Case studies from the edge of the grid

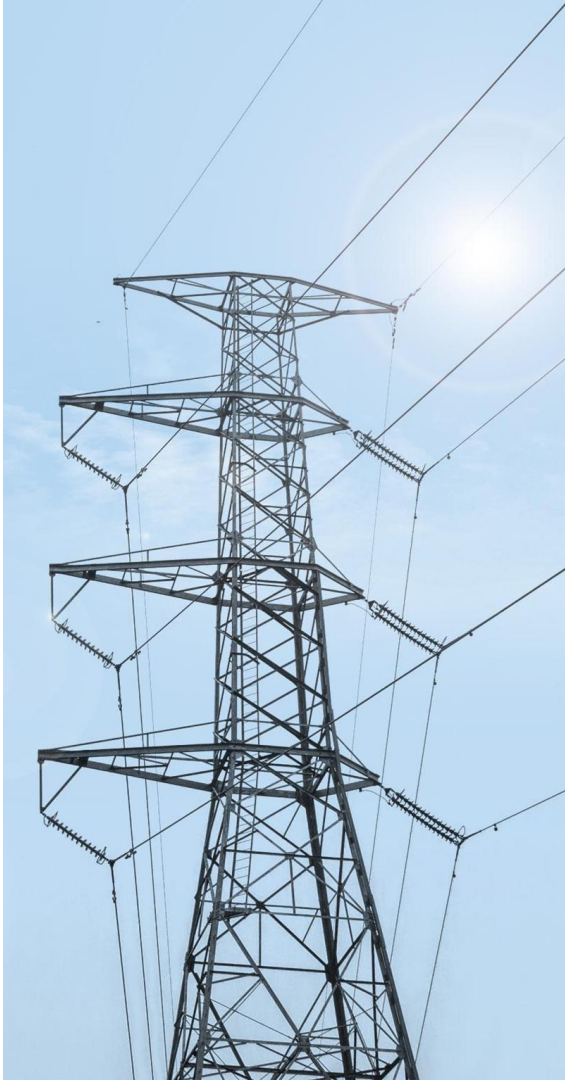
Gary Childs | Small-scale Energy Storage Forum 2019

About SwitchDin

Enabling Tomorrow's Energy:

Solar, batteries & loads made smart

- Australian energy tech company founded in 2014
- Energy management system software & hardware
- Integrate equipment from different manufacturers
- Enable microgrids & virtual power plants
- Work with electricity companies, equipment manufacturers/integrators, and solar panel retailers
- Multiple projects with tier 1 clients around Australia; early market entry into EU & North America



Lockhart River Community Microgrid (Lockhart River, QLD)

Energy Queensland's Lockhart River microgrid

- Stand-alone microgrid in far-north QLD for community of ~700 people
- Formerly supplied solely by diesel fuel
- Goal: To meet energy reliability requirements & reduce diesel consumption

