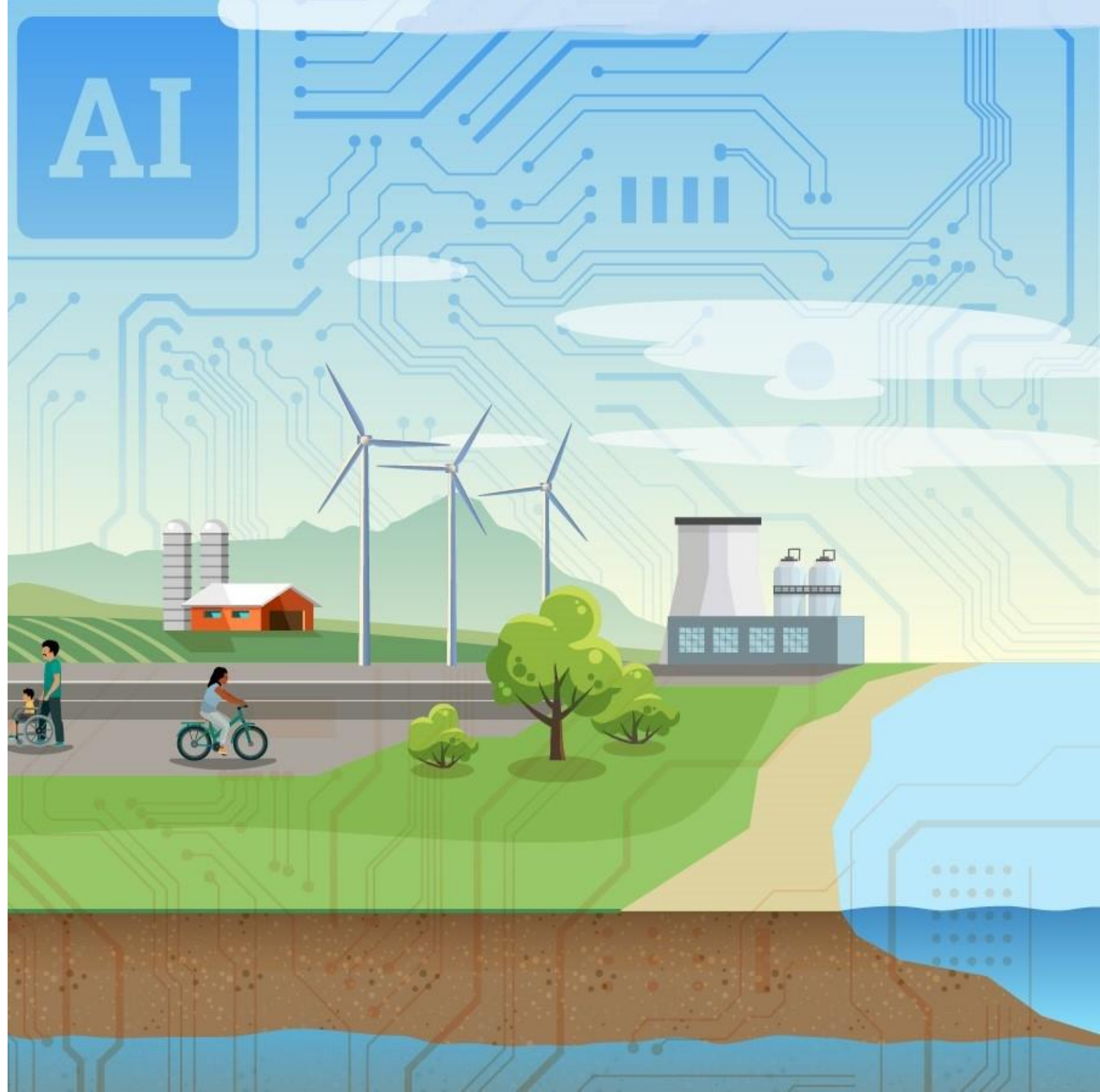


Digital Decommissioning

AI, Data Lakehousing and
Web Technologies for Charting
Nuclear Permitting Reviews

October 31, 2024

Anastasia Bernat
Data Scientist



U.S. Evolving Nuclear-Tech and its Nuclear Permit-Scape

Climate Solutions Weather

Climate / Solutions

The US is dismantling nuclear warheads to power the next generation of reactors



By Ella Nilsen, CNN

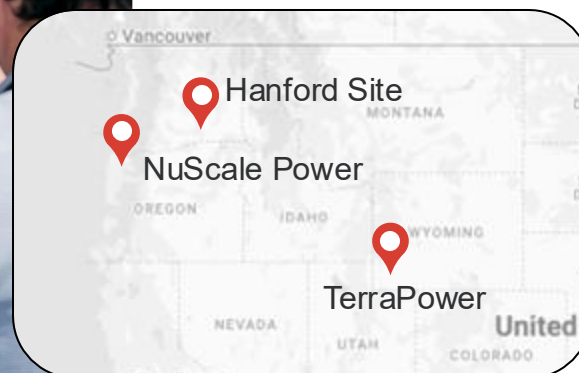
5 minute read · Updated 1:41 PM EDT, Mon September 9, 2024



*Nuclear permitting is an **expensive**, **complex**, and **technologically reactive** process.*



Bill Gates at the groundbreaking for TerraPower's nuclear power plant near Kemmerer, Wyoming, in June. Benjamin Rasmussen/The New York Times/Redux



AP

WORLD U.S. ELECTION 2024 POLITICS SPORTS ENTERTAINMENT BUSINESS SCIENCE FACT CHECK

Harris on Fox News Sean 'Diddy' Combs Bath & Body Works apology Middle East wars Giant pandas

1st small modular nuclear reactor certified for use in US



EPA

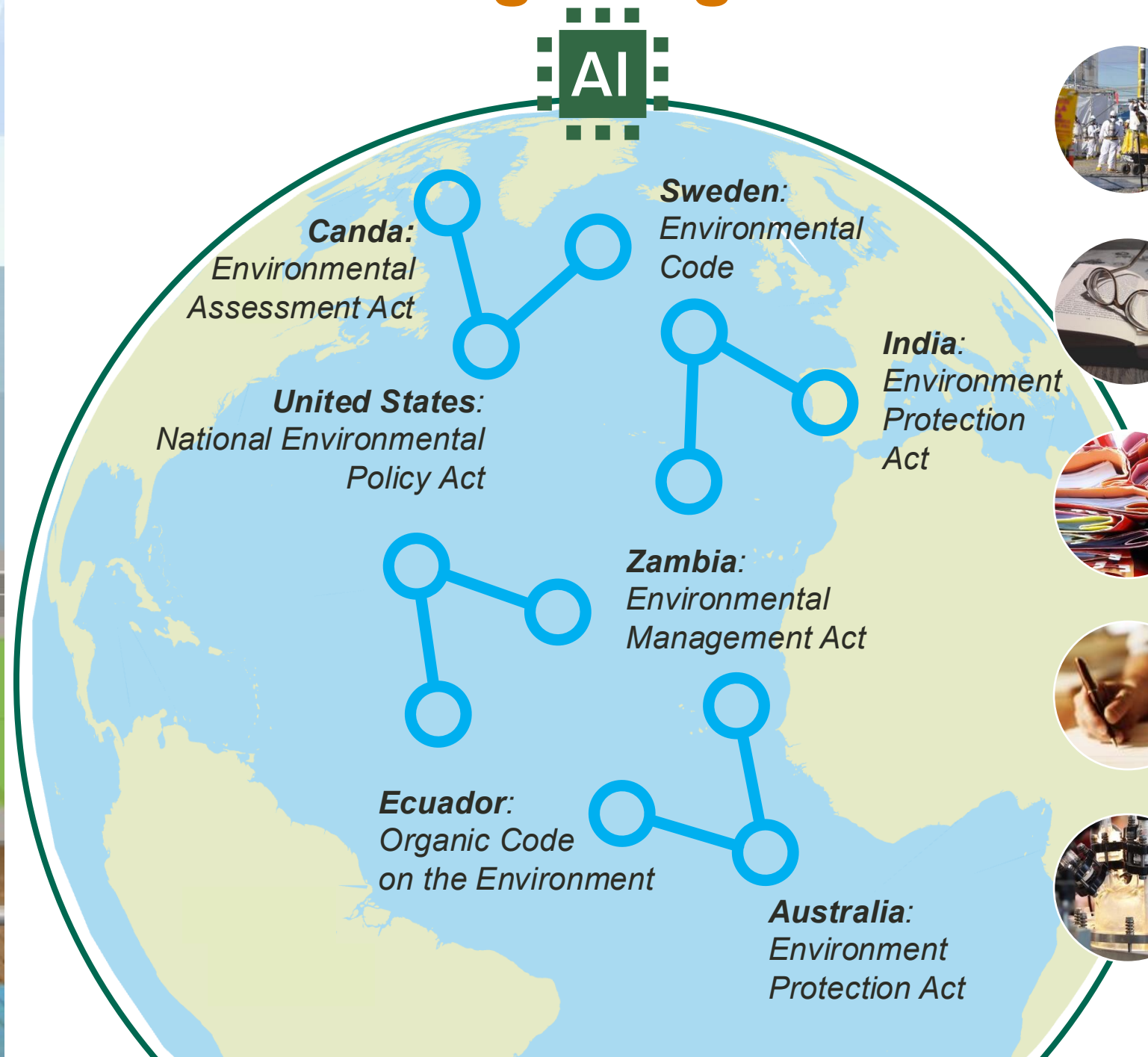
MENU

State of Washington, federal agencies agree on future of tank waste cleanup at Hanford Site

April 29, 2024

Proposed amendments to cleanup agreements to go out for 60-day public comment period May 30.

Proactive Environmental and Nuclear Safety By Integrating AI in Permitting Reviews



Streamline and harmonize decision-making on environmental impact assessments to chart significant impacts when building or decommissioning a reactor in critical areas of radioactive waste management, site characterization and restoration, and more.



Screening of pre-application reviews and **fast scoping of safety guidance** to resolve potential issues early in the licensing process.



AI-enhanced search, chat, and analytics to more efficiently **retrieve insights** from existing permitting documents and **inform development of future documents**. Potentially adaptable to other collections of large, technical, and unstructured data (e.g., ADAMS or PHOENIX).



Greater efficiency and consistency **processing and summarizing public comments** using AI-powered comment processing applications that leverage historical comment summary and response data.



Improve, centralize, and select reactor designs that produce shorter decommissioning timelines.

AI and Digital Tools for Streamlined U.S. NEPA Permitting Reviews

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

[Public Law 91–190]

[As Amended Through P.L. 118–5, Enacted June 3, 2023]

“... a **unified permitting portal** that would—

- (1) allow applicants to—
 - (A) submit required documents or materials for their project in one unified portal;
 - (B) upload and collaborate with the applicable agencies to edit documents in real-time, as required;
 - (C) upload and display visual features such as video, animation, geographic information system displays, and three-dimensional renderings; and
 - (D) track the progress of individual applications;
- (2) include a cloud based, digital tool for more complex reviews that would **enhance interagency coordination** in consultation by—
 - (A) **centralizing**, across all necessary agencies, the data, visuals, and documents, including but not limited to geographic information system displays, other visual renderings, and completed reports and analyses necessary for reviews;
 - (B) streamlining communications between all necessary agencies and the applicant;
 - (C) allowing for comments and responses by and to all necessary agencies in one unified portal;
 - (D) generating analytical reports to aid in organizing and cataloguing public comments; and
 - (E) be accessible on mobile devices;
- (3) **boost transparency in agency processes** and present information suitable for a lay audience, including but not limited to—
 - (A) scientific data and analysis; and
 - (B) anticipated agency process and timeline; and

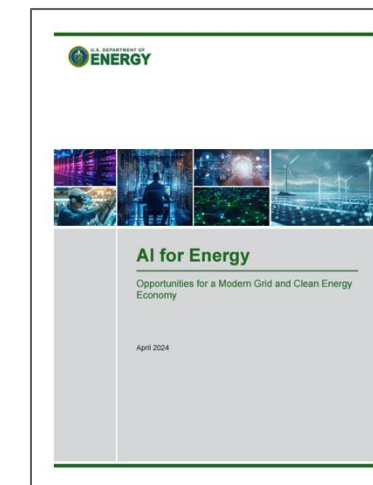
...”

CENTRALIZED, UNIFIED PORTAL

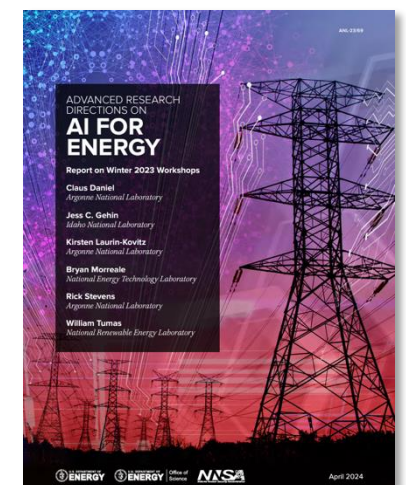
ACTIONS

The U.S. Department of Energy (DOE) [has announced many actions](#) to assess opportunities and challenges of AI for purposes of accelerating deployment of clean energy and managing growing energy demand.

These actions include coordination with regulators, researchers, utilities, clean energy developers, data center owners and operators, and other interested parties.

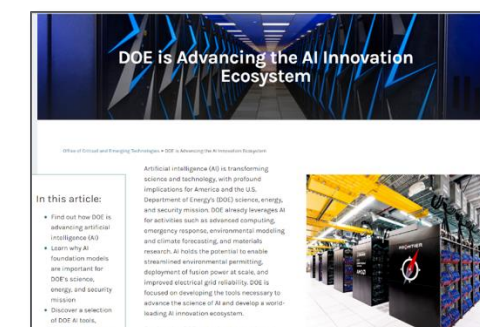


[DOE 2024](#)

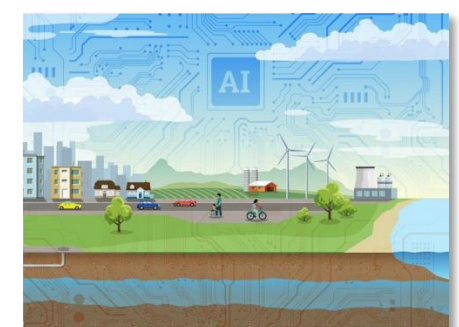


[DOE 2024](#)

REPORTS



<https://www.energy.gov...>



<https://www.pnnl.gov...>

TOOLS

PolicyAI: AI for Streamlining, Centralizing, and Augmenting Permitting Reviews



U.S. DEPARTMENT OF
ENERGY

\$20 million
VoltAIc Initiative



PolicyAI is a
policy-specific multimodal large
language model (LLM)
test bed seeking to...

