

BEFORE  
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Commission's	)	
Review of Chapter 4901:1-22, Ohio	)	Case No. 12-2051-EL-ORD
Administrative Code, Regarding	)	
Interconnection Services	)	

**SUPPLEMENTAL REPLY COMMENTS OF  
THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC. ON  
STAFF'S PROPOSED MODIFICATIONS  
TO INTERCONNECTION SERVICES AND STANDARDS**

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On behalf of the Interstate Renewable  
Energy Council, Inc.

February 7, 2013

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Pursuant to Rules of Administrative Provisions and Procedure, Chapter 4901-1, *et seq.*, Ohio Administrative Code (O.A.C.), and the Public Utilities Commission of Ohio's (Commission) Entry dated January 16, 2013, the Interstate Renewable Energy Council, Inc. (IREC) respectfully submits this reply to supplemental comments filed by parties on January 31, 2013 on the Staff's further proposed rule modifications to Chapter 4901:1-22, O.A.C. (Interconnection Rule).

**I. Introduction**

IREC, the Solar Advocates<sup>1</sup>, and the Office of the Ohio Consumers' Counsel (OCC), all generally support Staff's proposed modifications. Among those modifications, IREC's opening comments particularly emphasized the importance of Staff's proposal to expand access to the Level 2 Fast Track review process and to create a clear, well defined supplemental review process.<sup>2</sup> IREC supports these improvements, among the others proposals in Staff's revisions,<sup>3</sup>

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<sup>1</sup> The "Solar Advocates" are the Environmental Law & Policy Center, the Sierra Club, the Ohio Environmental Council, the Solar Energy Industries Association, and the Vote Solar Initiative.

<sup>2</sup> Entry Item (4) (illustrative Fast Track eligibility table); Proposed Rule 4901:1-22-07 (Supplemental Review).

because they provide a framework that appropriately balances the interests of interconnection customers and utilities and generally reflect emerging best practices. In this reply, IREC responds to the concerns of Ohio Edison Company, the Cleveland Electric Illuminating Company, and the Toledo Edison Company (jointly “The Companies”), Duke Energy Ohio, Inc. (Duke Energy), Dayton Power & Light (DP&L), and Ohio Power Company (AEP Ohio) regarding these two important proposals and suggests that:

- (1) Fast Track eligibility limits in Staff’s illustrative table are reasonable and do not pose a threat to the utilities’ electric systems because the initial review technical screens and supplemental review screens will work to prevent those impacts.
- (2) The supplemental review proposal is reasonable because it provides interconnection customers transparency and certainty about the length and expense of the process, while incorporating additional technical screens that provide guidance to help utilities assess which generator interconnections can be accomplished without a full study.

IREC supports these two modifications because they build upon the existing structure, which allows utilities to maintain safety and reliability, while providing more transparency for interconnection customers regarding the technical standards to which a proposed interconnection will be assessed. From the customer’s perspective, the existing process can appear inefficient and unnecessarily restrictive, and the likelihood is high that it will only become increasingly more so as penetration levels grow and the number of applications rises. Staff’s proposals proactively increase efficiencies and expand access to expedited interconnection while maintaining the protections embedded in the current process, delivering a win-win solution.

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<sup>3</sup> In opening Comments, IREC also noted its particular support for Staff proposals to establish a pre-application report option for prospective interconnection customers, a generation capacity limit on a single phased shared secondary set at 65% of transformer nameplate rating instead of the existing static 10 kW limit, and a requirement for additional study when the proposed generator has interdependencies with other queued generators on the transmission or sub-transmission system or if there are posted transient stability issues.

IREC appreciates the opportunity to submit this reply to address these issues and to encourage Commission adoption of Staff's proposal.

## **II. Fast Track Eligibility**

Staff's proposed framework for Fast Track eligibility, which is included in the table on page 2 of the Entry and reproduced below, proposes two categories of system size limits: (1) system size limit that are differentiated by line voltage "regardless of location" of the generator; and (2) system size limits that are differentiated by line voltage for systems that will interconnect on a 600 amp line and are within 2.5 feeder miles of a substation. Unlike the existing Fast Track system size limit, which is set at 2 MW regardless of location and line voltage, the values in the table vary eligibility according to line voltage rating.

