

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

NERC Cost Effective Analysis Process (CEAP) For NERC ERO Standards--Draft

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RELIABILITY | ACCOUNTABILITY



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Executive Summary

The Federal Energy Regulatory Commission, NERC and stakeholders have expressed keen interest in a process to determine effectiveness and implementation costs of proposed standards. During a 2010 FERC technical conference the Commission recognized that “reliability does not come without cost”, and significant interest was expressed in development of a process to identify costs for draft reliability standards and the ability of the proposed standards to achieve their reliability objective(s) in a cost effective manner. In addition, the NERC Board of Trustees (BOT), in its consideration of standards, have expressed concern regarding what a standard’s implementation may cost the industry and the relevant incremental reliability improvement (benefits) that implementation of that standard may yield. This NERC Cost Effective Analysis Process (CEAP) represents an initial step towards addressing concerns regarding cost impacts (implementation, maintenance, and ongoing compliance resource requirements) associated with achieving reliability objectives identified in standards. The Process allows the industry the opportunity to identify alternative requirements for meeting a standard’s reliability objective that may be less costly and equally as effective and efficient during the drafting process to help all in making informed choices. The approach described poses questions and provides aggregated results in the form of a report to the industry for informational purposes during balloting.

The CEAP introduces two assessments, one for feasibility, and another to determine the estimated industry wide cost impacts (implementation, maintenance, and ongoing compliance resource requirements) and potential reliability benefit of requirements in a proposed draft standard. “Cost impact” as used throughout the remainder of the document is meant to include “implementation, maintenance, and ongoing compliance resource requirements, and reliability benefit”. This will provide invaluable input into that standard’s development process. The procedure, conducted in parallel with the drafting process, is crafted so it does not delay the development of the standard, but adds supporting information and background for the NERC stakeholders, ballot body and the NERC Board of Trustees, to be utilized for decision making. In addition to providing a “snapshot” looking at an estimate of the cost impacts of the proposal, the CEAP will also solicit input from an independent and wider range of technical perspectives of the industry as well as NERC’s technical groups to determine if any unintended adverse impacts may be created with respect to other Regional or Continent wide standards, should the draft standard be approved.

The NERC CEAP will be utilized to perform an analysis of the cost impacts of the proposed requirements in NERC Reliability Standards as they are developed, and prior to their approval by the NERC Board of Trustees. Implementation of the CEAP will be coordinated with the steps outlined in the NERC Standards Process Manual for developing a Reliability Standard.

The NERC CEAP incorporates two separate phases of reviews. The first phase to be conducted is an estimated high level Cost Impact Analysis (CIA) that will be based on the responses to an initial set of questions posed to the industry during the Standard Authorization Request (SAR) stage, as part of the SAR posting, to determine if the standard project should be pursued. This Cost Impact Analysis is intended to be an assessment to determine the relative cost impacts (in orders of magnitude) of a particular proposed course of action. A comprehensive cost impact or benefit analysis is not being sought at this time. The focus of this effort is to obtain the information required to quantize the cost portion of the cost benefit equation. The “benefits” will be listed separately and may consist of either quantitative or qualitative information. Questions posed during the SAR stage to the industry will

focus on probability and potential cost impacts. Questions posed during the SAR phase will also determine if the standard, in the view of stakeholders, would achieve an Adequate Level of Reliability (ALR), or go “beyond” what is considered adequate, to achieve some additional optimum or premium level of reliability as well as what “reliability risk” may be mitigated. Cost information collected in this phase will strictly be “order of magnitude costs” to determine if a proposed standard will have egregious costs associated with it. Once this information is gathered and compiled by NERC Staff, the NERC Staff will present it to the NERC Standards Committee (SC) for review, and the SC will make a determination whether or not to pursue the development of the standard. The CIA might lead to the conclusion that a technical guideline or white paper might be a preferred undertaking as opposed to a mandatory standard in a given area.

The second phase of the CEAP will be the Cost Effectiveness Assessment (CEA). The Cost Effectiveness Assessment may be considered a more detailed assessment whose purpose is to provide information about the relative effectiveness and cost impacts of different approaches to eliminating disparities, increasing life expectancy, or of any program or initiative. This will involve two sets of questions which will be asked concurrently. The first set is to solicit industry opinion on the technical feasibility and effectiveness to achieve the reliability objective of the standard with its requirements as well as possible alternatives. The second set of questions will be to solicit cost impact, cost recovery, resource and estimated time required with actions and facilities associated with the implementation of compliance with the draft standard. These ultimately should be done on a requirement by requirement basis, and questions will ideally be posted once the draft standard’s requirements have been sufficiently solidified later in the standard development process.

