
What's Happening with Wholesale Electricity Prices in South Australia?

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**South Australian Energy Forum
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Hotel Grand Chancellor, Adelaide**

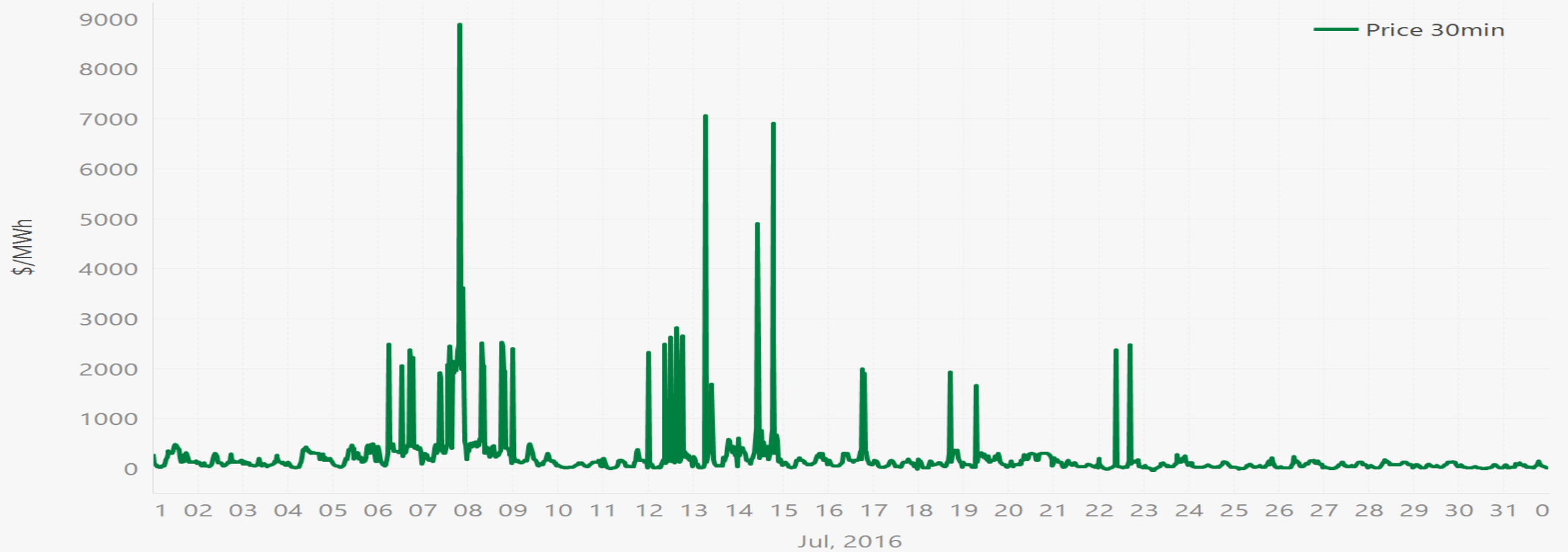


Scope of Presentation

- Review South Australian Market Events Since July 2016
 - Pricing
 - Reliability
 - Security
- Comment on possible market development/reforms

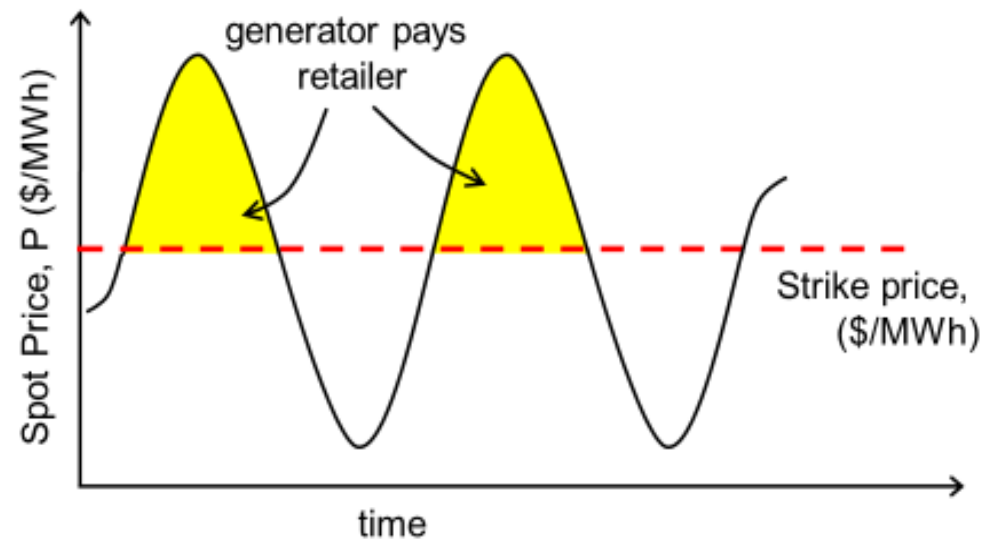
Exciting Times In South Australia In July

Region Price 30min (SA1)



