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Settlement Managers Working Group

23rd April 2020

Agenda

1. Welcome
   - Action items update
2. NEM – SA Separation Settlement Impact
3. Project Updates
   - Five Minute and Global Settlement
   - Wholesale Demand Response
   - Retailer Reliability Obligation
4. MCL Review – Removal of Shoulder 1
5. Five Minute Settlement – Reallocation
6. Prudential Performance and Risk
7. DWGM – Special Revision

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Welcome

Presented by: Stephen Harrison

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Action Items Update

Agenda Item	Action	Result
Credit Limit Procedure improvement	Shoulder 1 season has been removed from MCL review	This will be presented today by Cheryl Huang
Five Minute Settlement - Reallocation	5MS reallocation has been released into AEMO's production environment	This will be presented today by Pedro Riveros
Digital Bank Guarantee	Introduced the possibility of digitize and transform the bank guarantee process	AEMO is looking at the scope of works, includes the legal and system requirement

NEM – SA Separation Settlement Impact

Presented by: Christine Kang

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Content

1. Background
2. FCAS
3. Interventions – Directions and RERT
4. Available data and useful links
5. Q&A

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Background

NEM – SA Separation Settlement Impact

Friday, 31 January 2020

- Highest NEM demand (35,169MW at 1700) since 2015, third highest demand day on record
- Weather event caused SA separation from the NEM
- Actual LOR2 in VIC & NSW
- Generators directed in SA, NSW and VIC
- RERT dispatched in VIC & NSW

- Local contingency FCAS requirement in SA
- SA and VIC interconnector restored on 17 February 2020
  - Affected billing weeks 5,6,7,8

Energy Prices

Pool price region	Average price ($/MWh)						
	Week 4	Week 5	Move	Week 6	Move	Week 7	Move
QLD	74.40	99.53	34% ▲	44.62	-55% ▼	57.49	29% ▲
NSW	83.76	314.64	276% ▲	41.51	-87% ▼	60.38	45% ▲
VIC	41.16	462.29	1023% ▲	30.72	-93% ▼	59.01	92% ▲
SA	43.77	178.85	309% ▲	26.24	-85% ▼	131.77	402% ▲
TAS	46.44	25.50	-45% ▼	41.30	62% ▲	29.41	-29% ▼

