10 CFR PART 52 NEW REACTOR LICENSING LESSONS LEARNED RULEMAKING

The U.S. Nuclear Regulatory Commission (NRC) initially issued Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," on April 18, 1989, (54 FR 15386) to provide an alternative to the 10 CFR Part 50, "Domestic Licensing of Production and Utilization Factilities," licensing process for future nuclear power plant applicants. The NRC updated 10 CFR Part 52 on August 28, 2007, (72 FR 49352) to increase regulatory certainty and stability and to enhance the NRC's regulatory effectiveness and efficiency in implementing its licensing and regulatory approval processes. The 2007 amendments were expected to improve the effectiveness of the licensing process for future applications, and were based on the NRC staff's experience with previous design certification (DC) and early site permit (ESP) reviews and discussions with stakeholders on the ESP, DC, combined license (COL), and limited work authorization (LWA) processes.

Since the 2007 update to 10 CFR Part 52, the NRC staff has reviewed a number of ESP, DC, and COL applications. The NRC has issued four ESPs (one with a limited work authorization (LWA)), COLs for four units (with the Vogtle units containing updated LWAs), and two DC amendments. Several other DC, COL, and ESP applications are either still under review, or were either deferred or withdrawn.

During these reviews, the NRC staff identified a substantial number of corrections and clarifications that need to be made to 10 CFR Part 52 as well as other parts of the NRC's regulations including, but not limited to, 10 CFR Parts 21, "Reporting of Defects and Noncompliance", 50, 73, "Physical Protection of Plants and Materials", and 100, "Reactor Site Criteria." Examples of these changes and clarifications are as follows:

<u>Corrections</u>

- Regulations in 10 CFR Part 52 refer to the U.S. Department of Homeland Security. These references need to be corrected to instead refer to the Federal Emergency Management Agency.

- The introductory paragraph to 10 CFR 50.54, "Conditions of licenses," provides a list of conditions of licenses that are only applicable to holders of COLs only after the Commission makes the finding under 10 CFR 52.103(g). This list needs to be updated to include 10 CFR 50.54(q), which explicitly states its applicability after the finding under 10 CFR 52.103(g).

<u>Clarifications</u>

- The staff believes requirements for application, review, and approval for renewal of a DC need to be clarified. In 10 CFR 52.57, "Application for renewal," the requirement for renewal states "an applicant for renewal must contain all information necessary to bring up to date the information and data contained in the previous application." Further, 10 CFR 52.59, "Criteria for renewal," states "The Commission shall issue a rule granting the renewal if the design, either as originally certified or as modified during the rulemaking on the renewal, complies with the Atomic Energy Act and the Commission's regulations applicable and in effect at the time the certification was issued…" Regarding the length of the renewal, 10 CFR 52.61, "Duration of renewal," states, "Each renewal of

certification for a standard design will be for not less than ten, no more than 15 years." Lastly, 10 CFR Part 2, "Agency Rules of Practice and Procedure," is silent on applications for renewals. NRC staff should clarify these regulations based on its experience gained from the advanced boiling water reactor design certification renewal applications.

- The NRC staff believes the regulations should be clarified regarding whether a final design approval should remain effective upon issuance of a related design certification final rule or amendment. Currently, regulations for a final design approval and a design certification are executed under separate processes and result in different regulatory approvals. Further, changes may occur to the subject design between the final design approval and the design certification rulemaking, which could lead to two different regulatory approvals for different versions of the same design.

New Requirements

- Consider adding requirements to address a COL expiration date for a COL that does not engage in construction following COL issuance within a specified timeframe. Some of the current COL applicants have publicly[1] announced their intentions to not immediately pursue construction if the Commission issues a COL. This situation was not anticipated nor addressed in the existing 10 CFR Part 52. The NRC staff would like to amend the regulations for a COL to include an expiration date when no safety related construction activity has been started.

In addition, following the issuance of COLs for Vogtle Electric Generating Plant, Units 3 and 4; and V.C. Summer Nuclear Station, Units 2 and 3; the NRC initiated a lessons learned review to identify potential enhancements to the 10 CFR Part 52 licensing process and contribute to more effective and efficient reviews of future applications. During the review, the NRC conducted an extensive outreach effort to solicit feedback from external and internal stakeholders on their experiences including a focused session at the NRC's 2012 Regulatory Information Conference. The report, "New Reactor Licensing Process Lessons Learned Review: 10 CFR Part 52,"[2] identified seven lessons learned, one of which stated that "updates to the regulations incorporating lessons learned will contribute to an enhanced licensing process." In addition, the NRC initiated a post-licensing lessons learned review report entitled "Title 10 of the Code of Federal Regulations Part 52 Implementation Self-Assessment Review: 1 Year Post-Combined License Issuance,"[3] which also concluded that rulemaking would be beneficial.

