



## DEPARTMENT OF ENERGY

### Record of Decision for the Final Environmental Impact Statement for Department of Energy Activities in Support of Commercial Production of High-Assay Low-Enriched Uranium (HALEU)

**AGENCY:** Office of Nuclear Energy, Department of Energy.

**ACTION:** Record of decision.

**SUMMARY:** The U.S. Department of Energy (DOE or the Department) announces the Record of Decision (ROD) for the “Final Environmental Impact Statement for Department of Energy Activities in Support of Commercial Production of High-Assay Low-Enriched Uranium (HALEU)” (Final HALEU EIS) (DOE/EIS-0559). DOE prepared the Final HALEU EIS in accordance with the National Environmental Policy Act (“NEPA”) to evaluate the potential environmental impacts of activities associated with DOE’s Proposed Action to acquire, through procurement from commercial sources, HALEU enriched to at least 19.75 and less than 20 weight percent uranium-235 (U-235) over a 10-year period of performance, and to facilitate the establishment of commercial HALEU fuel production. The Proposed Action addresses the Energy Act of 2020 (“the Energy Act of 2020” or in context, “the Energy Act”), for the acquisition of HALEU produced by a commercial entity using enrichment technology and making it available for commercial use or demonstration projects. DOE also evaluated the No Action Alternative. DOE has decided to implement the Proposed Action, its Preferred Alternative, as described in the Final HALEU EIS.

**ADDRESSES:** Questions or comments should be sent to Mr. James Lovejoy, EIS Document Manager, by mail to U.S. Department of Energy, Idaho Operations Office, 1955 Fremont Avenue, MS 1235, Idaho Falls, Idaho 83415; or by email to [HALEU-EIS@nuclear.energy.gov](mailto:HALEU-EIS@nuclear.energy.gov). The Final HALEU EIS and this ROD are available for viewing or download at <https://www.energy.gov/ne/haleu-environmental-impact-statement>.

**FOR FURTHER INFORMATION CONTACT:** For information regarding the DOE HALEU Availability Program, visit <https://www.energy.gov/ne/haleu-availability-program>. For information about the HALEU EIS, including the Final HALEU EIS and this ROD, visit <https://www.energy.gov/ne/haleu-environmental-impact-statement>, or contact Mr. James Lovejoy at either the mailing address listed in the **ADDRESSES** section, via email at [HALEU-EIS@nuclear.energy.gov](mailto:HALEU-EIS@nuclear.energy.gov), or by telephone: (208) 526-4519. For general information on DOE's NEPA process, contact Mr. Jason Anderson at the mailing address listed in the **ADDRESSES** section, via email at [HALEU-EIS@nuclear.energy.gov](mailto:HALEU-EIS@nuclear.energy.gov), or by telephone: (208) 360-3437.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The Energy Act of 2020 directs DOE to “establish and carry out. . .a program to support the availability of HA-LEU for civilian domestic research, development, demonstration, and commercial use,” 42 U.S.C. 16281(a)(1). The current U.S. commercial power reactor fuel cycle is based on low-enriched uranium (LEU) enriched to less than 5 percent of U-235, but many advanced reactor designs require HALEU.

HALEU is defined as “uranium having an assay greater than 5.0 weight percent and less than 20.0 weight percent of the uranium-235 isotope,” 42 U.S.C. 16281(d)(4). In the United States, HALEU is currently made, in limited quantities, by blending down DOE stockpiles of highly enriched uranium (HEU) (enriched to 20% or greater), with natural uranium or lower enriched uranium (i.e., “downblending”). Anticipated demand from research reactors, isotope production facilities, and advanced nuclear reactors will require more HALEU to be produced. DOE has limited capability to produce HALEU by downblending existing surplus stockpiles of HEU. Limited quantities of HALEU are also being produced under DOE contract at the American Centrifuge Plant in Piketon, Ohio, by American Centrifuge Operating, LLC, a wholly owned indirect subsidiary of Centrus Energy Corp. A sufficient commercial capability to

produce HALEU through enrichment of natural uranium or LEU to meet anticipated demand does not exist in the United States.

