January 29, 2025

Mr. Kenneth W. DeFontes, Jr.
Chair, NERC Board of Trustees

Ms. Jennifer Flandermeyer
Chair, NERC Member Representatives Committee

Re: Request for Policy Input on Large Load Reliability Risk Issues

Dear Mr. DeFontes and Ms. Flandermeyer:

The New York State Reliability Council ("NYSRC") is pleased to respond to the January 9, 2025 Member Representatives Committee ("MRC") request for input on risks to reliability that are emerging quickly and require an accelerated response, especially given the integration of inverter-based resources.

## Background on the NYSRC

The NYSRC was approved by the Federal Energy Regulatory Commission ("FERC") at approximately the same time as the formation of the New York State Independent System Operator, Inc. ("NYISO") to ensure that the reliability of New York State's bulk power system would be maintained in the transition to a fully competitive wholesale electricity market. The NYSRC has fulfilled this responsibility for more than 20 years. The NYSRC accomplishes this through the adoption of Reliability Rules that establish necessary requirements to protect the reliability of the state's bulk power system. These rules are inclusive of, and go beyond, the NERC and NPCC Standards, and are binding on the NYISO and its market participants.

## Response to Request for Policy Input

The NYSRC offers the following responses to NERC's MRC request for policy input:

**Q1. What risks to reliability, resilience, and security do you see with the increasing integration of large loads?**

**A1. NYSRC Response:**

- The NYSRC has recognized the risks to reliability and resilience from the connection of large loads in prior submission it has made to FERC. On December 9, 2024, the NYSRC filed the attached comments in Docket No. AD24-11-000 in response to the FERC Large Load Technical Conference held on November 1, 2024. In its response, the NYSRC noted that the current regulatory requirements under NERC's PRC-006-5 – Automatic Underfrequency Load Shedding ("UFLS") – are not adequate to preserve reliability and resilience given the present pace of accelerated connection of the large loads. The reliability risk is that automatic underfrequency load shedding programs (the last line of defense) may not function as required to limit the extent of load loss resulting from system disturbances.
- In the interest of brevity and efficiency, the NYSRC will not restate the positions advanced in its comments in the FERC Large Load Technical Conference proceeding, but instead attaches them to this correspondence for consideration by the NERC Board of Trustees.
- There is a need for new interconnection processes for large loads to ensure that when they are studied under TPL standards and deficiencies are identified, they are not permitted to interconnect until deficiencies are addressed.

**Q2. What should NERC do to address these emerging risks?**

**A2. NYSRC Response:**

- In its attached comments, the NYSRC recommended to FERC that the following potential actions should be considered:
  - Shorten the time interval between automatic underfrequency reviews from the present five-year requirement.
  - Require that an automatic underfrequency program review be undertaken as part of the large load interconnection study process and adjust the automatic underfrequency programs accordingly.
  - Require large loads to offer a portion of the proposed connected load to be part of and under the control of the interconnecting utility's automatic UFLS programs.
  - There is an urgent need to harmonize federal and state jurisdictional issues regarding interconnecting large loads to the bulk electric system.

The NYSRC has a direct interest in ensuring that the addition of load does not disrupt reliability and resilience after a disturbance to the power system. Continued analysis and assessment of this matter is critical to the successful interconnection and operation of large new loads. The NYSRC appreciates the opportunity to provide input on such a critical issue and thanks the Board of Trustees for the thoughtful consideration of the comments advanced herein.

Respectfully Submitted,

*/s/ Amanda De Vito Trinsey*

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Attachment
cc: NERC Board of Trustees

# Attachment

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

| | | |
|---|---|---|
| Large Loads Co-Located at Generating Facilities | ) | Docket No. AD24-11-000 |

# POST-TECHNICAL CONFERENCE COMMENTS OF THE NEW YORK STATE RELIABILITY COUNCIL

On November 1, 2024, the Federal Energy Regulatory Commission ("Commission") held a Commissioner-led technical conference in the above captioned proceeding to discuss generic issues related to the co-location of large loads at generating facilities. Thereafter, a Notice of Request for Comments was issued inviting post-conference comments by December 9, 2024.[1] The New York State Reliability Council, L.L.C. ("NYSRC") hereby submits these post-technical conference comments regarding additional matters that should be considered as part of the Commission's comprehensive review of the effects resulting from large new loads entering the system.

