

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Transmission Relay Loadability Reliability Standard)))	Docket No. RM08-13-000
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**REQUEST FOR REHEARING AND CLARIFICATION OF
THE EDISON ELECTRIC INSTITUTE**

Pursuant to Section 313 of the Federal Power Act (“FPA”)¹ and Rule 713 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (“Commission”),² the Edison Electric Institute (“EEI”) respectfully requests rehearing and clarification of the Commission’s March 18, 2010 Order issued in the above-captioned proceeding.³ In the Order, the Commission approves, subject to modification, Reliability Standard PRC-023-1 (Transmission Relay Loadability Reliability Standard) (“PRC-023-1”), as proposed by the North American Electric Reliability Corporation (“NERC”) in its capacity as the Electric Reliability Organization (“ERO”).

On behalf of its member companies, EEI respectfully requests that the Commission grant clarification and rehearing of the Order. EEI is the association of the nation’s shareholder-owned electric utilities and affiliates and associates world-wide. EEI’s members serve ninety-five percent of the ultimate consumers in the shareholder-owned segment of the industry, and represent approximately seventy percent of the U.S. electric power industry. EEI also has more than eighty-one international electric companies as Affiliate members and more than one-

¹ 16 U.S.C. § 8251 (2006).

² 18 C.F.R. § 385.713 (2006).

³ *Transmission Relay Loadability Reliability Standard*, Order No. 733, 130 FERC ¶ 61,221 (2010) (“Order No. 733” or “Order”).

hundred seventy industry suppliers and related organizations as Associate members. Additionally, EEI member companies have responsibility for and a strong commitment to supporting, maintaining, and improving the reliability and security of the North American Bulk-Power System, as demonstrated by EEI member companies' consistent cooperation with the Commission, other Federal and State authorities, and other stakeholders with respect to reliability-related matters. Virtually all EEI members are required to comply with the mandatory electric Reliability Standards established by the ERO and approved by the Commission, pursuant to section 215 of the FPA.

I. BACKGROUND

EEI agrees with the Commission's approval of PRC-023-1 and, in particular, supports the Commission's approval of the "add-in" approach as set forth in PRC-023-1. In addition, EEI appreciates the Commission's clarification regarding the nature of its directives related to the modification of a Reliability Standard. In that regard, the Commission explained in Order No. 733 that its directives should not be so overly prescriptive as to preclude the consideration of viable alternatives.⁴ EEI agrees that the Commission should not be overly prescriptive and believes that it is important that the Commission give due weight to the technical expertise of the ERO as required by FPA Section 215. While supporting these important aspects of Order No. 733, several other aspects of the Order (referenced in the following Statement of Issues) exceed the scope of the Commission's authority by failing to provide due weight to the technical expertise of the ERO and/or being arbitrary and capricious. Accordingly, while EEI fully

⁴ Order No. 733, P 18.

supports key aspects of Order No. 733, the Commission should grant rehearing of the Order so as to provide the clarifications and relief discussed below.

II. STATEMENT OF ISSUES

In accordance with 18 C.F.R. §385.713(c)(1) and (2), EEI respectfully requests rehearing of the Order with respect to the following issues and specifications of error:

1. Whether the Commission failed to comply with the requirement in FPA Section 215 that the Commission “shall give due weight to the technical expertise of the Electric Reliability Organization with respect to the content of a proposed standard or modification to a Reliability Standard” by requiring NERC to either comply with a specific approach proposed by the Commission or propose at least an equivalent alternative approach that is as efficient and effective as the Commission’s proposal. 16 U.S.C. § 824o(d)(2) (2005); *see Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843 (1984) (courts and agencies are to “give effect to the unambiguously expressed intent of Congress.”).

2. Whether the Commission’s directive that NERC develop a test to determine if a facility is “operationally significant” or “critical to the reliability of the bulk electric system” is arbitrary and capricious because it is ambiguous, internally inconsistent, and violates due process. *McElroy Elecs. Corp. v. FCC*, 301 U.S. App. D.C. 81, 990 F.2d 1351, 1358 (D.C. Cir. 1993) (“[W]e look not at the reasonableness of the Commission’s intended interpretation, but at the clarity with which the agency made that intent known.” Further, regulated entities must have “knowledge of requirements established by the Commission, and elementary fairness requires clarity of standards sufficient to apprise an [entity] of what is expected.”); *East Texas Elec. Coop, Inc. v. FERC*, 218 F.3d 750, 754 (D.C. Cir. 2000) (We have consistently rejected agency efforts to bind parties “by what the agency intended, but failed to communicate.” (citing *McElroy Elecs. Corp.*, 990 F.2d 1351); *General Chemical Corp. v. U.S.*, 817 F.2d 844, 857 (D.C. Cir. 1987) (reversing an agency order that was “internally inconsistent”); *Air Line Pilots Ass’n v. FAA*, 3 F.3d 449, 453 (D.C. Cir. 1993) (overturning an order that “presents an interpretation of the [agency’s rules] which is internally inconsistent and therefore unreasonable and impermissible”); *Satellite Broadcasting Co., Inc. v. FCC*, 824 F.2d 1, 3 (D.C. Cir. 1987) (“Traditional concepts of due process incorporated into administrative law preclude an agency from penalizing a private party for violating a rule without first providing adequate notice of the substance of the rule.”); *Trinity Broad. of Fla., Inc. v. FCC*, 211 F.3d 618, 628 (D.C. Cir. 2000); *Affum v. U.S.*, 566 F.3d 1150, 163 (D.C. Cir. 2009) (quoting *Trinity Broad.*, 211 F.3d 618, 628; *General Elec. Co. v. EPA*, 53 F.3d 1324, 1329 (D.C. Cir. 1995) (An agency fails to provide fair notice if the “regulations and other public statements issued by the agency” are so unclear that regulated entities are unable to identify, “with ascertainable certainty, the standards with which the agency expects parties to conform.”); *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (quoting *Burlington Truck Lines, Inc. v. U.S.*, 371 U.S. 156, 168 (1962)) (“Nevertheless, the agency must examine the relevant data and articulate a satisfactory

explanation for its action including a ‘rational connection between the facts found and the choice made.’”)

