

January 11, 2016

**NYSEIA Comments on the November 9, 2015 Redline of the
New York Standardized Interconnection Requirements (SIR)**

Case Number 15-E-0557

The New York Solar Energy Industries Association (NYSEIA) respectfully submits the following comments and suggested revisions to the redline version of the "New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators 5 MW or Less Connected in Parallel with Utility Systems" dated November 9, 2015. These comments are made pursuant to the New York Department of Public Service docket for Case Number 15-E-0557. Aside from Comments #1 and #2, which are the most important, all other comments are given chronologically in order of the pages they reference in the redline SIR. NYSEIA appreciates the opportunity to share our views on this important matter, and we look forward to the completion of this critical and timely update to the New York SIR.



Comment 1 – The modification of Step 4 in the proposed redline SIR for systems over 50 kW (page 9 and Appendix G) to include a screening analysis whose results will determine if a full CESIR is required is a very positive step that NYSEIA strongly supports. NYSEIA feels that the inclusion of a screening analysis would have a substantive impact on improving the uniformity and transparency of standards used across the State and could help to significantly simplify and streamline the process for many systems that, due to their size and the nature of the distribution circuits to which they will interconnect, do not need a full technical review. The screening analysis as proposed in the redline SIR, however, has significant issues that greatly limit its potential to facilitate such improvements.

First, the redline SIR states that "[t]he results of the screening analysis will be used as a threshold to determine whether a full CESIR is necessary." This is the intent of the screening analysis as adopted in other high solar penetration jurisdictions like California and Massachusetts where systems that pass the technical screens are allowed to interconnect without a full technical review. However, the text of the proposed redline SIR introduces potential confusion on this point in two places. These include the following two sentences

"Upon completion of this analysis, the utility will provide the applicant with an estimate of costs associated with the completion of the CESIR, if deemed necessary" (p. 9)

"Any factors beyond those delineated in Appendix G that necessitate a CESIR shall be explained in detail and included in this response." (p. 10)

NYSEIA would recommend making explicit that a CESIR being deemed necessary for a system that passes all of the technical screens included in Appendix G should be viewed as an exceptional case and clarifying that the specific intent of the screening analysis included in the new Step 4 is to identify systems that whose size and nature are such that their interconnection do not generally pose any concerns for safety or reliability and thus do not require a CESIR.

Second, aside from setting a timeline for performing the screening analysis at 15 business days (which NYSEIA supports) and a timeline for the developer to commit to a CESIR, if required, at 20 business days, the proposed modifications to Step 4 include essentially none of the detailed timelines and processes for communication between the utility and the developer that NYSEIA proposed in its October 6th comments (see Comment #8 in the attached Annex One). In our October 6th comments we presented a detailed proposal for the revision of Step 4 starting at the bottom of the fourth page of Annex One. This proposed process for conducting the screening analysis, presenting the results, and detailing utility system upgrades deemed necessary when the screens are not passed was based on that successfully developed for use in California. Our proposed language for a new Step 4 ("Utility Performs an Initial Review and Develops a Cost Estimate for the Coordinated Electric System Interconnection Review (CESIR) if Required") adds significant form and clarity to the technical screening process and we feel that it would represent a significant improvement in the transparency and simplicity of the SIR process. As such, NYSEIA is again recommending the replacement of the language of Step 4 on pages 9 and 10 of the proposed redline SIR with that from our October 6th comments (see pages four through eight of the attached Annex One).

If NYSEIA's proposed language for a new version of Step 4 is not adopted in full, we would strongly recommend extending the time limit for the developers between receiving the results of the screening analysis and having to commit to a CESIR, if required. The currently proposed timeline of twenty (20) business days is too short for developers to be able to adequately consider the results of the screening analysis and move forward internally with project development to a point at which a decision could be made on whether or not to commit to a CESIR. If our proposal for an entirely new Step 4 is not accepted by DPS Staff, NYSEIA would recommend extending this deadline to sixty (60) business days before the utilities can reassess the project's position in the interconnection queue.

Third, while the adoption of a series of uniform technical screens for use in determining when a CEISR is required is a significant improvement over the current SIR, Appendix G of the present redline included only six (6) of the 13 initial review screens we proposed in our comments of October 6th (see Comment #8 and Attachment A included in Annex One below). While the six screens proposed by the redline SIR did include one of the more important changes we proposed in our Screen M: Simplified Voltage Fluctuation and Flicker Tests, it left out seven other screens commonly in use across the U.S. In order to maintain consistency and to maximize the utility of the screening process, NYSEIA is again proposing for inclusion the full set of 13 technical screens we have previously recommended in Attachment A of Annex One. The language of these 13 screens is based on our efforts to synthesize the best practices represented by the existing interconnection standards in use by the Federal Energy Regulatory Commission (FERC), by states like California, Massachusetts, and New Mexico, and from recommendations of the Interstate Renewable Energy Council (IREC).

Fourth, by far the biggest concern for NYSEIA and the most significant weakness we see in the proposed redline SIR, is the lack of any supplemental review process in the proposed redline SIR (again see Comment #8 and Attachment A of our October 6th

comments included here as Annex One). The inclusion of the three supplemental screens we proposed (i.e. Screen N: Supplemental Penetration Test, Screen O: Power Quality and Voltage Tests, and Screen P: Safety and Reliability Tests) would have a significant impact, particularly on moderate sized systems, and we view their absence as a critical concern. Having a formal supplemental review process that includes the screening of the system size against the relevant minimum load on the circuit could prevent many systems from having to bear the costs and delays of conducting a full CESIR when one is not needed and could also prevent needlessly tying up utility resources studying systems in detail that do not pose concerns for safety or reliability. In addition, the inclusion of such a supplemental review process would help to mitigate the significant conservativeness inherent in the use of 15% of peak load in the initial screening analysis (Simplified Penetration Test) and would bring New York more inline with the best practices of jurisdictions like California and Massachusetts and those adopted by FERC.

Comment 2 – The inclusion of a new pre-application report for systems over 50 kW in the proposed redline SIR (page 8 and Appendix D) will provide useful information to developers that will enable them to more accurately understand the nature and limitations of a circuit prior to submitting a formal application. The new pre-application report has the potential to help provide greater transparency about the ever changing state of the distribution grid and interconnection queue and to reduce the need for “site shopping” where applications at multiple sites are submitted for a single project due to the present lack of alternative means for acquiring adequate initial information. However, the pre-application report as proposed in the redline SIR has several issues that would limit its usefulness in this respect.

First, NYSEIA questions the requirement that all systems over 500 kW be required to file for a pre-application report. The pre-application report has significant potential for reducing uncertainty and for providing valuable information to the development community concerning the nature of the distribution grid at potential interconnection sites, but we do not see a rational for requiring it for all systems over 500 kW. In particular, this step would seem to add needless delays for projects that may not benefit from the pre-application screening. There are many sites where developers may have previous experience with the circuits involved and would thus wish to proceed to the application phase directly and not wait the additional time for a pre-application report that would be unlikely to reveal substantively new information. Thus NYSEIA recommends that no systems be required to file a pre-application report. If there is to remain a requirement of any kind for filing for a pre-application report, NYSEIA would recommend that it only apply to systems over 500 kW when interconnecting on a line below 5 kV and only to systems over 1MW on lines of other voltages.

Second, NYSEIA recommends that it be made explicit that the information on the circuit minimum load to be made available as part of the pre-application report be the “relevant” minimum load as defined in our October 6th comments (see Screen N: Supplemental Penetration Test in Attachment A included in Annex One below). Specifically, for solar PV systems with no battery backup, the information should be

for the minimum daytime load (i.e. the minimum load between 10 am and 4 pm for fixed panel systems and between 8 am and 6 pm for PV systems utilizing two-axis tracking systems). For all other distributed generation, the absolute minimum load should be reported.

Third, in order to give developers more useful information about the line characteristics at their proposed site that could aid their internal deliberations and help them more accurately and efficiently decide whether or not to move forward with the application process, NYSEIA would recommend including the existing fault current at both the substation and the PCC to the information provided in the pre-application report.