Line Voltage	Fast Track Eligibility- regardless of location	Fast Track Eligibility- on a 600 amp line and < 2.5 feeder miles from substation
< 5 kV	< 1 MW	< 2 MW
5 kV ≤ 15 kV	< 2 MW	< 3 MW
15 kV ≤ 30 kV	< 3 MW	< 4 MW
30 kV ≤ 69 kV	< 4 MW	< 5 MW

IREC, the Solar Advocates, OCC, and AEP Ohio each express support for the Fast Track eligibility criteria, as expressed in Staff's illustrative table.<sup>4</sup> The differentiated approach taken in this table reflects, on a sliding scale basis, the reality that generators larger than 2 MW may be capable of passing Level 2 review where they are located in close proximity to a substation or are interconnecting on a higher voltage line. Currently generators over 2 MW must proceed

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<sup>4</sup> IREC Comments at 1; Solar Advocates Comments at 1-2; OCC Comments at 1; AEP Ohio at 2.

under the Level 3 full study process, even if they are located on a main line close to the substation where they could be safely accommodated in the Level 2 review process. To the extent generators are needlessly pushed into the Level 3 study process, that taxes the resources of utilities and customers unnecessarily without a commensurate benefit.

IREC supports system size limits in the “regardless of location” column of Staff’s illustrative table—even where that value is lower than the status quo—because those limits reflect system sizes that have a realistic possibility of passing the Level 2 screening process. Indeed, increased system size limits do not change the baseline technical considerations that all Level 2 requests must pass: initial technical review screens and/or the new proposed supplemental review screens. For line voltages less than 5 kV, the system size limit in the table is actually lower than the current 2 MW Level 2 size limit. This adjustment reflects the possibility that voltage problems may occur that could cause systems over 1 MW to fail one or more screens at that line voltage level. By prohibiting such interconnection requests from applying under Level 2 review when interconnecting to line voltage less than 5 kW, the lower eligibility limit serves a practical, administrative purpose. In this way, the system size limit plays a gatekeeper function that helps create a realistic understanding of the types of applications that may pass Level 2 and helps discourage bottlenecks in the Level 2 process by routing projects that are likely to need a Level 3 review directly to the Level 3 process.

Expanded system size limits for higher line voltages serves a similar function of enabling viable projects that can pass initial review and/or supplemental review screens—but are larger than the current 2 MW limit—to avoid entering the Level 3 full study process when that more laborious process is not necessary to safeguard safety and reliability. Proceeding under the Proposed Level 2 process versus a study process can make an important difference in terms of

cost and time to the developer, and it also serves to provide greater transparency and certainty at the outset of the process. It can also reduce the time utilities unnecessarily spend on studies that may not be needed to maintain safety and reliability.

Customers benefit from Staff's proposal because it helps create more realistic expectations about the ability to interconnect in different locations on an expedited basis. In so doing, Staff's proposal also encourages development in areas of the utility system that are better able to accommodate large generators.

Indeed, DP&L and Duke Energy assert that not all parts of their systems are likely to support larger generators. DP&L opposes the illustrative table based on the fact that it has "a number of rural circuits are quite long with small conductors towards the end of the circuit."<sup>5</sup> Duke Energy is concerned that, under the "regardless of location" column, generators at the upward end of these limits are going to fail other screens, especially at lower voltages.<sup>6</sup> Duke Energy's alternate proposed table would only allow generators of 100 kW or less to interconnect to their 4.16 kV line in the "regardless of location" column, although Duke Energy does not provide any support for how it determined that 100 kW would be an appropriate system size limit. IREC notes that the existing size limit for Level 2 review is 2 MW, which also applies to Duke Energy's 4.16 kV system.

IREC understands that the maximum possible system size will not be possible in every case, but this should not outweigh the benefits of taking what all parties appear to agree are relevant criteria into account in determining eligibility for the Level 2 process. IREC encourages the Commission to adopt Staff's proposed eligibility limits to expand access to Fast Track review to applicants that are currently unable, but are likely, to benefit from expedited review.

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<sup>5</sup> Duke Energy at 1-2; DP&L at 1; AEP Ohio at 2.

<sup>6</sup> Duke Energy at 2.

### **III. Supplemental Review Process and Screens**

IREC, the Solar Advocates, and OCC all generally support Staff's proposed revisions to the supplemental review process as a significant improvement from the current process.<sup>7</sup> The existing supplemental review process is highly dependent on utility discretion and does not have clearly defined timeframes or technical review screens. The proposed process gives customers certainty that the supplemental review will be completed within twenty-five business days, will not exceed a yet to be determined fixed supplemental review fee, and will be conducted according to the clearly defined parameters of supplemental review screens. This improved process should enable more generators to pass through Level 2 and avoid Level 3 studies in higher penetration scenarios, achieving more cost-effective interconnection for a wider swath of the distributed generation market in Ohio. At the same time, the proposed supplemental review screens allow for ample exercise of utility engineering judgment to ensure that safety and reliability will be maintained.

