EXECUTIVE SUMMARY

AN INNOVATIVE MISSION EXTENSION FOR THE NEVADA NATIONAL SECURITY SITE (NNSS)[1]

GOAL: Create a NNSS Joint Public-Private-Partnership Center and National DOE Laboratory for Nuclear Fuel Cycles with a parallel, P-P-P Center for Carbon Free Energy Research, Development, Test and Evaluation.

PRIMARY BENEFIT:

Enable Carbon Free (CF) modular nuclear power systems to operate unrefueled for up to 30 years; produce power 24/7/365; protect against terrorist, EMP and cyber threats; be pollution-free, walk-away safe and proliferation-proof while providing turn-key, onsite services for commercial, national and homeland security, FEMA and international partners.

OTHER BENEFITS:

Provide spent nuclear fuel recycling, engineering and testing services to replace or upgrade the permanent repository plan for the Yucca Mountain Laboratory;

Convert U.S. spent fuel storage costs, litigation expenses and private funds into investments to build a world class NNSS facility for the temporary holding and recycling functions;

Establish a Joint Nuclear Fuel Cycle National Laboratory to work with other DOE, DoD and industry labs to design, reprocess, recycle, develop, manufacture, market and service advanced nuclear fuels; and

Create a CF center for design, engineering; licensing, systems integration, and testing of fixed and transportable power systems to employ microgrids; advanced reactors; internal power generators and other advanced reactor energy components for water purification, desalination and hydrogen fuels production.

NEW CAPABILITIES:

Implement Argonne Lab-Developed Pyroprocessing and other available technologies to recycle over 95 percent of used nuclear fuel into reusable, advanced nuclear products;

Use bore holes drilled in existing Yucca Mountain tunnels to temporarily hold the impenetrable glass disks containing the very small (3 percent) residue left from fuel recycling processes;

Exploit the convenient access to the new fuels and available Nye County land to expedite implementations from the designs, pilot testing, manufacturing, power distribution and field support of advanced nuclear reactor powered systems to create massive economic benefits; and

Assist U.S. companies with special testing and NRC licensing of leased, secure, robust, MicroGrid controlled, advanced reactor power systems. Such systems would feature sealed internal cooling, EMP and cyber protections, and offered in fixed and transportable versions to enable sustained resilience against natural and human threats or emergency restorations.

[1] Formerly the Nevada Atomic Test Site