Fourth, NYSEIA views the pre-application report as proposed as having both too high a price and too long a timeline to maximize its utility. As noted in our October 6th comments (see Comment #2 in the attached Annex One), fifteen business days is the timeline required in states like California for the completion of the entire Initial Review process and it is also the length of time proposed for the technical screening analysis in the new Step 4 of the present redline SIR. These screening processes are substantively more involved than the pre-application report envisioned in the redline SIR and thus we question the allowance of the same amount of time for both. As a result, we again recommend that the timeline be changed to ten (10) business days for the pre-application report.

In addition, given that the pre-application report is likely to be based, in the main, on existing data and analyses, the cost of \$750 seems high. As such, NYSEIA again recommends that the cost be set at no more than \$350, as that is the current application cost in the present SIR and the pre-application report as envisioned includes information that is generally similar to that already presented in the preliminary reports provided by some utilities under the current interconnection process.

Fifth, as will be covered in Comment #4 below in greater detail, NYSEIA is also recommending that the overall SIR process be modified so that the pre-application report request and the application itself do not have to be submitted in the name of the customer, but can be submitted under the name of the developer. This change would be of particular importance for the pre-application report given its intended role as a step to be taken early in the process of project development.

Comment 3 – Increasing the size of distributed generation facilities covered by the SIR from 2 MW to 5 MW is a positive development that NYSEIA supports. However, while the increase in size as proposed is a step in the right direction, NYSEIA questions the need for such a low upper limit to remain. Many other jurisdictions include systems up to 20 MW under similar interconnection standards. While the net metering caps are currently much lower, raising the limit in this manner will enable larger systems to be interconnected to the distribution system more easily if the net metering limits are increased in the future. Adopting such a forward looking aspect in the current revision of the SIR would also appear consistent with the goals of New

York State to significantly increase the rate of distributed generation development over the coming decades.

Comment 4 – As noted in our October 6th comments, NYSEIA again recommends that the pre-application report and the application process highlighted in Steps 2 and 3 on and detailed in Appendices B, C, D, and F in the proposed redline SIR no longer be submitted in the name of the customer and instead be submitted in the name of the facility developer without reference to the ultimate off-taker or off-takers (see Comment #1 in the attached Annex One). This recommendation would significantly simplify the development process and reduce the duplication of effort on the part of the utilities if off-takers for a proposed project change during development.

In addition, removing the customer name from the pre-application report and the application itself would help to maintain a simple and consistent interconnection process for all types of distributed generation systems. In particular, the recent opening of community shared solar offerings in New York has created distributed generation facilities where there will be many customers per interconnection application and the customer pool will be flexible and dynamic. As a result, these facilities will not require a single customer name for the interconnection process, and to maintain a consistent application procedure for all classes of customers, we would thus recommend that all interconnection applications can be filed without a customer listed, and instead in the name of the developer.

While NYSEIA understands that such a change would likely require modification of the internal processes of utilities and how they track, manage, and bill for interconnection requests, this should not represent an insurmountable barrier to making this critical change. As we noted previously, this change would also move New York more in line with the current practice of other high solar penetration states such as Massachusetts.

Comment 5 – As noted in our October 6th comments, NYSEIA again recommends that that the SIR require only a single-line diagram as part of the initial application process outlined in Appendix F and that a three-line diagram be required only as part of the interconnection design package submitted for a CESIR (page 10), if one is required, or as part of the process by which the interconnection contract is executed if a CESIR is not required following the screening analysis (see Comment #3 in the attached Annex One).

Comment 6 – NYSEIA is strongly supportive of the redline SIR's addition of the requirement that utility cost estimates "be detailed and broken down by specific requirements, needs, and efforts identified in the report" (page 12). NYSEIA is also supportive of the limitation of cost contingencies to no more than 25% of the total estimate. NYSEIA would, however, recommend the further clarification of this language so that it would address the uncertainty of the cost estimates as well as the

inclusion of explicit contingencies. As noted in our October 6th comments, NYSEIA would recommend specifying an explicit limitation of the uncertainty of cost estimates presented as part of a CESIR to no more than 25% and to clarify in the SIR the types of conditions under which contingencies are allowed to be included as opposed to those conditions covered by the overall uncertainty specified for the cost estimates (see Comment #9 in the attached Annex One).

Comment 7 –NYSEIA is strongly supportive of the redline SIR’s modification of Step 7 to only require partial payment of the utility costs prior to executing a contract for interconnection (page 12). However, as noted in our October 6th comments, we would recommend reducing the amount required from 50%, as in the current redline SIR, to 25% (see Comment #4 in the attached Annex One). Allowing a good faith payment of twenty-five (25) percent of the costs would enable the developers to obtain the required final commitments around financing, while simultaneously eliminating utility exposure to performing work at risk, and would carry an explicit understanding that the utility will not procure any equipment or begin construction until full payment is received.

In addition, NYSEIA is supportive of the redline SIR’s modification of Step 7 to include a limit to the length of time a developer has between receiving notification of the required utility system modifications and committing to those upgrades. We feel, however, that the sixty (60) business day timeline is too short and that the current language concerning the utilities’ right to “re-assess the project’s inventory position” if the limit is exceeded is too soft. NYSEIA would recommend that an initial timeline be set at one hundred twenty (120) business days. After the expiration of this time, the utility should be required to notify the developer that they have a maximum of ninety (90) business days from receipt of the notification to make the required partial payment of utility costs and execute a contract for interconnection or the utility will be required to remove the project from the interconnection queue. Such a change would provide sufficient time for projects of all sizes to secure final financing and other agreements while preventing dormant projects from needlessly filling space in the interconnection queue and locking up access to quality sites.

Comment 8 – As noted in our October 6th comments, NYSEIA is again recommending that a version of the Interconnection Inventory (page 26) be made publically available so that developers can get a high level view of interconnection activity going on in different regions (see Comment #7 in the attached Annex One).

In addition, having a public version of the Interconnection Inventory will also provide greater transparency regarding utility performance. With respect to this final point, NYSEIA is also recommending that the SIR include specific mechanisms for holding the utilities accountable to the timelines enumerated in the SIR and in our proposed replacement for Step 4 (see Comment #1 above). Such enforcement mechanisms should also cover the timelines agreed to between the utilities and the developers for the completion of the system upgrades required for interconnection and should specify

the overall metrics by which utility performance will be evaluated as well as the potential consequences that would apply in the case of non-compliance. As noted in our October 6th comments, NYSEIA would recommend as a model, the collection of performance metrics and enforcements mechanisms put in place in Massachusetts by the July 31, 2014 order from their Department of Public Utilities (see Comment #10 in the attached Annex One).

Comment 9 – The changes and additions NYSEIA is recommending in the above are based on national best practice standards. The most important modifications we are proposing have a demonstrated and substantive track record of success improving the interconnection process in other jurisdictions while maintaining the safety and reliability of the electric system. As such, we believe that the above improvements to the redline SIR can be made immediately without further need for delay. In addition to the above, however, there are a number of other critical technical issues currently facing distributed generation in utility territories across the State that present immediate and significant barriers to the continued growth of the renewable energy sector. If left these issues are allowed to remain unaddressed in the near term, they could present a very real threat to the State’s ability to meet the goals for renewables energy growth outlined in the NY Sun Initiative and in Governor Cuomo’s recent push to have 50 percent of the State’s electricity come from renewable resources by 2030.

In order to address these critical barriers to interconnection within the larger process of improving the SIR, NYSEIA supports the recommendation of IREC for a series of workshops to be scheduled immediately following the closure of the present public comment period. Such workshops would enable a wide range of stakeholders from across the distributed generation community to work with the utilities, NYSERDA, and DPS staff to begin the process of reaching consensus on an array of technical issues facing projects today. Such a process could then lead into the ongoing meetings of a Technical Review Group (TRG) established along the lines of the Technical Standards Review Group that has successfully contributed to the harmonization and improvement of interconnection standards in Massachusetts. NYSEIA would look forward to participating in both the near term workshops and the ongoing Technical Review Group and strongly supports these next steps following the revision of the current redline SIR.

We appreciate the opportunity to submit these comments and look forward to continuing to work with DPS Staff, the Commission, the Utilities, NYSERDA and other stakeholders.

Respectfully submitted,
/s/ Melissa Kemp

Melissa Kemp
Policy Co-Chair, New York Solar Energy Industries Association

Annex One

NYSEIA Comments on the June 2015 Redline of the New York Standardized Interconnection Requirements (SIR)

The New York Solar Energy Industries Association (NYSEIA) respectfully submits the following comments and suggested additions to the redline version of the “New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators 5 MW or Less Connected in Parallel with Utility Systems”. Aside from Comments #8, #9, and #10, which are the longest and most important, all other comments are given in the order of the page they reference in the redline SIR.