3. Whether the Commission’s directive that NERC include sub-100 kV facilities within the scope of PRC-023-1 is arbitrary and capricious because the Commission failed to “give due weight to the technical expertise of the Electric Reliability Organization with respect to the content of a proposed standard or modification to a Reliability Standard” as required by FPA Section 215. 16 U.S.C. § 824o(d)(2); *see Chevron*, 467 U.S. at 842-43. And, moreover, whether the Commission failed to engage in reasoned decision-making by not explaining this change in policy. *See, e.g., Motor Vehicle Mfrs.*, 463 U.S. 29, 43 (1983); *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1970).

4. Whether the Commission’s directive that NERC develop a Reliability Standard that requires the use of protective relay systems that can differentiate between faults and stable power swings is arbitrary and capricious. *See Motor Vehicles Mfrs. Ass’n*, 463 U.S. 29, 43 (quoting *Burlington Truck Lines v. U.S.*, 371 U.S. 156, 168 (1962)) (“Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’”).

5. Whether the Commission’s directive that NERC make a specific modification to sub-requirement R1.10 (*i.e.*, to require entities to verify that a limiting piece of equipment is capable of sustaining an anticipated overload for the longest clearing time associated with the fault affecting that equipment) exceeds the Commission’s authority under FPA Section 215 and is not supported by the record. As this requirement would seem to directly force transmission construction, it is also inconsistent with Congress’ express mandate that FPA Section 215 “does not authorize the . . . Commission to order the construction of additional generation or transmission capacity or to set and enforce compliance with standards for adequacy or safety of electric facilities or services.”; 16 U.S.C. § 824o(i)(2); *see Chevron*, 467 U.S. 837, 843 (courts and agencies are to “give effect to the unambiguously expressed intent of Congress.”); And, moreover, whether the Commission has failed to provide a rational explanation for its decision. *See Motor Vehicles Mfrs. Ass’n*, 463 U.S. 29, 43

6. Whether the Commission’s conclusion that Order No. 733 does not adversely affect a substantial number of small entities, as represented in the Commission’s certification under the Regulatory Flexibility Act (“RFA”), constitutes arbitrary and capricious agency action. 5 U.S.C. §§ 601-612 (1996, 1980); *see Chevron*, 467 U.S. 837, 843.

III. REQUESTS FOR REHEARING AND CLARIFICATION

A. **The Commission should clarify that the applicability of generator step-up transformer relay loadability shall be addressed in a Reliability Standard development process that is separate from PRC-023-1.**

EEl supports NERC’s request for clarification and, in the alternative, request for rehearing of Order No. 733 that is being contemporaneously filed in this docket. Among other

things, EEI agrees with NERC's arguments regarding the applicability of generator step-up transformer relay loadability in a Reliability Standard other than PRC-023-1. As explained by NERC, whether a relay is subject to PRC-023-1 or a new Reliability Standard should be based upon the location at which the relay is applied.

However, confusion has been created by the Order stating that generator step-up and auxiliary transformer loadability may be addressed in a separate Reliability Standard,⁵ but then clarifying that PRC-023-1 covers relays on the low-side of a generator step-up transformer that are applied to provide back-up protection for a bulk power system element.⁶ This clarification relates to "relays that are applied to provide back-up protection to Bulk-Power System elements and that would send increased current flow due to a fault on a Bulk-Power System transmission circuit."⁷ These relays would see increased current flow due to a fault, but their purpose is to provide thermal protection for the generator and back-up protection for the generator step-up transformer, not the connected transmission lines. As such, PRC-023-1 is not the appropriate standard for these relays. Accordingly, EEI requests that the Commission clarify that the applicability of generator step-up transformer relay loadability shall be addressed in a Reliability Standard development process that is separate from PRC-023-1.

⁵ Order No. 733, P 104.

⁶ *Id.*, P 113. See *General Chemical Corp.*, 817 F.2d 844, 857 (reversing an agency order that was "internally inconsistent"); *Air Line Pilots Ass'n*, 3 F.3d 449, 453 (overturning an order that "presents an interpretation of the [agency's rules] which is internally inconsistent and therefore unreasonable and impermissible").

⁷ Order No. 733, P 113.

B. The Commission’s directive that NERC modify Reliability Standard PRC-023-1 in a prescribed manner, or in the alternative, in an approach equally as effective and efficient as the Commission’s proposed modification constitutes arbitrary and capricious agency action.

In the Order, the Commission declines to direct NERC to adopt the “rule out” approach as proposed in the NOPR for determining which facilities operated or connected between 100 kV and 200 kV are subject to the requirements of PRC-023-1.⁸ Rather, the Commission directs NERC to adopt the “add in” approach to identify facilities between 100 kV and 200 kV that are critical to the reliability of the Bulk-Power System.⁹ EEI appreciates the Commission’s responsiveness to the industry’s concern with the “rule out” approach and its adoption of the much better alternative, the “add in” approach.