DOE projects that more than 40 metric tons (MT) of HALEU will be needed by 2030 with additional amounts required each year thereafter to deploy a new fleet of advanced reactors in a timeframe that supports the Administration's 2050 net-zero emissions target. The lack of an adequate domestic, commercial fuel supply could also impede both reactor demonstrations being supported under DOE's Advanced Reactor Demonstration Program and the development of future advanced reactor technologies.

As indicated by many commercial entities that responded to DOE's "Request for Information (RFI) Regarding Planning for Establishment of a Program to Support the Availability of High-Assay Low Enriched Uranium (HALEU) for Civilian Domestic Research, Development, Demonstration, and Commercial Use", 86 FR 71055 (Dec. 14, 2021), (referred to as the "RFI"), there are potential timing and coordination issues with developing that capability.

Those interested in designing, building, and operating advanced reactor designs that use HALEU fuel are hesitant to invest in the technology without a firm source of HALEU fuel. Likewise, those interested in providing HALEU fuel are hesitant to invest in facilities without a firm demand. As described in multiple responses to the RFI, this is a "chicken-and-egg" dilemma.

This concern is a consistent theme in the industry responses to DOE's RFI. Responders emphasized the opportunity for DOE to be an agent for stability (both in assuring industry and the market as to HALEU availability and price certainty) during the initial phase of HALEU fuel production.

To address this issue, an initial public/private partnership is intended to accelerate development of a sustainable commercial HALEU supply capability. If successful, this partnership could provide the incentive for the private sector to incrementally expand the capacity in a modular fashion as a sustainable market develops.

In 2023 and early 2024, the DOE Idaho Operations Office published two Requests for Proposals (RFPs) specific to HALEU. One covers DOE's planned acquisition of HALEU as enriched uranium hexafluoride. The other is for deconversion services to deconvert enriched HALEU to other forms, such as metal or oxide, that will be used to fabricate fuels required by many advanced reactor developers. DOE's "Request for Proposals for High-Assay Low-Enriched Uranium (HALEU) – Enrichment Acquisition" (the "Enrichment RFP") solicited responses from industry regarding DOE's proposal to acquire, through procurement from commercial sources, HALEU as uranium hexafluoride (UF<sub>6</sub>) enriched to a minimum of 19.75 and less than 20 weight percent U-235.

The enriched UF<sub>6</sub> must be deconverted to other forms, like oxide or metal, before it can be fabricated into HALEU fuel or put to other use. DOE's *Request for Proposals for the High-Assay Low-Enriched Uranium (HALEU) – Deconversion Acquisition* (the "Deconversion RFP") solicited responses from industry regarding DOE's proposal to acquire domestic HALEU deconversion services for HALEU and storage until future fuel fabrication.

### **Purpose and Need for Agency Action**

The *purpose* of the Proposed Action is to fulfill Congressional direction in section 2001(a)(2)(D)(v) of the Energy Act, codified at 42 U.S.C.16281(a)(2)(D)(v), and to facilitate the development of a domestic HALEU fuel cycle through procurement of HALEU. Agency action is *needed* to create a supply of HALEU fuel to power advanced reactors. Many advanced reactors are intended to operate using HALEU fuel, but there is currently not sufficient domestic supply of HALEU for these reactors.

The Energy Act of 2020 directs DOE to "establish and carry out, through the Office of Nuclear Energy, a program to support the availability of HA-LEU for civilian domestic research, development, demonstration, and commercial use," 42 U.S.C. 16281(a)(1). Section 2001(a)(2)(D)(v) of the Energy Act more specifically directs DOE to consider using enrichment technology to make HALEU available for commercial use or demonstration projects, where such

HALEU is “produced in the United States by—(I) a United States-owned commercial entity operating United States-origin technology; (II) a United States-owned commercial entity operating a foreign-origin technology; or (III) a foreign-owned entity operating a foreign-origin technology.” 42 U.S.C. 16281(a)(2)(D)(v). Further, section 3131 of the National Defense Authorization Act for Fiscal Year 2024 (Nuclear Fuel Security Act of 2023), Pub. L. 118-31, 137 Stat. 795, subtitle C, codified at 42 U.S.C. 16282(b), among other things, seeks to expeditiously increase domestic production of HALEU to meet the needs of advanced nuclear reactor developers and the consortium established under section 2001(a) of the Energy Act of 2020, codified at 42 U.S.C. 16281(a).

