

June 15, 2023

VIA ELECTRONIC FILING

Utah Public Service Commission
Heber M. Wells Building, 4th Floor
160 East 300 South
Salt Lake City, UT 84114

Attention: Gary Widerburg
Commission Secretary

RE: **Docket No. 23-999-09 – Proposed Rulemaking Regarding Utah Code Title 54,
Chapter 25, Electrical Power Delivery Quality Act**
Rocky Mountain Power Reply Comments

On March 17, 2023, the Public Service Commission of Utah (the “Commission”) issued a notice in the above referenced docket establishing comment and reply comment deadlines (“Notice”). The Commission is required to consult with qualified utilities, utility-scale electricity providers and other state agencies to create rules pursuant to H.B. 389, Electrical Power Delivery Quality Amendments (“HB 389”), which was passed by the Utah Legislature during the 2023 Utah General Session. In the Notice, the Commission requested comments from interested parties to promulgate rules:

- (1) Establishing the submission of an electrical power delivery quality plan;
- (2) Establishing procedures for the review of an electrical power delivery quality plan;
- (3) Establishing the procedures for the review of the implementation of an electrical power delivery quality plan; and
- (4) Any other rules that the PSC determines are necessary to protect the public interest and to implement Utah Code Title 54, Chapter 25.

On May 1, 2023, comments were submitted by Rocky Mountain Power (“RMP” or the “Company”), Division of Public Utilities (“Division”), and the Utah Rural Electric Cooperative Association, including Dixie Power (“URECA”). In accordance with the Notice, the Company submits its reply comments.

Comments of the Division

In comments, the Division recommends that the Commission consider Utah Administrative Code R746-313, Electric Service Reliability, as the foundation for this proposed rulemaking, taking into consideration Institute of Electrical and Electronics Engineers (“IEEE”) Standard 1159-2019 and Federal Energy Regulatory Commission (“FERC”) Standard 1846. The Division also recommends that the reporting be similar to the reporting template approved by the Commission in Docket No. 22-035-34 (“PQ Docket”).

The Company agrees that the reporting requirements should be similar to the template approved in the PQ Docket, however the Company notes that the rules should allow for flexibility for potential changes and enhancements to the report over time.

The Division proposes that the proposed rule include definitions and practices to clearly define power quality, suggesting that the definitions in IEEE 1159-2019 could provide a starting point. The Company agrees that IEEE 1159-2019 should be considered for the rulemaking decision. The guideline is the reference and basis for many power quality standards such as notching, voltage disruption definition and harmonic definitions. The standard also provides clarity on the common misconception between voltage flicker and voltage fluctuations.

The Division also states that the proposed rule should limit the scope to only include facilities and connections that are included by its statutory jurisdiction. The Company understands the Division's recommendation to mean to limit the scope and connections as set forth in House Bill 389, which enacted Utah Code §§54-25-101, 54-25-102, and 54-25-201. The Company agrees that the proposed rule should be limited to the rules necessary to implement Utah Code Title 54, Chapter 25. The Division also suggests that a database of the causes of recorded disturbances can be used to target system improvements. The Company is able to provide information on power quality issues caused by generation interconnections.

The Division lists common metrics that are used to assess reliability performance, including System Average Interruption Frequency Index ("SAIFI"), System Average Interruption Duration Index ("SAIDI"), Customer Average Interruption Duration Index ("CAIDI"), and Momentary Average Interruption Event Frequency Index ("MAIFIE"), which are defined in IEEE Standard 1366. The Division states it would support the use of additional metrics, such as MAIFIE to identify power quality issues. The MAIFIE index is an evaluation of customers that experience a loss of voltage for a momentary period. The index is a measurement of a reliability metric, which captures outages for the entire system. The Company can provide reliability performance metrics and/or information as it relates to any outages caused by generation interconnections. However, because the rule is intended to target power quality issues caused by generation interconnections, reliability performance metrics are unlikely to provide insight into these type of power quality issues. The Company can also provide results from power quality assessments utilizing IEEE standards.