Queensland Government

ERGON ENERGY RETAIL

yurika

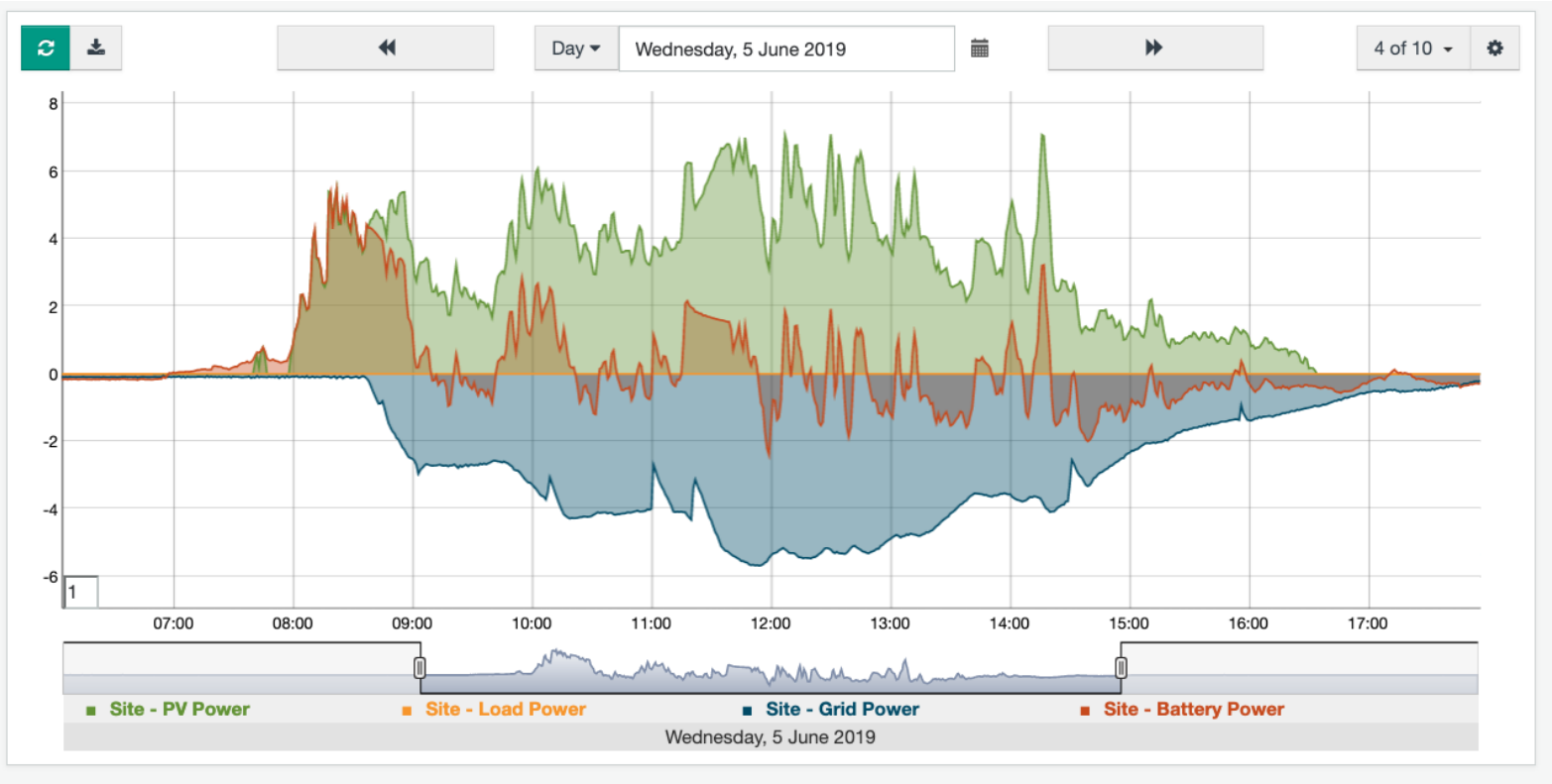
Part of the Energy Queensland Group

Energy Queensland's Lockhart River microgrid

The solution:

- Solar & batteries installed across 4 sites, each equipped with a Droplet
- SMA & Selectronic inverters, Ecoult batteries, Schneider MPPTs
- SwitchDin Droplets integrated into Ergon's Power Station Controller (PSC) and abstract data from distributed resources, providing consolidated monitoring & control
- Droplets implement PSC instructions in real-time

Solar smoothing at Lockhart River



Lobster Shack Industrial Microgrid (Cervantes WA)

