NERC Reliability Standards That Include Training Requirements or Compliance Measures Related to Training
CIP 004  Cyber Security – Personnel & Training
EOP 005  System Restoration Plans (System Restoration from Blackstart Resources)
EOP 006  System Restoration Coordination
EOP 008  Plans for Loss of Control Center Functionality
FAC 003  Transmission Vegetation Management Program
IRO 002  Reliability Coordination – Facilities
IRO 005  Reliability Coordination – Current Day Operations
NUC 001  Nuclear Plant Interface Coordination
PER 002  Operating Personnel Training
PER 004  Reliability Coordination Staffing
PER 005  System Personnel Training
TOP 006  Monitoring System Conditions
TOP 008  Response to Transmission Limit Violations
FERC Order 693
Issued March 16, 2007

(FERC Order 693A)
Issued July 19, 2007
Referring to EOP 003 Load Shedding Plans

597. … periodic drills of simulated load shedding should involve all participants required to ensure successful implementation of load shedding plans. As such, the drills should extend beyond system operators to distribution operators and LSEs. The Reliability Standard should require periodic drills by entities … and require those entities to seek participation by other entities. The drills should test the readiness and functionality of the load shedding plans, including, at times, the actual deployment of personnel.
Referring to EOP 005 System Restoration Plans

627. ... System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable. As such, the Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes.
Referring to PER 002 Operating Personnel Training

1342. … While PER-002-0 applies to transmission operators, it is important for reliability that personnel involved in both decisionmaking and implementation receive proper training.

1343. … Thus, while we direct the ERO to develop modifications to PER-002-0 to include formal training for local control center personnel, that training should be tailored to the needs of the positions.

1347. The Commission disagrees with those commenters who contend that, because operators at local control centers take direction from NERC-certified operators at the ISO or RTO, they do not need to be addressed by the training requirements of PER-002-0. …
Referring to PER 002 Operating Personnel Training

1359. … transmission operators and balancing authorities are not the only entities that have operating personnel in positions that directly impact the reliable operation of the Bulk-Power System … generator operators (are) among those that have such an impact. … if communication is lost, the generator operator personnel should have had sufficient training to take appropriate action to ensure reliability of the Bulk-Power System. Thus, we direct the ERO to develop a modification to make PER-002-0 applicable to generator operators.
Referring to PER 002 Operating Personnel Training

1360. ... Plant operators located at the generator plant site also need to be trained but the responsibility for this training is outside the scope of the Reliability Standard.

1363. ... training for generator operators need not be as extensive as that required for transmission operators. ... Thus, in addition to modifying the Reliability Standard to identify generator operators as applicable entities, we direct the ERO to develop specific Requirements addressing the scope, content and duration appropriate for generator operator personnel.
Referring to PER 002 Operating Personnel Training

1372. The Commission directs the ERO to develop a modification to PER-002-0 that extends applicability to the operations planning and operations support staff of transmission operators and balancing authorities … these personnel include those who carry out outage coordination and assessments in accordance with Reliability Standards IRO-004-1 and TOP-002-2, and those who determine SOLs and IROLs or operating nomograms in accordance with Reliability Standards IRO-005-1 and TOP-004-0.
Referring to PER 002 Operating Personnel Training

1373. … the Commission is aware that the personnel responsible for ensuring that critical reliability applications of the EMS, such as state estimator, contingency analysis and alarm processing packages, are available, up-to-date in terms of system data and produce useable results can also have an impact on the Reliable Operation of the Bulk-Power System. … we direct the ERO to consider, through the Reliability Standards development process, whether personnel that perform these additional functions should be included in mandatory training pursuant to PER-002-0.
Referring to PER 002 Operating Personnel Training

1375. … Training programs for operations planning and operations support staff must be tailored to the needs of the function, the tasks performed and personnel involved.
Referring to PER 002 Operating Personnel Training

1379. … The Commission directs the ERO to explore the feasibility of developing meaningful performance metrics for assessing the effectiveness of training programs, and if feasible, to develop such metrics for the Reliability Standard as part of the Reliability Standards development process.
Referring to PER 003 Operating Personnel Credentials

1409. … the Commission directs the ERO to develop a modification to PER-003-0 through the Reliability Standards development process that: (1) specifies the minimum competencies that must be demonstrated to become and remain a certified operator and (2) identifies the minimum competencies operating personnel must demonstrate to be certified. The Commission also directs the ERO to consider grandfathering certification requirements for transmission operator personnel in the Reliability Standards development process.
Basis and Purpose of PER 005

Proposed Reliability Standard PER-005-1 requires the use of a systematic approach to training in developing System Operator training programs, requires verification that System Operators can perform their assigned tasks, and requires responsible entities to provide at least 32 hours of emergency operations training to each of their System Operators every 12 months. For Reliability Coordinators, Balancing Authorities, and Transmission Operators that have operational authority or control over facilities with established Interconnection Reliability Operating Limits (“IROLs”) or that have established operating guides or protection systems to mitigate IROL violations, Requirement 3.1 of PER-005-1 requires that simulation technology, such as simulator, virtual technology, or other technology that replicates the operational behavior of the bulk electric system be used during normal and emergency conditions as a part of their emergency operations training requirements.
Basis for Retirement of PER 002

The Requirements of FERC-approved Reliability Standard PER-002-0 have been completely replaced and supplanted by the specific provisions of proposed new Reliability Standard PER-005-1. Retirement of PER-002-0, upon the effective date of PER-005-1 is necessary to avoid redundancy, conflict, and confusion regarding the mandatory training standards.
Responding to FERC Directed Expanded Applicability

“The proposed PER-005-1 Reliability Standard has been expanded to include Reliability Coordinators as an applicable entity, and also includes Balancing Authorities and Transmission Operators.”

