



# Joint BWROG/PWROG Technical Committee Meetings

NRC Panel: August 16, 2018

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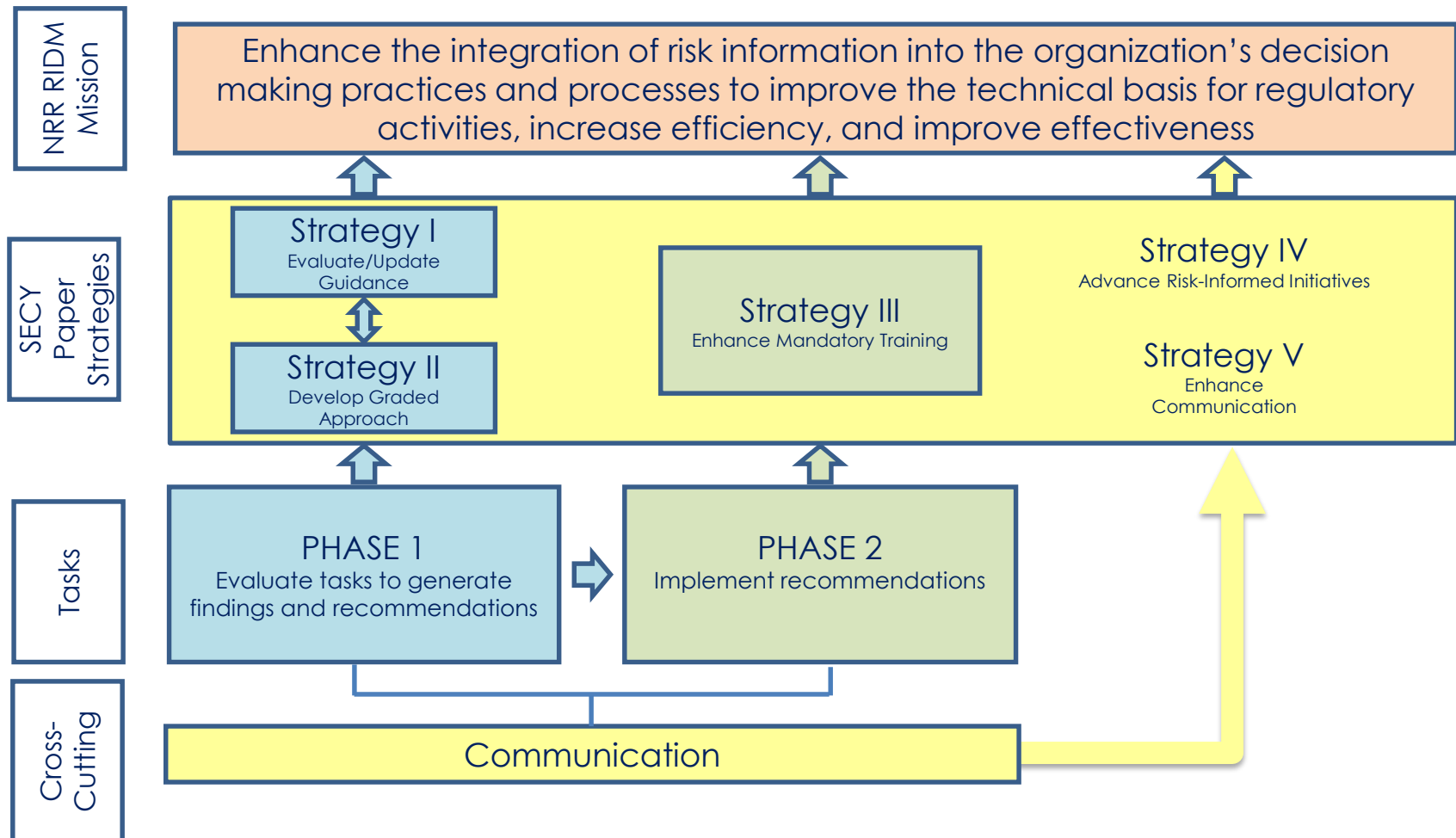




