NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Industry Webinar

Project 2010-13.2 Phase 2 of Relay Loadability: Generation
PRC-025-1 Generator Relay Loadability
Draft Standard

February 13, 2013

RELIABILITY | ACCOUNTABILITY




Agenda

- Welcome, Introductions and Administrative
- NERC Antitrust Guidelines
- Opening Remarks
- Project Background
- FERC Directives
- PRC-025-1 – Generator Relay Loadability (GENRLO)
  - Associated documents
- Cost Effective Analysis Process (CEAP)

Presenters

- Industry Stakeholders
  - Charlie Rogers, Standard Drafting Team (SDT) Chair, Consumers Energy
  - Mike Jensen, SDT Member, PG&E
  - Guy V. Zito, NPCC AVP Standards, NERC Team Lead
- NERC Staff
  - Scott Barfield-McGinnis, Project Coordinator
  - Howard Gugel, Associate Director of Standards Development (CEAP)
  - Phil Tatro, Technical Advisor

GENRLO SDT Members

Member	Registered Entity
Charles W. Rogers, Chair	Consumers Energy
Jeff Billo	ERCOT
S. Bryan Burch, P.E.	Southern Company
Steven Hataway	Florida Power and Light Company
Jonathan Hayes	Southwest Power Pool, Inc.
Mike Jensen	Pacific Gas and Electric Company
Xiaodong Sun	Ontario Power Generation, Inc.
Sudhir Thakur	Exelon Generation
Joe T. Uchiyama	U.S. Bureau of Reclamation
Benson Vuong	Salt River Project
David Youngblood	Luminant Energy

Administrative

- Informal Question and Answer (Q&A) session during the second half
  - Q&A session is intended to improve overall understanding
  - Submit questions and comments via the chat feature
  - Please reference slide number, standard section, etc.
  - Presenters will attempt to address each question
  - Some questions may require later SDT consideration
  - Session is intended to provide better understanding
- Comments for the official record
  - Submit during open comment periods
  - Chat comments are not a part of the project record

Antitrust Guidelines

- NERC Antitrust Guidelines
  - It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Disclaimer

- Disclaimer
  - Participants are reminded that this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. The notice included the number for dial-in participation. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.
  - Wording in this presentation is used for illustrative purposes and may not reflect the exact draft of the posted standard

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Opening Remarks

- Today’s important takeaways
  - Improvements to the proposed standard(s)
    - Attachment 1 and Table 1
  - Guideline and Technical Basis Improvement
    - Individual “Option” discussion sections
    - Calculations
  - Comments (January 25, 2013 – March 11, 2013)
    - Draft Reliability Standard Audit Worksheet (RSAW) for PRC-025-1 (email)
    - Standard PRC-025-1
    - Supplemental Standard Authorization Request (SAR) for PRC-023-2
    - CEAP – Phase II
  - Initial Ballot (March 1–11, 2013)

Terminology

- The following terms used in the presentation mean:
  - GO – Generator Owner
  - GSU – Generator Step-up
  - MVA – megavoltampere
  - Mvar – megavoltampere-reactive
  - MW – megawatt
  - PC – Planning Coordinator
  - RISC – Reliability Issues Steering Committee
  - SC – NERC Standards Committee
  - TP – Transmission Planner

Project Background

- FERC Order No. 733
  - PRC-023-1 Transmission Relay Loadability (Phase 1)
    - Directed modifications implemented in PRC-023-2
  - PRC-025-1 Generator Relay Loadability (Phase 2)
    - "…develop a new Reliability Standard addressing generator relay loadability, with its own individual timeline, and not a revision to an existing Standard." (P106)
  - Protective Relay Loadability due to Stable Power Swings (Phase 3)
    - "…develop a Reliability Standard that requires use of protective relay systems that can differentiate between faults and stable power swings and, when necessary, phases out protective relays that cannot meet this requirement."(P130)

Directives

- FERC Order No. 733
  - March 18, 2010
  - Docket No. RM08-13-000
- 1 primary directive (paraphrased)
  - P106 – Address generator loadability in a new standard
- 3 supporting directives (paraphrased)
  - P104 – Address GSU and unit auxiliary transformers
  - P105 – ERO to submit a schedule
  - P108 – Consider using a percentage of the rating

