

Smarter Sustainable Solar

Standards to Support

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SOLARZERO



Gareth Williams
Chief Technology Officer,
solarcity

Our mission



Accelerate New Zealand's transition to be 100% renewable and lower the cost of energy for Kiwis.



**100% RENEWABLE
ENERGY**



**PROVIDE CHEAPER
CLEANER ENERGY
OPTIONS**



**REMOVE THE COST
BARRIER**



**MAKE THE
TECHNOLOGY SIMPLE**

solarZero energy platform



SOLAR PANELS



SMART BATTERY



DATA and ANALYTICS



MONITORING and CONTROL



The solarZero service



4000 + customers



3500 with battery



500 solar only

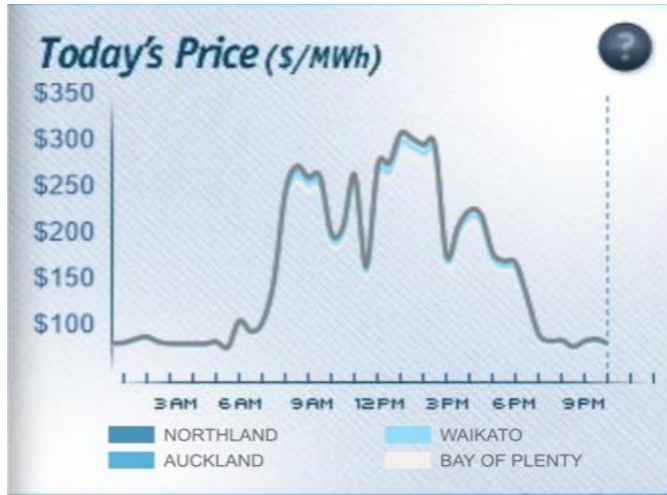
OUR SERVICE

- Solar panels, battery system, advances energy monitoring and control platform
- We own, manage and maintain the hardware – including battery swap
- Grid energy and e-store to drive energy efficiency

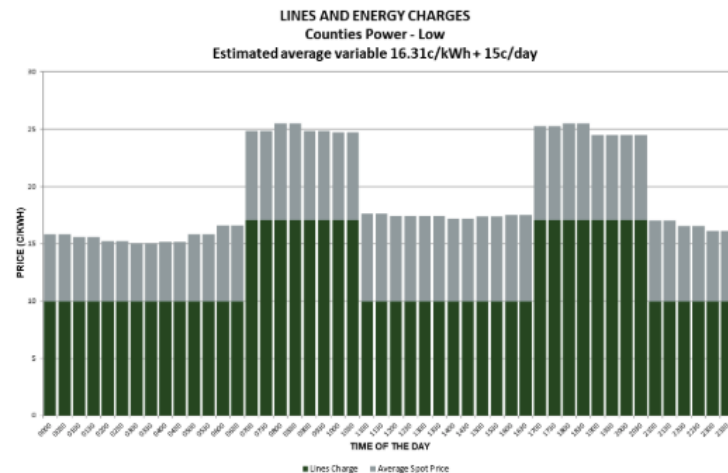
OUR VALUE

- Average bill savings of 10-25%
- Back-up during outages
- Fix up to 80% of energy costs for 20 years
- Savings across term guaranteed

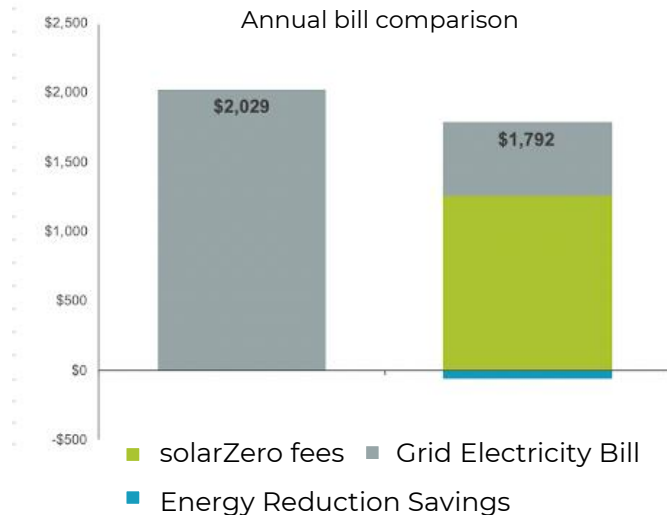
How do we save our customers money?



solarZero Tariff Details ⓘ



Outputs			
Location and Zoning			
Location	Auckland Central		
Network	Vector (Auckland)		
Recommended solarZero+ Battery Package			
Package	Size (kWp)	Area (m2)	Output (kWh/yr)
totara	2.655	15	3847
Energy Use Comparison			