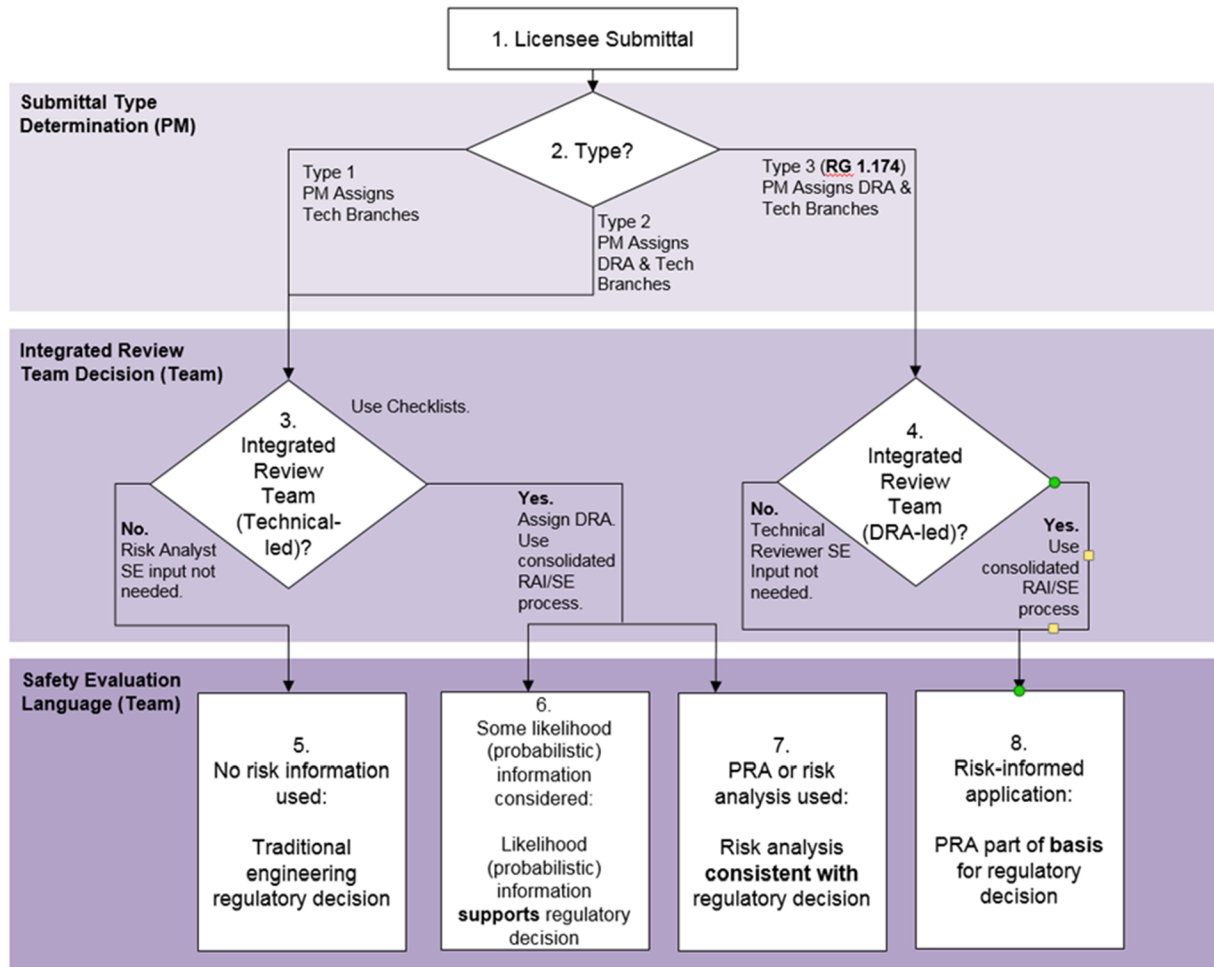
# Risk-Informed Decision Making (RIDM): Action Plan

Mike Franovich, Director  
Division of Risk Assessment

# An Action Plan is Being Implemented to Improve Risk-Informed Decisionmaking



# The Action Plan Supports Increased Use of Integrated Reviews and Safety and Risk Insights



# Strategies to Optimize Regulatory Activities

- Broaden efforts to promote RIDM practices
- Increase FLEX regulatory credit
  - correlate future plant modifications with FLEX to reduce other hazards risk (e.g., internal fires & floods)
  - showcase FLEX capabilities when NRC conducts onsite audits - increase reviewers, inspectors, and managers awareness
- Focus communications and coordination
  - Conduct joint NRC-Industry workshops on lessons learned from 50.69 and TSTF-505 reviews
  - Improve coordination and accuracy of forecasted LAR submittals
  - Sequence risk related LARs:
    - Consider submitting TSTF-505 prior to 50.69 or lower tier LARs (TSTF-505 program has a very high pedigree for PRA acceptability), or
    - Couple TSTF-505 and 50.69 LARs and reviews

