



Department of Energy

Idaho Operations Office

1955 Fremont Avenue
Idaho Falls, ID 83415

September 26, 2024

Subject: U.S. DEPARTMENT OF ENERGY FINDING OF NO SIGNIFICANT IMPACT FOR THE ENVIRONMENTAL ASSESSMENT FOR THE HIGH TEMPERATURE TEST FACILITY AT THE IDAHO NATIONAL LABORATORY (DOE/EA-2258) (CLN241621)

Agency: U.S. Department of Energy

Action: Finding of No Significant Impact (FONSI)

Summary: The U.S. Department of Energy (DOE) prepared an Environmental Assessment (EA) to evaluate potential impacts of establishing the High Temperature Test Facility (HTTF) at the Idaho National Laboratory (INL) to provide infrastructure for research, development, and demonstration related to testing and evaluating optimum operating parameters for high-temperature electrolysis (HTE) hydrogen generation demonstration systems at a commercial scale.

Establishing a clean hydrogen energy network is a vital component of DOE's strategy to support a more sustainable and just energy future and to meet the nation's goal to transition to a fully clean electrical grid. A cornerstone of this effort is the Regional Clean Hydrogen Hubs Program (H2Hubs). DOE's Office of Energy Efficiency and Renewable Energy, Hydrogen and Fuel Cell Technology Office (HFTO) proposes to leverage INL's unique capabilities and resources to provide testbed capabilities for clean hydrogen HTE production.

Based on the impact analysis of the proposed action, any potential impact associated with these activities would not significantly affect the quality of the human environment. With funding provided by HFTO, the proposed capability would assist vendors in private industry with demonstrating various Solid Oxide Electrolyzer Systems (SOEC) systems at scale and give insight and information critical to the continuing development of a nationwide network of H2Hubs.

A "No Action" alternative analysis was performed for the HTTF in the EA. Under the No Action alternative, DOE would not construct and operate HTTF, and the national need for facilities to support INL's research for industry-enabling clean energy demonstration systems to achieve DOE's Clean Hydrogen goals would not be met at INL. INL would continue to conduct small-scale clean hydrogen research, development, and demonstration (RD&D) activities at the Research and Education Campus (REC) in Idaho Falls, ID. The project area would be available for other uses or reclamation activities.

Purpose and Need: INL's Energy Systems Laboratory (ESL) at the REC in Idaho Falls, Idaho is home to state-of-the-art hydrogen laboratory testing capabilities and supports commercial developers looking to design, operate, and prove the performance of HTE modules. Using both the high bay interior space and the available backyard space at ESL, the facility currently has the capability of testing 25 kW to 500 kW sized SOEC units. However, private industry is now seeking higher capacity testing facilities, and the ESL does not have the available area or capacity to add testing capabilities for multiple multi-megawatt sized units sought by industry. The ESL backyard is shared between various RD&D programs, including hydrogen, electric vehicles, thermal energy management, microgrid development, and bioenergy, and there is limited overall area for further development by all programs. In addition, power at the REC is supplied by Idaho Falls Power, and there is limited capacity along MK Simpson Boulevard, where the ESL is located. Idaho Falls Power, a municipal utility, is considering upgrades to the area, including a new substation and siting options. However, lead times and construction are not yet in planning, and the project has not yet been funded.

Due to a lack of available space and limited power supply at REC, DOE needs an alternative location to support INL's research for industry-enabling clean energy demonstration systems. The purpose of the Proposed Action is to address a strategic gap in the U.S. acceleration pathway for commercial deployment of HTE systems (up to 10 MW), particularly SOECs and solid oxide fuel cell (SOFC) systems, by supplying the operations necessary for installing, testing, and operating a wide range of potential HTE technology demonstrations. On this basis, the high-level objectives of the Proposed Action include the following:

- De-risk U.S. Hydrogen Hub development and deployment at-scale.
- Accelerate hybrid nuclear and renewable HTE by enabling commercial system deployment and market penetration through at-scale demonstrations with INL expertise and industry partners.
- Enable achievement of the DOE's H2 Earth Shot goal to produce hydrogen at one U.S. dollar per one kilogram (\$1/kg) within a decade.
- Implement the INL "Net Zero in 10-year plan".

