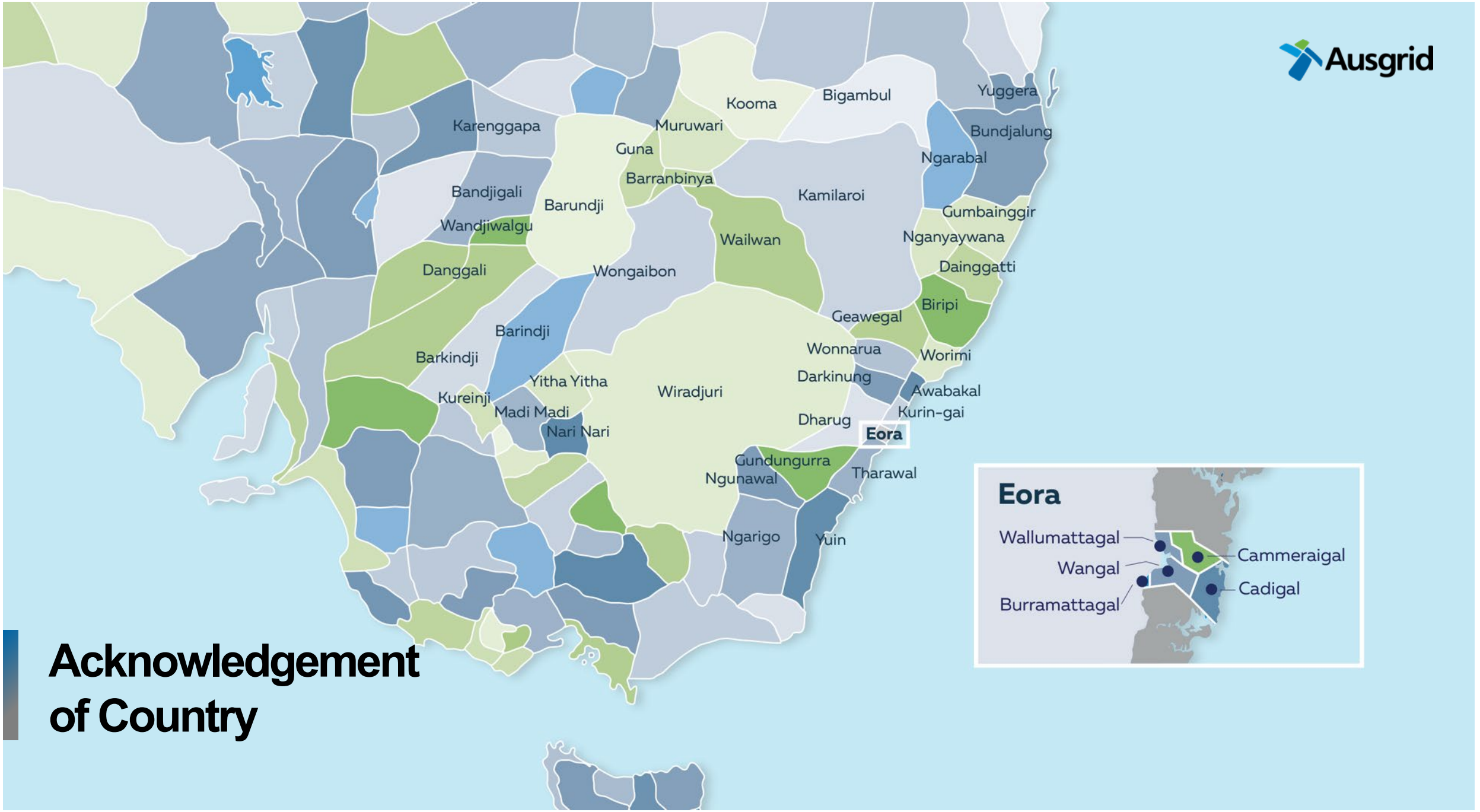
Community Battery Trial Technical Learnings

Future of Neighbourhood Batteries Conference
29 November 2023

Alan Luc – DSO Systems Lead

Acknowledgement of Country



Civil and electrical construction of a community battery is only the start

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Agenda

- Ausgrid's battery projects
- Choosing a battery
- Integrating a battery
- Usage optimisation
- Ongoing operations

Ausgrid's Community Batteries

Three batteries installed under trial project

- Project run over 2021-2023
- Bankstown, Cameron Park – 223kW/446kWh ea.
- Beacon Hill – 150kW/267kWh