Need for a standard

- Generation resource reliability
  - During disturbances
    - Generators tripped unnecessarily
    - Condition did not pose a risk to the generator
    - Tripping expanded the scope and/or extended the duration
  - August 14, 2003 findings
    - 290 generators tripped
  - During depressed and fluctuating voltage
    - Generators provide reactive power within their dynamic capability
    - Providing reactive power aids system recovery
    - Loss of reactive power may exacerbate a voltage disturbance
    - Loss of real power may exacerbate a frequency disturbance

PRC-025-1 Improvements

- Purpose
  - Revised to better reflect the intent of the standard
  - To set load-responsive generator protective relays at a level to prevent unnecessary tripping of generators during a system disturbance for conditions that do not pose a risk of damaging the generator
- Applicability
  - Clarified Elements associated with generating units and generating plants
  - Added generator interconnection Facility(ies)

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PRC-025-1 Improvements Continued

- Requirement R1
  - Changed “install settings” to “apply settings”
  - Added “fault” to “maintaining reliable fault protection”
- Measure M1
  - Restructured to eliminate adding to R1’s performance
  - Provided better evidence examples
- Compliance Monitoring Process
  - Updated CEA language for more consistent application across North America
- Violation Severity Level (VSL) included

Attachment 1 Improvements

- Introductory text rewritten
  - Includes GSU tap configurations (i.e., NLTC and OLTC)
- Exceptions for load-responsive protective relays
  - When disconnected from system
  - Phase fault detector elements employed to supervise
  - Elements enabled when other protection elements fail
  - Elements used only for Special Protection Systems
  - Protection systems designed to operate in 15 minutes or greater to allow operator intervention
- Table 1 restructuring

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Table 1 Modifications

- Restructuring
  - Redline variation between draft 1 and draft 2
  - Application, Relay Type, & Option
  - Improving consistency in Bus Voltage and Pickup Setting Criteria language
  - Options have “alpha” suffixes for clarity
- Additions
  - Phase directional time overcurrent (67) relay
  - Options to address new Applicability
    - Generator interconnection Facility(ies)
  - UAT option for measured current

Table 1 – Sample

Table 1. Relay Loadability Evaluation Criteria				
Application	**Relay Type**	**Option**	**Bus Voltage**	**Pickup Setting Criteria**
Synchronous generators	Phase distance relay (21) – directional toward the Transmission system	1a	Generator bus voltage corresponding to 0.95 per unit of the high-side nominal voltage times the turns ratio of the generator step-up transformer	The impedance element shall be set less than the calculated impedance derived from 115% of: (1) Real Power output – 100% of the MW capability reported to the Planning Coordinator or Transmission Planner, and (2) Reactive Power output – 150% of the MW value, derived from the nameplate MVA rating at rated power factor
		OR		
		1b	Calculated generator bus voltage corresponding to 0.85 per unit nominal voltage on the high-side terminals of the generator step-up transformer (including the transformer turns ratio and impedance)	The impedance element shall be set less than the calculated impedance derived from 115% of: (1) Real Power output – 100% of the MW capability reported to the Planning Coordinator or Transmission Planner, and (2) Reactive Power output – 150% of the MW value, derived from the nameplate MVA rating at rated power factor
		OR		
		1c	Simulated generator bus voltage corresponding to 0.85 per unit nominal voltage on the high-side terminals of the generator step-up transformer (including the transformer turns ratio and impedance)	The impedance element shall be set less than the calculated impedance derived from 115% of: (1) Real Power output – 100% of the MW capability reported to the Planning Coordinator or Transmission Planner, and (2) Reactive Power output –100% of the maximum gross Mvar output determined by simulation
	The same application continues on the next page with a different relay type			

Guideline and Technical Basis

- Separated from the standard (size)
- Rewritten to parallel restructured Table 1
  - Table 1 changes mapped in "Consideration of Comments"
- Appended with additional relay
  - Phase directional time overcurrent (67) relay
- Includes example calculations
  - Paired by similar methods
  - Simulation Options not included

What is Loadability ?