Avoided grid energy



Price cap on net energy cost



Time of Use line charges

Estimated savings in the first year of **\$230 or 12%**
Estimated savings over 20 years of **\$17,500 or 31%**

Pricing consistency and certainty



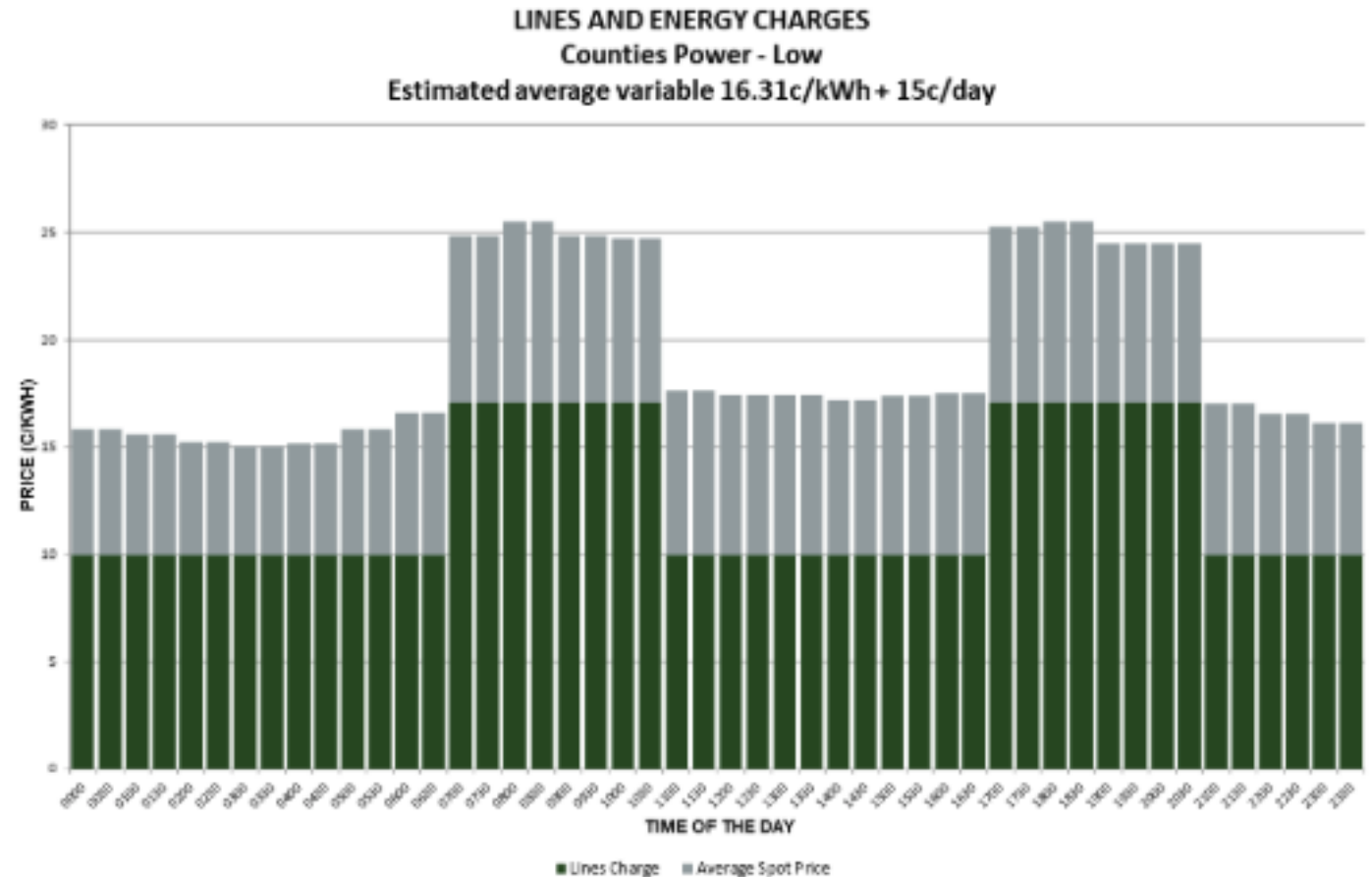
Time of use pricing is an important part of the value stack of batteries (not critical – but certainly helps)

A standardized approach to pricing / price certainty helps to make investment decisions in distributed generation and storage technologies

