NASA SBIR 2017 Phase I Solicitation

Z1.03 Surface Power Generation

Lead Center: GRC

Participating Center(s): JPL, JSC

Technology Area: TA3 Space Power and Energy Storage

NASA is seeking novel fission-based power generation technologies for surface missions on the moon and Mars. The objective is to develop power generation systems for landers, crewed habitats, and in-situ resource utilization plants. Power requirements are expected to range up to 40 kW with potential for clustering of smaller building blocks to meet the total need. Applicable thermal energy conversion should be lightweight, long-lived, and low cost. Of particular interest are technologies that are multi-use (e.g., moon and Mars). Strong consideration should be given to environmental robustness for surface environments that include day/night thermal cycling, natural radiation, partial gravity, vacuum or very low ambient pressure, dust, and wind. Recognizing that small businesses are not likely to develop the nuclear fuel core, proposals are solicited for the key non-nuclear components and sub-systems. Specific areas of interest include power conversion technologies that enable system level specific power above 5 W/kg, advanced manufacture of heat exchangers for power conversion, reliable and radiation hard controllers, reactor and power conversion thermal interfaces, neutron reflectors, and radiation shielding.