Industry Position on the Applicability of General Design Criteria (GDC) 2, 4 and 5 to the Offsite Power System (OPS)

Summary of the GDC: GDC 2 states that structures, systems, and components (SSCs) important to safety shall be designed for protection against natural phenomena, such as earthquakes, tornadoes, hurricanes, and floods, without loss of function. GDC 4 requires SSCs important to safety to be designed to accommodate environmental and dynamic effects (missiles, pipe whipping, etc). GDC 5 provides restrictions on the sharing of SSCs important to safety among nuclear plant units.

NRC Staff Position: The NRC staff has stated that COL applicants must demonstrate that the OPS complies with certain portions of GDC 2, 4, and 5, as provided in the Standard Review Plan (SRP). The staff has stated that the OPS is important to safety (and therefore subject to GDC 2, 4, and 5) because the OPS is the preferred power source and performs a defense in depth function.

Industry Position: The recent revision of the SRP constitutes an unwarranted change in the NRC's position and is inconsistent with the NRC's previous position on the applicability of GDC 2 and 4 to the OPS:

- The OPS is not safety-related. Additionally, for passive plants, design requirements for non-safety related systems like the OPS are determined using the RTNSS process as specified in SECY-94-084. Evaluations for ESBWR and AP1000 using this process have determined that design requirements in GDC 2 and 4 are not applicable to the OPS.
- NRC has not required the current fleet of operating nuclear plants to comply with GDC 2, 4 or 5. Furthermore, Section 8.1 of Tier 2 of the Design Control Documents (DCDs) for the ABWR and AP1000 (both of which have both been certified by the NRC) explicitly state that GDC 2, 4, and 5 are not applicable to the OPS.
- For more than 25 years, prior to the recent revision of the SRP in 2007, SRP 8.1 has stated that GDC 2 and 4 are not applicable to the OPS.
- Applying GDC 2 and 4 to the OPS would be inconsistent with other regulations. For example, 10 CFR 50.49, which applies to electrical components important to safety, does not apply to the OPS. Additionally, Appendix S to Part 50, which provides detailed criteria for implementing the seismic requirements in GDC 2, does not apply to the OPS.
- The SRP does not require compliance with GDC 2 and 4. For example, SRP 8.2 states that the OPS should be designed for atmospheric temperatures, high wind, rain, lightning, ice and snow; it does not require the OPS to be designed for other conditions listed in GDC 2, such as earthquakes, tornados, hurricanes, and floods. Thus, the provisions in the SRP related to GDC 2, 4, and 5 represent guidance rather than a statement that those GDC are legally applicable to the OPS.

Safety Significance: This issue is not a matter of safety significance.

- The current fleet of operating nuclear plants are safe, and yet their OPS have not been required to satisfy GDC 2, 4, and 5 - - their switchyards and transmission systems are not designed to withstand earthquakes, tornados, hurricanes, windborne missiles, etc.
- Like operating plants, new plants have provided adequate design requirements for the OPS without applying GDC 2, 4, and 5 or the SRP statements that relate to them. Examples include requirements for reliability and stability analyses of the transmission systems and evaluation of loss of offsite power in the site-specific PRA.
- The offsite power systems and offsite transmission networks are designed to transmission system and industry standards that include performance requirements relative to exposure to various environmental conditions, such as wind, precipitation, lightning and temperature variation.
- Designing switchyards and transmission lines to fully comply with the requirements of GDC 2, 4, and 5 would not make offsite power more reliable, because transmission systems and the grid are not designed to withstand these loads.

Recommendations: The NRC should continue to apply the position that it has taken in past licensing proceedings and in past guidance, and should not apply GDC 2, 4, and 5 to the OPS for new plants.