Note:
Week = calendar week, Monday to Sunday
Billing week = Saturday to Sunday

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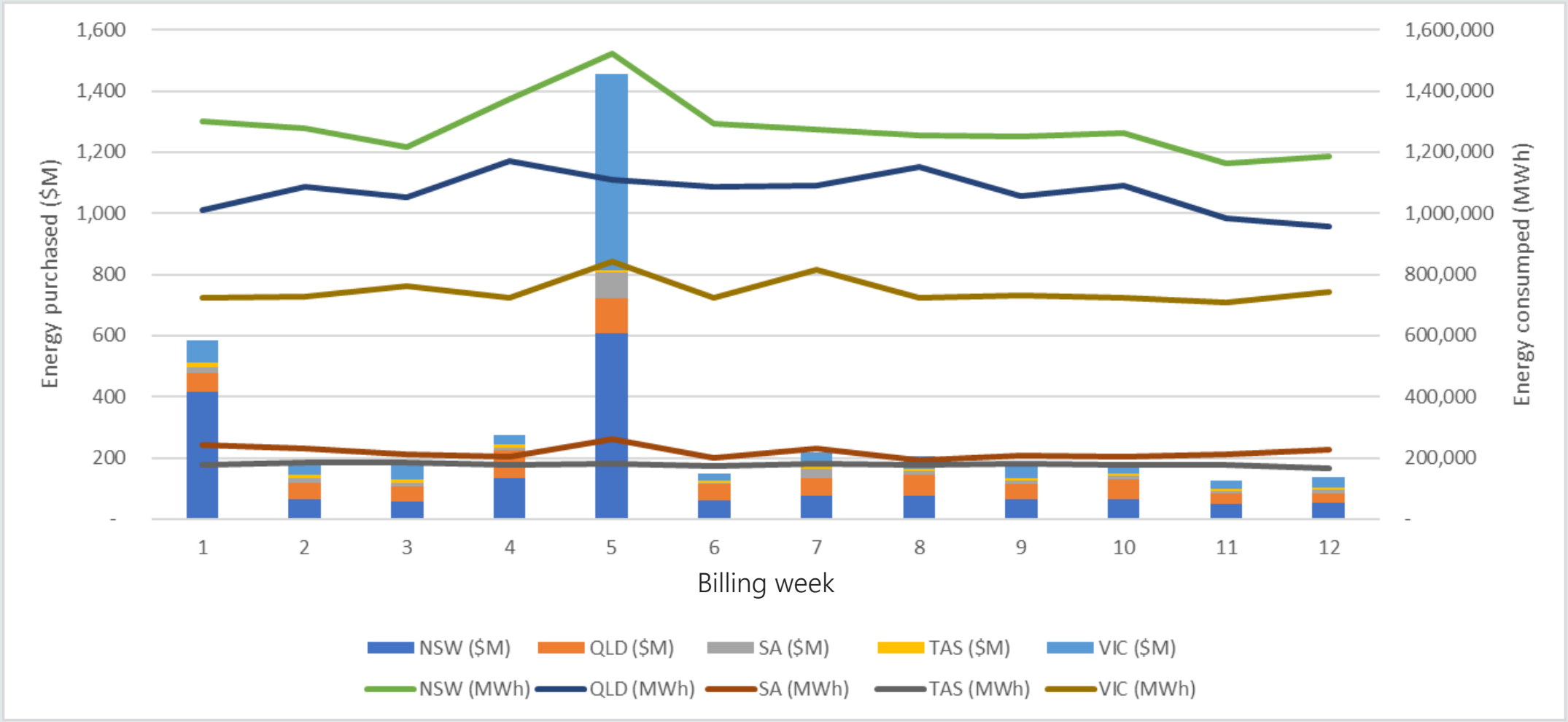
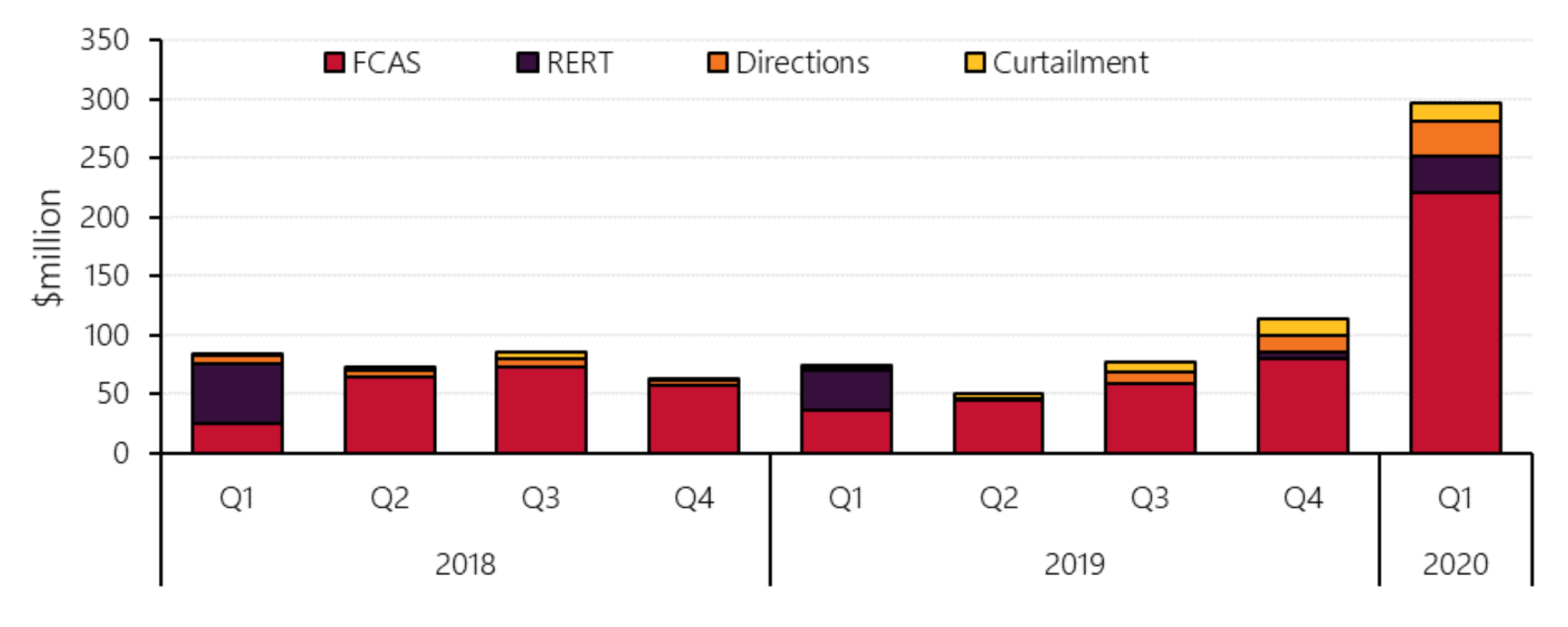
Energy Cost


