

**Periodic Review of Regulatory Guide 1.81, “Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants,” Revision 1, dated January 1975**

**1) What are the known technical or regulatory issues with the current version of the RG?**

Regulatory Guide (RG) 1.81, “Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants,” is not fully consistent with the current requirements of 10 CFR 50.55a(h), “Protection and Safety Systems.” The RG recommends separate and independent onsite emergency and shutdown electric systems for multi-unit nuclear power plants. It further recommends that onsite emergency electric power systems should not be shared between units and should be independent to minimize undesirable interactions between units. These recommendations do not agree with the current requirements in 10 CFR 50.55a(h), “Protection and Safety Systems” which states that applications for construction permits filed after May 13, 1999, must meet the requirements of IEEE Std. 603-1991, “IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations” which allows the sharing of electrical power systems between units as long as the shared components follow the guidance in IEEE Std. 308-1980, “IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations.” IEEE Std. 308-1980 states that Class 1-E power systems can be shared between units provided that the ability to simultaneously perform required safety functions is not impaired.

Additionally, the RG does not reflect current nuclear safety system guidance as delineated in IEEE Std. 603-2009 and IEEE Std. 308-2012. The NRC staff should be updated to incorporate new information from the normative references of these updated IEEE standards.

**2) What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities?**

Temporarily delaying a revision of RG 1.81 will have no known impact on internal or external stakeholders at this time. The RG provides guidance for initial plant design and no new plant designs are currently under review.

This RG should be revised within the next 18 to 24 months to minimize the potential impact on future licensing applications and reviews.

**3) What is an estimation of the level of effort needed to address identified issues in terms of FTE and contract dollars?**

Updating RG 1.81 is estimated to require approximately 60 hours of internal staff effort with no contractor support.

**4) Based on the answers to the questions above, what is the proposed staff action for this RG?**

The staff recommends declaring RG 1.81, Rev. 1 dated January 1975 to be acceptable as is at this time and initiating a revision to the RG within the next 12 to 18 months. The revision should address the issues identified in the response to question 1 (above).

**5) If the RG should be revised, provide a conceptual plan and timeframe to accomplish this.**

The staff plans to issue a draft guide for public comment in late 2014. The revised RG will be finalized after addressing public comments.

**NOTE:** This review was conducted in February 2014 and reflects the staff’s plans as of that date. Plans are tentative and subject to change.