

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Consideration of Comments Summary

Project 2010-03 Modeling Data (MOD B)
Standard Drafting Team

December 6, 2013

RELIABILITY | ACCOUNTABILITY



3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326

Introduction..... 3

Consideration of Comments..... 4

 MOD-032-1 4

 Changes Since Draft 1 4

 “Jointly Develop” concerns for Requirement R1 4

 Coordination with Other Standards..... 4

 User-written Models 5

 Distribution Provider Applicability 5

 Balancing Authority Applicability 5

 Short Circuit Data 6

 Older Unit Concerns..... 6

 Assignment of the Interconnection-wide Case 6

 RSAW Comments 7

 Attachment 1 comments 7

 Other Specific Comments..... 9

 MOD-033-1 12

 Dynamic Local Event Timing Clarification 12

 Inconsistent Procedures..... 12

 Period Between Validations..... 12

 “Paragraph 81” Criteria Concern..... 13

 Generator Owner or Transmission Owner Applicability 13

 Requirement R1 “Guidelines” 13

 What Models..... 14

 Other Specific Comments..... 14

Introduction

The 2010-03 Modeling Data Standard Drafting Team (SDT) thanks all participants for their feedback in finding ways to improve the proposed MOD-032-1 and MOD-033-1 Reliability Standards (MOD B standards). In response to the second formal posting of the standards, the SDT received input that was focused on the final issues that assisted the SDT in making final clarifications to the set of standards now posted. The SDT carefully considered all comments in determining whether to make particular changes to the standards, and this document is intended to provide a summary explanation of the SDT's deliberations.

These standards were posted for a 45-day public comment period from Monday, October 7, 2013, to Wednesday, November 20, 2013. Stakeholders were asked to provide feedback on the standards and associated documents through a special electronic comment form. There were 54 sets of comments, including comments from approximately 163 different people from approximately 105 companies representing 9 of the 10 Industry Segments.

Furthermore, the SDT wishes to thank the industry for their significant engagement and support throughout the project. Industry participants and observers, whether formally or informally, and whether in person or through other means, provided important perspectives and subject matter expertise that facilitated the SDT's consideration of the complicated issues and technical matters reflected in these standards. It was a collaborative process that reflected the significant dedication of the individuals in our committed industry.

At this stage, the drafting team has reached a point where it has made a good faith effort at resolving applicable objections, and it has not made any substantive changes to MOD-032-1 since posting draft 2. Therefore, the team is posting MOD-032-1 and its corresponding implementation plan for a final ballot. Because of one possible substantive change in MOD-033-1, explained in this document, MOD-033-1 is posted for an additional 45-day comment period and concurrent ballot. As in past drafts of MOD-032-1 and MOD-033-1, the SDT thoroughly considered proposed changes and evaluated them carefully by considering several important variables, such as, but not limited to, whether such changes were in the interest of reliability, whether they would improve or reduce consensus, whether they had unintended consequences for other types of entities, and whether they were in support of the SDT's obligation to respond to regulatory directives, most notably from FERC Order No. 693. The SDT has done its best to be responsive to all inputs, recognizing that it is not possible to adopt every suggestion given the considerable diversity of entities to which the standards will apply.

During the posting of the second draft of the proposed MOD-32-1 and MOD-033-1 Reliability Standards, the drafting team asked questions related to the approach in each of the standards. As a whole, the SDT found that the responses were thoughtful, organized, and focused.

All comments submitted may be reviewed in their original format on the standard's [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact Vice President and Director of Standards Mark Lauby at 404-446-2560 or at mark.lauby@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

¹ The appeals process is in the Standard Processes Manual: http://www.nerc.com/files/Appendix_3A_StandardsProcessesManual_20120131.pdf

Consideration of Comments

MOD-032-1

Commenters provided input on several items related to MOD-032-1, with some items commented upon more frequently than others. In this section, the SDT provides response to most of those items individually, followed by discussion of the remaining items.

Changes Since Draft 1

Several commenters continue to support the consolidation of the existing MOD-010 through MOD-015 standards into MOD-032-1, and they provided support for several of the specific changes described in the consideration of comments document for draft 1. The SDT appreciates the support and thanks the commenters for the input.

“Jointly Develop” concerns for Requirement R1

Some commenters expressed concern with the change in Requirement R1 for Planning Coordinators (PC) and Transmission Planners (TP) to “jointly develop” steady-state, dynamics, and short-circuit modeling data requirements and reporting procedures for the PC’s planning area. The specific concern was a compliance concern for one entity being subject to actions by another in this joint development.

The SDT appreciates this concern and discussed the language as proposed. In draft 1 of MOD-032-1, the requirement language required that “Each Planning Coordinator, *in conjunction with* each of its Transmission Planners, shall develop . . . data requirements and reporting procedures.” (Emphasis added). However, the industry response through comments overwhelmingly did not support an approach on the basis that it gave too much discretion to the Planning Coordinator. Similar to the approach in TPL-001-4, the SDT modified the requirement to focus on joint development between the Transmission Planners and Planning Coordinator for each planning area. This change reflects the SDT’s understanding of the vast majority of entities, and further discussion and deliberation underscored support for the language. The requirement as written does not specify how the entities must jointly develop the data requirements and reporting procedures, and provides for several alternatives to accomplish the requirement (whether by agreement, committee, delegation, etc). Multiple PCs and TPs may collectively sign on to a set of data requirements and reporting procedures that would cover their respective areas to accomplish “joint development.”