Judiciously apply artificial intelligence
(AI) to improve permitting outcomes
and efficiencies, particularly for
National Environmental Policy Act
(NEPA) and related reviews

Introduce AI features that improve
accessibility and transparency of
permitting processes and
information to the public

Environmental Protection

Environmental Review

- 📄 **Categorical Exclusion (CE):** No anticipated significant impact.
- 📄 **Environmental Assessment (EA):** Used to assess if an EIS is needed.
- 📄 **Environmental Impact Statement (EIS):** For significant impacts—detailed analysis and public involvement required.
 - New reactor, significant modifications to facilities, or **decommissioning activities**. This includes analyzing **waste management, site characterization & restoration, and radiation safety**

Public Involvement

Public hearings or **comment periods** are often carried out, so communities have opportunities to provide input.

Safety

Safety Review

- 📄 **Safety Analysis Report (SAR):** Analysis of facility safety, such as potential hazards, accident scenarios, and safety measures.
- 📄 **Decommissioning Plan (DP):** Methods for decommissioning, including safety protocols and waste management strategies.
- 📄 **Radiological Assessment Reports:** Documents assessments of radiation levels, potential exposures, and strategies for minimizing risk during decommissioning ...

PolicyAI: AI for Streamlining, Centralizing, and Augmenting Permitting Reviews



U.S. DEPARTMENT OF
ENERGY

\$20 million
VoltAIc Initiative



PolicyAI is a
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Public hearings or **comment periods** are often carried out, so communities have opportunities to provide input.

Safety



What disposal challenges were introduced that could persist if a new reactor is built in Washington State?



How does building a new reactor impact community economies and energy demand in the Pacific Northwest?



What are major topic areas described by public comments submitted to the latest decommissioning project?



What site characteristics would influence reactor design if building a reactor in California State?

PolicyAI Thrust Areas

Data Collection, Standardization, Management, and Governance

Optimize processing and storage of permitting documents in an AI-compatible format (i.e., NEPATEC dataset)

AI Model Prototyping and Benchmark Development

Fine-tune LLMs with NEPA knowledge and evaluate (e.g., NEPAQuAD benchmark)

User Discovery and Rapid Application Development

→ **Document Search (SearchNEPA)**

→ Comment Analysis

→ Drafting Assistant

→ *and more to come*

**Data Collection,
Standardization,
Management, and
Governance**

Optimize processing
and storage of
permitting
documents in an AI-
compatible format
(i.e., NEPATEC
dataset)

Goldrush Mine Project Final Environmental Impact Statement

DOI-BLM-NV-B010-2021-0006-EIS

October 2023

Bureau of Land Management
Battle Mountain District Office
Mount Lewis Field Office
50 Bastian Road
Battle Mountain, Nevada 89820

Cooperating Agencies:

United States Fish and Wildlife Service
United States Environmental Protection Agency
Nevada Department of Conservation and Natural Resources
Nevada Division of Environmental Protection
Nevada Department of Transportation
Nevada Department of Wildlife
Esmeralda County Board of Commissioners



Documents



Pages



Tokens



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Tonto National Forest

Final Environmental Impact Statement for the Land Management Plan

Tonto National Forest

Volume 1: Chapters 1 to 3

Coconino, Gila, Maricopa, Pinal, and Yavapai Counties, Arizona

Programmatic Environmental
Impact Statement
Decommissioning
Pacific Outer Continental Shelf

56,048

U.S. Army Garrison

5,220,940

3,839,837,482

MAX: 33,220,133/document

*and growing

Environmental Review

Approximate Page Length

NEPA Documents: Rich Data Modalities

Categorical Exclusion (CE): No anticipated significant impact.

1 to 10

Environmental Assessment (EA): Used to assess if an EIS is needed.

10 to 100

Environmental Impact Statement (EIS):

200 to 1,000+

COVER SHEET

RESPONSIBLE FEDERAL AGENCY: U.S. Department of Energy (DOE)

Title: *Final Supplemental Environmental Impact Statement for Disposition of Depleted Uranium Oxide Conversion Product Generated from DOE's Inventory of Depleted Uranium Hexafluoride (DU Oxide-SF6)*

LOCATIONS: Kentucky, Nevada, Ohio, Texas, and Utah

CONTACT: For further information on this supplemental environmental impact statement (SEIS), contact:

Jaffee Ferrer-Torres
Department Manager
Office of Environmental Management
U.S. Department of Energy
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For general information on the DOE National Environmental Policy Act (NEPA) process, contact:

William Ostrom
EM NEPA Compliance Officer
Office of Environmental Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
Telephone: 202-586-2513

This document is available on the DOE NEPA website (<http://energy.gov/energy-topics/disposition>) and the Portsmouth Nuclear Project NEPA website (<https://www.ornl.gov/disposition/portsmouth-nuclear-conversion-fuel-cycle-management.html#seis>) for viewing and downloading.

ON JAN. 28, 2024, the U.S. Department of Energy (DOE) issued environmental impact statements for the construction and operation of facilities to convert depleted uranium hexafluoride (DU/F₆) to depleted uranium (DU) oxide at DOE's Paducah site (Paducah) in Kentucky and Portsmouth (Portsmouth) in Ohio (DO EIS-043461). Both the *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky Site* (DOE/EIS-04359) and the *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the*

Final Supplemental Environmental Impact Statement – Depleted Uranium Oxide	
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1.6.1	Human Health and Safety
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3.1.1.3	Electricity
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Final Supplemental Environmental Impact Statement – Depleted Uranium Oxide

1 INTRODUCTION AND PURPOSE AND NEED FOR AGENCY ACTION

1.1 BACKGROUND INFORMATION

The use of uranium as fuel for nuclear reactors or for military applications requires uranium enrichment; that is, increasing the proportion of the fissile uranium-235 isotope found in natural uranium. The enrichment process is carried out at a number of plant or atomic bubble facilities developed during World War II. Uranium enrichment for both civilian and military uses was continued by the U.S. Atomic Energy Commission and its successor agencies, including the U.S. Department of Energy (DOE), until the mid-1970s. The enrichment process has since been discontinued at all sites, including the Paducah site (Paducah) in Kentucky, the Portsmouth site (Portsmouth) in New Hampshire, and the Savannah River site (SR) in Oconee County, Georgia. The United States Enrichment Corporation (USEC) carried out the enrichment process at all three sites: Paducah and Portsmouth (USEC began as a government agency, was later privatized, and then was merged with the Energy Research Corporation).

Depleted uranium hexafluoride (DUF₆) results from the uranium enrichment process. The DUF₆ that remains after enrichment is stored in large steel cylinders that contain approximately 9.5 to 12 metric tons (21 to 13.1 tons) of material. **Figure 1-1** shows a typical DUF₆ storage cylinder. The cylinders at the Paducah site (DOE EIS-0359) [Paducah], and SR (DOE EIS-0359) [Savannah River] were generally heavier. However, all DUF₆ cylinders that were stored at ETP were transported to Portsmouth. At its peak, Paducah stored approximately 46,000 DUF₆ cylinders (566,000 metric tons) of material. The cylinders at SR stored approximately 21,000 DUF₆ cylinders (250,000 metric tons) [276,000 tons], for a total of about 67,000 cylinders (810,000 metric tons [893,000 tons]) (PPOPP 2018). The cylinders are stored two layers high on outdoor gravel or concrete storage areas known as pads.

In addition to the DUF₆ cylinders, there are cylinders that contain enriched UF₆ or normal UF₆ or empty or mostly empty (collectively called “non-DUF₆” cylinders). *The Final Environmental Impact Statement for Construction and Operation of Depleted Uranium Hexafluoride Conversion Facilities at the Paducah, Kentucky Site* (DOE EIS-0359) [Paducah], and *Final Environmental Impact Statement for Construction and Operation of Depleted Uranium Hexafluoride Conversion Facilities at the Savannah River Site* (DOE EIS-0359) [Savannah River] (DOE, 2006a) (collectively, the “2006 EIS”) assumed that the normal UF₆ and enriched UF₆ cylinders from Paducah and Portsmouth would be sent to a beneficial uses, therefore, conversion of the contents of these cylinders was not considered. However, the *Supplemental Environmental Impact Statement for Disposition of Depleted Uranium Oxide Conversion Product Generated From DOE's Inventory of Depleted Uranium Hexafluoride* (DOE, 2018) (DOE EIS-0468) [DOE EIS-0468] assumed that the enriched UF₆ cylinders and some of the normal UF₆ cylinders would be sent to a beneficial uses, therefore, conversion of the contents of these cylinders was not considered.

¹ Depleted uranium is a material that, after the enrichment process, has been stripped of a portion of the 235 that is not so concentrated as that in proportion to lower than the 0.707 weight-percent found in nature. The uranium isotope that remains is called depleted uranium. It is a slightly poorer source of energy than natural uranium, but it is not radioactive and is not considered a nuclear waste. It is used in a variety of applications, including armor, armor-piercing munitions, and ballistics.

² Empty cylinders have been found at the DUF₆ and non-DUF₆ material removal and contain little or no DUF₆ or non-DUF₆ material.

³ Cylinders contain approximately 50 to (21) kg of material removed and contain little or no DUF₆ or non-DUF₆ material.

Final Supplemental Environmental Impact Statement – Depleted Uranium Ore

6 REFERENCES

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Metadata

2 DESCRIPTION AND COMPARISON OF ALTERNATIVES

DOI has prepared this *DU* *DOE* *SRB* to evaluate alternatives for transportation and disposal of *DU* *enriched* from Paducah and Portsmouth in Paducah, Kentucky, and Piketon, Ohio, respectively. The locations of Paducah and Portsmouth are shown in Figure 2-1 and Figure 2-2, respectively.

Figure 2-1 Location of the Paducah Site (Source: Modified from PFFO 2018)

2.1 DESCRIPTION OF RELATED ACTIVITIES AT PADUCAH AND PORTSMOUTH

Facilities for the conversion of depleted uranium hexafluoride (*DU**F**U*) to *DU* *enriched* at Paducah and Portsmouth became fully operational in 2011. The *DU* *DOE* *SRB* produced is a powder mixture of *DU* *enriched*, primarily uranium trioxide (*U**U**O**U*). The *U**U**O**U* forms is the most stable form, which is also the form most commonly found in nature. Uranium oxide has low solubility in water, has an average density of approximately 2.7 grams per cubic centimeter, and is relatively stable over a wide range of environmental conditions (PFFO 2018).

DU is defined as being less than 0.707 weight-percent uranium-235. Most of *DOE*’s *DU* inventory contains from 0.2 to 0.4 weight-percent uranium-235 (ANL 2014a). The *DU* *DOE* *SRB* at Paducah and Portsmouth is approximately 97.9 percent uranium-238, 0.2 percent uranium-235, and 0.001 percent uranium-234 (PFFO 2018).

The *DU* *DOE* *SRB* also evaluates the environmental impacts of transportation and disposal of related waste streams including empty and half cylinders, C-51, and molten U and molten U.

April 2020

Metadata

Final Supplemental Environmental Impact Statement – Draft EIS Chapter One: Overview

There are also 205, 55-gallon (208-liter) steel drums of DUF stored at Portsmouth (PPPO) 238s. These drums were generated during the first five years of conversion facility start-up operations and closures. As many as the drums could be generated each conversion facility annually during recovery from future off-normal events (PPPO 238b). Therefore, a total of 220 and 365 drums of DUF could be generated at Paducah and Portsmouth, respectively.³

2.1.3 Container Storage

Cylinders are typically stacked two high in cylinder storage yards as the only concern in Figure 2-5. The storage yards are large outdoor areas that typically have a gravel or concrete base. The cylinders are stored in rows and columns at the storage yards. The bottom cylinders are placed on concrete slabs to keep them off of the ground (ANSI 2016b).

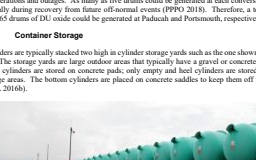


Figure 2-5 DUF, Cylinder Storage Yard (Source: BWXT 2016b)

DUF stored inside 55-gallon (208-liter) drums is protected from the elements by storing the drums in intermodal containers (BWXT 2016b). Typical intermodal containers would be 20 ft, 30 ft, and 40 ft long and 8 ft 6 inches high. Portsmouth has 12 containers that hold 12 cylinders each, for a total of 144 drums per container. This configuration allows access for routine inspections and retrieval as needed. There are approximately a 20-foot long dry container would be needed at Paducah and 12 at Portsmouth for the estimated drum inventory to be generated in each site. The drum storage capacity is detailed in the cylinder storage table (PPPO 238b).

Figure 2-6 shows the location of the storage yards at Paducah. There are multiple storage yards at Paducah, for a total of approximately 3.6 million square feet (334,545 square meters), or 83 acres (34 hectares), of storage space. This is enough space to store nearly 70,000 T7000 cylinders. These yards vary in size from 1,000 to 70,000 square feet (127.9 to 63,302 square meters). Seven of the yards are composed of compacted dense-grade aggregate, two are partially dense-grade aggregate and three are gravel, and one concrete. All of the storage yards are located inside security fences. As shown in Figure 2-6, two of the cylinder storage yards are located in

³As noted in the conversion, the total DUF waste quantity analyzed in the DUF table SERs for disposed in cylinders or bulk bags includes the quantities that may be generated and disposed of in the 55 gallon steel drums.

