

Community-Scale Battery Working Group – Monthly Meeting

Meeting Date/Time: 4 July 2023 3-4:30pm

Location: Teams

Number of Attendees:

Chair: Laura

Topic: YEF 1st year of operation

Meeting Agenda

- YEF presentation: fairly technical overview of their first year of operation, especially suited to those who are embarking on the delivery of a community-scale battery project

Meeting Minutes

Agenda Item/s: YEF presentation

Minutes:

- FN1 Fitzroy North Community Battery launched 5th June 2022: 1st year of operation just completed!
- In the early days, there were more issues than we knew where to start.
- Although our operating model was simple, the software stack was not so simple. Dispatch signals travel from the BCS Scheduler to the Mill integration layer to Acacia's software platform to the site controller to the Pixii Gateway, and back. Quite a bit to do to make it work.
- In early 2023, the system entered a more stable operation, and issues tended to originate in software upgrades or maintenance that disrupted the dispatch.
- LARGE number of frequency trips.. 166 in 29 Days. We thought there was a real grid problem but soon realized that could not be true. It was solved by slight adjustment of the grid protection relay settings.
- When we started, the 3 battery panels had different configurations, which on paper was ok. But in practice when coming to the end of charge, the three panels would behave differently. They would stop and restart in different ways as their DC voltages were rising. The way to fix this was to make all panels the same
- The way the Polarium batteries estimate the SoC is by 2 different methods: When the SoC comes close to the lower limit and the current is very low, the Polarium BMS does a recalculation causing a step change in 'apparent' SoC.
- The estimated roundtrip efficiency of the battery is 88% but that is reduced by the air conditioner and heat exchanger – parasitic loads.
- Advice:
 - Select an optimised dispatcher for optimal revenue
 - Select an aggregator with existing FCAS DUID
 - Oversize the battery to avoid boundary effects (Li-ion BESS).
 - Limit arbitrage range to 25% - 65% SoC for FCAS bidding, and 15% - 90% when FCAS is no longer viable (Li-ion BESS).
 - Change very little from known operating modes
 - Consider shading to reduce cooling power
 - Revise dispatch rules monthly

Agenda Item/s: Q&A

Minutes:

- On the state of charge variability, the BESS calculates SOC differently depending on whether the BESS is charging or discharging, and based on the open circuit voltage. Because these parameters are related, there can be some flip flopping between charging and discharging and calculation methods at the extreme end of the SOC
- One of the reasons for the narrow range for arbitrage is the significant economic consequences of not delivering FCAS if required. YEF therefore plan to take 0 risks. some FCAS events can require up to 10min of power output.
- The cells get "consumed" as they degrade over battery life. Have you done any work to understand the short run marginal cost? ie the cost of the decision to run the battery vs not running it. I make it to be around 15-20c/kWh so maybe you shouldn't discharge for a price any less than that?
- ANU advised YEF that reducing our depth of discharge when doing arbitrage (in order to participate fully in the FCAS markets) wasn't a bad idea economically speaking, in part because of the cost in battery degradation of running the system

Action Items

- DEECA has developed a Voltage Management in the Distribution Network Directions Paper, which can be found at [Engage Victoria - Voltage Management Consultation](#).