

# Battery Storage Demonstration Project

# Fact Sheet

*Located at ACUA's wind farm, the project will allow ACUA to capture and store energy during times of low demand, when it is plentiful and inexpensive, and use it during times of high demand, when energy is in short supply and more expensive, or when power is out.*

## Project Team:

**Viridity Energy:** Developer/Owner/ Operator

**ACUA:** Site Host

**Johnson Controls:** Battery System Provider

**RETTEW:** Electrical/Construction

**Local Contractor:** Calvi Electric



ACUA was awarded \$300,00 by the NJ Board of Public Utilities (BPU) for development and construction of a battery storage project. ACUA and Viridity Energy partnered to install one megawatt of battery storage at the Authority's Wastewater Treatment Facility in Atlantic City.

## Benefits of Battery Storage

- Supports overall grid operations
- Reduces greenhouse gas emissions
- Improves the integration of renewable energy resources
- Provides additional capacity to the grid in times of need
- Potentially defers capital upgrades
- Can be charged during off-peak times, such as mornings, and then discharged during peak times, such as hot afternoons, to reduce peak energy needs
- Can be placed strategically in locations on the circuit where they are needed most, with modular designs that address space and other constraints

## Funding Assistance

- \$300,000 grant from NJ Board of Public Utilities

## System:

- L2000 Containerized System
- ESS: 1000 kW / 1015 kWh
- Lithium Ion Battery

**Commissioning:** February 2018

## Applications:

- 24/7/365 PJM Frequency Regulation
- PLC Management

## Value:

- PJM Frequency Regulation Revenue
- Peak Load Contribution Capacity/  
Transmission Demand Savings
- Short-term Backup Power



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## Batteries on the Power Grid

As more and more renewable resources such as solar and wind come online, batteries can help smooth out the fluctuations in these resources by storing the energy they generate and supplying it to the grid later when the sun isn't shining or the wind isn't blowing. Energy storage can also support local distribution circuits impacted by the high penetration of renewable resources and improve power quality.

Battery energy storage can be used by itself or in combination with other resources, such as gas-fired plants, to help meet peak demand and support electric grid operations, and can serve as emergency backup during energy shortfalls or grid service interruptions. Over time, greater reliance on storage could also offset traditional ways of meeting increasing energy demand, such as building new power generation stations, transmission lines, and distribution circuits.

This project is a partnership between ACUA and Viridity Energy to install one megawatt (MW) of battery storage at the Authority's Wastewater Treatment Facility. ACUA and Viridity agreed to a land lease agreement in 2013 to develop a battery project and applied for funding through the NJBPU's Renewable Energy Storage Incentive program in 2014. The project was commissioned in February 2018.

The battery will be part of the PJM grid's frequency regulation program, responding to signals to balance local grid supply and demand. The battery will be inside the facility's microgrid; meaning when prompted to charge it will first use wind and solar power, if available.

## Frequency Regulation

Solar and wind power generate electricity only when the sun is shining or the wind is blowing. Because of the intermittency of solar and wind, this type of energy cannot be factored into what is called "baseload" generation such as natural gas, nuclear or coal. One solution to this problem is known as frequency regulation. Frequency regulation can be done through battery storage technology. Frequency regulation is used to match the real time supply and demand of the grid, and this is accomplished through battery storage technology.

## Balancing Supply and Demand

By dispatching battery technologies, grid operators can balance supply and demand without calling for more generation from power plants or asking customers to reduce their consumption. Battery technology also has the added benefit to provide instantaneous response to the signals in the grid. If there is excess supply, the batteries can charge up, and then switch to supply power back to the grid on a moment's notice.

## How does it work?

