

HORNIG Project Descriptions

High-performance Optimized Recycled Nuclear Isotopes for Gen IV Reactors

Westinghouse Electric Company – Cranberry Township, PA

PowerBlock: Additively Manufactured Metallic Fuel - \$7,000,000

The Westinghouse Electric Company team will develop an additive manufacturing process using laser powder bed fusion to produce metallic nuclear fuel. The team will combine computational modeling with this fabrication approach to optimize fuel design and production, enabling scalable manufacturing of metallic fuels for both the current fleet and advanced reactors.

Texas A&M University – College Station, TX

Thorium-Based Transuranic Burner Molten Salt Fuel Systems (TB²-MSR) - \$5,377,799

The Texas A&M University team will develop and test a liquid, thorium-based nuclear fuel salt incorporating transuranics from used nuclear fuel for use in next-generation molten salt reactors. By deploying a liquid fuel that simultaneously functions as the primary coolant, the team will harness abundant domestic thorium resources to generate energy while substantially reducing the volume and radiotoxicity of long-lived nuclear waste.

Standard Nuclear – Oak Ridge, TN

Mixed Oxycarbide (MCO) TRISO: Fueling Advanced Reactors with Recycled Transuranic and Uranium Feedstock - \$6,999,984

The Standard Nuclear team aims to develop tristructural isotropic (TRISO) particle fuel containing recycled transuranic elements for use in high-temperature gas reactors using advancing fabrication methods. The project will support scalable production of TRISO fuel from recycled nuclear materials, expanding the domestic supply of high-performance particle fuel while drawing down spent fuel stockpiles.

Oregon State University – Corvallis, OR

TRU-Nitride Fuel for Advanced Reactors - \$7,000,000

The Oregon State University team will make recycled transuranic-bearing nitride fuel for advanced reactors using an innovative low-temperature fabrication process. The team will combine fuel fabrication, characterization, testing, and modeling to improve production throughput, control fuel composition and purity, and generate data needed to advance fuel qualification.

Oklo Inc. – Santa Clara, CA

Fabrication of Optimized Recycled fuel for Gen IV reactors from Electrowinning product (FORGE) - \$6,842,989

The Oklo Inc. team will develop transuranic-bearing U-TRU-Zr metallic fuel for use in sodium-cooled reactors by advancing fuel fabrication methods, generating qualification-relevant data, and using fuel performance modeling to reduce uncertainty and inform qualification. The project will support scalable production and accelerated qualification of recycled metallic fuel, helping establish a secure, domestic supply of advanced fuels from recycled nuclear materials.

Exodys Energy Inc – New York, NY

Integrated TRU Fuel Cycle Analytics: Front-End Feedstock, Techno-Economics, and Deployment Pathways - \$1,300,792

Exodys Energy will develop a common framework for evaluating transuranic fuel feedstocks, fuel-cycle costs, transportation, and deployment requirements across HORNIG fuel concepts. The project will provide economic and logistical data to support the commercialization of recycled nuclear fuels.

Sandia National Laboratories – Albuquerque, NM

Transuranic Reactor-fuel Pathways for Sociotechnical Analysis, Technoeconomics, and Harmonization \$3,381,128

The Sandia National Laboratories team will provide an uncertainty-aware decision support capability associated with scaling transuranic fuel production across HORNIG fuel concepts. The project will help fuel developers identify requirements and constraints affecting commercial-scale manufacturing and deployment.

Idaho National Laboratory – Idaho Falls, ID

Irradiation of Molten Plutonium Actinide Chloride fuels and Testing (IMPACT) - \$7,000,000

The Idaho National Laboratory team will develop and test a chloride fuel salt containing recycled transuranic elements for use in molten salt reactors. The team will combine irradiation testing, fuel characterization, and modeling to evaluate fuel performance and generate data needed to advance qualification of transuranic-bearing molten salt fuel.