Comment 1 – NYSEIA would recommend that the application process highlighted in Steps 3 on pages 4 and 9 and detailed in Appendices B and C no longer require the applications to be submitted in the name of the customer and that interconnection applications be allowed in the name of the facility developer without reference to the ultimate off-taker or off-takers. This recommendation grows out of the goal of simplifying the process in cases where there are multiple projects in advanced development and the solar developer has a high-value location selected that they will choose to make a priority for construction regardless of which customer ultimately moves forward first. Such a prioritization of a location might be due to multiple factors such as land owner interest in leasing or proximity to known high-quality interconnection sites. In such a case it would be advantageous for both the utility and the prospective customers to be able to start the interconnection application process for the site prior to the final selection of which customer will ultimately be chosen by the developer as the final off-taker. In addition, this change would help to maintain a simple and consistent interconnection process for all types of distributed generation systems including things like community shared solar. In community shared solar, the customer pool will be flexible and dynamic and thus there will be no single off-taker or list of off-takers for a given facility that could be provided at the time of the application. This change would be in line with the current practice in other states such as Massachusetts.

Comment 2 – NYSEIA would recommend shortening the timeline for the pre-application report introduced on page 9 and detailed in Appendix D on page 49. Fifteen business days is the timeline required in states like California for the completion of the entire Initial Review process as well as the timeline we are proposing here for the revised Initial Review process in New York (see Comment 8) both of which are far more involved than the pre-application report envisioned in the redline SIR. For returning the information required in the pre-application report we would recommend that a timeline of ten (10) business days be required for the response by the utility.

Second, in light of the proposed changes NYSEIA is recommending for the Initial Review process (see Comment 8), we would recommend changing the relative costs of the pre-application report and the application fee. Having the simpler pre-application report cost more than twice the application fee itself (i.e. \$750 versus \$350) seems questionable to us. We would recommend that the pre-application report cost be set at \$350 as it is similar to the preliminary reports provided by some utilities under the current SIR process and that the new Initial Review application fee be set at no more than \$1,250 as this would more accurately capture the costs of performing the analysis we are recommending below for the new Initial Review process.

Third, we would recommend adding two additional pieces of information to the ten currently listed in Appendix D for the pre-application report. First, given the importance of the relevant minimum load screen to the Supplemental Review process (see Comment 8 and our Attachment A), it would be of potentially significant help to prospective interconnection applicants if the relevant minimum load on the circuit (where it is available from currently existing data) would be included in what is provided by the utility in their response to the pre-application report. Second, we would recommend adding to the existing Nominal Circuit Voltage requirement that information on the number of phases and (if not three-phase) the estimated distance to the nearest point of interconnection to a three phase circuit.

Comment 3 – We question the need for the proposal on page 12 to require three-line drawing that are approved by a NYS licensed Professional Engineer for systems proposing interconnection on lines at 13.2 kV or above during the CESIR study. Higher voltages for interconnection do not substantively change the electrical systems of solar PV facilities which raises a question for us regarding the voltage trigger in this requirement. In lieu of this language, we would recommend instead that only single-line diagrams for proposed facilities, approved by a licensed PE, be required for the CESIR. Similarly, on page 53 detailing the initial application process, we would recommend that only a single-line diagram be required in lieu of the present requirement for a three-line diagram. This would simplify the application process overall and would bring New York closer in line with the practices of other states.

Comment 4 – As in our letter dated September 4, 2015, NYSEIA strongly recommends that mechanisms be explored for inclusion in the SIR by which some system wide upgrades benefiting multiple present or future distributed generation projects and the ultimate transition to a Distributed System Platform would be paid for through a mechanism other than the current “first mover pays all” approach. This would affect Step 7 in the current redline SIR on page 15 where the applicant commits to paying for the cost of system upgrades. In addition to the example of places like California where some system upgrade costs are being proposed for inclusion in the rate-base, we would recommend exploring other mechanisms, such as those in place in some utilities for sharing the costs associated with the extension of existing lines to new customers where the first mover is reimbursed for a portion of the line extension cost when other new customers who benefit from the line are added in the future.

In addition, NYSEIA would also recommend that the SIR no longer require full payment for the system upgrades in advance of executing the interconnection contract as in the current Step 7. A fully executed interconnection contract is one of a few critical milestone documents commonly required for securing committed third party financing in the typical model for the development of distributed generation projects. Allowing a good-faith payment of twenty-five (25) percent of the costs would enable the developers to obtain the required final commitments around financing, while simultaneously eliminating utility exposure to performing work at risk. The 25% payment would cover the costs required to perform preliminary engineering for the changes required by the interconnection application, and would carry the explicit understanding that the utility will not procure any equipment or begin construction until full payment is received.

Comment 5 – There are several examples in the proposed redline of the SIR that NYSEIA would suggest be removed from the document as they would be better covered within the technical screens proposed as part of the revised Initial and Supplemental Review (see Comment 8 and Attachment A) or would be better addressed within the context of the proposed Technical Standards Working Group where utility practices would be discussed by stakeholders in light of industry best practices. Specific examples of such issues include:

- The language on pages 18-19 requiring that a “generator-owner shall be required to provide overvoltage mitigation solutions for any generator interconnection deemed not to be effectively grounded by the utility” and the subsequent mitigation solutions
- The language on page 20 requiring that a generator not cause the system voltage at the PCC to deviate more than five (5) percent from the prevailing level
- The language on pages 22-23 requiring static VAR control for inverters over 250 kW as opposed to allowing dynamic VAR control as well as is in the IEEE standards
- The language on page 24 requiring time over current relay protection for all systems regardless of size, and
- The language on page 29 requiring direct transfer trips (DTTs) for all systems over 2 MW

NYSEIA strongly supports making more explicit the requirements for ground fault overvoltage protection, the size of allowed voltage fluctuations, and the conditions under which direct transfer trips would be required. However, we would object to the setting of specific size limits above which DTTs would be required as a blanket rule and we note that the proposed requirements for ground fault overvoltage protection would appear to move in a direction against the current trends in other jurisdictions. As such, we would suggest that the areas identified above would be better addressed by their inclusion in the proposed technical screens (as we have done in Attachment A for ground fault overvoltage, direct transfer trips, and the $\pm 5\%$ voltage limit) or through a process of reaching consensus with and among the utilities through a mechanism like the proposed Technical Standards Working Group as has been done successfully in states like Massachusetts (as we would recommend for VAR control and over current relay protection).

Comment 6 – NYSEIA would recommend that the language on page 24 requiring all voltage, frequency, and clearing time set points to be field adjustable include an explicit statement that all such set points be adjustable only within the ranges proscribed by relevant IEEE and the UL standards.

Comment 7 – NYSEIA would recommend that a version of the Interconnection Inventory described on page 33 be made publically available so that developers can get a high level view of interconnection activity going on in different regions. It would also help to provide greater transparency regarding utility performance (see Comment 10) below.

Comment 8 – NYSEIA would recommend replacing the language on page 11 of the proposed Step 4 in its entirety by the language below as well as adding the list of technical screens included in Attachment A of these comments to the SIR as a new section. The technical screens we are proposing are based on our efforts to synthesis the best elements from the existing interconnection standards in use by the Federal Energy Regulatory Commission (FERC), by states like

California, Massachusetts, and New Mexico, and from recommendations of the Interstate Renewable Energy Council (IREC). Attachment B shows a detailed side-by-side comparison of the three supplemental review screens as adopted by FERC, California, and Massachusetts as an illustration of the processes we have used for developing our current recommendations.

In addition to the adoption of the attached technical screens and the revised Initial and Supplemental Review process detailed below in our proposed language for the new Step 4 in the interconnection process, NYSEIA would also recommend that the Public Service Commission adopt a standard for the content to be presented by the utilities in the results of these Initial and Supplemental reviews so that the data and analysis provided to the developers will be comparable across all service territories in the State. This would be similar to the efforts already included in the redline SIR for the standardization of the content to be provided in the new pre-application reports.

