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

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| **Physical Security** | **)** | **Docket No. RM14-15-000** |
| **Reliability Standard** | **)** | |

# REPLY COMMENTS OF THE FOUNDATION FOR RESILIENT SOCIETIES

Submitted to FERC on September 22, 2014

Pursuant to the Federal Energy Regulatory Commission's ("FERC" or "Commission") Notice of Proposed Rulemaking ("NOPR") issued on July 17, 2014,[1] the Foundation for Resilient Societies respectfully submits Reply Comments on the Commission's proposal to approve with modifications Reliability Standard CIP-014-1 of the North American Electric Reliability Corporation ("NERC").

The Foundation for Resilient Societies, Inc. (or "Resilient Societies") is incorporated in the State of New Hampshire as a non-profit organization engaged in scientific research and education with the goal of protecting technologically-advanced societies from infrequently occurring natural and man-made disasters. All technologically-advanced societies rely on critical infrastructures—electric power generation and transmission, telecommunications, transportation, financial services, petrochemical refining, food production, water, and sanitation, to name just a few. Sustained interruption of any one of these critical infrastructures can result in economic, political, and social chaos. The profit incentive, which normally serves society well, provides inadequate protection from disasters that occur infrequently but have

[1] Physical Security Reliability Standard, Notice of Proposed Rulemaking, 148 FERC ¶ 61,040 (2014) ("Physical Security NOPR"), issued July 17, 2014.
Fourteen months earlier, and 23 days after the Metcalf Substation attack of April 16, 2013, NERC's RISC Committee unanimously recommended elimination of an under-development standard for Physical Security. The NERC Standards Committee recommended eliminating a physical security standard on June 5, 2013, and the NERC Board eliminated the proposed standard from its work plan in November 2013. Following national publicity in February 2014 concerning the sophisticated attack on the Metcalf Substation in April 2013, the Commission, *sua sponte*, issued an Order on March 7, 2014 requiring NERC's expedited development of a Physical Security reliability standard. See *Reliability Standards for Physical Security Measures*, 146 FERC ¶ 61,166 (2014).

impact beyond the responsibilities of commercial enterprises. The Foundation seeks to identify cost-effective opportunities to protect societies and then develop policy initiatives. Its Board of Directors consists of persons residing in New Hampshire, Arizona, California, Massachusetts, and Virginia. Information about the Foundation may be found at www.resilientsocieties.org.

## BACKGROUND

The Commission proposed that Reliability Standard CIP-014-1 needed two modifications:

1. A modification to the physical security Reliability Standard to allow "applicable governmental authorities (i.e., the Commission and any other appropriate federal or provincial authorities) to add or subtract facilities from an applicable entity's list of critical facilities under Requirement R1."[2]

2. Removal of the term "widespread" in relation to instability.[3]

NERC, trade associations, and individual electric utilities objected to these modifications in their comments filed on the docket. In regard to the addition or subtraction of individual facilities, commenters proposed that FERC lacked legal authority to assume an operational role by specifying individual facilities for protection and also lacked legal authority to delegate to other governmental authorities. Some commenters proposed that any additions or subtractions of facilities would be subject to rulemaking per the Administrative Procedures Act, with opportunities for due process and appeal. In regard to removal of the modifier "widespread" describing instability, multiple commenters observed that that the modifier "widespread" had been used in previous FERC-approved definitions.

Reliability Standard CIP-014-1 as drafted did not include Generator Operators as applicable entities and multiple commenters supported this exemption.

[2] NOPR, July 17, 2014, para. 17.
[3] Id.

## COMMENTS

### PRIMARY AND BACKUP CONTROL CENTERS AND HIGH-CAPACITY GENERATING FACILITIES REQUIRE PROTECTION AND ACCOUNTABILITY AGAINST PURPOSEFUL ACTS, NOT JUST RANDOM OUTAGES.

The Bulk Power System has not been designed for resilience against purposeful physical attack. Instead, the Bulk Power System has been designed for resilience against random electrical and mechanical failure of individual transformers, generation units, control centers, etc. The N-1 planning criterion commonly assumes a single failure, not the simultaneous failure of all transformers at a substation, or all units at a large generation facility, or both a primary and backup control center. In a physical attack by an intelligent, organized adversary, the purpose of the attackers would be to cause multiple failures simultaneously and thereby overwhelm N-1 resilience planning.