Most lines companies do offer some form of TOU tariff option but

- Some don't
- Some do and then don't
- Some are short term trials

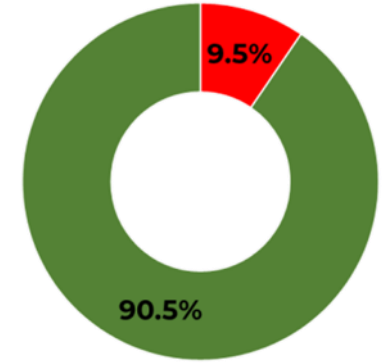
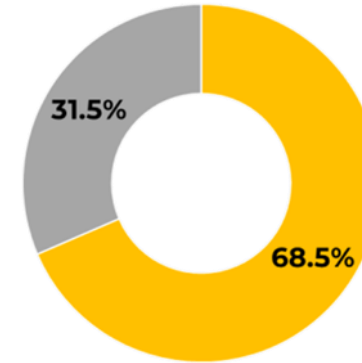
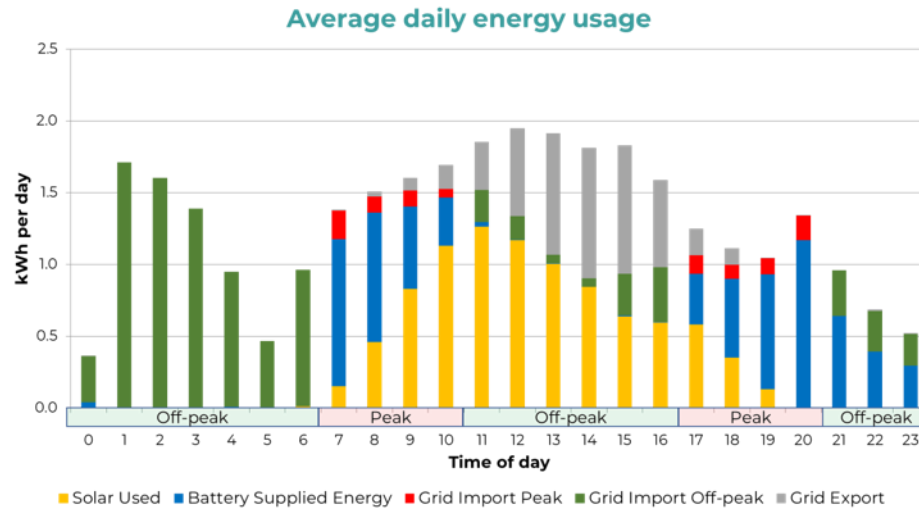
solarZero Tariff Details ⓘ



A day in the life of a solarZero customer



Summer



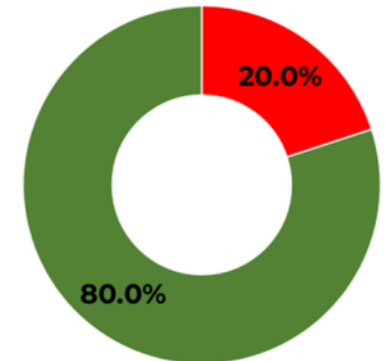
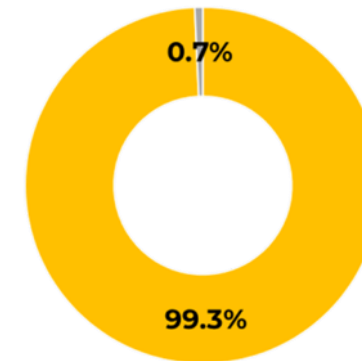
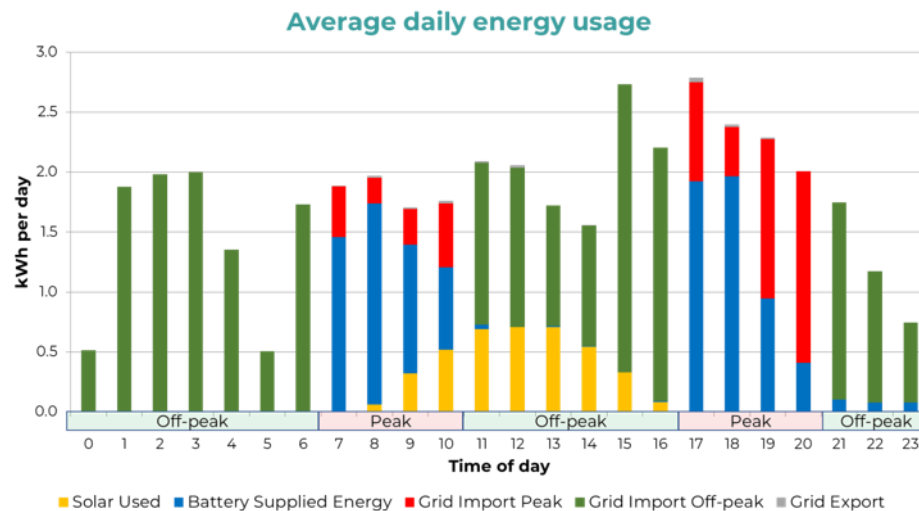
Total Solar Used