2-8 April 2017

Sections

Final Supplemental Environmental Impact Statement – Depleted Uranium Oxide			
Storage of DU ₀₁			Activities analyzed in this chapter of the DU Oxide SEIS
Conversion of DU ₀₁ to DU Oxide			Activities analyzed in this chapter of the DU Oxide SEIS
Sale and Offsite Transport of HE			Activities analyzed in this chapter of the DU Oxide SEIS
Transport of CaF ₂ for Disposal			
Transport of Empty Cylinders for Disposal			
Storage of DU Oxide – Maximum Duration for the Disposal Alts			
Transport of DU Oxide for Disposal			
Storage of DU Oxide – No Action Alternative			
Note: SEIS only addresses:			
2003	<45 yrs for Paducah	<45 yrs for Paducah	<100 yrs for Portsmouth
Figure 2-4 Anticipated Activities at the Paducah and Portsmouth Sites Analyzed in this DU Oxide SEIS¹ 2-2 Quantities of Depleted Uranium Oxide to be Managed Prior to the start of conversion operations, there were approximately 560,000 metric tons (617,288 tons) of DU₀₁ stored in 46,000 cylinders at Paducah and approximately 250,000 metric tons (275,775 tons) of DU₀₁ stored in 21,000 cylinders at Portsmouth (approximately 4,300 and 33,229 tons, respectively). By February 2013, the inventory had been reduced to approximately 572,524 metric tons (577,086 tons) of DU₀₁ at 46,261 cylinders at Paducah and approximately 227,49 metric tons (250,907 tons) of DU₀₁ at 19,609 cylinders at Portsmouth and DU₀₁ was converted to DU oxide. As the DU₀₁ inventory is reduced, the DU oxide inventory at each site will increase. As of February 2013, there were approximately 30,445 metric tons (33,229 tons) of DU oxide stored in 2,008 cylinders at Paducah and approximately 18,270 metric tons (20,469 tons) of DU oxide stored in 1,898 cylinders at Portsmouth (PPPOD 2013). By the end of the project, conversion operations will result in the inventory could result in the quantity of total DU oxide (approximately 46.15 tons) (446.515 tons) (492,193 tons) of DU oxide at Paducah and approximately 22.850 (493.737 tons) (19,337 metric tons [219,729 tons]) of DU oxide at Portsmouth (PPPOD 2018). ¹ The 2004 EISs analyzed disposal of DU oxide, empty spent heat exchangers, CaF₂, and molten U₃O₈ and MSLM for a 100-year period. The DU Oxide EISs only analyzed several quantities of these materials for disposal and included disposal at an additional facility (i.e., WCS).			
2-4		April 2020	

Text

at Paduach and 221 in the second case, "uncontrolled corrosion," which was not detected by the improved cylinder maintenance program. In that case, the number of active breaches between 2019 and 2020 for 444 cylinders stored at Paduach and 287 for cylinders stored at Portuamthi (74 breaches in the Portuamthi cylinders and 213 in the ETTIP cylinders). These breach estimates were determined based on historical corrosion rates when cylinders were stored under poor conditions (i.e., cylinders were stacked too close together, were stored on wooden blocks, or came into contact with the ground). Because storage conditions improved over time, the estimated number of cylinders with uncontrolled corrosion and the maintenance program, it is expected that the breach estimates based on historical corrosion rates provide a worst case for estimating the potential impacts on estimated cylinder stockpile (DOE 2004a, 2004b). No new cylinder breaches have occurred at Paduach and Portuamthi since improved storage conditions have been implemented (PPYO 2018).

Table 2 summarizes information on cylinder breach scenarios from the 2004 EISs (DOE 2004a, 2004b) and provides the estimated cylinder breach rates from these data for cylinders from Paduach, Portuamthi, and ETTIP.

Table 2. Estimate of Potential Cylinder Breach Rates from the 2004 EISs

Site	Number of Storage Pools	Number of Breaches		Breach Rate		
		Controlled	Uncontrolled	Controlled	Uncontrolled	
Paduach	36,091	81	36	444	5,480 (151) ^a	
Portuamthi	16,109	0	18	74	2,481 (151) ^b	
ETIP	4,835	0	213	287	6,432 (133) ^c	
Portuamthi and ETTIP	20,934	NA ^d	231	287	NA	NA

ETIP = Eni (mainstem) Enihami; NA = not applicable.

^aPPYO 1998; ^bPPYO 2000; ^cPPYO 2001; ^dPPYO 2001.

Impacts on human health and safety, surface water, groundwater, soil, air quality, and ecology from uranium releases from breached cylinders were assessed in the 2004 EISs (DOE 2004a, 2004b). For hypothetical cylinder breaches, it was assumed that the breach would be undetected for four years, which is the period between planned inspections for most of the cylinders. In practice, cylinders that show evidence of damage or heavy external corrosion are inspected and repaired, so it is very unlikely that a breach would be undetected for a 4-year period (DOE 2004b).

The estimated cylinder breach rates shown in Table 2 were used to calculate the number of cylinders that could be breached under the various corrosion scenarios and storage periods for the alternatives analyzed. The estimated cylinder breach rates estimated and presented in Table 2 and are used in the impact analyses presented in Chapter 4 of this *Final EIS/SEA* EIS.

Citations

[illegible]

Material	Mode of Transport	Size	Criteria Pollutant Emissions (lb/shipment)					
			CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
Acetylene L1.W and MCL1.W	Truck	California	0.01	0.03	0.00	0.00	0.00	0.00
		National	0.01	0.03	0.00	0.00	0.00	0.00
		California	0.09	0.34	0.01	0.01	0.01	0.01
		National	0.09	0.34	0.01	0.01	0.01	0.01
		Total emissions	0.19	0.71	0.01	0.01	0.01	0.01
DC inside in cylinders	Truck	California	0.08	0.08	0.00	0.00	0.00	0.00
		National	0.09	1.36	0.07	0.07	0.00	0.00
		California	2.11	8.71	0.10	0.29	0.15	0.42
		National	0.10	1.36	0.07	0.07	0.00	0.00
		Total emissions	2.45	17.09	0.18	0.43	0.13	0.42
14,000 empty and full	Truck	California	0.01	0.03	0.00	0.00	0.00	0.00
		National	0.01	0.03	0.00	0.00	0.00	0.00
		California	0.06	0.31	0.01	0.01	0.00	0.00
		National	0.06	0.31	0.01	0.01	0.00	0.00
		Total emissions	0.09	0.67	0.01	0.01	0.00	0.00
DC inside in bulk bags	Truck	California	0.03	0.16	0.01	0.01	0.02	0.02
		National	0.03	0.16	0.01	0.01	0.02	0.02
		California	0.77	1.00	0.12	0.11	0.13	0.17
		National	0.03	0.16	0.01	0.01	0.02	0.02
		Total emissions	0.20	0.56	0.13	0.12	0.15	0.19
10,000 empty and full	Truck	California	0.20	0.56	0.02	0.02	0.00	0.00
		National	0.20	0.56	0.02	0.02	0.00	0.00
		California	1.32	14.11	0.10	0.18	0.09	0.28
		National	0.20	0.56	0.02	0.02	0.00	0.00
		Total emissions	1.78	9.19	0.12	0.12	0.17	0.17
CAF	Truck	California	0.26	0.71	0.03	0.03	0.02	0.02
		National	0.26	0.71	0.03	0.03	0.02	0.02
		California	1.02	1.80	0.26	0.26	0.14	0.14
		National	0.26	0.71	0.03	0.03	0.02	0.02
		Total emissions	1.78	3.14	0.32	0.32	0.16	0.16
General Freight, DC inside in 10 trailers	Truck	California	1.72	1.78	0.14	0.13	0.27	0.23
		National	1.72	1.78	0.14	0.13	0.27	0.23
		California	1.92	4.84	0.23	0.23	0.10	0.10
		National	1.72	1.78	0.14	0.13	0.27	0.23
		Total emissions	3.56	6.84	0.35	0.35	0.30	0.30
General Freight, DC inside in 25 trailers	Truck	California	2.72	2.77	0.20	0.20	0.29	0.25
		National	2.72	2.77	0.20	0.20	0.29	0.25
		California	1.76	5.13	0.26	0.26	0.10	0.10
		National	2.72	2.77	0.20	0.20	0.29	0.25
		Total emissions	4.48	8.54	0.46	0.46	0.39	0.39

a. Emissions of those that are subject to 10 minutes and 25 minutes.
 b. Emissions of those that are subject

Extraction: Maps and Figures of NEPA Documents



Figure 3-3 Location of the EnergySolutions Site near Clive, Utah

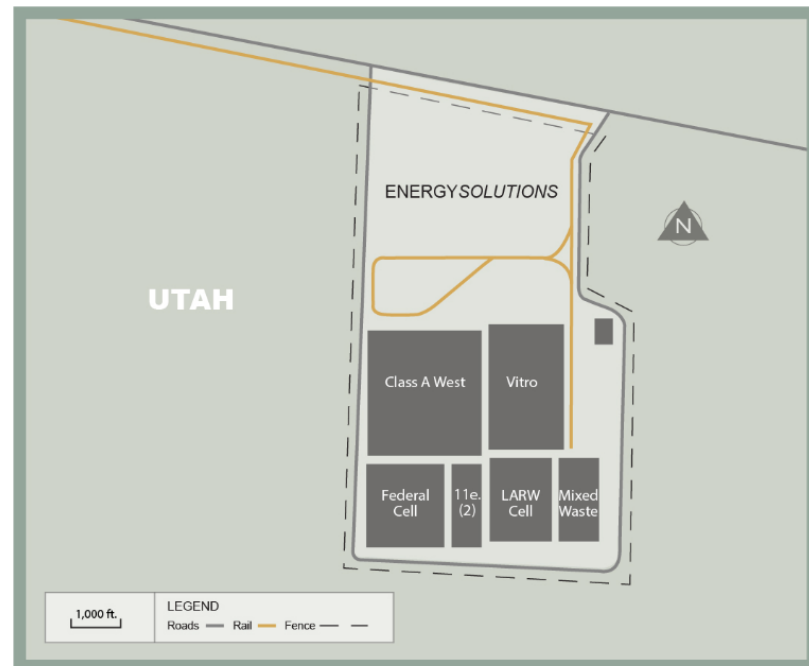


Figure 3-4 EnergySolutions Disposal Facilities (Source: [ES 2015a](#))³⁹



Figure 3-5 Nevada National Security Site Location

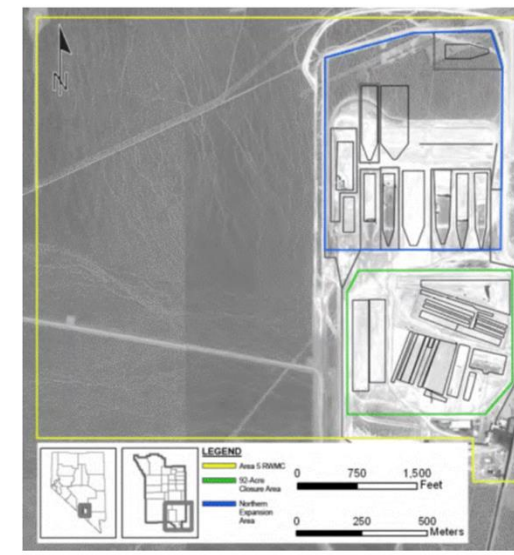


Figure 3-6 Nevada National Security Site Area 5 Radioactive Waste Management Complex (Source: [DOE 2013a](#))

U.S. Operating Commercial Nuclear Power Reactors



Figure 3-1. Map of NRC Regions Showing Locations of Operating Reactors (NRC 2013b)

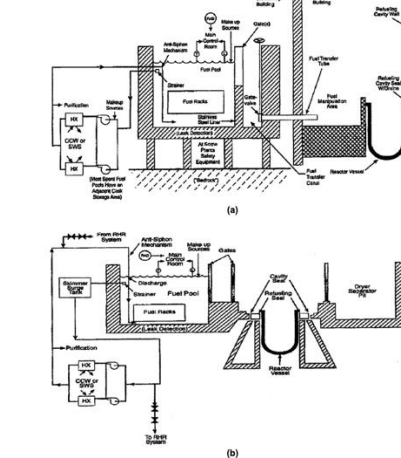


Figure E-2. Generic Layouts of Spent Fuel Pools and Transfer Systems for (a) Pressurized Water Reactors and (b) Boiling Water Reactors (NRC 1997a)



Figure 2-1. Single-Shell Tanks Under Construction at the Hanford Site, 1947–1948

Extraction and Enrichment: Text of NEPA Documents

Enrichment via LLM

PDF Corpus

PNNL Mass
File Transfer

Agency Data
Platform

Web
Scraping

Document
Data
Extraction

PDF

PyMuPDF
(Fast, Cheap)

Unstructured
IO
(Slow, Cheap)

LLaMA-Parse
(Fast,
Expensive)

Full text with Page Num, Page Text, TOC ...

