



# Browns Ferry Nuclear Plant Units 1, 2 and 3

---

## Adoption of 10 CFR 50.69

April 2, 2020

# Agenda

- 10 CFR 50.69 Background
- License Amendment Background
- Operating Experience
- Browns Ferry 50.69 Evaluation

# 10 CFR 50.69 Overview

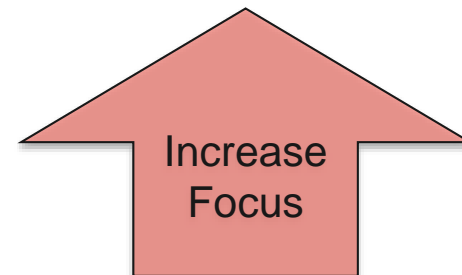
**Provide Flexibility to Reduce Cost and Improve Plant Operations & Safety Margins**

**It has the potential to provide the industry substantial cost savings and drive the goals of the *Delivering the Nuclear Promise Initiative***

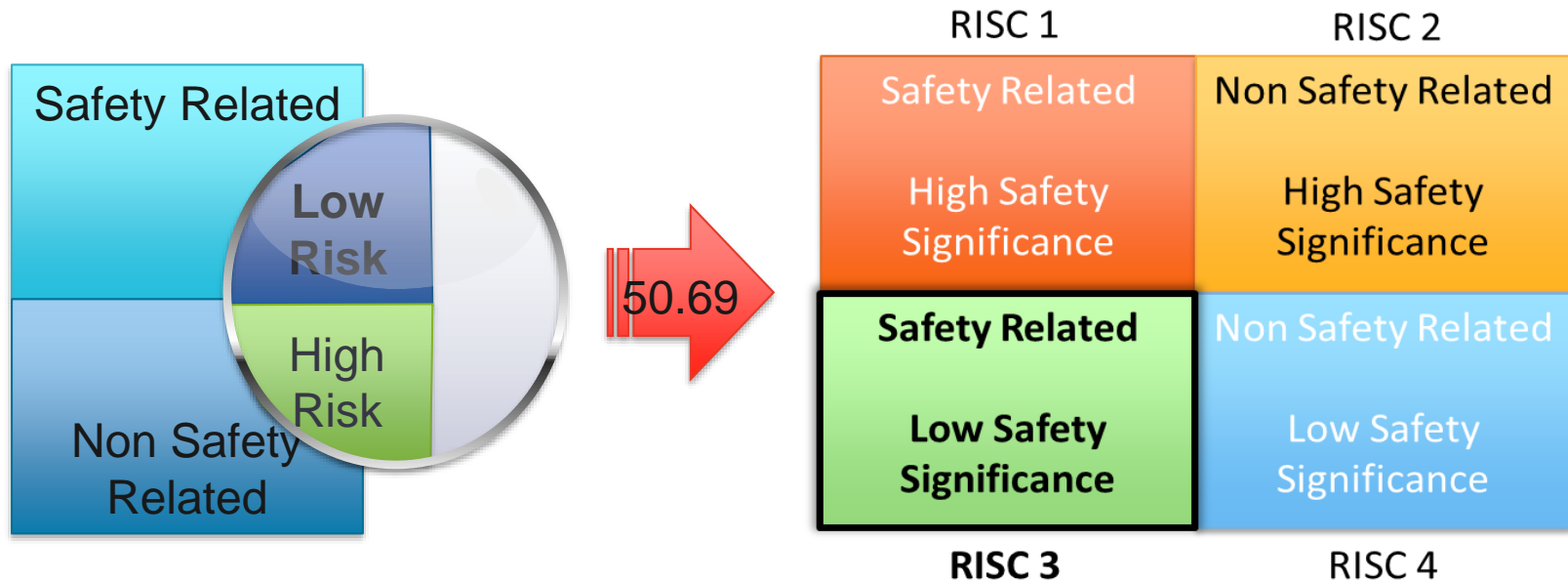


**High Safety Significant Areas**

**Low Safety Significant Areas**



# Overview - Categorization



RISC = Risk Informed Safety Class

# Overview – Exempted Special Treatment Requirements

Low Safety Significant Components can be scoped out of these regulations

Local Leak Rate Testing  
[10 CFR 50 Appendix J]

Quality Requirements  
[10 CFR 50 Appendix B]

In-service  
Inspection  
[10 CFR 50.55a(g)]

ASME XI repair &  
replacements, applicable  
portions, with limitations  
[10 CFR 50.55a(g)]

Maintenance Rule  
[10 CFR 50.65]

In-service Testing  
[10 CFR 50.55a(f)]

Environmental  
Qualification  
[10 CFR 50.49]

