

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

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Executive Summary

New Nuclear Power (NNP) projects, including small modular reactors (SMRs), large light water reactors, heavy water reactors, microreactors, or other advanced reactor projects have a long lifecycle with multiple steps prior to authorization and construction and after the operating life ends. These steps include early project development, design phases, licensing activities, procurement, fabrication, and construction planning. Timelines for First of a Kind (FOAK) NNP projects are lengthy and uncertain. A key challenge for owners and developers of NNP projects is to manage the project's team, risk, cost, and schedule.

NEI's Strategic Project Management Lessons Learned and Best Practices for New Nuclear Power Construction report (NEI 20-08) identified numerous construction best practices specifically focused towards NNP projects. NEI has developed a series of Implementation Guides (IGs) that describe strategies for the best practices and lessons learned identified in NEI 20-08. Each IG focuses on a subset of the 59 key construction best practices discussed in NEI 20-08. This Implementation Guide, IG-05, discusses three areas of interest: schedule practices, team and data management, and configuration control. This guidance was developed from industry experience and is considered generally applicable to NNP projects. However, individual users of this IG should consider the guidance and apply it as appropriate for their specific projects.

A well-formed, integrated project schedule can be 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 objectives for the schedule is essential to efficiently develop and maintain an appropriately useful project schedule. Projects should develop a rigorous Schedule Development Plan that will allow the schedule to be clearly understood and updated throughout the project. 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 just 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) 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 NNP 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 lean 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 to look and strive for to achieve a successful IPT and PMO pairing.

The management of an NNP project also requires effective use of objective measurements. Developing a set of key performance indicators (KPIs) 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. NNP project managers must be equipped with and 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 is essential for the success of nuclear construction projects. Or, said another way, lack of effective configuration management can easily spell doom for a project as history shows that projects with poor configuration management abilities are almost guaranteed to fail. 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. Constant reevaluation of the project, including these implementation topics, should occur routinely throughout the project. This exhaustive leadership is critical to allow agility and proper decision making to ultimately determine if the project will be successful.