UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Revisions to Electric Reliability Organization Definition of Bulk Electric System and Rules of Procedure	Docket Nos. RM12-6-000 RM12-7-000

COMMENTS OF TRANSMISSION ACCESS POLICY STUDY GROUP

Pursuant to the Commission's June 22, 2012 Notice of Proposed Rulemaking ("NOPR"),[1] the Transmission Access Policy Study Group ("TAPS") comments on the Commission's proposal to approve the North American Electric Reliability Corporation's ("NERC") proposed revised definition of the Bulk Electric System ("BES") and related revisions to its Rules of Procedure. TAPS supports NERC's revised BES definition and exception procedure and urges the Commission to approve both without directing changes.

I. INTERESTS OF TAPS

TAPS is an association of transmission-dependent utilities ("TDUs") in more than 35 states, promoting open and non-discriminatory transmission access.[2] As transmission-dependent utilities, TAPS members have long recognized the importance of grid reliability. As TDUs, TAPS members are users of the Bulk Power System, highly reliant on the reliability of facilities owned and operated by others for the transmission service

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[1] *Revisions to Elec. Reliability Org. Definition of Bulk Elec. Sys. & Rules of Procedure*, 77 Fed. Reg. 39,857 (Jul. 5, 2012), 139 FERC ¶ 61,247 (2012).

[2] Tom Heller, Missouri River Energy Services, chairs the TAPS Board. Cindy Holman, Oklahoma Municipal Power Authority, is TAPS' Vice Chair. John Twitty is TAPS' Executive Director.

required to meet TAPS members' loads. In addition, many TAPS members participate in the development of and are subject to compliance with NERC Reliability Standards. Thus, TAPS is sensitive to both the need for standards to support grid reliability, as well as the need to make the standards clear and cost-effective. TAPS was active in the development of NERC's revised BES definition.

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II. COMMENTS

The BES must both include the Elements necessary to protect reliability, and also *exclude* the Elements that are not necessary for the reliability of the grid. Inappropriate inclusion in the BES can have a stunning impact on small entities, as it can trigger their obligation to comply with hundreds of reliability standards. NERC's proposal complies with the Commission's directives in Order Nos. 743 and 743-A.[3] The proposal will protect reliability while excluding those Elements that are not necessary for grid reliability. As explained below in TAPS' responses to those of the NOPR's questions that are particularly relevant to the experience of TAPS members, the Commission

[3] Revisions to Elec. Reliability Org. Definition of Bulk Elec. Sys., Order No. 743, 75 Fed. Reg. 72,910 (Nov. 26, 2010), 133 FERC ¶ 61,150 (2010), *on reh'g*, Order No. 743-A, 76 Fed. Reg. 16,263 (Mar. 23, 2011), 134 FERC ¶ 61,210 (2011).

should approve the revised BES definition and BES exception procedure, as proposed, without directing further changes. The proposed core definition, with the case-by-case exception process for inclusions and exclusions, removes the regional discretion in the currently-effective BES definition, and improves upon the current definition by providing greater clarity, granularity, and consistency.

A. Local Distribution

The NOPR asks whether the proposed definition "adequately differentiates between local distribution and transmission facilities in an objective, consistent, and transparent manner." NOPR P 60. TAPS believes that the core definition, with the case-by-case process for inclusions and exclusions, strikes a balance that appropriately excludes Elements that serve mostly a distribution function without significant transmission function.

B. Transformers

Inclusion I1 of the proposed BES definition will include in the BES "[t]ransformers with the primary terminal and at least one secondary terminal operated at 100 kV or higher unless excluded under Exclusion E1 or E3." *Id.* P 18. The NOPR asks whether transformers "that have a terminal operated at 100 kV or above on the high side and below 100 kV on the low side should be designated as part of the bulk electric system," and, if so, "whether the case-by-case exception process suffices, or a generic inclusion is appropriate." *Id.* P 63. Transformers with only one winding over 100 kV generally do not impact the reliability of the grid and should not be included in the BES. While there may be some specific cases where such transformers should be included, that possibility does not warrant including all such transformers through the core definition. Expanding the BES definition to include transformers with a single winding over 100 kV

would result in undue administrative burden as NERC would face exclusion exception requests for the majority of such transformers, which are not necessary for the reliable operation of the grid. Reliability and efficiency are both advanced by using the case-by-case exception process to include any transformers with a single winding over 100 kV that should be designated as part of the BES, as proposed by NERC.

