INL/MIS-22-65930-Revision-0

NRIC Siting Preparation and Demonstration Studies - Program Review

February 2022

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Changing the World's Energy Future

Idaho National Laboratory

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NRIC
National Reactor Innovation Center

INL
Idaho National Laboratory

Siting Preparation and Demonstration Studies

Steve Grabinski, PM and Alison Conner, WPM

INL/MIS-22-65930

Siting Preparation and Demonstration Studies Overview

- Federal Reserved Water Rights Usage at INL Report
- ARD Electrical Grid Connection at INL Roadmap

Water Rights Usage Project Progress

- **Federal Reserved Water Rights Usage at INL Roadmap Objective:** Define the requirements and constraints associated with DOE's federal reserved water rights at INL in the context of water use in support of the demonstration of advanced nuclear reactors and associated nuclear technologies. This will also define what INL federal reserved water rights may be used, under what conditions, and potential path forward for obtaining State concurrence. An interpretation of the Water Rights Agreement of 1990, between the State of Idaho and DOE, for implementation of water use in reactor demonstrations at the INL will be included and feedback from key stakeholders (INL Senior Leadership, DOE-ID, State, Tribes, etc.) will be included as available.
- **Project Team (as needed):** MW Patterson, Nuclear Engineer; George Griffith, NS&T Siting POC; Stephen Burdick, Legal Counsel; Kara Cafferty, Water Program Lead; Alison Conner, Systems Engineer/WPM
- **Total Project Cost in FY22:** $48,692

Water Rights Usage Project Progress (cont'd)

- **Benefit:** In support of NRIC's mission to enable testing and demonstration of reactor concepts by the private sector, the goal of this scope is to provide a clearer understanding of what water is potentially available for demonstration use and what actions will be expected for reactor demonstrations located at INL.
- **Accomplishment in FY21:** INL/EXT-21-64460 – NRIC Advanced Reactor Demonstration Water Use Options at INL

Water Rights Usage Plan for FY22

Activity	End Date
Review comments received to date	
Present to INL SLT and incorporate comments	
Engage DOE-ID in the discussion and capture feedback	
Next steps as advised by DOE-ID	
Incorporate comments into draft assessment report as they're received	
M4RC-22IN0205012 - Draft Federal Reserved Water Rights Usage at INL Report	4/29/2022
Capture feedback on draft report via email and/or focused review meeting	
Incorporate comments into draft assessment report	
M3RC-22IN0205013 - Final Federal Reserved Water Rights Usage at INL Report	6/17/2022

Water Rights Usage Accomplishments

- Reviewed comments received on draft white paper from INL Management – 11/18/21
- Developed water rights usage roadmap outline and began to populate it with draft white paper content
- Collected input from INL Water Program Lead and MFC environmental SME to provide clarification on question from NRIC management

Water Rights Usage Risks

- Forward progress depends on engagement and concurrence from INL leadership and DOE-ID.

Water Rights Usage Summary

- Completion of work to date has been to inform potential future advanced reactor developers (ARDs) of the conditions and requirements needed to manage the water used at INL.
- Completion of the “Federal Reserved Water Rights Usage” roadmap would provide a better understanding of the definition of what federal reserved water rights may be available and under what constraints they may be used.
- Clarification will enhance the viability of INL to be a preferred site for advanced reactor demonstrations.

ARD Electrical Grid Connection Roadmap Project Overview

- **Advanced Reactor Demonstrations Electrical Grid Connection at INL Roadmap Objective:** Develop a path forward to connect demonstration reactors to the INL grid (without transmission rights). This will include working with DOE-ID and INL power management to determine the most appropriate path forward for enabling advanced reactor developers with the opportunity to demonstrate power generation and address FERC and NERC regulations.
- **Project Team:** James Case, Lead Systems Engineer; Jakob Meng, Systems Engineer; Kurt Myers, Distributed Energy & Grid Systems Engineer; Alison Conner, WPM
- **Total Project Cost:** $207,006
- **Benefit:** Completion of this work will provide guidance on the steps necessary to connect demonstration reactors to the grid. This may also enable INL's Net Zero goals.

ARD Electrical Grid Connection Roadmap Plan for FY22

Activity	Start Date	End Date
Planned kick-off	2/14/2022	2/18/2022
Gather data and formulate document outline	2/21/22	5/27/22
Capture SME and stakeholder input	5/31/22	7/28/22
M4RC-22IN0205016 - Draft ARD Electrical Grid Connection Roadmap		7/29/2022
Capture feedback on draft report via email and/or focused review meeting	8/1/2022	8/5/2022
Incorporate NRIC management comments into draft document	8/8/2022	8/11/2022
Distribute draft report for technical editor and peer reviews (PRS)	8/15/2022	8/23/2022
Incorporate technical editor and peer review comments	8/24/2022	8/25/2022
Initiate LRS document reviews NLT 8/29/2022	8/29/2022	9/12/2022
M3RC-22IN0205017 - Final ARD Electrical Grid Connection at INL Roadmap		9/16/2022
Upload final document in PICS and SORT		9/16/2022

ARD Electrical Grid Connection Roadmap Risks

- Completeness of the path forward will be contingent on integration with proposed INL electrical infrastructure upgrades.

ARD Electrical Grid Connection Roadmap Summary

- Identification of their desire to demonstrate and prove their ability to add power to the electrical grid has been made by several advanced reactor developers (ARDs).
- Completion of this work will provide them with guidance on the steps necessary to connect their demonstration reactors to the grid, with consideration to commercial power distribution regulations.
- Publication will enhance the viability of INL to be the preferred site for interested advanced reactor demonstrations.
- Grid connection guidance for advanced reactor demonstrations will support INL's Net Zero goals.

Thank you!

Questions?
Time Permitting

Contact: alison.conner@inl.gov