



IAEC
Idaho Advanced Energy Consortium

Idaho Advanced Energy Consortium (IAEC)

*Lead Entity, Intermountain-West Nuclear
Energy Corridor (INEC) Tech Hub*

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INEC Tech Hub

Reinvigorating the Nuclear Supply Chain – Advanced Construction Technique Demonstration Project

This INEC Tech Hub project's core objective is to optimize construction cost, schedule, and quality. Over 3 years, Hi Tech Solutions, Holtec International, and the Idaho Advanced Energy Consortium (IAEC) will erect, inspect, and decommission a complex portion of the nuclear island, the basemat, at the College of Eastern Idaho (CEI) test site. This modular baseplate design is applicable across multiple Small Modular Reactor (SMR) technologies, including light-water and advanced reactors. At least five SMR models under current development can integrate this approach, enabling standardized and scalable construction methods.

Milestones include achieving Technical Readiness Level (TRL) 6 within 18 months and TRL 8 by project completion, validating commercial readiness. Economic impacts include reduced fabrication costs through standardized components and improved reliability via modernized quality-assurance (QA) standards. These advances will expand qualified manufacturers, lower costs through competition, and drive growth in the nuclear supply chain.

Description of Challenge/Gap

Most advanced nuclear reactor designs involve new and innovative construction technologies to reduce cost and schedule and to optimize quality.

While these advanced construction techniques have been discussed at length in the nuclear industry, limited field-work demonstration and validation has been performed to date. Therefore, field demonstration, validation, and regulatory acceptance of these construction technologies are urgently needed as the deployment of advanced reactors





hinges on the ability to implement the construction technologies for the associated construction projects.

The basemat design proposed for this project is approximately 150 feet by 350 feet in size. It has been designed to be fully modular. The proposed physical demonstration will provide critical design safety-basis information and will assist in predicting its ability to meet regulatory requirements with optimized (project-specific) nuclear quality assurance (NQA) standards. If successful, lower construction and fabrication costs and an increased supplier base will be achieved, allowing the INEC Tech Hub to provide crucial services to the more than 40 advanced-reactor developers transitioning from development to deployment in the next 3-5 years.

****This is a construction mock-up project only; no irradiated or nuclear materials will be used for this work.**

Table 5.0-1:Reinvigorating the Nuclear Supply Chain project activities and timeline.

Advanced Construction Technique Demonstration Activities and Timeline		
No.	Activity	Time After Award (PO)
1	Preliminary planning for site plans, excavation, civil work, foundation/footing placements.	P ₀ + 3 months
2	Competitive bid and award for regional constructor(s), complete safety civil work at demonstration site.	P ₀ + 6 months
3	Hi Tech and partners design the demonstration program and establish the testing and examination program.	P ₀ + 6 months
4	Hi Tech and regional vendor partnership will fabricate and provide composite steel panels/modules.	P ₀ + 12 months
5	Hi Tech to collaborate with vendors and SMEs to develop innovative field welding and inspection schemes.	P ₀ + 14 months
6	Hi Tech and partners develop a comprehensive evaluation program including review criteria, timing, outcomes, reporting, etc.	P ₀ + 16 months
7	Plan and schedule mockup Activity 1 and Activity 2.	P ₀ + 16 months
8	Execute mockup Activity at College of Eastern Idaho.	P ₀ + 19 months
9	Hi Tech and partners to orchestrate nondestructive and destructive examination program.	P ₀ + 22 months
10	Decommission project materials for recycling and additional workforce training.	P ₀ + 24 months
11	Share outcomes and best practices.	P ₀ + 27 months