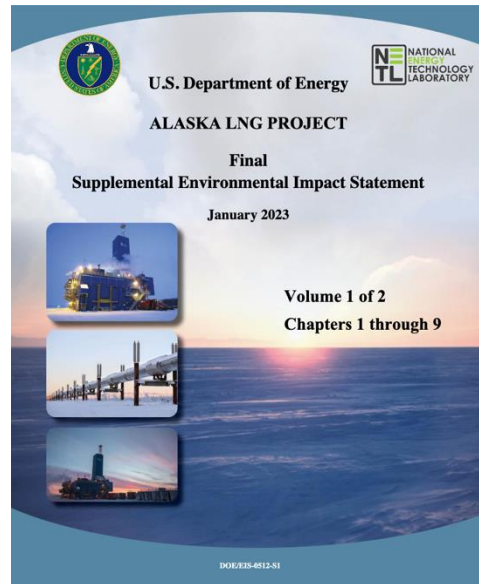
Document
Enrichment

1. Purpose and Need/Proposed Action Description
2. Affected Environment – Baseline conditions
 - a. Land Use/Visual/Transportation
 - b. Geology/Soils
 - c. Hydrology (groundwater/surface water)
 - d. Ecology (terrestrial/aquatic)
 - e. Air Quality/Meteorology/Climate Change
 - f. Historic & Cultural Resources
 - g. Human Health/Noise
 - h. Socioeconomics
 - i. Environmental Justice
 - j. Waste
 - k. Project Specific Hazards
3. Resource impact assessments from construction and operation
4. Cumulative impacts from other actions
5. Alternatives to the proposed action and environmental impacts
6. Mitigations/Conclusions

You are a helpful assistant, and your role is to identify the structure and layout of the following National Environmental Policy Act (NEPA) document. Background: Categorical exclusions are categories of actions that a federal agency has determined, in its NEPA procedures, normally do not have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement normally is required. A CE determination is the application of one or more CEs to a particular project or group of projects. Your task is to convert the text of the document into a structured JSON document with the fields of Program or Field Office, Project Title, Location, Proposed Action and the Categorical Exclusion(s) Applied.

```
{ "Program or Field Office": "U.S. Department of Energy (DOE) Office of Legacy Management (LM)",  
  
  "Project Title": "Administrative Actions, Routine Operations, and Maintenance Activities at the Tuba City, Arizona, Disposal Site",  
  
  "Location": "Tuba City, Arizona, Disposal Site",  
  
  "Proposed Action or Project Description": "LM is proposing to conduct administrative actions, routine operations, and maintenance activities at the Tuba City, Arizona, Disposal Site. Proposed activities would include, but would not be limited to: administrative functions such as preparation of inspection reports and work planning documents; routine operations such as monitoring, conducting surveys, and calibration of existing telemetry equipment and instrumentation; and maintenance activities such as maintaining existing on-site groundwater wells and associated infrastructure and vegetation management.",  
  
  "Categorical Exclusion(s) Applied": [ "A1 Routine DOE Business Actions", "A9 Information Gathering, Analysis, and Dissemination", "A12 Emergency Preparedness Planning", "B1.3 Routine Maintenance", "B1.7 Electronic Equipment", "B1.15 Support Buildings", "B1.19 Microwave, Meteorological, and Radio Towers", "B1.26 Small Water Treatment Facilities", "B1.33 Stormwater Runoff Control", "B2.1 Workplace Enhancements", "B2.2 Building and Equipment Instrumentation", "B2.3 Personnel Safety and Health Equipment", "B2.5 Facility Safety and Environmental Improvements", "B3.1 Site Characterization and Environmental Monitoring", "B5.1 Actions to Conserve Energy or Water", "B5.2 Modifications to Pumps and Piping", "B5.4 Repair or Replacement of Pipelines", "B5.12 Workover of Existing Wells", "B5.16 Solar Photovoltaic Systems", "B6.1 Cleanup Actions" ] }
```

From PDF to An AI-Ready Dataset (NEPATEC1.0)



level		name	page
0	1	U.S. Department of Energy, Alaska LNG Project,...	1
1	2	Cover Sheet	3
2	2	Table of Contents	5
3	2	List of Tables	18
4	2	List of Figures	28
5	2	List of Exhibits	30
6	2	Acronyms and Abbreviations	35
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9	3	1.2 Purpose and Need	44
10	4	1.2.1 Department of Energy	44
11	4	1.2.2 Alaska Gasline Development Corporation a...	45
12	3	1.3 Purpose and Scope of this Final SEIS	45
13	3	1.4 Public Involvement	46
14	4	1.4.1 Summary of 2020 EIS Public Involvement A...	46
15	4	1.4.2 SEIS Scoping	47
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18	4	1.4.5 Alaska Native Government-to-Government C...	48
19	3	1.5 Traditional Knowledge	48

Table of Content

Name

Date

Agency

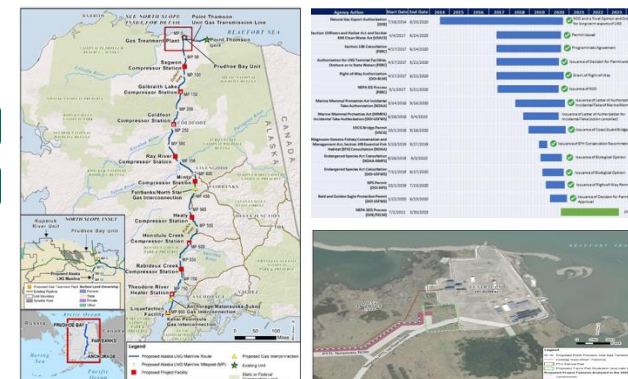
Location

Title

Named Entities

"Page-3": {
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 \nTitle: Final Supplemental Environmental Impact Statement for the Alaska LNG Project \n(DOE/EIS-0512-S1)
 \nLocation: North Slope, Alaska \nContact: \nFor further information about this Supplemental \nEnvironmental Impact Statement, contact: \nFor general information on the DOE process for \nImplementing the National Environmental Policy Act, \n(NEPA) contact: \nMark Lusk, NEPA Compliance Officer \nU.S. Department of Energy \nNational Energy Technology Laboratory \n3618 Collins Ferry Road \nMorgantown, WV 26505 \n(304) 285-4145 or Mark.Lusk@NETL.DOE.GOV \nBrian Costner, Director \nOffice of NEPA Policy and Compliance (GC-54) \nU.S. Department of Energy \n1000 Independence Avenue, SW \nWashington, DC 20585-0183 \n(202) 586-4800 or Brian.Costner@hq.doe.gov \n\nAbstract: \nThe U.S. Department of Energy (DOE) prepared this Final Supplemental Environmental Impact Statement (SEIS) to evaluate the potential environmental impacts associated with natural gas production on the North Slope of Alaska (North Slope) and life cycle greenhouse gas emissions associated with authorizing Alaska LNG Project LLC (Alaska LNG) to export liquefied natural gas (LNG) as part of the Alaska Gasline Development Corporation's proposed Alaska LNG Project (Project). DOE is in the process of rehearing DOE/Office of Fossil Energy Order No. 3643-A issued in August 2020 (Alaska LNG Order), which unauthorized export of LNG to non-Free Trade Agreement (FTA) countries. This Final SEIS supplements the Final Environmental Impact Statement published by the Federal Energy Regulatory Commission, as adopted by DOE (DOE/EIS-0512) on March 16, 2020, and will support DOE's 2019 decision-making process. \n\nFollowing completion of the National Environmental Policy Act (NEPA) process, DOE intends to issue an order under Section 3 (a) of the Natural Gas Act in which DOE may exercise its authority to reaffirm, \nmodify, or set aside the Alaska LNG Order. \n\nDOE prepared this Final SEIS in accordance with the National Environmental Policy Act of 1969 (42 United States Code 4321 et seq.) and in compliance with the Council on Environmental Quality \nImplementing Regulations (Title 40 Code of Federal Regulations (CFR) Parts 1500 to 1508) and DOE NEPA procedures (10 CFR 1021). This Final SEIS evaluates the potential environmental impacts \nassociated with natural gas production in the North Slope and includes a life cycle analysis calculating the \ngreenhouse gas emissions for LNG exported from the proposed Alaska LNG Project. \n\nComment Period: \nOn June 29, 2022, DOE published a Notice of Availability in the Federal Register announcing the \navailability of the Draft SEIS, presenting the date, time, and access information for a virtual public \nmeeting and initiating a 45-day public comment period that ran from July 1, 2022 until August 15, \n2022 (Federal Register Volume 87, Number 124). DOE also placed notification advertisements in \nnewspapers, sent notification letters, placed hard copies of the Draft SEIS at libraries, and placed an \nelectronic version of the document on DOE's 2019 website. \n\n",
}

Text



Images

Standardized Schema

- Project Title
- Project GIS
- Project Sector/Type
- Agency

- Process Name

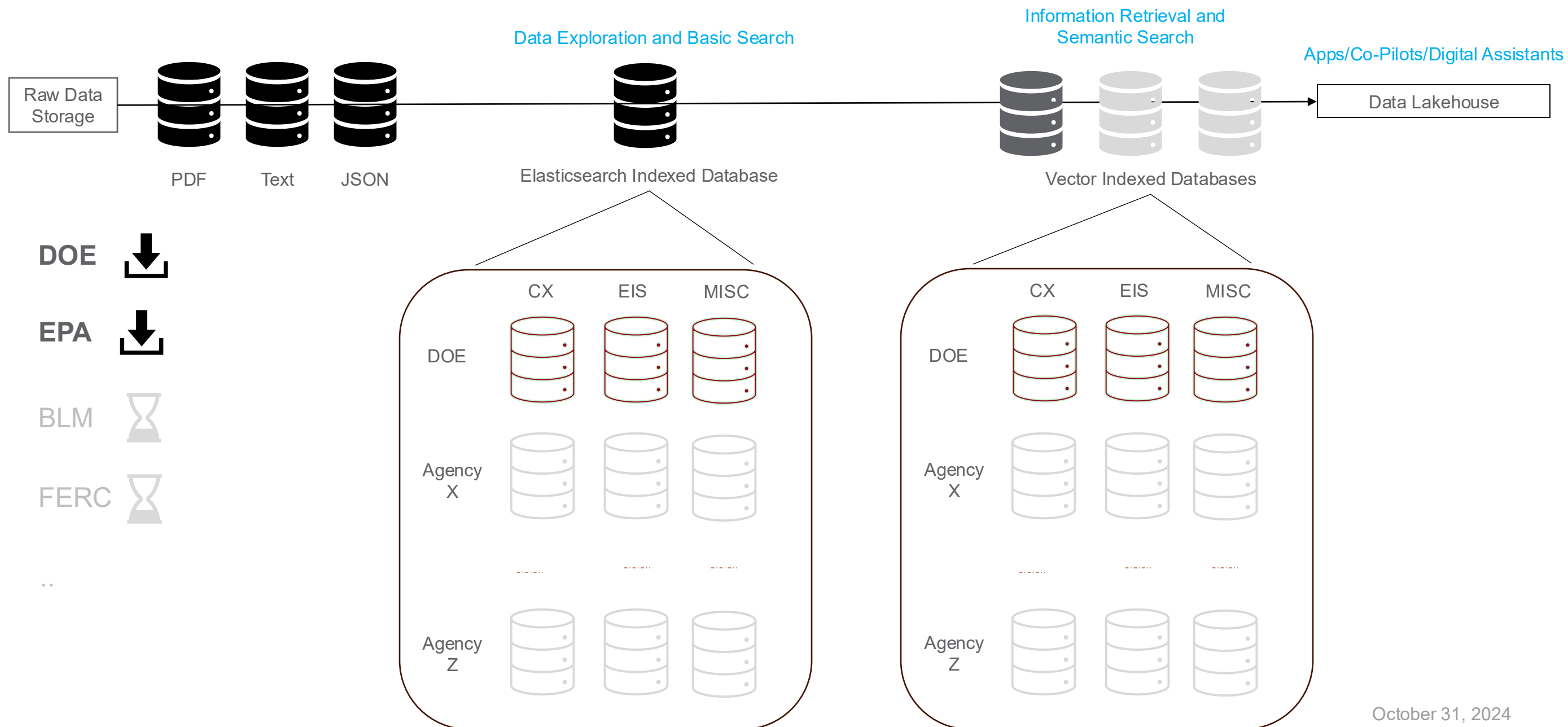
- Document Title
- Version
- Affected Environment
- Dates
- Location
- Section Headings
- Authors
- Table of Content

Metadata

- Number of Pages: 454
- Agency: DOE
- Document Version: Final
- Project Process: EIS
- Location: Alaska



AI-Ready Vector Databases and Database Structure



AI Model Prototyping and Benchmark Development

Fine-tune LLMs
with NEPA
knowledge and
evaluate (e.g.,
NEPAQuAD
benchmark)

Is Platform Habitat expected to be decommissioned within the next 20 years?

Model A

Yes

Yes

Model B

If the Programmatic Environmental Impact Statement (PEIS) is intended to aid understanding and inform decision-making on environmental impacts associated with decommissioning, what might one infer about the importance of the PEIS in the decommissioning process?

Which model response do you prefer?

Model A

One can infer that the PEIS (Programmatic Environmental Impact Statement) plays a crucial role in the decommissioning process of offshore oil platforms in the Pacific OCS (Outer Continental Shelf). It serves as a comprehensive document that outlines the purpose and need for the proposed action, describes the proposed action and reasonable alternatives, and evaluates potential environmental impacts ...

Model B

From the context provided, one can infer that the Programmatic Environmental Impact Statement (PEIS) is of significant importance in the decommissioning process for several reasons: 1. ****Regulatory Compliance****: The PEIS is prepared in accordance with CEQ regulations and DOI regulations implementing NEPA. This indicates that the PEIS is a critical component of the legal framework governing the decommissioning process ...

NEPA-GPT-Instruct: An AI Model With Specialized Domain Knowledge



“LLM Whose Whole World is NEPA”

Is Platform Habitat expected to be decommissioned within the next 20 years?

Model A

Yes

If the Programmatic Environmental Impact Statement (PEIS) is intended to aid understanding and inform decision-making on environmental impacts associated with decommissioning, what might one infer about the importance of the PEIS in the decommissioning process?

Model A

One can infer that the PEIS (Programmatic Environmental Impact Statement) plays a crucial role in the decommissioning process of offshore oil platforms in the Pacific OCS (Outer Continental Shelf). It serves as a comprehensive document that outlines the purpose and need for the proposed action, describes the proposed action and reasonable alternatives, and evaluates potential environmental impacts ...

Which Model? NEPAQuAD For Measuring AI Model Accuracy



Chat (Access to varying levels of NEPA context from none to high)



Humans-in-the-Loop
(NEPA Expert)

Answer

No

Answer

The PEIS is likely considered important in the decommissioning process as it helps to identify and evaluate potential environmental impacts and socioeconomic considerations which are essential for informed decision-making.

Model A

Yes

Yes

Model B

None

Model A

One can infer that the PEIS (Programmatic Environmental Impact Statement) plays a crucial role in the decommissioning process of offshore oil platforms in the Pacific OCS (Outer Continental Shelf). It serves as a comprehensive document that outlines the purpose and need for the proposed action, describes the proposed action and reasonable alternatives, and evaluates potential

If the Programmatic Environmental Impact Statement (PEIS) is intended to aid understanding and inform decision-making on environmental impacts associated with decommissioning, what might one infer about the importance of the PEIS in the decommissioning process?

From the context provided, one can infer that the Programmatic Environmental Impact Statement (PEIS) is of significant importance in the decommissioning process for several reasons: 1. ****Regulatory Compliance****: The PEIS is prepared in accordance with CEQ regulations and DOI regulations implementing NEPA. This indicates that the PEIS is a critical component of the legal

Model B

Model B

Which model response do you prefer?