The NERC Standards Staff will evaluate all information provided and produce a CEAP report that will be provided to the NERC SC for their endorsement, and to the SDT for information. All of the cost impact information submitted by entities will be reviewed and compiled by NERC Staff prior to being made public, or presented to the SC. Market sensitive issues of individual stakeholders may exist or be provided through the responses to the CEAP questions. Necessary confidentiality will be maintained, and no market sensitive information will be revealed. In addition, information in the final posted report will be based on the total number of respondents with due regard to regional reliability impacts. Upon approval, the report will be posted along with the NERC standard during balloting, or result in a remanded standard to be sent back to the NERC SDT with recommendations requiring further consideration along with potential issues for stakeholder consideration.

In the production of a final CEAP report, all available NERC resources will be utilized effectively and efficiently. If the industry responses were insufficient in the view of NERC Staff when compiling the responses, efforts will be made to extrapolate without drawing conclusions, clearly identifying where this extrapolation may have been done in the final report. It must be emphasized that the purpose of the CEAP is not to provide additional obstacles to the NERC standard development process, but rather to inform stakeholders of proposed industry cost impact and provide an opportunity for suggestions of alternate methods to achieve equally effective reliability goals and objectives that may result in less cost. The final report is intended to be less analytical in nature and promote better judgment and decision making.

Considerations for CIA and CEA Reports of the CEAP

In developing the reports for Phase One of the CEAP (CIA) and Phase Two (CEA) NERC Staff, working in conjunction with the SCPS or other SC designee(s), will utilize any and all available and approved data and tools which may be necessary to extrapolate from incomplete responses, or leverage historical and “snapshot” data and available information to produce an informative report. Items that may be used when developing the report and Staff recommendation will consist of, but not be limited to the following:

- i. Adequate Level of Reliability Metrics (ALRs)
- ii. TADS, GADS and DADS databases
- iii. Filings of the EIA411 Data which includes information regarding quantities of resources and transmission miles by voltage class
- iv. Event, condition, and performance driven indices being developed
- v. Historical Compliance or Event Analysis information
- vi. Published “Lessons Learned”
- vii. Standards Knowledge Database

Examples of how some of the above may be used, include but are not limited to the following;

- i. Use of “averaging” when insufficient data may be submitted by stakeholders. In some instances it may be sufficient to provide a “typical” cost impact for a Transmission Owner with “X” amount of load, or a Generator capable of “X” MW. Ranges instead of discrete cost impacts such as TOs’ costs ranged between \$X and \$Y dollars per MW of load served may be used. Regional characteristics will be taken into consideration to ensure that “averaging” does not produce a misleading perception of results.
- ii. Extrapolating when insufficient data may be submitted by stakeholders by determining total Generation or Transmission circuit miles by voltage class and estimating from the responses given total potential industry cost impact. EIA411 Data that NERC currently compiles could provide this “total” data and submitted data could be extrapolated to arrive at approximate industry cost impact.

The final CEAP Report should be provided in consideration of the following:

- i. The total of number of respondents, their cost impacts and their capacities with due consideration given to market sensitivities.
- ii. Ranges or discrete cost impact per MW or circuit mile of transmission or some other factor that industry can utilize to determine an approximation for their cost impact.
- iii. Total industry wide potential implementation cost impact for entities.
- iv. Effectiveness of the requirements to meet the reliability objective of the standard.
- v. Basis for need of the standard as identified in the CIA Phase One of the project based on probabilities of occurrence, potential severity of impact to the BES and reliability need (event, condition or performance driven).

- vi. List of any alternatives considered that may have been proposed by stakeholders and not accepted by the SDT along with reasons.
 - vii. List any assumptions or extrapolations that may have been presented in the report which may skew the results.
 - viii. Recommendations to the SC by NERC Staff based on report's contents.
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NERC Procedure for Cost Effective Assessment Process of Proposed NERC Reliability Standards