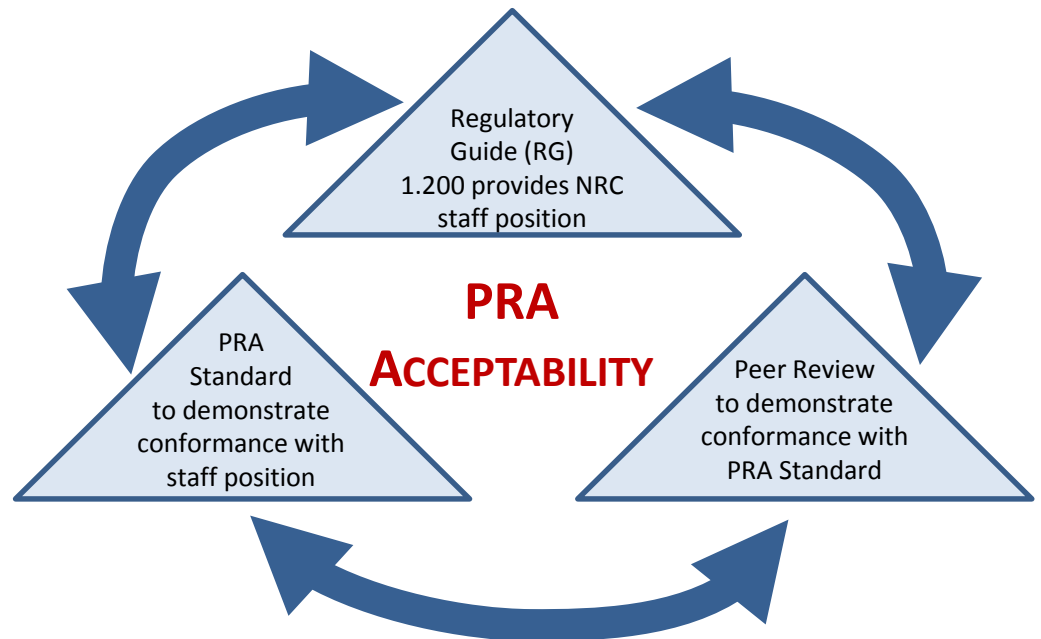


# New Methods

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# PRA Acceptability – 3 Elements

- All 3 elements have to work together to demonstrate PRA acceptability



# New Methods Are a Current Focus Area for NRC and Industry

- Ongoing focus on industry peer-review and the F&O closure process
  - ASME/ANS PRA Standard updates
  - RG 1.200 update
  - NEI 17-07
- A risk-informed oversight process will complement licensing activities and possibly new methods





# Crediting Mitigating Strategies in Regulatory Applications

Mike Montecalvo  
Acting, Branch Chief  
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# Crediting Diverse and Flexible Coping Strategies (FLEX)

- FLEX developed to meet the Commission's Orders after the Fukushima accident
- FLEX can also be utilized for:
  - Outages
  - Defense-in-Depth
- The NRC wants to encourage safety enhancements
- Addressing ongoing challenges

# Challenges to Crediting FLEX

- **No Operational Experience (OpE) data**
  - Needed to develop, and support, equipment reliability used in risk assessments
  - Prior OpE collection effort by EPRI abandoned
  - Owner's Groups have taken lead
  - Have committed to sharing draft and final results
- HRA methods for unique FLEX actions
  - Current HRA methods not adequate for all FLEX actions
  - Ongoing work in NRR and RES to address this challenge
  - RES held an expert elicitation in April 2018
  - EPRI Workshop in February 2018

# FLEX OpE data expectations

- Commission's PRA policy statement states:
  - "PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review."
- The data needs to be of comparable resolution to what the NRC publishes on its public website.
  - Failures, Number of attempts (or hours), and number of components
- The data does **not** need to identify individual plants, consistent with our current approach.
- The data should be of sufficient resolution to verify that any poolability assumptions are statistically sound.
  - Basis for pooling FLEX diesels from different vendors

# Path Forward on FLEX OpE data

- Owner's Group Effort
  - Draft report Fall 2018
  - Publish report (1<sup>st</sup> quarter 2019)
- NRC is looking forward to reviewing the report
- Possible Public Meeting
  - Discuss the NRC's review of the report
  - Discuss how RES will integrate this information into the current process
- NRC staff is looking forward to engaging the owner's groups on the FLEX OpE data.