Grid Import Peak

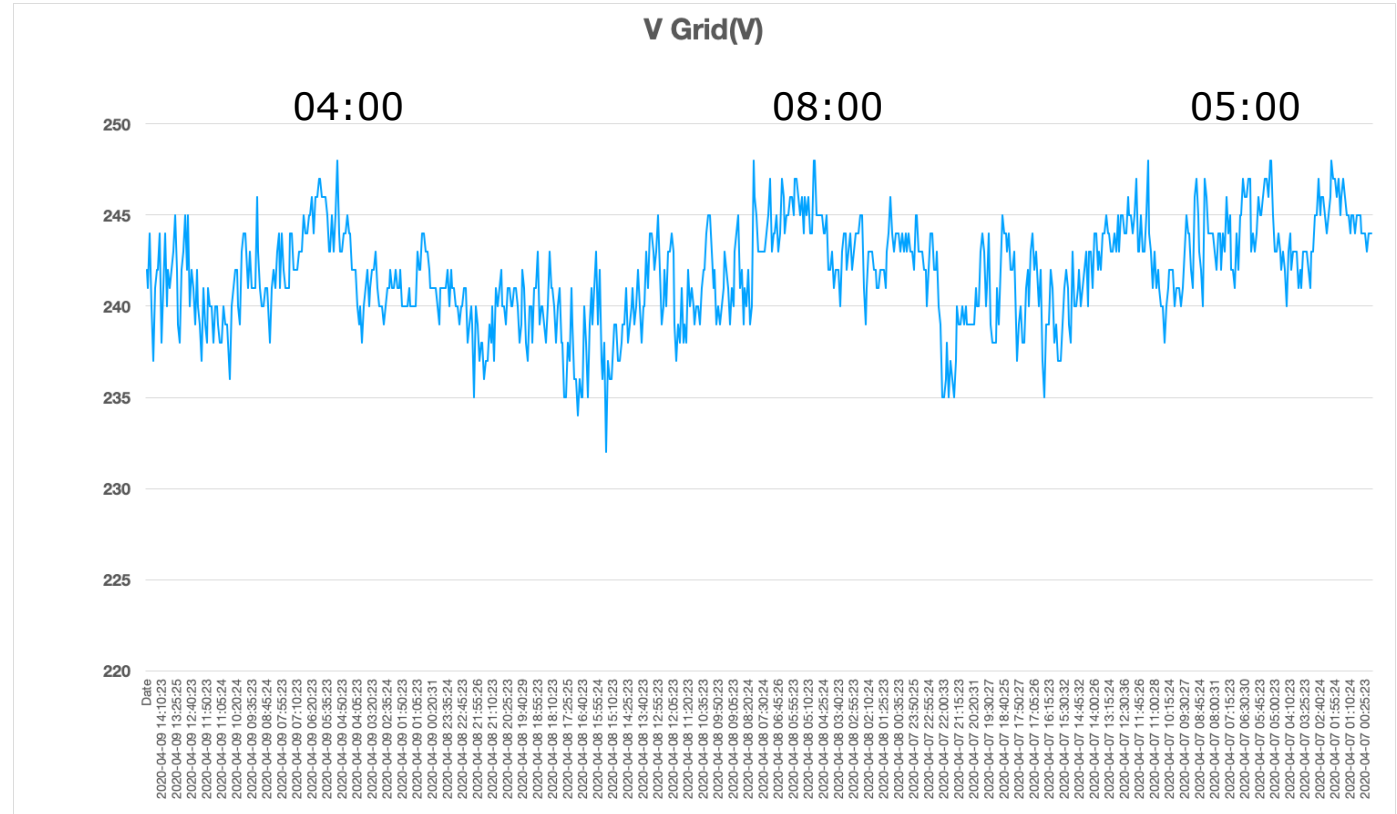
Total Solar Exported

Grid Import Off-peak

Winter

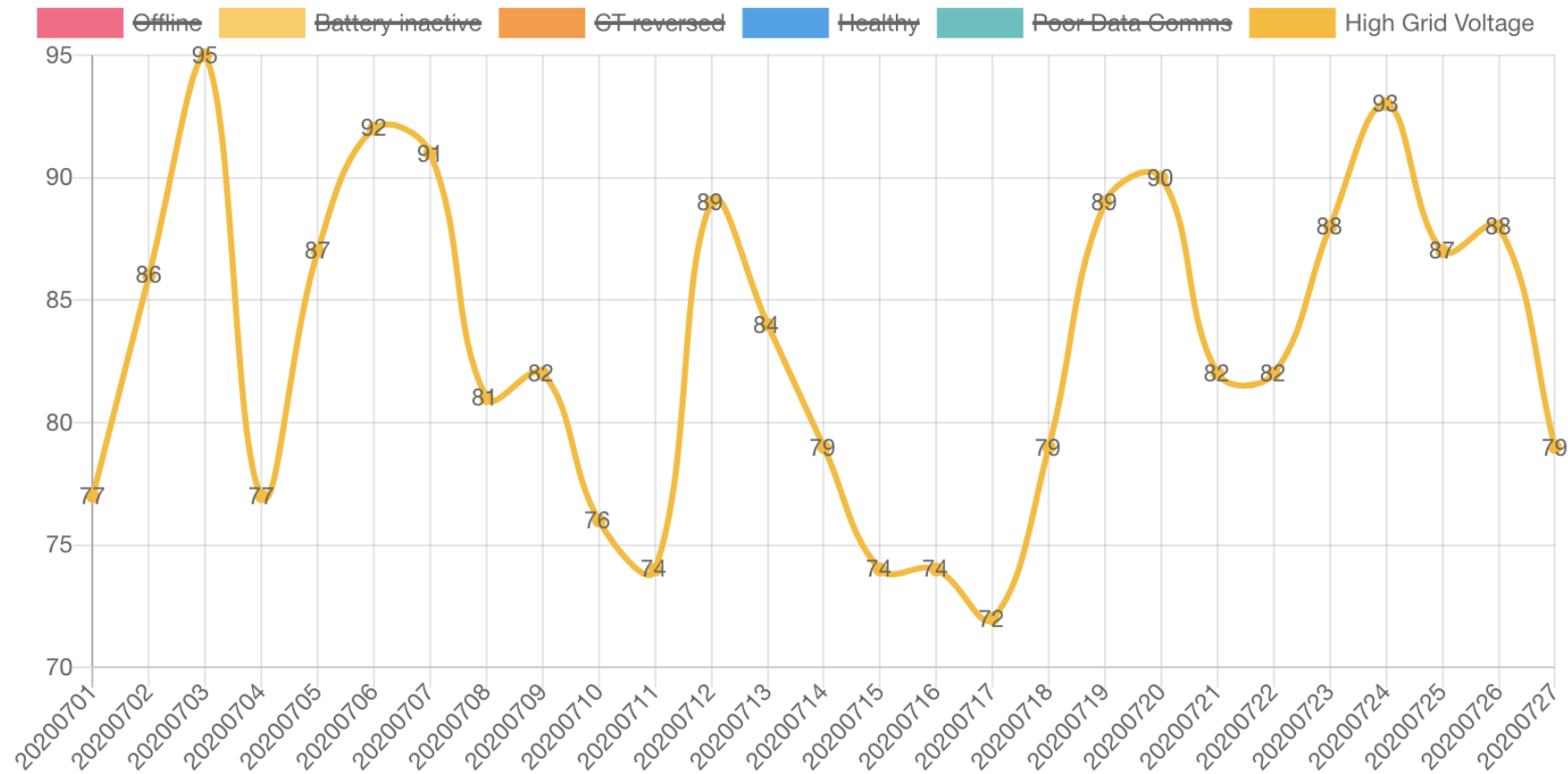


But sometimes it doesn't work