Awarded six batteries under DCCEEW grants

- Cabarita, Narara – 160kW/412kWh ea.
- Bondi, Cammeray, North Epping, Warriewood in progress – min. 160kW/240kWh each

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Artwork: *Looking Down on the Land*
Sharon Smith

Cabarita Community Battery, Kendall Reserve, 8 September 2023

Artwork: *Travelling across Country*
Emma Peel

Narara Community Battery, Mitchell Park, 3 November 2023

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Choosing a battery

MTU Rolls Royce QS/4

Beacon Hill

Tesla Powerwall 2

Bankstown

Cameron Park

Pixii Powershaper

Cabarita

Narara

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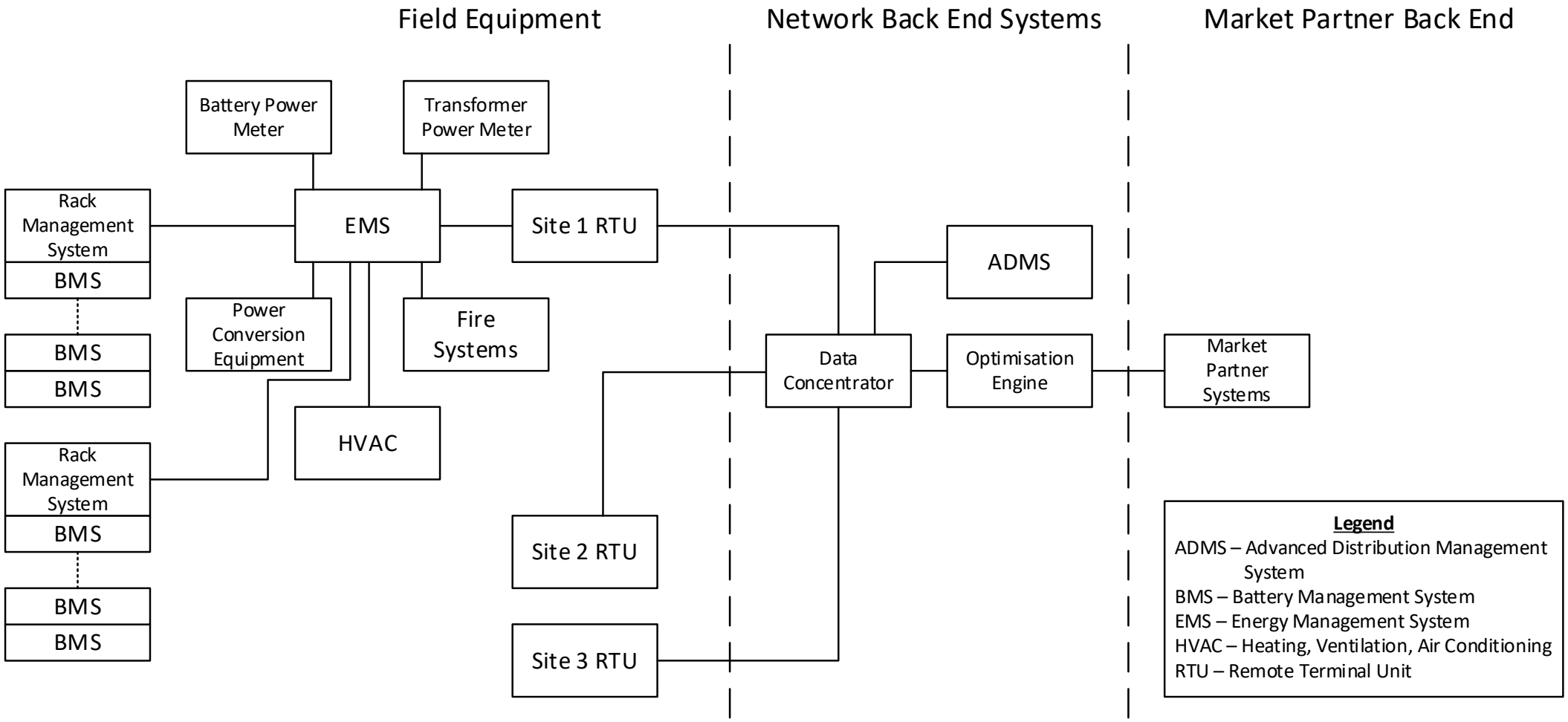
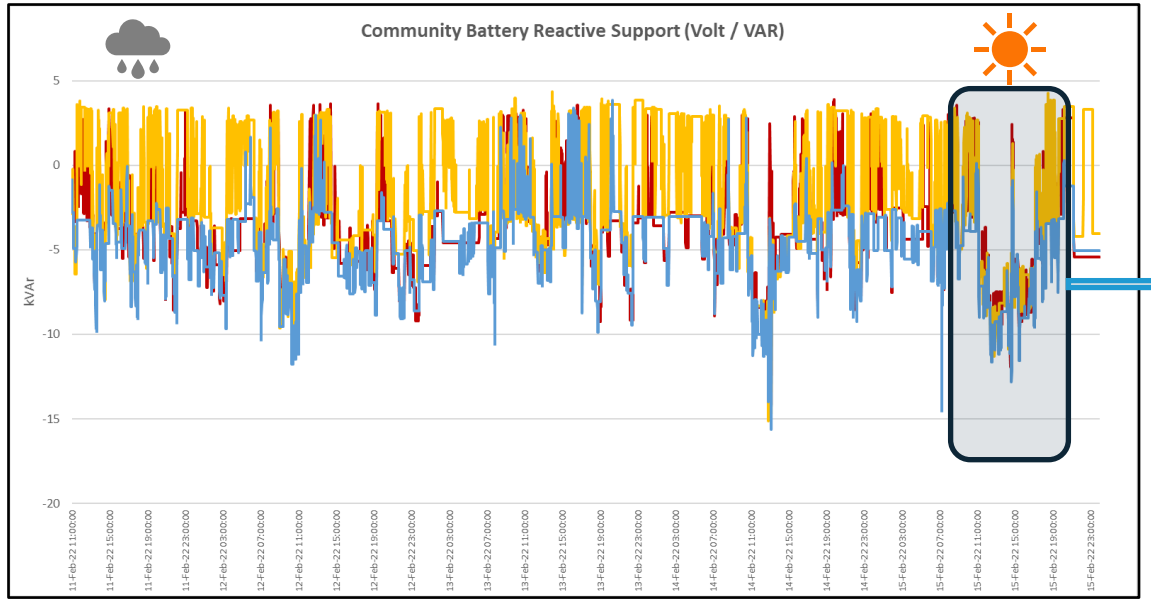
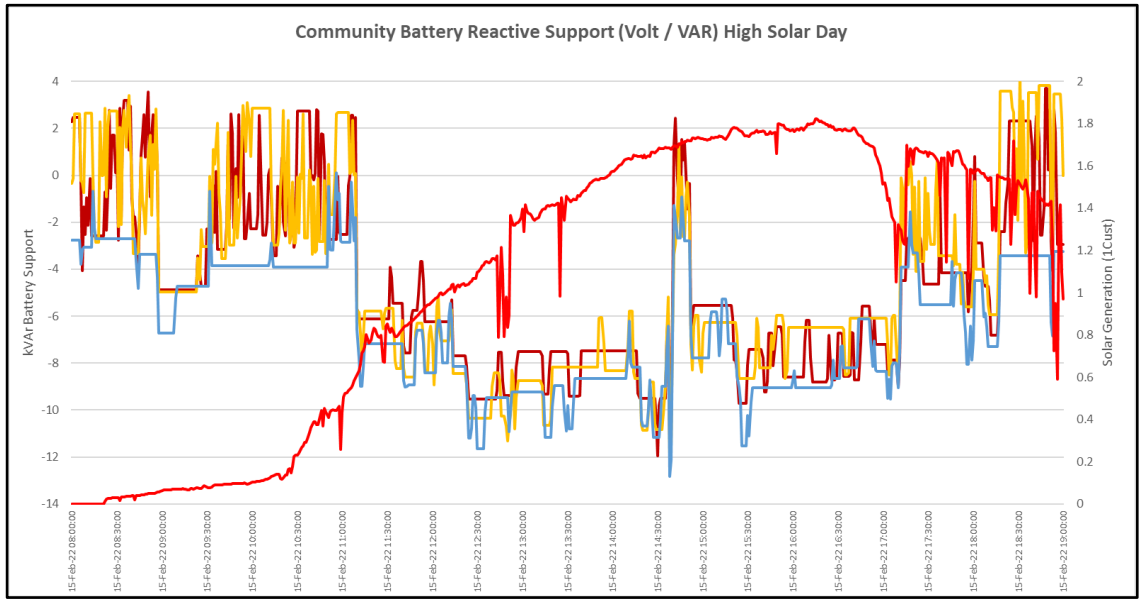
Integrating a battery



