

MEMORANDUM OF UNDERSTANDING
between the
FEDERAL ENERGY REGULATORY COMMISSION
and the
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS,
INCORPORATED

This Memorandum of Understanding (“MOU”) is entered into by and between the United States Federal Energy Regulatory Commission (FERC) and the Institute of Electrical and Electronics Engineers, Incorporated (IEEE) on behalf of the Power & Energy Society (IEEE PES), hereinafter “the Parties.” IEEE is a not-for-profit organization that engages in scientific and educational activities directed toward advancement of the theory and practice of electrical, electronics, communications and computer engineering. FERC regulates aspects of the energy industry in the United States, including reliability of the nation’s bulk power system.

I. Purpose

The purpose of this MOU is to facilitate interactions between FERC and IEEE on matters of mutual interest pertaining to the nation’s bulk power system. Through this MOU, the Parties seek to more effectively align their efforts to address energy infrastructure and energy market challenges due to significant changes in energy supply, demand, and technology. Technology changes, including the growth in renewable generating resources, distributed energy resources, electric vehicles, and energy storage, among others, coupled with the increased availability of natural gas, and new environmental requirements provide new opportunities for improving the efficiency and reliability of the bulk power system. Increasingly volatile weather patterns (storms, tsunamis, solar flares, etc.), and cyber and physical security concerns, in combination with increased demands to deliver quality electrical power, have resulted in increased public focus to improve electrical energy delivery.

As new technologies are developed, they will require careful examination to understand their impacts, requirements, and potential benefits for integration into the electric energy system. Recognizing the mutual interest in mobilizing the technical community to address these challenges pertaining to the reliable and efficient operation of the nation’s bulk power system, FERC and IEEE are formalizing this understanding for the purpose of facilitating dialogue and coordinating activities leading to the implementation of effective strategies for enduring responsibilities of both organizations. This purpose statement is not

exhaustive and FERC and IEEE may decide to cooperate in other areas of mutual interest.

Cooperation between FERC and IEEE under this MOU may include but is not limited to the following objectives for electric energy systems:

1. Sharing technical needs and addressing challenges for infrastructure planning, operation, and market optimization;
2. Identifying existing and emerging technological requirements and needs and approaches for addressing them; and
3. Developing, disseminating and sharing information on advancements in technology and associated policy and standards for planning, operations, and maintenance of electric energy systems and their component parts.

II. Coordination

IEEE PES will act as the IEEE lead organization and will consult within other divisions of IEEE as necessary.

Through this MOU, the Parties agree to work together to advance the objectives stated above and will develop an implementation plan to accomplish them. An initial draft implementation plan is incorporated as an addendum under this MOU.

III. Terms and Termination

This MOU shall remain in effect until terminated by either party upon written notice to the other party. Parties should endeavor to give sixty (60) days prior written notice of such termination.

This MOU in no way restricts either of the Parties from participating in any activity with other public or private agencies, organizations or individuals.

This MOU is neither a fiscal nor a funds obligation document. Nothing in this MOU authorizes or is intended to obligate the Parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value.

This MOU is not legally enforceable and shall not be construed to create any legal obligation on the part of either Party, including that of a federal contractor. This MOU shall not be construed to provide a private right or cause of action for or by any person or entity.

This MOU does not imply endorsement by either party of the other organization, its products or its services.

This MOU is subject to, and will be carried out in compliance with, all applicable laws, regulations and other legal requirements.

IV. Modifications

This MOU may be modified by mutually acceptable written amendment duly executed by authorized officials of FERC and IEEE.

V. Entire Agreement

This MOU constitutes the full and final understanding of both Parties on all subjects contained within it. All prior negotiations, understandings, and agreements are merged into this MOU.

VI. Execution

The Parties have caused this MOU to be executed in duplicate originals by their duly authorized representatives and is effective on the date of the last signature below.