1,600
1,400
1,200
1,000
800
600
400
200
-
Energy purchased ($M)
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
Energy consumped (MWh)
1
2
3
4
5
6
7
8
9
10
11
12
Billing week
NSW ($M)
QLD ($M)
SA ($M)
TAS ($M)
VIC ($M)
NSW (MWh)
QLD (MWh)
SA (MWh)
TAS (MWh)
VIC (MWh)

System Costs

- Total system costs ~ 300M, 7% of the energy costs for the quarter.



- SA separation event attributed ~70% of the Q1 2020 system costs

FCAS Market

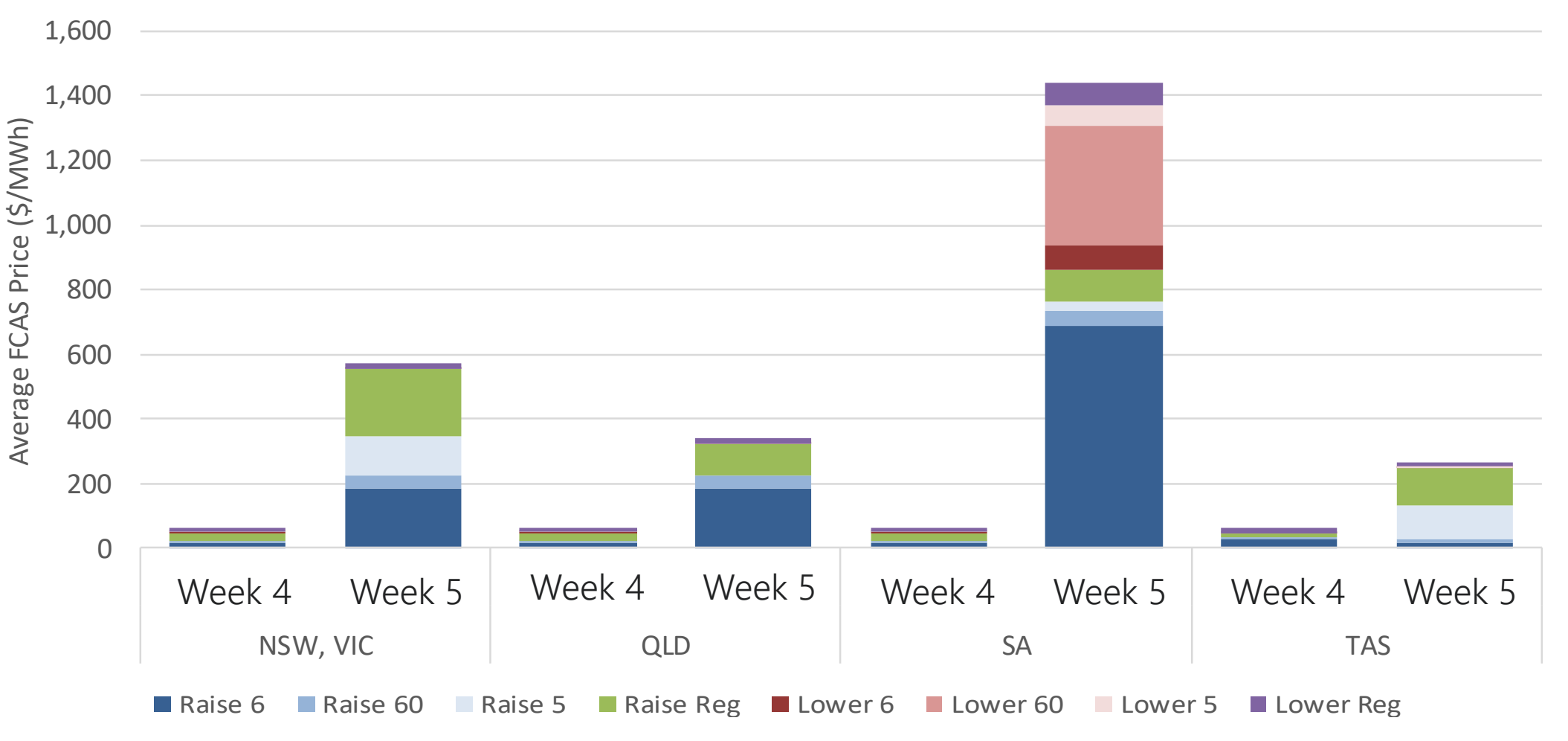
NEM – SA Separation Settlement Impact

FCAS