Drilling Down - Premium Curve Analysis of NEM Prices— July 2016

Cap Contract Payout

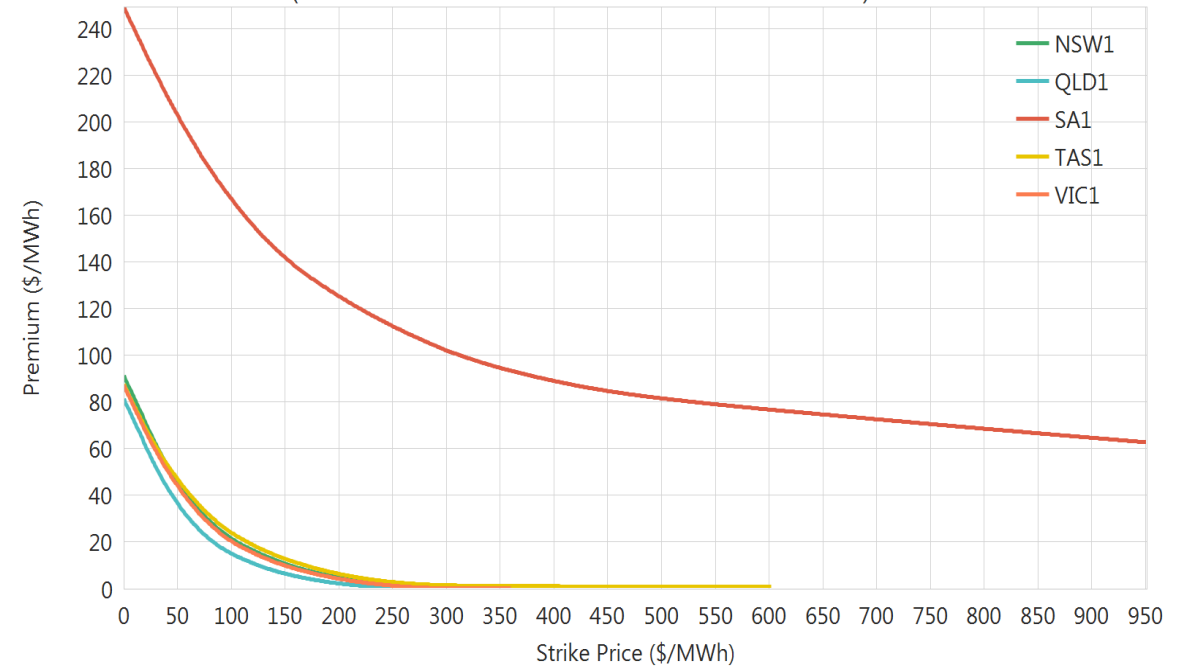


Intelligent Energy Systems

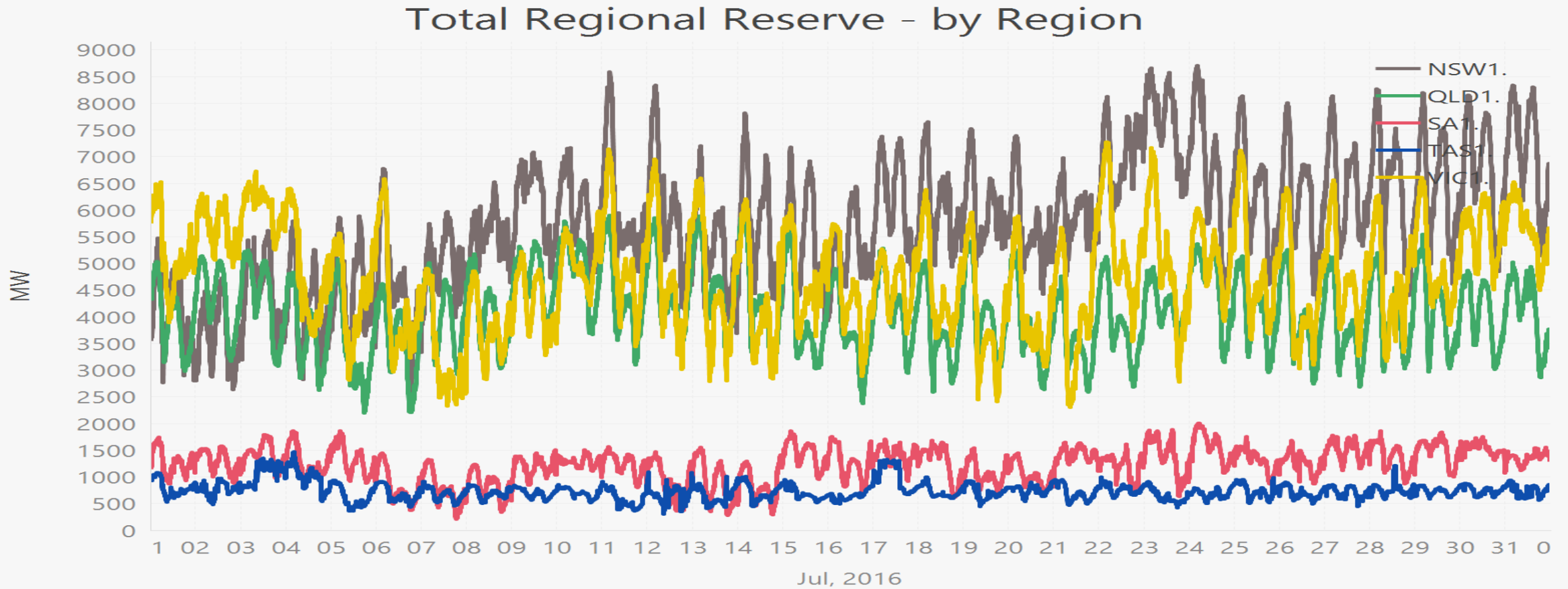
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Region Price ALL 30min Premium Curves

