POLICY ISSUE
INFORMATION

December 2, 2005 SECY-05-0219

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations

SUBJECT: ISSUANCE OF NUCLEAR REGULATORY COMMISSION GENERIC LETTER 2005-XX, "GRID RELIABILITY AND THE IMPACT ON PLANT RISK AND THE OPERABILITY OF OFFSITE POWER"

PURPOSE:

This paper informs the Commission that the staff intends to issue the subject generic letter (GL). The proposed GL is provided as Enclosure 1. Enclosure 2 provides the staff resolution of public comments. This paper does not address any new commitments or resource implications.

BACKGROUND:

On August 14, 2003, the largest power outage in U.S. history occurred in the Northeastern United States and parts of Canada. Nine U.S. nuclear power plants (NPPs) tripped. Eight of them lost offsite power, along with one NPP that was already shut down. The length of time until power was available to the switchyard ranged from one hour to six and one half hours. Although the onsite emergency diesel generators (EDGs) functioned to maintain safe shutdown conditions, the event was significant in terms of the number of plants affected and the duration of the power outage.

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The loss of all alternating current (AC) power at nuclear power plants involves the simultaneous loss of offsite power (LOOP), turbine trip, and the loss of the onsite emergency power supplies (typically EDGs). This situation is called a station blackout (SBO). Risk analyses of nuclear power plants indicate that the loss of all AC power can be a significant contributor to the core damage frequency. Although nuclear power plants are designed to cope with a LOOP event by using onsite power supplies, LOOPs are considered to be precursors to SBO. An increase in the frequency or duration of LOOPs increases the risk of core damage.

Based on inspection information and risk insights, the staff is concerned that several issues associated with assurance of grid reliability may impact public health and safety and/or compliance with applicable regulations. These issues are use of long-term periodic grid studies and informal communication arrangements to monitor real-time grid operability, potential shortcomings in grid reliability evaluations done as part of maintenance risk assessments, lack of preestablished arrangements identifying local grid power sources and transmission paths for response to a station blackout, and potential elimination of grid events from operating experience and training. The staff identified these issues as a result of considering the August 14, 2003, blackout event.

DISCUSSION:

The NRC issued a regulatory issue summary (RIS 2004-5, “Grid Operability and the Impact on Plant Risk and the Operability of Offsite Power,” dated April 15, 2004) to sensitize NPP addressees to the requirements in Section 50.65 of Title 10 of the Code of Federal Regulations (10 CFR 50.65), “Requirements for monitoring the effectiveness of maintenance at nuclear power plants”; 10 CFR 50.63, “Loss of all alternating current power”; 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 17, “Electric power systems”; and plant technical specifications on the operability of offsite power. NRC also issued Temporary Instruction (TI) 2515/156, “Offsite Power System Operational Readiness,” dated April 29, 2004; and TI 2515/163, “Operational Readiness of Offsite Power,” dated May 05, 2005, which instructed the regional offices to perform followup inspections at plant sites on the issues identified in the RIS.

The staff found considerable variability and uncertainty in licensees’ responses to TIs 2515/156 and 2515/163. The switchyard degraded voltage condition at the Callaway nuclear plant on August 11, 1999, was attributed to a high service territory demand combined with large amounts of power being transported across the grid. The staff is still assessing significant operating experience such as the event on June 14, 2004, when an electrical fault on the 230kV transmission line about 40 miles from the Palo Verde Nuclear Station caused the trip of all three units, a LOOP, and the loss of six additional fossil-fueled generating units nearby within about 30 seconds of the start of the fault.

On April 26, 2005, the Commission was briefed on grid stability and offsite power issues by a stakeholder panel consisting of representatives of the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Council (NERC), the National Association of Regulatory Utilities Commissioners, PJM Interconnection (one of the country’s largest transmission system operators), a First Energy Corporation executive representing the Nuclear Energy Institute, and the NRC staff. On May 19, 2005, the Commission issued a staff

requirements memorandum (SRM), directing the staff to issue the subject generic letter by December 15, 2005.

The GL asks addressees to provide information on four topics:

(1) The use of protocols between the nuclear power plants (NPPs) and the transmission system operators (TSOs), independent system operators (ISOs), or reliability coordinators/authorities (RCs/RAs) and the TSO's use of real-time contingency analysis (RTCA)[1] software or an equivalent state of the art software program to assist NPPs in monitoring grid conditions to determine the operability of offsite power systems under plant technical specifications (TSOs, ISOs, or RCs/RAs are responsible for preserving the reliability of the local transmission system. In this GL, TSO includes ISOs and RCs/RAs);

(2) the use of NPP/TSO protocols and RTCA programs by TSOs to assist NPP operators in monitoring grid conditions for consideration in maintenance risk assessments;

(3) the offsite power restoration procedures in accordance with Section 2 of NRC Regulatory Guide (RG)1.155, "Station Blackout"; and

(4) LOOPs caused by grid failures at a frequency equal to or greater than once in 20 site-years in accordance with RG 1.155, "Station Blackout."

Under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), this GL requests that addressees provide responses to the questions in the generic letter within 60 days of the issuance of the GL.

A draft of this GL was placed in the *Federal Register*. The staff's response to the public comments on the draft is given in Enclosure 2.

COORDINATION:

The Advisory Committee on Reactor Safeguards (ACRS) reviewed the generic letter during its 527th meeting on November 3, 2005, and recommended that it be issued. The Committee To Review Generic Requirements (CRGR) reviewed and endorsed the generic letter during its 405th meeting on November 8, 2005. The staff incorporated the CRGR's comments on the GL.

[1] In this GL, the RTCA includes equivalent state of the art programs.

The Office of the General Counsel has no legal objection to this paper. The Office of the Chief Financial Officer (OCFO) determined that a review of the GL was unnecessary and that OCFO has no objections based on budget or financial management concerns.

The GL is not a "rule" under the Small Business Regulatory Enforcement Fairness Act of 1996.

/RA Jacqueline E. Silber Acting For/

Luis A. Reyes
Executive Director
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Enclosures:
1. NRC Generic Letter 2005-XX
2. Staff Resolution of Public Comments

OMB Control No.: XXXX-XXXX

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

NRC GENERIC LETTER 2005-XX: GRID RELIABILITY AND THE IMPACT ON PLANT RISK AND THE OPERABILITY OF OFFSITE POWER

ADDRESSEES

All holders of operating licenses for nuclear power reactors except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

PURPOSE

To determine if compliance is being maintained with U.S. Nuclear Regulatory Commission (NRC) regulatory requirements governing electric power sources and associated personnel training for your plant, the NRC is issuing this generic letter (GL) to obtain information from its licensees in four areas:

(1) use of protocols between the nuclear power plant (NPP) and the transmission system operator (TSO), independent system operator (ISO), or reliability coordinator/authority (RC/RA) and the use of real-time contingency analysis (RTCA)[1] software or an equivalent state-of-the-art software program by TSOs to assist NPPs in monitoring grid conditions to determine the operability of offsite power systems under plant technical specifications. (The TSO, ISO, or RA/RC is responsible for preserving the reliability of the local transmission system. In this GL the term TSO is used to denote these entities);

(2) use of NPP/TSO protocols and RTCA programs by TSOs to assist NPPs in monitoring grid conditions for consideration in maintenance risk assessments;

(3) offsite power restoration procedures in accordance with Section 2 of NRC Regulatory Guide (RG) 1.155, “Station Blackout;” and

(4) losses of offsite power caused by grid failures at a frequency equal to or greater than once in 20 site-years in accordance with RG 1.155.

Enclosure 1

[1] In this GL, the RTCA includes equivalent state-of-the-art programs

Pursuant to 10 CFR 50.54(f), addressees are required to submit a written response to this GL.

BACKGROUND

Based on information obtained from inspections and risk insights developed by an internal NRC expert panel (further described below), the staff is concerned that several conditions associated with assurance of grid reliability may impact public health and safety and/or compliance with applicable regulations. These conditions include use of long-term periodic grid studies and informal communication arrangements to monitor real-time grid operability, potential shortcomings in grid reliability evaluations performed as part of maintenance risk assessments, lack of preestablished arrangements identifying local grid power sources and transmission paths, and potential elimination of grid events from operating experience and training. The staff identified these issues as a result of considering the August 14, 2003, blackout event.

On August 14, 2003, the largest power outage in U.S. history occurred in the Northeastern United States and parts of Canada. Nine U.S. nuclear power plants (NPPs) tripped. Eight of these lost offsite power, along with one NPP that was already shut down. The length of time until power was available to the switchyard ranged from approximately one hour to six and one half hours. Although the onsite emergency diesel generators (EDGs) functioned to maintain safe shutdown conditions, this event was significant in terms of the number of plants affected and the duration of the power outage.

The loss of all alternating current (AC) power to the essential and nonessential switchgear buses at a NPP involves the simultaneous loss of offsite power (LOOP), turbine trip, and the loss of the onsite emergency power supplies (typically EDGs). Such an event is referred to as a station blackout (SBO). Risk analyses performed for NPPs indicate that the SBO can be a significant contributor to the core damage frequency. Although NPPs are designed to cope with a LOOP event through the use of onsite power supplies, LOOP events are considered precursors to SBO. An increase in the frequency or duration of LOOP events increases the probability of core damage.

The NRC issued a regulatory issue summary (RIS 2004-5, "Grid Operability and the Impact on Plant Risk and the Operability of Offsite Power," dated April 15, 2004) to advise NPP addressees of the requirements in Section 50.65 of Title 10 of the *Code of Federal Regulations* (10 CFR 50.65), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants;" 10 CFR 50.63, "Loss of all alternating current power;" 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 17,[2] "Electric power systems;" and plant technical specifications on operability of offsite power. In addition, the NRC issued Temporary Instruction (TI) 2515/156, "Offsite Power System Operational Readiness," dated April 29, 2004, and TI 2515/163, "Operational Readiness of Offsite Power," dated May 05, 2005, which instructed the regional offices to perform followup inspections at plant sites on the issues identified in the RIS.

[2] In this GL, GDC 17 includes equivalent plant specific principal design criteria.

The NRC needs additional information from its licensees in the four areas identified above in order to determine if regulatory compliance is being maintained.

On April 26, 2005, the Commission was briefed on grid stability and offsite power issues by a stakeholder panel that included representatives of the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Council (NERC), the National Association of Regulatory Utilities Commissioners, PJM Interconnection (one of the country's largest transmission system operators), a FirstEnergy Corporation executive representing the Nuclear Energy Institute, and the NRC staff. In light of this briefing, the Commission issued a staff requirements memorandum (SRM) dated May 19, 2005, in which the Commission directed the staff to review NRC programs related to operator examination and training and ensure that these programs adequately capture the importance of grid conditions and offsite power issues to the design, assessment, and safe operation of the plant, including appropriate interactions with grid operators. The SRM further directed the staff to determine whether the operator licensing program needs to be revised to incorporate additional guidance on grid reliability.

DISCUSSION

Use of protocols between the NPP and the TSO, ISO, or RC/RA and the use of RTCA software programs by TSOs to assist NPP in monitoring grid conditions to determine the operability of offsite power systems under plant technical specifications (TS)

A licensee's ability to comply with TS for offsite power may depend on grid conditions and plant status; in particular, maintenance on, and degraded conditions of, key elements of the plant switchyard and offsite power grid can affect the operability of the offsite power system, especially during times of high grid load and high grid stress. A communication interface with the plant's TSO, together with training and other local means to maintain NPP operator awareness of changes in the plant switchyard and offsite power grid, is important to enable the licensee to determine the effects of these changes on the operability of the offsite power system. The staff found a good deal of variability in the TI 2515/156 and TI 2515/163 responses on the use of these NPP/TSO communication protocols. Some licensees apparently rely on informal NPP/TSO communication arrangements and long-term grid studies without real-time control of operation to within the limits of the studies to assure offsite power operability. However, the staff also learned that most TSOs serving NPP sites now have, or will shortly have, RTCA software programs.

The RTCAs give the TSO the capability to determine the impact of the loss or unavailability of various transmission system elements (called contingencies) on the condition of the transmission system. The transmission systems can generally cope with several contingencies without undue impairment of grid reliability, but it is important that the NPP operator know when the transmission system near the NPP can no longer sustain NPP voltage based on the TSO's analysis of a reasonable number of contingencies. This knowledge helps the operator understand the general condition of the NPP offsite power system. To satisfy the maintenance

rule, the NPP operator should know the grid's condition before taking a risk-significant piece of equipment out of service, and should monitor it for as long as the equipment remains out of service.

It is especially important that the NPP operator know when the trip of the NPP will result in LOOP to the plant. As stated earlier, a reduction in NPP switchyard voltage due to a trip is the main cause of a LOOP event. It is important to understand that the transmission systems can generally tolerate voltages lower than required by plant TS for NPP system, structures and components (SSC) operability. As a result, the TSO will not necessarily keep the transmission system voltage above the level needed for the NPP unless the TSO has been informed of the needed voltage level and agreements have been formalized to maintain the voltage level. It was not always clear from the data collected in accordance with TI 2515/156 whether the TSO would notify the NPP of inadequate transmission system contingency voltages or inadequate voltages required for the NPP SSC operability.

Inadequate NPP contingency post-trip switchyard voltages will result in TS inoperability of the NPP offsite power system due to actuation of NPP degraded voltage protection circuits during certain events that result in an NPP trip. NPPs of certain designs have occasionally experienced other inoperabilities in these circumstances (e.g., overloaded EDGs or loss of certain safety features due to interaction with circuit breaker logic). Safety-related motors may also be started more than once under these circumstances, which could result in operation outside the motors' specifications and actuation of overload protection. Unavailability of plant-controlled equipment such as voltage regulators, transformer auto tap changers, and generator automatic voltage regulation can contribute to the more frequent occurrence of inadequate NPP post-trip voltages.

The RTCA programs in use by the TSOs, together with properly implemented NPP/TSO communication protocols and training, can keep NPP operators better informed about conditions affecting the NPP offsite power system. However, the RTCA programs are not always available to the TSO. This was the case during the period leading up to the August 14, 2003, blackout; and events have shown that the data used in the programs sometimes do not represent actual conditions and capabilities. These shortcomings have been offset to some degree by notification of RTCA unavailability to NPP operators. The NPP operators then perform operability determinations to assess post-trip switchyard voltages following inadvertent NPP trips.

Use of NPP/TSO protocols and RTCA programs by TSOs to assist NPPs in monitoring grid conditions for consideration in maintenance risk assessments

As discussed above (when warranted by worsening grid conditions, etc.), grid reliability evaluations should be performed as part of the maintenance risk assessment required by 10 CFR 50.65 (or in any reassessment.) To perform meaningful and comprehensive grid reliability evaluations (or reevaluations as appropriate), it is essential that the NPP communicate with the TSO before, and periodically for the duration of, grid-risk-sensitive maintenance activities. The communication between the NPP and its TSO should enable the NPP operator to obtain up-to-date information on existing and projected grid reliability for use in maintaining a current and valid maintenance risk assessment and in managing possibly changing risk.