Industrial microgrid for constraint management

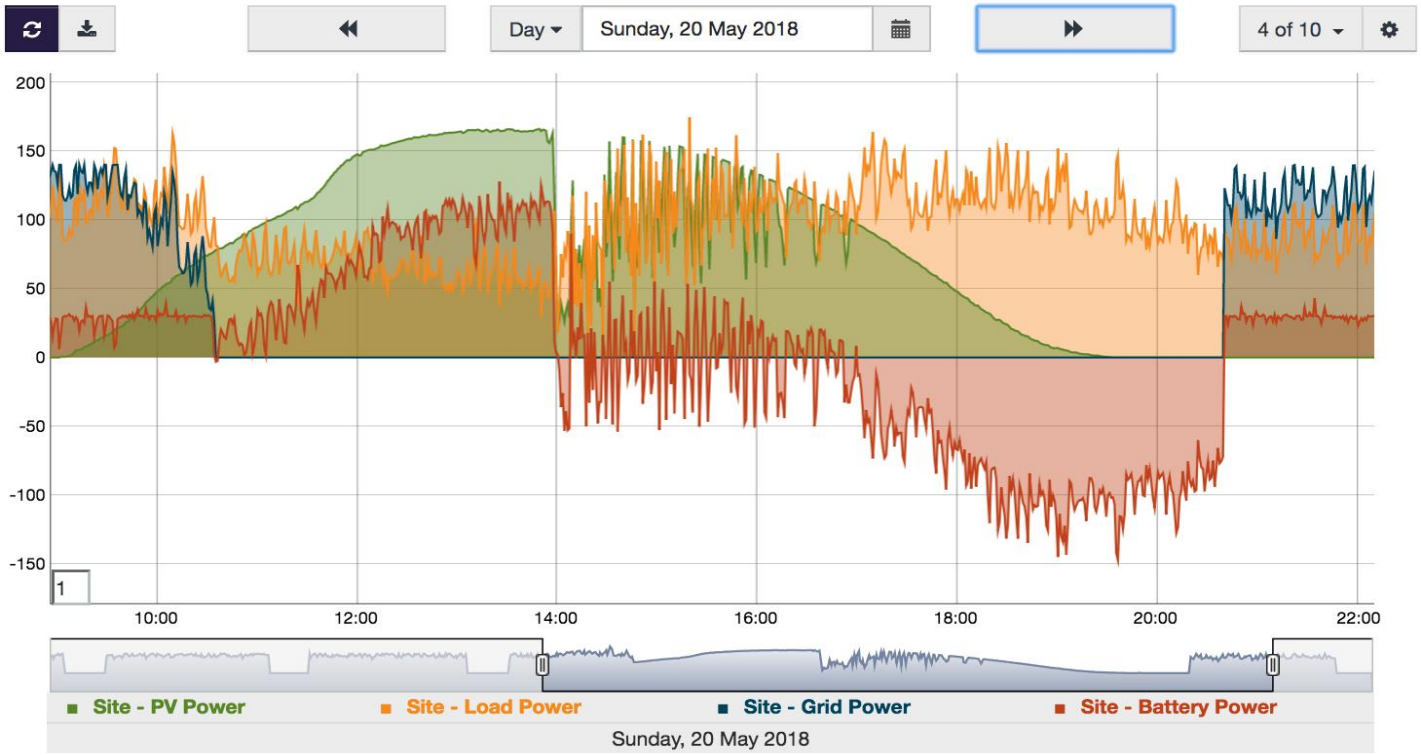
- SwitchDin maximises energy independence while working within local network constraints (import & export)
- 150kW solar, 750kWh batteries, 160kW generator
- Power stays on during (frequent) grid outages
- Cutting-edge approach to grid connection

