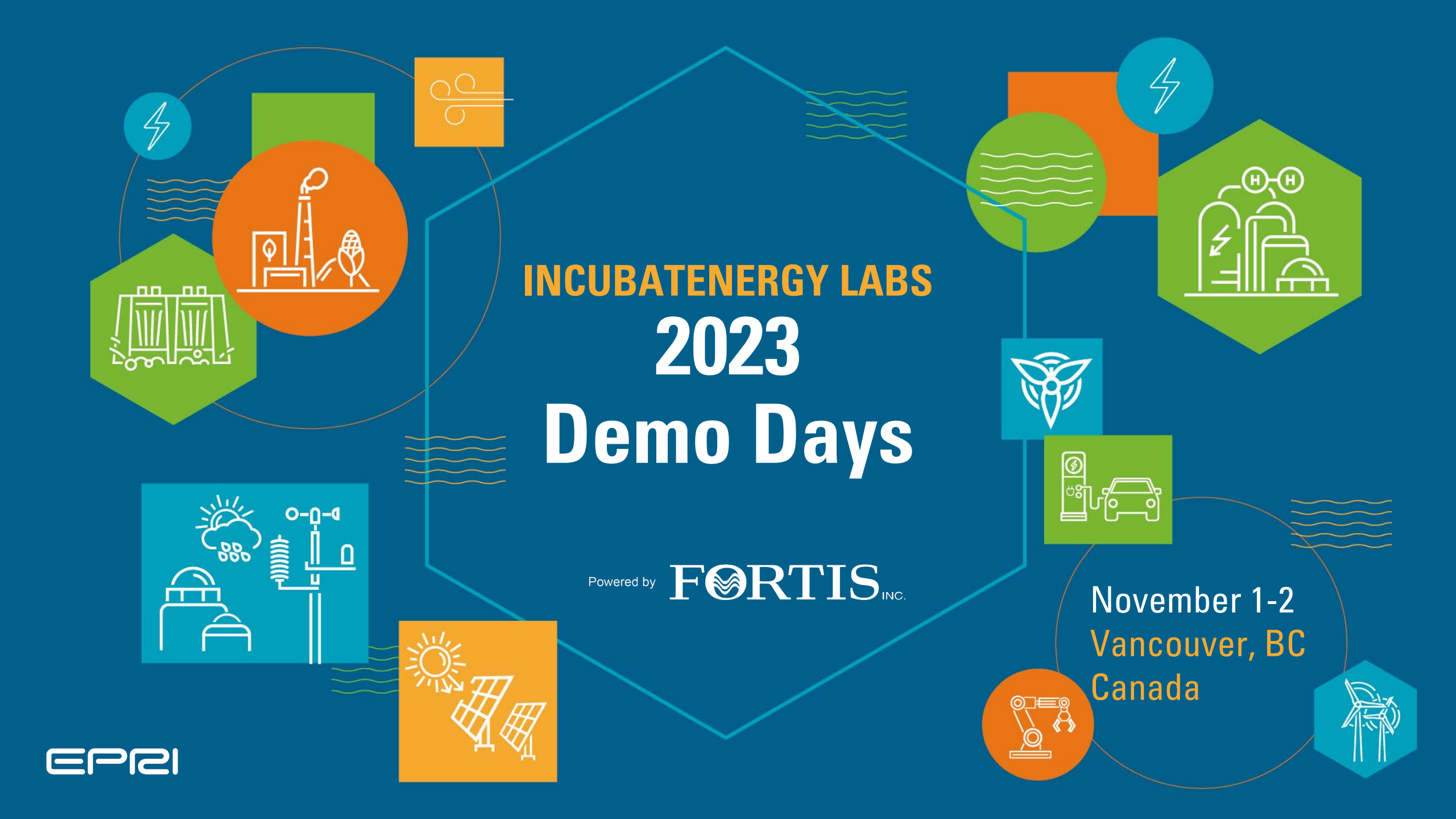
INCUBATENERGY LABS
2023
Demo Days
Powered by FORTIS INC.
November 1-2
Vancouver, BC
Canada
EPRI