A commenter for both MOD-032-1 and MOD-033-1 indicated concern with applicability to the PC or that they do not have a PC, which creates concern for them in submitting to both the TP and PC in Requirement R2. The commenter suggests alternative language for Requirement R2 to focus on submitting to either the TP or the PC, and additionally asserts that, for the Western Interconnection, WECC should collect the data and there should be a WECC variance. On the first issue, the SDT notes the language from the guidance section of MOD-032-1: “If a Transmission Planner (TP) and Planning Coordinator (PC) mutually agree, a TP may collect and aggregate some or all data from providing entities, and the TP may then provide that data directly to the PC(s) on behalf of the providing entities. The submitting entities are responsible for getting the data to both the TP and the PC, but nothing precludes them from arriving at mutual agreements for them to provide it to the TP, who then provides it to the PC. Such agreement does not relieve the submitting entity from responsibility under the standard, nor does it make the consolidating entity liable for the submitting entities’ compliance under the standard (in essence, nothing precludes parties from agreeing to consolidate or act as a conduit to pass the data, and it is in fact encouraged in certain circumstances, but the requirement is aimed at the act of submitting the data).” On the second issue, the SDT notes below in greater detail the continued reason for including PC to meet the directive language, along with why the standard is not applicable to the Regions.

Coordination with Other Standards

There were some comments that repeated the already addressed concerns from the previous comment period regarding perceived duplication with other standards (MOD-025, MOD-026, MOD-027, IRO-010-1, and TOP-

003). The SDT response remains the same as that provided under the comment response from draft 1 on October 7, 2013, which is described in detail on pages 5 and 6 that comment report. MOD-025 was newly commented upon during draft 2 on this issue, and the rationale as explained for the other standards (that they are for different purposes, and the information provided could be different information), remains apt for MOD-025 as well. MOD-025 requires *verification*, and MOD-032 is focused on obligations between and among entities regarding *submission* of data in support of the Interconnection-wide case(s)). Furthermore, other commenters supported the SDT's position by stating that the SDT added "precision to the data specification that we are required to support. In addition, it is clear that the drafting team has made a concerted effort to ensure consistency with the Generation Validation and other NERC standards." The SDT agrees and thanks the commenter for that statement.

User-written Models

Some commenters suggest that user-written models should be forbidden or prohibited, and they have concern that the standard provides permission to submit user-written models (a primary argument from commenters against "user written" models is that they are not easily converted from, for example, PSS/E software over to PSLF software that companies use). Other concerns included perceived weakening of the advancements in precluding the use of user-written models in certain areas today, and that the standard as written could potentially erode that progress.

The SDT understands the concerns and wants to reiterate that it agrees that user-written models should be used rarely, if at all. MOD-032-1 is not intended to encourage the use of user-written models, and the jointly developed data requirements and reporting procedures under Requirement R1 may provide details for how a user-written model may or may not be employed. In any case, attachment 1 specifies certain essential information that is required when a user-written model is used. The SDT also notes that Requirement R1, part 1.2 prescribes that certain specifications in the data requirements and reporting procedures must be consistent with procedures for building the Interconnection-wide case(s), including data format. Additionally, the SDT discussed that as new technology evolves, there may be instances where a standard model is not available, and the information must come from a user-written model. Therefore, the SDT did not make a change, as the additional information required for user-written models as specified in attachment 1 provides a reasonable mechanism to support reliability by ensuring that additional information and characteristics will accompany each user-written model until a standard library model is available.

Distribution Provider Applicability

Some commenters suggested that certain items should also be applicable to Distribution Providers to provide data for facilities less than 100 kV, load forecast data for use in model development, and short circuit data for transformer connections to the transmission system that serves network subtransmission facilities.

The SDT confirms that the load data contemplated by the standard is that data provided by the Load Serving Entity function, and it did not make the change. While the SDT understands that certain subtransmission information is useful in certain cases, it is outside the scope of applicability of this standard unless those facilities are part of the Bulk Electric System (BES).

Balancing Authority Applicability

Some commenters asked that the SDT consider the removal of Balancing Authority (BA) as an applicable entity because the only reference to BA in Attachment 1 (data reporting requirements for steady state, dynamics, and short circuit) is in the item for "Other Information Requested by the PC or TP necessary for modeling purposes." The commenters suggest that it appears unlikely that the BA will need to supply modeling data that is not already being provided by any of the other functional entities that the standard applies to.

In response, the commenters are correct that as a matter of course most data requirements or reporting procedures in MOD-032 would not require data from BAs. The SDT did discuss the issue at length, and at first glance the SDT thought removing BA from the applicability of MOD-032 would not be a reliability concern.

However, the SDT originally included BAs on the basis that they may have certain information regarding interchanges that affect the powerflow cases, especially for BAs that are not ISOs. Coordination of load and resources in the models with the areas corresponding to them is important as well, and the SDT continues to believe BA input may be necessary in certain cases. Furthermore, removing BAs from applicability at this time would require modification of the standard at a later date through the standards development process if additional information is necessary in the future. The SDT notes the concern regarding BA applicability was not widespread, and it was not raised at all during the comment period for draft 1 of the standard. The SDT also reiterates that the primary focus of this project is not only addressing improvements and recommendations related to the existing set of standards, but also addressing remaining directives from FERC Order No. 693. Several directives related to this project underscore the Commission's concern that analysis of the Interconnection system behavior requires the use of accurate models, and leaving BA out of applicability may leave a potential gap in that analysis.