(17/06/2016 12:00:00 AM - 17/07/2016 12:00:00 AM)

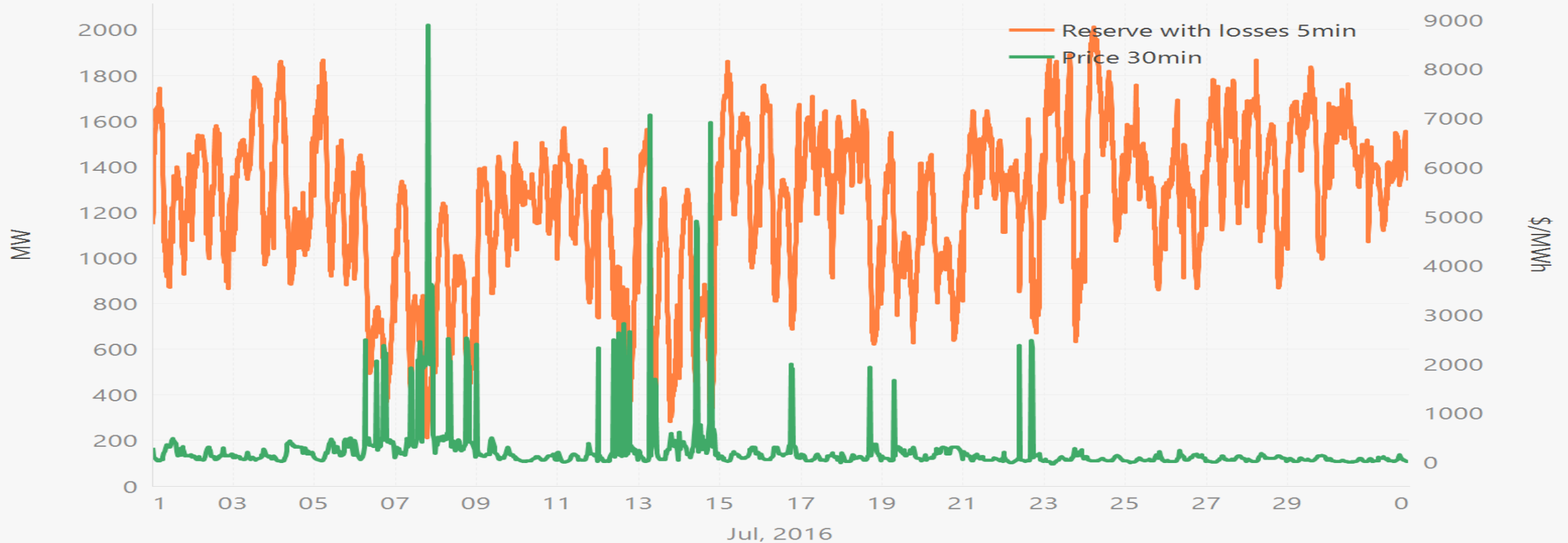


Total Regional Reserve – A Key Driver Of Wholesale Prices

