The Energy Transition
A Tale of Two Countries: Australia and Taiwan

It was the best of times…
It was the worst of times….

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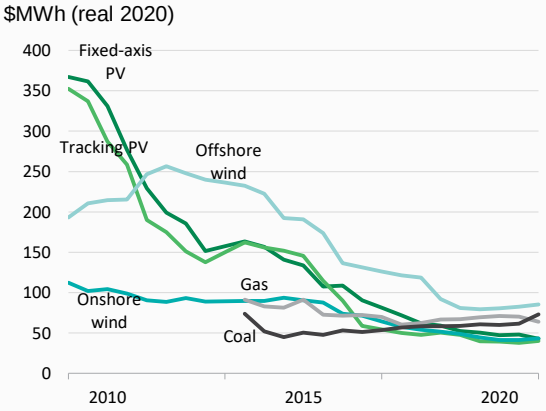
The Energy Transition
What is it and what is it doing to grids?

Eku

Renewable Energy (RE) cost declines and goals of energy security from domestic generation are accelerating one of the largest investment opportunities and one of the energy value chain changes in history; the Energy Transition.

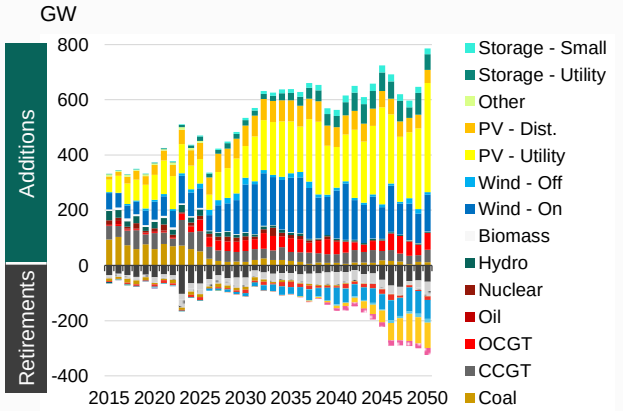
Renewable cost decline[1]

The decrease in wind and solar costs and push for decarbonization of power grids globally…



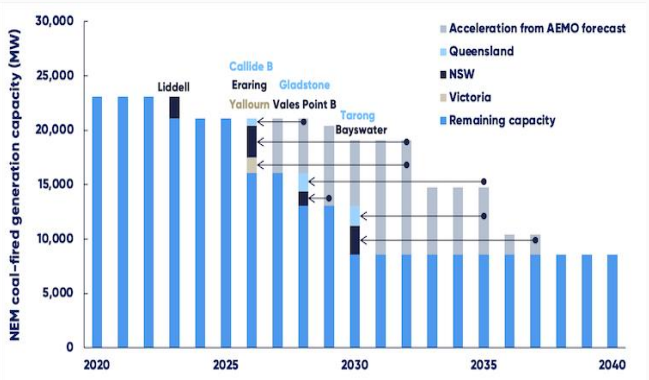
Global generation mix[2]

…is accelerating the growth of renewables …



Retirements of thermal plants[3]

… and the retirement of traditional thermal generators

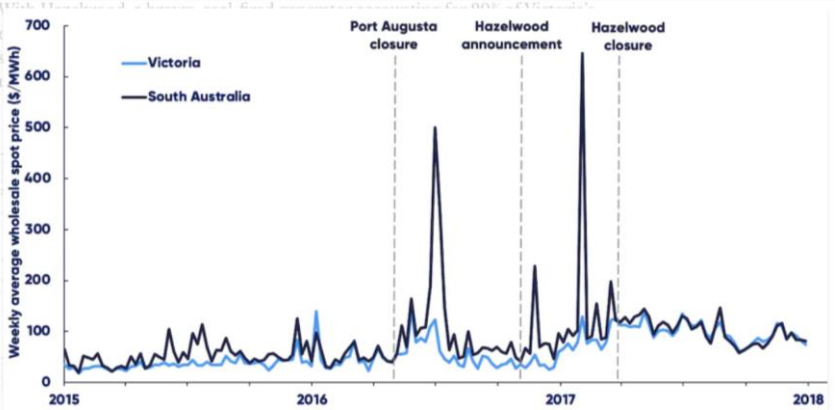


1) BNEF, “2H 2021 LCOE: Data Viewer,” Dec. 21, 2021. 2) BNEF, “New Energy Outlook 2020,” Oct. 2020. Note, the BNEF NEO 2020 ETS scenario remains BNEF’s business as usual view as of Jan. 2022 3.) AEMO ISP