LOBSTER SHACK

WALNUT ENERGY SYSTEMS

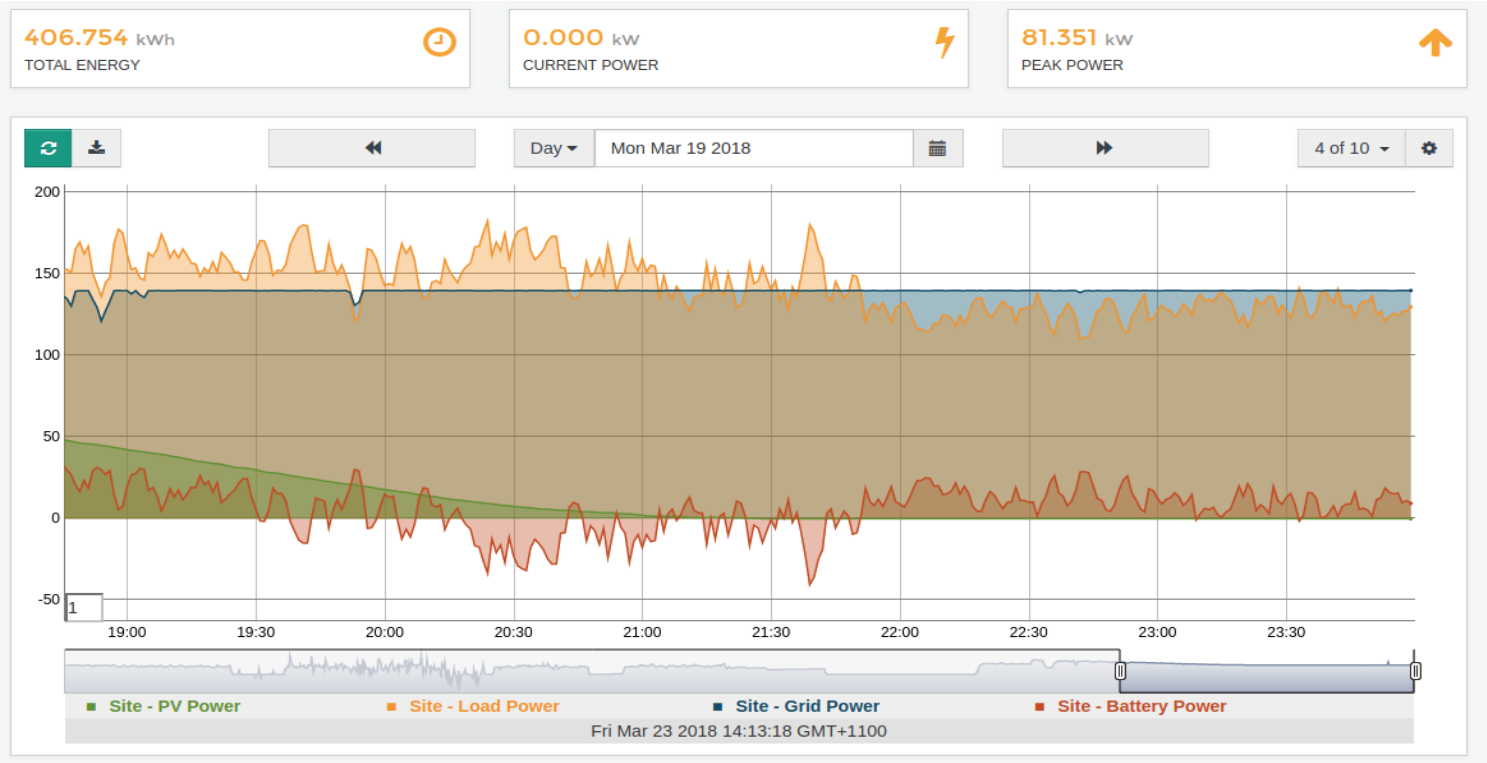
Industrial microgrid (WA)

Self-consumption, solar smoothing & blackout protection



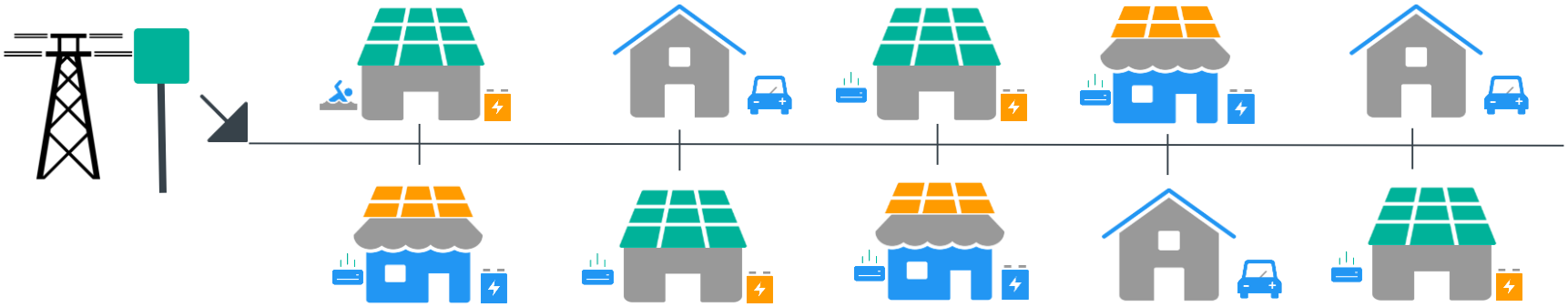
Industrial microgrid (WA)

