



Solar energy generation and storage: SHINES

In partnership with the Electric Power Research Institute (EPRI) and other participating utilities, we're contributing to a Department of Energy project that will develop tools to optimize the integration of DERs, such as solar energy, onto the existing electric grid. The purpose of the project is to build an infrastructure that can manage multiple DERs to help provide safe, reliable, clean and affordable electricity to all.

The Sustainable and Holistic Integration of Energy Storage and Solar Photovoltaic project, or SHINES, is developing a robust electric power delivery network that combines the benefits of clean, efficient solar photovoltaic (PV) energy generation, battery energy storage, electricity load management and advanced solar forecasting techniques. By supporting this project, we're investing in a valuable tool that may help us manage and integrate dynamic energy generation and use. So, we're able to operate more efficiently, as well as more reliably predict load on the grid.

SHINES is part of an overall modernizing of the electric grid through new technologies and management systems. The idea that really sets it apart is the two-level control structure:

- **System controller** that maintains overall reliability of the electric grid, through coordinated control of multiple local controllers and other energy distribution equipment.
- **Local controller** that responds to system controller needs and makes solar PV more manageable by efficiently using energy storage, load management, smart inverters and solar/load forecasting.

SHINES promotes coordination of joint customer and utility energy control, which improves grid operations, reduces grid and load impact, smooths out the delivery of PV energy and ultimately lowers the total cost of energy for all.