The April 2013 attack on the Metcalf substation showed that an attacker could cause near-simultaneous failure of multiple units. In fact, the Metcalf attacker took out 17 out of 21 transformers at the substation in 19 minutes. In response to public disclosure of details of the Metcalf attack, FERC ordered NERC to set a standard that would protect against non-random, purposeful failures of critical grid facilities, including control centers. Now some industry commenters seek to minimize the requirements of the final standard, even if the standard would not protect against purposeful attack on control centers and high-capacity generation facilities.

### FERC SHOULD REQUIRE INCLUSION OF ALL RELIABILITY COORDINATOR CONTROL CENTERS IN THE PHYSICAL SECURITY STANDARD

Out of 16 Reliability Coordinators, three would be exempted from the standard because they are not also designated in the NERC Compliance Registry as Transmission Operators. These three Reliability Coordinators—Peak Reliability, Midcontinent ISO, and Southwest Power Pool—supervise power for 141 million Americans and Canadians.

The U.S. and Canada already had a cascading outage in 2003 because of inadequate reliability coordination. In particular, in August 2003 the Midwest Independent System Operator (MISO), a Reliability Coordinator, lacked real-time data from First Energy, and lacked broad visibility over 37 control areas. These constraints led to inadequate diagnostic assistance and direction. Mandatory reliability coordination might well have averted a cascading blackout throughout much of the Northeast and Canada.[4]

A concurrent physical attack on a Reliability Coordinator's primary control center and its backup control center can replicate the conditions of August 14, 2003: causing the unavailability of usable real-time data. The Reliability Coordinator would become unable to provide diagnostic assistance and direction to minimize blackout risk and prevent damage to grid-critical equipment. Moreover, under the NERC system of standards, Reliability Coordinators are solely responsible for managing system restoration, so an attack on both transformer substations and Reliability Coordinators could be long-lasting. FERC should not give weight to comments that promote the exemption of Reliability Coordinators.

## FERC SHOULD ORDER HIGH-CAPACITY GENERATOR FACILITIES TO BE DESIGNATED AS "CRITICAL FACILITIES" REQUIRING PROTECTION AND FORCE-ON-FORCE EXERCISES OF SECURITY & RESPONSE ADEQUACY

Proposed Reliability Standard CIP-014-1 would not protect large generation facilities when there is evidence, including congressional testimony by FERC Chairman LaFleur, that loss of a single generation facility could cause cascading outage.[5] FERC has proposed a modification whereby critical facilities—including control centers and generation facilities—could be added to the requirements of the standard. Nonetheless, multiple commenters supported the

[4] See 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, at pp. 18-19, 49-50, 67, 110, 139, and 159-160.

[5] Testimony of FERC Chairman Cheryl LaFleur, to U.S. Senate Energy Committee in a letter dated June 4, 2014, available at http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=86e83c32-636a-40b6-8e5d-c072f2f95a8c. See "Question 16: Could an attack on an electric generation plant cause a cascading outage or long term power shortage? Answer: A carefully planned and executed attack on a single or multiple generation plants could cause cascading outages, but I have not seen information that would lead me to believe that it could cause a long-term power shortage. The extent and duration of any outage from an attack would depend upon a number of factors..."

exemption of Generator Operators from the standard. Notably, commenter Roger Paschall confirmed that loss of generation facilities could cause cascading outage.

FERC should take into account and emulate policies of the Nuclear Regulatory Commission (hereafter "NRC") relating to physical security standards to protect large electric generation facilities. The NRC has adopted physical security standards for approximately 100 actively licensed nuclear power plants at about 62 facility sites. These generating facilities require protection both to secure special nuclear materials and to prevent radiological contamination. Importantly, these generating facilities, generally providing approximately 1 gigawatt of generating capacity per reactor unit, supply baseload power that provides essential stability for regional electric grids.

Since 1974 the NRC has included physical security standards in the Design Basis Threat (DBT) requirements of its licensed power plants. In 1991, the NRC commenced mandatory Force-on-Force (FOF) exercises to test the practical functionality of physical security, not mere compliance with standards in paper plans. After the terrorist attacks of 9-11-2001, the Nuclear Regulatory Commission upgraded security requirements for its licensed electric generating facilities.