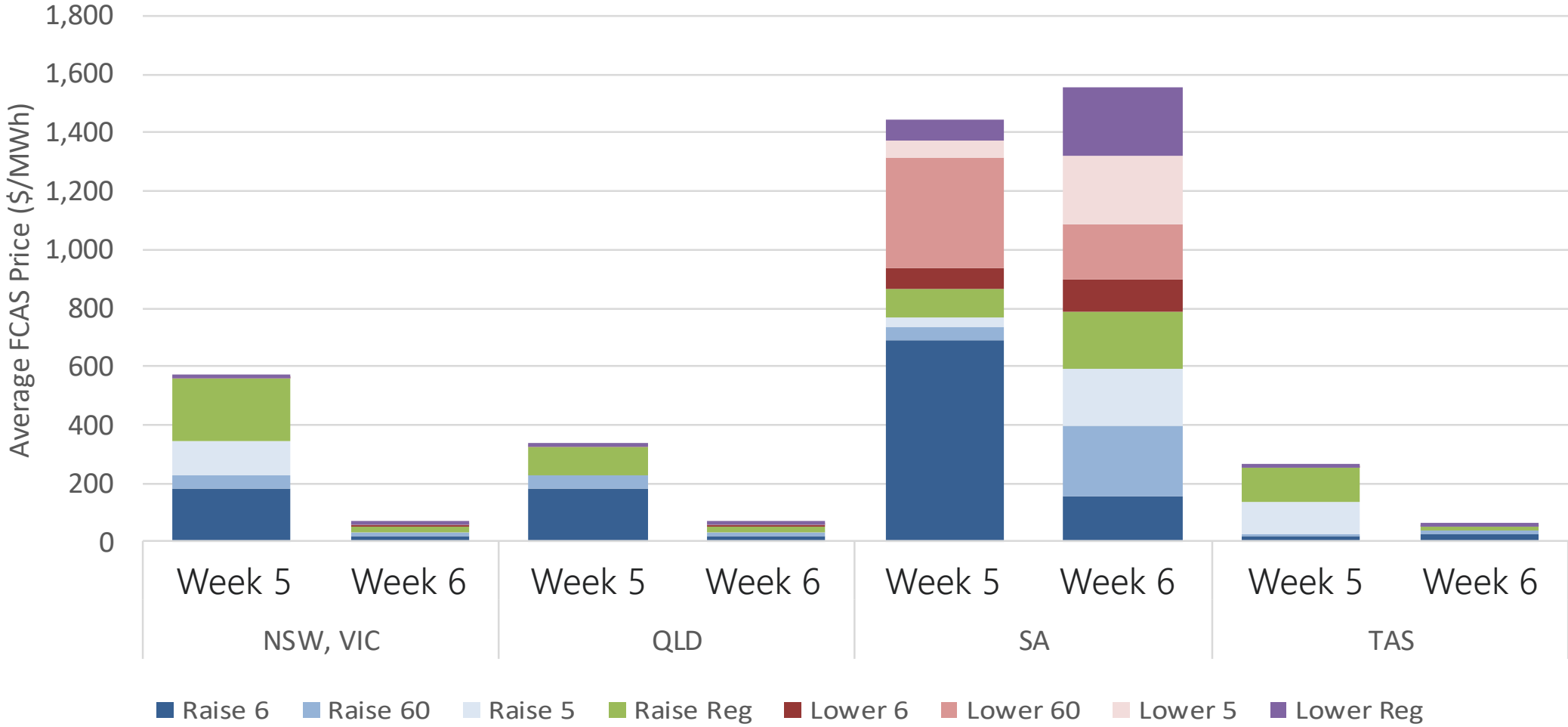
- Frequency Control Ancillary Services (FCAS) are market ancillary services required to maintain or rebalance the frequency on the power system
- Services can be to either increase (Raise) or decrease (Lower) the frequency in the power system
- 2 different services of FCAS:
  - Contingency FCAS services to correct major frequency disturbances
  - Regulation FCAS services to correct frequency for minor deviations in demand/supply balance
- Different recovery methodology for Contingency and Regulation FCAS