The communication with the TSO should include whether a loss of the NPP's electrical output could impact the local grid, as do two of the three types of grid-risk-sensitive maintenance (activities that increase the likelihood of (1) a plant trip and (2) a LOOP).

With regard to risk management, an internal NRC expert panel convened to obtain short-term, grid-related risk insights found that it is important to have effective NPP configuration risk management (including the maintenance risk management required by Section 50.65(a)(4)) when grid reliability is degraded or threatened. In particular, a potentially significant increase in NPP risk may occur if equipment required to prevent and mitigate station blackout is unavailable when the grid is degraded. Recent NRC studies have found that since 1997, LOOP events have occurred more frequently during the summer (May through October) than before 1997, that the probability of a LOOP event due to a reactor trip has also increased during the summer months, and the durations of LOOP events have generally increased. The staff is concerned about extended maintenance activities scheduled for equipment required to prevent and mitigate station blackout during these months, especially in areas of the country that experience a high level of grid stress.

The staff found a good deal of variability in the data collected in accordance with TI 2515/156 and TI 2515/163 regarding grid reliability evaluations performed when warranted as discussed above, as part of the maintenance risk assessment required by 10 CFR 50.65. Some licensees communicate routinely with their TSOs once per shift to determine grid conditions, while others rely solely on the TSOs to inform them of deteriorating grid conditions and do not inquire about grid conditions before performing grid-risk-sensitive maintenance activities. Some licensees do not consider the NPP post-trip switchyard voltages in their evaluations, and some do not coordinate grid-risk-sensitive maintenance with their TSOs. The NPP/TSO communication protocol is a useful tool for obtaining the information necessary for the grid reliability evaluations that should be performed, when warranted, as discussed above, as part of the maintenance risk assessment required by 10 CFR 50.65. The protocol is also useful in effectively implementing the guidance in the 2000 revision of Section 11 of NUMARC 93-01, Rev. 2, on reassessing plant risk in light of emergent conditions. As discussed under the previous topic, the RTCAs available to most TSOs give them the capability to determine the impact of various transmission system contingencies on the condition of the transmission system. It is important that the NPP operator know when the transmission system near the NPP cannot sustain a reasonable level of contingencies. In summary, the NPP operator should know and stay informed of the general condition of the NPP offsite power system and be adequately trained to assess and manage risk under the Maintenance Rule before performing and for the duration of grid-risk-sensitive maintenance activities (i.e., activities that could increase risk under degraded grid reliability conditions).

Offsite power restoration procedures in accordance with Section 2 of RG 1.155

LOOP events can also have numerous unpredictable initiators such as natural events, potential adversaries, human error, or design problems. Pursuant to 10 CFR 50.63, "Loss of all alternating current power," the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 provides NRC guidance for licensees on developing their approaches for complying with 10 CFR 50.63. Section 2 of RG 1.155 provides guidance on the procedures necessary to restore offsite power,

including losses following "grid undervoltage and collapse." Section 2 states: "Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable."

Preestablished agreements between NPP and TSOs that identify local power sources and transmission paths that could be made available to resupply NPPs following a LOOP event and NPP operator training help to minimize the durations of LOOP events, especially unpredictable LOOP events. Discussions with NPP licensees indicate that some licensees do not have such agreements in place, but instead only attempt restoration of their EDGs following a potential SBO. RIS 2004-05 states that NPPs should have procedures available consistent with the guidance in Section 2 of RG 1.155 for restoration of offsite power following a LOOP or SBO event.

Losses of offsite power caused by grid failures at a frequency equal to or greater than once in 20 site-years in accordance with RG 1.155

The data collected in accordance with TI2515/156 indicate that grid failures that caused total loss of offsite power at some nuclear power plants have occurred since the nuclear power plants were initially analyzed in accordance with the criteria in RG 1.155. The staff is concerned that these nuclear power plants have not been reanalyzed to determine whether their SBO coping durations have remained consistent with the guidance in RG 1.155 after these LOOP events. The staff is also concerned that some plants may be inappropriately eliminating some of these grid events from their operating experience database.

Thus, power reactor licensees may depend on information obtained from their TSOs to make operability determinations for TS compliance, to perform risk assessments under the Maintenance Rule, and to assure compliance with the SBO Rule. Accordingly, the NRC staff is requesting information on such matters from addressees.

However, the NRC staff has not identified any corrective actions that might be warranted.

APPLICABLE REGULATORY REQUIREMENTS

GDC 17 and plant TSs

For NPPs licensed in accordance with the GDC in Appendix A to 10 CFR Part 50, the design criteria for onsite and offsite electrical power systems are provided in GDC 17. For NPPs not licensed in accordance with the GDC in Appendix A, the applicable design criteria are provided in the updated final safety analysis report (UFSAR). These reports set forth criteria similar to GDC 17, which requires, among other things, that an offsite electric power system be provided to permit the functioning of certain SSCs important to safety in the event of anticipated operational occurrences and postulated accidents.

The transmission network (grid) is the source of power to the offsite power system. The final paragraph of GDC 17 requires, in part, provisions to minimize the probability of the loss of

power from the transmission network given a loss of the power generated by the nuclear power unit(s). The loss of the power generated by the nuclear power unit (trip) is an anticipated operational occurrence. The offsite power circuits must therefore be designed to be available following a trip of the unit(s) to permit the functioning of SSCs necessary to respond to the event.

The trip of an NPP can affect the grid so as to result in a LOOP. Foremost among such effects is a reduction in the plant's switchyard voltage as a result of the loss of the reactive power supply to the grid from the NPP's generator. If the voltage is low enough, the plant's degraded voltage protection could actuate and separate the plant safety buses from offsite power. Less likely results of the trip of a nuclear plant are grid instability, potential grid collapse, and subsequent LOOP due to the loss of the real and/or reactive power support supplied to the grid from the plant's generator.

In general, plant TSs require the offsite power system to be operable as part of the limiting condition for operation and specify actions to be taken when the offsite power system is not operable. Plant operators should therefore be aware of (1) the capability of the offsite power system to supply power, as specified by TS, during operation and (2) situations that can result in a LOOP following a trip of the plant. If the offsite power system is not capable of providing the requisite power in either situation, the system should be declared inoperable and pertinent plant TS provisions followed.

10 CFR 50.65

Section 50.65(a)(4) requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities before performing the maintenance activities. These activities include, but are not limited to, surveillances, post-maintenance testing, and corrective and preventive maintenance. The scope of the assessment may be limited to SSCs that a risk-informed evaluation process has shown to be significant to public health and safety.

In NRC RG 1.182, the NRC endorsed the February 22, 2000, revision to Section 11 of NUMARC 93-01, Revision 2, as providing acceptable methods for meeting 10 CFR 50.65(a)(4). (The revised Section 11 was later incorporated into Revision 3 of NUMARC 93-01.) The revised Section 11 addressed grid stability and offsite power availability in several areas. Section 11.3.2.8 states that:

> emergent conditions may result in the need for action prior to conduct of the assessment, or could change the conditions of a previously performed assessment. Examples include plant configuration or mode changes, additional SSCs out of service due to failures, or *significant changes in external conditions (weather, offsite power availability)* [emphasis added].

Additionally, Section 11.3.4 states that "the assessment for removal from service of a single SSC for the planned amount of time may be limited to the consideration of *unusual external conditions that are present or imminent (e.g., severe weather, offsite power instability*)"

[emphasis added].

Accordingly, licensees should perform grid reliability evaluations as part of the maintenance risk assessment required by 10 CFR 50.65 before performing "grid-risk-sensitive" maintenance activities (such as surveillances, post-maintenance testing, and preventive and corrective maintenance). Such activities are those which could increase risk under existing or imminent degraded grid reliability conditions, including (1) conditions that could increase the likelihood of a plant trip, (2) conditions that could increase the likelihood of LOOP or SBO, and (3) conditions impacting the plant's ability to cope with a LOOP or SBO, such as out-of-service risk-significant equipment (e.g., an EDG, a battery, a steam-driven pump, an alternate AC power source, etc.). The likelihood of LOOP and SBO should be considered in the maintenance risk assessment, whether quantitatively or qualitatively. If the grid reliability evaluation indicates that degraded grid reliability conditions may exist during maintenance activities, the licensee should consider rescheduling any grid-risk-sensitive maintenance activities (i.e., activities that tend to increase the likelihood of a plant trip, increase LOOP frequency, or reduce the capability to cope with a LOOP or SBO). If there is some overriding need to perform grid-risk-sensitive maintenance activities under existing or imminent conditions of degraded grid reliability, the licensee should consider alternate equipment protection measures and compensatory actions to manage the risk.

With regard to conditions that emerge during a maintenance activity in progress, Section 11.3.2.8 in the 2000 revision to Section 11 of NUMARC 93-01 states that emergent conditions could change the conditions of a previously performed risk assessment. Offsite power availability is one example given of an emergent condition that could change the conditions of a previously performed risk assessment. Licensees should reassess the plant risk in view of an emergent condition that affects an existing maintenance risk assessment, except as discussed below, and should take a worsening grid condition into account when doing so. However, as discussed in the Statements of Consideration for 10 CFR 50.65(a)(4) and also in the associated industry guidance (revised Section 11 of NUMARC 93-01), this reassessment of the risk should not interfere with or delay measures to place and maintain the plant in a safe condition, in general, or in response to or preparation for the worsening grid conditions. Note also that as discussed in the Statements of Consideration for 10 CFR 50.65(a)(4) and also in the associated industry guidance (revised Section 11 of NUMARC 93-01, Revision 3), if the emergent condition (including degrading grid reliability) is corrected (or ceases to exist) before the risk reassessment is completed, the reassessment need not be completed.

10 CFR 50.63

Pursuant to 10 CFR 50.63, "Loss of all alternating current power," the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 provides guidance for licensees to use in developing their approach for complying with 10 CFR 50.63. A series of tables in the RG define a set of pertinent plant and plant site parameters that have been found to affect the likelihood of a plant experiencing an SBO event of a given duration. Using the tables allows a licensee to determine a plant's relative vulnerability to SBO events of a given duration and identify an acceptable minimum SBO coping duration for the plant.

With regard to grid-related losses of offsite power, Table 4 in RG 1.155 indicates that the following plant sites should be assigned to Offsite Power Design Characteristic Group P3:

> Sites that expect to experience a total loss of offsite power caused by grid failures at a frequency equal to or greater than once in 20 site-years, unless the site has procedures to recover AC power from reliable alternative (nonemergency) AC power sources within approximately one-half hour following a grid failure.

The majority of U.S. NPPs fall into the four hour minimum coping capability category set forth in RG 1.155. However, Table 2 in RG 1.155 indicates that a typical plant with two redundant EDGs per nuclear unit should have at least an eight hour minimum coping duration if it falls into the P3 group. Therefore, plants that have experienced a grid-related LOOP that were evaluated in accordance with the SBO guidance in RG 1.155 may no longer be consistent with that guidance.

Section 2 of RG 1.155 provides guidance on the procedures necessary to restore offsite power, including losses following "grid undervoltage and collapse." Section 2 states: "Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable." These procedures are a necessary element in minimizing LOOP durations following a LOOP or SBO event.

10 CFR 55.59 and 10 CFR 50.120

Pursuant to 10 CFR 55.59(c)(2), operator requalification programs must include preplanned lectures on a regular basis throughout the license period in areas where operator and senior operator written examinations and facility operating experience indicate that more scope and depth of coverage is needed in the following subjects:

(i) Theory and principles of operation
(ii) General and specific plant operating characteristics
(iii) Plant instrumentation and control systems
(iv) Plant protection systems
(v) Engineered safety systems
(vi) Normal, abnormal, and emergency operating procedures
(vii) Radiation control and safety
(viii) Technical specifications
(ix) Applicable portions of Title 10, Chapter I, Code of Federal Regulations

Section 55.59(c)(3)(i) requires operator requalification programs to include on-the-job training on a number of control manipulations and plant evolutions if they are applicable to the plant design; the loss of electrical power (or degraded power sources) is but one of the evolutions to be performed annually by each operator. Moreover, section 55.59(c)(3)(iv) requires each licensed operator and senior operator to review the contents of all abnormal and emergency procedures on a regularly scheduled basis.

In addition, 10 CFR 55.59(c) states that, in lieu of the programs specified in 10 CFR 55.59(c)(2) and (3) above, the Commission may approve a program developed by using a systems

approach to training (SAT).

According to 10 CFR 50.120, each nuclear power plant licensee must establish, implement, and maintain a SAT-based program for training and qualifying nonlicensed operators, shift supervisors, and electrical and mechanical maintenance personnel (among several other job categories). The training program must be periodically evaluated and revised as appropriate to reflect industry experience and changes to the facility and procedures (among other things).

SAT-based training programs, which are developed, implemented, and maintained by facility licensees and accredited by the National Nuclear Accrediting Board (NNAB), should incorporate lessons learned as a result of industry operating events, such as the 2003 blackout. The NRC staff routinely monitors the industry's accreditation process, administers the initial operator licensing examinations, conducts biennial licensed operator requalification training program inspections, and retains authority to conduct for-cause training program inspections. However, these activities do not provide the staff with information sufficient to verify that all facility licensee training programs have adequately captured the importance of grid conditions and offsite power issues in advance of the 2006 peak summer cooling season. Accordingly, the staff has included questions on operator training in the information requested below.

REQUESTED INFORMATION

In accordance with 10 CFR 50.54(f), addressees are required to submit written responses to this GL within 60 days of its date.

In their responses, addressees are requested to answer the following questions and provide the information to the NRC with respect to each of their NPPs:

Use of protocols between the NPP and the TSO, ISO, or RC/RA and the use of RTCA software programs by TSOs to assist NPP in monitoring grid conditions to determine the operability of offsite power systems under plant TS .

GDC 17, 10 CFR Part 50, Appendix A, requires that licensees minimize the probability of the loss of power from the transmission network given a loss of the power generated by the nuclear power unit(s).

1. Describe your formal agreements with your transmission system operator (TSO) to promptly notify you when conditions of the surrounding grid are such that degraded voltage (i.e., below TS requirements) or LOOP could occur following a trip of the reactor unit(s).

   (a) What is the time period required for the notification?

   (b) Describe the procedures to periodically check with the TSO to determine the grid condition and ascertain any conditions that would require a notification. If you do not have procedures, describe how you assess grid condition that would require notifications.

(c) Describe how NPP operators are trained and tested on the use of the procedures in 1.(b).

(d) Describe the grid conditions that would trigger a notification.

(e) If you do not have a formal agreement with your TSO, describe why you believe you comply with the provisions of GDC 17 as stated above, or describe what actions you intend to take to establish the necessary formal agreement with your TSO.

