

## **NYISO Comments on Draft Proposed Reliability Rule 151 – Large Inverter Based Resources**

In consideration of the issues facing the industry in preserving the reliability of the electric grid, the NYISO appreciates the efforts put forward by the New York State Reliability Council (NYSRC) in the development of Proposed Reliability Rule (PRR) 151. As discussed by the NYISO at the February 8, 2023 TPAS/ESPGWG meeting<sup>1</sup> there are significant efforts underway at FERC, NERC, and the NYSRC to promote reliability with increased amounts of Inverter-Based Resources (IBRs). At the time of the February 8, 2023 TPAS/ESPGWG meeting the NYISO encouraged all IBR generator owners and developers to promote reliability by designing and operating their facilities in accordance with the requirements in the IEEE 2800 standard.

In accordance with the request from the NYSRC the NYISO submits these comments regarding PRR 151. The NYISO's chief concerns and recommendations are as follows:

- There are examples throughout industry of adopting IEEE 2800 with a more limited scope than what is proposed in PRR 151, focusing on key reliability risks. The NYISO strongly recommends that the NYSRC revise the implementation plan and scope of the PRR to focus first on the key issues impacting reliability, instead of simultaneously adopting most requirements in IEEE 2800.
- It is not known whether IBR manufacturers currently are able to comply with all aspects of IEEE 2800 proposed here for adoption. Requiring compliance with the proposed provisions within PRR 151 may cause IBR developers to procure their inverters from a limited set of OEMs that can meet compliance with IEEE 2800. This could create delays in the possible interconnection of these resources due to limitations in manufacturer supply of equipment and lead to delays in the capability to meet CLCPA goals. The NYISO suggests that a survey be conducted of IBR OEMs to assess their ability to comply with IEEE 2800 in the near term.
- The NYISO notes that there are nearly 200 decision points within IEEE 2800 concerning establishment of criteria. Due to the volume of decisions that need to be made, along with the work required to modify and create the documentation needed to comply with IEEE 2800, a six-month implementation timeline is not feasible. The implementation timeline needs to allow the time for the NYISO and Transmission Owners to collectively review IEEE 2800 and determine the individual and joint responsibilities for meeting compliance with PRR 151. The NYISO believes that implementation for units entering the next Class Year is a more realistic goal; however, given the amount of uncertainty regarding industry preparedness to meet all IEEE 2800 requirements, the implementation plan should acknowledge that full adoption by that date may prove unattainable. NYISO proposes that it give regular reports to NYSRC RCMS as it works to implement the PRR, and, if necessary, seek to alter the imposed requirements or implementation plan if it becomes clear that one or more requirements would cause untenable delays or interruptions to the NYISO interconnection process.

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<sup>1</sup> Overview of Industry Activities Related to Inverter-Based Resources and IEEE 2800, NYISO TPAS/ESPGWG, February 8, 2023 ([here](#))

- The NYISO agrees that a key aspect of the performance issues documented in the recent NERC disturbance reports is the unexpected performance issues of IBRs during real-time operations. One of the keys to addressing this issue is the ability to identify the problems during planning studies. The NYISO recognizes that the NYSRC already has criteria in place for market participants to provide accurate and comprehensive modeling data. PRR 151 increases the modeling expectations to include a verified plant level model and corresponding data; NYISO supports the aim of this requirement, but notes that the ability to obtain this information will likely lead to increased time needed for generators to interconnect.

The NYISO also provides the following more detailed comments.