User Discovery and Rapid Application Development

→ Document Search
(SearchNEPA)

→ Comment Analysis

→ Drafting Assistant

→ *and more to come*

Document Results

NUREG-2157 Volumes 1 and 2 Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel > 52 pages

Generic - Continued Storage of Spent Nuclear Fuel NUREG-2157



Nuclear Regulatory Commission



EIS



other



Not Supplemental



Map It

NUREG-1437 Volume 1 rev 2 draft for publication > 29 pages



SearchNEPA.ai



nuclear x

CRN Site Advanced Nuclear Reactor Technology Park Final PEIS with Appendices 07 > 29 pages

Clinch River Nuclear Site Advanced Nuclear Reactor Technology Park



Tennessee



Tennessee Valley Authority



EIS



other



Not Supplemental



Map It

NUREG-2179, Volume 2, Final > 27 pages

Combined License (COL) for the Bell Bend Nuclear Power Plant



Pennsylvania



Nuclear Regulatory Commission



EIS



final



Not Supplemental



Map It

NUREG-2111 Volume 1 > 26 pages

William States Lee III Nuclear Station Units 1 and 2 Combined Licenses (COLs) Application



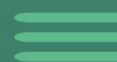
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decommissioning



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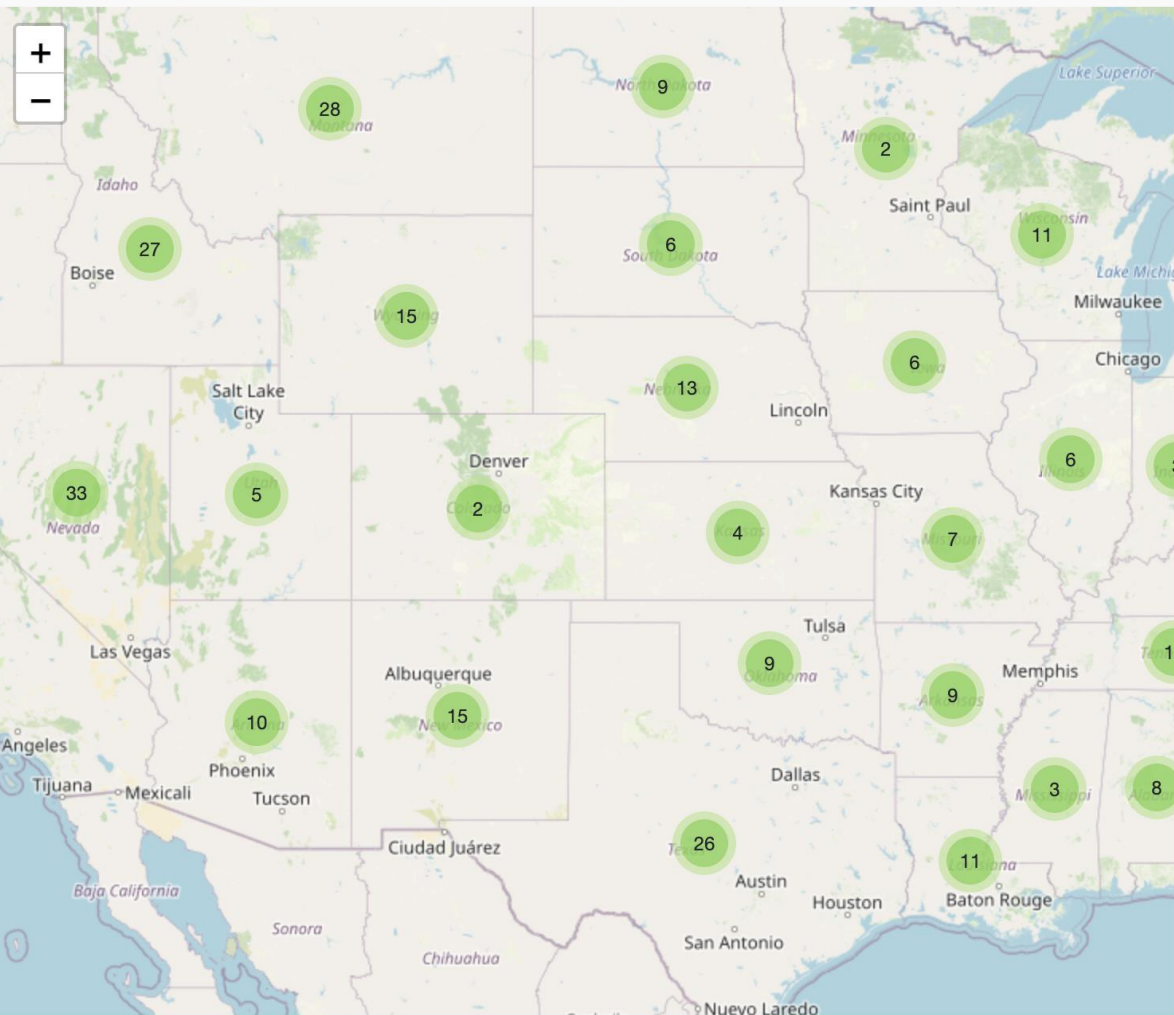
National Environmental
Policy Act

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California

California

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documents

Environmental
Protection Agency



NUREG-2209 NWMI DEIS > 11 pages

Construction Permit for the Northwest Medical Isotopes Radioisotope Production Facility

Missouri, Wisconsin

Nuclear Regulatory Commission

EIS

draft

Not Supplemental

Map It

Northwest Medical Isotopes Final EIS for Construction Pernit application NUREG-2209 > 10 pages

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Empire Wind PDEIS Vol2 > 10 pages

Empire Offshore Wind

New York

Bureau of Ocean Energy Management

EIS

draft

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Map It

NUREG-2239 Draft Report for Comment > 10 pages

Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas

Texas

Nuclear Regulatory Commission

EIS

comment

Not Supplemental

Map It

210112 - Southern Bighorn Solar Projects DEIS - Volume 2 - reduced size DGS > 9 pages

Southern Bighorn Solar Projects

319 Documents

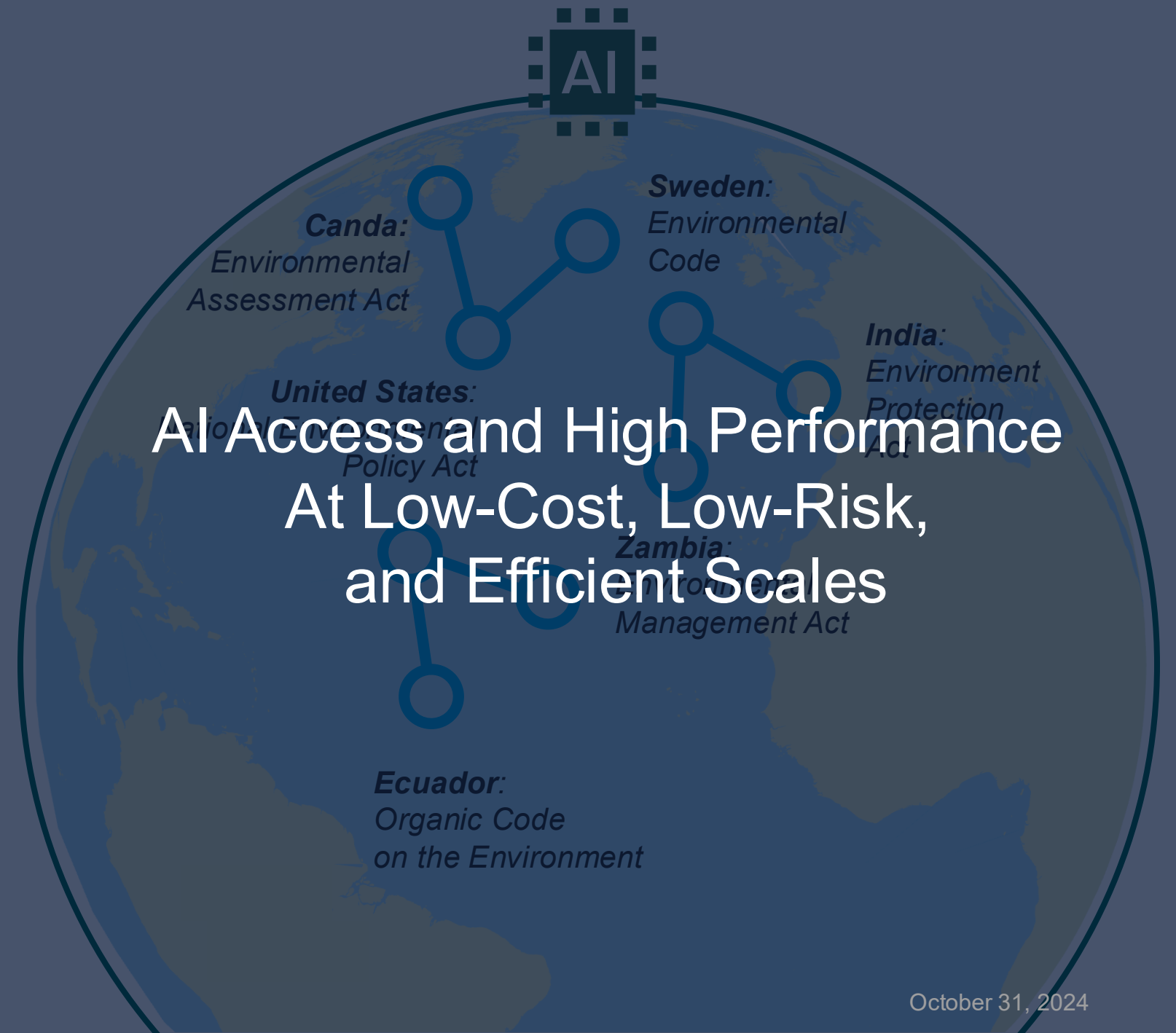
AGENCIES

- Bureau of Indian Affairs - 24
- Bureau of Land Management - 64
- Bureau of Ocean Energy Management - 28
- Bureau of Reclamation - 4
- Denali Commission - 3
- Department of Agriculture - 2
- Department of Defense - 2
- Department of Energy - 21
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- Arkansas - 9
- California - 60
- Colorado - 2

Future Directions



PolicyAI Timeline and Next Steps

Ongoing Improvements

- Continued collection and processing of existing NEPA documents
- Continued coordination with CEQ on a standardized data ontology for NEPA documents
- Fine-tune generative AI chat and summarization capabilities

Planned Future Enhancements

- Use AI to generate geospatial information from past projects for more detailed locational searches
- Develop analytics platform for multi-document statistical and trend analysis
- Develop public comment feature enabling precise comment placement within document, and rapid intake and summarization with AI

Timeline

Current status: Research and development, pilot and v1 applications, interagency agreements and feedback

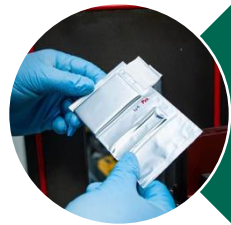
1–2 years

AI-enabled pilots improving permitting workflows

5 years

Operationalized AI models streamlining permitting

Recommendations



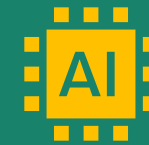
REC 1: **Supporting** AI Access for Streamlining Reviews at Energy Efficient Scales



REC 2: **Standardizing** High Performance With More Democratized AI Models



REC 3: **Forums** on Global Reach in AI for Streamlining Environmental Permitting Reviews for Nuclear Safety



A Big Tech company have costs that could run

~4,000
times more every month than PolicyAI



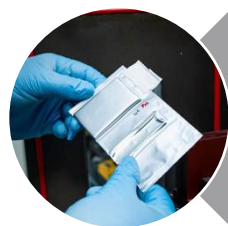
High Compute Cost Big Tech

Energy Secretary Jennifer Granholm to Big Tech: **“BYOP”** or **“bring your own power”** to the buildout of data centers.

Low Compute Cost PolicyAI

Capabilities are in-house but **services are made to add new value to users** like federal agents and the public.

Recommendations



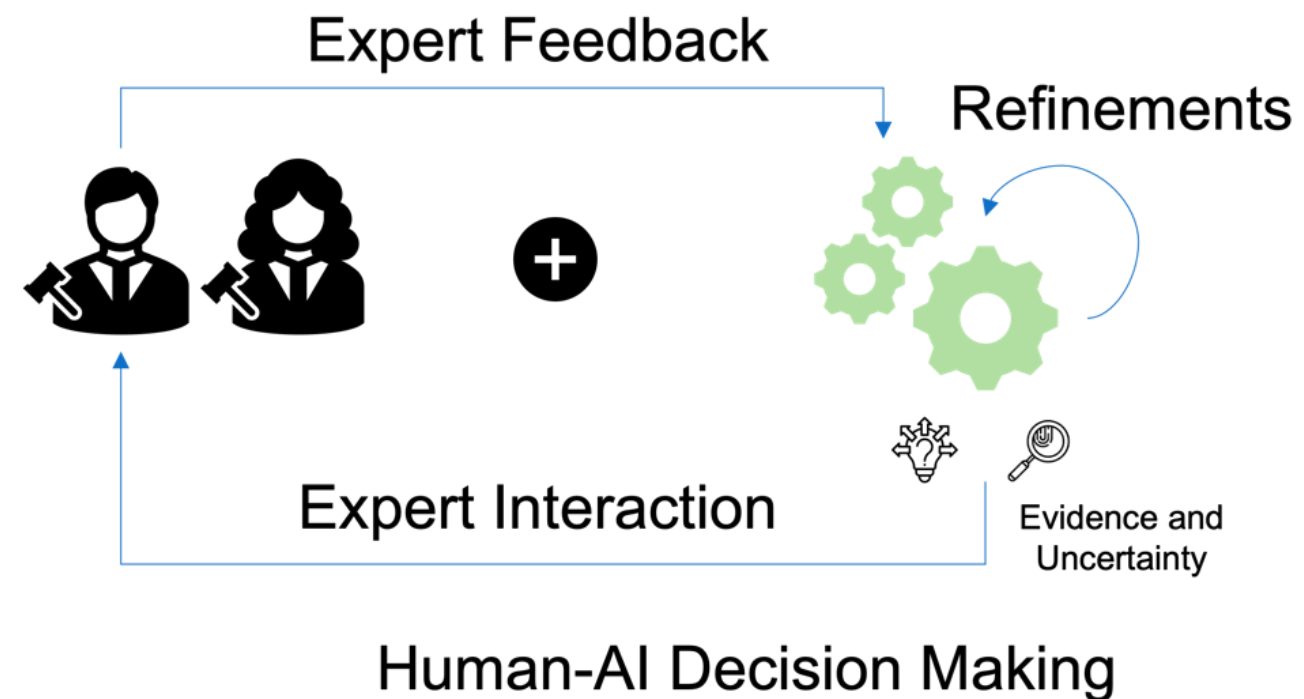
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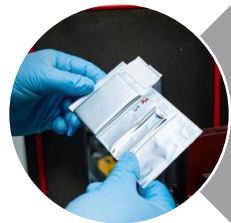
REC 2: **Standardizing** High Performance With More Democratized AI Models