## I. Introduction

The NYSRC is a not-for-profit entity, organized in 1999 and authorized by the Commission, whose mission is to promote and preserve the reliability of electric service on the New York State Power System by developing, maintaining, and, from time-to-time, updating the Reliability Rules which shall be complied with by the New York Independent System Operator, Inc. ("NYISO") and all entities engaging in electric transmission, ancillary services, energy and power transactions on the New York State Power System. The NYSRC conducts its mission with no intent to advantage or disadvantage any Market Participant's commercial interests. Its sole

[1] Docket No. AD24-11-000, *Notice of Request for Comments* (issued Nov. 8, 2024).

focus is maintaining the reliability of the bulk electric system in New York (the New York Control Area or "NYCA").

The subject large loads –whether co-located with generating facilities or standalone – will most likely be interconnected at voltage levels exceeding the 100kV NERC Definition of Bulk Electric System. As a result, this will bring the interconnection of such large load facilities within the scope of the Commission-approved Electric Reliability Organization ("ERO") mandatory requirements that are designed to preserve the reliable operation of the power system.[2]

In general, under the ERO standards, all proposed system modifications, including transmission and generation additions or significant load reductions or additions, must be analyzed and designed to ensure system-wide coordination and continued system reliability and resilience to provide society with an "adequate level of reliability."[3] Reliability Coordinators, Transmission Planners and Transmission Planning Coordinators and Regional Entities comply with ERO reliability standards requirements and, in some cases, regional criteria requirements that provide the minimum power system performance expectations. These requirements serve as the foundation for good utility practices in transmission planning and operation. The Commission has a substantial role through its policies, its oversight and approval of ERO activities.

As the power system becomes demonstrably more operationally stressed due to the increased penetration of intermittent resources, concerns over their performance during disturbances, and the upward pressure that is placed on the system due to public policy driven electrification programs coupled with the new large loads coming online, the likelihood of

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[2] See the definition of Bulk Electric System (BES) and Bulk-Power System in the NERC Glossary *available at*:
https://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf.

[3] *See*, NERC Filing to the Commission regarding Adequate Level of Reliability, May 10, 2013, attached hereto as Appendix 1.

triggering automatic underfrequency load shedding ("automatic UFLS") programs may increase.[4] While there are many areas of reliability related concern[5], one that has not been raised is Automatic UFLS programs in their role as the last line of defense used during periods of stressed system conditions after operators have exhausted all of their manual load shedding (*i.e.*, rotating blackout) options. Although the automatic UFLS standard calls for having a certain amount of load to be under automatic control to be shed, the addition of large loads at a swift pace makes it all the more important to ensure that the automatic UFLS programs are up to date and can address the presence of the new large loads on the system. The NYSRC has direct interest in ensuring that the addition of load does not disrupt reliability and resilience after a disturbance to the power system.

## II. NERC Standards and Guiding Principles

There are a number of NERC standards and principles that the NYSRC submits should be relied upon more heavily in the analysis surrounding the reliability and resilience impacts of large new loads coming online and their interaction with existing automatic UFLS programs.

A. FAC-001-4 – Facility Interconnection Requirements

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[4] *See*, NYISO 2024 Reliability Needs Assessment ("RNA") *available at*: https://www.nyiso.com/documents/20142/2248793/2024-RNA-Report.pdf/0fe6fd1e-0f28-0332-3e80-28bea71a2344 (issued Nov. 21, 2024). The RNA states:

> "[t]he forecasted transition from a summer-peaking system to a winter-peaking system also poses challenges to grid reliability . . . . This shift, driven by the electrification of the building and transportation sectors, is expected to accelerate over the next ten years. Increased winter demand introduces new reliability concerns, particularly around fuel availability for gas-fired generators. On the coldest days, natural gas distribution companies prioritize residential heating and limit the fuel available to generators without firm contracts. These coldest days also correspond to peak winter demand periods when the gas fleet is needed most.
>
> Given the rapid pace of change on the bulk electric system, the NYISO will continue to monitor these and other developments to determine whether changing system resources and conditions could impact the reliability of the New York electric grid."

[5] A number of concerns raised during the Technical Conference are already in the record. These include reliability related ancillary services, black start capability, and resource adequacy for customers.

Under mandatory NERC Standard FAC-001-4 all Transmission Owners through requirement R1 are required to have documented Facility interconnection requirements to address interconnection for end-user loads. The purpose is to address the impact of these loads on the reliable operation of the power system in accordance with the purpose of the FAC-001-4 standard which is: "[t]o avoid adverse impacts on the reliability of the Bulk Electric System, Transmission Owners and applicable Generator Owners must document and make Facility interconnection requirements available so that entities seeking to interconnect will have the necessary information."[6]