Demand management: Working within grid constraints (battery fills in the gaps):



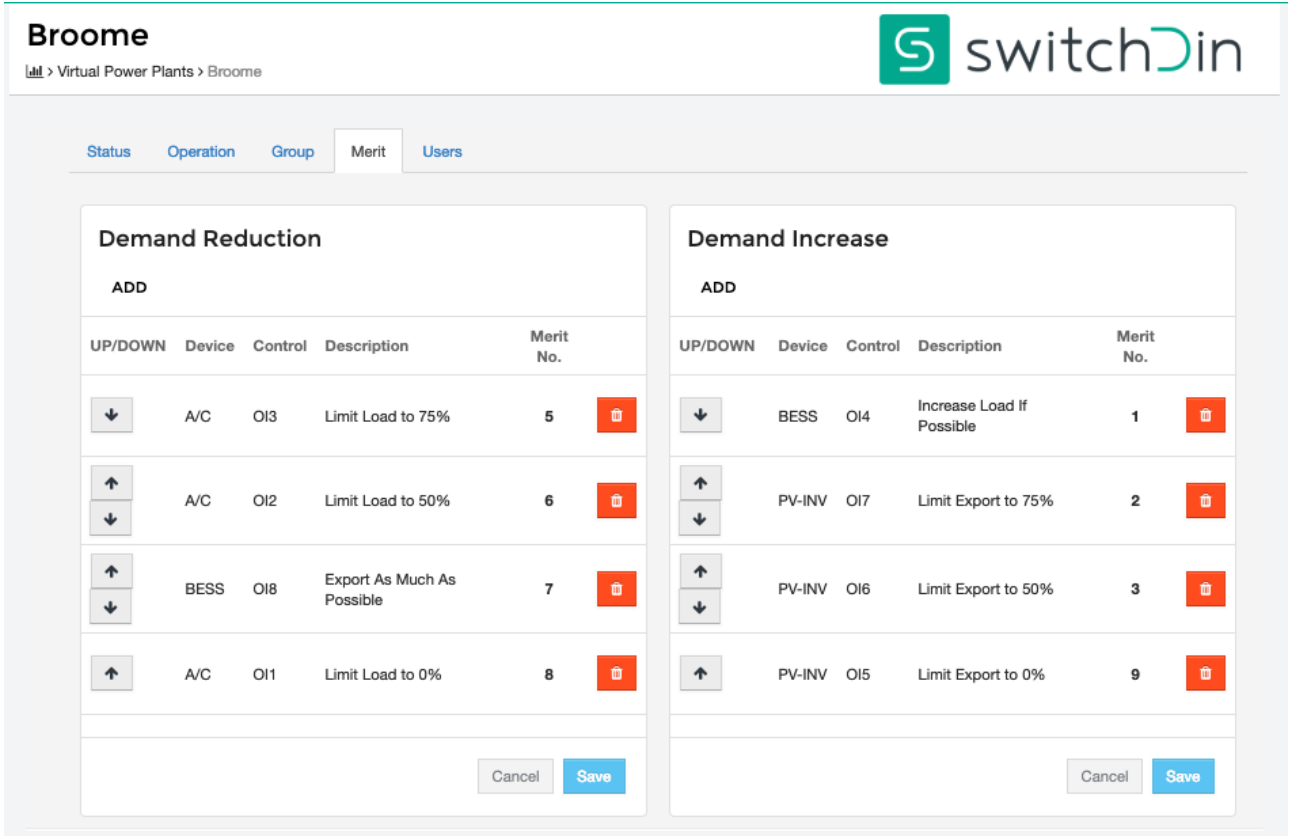
Horizon Power Smart Sun Pilot (Broome WA)