### **Rule Scope Comments**

1. PRR 151 states that the rule is based on a critical subset of IEEE 2800 requirements. However, the proposed rules in the PRR requires, among other rules, the development of processes and procedures for all sections of IEEE 2800 except Section 8 (power quality) and Sections 12.2.4 through 12.2.9 (as specified in the clarification presentation). The NYISO strongly recommends that the NYSRC revise the implementation plan and scope of the PRR to focus first on the key issues related to reliability instead of most requirements in IEEE 2800. For instance, in a recent presentation at the MISO Interconnection Process Working Group (IPWG), MISO proposed a prioritization of several criteria based on NERC event reports, FERC NOPR RM22-12, and other resources.<sup>2</sup> MISO identifies as a priority focus area the performance requirements that tie back to different aspects of voltage and frequency ride-through performance requirements. These include measurement accuracy (clause 4.4), frequency ride through (clause 7.3.2.1), rate-of-change-of-frequency (ROCOF) ride-through (clause 7.3.2.3.5), voltage ride-through (clause 7.2.2.1), transient overvoltage ride-through (clause 7.2.3), return-to-service (and enter-service) (clauses 4.10.2, 4.10.3, and 7.4), restore output after voltage ride-through (clause 7.2.2.6), and voltage phase angle jump ride-through (clause 7.3.2.4). The NYISO concurs with MISO's conclusions and supports a focus on these performance requirements that tie back to reliability. Alternatively, or in addition to MISO's approach, the implementation plan could consider prioritization of the seven recommendations found in the recent NERC alert on IBR performance issues.<sup>7</sup> The key issues highlighted in the NERC alert continue to be the source of most IBR disconnections, including the recent January 23, 2023 ERCOT event.<sup>3</sup>
2. Some IBR OEMs may not currently have the capability to meet, or it is unknown by the OEM if they can meet, all required aspects of IEEE 2800.<sup>4</sup> Further, GE Renewable Energy at the NYSRC IEEE 2800 workshop held in September 2022 provided several considerations and adoption challenges regarding IEEE 2800. In this presentation GE states that typical design, test, verification and certification cycles for new products are 3-4 years and acknowledges that IEEE 2800 will require some changes in the products.<sup>5</sup> The ability of an OEM to meet IEEE 2800 will

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<sup>2</sup> MISO Interconnection Process Working Group (IPWG) March 14, 2023, Inverter-Based Resource Performance Requirements ([here](#)).

<sup>3</sup> ERCOT IBRTF March 10, 2023, Solar Generation Loss Event January 23, 2023, ERCOT ([here](#))

<sup>4</sup> Southern Power ([here](#)). In this presentation Southern Power reports on a survey conducted of five OEMS.

<sup>5</sup> NYSRC IEEE 2800-2022 Workshop OEM/Developer Perspective, September 13, 2022 ([here](#)).

likely be better understood following the publication of IEEE 2800.2. As such, some inverters may not pass type testing prescribed in clause 12 of IEEE 2800 which is an important aspect in the performance of model validation. In the near-term, requiring full compliance with the standard may cause developers to procure their inverters from a limited set of OEMs that might meet compliance with IEEE 2800. This could create significant delays in the possible interconnection of these resources due to limitations in manufacturer supply of equipment that meets IEEE 2800 which may lead to delays in the capability to meet CLCPA goals. PRR 151 states that there are no disadvantages to the immediate adoption of the proposed rules. However, the potential impact of delaying or halting the interconnection process or providing barriers to achieving the CLCPA goals is a disadvantage. Until IEEE 2800.2 is provided to industry with time for IBR OEMs to implement its recommendations, the NYISO recommends that IBR developers obtain a statement from their selected IBR manufacturer that their model provides an accurate and comprehensive representation of their IBR data.