Using the battery - local voltage support

- **The batteries provide reactive support to allow customers to maximise active power exports**
- Volt-VAR curves are custom for each battery and LV network (different to AS/NZS 4777.2:2020)
- At Beacon Hill it has been observed during high irradiance days the local voltage will traditionally increase. As seen below BESS will react to this and work to lower the voltage by absorbing reactive power.
- Control systems designed to allow for central reactive power dispatch.





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Using the battery - peak shaving

- Have tested peak shaving capabilities of different vendors.
- Peak shaving at the transformer ensures that it is not overloaded for both direction of power flows (negative and positive power flows).

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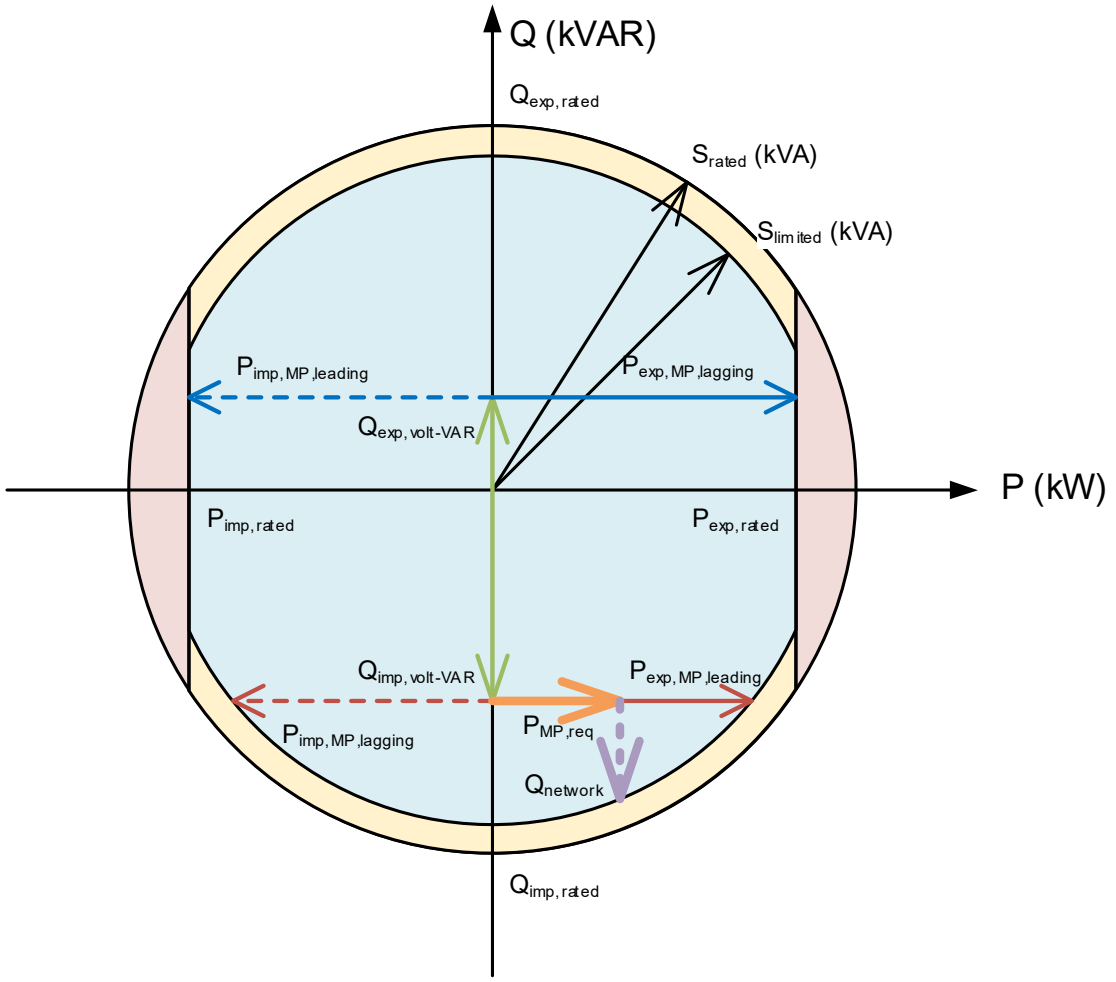
Using the battery – market partner use