Comments of the URECA/Dixie Power

The URECA and Dixie Power jointly submitted proposed draft rules with their comments. The Company believes that URECA and Dixie Power have misapplied the ANSI/IEEE Standard 141, which is intended to be used for industrial customer facilities. In Attachment A that accompanies these reply comments, the Company offers revisions to URECA's proposed rule language using IEEE 1453, IEEE 519 and ANSI C84.1.

Conclusion

The Company appreciates the opportunity to provide feedback and recommendations to the Commission as it relates to the rulemaking associated with Utah Code Title 54, Chapter 25, Electrical Power Delivery Quality Act. The Company is committed to help the Commission in this matter in whatever capacity required.

Public Service Commission of Utah

June 15, 2023

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Sincerely,

A handwritten signature in blue ink that reads "Joelle Steward". The signature is written in a cursive, flowing style.

Joelle Steward

Senior Vice President, Regulation and Customer & Community Solutions

Enclosures

CC: Docket No. 23-999-09

Attachment A

Rulemaking Regarding HB 389: Utah Code Title 54, Chapter 25 Electrical Power Delivery Quality (with suggested edits by Rocky Mountain Power)

The interconnected Generating Facilities shall not adversely affect the quality of service to other Utility consumers and shall have a design, installation, maintenance, and operation to minimize the likelihood of causing a malfunction in, damaging, or otherwise impairing the Power Delivery System.

If rapidly fluctuating resources are 10% or greater of the capacity of the substation transformer(s), accurate calculations should be made using the actual load currents and system impedances to determine that the effect of connected equipment does not exceed the following criteria: (See ANSI/IEEE Std 141-1993, most recent edition, page 93)

- A. Voltage Fluctuation. The combined intermittent resources aggregate limits of all rapid voltage (RVC) sources at a point of evaluation in an area or on a particular system serving load cannot result in a voltage fluctuation greater than 3% at any time (IEEE Std 141-1993, pg. 93) the values defined in Table 3 of IEEE 1453. At a medium voltage a distributed energy resource shall not cause step or ramp changes in the RMS voltage at the point of common coupling exceeding 3 percent of nominal and exceeding 3 percent per second average over a period of one second. When the point of common coupling is at low voltage, the distributed energy resource shall not cause step or ramp changes in the RMS voltage exceeding 5 percent of nominal and exceeding 5 percent per second average over a period of one second (IEEE 1547 7.2.2 Rapid Voltage Changes); calculated by assessing with intermittent resources at full designed output, disconnecting the intermittent resources completely and taking the before and after system voltage at load serving nodes as a percentage or by measurement at actual load serving nodes. The number of cycles exceeding a maximum 3% voltage fluctuation shall not exceed 1% (IEEE Std 1453-2022, pg. 45) in any given measured interval not to exceed one week. The frequency of excessive voltage fluctuation up to 3% shall be less than two occurrences per 24-hour period and no single event shall have a duration of more than 30 seconds.
- B. Light Flicker. The planning levels are developed to be the basis for determining light flicker emission limits for individual installations with point of common coupling at MV, HV, and EHV voltages. (IEEE 1453 6.1.1) The IEEE 6.1.2 Evaluation-assessment procedure shall be used to determine an installations contribution to the P_{st} and P_{lt} level at low and medium voltage levels. The assessment procedure ought to ensure that the compatibility levels for a low voltage point of common coupling is maintained to 1.0 for P_{st} 95% and 0.8 for P_{lt} 95% with Planning Levels defined in Table 2 of IEEE 1453.
- C. Electric supply systems. Electric supply systems should be designed and operated to limit the maximum voltage unbalance to 3 percent when measured at the point of common coupling under no-load conditions. This shall not expand the voltage ranges prescribed in 5. If the unbalanced voltages of a polyphase system are near the upper or lower limits specified in table 1, Range A or Range B, each individual phase voltage should be within limits in table 1. (ANSI C84.1-2020 Annex C).
- D. Voltage Harmonic. Voltage harmonic distortion is commonly produced by customer equipment injecting current harmonic distortion into the power system. An interconnection generation facility shall stay within all harmonic distortion limits, described in IEEE 519 and 1C.4.1., as

measured at the point of common coupling. The interconnection facility shall take necessary action, at the interconnection facility's sole expense, for the facility to stay within these limits. Failure to operate within these limits can result in termination of electrical service or other remedial action as provided by state regulatory authority.