(f) If you have existing formal interconnection agreements and related protocols that ensure adequate communication and coordination between the NPP and the TSO, describe such agreements to promptly notify you when the conditions of the surrounding grid could result in degraded voltage (i.e., below TS nominal trip setpoint value requirements; including NPPs using allowable value in its TSs) or LOOP after a trip of the reactor unit(s).

(g) Describe the low switchyard voltage conditions that would initiate operation of plant degraded voltage protection

2. Describe how you ensure (i.e., the criteria and any methodologies used to assess) that the offsite power system will remain operable following a trip of your NPP.

(a) Does your NPP's TSO use a RTCA program, or an online analytical transmission system studies program or other equivalent predictive methods, to determine the grid conditions that would make the NPP offsite power system inoperable during various contingencies? Provide a brief description of such a program used by the TSO.

(b) Does your NPP's TSO use the RTCA program as the basis for notifying the NPP when such a condition is identified? If not, how does the TSO notify the NPP of such a condition on the grid?

(c) Would the RTCA program utilized by your TSO identify a condition in which a trip of the NPP would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPPs using allowable value in its TSs) and would actuate plant degraded voltage protection? If not, discuss how such a condition would be identified on the grid.

(d) How frequently does the RTCA program update?

(e) Provide details of RTCA-identified contingency conditions that would trigger an NPP notification from the TSO.

(f) Is the NPP notified of periods when the RTCA program is unavailable to the TSO, and does the NPP conduct an offsite power system operability determination when such a notification is received?

(g) After an unscheduled inadvertent trip of the NPP, are the resultant switchyard voltages verified by procedure to be bounded by the voltages predicted by the RTCA?

(h) If an RTCA program is not available to the NPP's TSO, are there any plans for the TSO to obtain one? If so, when?

(i) If an RTCA program is not available, does your TSO perform periodic studies to verify that adequate offsite power capability, including adequate NPP post-trip switchyard voltages (immediate and/or long-term), will be available to the NPP licensee over the projected timeframe of the study?

(i) Are the key assumptions and parameters of these periodic studies translated into TSO guidance to ensure that the transmission system is operated within the bounds of the analyses?

(ii) If the bounds of the analyses are exceeded, does this condition trigger the notification provisions discussed in question 1 above?

(j) If your TSO does not use, or you do not have access to the results of a RTCA program, or your TSO does not perform and make available to you periodic studies that determine the adequacy of offsite power capability, please describe why you believe you comply with the provisions of GDC 17 as stated above, or describe what compensatory actions you intend to take to ensure that the offsite power system will be sufficiently reliable and remain operable with high probability following a trip of your NPP.

3. NPP TS require that the plant's offsite power system be operable as part of the plant's limiting condition of operation. Describe how you ensure (i.e., the criteria and any methodologies used to assess) that the NPP's offsite power system and safety-related components will remain operable when switchyard voltages are degraded.

(a) When the TSO notifies the NPP operator that a trip of the NPP or the loss of most critical transmission line or the largest supply to the grid would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPPs using allowable value in its TSs) and would actuate plant degraded voltage protection, is the NPP offsite power system declared inoperable under the plant TSs? If not, why not?

(b) If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) is lost when subjected to a double sequencing (LOCA with delayed LOOP event) as a result of the anticipated system performance and is incapable of performing its safety functions as a result of responding to an emergency actuation signal during this condition, is the equipment considered inoperable? If not, why not, including any compensatory actions?

(c) Describe your evaluation of onsite safety-related equipment to determine whether it will operate as designed during the condition described in question 3.(b).

(d) When the NPP is notified by the TSO of other grid conditions that may impair the capability or availability of offsite power, are any plant TS action statements entered? If so, please identify them.

(e) If you believe your plant TSs do not require you to declare your offsite power system or safety-related equipment inoperable in any of these circumstances, explain why you believe you comply with the provisions of GDC 17 and your plant TSs, or describe what compensatory actions you intend to take to ensure that the offsite power system and safety-related components will remain operable when switchyard voltages are degraded.

(f) Describe how NPP operators are trained and tested on the compensatory actions mentioned in questions 3.(a) through (e).

4. NPP TS require that the plant's offsite power system be operable as part of the plant's limiting conditions of operation. Describe how you ensure (i.e., the criteria and any methodologies used to assess) that the offsite power system will remain operable following a trip of your NPP.

(a) Do the NPP operators have any guidance in plant TS bases sections, the final safety analysis report, or plant procedures regarding situations where the condition of plant-controlled or -monitored equipment (e.g., voltage regulators, auto tap changing transformers, capacitors, static VAR compensators, main generator voltage regulators) can adversely affect the operability of the NPP offsite power system?

(b) Describe how NPP operators are trained and tested on the guidance and procedures described question 4.(a).

(c) If your TS bases sections, the final safety analysis report, or plant procedures do not provide guidance regarding situations where the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite power system, explain why you believe you comply with the provisions of GDC 17 and the plant TSs, or describe what actions you intend to take to provide guidance on situations where the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite power system.

Use of NPP/TSO protocols and RTCA programs by TSOs to assist NPPS in monitoring grid conditions for consideration in maintenance risk assessments

The Maintenance Rule (10 CFR 50.65(a)(4)) requires that licensees assess the increase in risk that may result from proposed maintenance activities before performing them.

5. Describe how you perform grid reliability evaluations as part of the maintenance risk assessments required by 10 CFR 50.65(a)(4).

(a) Is a grid reliability evaluation performed at your NPP as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) before performing grid-risk-sensitive maintenance activities? This includes surveillances, post-maintenance testing, and

preventive and corrective maintenance that could increase the probability of a plant trip or LOOP or impact LOOP or SBO coping capability, for example, before taking a risk-significant piece of equipment (such as an EDG, a battery, a steam-driven pump, an alternate AC power source) out of service?

(b) Is grid status monitored by some means for the duration of the grid-risk-sensitive maintenance to confirm the continued validity of the risk assessment and is risk reassessed when warranted? If not, how is the risk assessed during grid-risk-sensitive maintenance?

(c) Is there a seasonal variation in the stress on the grid in the vicinity of your NPP site? Is there a seasonal variation in the LOOP frequency? If yes to either question, discuss when do they occur and what is the magnitude of the variations.

(d) Are seasonal variations in the probability of a LOOP at your plant site considered in the grid-risk-sensitive maintenance evaluation? If not, what is your basis for not considering them?

(e) Describe your contacts with the TSO to determine current and anticipated grid conditions as part of the grid reliability evaluation performed before conducting grid-risk-sensitive maintenance activities

(f) Describe your use of a formal agreement with your TSO or use formal procedures to assure that a worsening grid condition has not emerged during a maintenance activity in progress.

(g) Do you contact the TSO periodically for the duration of the grid-risk-sensitive maintenance activities?

(h) Describe how NPP operators and maintenance personnel are trained and tested on these agreements and procedures in question 5.(f).

(i) Is the TSO expected to notify the NPP of such a condition? If so, why can the TSO be relied on to do so?

(j) If a grid reliability evaluation performed as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) does not consider or rely on some arrangement for communication with the TSO, explain why you believe you comply with 10 CFR 50.65(a)(4).

(k) If risk is not assessed (when warranted) based on continuing communication with the TSO throughout the duration of grid-risk-sensitive maintenance activities, explain why you believe you have effectively implemented the relevant provisions of the endorsed industry guidance associated with the maintenance rule.

(l) With respect to questions 5.(j) and 5.(k), you may, as an alternative, describe what actions you intend to take to ensure that the increase in risk that may result from

proposed grid-risk-sensitive activities is assessed before and reassessed during grid-risk-sensitive maintenance activities, respectively, during existing, imminent, or worsening degraded grid reliability conditions.

6. Describe how you use the results of your risk assessment, including the results of the grid reliability evaluations, in managing maintenance risk, as required by 10 CFR 50.65(a)(4).

(a) Describe how the TSO coordinates transmission system maintenance activities that can have an impact on the NPP operation with the NPP operator.

(b) Describe how the NPP operator coordinates NPP maintenance activities that can have an impact on the transmission system with the TSO.

(c) Describe how you consider, and implement if warranted, the rescheduling of grid-risk-sensitive maintenance activities (activities that could (i) increase the likelihood of a plant trip, (ii) increase LOOP probability, or (iii) reduce LOOP or SBO coping capability) under existing, imminent, or worsening degraded grid reliability conditions?

(d) If there is an overriding need to perform grid-risk-sensitive maintenance activities under existing, or imminent conditions of degraded grid reliability, or continue grid-risk-sensitive maintenance when grid conditions worsen how do you effectively implement when warranted, appropriate risk management actions, including alternate equipment protection and compensatory measures to limit or minimize risk?

(e) Describe how these actions (in question 6.(a) through (d)) are accomplished and how the procedures in place provide reasonable assurance they are accomplished consistently and effectively.

(f) Describe how NPP operators and maintenance personnel are trained and tested on these procedures (in question 6.(e)).

(g) If there is no effective coordination between the NPP operator and the TSO regarding transmission system maintenance or NPP maintenance activities, please explain why you believe you comply with the provisions of 10 CFR 50.65(a)(4).

(h) If you do not consider and effectively implement appropriate risk management actions during the conditions described above, explain why you believe you effectively addressed the relevant provisions of the associated NRC-endorsed industry guidance.

(i) You may, as an alternative to questions 6.(g) and (h) describe what actions you intend to take to ensure that the increase in risk that may result from grid-risk-sensitive maintenance activities is managed in accordance with 10 CFR 50.65(a)(4).

Offsite power restoration procedures in accordance with 10 CFR 50.63 as developed in Section 2 of RG 1.155

Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.

7. Consistent with the recommendations in Section 2 of RG 1.155, you are expected to have established an agreement with your plant's TSO that identifies local power sources[3] that could be made available to resupply your plant following a LOOP event. Briefly describe any agreement made with the TSO.

   (a) Describe how NPP operators are trained and tested on identifying and using local power sources to resupply your plant following a LOOP event.

   (b) If you have not established an agreement with your plant's TSO that identifies local power sources that could be made available to resupply your plant following a LOOP event, explain why you believe you comply with the provisions of 10 CFR 50.63, or describe what actions you intend to take to establish compliance.

Losses of offsite power caused by grid failures at a frequency of equal to or greater than once in 20 site-years in accordance with Table 4 of Regulatory Guide 1.155 for complying with 10 CFR 50.63.

Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.

8. Describe how your NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.

   (a) Has your NPP experienced a total loss of offsite power caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63?

   (b) If so, have you reevaluated the NPP using the guidance in Table 4 of RG 1.155 to determine if it should be assigned to the P3 offsite power design characteristic group?

   (c) What were the results of this reevaluation, and was the initially determined coping duration for the NPP adjusted?

   (d) If your NPP has experienced a total loss of offsite power caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63 and has not been reevaluated using the guidance in Table 4 of RG 1.155, explain why you believe you comply with the provisions of 10 CFR 50.63 as stated above, or describe what actions you intend to take to ensure that the NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.

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[3] This includes items such as nearby or onsite gas turbine generators, portable generators, hydro generators, and black-start fossil power plants.

Actions to ensure compliance

9. If you determine that any action is warranted to bring your NPP into compliance with NRC regulatory requirements, including TSs, GDC 17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59 or 10 CFR 50.120, describe the schedule for implementing it.

REQUIRED RESPONSE

In accordance with 10 CFR 50.54(f), in order to determine whether a facility license should be modified, suspended, or revoked, or whether other action should be taken, an addressee is required to respond as described below.

An addressee should consult SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors From Public Disclosure," dated October 19, 2004, and 10 CFR 2.390 to determine if its response contains sensitive unclassified (nonsafeguards) information and should be withheld from public disclosure. SECY-04-0191 is available on the NRC public Web site.

Within 60 days of the date of this generic letter, an addressee is required to submit a written response. If an addressee is unable to provide the requested information or can not meet the requested completion date, it must address in its response any alternative course of action that it proposes to take, including the basis for the acceptability of the proposed alternative course of action.

The required written response should be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, 11555 Rockville Pike, Rockville, Maryland 20852, under oath or affirmation under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f). In addition, a copy of the response should be sent to the appropriate regional administrator.

REASONS FOR INFORMATION REQUEST

This GL requests addressees to submit information. The requested information will enable the NRC staff to determine whether applicable requirements (plant TSs in conjunction with 10 CFR Part 50, Appendix A, General Design Criteria 17; 10 CFR 50.65(a)(4); 10 CFR 50.63; 10 CFR 55.59; and 10 CFR 50.120) are being met in regard to the grid topics addressed.

RELATED GENERIC COMMUNICATIONS

NRC Regulatory Issue Summary 2004-05, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power," dated April 15, 2004 (ADAMS Accession No. ML040990550).

BACKFIT DISCUSSION

Under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and

10 CFR 50.54(f), this GL transmits an information request for the purpose of verifying compliance with applicable existing requirements. Specifically, the requested information will enable the NRC staff to determine whether applicable requirements (plant TSs in conjunction with 10 CFR Part 50, Appendix A, General Design Criteria 17; 10 CFR 50.65(a)(4); 10 CFR 50.63; 10 CFR 55.59; and 10 CFR 50.120) are being met in regard to the grid topics addressed. No backfit is either intended or approved in the context of issuance of this generic letter. Therefore, the staff has not performed a backfit analysis.

FEDERAL REGISTER NOTIFICATION

A notice of opportunity for public comment on this generic letter was published in the *Federal Register* (70 FR 19125) on April 12, 2005. Approximately 65 comments were received from 10 nuclear entities comprising of utilities, owners groups, and nuclear organizations such as NEI; one comment each was received from the Oak Ridge National Laboratory, the State of New Jersey, the Department of Energy (Bonneville Power Administration), and Mr. K. M. Strickland. There were 15 comments on GDC 17 and the use of a real-time contingency analysis program, 8 comments on the Maintenance Rule, 8 comments on the Station Blackout Rule, and 4 comments on applicable regulations and rules; 28 comments were categorized as miscellaneous since they could not be binned into other categories, and 1 comment was on extending the response time of the proposed GL. The staff considered all comments that were received. The staff's evaluation of the comments is publicly available through the NRC's Agency wide Documents Access and Management System (ADAMS) under Accession No. ML052440417.

SMALL BUSINESS REGULATORY ENFORCEMENT FAIRNESS ACT

The NRC has determined that this action is not subject to the Small Business Regulatory Enforcement Fairness Act of 1996.

PAPERWORK REDUCTION ACT STATEMENT

This generic letter contains information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved by the Office of Management and Budget, approval number 3150-0011, which expires on February 28, 2007.

The burden to the public for these mandatory information collections is estimated to average 122 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of these information collections, including suggestions for reducing the burden, to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet electronic mail to INFOCOLLECTS@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0011), Office of Management and Budget, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact or the lead project manager listed below.