There is currently insufficient private incentive to invest in commercial HALEU production due to the current market base. There is also insufficient incentive to invest in commercial deployment of advanced reactors because the domestic HALEU fuel cycle does not exist. Both DOE and industry groups have recognized that DOE action is needed to facilitate the development of the necessary infrastructure, support near-term research and demonstration needs, and support the U.S. commercial nuclear industry. One of the main challenges to establishing a commercial HALEU-based reactor economy is the upfront capital investment required to establish the enrichment capability to produce quantities of HALEU suitable for fabrication into the fuel needed for the various types of advanced reactor designs.

### **Proposed Action**

The Proposed Action is to acquire, through procurement from commercial sources, HALEU enriched to at least 19.75 and less than 20 weight percent U-235 over a 10-year period of performance, and to facilitate the establishment of commercial HALEU fuel production. The Proposed Action addresses section 2001(a)(2)(D)(v) of the Energy Act of 2020, for the acquisition of HALEU produced by a commercial entity using enrichment technology and making it available for commercial use or demonstration projects.

The Final HALEU EIS addresses the following activities to facilitate the commercialization of HALEU fuel production and acquisition of up to 290 MT of HALEU under the Proposed Action: (1) mining, extraction, and recovery of uranium ore producing triuranium octoxide ( $U_3O_8$ ) (from in-situ recovery or conventional mining and milling sources); (2) uranium conversion from  $U_3O_8$  to  $UF_6$  for input to enrichment facilities; (3) enrichment in up to three steps: (a) from natural uranium to LEU of no more than 5 weight percent U-235, (b) from LEU to HALEU greater than 5 and less than 10 weight percent U-235, and (c) to HALEU from 10 to less than 20 weight percent U-235; (4) HALEU deconversion from  $UF_6$  to uranium oxide, metal, and other forms; (5) storage of HALEU; (6) transportation of uranium/HALEU between facilities; and (7) DOE acquisition of HALEU of between at least 19.75 weight percent and less than 20 weight percent U-235. In addition to the listed activities, the following related actions could result from implementation of the Proposed Action: (1) fuel fabrication for a variety of fuel types; (2) HALEU-fueled reactor (demonstration and test, power, isotope production) operations; and (3) spent fuel storage and disposition.

While the Final HALEU EIS provides information that could be used to identify impacts from the construction and operation of HALEU fuel cycle facilities, the selection of specific locations and facilities is not a part of the ROD for this EIS.

### **Alternatives**

The Final HALEU EIS evaluates potential environmental impacts for the Proposed Action and the No Action Alternative. The No Action Alternative is the status quo, where DOE would not implement the Proposed Action and no sufficient domestic commercial supply of HALEU is available. DOE would not be involved in establishing a commercial HALEU fuel cycle; development of a domestic commercial supply of HALEU would be left to industry.

### **Potential Environmental Impacts**

Implementation of the Proposed Action, as well as related activities, would generally have SMALL to MODERATE environmental consequences. In this ROD for this EIS, DOE will

make a decision on whether to move forward with the Proposed Action but will not select specific locations or facilities. For this reason, and to bound impacts, DOE analyzed construction and operation of HALEU facilities at existing uranium fuel cycle facilities, other industrial (brownfield) sites, and at undeveloped (greenfield) sites. As explained in more detail in the EIS, DOE's assessment of the potential impacts of the Proposed Action are based on existing NEPA documentation that addresses the construction and operation of existing and proposed fuel cycle (mainly LEU fuel cycle) facilities. This information was reviewed by subject matter experts and used to develop the information regarding the potential impacts of the Proposed Action. This EIS uses assessment ratings for the categorization of the potential environmental impacts. When referring to the degree of environmental impacts, the EIS uses the same impacts assessment rating terminology from the existing NEPA evaluations to the extent possible. For reference, the Nuclear Regulatory Commission (NRC) generally defines environmental consequences as:

- SMALL – The environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
- MODERATE – The environmental effects are sufficient to alter noticeably, but not destabilize, important attributes of the resource.
- LARGE – The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

In general, constructing and operating modified or new HALEU fuel cycle facilities at *existing facilities* results in estimated potential environmental consequences that range from mostly SMALL to MODERATE. Most MODERATE consequences are associated with construction activities and not the HALEU operations or production-related processes.