1. Native battery (real power) and converter (apparent power) ratings
2. Apply day/time based operational limits (e.g. noise)
3. Allocate reactive power for volt-VAR mode
4. Offer remaining real power capacity to Market Partner
5. Receive Market Partner real power request
6. If available, spare apparent power capacity can be used by Ausgrid for further reactive network support



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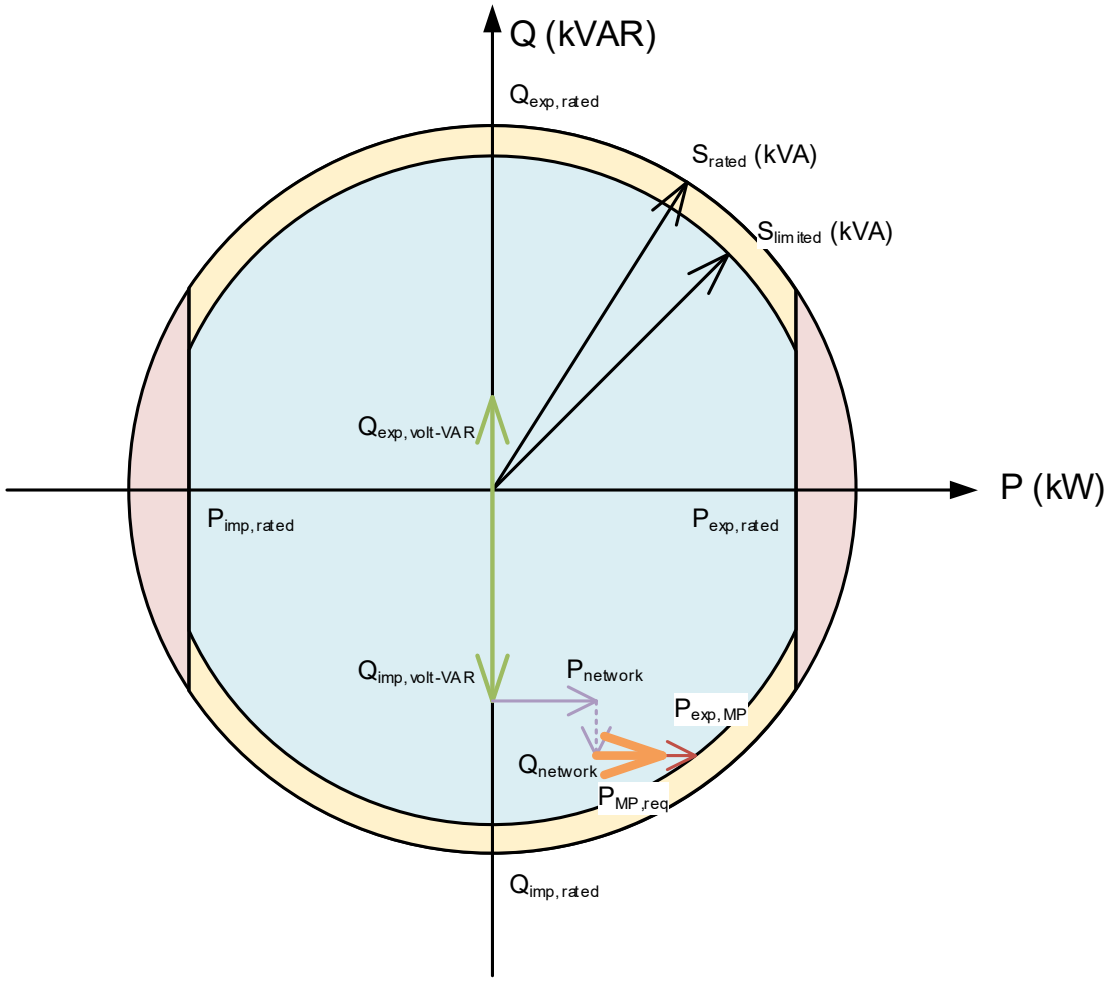
Using the battery – network/shared use

1. Native battery (real power) and converter (apparent power) ratings
2. Apply day/time based operational limits (e.g. noise)
3. Allocate reactive power for volt-VAR mode
4. Ausgrid determines how much real and reactive power is required for network support
5. Offer remaining real power capacity and battery energy to Market Partner
6. Receive Market Partner real power request



