



Oakley Greenwood

# Energy supply disruption - policy and regulation

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# The Energy Supply Industry – a study of major disruption

- Very high gas prices and electricity prices - simultaneously - commodity driven - and now impacting on industry - economic restructuring occurring at pace
- Declining energy sales but still need underlying thermal capacity until fleet can be replaced by alternatives that will provide grid stability - pricing issues abound
- Rapid uptake of solar PV - customer side and now grid connected
- Fear of electricity system failures - at the state level - NSW load shedding, AEMO & ARENA demand side response \$22.5m program
- Fear gas supply not sufficient at peak times to support power supply anyway
- New disruption exploding on the scene - energy storage and embedded networks - and other new technologies and options
- Failure of existing forecasting methods - forecasting needs serious reform - been know for more than a decade - you can not regress your way to this future
- Underlying battle over sustainability of energy use and supply - every level of Government - national Policy in crisis response mode

# Policy landscape – a battle ground.....

My favourite question:

*Why are consumers electing to invest their own savings or cash flow into self generation and turn their back on an electricity supply industry that has been servicing them for a century – making large parts of it stranded/redundant?*

- Initially unpredictable price rises - demand elasticity response inevitable
- Then along comes very well subsidised alternatives, and
- These alternatives are more sustainable supply.....*happy days*

Effectively customers have been taking longer term hedges against the industry - retiree baby boomers, mortgage stressed families, new home owners, etc.

- There has been an industry failure to give customers real options - and this continues today with the “disrupters” way out in front
  - They are the only ones visiting you in your home....
- The industry is still in “commodity” & “infrastructure” mode - really struggling to change

# Policy landscape – a battle ground

- And make no mistake there is an underlying ideological battle being waged over energy sustainability in Australia, and
- It is driving state policies - which is really driving energy policy
  - Every state has some form of emission reduction target in the next 13 to 33 years - from 50% reduction through the zero emission - yes every state - and other schemes to support solar and energy storage,
  - On top of national policies - RET certificate schemes, ARENA, CFC, ERF, Carbon Neutral
- And gas drilling has been severely curtailed at the state level - some are complete bans - only Qld is investable
- Price and even reliability in the short term is seen as “collateral” damage to ensure the eradication of fossil fuels from the energy supply sector
  - Gas is not wanted as a “transition fuel” - *“it just delays the inevitable conversions”*, and
  - The coal war (until recently) had largely been won - moving onto the export industry

# Policy landscape – a battle ground

- Voters (who are consumers) may want sustainable, affordable and reliable energy - **the energy trilemma**, and
- They are told they **can pick two - not all three**, but it is as important to ask
  - Do they want affordable, reliable **but unsustainable** energy - business may be keen right now but consumers/voters are showing little interest?
  - Or will they **pay more** for reliable, sustainable energy - they are certainly paying (a lot) more for the sustainable energy - cash plus subsidies?
  - Or are we in reality **close to getting all three** but the transition path is about costs - consumers have learnt from solar PV - prices will come down
- Right now corporate customers are signing up for **solar grid farm PPA's** for bundled LGC's and black power - as they **are much cheaper** but also act as a portfolio based hedge
- Growth in **commercial and industrial** site based **solar and energy storage plant** is also staggering with sophisticated modelling and control to minimise energy costs - amazing developments in this space

# Lets talk disrupters and regulation

- **Embedded networks**, and microgrids are **growing at pace** - taking market share from networks, generators and retailers
  - They can supply the customers energy, water and waste water needs and reticulated broadband using fibre to the premise - as well as many other bundled services - at scale
  - Developers and body corporates are establishing this model as **a true alternative for customers** with stand alone systems or options that are co-optimised with the network, with the network having a very different role
- Highly **competent new businesses** are being established - and many will move on to take full retail licences
- Regulators have moved to introduce **new regulation** that is aimed at customer protection and choice (from 1 December 2017)
  - AER - Electricity Network Service Provider Registration Exemption Guideline (December 2016) - in response to the AEMC National Electricity Amendments (Embedded Networks) Rule 2015 (No. 15, December 2015)

## Lets talk disrupters and regulation

- Under certain conditions these changes create a new accredited service provider - the **Embedded Network Manager** (AEMO)
- Aimed at improving **access to retail competition** for customers in embedded networks - it may be a bit of a change for the disrupters, but it is also very timely and welcomed as now not just some form of “**exemption**”
  - Many planning to register as Retailers and are already fully compliant
- Our NEM forecasting and now lots of others have shown that to get to low levels of greenhouse emissions by 2050 (we have modelled zero emissions by then) you will need to:
  - Take account of **system reliability and security of supply** - you need inertia of some sort in the system and **dependable failure modes for loss of renewable supplies**
  - Both through the transition periods and at the end point
- Prime contenders are pump storage and battery technologies - as we have seen from Professor Bartlett

# Lets talk disrupters and regulation

- Batteries probably have the edge right now in my mind as:
  - They can be **deployed rapidly** at household and business premise level
  - Being deployed at grid scale (really fast) and suppliers are targeting that market - Tesla Gigawatt Factory - 35 GWh per year production/5 of these....
  - They offer huge **flexibility** in terms of controls and range of use
  - The **prices** are on the same trajectory as solar PV
  - **Subsidies** for batteries are very popular with voters
  - No major infrastructure required
  - Pump storage subject to lots of development regulation, NEM regulations, licencing, Prudential's, merchant risks, etc. - **far more complex and slower to deploy**
  - But pump storage is seen as the “**gold standard**” for the duties required
  - We will have a major debate in this country about **pump storage and land inundation - like we had for dams** - and we ended up with Desal plants...



# Lets talk disrupters and regulation

- We will end up with a mix I suspect but batteries will be very quick
- Which brings up another great observation from both modelling these issues and thinking about the disrupters and regulation:
- The **NEM can not remain an energy only market**
  - When there is a high level of renewables **short run marginal cost does not work**
  - It has to become more focused on **fall back capacity and system (inertia) support,**
  - This is rapidly being recognised - AEMC effectively starting this process - **5 minute settlement rule change** - valuing rapid demand/supply response systems - more evidence that regulators are trying hard to catch up and provide options - not foreclose on options.
  - **Viral consumer battery based trading** - grid credits by Reposit Power, apps - could we see 1 GWh/year added - Vic and SA Battery projects - distributed asset management - customer latent demand - demand response from controllable devices?

## Lets talk disrupters and regulation

- So my last question is one that arises from our talks here tonight - **will the supply model remain linear** - from generator to customers?
  - Will transmission meshing be needed, will we need a lot of new macro plant or will embedded be better?
  - Will it all be about the **distribution system capability in the end as a trading platform** for very sophisticated distributed generation and storage at scale - block chain?
  - Will it all be about who is **fastest to market and the viral players** - or will it be **about detailed cost benefit analysis?**
  - Or as a disrupter said to me - will the Geeks win over the Neanderthals - well the disrupters do seem to be winning regulatory and policy support?

**We may well need to revisit this question very soon.....**



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