In adopting the “add in” approach, the Commission directs NERC to “modify Requirement R3 of the Reliability Standard to specify the test that planning coordinators must use to determine whether a sub-200 kV facility is critical to the reliability of the Bulk-Power System.”¹⁰ In directing NERC to modify PRC-023-1 to specify a test for identifying critical sub-200 kV facilities, the Commission provides NERC with “sufficient guidance so that the ERO has an understanding of the Commission’s concerns and an appropriate, but not necessarily exclusive, outcome to address those concerns.”¹¹ The Commission states that

the ERO must develop a test that: (a) defines expectations of desirable system performance; and (b) describes the steady state and dynamic base cases that the planning coordinator must use in its assessments to carry out Requirement R3. The goal of the test must be consistent with the general reliability principles embedded in the existing series of TPL, Transmission Operations (TOP),

⁸ Order No. 733, P 47.

⁹ *Id.*

¹⁰ *Id.*, P 69.

¹¹ *Id.*, P 71 (*quoting* Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 185).

Reliability Coordination (IRO), and Protection and Control (PRC)
Reliability Standards.¹²

EEI is concerned that if NERC does not adopt the Commission's proposed method for addressing an issue, NERC must propose an approach that is as "equally efficient and effective" as the approach proposed by the Commission. In essence, the Commission's guidance establishes a rebuttable presumption that the Commission's proposed approach is the correct approach and that it efficiently and effectively addresses the underlying concern or goal.¹³ The Commission's establishment of such a requirement is arbitrary and capricious because it is inconsistent with the unambiguous requirement in Section 215 of the Federal Power Act that:

The Commission shall give due weight to the technical expertise of the Electric Reliability Organization with respect to the content of a proposed standard or modification to a reliability standard¹⁴

Instead of giving due weight to the technical expertise of the ERO with respect to the content of a standard, the Commission is establishing what the content of the Reliability Standard should be and requiring that any ERO proposed alternative must, in the Commission's view, adequately address the Commission concerns and goals "as efficiently and effectively" as the Commission's proposal. This process is contrary to the foregoing Congressional directive, which conclusion is reinforced by statements from the U.S. Senate regarding the establishment of FPA Section 215

[t]he amendment, instead, establishes a participant-run, FERC-overseen electric reliability organization. This is key to this whole amendment and this whole direction. It is a blend of Federal oversight along with industry expertise.¹⁵

¹² Order No. 733, P 80.

¹³ *Id.*, P 18.

¹⁴ 16 U.S.C. § 824o(d)(2); *see Chevron*, 467 U.S. 837, 843 (courts and agencies are to "give effect to the unambiguously expressed intent of Congress.").

¹⁵ Congressional Record, March 14, 2002, at S1873.

Further, it may be difficult for the ERO to develop an alternative proposal if the ERO and the Commission have a different understanding of a reliability concern or goal. For example, with regard to PRC-023-1, the Commission and NERC appear to have different understandings regarding certain aspects of the August 14, 2003 blackout (“2003 Blackout”) and the findings set forth in the US-Canada Final Blackout Report.¹⁶ While the Commission and NERC want to address transmission relay loadability and ensure the reliability of the Bulk-Power System, this task is made more difficult for NERC by these different understandings. In relevant part, the Final Blackout Report concludes that:

- Thirteen important 345 kV and 138 kV lines tripped offline during a four-minute time span just prior to the rapid and widespread geographic acceleration of the cascading event. The system remained thermally stable during these minutes.¹⁷
- These lines tripped because of relays that operated exactly as they were programmed. The relays operated without time delay, that is, they were not programmed to delay their operation.¹⁸
- These relays acted so quickly that they impeded the natural ability of the system to hold together, and did not allow for any operator intervention.¹⁹
- This set of relay operations are described as the “common mode of failure” in accelerating the geographic spread of the cascade.²⁰
- If these lines had not tripped so quickly and this period of deterioration and overloading under stable conditions for as little as 15 minutes or as much as an hour, it is possible that growing problems could have been recognized and action taken.²¹

¹⁶ U.S.-Canada Power System Outage Task Force, Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations (2004) (“Final Blackout Report”).

¹⁷ *Id.*, p. 80.

¹⁸ *Id.*, pp. 80, 90.

¹⁹ *Id.*, p. 80.

²⁰ *Id.*

²¹ *Id.*, p.82.

- Relay operations did not cause the final cascade, however, “it is certain that they greatly expanded and accelerated the spread of the cascade.”²²

Thus, EEI understands these events as pointing to transmission relay loadability as an important factor in the sequence of events on August 14, 2003, which NERC addresses with PRC-023-1. While all the facts and analyses are not publicly available, it does appear that if PRC-023-1 had been in place and these relays had been programmed to delay their operations for even a few minutes, system operators would likely have had time to consider other operational decisions that could have prevented or mitigated the rapid acceleration of the cascade.

However, Order No. 733, at least at times, appears to characterize transmission relay loadability as a non-critical issue in the 2003 Blackout. Instead, Order No. 733 provides that the cascade of 138 kV lines was “precipitated by faults caused by tree contact, and not protective relays” and that it would not have been prevented if PRC-023-1 had been in place before the blackout.²³ While it may be true that a tree contact precipitated the events on August 14, the Final Blackout Report provides that relay loadability was a critical issue in the events of that day because the operation of the relays “greatly expanded and accelerated the spread of the cascade.”²⁴ Because of these basic differences it may be very difficult for NERC to develop an alternate approach.

²² *Id.*

²³ Order No. 733, P 52.

²⁴ Final Blackout Report, p.82.

C. The Commission’s directive that NERC develop the test to determine if a facility is “operationally significant” or “critical to the reliability of the bulk electric system” is ambiguous, internally inconsistent, and violates due process.

