



VONORE, TN

# TVA's First Battery Energy Storage System

TVA's first owned and operated, grid-scale battery energy storage system near an industrial complex in Vonore, Tennessee, about 35 miles southwest of Knoxville. The battery will support TVA's 2019 IRP recommendation of adding 5GW of storage by 2038. This project will maximize learning about battery storage projects, target specific grid needs, assess grid resiliency and flexibility applications and focus on lithium-ion chemistry.

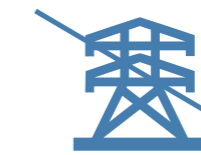
This marks the beginning of TVA's energy storage strategy which aims to diligently place batteries in strategic locations throughout the system. Battery siting will be essential for TVA to achieve its aim of reducing carbon emissions in its electrical grid. Energy storage, especially short-duration storage in the form of lithium-ion batteries, will play a crucial role in making renewable energy resources more valuable to the energy system.

## Benefits



### Customer Support

Brings high-quality power to industrial customers served by Loudon Utilities Board.



### Transmission Deferral

Alleviates the need to build new transmission lines, which is expensive and time consuming.



### TVA's First Owned Battery Energy Storage System

This battery will provide important learnings to TVA as it looks to expand its energy storage fleet.



### Renewable Energy Enhancement

A battery on this system will enhance renewable energy resources by smoothing production of energy throughout the day.



### Reliability

Improves quality of electrical service provided to local manufacturing facilities.



### Proven Model

Serves as a test bed as TVA prepares to meet future energy needs.

## Storage Capacity

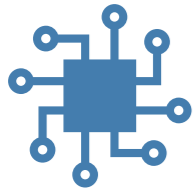
# 40MWh

enough to power 5,300+ homes for three hours

## Completion

# 2024

## Anticipated Learnings



### Technical

- Understand system integration and grid-support capabilities
- Discern actual operational characteristics once integrated
- Determine battery degradation, cost of operation, reliability of the system and other support systems provided by the battery
- Confirm communications and controls for safety systems
- Provide information on modeling deficiencies
- Help improve interconnection studies
- Determine cradle to grave life cycle costs



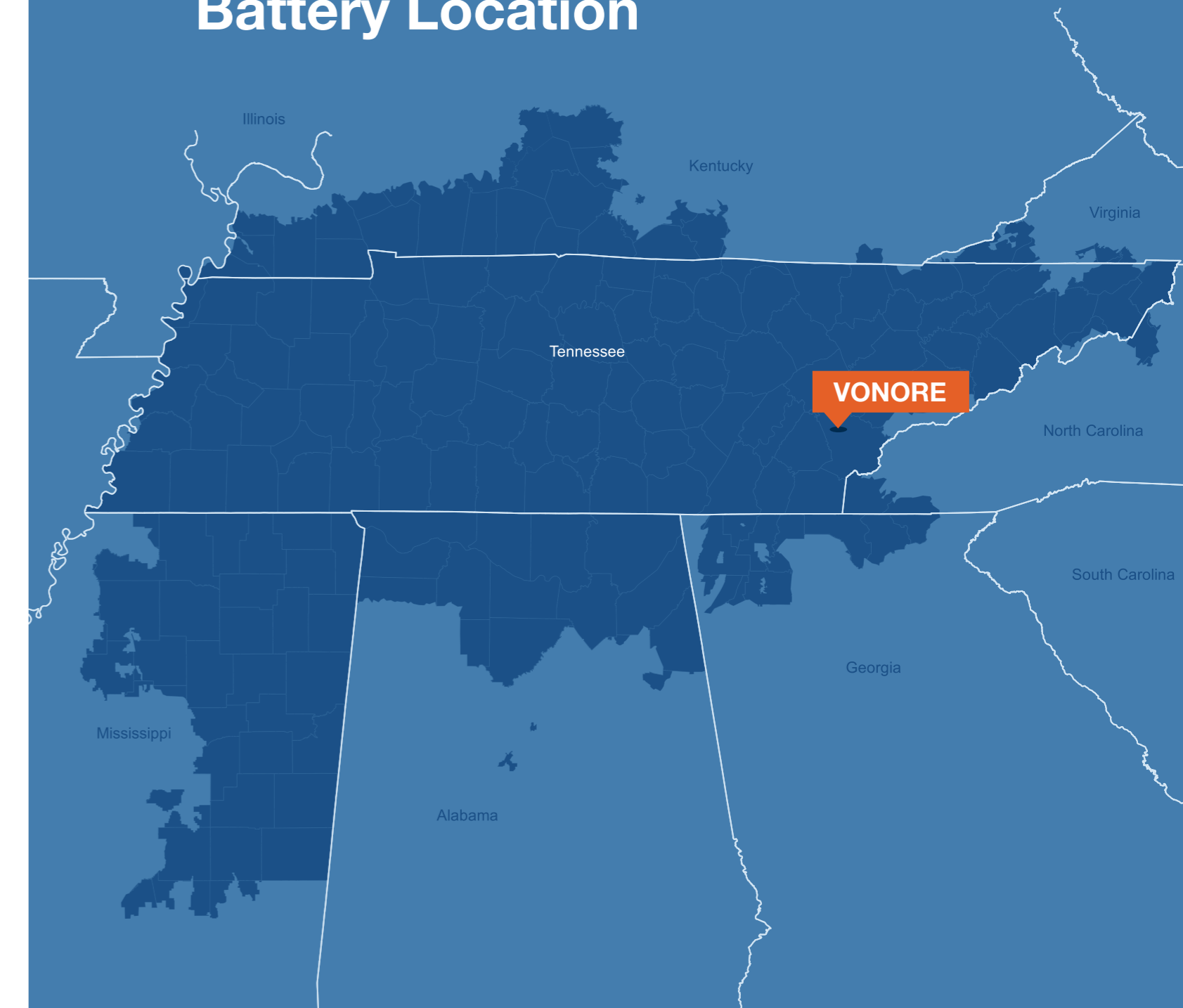
### Operational

- Develop methods and tools to forecast dispatch, signal system need and minimize production cost
- Create guidelines and tools for operations and maintenance of this new asset
- Gain operational experience with battery storage use for load following/area control error calculations
- Build other organizational capabilities, such as best practices for design, deployment, integration, operation and disposal



**TVA expects to gain these technical and operational insights through the deployment of its first owned battery storage system.**

## Battery Location



## Key Partners

TVA  
Loudon Utilities Board  
Hitachi Energy