Finally, NYSEIA would strongly recommend that a similarly detailed process, set of mandatory timelines, and technical requirements for the Coordinated Electric System Interconnection Review and related cost estimates (i.e. Step 6) be developed along the lines of what we are recommending here for the Initial and Supplemental Reviews. The standards of states like Massachusetts and California for how applications that fail the Initial and Supplemental Reviews are handled would provide an excellent model for how such a detailed proscription of the CESIR process could be made. In addition, other changes would be required in Step 6 of the SIR if our recommendations for the Initial and Supplemental Review processes detailed below were adopted. For example, the language at the top of page 14 stating

A full CESIR may not be needed if the aggregate generation is less than (1) 50 kW on a single-phase branch of a radial distribution circuit; or (2) 150 kW on a single distribution feeder.

would need to be replaced by language clarifying that a CESIR is not required if the system passes the technical screens in the Initial or Supplemental Review or if the applicant chooses to proceed to an results meeting following failure of one or more screens and agrees to utility required modifications that would obviate the need for a CESIR.

“Step 4: Utility Performs an Initial Review and Develops a Cost Estimate for the Coordinated Electric System Interconnection Review (CESIR) if Required.”

The utility performs an Initial Review of the proposed system interconnection utilizing the technical screens A through M detailed in Section XXX. The Initial Review shall be completed and a written response detailing the results of each screen and the overall outcome of the Initial Review shall be sent to the applicant within fifteen (15) Business Days of the completion of Step 3. Depending on the results of the Initial Review and the subsequent choices of the applicant, the following process(es) will apply:

- a. If the Initial Review finds that the applicant’s proposed system passes all of the relevant technical screens (i.e. screens A through M) and is in compliance with the Interconnection Requirements outlined in Section II, there are no requirements for Interconnection Facilities or Distribution Upgrades. As such the utility will return a signed and executed New York State Standardized Interconnection Contract to the applicant within fifteen (15) Business Days of providing the applicant the results of the Initial Review and the applicant may proceed with the interconnection process.

- b. For interconnection applications that would pass the Initial Review screens with the addition of readily identifiable Interconnection Facilities or Distribution Upgrades, the utility shall provide the technical reasons, data and analysis supporting the Initial Review results in writing and within fifteen (15) Business Days of providing notice of Initial Review results provide the applicant with a non-binding cost estimate of the Interconnection Facilities or Distribution Upgrades. The applicant shall notify the utility within fifteen (15) Business Days following such notification indicating the intention of the applicant to (i) accept the proposed upgrades and proceed with interconnection, (ii) proceed to an Initial Review results meeting, (iii) proceed to Supplemental Review, (iv) proceed to a full CESIR, or (v) withdraw the Interconnection Request. The applicant may request one extension of no more than fifteen (15) Business Days to respond. If the applicant fails to notify the utility of their decision within fifteen (15) Business Days of notification of the Initial Review results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received. If the applicant does notify the utility of its intention to accept the proposed upgrades and proceed with interconnection, the utility will return a signed and executed New York State Standardized Interconnection Contract to the applicant within fifteen (15) Business Days of receiving the notification.

If the Initial Review finds that the applicant's proposed system cannot passes all of the relevant technical screens (i.e. screens A through M) with readily identifiable upgrades, the utility shall provide the technical reasons, data and analysis supporting the Initial Review results in writing. The applicant shall notify the utility within ten (10) Business Days following such notification whether to (i) proceed to an Initial Review results meeting, (ii) proceed to Supplemental Review, (iii) proceed to a full CESIR, or (iv) withdraw the Interconnection Request. If the applicant fails to notify the utility of their decision within ten (10) Business Days of notification of the Initial Review results, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received.

- i. If the applicant chooses to proceed to an Initial Review results meeting and modifications that obviate the need for Supplemental Review are identified, and the applicant and the utility agree to such modifications, the utility shall return a signed and executed New York State Standardized Interconnection Contract within fifteen (15) Business Days of the Initial Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required and agreed to, the utility shall provide the applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Initial Review results meeting. The applicant shall notify the utility within fifteen (15) Business Days following such notification indicating the intention of the applicant to revise its application as requested and proceed with the interconnection process or withdraw its application. The applicant may request one extension of no more than fifteen (15) Business Days to respond. If the applicant fails to notify the utility of their

decision within fifteen (15) Business Days of notification of the Initial Review results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received. If the applicant does notify the utility of its intention to accept the proposed upgrades and proceed with interconnection, the utility will return a signed and executed New York State Standardized Interconnection Contract to the applicant within fifteen (15) Business Days of receiving the notification.

If the applicant chooses to proceed to an Initial Review results meeting and modifications that obviate the need for Supplemental Review are not identified and agreed to, the applicant shall notify the utility within ten (10) business days of the meeting of their intention to (i) proceed to Supplemental Review, (ii) proceed to a full CESIR, or (iii) withdraw the Interconnection Request. If the applicant fails to notify the utility of their decision within ten (10) business days, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received.

- ii. Applicants that elect to proceed to Supplemental Review shall provide a nonrefundable fee of \$2,500 with their response. The utility shall complete the Supplemental Review within twenty (20) Business Days, absent extraordinary circumstances, following authorization and receipt of the fee. If the Supplemental Review finds that the applicant's proposed system passes all of the relevant technical screens (i.e. screens N through P) and is in compliance with the Interconnection Requirements outlined in Section II, there are no requirements for Interconnection Facilities or Distribution Upgrades. Thus, the utility will return a signed and executed New York State Standardized Interconnection Contract to the applicant within fifteen (15) Business Days of providing the applicant the results of the Supplemental Review and the applicant may proceed with the interconnection process.

For interconnection applications that would pass the Supplemental Review screens with the addition of readily identifiable Interconnection Facilities or Distribution Upgrades, the utility shall provide the technical reasons, data and analysis supporting the Supplemental Review results in writing and within fifteen (15) Business Days of providing notice of Initial Review results provide the applicant with a non-binding cost estimate of the Interconnection Facilities or Distribution Upgrades. The applicant shall notify the utility within fifteen (15) Business Days following such notification indicating the intention of the applicant to accept the upgrades and proceed with the interconnection process or withdraw its application. The applicant may request one extension of no more than fifteen (15) Business Days to respond. If the applicant fails to notify the utility of their decision within fifteen (15) Business Days of notification of the Supplemental Review results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be

required until positive confirmation is received. If the applicant does notify the utility of its intention to accept the upgrades and proceed with interconnection, the utility will return a signed and executed New York State Standardized Interconnection Contract to the applicant within fifteen (15) Business Days of receiving the notification.

If the Supplemental Review finds that the applicant's proposed system cannot pass all of the relevant technical screens (i.e. screens N through P) with readily identifiable upgrades, the utility shall provide the technical reasons, data and analysis supporting the Supplemental Review results in writing. The applicant shall notify the utility within ten (10) Business Days following such notification whether to (i) proceed to a Supplemental Review results meeting, (ii) proceed to a full CESIR, or (iii) withdraw the Interconnection Request. If the applicant fails to notify the utility of their decision within ten (10) Business Days of notification of the Initial Review results, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received.

- I. If the applicant chooses to proceed to a Supplemental Review results meeting and modifications that obviate the need for a CESIR are identified, and the applicant and the utility agree to such modifications, the utility shall return a signed and executed New York State Standardized Interconnection Contract within fifteen (15) Business Days of the Initial Review results meeting if no Interconnection Facilities or Distribution Upgrades are required. If Interconnection Facilities or Distribution Upgrades are required and agreed to, the utility shall provide the applicant with a non-binding cost estimate of any Interconnection Facilities or Distribution Upgrades within fifteen (15) Business Days of the Supplemental Review results meeting. The applicant shall notify the utility within fifteen (15) Business Days following such notification indicating the intention of the applicant to accept the upgrades and proceed with the interconnection process or withdraw its application. The applicant may request one extension of no more than fifteen (15) Business Days to respond. If the applicant fails to notify the utility of their decision within fifteen (15) Business Days of notification of the Initial Review results, or at the end of the extension, if one was requested, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received. If the applicant does notify the utility of its intention to accept the upgrades and proceed with interconnection, the utility will return a signed and executed New York State Standardized Interconnection Contract to the applicant within fifteen (15) Business Days of receiving the notification.
- II. If the applicant chooses to proceed to a Supplemental Review results meeting and modifications that obviate the need for Supplemental Review are not identified and agreed to, the applicant shall notify the

utility within ten (10) business days of the meeting of their intention to proceed to a full CESIR or withdraw the Interconnection Request. If the applicant fails to notify the utility of their decision within ten (10) business days, the Interconnection Request shall be deemed inactive and no further action on the part of the utility will be required until positive confirmation is received.