REC 3: **Forums** on Global Reach in AI for Streamlining Environmental Permitting Reviews for Nuclear Safety



Recommendations



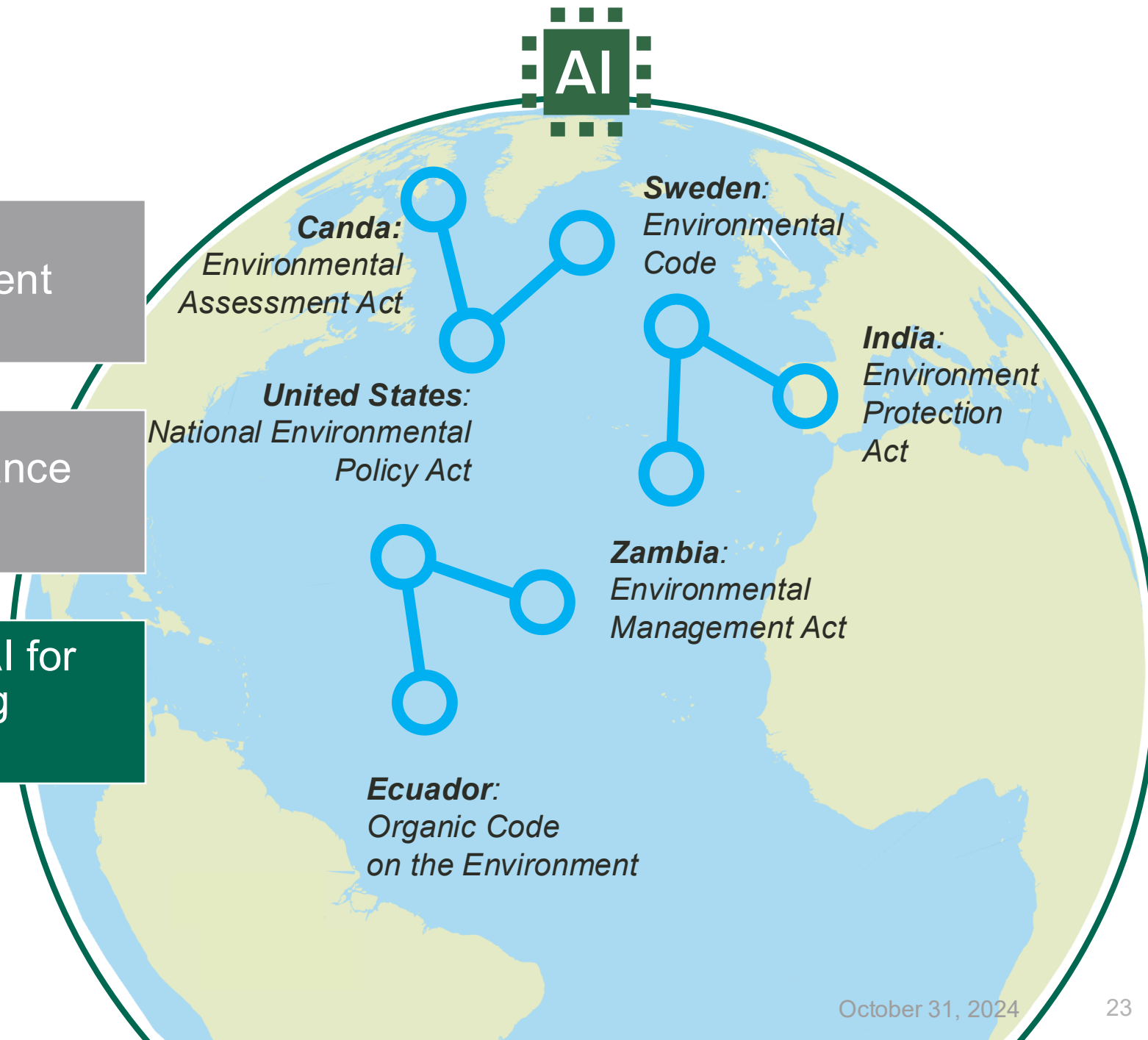
REC 1: **Supporting** AI Access for Streamlining Reviews at Energy Efficient Scales



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REC 3: **Forums** on Global Reach in AI for Streamlining Environmental Permitting Reviews for Nuclear Safety

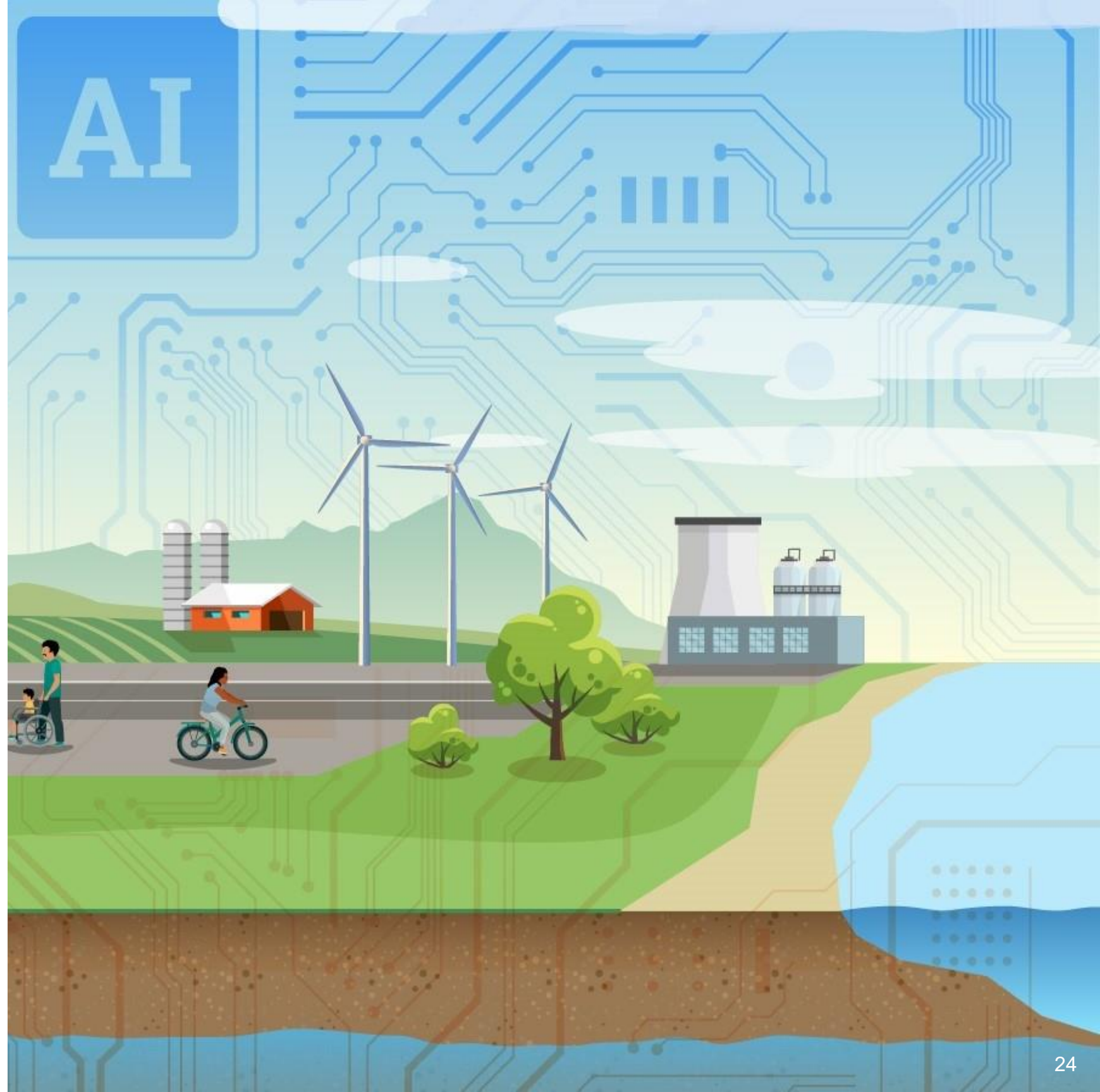


Thank you

To learn more about our PolicyAI team, resources, and publications, visit pnnl.gov/projects/policyai or email us at policyai@pnnl.gov

Anastasia Bernat

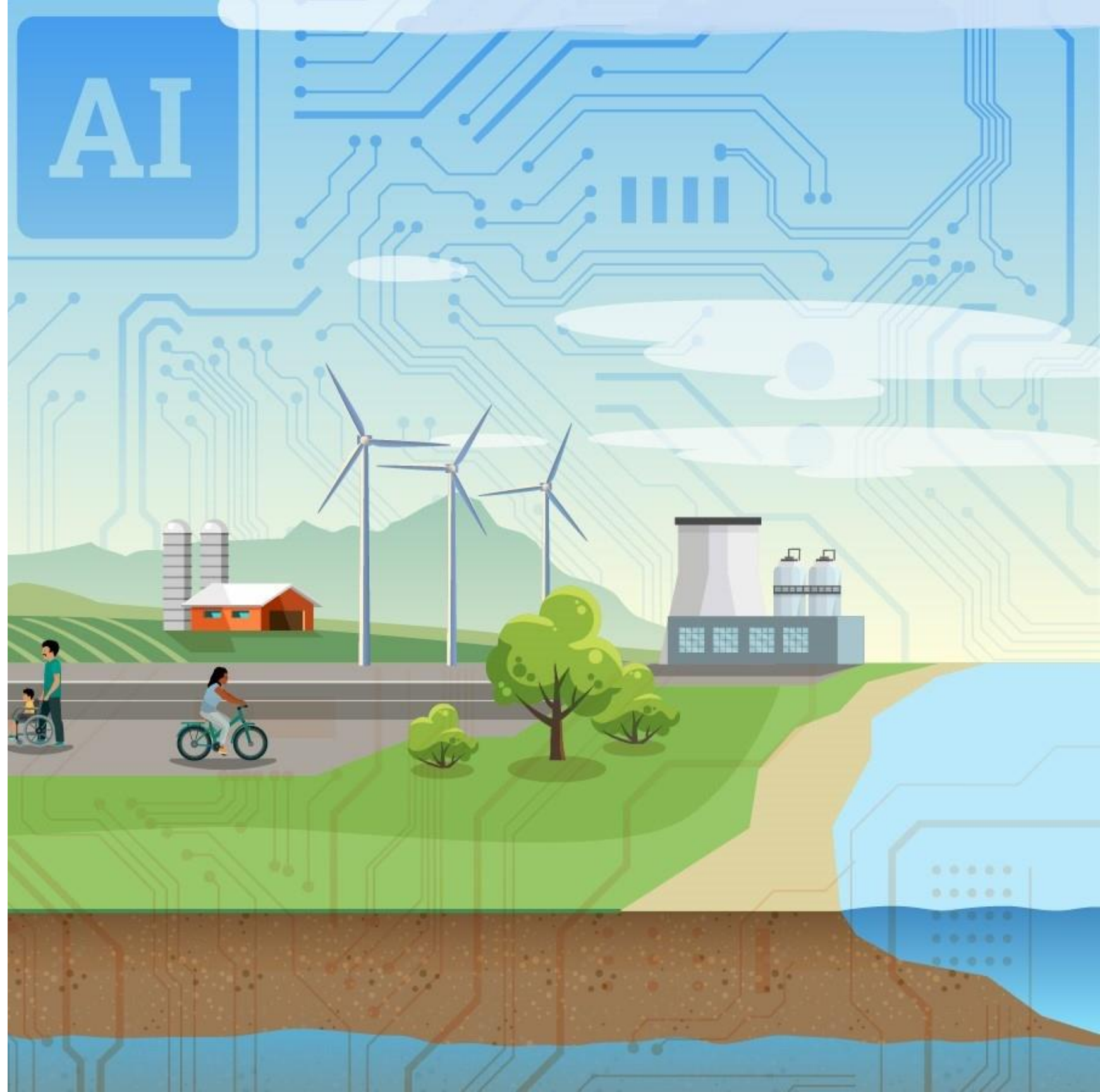
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October 31, 2024

