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## Nuclear Battery Will Warm Giant Rover on Frigid Mars Treks

By [Adam Mann](#)

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The new rover is the size of a small car and will be the [largest and most advanced machine](#) to ever touch down on another planet. Rather than opting for solar panels, as NASA has done for past missions, MSL will use nuclear energy to make it more productive during its treks over the Martian surface.

The plutonium (which is, not to worry, non-weapons-grade Pu-238) undergoes nuclear decay, providing heat to warm MSL's electronics and keep it churning out data even at night. Unlike

previous missions, the rover will be able to ride over to areas without sunlight, giving it wider range of possibilities for exploration.

The rover isn't powered by a nuclear reactor but the insulated Pu-238 generates so much heat that it actually glows a dull red in the dark. This excess warmth will be put to good use, generating approximately 110 watts of electricity through thermoelectric lead tellurite -- a material that creates electricity when there is a temperature gradient. This power can keep the rover chugging along for years if needed, though MSL's current mission is only scheduled to last 23 months.

To assuage any lingering fears, [Idaho National Laboratory](#), which assembled the nuclear battery, has assured that multiple layers protect the nuclear fuel and that extensive testing has been done to ensure safety. They point out that NASA has reliably used nuclear generators for 26 missions over the last 50 years.

*Image: NASA/JPL*

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Adam is a Wired Science staff writer. He lives in Oakland, Ca near a lake and enjoys space, physics, and other sciency things.

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