Event Reporting  
[10 CFR 50.55(e)]

Seismic Qualification  
[Portions of Appendix  
A to 10 CFR Part 100]

Deficiency  
Reporting  
[10 CFR Part 21]

Applicable Portions  
of IEEE standards  
[10 CFR 50.55a(h)]

Notification  
Requirements  
[10 CFR 50.72, 50.73]

# License Amendment Background

- Delivering the Nuclear Promise Efficiency Bulletins (EB)
  - EB 17-09 LAR Submittal
    - LAR Template
  - EB 17-16 Process Implementation
- LAR Coordinating Committee
  - Peer review prior to submittal
  - Comments resolved prior to submittal

# License Amendment Background – cont.

- Joint Owners' Group Committee
  - Collaboration
  - Sharing Infrastructure
  - Training
  - Information Sharing

# Operating Experience

- TVA has submitted 50.69 LARs for Sequoyah (Approved) and Watts Bar (In Review)
- NRC to date, 14 plants have received regulatory approval to adopt 50.69 into their operating licensing, including TVA's Sequoyah plant
- TVA has performed benchmarking with several utilities



# BFN 50.69 Evaluation



# HSS Component Determination Overview

## Determination of High Safety Significant (HSS) Components for Indicated Events/Hazards

- Internal Events, Risk Imp. Measures & Sensitivity Studies
- Internal Flooding, Risk Imp. Measures & Sensitivity Studies
- Seismic Events, Risk Imp. Measures & Sensitivity Studies
- Internal Fire Risk, Risk Imp. Measures & Sensitivity Studies
- Other External Hazards, any System, Structure or Component (SSC) Credited by the IPEEE to Screen the Hazard
- Shutdown Risks, Key Safety Function Defense-In Depth

# PRA Technical Adequacy Evaluation

## Internal Events & Internal Flooding PRA Models

- Peer reviewed in accordance with RG 1.200 Rev. 2 and ASME/ANS PRA Standard (2008) Addendum a
- Underwent Fact and Observation (F&O) Closure Process
- Ten Internal Events Open F&Os (Finding Level) which were assessed against the 50.69 application
- Eight Internal Flooding Open F&Os (Finding Level) which were assessed against the 50.69 application

# PRA Technical Adequacy Evaluation cont.

## Seismic PRA Model

- Full Scope Peer Review against the ASME/ANS PRA Code Case 1 (seismic)
- Underwent F&O Closure Process
- No Open F&Os (Finding Level)

# PRA Technical Adequacy Evaluation cont.

## Fire PRA Model

- Full Scope Peer Review against the 2008 ASME/ANS PRA Standard Addendum a Part 4 (Fire)
- Has not been subjected to F&O Closure Process, planned to take place later this year
- Nine F&Os (Finding Level)
- BFN FPRA model developed in accordance with NFPA-0805 and NUREG-6850
- All FPRA credited NFPA-805 modifications have been installed in the as-built plant

# Non-Modeled Hazards

- Other External Hazards – the BFN process will use the screening results from the IPEEE, reviewed against the current as-built, as-operated plant, for evaluation of safety significance related to:
  - High Winds
  - External Flooding
  - Transportation and Nearby Facility Accidents
  - Other External Initiating Events
- All SSCs credited in IPEEE Other External Hazards evaluation to allow the hazard to screen will be considered High Safety Significant (HSS)

# Low-Power / Shutdown

- The BFN Categorization process will use the shutdown safety management plan described in NUMARC 91-06, for evaluation of safety significance related to low power and shutdown conditions.
- TVA process assesses the potential impact on shutdown risk
  - Focus on planning, conservative decision-making and maintaining defense-in-depth
  - Assessment of plant shutdown configurations for impact on Key Safety Functions

# Credit for FLEX Equipment

- BFN PRA modeling does not credit portable FLEX equipment
- A permanently installed cart that holds a nitrogen bottle for use to open a drywell vent valve on loss of control air is credited in the seismic model only



# Model Update and Maintenance

TVA procedures ensure or provide:

- Model configuration, fidelity and realism
- Periodic update requirements
- Living model requirements
- PRA model updates
  - > PRA Maintenance
  - > PRA Upgrade (peer review required)

# LAR Schedule

- Tentatively, week of 4/6/20-Draft 50.69 LAR to be reviewed by Industry Coordinating Committee
- Coordination with TSTF-425 Submittal
  - It is expected that there will be review efficiencies gained because of the common PRA usage
  - The BFN TSTF-425 LAR was submitted on March 27, 2020
- A one-year NRC review is requested
- Upon approval, the 50.69 License Amendment will be implemented within 60 days