Christopher I. Grimes, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Technical Contact: Paul Gill, NRR
301-415-3316

Lead PM: Kimberley Corp, NRR
301-415-1091

NRC Staff Resolution of Public Comments Received on the Proposed Generic Letter on Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power

Table 1: Key for Resolution of Comments		
Sources of Comments (ADAMS Accession No.)	**Comment Designator**	**Remarks**
Nuclear Energy Institute (NEI) (ML051710189)	N	
Progress Energy, Inc (ML051740216)	P	Progress Energy endorses the NEI comments.
Tennessee Valley Authority (ML051740196)	T	TVA endorses the NEI comments.
Strategic Teaming and Resource Sharing (STARS) (ML051740206)	S	STARS endorses the NEI comments.
Detroit Edison (ML051740218)	D	Detroit endorses the NEI and NRSG comments.
Entergy Nuclear Northeast (ML051740203)	E	Entergy supports NEI position on this issue.
AmerGen (ML051740213)	A	AmerGen endorses the NEI comments.
Nuclear management Company (NMC) (ML051890020)	M	NMC endorses the NEI comments and NRSG letter
BWR Owners' Group (ML051740198)	O	BWR Owners Group endorses the NEI comments.
Nuclear Regulatory Services Group (NRSG) (ML051710193)	G	
Bonneville Power Administration (ML051710186)	B	
Oak Ridge National Laboratory (ML051260218)	R	
Kimball M. Strickland (ML051120223)		
State of New Jersey (ML051710183)		The State of New Jersey supports the issuance of this generic letter as written.

ATTACHMENT 2

Table 2: Key for Classifying Comments	
Bin #	**Description**
1	Comments related to connecting the generic letter to compliance with GDC 17
2	Comments related to connecting the generic letter to compliance with 10 CFR 50.65
3	Comments related to connecting the generic letter to compliance with 10 CFR 50.63
4	Comments related to schedule
5	Legal, backfit determinations
6	Miscellaneous comments

Table 3: Resolution Matrix for Comments	
Introduction to responses to public comments	The power blackout on August 14, 2003, raised questions about whether the Nation's electric grid was being operated in a safe and reliable manner. The use of the national power grid has significantly changed over the past years. As deregulation of the electric industry continues to develop, it raises the potential for a public health and safety issue related to the reliability of the grid and its impact on the safe operation of nuclear power plants (NPPs). An unreliable grid cannot ensure the availability of the offsite power system (preferred power supply, PPS), which is essential to the safe operation of NPPs. The electric power system for NPPs depends to a great extent on the reliability of the grid to ensure the availability of offsite power at the PPS. A decrease in the reliability of the grid may lead to unnecessary challenges to safety systems and dependance on onsite power systems such as diesel generators. In the past, NPPs were connected to an electric power grid that was dominated by vertically integrated utilities that produced and transmitted electricity for local customer demand, and excess capacity on the transmission system was used to move power from low-cost to high-cost centers. The utilities owning NPPs also owned the transmission networks to which the NPPs were connected. Because each utility had franchise service territories little competition, and owned its transmission network, the utilities could control the reliability of the grid in the general vicinity of their NPPs. Today some NPP licensees no longer own the transmission network to which their NPPs are connected, and the management of the power grid is most often in the hands of independent entities, called independent system operators (ISOs) or regional transmission operators (RTOs), that are responsible for dispatching, transmission, and generation of electricity, and maintaining reliability during both normal and abnormal grid operating conditions. In the past 4 years, significant increases have occurred in the transfer of large amounts of bulk power across the grid, particularly during peak hours. These changes have shifted the focus for maintaining grid reliability from a local area network, where the NPPs are located, to a large geographic region. The reliability of offsite power for NPPs supplying power to the grid in this environment now depends on reanalysis of grid stability on a wider scale to include the region controlled by the ISO/RTU. In this new grid environment created by the sale of electricity in an open market, NPP owners must demonstrate that the loss of the largest single generator or transmission line in the grid would not result in the complete loss of preferred power to the plant—even when the largest single load is hundreds of miles from the NPP. To that end, NPP operators, in concert with ISOs/RTOs, must establish the operational requirements (including transmission line configurations) for the grid in order to ensure the availability of the preferred power supplies to the NPPs in the event of a loss of load in the grid.

	As a result of electric industry restructuring and the consequent open access to the grid, use of the grid has significantly changed over recent years, and the grid is now operated in a manner that was not originally considered. The national consensus is that the grid is in serious need of modernization, but it will take several years to bring the grid into the 21st century. In addition, the threat environment in the wake of the terrorist attacks of September 11, 2001, suggests that the grid should be prepared for contingencies that were not previously considered. The NPP operator and ISO/RTO must be vigilant to ensure that the grid pre-contingency conditions remain within the limits of the conditions for the post-contingency analysis. This is especially difficult because pre-contingency conditions that might be perfectly acceptable for all other users of the grid are often unacceptable for an NPP. Moreover, it is often not obvious that the conditions are unacceptable until after the contingency and the NPP trip. Also, the NRC staff needs to be actively engaged with all of the groups involved in improving grid reliability in order to prevent future events like the power blackout on August 14, 2003, from challenging the safe operation of NPPs. The NRC staff needs to have information on (1) how NPP operators ensure the PPS is being operated in a manner consistent with the licensing basis of NPPs, (2) how the grid-risk-significant equipment is being operated and maintained at NPPs, and (3) how the underlying assumptions and criteria for the PPS and the station blackout rule are being maintained and validated in view of restructuring of the electricity generation and transmission industry. The purpose of this GL is to collect information on how the NPP operators are ensuring the availability of the offsite power to the NPP when the grid is being operated in ways not originally envisioned.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	E-1 (Attachment 1, Comment 1)	Several of the questions regarding compliance with GDC 17 are unclear. GDC 17 establishes design requirements in part to minimize the potential for a loss of an offsite power source as a result of a loss of plant generation (i.e., a plant trip). However, the questions refer to formal agreements, procedures, and communication protocols rather than to specific design attributes. For example, Question 1 of the draft Generic Letter (GL) states, "If you do not have a formal agreement with your TSO, please describe why you believe you comply with the provisions of GDC 17 as stated above..." A clear distinction between plant's design and licensing basis and programmatic operational controls should be maintained. Compliance with design criteria is already addressed in plant FSARs.	Not Incorporated - As a result of electric industry deregulation, the independent system operators (ISOs) and/or transmission system operators (TSOs) are now responsible for ensuring the overall reliability and stability of the electric grid at the regional level. To ensure the availability of offsite power to nuclear power plant (NPPs), NPP owners/operators should establish formal protocols with their regional ISOs/TSOs to identify the necessary regional and local operational requirements (set by Federal Energy Regulatory Commission (FERC), National Electric Reliability Council (NERC), etc.) to ensure the operability of the nuclear facility's preferred power supply (PPS) for a given set of contingencies. The agreements between a NPP licensee and its transmission operator determine the reliability of the grid and the basis for the availability of offsite power to the NPP. Licensees are required to comply with plant technical specifications (TS) that govern the operability of the offsite power system. If the design requirements of GDC 17 (or offsite power criteria documented in the USFAR) cannot be met (i.e., if post-trip switchyard voltages will be inadequate or offsite power will be unavailable post-trip), then the offsite power system may be inoperable. Plant technical specifications contain limiting conditions for operation that require the plant offsite power system to be operable. The TSOs (or their equivalent counterparts) normally run online contingency analyses to ensure that the grid will meet first contingency, that is, loss of critical transmission lines or generation. Therefore, it is important for NPP operators to have a communication interface with the transmission system operator, together with other local means to maintain

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
			an awareness of changes in the plant switchyard and offsite power grid, to determine the impact of these changes on operability of the offsite power system to NPPs. Therefore, Question 1 of the draft generic letter (GL) is seeking information on how licensees comply with the design requirements of GDC 17 and meet the technical specifications if no formal agreement exists between the licensee and its transmission operator.
1	E-5 (Attachment 1, Comment 5, paragraph 5)	The draft GL does not appear to be in agreement with GDC 17, by implying the off-site power circuits must be available immediately following a trip.	Not Incorporated - On page 5, the draft GL refers to the applicable regulatory requirements (GDC 17) and states: "It is therefore necessary that the offsite power circuits be designed to be available following a trip of the unit in order to permit functioning of SSCs necessary to respond to the event." In other words, the offsite power design must be capable of immediate support of SSCs following a reactor trip. GDC 17 requires that one of these circuits be available within a few seconds following a loss-of-coolant accident. The staff calls this circuit the "immediate access circuit." However, this does not mean that the GDC 17 requires that all of the circuits be available immediately. The draft GL merely refers to the regulatory requirements and design criteria applicable to each licensee's plant and does not imply a new interpretation of GDC 17.
1	G-1a (Comment 1, page 2, paragraph 2)	GDC is a design standard used in the development of the plant's electric power systems, but does not prescribe methods to operate and maintain the design (RG 1.93). GDC does not require that the NPP continually assess the conditions on the transmission system. Compliance with GDC 17, which was	Not Incorporated - The comments suggest that design and operating requirements are not related. While it is true that GDC do not prescribe operational limits, the NRC staff believes that the adequacy of any design, including the design of an offsite electric power supply, can only be determined by reference to the conditions under which the design will be operated. That is, whether a system meets its

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
		established prior to issuance of an operating license, should be assured unless the plant design is altered. Since the enhanced operating and maintenance practices suggested in the proposed GL are not related to a plant design, change, such practices should not be characterized as necessary for compliance with the design standard of GDC 17.	design criteria can only be determined by analyzing the system response under the most extreme operating conditions prescribed by the TSs in the license. Through the GL, the staff will seek to determine whether current plant offsite electric power supplies are designed and being operated in compliance with currently applicable requirements (whether embodied in GDC, plant-specific design criteria, or plant TSs) even though the current grid conditions were not anticipated in original licensing. This analysis can only be done on a plant-specific basis considering individual plant design and operating practices. The capacity and capability of the offsite power system may be significantly affected by electric industry restructuring and how the grid is being managed. It is important that licensees continue to ensure that the design bases for the reliability and stability of the offsite power sources do not degrade during the life of the plant. GDC 17 establishes the plant's electric power system requirements, including capacity and capability (operational requirements), to performing the system's intended function. Plant TS, in combination with GDC 17 (or its forerunner, Safety Criterion 39), will require plant operators to be aware of the offsite power needs of the plant, including minimum required switchyard voltages, and when these needs cannot be met. Therefore, plant operators should be aware of situations that can impact operability of offsite power. To ensure that the design basis of the plant continues to be maintained under current grid conditions and offsite power is available to the NPP, the staff believes that plant operators and the transmission system operator must communicate.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	M-2 (Enclosure, page 1, paragraphs 5 and 6)	All of the NMC-operated plants were licensed prior to the formal publication of the GDC, (i.e., Appendix A to 10 CFR Part 50). As noted in SECY-92-223, all plants with Construction Permits issued prior to May 21, 1971, are not subject to these provisions and each licensee has its own licensing basis. To place all such plants into a single determination of "or equivalent" as stated in the GL is a gross over-simplification of the licensing basis of these plants. In addition, the GL blurs the design requirement for offsite circuits in GDC 17, with operational criteria for maintaining grid voltage/frequency. The Staff has expanded its interpretation of the following provision in GDC 17 to include use of Real Time Contingency Analysis (RTCA) software and protocols with Transmission System Operators (TSO).	Not Incorporated - Plants not licensed in accordance with GDC 17 were licensed to satisfy plant-specific principal design criteria (PDC) presented in the plant updated final safety analysis report. These criteria (such as AEC Safety Criterion 39, which required an offsite electric power system to be provided to power safety equipment necessary to respond to anticipated operational occurrences and postulated accidents) are similar to GDC17. The electric grid is the source of power to the offsite power system. Therefore, all operating plants have offsite power requirements similar to GDC 17. Each licensee should respond to the GL in the context of the requirements that apply to its NPP. As for the use of RCTA to monitor grid parameters, see staff's response to M-3 below.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	M-3 (Enclosure, page 2, paragraph 1)	The use of real-time analysis, such as the RTCA model discussed in the proposed GL, and a deregulated energy market, where the owner/operator of the Nuclear Power Plants (NPP) is a separate entity from the owner/operator of the transmission network (i.e., TSO), were never contemplated at the time the GDC were drafted. To interpret the above language in GDC 17 to include these new concepts is an expansion of the original intent and should be treated as such.	Not Incorporated - Significant changes have occurred in the electric industry as a result of its restructuring and deregulation. Therefore the traditional type of transmission system load flow analysis may not suffice to predict the impact of power wheeling on the grid. Some transmission system operators use state estimators and contingency analyzers to periodically verify the condition of the transmission system. The NRC special inspection report No. 50-483/99-15 on the Callaway Plant stated that the traditional load flow analysis before the trip of August 11, 1999, did not anticipate the potential impact of economic deregulation and power wheeling and underestimated the system loading conditions. RTCA software (or a similar tool) for monitoring grid parameters is one way to predict that there will be adequate voltage following a unit trip. Licensees may use other tools that are similar to RTCA as long as the tools are able to reliably predict that an NPP will have adequate offsite power system under the current grid conditions. Changes in grid use as a result of industry restructuring, may warrant the use of enhanced tools to monitor the grid conditions.
1	N-G1* *General Comment (page 4, paragraph 5)	The NRC has not provided a sound basis to support the need for additional information to determine if regulatory compliance is being maintained.	Not Incorporated - Operating experience reveals that many NPPs my lack provisions adequate to ensure the operability of the offsite power system following a trip of the reactor and main generator. Information Notices 98-07 and 2000-06 cite numerous NPPs where the availability of offsite power was not assured. NRC inspections and licensee event reports have indicated that the changes as a result of restructuring of the electric utility industry affect the reliability of the offsite power systems at NPPs. For example, the August 2003 blackout caused grid voltages to collapse so that nine