3. The NYISO recommends that the proposed rule allow for the development of a tailored exemption process that would allow the interconnection of IBR resources that meet the critical aspects of IEEE 2800 (*i.e.*, those outlined by ERCOT<sup>2</sup> as well as in the NERC alert<sup>7</sup>). To better understand this risk the NYISO recommends that the NYSRC conduct a survey of OEMs to understand their ability to meet the critical aspects of IEEE 2800.
4. The implementation plan for PRR-151 should be clarified to explain what units would be subject to the PRR. The PRR 151 clarification presentation<sup>6</sup> states that the rule would apply to: (i) eligible projects providing notice to the NYISO that they wish to participate in the CY2024 and all future class years, and (ii) all IBR projects that submit an interconnection request after PRR 151 becomes effective and with PRR 151 applying to all subsequent steps in the NYISO's interconnection process. Further, the PRR clarification presentation states that the PRR would not apply to: (i) projects in previous Class Years that have accepted their cost allocation, posted security and executed Large Facility Interconnection Agreements, projects already having SRIS study or SRIS scope approvals (PRR 151 would apply to those projects if they elect to participate in CY2024 studies or any future Class Year studies). The NYISO believes this is an adequate statement to define units for which the PRR would be mandatory, but notes that the proposed implementation may create challenges in the administration of NYISO's interconnection queue. Applying the PRR to projects that submit an interconnection request after the PRR is adopted may encourage them to enter the interconnection queue prematurely to ensure they are not subject to the PRR. Another consequence of the proposed implementation is that reliability issues that may appear in future interconnection studies would not have the ability to address the concerns that arise due to resources that do not need to comply with the proposed rule. For these reasons, the NYISO recommends that work commence expeditiously to address reliability issues that can be traced to IBR resources that are not subject to the currently proposed rule. This recommendation is in consideration of the issues observed in the recent NERC disturbance reports and the recent NERC alert.<sup>7</sup>
5. The clarification presentation states that following approval of PRR 151 it would apply to all subsequent steps in the NYISO interconnection process and specifically lists out study scope,

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<sup>6</sup> NYSRC Presentation to the NYSRC Executive Committee, April 14, 2023 ([here](#))

<sup>7</sup> See NERC Alert issued March 14, 2023 ([here](#)). Within this alert, NERC strongly encourages the generator owners of all NERC BPS connected solar PV resources to adopt several recommendations.

system reliability impact study, class year study, and large facility interconnection agreement.

For the proposed study interconnection responsibilities, the clarification presentation seems to state that the studies as conducted through the interconnection process by the NYISO would be unchanged except for the need to have verified IBR plant-level models. The NYISO requests that the clarifications put forward by the NYSRC regarding the impacts of the PRR on interconnection study responsibilities by the NYISO, Transmission Owner, and IBR Owner be reflected in the next revision of PRR 151.

6. The NYISO recommends that PRR 151 Section 3 be modified in order to be applicable to interconnection studies of Large IBR generating facilities entering service through the NYISO Interconnection Queue.<sup>8</sup>
7. The NYISO requests that should the implementation plan focus on class year start dates that it not use the phrase “class-year 2024” (as stated in the clarification presentation) but be consistent with the language currently in the PRR, which is the class year following the completion of the current class year. Further, interconnection process reforms currently in discussion in the NYISO stakeholder process may significantly revise the existing Class Year structure, so it may be appropriate to refer to the “class year or class year equivalent” following the completion of the current class year.