Overall, constructing and operating all-new HALEU fuel cycle facilities at previously developed industrial sites (brownfield sites) or previously undeveloped locations (greenfield sites) could also result in estimated potential environmental consequences that range from

SMALL to MODERATE. The MODERATE consequences are associated with the uncertainties of the specific characteristics (particularly the presence of ecological and historic and cultural resources) of the site relative to construction and not the HALEU operations or production-related processes. Construction activities are usually transient in nature and mitigations would be expected to be incorporated, as appropriate, to minimize potential consequences, as part of the required regulatory licensing, permitting, and associated NEPA or equivalent evaluation processes. Therefore, as discussed in the Final HALEU EIS, the majority of potential environmental consequences would likely range from SMALL to MODERATE.

Although DOE did not select specific locations or facilities in this ROD, implementation of the Proposed Action could result in HALEU fuel cycle facilities being sited at various locations in the future. The environmental impacts of such HALEU fuel cycle facilities are expected to be evaluated by the appropriate regulatory authority (*e.g.*, the NRC, other Federal agencies or Agreement States). Such site-specific environmental evaluations are expected to identify the specific impacts that might occur. Further, DOE expects the relevant regulatory agency would determine, consistent with the Council on Environmental Quality (CEQ) regulations at 40 CFR 1501.11 related to tiering, to what extent this EIS could be utilized to support site-specific environmental reviews.<sup>1</sup>

### **Environmentally Preferable Alternative**

The No Action Alternative serves as the status quo, where DOE would not implement the Proposed Action and no sufficient domestic commercial supply of HALEU is available. Overall and at least in the short term, the No Action Alternative would have fewer potential adverse environmental effects than the Proposed Action because construction and operation of HALEU fuel cycle facilities would not occur. Development of a domestic commercial supply of HALEU

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<sup>1</sup> DOE is aware of the November 12, 2024, decision in *Marin Audubon Society v. Federal Aviation Administration*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the CEQ regulations implementing NEPA are not judicially enforceable or binding on this agency action, DOE has nonetheless elected to follow those regulations at 40 CFR parts 1500–1508, in addition to DOE’s regulations implementing NEPA at 10 CFR part 1021 to meet DOE’s obligations under NEPA, 42 U.S.C. 4321 *et seq.*

would be left to industry, which could result in fewer, short-term, domestic impacts than under the Proposed Action Alternative. Therefore, the No Action Alternative would be the Environmentally Preferable Alternative. However, the No Action Alternative would not meet the purpose and need to establish a program to support the availability of HALEU for civilian domestic research, development, demonstration, and commercial use, and may not result in the potential long-term environmental benefits, identified in the EIS, of the Proposed Action.

### **Comments on the Final HALEU EIS**

During the development of the Final HALEU EIS, DOE considered all the alternatives, information, analyses, and objections submitted by state, Tribal, and local governments as well as public commenters.

DOE made more than 4,000 notifications of the completion and availability of the Final HALEU EIS to Congressional members and committees; all fifty United States; Tribal governments and organizations; local governments; other Federal agencies; non-governmental organizations; and individuals. Following issuance of the Final HALEU EIS, DOE received five comments.

As part of the comments received on the Final HALEU EIS, a non-profit organization requested DOE refrain from issuing a ROD on the Final HALEU EIS until a Nonproliferation Impact Assessment (NPIA) has been prepared. This non-profit group further requested that its comments be added to the EIS record and that the requested NPIA be available for public review and comment. DOE received similar requests from this organization during the scoping and public comment periods and addressed these comments in the Final HALEU EIS. This organization submitted two identical comments on the Final EIS by email and U.S. Mail.

As noted in the EIS, DOE acknowledges that the widescale deployment of HALEU fuels, which could be facilitated by the Proposed Action, presents different proliferation challenges than the use of LEU. DOE will continue working with industry, the NRC, and the IAEA to further assess potential risks associated with a commercial HALEU fuel cycle, and the National

Nuclear Security Administration (NNSA) will continue to strengthen its cooperation with industry to enhance the security and safeguards of new HALEU-based reactor designs. At the same time, DOE assesses that adequate structures are in place to manage the evolving proliferation challenges to acceptable levels and the benefits of using HALEU fuels in advanced reactors outweigh the potential proliferation risks.

