

NASA seeks ideas for a nuclear reactor on the moon

November 19 2021, by Keith Ridler



This Nov. 29, 2018, file photo, shows the exterior of the Transient Reactor Test Facility at Idaho National Laboratory about 50 miles west of Idaho Falls, Idaho. NASA and the nation's top federal nuclear research lab on Friday, Nov. 19, 2021, put out a request for proposals for a fission surface power system. NASA is collaborating with the U.S. Department of Energy's Idaho National Laboratory to establish a sun-independent power source for missions to the moon by the end of the decade. Credit: AP Photo/Keith Riddler, File

If anyone has a good idea on how to put a nuclear fission power plant on the moon, the U.S. government wants to hear about it.

NASA and the nation's top federal nuclear research lab on Friday put out a request for proposals for a [fission](#) surface power system.

NASA is collaborating with the U.S. Department of Energy's Idaho National Laboratory to establish a sun-independent power source for missions to the [moon](#) by the end of the decade.

"Providing a reliable, high-power system on the moon is a vital next step in [human space exploration](#), and achieving it is within our grasp," Sebastian Corbisiero, the Fission Surface Power Project lead at the lab, said in a statement.

If successful in supporting a sustained [human presence](#) on the moon, the next objective would be Mars. NASA says fission surface power could provide sustained, abundant power no matter the [environmental conditions](#) on the moon or Mars.

"I expect fission surface power systems to greatly benefit our plans for power architectures for the moon and Mars and even drive innovation for uses here on Earth," Jim Reuter, associate administrator for NASA's Space Technology Mission Directorate, said in a statement.

The [reactor](#) would be built on Earth and then sent to the moon.



The earth's shadow covers the full moon during a partial lunar eclipse, early Friday, Nov. 19, 2021, in Kansas City, Mo. NASA and the nation's top federal nuclear research lab on Friday, Nov. 19, put out a request for proposals for a fission surface power system. NASA is collaborating with the U.S. Department of Energy's Idaho National Laboratory to establish a sun-independent power source for missions to the moon by the end of the decade. Credit: AP Photo/Charlie Riedel

Submitted plans for the fission [surface](#) power system should include a uranium-fueled reactor core, a system to convert the [nuclear power](#) into usable energy, a thermal management system to keep the reactor cool, and a distribution system providing no less than 40 kilowatts of continuous electric power for 10 years in the lunar environment.

Some other requirements include that it be capable of turning itself off and on without human help, that it be able to operate from the deck of a lunar lander, and that it can be removed from the lander and run on a mobile system and be transported to a different lunar site for operation.

Additionally, when launched from Earth to the moon, it should fit inside a 12-foot (4-meter) diameter cylinder that's 18 feet (6 meters) long. It should not weigh more than 13,200 pounds (6,000 kilograms).

The proposal requests are for an initial system design and must be submitted by Feb. 19.

The Idaho National Laboratory has worked with NASA on various projects in the past. Most recently, the lab helped power NASA's Mars rover Perseverance with a radioisotope power system, which converts heat generated by the natural decay of plutonium-238 into electrical power.

The car-sized rover landed on Mars in February and has remained active on the red planet.

The Energy Department has also been working to team up with private businesses on various nuclear power plans, notably on a new generation of smaller [power](#) plants that range from small modular reactors to small mobile reactors that can quickly be set up in the field and then removed when not needed.

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