EEI appreciates the Commission’s holding in Order No. 733 that it will not apply the “opt-out” approach, but instead will adopt an “add-in” approach to determine which facilities between 100 and 200 kV are subject to the standard. However, and as just discussed, the Commission is required to give due weight to NERC’s technical expertise and should, thus, permit NERC to develop, based upon any concerns or general guidance provided by the Commission, the test to determine if a facility is “critical to the reliability of the bulk electric system” or “operationally significant”.²⁵ Importantly, this flaw in the Order is compounded by the “specific guidance” that it prescribes being ambiguous, internally inconsistent, violative of due process and as such, is arbitrary and capricious.

In Order No. 733, the Commission directed NERC to develop a test that “(a) defines expectations of desirable system performance; and (b) describes the steady state and dynamic base cases that the planning coordinator must use in its assessments to carryout Requirement R3.”²⁶ With regard to “desirable system performance”, the Commission stated that

the first component of desirable system performance that the test must seek to maintain is the continuity of all firm load supply except for supply directly served by the faulted facility. In other words, it is the Commission’s view that the test must identify facilities necessary to achieve the reliability performance for Category B and Category C contingencies—*which would include no non-consequential load loss (for Category B) and no cascading outages (for Category B and Category C) for all stable operating conditions.*²⁷

²⁵ Order No. 733, P 74.

²⁶ *Id.*, P 80.

²⁷ *Id.*, P 81 (emphasis added).

However, these statements are inconsistent with an important aspect of Reliability Standard TPL-002-0.²⁸ Contrary to the above-quoted language, TPL-002-0, footnote b provides that certain firm load losses (*i.e.*, non-consequential load loss) in a local network are permissible. Thus, the Commission’s statement is incorrect as being inconsistent with that standard. Further, the Commission directed NERC to clarify footnote b in FERC Docket No. RM06-16-009 by June 30, 2010.²⁹ Therefore, if the above quoted language is more than oversight and provides the Commission’s assumption of how the NERC process will conclude, it is simply inappropriate. In doing this, the Commission is prescribing a specific modification to Reliability Standard TPL-002-0. Such an implicit description of the outcome essentially contravenes the requirements of FPA Section 215 by depriving NERC of the ability to develop a clarification to TPL-002-0.³⁰

In addition, P 83 provides that the “curtailment of firm transfers is permitted to prepare for the next contingency.” This statement is consistent with TPL-002-0, footnote b. However, the Commission then states that curtailments are “generally not the desired system performance for single contingencies” and concludes that the “continuity of all firm transfers is the third component of desirable system performance.” The Commission’s conclusion appears to contradict TPL-002-0, footnote b by precluding the interruption of firm transfers to prepare for the next contingency. At a minimum, the Commission should have stated that the “continuity of all firm transfers be consistent with the TPL standards.”

²⁸ *Id.*

²⁹ *Mandatory Reliability Standards for the Bulk Power System*, Order Setting Deadline for Compliance, 130 FERC ¶ 61,200 (2010).

³⁰ *Compare with* 16 U.S.C. § 824o(c)(2)(D) (requiring that the ERO to “provide for reasonable notice and opportunity for public comment, due process, openness, and balance of interests in developing reliability standards and otherwise exercising its duties”).

With regard to “describ[ing] the steady state and dynamic base cases that the planning coordinator must use in its assessments to carryout Requirement R3”, the Commission states that “the ERO must develop a test that ... describes the steady state and dynamic base cases.”³¹ However, Reliability Standard PRC-023-1 applies only to *steady state* loadability of transmission relays. It does not apply to *dynamic* swings which may get into relay characteristics. As a result, dynamic base cases should not be used to determine “critical” and “operationally significant” facilities under PRC-023-1.

P 87 provides that “initiating events that represent all feasible types and locations of faults, including evolving faults must be simulated in each of the fundamental base case categories to determine the performance of the system.” The Commission adds that base case categories in the application of a test to identify critical facilities “must ... [i]nclude all stable operating conditions and allowable topologies.”³² It is very impractical, and practically impossible, to include all possible operating conditions and topologies. In addition, Order No. 733 appears to contradict this directive when it acknowledges that not every possible condition and topology needs to be studied.³³ Therefore, including all stable operating conditions and allowable topologies should not be a requirement. At a minimum, the Commission should make this requirement consistent with the TPL Reliability Standards which require the planning

³¹ Order No. 733, P 80, 85 (emphasis added).

³² Order No. 733, P 88, item (2).

³³ See e.g., *Id.*, P 95 (the Commission does “not conclude that the applicability of PRC-023-1 should be determined based on Category D contingencies,” stating an understanding that relay settings cannot be determined with great certainty for extreme multi-contingency conditions.); P 168 (“We realize that relays cannot be set reliably under extreme multi-contingency conditions covered by the Category D conditions of the TPL Reliability Standards.” ... The Commission, citing to Order No. 693, P 1706, “stated that it is not realistic to expect the ERO to develop Reliability Standards that anticipate every conceivable critical operating condition applicable to unknown future configurations for regions with various configurations and operating characteristics.”); See *General Chemical Corp.*, 817 F.2d 844, 857 (reversing an agency order that was “internally inconsistent”); *Air Line Pilots Ass’n*, 3 F.3d 449, 453 (overturning an order that “presents an interpretation of the [agency’s rules] which is internally inconsistent and therefore unreasonable and impermissible”).

coordinator to “cover critical system conditions and study years as deemed appropriate by the responsible entity.”³⁴

Further, the Commission stated in P 88, item 4 that the base case categories “[i]nclude the effects of a *failure* of a single component within the as designed Protection Systems, consistent with TPL-002-0 Requirement R1.3.10” (emphasis added). However, TPL-002-0 does not address protection system failures. Instead, failures are addressed in standards TPL-003-0 and TPL-004-0.³⁵

In addition, other aspects of the Commission’s guidance are ambiguous and internally inconsistent. For example, with regard to an ambiguity, in P 56 the Commission requires responsible entities to validate relay settings on “system conditions that the relays could experience,” including acceptable margins applied to minimum voltages and power factor angles, and if this is not done, companies “may not achieve the reliability goals intended by the standard.” However, Order No. 733 does not explain what the “system conditions” that “could” be experienced are and does not explain what the “reliability goals” that are to be achieved by PRC-023-1.