B. FAC-002-3 – Facility Interconnection Studies

Mandatory NERC Standard FAC-002-2-4 is intended to assure that the impact of interconnecting new or changed Facilities on the Bulk Electric System are comprehensively studied. Through R6, the Planning Coordinator is required to have identified and make publicly available a threshold definition of what it considers a "qualified change" to the power system. Typically, this is in the form of a voltage threshold and a MW or MVA load size. In New York for example, this requirement is met through the NYISO's publication of Technical Bulletin #259 which specifies a 10 MW and 115 kV threshold.[7]

C. PRC-006-5 - Automatic Underfrequency Load Shedding (UFLS)

Not specifically discussed in the Technical Conference, but extremely important to the preservation of an adequate level of reliability are the mandatory requirements, is PRC-006-5 related to automatic UFLS. The purpose of the standard is stated as follows: "[t]o establish design

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6 *See*, NERC Standard FAC-001-4, available at: https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-001-4.pdf.

7 *See*, NERC Standard FAC-002-4 available at: https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-002-4.pdf.

and documentation requirements for [automatic UFLS] programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures." (emphasis added.)

The functionality of this "last resort system preservation" program is assessed through studies, which identify the electrical islands that may be formed under simulated conditions. The studies are used to establish the parameters of the UFLS Entity automatic UFLS programs as required by the standard. Automatic load shedding programs will activate and shed pre-selected load automatically if all manual load shedding (rotating blackouts) by operators has been exhausted and system frequency continues to decline. The expectation is that the system can be reconstructed from the remaining energized islands to reduce the likelihood that the black start of the entire system is avoided as much as possible. This is a resilience performance requirement more than a reliability performance requirement in the first instance.

## III. Impact of System Frequency on Reliability and Resilience

During the Technical Conference, a number of system reliability issues were raised, one of which was maintenance of system frequency within the prescribed limits. The system frequency is closely monitored by system operators, and deviations from normal ranges are reported through the requirements of BAL-003-2.[8]

Mr. Gugel, NERC's Vice President of Regulatory Oversight, during the Technical Conference described an example of over frequency (upon loss of a large load) reliability risk. Gugel expressed a reliability concern regarding situation where the sudden loss of a nearby large load might result in overspeed of the nearby generator and then dynamically propagate into other

[8] *See* BAL-003-2 *available at*: https://www.nerc.com/pa/Stand/Reliability%20Standards/BAL-003-2.pdf. This standard requires that under normal operation, Balancing Authorities provide sufficient Frequency Response capability to maintain Interconnection Frequency within predefined bounds by arresting frequency deviations and supporting frequency until the frequency is restored to its scheduled value.

system elements, potentially leading to costly damage to generation equipment or uncontrolled system separation. This propagation may lead to loss of service to other loads outside the immediate large load facility and nearby generator(s). Expanding on this concern is the fact that if the impact of large loads on Automatic UFLS programs is not studied, and a propagating disturbance event is severe enough, it could also lead to the loss of generation in a wide area resulting in a frequency decline that triggers at the set points designed into automatic UFLS programs.

Potential adverse impacts to reliability and resilience must be examined in advance (not reactively) and be addressed through the design of the interconnection facility as specified in NERC standards FAC-001-4 and FAC-002-4. Good utility practice mandates that the reliability effects of the added large load be thoroughly examined in advance, the risks thoroughly identified, and then mitigated through the application of good utility practice in planning, design, construction, and testing. A substantial portion of what is required in the ERO standards is directed in such a way as to avoid ever experiencing load loss, cascading, and uncontrolled separation as outlined in the definition of the adequate reliability mentioned earlier. But the automatic UFLS programs are rarely thought of because they are not triggered frequently. Although, in recent years, automatic UFLS has come close to being activated during Winter Storm Uri.[9]

## IV. Policy Considerations and Potential Solutions

Given the impact to public health and safety if the UFLS program is not properly triggered, coupled with the large size of the prospective new loads entering the system as discussed in the Technical Conference, it is strongly advised that the Commission offer some guidance on the applicability of the requirements of PRC-006-5 and the importance of the analysis prior to connecting the large load.

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[9] *See, FERC - NERC - Regional Entity Staff Report: The February 2021 Cold Weather Outage in Texas and the South Central United States*, (Nov. 2021), p. 156.

It may be feasible to rely on the notion that the NERC standard speaks for itself and that good utility practice mandates that underfrequency load shedding programs be reviewed as part of each interconnection study under FAC-001 and FAC-002. There is currently no such requirement, however and the NYSRC submits that this concept should be considered as part of the dialogue and as a potential solution to preventing a potential future reliability issue.