Consistent with NNSA's and DOE's consideration of, and discussion regarding, nonproliferation in the EIS, NNSA and DOE have concluded that the preparation of an NPIA is not necessary prior to the issuance of a ROD.

DOE received one comment by email from a NEPA reviewer in the U.S. Environmental Protection Agency's (EPA) Region 9 Environmental Review Section seeking clarification as to the location of the HALEU acquisition. In response, DOE stated that DOE does not have site-specific information that is ripe to analyze in a NEPA document, and as the Final EIS states, DOE will not select specific locations and facilities as a part of the Record of Decision for this EIS.

DOE also received comments on the Final HALEU EIS from the EPA Office of Federal Activities. This office previously submitted comments on the Draft HALEU EIS, which are available for review in Volume 3 of the Final HALEU EIS (Comment ID: 56). In response to the comments received on the Draft HALEU EIS, DOE engaged in follow-on discussions with EPA staff, which informed changes that DOE made in the Final HALEU EIS.

In their comments on the Final HALEU EIS, EPA acknowledged DOE's revisions in response to EPA's comments on the Draft HALEU EIS, but further recommended incorporating site-specific monitoring data for mining and milling activities. In their comments on the Draft HALEU EIS, EPA also recommended that environmental monitoring information from mining and milling operations at existing facilities be incorporated. As stated in DOE's response to EPA

Comment 0056-1 on the Draft HALEU EIS, the Proposed Action involves numerous actions (*e.g.*, mining, enrichment, deconversion, etc.) and does not propose to select site-specific locations. Given the potential possibilities of all actions and locations, it would not be reasonable to accumulate and assess operating and environmental data for all potential activities.

In its comments on the Final HALEU EIS, EPA recommended clearly disclosing the uncertainty associated with not utilizing monitoring data for mining and milling facilities assessed in the EIS. In preparing the HALEU EIS, DOE reviewed numerous NEPA documents, including those for uranium mining and milling facilities, to establish estimated ranges of the potential impacts of mining and milling activities to support the Proposed Action. DOE acknowledges the uncertainties associated with the estimated ranges of potential environmental consequences as specific sites and actions are not known. DOE expects that once sites are identified, site-specific information, including environmental monitoring data, would be used by the appropriate regulatory authority during the licensing and permitting processes. Further, in response to comments on the Draft HALEU EIS regarding legacy health issues related to historic uranium mining, milling, and enrichment practices, DOE reviewed a limited amount of monitoring data (*e.g.*, White Mesa Mill) (see Volume 3, Comment Response 56-21) and determined that the data was not inconsistent with the associated NEPA documents' estimated ranges of potential impacts. DOE understands and agrees that the uranium mining and milling portion of the Proposed Action is rapidly evolving due to international policies and increased demand for a domestic uranium supply; the estimated potential environmental impacts associated with these activities are uncertain; and, as discussed in the Final HALEU EIS, they have the potential to be large for some resources at some locations.

In addition to concerns about site-specific monitoring data for mining and milling activities, EPA recommended DOE pursue consultation with the Ute Mountain Ute Tribe on future actions at White Mesa Mill as it is the only operational conventional uranium mill in the United States. Although the Ute Mountain Ute Tribe did not request consultation on the HALEU

EIS, DOE participated in interagency consultation with Ute Mountain Ute Tribal officials, NNSA, EPA, NRC, Senator John Hickenlooper, and the State of Utah regarding the Tribe's concerns about White Mesa Mill in August 2023. During this consultation meeting, the Ute Mountain Ute Tribe expressed concerns about drinking water quality, air quality, health and safety of mill workers, lack of notification for the receipt of materials at the mill, and continued operations at White Mesa Mill despite an initial 15-year operation window. After hearing the Ute Mountain Ute Tribe's concerns, DOE presented information on the HALEU EIS and other Federal actions that could potentially impact future activities at the mill. Ute Mountain Ute Tribal officials did not express specific concerns related to the HALEU EIS, but had general questions on the presentation, which were addressed. DOE continues to extend an opportunity for all Tribes, including the Ute Mountain Ute Tribe, to share feedback and concerns or ask questions related to the HALEU EIS through government-to-government consultation as requested.

