Establishing New Routes to Lead the Way to Deployment

GAIN Regulatory Webinar Series

GAIN Gateway for Accelerated Innovation in Nuclear

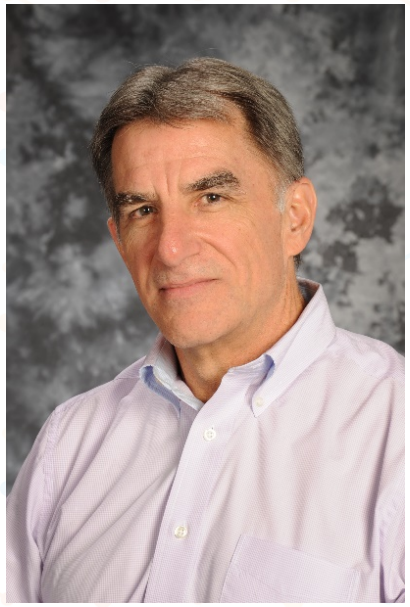
Logistics

- Thank you for joining our webinar with Doug McDonald, Ross Moore, Peter Hastings, Marc Nichol, and Tom Bergman
- Your camera is turned off and your audio is muted
- Use the “Question” feature on the GoToWebinar Control Panel to ask questions or to report technical difficulties at any time during the webinar
- This webinar is being recorded and will be available on the GAIN website along with today’s presentations

Agenda: Webinar #4 - Establishing New Routes to Lead the Way to Deployment

Tuesday, June 1, 2021 | Noon – 3:00 pm MT

MST	Description	Presenter
12:00 pm	**Opening Remarks**	**Jim Kinsey, GAIN**
12:10 pm	**Prepping Your Vehicle: Smartly Leveraging Past Work** • Building on past technology development • Licensing approach – reducing risk	**Doug McDonald, GE-Hitachi**
12:30 pm	**The Road Less Traveled: Blazing a Trail Customized for Your Vehicle** • Developing a novel license application approach • Submitting the first ever advanced reactor combined license • Creating a simpler, more flexible, performance-based approach to licensing	**Ross Moore, Oklo**
12:50 pm	**The Driver's Seat: Tailoring the Route You Take** • Leveraging guidance / Making the approach your own	**Peter Hastings, Kairos Power**
1:10 pm	**Under Construction: Where to Next?** • Building bridges (using Part 50/52 more efficiently) • Express lanes (streamline with an eye on current requirements) • Superhighway (Tech-incl. RIPB → timely & efficient deployment)	**Marc Nichol, NEI**
1:30 pm	**Moderated Panel Discussion with Presenters** Discussion / Q&A	**Tom Bergman, NuScale Power**
2:50 pm	**Closing Remarks**	**Jim Kinsey, GAIN**



Jim Kinsey
Regulatory Affairs,
Idaho National
Laboratory

Mr. Kinsey has over 40 years of experience in the nuclear industry, including significant commercial experience in licensing, regulatory affairs, system engineering and major project management. He has managed numerous industry licensing and regulatory affairs projects, including the licensing of GE-Hitachi's ESBWR advanced reactor design, and the development of successful recovery and re-start programs for commercial nuclear plants previously placed on the NRC's "Watch List". He also has considerable experience in supporting "day-to-day" commercial nuclear facility operation, including engineering management of safety systems, plant power uprate projects, outage management, and as a primary utility interface with both federal and state regulators.

At the Idaho National Laboratory, he is responsible for licensing strategy development and implementation in direct support of industry's near-term deployment of advanced nuclear technologies. In this role, he has led the development of a series of DOE/industry proposals resulting in key Commission policy changes and related updates to NRC's regulatory guidance, including acceptance of performance-based functional containment approaches, and the use of a risk-informed and performance-based approach for plant event identification and assessment.

Mr. Kinsey holds a Bachelor of Science degree in Nuclear Engineering from the University of Cincinnati and is a Licensed Professional Mechanical Engineer. He has also previously received a Senior Reactor Operator Certification for Boiling Water Reactors.

