

Session 2: Responsiveness and contract market implications

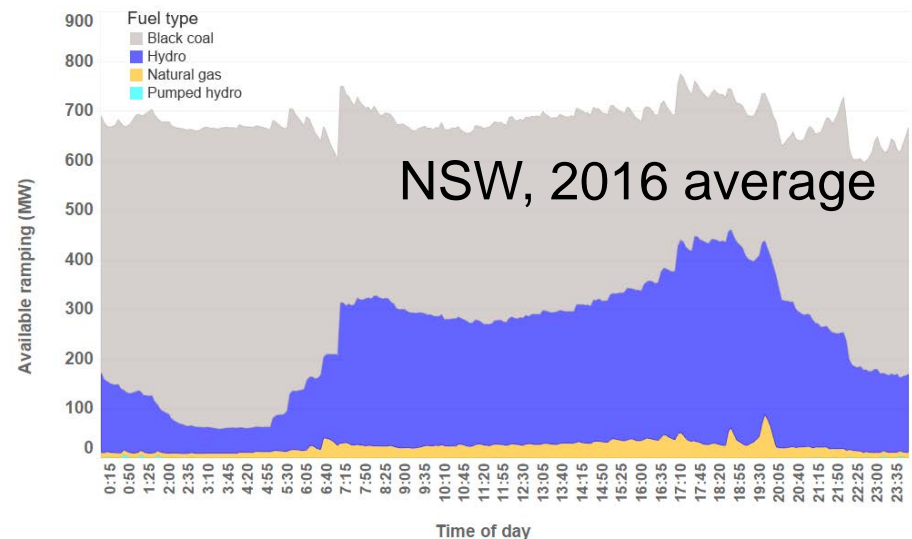
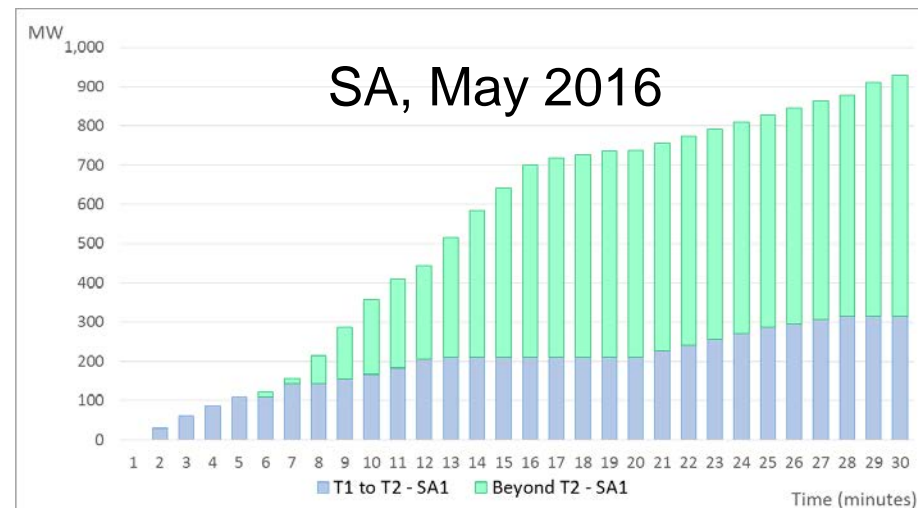
Five Minute Settlement public forum – 4 May 2017



BEN NOONE
SENIOR ADVISER
AUSTRALIAN ENERGY MARKET COMMISSION

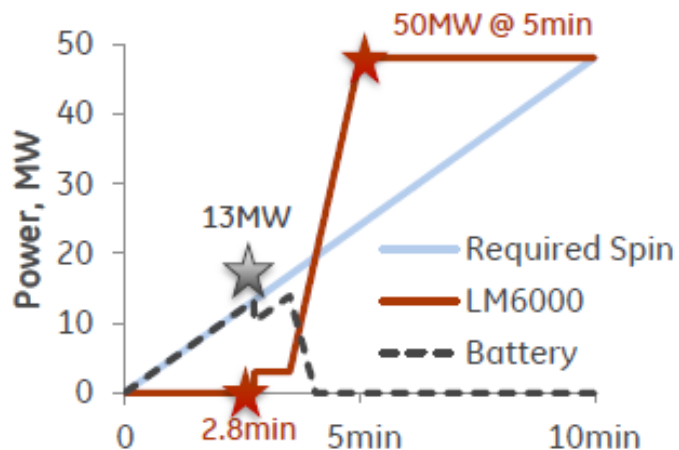
CAPABILITY OF EXISTING GENERATION

- Very little scheduled, fast-start plant can respond from rest within five minutes
 - 100-150 MW in SA and Qld
 - ~0 MW in NSW and Vic
- However, 100s of MW in each region can be provided within five minutes by generators already running
- Not a physical capability issue