Horizon Power Smart Sun Pilot: Dynamic constraint management



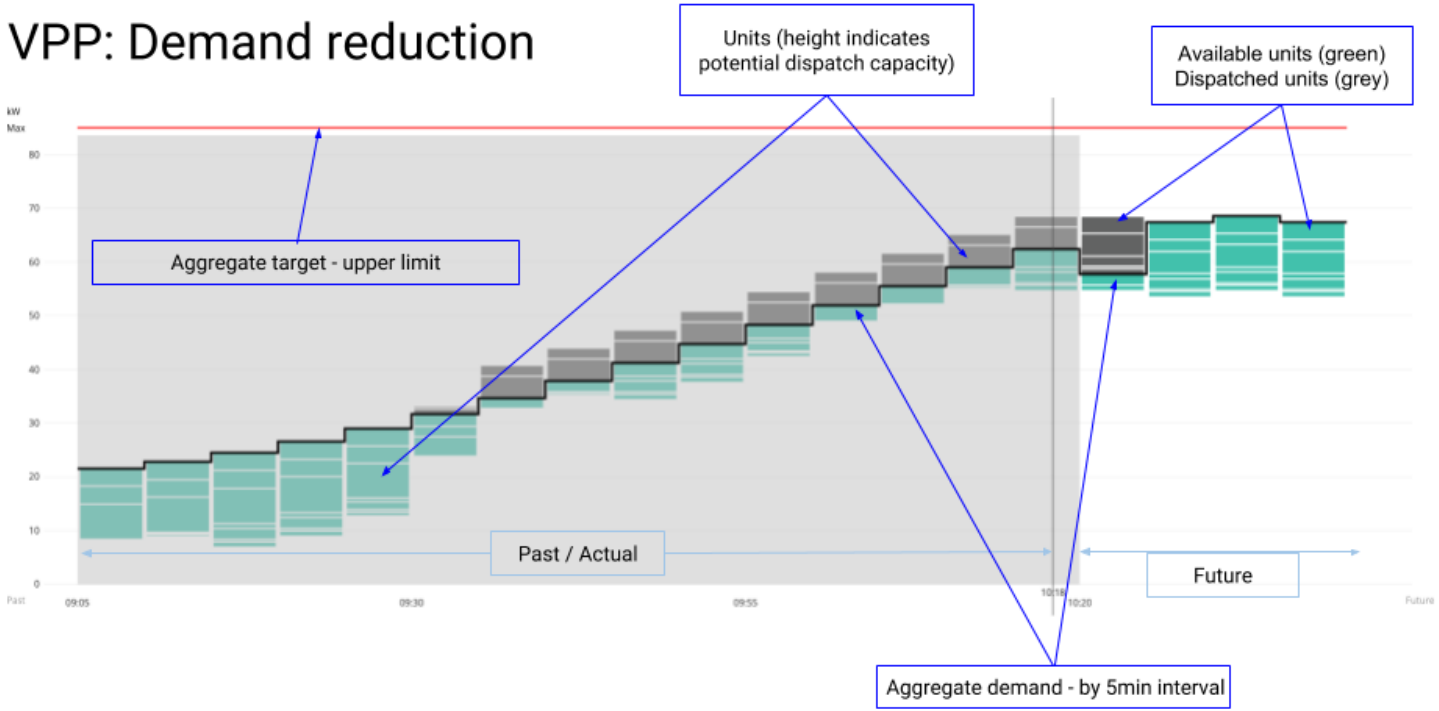
- Too much solar: Voltage issues, reverse power flows
- Closed-loop monitoring & management of distributed resources via readings at transformer

Customisable merit order



Managing distributed assets

Stages 2 & 3 underway soon



Thank you!

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Other projects

BCG regional microgrid, Oak Tree Retirement Villages

Lockhart River microgrid: Results to date

- 8% reduction in diesel fuel consumption (62,000 litres, 50hrs genset runtime)
- Real-time info & operations portal used to understand local conditions following cyclone impacts, increasing safety & speed of response to issues
- Droplets continued to operate without comms for weeks after lightning struck Telstra tower

switchDin

By providing balance to the relationship between renewable energy asset owners and utilities ... we maximise the value of these distributed energy resources to all.