GAIN Regulatory Webinar Series - Purpose

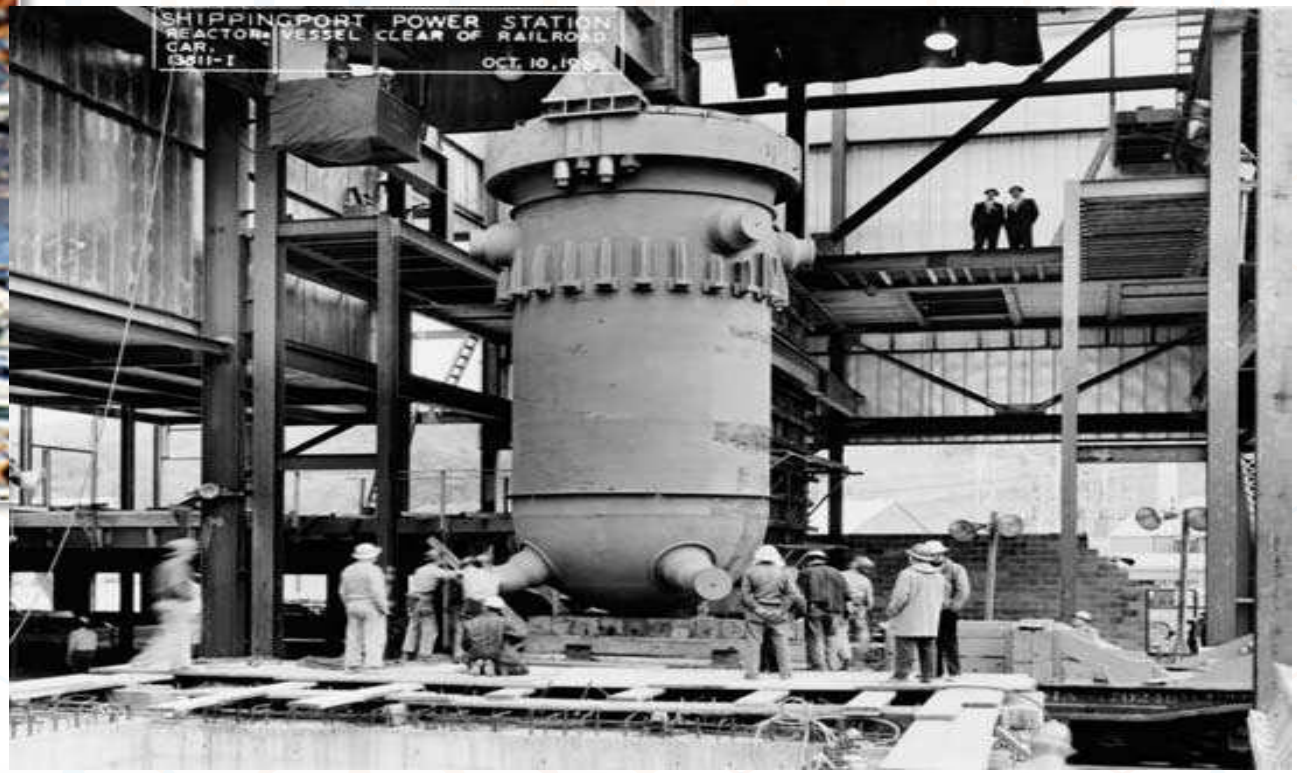
The Regulatory Route to Commercial Nuclear Deployment

- Build familiarity with the current U.S. regulatory framework for commercial reactors
- Facilitate nuclear industry efforts to identify and address regulatory uncertainties and associated risks (technical, financial, schedule) in their deployment strategies

GAIN Regulatory Webinar # 1

- Historical Development of Nuclear Energy
- Structure of NRC Regulatory Framework: Historical Licensing Landmarks
- Structure of the Current NRC Regulatory Framework and Considerations for Advanced Technologies

Shippingport



First US large-scale nuclear power plant (1957)

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3 Major "Eras" of Regulatory Framework Development

