### **TENNESSEE VALLEY**

# Home Energy Management System Platform A pilot project that aims to connect the LPC electricity distribution system with residential

customers through smarter home controls and a free, open-source software platform and mobile app.

# **Readiness**

#### Local Power Company Assessment

#### SURVEY

LPCs on their readiness to utilize, deploy, and support a HEMS offering to their customers.

#### ACCESS

LPCs through Supervisory Control & Data Acquisition Systems (SCADA).

#### ASSIGN

LPC technical readiness score.



#### GOALS

- Connect with many smart hardware devices
- Mitigate cyber security risks

# **VOLTTRON<sup>™</sup> Platform**

### **Open Source Control Device Software**

#### **DEVELOP A VOLTTRON SOFTWARE PLATFORM TO CONNECT WITH:**

- Distributed Energy Resources (DER)
- Battery Electric Storage Systems (BESS)
- Supervisory Control & Data Acquisition Systems (SCADA)

#### **EXPAND OPEN-SOURCE HEMS PLATFORM**

to allow greater integration with LPCs and home residents the software will allow anyone to further develop & customize the free software.

#### **INCORPORATE LPC DEPLOYMENT**

best practices, including learnings from Phase 1.

# AVAILABLE throughout the vallev

#### GOALS

BUDGET



• Connect buildings to the power grid in a meaningful way

Make smart devices smarter

# **Customer Interface**

# Mobile App

Develop an open-source mobile app to serve as the customer interface and portal for engagement with their local power companies.

### **APP WILL ALLOW RESIDENTIAL CUSTOMERS TO:**

- Enroll in the program and set preferences
- Connect their technologies
- Set their comfort and energy-saving preferences
- Track and monitor their energy use and cost trends
- Opt in or out of specific demand response events



#### **INTEGRATED WITH**

- VOLTTRON platform
- Alexa Skill





# **Points of Leverage**

#### Connections

Buildings to operators, operators to LPCs, LPCs to energy technologies – the dialogue between each system maximizes energy performance with collaboration, control and confidence.

### Resiliency

LPCs and homeowners can control and optimize their energy conservation measures and DERs to create greater flexibility and resilience.

# **The Value**

### Customers

- Enhanced platform will simplify participation and connection with their smart devices
- Provides additional insight into energy use and costs
- Creates the opportunity to manage costs without sacrificing comfort, or triggering time of use rates

# LPC

- Free, open-source platform will be made available through TVA
- Enhanced software will improve LPC experience and customer insight and engagement
- Integration between the home gateway and SCADA will allow LPCs to do demand response calls to DERs
- HEMS BESS agency will ensure LPCs can support resilient operation modes (including whole home islanding)



### **Project Kick-off**

#### Assessment

# Timeline

#### August 2021 Project kick-off for all 3 parts

#### Jan 2022 Technical Readiness Assessment complete

# **Key Partners**

### TVA

<u>Georgia Caruthers</u> (main contact) Bonnie Latta

### **ACE IoT Solutions**

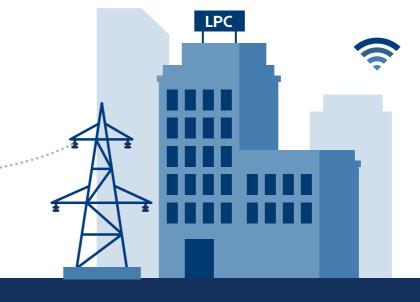
William Maguire Andrew Rogers

# Oak Ridge National Laboratories

Joe Hagerman Peter Fuhr



- LPC Technical Readiness Assessment Report will provide visibility into the potential to expand collaboration to other LPCs
- LPC Technical Readiness Assessment Report will provide valuable input into future Connected Communities projects and initiatives
- TVA will serve as a partner for the digitization and modernization of utilities to increase efficiency, accessibility and transparency



### Completion

March 2022 Completed platform & app