C. Generation

Inclusion I2 of the revised definition will include in the BES "[g]enerating resource(s) with gross individual nameplate rating greater than 20 MVA or gross plant/facility aggregate nameplate rating greater than 75 MVA including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above." *Id.* P 18. The NOPR asks whether the use in Inclusion I2 of the phrase "generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above," rather than the "direct connection" used in Section III.c of the NERC Statement of Compliance Registry Criteria,[4] "will result in a material change to registration of existing generating units due to the difference in the language regarding the connection point." *Id.* P 65.

It is TAPS' understanding that the language in Inclusion I2 is intended to clarify the meaning of a "direct connection," not to provide a different standard from the Registry Criteria, and that the phrase thus will not result in a material change to the registration of existing generators.

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[4] NERC, *Statement of Compliance Registry Criteria* (Rev. 5.1 Jan. 31, 2012), www.nerc.com/files/Appendix_5B_RegistrationCriteria_20120131.pdf ("Compliance Registry Criteria").

The NOPR also requests comments on the application of Inclusion I2 to generators that are connected to the 100 kV grid through multiple transformers. *Id.* P 65. Through its reference to "the high-side of the step-up transformer*(s)*" (emphasis added), Inclusion I2 appropriately includes generators that are connected to the 100 kV grid through multiple dedicated step-up transformers in series. *Id.* P 18. It does not, and should not, include generators that are stepped up to a distribution system that itself is connected through another transformer to the 100 kV grid, because such generators are not directly connected to the bulk power system.

D. Blackstart Resources

Inclusion I3 includes in the BES "Blackstart Resources identified in the Transmission Operator's restoration plan." *Id.* P 18. The NOPR asks "whether the term 'restoration plan' refers to the system restoration plans required in the Emergency Preparedness and Operations (EOP) Reliability Standards or included in a Commission approved tariff." *Id.* P 67. The Commission's summary is correct: the term "restoration plan" is intended to refer to the system restoration plans required in the EOP standards or included in a Commission-approved tariff.

NERC does not propose to include the cranking path for Blackstart Resources in the BES, if the path is not otherwise included by the definition or through the inclusion process. The NOPR asks "whether a reliability gap may exist with regard to cranking paths and, if so, what potential approaches are appropriate to remove the gap." *Id.* P 68. The possibility of including any lower-voltage or radial cranking paths that are necessary to reliability through the case-by-case exception process will ensure that there is no reliability gap.

E. Radials

The NOPR asks for comment on its understanding that "radial facilities are excluded under the currently effective bulk electric system definition, and the detailed criteria in the revised definition provide enhanced clarity." *Id.* P 76. The revised definition's treatment of radial Elements is not identical to that of the currently effective definition. The existing definition excludes only radials serving only load; the presence of a 1 MW back-up generator could make the exclusion inapplicable. Under the revised definition, radials serving a small amount of generation would also be excluded. This revision is appropriate because it removes the current technically unjustified inconsistency that a generator that is too small to be registered under the Compliance Registry Criteria—one which, in other words, has already been determined not to be necessary for reliability—can, on its own, nevertheless result in radial Elements being considered part of the BES.

The NOPR states that it "would like to ensure that the conditions in exclusion E1 will not lead to conflicting results when applying inclusion I2 and exclusion E1." *Id.* P 76. Because Inclusion I2 deals with generation, while Exclusion E1 deals with transmission (including transmission between the generator and the grid), Exclusion E1 and Inclusion I2 do not conflict. TAPS agrees with the Commission's understanding that Exclusion E1 exempts only radial *transmission* Elements, not generation on an exempt radial system. *Id.* P 77 & n.100.