- iii. If the applicant and the utility are unable to identify or agree to modifications that enable the applicant to pass either the Initial or Supplemental Review or if the applicant chooses at any time in the above process to proceed directly to a CESIR, the utility shall provide the applicant with an estimate of costs associated with the completion of the CESIR within five (5) Business Days of the final notification to/from the applicant. The applicant shall notify the utility within ten (10) business days of receiving this cost estimate of their intention to proceed to a full CESIR and move on to Step 5 or to withdraw their application.”

Comment 9 – We would recommend that the Public Service Commission add to the SIR a set of rules governing cost transparency and limiting the extent of cost uncertainty, particularly during the later stages of the interconnection process. Specifically, we would recommend that the Public Service Commission work with the utilities and the distributed generation development community to create a set of standards for the levels of specificity and certainty required for both the non-binding costs estimates we are recommending be provided as part of the Initial and Supplemental Review processes in Comment 8 above as well as for the costs estimates to be provided as part of the CESIR process for systems that require such a study. An example of such a standard would be the $\pm 25\%$ certainty currently provided on cost estimates in some other jurisdictions. We would further recommend that the Public Service Commission clarify in the SIR the conditions under which contingencies are allowed to be included in these cost estimates as well as their allowed scale and what they are allowed to govern.

Comment 10 – Finally, NYSEIA would recommend that the SIR include specific mechanisms for holding the utilities accountable to the timelines enumerated in the redline SIR and our comments above for the application process as well as for the timelines agreed to with developers for the completion of the required system upgrades required for interconnection. While the current interconnection process does include an Ombudsperson for helping to resolve concerns, the SIR does not specify either the overall metrics by which utility performance will be evaluated, the frequency or mechanisms for such performance evaluations, or the potential consequences that would apply in the case on non-compliance. An illustration of an industry-leading example, which NYSEIA would recommend as a model, is the collection of performance metrics and enforcements mechanisms put in place in Massachusetts by the July 31, 2014 order from their Department of Public Utilities (“Order on a Timeline Enforcement Mechanism”). We would strongly recommend that binding enforcement mechanisms such as these from Massachusetts be included in the final revision of the New York SIR.

Attachment A: NYSEIA Recommendations for the Technical Screens to be Included in the Revised New York SIR for Systems over 50 kW

Initial Review Process

Within 15 Business Days after the Distribution Provider notifies the Interconnection Customer it has received a complete Interconnection Request, the Distribution Provider shall perform an initial review using the Screens A through M set forth below, shall notify the Interconnection Customer of the results, and include with the notification copies of the analysis and data underlying the Distribution Provider's determinations under the screens. If any of the Screens A through M are not passed, a quick review of the failed Screen(s) may determine the requirements to address the failure(s). Otherwise, a full Coordinated Electric System Interconnection Review (CESIR) is required.

Examples of solutions that may be available to mitigate the impact of a failed Screen A through M include:

1. Replace an overloaded distribution transformer with a larger transformer.
 2. Replace overloaded secondary conductors with larger conductor.
 3. Determine if phase balancing on the transformer is possible with minimal review.
 4. If possible without further study check if the Generating Facility will actually overstress equipment.
-

Screen A: Is the PCC on a Networked Secondary System?

- If Yes (fail), must exit the Initial Review and go to the Coordinated Electric System Interconnection Review (CESIR) process except if the Generating Facility is on a Spot Network and meets the following criteria, in which case continue to Screen B. The proposed Generating Facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of 5 % of a Spot Network's maximum load or 50 kW. Under no condition shall the interconnection of a Generating Facility result in the backfeed of a Spot Network or cause unnecessary operation of any Spot Network protectors.
- If No (pass), continue to Screen B.

Significance: Special considerations must be given to Generating Facilities proposed to be installed on Networked Secondary Systems because of the design and operational aspects of network protectors. There are no such considerations for radial distribution systems.

Screen B: Is Certified Equipment used?

Does the Interconnection Request propose to use equipment that has been listed to meet UL1741 (Inverters, Converters and Charge Controllers for Use in Independent Power Systems) or UL2200 (Stationary Engine Generator Assemblies) by a nationally recognized testing laboratory or does the equipment have interim Distribution Provider approval?

- If Yes (pass), continue to Screen C.
- If No (fail) continue to Screen C.

Interim approval allows Distribution Provider to treat equipment that has not completed the certification requirements as having met the intent of this screen. Interim approval is granted at Distribution Provider's discretion on case by case bases, and approval for one Generating Facility does not guarantee approval for any other Generating Facility.

Significance: If the Generating and/or Interconnection Facility has been certified to be in compliance with compliance with relevant guidance such as IEEE Std 1547 as demonstrated by testing by a nationally recognized laboratory, further verification by the Distribution Provider is not required. Site Commissioning Testing may still be required to ensure that the Protective Functions are working properly.

Screen C: Is the Starting Voltage Drop within acceptable limits?

- If Yes (pass), continue to Screen D.
- If No (fail), continue to Screen D.

Note: This Screen only applies to Generating Facilities that start by motoring the Generator(s).

Distribution Provider has two options in determining whether Starting Voltage Drop is acceptable. The option to be used is at Distribution Provider's discretion.

Option 1: Distribution Provider may determine that the Generating Facility's starting In-rush Current is equal to or less than the continuous ampere rating of the Customer's service equipment.

Option 2: Distribution Provider may determine the impedances of the service distribution transformer (if present) and the secondary conductors to Customer's service equipment and perform a voltage drop calculation. Alternatively, Distribution Provider may use tables or nomographs to determine the voltage drop. Voltage drops caused by starting a Generator must be less than 2.5% for primary Interconnections and less than 5% for secondary Interconnections.

Significance:

1. This Screen addresses potential voltage fluctuation problems that may be caused by Generators that start by motoring.
2. When starting, Generating Facilities should have minimal impact on the service voltage to other Distribution Provider Customers.
3. Passing this Screen does not relieve Producer from ensuring that its Generating Facility complies with the voltage fluctuation and flicker requirements of Screen M.

Screen D: Is the transformer or secondary conductor rating exceeded?

Do the maximum aggregated Gross Ratings for all the Generating Facilities connected to a secondary distribution transformer exceed the transformer or secondary conductor rating, modified per established Distribution Provider practice, absent any Generating Facilities?

- If Yes (fail), continue to Screen E.
- If No (pass), continue to screen E.

Significance: This screen addresses potential secondary transformer or secondary conductor overloads. When Distribution Provider's analysis determines a transformer or conductor change is required, Distribution Provider will furnish Applicant with an explanation of why the change is needed.

Screen E: Does the Single-Phase Generator cause unacceptable imbalance?

If the proposed Generating Facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, does it cause unacceptable imbalance of greater than 20% between the two phases of the 240 volt service?

- If Yes (fail), continue to Screen F.
- If No (pass), continue to screen F.

Note: This Screen only applies to Generating Facilities that are interconnecting on single-phase lines.

Significance: Generating Facilities connected to a single-phase transformer with 120/240 V secondary voltage must be installed such that the aggregated gross output is as balanced as practicable between the two phases of the 240 volt service. When Distribution Provider's analysis determines a transformer change is required. Distribution Provider will furnish the customer with an explanation of why the change is needed.

Screen F: Is the Short Circuit Current Contribution Ratio within acceptable limits?

- If Yes (pass), continue to Screen G.
- If No (fail), continue to Screen G.

When measured at primary side (high side) of the Dedicated Distribution Transformer serving a Generating Facility, the sum of the Short Circuit Contribution Ratios of all Generating Facilities connected to Distribution Provider's Distribution System circuit that serves the Generating Facility must be less than or equal to 10%.

Significance: If the Generating Facility passes this Screen, it can be expected that it will have no significant impact on Distribution Provider's Distribution System's short circuit duty, fault detection sensitivity, relay coordination or fuse-saving schemes.

Screen G: Is the Short Circuit Interrupting Capability Exceeded?