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
			nuclear power plants tripped and had to rely on standby emergency diesel generators. In February 2000, the NRC inspection at the Callaway Plant (Inspection Report No. 50-483/99-15) found that the Callaway Plant did not have sufficient provisions in place or to ensure adequate post-trip voltages. The Callaway licensee stated that large flows coupled with high local demand and loss of the Callaway unit caused switchyard voltages to drop below the minimum requirements for 12 hours without being detected by the licensee. Industry restructuring has heightened the need for better communication between the NPP operator and the TSO and the need to update the analyses more frequently. Some NPP licensees are utilizing online contingency analysis software in their grid control centers and have implemented protocols to be notified when the offsite supply for their plant is in jeopardy of not providing the plant's minimum required capability. Some NPP licensees have also established provisions for updating the analyses more frequently when the online capability is not available. These licensees have implemented procedures to determine when the plant and grid conditions are outside the bounds of the assumptions of the analyses, and the information necessary for the licensee to take appropriate compensatory actions if any. The staff believes that similar arrangements are needed at all operating reactors to ensure the reliability of offsite power and consequently NPP safe operation.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	N-1 (Enclosure, Comment 1, page 3)	The NRC request for information is related to formal agreements between the nuclear plant operator and transmission system operator are not necessary to determine compliance with GDC 17. Such agreements are not part of the plant licensing basis. WANO SOER 99-01 Addendum explicitly addresses the need to establish formal agreements between plant operators and transmission system operators. INPO evaluations assure that the recommendations contained in SOER are implemented.	Not Incorporated - The electrical grid today is made up of utilities and independent power producers. This results in multiple combinations of generating units going on and off the grid. The capacity and capability of the offsite power system for each nuclear power plant, as required by GDC 17, could be significantly affected by the decisions of multiple companies. Since the capability of offsite power cannot be tested except when challenged in an actual event, the design bases for the offsite power system can only be assured by analyzing grid and plant conditions. The NRC request for information on formal agreements is needed to assess operating agreements between nuclear plant operator and the TSOs related to minimum switchyard voltage and operator performance expectations between nuclear power plant operator and TSO. The staff does not intend for the GL to establish any standards or requirements with respect to such agreements.
1	N-2 (Enclosure, Comment 2, page 4)	Compliance with the design requirements of GDC 17 should be based on the tools utilized during the licensing of the plant and which provide for the bounding design bases of the GDC 17 offsite sources. The RTCA program is not part of the plant licensing basis. The RTCA program is beyond the control of the nuclear plant operator and should not in and of itself be a basis for offsite source operability. The nuclear plant must rely on the transmission system operator to maintain the reliability of the grid utilizing available tools. This may or may not include a RTCA program. The operability of the offsite sources should be based on the	Not Incorporated - As described in the responses to Comments G-1a and N-1, conditions on the grid have changed since plants were initially licensed. The electric power industry has been deregulated, at least partly, and industry restructuring could adversely affect the reliability of the offsite power system. Licensee event reports (LERs) have shown that grid stability analyses have not been updated to reflect the changes in the grid power system. Also, because of industry restructuring, the effects of demand-supply imbalance, post-trip voltage adequacy, and reserve margins on grid availability may no longer be bounded by the analysis used during initial licensing of the plant. Continuing to ignore potential changes in the reliability and electrical characteristics of the grid due to

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
		transmission system operator's evaluation of the current grid conditions and not solely on a single tool available to the system operator.	power market conditions could result in a failure of the offsite power sources to have the capacity and capability required by GDC 17. The commenter is correct that RTCA is but one tool available to the grid system operator to continually assess grid reliability and the functionality of the offsite power system. Nonetheless, licensees must continue to ensure that the design bases for the reliability and stability requirements for the offsite power sources do not degrade during the life of the plant. Forward-looking entities are using improved tools such as RTCA software for analyzing grid reliability and stability to manage the grid. The capacity and capability of the offsite power system (assuming onsite power is not available) are important factors in ensuring that the system safety function can be accomplished as required by the respective plant specific requirements (GDCs or PDCs). The GL does not require use of the RTCA per se. The RTCA is used by the TSO to determine whether the grid is being operated in a manner that assures that specified contingencies are being met, thus ensuring the availability of the offsite power system to NPPs that is required by GDC 17 and TS. (See page 10, item 3 of GL.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	N-3 (Enclosure, Comment 3, page 5)	One of the questions states, "If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) are lost and incapable of performing their required safety functions as a result of responding to an emergency actuation signal during this condition, are they declared inoperable as well?"	Fully Incorporated - The staff will clarify this question. In the GL, this question is being asked in the context of delayed LOOP and double sequencing of safety loads. The staff is seeking information on NPP designs in which the emergency diesel generator (onsite power source) may not be capable of starting and supplying the safety loads sequenced onto the safety buses in response to an emergency actuation signal after a delayed LOOP. This scenario can occur if the plant post-trip voltages are known to be degraded and are below the TS minimum limits. This would actuate the plant degraded voltage protection scheme upon a unit trip with safety loads being sequenced onto the safety buses. In a delayed LOOP, the emergency diesel generator will attempt to supply the loads without stripping the accident loads. These loads, in turn, may not be designed to trip on an undervoltage condition (undervoltage relays generally trip loads which are normally running), causing the diesel generator to overload and eventual trip. Also, safety load breakers have a lockout (antipump) feature. If actuated, this feature may lock out these breakers, making them incapable of performing their safety function. The staff is seeking information on whether the operators of NPPs with known deficiencies in the design of their plants declare the affected equipment inoperable during degraded conditions on the offsite power system and if not, why not. (See page 10 for an explanation of when the onsite safety-related equipment could be lost and incapable of performing its required safety functions.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	N-4 (Enclosure, Comment 4, page 5)	The nuclear power plant operator cannot ensure that the offsite power system is operable without direct information and support from the transmission system operator. Contingency analyses maintained by the transmission system operator determine the impact of a nuclear plant trip on the offsite power system.	Not Incorporated - The staff agrees that information and support from the TSO is necessary to assess whether the offsite power system is operable or not. A communication protocol between the TSO is essential to maintain an awareness of changes in the NPP's switchyard and offsite power grid and to determine the impact of these changes on operability of the offsite power system. Licensees should ensure that offsite power is operable during normal plant operation and for anticipated operational occurrences and postulated accidents. Licensees should also be aware of the impact of a plant trip on the availability of offsite power and the adequacy of post-trip switchyard voltages. Plant operators should therefore be aware of the offsite power needs of the plant, including minimum required switchyard voltages, and they must know when these needs cannot be met. The cooperation of the TSO may have to be enlisted through an appropriate communication protocol to ensure that offsite power will be available and switchyard voltages will be adequate following a trip of the plant. Furthermore, contingency analysis done by the TSOs will show whether the switchyard will have adequate voltage after the trip of the NPP, loss of the critical transmission line, or the loss of the largest generating unit.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	P-1 (Comment 1, page 1)	The second and third paragraph [of the draft generic letter] imply that use of the Real Time contingency Analysis (RTCA) is required for compliance to GDC 17. Please revise this section to clarify that RTCA or Analytical Transmission System Studies or both or other means of predicting post trip NPP switchyard voltage support are acceptable methods of minimizing the probability of the loss of power from the transmission network given a loss of power generated by the nuclear power unit. We recommend that the request for information regarding the RTCA and/or Analytical Transmission System Studies be preceded by wording similar to that implied in the fourth paragraph. For example, the addition of wording similar to the following sentence at the end of paragraph 1 " Predictive methods such as Real Time Contingency Analysis, Analytical Transmission System Studies, or other means used should be described."	Partially Incorporated - There is no NRC requirement to use RTCA. The staff merely seeks to understand how licensees comply with TSs and GDC 17 with respect to offsite power. The staff considers the RTCA software program a state-of-art tool that most transmission operators serving NPPs now have or will soon have for analyzing grid conditions. The staff agrees with the commenter that online Analytical Transmission System Studies computer capability for analyzing the grid probably will provide similar information in a similar time frame. A licensee may also have other means at its disposal to ensure compliance. The staff will therefore clarify the GL. (The revised text appears on GL page 1.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
1	S-2 (Enclosure, Comment 2, page 1)	During the licensing process of a nuclear power plant (NPP), the NPP applicant and the transmission system operator were generally the same entity. The NRC required the NPP applicant to perform stability studies of the transmission grid to demonstrate compliance to GDC 17 requirements. In addition, Draft Revision 3 of Branch Technical Position ICSB-1 1, "Stability of Offsite Power Systems," dated April 1996, has concluded that power systems, with supporting grid inter-ties, meet the grid availability criteria with sufficient margin. This position also recognized that an isolated system large enough to justify inclusion of a nuclear unit will also meet these criteria. In the deregulated environment, the NPP licensee may not be the same entity as the transmission system operator. The operators and operation of the transmission network are governed by the rules and regulations of NERC and other regulatory and governmental agencies. The requirements for grid reliability should be established through the appropriate agencies to ensure the adequacy of NPP offsite power. The necessary steps to minimize the probability of the loss of power from the transmission network, given a loss of power generated by the nuclear power unit, should be under-taken by the transmission provider, who is not be under the jurisdiction of the NRC.	Not Incorporated - The NRC agrees that grid reliability should be established by the appropriate agencies (not the NRC) to ensure the availability and adequacy of offsite power for NPPs. The NRC has not promulgated any requirements for grid stability and is not doing so through the GL. The TSOs normally run online contingency analyses to ensure that the grid is operated in a way that would meet first contingency, that is loss of critical transmission lines or generation. As stated in the staff response to Comment E-1 above, a communication protocol between the NPP and the plant's transmission system operator will maintain an awareness of changes in the plant switchyard and offsite power grid to minimize the probability of losing power from the transmission network after a loss of critical transmission line or the power generated by the nuclear power unit. This is not the same thing as establishing requirements for grid reliability.
1	S-8 (Enclosure,	Offsite power supply operability determinations should not be based on "contingencies" defined	Not Incorporated - The NRC does not require the use of an RTCA program to determine the operability of offsite power

Table 3: Resolution Matrix for Comments			
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	Comment 8, page 3)	by the real time contingency analysis programs or models. "Contingencies" define hypothetical situations that may or may not occur. Operability of a structure, system, or component is determined on actual plant/SSC conditions, not on hypothetical "what if' situations that may or may not occur. The RTCA program is not required by the Technical Specifications, nor is it required to ensure offsite power source operability since it has no impact on offsite power supply availability, reliability, or functions. In fact, the RCTA program would neither prevent the degraded state from occurring, nor would it initiate remedial actions should the degraded state occur. Requiring an RTCA program to assist in determining if an offsite power supply is OPERABLE represents a new license requirement that is beyond the existing licensing basis and Technical Specification requirements for NPP.	systems. Further, the draft GL is not intended to set forth such a requirement, and the staff does not believe that the draft GL implies that a licensee must use an RTCA program. Nonetheless, the capability and operability of the offsite power cannot be tested except when challenged in an actual event. Therefore, the design bases for the offsite power can only be assured by considering actual and anticipated grid and plant conditions. The contingency analyses done when the plant was licensed may not bound the ever-changing conditions of the grid today as a result of electric industry restructuring. An RTCA is being used today to assess operating conditions and impending conditions on the grid. TSOs often use an RTCA program to continually manage the grid. Obtaining the RTCA program information from their TSOs will help NPP operators in assessing whether the offsite power system is operable. The plant technical specifications require the offsite power system to be operable as a limiting condition for operation. Therefore NPP operators should be aware of the capability of the offsite power system to supply power and conditions that can result in a loss of offsite power after a plant trip. An RTCA program gives the TSO information for determining if an offsite power system to a NPP is operable. Since the offsite power system cannot be tested, the staff believes that it is important that the NPP operator know when the trip of the plant will result in the loss of offsite power to the plant, and the use of RTCA and/or an online analytical transmission system studies program can provide this information. Further, all safety transient and operational design basis analyses are based on hypothetical situations (e.g., the double-ended guillotine pipe break). Though TSs only apply to systems as they are, the TS by themselves are

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
			based on analyses of hypothetical events. Therefore, licensees should be aware of developing conditions that may render TS equipment inoperable. See staff response to N-1 and 2 and M-3 of Bin 1.
1	S-11 (Enclosure, Comment 11, page 4)	The draft generic letter incorrectly alludes to operating agreements and transmission protocols as design basis requirements or license conditions. Regulatory Guide 1.93, "Availability of Electric Power Sources," states: "GDC-17 specifies design requirements, not operating requirements; it therefore does not stipulate operational restrictions based on the loss of power sources." Contrary to this concept, the draft Generic Letter implies that "formal agreements" between the NPP and the grid operator are essential to assure compliance with GDC-l 7. Such formal agreements, if used, are not part of the design of the plant, but represent operating agreements between two or more parties to ensure a mutual benefit to each party.	Not Incorporated - The commenter has taken the sentence "GDC-17 specifies design requirements, not operating requirements" out of context. As explained in the response to comment G-1a, the adequacy of design cannot be evaluated in the absence of operational restrictions. The operational restrictions for the design requirements of GDC 17 for the loss of offsite power sources are embodied in the technical specifications. Therefore, an NPP's ability to comply with technical specifications for offsite power could depend on grid conditions and NPP status. Communications should help maintain the NPP operator's awareness of the effects of changes in the plant switchyard voltage and/or the offsite power grid on the operability of the offsite power system. The staff believes that communications between the NPP and its transmission system operator are important in assessing whether the offsite power sources are capable and operable as required by GDC 17 and technical specifications. See the staff response to comment G-1a of Bin 1.
1	Strickland (page 2, paragraph 1)	In the Requested Information section of the GL, please clarify how plants that are not licensed to nor required to meet the provisions of GDC 17 should address design criteria that do not apply to their facility.	Not incorporated - See the staff response to comment M -2 of Bin 1.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
2	G-1c (Comment 1, page 3, paragraph 2)	10 CFR 50.65(a)(4) does not direct that the NPP conduct a grid reliability evaluation prior to performing maintenance on risk-significant equipment.	Not Incorporated -The risk of grid-risk-sensitive maintenance activities (activities that could (1) increase the probability of a plant trip, (2) increase the probability of LOOP, or (3) impact the ability to cope with LOOP or SBO) is elevated during existing or imminent degraded offsite power as a result of impaired grid reliability. To perform an adequate maintenance risk assessment that includes grid-risk-sensitive maintenance activities, pursuant to 10 CFR 50.65(a)(4) the licensee should consider, along with other relevant external events and conditions, either qualitatively or quantitatively, the status and projected reliability of the local grid for the planned grid-risk-significant maintenance period.
2	M-5 (Enclosure, page 2, paragraph 4)	Whereas it may be true that an RTCA monitor and formal protocols could provide insights into the likelihood of grid-related events and their associated risk, NMC does not believe that Maintenance Rule compliance requires such a monitor or protocols and that the existing process for evaluating and managing risk in this area is acceptable.	Partially Incorporated - The staff agrees that the Maintenance Rule does not require RTCA software or formal protocols. See the responses to S-3 and S-5 of Bin 2 below. Nonetheless, the staff needs this information to help in determining whether existing processes for assessing and managing the risk of grid-risk-sensitive maintenance activities are acceptable, especially for existing or threatened conditions of degraded grid reliability. The questions have been revised to clarify this as discussed above. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
2	N-5 (Enclosure, Comment 5, page 5)	One of the questions asks, "Are seasonal variations in the probability of a LOOP at your plant site considered in the evaluation?" We recommend this question be removed. The risk assessment required by 10 CFR 50.65 is typically performed both quantitatively and qualitatively by licensees. This is consistent with guidance endorsed by the NRC that allows for a combination of qualitative and quantitative assessment of risk. Licensee probabilistic risk assessments typically do not contain a seasonal variation in LOOP probability. As a result, licensees typically assess any factors that could immediately affect grid reliability in a qualitative manner, e.g., pending severe weather.	Partially Incorporated - The staff agrees that the important thing is that the licensee be aware of and address existing or imminent degraded grid reliability. The staff has revised the questions about this factor to avoid any implication that 10 CFR 50.65(a)(4) requires consideration of seasonal variations in LOOP frequency. However, the staff needs information on seasonal variations in LOOP frequency and whether they are considered in risk assessments by licensees. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13).
2	N-6 (Enclosure, Comment 6, page 5)	Coordination between the transmission system operator and plant owner/operator is an area for improvement. This is explicitly addressed in WANO SOER Addendum discussed earlier.	Fully incorporated - The staff agrees with this comment. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13.)