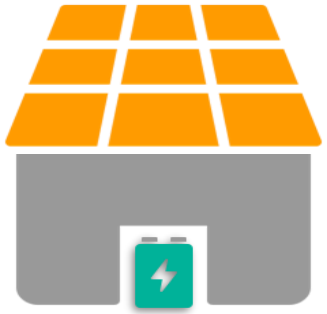
Droplet controller: Features & benefits

Droplet™

- Vendor-agnostic: Works with most inverters, batteries, power meters, load controllers and sensors
- Improves user experience with web and mobile portal
- Utility-grade security available in both communications and cloud platform
- Improves cost effectiveness and reduces technology and supply risk
- Can also be deployed as software

In a nutshell: Small picture to big picture

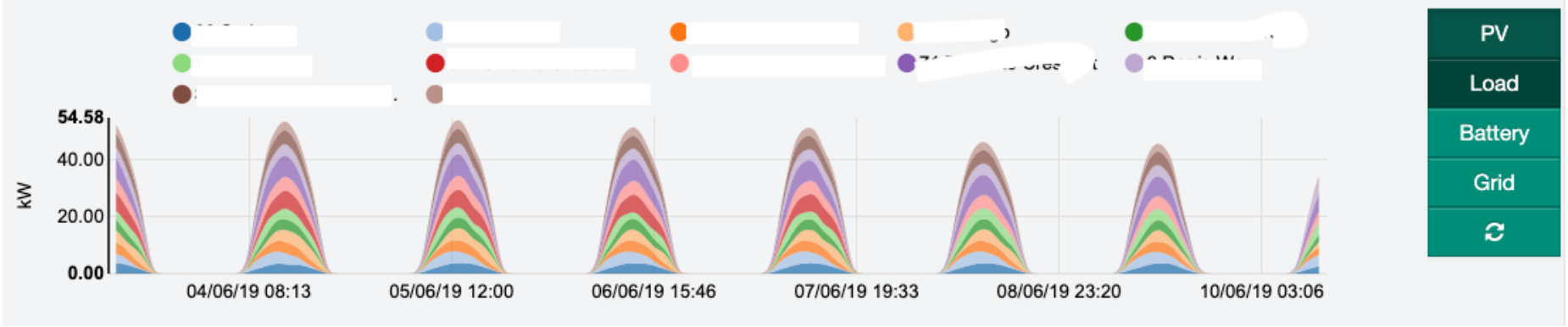
Optimisation of solar, batteries & loads for homes & businesses - vendor neutral

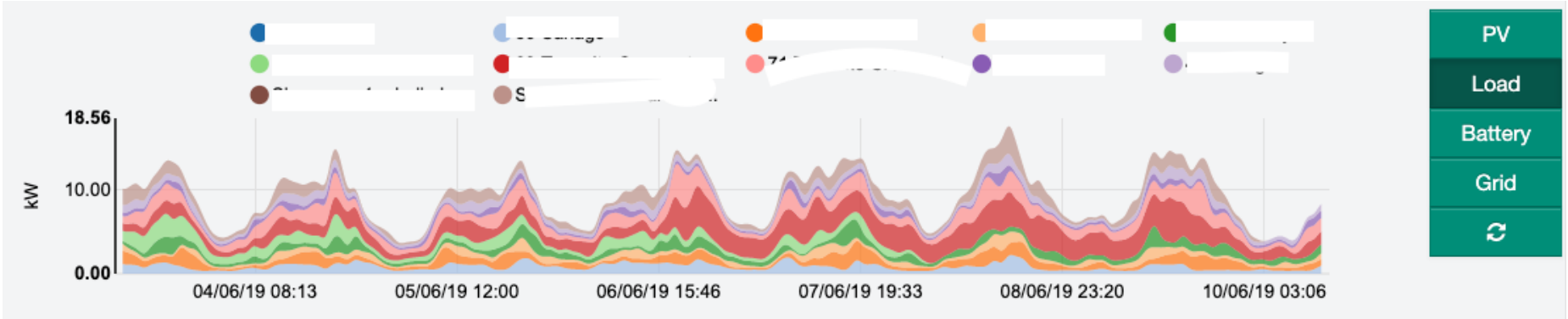


Better outcomes for local networks - overcome challenges with high solar penetration, better use of local resources

Enable small-scale solar, batteries & loads to participate in energy markets, providing wholesale energy, frequency response and other services

Asset portfolio monitoring





Device controls