The NOPR asks how Exclusion E1 would apply to several different scenarios, each illustrated with a one-line diagram. *Id.* P 78. The first scenario shows two radial systems each individually connected to a different 230 kV line. *Id.* P 79. Both of the 230 kV lines from the hard-tap down to the transformer are properly excluded from the BES

under E1. Excluding these radial lines is appropriate because they cannot be part of a cascade. The 69 kV continuations of the radial lines, in addition to being non-BES under the core definition's bright-line 100 kV criterion, also meet the criteria of Exclusion E1.

The second scenario shows a very similar configuration except that the two systems are connected by a 115 kV loop. *Id.* P 80. The NOPR asks whether Exclusion E1 would apply and whether this scenario is more appropriately analyzed under Exclusion E3. The (radial) Elements below the loop would be excluded as two separate E1 exclusions. The network Elements above and including the 115 kV loop would be included in the BES, unless the entire network configuration met the requirements to be excluded under E3.

The third scenario again shows a similar (not identical) configuration in which the two systems are connected by a 69 kV loop. *Id.* P 81. The NOPR asks how this configuration should be analyzed and "whether it is appropriate to examine the elements below 100 kV to determine if the configuration meets the exclusion E1 definition for radial systems." *Id.* Under the proposed definition, the network configuration depicted in the third scenario would be excluded under E1. It would not be appropriate to consider the Elements below 100 kV to determine if the configuration should be excluded under E1 because doing so would be counter to the 100 kV bright line, creating ambiguity and uncertainty in the definition, which is intended to be applied uniformly and objectively.

The 100 kV bright line is appropriate, including in the case illustrated in Figure 3. *Id.* Impedance of a parallel network, whether it be 14 kV, 24 kV, 46 kV, 69 kV or 92 kV, is inversely proportional to the square of the voltage of that network, and power flow is inversely proportional to the impedance. Hence, a 69 kV network will have an

impedance almost double that of a 92 kV network of the same length, and would therefore carry about half of the power flow. A 69 kV network will have an impedance about four times that of a 138 kV network of the same length and will carry about 25% of the power flow. These estimates ignore the very significant impedance of transformers, which would reduce that flow significantly more, often reducing the Transfer Distribution Factor to below 5%. These impedance differences are very significant in limiting the amount of parallel path flows. TAPS therefore believes that the 100 kV bright line is appropriate. If a particular system or set of Elements with a distribution-voltage loop warrants inclusion in the BES, it can be included through the exception process.[5]

Figure 4 is identical to Figure 3, except that the 69 kV loop is interrupted by a normally open switch. *Id.* P 86. Under Exclusion E1, the two lines connected by the normally open switch would be excluded as radial even if the loop were over 100 kV, because the switch is normally open. The NOPR asks whether the term "normally open switch" in this context is well understood in the industry, and whether it is subject to interpretation or misunderstanding. *Id.* P 87. The term "normally open" is well understood in the industry and is not subject to interpretation. In the context of Figure 4, it means that the switch is closed when needed for reliability, such as if one of the two lines connected by the normally open loop were out of service, in which case closing the switch would prevent the loss of that line's load. Such switches are marked as such on one-line diagrams.

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[5] Figure 5 (*id.* P 95), which is identical to Figure 3, would not need to be considered under Exclusion E3 because it would be excluded under E1.

The Commission also "seek[s] comment on the need of transmission operators or other functional entities to study the system impacts of the closing of a 'normally open' switch, or to take other steps to ensure awareness of the impacts of the loop that is created by the closing of the switch if the closed loop is not included as part of the bulk electric system." *Id.* Closing a normally-open switch does not have an impact on the system that needs to be studied because, by definition, it is closed only to change a downstream path on a temporary basis, and thus does not create a loop.