Services	Recovered from
FCAS contingency raise	Market generators and SGAs
FCAS contingency lower	Market customers
FCAS regulation	Scheduled and semi-scheduled market generators and customers on causer pays basis

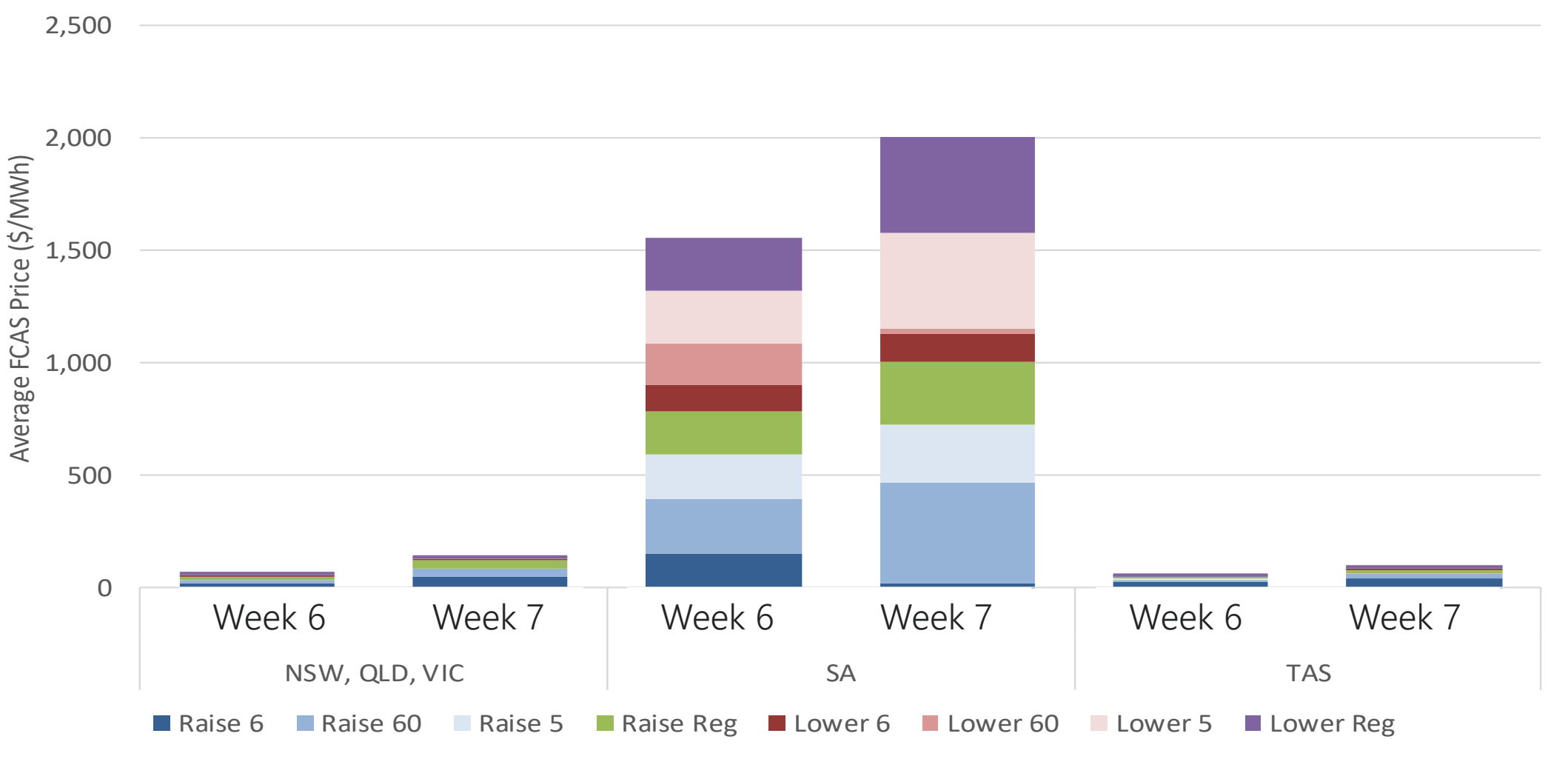