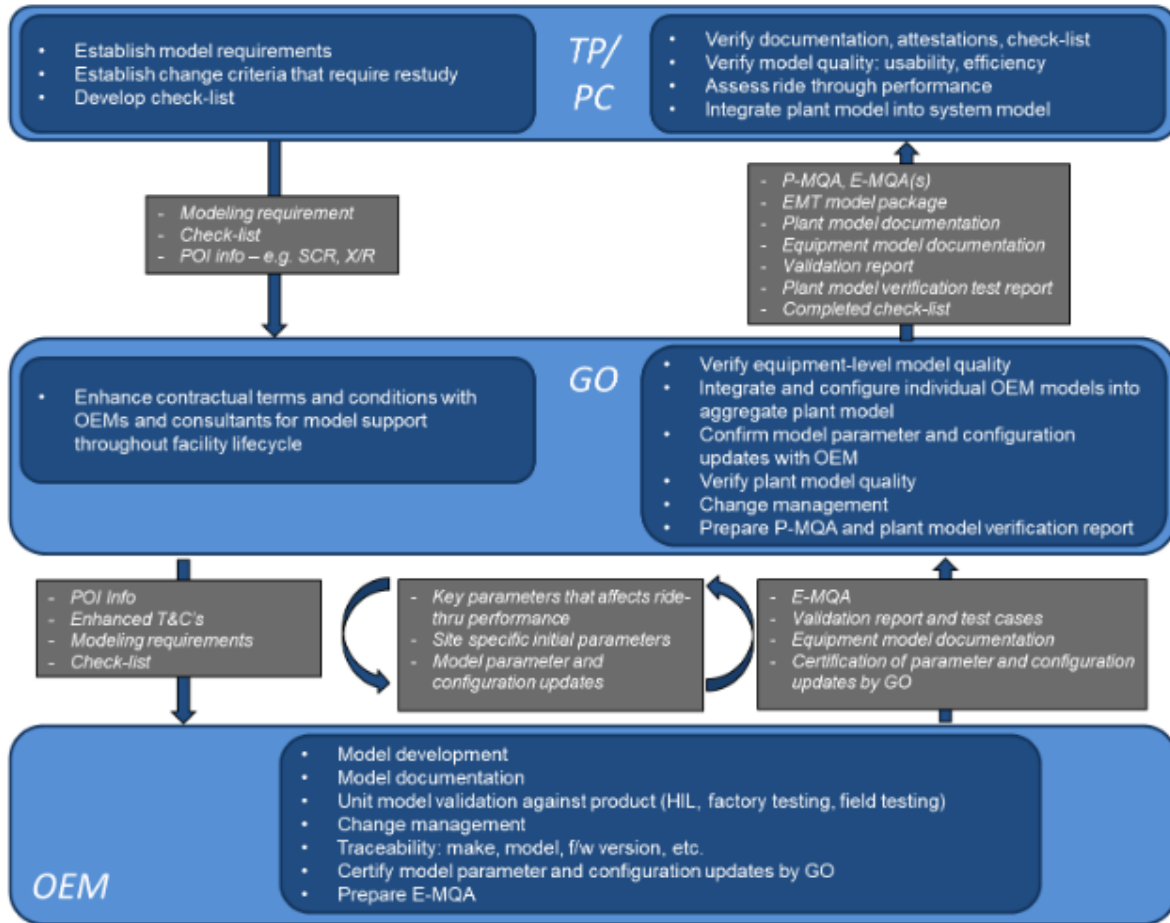
### **Implementation Plan Timing Comments**

8. Within IEEE 2800, there are different layers or types of criteria. There are requirements that are mandatory (identified with a “shall”). Overall, there is a total of 67 mandatory requirements, of which 52 are required by the TS owner or TS operator. Of the recommended actions (identified with a “should”) there are a total of 49 requirements, of which 33 are to be determined by the TS owner or TS operator. Additionally, IEEE 2800 identifies possible 82 decisions (identified with a “may”) of which 76 are to be determined by the TS owner or TS operator. In consideration of the obligations placed on the AGIR, TS operator/TS owner, and IBR owner/IBR operator, there are 198 decisions the responsible entities can be involved with. Within Attachment A of PRR 151, the rule states that all requirements specified in IEEE 2800 shall be mandatory providing for no differentiation between the shall/should/may obligations within IEEE 2800. The NYISO recommends that the NYSRC provide clarification as to which of the decisions are requirements within the criteria (i.e., are all “should” and “may” statements also viewed as criteria). As stated above, and based on the volume of decisions that need to be made (again 198 shall/should/may) having this rule implemented within six months following EC approval of PRR 151 is infeasible. For example, in consideration of only the modeling criteria of IEEE 2800 (Section 10), there are a total of 6 “shall”, 2 “should,” and 1 “may” statements. While in number these are only a fraction of the items that need to be addressed in IEEE 2800, developing the process of a model quality verification process will require the development of several items to be considered such as those shown in the figure below (see NERC EMT modeling guideline published March 2023 [here](#)). The development of guidelines alone may