“Generator Owners, operations planning, and operations support staff were not included in the scope of the development of the Reliability Standards proposed in this filing, and instead are included in the scope of Project 2010-1 – Support Personnel Training, which is part of NERC’s Reliability Standards Development Plan: 2009-2011.”
Responding to FERC Directed Expanded Applicability

“FERC directed NERC to consider through the Reliability Standards Development Process the question of whether personnel that support EMS applications should be included in mandatory training. This issue is being addressed in Project 2010-01 Support Personnel Training.”
Generator Interconnection Facility

- a sole-use facility that interconnects the generator to the grid
- considered as though part of the generating facility specifically for purposes of applying Reliability Standards to a Generator Owner or Generator Operator

“If a generator is connected to multiple transmission facilities that are subject to network power flows (that is, power flow on these multiple transmission facilities includes power not solely associated with the generator output, requirements for station service, auxiliary load, or cogeneration load), then those transmission facilities are integrated transmission facilities and should be subjected to the applicable Transmission Owner and Transmission Operator Standard Requirements.”
Proposed Changes to NERC Reliability Standards

- 32 requirements in which the Generator Interconnection Facility is specifically added to the requirement.
- 12 requirements in FAC-003-1 – Transmission Vegetation Management that need to include the Generator Owner as an applicable entity.
- 2 requirements whose applicability should be expanded to address generic issues associated with the generating facility and not necessarily with respect to the Generator Interconnection Facility.
- 8 new standard requirements to fully clarify the expectations with regard to the Generator Interconnection Facility, heretofore implied in the Standards, or to address certain requirements that should apply to all generators regardless of interconnection configuration.
Proposed Generator Operator Authority and Responsibility

“Each Generator Operator shall provide its operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Generation Facility and the Generation Interconnection Facility, and to implement directives of the Transmission Operator and Balancing Authority.”
Proposed Generator Operator Training

“Each Generator Operator shall implement an initial and continuing training program for all personnel responsible for operating the Generator Interconnection Facility to ensure the ability to operate the equipment in a reliable manner.”

NERC Certification is not proposed as a requirement
FP&L Stipulation and Consent Agreement

Issued October 8, 2009
Reliability Enhancement Measures Related to Training

Enhancements to FPL Compliance Program: Within 6 months of the Effective Date, FPL will undertake incremental enhancements to its existing Reliability Standards compliance program with respect to all FPL owned or operated Bulk Electric System operations. This shall include specified roles for senior management involvement, independent reporting of compliance management to senior executives outside of the business units that plan, operate and maintain BES equipment, internal auditing, accountability for reliability in compensation packages, a compliance hotline, a written reliability compliance manual, and improvements to document databases, processes, and training. In addition, FPL will perform practice audits of all FPL Business Units, including a review of procedures, process flowcharts, and compliance documentation. FPL will also assess NERC compliance education and training for all employees responsible for compliance with the Reliability Standards and implement improvements in these programs. To execute these enhancements, perform additional training, document control and spot audits to enhance a sustainable culture of compliance, FPL will provide additional employee support for its compliance program. In its quarterly progress reports to the Commission as described below, FPL shall document compliance improvement actions taken to date. Some of the incremental enhancements set forth herein have been undertaken prior to the effectiveness of the Agreement.
Reliability Enhancement Measures Related to Training

*Training and Certification:* FPL will enhance training to operating employees staffing the control room on the functionalities and limitations of the protection schemes, emergency operations procedures and the requirement to utilize three part communication protocols of Direct-Repeat-Acknowledge. This training shall address the reliability risks to the BES when a part or all of a protection scheme is removed for maintenance or other purposes. FPL will also provide detailed technical training for field relay testing engineers regarding Protection and Control compliance activities, which will include a phased-in certification program. This training shall address seeking express permission from System Operators before switching or before work can be performed on energized BES facilities and the protection systems. Some of the incremental enhancements set forth herein have been undertaken prior to the effectiveness of the Agreement. In addition, **FPL’s initiative to NERC-certify all load dispatchers is currently in progress and will be completed per the schedule agreed upon in a separate Remedial Action Directive Settlement with NERC.**
Reliability Enhancement Measures Related to Training

*Update Emergency Operating Procedures:* FPL will review and modify, as is reasonably necessary, plans to mitigate operating physical emergencies including fires within stations or on BES transmission facilities. These revised procedures will be reviewed by NERC and FERC Staff. Such procedures shall specify a situational assessment to identify and, if possible, isolate the specific portion of the switchyard that is on fire. In the quarterly progress reports to the Commission, FPL shall document actions to be taken to conduct reasonably adequate emergency *training* of these revised procedures to operators of the BES.
Conclusions
Questions and Answers
NERC Compliance: Changes to Training Requirements and Other Recent Developments

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