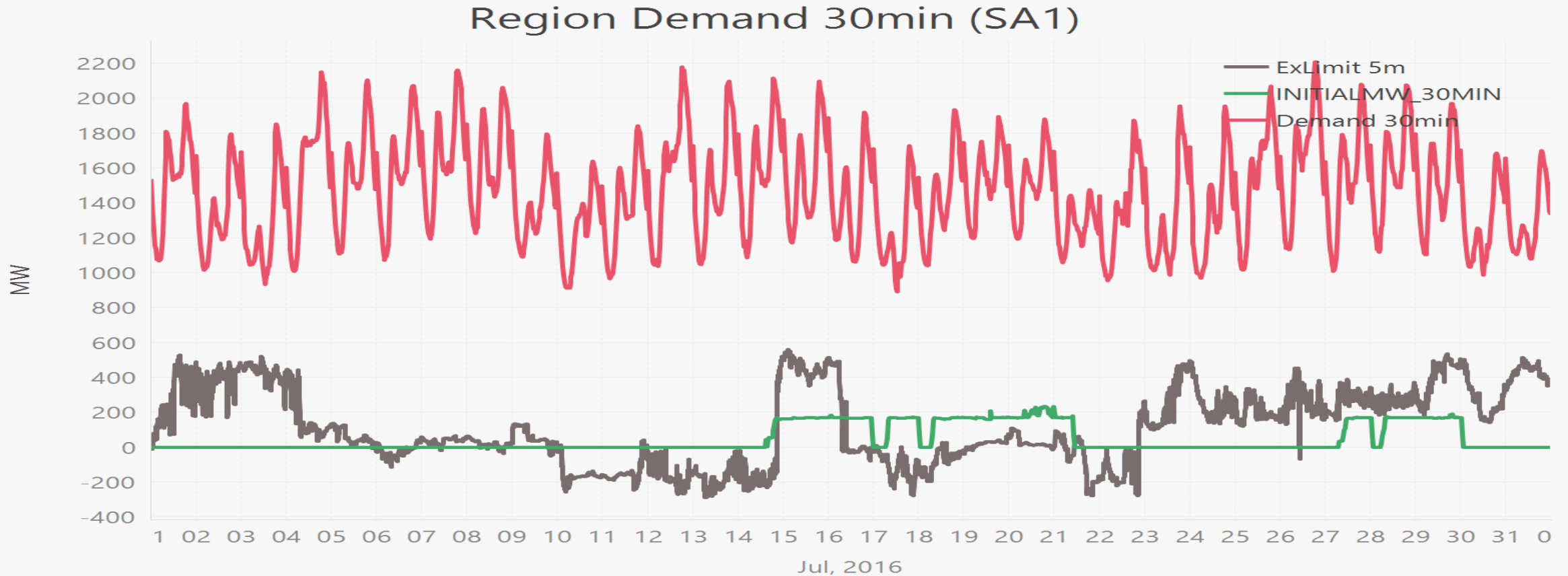


Regional Reserve And Wholesale Prices in South Australia

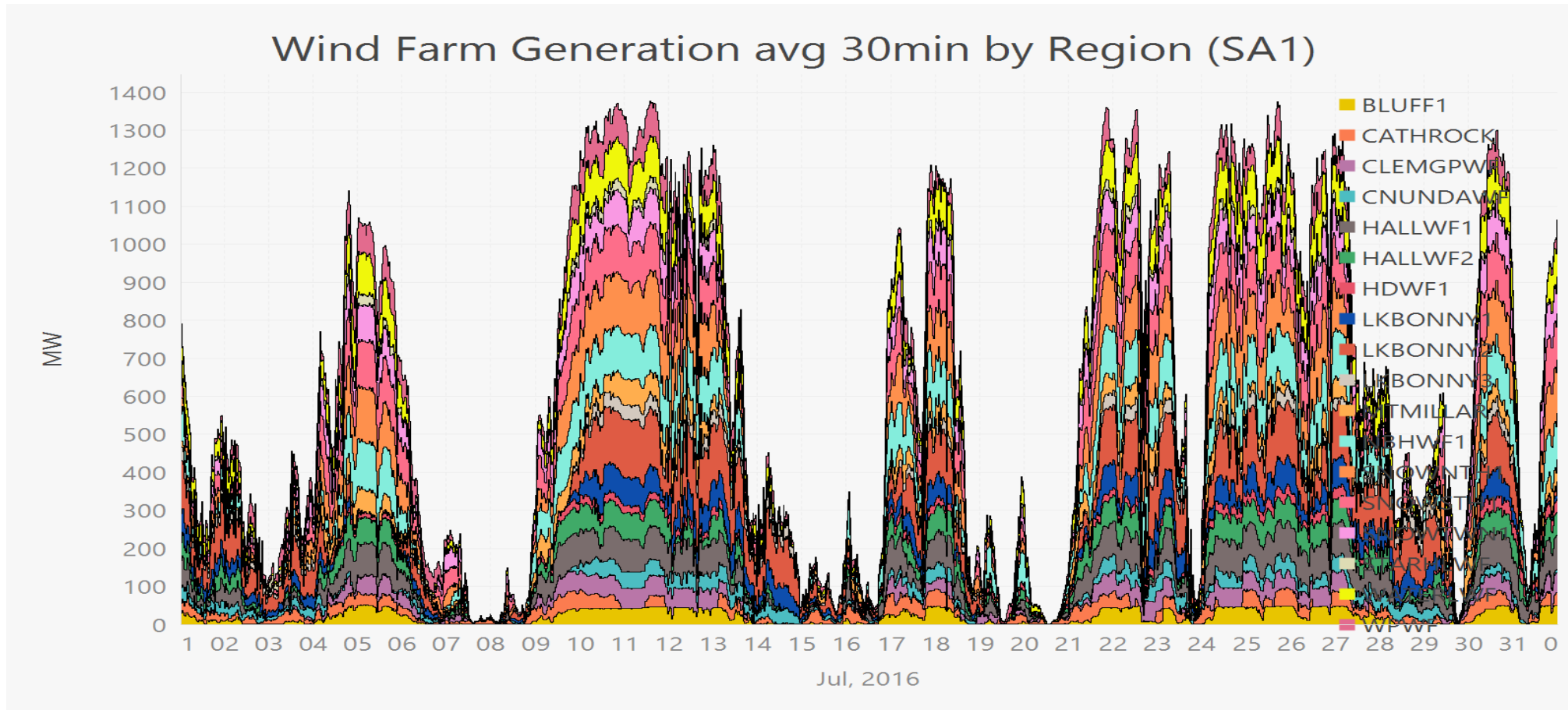
Region Price 30min (SA1)