Short Circuit Data

Some commenters continued to request that the SDT not include short-circuit data in MOD-032-1. Some suggested that short-circuit data should not be required by the standard or that there is not a need for an Interconnection-wide short-circuit model.

The SDT notes this was an issue also raised in response to draft 1, and the SDT reaffirms its previous discussion that "the directive from FERC Order No. 890, paragraph 290, specifically requires inclusion of short circuit data. Having the short circuit data as part of this standard supports that information being shareable on an interconnection basis, particularly to support analysis at the seams, and it supports TPL-001-4, Requirement R2, which requires the Transmission Planner (TP) and PC to include a short circuit analysis as part of its annual assessment."

In addition, its inclusion here does not necessarily mean that the information would be used in a power flow case or in an Interconnection-wide case. It could also be used to provide equivalence information at the seams.

Older Unit Concerns

Some commenters raised concern surrounding treatment of detailed data for older units, and that estimated data should be allowed in certain cases.

Under Requirement R1, part 1.2.2, the data requirements and reporting procedures must specify the level of detail required that is consistent with Interconnection-wide procedures, and in this manner, the standard addresses the commenters' concern and provides a mechanism to allow estimated data for such older units. As noted in the response to comments from draft 1, "the standard as written does allow submission of estimated/typical data – and at the same time does not preclude submission of unit-specific data. More detailed stipulations can be included in the specific PC/TP procedures as necessary."

Assignment of the Interconnection-wide Case

Some commenters correctly note that MOD-032-1 does not assign who builds the Interconnection-wide case or provide a requirement for the ERO to provide the models. Other comments indicated suggestions for minor changes to the wording of Requirement R4 to the "designated Interconnection-wide Data Base Group and to the ERO on request." Similarly, one commenter suggested there should be an additional requirement for the ERO or its designee to submit model data requirements and reporting procedures to the PCs for data consistency and data reporting timeliness.

MOD-032-1 is not a standard for building the Interconnection-wide case, however. It is a standard that outlines the obligations surrounding submission of data by various entities in support of analysis of the interconnected transmission systems. The focus of the standard is on data owners and Planning Coordinators supporting Interconnection-wide case building processes in their respective Interconnection while creating a framework to support ERO designation of an entity to build the actual Interconnection-wide case. The ERO has an interest in

ensuring successful completion of the Interconnection-wide cases for each interconnection, and that interest and obligation is outside the scope of MOD-032-1. Rather than specify Interconnection-wide case building responsibilities in MOD-032-1, the standard is a part of and supports that larger ERO commitment. In MOD-032-1, the Planning Coordinator's obligation is to make information available for use in the Interconnection-wide case(s), and that obligation remains and is measurable regardless of whom they are making that information available to.

On the issue of changing the wording of R4, the SDT discussed at length, and notes that the language in Requirement R4 was heavily coordinated to reach a consensus point. Given the purpose of the requirement and the support for the current wording, changes to the language as suggested may not support the consensus position, and the SDT did not adopt them.

RSAW Comments

There were some specific comments on the associated Compliance Input document and the Reliability Standards Audit Worksheets (RSAW) developed by NERC compliance operations with input from the SDT and posted for information during the comment period. The SDT notes that the RSAW is not part of the standard ballot, and it is outside the scope of the SDT. The SDT will forward the specific comments regarding the RSAWs to NERC Compliance Operations for their review, and they expect they will be considered in working to finalize the RSAW.

Attachment 1 comments

Several individual comments included suggestions to add specificity or additional items in certain criteria in attachment 1. The SDT determined that the existing language in the attachment provides appropriate information, and additionally notes that the PC/TP procedures could specify more details around how to provide the information in response to the comments. The SDT reviewed Attachment 1 in considerable detail between posting drafts 1 and 2 of the standards, and revised Attachment 1 to focus on the information necessary to support the Interconnection-wide case(s). These changes resulted in increased consensus and to find a balance between specificity and consistency. Furthermore, several of the recommended inclusions to attachment 1 are not regarded as essential to Interconnection-wide case(s) or related to reliability (e.g., some parameters suggested are used for other reasons such as cost allocation or other purposes), and the SDT intends to ensure that inclusion of attachment 1 parameters supports the purpose of MOD-032-1.

A commenter was concerned that the phrase 'Other information requested by' in Attachment 1 is too open ended, and the commenter was concerned that it provides "a route for requesting copious amounts of modeling data, for powerflow, dynamics, or short-circuit models, and wasting valuable resource time." The SDT understands the concern, but it notes that the purpose and scope of the standard limits that item under Attachment 1. To the extent something is requested that is in addition to the items previously listed, it must be necessary to support the Interconnection-wide case(s), not just additional information that is unrelated to the purpose of the standard or used for other means.

Other comments suggested including items 2, 3, and 4 under dynamic data as subparts under item 1, as they only apply to synchronous generators. The SDT did not make the change because in some cases (e.g., certain wind units), these items may apply to other resource types.