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<sup>8</sup> See NYSRC Policy 1-11 ([here](#)). NYSRC Policy 1-11, Section 2 regarding the definition of a reliability rule states that one of the elements of a reliability rule are the requirements which define specific obligations of the NYISO and New York market participants.

require assistance from industry experts on model verification, EMT, and other technical aspects.<sup>9</sup> As these Comments are available to the public, the NYISO cannot provide a detailed listed of 198 decisions IEEE 2800 requires as the restrictions provided in accessing IEEE 2800 prohibit making available any part of the standard to anyone other than Authorized Users.<sup>10</sup>



**Figure 2.2: Model Quality Verification Processes**

9. IEEE 2800 identifies for the TS owner or TS operator approximately 160 decisions that need to be made (inclusive of all shall/should/may criteria). Of these decisions, approximately 65 are the responsibility of the TS owner while about 50 are the responsibility of the TS operator. The remaining decisions (about 45) are in collaboration between the TS owner and TS operator. In consideration of the definitions<sup>11</sup> for TS owner and TS operator provided in IEEE 2800, the NYISO

<sup>9</sup> For example, ERCOT has several guidelines that were issued to address their modeling improvement initiatives ([here](#)). NERC has also recently issued (March 2023) a guideline on EMT modeling for IBRs providing recommended model requirements and verification practices ([here](#)).

<sup>10</sup> Authorized users means (1) persons affiliated with Licensee as employees, consultants, onsite contractors or temporary employees; (2) authorized persons physically present in Licensee’s library facilities; and (3) such other persons as IEEE may, at the request of the Licensee and in IEEE’s sole discretion, authorize in writing to access the Standards.

<sup>11</sup> Transmission system operator (TS operator) is defined as the entity that is functionally responsible for the operating the transmission system. Transmission system owner (TS owner) is the entity that is functionally responsible for designing, building, maintaining, and sometimes also planning the transmission system.

- recommends that the PRR 151 Requirement 1 be modified to reflect that some of the requirements may best fit into NYISO procedures while others may best fit into Transmission Owner local criteria. As such, the implementation timeline needs to allow the time for the NYISO and Transmission Owners to collectively review IEEE 2800 and determine the individual and joint responsibilities for meeting compliance with PRR 151. Further, sufficient time will then be needed for each entity to develop processes and procedures to meet compliance with the responsibilities. For the NYISO this would require time to develop revisions to the *pro forma* Interconnection Agreement in the tariff, various manuals, and possibly other tariff revisions.
10. The NYISO believes that implementation for units entering the next class year study (or class year study equivalent) is a more realistic goal than six months; however, given the amount of uncertainty regarding industry preparedness to meet all IEEE 2800 requirements, the implementation plan should acknowledge that full adoption by that date may prove unattainable. NYISO proposes that it give regular reports to NYSRC RCMS, and, if necessary, seek to alter the imposed requirements or implementation plan if it becomes clear that one or more requirements would cause untenable delays or interruptions to the NYISO interconnection process.
  11. The clarification presentation states that the IBR owner has the responsibility of performing plant design evaluation studies (IEEE 2800 12.2.3) and the NYISO has the responsibility to perform its interconnection studies using verified IBR models. As the use of verified IBR models is a key contributor towards addressing the reliability issues documented in the NERC disturbance reports, the NYISO agrees with the need to perform interconnection studies with verified plant-level models; however, the increased time needed to perform model verification by the developer and OEM is unknown. The cost for these entities to perform model verification are also unknown. Additionally, GE stated at the September NYSRC IBR workshop that a “staged adoption of IEEE 2800-2022 must consider the availability of equipment functionality and test and verification procedures.”<sup>5</sup> The NYISO further recommends that the rules for providing verified plant-level models at the various stages of the interconnection process allow for the IBR developer to acknowledge that the verified model is accurate and comprehensive at the time of the study. This is needed as it is expected that as the project moves through the various stages of interconnection development that the model will be refined as needed and validated through the design evaluation to occur later in the interconnection process.