- "Field-forcing"
- Unit protection concerns
  - Fault clearing
  - Overload
  - Protective functions
  - Other considerations
- Determination of settings
  - MW reported
  - Mvar based on MW nameplate
  - Single units vs. aggregated units
  - Impedance, overcurrent, voltage setting

Field Forcing

- When a synchronous generator experiences a depressed voltage, it will respond by increasing its Reactive Power output to support the generator terminal voltage
- Results in exceeding the steady-state reactive capability of the generator - may result in operation of load-responsive protective functions
  - Short duration (typically several seconds) – Depends on the application of excitation system controls

Unit Protection Concerns

- Durations
  - Longer than fault clearing
  - Shorter than overload conditions
- Protective functions
  - NERC Power Plant and Transmission System Protection Coordination document
  - IEEE C37.102-2006, “Guide for AC Generator Protection”
- Other considerations
  - Adequate/reliable fault protection
  - Equipment that can’t meet reliable fault protection and loadability

Determination of Settings

- MW/Mvar “capability” to “loadability”
  - Real Power – Value reported to the PC or TP
  - Reactive Power – Derived from the nameplate rating 150% or by simulation 100%
- Multiple options - Ease of calculation
  - 0.95 p.u. generator bus voltage – easiest, approximates the stressed system conditions
  - 0.85 p.u. system voltage – more involved and precise
  - Simulation – most involved and precise
- Single option – Only provided when there is not a more precise alternative

Settings Based on Capability

- Synchronous Units
  - Real Power output – 100% of the MW capability reported to the PC or TP, and
  - Reactive Power output – 150% of the MW value, derived from the nameplate MVA rating at rated power factor
  - Must include an additional 15% margin
- Asynchronous Units
  - The impedance element shall be set less than the calculated impedance, derived from 130% of the maximum aggregate nameplate MVA output at rated power factor (including the Mvar output of any static or dynamic reactive power devices)

Other Settings

- Both Sync and Async units
  - Voltage – Voltage controlled relay setting shall be set less than 75% of the calculated generator bus voltage
  - Simulation – (Must include an additional 115% margin)
    - (1) Real Power output – 100% of the MW capability reported to the PC or TP, and
    - (2) Reactive Power output –100% of the aggregate generation maximum gross Mvar output determined by simulation
- Unit auxiliary transformer (UAT)
  - Calculated – 150% of the nameplate MVA of the UAT
  - Measured – 150% of the load current when the unit is at the MW value reported to the PC or TP

Relay Functions

- Impedance Relays
  - Less than the calculated impedance derived from X% of the calculated MW and Mvar capacity
  - $Z_{calc} \div 115\%$, not $Z_{calc} \times 115\%$
- Overcurrent Relay (incl. V-R)
  - Greater than X% of the calculated current derived from the calculated MW and Mvar capacity
  - $I_{calc} \times 115\%$, not $I_{calc} \div 115\%$
- Voltage controlled (V-C)
  - Voltage control setting shall be set less than 75% of the calculated generator bus voltage

Calculation Inputs

Generator nameplate (MVA @ rated pf):	$GEN_{nameplate} = 903\ MVA$
	$pf = 0.85$
Generator rated voltage (Line-to-Line):	$V_{gen} = 22\ kV$
Real Power output in MW as reported to the PC or TP:	$P_{reported} = 767.6\ MW$
Generator step-up transformer impedance (903 MVA base):	$Z_{gsu} = 12.14\%$
Generator step-up transformer turns ratio:	$GSU_{ratio} = \frac{22\ kV}{346.5\ kV}$
High-side nominal system voltage (Line-to-Line):	$V_{nom} = 345\ kV$
Current transformer ratio:	$CT_{ratio} = \frac{25000}{5}$
Potential transformer ratio:	$PT_{ratio} = \frac{200}{1}$
Auxiliary transformer nameplate:	$UAT_{nameplate} = 60\ MVA$
Auxiliary low-side voltage:	$V_{uat} = 13.8\ kV$
Auxiliary current transformer:	$CT_{uat} = \frac{5000}{5}$
Transformer High Voltage CT:	$CT_{HV} = \frac{2000}{5}$
Reactive Power output of static reactive device:	$MVAR_{static} = 100\ Mvar$

Calculation – Options 1b & 7b

Example Calculations: Options 1b and 7b

Option 1b represents a more complex, more precise calculation for synchronous generators applying a phase distance (21) directional toward the Transmission system relay. This option requires calculating low-side voltage taking into account voltage drop across the generator step-up transformer. Similarly these calculations may be applied to Option 7b for generator step-up transformers applying a phase distance (21) directional toward the Transmission system relay.