> "The April 29, 2003, [Revised] DBT orders required nuclear power reactors … licensees to revise their physical security plans, security personnel training and qualification plans, and safeguards contingency plans to defend against the supplemental DBT requirements. The orders resulted in licensee security enhancements such as increased patrols; augmented security forces and capabilities; additional security posts; additional physical barriers; vehicle checks at greater standoff distances; better coordination with law enforcement and military authorities; augmented security and emergency response training, equipment, and communication; and more restrictive site access controls for personnel, including expanded, expedited, and more thorough worker initial and follow-on screening. Currently, all power reactor and Category I fuel facilities have received NRC approval of security plans consistent with the DBTs imposed by the April 2003 orders. "[6]

[6] Nuclear Regulatory Commission, "Guidance on Implementation of the April 2003 Revised Design Basis Threat," June 14, 2005 Doc. SECY-05-0106.

In 2004, following criticism from the Government Accountability Office,[7] the NRC enhanced its Force-on-Force exercises to test the adequacy of physical security protections and responses at nuclear generating sites. The NRC utilizes Special Operations Command units to design the testing of concurrent sabotage attacks on these licensed generating facilities. The results of these Force-on-Force exercises are utilized to modify and strengthen physical security and response plans at these facilities, but also involving contingencies for law enforcement and military personnel as needed.[8]

The concurrent attack on selected generating facilities, perhaps combined with cyber-attacks on control centers and communication networks, could cause widespread and persistent outages. Hence, Resilient Societies recommends that:

- FERC exclude NRC-licensed nuclear generating facilities from any listing as "Critical Facilities" to be included in mandatory physical security standards, a modification of CIP-014-1; and
- FERC order modification by NERC of Physical Security Standard CIP-014-1 to include non-NRC-licensed generating facilities with combined facility generating capacity above a Commission and NERC-determined limit, to be designated "Critical Facilities"; and
- FERC by an order to NERC require modifications of Physical Security Standard CIP-014-1 to include Force-on-Force exercises for all designated "Critical Facilities" to validate and assess the adequacy of physical security plans and the adequacy of coordinated responses of facility security personnel, and law enforcement personnel as needed.

## FERC SHOULD ORDER NERC TO MODIFY STANDARD CIP-014-1 TO INCLUDE ENTIRE CLASSES OF DESIGNATED "CRITICAL FACILITIES" THAT ARE "HIGH IMPACT" INSTEAD OF ADDING FACILITIES PIECEMEAL

As a "duct tape" fix to a deficient NERC standard, FERC proposed a process to add individual facilities. In comments received on or before September 8, 2014, , some utility commentators now threaten to delay and disrupt physical protection of the Bulk Power System with legal

[7] GAO Report, Nuclear Regulatory Commission Oversight of Security at Commercial Nuclear Power Plants Need Strengthening, September 24, 2003. See also Mark Holt and Anthony Anderson, Nuclear Power Plant Security and Vulnerabilities, Congressional Research Service, March 18, 2009, Report RL34331.

[8] For a recent overview, see Nuclear Regulatory Commission, "Backgrounder on Force-on-Force Security Inspections," July 23, 2014.

objections and maneuvering, including due process argument for each individual facilities addition. It appears from the tone of the comments that some industry participants may file administrative appeals and ultimately, court challenges in the D.C. Court of Appeals.

It would be more prudent, more timely, and more effective, from our perspective, for the FERC Commissioners to simply direct NERC to modify Reliability Standard CIP-014-1 to include all Reliability Coordinators, Balancing Authorities, and "high impact" Generator Operators (those with facilities above a designated "all unit" generating capacity) to the list of applicable entities for the standard; FERC has clear legal authority to direct this modification. As multiple commenters point out, a "high impact" criterion could specify which facilities would need physical protection within applicable entities.

## FERC SHOULD ORDER NERC TO REMOVE THE MODIFIER "WIDESPREAD" FROM THE STANDARD

The modifier "widespread" appears nowhere in Section 215 of the Federal Power Act in regard to the prevention of instability, uncontrolled separation, or cascading; neither should this term be permitted in Reliability Standard CIP-014-1, despite arguments from commenters.

Respectfully submitted by:

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