Q. Why have inverters disconnect for over-voltage when grid charging?

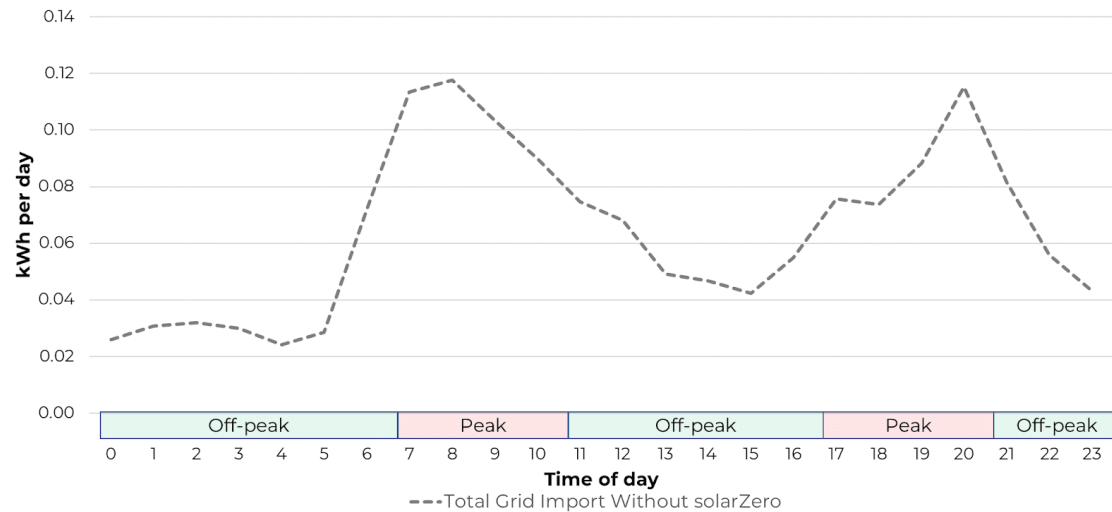
Network voltage is an issue across our fleet