### **Specific Requirement Comments**

12. PRR 151 Section 7, R1, requires that the procedures established for Large Generating Facility Owner interconnection studies be based on “uniform technical minimum requirements.” As this is accomplished by requiring compliance with various sections within IEEE 2800 there is no need for this language within R1.<sup>12</sup>

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<sup>12</sup> IEEE 2800 Section 1.3 states, “This standard provides uniform technical minimum requirements for the interconnection, capability, and performance of inverter-based resources interconnecting with transmission and sub-transmission systems.”

13. Requirements R2 and R3 of PRR 151 require the NYISO to develop procedures that ensure the Transmission Owners IBR interconnection requirements and Large IBR Generating Facility Owners compliance with R1.1, R1.2, and R1.3. The NYISO cannot ensure compliance of these resources. The NYISO recommends that the word “ensure” be replaced with “require”.
14. The NYISO’s understanding of PRR 151 R2 is that the Transmission Owners’ IBR interconnection requirements be incorporated in NYISO’s interconnection studies following normal procedures. This understanding is based on the additional information provided in the clarification presentation. The NYISO notes Transmission Owner local criteria is already included in interconnection studies as per Section 4.2 of the Transmission Expansion and Interconnection (TEI) manual. The NYISO recommends that R2 be modified to read, “The NYISO shall develop procedures to require each Transmission Owner to develop IBR interconnection criteria for large IBR generating facilities consistent with IEEE 2800.”
15. In Requirement 6, the NYSRC is requiring that the large IBR owners provide databases. The obligation of the large IBR owner should be on providing the accurate, comprehensive and verified IBR modeling data. It is the responsibility of the NYISO to provide the databases. Further, it is unclear as to whom a database is to be provided. Further, based on the clarification presentation, the NYISO recommends that R6 be expanded to include the IBR owner performance of plant design evaluation studies.
16. In consideration of the model criteria specified in PRR 151 the only entities that would be obligated to provide verified plant level models inclusive of steady state, positive sequence stability, short circuit, and EMT models Large IBR Generating Facility Owners (see PRR 151 R6, and Attachment A Section 10). Only having criteria placed on the owners of Large IBR generators will be insufficient to capture the required modeling data to have a usable EMT model. For instance, the criteria does not specify the data that Transmission Owners or other entities need to provide to have a functional EMT model. As the implementation of the requirements in PRR 151 is from a future point in time forward (as clarified by the NYSRC), the ability to develop quality EMT models would not be achieved. This results in the inability to observe several key issues such as those identified in ERCOT in the Odessa disturbance reports which point out that the majority of issues observed cannot be observed in positive sequence models and require EMT models to observe the issues.<sup>13</sup> The NYISO recommends that the established rule in the PRR be inclusive of all data needed for a verified, accurate, and comprehensive set of EMT model data.
17. The NYISO recommends throughout PRR 151 that the compliance obligations related to model validation be replaced with model verification. While both terms are utilized throughout IEEE 2800, the meaning of these words need to be fully considered when establishing criteria. The NYISO recommends that model validation be understood as a hardware type of test.<sup>14</sup> Model

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<sup>13</sup> The 2021 Odessa disturbance report ([here](#)) points out that ERCOT had EMT model criteria prior to the event; however, the models were unable to effectively replicate the event. As such, ERCOT has implemented requirements that are not retroactive and apply only to newly interconnecting facilities. Entities have had significant difficulty coordinating with equipment manufacturers to submit acceptable model validations, and this is significantly more challenging for older plans and models. As such, an exemption process with narrowly tailored exceptions should be considered to reduce reliability risk.