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Bin	**Comment No.**	**Comment**	**Resolution**
2	P-3 (Comment 3, page 3)	The third paragraph of the request for information implies that "consideration of seasonal variations in the Loss of Offsite Power (LOOP) probability" is required for compliance with 10 CFR 50.65(a)(4) (Maintenance Rule). Various factors affect the probability of LOOP with variations in transmission system loading being only one of many. Please revise this section to recognize that the probability of LOOP used for risk assessment should vary based on "considerations such as line maintenance activities, severe weather, and variations of transmission system loading (grid stress)." ---------- Considerations of "seasonal" variations should therefore not be implicitly mandated.	Fully Incorporated - The staff agrees that multiple factors affect grid reliability and consequently LOOP frequency. The staff needs to determine whether seasonal variations are a significant factor and to what extent they may be considered. The language of the GL has been revised to recognize multiple grid reliability factors, including the factors cited by the commenter, and the question has been clarified as discussed in the responses above. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
2	S-3 (Enclosure, Comment 3, page 1)	The draft generic letter would seem to imply that the existing methods of ensuring grid reliability, which are based on periodic contingency analyses and agreements, contracts, and protocols, are ineffective in assuring grid reliability or compliance with NRC regulations, including 10 CFR 50.65, the Maintenance Rule. The existing methods have generally proven to be effective for ensuring grid reliability and demonstrating compliance with the applicable regulations. Imposing new staff positions, i.e., the requirement for an RTCA program and increasing the scope of the Maintenance Rule, is inappropriate, particularly in light of the fact that the NRC may be stepping outside of their regulatory jurisdiction as it relates to ensuring grid reliability.	Partially Incorporated - The draft GL did not state that the NRC staff believes the existing arrangements to be inadequate, nor did it impose any new requirements. The staff clarified the language to avoid the implication that compliance with 10 CFR 50.65(a)(4) cannot be achieved without RTCAs, consideration of seasonal variations in LOOP frequency, formal agreements with TSOs, etc.. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13.) Regarding the comment on RTCA, see staff's response to Comments N-1, N -2, M-3, and S-8 of Bin 1, and S-4of Bin 5.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
2	S-5 (Enclosure, Comment 5, page 2)	The draft generic letter provides an expanded interpretation of the application of the Maintenance Rule, 10 CFR 50.65, which represents an increase in scope beyond current NRC and industry- accepted practice. The draft generic letter implies that for grid reliability evaluations, 10 CFR 50.65 requires application of an RTCA program, and that plants should have such models/monitors in place as part of their Maintenance Rule compliance scheme. The Maintenance Rule provides for the use of qualitative analysis, and does not require quantitative real-time analysis. Therefore, this apparent increase in scope of application of the Maintenance Rule is inappropriate, as is the requirement to have an RTCA program.	Partially Incorporated - See the response to Comment S-3. The draft GL has been revised to clarify the staff's position on qualitative and quantitative risk assessments pursuant to 10 CFR 50.65(a)(4), the need to consider grid and offsite power reliability when warranted, and the need for the TSO to communicate with the NPP operator about grid reliability evaluations. The staff needs information on RTCA availability and use, seasonal variations in LOOP frequency, and formal TSO protocols. The language in the GL has been clarified to avoid the mistaken inference that particular communication protocols or arrangements are required. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
2	T - G1* * General Comment (page 2)	We agree with NEI's objection to the implication that a seasonal period of increased offsite power risk should be defined based on historical grid conditions, and that such parameter should influence the scheduling of sensitive maintenance activities. Historical data is too sparse to support such an action. Periods of increased system stress and offsite power risk may have had some seasonal correlation in the past when the power system was operated in a coordinated and cohesive manner by integrated utilities. However, this is no longer the case. Under deregulation the generation schedules are independently determined and transfer patterns no longer follow predictable seasonal trends. Offsite power adequacy and risk factors are continually evaluated by the Transmission Supply Operator (TSO) through the assessments of actual and expected grid conditions, and the nuclear generating stations are informed of periods of increased risk. Perceived regulatory pressure to identify and avoid certain time windows, based on historical experience, could cause important maintenance activities to be rescheduled or delayed unnecessarily.	Partially Incorporated - See the responses to N-5 and P-3 of Bin 2 above. (The revised text appears on GL pages 4, 6, 7, 11, 12, and 13.)

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Bin	**Comment No.**	**Comment**	**Resolution**
3	E-6 (Attachment 1, Comment 6, paragraph 3)	The definition of LOOP is inconsistent. Some events, such as the August, 2003, blackout clearly caused a risk-significant LOOP event at a number of plants in the Northeast. Other events, that could potentially be classified as LOOP events using some definitions, do not meet the NUREG-1022 definition of a LOOP, for example, as the emergency buses can remain energized even if off- site circuits are denenergized. A LOOP that occurs for a few seconds while a plant has been shut down for some time, probably has little risk significance. The need to count these types of events in determining SBO risk should be evaluated on a case by case basis. Additionally, plants are expected to classify their expected LOOP frequency going forward. Using the historical LOOP frequency may not accurately characterize the future LOOP frequency due to implementation of various lessons learned from past LOOP events. Ensuring that the power grid is more robustly protected against failures that could result in LOOP events may be one of the acceptable means of ensuring compliance with Regulatory Guide 1.155.	Not Incorporated - The loss-of-offsite power (LOOP) frequency due to grid-related events was used in developing the Station Blackout Rule (10 CFR 50.63), as discussed in Appendix A of NUREG-1032 and RG 1.155. Grid related LOOPs are also discussed in NUMARC-8700, Section 3.2.1, Part 1A. According to these documents, there is no inconsistency in the definition of total LOOP frequency used for station blackout coping determinations. One of the underlying assumptions in determining the offsite power design characteristic group of an NPP was a total loss of offsite power caused by grid failures having a frequency of $20 years, as given in Table 4 of RG 1.155. The assumptions used in meeting 10 CFR 50.63 must remain valid for the life of the NPP. Licensees are therefore expected to reevaluate LOOP assumptions for their plants using Table 4 of RG 1.155 to determine if the specified coping duration initially determined should be adjusted based on the current LOOP data.

Table 3: Resolution Matrix for Comments			
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3	G-1b (Comment 1, page 2, paragraph 5)	Compliance with 10 CFR 50.63 is demonstrated by the current design and operational procedures, which would rely upon the plant alternate AC and DC power sources to achieve and maintain a safe shutdown condition based on plant-specific analysis, in accordance with RG1.155. Even assuming the August 14, 2003, blackout were to call into question the assumption used to establish SBO coping categories, it should not have any impact on the method of compliance with the SBO rule for plants relying on alternate AC sources since those plants are required to cope with an SBO only until alternate AC source becomes available.	Not Incorporated - The staff disagrees with the statement that NPP coping categories should not have any impact on the method of compliance with the SBO rule for plants relying on alternate AC (AAC) sources. The commenter is assuming that NPPs that credit an AAC source use it to power all of the equipment needed to cope with an SBO. However, this is not the case for many NPPs that credit an AAC source for coping with an SBO. Various NPPs have used AAC sources that vary from being minimally capable to fully capable. An NPP using a minimally capable AAC source is relying on equipment and systems that are not supported by the AAC power source i.e., relying on both AC and DC power. If the specified coping duration is increased for an NPP that relies on both AC and DC power for coping from 4 hours to 8 or 16 hours as a result of a grid-related LOOP, then the plant-specific analysis approved for complying with 10 CFR 50.63 for such a plant may no longer be valid. The staff expects licensees to reevaluate their NPPs' specified coping duration and the accompanying coping analysis using the RG 1.155 or NUMARC-8700 if the underlying assumptions change during the life of the NPP.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
3	M-6 (Enclosure, page 3, paragraph 1)	The mere fact that a given NPP has a grid-centered LOOP does not automatically mean that their probability is now greater than once in 20 years, as implied by the proposed GL, and that they should re-evaluate their previous categorization. Otherwise, both RG 1 .155 and NUMARC 87-00 would have posed the question as "Has your plant ever experienced a grid-centered LOOP of greater than 5 minutes duration? If so, the plant is category P3." This is not what was done and is not what Table 4 of RG 1 .1 55 means. If the Staff believes that NUREG-1032 is no longer valid and NUMARC 87-00 is not an acceptable method for determining coping periods for 10 CFR 50.63 compliance, then the Staff needs to finalize the currently drafted NUREG/CRs on LOOP probability and SBO risk, update RG 1 .155 accordingly, prior to issuing the proposed GL.	Not Incorporated - Table 4 of RG 1.155 states that plants are category P3 if the sites expect to experience a total loss of offsite power caused by grid failures at a frequency equal to or greater than once in 20 site-years. RG 1.155 criterion envelopes both plants that have experienced a grid-centered LOOP in the last 20 years and plants that can expect to incur loss of offsite power based on prior experience of grid-related failures. The RG 1.155 is very clear in this regard, stating that plants should be classified as P3 sites if the expected frequency of total loss of offsite power due to grid-related events is equal to or greater than once in 20 years. Therefore, the staff expects licensees to reevaluate their NPPs' specified coping duration and the accompanying coping analysis if the underlying assumptions change during the life of the NPP. See staff response to Comments E-6, S-15 and G-1b regarding the grid related LOOPs.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
3	N-7 (Enclosure, Comment 7, page 6)	In response to the third paragraph of item 7 of the proposed GL, NEI states the following: Such agreements are not part of the plant licensing basis and as such are not required for compliance with 50.63. Typical power restoration agreements with transmission system operators do not provide specific resupply sources and paths, as these will vary greatly depending on the nature of the event. The transmission system operators restoration procedures should clearly identify the importance of and give priority to the restoration of an offsite power source to each affected NPP; however, as stated above, the restoration method will be dependent on the nature of the grid disturbance.	Not Incorporated - All NPPs are required to comply with 10 CFR 50.63, "Loss of all alternating current power." Therefore it is part of the plant licensing basis. All NPPs used NUMARC-8700 and Regulatory Guide (RG) 1.155 for complying with 10 CFR 50.63. RG 1.155, Section 2.0, "Offsite Power," states that procedures should include actions necessary to restore offsite power and the use of nearby power sources such as hydro generators, "black start" fossil power plants, onsite gas turbine generators, and portable generators. NUMARC-8700 Section 4.2. 2, "AC Power Restoration," provides guidance for operations and load dispatcher personnel on the proper course of action for restoring AC power in an SBO. In NUMARC-8700 Section 4.2.2 the guidance refers to planned actions and identification of required equipment to restore AC power to the blacked out unit. Similarly, NUMARC-8700 Section 4.3.2, "AC Power Restoration Guidelines," provides supplemental information for the restoration procedure guidelines in Section 4.2.2. Thus, current guidance calls for procedures that identify power sources and transmission paths to restore offsite power in the event of an SBO. The "load dispatchers," a term used in NUMARC-8700 is equivalent to the TSO in the restructured electric grid. The question in the proposed GL seeks information on whether the affected NPP has established restoration procedures and coordinated with the TSO (or load dispatcher) in restoring power.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
3	N-8 (Enclosure, Comment 8, page 6)	In response to the second paragraph of item 8 of the proposed GL, NEI states the following: The projected LOOP frequency for a plant is a statistical measure. Occurrence of a single LOOP does not necessarily invalidate the assumed frequency of a LOOP. Categorization of grid disturbances and their causes are the subject of continuing discussion between the industry and NRC. Consistency in the treatment of these events must be achieved before such information is requested from licensees.	Not Incorporated - See the staff response to Comments E-6, S-15, and G-1b on grid-related LOOPs. All NPPs have an approved specified coping duration and an accompanying coping analysis based on a given LOOP frequency. The staff expects each licensee to reevaluate its NPP's specified coping duration and the accompanying coping analysis if the underlying assumptions change.
3	P-4 (Comment 3, page 3)	The wording used in the request for information "grid-related total loss of offsite power" and grid-related total LOOP is not consistent with Regulatory Guide 1.155 table 4, which used the words "total loss of offsite power caused by grid failures." Please revise the GL wording to be the same as that used in the Regulatory Guide.	Fully Incorporated - The staff will revise the wording in the GL to be consistent with the wording in RG 1.155. (The revised text appears on GL pages 8 and 14.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
3	S-13 (Comment 13, page 4)	The draft generic letter appears to include the Station Blackout (SBO) event in the overall grid reliability issue. This action is creating a subtle shift in the definition of "loss of offsite power" (LOOP) relative to SBO. As a design basis event, a LOOP can have numerous unpredictable initiators, such as natural events, potential adversaries, human error, or design problems. The SBO event is limited to "grid related" LOOP events that are directly related to insufficient generating capacity, excessive system load, or dynamic instability, as described in Regulatory Guide 1.155, "Station Blackout." It should be clarified that LOOP events resulting from weather, fire, other external events, or random grid events that are not symptomatic of underlying or growing instability, do not need to be considered for the SBO event.	Not Incorporated - The proposed GL is requesting licensees to review information on total loss of offsite power caused by grid failures experienced by NPPs since the implementation of the SBO rule. If the original assumption used for the LOOP frequency for this event has changed then it is expected that the specified coping duration and accompanying analysis should be adjusted to comply with 10 CFR 50.63. The GL requests information on the frequency of total loss of offsite power due to grid-related events rather than other initiators (such as weather, fire, and other external events), for the 20 years with respect to an SBO, as the commenter implied.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
3	S-15 (Comment 15, page 4)	Several references are made throughout the draft generic letter to Regulatory Guide 1.155, "Station Blackout." These references imply that compliance with this regulatory guide is the only acceptable method for meeting the stated criterion or objective. Regulatory guides provide a means that is acceptable to the NRC staff for satisfying the requirements of the topic under consideration, but they do not provide the sole means for achieving compliance. Therefore, clarification should be provided to indicate that compliance may be achieved by complying with the information provided in the regulatory guide, or by the method approved in the plant-specific licensing basis.	Not Incorporated - As stated in Section A of RG 1.155, this guide describes a method acceptable to the NRC staff for complying with 10 CFR 50.63. Section C of RG 1.155 also states that NUMARC 8700 provides guidance acceptable to the staff for meeting these requirements. RG 1.155 and NUMARC-8700 were developed concurrently, and NUMARC-8700 provides guidance on conformance with Section 50.63 that is in large part identical to the guidance in RG 1.155. Based on the information available to the staff, all NPPs used NUMARC-8700 and RG 1.155 for complying with 10 CFR 50.63. Nonetheless, a licensee may choose a different method for complying with 10 CFR 50.63 in view of new information such as the information that prompted the NRC to issue this GL.
4	E-3 (Attachment 1, Comment 3)	The time to respond to the GL should be changed to 120 days.	Not Incorporated - The staff believes that 60 days is long enough for the licensee to respond to the information requested in the GL. Further, the GL allows requests for extensions for good cause. Therefore, the GL need not be modified in response to this comment.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
5	G-4 (Comment 1, page 3, paragraph 5)	It is not the purpose of the GL to impose new regulatory positions and expectations on licensees by presuming that licensees are in noncompliance with existing regulatory requirements as a result of an emerging issue. Such a presumption of noncompliance expressed via a GL illegitimately shifts the burden of compliance onto licensees when an emerging issue arises that was not specifically addressed in current regulations and the existing plant licensing bases. If the NRC does proceed with the issuance of the proposed GL, we believe it should be treated as a backfit under 10 CFR 50.109.	See the staff response to Comment S-4 of Bin 5.
5	M-8 (Enclosure, page 3, paragraph 6, and page 4, paragraphs 1, 2, & 3)	The draft GL proposes some new ideas for dealing with grid stability issues in a deregulated energy market. These new ideas are portrayed in the GL as compliance with existing regulations and TS. The use of RCTA software and other suggested operational protocols with TSO were never contemplated when these regulations were originally drafted and used to license current plants. To characterize these new ideas as "compliance" with the current regulations and TS is not valid. Absent an identified problem, the Staff cannot state that the actions requested in the proposed GL are required to ensure compliance with the existing regulations and are not subject to the requirements of 10 CFR 50.109(a)(3).	See the staff response to Comment S-4 of Bin 5.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
5	N - G2* * General Comment (page 5, paragraph 3)	"----------.These protocols and analysis programs are not part of the plant licensing basis; therefore, it is inappropriate to request such information under the provisions of 50.54(f)."	Not Incorporated - The staff is seeking information to determine whether offsite electric power supplies are designed and being operated in compliance with currently applicable requirements in view of how grid is being managed and operated today, how grid-risk-significant equipment is being operated and maintained, and how the underlying assumptions and criteria for SBO rule are being maintained and validated in view of power industry restructuring. The TSOs are now responsible for ensuring the overall reliability and stability of the electric grid at the regional level. NPP licensees may therefore have to establish agreements with their regional TSOs to identify the operating measures (both regional and local) necessary to ensure the operability of the nuclear facility's preferred power supply for a given set of contingencies. The grid stability analysis for each nuclear facility should be based on the correct implementation of these operating measures for the grid. As explained in the introduction to these comment responses, the TSOs now control the grid in the general vicinity of NPPs, rather than the vertically integrated utilities that originally obtained the NPP licenses. Utility/licensee control of the grid was originally part of the licensing bases, and TSO analysis and communication protocols continue to be part of the licensing basis for the facility. The power system operator should also ensure that pre-contingency conditions remain within the limits determined by the post-contingency analysis. Such an evaluation can only be done on a plant-specific basis, considering the individual plant design and operating practices.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
5	S-4 (Comment 4, page 2)	The apparent staff position that an NPP should have a RTCA program to minimize the probability of the loss of power from the transmission network represents a new staff position, beyond those described in NRC Branch Technical Position ICSB- 11. This new position should be addressed through rulemaking or as a backfit that has been appropriately evaluated in accordance with the appropriate regulations. In addition, requiring transmission system operators to provide this information to licensees would appear to go beyond the regulatory authority of the NRC.	Not Incorporated - The GL suggests that licensees can use an RTCA program to ensure compliance with various requirements, but the NRC staff has not yet taken a position on whether licensees should do so. If the staff determines that the use of an RTCA is a preferred method for meeting certain requirements, the staff will revise the applicable regulation or otherwise inform licensees of the determination. The GL does not set forth such a staff position. The GL merely asks whether and how licensees obtain and use RTCA program information, with respect to compliance with applicable regulatory requirements (plant TSs in conjunction with 10 CFR Part 50, Appendix A, General Design Criteria 17, 10 CFR 50.65(a)(4), and 10 CFR 50.63) and whether these requirements are being met in regard to the grid topics addressed in the GL. The GL does not involve or propose any backfit or rulemaking. The GL is not directed to transmission system operators, nor does it suggest that the NRC is considering a requirement that TSOs provide information to licensees. If the NRC determines that such a requirement is needed to ensure compliance with NRC requirements or to assure adequate protection of public health and safety or the common defense and security, the NRC will impose the requirement through a rule or orders. The NRC will consider any backfit issues in issuing such a rule or orders. The NRC staff is not now suggesting that the Commission impose requirements on TSOs. However, in Order 2004, "Standard of Conduct," dated November 25, 2003, and Order 2004-A, "Standards of Conduct for Transmission Providers, Final Rule; Order of Rehearing," dated April 16, 2004, FERC has consistently interpreted 18 CFR 358.5(b)(8) as an exemption that permits