Does the proposed Generating Facility, in aggregate with other Generating Facilities on the distribution circuit, cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Request equipment on the system to exceed 90% of the short circuit interrupting capability; or is the Interconnection proposed for a circuit that already exceeds 90% of the short circuit interrupting capability?

- If Yes (fail) continue to Screen H.
- If No (pass), continue to Screen H.

Significance: If the Generating Facility passes this screen, it can be expected that it will not cause any of Distribution Provider's equipment to be overstressed.

Screen H: Is the line configuration compatible with the Interconnection type?

- If Yes (pass), continue to Screen I.
- If No (fail), continue to Screen I.

Line Configuration Screen: Identify primary distribution line configuration that will serve the Generating Facility. Based on the type of Interconnection to be used for the Generating Facility, determine from Table H.1 if the proposed Generating Facility passes the Screen.

Table H.1

Primary Distribution Line Type	Type of Interconnection to Primary Distribution Line	Result/Criteria
Three-phase, three wire	3-phase or single phase, phase-to-phase	Pass Screen
Three-phase, four wire	Effectively-grounded 3 phase or single-phase, line-to-neutral	Pass Screen
Three-phase, four wire (For any line that has such a section, or mixed three wire and four wire)	All Others	To pass, aggregate Generating Facility nameplate rating must be less than or equal to 10% of Line Section peak load

Significance: If the primary distribution line serving the Generating Facility is of a "three-wire" configuration, or if the Generating Facility's distribution transformer is single-phase and connected in a line-to neutral configuration, then there is no concern about overvoltages to Distribution Provider's, or other Customer's equipment caused by loss of system neutral grounding during the operating time of the Non-Islanding Protective Function.

Screen I: Is the Generating Facility to be interconnected on a single-phase shared secondary?

Does the aggregate generation capacity on the shared secondary, including the Generating Facility, exceed sixty-five percent of the transformer nameplate power rating?

- If Yes (fail), continue to Screen J.
- If No (pass), continue to Screen J.

Significance: If the Generating Facility passes this screen, it can be expected that voltage rise or related issues for customers connected to the same distribution transformer will not be a cause for concern.

Screen J: Will power be exported across the PCC?

- If Yes, Continue to Screen K.
- If No, then to ensure that the Generating Facility does not export across the PCC, the Generating Facility must incorporate one of the following five options. Following that selection, Initial Review is complete.

Option 1 (“Reverse Power Protection”): To ensure power is never exported across the PCC, a reverse power Protective Function may be provided. The default setting for this Protective Function shall be 0.1% (export) of the service transformer’s rating, with a maximum 2.0 second time delay.

Option 2 (“Minimum Power Protection”): To ensure at least a minimum amount of power is imported across the PCC at all times (and, therefore, that power is not exported), an under-power Protective Function may be provided. The default setting for this Protective Function shall be 5% (import) of Generating Facility’s total Gross Rating, with a maximum 2.0 second time delay.

Option 3 (Certified Non-Islanding Protection): To ensure the incidental export of power is limited to acceptable levels, this option requires that all of the following conditions be met: a) the total Gross Capacity of the Generating Facility must be no more than 25% of the nominal ampere rating of Producer’s service equipment; b) the total Gross Capacity of the Generating Facility must be no more than 50% of Producer’s service transformer capacity rating (this capacity requirement does not apply to Customers taking primary service without an intervening transformer); and c) the Generating Facility must be Certified as Non-Islanding.

The ampere rating of the Customer’s service equipment to be used in this evaluation will be that rating for which the customer’s utility service was originally sized or for which an upgrade has been approved. It is not the intent of this provision to allow increased export simply by increasing the size of the customer’s service panel, without separate approval for the resize.

Option 4 (Relative Generating Facility Rating): This option, when used, requires the Net Rating of the Generating Facility to be so small in comparison to its host facility’s minimum load, that the use of additional Protective Functions is not required to ensure that power will not be exported to Distribution Provider’s Distribution or Transmission System. This option requires the Generating Facility capacity to be no greater than 50% of Producer’s verifiable minimum Host Load over the past 12 months.

Option 5: (Inadvertent Export) The event of exporting uncompensated power for a short time in situations where the loading changes rapidly and/or the Generator cannot ramp down quickly enough is referred to as Inadvertent Export. It is proposed that the following criteria be the minimum requirements for Inadvertent Export systems. It should be understood that other factors relevant to the interconnection study process (15% screen results, short circuit current ratio, etc.) may necessitate additional technical requirements (e.g. reclose block, transfer trip, ground bank,

etc.) that are not explicitly noted here. Also, it should be noted that Inadvertent Export may not be available for interconnections to Networked Secondary Systems.

1. If a Generating Facility is proposed with Inadvertent Export, additional Protective Functions and equipment to detect Distribution or Transmission System faults (per Distribution Provider's standard practices) may be required over and above the basic Protective Functions and equipment associated with the four options in the Export Screen. Protective Functions may include, but are not limited to, directional overcurrent / voltage-restraint overcurrent Protective Functions for line-to-line fault detection and overcurrent / overvoltage Protective Functions for line-to-ground detection. The addition of a ground bank or ground detector may also be necessary.
2. The effect on equipment ratings can be mitigated by limiting the amount of inadvertent export allowed. To a large degree, Voltage Regulation may be similarly handled. The amount of Inadvertent Export is dependent on specific Distribution Provider requirements and should be limited to the lesser of the following values:
 - a. 50% of the Generating Facility Capacity, or
 - b. 10% of the continuous conductor rating in watts at 0.9 power factor for the lowest rated feeder conductor upstream of the GF (i.e. 200kW @ 12kV), or
 - c. 110% of the largest load block in the facility, or
 - d. 500kW or some other maximum level indicated by Distribution Provider

To govern this quantity, a reverse power Protective Function will be provided to trip the connected Generator(s) within two seconds if the proposed amount of Inadvertent Export is exceeded.

3. Similarly, to ensure limited impact to the Distribution or Transmission System, the expected frequency of Inadvertent Export occurrences should be less than two occurrences per 24-hour period. Additionally, a separate reverse power or underpower Protective Function will be required (in addition to the reverse power Protective Function described in 2) above) to trip the connected Generator(s) if the duration of reverse power or underpower (i.e. ANY export) exceeds 60 seconds.

Significance:

1. If it can be assured that the Generating Facility will not export power, Distribution Provider's Distribution or Transmission System does not need to be studied for load-carrying capability or
2. Generating Facility power flow effects on Distribution Provider voltage regulators.
3. This Screen permits the use of reverse-power or minimum-power relaying as a Non-Islanding Protective Function (Option 1, 2, and 3).
4. This Screen allows, under certain defined conditions, for Generating Facilities that incorporate Certified Non-Islanding protection to qualify for interconnection through the Initial Review process without implementing reverse power or minimum power Protective Functions (Option 3).

Screen K: Transient Stability Test

Does the proposed Facility, in aggregate with other Facilities interconnected to the distribution low voltage side of the substation transformer feeding the distribution circuit where the Facility proposes to interconnect, exceed 10 MW in an area where there are known or posted transient

stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission voltage level buses from the PCC) or does the proposed Generating Facility have interdependencies, known to the Utility, with earlier-queued Interconnection Requests?

- If Yes (fail), Supplemental Review is required, continue to Screen L.
- If No (pass), continue to Screen L.

Significance: Special consideration must be given to those areas identified as having current or future (due to currently-queued interconnection requests) grid stability concerns.

Screen L: Simplified Penetration Test

Is the aggregate Generating Facility capacity on the Line Section less than 15% of the Line Section annual peak load as most recently measured at the relevant location (i.e. substation, sub-transmission tap, or loop tap)?

- If Yes (pass), continue to Screen M.
- If No (fail), Supplemental Review is required, continue to Screen M.

Note: A line section is that portion of a Distribution Provider's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line.

Significance:

1. Low penetration of Generating Facility capacity will have a minimal impact on the operation and load restoration efforts of Distribution Provider's Distribution System.
2. The operating requirements for a high penetration of Generating Facility capacity may be different since the impact on Distribution Provider's Distribution System will no longer be minimal, therefore requiring additional study or controls.

The purpose of this Screen is solely to identify if the Generating Facility needs additional study and is not intended as justification for limiting the penetration of generation on a line section.