#### **A. Supplemental Review Process**

When an interconnection request fails one of the Level 2 initial review screens, the proposed supplemental review process will provide utilities with sufficient additional time to perform additional analysis and will give interconnection customers more transparency. Ultimately, supplemental review provides customers a middle path between the Fast Track and the full study process that may allow a greater number of generators to proceed without further study when one is not needed.

The supplemental review process also provides the benefit of allowing generators an opportunity to assess the continuing cost-effectiveness of a project, at an early step in the

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<sup>7</sup> IREC at 1-4; Solar Advocates at 1-2; OCC at 1-2.

interconnection process. In some circumstances, an interconnection customer may use the results of the supplemental review study as a basis to abandon a non-viable project before substantial sums of money have been committed to a study process. IREC agrees with the Companies that supplemental review can provide an opportunity for a developer to reassess or modify a project based on study results, but disagrees with the Companies' assertion that a one-time, "omnibus" supplemental review process is less desirable than the Companies' current incremental or staged process of performing supplemental review.<sup>8</sup> Rather than allowing utilities continue to perform a series of incremental reviews, without formal structure,<sup>9</sup> Staff's proposal puts a uniform and well-defined framework in place that will be consistent across utilities. It is important to have a consistent supplemental review framework across the state, as project developers often work in the territories of several utilities and become more efficient when the processes are uniform statewide.

## **B. Supplemental Review Screens**

The overall supplemental review process allows generators that fail one or more of the initial review screens to continue on an expedited path to interconnection. The supplemental review screens ensure that, in the time available for supplemental review, utilities can address the additional safety and reliability concerns that typically arise at higher penetrations.

The first supplemental review screen (proposed Rule 4901:1-22-07(E)(1)(a)) asks whether the aggregate generating facility capacity on a line section is less than 100% of the minimum load measured during the period relevant for the generator type for all line sections

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<sup>8</sup> Companies Comments at 4.

<sup>9</sup> The Companies Comments at 4; *see also* Duke Energy at 2 (stating that the supplemental review process need not be as formal as the process in the FERC's SGIP).



bounded by automatic sectionalizing devices upstream of the generating facility.<sup>10</sup> The purpose of the 100% minimum load screen is to address situations where a generator has failed the initial review screen limiting aggregate generation on a line section to 15% of line section peak demand. According to a recent paper from the National Renewable Energy Laboratory, “there are many circuits across the United States and Europe with PV penetration levels well above 15% where system performance, safety, and reliability have not been materially affected.”<sup>11</sup> Where 100% of minimum load exceeds 15% of peak load on a circuit, then the proposed supplemental screen would allow for higher penetration than is possible under the initial review screens without significantly increasing the risks of “unintentional islanding, voltage deviations, protection miscoordination, and other potentially negative impacts.”<sup>12</sup> Moreover, if the proposed generation facility is below 100% of the minimum load measured at the time the generator will be online, then in most cases the risk of power backfeeding beyond the substation will be minimal.<sup>13</sup> Parties are not opposed to the minimum load screen, but several do raise a concern about the availability of minimum load data in order to apply the screen. IREC addresses those concerns in subsection C, below.

The second and third screens are not as black and white as the initial ten Fast Track screens, but a virtue of those screens is that they provide utilities the ability to review projects in light of their unique variations. For projects that are below 100% of minimum load, the second screen (proposed Rule 4901:1-22-07(E)(1)(b)) asks whether the proposed generating facility is

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<sup>10</sup> Proposed Rule 4901:1-22-07(E)(1)(a).

<sup>11</sup> Michael Coddington *et al.*, *Updating Interconnection Screens for PV System Integration*, at 2, NREL/TP-5500-54063 (January 2012)

<sup>12</sup> *Id.* at 2.