For the Federal Energy Regulatory Commission

 acting for M. Bardee Oct. 26, 2016
Michael Bardee DATE
Director, Office of Electric Reliability
Federal Energy Regulatory Commission

For the Institute of Electrical and Electronics Engineers, Incorporated

 15 Nov 2016
Barry L. Shoop DATE
IEEE President and CEO

FERC-IEEE MOU Implementation Plan

Objective:

Pursuant to a Memorandum of Understanding (MOU), the Federal Energy Regulatory Commission (FERC) and Institute of Electrical and Electronics Engineers, Incorporated (IEEE) have agreed to coordinate activities to address energy infrastructure and energy market challenges due to significant changes in energy supply, demand, and technology. This draft implementation plan outlines the approach and content for the coordinated effort.

Organization and Process:

FERC and IEEE Power & Energy Society (PES) will plan and execute the initiatives set forth in the MOU. FERC and IEEE PES will meet annually to review progress and to revise the implementation plan, as well as to monitor progress against stated objectives as set forth in the MOU. The implementation plan will be updated annually to identify possible new projects to help accomplish the planned objectives as set forth in the MOU.

Designated points-of-contact will serve as liaisons between the respective organizations and they will ensure the effective coordination of activities.

The currently designated lead officers and points-of-contact are:

For FERC:

Lead Officer: David Ortiz, Deputy Director, Office of Electric Reliability (OER)
Point-of-Contact: Richard O'Neill, Chief Economist, Office of Energy Policy and Innovation (OEPI)
Monica Taba, Engineer, OER

For IEEE:

Lead Officer: Damir Novosel, President, PES Governing Board
Point-of-Contact: Daniel Toland, IEEE PES Program Director

Proposed Technical Topics:

A proposed set of technical topics on which FERC and IEEE-PES will coordinate is provided below. These topics may be modified as a result of the review of the lead officers or for other appropriate reasons. The proposed topics for coordination are:

1. **Grid Reliability:**
 - a. Evaluate electric grid-related elements, activities and conditions that may impact the bulk power system (such as fuel constraints, generation and transmission siting and permitting, congestion, rate recovery for reliability expenditures, etc.) and cost recovery options for potential solutions;

- b. Identify bulk power system operations and planning emerging needs and probable regulatory/legislative concerns; and
 - c. Explore and develop methods and tools to secure the bulk power system, including cyber facilities, against potential vulnerabilities.
- 2. **Ancillary Services (e.g., regulation, voltage support, frequency response):**
 - a. Operating characteristics and capabilities of ancillary services;
 - b. New types of ancillary services and requirements;
 - c. Methods and tools to analyze potential impact on grid reliability; and
 - d. Methods and tools to investigate the influence of new ancillary services on the wholesale prices and electric rates.
- 3. **Electric Market Efficiency:**
 - a. Seams (inter-regional coordination);
 - b. Long-term transmission rights;
 - c. Transmission supply functions;
 - d. Day-ahead market and real-time market operation; and
 - e. Price responsive demand technology and policy.
- 4. **Application of technology (e.g., microgrids, energy storage technology, distributed energy resources, aggregation, intersection of operational and information technology, and power electronics):**
 - a. Performance characteristics and limits;
 - b. Advanced control and interoperability requirements;
 - c. Methods and tools to permit valuation and cost/benefit analysis; and
 - d. Disruptive effects.

Proposed Engagement Activities:

FERC:

- 1. Participating in IEEE PES technical committees as appropriate, including committees that develop IEEE Standards (e.g., Standard IEEE1547) relevant to the objectives of the MOU;
- 2. Participating in power engineering, technology education, and professional training programs offered by PES;
- 3. Participating in IEEE webinars and providing newsletter articles and presentations on topics related to energy infrastructure and energy market regulation; and
- 4. Attending and participating in IEEE PES conferences and workshops.

IEEE:

- 1. Participating in FERC technical conferences and workshops related to energy infrastructure and energy market;
- 2. PES publications, panels, sessions, conferences, and other media platforms to address FERC's outreach in energy infrastructure, reliability, and energy markets; and
- 3. Commenting on FERC dockets and notices in relevant technology areas.

Caveats: Nothing in this implementation plan should be deemed binding on the parties or obligate the parties to expend funds.