Anastasia Bernat



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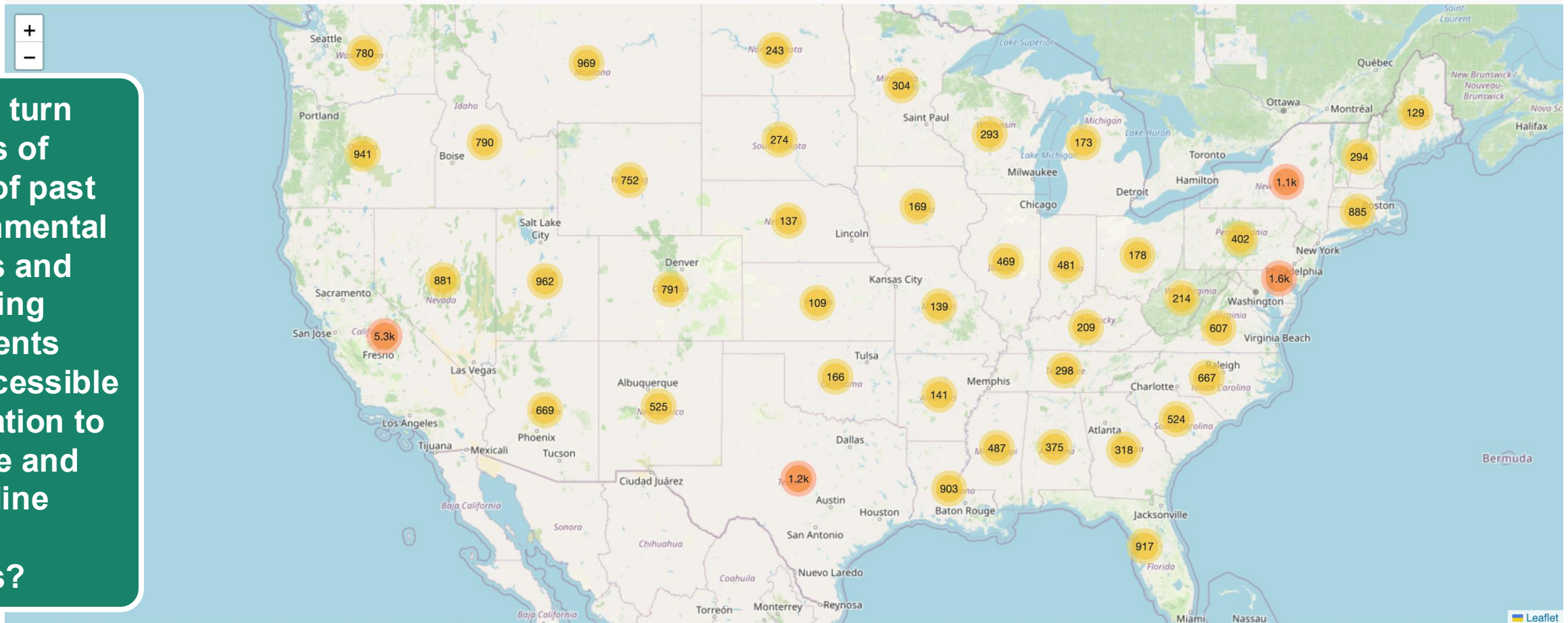
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California

List all EPA documents

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Can we turn millions of pages of past environmental reviews and permitting documents into accessible information to improve and streamline current reviews?





radioactive waste x

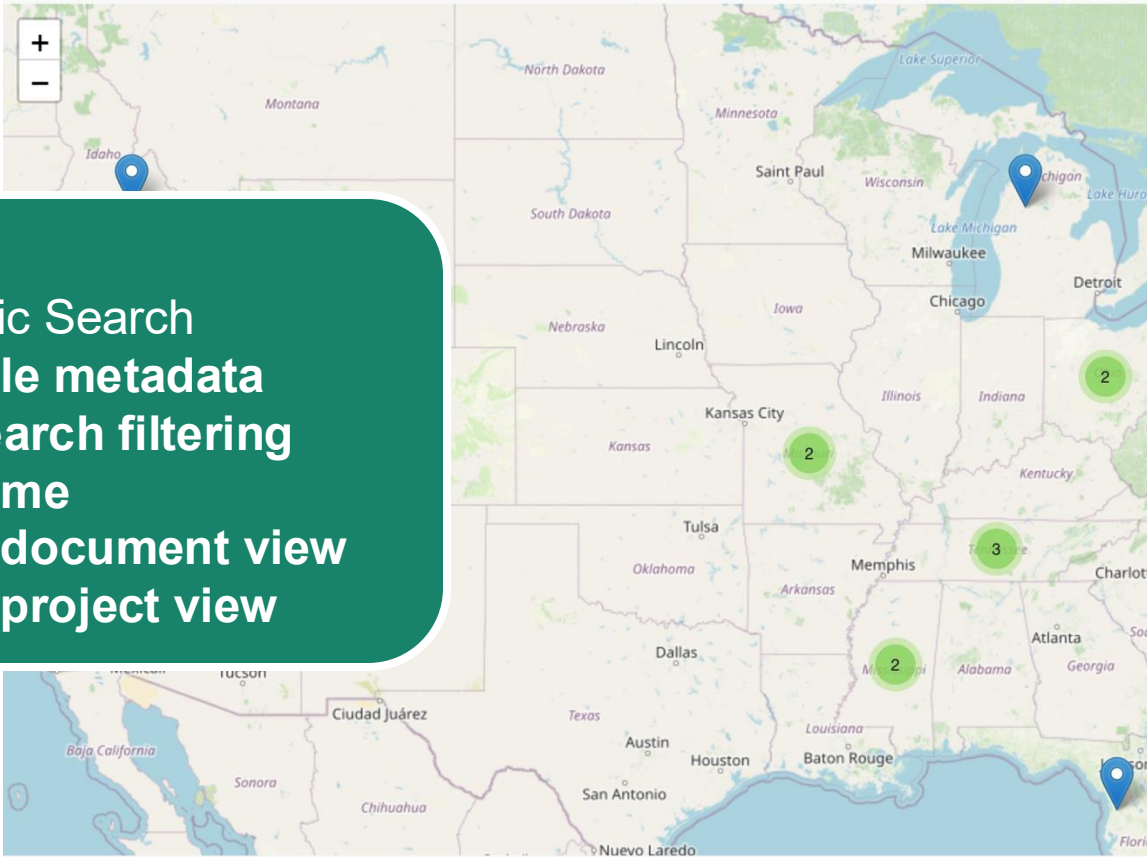
high-level waste disposal x

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Document Results

EIS-0542 Volume 3 Comment Response Document > 3 pages
 Draft Versatile Test Reactor Environment Impact Statement
 South Carolina, Tennessee, Idaho Department of Energy Map It

Generic Environmental Impact Statement for License Renewal of Nuclear Plants Vol 2 > 2 pages
 GENERIC - License Renewal of Nuclear Plants (NUREG-1437)
 Nuclear Regulatory Commission Map It

Generic Environmental Impact Statement for License Renewal of Nuclear Plants Vol 1 > 2 pages
 GENERIC - License Renewal of Nuclear Plants (NUREG-1437)
 Nuclear Regulatory Commission Map It

Generic Environmental Impact Statement for License Renewal of Nuclear Plants Vol 3 > 2 pages
 GENERIC - License Renewal of Nuclear Plants (NUREG-1437)
 Nuclear Regulatory Commission Map It

GGNS DSEIS Supplement 50 to the GEIS > 2 pages
 Generic - License Renewal of Nuclear Plants Supplement 50 Regarding Grand Gulf Nuclear Station Unit 1
 Mississippi Nuclear Regulatory Commission Map It

20 Documents

> AGENCIES

- Nuclear Regulatory Co
- Department of Energy

> STATES

- Michigan
- Florida
- California
- Mississippi
- South Carolina
- Tennessee
- Virginia
- New Hampshire
- Maryland
- Missouri
- Pennsylvania
- Idaho
- Ohio

Features

- Semantic Search
- Clickable metadata
- Post-search filtering
- Map frame
- Link to document view
- Link to project view

Features

- Generative AI-powered search
- Same filtering options as semantic search

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SearchNEPA

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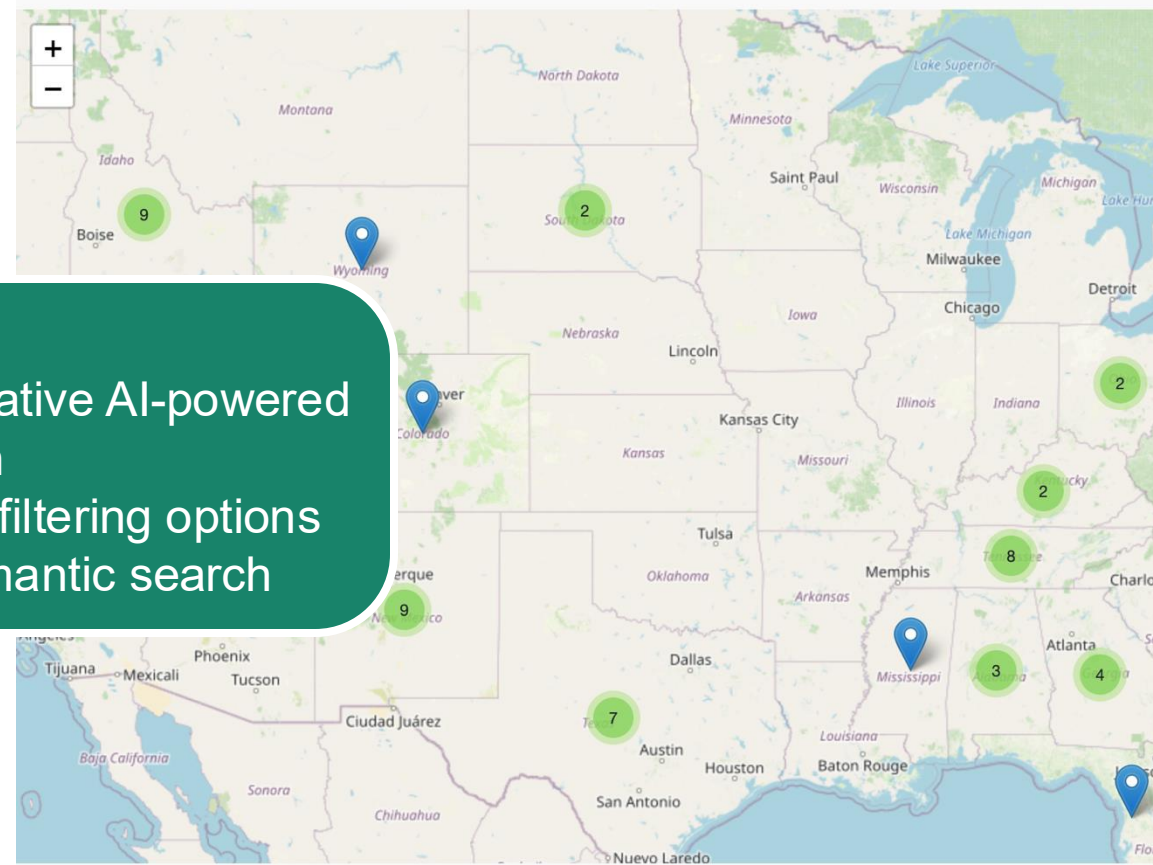
Provide information about interim storage of radioactive waste X

Help me learn about RNG projects
Renewable Natural Gas

List all NEPA documents
National Environmental Policy Act

List all documents in California
California

List all EPA documents
Environmental Protection Agency



Document Results

NUREG-2239 Draft Report for Comment

Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas

Texas Nuclear Regulatory Commission Map It

36 of 40 Final TCWM EIS Section 3 Part 2 of 5

Hanford Site Tank Closure and Waste Management Project Implementation Richland Benton County WA

Washington Department of Energy Map It

Appendix B 03 Addendum to the Geotechnical and Hazardous Materials Tech Report

ADOPTION - Westside Purple Line Extension Section 4(f) Evaluation

California U.S. Army Corps of Engineers, Department of Veteran Affairs, Federal Transit Administration Map It

EIS-0542 Volume2 FrontMatterandTableofContents

Draft Versatile Test Reactor Environment Impact Statement

South Carolina, Tennessee, Idaho Department of Energy Map It

Environmental Impact Statement for the Reno Creek In Situ Recovery Project

Reno Creek In Situ Recovery Project

Wyoming Nuclear Regulatory Commission Map It

50 Documents

AGENCIES

- Department of Veteran
- Department of Defense
- Bureau of Land Manage
- Nuclear Regulatory Co
- Federal Transit Admin
- United States Navy
- National Nuclear Secu
- U.S. Army Corps of En
- Department of Energy

STATES

- California
- District of Columbia
- Washington
- Wyoming
- Idaho
- New Mexico
- Colorado
- Georgia
- Mississippi
- South Dakota
- Texas

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More data and new metadata:

- Document Process
- Document Stage
- Supplemental

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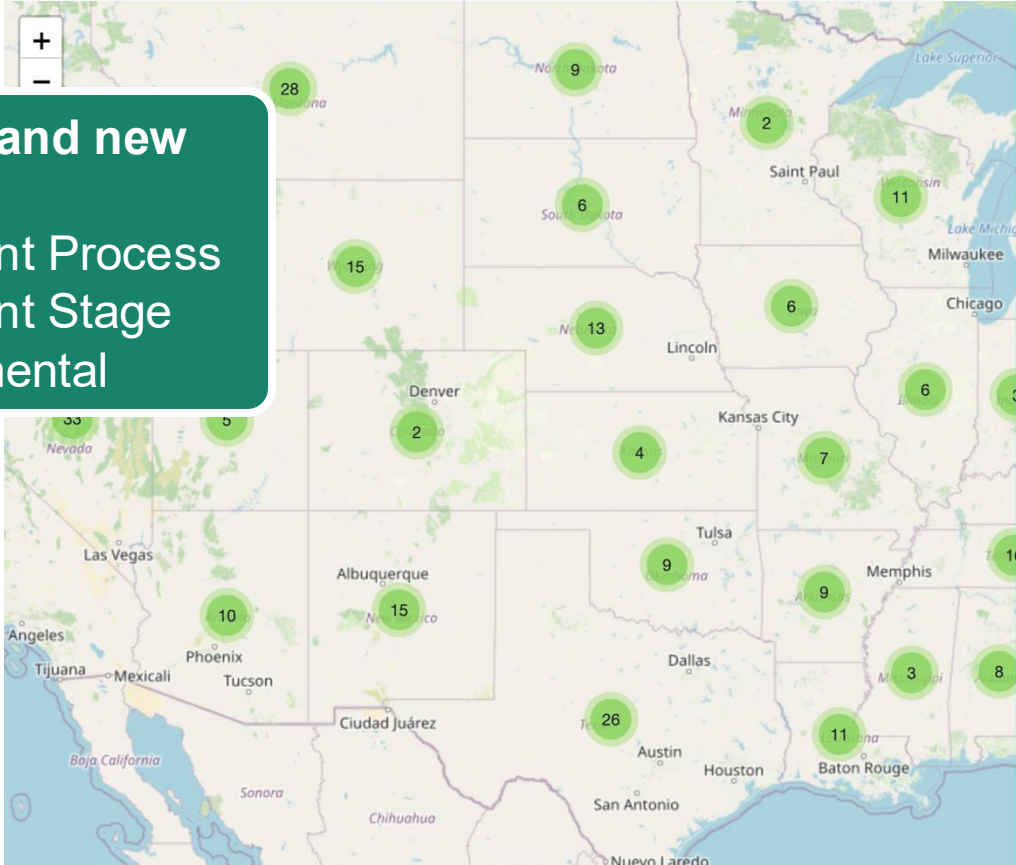
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National Environmental Policy Act