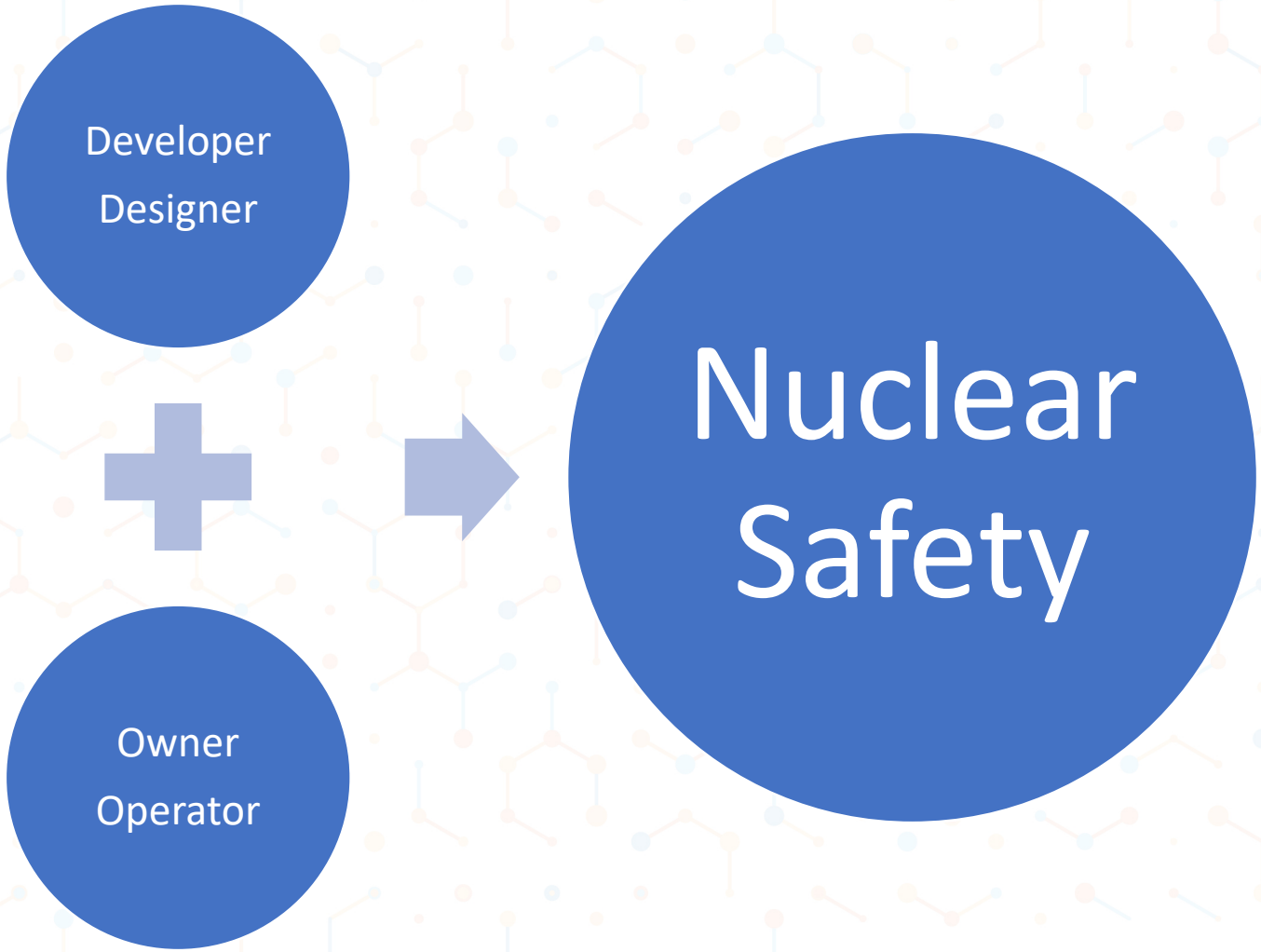
CORRECTING for Operational Experience *1980 - TODAY*

DEVELOPING the Independent Regulator *1975 - 1979*

SEARCHING for the Regulator's Role *1954 - 1975*

NRC License Applications & Responsibilities

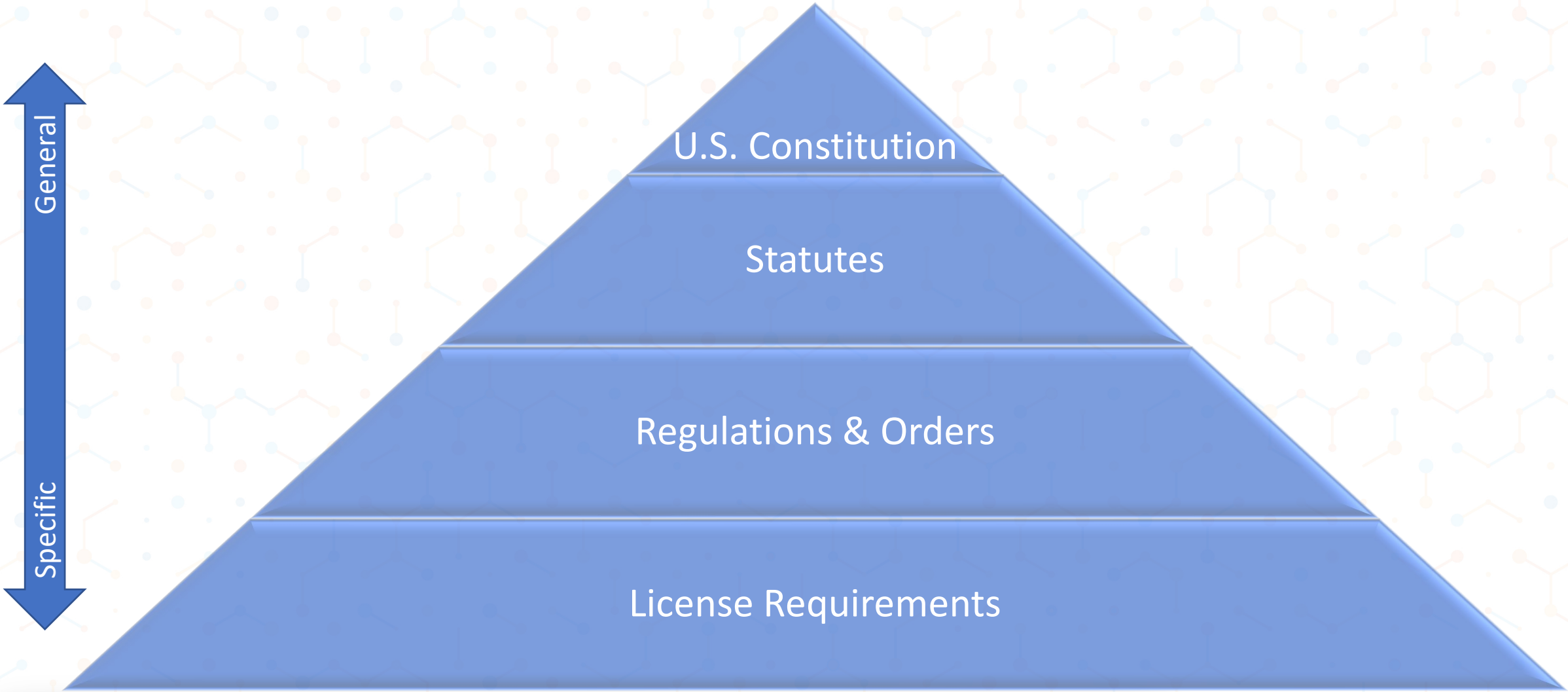
- Adequate design for nuclear safety is the responsibility of the developer/designer, with implementation and oversight by the owner/operator
- The owner is responsible for the safety of the reactor, and protection of the public and environment, in addition to requirements provided by the regulator



GAIN Regulatory Webinar # 2

- So – Just what is the Regulatory “Framework”?
- Insights on the Efficient Exchange of Licensing Information
- Regulatory Considerations when Developing a Deployment Path

Hierarchy of Law & NRC Requirements



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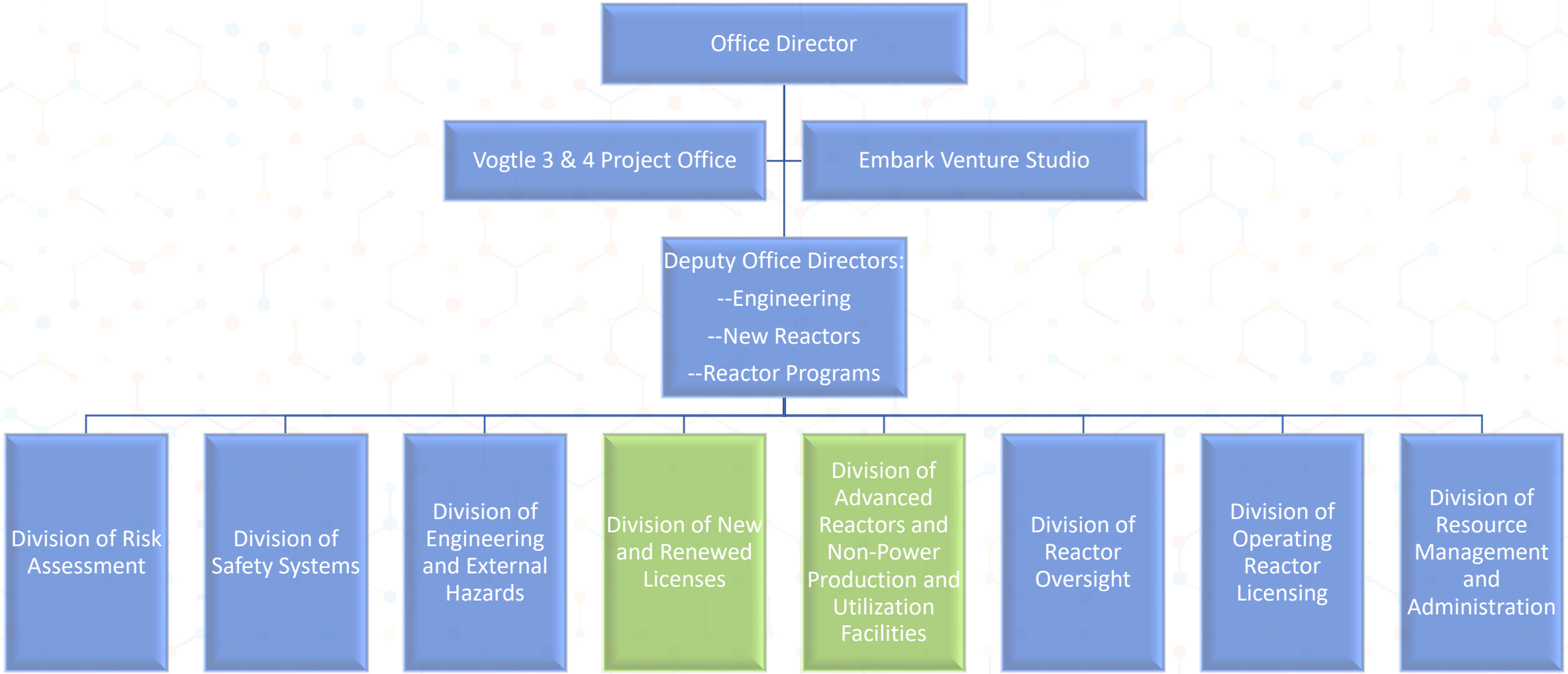
NRC's Nuclear Reactor Regulation (NRR) Divisions



Attributes of Effective NRC Engagement

- Regulatory Engagement Plan concept: “everyone understands what’s coming”
  - Assists NRC in establishing the necessary resources for a timely review
- Develop and provide complete and accurate information
  - Clearly establish and describe the robust safety case for the design
  - Understand the review criteria and guidance that NRC will implement
  - Pre-Application Readiness Assessment (6 months prior to application submittal)
- Establish and maintain effective communications – definec points-of-contact

The expected outcome is improved license review efficiency, which translates to lower costs and shorter review schedules

GAIN Regulatory Webinar # 3

- Available NRC Licensing Pathways and Associated Hearing Processes
- The Use of Non-public Information Within the Licensing Process
- The Impact of the Regulatory Process on Overall Project Risk

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Available Paths - Part 50 versus Part 52

- Part 50
  - Allows construction to begin earlier in licensing process
  - Flexibility during construction
  - Lack of finality on CP issues into OL review
  - Potential for delay in OL issuance (e.g., design evolutions during construction)
  - Repetitive hearing opportunities
  - Little recent licensing experience
- Part 52
  - More finality from licensing process
  - Changes during construction necessitate licensing actions
  - All regulatory reviews must be completed before construction can begin
  - Significant recent experience issuing certifications/licenses
  - Has not yet resulted in operation (Vogtle 3&4 nearing completion)
- Need to find right approach for your company

Key Mandatory & Contested Hearing Takeaways

- Adversarial process (other than mandatory hearings)
- Almost every new reactor proceeding has been challenged
  - Wide range of level of challenges (e.g., 1 vs. 5 petitioners, 1 vs. 30 contentions)
- Potential for delay because hearings may be on critical path
- Engage experienced legal counsel
- Structured process, but always unique features/uncertainties
- Prepare ahead of time
  - Ensure documentation in order
  - Account for hearing possibility in schedules and budgets
- Applicants typically prevail because flexibility to address any valid contested issues

Considerations When Evaluating Overall Project Risks

- Siting Risks
  - Environmental impact
  - Federal and state interactions and opposition
  - Potential intervenor litigation
- Technical Risks
  - First-of-a-kind (FOAK) reactor technology
  - Design certification delay, especially with using Part 52 pathway
  - Number of changes to a design after a combined operating license (COL) approved under Part 52
- Regulatory Risks
  - Lack of clarity in existing regulatory framework for advanced nuclear (e.g., licensing basis events, categorizing systems, structures and components or SSCs, radiological limits, etc.)
  - Number of exemption requests required and number of requests for additional information
  - Regulatory decision making – Approved, Not approved or Delayed