~~The combined intermittent resources in an area or on a particular system serving load cannot cause or result in unbalance of phase voltage magnitude more than 2% (IEEE Std 141-1993, pg. 91) between any of the three phases of a three-phase power system as measured.~~

The Utility shall notify a Customer if there is reason to believe that operation of the Customer's Generating Facility has caused disruption or deterioration of service to other Utility customers served from the Power Delivery System or that such operation has caused damage to the Power Delivery System.

A Utility shall disconnect a Generating Facility from the Power Delivery System upon determining that the Generating Facility is causing Adverse Operating Effects and is not in compliance with the technical requirements found within this Rule and/or the Utility's Interconnection requirements.

Rulemaking Regarding HB 389: Utah Code Title 54, Chapter 25 Electrical Power Delivery Quality (with suggested edits by Rocky Mountain Power)

The interconnected Generating Facilities shall not adversely affect the quality of service to other Utility consumers and shall have a design, installation, maintenance, and operation to minimize the likelihood of causing a malfunction in, damaging, or otherwise impairing the Power Delivery System.

- A. Voltage Fluctuation. The aggregate limits of all rapid voltage (RVC) sources at a point of evaluation cannot result in a voltage fluctuation greater than the values defined in Table 3 of IEEE 1453. At a medium voltage a distributed energy resource shall not cause step or ramp changes in the RMS voltage at the point of common coupling exceeding 3 percent of nominal and exceeding 3 percent per second average over a period of one second. When the point of common coupling is at low voltage, the distributed energy resource shall not cause step or ramp changes in the RMS voltage exceeding 5 percent of nominal and exceeding 5 percent per second average over a period of one second (IEEE 1547 7.2.2 Rapid Voltage Changes).
- B. Light Flicker. The planning levels are developed to be the basis for determining light flicker emission limits for individual installations with point of common coupling at MV, HV, and EHV voltages. (IEEE 1453 6.1.1) The IEEE 6.1.2 Evaluation-assessment procedure shall be used to determine an installations contribution to the P_{st} and P_{it} level at low and medium voltage levels. The assessment procedure ought to ensure that the compatibility levels for a low voltage point of common coupling is maintained to 1.0 for P_{st} 95% and 0.8 for P_{it} 95% with Planning Levels defined in Table 2 of IEEE 1453.
- C. Electric supply systems. Electric supply systems should be designed and operated to limit the maximum voltage unbalance to 3 percent when measured at the point of common coupling under no-load conditions. This shall not expand the voltage ranges prescribed in 5. If the unbalanced voltages of a polyphase system are near the upper or lower limits specified in table 1, Range A or Range B, each individual phase voltage should be within limits in table 1. (ANSI C84.1-2020 Annex C).
- D. Voltage Harmonic. Voltage harmonic distortion is commonly produced by customer equipment injecting current harmonic distortion into the power system. An interconnection generation facility shall stay within all harmonic distortion limits, described in IEEE 519 and 1C.4.1., as measured at the point of common coupling. The interconnection facility shall take necessary action, at the interconnection facility's sole expense, for the facility to stay within these limits. Failure to operate within these limits can result in termination of electrical service or other remedial action as provided by state regulatory authority.

The Utility shall notify a Customer if there is reason to believe that operation of the Customer's Generating Facility has caused disruption or deterioration of service to other Utility customers served from the Power Delivery System or that such operation has caused damage to the Power Delivery System.

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CERTIFICATE OF SERVICE

Docket No. 23-999-09

I hereby certify that on June 15, 2023, a true and correct copy of the foregoing was served by electronic mail to the following:

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