Some Components Affecting Low Regional Reserves (and Prices) in SA in June

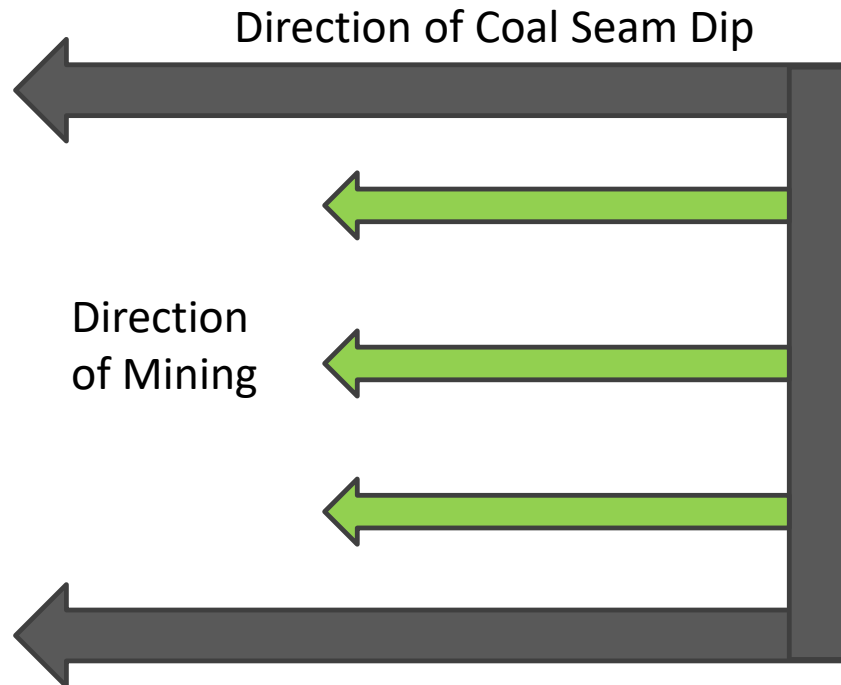


And Wind Variability Topped It Off.....

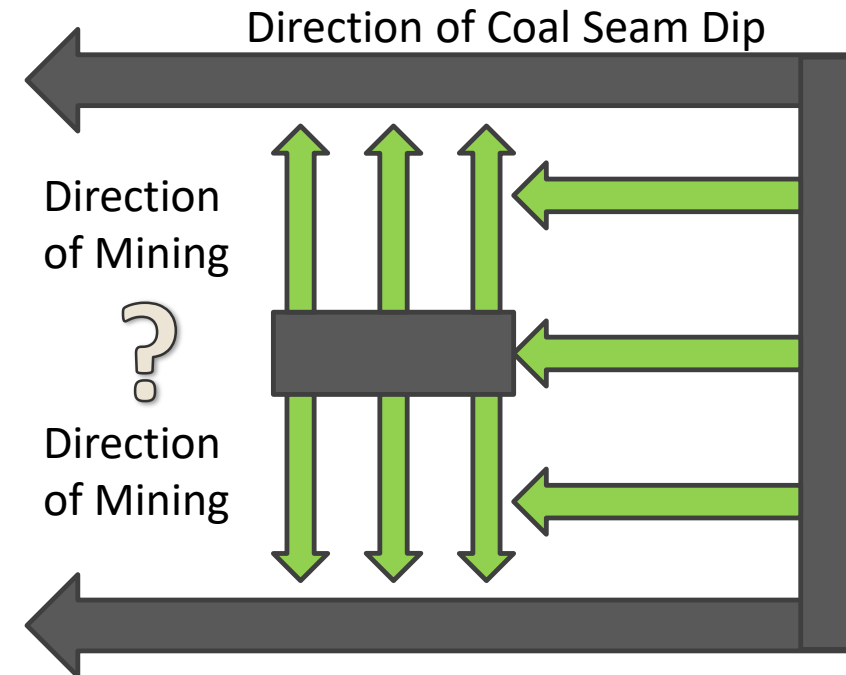


Did Wind Power Shut Down Northern Power Station?