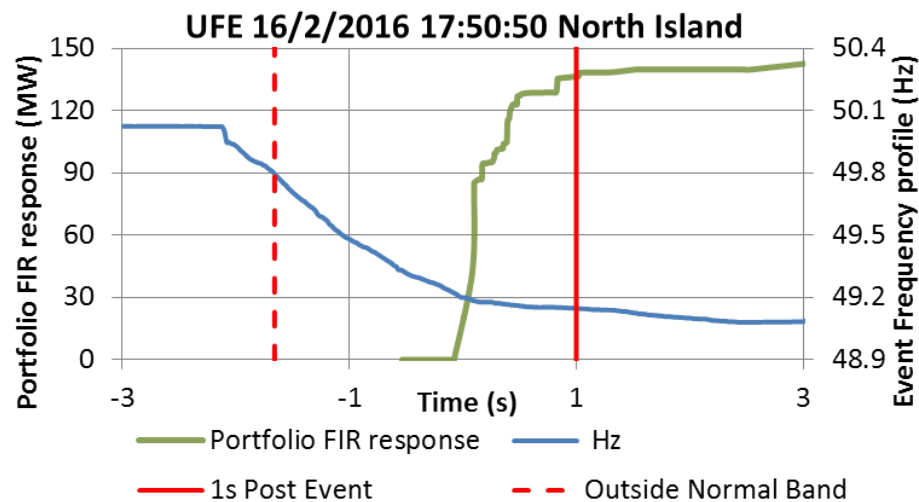


POTENTIAL NEW INVESTMENTS

- A range of fast, flexible technologies available
- Battery applications: co-location, stand-alone utility scale, aggregation of behind-the-meter storage
- New or “repowered” gas, 0 to 100% in 5 mins



POTENTIAL NEW INVESTMENTS



- Faster demand response, more cost-effective automation and IoT present new opportunities
- Diesel gensets, 0 to 100% in 2 mins
- Technology enabling faster, more flexible responses, and more active participation from smaller customers

INCENTIVES TO INVEST IN FLEXIBLE TECHNOLOGIES

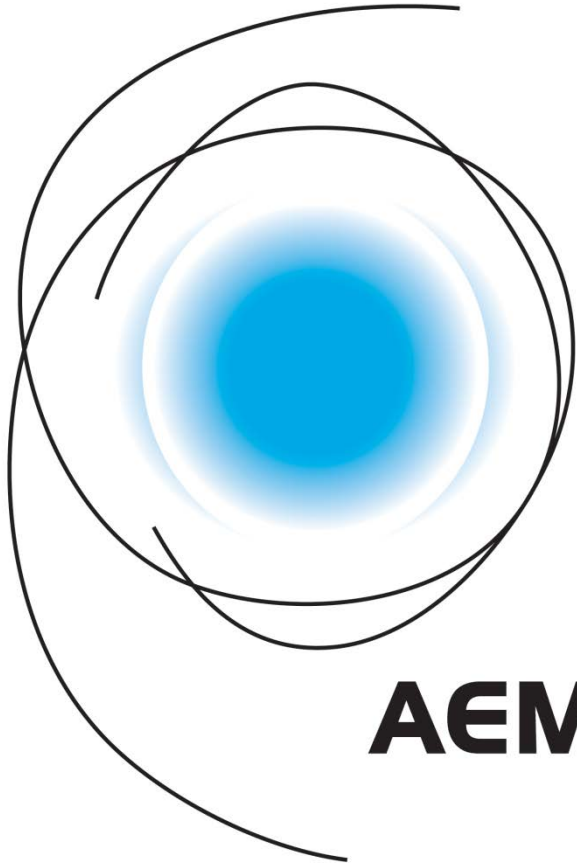
- Five minute prices more accurately reflect value of flexibility, providing incentive for most efficient investment in and operation of flexible resources
- Conversely, 30-minute settlement favours slower, less flexible technologies at the expense of more flexible alternatives
- Expect to see changes at the margin under 5 minute settlement, e.g.
 1. more battery investment, more aggregation/control of batteries
 2. more flexible gas
 3. faster demand response
- In absence of these changes, over time generation mix will be less efficient

CONCERNS AROUND CONTRACT MARKET IMPACT

- Existing strategies less effective, impacting on the volume and price of some hedging contracts (caps)
- A contract shortfall would leave retailers and large loads unable to hedge spot exposure. Unhedged generators could cause higher and more volatile prices. Could damage retail competition
- Potential responses:
 1. Existing assets run more at low load; engage in more sophisticated forecasting; or sell different financial products
 2. Baseload generators sell more caps
 3. Caps could be sold by new entrants (utility-scale batteries, new thermal, aggregation and control of distributed resources)
- Replacement liquidity uncertain = transition period for assets to adapt and new options to emerge

QUESTIONS FOR DISCUSSION

- How operation and investment may differ different under five minute settlement?
- How successful would alternative strategies be for existing generators?
- Volume of caps and similar risk management products that could be offered by utility-scale and aggregated batteries?



AEMC