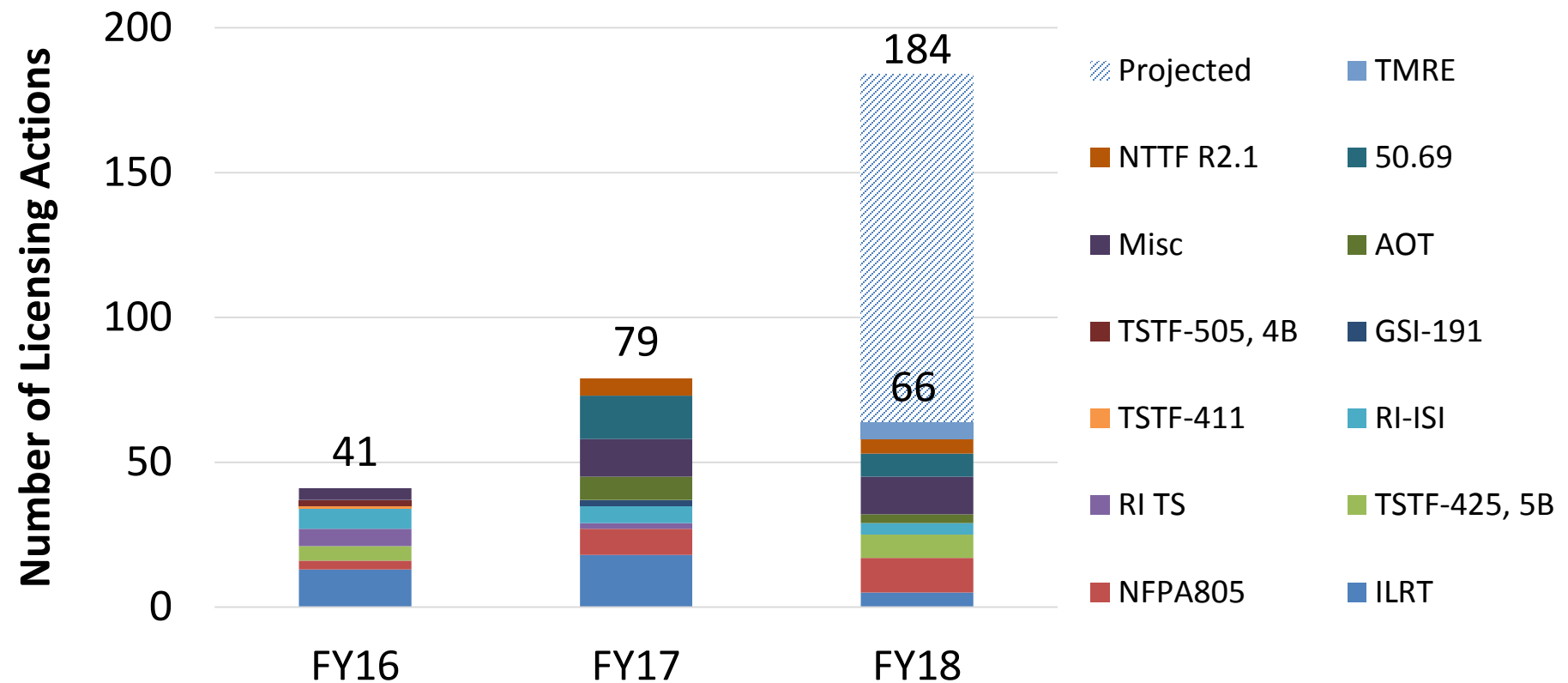


# Lessons Learned: Recent Risk-Informed LAR Reviews

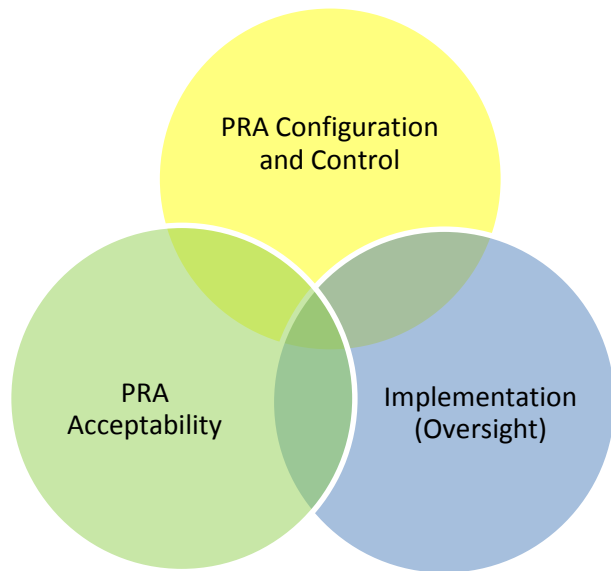
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# Influx of Risk-Informed Applications Requires Increased Coordination and Planning Between NRC and Industry

Risk-Informed Licensing Actions Received from FY16-FY18



# High Quality Submittals to Streamline Efficient Staff Reviews



- PRA Quality
  - ❑ Up-to-date full-scope PRA peer reviews
- Crediting Appendix X, consistent with staff letter of acceptance
- Incorporations of precedent from previous SEs
- Disposition of open F&O applicable to risk-application



# 50.69: Risk Informed Categorization of Structures, Systems, and Components

- LAR review scope:
  - NRC staff reviews the quality of the PRA models used in the categorization process
  - NRC approves categorization process
  - NRC does not review categorization results, procedures, or alternative treatment during LAR review. These are subject to inspection
- 16 applications for 50.69 received
  - 6 in early stages of review; 3 withdrawn
  - One SE has been issued, several reviews approaching completion

# Insights from Initial 50.69 Reviews

- Deviations from endorsed guidance
  - Categorization of passive SSCs
  - Public meetings preferred to discuss generic industry topics/deviations prior to LAR submittal
    - Public meetings to resolve generic topics related to seismic or fire (sites without seismic analysis or fire PRA)
- Some LARs require more review hours due to scope of PRA (e.g., seismic, high winds)
- NRC review resources are challenged due to the large volume of applications
- License Condition for approval specifying modeled PRA hazards and non-PRA methods

# Tornado Missile Risk Evaluator (TMRE)

- Three pilot plant LARs using TMRE draft guide (NEI 17-02 draft Rev. 1)
  - Plant audits and RAs generated to pilots
  - Pilot plant RA responses also updating NEI 17-02
  - Staff positioned to complete safety evaluations (SEs) following receipt of licensee responses
  - Post-pilot amendments could model pilot SEs in advance of NEI 17-02 endorsement
  - Staff prepared to receive approximately 12 amendments in FY19
- 13 of 13 EGM 15-002 extension requests dispositioned between January and June

# TSTF-505: Risk-Informed Technical Specification Completion Times

- Background
  - TSTF-505 suspended (November 2016)
  - Vogtle's License Amendment for RICT issued (August 2017)
    - Vogtle was the “pilot” for changes needed to unsuspend TSTF-505
  - NRC staff modified TSTF-505 and the model application/SE
    - No RICT for loss of function
    - Enables licensing efforts to advance forward
    - License Condition for use of new methods
- September/October target for revised TSTF model application and safety evaluation report

# NRC PANEL: QUESTIONS



# Acronyms

- ANS: American Nuclear Society
- ASME: The American Society of Mechanical Engineers
- CDF: Core Damage Frequency
- CFR: Code of Federal Regulations
- DRA: Division of Risk Assessment
- EGM: Enforcement Guidance Memorandum
- FLEX: Diverse and Flexible Coping Strategies
- F&O: Fact/Finding and Observation
- FY: Fiscal Year
- HRA: Human Reliability Analysis
- LAR: License Amendment Request
- LERF: Large Early Release Frequency
- NEI: Nuclear Energy Institute
- NFPA: National Fire Protection Association
- NOED: Notice of Enforcement Discretion
- NTTF: Near Term Task Force
- PM: Project Manager
- PRA: Probabilistic Risk Assessment
- RG: Regulatory Guide
- RI: Risk-Informed
- RICT: Risk-Informed Completion Time
- RIDM: Risk-Informed Decision-Making
- RISC: Risk-Informed Steering Committee
- RITS: Risk-Informed Technical Specifications
- ROP: Reactor Oversight Process
- SDP: Significance Determination Process
- SE: Safety Evaluation
- SFCP: Surveillance Frequency Control Program
- SR: Surveillance Requirement
- SSC: Structure, System, or Component
- TMRE: Tornado Missile Risk Evaluator
- TS: Technical Specification
- TSTF: Technical Specification Task Force