<sup>13</sup> Kevin Fox, Sky Stanfield, Laurel Varnado, Thad Culley, Michael Sheehan, and Michael Coddington, *Updating Small Generator Interconnection Procedures for New Market Conditions*, NREL/TP-5500-56790, at p. 32 (December 2012), available at [www.nrel.gov/docs/fy13osti/56790.pdf](http://www.nrel.gov/docs/fy13osti/56790.pdf).

likely to create power flow or adverse voltage conditions. The second screen examines whether voltage regulation, fluctuation and harmonic levels are in compliance with applicable standards. The utilities generally support the second supplemental review screen as a workable standard, but several utilities express some apprehension.<sup>14</sup> For example, the Companies support the screen, but suggest that additional information from developers on generator output ramp rates and harmonic current injection is necessary before the utility can properly administer the screen.<sup>15</sup>

IREC suggests that requiring this level of data may prove overly burdensome on interconnection customers and may not be necessary to administer the screen. For example, a recent Sandia National Laboratory study examined the electrical impacts of integrating 2 MW solar PV systems on distribution feeders and found that, even in the worst case for ramp down rates, no flicker issues were expected.<sup>16</sup> IREC suggests that this report may be helpful to utilities in their approaches to identifying potential flicker problems and may help refine exactly what information is needed to accurately estimate flicker impacts.

Finally, the third proposed screen (proposed Rule 4901:1-22-07(E)(1)(c)) asks whether the addition of the proposed generating facility would create impacts to safety or reliability that cannot be adequately addressed without further study. This screen identifies a list of some of the specific issues that utilities might look for, but also allows sufficient flexibility for utilities to examine other issues that may arise. Duke Energy does not oppose inclusion of the third screen

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<sup>14</sup> DP&L Comments at 4 (noting that the utility’s “lack of experience with the impact of renewable generation connections” would make it difficult to identify reliability and safety issues without a full study); Companies Comments at 5.

<sup>15</sup> The Companies Comments at 5.

<sup>16</sup> Jimmy Quiroz and Christopher Cameron, *Technical Analysis of Prospective Photovoltaic Systems in Utah* (Sandia National Laboratories) at 23, SAND2012-1366 (February 2012).

and the Companies support using the screen, noting that it reflects the utilities' current standard practice.<sup>17</sup>

IREC supports Staff's proposed technical review screens because they enable utilities to ensure safety even up to the 100% of minimum load threshold. By integrating the 100% of minimum load threshold into the supplemental review process, along with additional power quality, voltage and safety and reliability screens, utilities would be provided additional time and resources to study potential issues, without requiring a full study in every case. Accordingly, IREC supports the supplemental review technical screens as a reasonable balancing of interconnection customer of utility interests.

### **C. Availability of Minimum Load Data**

IREC acknowledges that minimum load data is not always available, but suggests that minimum load can be calculated, estimated or determined using a power flow model. Because it is possible to accurately estimate minimum load, utilities do not have to rely solely on measured data or even have the capability to measure minimum load. In the event that minimum load cannot be reliably determined using any of these methods, the utilities can default to using a 30% of peak load screen, according to proposed Rule 4901:1-22-07(E)(1)(a). In IREC's experience, 15% of peak load has typically been used to serve as a proxy for 50% of minimum load, 30% of peak load can serve as a proxy for 100% of minimum load.<sup>18</sup> Duke Energy takes issue with using 30% of peak load where minimum load data is not available, based on the fact that its own internal studies show that minimum load on their system is closer to 20% of peak load.<sup>19</sup> Duke

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<sup>17</sup> The Companies Comments at 5.

<sup>18</sup> See *Updating Interconnection Screens for PV System Integration*, at 2 ("For typical distribution circuits in the United States, minimum load is approximately 30% of peak load.").

<sup>19</sup> Duke Energy Comments at 2.

Energy's internal study reveals that the utility already has an understanding of the relationship between peak and minimum load, suggesting that it is capable of estimating 100% of minimum load and that it may not need to resort to using the default 30% of peak load data for this screen. IREC supports Staff's proposed default of 30% of peak load as a rough approximation of 100% of minimum load where a utility lacks the ability to estimate.

IREC encourages the Commission to adopt the proposed supplemental review process and screens, as proposed and without modification.

#### **IV. Conclusion**

IREC supports Commission adoption of Fast Track eligibility criteria, as shown in Staff's illustrative table in the Entry, and encourages the Commission to fully adopt, without modification, the proposed supplemental review process and technical screens. IREC supports total adoption of Staff's proposed revisions, consistent with IREC's opening supplemental comments.

Respectfully submitted on February 7, 2013,



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electronically filed by Mr. Thad B Culley on behalf of Interstate Renewable Energy Council, Inc.