Screen M: Simplified Voltage Fluctuation and Flicker Tests

In aggregate with existing generation on the Line Section,

- a. Can the Generating Facility parallel with the Distribution Provider's Distribution System without causing a voltage fluctuation at the PCC greater than 5% of the prevailing voltage level of the Distribution System at the PCC?
 - b. Can the Generating Facility operate without creating objectionable flicker for other customers on the Distribution Provider's Distribution System?
- If Yes (pass), Initial Review is complete.
 - If No (fail), Supplemental Review is required, continue to Screen N if chosen.

Note: When making use of the “Flicker tolerance curve” identified in IEEE Std 519-1992 to demonstrate compliance with this screen, the relevant standard for setting limits on flicker at the PCC caused by the Generating Facility shall be the “Maximum Borderline of Irritation Curve.” The flicker levels should be calculated by taking into account realistic levels for the size and frequency of power fluctuations caused by transient weather conditions appropriate to scale of the Generating Facility and should, where possible, account for existing voltage regulation devices on the line section.

Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider’s Distribution System caused by operation of the Generating Facility(ies).

Supplemental Review Process

The Supplemental Review consists of Supplemental Review Screens N through P. If any of the Screens are not passed, a quick review of the failed Screen(s) will determine the requirements to address the failure(s) or that a Coordinated Electric System Interconnection Review (CESIR) is required. In certain instances, the Company may be able to identify the necessary solution and determine that CESIR is unnecessary. Some examples of solutions that may be available to mitigate the impact of a failed Screen are:

1. Replacing a fixed capacitor bank with a switched capacitor bank
 2. Adjustment of line regulation settings
 3. Simple reconfiguration of the distribution circuit
-

Screen N: Supplemental Penetration Test

Where 12 months of line section minimum load data is available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate Generating Facility capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the Generating Facility?

- If yes (pass), continue to Screen O.
- If no (fail), a quick review of the failure may determine the requirements to address the failure; otherwise the Interconnecting Customer may be required go on to the Coordinated Electric System Interconnection Review (CESIR) process. Continue to Screen O.

If minimum load data is not available, or cannot be calculated, estimated or determined from a power flow model, the Distribution Provider will specify the reason(s) that it is unable to calculate, estimate or determine the circuit or Line Section minimum load in its supplemental review results.

Note 1: The type of generation will be taken into account when calculating, estimating, or determining the circuit or Line Section minimum load relevant for the application of this screen. Solar generation systems with no battery storage use daytime minimum load (i.e. 10 am to 4 pm for fixed panel systems and 8 am to 6 pm for PV systems utilizing two-axis tracking systems), while all other generation uses absolute minimum load.

Note 2: Distribution Provider will not consider as part of the aggregate generation for purposes of this screen Generating Facility capacity known to be already reflected in the minimum load data or estimate.

Note 3: When this screen is being applied to a Generating Facility that serves some onsite or station service load, only the net injection into the Distribution Provider's electric system across the Point of Common Coupling will be considered as part of the aggregate generation on the Line Section.

Significance: Penetration of Generating Facility installations that does not result in power flow from the circuit back toward the substation will have a minimal impact on equipment loading, operation, and protection of the Distribution System.

Screen O: Power Quality and Voltage Tests

In aggregate with existing generation on the Line Section,

- a. Can it be determined within the Supplemental Review that the voltage regulation on the line section can be maintained in compliance with current voltage regulation requirements under all system conditions?
 - b. Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE 1453 or utility practice similar to IEEE1453?
 - c. Can it be determined within the Supplemental Review that the harmonic levels meet IEEE 519 limits at the Point of Common Coupling (PCC)?
- If yes to all of the above (pass), continue to Screen P.
 - If no to any of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise the Interconnecting Customer may be required go on to the Coordinated Electric System Interconnection Review (CESIR) process. Continue to Screen P.

Note: When making use of the "Flicker tolerance curve" identified in IEEE Std Std 519-1992 to demonstrate compliance with this screen, the relevant standard for setting limits on flicker at the PCC caused by the Generating Facility shall be the "Maximum Borderline of Irritation Curve." The flicker levels should be calculated by taking into account realistic levels for the size and frequency of power fluctuations caused by transient weather conditions appropriate to scale of the Generating Facility and should, where possible, account for existing voltage regulation devices on the line section.

Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider's Distribution System caused by operation of the Generating Facility(ies).

Screen P: Safety and Reliability Tests

Does the location of the proposed Generating Facility or the aggregate generation capacity on the Line Section create specific impacts to safety or reliability that cannot be adequately addressed without a detailed study?

- If yes (fail), a quick review of the failure may determine the requirements to address the failure; otherwise the Interconnecting Customer will be provided with information on the specific points of failure in the supplemental review results and may go to the Coordinated Electric System Interconnection Review (CESIR) process.
- If no (pass), Supplemental Review is complete.

Note: When evaluating the potential of the proposed generating facility to support an unintentional island as part of this technical screen (and thus where mitigation like direct transfer trips may be required), the following methodology should be adopted for solar PV systems interconnected via inverters:

- Does the aggregate generating capacity of distributed generators on the Line Segment, including the proposed facility, exceed 67 percent of the relevant minimum day-time load as used in Screen N?
- If so do any of the following apply:
 - Does the line contains reactive power support (such as capacitor banks) sized such that there is a reactive power match with the load that is within one (1) percent?
 - Does more than one-fourth of the distributed generation capacity on the line segment come from rotating generators?
 - Do the inverters used for all inverter-interconnected facilities on the line vary so that no single manufacturer accounts for at least two-thirds of the total installed capacity?

For evaluating facilities proposing new rotating generation alone, the following methodology should be adopted

- Does the aggregate generating capacity of distributed generators on the Line Segment, including the proposed facility, exceed 33 percent of the relevant minimum load as used in Screen N?

Such a screening methodology can identify where there are risks of unintentional islands forming are a potential concern and thus whether or not mitigation may be required.

Significance: In the safety and reliability test, there are several factors that may affect the nature and performance of a proposed Generating Facility at a specific point of interconnection. These include, but are not limited to:

- a. Generation energy source
- b. Modes of synchronization
- c. Unique system topology
- d. Possible impacts to critical load Customers
- e. Possible safety impacts

The specific combination of these factors for each application will determine if a full system study is required. The following are examples of the items that may be considered under this supplemental screen:

- i. Does the Line Section have significant minimum loading levels dominated by a small number of Customers (i.e. several large commercial customers)?
- ii. Is there an even or uneven distribution of loading along the feeder?
- iii. Is the proposed Generating Facility located in close proximity to the substation (i.e. <2.5 electrical line miles), and is the distribution line from the substation to the Customer composed of large conductor/cable (i.e. 600A class cable)?

- iv. Does the proposed Generating Facility incorporate a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time?
- v. Is operational flexibility reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues?
- vi. Does the Generating Facility utilize UL 1741/IEEE 1547 Certified anti-islanding functions and equipment?

Attachment B: Side-by-Side Comparison of Existing Supplemental Screens from FERC, California, and Massachusetts