Pilot Participants

PowerUp +

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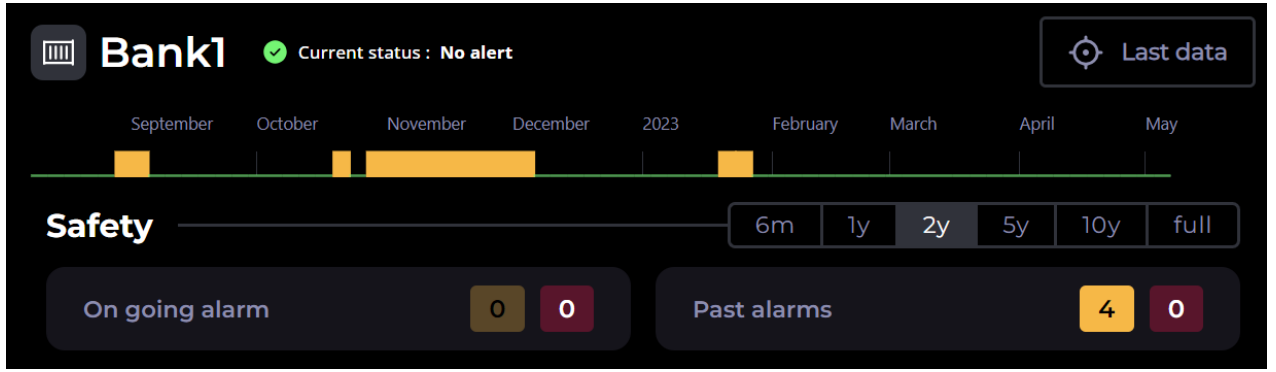
The Challenge

Li-ion battery storage systems are critical to the **energy transition** to resolve the challenge of **intermittency in renewable energy production**. However, the **complexity of these battery systems** could result in unpredictable behavior—namely, uncontrolled **thermal runaway** (battery fires).