Order No. 733 is internally inconsistent when it provides that the test to determine the applicability of sub-200 kV facilities “must include or be consistent with system simulations and assessments that are required by the TPL Reliability Standards and meet the system performance levels for all Categories of Contingencies used in transmission planning.”³⁶ However, Order No. 733 also provides that Category D contingencies are not required to be performed, based on the

³⁴ NERC Reliability Standards TPL-001-0 through TPL-004-0, Requirement R1.3.2.

³⁵ In fact, whether protection relay failure should be considered in TPL-002 is the subject of Docket No. RM10-6 issued on March 18, 2010. Comments are due on May 10, 2010.

³⁶ Order No. 733, P 79.

understanding that relay settings cannot be determined with great certainty for extreme multi-contingency conditions.³⁷

In addition, the Commission rejected a proposal requesting, in order to address physical differences in network topology, design and performance, to allow each region to develop an approach to identify critical facilities. The Commission stated that “the test set forth above is best implemented uniformly across all regions.”³⁸ However, the Commission acknowledged that some issues may not affect some utilities as a result of physical difference in network design and performance.³⁹ Therefore, the Commission’s directive is internally inconsistent and is ambiguous.

In P 94 the Commission noted that radial transmission facilities serving load with only one transmission source are not included in the NERC definition of “bulk electric system.” However, Requirement R1.10 of PRC-023-1 applies to “transmission lines terminated only with a transformer.” As a result this aspect of Order No. 733 appears to be internally inconsistent.

Therefore, Order No. 733 is arbitrary and capricious because the test to determine whether a facility is operationally significant is ambiguous,⁴⁰ internally inconsistent,⁴¹ and violates due process.⁴²

³⁷ *Id.*, P 95.

³⁸ *Id.*, P 92.

³⁹ Order No. 733, PP 157-158. *See also*, P 168 (The Commission, citing to Order No. 693, P 1706, “stated that it is not realistic to expect the ERO to develop Reliability Standards that anticipate every conceivable critical operating condition applicable to unknown future configurations for regions with various configurations and operating characteristics.”)

⁴⁰ *McElroy Elecs. Corp.*, 990 F.2d 1351, 1358 (“[W]e look not at the reasonableness of the Commission’s intended interpretation, but at the clarity with which the agency made that intent known.”). *East Texas Elec. Coop.*, 218 F.3d 750, 754 (We have consistently rejected agency efforts to bind parties “by what the agency intended, but failed to communicate.” (citing *McElroy Elecs. Corp.*).

⁴¹ *General Chemical Corp.*, 817 F.2d 844, 857 (reversing an agency order that was “internally inconsistent”); *Air Line Pilots Ass’n*, 3 F.3d 449, 453 (overturning an order that “presents an interpretation of the [agency’s rules]

D. The Commission’s directive to include facilities below 100 kV within the scope of PRC-023-1 is inconsistent with FPA Section 215 and thus arbitrary and capricious.

Order No. 733 adopts the NOPR proposal to direct NERC to

modify PRC-023-1 to apply an “add in” approach to sub-100 kV facilities that are owned or operated by currently-Registered Entities or entities that become Registered Entities in the future, and are associated with a facility that is included on a critical facilities list defined by the Regional Entity.⁴³

The Commission’s directive that NERC extend applicability of PRC-023-1 to critical sub-100 kV facilities is arbitrary and capricious because the Commission failed to provide a reasoned explanation for its change in policy.⁴⁴ Moreover, the Commission has failed to provide a technical basis for its determination, but simply states that the loss of sub-100 kV facilities “can also affect the reliability of the Bulk-Power System.”⁴⁵

The Commission states that NERC is free to propose an alternative approach for sub-100 kV facilities that meets the Commission’s “concerns;” however, the Commission fails to identify any specific concerns with transmission relay loadability requirements being inapplicable to sub-100 kV facilities. Indeed, the Final Blackout Report provides no evidence that transmission

which is internally inconsistent and therefore unreasonable and impermissible”).

⁴² See, e.g., *Satellite Broadcasting Co.*, 824 F.2d 1, 3 (“Traditional concepts of due process incorporated into administrative law preclude an agency from penalizing a private party for violating a rule without first providing adequate notice of the substance of the rule.”); *Trinity Broad.*, 211 F.3d 618, 628; *McElroy Elecs. Corp.*, 990 F.2d 1351, 1358 (Further, regulated entities must have “knowledge of requirements established by the Commission, and elementary fairness requires clarity of standards sufficient to apprise an [entity] of what is expected”); *Affum*, 566 F.3d 1150, 1163 (An agency fails to provide fair notice if the “regulations and other public statements issued by the agency” are so unclear that regulated entities are unable to identify, “with ascertainable certainty, the standards with which the agency expects parties to conform.”)

⁴³ Order No. 733, P 60.