This rulemaking would be responsive to the recommendations contained in both the licensing process and post-combined license issuance lessons learned reviews as follows:

The Licensing Process Lessons Learned Report, Lesson 7, "Updates to the regulations incorporating lessons learned," will contribute to an enhanced licensing process. The report offers two examples of possible enhancements:

- Consider adding a process to allow changes to information in an LWA.

[1] Duke Energy 2013 Annual Report.
[2] Agencywide Documents Access and Management System (ADAMS) Accession No. ML13059A240.
[3] ADAMS Accession No. ML13196A403.

An applicant for an ESP under 10 CFR 52.17, "Contents of applications: technical information," may also request, as part of the application, an LWA under 10 CFR 50.10, "License required: limited work authorization." The issuance of an LWA would allow activities including the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of the foundation, including placement of concrete. These activities would otherwise be associated with either a construction permit (CP) or COL. As expected, the translation of design information into detailed requirements for physical construction may necessitate modifications to the LWA. Therefore, the NRC staff recommends developing a change process for an LWA to determine if prior NRC approval is necessary. The change processes under 10 CFR 50.59, "Changes, tests, and experiments," and Section VIII of the 10 CFR Part 52 design certification rule appendices have demonstrated themselves effective and could be used as the basis for the change process as applied to information contained in an LWA.

- Applicability of 10 CFR Part 73, "Physical Protection of Plants and Materials," requirements to holders of a COL.

  The requirements of 10 CFR Part 73 (i.e., 10 CFR 73.55(b)(4))[4] require operating reactor security programs be implemented before receiving unirradiated fuel within the protected area. For a COL holder, this may impose an unnecessary burden because the possession and storage of unirradiated fuel is no different in radiological hazards or risks from a license issued under 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material." The regulations in 10 CFR Part 50 currently require a holder of a construction permit to meet the 10 CFR Part 70 requirements for receipt of fuel on site and the 10 CFR Part 73 requirements for protecting a nuclear power reactor are implemented prior to receiving the operating license (i.e., just prior to irradiating fuel). The staff is considering revising 10 CFR Part 73 to better align the 10 CFR Part 52 licensing requirements to those in 10 CFR Part 50.

In addition to the examples provided, the licensing process lessons learned report also acknowledged the need to incorporate lessons from the post-COL issuance review effort that was being performed in parallel. The post-COL issuance lessons learned report identified the following recommendations.

- Clarity of design control document (DCD) Tier 2* information (i.e., information for which prior NRC review and approval is needed before changes can be implemented) could be enhanced. Clear and concise criteria for Tier 2* designations would provide additional regulatory certainty and consistency of design certification information during the construction phase for future plants referencing a design certification.

- NRC staff and the licensees should monitor the ongoing implementation of the current licensing basis change processes to identify where additional process enhancements may be warranted. From efforts to date, the NRC staff identified the following topics for consideration:

[4] 74 FR 13971, March 27, 2009, as amended at 77 FR 39909, July 6, 2012.

- 10 CFR 73.58, “Safety/Security Interface Requirements for Nuclear Power Reactors,” and its applicability for changes requested by a COL holder during construction. A COL applicant is required under 10 CFR 52.79(a)(35) and 10 CFR 52.79(a)(36) to submit a security plan that has in its basis the design information contained in the final safety analysis report as updated. However, the interrelationships of the change processes for safety attributes of the design and the security attributes of the design addressed in 10 CFR 73.58 are not directly applicable during the construction phases of the new nuclear power plants. When this regulation was issued, the Commission decided it would only become relevant following the transition to operation at the 10 CFR 52.103(g) finding. However, the inclusion of the entire construction phase under the SSI regulation would enhance public health, safety and security by verifying the security attributes of the certified design information are considered when the licensee is progressing from conceptual design to the detailed design necessary for physical construction of new nuclear power plants.

- Regulations in 10 CFR 50.54 related to ex-vessel severe accident mitigation features and whether there should be a corresponding requirement for “in-vessel retention.”

- Consideration of the Preliminary Amendment Request (PAR) process. The staff recommends moving this developmental PAR process into the regulations for use by future COL holders.

The NRC staff also notes that such amendments to the regulations would require corresponding updates to guidance documents. The staff is updating NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” and Regulatory Guide 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition).” The proposed 10 CFR Part 52 lessons learned rulemaking would also necessitate further changes to NUREG-0800 and Regulatory Guide 1.206. Further updates to the guidance would be coordinated with the rulemaking activities described above.

The Commission and other stakeholders will be informed of details of specific proposed rule changes in accordance with the NRC’s standard rulemaking practices, including opportunities for public comment.