NYPA is testing a novel battery design and system architecture that **limits propagation of thermal runaway** and wants to validate its efficacy. While NYPA's battery system is unique, risks of thermal runaway generally exist across **all Li-ion battery designs** and must be mitigated to support the **transition to renewable energy**.



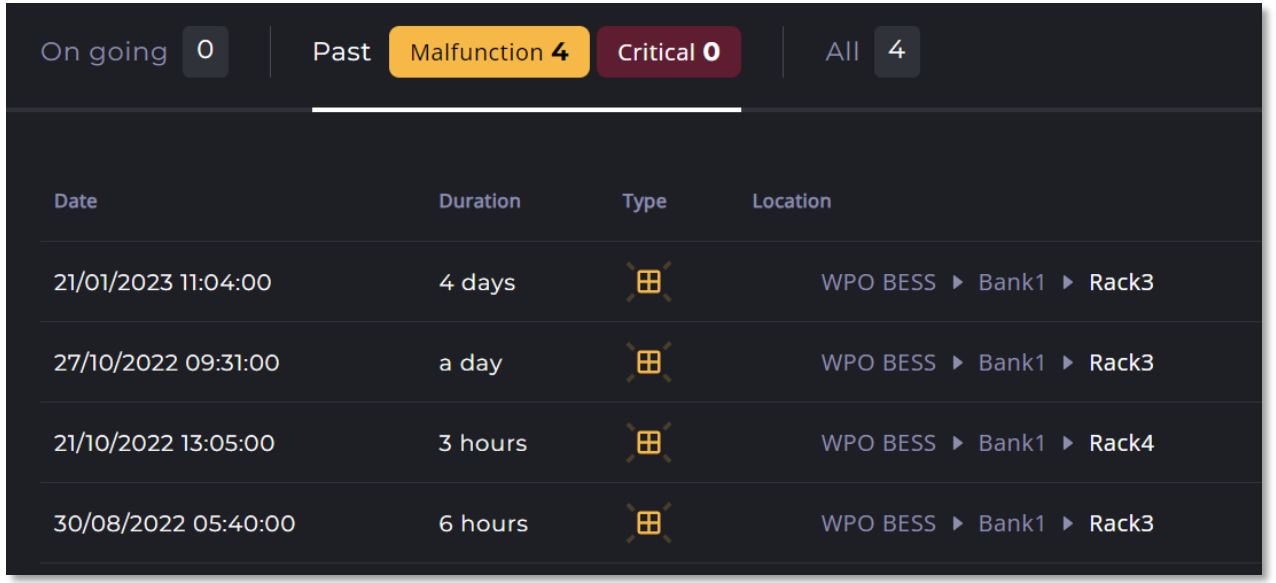
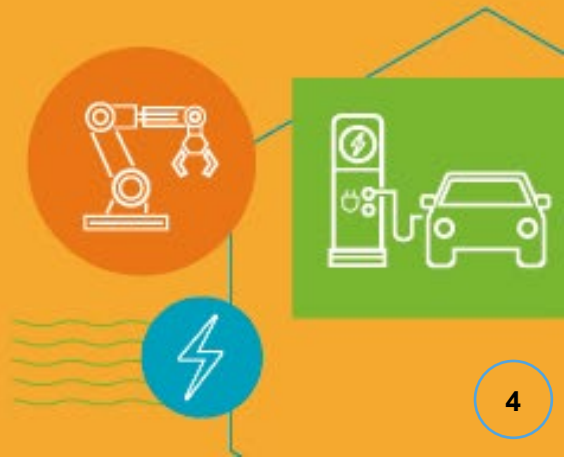
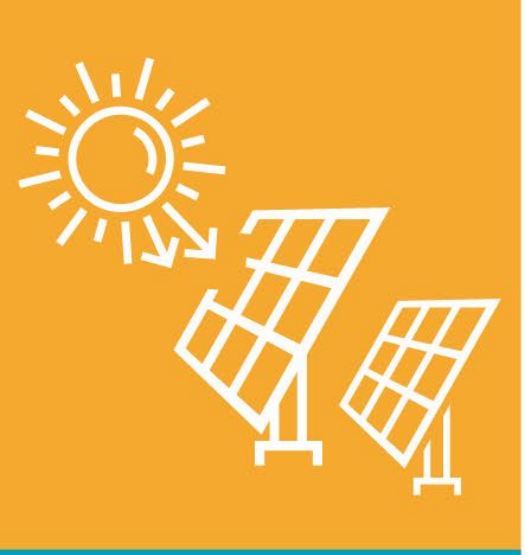
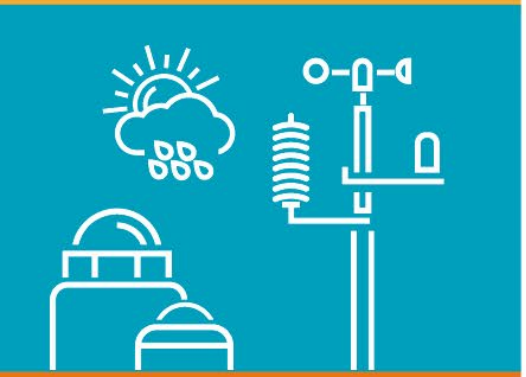