<sup>14</sup> The NERC reliability guideline on EMT modeling for IBRs (found [here](#)) describes that GOs may consider requiring one of multiple forms of EMT model validation based on information provided by equipment manufacturers.

verification should be understood as the practices utilized to confirm plant behavior with site specific design information. Several NERC reliability guidelines have been published outlining various verification practices.<sup>15</sup> Some examples of changing “model validation” with “model verification” within PRR 151 include: (i) Section 6 item 1, (ii) Attachment A, Clause 10, requires the NYISO to define the acceptable methods and criteria for model verification;<sup>16</sup> however, the section title is “model validation” and (iii) Requirement 6 currently reads such that each large IBR generating facility owner is to provide all applicable model validation methods and performance criteria. Further the NYISO recommends that model validation aspects not be fully required for compliance purposes until following the publication of IEEE 2800.2 with an appropriately timed implementation plan to allow IBR OEMs to develop established model validation practices.

18. PRR 151 currently requires the IBR owner to provide supporting documentation for all test and verification requirements in clauses 4-11 of the standard. This includes “type tests”. Type tests are also included as specified in the clarification presentation. As defined in IEEE 2800, a type test is “a test of one or more devices manufactured to certain design to demonstrate, or provide information that can be used to verify, that the design meets the requirements specified in this standard.” IEEE 2800 recognizes that type tests are rarely, if ever, applied to entire IBR plants. IEEE 2800 further states that type testing shall be performed on a representative IBR unit or subsystem that represents the behavior of the IBR, either in the factor, or a testing laboratory or on equipment in the field. Type tests are a form of model validation. As such the NYISO recommends that they not be required until following the publication of IEEE 2800.2, with an appropriately timed implementation plan to allow IBR OEMs to develop established model validation practices.
19. PRR 151, Attachment A, Clause 12, Item 2 requires the IBR owner to self-certify compliance with IEEE 2800. Further the IBR owner is required to provide supporting documentation for all test and verification requirements in clauses 4 through 11 of the standard as to method, timing, and pass/fail criteria. Consistent with the clarification presentation, the NYISO recommends that the self-certification for compliance should also require the generator owners to demonstrate compliance with the design evaluation.<sup>17</sup>
20. Requirement R4 of PRR 151 requires the NYISO to annually submit a technical report documenting the assumptions, models and methodology of Large IBR Generating Facility interconnection studies in accordance with R1.1, R1.2, R1.3, R2, and R3. It is unclear what would be provided in this report in addition to the technical studies which would be performed that show compliance with R1.1, R1.2, R1.3, R2, and R3. As this requirement is duplicative of required work to show compliance with R1.1, R1.2, R1.3, R2, and R3 and is addressed in current Measure 1 in the PRR, the NYISO recommends that this requirement be removed.

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Examples provided of model validation include aspects such as factory test reports, hardware-in-the-loop testing, and benchmarking reports.

<sup>15</sup> The most relevant example is the NERC Reliability Guideline on Power Plant Model Verification for Inverter-Based Resources, published in 2018 ([here](#)).

<sup>16</sup> This seems consistent with the draft NERC MOD-026 ([here](#)). This draft of MOD-026 requires each TP and PC to jointly develop dynamic model verification requirements and processes. The draft NERC MOD-026-2 standard is part of NERC project [2020-06](#).

<sup>17</sup> IEEE 2800 Section 12.2.3 states, “The IBR plant design evaluation may be performed by the IBR owner, TS operator, TS owner, third-party consultants, and/or jointly by these parties.”