List all documents in California
California

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NUREG-2209 NWMI DEIS > 11 pages

Construction Permit for the Northwest Medical Isotopes Radioisotope Production Facility

Missouri, Wisconsin Nuclear Regulatory Commission EIS draft

Not Supplemental Map It

Northwest Medical Isotopes Final EIS for Construction Permit application > 10 pages

NUREG-2209

Construction Permit for the Northwest Medical Isotopes Radioisotope Production Facility

Missouri, Wisconsin Nuclear Regulatory Commission EIS final

Not Supplemental Map It

Empire Wind PDEIS Vol2 > 10 pages

Empire Offshore Wind

New York Bureau of Ocean Energy Management EIS draft

Not Supplemental Map It

NUREG-2239 Draft Report for Comment > 10 pages

Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas

Texas Nuclear Regulatory Commission EIS comment Not Supplemental

Map It

210112 - Southern Bighorn Solar Projects DEIS - Volume 2 - reduced size > 9 pages

DGS

Southern Bighorn Solar Projects

319 Documents

AGENCIES

- Bureau of Indian Affairs - 24
- Bureau of Land Management - 64
- Bureau of Ocean Energy Management - 28
- Bureau of Reclamation - 4
- Denali Commission - 3
- Department of Agriculture - 2
- Department of Defense - 2
- Department of Energy - 21
- Department of State - 5
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- Forest Service - 52
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- National Oceanic and Atmospheric Administration - 2
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- Rural Utilities Service - 2
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- U.S. Army Corps of Engineers - 8
- U.S. Coast Guard - 14
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- Western Area Power Administration - 2

STATES

- Alabama - 8
- Alaska - 6
- Arizona - 10
- Arkansas - 9
- California - 60
- Colorado - 2

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Greater Communication and Engagement:

- Document Counts
- Pop-up documentation on policies, warnings, and release notes
- User survey for feedback

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California

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Document Results

Tell us how we're doing on a new version of SearchNEPA.

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154 Documents

AGENCIES

- Bureau of Ocean Energy... - 12
- Department of Defense - 2
- Department of Energy - 21
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- Federal Energy Regula... - 1
- Federal Highway Admin... - 1
- National Nuclear Secu... - 12
- National Oceanic and ... - 1
- Nuclear Regulatory Co... - 90
- Tennessee Valley Auth... - 11
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- COMMENT - 12
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- FINAL - 41
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SUPPLEMENTAL

- Is Supplemental - 13
- Not Supplemental - 141

visual renderings, and completed reports and analyses necessary for reviews; ..." (SEC. 110. E-NEPA, NATIONAL ENVIRONMENTAL POLICY ACT OF 1969)

New Features

- **Data enrichments:** Users now get access to several new data sources, including DOE Categorical Exclusion (CE) Determinations, DOE Environmental Assessments (EA), Bureau of Ocean Energy Management (BOEM), and United States Department of Agriculture (USDA).
- **New multi-select filters:** Four new metadata filters were introduced for fast document retrieval. These filters are Process Type, Document Stage and Supplemental.
- **Pop-up documentation:** On the landing page and in the footer, users can access and read our about us, warning(s), disclaimer(s), notice(s), and release note(s).
- **Document counts:** Categories in each filter now show their respective document counts for more informed filtering.

Bug Fixes

- **Broken document links:** Some PDFs did not load in their respective document viewer page. We tested and systemically fixed all identified broken links. Location information is missing for some documents.

Generic Environmental Impact
of Spent Nuclear Fuel

Nuclear Fuel NUREG-2157

EIS OTHER

Technology Park Final PEIS

29 pages

Nuclear Reactor Technology Park

Authority EIS OTHER

or publication

29 pages

Statement for License Renewal of Nuclear Plants
on 2

EIS DRAFT

NUREG-2179, Volume 2, Final

27 pages

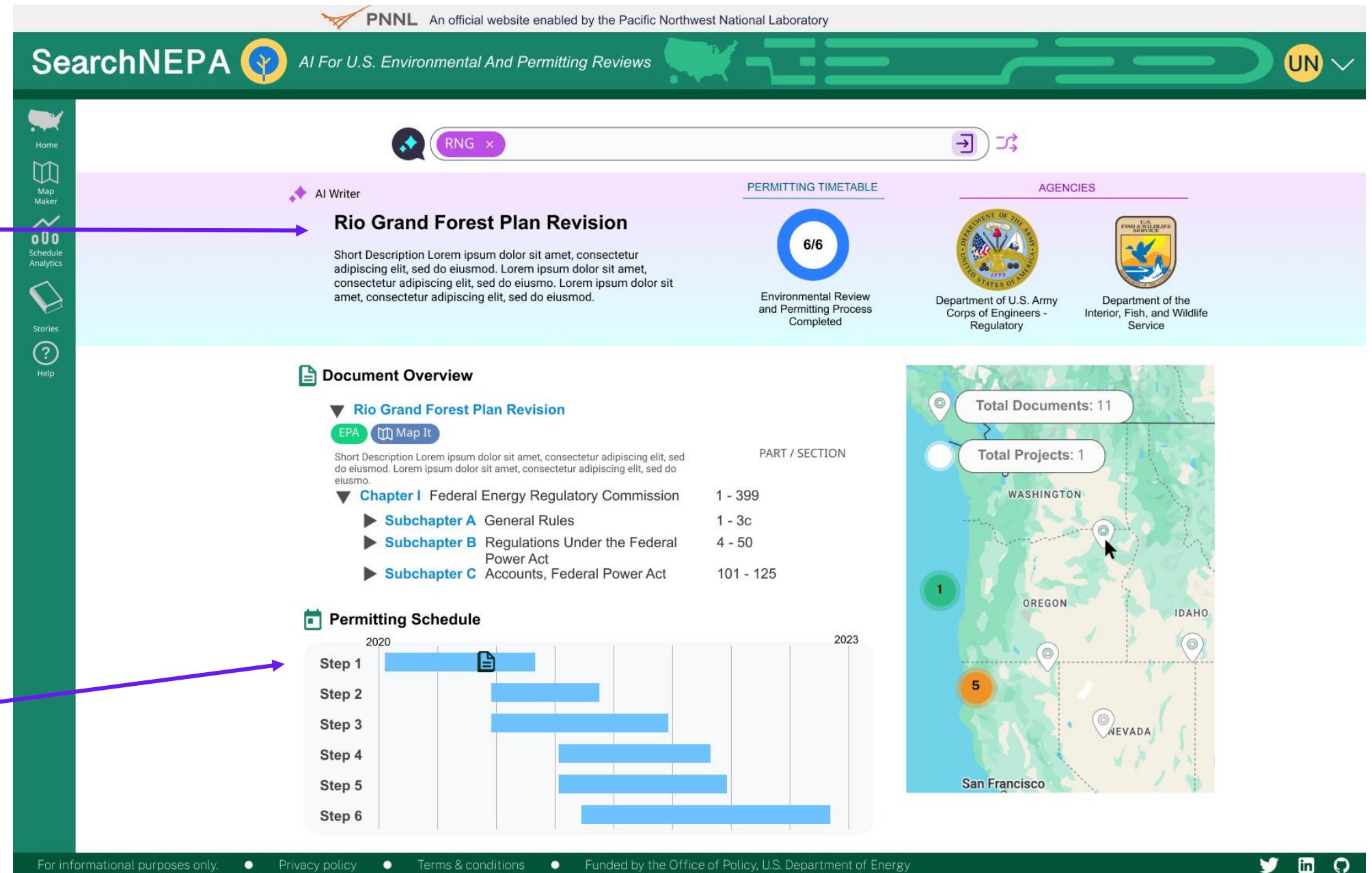
Combined License (COL) for the Bell Bend Nuclear Power Plant

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SearchNEPA – Planned Updates

Project View page
with GenAI summary

A permitting schedule
showing permits and
progress associated
with the project



GenAI integration for "chatting" with the document

SearchNEPA

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UN

Aiaya Solar Project

Summary Documents Comments Map Permitting Schedule

EIS Volume 1 Chapter 1-8

Comments 1/12

EXECUTIVE SUMMARY

The following sections summarize the Draft Environmental Impact Statement (DEIS) for the Aiaya Solar Project. This information is provided as an overview for the public, but is not a substitute for review of the complete DEIS.

This executive summary provides a general overview of the Proposed Project and its purpose and need. It also briefly describes the Proposed Actions by the Bureau of Indian Affairs (BIA) as the lead agency and the U.S. Bureau of Land Management (BLM) as a cooperating agency who will both use this EIS to make their respective decisions. The Moapa Band of Paiutes (Tribe), U.S. Environmental Protection Agency (EPA), and the US Fish and Wildlife Service (USFWS) are also cooperating agencies on this EIS. The USFWS will use this information to render their decision under Section 7 of the Endangered Species Act (ESA). This executive summary also outlines the Proposed Project and alternatives considered in this EIS as well as the environmental impacts that would occur if they were implemented.

Aiaya Solar Project, LLC (Aiaya Solar or Applicant) has entered into an agreement with the Tribe to lease land, for up to 30 years, on the Moapa River Indian Reservation (Reservation) for the purposes of constructing, operating, and maintaining the Aiaya Solar Project and associated infrastructure. The Proposed Project would generate electricity using photovoltaic (PV) technology and would generate up to 100 megawatts (MW).

The Tribe is federally recognized and has a Constitution approved by the Secretary of the Interior on April 17, 1942. The tribal lands originally set aside in 1874 consisted of two million acres, but in 1876 it was reduced to a thousand acres. In December 1980, Congress added approximately 70,000 acres to the Tribal land base. The stated purpose of the restoration of these Tribal lands was to provide economic development opportunities. The current

UN

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Short Description Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod.

What is a summary of the project?

The Aiaya Solar Project is a significant solar power initiative aimed at boosting renewable energy production. Here's a summary of its key points:

1. Location and Scale: The project is based in a specific region, often aiming to utilize a large area of land to install solar panels. It is designed to generate a substantial amount of electricity, contributing significantly to the local or national grid.

2. Objectives: The primary goals are to increase the share of renewable energy, reduce dependence on fossil fuels, and lower greenhouse gas emissions. This aligns with broader sustainability and environmental goals.

3. Technology: The project typically involves the use of advanced solar photovoltaic (PV) technology to convert sunlight into electricity. It may also incorporate innovations like solar trackers or energy storage systems to enhance efficiency.

4. Economic and Environmental Impact: The Aiaya Solar Project is expected to create jobs, stimulate local economies, and provide a cleaner energy source. The reduction in carbon emissions and other pollutants is a significant benefit, contributing to climate change mitigation efforts.

5. Timeline and Development: The project might be implemented in phases, with planning, construction, and operational stages spanning several years. Key milestones include securing permits, completing construction, and commencing energy generation.

Can summarize all comments?

Draft EIS Volume 1

Draft EIS Volume 2 Append.

EIS Volume 1 Chapter 1-8

EIS Volume 2 Append. A-L

EIS Volume 2 Append. M-P

Expand

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Comment Analysis



This correspondence document contains quotes that will be used to populate a NEPA scoping summary report. That report will be organized by resources areas (e.g., Environmental Justice, NEPA Policy, Air Quality). With that in mind, I need this correspondence to be broken into discrete delineated quotes by NEPA-relevant resource areas. All narrative content should be delineated, and if a quote does not fit any category, list that quote at the beginning under the heading "Not Applicable". The content should be formatted as a table where column 1 would have a relevant category, column 2 the name of the commenter (if known), and column 3 would contain the quote from the correspondence that fits in that section. The table should be sorted in the order comments appear in the correspondence. The scoping summary report we're writing includes the following sections, separated by semicolons: Postulated Accidents; Alternative – No-Action; Alternatives - Replacement Power; Environmental Justice; Geologic Environment; Greenhouse Gas Emissions and Climate Change; Historic and Cultural Resources; Human Health - Microbiological Hazard; Human Health - Radiological; Hydrology; Meteorology and Air Quality; Socioeconomics; Uranium Fuel Cycle; Waste Management - Radioactive Waste; General Comment: comments general in nature that do not convey significant information for environmental review; NRC Review Process NEPA, 10 CFR 51, and 10 CFR 54; Emergency Preparedness; Peripheral or Outside of Scope Miscellaneous; Aging Management; Safety; Security and Terrorism; Energy Costs; Need for Nuclear Power.



Here is the correspondence reformatted into a table with columns for category, commenter name, and quote, sorted by the order the quotes appear in the document, and categorized under relevant NEPA resource areas:

Category	Commenter Name	Quote
Waste Management - Radioactive Waste	[REDACTED]	Further, these containers, designed only for temporary storage, had been used for storage for up to 14 years. Though this incident appeared in the Environmental Assessment, WEC's failure to disclose the site and existing contamination showed lack of attention to proper site management and disclosure.
Waste Management - Radioactive Waste	[REDACTED]	Intermodal containers. The damaged and leaking trailers and their contents are currently being remediated under the Southern Storage Area Operable Unit Intermodal Container Work Plan, details of which appear in the Final Interim Remedial Investigation Summary Report developed as part of Westinghouse's February 2019 Consent Agreement with SCDHEC. Under the negotiated work plan, Westinghouse has been required to test soil underneath the containers for radionuclides, empty the containers of their barrels, properly dispose of the barrels and their contents, and ship the containers off-site (some as low-level radioactive waste). Contaminated soil beneath the containers was removed and subsequent tests found no further evidence of contamination.
NRC Review Process NEPA	[REDACTED]	Unfortunately, the Communications Protocol prepared as part of the Consent Agreement leaves too many reporting decisions to WEC's discretion. Given WEC's history, we are not confident that future incidents will be disclosed in a timely manner. We request that the Communications Protocol be revisited as part of the Environmental Impact Statement.

Prompt

Result

- Experimentation with copilot applications to bracket, categorize, and summarize comments by subject matter
- Developing experimental design to test AI performance through retrospective comparison to human-prepared comment analyses
- Risk-informed human decision making, validation of results, information security, and transparency remain paramount

Thank you

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