FERC 2013 SGIP	California Rule 21	Massachusetts D.P.U. 11-75-F
2.4.4.1 Minimum Load Screen Where 12 months of line section minimum load data (including onsite load but not station service load served by the proposed Small Generating Facility) are available, can be calculated, can be estimated from existing data, or determined from a power flow model, the aggregate Generating Facility capacity on the line section is less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed Small Generating Facility. If minimum load data is not available, or cannot be calculated, estimated or determined, the Transmission Provider shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under section 2.4.4. 2.4.4.1.1 The type of generation used by the proposed Small Generating Facility will be taken into account when calculating, estimating, or determining circuit or line section minimum load relevant for the application of screen 2.4.1.1. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (i.e. 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems), while all other generation uses absolute minimum load. 2.4.4.1.2 When this screen is being applied to a Small Generating Facility that serves some station service load, only the net injection into the Transmission Provider's electric system will be considered as part of the aggregate generation. 2.4.4.1.3 Transmission Provider will not consider as part of the aggregate generation for purposes of this screen generating facility capacity known to be already reflected in the minimum load data.	Screen N: Penetration Test Where 12 months of line section minimum load data is available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate Generating Facility capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the Generating Facility? • If yes (pass), continue to Screen O. • If no (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and detailed Studies are required. Continue to Screen O. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens if Applicant elects to proceed.) Note 1: If none of the above options are available, this screen defaults to Screen N. Note 2: The type of Generating Facility technology will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. For solar Generating Facilities with no battery storage, daytime minimum load will be used (i.e. 10 am to 4 pm for fixed panel solar Generating Facilities and 8 am to 6 pm for solar Generating Facilities utilizing tracking systems), while absolute minimum load will be used for all other Generating Facility technologies. Note 3: When this screen is being applied to a NEM Generating Facility, the net export in kW, if known, which may flow across the Point of Common Coupling into Distribution Provider's Distribution System will be considered as part of the aggregate generation. Note 4: Distribution Provider will not consider as part of the aggregate Generating Facility capacity for purposes of this screen Generating Facility capacity known to be already reflected in the minimum load data. Note 5: NEM Generating Facilities with net export less than or equal to 500 kW that may flow across the Point of Common Coupling into Distribution Provider's Distribution or Transmission System will not be studied in the Transmission Cluster Study Process, but may be studied under the Independent Study Process. Significance: Penetration of Generating Facility capacity that does not result in power flow from the circuit back toward the substation will have a minimal impact on equipment loading, operation, and protection of the Distribution System.	Screen A: Penetration Test Where 12 months of line section minimum load data is available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate Generating Facility capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the Generating Facility? If yes (pass), continue to Screen B. If no (fail), a quick review of the failure may determine the requirements to address the failure and, if so, continue to Screen B; otherwise Interconnecting Customer will go to the Standard Process. Note 1: The type of generation will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. Solar generation systems with no battery storage use daytime minimum load (i.e. 10 am to 4 pm for fixed panel systems and 8 am to 6 pm for PV systems utilizing tracking systems), while all other generation uses absolute minimum load. Note 2: Distribution Provider will not consider as part of the aggregate generation for purposes of this screen Generating Facility capacity known to be already reflected in the minimum load data. Significance: Penetration of Generating Facility installations that does not result in power flow from the circuit back toward the substation will have a minimal impact on equipment loading, operation, and protection of the Distribution System.

2.4.4.2 Voltage and Power Quality Screen In aggregate with existing generation on the line section: (1) the voltage regulation on the line section can be maintained in compliance with relevant requirements under all system conditions; (2) the voltage fluctuation is within acceptable limits as defined by Institute of Electrical and Electronics Engineers (IEEE) Standard 1453, or utility practice similar to IEEE Standard 1453; and (3) the harmonic levels meet IEEE Standard 519 limits.	Screen O: Power Quality and Voltage Tests In aggregate with existing Generating Facility capacity on the Line Section, a) Can it be determined within the Supplemental Review that the voltage regulation on the line section can be maintained in compliance with Commission Rule 2 and/or Conservation Voltage Regulation voltage requirements under all system conditions? b) Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE 1453 or utility practice similar to IEEE1453? c) Can it be determined within the Supplemental Review that the harmonic levels meet IEEE 519 limits at the Point of Common Coupling (PCC)? • If yes to all of the above (pass), continue to Screen P. • <i>If no to any of the above (fail), a quick review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required.</i> Continue to Screen P. (Note: If Electrical Independence tests and Detailed Studies are required, Applicants will continue to the Electrical Independence Tests and Detailed Studies after review of the remaining Supplemental Review Screens.) <i>Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider's Distribution System caused by operation of the Generating Facility(ies).</i>	Screen B: Power Quality and Voltage Tests In aggregate with existing generation on the line section, a) Can it be determined within the Supplemental Review that the voltage regulation on the line section can be maintained in compliance with current voltage regulation requirements under all system conditions? b) Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE 1453 or utility practice similar to IEEE1453? c) Can it be determined within the Supplemental Review that the harmonic levels meet IEEE 519 limits at the Point of Common Coupling (PCC)? If yes to all of the above (pass), continue to Screen C. <i>If no to any of the above (fail), a quick review of the failure may determine the requirements to address the failure and, if so, continue to Screen C; otherwise the Interconnecting Customer will go to the Standard Process.</i> <i>Significance: Adverse voltages and undesirable interference may be experienced by other Customers on Distribution Provider's Distribution System caused by operation of the Generating Facility(ies).</i>
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2.4.4.3 Safety and Reliability Screen:

The location of the proposed Small Generating Facility and the aggregate generation capacity on the line section do not create impacts to safety or reliability that cannot be adequately addressed without application of the Study Process. The Transmission Provider shall give due consideration to the following and other factors in determining potential impacts to safety and reliability in applying this screen.

2.4.4.3.1 Whether the line section has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).

2.4.4.3.2 Whether the loading along the line section uniform or even.

2.4.4.3.3 Whether the proposed Small Generating Facility is located in close proximity to the substation (i.e., less than 2.5 electrical circuit miles), and whether the line section from the substation to the Point of Interconnection is a Mainline rated for normal and emergency ampacity.

2.4.4.3.4 Whether the proposed Small Generating Facility incorporates a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time.

2.4.4.3.5 Whether operational flexibility is reduced by the proposed Small Generating Facility, such that transfer of the line section(s) of the Small Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues.

2.4.4.3.6 Whether the proposed Small Generating Facility employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, or voltage quality.

Screen P: Safety and Reliability Tests

Does the location of the proposed Generating Facility or the aggregate generation capacity on the Line Section create impacts to safety or reliability that cannot be adequately addressed without Detailed Study?

- If yes (fail), review of the failure may determine the requirements to address the failure; otherwise Electrical Independence Tests and Detailed Studies are required. Continue to Section G.3.
- If no (pass), Supplemental Review is complete.

Significance: In the safety and reliability test, there are several factors that may affect the nature and performance of an Interconnection. These include, but are not limited to:

1. Generating Facility energy source
2. Modes of synchronization
3. Unique system topology
4. Possible impacts to critical load customers
5. Possible safety impacts

The specific combination of these factors will determine if any system study requirements are needed. The following are some examples of the items that may be considered under this screen:

1. Does the Line Section have significant minimum loading levels dominated by a small number of customers (i.e. several large commercial customers)?
2. Is there an even or uneven distribution of loading along the feeder?
3. Is the proposed Generating Facility located in close proximity to the substation (i.e. <2.5 electrical line miles), and is the distribution line from the substation to the customer composed of large conductor/cable (i.e. 600A class cable)?
4. Does the Generating Facility incorporate a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time?
5. Is operational flexibility reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues?
6. Does the Generating Facility utilize Certified anti-islanding functions and equipment?

Screen C: Safety and Reliability Tests

Does the location of the proposed Generating Facility or the aggregate generation capacity on the Line Section create impacts to safety or reliability that cannot be adequately addressed without a group or Impact Study?

- If yes (fail), review of the failure may determine the requirements to address the failure; otherwise the Interconnecting Customer will go to the Standard Process.
- If no (pass), Supplemental Review is complete.

Significance: In the safety and reliability test, there are several factors that may affect the nature and performance of an Interconnection. These include, but are not limited to:

- i) Generation energy source
- ii) Modes of synchronization
- iii) Unique system topology
- iv) Possible impacts to critical load Customers
- v) Possible safety impacts

The specific combination of these factors will determine if any system study requirements are needed. The following are some examples of the items that may be considered under this screen:

- i) Does the Line Section have significant minimum loading levels dominated by a small number of Customers (i.e. several large commercial Customers)?
- ii) Is there an even or uneven distribution of loading along the feeder?
- iii) Is the proposed Generating Facility located in close proximity to the substation (i.e. <2.5 electrical line miles), and is the distribution line from the substation to the Customer composed of large conductor/cable (i.e. 600A class cable)?
- iv) Does the Generating Facility incorporate a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time?
- v) Is operational flexibility reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues?
- vi) Does the Generating Facility utilize UL 1741/IEEE 1547 Certified anti-islanding functions and equipment?

2.4.5 If the proposed interconnection passes the supplemental screens in sections 2.4.4.1, 2.4.4.2, and 2.4.4.3 above, the Interconnection Request shall be approved and the Transmission Provider will provide the Interconnection Customer with an executable interconnection agreement within the timeframes established in sections 2.4.5.1 and 2.4.5.2 below. If the proposed interconnection fails any of the supplemental review screens and the Interconnection Customer does not withdraw its Interconnection Request, it shall continue to be evaluated under the section 3 Study Process consistent with section 2.4.5.3 below.