- 1) Upon accepting a SAR the Standards Committee (SC) approves the posting of the “typical” set of CIA questions (Phase one of the CEAP) in Appendix B as amended by NERC Staff along with the draft SAR, for a thirty (30) day comment period for stakeholder review and response. Following receipt of the compiled responses to the CIA questions and report containing a recommendation by NERC Staff, the SC will consider all information obtained during the posting and determine whether or not to authorize the SAR’s development into a standard. If the SC determines that the CIA report and NERC Staff recommendation do warrant development of a standard, the SAR will be authorized for standards development. If the SC determines that the CIA responses and report do not support a standard’s development, the SC will determine if a technical guideline or white paper should be developed to address the reliability objective and provide this information to the appropriate NERC standing committee (OC, PC or CIPC) or working group for assignment. The SC will also issue a formal notice to the Requester explaining why the SAR was not accepted and publish the findings of NERC Staff, the SC and the CIA report.
- 2) During the NERC standards development process, a NERC Standard Drafting Team (SDT), in conjunction with NERC Staff, will deliberate on whether the requirements in a standard are developed enough to begin the second phase of the CEAP, namely the the CEA process, and request that the SC initiate the CEA (Phase Two of the CEAP).
- 3) The SC with the assistance of NERC Staff, upon approval of the SDT’s request to initiate Phase Two of the CEAP, will develop a CEAP Guidance Procedure Document (see Appendix A for template) outlining the expectations for the development of the final CEAP report, and conduct and provide oversight of the assessment as follows:
 - a. Approve a set of survey questions (Appendix B) in addition to any other questions that must be conducted to identify the impact (i.e. operational, implementation costs, resources, maintenance costs, ongoing compliance costs, etc.) of the proposed standard’s requirements on a requirement by requirement basis. The SC in conjunction with NERC Staff, will judge whether or not sufficient stakeholder responses were received to provide valid results for analysis. If the number of responses received was inadequate the SC will determine what course of action to

take and consider alternatives such as but not limited to the following; accepting the limited information received or determining if any opportunity for extrapolating data exists or the reissuance of the surveys. The surveys should be such that their results provide:

- i. Indication of what cost impact would be associated with the individual requirements in the standard, if approved. The approximate cost impacts would be aggregated by the SC and based on surveys for the affected entities, and also using any historical information to provide more information on how universal the impact may be.
 - ii. Indication of the entities' estimates of what resources and timeframes might be needed to comply with a standard's requirements and provide information on the time the entities might need to implement the requirements of the standard, and develop documentation regarding compliance. This input would consider not only technical but budgetary concerns. The timeframe would provide further input to the SDT's Implementation Plan.
 - iii. Identification of potential alternative reliability requirements that could more cost effectively achieve the same benefits of reliability improvements, and provide justifications, as well as any potential adverse impacts or unintended consequences, if any, that may result directly, or indirectly.
 - iv. Identification of any market issues that may exist and how they could affect the standard's requirements or applicability.
- b. Post the standard set of questions in Appendix B, and additional questions as may be deemed appropriate by the SDT, and approve posting along with the draft standard and all pertinent information for comment. All information from all surveys and postings will be directed to NERC Staff.
 - c. Upon completion of the surveys and analysis, NERC Staff will compile the information with due consideration to any market sensitive information.
- 4) Upon completion of the CEA and all SC requested tasks, NERC Staff will submit the results of their analysis and recommendations to the SC in the form of a report.
 - 5) The SC will review the NERC Staff report and any suggested follow up actions and will determine and approve a course of action.
 - 6) The SC will communicate the outcome of their deliberations to the SDT and direct the SDT to take one of the following actions:
 - a. Revise the standard to address the results of the CEAP.
 - b. Accept the standard "as is" to move forward through the remainder of the process (go to Step 7).
 - c. Hold the standard in abeyance until such time as additional guidance can be provided regarding whether or how to continue.

- d. Decide not to pursue the development of certain requirements due to cost impact considerations and remand these back to the SDT.
- 7) Upon acceptance by the SC of the CEA and determination that the standard is cost effective by virtue of information provided in the report and any other input that may be available, the remainder of the NERC standards development process will be followed. The results of both phases of the CEAP will be posted along with the draft standard and Implementation Plan along with any other pertinent information for the information of the stakeholders during ballot.
- 8) NERC Staff will present the results of the CEAP to the NERC Board of Trustees as part of a standard's package of materials, along with the proposed standard for approval.
- 9) Upon BOT approval of the standard, the CEAP will become a matter of record and held with all archived information in the standard's development and provided to the FERC and Provincial Governmental Authorities as required.

Appendix A
CEAP Guidance Document

CEAP Guidance

Draft Standard Title/Project Number _____

Standard Type (i.e. Planning- TPL, Protection-PRC, etc.) _____

(Cost impact (implementation, maintenance, and ongoing compliance resource requirements) and reliability benefits and Technical consideration--assigned gathering of data/surveys) “or” Authorize Posting of Phase Two CEA questions developed by NERC Staff and SDT.