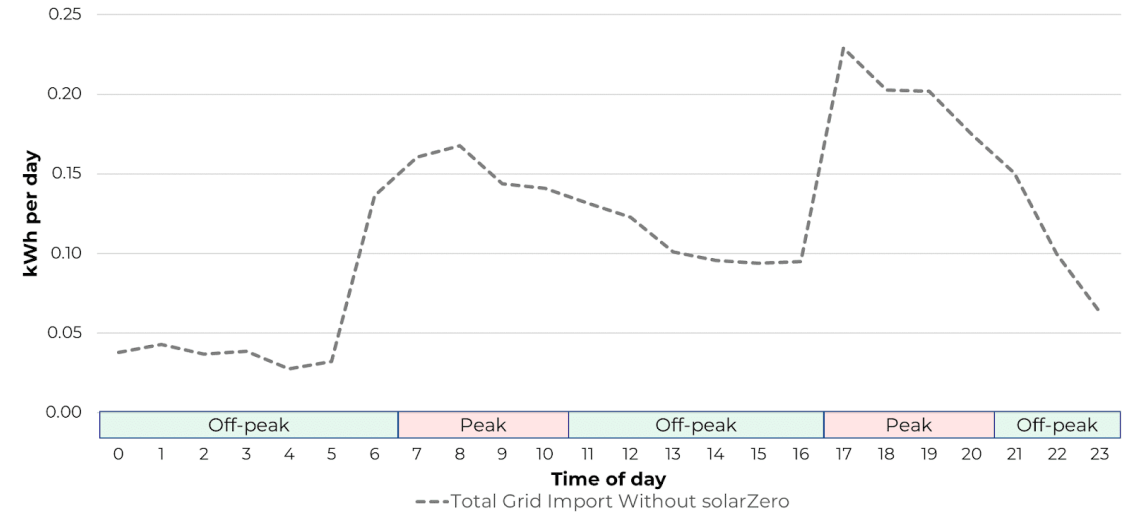
solarZero's effect on our customer's energy profile



