Toyota Flips the Switch to Sustainable Power at Yellowstone National Park

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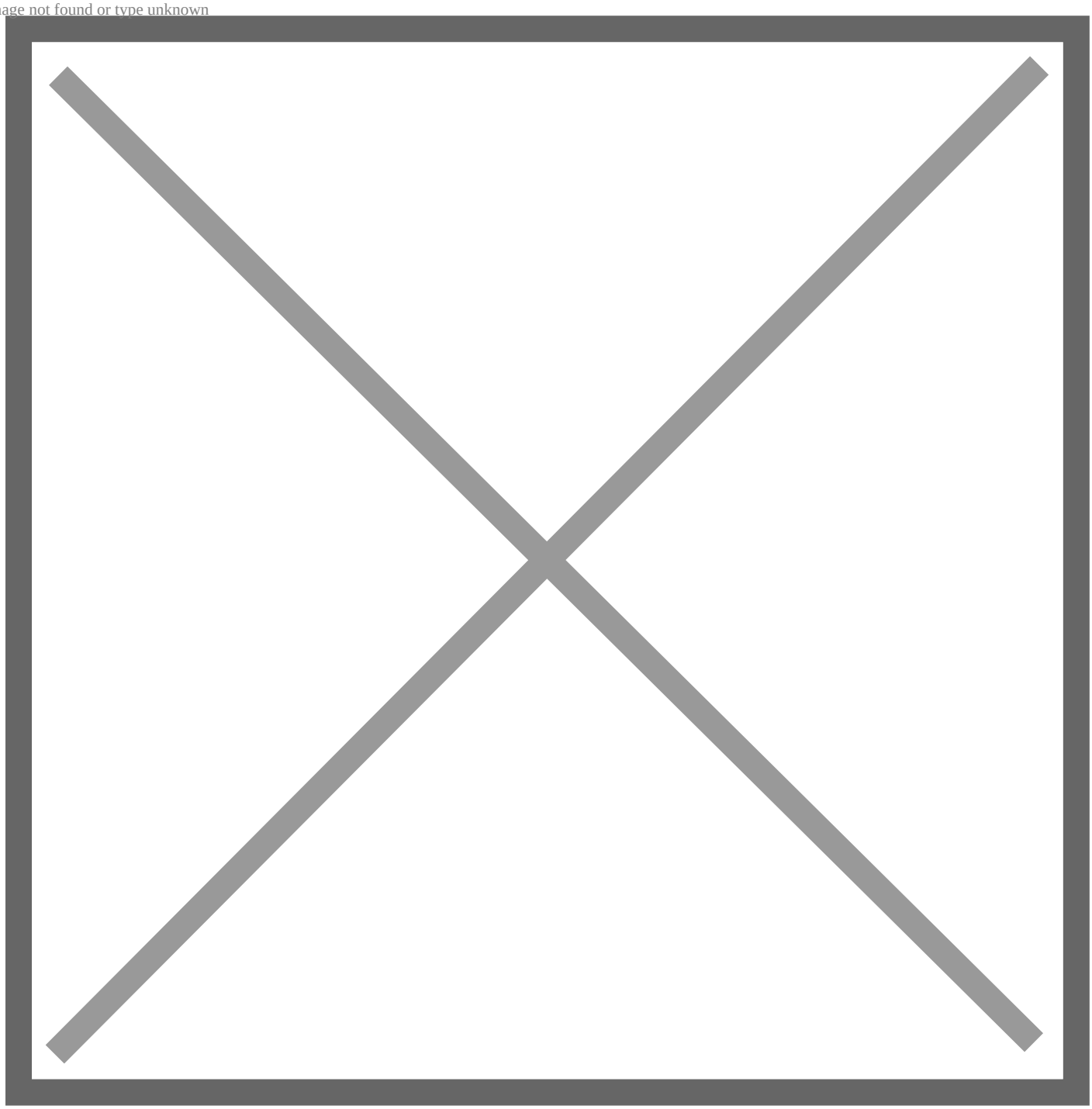

Torrance, Calif. (May 12, 2015) – The lights are on where the buffalo roam.

At the Lamar Buffalo Ranch field campus in Yellowstone National Park, an innovative distributed energy system that combines solar power generation with re-used Camry Hybrid battery packs is now online. The result: reliable, sustainable, zero emission power to the ranger station and education center for the first time since it was founded in 1907.

Announced in June 2014, the partnership among Toyota, Indy Power Systems, Sharp USA SolarWorld, Patriot Solar, National Park Service and Yellowstone Park Foundation is an innovative effort to extend the useful life of hybrid vehicle batteries while providing sustainable power generation for one of the most remote, pristine areas in the United States.

Solar panels generate the renewable electricity stored within the 208 used Camry Hybrid nickel-metal hydride battery packs, recovered from Toyota dealers across the United States.

“Through our long-standing partnership with Yellowstone National Park and the Yellowstone Park Foundation, Toyota has helped preserve Yellowstone for future generations,” said Jim Lentz, chief executive officer, Toyota North America. “Today, our relationship with Yellowstone continues, as more than 200 battery packs that once powered Toyota Camry hybrids have found a new home on the range.”

On an annual basis, the solar system generates enough electricity to power six average U.S. households for a year, or plenty of power for the five buildings on the Ranch campus. The hybrid batteries provide 85kWh of energy storage to ensure continuous power, as the system charges and discharges. Onsite micro-hydro turbine systems, capturing energy from a neighboring stream, are scheduled to join the power mix in 2016.

The Yellowstone system is the first of its kind to use recovered hybrid vehicle batteries for commercial energy storage. Each battery pack has been disassembled and tested, and every piece that could be was repurposed. New components were also designed and built by Indy Power Systems specifically for this application, including an onboard battery management system for each battery pack. The battery management system is designed to maximize battery life and will also provide important insights into real-world performance. These insights will help Toyota design future battery performance and durability improvements.

“Toyota’s innovative response to solve a difficult problem has helped Yellowstone move closer to its goal of becoming the greenest park in the world,” said Steve Iobst, acting superintendent of Yellowstone.

Hybrid batteries typically reach the end of their usable life in automobile-grade applications with significant remaining power storage capacity. While Toyota has a robust hybrid battery recycling program in place, the Yellowstone project reflects ongoing efforts to extend the life of existing hybrid batteries. Engineers expect this type of use to double the overall lifespan of the hybrid batteries.

The Lamar Buffalo Ranch project is just part of Toyota’s extensive work with Yellowstone National Park and the Yellowstone Park Foundation, including providing hybrid vehicles to support park operations, and green building expertise and financial backing for the Old Faithful Visitor Education Center, which opened in 2010.

“As exemplified by the Lamar Buffalo Ranch project, Toyota’s mission-driven philanthropic focus and expertise in sustainability will make a difference in Yellowstone for generations to come,” said Karen Bates Kress, president of the Yellowstone Park Foundation.

To learn more about Yellowstone National Park sustainability initiatives please visit http://www.nps.gov/yell/parkmgmt/sustainability-contents.htm.

Details on the Yellowstone National Park Sustainability Project Energy Storage and Management System

- **Power Generation:** 40kW solar system producing ~67,900 kwH annually. (40kW propane backup generator onsite for emergency use only)

- **Storage Array:** 208 repackaged battery packs, each internally re-wired in parallel and arranged in series in four arrays of 52. Each array provides a nominal 375 volts. Total storage capacity of 85kwH.

- **Power Management:** Indy Power Systems' Energy Router™ manages and optimizes generation and use of energy between solar energy, battery storage, and/or propane generators (if emergency generator is needed).