Applicability (i.e. TOP, GO, TO, etc.) _____

Suggested Additional Outreach for Survey-Posting _____

(Gen. Forum, NATF, APPA, EEI, ISO/RTO Council, etc.)

Standard Template Survey Questions and any Additional Questions _____

Specific Issues to Address _____

Market Sensitive Issues to Consider for Report _____

Appendix A (cont'd)

CEAP Documentation--SC/NERC Staff Project Management of CEAP. Example only.

1) **CEAP Phase 1 Cost Impact Analysis (CIA)**

SAR Accepted by the SC (but not yet Authorized) Date _____

Date SC initiates Phase One CEAP, CIA _____

Date of Posting for Comment _____

Results of SC Evaluation of CIA Responses and other information (Proceed? Y/N)

Date of SC Decision _____

SAR Authorization Date by SC for Standard Development _____

2) **CEAP Phase Two Cost Effectiveness Assessment (CEA)**

Draft Standard w/ Supporting Information and CEAP request from SDT, Date Received _____

SC and NERC Staff to Develop CEAP Guidance Document, Date Completed _____

Conduct Posting or Survey for CEA information, Date Initiated _____

Date Concluded _____

Compile CEAP draft Report, Date Completed _____

Results of SC Evaluation of CEAP Report and NERC Staff Recommendations

(Continue with approvals? Y/N) _____ Date _____

Appendix B

CIA, CEA Typical Questions

Typical CIA Questions (Phase One of CEAP to be included upon notification of intention to develop a NERC Reliability Standard and posting of SAR. Additional questions may be added to the list below as appropriate):

- 1) Does the proposed standard address a reliability concern that must be filled to protect reliability? If not, why not (probabilistic data may be used to make a determination)?

- 2) If the standard meets a “reliability related” need would it achieve an adequate level of reliability “ALR” or exceed this ALR as defined by NERC’s ALR approved metrics? If not why?

- 3) What approximate one-time and ongoing estimated potential cost impacts (implementation, maintenance, and ongoing compliance resource requirements) and reliability benefits would be associated with compliance with the proposed standard?

- 4) Are there alternate requirement(s) other than the proposed requirement(s) to achieve the reliability objective of this proposed standard?

- 5) Would a technical guideline or “best practices” whitepaper or a training program be effective in achieving a desired outcome to meet the reliability need, as opposed to a “region wide” standard or variance?

- 6) What are the benefits of the proposed standard/requirements?

Typical CEA Technical Survey Questions (Phase Two of CEAP may be included in SDT postings for comments or done separately as part of the CEAP. Additional questions may be added to the list below as appropriate):

- 1) On a requirement by requirement basis, are the requirements effective in achieving the reliability objective of the standard and if not, why?**

- 2) Are there alternative requirement(s) to achieve the draft standard’s reliability objective? If so, what alternatives are there and which requirements would they replace?**

- 3) On a requirement by requirement basis, does each of the draft requirements, by itself, achieve or contribute to a level of reliability that is “adequate”, i.e. acceptable? If so, how? If not, why not?**

- 4) Are there additional “efficiencies” that could be realized for any requirement(s)? If so, which requirements, what “efficiencies”, and how realized?**

- 5) Is there any adverse impact to reliability or any other existing NERC standard, Regional standard, Regional criteria, or in-process project draft standard(s), of which your organization is aware?**

- 6) What would the probabilistic risk be for an event/issue to occur which would otherwise be addressed by this standard? (i.e. High, Medium, or Low)**

“Typical” CEA Cost and Implementation Questions (Phase Two of CEAP may be included in SDT postings for comments or done separately as part of the CEAP. Additional questions may be added to the list below as appropriate):

- 1) Describe the size of your organization in broad general terms, e.g. GO-Total installed MWs, TOs circuit miles by kV and total load served, etc.**
- 2) What are the gross anticipated one-time and ongoing cost impacts (implementation, maintenance, and ongoing compliance resource requirements) and reliability benefits of implementing the standard and its requirements as presently drafted (labor, materials, administrative)?**
- 3) Is there an alternative for achieving the reliability objective of the standard with a different requirement that may result in less cost impact (implementation, maintenance, and ongoing compliance resource requirements)? If so what? Please provide as much additional supporting evidence as possible.**
- 4) How long would it take your organization to implement full compliance to the standard as written? What would affect the implementation (i.e. outage scheduling, availability of materials, human resources, etc.)?**

NERC Cost Effective Assessment Process