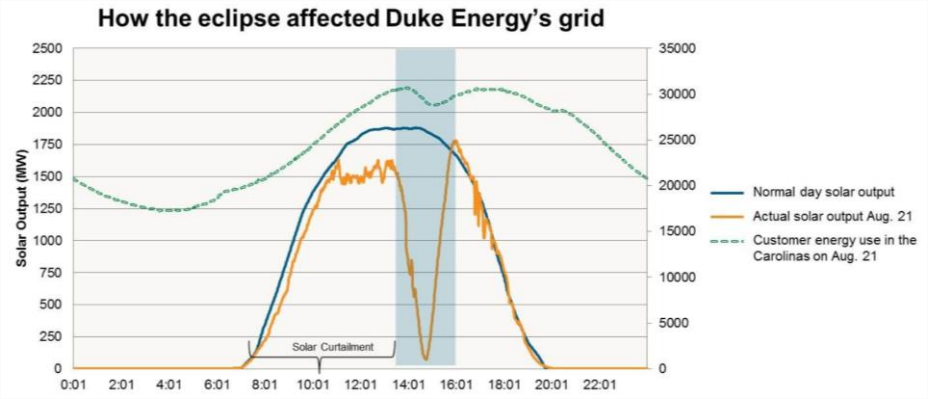
The Energy Transition
An invitation for innovation …

Thermal retirements can be disruptive and Renewable Energy (RE) isn't predictable. Often current energy systems haven't been designed for faster changing inverter-based generation, like solar and wind.

Thermal retirements often chunky and increase volatility[1]



Potential RE output change[2]



1) AEMO 2) Duke

Introducing Eku Energy

Eku Energy is a global energy storage business working across the full project life-cycle to develop, build and manage utility-scale energy storage assets for the long-term.

Our portfolio of digitally enabled, flexible, utility-scale storage projects will provide vital grid services in key markets around the world, including **Australia**, Japan, **Taiwan** and the UK.

Long-term partner

Specialist technology-enabled developer

Globally diverse player

1GWh+	20+	6+
of committed battery storage projects	Projects in mid – late stage development	Targeted key markets globally

Eku is backed by two global financial powerhouses to advance the Energy Transition

Initially launched by Macquarie's Green Investment Group, Eku Energy is jointly owned by a Macquarie Asset Management (MAM) managed fund and British Columbia Investment Management Corporation (BCI).

With over A$870.8 billion of assets under management (as of 30 April 2023), MAM brings world-class financial capability as the largest infrastructure asset manager globally. Macquarie's Green Investment Group is a specialist green investor which operates as a part of MAM with 35+ GW renewable energy capacity in development globally.

BCI is among the largest institutional investors in Canada with C$211.1 billion under management (as of 31 March 2022). BCI's infrastructure & renewable resources program, valued at approximately C$20.2 billion, invests in tangible long-life assets in the Americas, Europe, and Asia Pacific, including a portfolio of direct investments in regulated utilities and renewable energy.

Partnering to deliver valuable capacity through innovative revenue contracting arrangements

Hazelwood, Australia

Australia's largest privately-funded and grid-connected battery

Partnership with ENGIE
Former coal-fired Hazelwood Power Station

Capacity	150 MW / 150 MWh
Financial close	Mar 2022

Cranbourne, Australia

One of the largest BESS offtake agreements in Australia

Partnership with Shell Energy
20-year offtake agreement with Shell Energy

Capacity	200 MW / 400 MWh
Financial close	Mar 2023

Maldon, United Kingdom

Eku Energy's first facility to support our European presence

Capacity contract
Revenue floor contract

Capacity	40 MW / 40 MWh
Financial close	Dec 2021

Williamsdale, Australia

Australia's first innovative revenue share contract with an Australian Government

Partnership with ACT Government
15-year revenue swap with the ACT

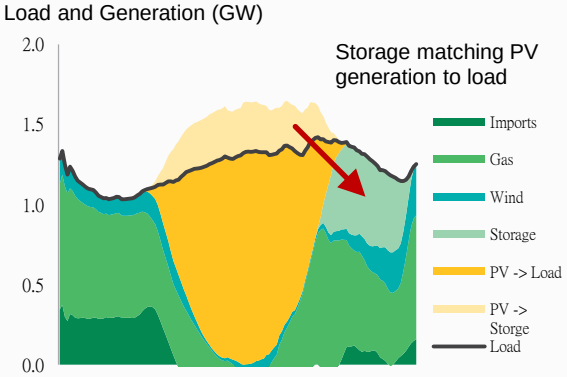
Capacity	250 MW / 500 MWh
Contract Award	April 2023

The Energy Transition creates several problems that energy storage can solve (1/2)

Energy storage helps enable a low-carbon economy by providing a source of flexible capacity to high renewable grids via a wide range of applications. These applications include...