⁴⁴ See *Motor Vehicles Mfrs. Ass’n.*, 463 U.S. 29, 43 (quoting *Burlington Truck Lines*, 371 U.S. 156, 168). (“Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’”)

⁴⁵ Order No. 733, P 67.

relay loadability issues related to sub-100 kV facilities could (1) initiate or sustain a cascading event, or (2) cause or sustain instability or system separation -- the events that FPA Section 215 states are avoided if the Bulk-Power System is being reliably operated.⁴⁶ Furthermore, the Commission provides no analyses, studies, or results of system modeling activities to support the inclusion of sub-100 kV facilities within the scope of PRC-023-1. As such, the Commission has failed to provide a reasoned explanation for this change in policy or to make a rational connection between the facts found in this proceeding and the choice made by the Commission. Thus, the requirement to include sub-100 kV facilities in PRC-023-1 is arbitrary and capricious.

E. The Commission’s directive that NERC develop a Reliability Standard that requires the use of protective relay systems that can differentiate between faults and stable power swings is arbitrary and capricious.

As part of the Transmission Relay Loadability NOPR, the Commission acknowledged that relays cannot distinguish between actual faults and stable power swings.⁴⁷ However, the Commission explained that “there are several protection applications and relays that are less susceptible to transient or dynamic power swings” that “mitigate relay susceptibility to power swings.”⁴⁸ As a result, the Commission concluded that “the use of protective relay systems that cannot differentiate between faults and stable power swings constitutes mis-coordination of the protection system and is inconsistent with entities’ obligations under existing Reliability

⁴⁶ Under FPA Section 215, the term reliable operation is defined as “operating the elements of the bulk-power system within the equipment and electric system thermal, voltage, and stability limits so that instability, uncontrolled separation, or cascading failures of such system will not occur as a result of a sudden disturbance, including cybersecurity incident, or unanticipated failure of system elements. (emphasis added).

⁴⁷ *Transmission Relay Loadability Reliability Standard*, 127 FERC ¶ 61,175, P 59 (2009) (“NOPR”).

⁴⁸ *Id.*

Standards.”⁴⁹ In addition, the Commission directed NERC to include in the new standard provisions that would require the phasing out of existing electromechanical relays.⁵⁰

However, the Commission’s directives that NERC develop a Reliability Standard that can differentiate between faults and stable power swings, and eliminate electromechanical relays, are arbitrary and capricious.⁵¹ The Commission’s directive and explanation is internally inconsistent and ambiguous because relays cannot distinguish between actual faults and stable power swings and, at best, some protection schemes “are demonstrably *less susceptible* to operating unnecessarily because of stable power swings.”⁵² Thus, it does not appear that a Reliability Standard that requires the use of protective relay systems that can differentiate between faults and stable power swings can be developed at this time. In addition, the Commission provides no reasoning for its conclusion on electromechanical relays.

Next, the record in this docket does not support the conclusion that a mandatory Reliability Standard is needed to address protective relays and stable power swings.⁵³ For example, while the NERC System Protection and Control Task Force (SPCTF) has reported that relays should not trip inadvertently, there has been no thorough and systematic research performed on the exact nature and scope of any problems, or even if any problems exist that need to be addressed through a mandatory Reliability Standard. Thus, because neither the totality of

⁴⁹ Order No. 733, P 130.

⁵⁰ *Id.*, P. 150.

⁵¹ *McElroy Elecs. Corp.*, 990 F.2d 1351, 1358 (“[W]e look not at the reasonableness of the Commission’s intended interpretation, but at the clarity with which the agency made that intent known.” Further, regulated entities must have “knowledge of requirements established by the Commission, and elementary fairness requires clarity of standards sufficient to apprise an [entity] of what is expected.”); *General Chemical Corp.*, 817 F.2d 844, 857 (reversing an agency order that was “internally inconsistent”).

⁵² Order No. 733, P 130 (emphasis added).

⁵³ *Id.*, P 150. *See Motor Vehicles Mfrs. Ass’n.*, 463 U.S. 29, 43 (quoting *Burlington Truck Lines*, 371 U.S. 156, 168). (“Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’”).

the record in this proceeding nor the Final Blackout Report supports the Commission's conclusion, and because the Commission has not provided sufficient technical analysis to support its conclusions, the Commission's directives are not supported by substantial evidence and are arbitrary and capricious.⁵⁴

In addition, the Commission failed to give "due weight to the technical expertise" of NERC as required by FPA Section 215 in reaching its conclusion that a mandatory Reliability Standard was needed. NERC explained in its comments to the NOPR that there are significant challenges present in understanding the influence of stable power swings on protective relay systems.⁵⁵ In addition, many other commenters described the inherent technical difficulties in this very challenging area of Bulk-Power System planning and operations. In fact, the comments provided in this docket do not provide a clear consensus on either: (a) the nature and scope of the problem; (b) or the solution available through the applicability of a mandatory Reliability Standard.

Finally, the Commission stated that more than six years have passed since the 2003 Blackout and that there is still no mandatory Reliability Standard in place to address relays tripping as a result of stable power swings.⁵⁶ This statement mischaracterizes the complexity of the issues involved and the efforts NERC and the industry have expended in analyzing this issue and the technology that is available to address this issue. By dismissing the comments of NERC and other stakeholders, the Commission has given *no* weight to the technical expertise of the

⁵⁴ See *Motor Vehicles Mfrs. Ass'n.*, 463 U.S. 29, 43 (quoting *Burlington Truck Lines*, 371 U.S. 156, 168) ("Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'").

⁵⁵ Comments of The North American Electric Reliability Corporation in Response to Notice of Proposed Rulemaking, p. 24-25 (August 17, 2009).

⁵⁶ Order No. 733, P 153.

ERO. In failing to do so, the Commission has completely dismissed the enormous volume of work performed by NERC with regard to this set of extremely complex and technical issues, including its timely development and approval of PRC-023-1 through the Commission-approved Reliability Standards development process.

F. The Commission’s directive that NERC modify Requirement R1.10 in a prescribed manner constitutes arbitrary and capricious agency action.