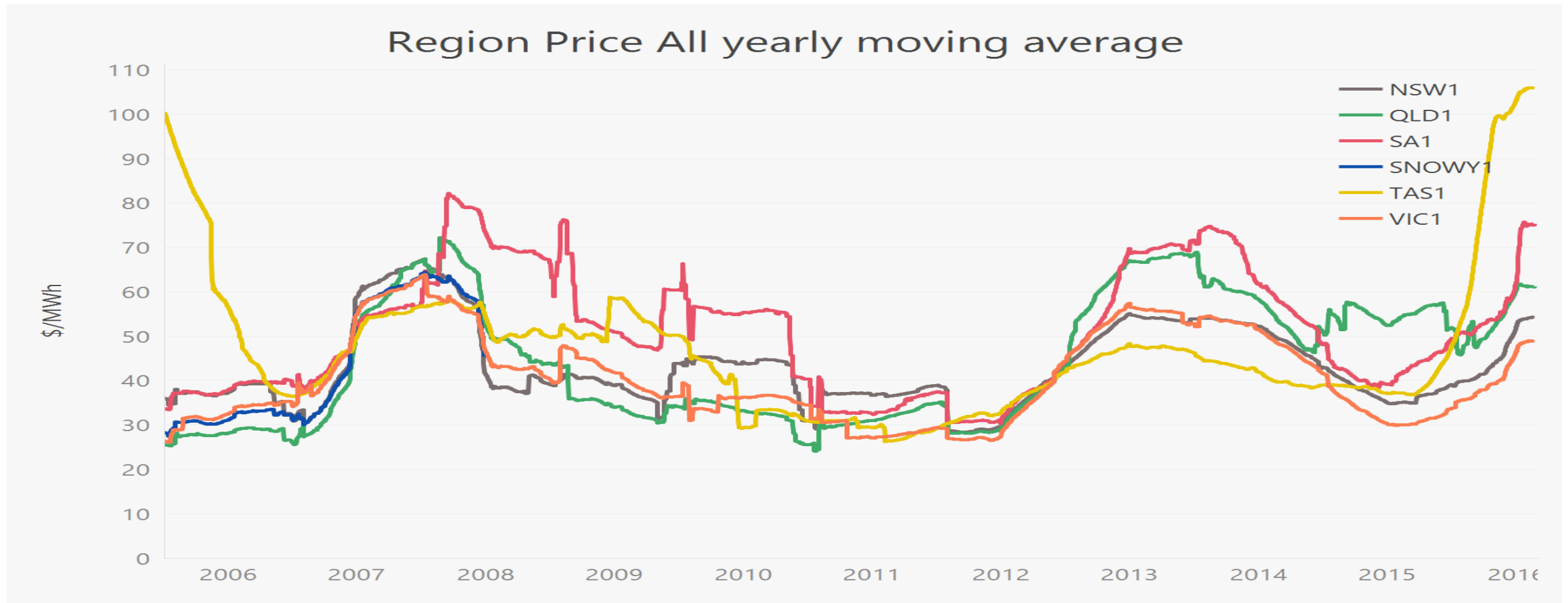
Leigh Creek Mining Strategy 1: 1990s



Leigh Creek Mining Strategy 2: 1990s

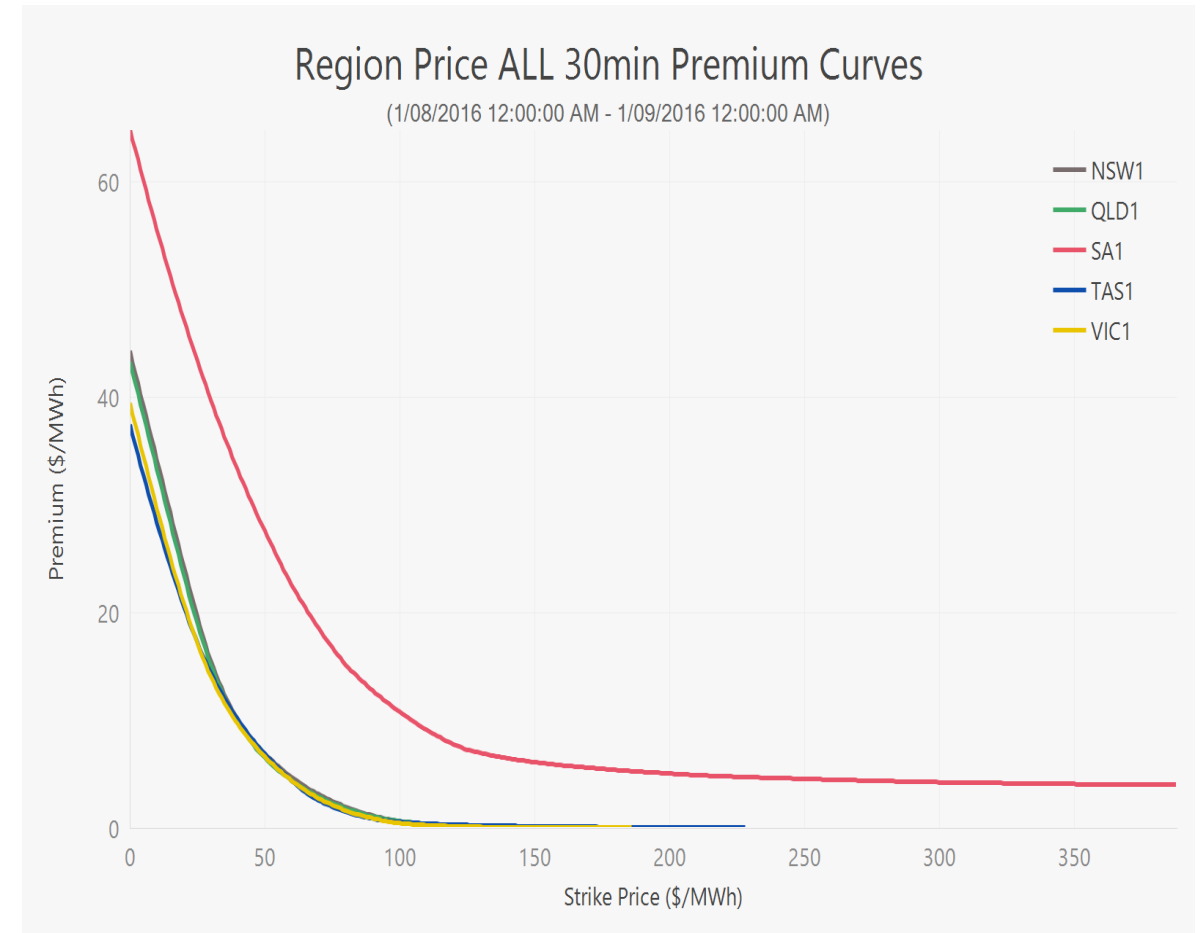


Is The NEM and South Australia in a New Paradigm? Or Has It Happened Before?