Real Power output (P):

Eq. (9) $$P = GEN_{namplate} \times pf$$

$$P = 903\ MVA \times 0.85$$

$$P = 767.6\ MW$$

Reactive Power output (Q):

Eq. (10) $$Q = 150\% \times P$$

$$Q = 1.5 \times 767.6\ MW$$

$$Q = 1151.3\ Mvar$$

Options 1b & 7b Continued

Convert Real Power, Reactive Power, and transformer reactance to per unit values on 767.6 MVA base:

Real Power output (P):

Eq. (11) $$P_{pu} = \frac{P}{MVA_{base}}$$

$$P_{pu} = \frac{767.6\ MW}{767.6\ MVA}$$

$$P_{pu} = 1.0\ p.u.$$

Reactive Power output (Q):

Eq. (12) $$Q_{pu} = \frac{Q}{MVA_{base}}$$

$$Q_{pu} = \frac{1151.3\ Mvar}{767.6\ MVA}$$

$$Q_{pu} = 1.5\ p.u.$$

Options 1b & 7b Continued

Transformer impedance (X_{pu}):

Eq. (13) $$X_{pu} = X_{GSU(old)} \times \left(\frac{MVA_{base}}{MVA_{GSU}}\right)$$

$$X_{pu} = 12.14\% \times \left(\frac{767.6\ MVA}{903\ MVA}\right)$$

$$X_{pu} = 0.1032\ p.u.$$

Use the formula below; calculate the low-side generator step-up transformer voltage ($V_{low\text{-}side}$) using 0.85 p.u. high-side voltage ($V_{high\text{-}side}$). Estimate initial low-side voltage to be 0.95 p.u. Repeat the calculation if necessary until $V_{low\text{-}side}$ converges:

Eq. (14) $$\theta_{low-side} = \frac{\sin^{-1}(P_{pu} \times |X_{pu}|)}{(|V_{low-side}| \times |V_{high-side}|)}$$

$$\theta_{low-side} = \frac{\sin^{-1}(1.0 \times 0.1032)}{(0.95 \times 0.85)}$$

$$\theta_{low-side} = \frac{5.92^\circ}{0.8075}$$

$$\theta_{low-side} = 7.3^\circ$$

Options 1b & 7b Continued

Eq. (15)

$$|V_{low-side}| = \frac{|V_{high-side}| \times \cos(\theta_{low-side}) \pm \sqrt{|V_{high-side}|^2 \times \cos(\theta_{low-side})^2 + 4 \times Q_{pu} \times X_{pu}}}{2}$$

$$|V_{low-side}| = \frac{|0.85| \times \cos(7.3°) \pm \sqrt{|0.85|^2 \times \cos(7.3°)^2 + 4 \times 1.5 \times 0.1032}}{2}$$

$$|V_{low-side}| = \frac{|0.85| \times 0.9918 \pm \sqrt{0.7225 \times 0.9837 + 0.6192}}{2}$$

$$|V_{low-side}| = \frac{0.8430 \pm 1.1532}{2}$$

$$|V_{low-side}| = 0.9981\ p.u.$$

Use the new estimated $V_{low\text{-}side}$ value of 0.9981 per unit for the second iteration:

Eq. (16)

$$\theta_{low-side} = \frac{\sin^{-1}(P_{pu} \times |X_{pu}|)}{(|V_{low-side}| \times |V_{high-side}|)}$$

$$\theta_{low-side} = \frac{\sin^{-1}(1.0 \times 0.1032)}{(0.9981 \times 0.85)}$$

$$\theta_{low-side} = \frac{5.92°}{0.8484}$$

$$\theta_{low-side} = 7.0°$$

Options 1b & 7b Continued

Eq. (17)

$$|V_{low-side}| = \frac{|V_{high-side}| \times \cos(\theta_{low-side}) \pm \sqrt{|V_{high-side}|^2 \times \cos(\theta_{low-side})^2 + 4 \times Q_{pu} \times X_{pu}}}{2}$$

$$|V_{low-side}| = \frac{|0.85| \times \cos(7.0°) \pm \sqrt{|0.85|^2 \times \cos(7.0°)^2 + 4 \times 1.5 \times 0.1032}}{2}$$

$$|V_{low-side}| = \frac{|0.85| \times 0.9926 \pm \sqrt{0.7225 \times 0.9852 + 0.6192}}{2}$$

$$|V_{low-side}| = \frac{0.8437 \pm 1.1532}{2}$$

$$|V_{low-side}| = 0.9987\ p.u.$$

To account for system high-side nominal voltage and the transformer tap ratio:

Eq. (18)

$$V_{bus} = |V_{low-side}| \times V_{nom} \times GSU_{ratio}$$

$$V_{bus} = 0.9987\ p.u.\ \times 345\ kV \times \left(\frac{22\ kV}{346.5\ kV}\right)$$

$$V_{bus} = 21.88\ kV$$

Options 1b & 7b Continued

Apparent power (S):