Some commenters suggested that the GO item in attachment 1 to provide regulated bus and voltage set points is covered by VAR-001-2 or that the TOP or GOP should be subject to the standard instead. The SDT ultimately does not agree. First, with respect to item 3 overall, the GO, as the owner, should know certain characteristics about its units, and it is reasonable to expect them to know this information. There is also a distinction between the reason and purpose for the required action in the VAR standards. The fact that VAR-001 requires TOPs to provide GOPs certain information is for operations purposes that can change more readily, and is to support

knowing operational bands. In the VAR context, it has operating implications. For planning purposes (the time horizon of this standard), that information is much more static. Thus, the SDT believes that it is reasonable to expect a GO to provide the information as part of the larger suite of generator unit information. It may require coordinating with their GOP or other parties, or it could involve the GO, as the owner, ensuring that its operator provide this information to the GO. Or, the GO could communicate with its TP. Further, the SDT was trying to provide the parenthetical in earlier drafts (that was not commented on) to note that “regulated bus” and “voltage set point” were not arbitrary data the GO determines. However, to clarify the item, the SDT modified the parenthetical slightly to clarify that the information is required to be known by the GO (without specifying how it must know it) and to remove the misunderstood expectation that they must get the information directly from their TOP. With respect to adding the GOP or the TOP to the standard, the SDT determined that those functions are not appropriate for inclusion in this standard.

A commenter also suggested that Resource Planners (RP) are not appropriate to provide future information and that the GO should be responsible. The SDT disagrees; in many cases, the RP is the entity that identifies the need for future generation, and a GO may not yet exist for that planned resource to provide the information.

A commenter suggested adding a caveat to MOD-032-1’s attachment 1 exempting nuclear units from validating reactive power by staged performance testing. In response, those units are still expected to provide capabilities, and that is all that this standard requires. Other standards address individual unit capability verification.

A commenter asks for clarification of “all applicable elements” in the short circuit column. The SDT reviewed this suggestion and determined that applicable elements may vary. The short circuit column also makes specific reference to the elements in the “steady-state” column.

A commenter notes that VAR-002-2b already requires certain transformer data to be provided to the TOP and TP, but the SDT notes that the purpose and context of those requirements are different. While some information may be the same, VAR-002-2b only requires that information be sent to the TP upon a request for the information, and MOD-032-1 supports providing that data to the TP and PC for use in the Interconnection-wide case(s).

Commenters provided specific suggestions for addition or removal of entities from applicability of certain items in attachment 1, to include whether BA, LSE, or TSP should be provided in certain instances, particularly in the “other items necessary for . . .” criteria. Commenters also suggested flexibility to account for how data or information is collected in certain instances. Similar to the explanation for BA applicability, above, analysis of Interconnection system behavior requires use of accurate models, and removing these entities from applicability in the instances suggested may leave a gap in that analysis. With respect to how information is collected, the functions listed are still generally responsible for the information, and alternative arrangements for collection are contemplated and explained in greater detail in MOD-032-1’s Guidelines and Technical Basis section.

A few commenters suggest that attachment 1 is too prescriptive and provide alternative examples. The SDT made several significant changes in previous drafts to remove specificity from attachment 1 to limit it to those necessary for reliability while also ensuring a balance to account for other entities desiring greater specificity. The commenter provided suggestions to add to the explanation that the asterisk could also mean that the items have no data. The SDT was concerned that such addition could unintentionally result in entities not providing data that they should have in certain cases. Instead, the SDT reviewed the items under item 7 for reactive compensation and clarified that certain of the items are only applicable if mode of operation is not fixed. The commenter also suggested that regulated voltage band limits may vary, and the SDT agrees and has added an asterisk. Finally, the commenter suggested that “Demand” is unclear under the Dynamics column’s item 5, and that it should be clarified to “Demand classification” with an explanatory footnote. The SDT changed this item

in response to comment during a previous draft to remove such specificity, and it notes that such additional detail could be clarified by individual procedures under Requirement R1.

One commenter asked the SDT to provide modifications to attachment 1 to provide more specificity around “Gross Minimum Real Power,” “normal plant configuration,” and “In-service status.” The SDT discussed these parameters, and similar to other suggestions for greater specificity, such additional detail could be clarified by individual procedures under Requirement R1. Providing greater specificity in the Reliability Standard itself could unintentionally restrict various modeling configurations. The SDT also notes that the phrase “normal plant configuration” was added specifically in response to comments from previous drafts.

A commenter asked for clarification whether the parenthetical caveat “for future planned resources only” under “[GO, RP (for future planned resources only)]” applies only to the RP function, and the SDT confirms that the caveat as used is intended to apply only to RP.

A commenter asks for clarification on which generator units are subject to Attachment 1. The SDT references previous commentary on this question from the October 7, 2013, response to comments at page 7 on “Facilities,” noting the limitations to the scope and jurisdiction of reliability standards. Specifically, the SDT noted, “While such data is not precluded to be modeled, it is outside the scope of the reliability standard itself. Such data is typically provided through other existing procedures or arrangements.”

A commenter suggested that additional dispersed forecast Demand data be added to MOD-032-1 (that was previously in MOD-016), with additional clarifications in the footnote. However, consistent with ensuring that the information in attachment 1 supports various differences across the continent, such additional detail is best clarified by individual procedures under Requirement R1, not by increased specificity in attachment 1. Furthermore, the footnote at reference already specifies that the Demand contemplated “is the Demand aggregated at each bus.”