Summer



Winter



solarZero's effect on our customer's energy profile



Summer



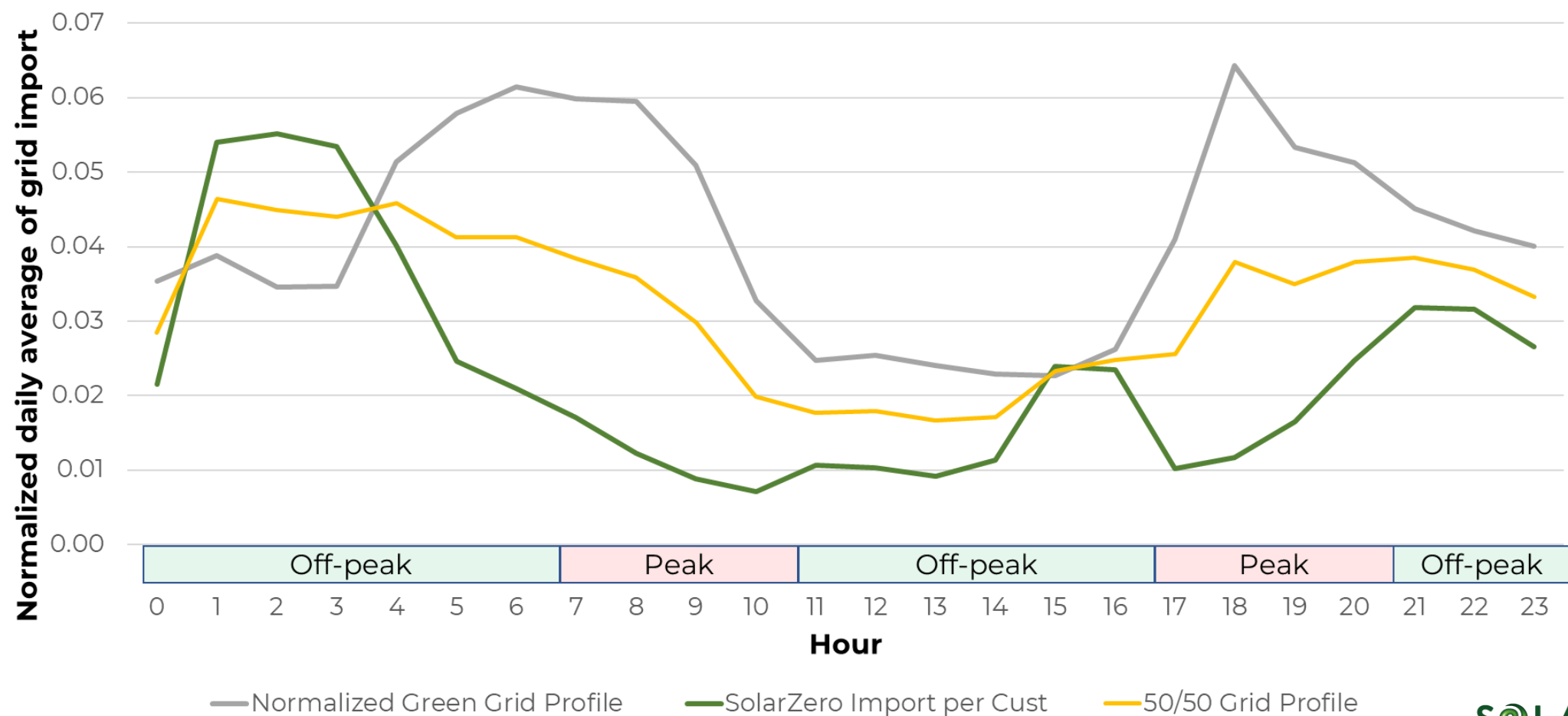
Winter



Changing demand profiles



Impact of solarZero solution on New-Zealand Grid
Profile in October



Connection standards - Congestion



Already becoming an issue with networks declining connection or placing limits on export

“Rules” don’t take account of battery storage

Requires a standard and robust method for determining impact on the network (at the LV and HV levels)



Connection standards - Consistency



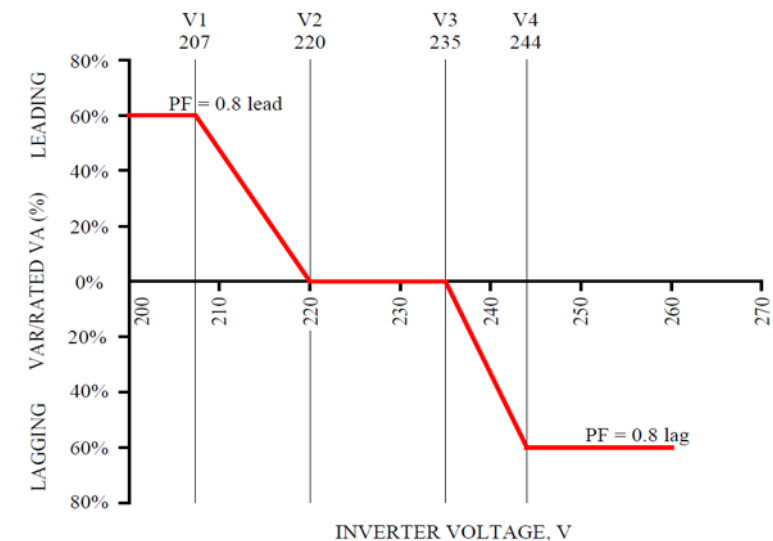
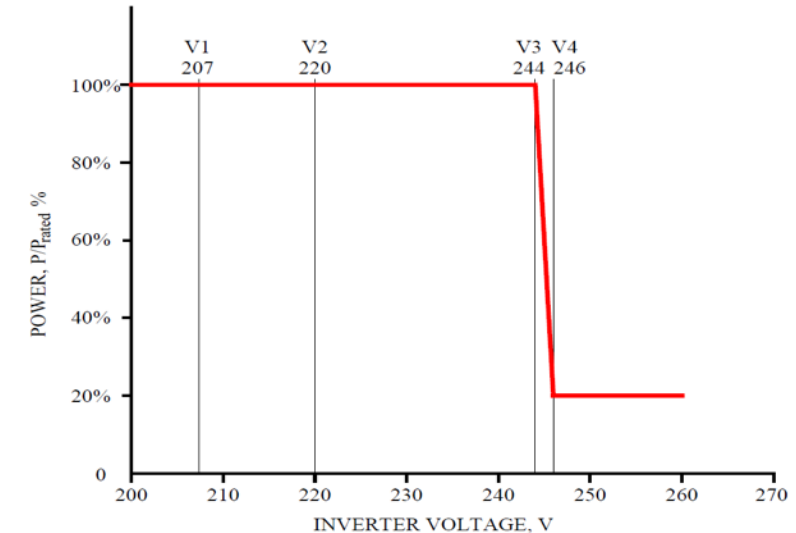
AS 4777 versus Green Grid settings
(and how do they deal with battery
charging / discharging)

Local rules – “Cannot charge the
battery from the grid at any time when
network is undertaking load control”

Grid control standard??