Eq. (19) $S = P_{reported} + jQ$

$S = 767.6\,MW + j1151.3\,Mvar$

$S = 1383.7\angle 56.3°$

Primary Impedance (Z_{pri}): → Secondary impedance (Z_{sec}):

Eq. (20) $Z_{pri} = \frac{V_{gen}^2}{S^*}$

$Z_{pri} = \frac{(21.88\ kV)^2}{1383.7\angle -56.3°\ MVA}$

$Z_{pri} = 0.3458\angle 56.3°\ \Omega$

Eq. (21) $Z_{sec} = Z_{pri} \times \frac{CT_{ratio}}{PT_{ratio}}$

$Z_{sec} = 0.3458\angle 56.3°\ \Omega \times \frac{\frac{25000}{5}}{\frac{200}{1}}$

$Z_{sec} = 0.3458\angle 56.3°\ \Omega \times 25$

$Z_{sec} = 8.6462\angle 56.3°\ \Omega$

Options 1b & 7b Conclusion

To satisfy the 115% margin in the requirement in Options 1b and 7b:

Eq. (22) $$Z_{sec\,limit} = \frac{Z_{sec}}{115\%}$$

$$Z_{sec\,limit} = \frac{8.6462\angle 56.3°\ \Omega}{1.15}$$

$$Z_{sec\,limit} = 7.5185\angle 56.3°\ \Omega$$

Assume a Mho distance impedance relay with a maximum torque angle (MTA) set at 85°, and then the maximum allowable impedance reach is:

Eq. (23) $$Z_{max} < \frac{|Z_{seclimit}|}{\cos(\theta_{MTA} - \theta_{transient\ load\ angle})}$$

$$Z_{max} < \frac{7.5185\Omega}{\cos(85.0° - 56.3°)}$$

$$Z_{max} < \frac{7.5185\ \Omega}{0.8771}$$

$$Z_{max} < 8.5715\angle 85.0°\ \Omega$$

Implementation

- Draft 1 proposal
  - 48 months
- Draft 2 proposal – Phased approach
  - 48 months for calculations (implicit)
    - Required to determine if settings can be applied to existing protection systems, or
    - if protection systems requires replacement
  - 48 months for applying settings (existing)
  - 72 months for applying settings (replacements)
    - Where there is no alternative to replacement
    - Not a “safe harbor” for failing to set existing relays

VRF/VSL Justification

- Only one Requirement, R1
- Violation Risk Factor (VRF) – High
  - Consistency within standards (e.g., PRC-023-2, R1, Crit. 6)
  - Unnecessary tripping of generation relays expanded scope and/or extended the duration of disturbances
  - Was a serious issue in the August 2003 “blackout” in the northeastern North American continent
- VSL – Severe
  - Meets the criteria for “binary” performance
  - Addresses each instance of a violation by relay

Consideration of Issues and Directives

- Purpose
  - Ensures project meets directives
  - Ensures issues captured by NERC are addressed
  - Aids NERC in filing for approvals
- Beneficial to drafting team
  - Helps maintain focus on purpose and goals
  - Identifies outstanding items
    - Facilitates tracking unresolved items
- Little to no feedback from industry
  - Team encourages suggestions to strengthen arguments and basis on how the project meets issues and directives

Standards Coordination

- Project 2007-06 System Protection Coordination
  - PRC-001-1
  - PRC-027-1
- Project 2007-09 – Generator Verification
  - MOD-025-2 (Board adopted February 7, 2013)
  - PRC-019-1 (Under development)
  - PRC-024-1 (no longer includes load-responsive relays)
- Existing Standards
  - PRC-023-2 (posted supplemental SAR)

Supplemental SAR

- Draft 1 of PRC-023-3 – Transmission Relay Loadability
- SC approved at January 16-17, 2013 meeting
- Scope
  - Establish a “bright line” between PRC-023 & PRC-025
  - Prevent potential overlap in compliance
  - Provide clarity with respect to relay location
- “Applicability” & other information
  - Load-responsive protective relays applied “at the terminals” of circuits rather than “on circuits”
  - V3 effective date –expected to occur after V2 implementation

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RSAW (PRC-025-1)

- Encouraged by industry to post with standard
- RSAWs are managed by NERC Compliance
- SDT provided Compliance valuable input
- Industry encouraged to comment on draft 1
  - Provide feedback via the electronic form and email to NERC Compliance at RSAWfeedback@nerc.net
  - NERC Compliance will share feedback with the SDT
- Documents not officially in the Standard Process
  - RSAW Development (Compliance)
  - CEAP Guidelines (SC)

