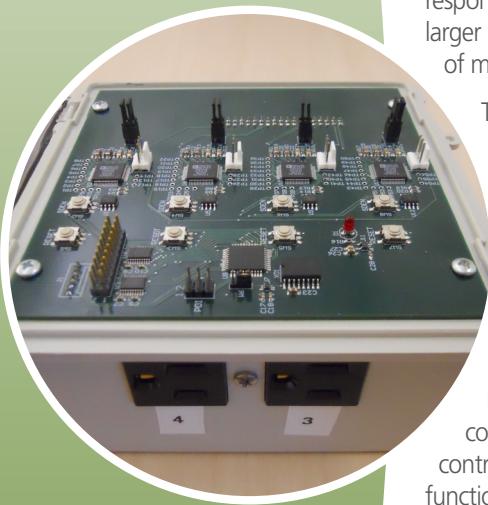




## Smart Outlet

**To our knowledge, this is the first platform to incorporate sensing, communications, actuation, and processing for autonomous load control in a single compact unit.**



**For more information  
please contact:** [ip@sandia.gov](mailto:ip@sandia.gov)

Sandia's Smart Outlet is an autonomous intelligent electrical outlet for controlling loads for power grids with a high percentage of renewable resources. The Smart Outlet platform performs sensing, actuation, communications, and processing for autonomous load control in response to variations in generation supply.

### Managing the Load

The increased use of renewable resources, such as wind and solar PV, is putting pressure on the operational model of today's power grid. To compensate for the variations in renewable generation, one must choose a combination of increased storage, fossil fuel backup generation, responsive load controls, and operation over a larger geographic area to reduce the likelihood of major decrease or increase in power.

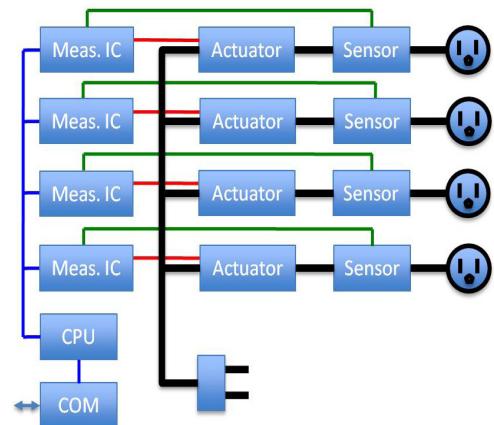
Today, utilities can control the load on power devices with manual intervention, and third party vendors provide contracts whereby they can 'bid' a reduction in energy use just like generation is bid in the electricity markets. While products have been available for several years to begin implementing home energy saving architectures, 'intelligent' devices have not yet been built with sensing, communications, or local closed-loop controls that can perform more advanced functions such as demand response to balance load to PV power availability.

### A Platform for Autonomous Load Control

The smart outlet platform performs sensing, actuation, processing, and communications for autonomous load control in response to variations in generation supply without a central computer or human making the decisions. The device is unique in having all of the components required for autonomous load control within a single unit.

Ultimately, this distributed control approach may be much more amenable to scaling to large numbers of loads and may be more suited to distributed micro-grid applications having a large percentage of renewable resources.

These concepts are likely to be a critical component to enable the widespread use of clean, reliable, and distributed energy.



### Commercialization Path

Sandia tech transfer officers are now seeking U.S. companies to license and commercialize the device for use in future smart grid applications.

Companies interested in licensing the Smart Outlet are invited to contact Sandia's IP team for more information.