

# Technology Innovation Project



*Closing  
Project Brief*

## TIP 404: EPRI P161 Persistent WiFi

### Context

Utilities are challenged to effectively manage consumer loads found in a variety of devices such as thermostats, water heaters, charging stations, and other residential and commercial appliances. New utility programs for energy efficiency and demand response using connected devices can run into issues with persistence of the connection that can reduce program effectiveness over time. This in turn can reduce cost effectiveness of programs and make them less attractive to utilities, ratepayers and the PUCs.

Device connectivity may be lost when Wi-Fi network parameters [Service Set Identifier (SSID) and security key] are changed by the consumer. This lack of connection durability creates communications challenges as well as potential for increased customer support burdens to re-establish connectivity. The Internet of Things (IoT) and Internet-connected devices may be compromised by attackers, presenting increased attack surfaces for potential intrusion into grid operations.

### Description

BPA joined this program as an Observer participant.

The project intended to define and demonstrate a communications platform that can facilitate secure integration of customer systems with grid operations (both distribution and system operator) as well as enabling third parties, service providers and equipment manufacturers to maintain their own interfaces.

Project activities were to include:

- Use Case definition;
- Provisioning Server, and Data Repository development;
- Project progress and developments shared via Webcasts;
- Wi-Fi Standardization progress provided in Wi-Fi Alliance updates.

### Benefits

Eliminating the significant expense associated with creating new utility communications networks to integrate consumer devices with grid operations (e.g. DER, storage, load management), would be just one advantage this project demonstrated by using existing networks such as customer broadband and Wi-Fi to integrate these technologies, enabling the connection to offer durability and security.

The outcome would be an improved ability to manage loads and DER devices and possibly provide customers more reliable connected device connections without incurring the capital and operating expenses required by new utility networks.

### Accomplishments

The project was unable to complete its activities due to limited participation. However, the communication challenges this project addresses including: avoiding device drop-off; understanding of root cause of any loss of connection; reducing security-related connection vectors; and automated provisioning of customer devices and networks, will be addressed in related Wi-Fi Alliance programs.

### Deliverables

A final report delineating the project status and distribution of tasks to other program was the only deliverable.

---

## TIP 404: EPRI P161 Persistent WiFi

**Project Start Date:** January 2019

**Project End Date:** March 2020

**For More Information Contact:**

**Technology Innovation Office:**  
[TechnologyInnovation@bpa.gov](mailto:TechnologyInnovation@bpa.gov)

### Participating Organizations

Electric Power Research Institute (EPRI)  
Wi-Fi Alliance  
Duke Energy  
Bonneville Power Administration  
Dairyland Electric Power

### Conclusions:

This was a supplemental project requiring minimum member participation to continue. The initiative did not reach a critical mass of member utilities to make it go. BPA's current position is not to use homeowner / residential customer internet for utility applications. Thus, BPA and the other observing participant ultimately did not deploy the field devices this project intended to test. Additionally, the remaining participating utility, could not execute the project plan according to the original scope and eventually decided to pull their funding for the project. Remaining funds were used to engage internet appliance industry groups regarding the VPN tunnel (for a third party utility) for standard internet modems.

Several project tasks have been incorporated into other Wi-Fi Alliance programs. BPA is not a participant in these programs.