FCAS Prices Week 5



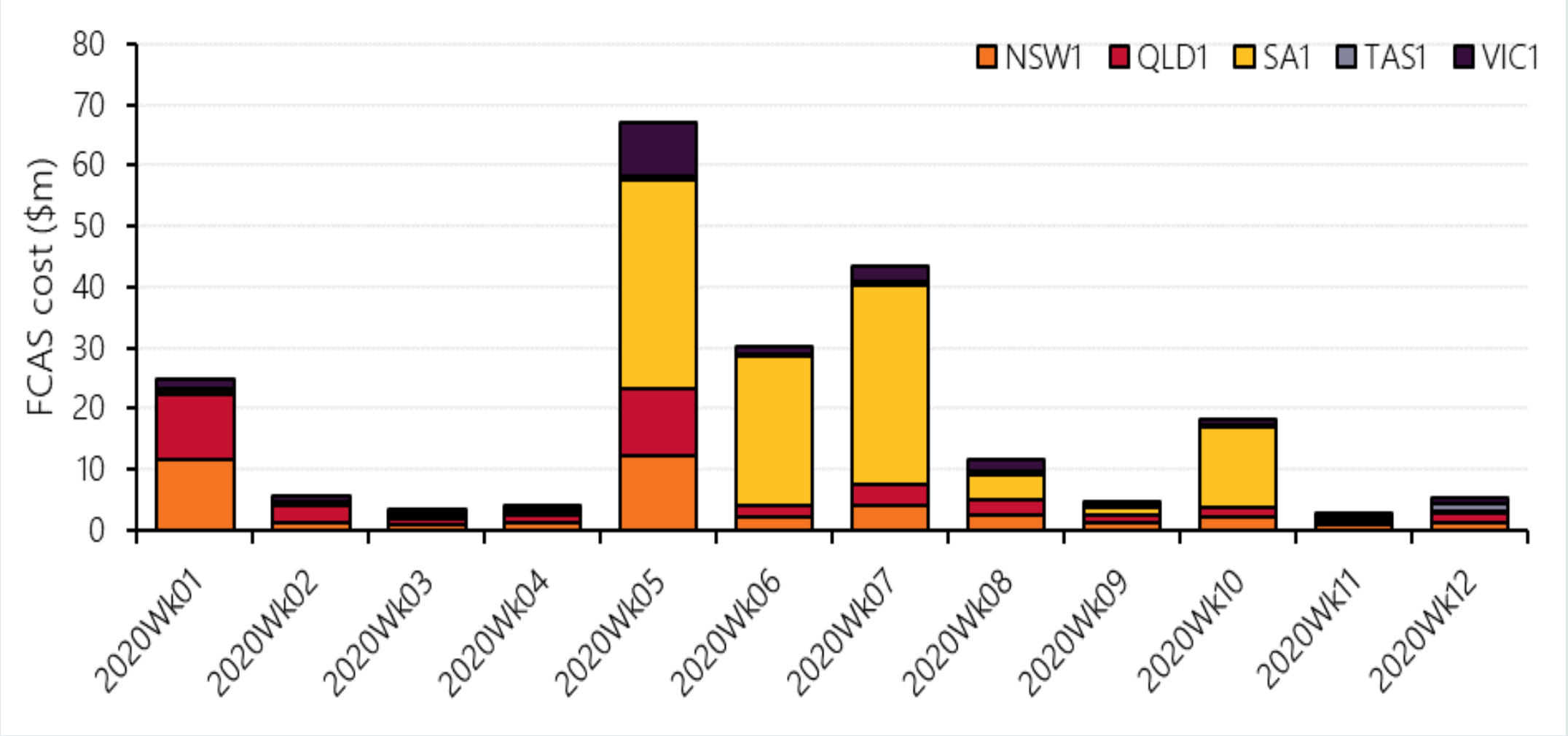
FCAS Prices Week 6



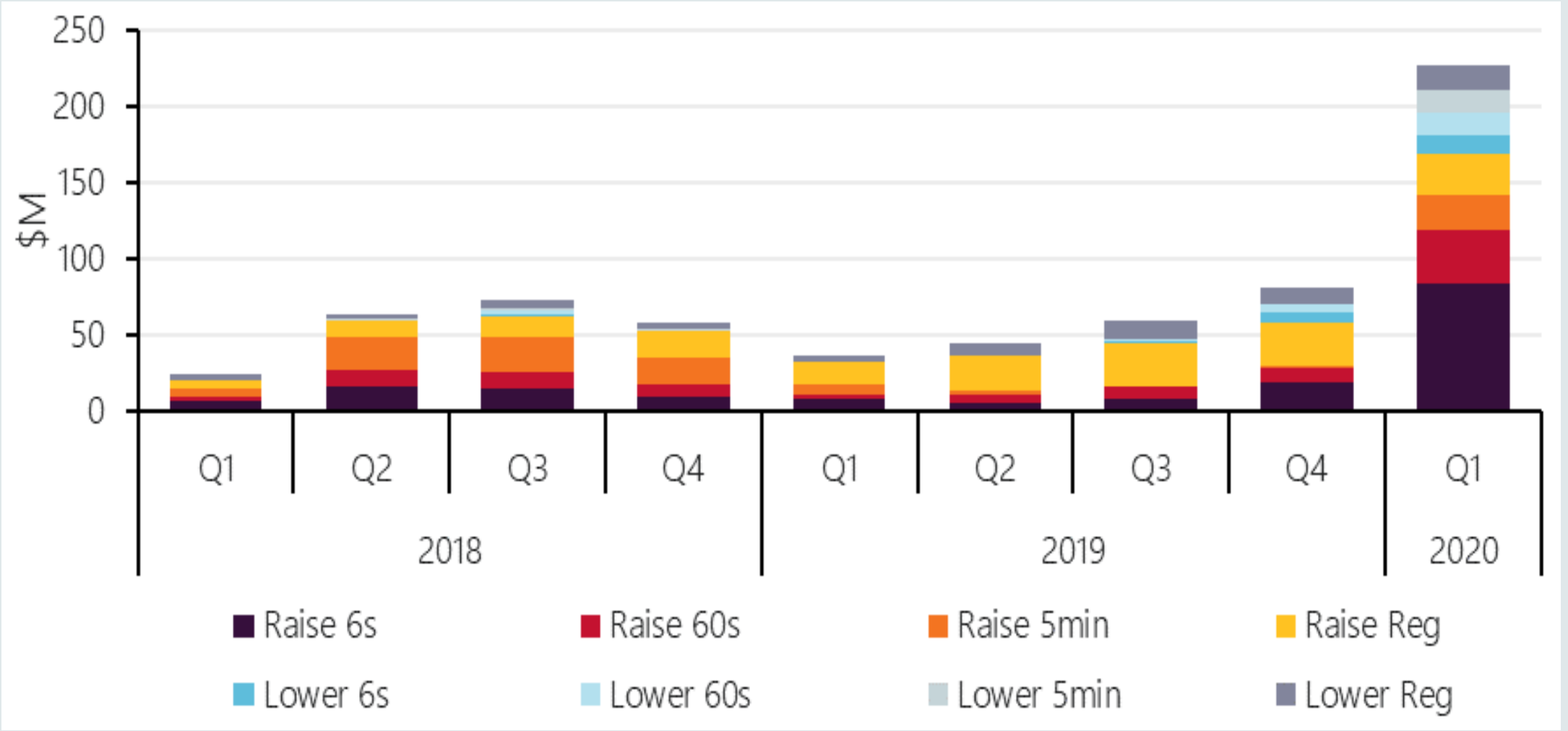
FCAS Prices Week 7



FCAS Costs


NSW1
QLD1
SA1
TAS1
VIC1
FCAS cost ($m)
80
70
60
50
40
30
20
10
0
2020Wk01
2020Wk02
2020Wk03
2020Wk04
2020Wk05
2020Wk06
2020Wk07
2020Wk08
2020Wk09
2020Wk10
2020Wk11
2020Wk12

FCAS Costs


250
200
150
100
50
0
$M
Q1
Q2
Q3
Q4
Q1
Q2
Q3
Q4
Q1
2018
2019
2020
Raise 6s
Raise 60s
Raise 5min
Raise Reg
Lower 6s
Lower 60s
Lower 5min
Lower Reg