In Order No. 733, the Commission directs NERC to make a specific modification to sub-requirement R1.10, *i.e.*, to require entities to verify that a limiting piece of equipment is capable of sustaining an anticipated overload for the longest clearing time associated with the fault affecting that equipment.⁵⁷ The Commission also mandates that further requirements be added to Requirement R1.10 concerning topology, transformer capability, and transformer failure.⁵⁸ The specific modifications directed by the Commission exceed the Commission’s authority under FPA Section 215 and are not supported by the record. In addition, the Commission has failed to provide a rational explanation for its decision.

Initially, contrary to the Commission’s acknowledgement that it may not set and enforce compliance with standards for safety, the direction requiring companies to “verify” that equipment is capable of withstanding an anticipated overload for the longest clearing time associated with that overload suggests both safety and liability issues, and not a reliability issue. As such, the Commission’s action exceeds its authority under FPA Section 215.⁵⁹ In addition, the terms “verify” and “longest clearing time associated with a fault” may be reasonably

⁵⁷ *Id.*, P 203.

⁵⁸ *Id.*, P 210.

⁵⁹ 16 U.S.C. § 824o(i)(2) ([FPA Section 215] “does not authorize the ... Commission to order the construction of additional generation or transmission capacity or to set and enforce compliance with standards for adequacy or safety of electric facilities or services.”).

interpreted to mean a number of things and hence is overly ambiguous. Further, the Commission argues that not applying system protections as it proposes would result in a “degradation of system reliability.”⁶⁰ However, the Commission offers no technical analysis or evidence to support this conclusory statement.

Finally, while the Commission properly agreed that “manual mitigation of thermal overloads is best left to system operators”, the Commission should clarify that mitigation of thermal overloads is beyond the scope of PRC-023-1.⁶¹

G. The Commission should clarify its decision regarding Section 3.1 in Attachment A.

Section 3 of Attachment A of PRC-023-1 provides a list of protective systems that are expressly excluded from the standard’s requirements.⁶² In the NOPR the Commission stated that it could not determine whether these exclusions are justified.⁶³ The Commission concluded in Order No. 733 that it would not direct the ERO to remove the exclusions from Section 3 except for the exclusion of supervising relay elements in Section 3.1.⁶⁴ Instead, the Commission directed the ERO to revise Section 3 to specifically include supervising relay elements on the list of systems that are specifically subject to PRC-023-1.⁶⁵ The Commission states that it is not prescribing the “specific change as an exclusive solution to our reliability concerns regarding the exclusion of supervising relay elements.”⁶⁶ EEI understands that the concern is that protective

⁶⁰ Order No. 733, P 210.

⁶¹ *Id.*, P 212.

⁶² *Id.*, P 238.

⁶³ *Id.*, P 250.

⁶⁴ *Id.*, P 264.

⁶⁵ *Id.*

⁶⁶ *Id.*

relays are “dependable and secure,” that is, they operate correctly when required to clear a fault and refrain from operating unnecessarily.⁶⁷

EI seeks clarification of the underlying concern and alternatively requests that the Commission reverse its decision for the reasons set forth below. Specifically, the Commission states that protective relays must be dependable and secure, and must operate correctly when required to clear a fault and refrain from operating unnecessarily.⁶⁸

Importantly, dependability and security are not additive features, but rather, they tend to be mutually exclusive in complex protective schemes. Increasing dependability takes place by ensuring that breakers trip during a fault, which takes place largely at the expense of security because relays will trip more frequently than needed. Similarly, increasing security can reduce dependability. Therefore, the Commission should also clarify its statement that protective relays must be “dependable and secure.”⁶⁹ This clarification is important if NERC is to reasonably respond to the Commission’s direction and will assist NERC in addressing the reliability concerns, including determining if there is a more efficient and effective method that may be proposed by NERC.

Historically, protection engineers have been biased toward dependability for good reason -- to ensure the safety of people and equipment. The exclusions in Section 3.1 of Attachment A allow that to happen. These are contingency scenarios, where protective schemes are compromised due to loss of a voltage input or a failed communication channel. For a second contingency, where voltage input is lost and a fault occurs, dependability is at risk if fast tripping

⁶⁷ *Id.*, P 269. The Commission refers to NERC Planning Standards III document in addressing this issue.

⁶⁸ *Id.*

⁶⁹ *Id.*

is not employed. Therefore, by removing the exclusion in Section 3.1, reliability could be harmed. For example, an operational decision to open breakers will be needed for loss of potential, as opposed to the operator likely leaving the element in service with fast tripping enabled for a fault with the exclusion in Section 3.1. Therefore, the Commission should clarify what it means by “dependable and secure,” with the optimal alternative being for the Commission to simply grant rehearing on this issue and reverse its decision.

H. The Commission erred in certifying that Order No. 733 will not have a significant economic impact on a substantial number of small entities.

The Commission concluded in Order No. 733 that the “Final Rule will not have a significant economic impact on a substantial number of small entities.”⁷⁰ Accordingly, the Commission certified that Order No. 733 complies with the Regulatory Flexibility Act.⁷¹ EEI believes that the reasoning underlying this certification is invalid, and thus seeks rehearing. EEI believes that to fully comply with the Commission’s directives in this Order, a substantial number of small entities in the United States will be required to spend significant monies for: (1) employing engineers to perform studies for determining applicability of PRC-023-1; and (2) the capital cost of replacement existing terminals, and associated operating and maintenance expenses.