Figure 2. Battery Insight® Safety Alarm Log

The Pilot







Pilot Overview

- Confirm ability to test our algorithms and capabilities on a **novel battery design and system architecture**
- **Improve** upon best practices for **onboarding** assets
- Expand upon initial capabilities and **ad hoc analyses** requested by clients

Aims of the Pilot

- **PowerUp's** claims for safety, performance, and reliability monitoring capabilities
- Identify **safety concerns** with the storage technology under **NYPA's consideration**

What, when, & where?

- Data from the **WPO BESS** at the **NYPA** headquarters are transmitted for analysis to better understand the system's operations and **investigate opportunities** to improve the system's operations
- Users from NYPA's operations/engineering team can **review the status** of their system using our **cloud-based platform** and gain insight into daily operations
- After data are received, we incorporate it into **NYPA's dashboard** for their review

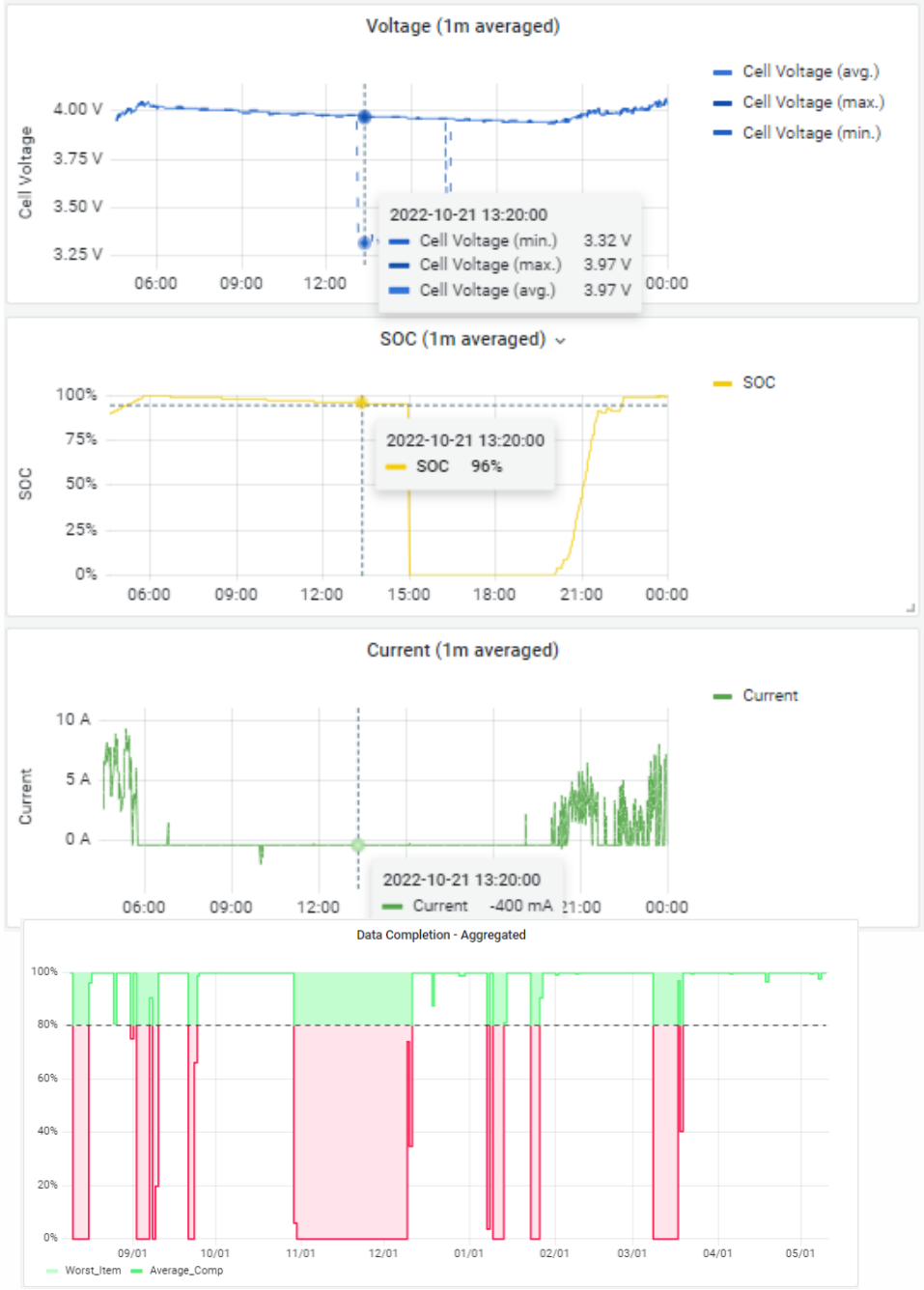


Figure 1. Rack In-Depth Analysis

Pilot Outcomes

- **On schedule**
- Identified anomalous behavior of system as well as **underperformance** in one of the four racks
- Accurately measured the capacity of a **novel battery design**—NYPA received insight to discuss **accelerated degradation** with the manufacturer
- Identified a constant **energy leak** affecting the system's efficiency
- Added AC/AC **round-trip efficiency**, were able to provide calculations
- Transitioned seamlessly between **different levels of data granularity**

Figure 3. WPO BESS at NYPA's Headquarter Office

Figure 4. Battery Insight Dashboard with NYPA's Asset Displayed

What’s Next

Next Steps

PowerUp will expand its monitoring capabilities over the coming months to include **lithium-plating detection**, **sensor failure detection**, and **root cause analysis** which, when used together, provide clients with the **actionable information**.

In the longer-term, monitoring capabilities will be expanded to other storage technologies and facets of BESS systems.

NYPA continues to expand its capabilities and innovative approach, particularly in the **energy storage space**, in the area of lithium-ion based energy storage systems.

Additionally, NYPA will continue to assess the **safety implications and response plans** for Li-ion batteries **across various use-cases**.

PowerUp

NYPA and PowerUp have been working jointly under EPRI's **Incubatenergy Labs** to validate the state of health (SOH) of NYPA's White Plains Office BESS by conducting **formal capacity tests** to compare Battery Insight's calculated values to those observed under **current industry standards**.

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Interested in learning more?

Any Questions?

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PowerUp

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Thank you!

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