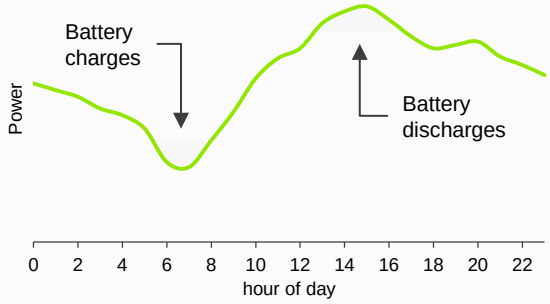
Renewable time-shifting

The mis-match between renewable generation and load is a key challenge of high-renewable grids. Storage helps match renewable supply with demand



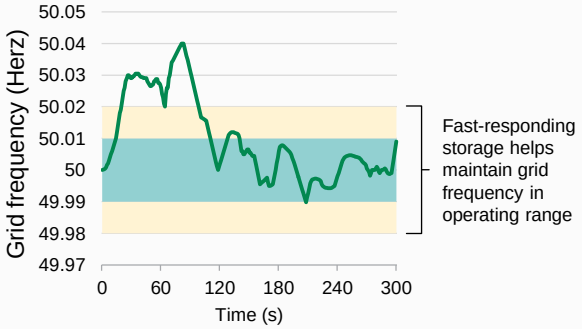
Peaking capacity

Storage can replace natural gas, reciprocating engine and other peaking generators in providing carbon-free firm peaking capacity



Grid stability

High renewable penetration displaces the natural inertia of spinning generators. Storage provides synthetic inertia to maintain grid stability



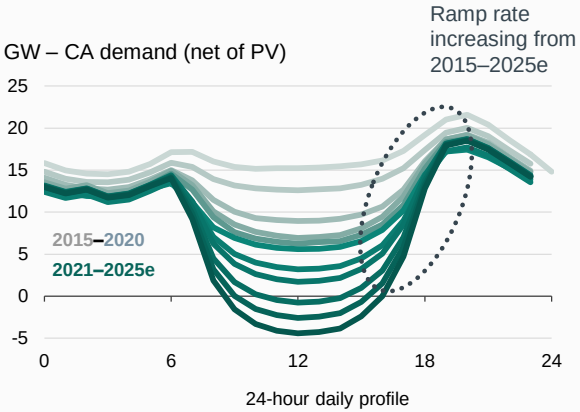
In Australia energy arbitrage and FCAS; in Taiwan: dReg and enhanced-dReg

The Energy Transition creates several problems that energy storage can solve (2/2)

Energy storage helps enable a low-carbon economy by providing a source of flexible capacity to high renewable grids via a wide range of applications. These applications include...

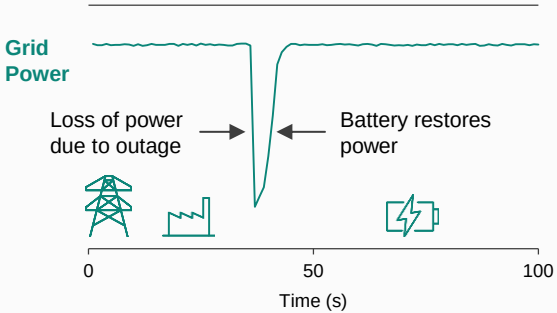
Ramp rate control[1]

Storage can relax ramp rate constraints for thermal generators operating in markets with high PV penetration (e.g. California “Duck Curve”)



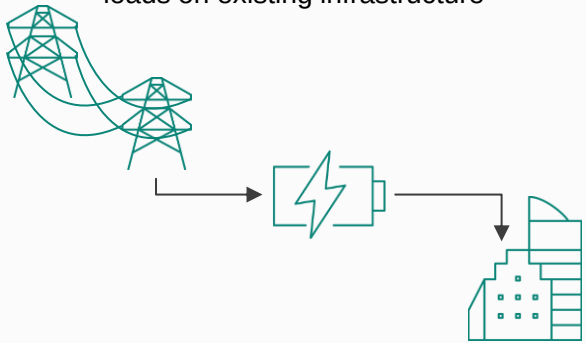
Grid reliability

Fast-responding energy storage helps maintain grid reliability providing emergency capacity during transmission/distribution network or generator outages



Network management and Advanced Ancillary Services

Storage can accelerate network capacity additions and/or defer network upgrades by averaging line utilization and optimizing N-1 contingency plans enabling more renewables and high loads on existing infrastructure



1) BNEF, “Batteries and Energy Storage: a primer,” Dec. 7, 2020. Historical 2015-2020. Forecasted 2021-2025

Australia and Taiwan and the Energy Transition
Similar, but different; private sector innovation needed…

Australia and Taiwan share a lot of similar characteristics, but geography and exports change the nature of the issues to overcome in the Energy Transition

Similarities Australia and Taiwan

Strong civil societies	Democracy
Diversity and respect for aboriginal people	Inclusive values
Women in public and private sector leadership	Gender equality
Population	c25 million
Installed capacity	60-65GW
Annual electricity consumption	240-270 TWh
Emission reduction targets and thermal retirements	2050 NetZero

Differences Australia vs. Taiwan

Energy, raw materials and staples vs. semiconductors, computers, and optical/medical equipment	Exports
Decentralized / intra-day vs. centralized and day ahead trading	Energy market design
Flat or declining vs. growing	Demand
7.7 m sq vs. 35k sq km	Size
Long and stringy vs. concentrated	Transmission
Spread-out vs. highly concentrated	RE generation
Inertia, voltage stability vs. RE ramp-rate management	Stability issues

Thank you!

Image of Hazelwood BESS