DG Application forms are all different
and approval process is variable –
admin burden

Meter change / inspection processes
different



Product Development



**SMARTER
ALGORITHMS**



ENERGY TRADING



LARGER BATTERIES



**EXPANDING
COMMUNITY**



EV CHARGING



NETWORK SERVICES

solarZero energy platform – Grid Services



Add new schedule

Application type	Dis-charge		
Start Date	2020-03-12	Start Time	09:56
End Date	2020-03-12	End Time	10:26
Per-ESS Power setting (kW)	2.0		

Max Power setting for each selected ESS is 3 kW

Add sites to execute application

Site	Network	GXP	Region
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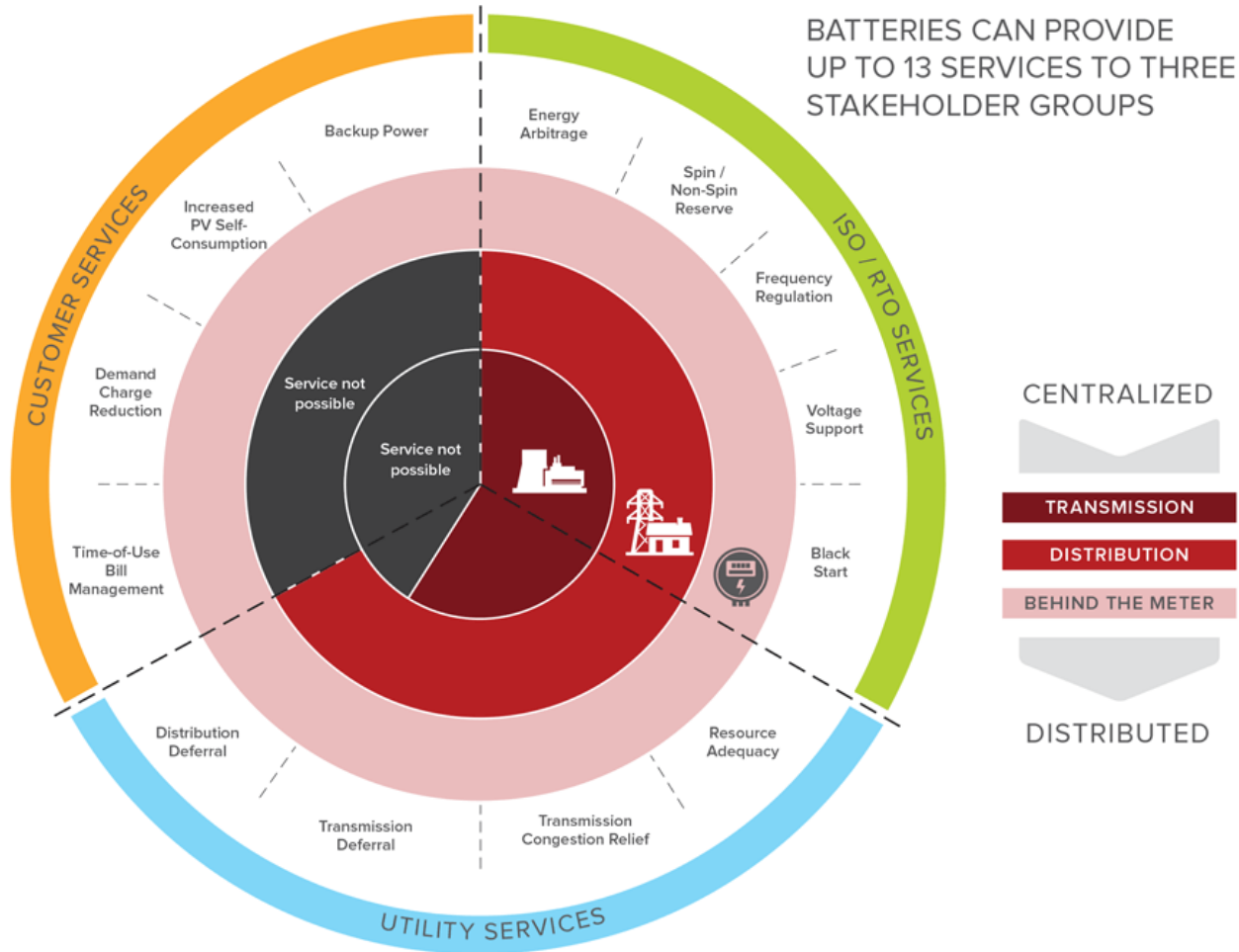
ALB0331 (160.00000000000006kWh. 28 sites)

160.00 kWh / 56 kW
Selected / Requested

Cancel

Review

solarZero energy platform – Grid Services



Significant potential value

- Avoided / deferred investment
- Demand response
- Voltage management

Requires standard approach to communications, data exchange, performance

....

Allow third parties / customers to provide cost effective solutions without compromising network security

Will deliver a cost effective, robust and flexible network



Thank you