What's Happened During August?

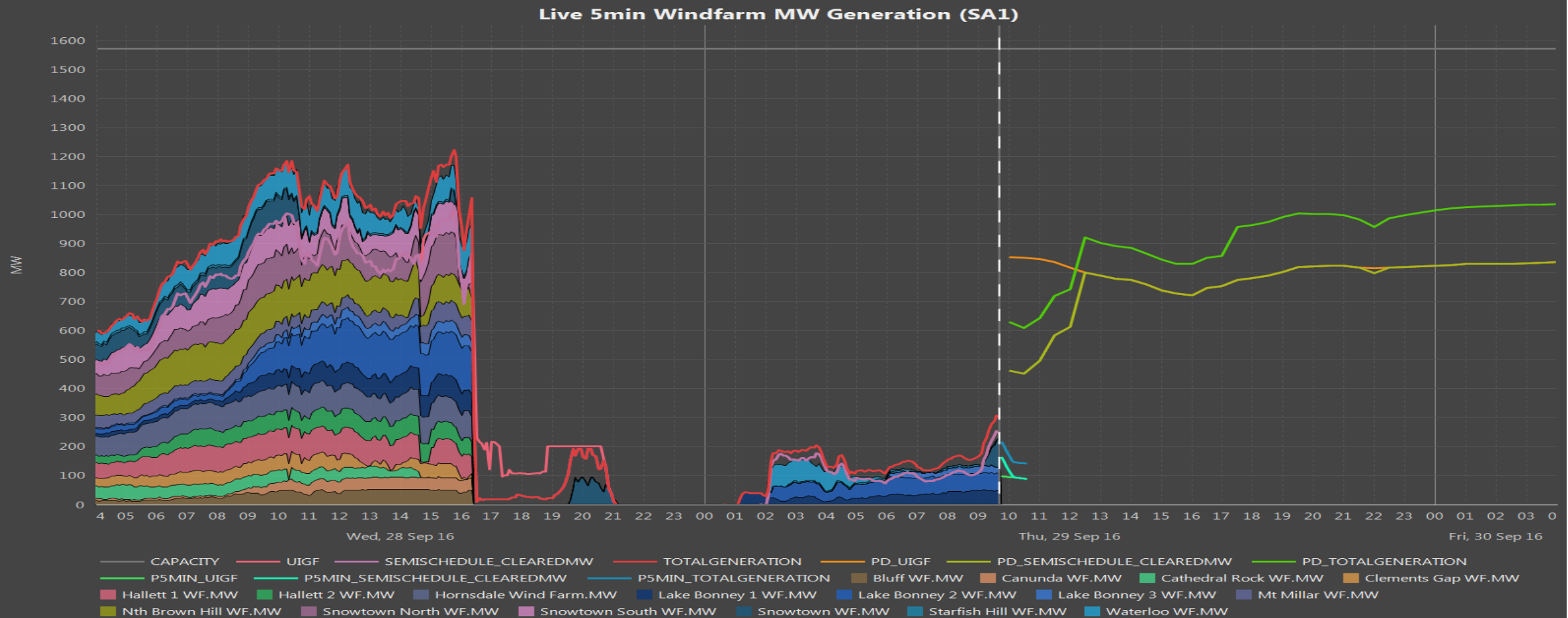
- The market calmed down a lot during August, including in SA
 - Milder weather?
 - Interconnector up more often
 - Less aggressive market behaviour?
- Market behaviour in the rest of the NEM seems to have changed recently
 - Fewer extreme prices, more at \$100-\$500
 - New bidding in good faith rule
 - Gas prices and plant retirements???



Summary of SA Market in July

- This was a market pricing event
 - High prices, but
 - No loss of load
 - No immediate risk to system security
 - No operational concerns for AEMO
- Factors in play over volatile period
 - Northern closure
 - Pelican Point offline – gas contract? Other reason?
 - Interconnector down
 - Cold weather
 - No wind

Recent System Failure in South Australia – 28 September 2016



Emerging System Security Issues in The NEM - Have We Just Witnessed This?