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
			a nuclear power plant operator and a grid operator to share crucial operating information for ensuring the reliability of offsite power to NPPs.
6	A (page 1, paragraph 3)	Based on the recent nuclear industry initiatives to improve the nuclear plant interface with transmission organizations (TOs), Exelon and AmerGen do not believe the issuance of this proposed GL is required.	Not Incorporated - The staff encourages nuclear industry initiatives to improve the nuclear plant interface with TSOs to forestall any challenges to the safe operation of NPPs. However, no industry initiative addresses the topics discussed in the GL. The staff needs the requested information from NPP licensees to determine whether applicable regulatory requirements are being met in regard to the grid topics addressed in the GL. Also, see the staff response to Comment S-1 of Bin 6.
6	B (page 6, paragraph 4)	BPA respectfully urges the Commission to determine that any Critical Infrastructure Information that would be provided to Entergy Northwest by BPA, and subsequently to the Commission as a result of the proposed GL, be determined to be of the type of non-safeguards sensitive unclassified information that would not be subject to disclosure to any third parties.	Fully Incorporated - The staff agrees with the comment that all nonsafeguards sensitive unclassified information should be protected. Addressees should consult SECY-04-0191, “Withholding Sensitive Unclassified Information Concerning Nuclear Reactors From Public Disclosure," dated October 19, 2004, to determine if their responses contain sensitive unclassified (nonsafeguards) information and should be withheld from public disclosure. Addressees should also refer to 10 CFR 2.390 and identify the information submitted to the NRC as nonsafeguards sensitive unclassified information. If the staff agrees with that assertion, the information will be withheld from public disclosure in accordance with 10 CFR 2.390. (See page 14 of GL for reference to SECY-04-0191, “Withholding Sensitive Unclassified Information Concerning Nuclear Reactors From Public Disclosure," dated October 19, 2004.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	D -G1* * General Comment (page 1)	Detroit Edison is concerned that the proposed practice of transmission operators providing certain information to nuclear generators could be inconsistent with existing Federal Energy Regulatory Commission (FERC) standards. In providing a nuclear generator with information on regional grid conditions and contingency analysis results, an independent transmission operator could be viewed as providing the nuclear generator with a competitive advantage over other generators that they serve. Specific recognition of the need for nuclear generators to have access to this information needs to be factored into the development of future changes to FERC standards.	See the staff's response to Comment S-10 of Bin 6.
6	E-2 (Attachment 1, Comment 2)	The terms "levels of contingencies" and "various contingencies" needs to be defined in the GL.	Not Incorporated - The level of contingencies for assessing the reliability of offsite power was defined during the original licensing of the NPPs. The various contingencies applicable to a particular NPP should be considered to determine whether these power sources are capable and operable in the deregulated electric grid.
6	E-4 (Attachment 1, Comment 4)	If all of the questions are expected to be addressed, it would be helpful to number each question. For example, Question 2 contains approximately 11 sub-questions which could be labeled 2 a) through 2 k) to facilitate standard binning of information and ensure more complete responses.	Fully Incorporated - Each question in the GL requests information on a specific topic with multiple aspects. The staff numbered the applicable questions with sub-questions as the commenter suggests.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	E-7 (Attachment 1, Comment 7)	It appears that the draft GL is a duplication of a process that was already in progress in the industry (nuclear generators and transmission authorities) well before the August 14th blackout. Therefore, Entergy believes that the additional effort requested by the draft GL is unnecessary.	See the staff response to Comments A and S-1 of Bin 6.
6	G-1d (Comment 1, page 3, paragraph 3)	TI 2515/156 and 2515/163 have not revealed any significant plant-specific or generic issues of non-compliance. If the NRC inspection results have not shown significant compliance problems, the need to issue a GL for the purpose of achieving compliance is questionable.	Not Incorporated - Both TI 2515/156 and 2515/163 have revealed a considerable amount of variability in NPP/TSO communication protocols and in the monitoring of grid conditions for maintenance risk assessments. Therefore, the staff is issuing the GL to obtain information on the topics discussed in the GL.
6	G-2 (Comment 2, page 3, paragraph 6, and page 4, paragraphs 1 & 2)	It appears from the proposed GL that the NRC expects licensees to enter formal agreements with the TSO establishing appropriate protocols and coordination for early detection of degraded grid conditions. The NRC should recognize that it has limited jurisdiction to regulate the relationship between the TSO and NPP. Existing NRC regulations do not mandate that a NPP must have particular formal agreements in place with the TSO or that the NPP or TSO utilize any particular method of monitoring grid conditions such as an RTCA program. The NRC should also recognize that there are regional differences with respect to the need for formal agreements between the NPP and its particular TSO.	See the staff response to Comments S-4 and S-10 of Bin 6.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	G-3 (Comment 3, page 4, paragraph 6)	The NRC should explicitly allow licensees to take credit for provisions of existing Interconnection Agreements and related protocols that ensure adequate communication and coordination between the NPP and the TSO.	Fully Incorporated - The staff agrees with this comment. The staff will modify the GL accordingly. (The revised text appears on GL page 9.)
6	G-5 (Comment 5, page 6, paragraph 1)	The NRC would benefit from conducting a technical conference among all the stakeholders, including NPP licensees, the TSOs, reliability organizations, and interested state and federal agencies. A technical conference could be designed to allow the stakeholders to develop a standardized model and a pro forma communications protocol.	Partially Incorporated - The staff agrees that a technical conference for all stakeholders may be beneficial. However, the staff needs to obtain the information requested in the GL to determine the scope of the issues for such a conference. The staff will consider holding such a conference after it has reviewed the information in the responses to the GL.
6	M-1 (Enclosure, page 1, paragraphs 2 & 3)	The Electric Power Research Institute (EPRI) routinely publishes it review of LOOP events in the US (Ref. EPRI Technical Report 1009889, "Losses of Off-site Power at U.S. Nuclear Power Plants - Through 2003," April 2004). The EPRI report cautions against combining plant-centered LOOP events with the August 13, 2003 grid event, as doing so leads to misleading statistics and conclusions. The Staff's proposed GL appears to do just that. Consequently, NMC believes that it would be premature to issue this GL pending resolution of comments on the basis documents.	Not Incorporated - The August 13, 2003, event was related to grid disturbance and instability. The staff does not agree with the commenter that this event was combined with plant centered LOOP events. As stated earlier, the purpose of the GL is to request information to enable the staff to determine whether applicable regulatory requirements are being met in regard to the grid, maintenance rule and station blackout topics addressed in the GL.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	M-4 (Enclosure, page 2, paragraphs 2 & 3)	The licensee of the NPP in a deregulated electrical market typically must maintain a required "distance" from the TSO to avoid any potential for the generation and transmission companies to manipulate the market price of electricity. The NPP can only provide the TSO with the preferred operating limits to minimize the probability that the degraded voltage/frequency protection is challenged and the desired actions to be taken to expedite recovery from a loss- of-offsite power (LOOP) event (addressed by 10 CFR 50.63). However, this documentation does not carry the force of a law and the NPP may not be able to assure compliance to these requirements under all circumstances. The proposed GL assigns too much significance to these operating protocols and letters of agreement. The TSO is governed by the rules and regulations of FERC, NERC, including the regional Reliability Council. For adequacy of a transmission system (TSO) to supply each NPP with offsite power, the TSO requirements need to be established thru NERC, not through a backdoor approach by the NRC to put requirements on the NPP that it cannot reliably enforce.	Not Incorporated - It is important that NPP licensees and TSOs have a communication interface, together with other local means, and keep each informed of changes in the plant switchyard and offsite power grid so they can determine the impact of these changes on the operability of the NPPs' offsite power systems. The staff is seeking information on how licensees ensure that the offsite power system is operable as required by plant TSs if there is no standing agreement between the licensee and its TSO. The staff expects agreements and protocols between the licensee and its TSO to include preferred operating limits for the offsite power system and preferred actions for recovering from a LOOP event. The staff acknowledges that these agreements may not be binding in all circumstances, but the agreements make the TSO aware of the NPP's offsite power requirements. Furthermore, when the preferred operating limits for the offsite power system are in jeopardy, the TSO can inform the NPP licensee so that appropriate actions are taken. See the staffs response to Comment S-4 of Bin 5 and S-10 of Bin 6.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	M-7 (Enclosure, page 3, paragraphs 3 & 5)	The proposed GL states that the ability to predict contingency conditions in the transmission network is necessary for determining OPERABILITY, as defined in TS, for the offsite circuits. Nothing in the current Standard TS for operating reactors implies such a condition. NMC believes that current TS adequately define the requirements for determining the OPERABILITY of the offsite circuits, based upon actual switchyard conditions, and that the Loss-of-Offsite Power (LOOP) instruments are adequate for detecting degraded voltage/frequency conditions in the switchyard. NMC has reservations about the state-of-the-art of the RCTA software that preclude its use for taking such prescriptive, compensatory actions based upon its calculations. Or worse, for the NPP to take such actions when the RCTA is not available to make such predictions. Until this technology is proven, it should not be used to make OPERABILITY determinations within the TS.	Not Incorporated - GDC 17 requires provisions to minimize the probability of the loss of power from the transmission network after a loss of the power generated by the nuclear power unit. The loss of the power generated by the nuclear power unit (trip) is an anticipated operational occurrence. It is therefore necessary that the offsite power circuits be designed to be available following a trip of the unit to permit the functioning of SSCs necessary to respond to the event. However, the trip of an NPP can affect the grid, resulting in a LOOP. In general, plant TSs require that the offsite power system be operable as part of the limiting condition for operation and specify what actions are to be taken when the offsite power system is not operable. Plant operators should therefore be aware of the capability of the offsite power system to supply power, as specified by TSs, during operation and situations in which in a LOOP can result following a trip of the plant. If the offsite power system is not capable of providing the requisite power, the system should be declared inoperable and pertinent plant TS provisions followed. Regarding the comment on RTCA, see the staff response to comments N-1 & 2, M-3, and S-8 of Bin 1.
6	N–9 (Enclosure, Comment 9, page 6)	As stated previously licensees are in compliance with NRC regulations and plant technical specifications as they relate to onsite and offsite power systems. Formal agreements between plant operators, transmission system operators, and RTCA programs are not part of the plant licensing basis; therefore, no actions are needed to restore compliance with NRC regulatory	Not Incorporated - The requested information will enable the NRC staff to determine whether applicable regulatory requirements (plant TSs in conjunction with 10 CFR Part 50, Appendix A, General Design Criteria 17; 10 CFR 50.65(a)(4), and 10 CFR 50.63) are being met in regard to the grid topics addressed in the GL. The staff believes the requested information is part of the licensing basis.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
		requirements.	See the staff response to Comment N-G2* of Bin 5.
6	O-1 (Comment 1, page 1)	Utilities are in compliance with NRC regulations associated with onsite and offsite electric power systems. Much of the information requested would impose new requirements exceeding existing regulations and plant licensing bases.	Not Incorporated - The staff is seeking information on the topics discussed in the GL to determine if the NPPs are in compliance with the NRC regulations. See the staff response to Comments S-4 and N-G2* of Bin 5.
6	O-2 (Comment 2, page 2)	Activities being conducted by FERC, INPO, NARUC, NERC, and NEI already address the NRC issues stated in the proposed generic communication, and the proposed generic communication will not enhance these activities. Issuing the proposed communication could interfere with and delay development of standards and guidance from various Federal agencies and industry groups such as INPO. This should be avoided. Active participation of NRC with these other agencies is the most effective way to assure that guidance and standards are developed that fully align with NRC's mission to protect the health and safety of the public.	See the staff response to Comments A, E-7, S-1, and S-10 of Bin 6.
6	P-2 (Comment 2, page 2)	The second paragraph implies that EDGs and safety related equipment should be declared inoperable when offsite power is declared inoperable for predicted inadequate post trip voltage support reasons. This is not consistent with standard improved technical specifications or the guidance of Regulatory Guide 1.93 "Availability of Electric Power Sources." Please	Partially Incorporated - See the staff response to Comment N-3 of Bin 1. As indicated in response to Comment N -3, the staff will clarify the GL in this regard. (See page 10 of the GL for explanation of when the onsite safety-related equipment could be lost and incapable of performing its required safety functions.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
		revise this section to clarify that EDG and safety related equipment inoperability does not result from offsite power inoperability due to predicated inadequate post trip voltage.	
6	R (page 2, paragraph 1)	Suggests that the GL indicate that the NPP develop a communication interface with both the TSO and the RA (RC) when needed.	Fully Incorporated - The staff agrees with the comment. The reference to RA and RC will be incorporated in the GL. (The revised text appears on GL page 1.)