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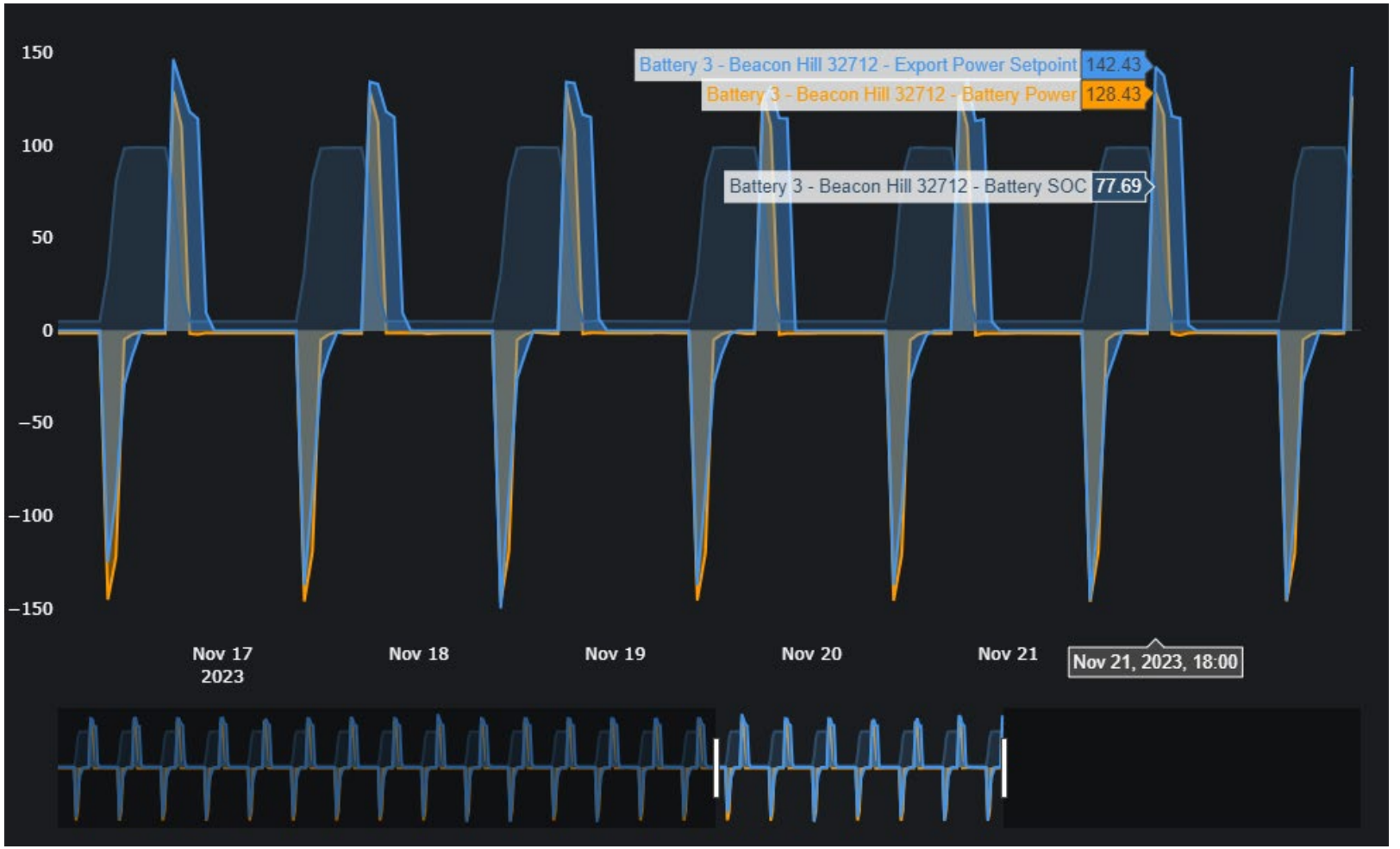
Recent market partner usage



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Future integration work

- Further refinement of optimisation engine
- Deployment with new vendors
- Forward forecasting and scheduling (DERMS)
- Use of IEEE 2030.5 / CSIP-Aus for Market Partner communications
- Different Storage-as-a-Service/partner models

Thank you.
Questions?