Analysis: To determine whether the Proposed Action could cause significant environmental effects, the EA analyzed the potential impacts of the proposal on human and natural resources and presented them in Section 3, "Affected Environment and Environmental Consequences." The following discussion provides a summary of the Proposed Action's potential impacts and the reasons these impacts would not be significant.

Air Quality

Impacts to air quality would not be significant. Construction of the HTTF would produce two types of air contaminants: exhaust emissions from construction equipment and fugitive dust from soil disturbance, resulting in small, temporary impacts to air quality. During operation the HTTF would not emit any criteria air pollutant, hazardous air pollutant, or greenhouse gas. During operations the produced hydrogen is intended to be used to generate electricity via a fuel cell, but it may also be used for other beneficial purposes, vented, or possibly flared. Flaring hydrogen does not directly emit criteria or hazardous air pollutants from the combustion, but the nitrogen in the air can be converted to NOx from the heat of the flare. The Proposed Action has the

potential to generate up to 6.2 tons of NO_x. The 2020 INL Facility Emissions Cap (FEC)-Permit to Construct (PTC) permit application was based on a 72.2 tons per year baseline and projected actual emissions with a 22.8 ton per year operational variability and growth component, totaling 95 tons per year. The additional 6.2 tons of NO_x potentially emitted from operating the HTTF would fall within the operational variability and growth component and not cause an exceedance of permitted limits. Impacts to air quality from NO_x emissions would be small. Construction and operations would not contribute to cumulative impact on air quality.

Ecological Resources

Impacts to ecological resources would not be significant. The construction and operations proposed as part of the HTTF would occur in and around existing facilities. There are no anticipated impacts from HTTF activities on native vegetation communities, special status plant species, nor critical habitat designated under the Environmental Site Assessment. Any peripheral effects on native plant communities or sensitive plant species from HTTF activities would not be discernable from current INL operations, and impacts would be negligible. The direct impacts of disturbance on wildlife would be limited to the period of construction and maintenance, and the level of disturbance may be reduced for some species through the implementation of design features such as conducting work outside migratory bird nesting season, pre-work surveys, and onsite monitoring intended to minimize these types of effects. From a cumulative impact perspective, the incremental impacts of the HTTF when added to past, present, and reasonably foreseeable actions at the INL Site are small.

Cultural Resources

Impacts to cultural resources would not be significant. There will be no physical or visual affects to archaeological historic properties as there are none present within the ground disturbance portion of the Area of Potential Effects (APE). No built environment historic properties were identified within the APE; therefore, the proposed HTTF has no potential to impact any built environment historic properties. The result of the Section 106 review found the HTTF project would not affect archaeological and built environment historic properties. The Idaho State Historic Preservation Office concurred with this finding on August 21, 2024.

Geological Resources

Impacts to geological resources would not be significant. The Proposed Action would directly disturb about 7 acres of previously disturbed land. There would be no additional land disturbance during operations, testing, and dismantling of test articles; any activities outside INL Central Facility Area (CFA) building CFA-686 would occur on previously disturbed areas at CFA. Operation of the HTTF would involve no ground disturbance, minimal soil erosion, and little or no use of local geologic and soil materials and, therefore, would have a small additional impact on geology and soils. Given the previously disturbed characteristics of the HTTF project area, when combined with past, present, and reasonably foreseeable future activities at the INL Site, cumulative impacts from the proposed HTTF would be negligible.

Electricity

Impacts from electricity use would not be significant. The electricity required to operate the HTTF is available from the INL power grid and comprises about 20 percent of the electrical energy available to the INL Site each year based on the contract load limit. The increased use of electrical power would result in moderate impacts to the consumption of electricity at the INL Site, meaning the effects would be noticeable, but would not destabilize the available power supply. Moderate cumulative impacts to electricity consumption are anticipated from construction and operations of the HTTF when viewed in combination with reasonably foreseeable future growth but would not result in the need for additional power infrastructure and would not negatively impact other INL programs.

Fuel Consumption

Impacts from fuel consumption would not be significant. Given the short-term nature of construction and transportation activities, and the very minor increase in INL employment associated with the HTTF, direct, indirect, and cumulative impacts to fuel use would be negligible.