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6.	S-1 (Enclosure, Comment 1, page 1)	The draft generic letter does not appear to recognize ongoing industry efforts in the area of grid reliability. The industry is currently addressing different aspects of this issue through several different avenues. For example, the World Association of Nuclear Operators (WANO) issued a Significant Operating Experience Report (SOER) 1999-1, "Loss of Grid," in 1999. The Institute of Nuclear Power Operations (INPO), driven by the August 14, 2003, northeast blackout event, issued an addendum to this SOER in December, 2004, to provide additional information and recommendations to licensees regarding grid reliability issues. In addition, the Nuclear Energy Institute (NEI) is coordinating industry efforts, through the Grid Reliability Task Force, to address grid reliability issues. This Task Force is actively working with various regulatory, governmental, and industry entities such as the North American Electric Reliability Council (NERC), INPO, Electric Power Research Institute (EPRI), transmission system operators, and nuclear power plant personnel to improve overall grid reliability. The combined efforts of these organizations will help to ensure the reliability of the bulk power supply systems. It is essential that the NRC staff be directly involved with these efforts such that their regulatory concerns are adequately addressed. This involvement, and the work currently undertaken by the Grid Reliability Task Force, obviates the need for this proposed generic letter.	Not Incorporated - The staff is in favor of all of the industry initiatives and activities cited by the commenter. Based on the information gathered by Temporary Inspections (TI) 2515/156 and 2515/165 to assess NPPs' readiness for grid challenges during the summers of 2004 and 2005, respectively, there is much variability in the use of NPP/TSO communication protocols and NPP configuration risk management, which is required by 10 CFR 50.65. The staff is concerned that pending the completion of the ongoing industry initiatives, the NPP operators may not have a good enough understanding of the offsite power system conditions to assure adequate post-trip voltage or may not know the condition of the grid before taking a risk-significant piece of equipment out of service for maintenance. The staff believes the GL is needed to obtain information on the issues discussed in the GL for further staff assessment and action.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	S-6 (Comment 6, page 2)	Real time contingency analysis can benefit the transmission system operators and dispatchers to determine grid conditions. However, it would be inappropriate to rely solely on an RTCA program to determine grid conditions and offsite power operability. The end user must be qualified to make judgments and interpretive assessments of emerging problems as they arise in the event of computer failures or during scheduled software maintenance windows of the RTCA program. A simple "dashboard red light/green light" form of RTCA program will give either a false sense of security or unnecessary paranoia under many scenarios. Also, since the RTCA program relies on accurate telemetering of many data points, the results of the system state estimation calculation and the effects of relevant contingencies can be significantly inaccurate or misleading depending on the availability and accuracy of the telemetered data. - - - - The draft generic letter should reduce the apparent emphasis on the need to use RTCA programs and should instead focus on promoting the enhancement of communication protocols between the transmission system operators and the nuclear power plants (which may or may not include RTCA programs).	Not Incorporated - The North American Electric Reliability Council (NERC), an industry organization, is developing grid reliability and operating standards and is responsible for maintaining the reliability of the electrical grid. The NERC standards include the use of RTCA for preserving the integrity of the electrical grid. The use of the software has increased over time because the thousands of scenarios from actual and simulated events warrant evaluation in a few minutes. All North American control centers will have this capability in some form by the end of 2005. In most areas, especially areas with NPPs, multiple overlapping layers of RTCA are done by independent entities. In a typical arrangement, the local transmission owner/operator runs its own RTCA program for the local network. The independent system operator (ISO) runs an RTCA program for the local network at a higher voltage level and for the adjacent areas. The ISOs monitor the voltage levels at nuclear plant switchyards. ISOs are responsible for identifying actions necessary to maintain the stability of the gird, and communicating the need for such actions to nuclear stations or other generation and transmission entities. Moreover, the procedures for communication, the legal authority for ordering actions, and the reporting of violations are periodically reviewed by regional reliability councils and NERC. In short, the NRC staff anticipates that end users will appropriately assess RTCA program results in judging the operability of the NPP offsite power system. Accordingly, this GL solicits information on how nuclear operators interact with grid operators and use the capabilities of grid operators to ensure that offsite power remains available and that the risk-significant maintenance

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	S-7 (Comment 7, page 3)	The draft generic letter implies that licensees are not complying with the regulations if they haven't established an RTCA program, a real time grid stability and offsite power availability assessment for each maintenance activity, and real time NPP/Transmission System Operator (TSO) communication protocols. These proposed initiatives are not specifically required by 10 CFR 50, Appendix A, General Design Criterion 17, or 10 CFR 50.65, 10 CFR 50.63, or the Technical Specifications for an offsite power system. As such, licensees not fully endorsing all these proposed initiatives should not be perceived as violating regulations, nor should the proposed initiatives be imposed upon licensees without an appropriate backfit analysis or rulemaking.	Not Incorporated - NPP TSs require the offsite power system to be operable as a part of the limiting conditions for operation and specify actions to be taken when the offsite power systems not operable. Since the capability of the offsite power system cannot be tested except when challenged in an actual event, the design bases for the offsite power system can only be assured by evaluating grid and plant conditions and the associated analyses. An RTCA software program is a tool for continually assessing grid reliability and the functionality of the offsite power system. Plant operators should be aware of the capability of the offsite power system to supply power as specified by TSs during operations and situations that can lead to a LOOP after a trip of the plant. The TSs and existing regulations require this capability. See the staff response to Comment S-4 of Bin 5.
6	S-9 (Comment 9, page 3)	The draft generic letter should not presume that the use of a real time contingency analysis program is the best or only viable method to assure adequate post-trip voltage levels. For example, the draft generic letter discusses "a reduction in the plant's switchyard voltage as a result of the loss of the reactive power supply to the grid from the NPP's generator." It is reasonable to conclude from this statement that if the NPP generator is not providing reactive power to the grid prior to its tripping, then switchyard voltage will not be reduced. Therefore, a contingency analysis program is unnecessary to make this determination.	Not Incorporated - The staff agrees that it is reasonable to conclude that if the NPP generator was not providing reactive power to the grid before tripping, switchyard voltage is not reduced. However, many NPPs routinely provide reactive support to the grid. The reduction in post-trip voltage can be caused by many other conditions on the grid. An RTCA program is therefore useful for determining if the offsite power system is operable and capable within the defined contingencies for the design.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	S-10 (Comment 10, page 3)	Reliance on a complex computerized RTCA system that is not under the ownership, control, or oversight of the NPP to determine the adequacy of a critical plant parameter is problematic from a regulatory point of view. In addition, the TSO may be limited as to what information they can provide to the NPP regarding the combination of contingencies based on the FERC Order 2004. The final generic letter, if issued after consideration of industry comments to the contrary, should simply focus on how the NPP assures that its offsite power circuits are operable (i.e., having the capability to mitigate the effects of a design basis event or effect a safe shutdown), without requesting information that is clearly beyond the NPP licensing basis, such as how the TSO operates their grid or what business agreements are in place between the TSO and NPP owner(s).	Not Incorporated - The GL does not request information on how the TSO operates its grid or what business agreements are in place between the TSO and NPP owner or owners. Rather, the GL focuses on topics related to NPP/TSO communication protocols for assuring that the offsite power system is operable and capable and for assessing grid conditions for maintenance risk assessments. In FERC Order 2004, "Standard of Conduct," dated November 25, 2003, and FERC Order 2004-A, "Standards of Conduct for Transmission Providers, Final Rule; Order of Rehearing," dated April 16, 2004, FERC has consistently interpreted 18 CFR 358.5(b)(8) as an exemption that permits a NPP operator and a grid operator to share crucial operating information.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	S-12 (Comment 12, page 4)	The summary paragraph labeled "(2)" near the beginning of the draft generic letter mentions "Use of... real time contingency analysis programs to monitor grid conditions for consideration in maintenance risk assessments." However, the corresponding sections under "Discussion" and "Requested Information" discuss only protocols--not contingency analysis programs. No convincing argument has been made for the need for such programs to perform maintenance risk assessments, so their mention should be removed from the earlier text.	Partially Incorporated - The staff will make item 2 and the Discussion section in the GL consistent with each other. The staff seeks information on whether existing NPP licensees' methods for assessing and managing the risk of maintenance activities under varying grid conditions are acceptable. The staff believes that adequate maintenance risk assessment includes licensee consideration of external events and conditions, including the reliability of the grid and the offsite power system for grid-risk-sensitive maintenance activities. RTCA is one of several tools used by TSOs for assessing the reliability of the grid for various contingencies. The staff therefore wants to know whether licensees are obtaining information from their TSOs on grid reliability before and during grid-risk-sensitive maintenance activities and whether this information is based on RTCA.
6	S-14 (Comment 14, page 4)	Internal NRC Expert Panel - While the qualifications and experience of the expert panel are undoubtedly impressive, STARS is disappointed that the panel did not include representation from the industry, key stakeholders, or other regulatory and governmental agencies that are responsible for grid operation. Stakeholder participation in this process could have added valuable insights as to how bulk power supply systems are managed and operated, and how licensees ensure regulatory compliance with the regulations cited in this draft generic letter.	Not Incorporated - In response to the August 14, 2003, blackout, the NRC convened an internal expert panel to identify all relevant actions by nuclear generating facilities in connection with the outage. The panel focused on collecting and analyzing data from every affected nuclear plant and determining whether any activities at the plants caused or contributed to the power outage or its spread or involved a significant safety issue. Outside experts would likely have provided valuable information and insights, but it was not practical to include them on the panel, and still obtain timely results. In any event, the expert panel's report was just one input to the decision to issue the GL.
6	State of NJ (page 1,	Fully Supports the NRC's proposed information request in light of the consequences of the	The staff agrees.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
	paragraph 3)	recent, August 14, 2003, blackout event. Recommends that the proposed GL be implemented on a schedule such that it can be assured that all nuclear power facilities in NJ will be in full compliance with the proposed GL prior to the start of the 2006 summer season.	
6	T - G2* *General Comment	TVA is also concerned with the NRC's emphasis in the draft GL concerning the use of a realtime contingency analysis (RTCA) program to determine the adequacy of offsite power at the nuclear generating station, and there is a concern for maintenance risk assessments consideration. The use of a RTCA program is not necessarily the best or only viable method to assure adequate post-trip voltage levels. RTCA programs use an unproven technology that is in the early stages of development and implementation by various transmission organizations.	See the staff response to Comments N-2, M-3, and S-8 of Bin 1 and S-7 of Bin 6 regarding RTCA.

Table 3: Resolution Matrix for Comments			
Bin	**Comment No.**	**Comment**	**Resolution**
6	T - G3* *General Comment	INPO evaluation and assessment of utility implementation of SOER recommendations will ensure that nuclear utilities are addressing the issues. The nuclear industry has also been working with the North American Electric Reliability Council (NERC) and regional transmission organizations to develop and issue NERC standards that will address the need for formal agreements and communications protocols regarding the special operating requirements of nuclear generating stations. TVA is participating in grid reliability workshops sponsored by NEI Electric Power Research Institute (EPRI), INPO, and NERC. We believe that these forums are the correct approach to address grid reliability issues and that the proposed GL is unnecessary given the upcoming issuance of these new standards and the implementation of grid reliability programs.	Not Incorporated - The staff is in favor of all of the industry initiatives and activities cited by the commenter. Based on the information gathered by Temporary Inspections (TI) 2515/156 and 2515/165 to assess NPPs readiness for grid challenges during the summers of 2004 and 2005, respectively, there was much variability in the use of NPP/TSO communication protocols and NPP configuration risk management (required by 10 CFR 50.65). The staff is concerned that, pending the completion of the ongoing industry initiatives, NPP operators may not have a good understanding of the power system conditions needed to assure adequate post-trip voltage or know the condition of the grid before taking a risk-significant piece of equipment out of service for maintenance. The staff needs the requested information for further staff assessment and action. The GL is not addressed to transmission system operators and does not suggest that the NRC is considering a requirement that the TSOs give certain information to licensees. If the NRC determines that such a requirement is needed to ensure compliance with NRC requirements applicable to licensees or to adequately protect public health and safety or the common defense and security, the NRC will impose the requirement by rulemaking or through orders. The NRC will consider any backfit issues in issuing such a rule or orders. The NRC staff is not now suggesting that the Commission impose requirements on TSOs. See the staff response to Comment S-1 of Bin 1.