First, based upon the collective experience and engineering expertise of EEI’s membership, the industry would need to employ approximately 200 additional planning and relay engineers to perform all of the studies for determining applicability under PRC-023-1 and all of the studies and tests to support decisions on whether replace or reconfigure relays in accordance with a new standard on stable power swings. EEI believes that a realistic basic

⁷⁰ *Id.*, P 344.

⁷¹ 5 U.S.C. §§ 601-612.

salary for this type of technical expertise nationwide is approximately \$125,000 annually. This salary must then be grossed up another 35 percent for non-salary benefits such as insurance and other employee benefits. This totals \$33,750,000 annually, that is, $200 \times 125,000 \times 1.35 = \$33,375,000$. In addition, EEI believes that these professionals would, at a minimum, require office space and support staff, and computer hardware and software, in an amount roughly equal to the initial amount, that is, another \$33,750,000. Since many companies do not have in-house technical expertise to conduct this type of work, EEI notes that the use of consultants and consulting firms would significantly increase these estimates.

Second and most importantly, EEI maintains the estimates included in its initial comments in this docket, that projects the capital cost of replacement of existing terminals would be approximately \$2.4 billion. While the Commission states that its rejection of its own proposal for the “rule out” approach renders the EEI cost estimate irrelevant,⁷² the Commission states elsewhere in Order No. 733⁷³ that the determination of applicability of the standard under either the “rule out” approach or the “add-in” approach would achieve the same result as contemplated by the NOPR. In addition to the estimates made in initial comments EEI adds an additional \$100,000,000 for annual operating and maintenance expenses to support studies and modeling, and field maintenance and testing of the new replacement relays that would be added.

In addition, development of a more robust and sophisticated model capable of producing meaningful results in support of a new standard to address relay operations and stable power swings is a formidable and expensive set of tasks. This necessity would include identifying the dynamic system conditions that exist throughout a range of stable and dynamic power swings

⁷² Order No. 733, P 327.

⁷³ *Id.*, P 50.

and would therefore require extensive modeling of all generators that can be connected to the Bulk Power System. For this model to be meaningful at predicting relay operations, it would need to be validated against actual system response, as was done for analysis supporting the Final Blackout Report. This task alone would require detailed testing and measuring of all of the excitation and governors systems on all generating units in the United States.

This testing must be performed with the unit online, that is, power plants connected to the grid, and would require various “ramp ups” and “ramp downs” during various system conditions in order to capture the unit’s responses to various operational variables. These system conditions would need to include such variables as multiple system loadings and system configurations, which are the various contingencies that the standard would need to address. This testing could involve development of data sets for a minimum of several tests to be performed at each generator unit over a multi-year period. While these tests are being performed, other generation will be affected, precluding the economic dispatch of generation. The costs associated with the loss of economic dispatch during the estimated five years could be represented by simply adding a 10 percent increment to nationwide expense for fuel consumed by the thermal power plant fleet. In addition, any errors in test procedure development or performance could have significant impacts on Bulk Power System reliability, including loss of retail load.

EEI roughly envisions that the costs of developing and conducting the tests for each generator unit would be approximately as follows:

- **Test development:** 4 fulltime equivalents (full-time equivalents (FTEs)) x 120 hours (one transmission operator, one generator operator, two test engineers)
- **Test performance:** 5 FTEs x 80 hrs (same plus another generator operator)

- **Test Report:** 2 FTEs x 80 hrs (two engineers)
- **Model Development:** 2 FTEs x 80 (two engineers) this is addition to the above. The above runs the model after it is developed.

Each generator unit would require approximately 1200 FTE professional time, and associated clerical and administrative support. Since these are tasks and tests that are not currently conducted by the electric industry, these are new expenses not currently absorbed within the industry. In addition, significant generic costs would be incurred to develop data collection, data communication, data management, and the associated security and CEII protections.

In making these estimates and with reference to the issue of developing a standard to address stable power swings, EEI notes the comments of Exelon Corp. in this docket, where the company indicates that it has never experienced in the history of the (combined Commonwealth Edison Co. and Philadelphia Electric Co.) company the type of activity (relay misoperation on a stable power swing) for which the Commission directs to develop a mandatory standard. EEI believes that the Exelon experience is much more the rule than the exception with regard to this issue. Moreover, EEI points out that the FPL event was not initiated by a relay failure or the actions of 138 kV transmission facilities; rather, it was initiated by an employee who disregarded clear and explicit company operating procedures. It is difficult for EEI to understand the Commission's direction to the electric industry to undertake such significant capital and operating expenditures that may not address actual Bulk-Power System reliability problems.

A final observation, EEI notes that the development of this kind of support activity would be for addressing the potential for a transmission line to trip offline during an overloaded condition when the Bulk Power System is otherwise "healthy." This direction does not consider the likelihood that an overloaded line may have a reasonable likelihood of tripping offline for a

variety of reasons, including vegetation contact. In other words, the Commission direction regarding stable power swings in Order No. 733 is equivalent to asking the electric industry to insure against a highly unlikely event that has few, if any, consequences, for Bulk Power System reliability or Reliable Operation, and plainly contrary to the specifications for Reliability Standards as set forth under Section 215. Therefore, the Order's conclusion in this regard not only fails to satisfy the requirements of the Regulatory Flexibility Act, but the Order is also arbitrary and capricious by failing to reasonably consider significant aspects of its pursued course of regulatory action in that it fails to seriously consider the magnitude of its impacts, costs, and burdens upon the electric industry and, ultimately, consumers.

IV. CONCLUSION

For the reasons stated herein, EEI respectfully requests that the Commission grant this request for clarification and rehearing.

Respectfully submitted,

/s/

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April 19, 2010

CERTIFICATE OF SERVICE

I hereby certify that I have, this the nineteenth day of April 2010, served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

/s/ Barbara A. Hindin

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