Groundwater

Impacts to groundwater would not be significant. Construction and operation of the HTTF would increase water consumption at CFA by about 17 percent and total INL consumption by about 1.3 percent. The impacts of increased water use would be moderate for CFA, meaning they would be noticeable but would not destabilize the resource. Impacts to overall INL water consumption would be small. The cumulative impacts of water consumption at HTTF when considered in context with past, present, and reasonably foreseeable future actions at the INL Site is small.

Noise

Impacts from noise would not be significant. The Proposed Action would generate noise from construction activities and from the use of equipment, machinery, and vehicles, which could affect noise-sensitive receptors. Elevated noise levels would generally be limited to the immediate area of the noise source and are expected to dissipate before reaching publicly accessible areas. Any adverse noise impacts would generally be small.

Waste Management

Impacts to waste management processes would not be significant. Additional waste volumes from the HTTF would be small compared to current disposal volumes at INL. These small volumes would be nearly indiscernible from current operations when combined with past, present, and reasonably foreseeable future actions.

Health and Safety

Impacts to health and safety would not be significant. Potential impacts from noise, exposure to chemicals, and occupational injuries are and would continue to be regulated to be protective of human health. No adverse impacts to human health and safety are anticipated from the HTTF.

Traffic and Transportation

Impacts to traffic and transportation would not be significant. The average increases in daily traffic during construction are not expected to exceed the existing level of service on offsite roads and no upgrades or improvements to onsite roads are anticipated. Operations traffic is not expected to cause a change in the existing level of service on offsite roads and no upgrades or improvements to onsite roads are anticipated. The impacts on traffic from construction and operation activities are anticipated to be negligible to minor. As such, they would not substantially contribute to cumulative traffic impacts.

Environmental Justice

Impacts to environmental justice would not be significant. Although the HTTF is located within and surrounded by census tracts identified as communities of environmental justice concern, the HTTF would have little to no potential to negatively affect the baseline environmental justice conditions in surrounding communities. The effects in communities of environmental justice concern would not be disproportionately high or adverse.

Intentional Destructive Acts

Acts of sabotage are unlikely, but should they occur, resultant health impacts to members of the public would be small. Resultant health impacts to workers would be mitigated by normal response actions and would also be small.

Cumulative Impacts

The quantitative and qualitative impacts to the critical resource areas from implementing the Proposed Action were individually insignificant. Additive impacts from implementing the Proposed Action to those manifested from past, present, or reasonably foreseeable future projects or programs on and adjacent to the INL were evaluated and determined to be insignificant.

EA Public Participation

The 30-day public comment period for the Draft EA for the HTTF ended on August 16, 2024. DOE received and considered the two individual public comments and additional comments from U.S. Environmental Protection Agency (EPA) Region 10 and coordinated comments from the Idaho Department of Environmental Quality (DEQ) and the Idaho Governor's Office of Energy and Mineral Resources (OEMR). The two individual comments were supportive of the HTTF while comments from EPA, DEQ, and OEMR focused on air quality emissions, green infrastructure, and climate change. Most of the comments expressed their general support for the

Proposed Action, and DOE provided responses to comments on a comment-by-comment basis and those are captured in Appendix A of the Final EA.

EA Coordination and Consultation:

- DOE briefed the Shoshone-Bannock Department of Energy Tribal staff on the HTTF EA and project on May 23, 2024.
- DOE briefed the Fort Hall Business Council on the HTTF EA and project on June 17, 2024.
- DOE briefed staff from the Idaho Governor's Office of Energy and Mineral Resources on the HTTF EA and project on June 24, 2023.

Mitigation is not necessary to render the impacts of this action not significant.

Determination: Based on its analysis and public comments received on the EA, DOE has determined that the Proposed Action to implement the HTTF project is not a major federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act of 1969 (42 United States Code [USC] 4321 et seq.). Therefore, the preparation of an environmental impact statement is not required, and DOE is issuing this FONSI for the Proposed Action.

Issued at Idaho Falls, Idaho on this 26th day of September 2024.


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Manager

Copies of the EA and Proposed FONSI are available from: Danielle Miller, Office of Communications, Idaho Operations Office, U.S. Department of Energy, 1955 Fremont Avenue, Idaho Falls, ID 83415, or by calling 208-526-5709

For further information on the NEPA process contact: Jason Anderson, NEPA Compliance Officer, U.S. Department of Energy, 1955 Fremont Avenue, Idaho Falls, ID 83415, or by calling (208) 526-0174.