Interventions – Directions and RERT

NEM – SA Separation Settlement Impact

Directions

- A Direction is an instruction issued by AEMO to a Participant in order to maintain or restore the power system in a secure and reliable operating state
- Compensation payments may be required to:
  - Directed Participant
  - Affected Participant
  - Eligible Participant
- Compensation included in Final Statement (Provisional Determination) and Revision Statement (Final Determination)

Directions

- Generators directed in SA, NSW and VIC
- ~22M direction cost on 31 January 2020
  - Victoria ~80% of the cost
  - SA ~20% contingency FCAS and energy directions
  - NSW $0

- Energy direction costs are recovered from affected region's market customers
- FCAS direction costs are recovered from:
  - Contingency raise: market generators + SGA
  - Contingency lower: market customers

RERT

- The Reliability and Emergency Reserve Trader (RERT) is a function available to AEMO to maintain power system reliability and system security using reserve contracts negotiated with Participants
- Types of RERT procured:
  - Load reduction (demand response)
  - Generation capacity
- RERT contracts can have provisions to pay providers for availability, pre-activation (for non-scheduled reserves only), usage, and early termination

RERT

- RERT dispatched in VIC & NSW
- ~18.5M RERT cost on 31 January 2020

- RERT is recovered by affected region's market customers apportioning 8am-8pm business days customer energy quantity
- From March 2020, the rule change has changed the recovery calculation to only recover from market customers with energy during the RERT activated trading intervals

Documents and Data

NEM Settlements

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Documents

- Settlements guide to ancillary services payment and recovery https://www.aemo.com.au/-/media/files/electricity/nem/data/ancillary_services/2020/settlements-guide-to-ancillary-services-payment-and-recovery.pdf?la=en
- Ancillary services https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/ancillary-services
- NEM Direction Compensation Recovery http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data/Settlements/Direction-Compensation-Recovery
- MMS data model report https://www.aemo.com.au/-/media/files/electricity/nem/it-systems-and-change/2019/mms-data-model-report.pdf
- RERT recovery http://www.nemweb.com.au/Reports/Current/Reserve_Contract_Recovery/

Other Market Documents

- RERT rule change https://www.aemc.gov.au/rule-changes/enhancement-reliability-and-emergency-reserve-trader
- RERT reporting https://aemo.com.au/en/energy-systems/electricity/emergency-management/reliability-and-emergency-reserve-trader-rert/rert-reporting
- NEM quarterly dynamics report https://aemo.com.au/energy-systems/major-publications/quarterly-energy-dynamics-qed
- AER wholesale market reports https://www.aer.gov.au/wholesale-markets

Public Data

- Market notices https://aemo.com.au/market-notices

- Market data NEMWEB portal http://nemweb.com.au/#settlements
  - Settlement summary
  - Billing summary
  - Ancillary services payments
  - Directions data

Project Updates

Presented by: Stephen Harrison

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Content

1. Five Minute and Global Settlements
2. Wholesale Demand Response (WDR)
3. Retailer Reliability Obligation (RRO) & Procurer of Last Resort (PoLR)

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5MS/GS – Update

Project Status

- AEMO submitted rule change 9th April requesting delay 5MS & GS. implementation by 12 mo. to 1 July 2022.
- Industry focus on energy supply and customer support.
- AEMO will continue to progress the project internally.
- AEMC enter consultation phase with decision target by end June 2020.

Prudential Impacts

- Reallocations successfully deployed 1/4/20.
- Can presently enter reallocations spanning 1 July 2021 (catering to 30min and 5min intervals).
- May be problematic from system administration viewpoint given potential delay.
- Please contact Prudentials team should you wish to transact beyond current start date.

Further information is available in the Guide to Electricity Reallocations available on the AEMO 5MS webpage.

Wholesale Demand Response - Overview

On 12 March AEMC published a 2nd Draft Determination on the WDR mechanism that would allow consumers to sell demand response in the wholesale market through specialist aggregators.

Key elements of the draft Rule include:

- A new market participant category, a demand response service provider (DRSP)
- Obligations on DRSP that as much as possible replicate those applied to other scheduled participants
- A process for having baseline methodologies determined and applied to wholesale demand response units
- DRSP to be settled in the wholesale market at the prevailing spot price
- Reduced scope - Can't aggregate residential (small) customers, limited baseline methodology.
- