Project Management, Integrated Project Schedule and Reporting Systems, and Configuration Management / Design Control

Implementation Guidance 05 for NEI 20-08, “Strategic Project Management Lessons Learned & Best Practices for New Nuclear Power Construction”

Executive Summary

Revision 1

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Revision Table

Revision	Description of Changes	Date Modified	Responsible Person
0	Initial Issuance	7/2024	Benjamin Holtzman
1	Document updated to align with subsequent materials and correct any inconsistencies.	11/2025	Benjamin Holtzman

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Executive Summary

Adapting best practices and lessons learned is key to standardizing design and predictable project execution, reducing cost and schedule risk, and achieving economic competitiveness for nuclear energy. NEI 20-08, "Strategic Project Management Lessons Learned & Best Practices for New Nuclear Power Construction," identifies 14 areas of construction best practices, with a total of 59 key construction best practices, that have been critical in the successful execution of large complex projects. Implementation guides (IG) are developed to explain how these best practices can be incorporated into actual new nuclear projects (NNP). The development and construction of nuclear power plants, whether First-of-a-Kind (FOAK) or Nth of a Kind (NOAK) may be subject to relatively longer project schedules and need to account for uncertainty, and FOAK construction has additional elements that add to the overall risk.

This Implementation Guide, IG 05, discusses three areas of interest: schedule practices, team and data management, and configuration control. However, individual users of this IG should consider the guidance and apply it as appropriate for their specific projects. Additional detail on what information should be incorporated into the project plan and management systems is discussed in IG 01, "Design Completion and Reliability of Schedule and Cost Estimations to Support Construction Decisions."

A well-formed, integrated project schedule is a powerful tool that can be used to manage and drive project behavior and performance. Early and continuing effort by the project owner to define clear requirements for the schedule is essential to efficiently develop and maintain an accurate and effective project schedule with a strong basis documented. Projects should develop rigorous Schedule Development and Schedule Management Plans that will allow the schedule to be successively developed through each of the major project phases, and updated throughout the project lifecycle. This implementation guide discusses key features of an integrated project schedule to enable effective planning, management, and communication of key project schedule milestones and performance indicators.

Beyond the project management tools, effective project management requires experience with balancing the human and technical aspects of the project. Developing an effective integrated project team (IPT, further discussed in IG 02, "Organizational Challenges, Collaborative Contracting Strategies, and Aggressive Risk and Opportunity Management") for an NNP project does not occur by simply following a procedure or checklist – but rather, by collaborating with teams that have the right experience and aligned motivations to execute the project. FOAK NNP projects will rely on past experiences, process, and culture; and will also need to be flexible and adaptable. As noted in IG 03, extreme ownership and leading from the top are essential parts of a successful NPP project. The Owner's Project Management Organization (PMO) must display ownership of the project and be at the forefront in leading the project's culture. Not just anyone can successfully lead an NNP project. An effective PMO is one that is efficient and focused on the right details enabling leadership, direction, and encouragement to the IPT using both interpersonal and data-driven tools. This implementation guide discusses the characteristics of a successful IPT and PMO pairing.

The management of an NNP project requires effective use of objective measurements. Developing a set of key performance indicators (KPIs, also discussed in IG 02) will enable the PMO to focus on key activities, quickly evaluate trends in performance, and identify successes and challenges throughout the project and efficiently provide timely direction to the IPT. Project leaders must be cautious and intentional in displaying information to ensure that the correct insights are consolidated from the vast amounts of data available for an NNP project. This requires them to be informed by key indicators that

enable them to manage the work and personnel executing the project tasks. This implementation guide provides examples and best practices for developing KPIs, maintaining the underlying data that informs the project, and using that information to manage effectively.

Configuration management in essence is the process of ensuring the physical plant matches the paper plant and is essential for the success of nuclear construction projects and subsequent plant operations. Being able to demonstrate strong configuration management is a requirement throughout the licensing process and ongoing operations of the facility. The PMO must consider how to implement a process that provides appropriate structure and guidance for the IPT (while maintaining appropriate flexibility) throughout the project. This implementation guide provides best practices for developing and defining the configuration management program.

Specific relevant Best Practices and Lessons Learned from NEI 20-08 are addressed in Section 2 and Appendix C with recommendations for implementation.