A commenter suggested including synchronous condensers to attachment 1, and the SDT notes that they are specified in attachment 1 (see footnote 3).

Other Specific Comments

Commenters also raised several other items that were not directly related to the issues already identified and discussed, above, and a summary of those comments and the SDT’s consideration is provided in this section.

One commenter provided suggested edits to the gradations provided for in the VSLs for Requirement R 1 to correct them for consistency. The SDT agrees with the edits and has made the correction.

A commenter provided concern (in both MOD-032-1 and MOD-033-1) regarding two specific items in the Compliance section of the standard, noting that there are capitalized references to “Applicable Entity” which are not defined terms and requesting that the SDT list the applicable processes in the “Compliance Monitoring and Assessment Processes” part instead of referring to those in the NERC Rules of Procedures (ROP). The commenter states that the reference to a process found in the NERC ROP may be an issue for some Canadian entities in particular who have their own Compliance and Monitoring program and have only adopted select aspects of the NERC ROP. In response, the SDT agrees with the capitalization suggestion and has made the change. The SDT has also made a change to modify references to the NERC ROP in response to the second concern. Section 1.3 of that section does not mandate the use of a specific ROP process (i.e., it does not require that NERC’s Compliance Monitoring and Enforcement Program (CMEP) be used); rather, the language simply refers to the processes described in the ROP that may be used to monitor and assess compliance with the standard.

Some commenters suggested some minor additions or wording changes. One commenter suggested adding the words ‘a registered entity shall submit’ after the words ‘last submission’ for requirement R2. One commenter suggested changing ‘current data’ to ‘data already submitted’ for requirement R 3.1. The SDT reviewed each suggestion, but did not make changes, as the phrases as written are reasonably well-understood, and the SDT did not want to introduce changes that may affect others’ understanding to negatively impact maintaining consensus.

A commenter suggested modifying the reference to ‘within 90 calendar days of the request’ to ‘within 90 calendar days of written notification’ in measurement M3. The SDT reviewed the measure and it has made a clarifying change to synchronize the measure with the requirement language.

One commenter suggested adding a time or frequency requirement to Requirement R4, but the SDT believes that the obligations in Requirement R4 are clear without requiring specific time or frequency parameters.

One commenter raised concern regarding Requirement R4 by asserting that it has the potential to put a resource burden on a PC to provide a potentially unknown number of models to the ERO to support Interconnection-wide cases they want to create. The SDT attempted to provide a framework that will work on a continent-wide basis to support Interconnection-wide case building processes. The SDT understands this concern and gave this serious consideration, but in many respects, it is outside the scope and purpose of the standard.

One commenter raised concerns over PCs developing different procedures, which may lead to inconsistent procedures. The SDT discussed this issue, and it notes that PCs may have different procedures, but the type of data required by attachment 1 provides a level of consistency. Additionally, as the SDT noted in its consideration of comments posted on October 7, 2013, “The SDT . . . added clarification to Requirement R1 that PCs must create their data requirements and reporting procedures jointly with TPs, and the requirement is more specifically linked to support Interconnection-wide modeling to address inconsistency concerns.”

Some commenters suggested that the following phrase should be moved to the measure for Requirement R2: “...For data that has not changed since the last submission, a written confirmation that the data has not changed is sufficient.” The SDT considered this during the previous comment period and indicated that it was a significant item for building consensus. The SDT also continues to understand that it is more than a measure, but a further qualification of the requirement language to positively indicate the performance expectations under the requirement.

For Requirement R4, a commenter suggested a rewording of the specific requirement language related to making models available to the ERO or its designee. Rather than “to support creation of the Interconnection-wide case(s),” the commenter suggested that it should refer instead to “the compilation of submitted data to form new Interconnection-wide base cases.” The SDT does not believe that this suggestion adds specific clarity over what is already present. At this stage, changing the language could cause more confusion than it resolves, or negatively affect already established consensus, and it did not make the change.

One commenter suggested that the standard should require in Requirement R4 that the PCs, in making models available for use in the Interconnection-wide case(s), be “independent” Planning Coordinators to prevent any submission of equipment or system representation data that can influence base case simulation results. The SDT notes that the obligation under the requirement is to make models available that reflects data it received.

One commenter does not agree with the need to characterize the PC in the requirements as a combination of Planning Coordinators and Planning Authorities, as noted in the applicability section, given that version 5 of the Functional Model does not include “Planning Authority” as a functional entity. As explained in the applicability

section and in response to comments from the last posting period, the purpose of that characterization is to account for current differences between the NERC registration criteria and the NERC functional model.

One commenter believes there is insufficient linkage between Requirements R1 and R5 for the Eastern Interconnection and also suggests developing separate standard for each Interconnection. The SDT notes that Requirement R5 from draft one was changed significantly and renumbered to Requirement R4 in draft two, and it believes that the comment may be addressing a previous draft. If it was not in reference to the previous draft, the SDT does believe there is a linkage between Requirements R1 and R4 because of Part 1.2. Part 1.2 requires that the data requirements and reporting procedures developed under Requirement R1 provide specifications of data format, level of detail, and case types and scenarios must be consistent with procedures for building the Interconnection-wide case. The SDT does not believe that a separate standard is necessary for each Interconnection and that this standard strikes the appropriate balance of consistency of data types (through attachment 1) while also supporting a framework that recognizes certain differences among the Interconnections.

A commenter noted that the Application Guide discusses the SDT intent to not require a change to present data collection efforts, and the commenter notes that short circuit models are currently handled via the Regional Entity, not the Planning Coordinator. The SDT understands this concern, but notes the standards applicability to Regional Entities (previously RRO) is, in part, why FERC did not approve them in Order No. 693. Additionally, that order contained directives to add PCs. With the exception of some changes in responsibility, the SDT does continue to believe that, in general, data collection efforts or procedures do not necessarily need to change extensively as a result of the standard, but it acknowledges that they may. The standard provides a framework that is durable and should not require standards modifications to support changing processes, methods, or organizational structures going forward.

A commenter suggested that MOD-032-1 requires data collection that meets the Paragraph 81 criteria, and that such information should be linked to mandatory data request instead of through a standard. This issue was raised in the first comment period as well, and the SDT addressed this issue in its response to that draft. The SDT ensured that the requirements in the proposals were results-based and considered criteria from the Paragraph 81 project (Project 2013-02 Paragraph 81). The SDT considered the criteria from the Paragraph 81 project to ensure that the standards proposals did not create requirements that meet those criteria. The Paragraph 81 project also prepared a “Paragraph 81 Project Technical White Paper,” dated December 20, 2012, that includes discussion of the identifying criteria that must be satisfied before a Reliability Standard requirement may be proposed for retirement.² Specifically, for a Reliability Standard requirement to be proposed for retirement, it must satisfy *both* the overarching criterion that it requires an activity or task that does little, if anything, to benefit reliability *and* additional identifying criteria (such as criteria that it is administrative, reporting, redundant, etc., as discussed in the Paragraph 81 Technical White Paper).³ Importantly, with respect to modeling, providing modeling data itself supports reliability objectives. The paragraph 81 identifying criterion for administrative requirements (criterion B1) applies when the requirement “requires responsible entities to perform a function that is administrative in nature, *does not support reliability* and is needlessly burdensome.”⁴ Similarly, the identifying criterion for reporting requirements (criterion B4) applies to requirements that obligate responsible entities to report to a Regional Entity, NERC, or another party or entity “on activities *which have no discernible impact on promoting the reliable operation of the BES* and if the

² Paragraph 81 Project Technical White Paper, December 20, 2012. Available at http://www.nerc.com/pa/Stand/Project%20201302%20Paragraph%2081%20RF/P81_Phase_I_technical_white_paper_FINAL.pdf.

³ See *Id.* at p. 7 and 8.

⁴ *Id.* at p. 8. (Emphasis added).

entity failed to meet this requirement there would be little reliability impact.”⁵ Absence of modeling data for use in the Interconnection models would be expected to have a reliability impact, and the requirements in MOD-032-1 do not create requirements that meet the Paragraph 81 criteria because they establish consistent modeling data requirements and reporting procedures to support analysis of the reliability of the interconnected transmission system.

MOD-033-1

Much like MOD-032-1, commenters provided input on several items related to MOD-033-1, with some items commented upon more frequently than others. In this section, the SDT provides response to most of those items individually, followed by discussion of other items from the comment report.

Dynamic Local Event Timing Clarification

One commenter stated that for Requirement R1, part 1.2, there is no specific timeframe given in which the comparison should be completed after the event if the event does not occur within the first 24 months, which could lead to concerns that an auditor could expect it to be done more quickly than is possible. The SDT reviewed the requirement in response to the comment and agrees that some might benefit from additional clarity of intent in part 1.2. In response, the SDT confirms that the intent of the requirement is to complete comparison using a dynamic local event within 24 months of the last dynamic local event used in comparison and to complete each comparison within 24 months of the dynamic local event. The SDT has rephrased part 1.2 to clarify the intent of the requirement to ensure that it is clear that PC will not face a timing scenario that makes it impossible to comply. If the time referred to the completion time of the comparison, it would be possible for an event to occur in month 23 since the last comparison, leaving only one month to complete the comparison, and that is not what is intended by the requirement. In addition, the SDT provides expanded discussion of the timeline for that part in the “Guidelines and Technical Basis” section of the standard to underscore the requirement part’s intent. While the SDT views this addition as a general clarification of the timeframes expected by Part 1.2, the clarification it provides may be viewed by some as substantive. Therefore, rather than proceed to final ballot on MOD-033-1, an additional ballot will occur because of this change.

Inconsistent Procedures

Some commenters expressed concern that the large number of PCs may lead to inconsistent validation procedures. MOD-033-1 is focused on the procedures of how a PC will conduct comparisons of the information within its area. The commenters are correct that not every PC would necessarily conduct their comparisons in the same manner. The SDT notes that the focus of MOD-033-1 is not on Interconnection-wide disturbances, and it is therefore not necessary that the procedures be the same. The SDT also provides many suggested ways to perform comparison under this standard in the Guidelines and Technical basis section, and the SDT determined that final decisions regarding specificity of procedure should be left to the PC’s judgment. The SDT also believes that, while individual procedures may be different, the outcomes of such comparisons (validation of data) would be consistent.

Period Between Validations

Commenters suggested that the 24 months timeline in Requirement R1 is too frequent. As alternatives, various commenters suggested making the timeline 36 months, 5 years, or 10 years. The SDT continues to support its comments in response to this issue from the first posting, and it believes 24 months represents the consensus position: “The SDT clarifies that the “local dynamic event” does not have to be a severe event requiring a large amount of set-up, but could be much smaller events that if done frequently over time would validate portions of the model in each 24 month period. The SDT also provided greater explanation of “dynamic local event” in the background section of the standard. In response to concern that validation every two years will be a large

⁵ *Id.* at p. 9. (Emphasis added).

engineering effort, the SDT notes that the requirements are focused on planning area validation, and it leaves a lot of decisions regarding validation to the discretion of the PC.”

“Paragraph 81” Criteria Concern

A commenter suggested that Requirement R2’s requirement for RCs and TOPs to provide data to the PC in certain circumstances violates the “Paragraph 81” criteria (for a more in-depth discussion of “Paragraph 81” criteria as it relates to this project, please see the October 7, 2013, comment response document for draft 1, and discussion regarding the same issue for MOD-032-1, above). The commenter suggested Requirement R2 meets Paragraph 81 criteria because it is administrative, focuses on data collection activities, and requires periodic updates that do not directly support reliability. The SDT disagrees. The Paragraph 81 criteria addresses “requirements that obligate responsible entities to report to a Regional Entity, NERC, or another party or entity “on activities *which have no discernible impact on promoting the reliable operation of the BES* and if the entity failed to meet this requirement there would be little reliability impact.” (Emphasis added). The SDT does not agree that Paragraph 81 is invoked since providing such information for use in performing comparisons under MOD-033-1, Requirement R1 “[promotes] the reliable operation of the BES” and that there would be a “reliability impact” if such information is not provided.

Generator Owner or Transmission Owner Applicability

Some commenters suggested adding either or both the Generator Owner (GO) and Transmission Owner (TO) to Requirement R2’s applicability. In response, the type of data that the GO or TO may have, such as PMU or DFR data, would generally be available at the RC or TOP, and the SDT did not add the GO or TO functions to the applicability for MOD-033-1. Furthermore, if comparison under MOD-033-1 highlights a technical concern with data already provided for the existing system used for planning purposes from a GO or TO, MOD-032-1, Requirement R3 provides the means to coordinate those concerns with a GO or TO. For purposes of MOD-033-1, Requirement R2, the focus is on actual system behavior data the RC or TOP is expected to have to compare with planning data the PC already has.

Requirement R1 “Guidelines”

Some commenters asked for clarification about what is meant by “guidelines” in Requirement R1. The SDT sees this question as potential confusion over whether the word “guidelines” in the requirement is supposed to be guidelines the PC develops for itself as part of the procedure, or whether it refers to guidelines that exist outside the context of the standard. Another commenter expressed concern that different PCs could create different guidelines, resulting in different results. One commenter suggested that the guidelines under parts 1.3 and 1.4 be specified in the standard, not left to the PC. The two references to guidelines in Parts 1.3 and 1.4 are mandatory attributes that must be included in the PC’s documented process. The SDT also changed references from “criteria” to “attributes” in the rationale and Guidelines and Technical basis section to make clear that it is referring to the attributes required by Parts 1.1 through 1.4. The main requirement language in Requirement R1 requires a PC to implement a documented validation process. That process must include the attributes listed under 1.1 through 1.4. The “guidelines” referenced in parts 1.3 and 1.4 to be in a PC’s process are not the same as the “Guidelines and Technical Basis” section of the standard, though a PC could certainly incorporate concepts from that discussion into its documented process. The SDT also notes that the “Guidelines and Technical Basis” section of the standard is not mandatory and enforceable, and does not itself create requirements. With respect to consistency, the SDT agrees that the guidelines could vary, and notes the discussion, above, under the “inconsistent procedures” heading. The SDT also made clarifying changes in the “Guidelines and Technical Basis” section to explain Parts 1.3 and 1.4 require the PC to include certain guidelines in its documented validation process. The PC may develop the guidelines required by parts 1.3 and 1.4 itself, reference other established guidelines, or both.

What Models

Some commenters asked the SDT to clarify “what models” (or, alternatively, some commenters suggested the standard addresses the wrong models; that issue was discussed in great detail in the October 7, 2013, comment response to draft 1). Some entities suggested that the requirement should focus on only near term (year one) models, and that the standard should be more specific about which models are the focus of the requirement. Other commenters continued to suggest that MOD-033-1’s focus on planning models is incorrect and that the operations models should be validated. In response to specifying year-one models, the SDT believes that the language in the requirement is clear with reference to “existing system.” The SDT considered further specifying “year-one” models, but that could potentially preclude the PC’s use of other, more useful models for a particular comparison. The SDT did not make a change for those reasons.

In response to the comments that the operational models should be validated instead of the planning models, the SDT notes that the purpose of the standard is to support increased accuracy of the planning models, and the FERC directives applicable to this project (see related “Consideration of Issues and Directives” document of the project page) are also in the context of the planning models. The state estimator already uses an operational model, so comparing that model may not result in a meaningful comparison from the perspective of improving planning models. There is, however, potential for a significant discrepancy between planning models and actual system behavior.

Other Specific Comments

Commenters also raised several other items that were not directly related to the issues already identified and discussed, above, and a summary of those comments and the SDT’s consideration is provided in this section.

One commenter suggested that for MOD-033-1, Requirement R1, it should be required that the PCs be “independent,” because the requirement places the responsibility for implementation of a documented data validation process on the PC. The SDT did not fully understand what was intended by this concern, but notes that the requirement applies to each PC to implement a documented data validation process for its own planning area. The PC could request input into developing its process, but the PC is independently responsible under the requirement.

One commenter suggested that specific requirements for the guidelines in Requirement R1, parts 1.3 and 1.4 need to be spelled out to address concerns that Requirement R2 may impose an excess burden on the TOP to provide data to the PC. The SDT does not believe that an excessive burden will be placed on the TOP. Requirement R2 only requires the TOP to provide any real time data that it has for a specific event or disturbance, and the TOP does not have to identify or otherwise conduct the comparisons under Requirement R1.

Another commenter states that Requirement R2 requires an entity to provide data that, in some cases, it is not required to have. Requirement R2 states, in part, that “Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (*or a written response that it does not have the requested data*).” (Emphasis added). If the TOP or RC does not have the data, it is not required to provide any data.

Several commenters expressed concern that it could take a “plethora of smaller dynamic local events spaced across the Planning Coordinator’s portion of the system to provide sufficient event coverage of a Planning Coordinator’s system for validation purposes.” The SDT agrees that it could take a large number of dynamic local events to cover the entire PC’s area, especially for the larger PCs, but the SDT does not see that as an issue. The intent of the SDT was to use smaller local events for the comparisons so that the data requirement for the comparisons would be less and the need for data from another Planning Coordinator would be less. If it takes a large number of these comparisons, it may just take a longer period of time to complete.

One commenter asserted that MOD-033-1 will be very burdensome to the industry with little benefit. As this standard addresses local phenomena, not Interconnection-wide events, the SDT does not believe that the effort to make the required comparisons for dynamic local events will be burdensome. A local event will not require a significant amount of data or time to accomplish, and it is required only every 24 months.

Some commenters suggest that MOD-033-1 is generally vague and generic, and the commenters suggest there needs to be more clarity regarding which cases should be benchmarked and what parameters of the case will be evaluated. Another commenter indicated that the phrase “unacceptable difference” should be clarified in Requirement R1, part 1.3, and that the SDT needs to provide quantitative or qualitative factors for acceptability of the required comparisons. The SDT intentionally left many details of the comparisons up to the judgment of the PC, so long as the process meets the established attributes laid out in Requirement R1’s parts. As a results-based standard, the SDT focused on describing what result is expected (comparisons to real-time data) compared to prescribing in too much detail how to accomplish the result.

One commenter suggested allowing for an extension of the 30 day timeframe in Requirement R2 for providing actual system behavior data, as long as all parties involved agree to the time extension. The SDT continues to believe that the data required by Requirement R2 is readily available and that 30 days is an appropriate time frame.

Another commenter suggested that there are issues not yet well addressed by the industry in order to perform “consistent validation”. These are, according to the commenter: a) typical or estimated data models, b) generic data models, and c) proprietary data models. The SDT believes that typical, estimated, or generic models should reasonably represent the behavior of the devices that they represent. If they do not, then the comparisons performed by the PC will indicate that the parameters of the model should be modified. Furthermore, the SDT notes that there is no requirement to submit proprietary (user-written) models, and if agreements do not allow sharing the proprietary model, the expectation is for the data owner to submit a generic or standard model that is shareable and that represents the behavior of the device. Should there be a need to use proprietary models, those will need to be supplemented with proper documentation, as noted in MOD-032-1’s Attachment 1.

One commenter expressed a concern for the lack of clarity concerning who their PC is. The SDT agrees that entities need to know who their PC is. The SDT also notes that the Guidelines and Technical Basis section at the end of MOD-032-1 gives guidance on how to determine who the PC is, and Regional Entity registration staff should also be able to assist.

One commenter asked when the 24 month interval begins for Requirement R1, parts 1.1 and 1.2. The SDT intends for the 24 month interval to begin on the date that the standard becomes effective as determined from the information in the Effective Date section and as described in greater detail in the implementation plan, which states, “MOD-033-1, Requirement R1, parts 1.1 and 1.2 include periodic components for validation that contain time parameters for subsequent and recurring iterations of implementing the requirement, specified as, “. . . at least once every 24 calendar months . . .”, and responsible entities shall comply initially with those periodic components within 24 calendar months after the Effective Date of MOD-033-1.”

One commenter suggested that in Requirement R1, part 1.4 – “differences” should be clarified to “unacceptable differences” to be consistent with the “unacceptable differences” it references in part 1.3 of the requirement. The SDT agrees and has made the change.

Another commenter suggested that in Requirement R2, the words “who has indicated a need for the data for validation purposes” should follow “under Requirement R1” to be consistent with the Measure. The SDT agreed

that the Measure should be consistent with the requirement, and it has changed the language in the measure such that it conforms to the language in the requirement.

One commenter suggested that in Requirement R2, the words ‘from such Planning Coordinator’ should follow ‘written request’. The SDT believes the intent as written is clear and reasonably understood, and it did not see the need for that addition.

One commenter stated that as the complexity of the component models increase, so does the likelihood of non-convergence at the system level. The commenter also suggests that it may take several iterations before a good approximation is reached (and may not converge under all operating scenarios), and the commenter believes a reasonable risk-based approach to compliance should be used to account for the uncertainty in the technology. The SDT agrees that non-convergence could be an issue in some instances, but it believes that PCs may account for those scenarios in their data validation processes. Possible compliance approaches is a topic largely outside the scope of the SDT.