F. Exclusion E3 (local networks)

The Commission "seek[s] comments to better understand how an entity with a candidate local network would analyze [a particular contingency situation] to determine potential impacts to the reliable operation of the interconnected transmission network." *Id.* P 94. The Inclusions and Exclusions are intended to be clear statements that eliminate discretion in application of the revised BES definition. Thus, sophisticated engineering analysis should not be needed to determine the applicability of the Inclusions and Exclusions, because such an analysis is susceptible to disagreement between reasonable, educated minds. Where an analysis of potential contingencies, rather than simply an examination of historical data, is needed, the exception process should be used.

Similarly, the Commission requests comments on whether Exclusion E3's requirement that power can only flow into the local network and the local network does not transfer energy originating outside the local network for delivery through the network applies in both normal and emergency operating conditions. *Id.* P 98. It is TAPS' understanding that the Standard Drafting Team intended that the applicability of Exclusion E3 be determined based on hourly historical data. Historical emergency operating conditions would thus be considered in an entity's determination of whether

Exclusion E3 applies. If an Element that meets the requirements of Exclusion E3 ought nevertheless to be included in the BES because of a potential contingency, the Element can be included through the exception process.

G. Excepted Facilities List

The NOPR states that, except where an entity asks to be removed from the Compliance Registry, "it is not clear what, if any, notification an entity would provide to NERC or a Regional Entity when the entity self-determines that an element is no longer part of the bulk electric system," and asks whether NERC's proposal should be modified to add a requirement "for the registered entity to inform NERC or the Regional Entity of the entity's self-determination through application of the definition and specific exclusions E1 through E4 that an element is no longer part of the bulk electric system." *Id.* P 124. There is a tension between regulatory certainty—for both the regulator and the registered entity—and the resources that would be involved in Regional, NERC, or FERC staff listing of each BES or non-BES Element. Tracking Elements that are *not* part of the BES would impose enormous staffing and computing costs on both the ERO and registered entities, without contributing to reliability, because by definition these non-BES Elements are not necessary for the reliable operation of the grid.

H. Exception process

The NOPR asks what "additional reforms . . . may be needed to the definition or to the Rules of Procedure to ensure that, over the long term, the facilities necessary to the reliability of the interconnected transmission network are captured in its definition," specifically noting "that while establishing a 'bright-line' threshold of 100 kV has significant advantages, it may not capture all facilities that are necessary for the operation of the interconnected transmission network that fall below that threshold." *Id.* P 106.

The core definition, with its Inclusions and Exclusions, supplemented by the exception process, will ensure that the appropriate set of Elements is included in the BES. It would be unworkably complex to delineate in the core definition the appropriate treatment of every possible configuration. The Standard Drafting Team therefore, with the support of stakeholders, drafted the core definition with Inclusions and Exclusions to cover the majority of situations with bright-line rules that are sufficiently clear and uncontroversial that entities can confidently determine the applicability for themselves without imposing costs on NERC and the Regions to do so. The exception process is designed to, and will, handle the more unusual situations that need to be addressed on a case-by-case basis, including sub-100 kV transmission Elements that are necessary for the reliable operation of the interconnected transmission network.

The NOPR seeks comments on the role FERC and NERC should have in proposing facilities for inclusion in the BES. *Id.* PP 111-12. The purpose of the exception process is to facilitate expert evaluation of Elements that may not be appropriately classified based on the core definition, and to give due process to entities that may be affected by a change in that classification. Therefore, no entity should be permitted to circumvent the exception process and simply designate Elements as BES. If, however, through its investigations, risk assessments, or analysis of events, NERC identifies facilities that should be included in (or excluded from) the BES, it would be appropriate for NERC to have the authority to make such a proposal through the exception process, provided that it implements due process safeguards such as the designation of decisional and non-decisional staff. As FERC is the ultimate adjudicator

of any disputes about the inclusion of Elements in the BES, it would raise due process concerns if FERC were to propose inclusions.

CONCLUSION

For the reasons set forth above, TAPS respectfully requests that the Commission approve the revised BES definition and exception procedure as filed by NERC, without directing changes.

Respectfully submitted,

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