Deep Isolation: The Geologic Disposal Partner for Nuclear Lifecycle Innovation Campuses

The U.S. Department of Energy's Request for Information (RFI) on **Nuclear Lifecycle Innovation Campuses** invites states to consider hosting integrated nuclear ecosystems that explicitly include long-term management and disposal of high-level radioactive waste (HLW) and used nuclear fuel (UNF). For many states, geologic disposal represents the most technically credible but also the most socially and politically sensitive element of any potential response.

This information sheet introduces Deep Isolation, our technology, and our approach.

It explains how we are uniquely able to help states respond to the waste disposition aspects of the RFI in a way that is **technically robust, financially responsible, and socially acceptable**.

Introducing Deep Isolation

Deep Isolation is a U.S.-based nuclear waste disposal technology company focused on the **safe, permanent isolation of radioactive waste in deep geologic formations**. We were founded to address a long-standing gap in the nuclear fuel cycle: the lack of deployable, scalable, and publicly credible disposal solutions for HLW, UNF, and secondary waste streams.

Our team combines expertise from the nuclear, oil and gas, drilling, geoscience, and regulatory communities, and we work closely with licensed nuclear contractors, national laboratories, and regulators. Deep Isolation's mission is to enable nuclear energy growth while reducing long-term risk, cost, and societal burden associated with radioactive waste.

Our Technology

Deep Isolation's technology combines two unique, patented platforms to provide an **integrated, future-proof approach to geologic disposal**:

- **The Universal Canister System (UCS)** is a standardized, robust waste package designed to accommodate a wide range of waste forms over time, including used nuclear fuel from the legacy fleet, waste streams from advanced reactors, and high-level radioactive waste from reprocessing or recycling. By decoupling waste packaging from any single disposal pathway, the UCS allows waste to be safely managed, transported, stored, and ultimately disposed of without requiring costly repackaging as technologies or policies change.
- **Deep Borehole Disposal (DBD)** uses proven directional drilling techniques to place UCS packages in deep, stable, isolated rock formations far below groundwater resources. Horizontal or inclined boreholes allow waste to be emplaced laterally within suitable formations, minimizing surface footprint, increasing passive safety through deeper disposal, and avoiding the need for large, mined facilities designed to dispose of the entire nation's waste.

Why Deep Isolation Is Relevant to the NLIC RFI

DOE's RFI makes clear that long-term waste management is not optional. States are asked to describe how they would address HLW and other waste streams, including **deep geologic disposal** and explicitly referencing **deep boreholes**. Beyond RFI compliance, this focus on disposal reflects a broader social reality: public confidence in new nuclear deployment depends on credible, permanent solutions for radioactive waste.

Deep Isolation is uniquely positioned to support states responding to that social imperative and to the requirements of the RFI, for three key reasons:

1. Societal consent and state choice

- Our technology matches exactly with citizen wishes: public-opinion research by GfK reports that:
  - **Four out of five Americans** want radioactive waste to be permanently disposed of deep underground rather than stored at the surface.
  - **Four out of five Americans** also prefer disposal to occur at or near the waste's origin rather than transporting it across multiple communities.

- Borehole disposal is the only geologic disposal approach that allows a state or community to dispose solely of its own waste, without defaulting into a regional or national repository role.

2. Product–problem fit: the world's only flexible, future-proof disposal solution

- We provide a deployable geologic disposal solution aligned with the RFI's explicit reference to deep borehole disposal, enabling early demonstration followed by phased expansion.
- UCS and borehole disposal combine to provide a modular, scalable, and future-proof system that can accommodate legacy UNF, residual HLW from recycling, and advanced reactor waste streams.
- Our patented disposal system is uniquely designed for co-location with existing and proposed nuclear facilities, enabling waste disposition to be physically and institutionally integrated into an Innovation Campus rather than treated as a remote, downstream obligation.

3. World-class partnerships and industry consensus

- The underlying drilling, emplacement, and canister technologies integrate mature practices from the nuclear and energy sectors, enabling near-term deployability; our supply chain of leading U.S. companies like Amentum, Bechtel, NAC International, and Halliburton is ready to deploy and scale.
- Leading U.S. companies from both the reactor developer and recycling sectors are partnering with Deep Isolation to validate compatibility with their waste streams, with publicly announced collaborations including OKLO, Kairos Power, SHINE Technologies, and Curio Legacy Ventures.
- Our approach aligns with — and helps operationalize — industry consensus reflected in initiatives such as the U.S. Nuclear Industry Council's Back End Action Plan, which calls for near-term demonstrations, public–private partnership models, and innovative disposal technologies.

A Phased, Credible and Low-risk Path to Implementation

Deep Isolation supports a **stepwise approach** that enables states to demonstrate leadership on disposal while retaining flexibility, community consent, and fiscal discipline. We offer states:

- **Early integration and planning:** Desktop studies to integrate co-located geologic disposal into an Innovation Campus concept without upfront site.
- **Targeted site characterization** – Site characterization boreholes to generate data, evidence the safety case, support regulator engagement, and inform communities.
- **Demonstration and learning** – A limited-scale demonstration focused on confidence building, monitoring, and regulatory learning.
- **Phased expansion** – Incremental deployment of additional boreholes as waste volumes grow and campus activities scale.

Across these phases, Deep Isolation works with states to **deliver near-term benefits within existing legal and regulatory frameworks**, while also helping specify where **targeted DOE or Congressional action** could further accelerate deployment or unlock private capital. We align this roadmap with **industry consensus** (including US NIC, ANS, and NEI) and collaborate with licensed nuclear contractors to ensure regulatory credibility and execution readiness.

Conclusion

Nuclear Lifecycle Innovation Campuses offer states a chance to lead in nuclear energy, technology, and stewardship — and credible geologic disposal is essential to that leadership. Deep Isolation provides the only practical, scalable, and socially grounded pathway for disposal — and, for states prepared to move first, we are open to **co-investing in first-of-a-kind deployments** to accelerate progress while sharing risk. States wishing to discuss how we can support their vision for nuclear innovation may contact me at: rod@deepisolation.com.

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