21. Requirement 5 is in essence duplicative of the obligations already required by NERC for entities to make available their interconnection requirements.<sup>18</sup> As R5 is not more stringent or specific than existing NERC criteria, the NYISO recommends that R5 be removed. For instance, the TEI manual covers applicable reliability standards and criteria. These include all local Transmission Owner planning and interconnection criteria (e.g. See Section 4.2 of the TEI manual).
22. PRR 151, Attachment A, Section 5, Item 2, Clause 5.1 states that IBR *plants* containing energy storage capability, supply of reactive power support shall not be required at levels of power import no greater than is required to meet plant standby loss demand. The NYISO recommends clarifying the requirement to read ‘For *IBR plants* containing energy storage capability, supply of reactive power support shall not be required at levels of power import no greater than is required to meet plant standby loss demand, unless agreed to by the NYISO and *IBR owner* as an Ancillary Service.
23. PRR 151 Attachment A, Section 5, Item 5, Clause 5.2.2 specifically identifies the system impact study (SIS) for assessing small-signal dynamics performance under near minimum short-circuit strength conditions. The NYISO recommends that the specific call out of system impact studies and be replaced with design evaluation (IEEE2800 Section 12.2.3).
24. Currently, the implementation plan reads such that once the processes outlined in R1 are defined, instantaneously the IBR generator owners would be required to meet compliance. The NYISO recommends that the implementation plan be modified to provide time for IBR developers and OEMs to understand the established NYISO and Transmission Owner processes and procedures and develop their abilities to achieve compliance.
25. PRR 151 Attachment A, Section 4 Item 1 states that the reference point of applicability (RPA) shall be the point of interconnection (POI) with a few exceptions in Section 7. IEEE 2800 Section 1, Figure 1 notes that moving the RPA from the point of measurement (POM) to the POI requires a consideration of the pros and cons. The example written into IEEE 2800 states, “The ability of IBR plants to meet the performance requirements in this standard may be impacted if the IBR owner is not allowed to install their measurement and control equipment at the POI substation.” The NYISO recommends that the NYSRC conduct a review of the feasibility and impact of moving the RPA to the POI.
26. PRR 151, Attachment A, Section 6, Item 1, Clause 6.1.1 states, “If the IBR plant active power has been curtailed to less than available active power for any reason, supply of underfrequency response, to the extent of the available active power, is mandatory. The underfrequency response shall override power curtailment limits.” The NYISO recommends that this clause be modified to reflect that IBR units are required to have the capability to supply under frequency response as well as the capability to override power curtailment limits. These changes will better reflect the capabilities expected of the plant for under frequency response and allow NYISO operational flexibility to utilize this capability as needed to address underfrequency.
27. PRR 151 Attachment A, Section 7 Items 4 and 5 allows for the determination in interconnection studies or design evaluation study. The NYISO recommends that this evaluation solely occur in the design evaluation study and be coordinated with the local Transmission Owner.
28. PRR 151 Attachment A, Section 7, Item 7, Clause 7.2.2.3.5 is not clear in the contingencies applicable to the performance specifications in this clause. The NYISO recommends that the

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<sup>18</sup> E.g., NERC FAC-001-3.

NYSRC add language to reflect that the performance specifications apply to planning design criteria.

29. PRR 151, Attachment A, Section 7, Item 10, Clause 7.2.2.6 is unclear in what is meant by beneficial to the New York Transmission System or how the benefit would be determined within interconnection studies. The NYISO requests the NYSRC clarify the intent of modifications to IEEE 2800 Clause 7.2.2.6 as described in PRR 151, Attachment A, Section 7, Item 10. Also, 7.2.2.6 is clearly about active power recover time after voltage ride-through, it would be clear if item 10 described as “If active power ~~voltage disturbance~~ recovery times greater than one second, but less than or equal to ten seconds”.
30. In IEEE 2800 Section 1.4, the standard recognizes that, for radial sub-transmission systems, there is overlap with the IEEE 1547 standard. In these instances, it may be more appropriate for IEEE 1547 to be applied rather than IEEE 2800. The NYISO recommends that the NYSRC consider a rule that would allow for these specific circumstances for the Transmission Owner to determine the applicable IEEE standard and subsequent criteria to apply. For instances the instances where IEEE 1547 is utilizes those processes and procedures shall be determined in the local Transmission Owner planning criteria.
31. Throughout IEEE 2800 there are requirements that are unit specific and not plant specific. The NYISO recommends that the proposed rule not require unit specific evaluations at this time or by the NYISO as the NYISO interconnections would evaluate only at the plant level. The NYISO recommends that unit specific requirements by covered by the developer as part of the design evaluation.