EPA further recommended DOE include mitigation measures informed by the Ute Mountain Ute Tribe in the ROD. Since DOE's Proposed Action and ROD do not include site selection activities, there are no specific actions at White Mesa Mill upon which to include mitigation measures. However, should specific actions concerning the White Mesa Mill be identified in the future, consultations with the Ute Mountain Ute Tribe and any associated mitigation measures would be expected to be conducted consistent with all applicable laws and regulations by the cognizant regulating authority.

In EPA's final comment, the agency recommended that additional information be provided in section 4.3.2 of the Final HALEU EIS to support the project's social cost of greenhouse gases (SC-GHG) analysis, including (1) the project time horizon, (2) the year the stream of SC-GHG values is discounted to, and (3) the application of different discount rates. This information is available in Section A.8, *Greenhouse Gas Emissions Calculations*, in Volume 2 of the Final HALEU EIS. EPA also recommended that the SC-GHG analysis be

based on three separate greenhouse gases (GHGs), rather than on carbon dioxide equivalents (CO<sub>2</sub>e). As stated in DOE's response to EPA Comment 0056-24 on the Draft HALEU EIS, all GHGs estimated because of implementation of the Proposed Action would occur from the combustion of gasoline, diesel, or natural gas in construction and operational equipment, trucks, or worker commuter vehicles. Roughly 99 percent of the CO<sub>2</sub>e emitted from these sources would occur in the form of carbon dioxide. Therefore, reporting each individual GHG, including methane and nitrous oxide emissions, would not substantially add to the precision of the project CO<sub>2</sub>e emissions or SC-GHG calculations. Appendix A, section 8, tables A-20 and A-21 of the Final HALEU EIS show that the project SC-GHG analysis is based only on carbon dioxide emissions.

DOE also received one comment from a member of the public expressing opposition. This commenter did not specifically oppose the Proposed Action or reasonably foreseeable activities but, instead, expressed general opposition against nuclear programs and technologies.

DOE considered the comments received following issuance of the Final HALEU EIS and finds that they do not present "substantial new circumstances or information about the significance of adverse effects that bear on the analysis" 40 CFR 1502.9(d); see also 10 CFR 1021.314(a); therefore, they do not require preparation of a supplement analysis or a supplemental EIS.

## **Decision**

As discussed in the Final HALEU EIS, the EIS provides information to support decisions regarding whether or not to acquire HALEU from commercial sources and to facilitate commercial HALEU fuel production capability. DOE has decided to implement the Proposed Action, its Preferred Alternative, as described in the Final HALEU EIS. DOE's Preferred Alternative is to acquire, through procurement from commercial sources, HALEU enriched to at

least 19.75 and less than 20 weight percent U-235 over a 10-year period of performance, and to facilitate the establishment of commercial HALEU fuel production.

### **Basis of Decision**

The Final HALEU EIS provided DOE decision-makers with important information regarding potential environmental impacts of alternatives and options for satisfying the purpose and need. DOE's decision to implement the Proposed Action is based on consideration of Congressional direction, the need for agency action, the potential environmental impacts (including beneficial impacts related to climate change), as well as other factors, including public comments, strategic objectives, technology needs, safeguards and security, cost, and schedule.

### **Mitigation Measures**

As stated in this EIS, decisions regarding locations of specific activities are not part of the Proposed Action. Therefore, no location-specific mitigation measures are identified in this ROD.

However, implementation of the Proposed Action could result in HALEU fuel cycle facilities being sited at various locations. The environmental impacts of such HALEU fuel cycle facilities are expected to be evaluated by the appropriate regulatory authority (e.g., the NRC, other Federal agencies, or Agreement States). Such site-specific environmental evaluations would be expected to identify mitigation measures and/or the implementation of best management practices to reduce impacts. Mitigation measures, if needed, would be expected to be executed and tracked as required.

### **Signing Authority**

This document of the Department of Energy was signed on December 20, 2024, by K. Michael Goff, Principal Deputy Assistant Secretary for Nuclear Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an

official document of DOE. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on January 8, 2025.

**Jennifer Hartzell,**  
*Alternate Federal Register Liaison Officer,*  
*U.S. Department of Energy.*

[FR Doc. 2025-00610 Filed: 1/13/2025 8:45 am; Publication Date: 1/14/2025]