It is likely that when the standards were drafted, NERC did not envision the magnitude of the single load additions that are being contemplated and studied at this time (*i.e.*, 500, 1,000, 1,500 MW/MVA loads). At the time of the standard's development, load growth was either relatively slow or non-existent in some areas and there was consensus around the current requirement in R4 to perform a functional review of the effectiveness of the UFLS program only once every five-years. It is entirely possible that without offering some portion of the newly connected large load to become part of the automatic UFLS program, the utility may not be able to find enough additional load to place under automatic UFLS control to meet the NERC or regional standard requirements. More importantly, if a portion of the large new load is not incorporated in a study, the studied system's automatic UFLS program may not work to achieve the purpose of providing guidance and limiting the extent of system separation. This is a retroactive, not preemptive approach. The Commission should consider modifying this approach to account for the current state of the system and the rapid changes underway.

The NYSRC respectfully requests that the Commission take note of this aspect of integration of large loads into the system and offer some guidance to the ERO and to industry. At the Technical Conference there was recognition that the large new loads will be coming quickly. The need to identify the processes necessary to serve these loads and understand the relationship between their service and automatic UFLS programs is urgent. It is likely that retroactive automatic UFLS studies conducted only once every five years will not pick up the reliability and resilience

implications of these large loads on the existing automatic UFLS programs unless they are conducted more frequently or before energization of the new large load.

One model to consider is to require the automatic UFLS studies annually, as is currently required under the TPL-001 standard. Although other intervals between one and five years could be considered, these will suffer the same defect unless a forward-looking test year (near -term, long term as in TPL-001) is implemented. Alternatively, a review of each specific new large load, using each Planning Coordinator's existing definition of "qualified change" to trigger a review of the automatic UFLS program in the area to which it is interconnecting is appropriate. If the load is large (threshold to be determined), perhaps an even wider area examination beyond the local interconnecting utility's automatic UFLS programs might be necessary and considered, perhaps on a Balancing Authority wide area basis.

Accordingly, the NYSRC submits that automatic UFLS programs must be designed to be preemptive (as many things in electric utility design and operation already are) and not be reactive and modified only after an adverse public health and safety event our outcome occurs. The power system has its own unique way of very quickly signaling to society through adverse outcomes when mistakes in power system planning, design and operation are made. The topic of large load addition's reliability and resilience impacts on the effectiveness of automatic UFLS programs should be brought forward for review and discussion by the Commission. Understanding the new natural "islands" that may be formed after the large load is connected to the system is critical to development of resilient system restoration plans. These restoration operating plans rely on thorough, forward-looking understanding of the expected outcomes of large new loads on existing automatic UFLS programs.

## V. Conclusion

The NYSRC thanks the Commission and Commission staff for conducting this technical conference and appreciates the thoughtful consideration of the comments advanced herein.

Dated: December 9, 2024
Albany, New York

Respectfully Submitted,

*/s/ Amanda De Vito Trinsey*

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# APPENDIX 1

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Link to Filing:https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01b12894-66e2-5005-8110-c31fafc91712

May 10, 2013

**VIA ELECTRONIC FILING**

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

**Re: Informational Filing on the Definition of "Adequate Level of Reliability"**

Dear Ms. Bose:

The North American Electric Reliability Corporation ("NERC") hereby submits solely as an informational filing the definition of "Adequate Level of Reliability" that the NERC Board of Trustees approved on May 9, 2013 (Attachment A), and a supporting technical report (Attachment B). NERC is not requesting the Commission to take any action on this definition.[1]

The Commission directed NERC to consider and propose methods for ensuring Reliability Standards provide for an adequate level of reliability and for defining an "adequate level of reliability" in the Commission order certifying NERC as the Electric Reliability Organization.[2] "Adequate level of reliability" is a term used in Section 215 (c)(1) of the Federal Power Act, specifying what standards the ERO can develop and enforce.

The definition of "Adequate Level of Reliability" will be used primarily to guide NERC Reliability Standards development, but also by the NERC Performance Analysis Subcommittee and NERC reliability assessment staff to assess Bulk Electric System reliability and identify gaps in data. Other NERC groups, such as the Reliability Issues Steering Committee, will be able to use the definition and supporting technical report for guidance when addressing major reliability issues and prioritizing work. Neither document should be interpreted as requiring the development of specific standards or additional compliance elements.

Respectfully submitted,

*/s/ Stacey Tyrewala*
Stacey Tyrewala
*Senior Counsel for North American Electric Reliability Corporation*

[1] This definition supersedes the prior definition submitted for informational purposes on May 5, 2008 in Docket No. RR06-1-000.

[2] The Commission certified NERC as the electric reliability organization ("ERO") in accordance with Section 215 of the FPA on July 20, 2006. *N. Amer. Elec. Reliability Corp.*, 116 FERC ¶ 61,062 (2006).