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SC Pilot of “Cost Effective Analysis Process” (CEAP) Guideline

Howard Gugel, NERC Associate Director of Standards Development

February 13, 2013

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Background

- FERC "..reliability does not come without cost…", references to cost effectiveness in rulings and Commission statements
- Concerns expressed:
  - NERC Board of Trustees, Regional Entity boards, industry stakeholders and trade groups, and State and Provincial governmental authorities
  - NERC SPIG Recommendation-cost effectiveness
- NERC developed a CEAP Guideline, SC-pilot two projects for the two phases of CEAP
- Guy V. Zito, NPCC AVP Standards, NERC Team Lead

Guideline Objectives

- Introduce a cost –
  - Impact analysis into the standards process at or before the SAR stage of a project
  - Effectiveness assessment into the standards development process once the standard is sufficiently developed (requirement by requirement)
- Provide meaningful cost implementation information to the industry and regulators
- Afford industry the opportunity to propose alternate requirements which achieve the reliability objective of a draft standard more efficiently or less costly

Phased Concept

- Presents questions to stakeholders
- Phase I
  - Cost Impact Analysis (CIA)- initially estimates potential impact and is used to support general feasibility, identify order of magnitude costs, potential reliability benefit, and to examine probabilities of occurrence
- Phase II
  - Cost Effectiveness Assessment (CEA)- identifies specific entity costs associated with implementation, maintenance, and ongoing compliance and reporting (PRC-025-1 chosen as pilot)

CEAP Basics

- Not intended to –
  - Result in delays to standards development
  - Result in variances to the standards development process
  - Reveal market sensitive information
- Is intended to –
  - Provide information to a standard's developmental record and is not "decisional" but "informational"
- SC provides oversight, owns and manages the process and coordinates with the RISC
- Outreach through announcements, notifications and education

Determinations

- CIA – Cost Impact Analysis
  - A report and conclusion for use prior to authorization of a SAR to be developed into a standard
- CEA – Cost Effective Analysis
  - A report and conclusion will be provided to the SC and SDT to either continue with balloting or suggest the standard be considered for revision by the SDT to address CEA findings and alternate more cost effective solutions

Piloted Process

- Set of 10 CEA cost of implementation questions posted concurrently with Draft 2 of PRC-025-1
  - Posted for comment through March 11, 2013 | 8:00 p.m. ET
  - All stakeholders that would be in some way affected by the standard are encouraged to respond
- CEAP Team will
  - Analyze and aggregate results of the CEAP Phase 2 (CEA), provide them to the SC and SDT and post with future ballots as information
  - Finalize CEAP Guideline for SC approvals and broad application based on the results of the pilot(s)

Submit Comments

- Generator Relay Loadability (PRC-025-1)
  - Guideline and Technical Basis
  - Implementation Plan
  - VRF/VSL Justification
  - Consideration of Issues and Directives
- Supplemental SAR (PRC-023-2)
  - Proposed draft PRC-023-3
  - Implementation Plan
- RSAW (PRC-025-1) – via email
- CEAP – Phase II

Commenting

- Effective feedback:
  - Specific to question, brevity is best
  - Provide suggestions or alternative approaches
  - Indicating agreement with others is preferred over copying the comments (e.g., “ABC agrees with XYZ’s comments...” or “ABC agrees with XYZ’s comments except for…”) Provide proposed change and rationale
- Less effective feedback:
  - Repeating same comment multiple times
  - No reference to where suggested change should occur
  - Non-specific concerns (e.g., “This standard is not needed.”)

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Questions and Answers

Question and Answer Session

- Please submit your questions via the chat window
  - This session is intended to help general understanding
  - Please reference slide number, standard section, etc.
  - Presenters will respond to as many as possible
  - Some questions may have to be deferred to the team
- Comments for the official record
  - Comments must be submitted via the project page during the open comment period (ends at 8:00 p.m. ET on March 11, 2013)
  - Webinar and chat comments are not a part of the project record

Conclusion

- NERC Standard Developer, Scott Barfield-McGinnis
  - Email at scott.barfield@nerc.net
  - Telephone: 404-446-9689
  - To receive project announcements and updates
    - Request to be added to GENRLOSDT_Plus
- Timeline
  - 45-Day Formal Comment Period – Ends March 11, 2013
  - Initial Ballot last ten days of comment period