- The Market Operator (AEMO) and Rule Maker (AEMC) are jointly reviewing system security issues arising from high renewable penetration in some regions (e.g. in South Australia). There are two main issues.
- Decreasing system inertia as asynchronous plant replaces synchronous plant
 - Not yet a problem nationally (if all interconnectors operating)
 - Already a potential problem in some regions (e.g. SA) in the event of regional isolation.
- Decreasing system strength in some parts of the network where there may be insufficient synchronous generation to withstand faults.
- There are technical solutions to these challenges and a range of potential implementation options. e.g. regulated or market oriented.
 - AEMC will ultimately determine arrangements, perhaps guided by government directive

Market Development Reform Options

- Accelerate options to deal with declining inertia
 - Modify operational operational rules at times of high risk
 - Fast frequency response market
 - Fix 5 minute problem (current rule change with AEMC)
- Accelerate options for dealing with declining system strength
 - Technical standards for asynchronous plant?
- More Interconnection
 - Regulatory test could put greater weight on security
 - Cost may not be high
- Improve the policy mix

More Interconnection (Especially To SA And Possibly Tasmania)

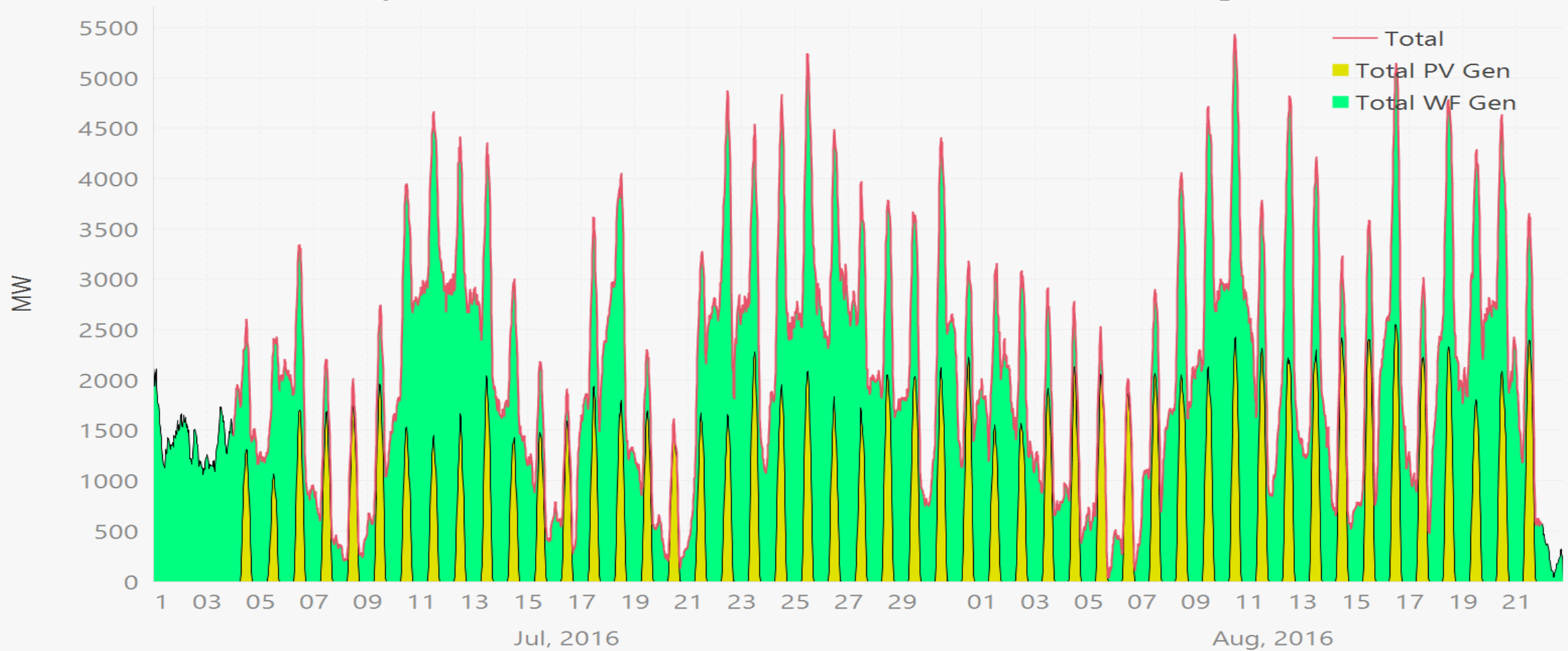
■ The upside

- Could use existing storage capability in TAS and Snowy
- More competition, lower prices
- Isolation less likely
- Can share more reserve plant

■ The downside

- High cost
- There doesn't seem to be much diversity in wind availability
- Increased pressure to close high fuel cost base/intermediate gas plant in SA ?????

Rooftop PV and Windfarm Generation - All Regions



Improved Policy Mix

- Better balance between the RET and other policy options
 - RET places pressure on the wrong plant to close (should be brown rather than black plant closure)
 - Forces in wind where solar will likely be a more reliable long run renewable options
 - More reliable nationally and has a less demanding storage requirement
 - Renewables are fundamentally limited by lack of storage, so improve policy options to support battery storage and don't press harder than the ability of storage to catch up
 - Behind the meter batteries can take advantage of all value streams with appropriate incentives
 - Beware of AER's long run marginal pricing policy leading to higher fixed charges
 - Encourage independent aggregators
- More Focussed Market Reform
 - Current AEMC rule making approach is too passive and too much led by incumbents

THANK YOU!!

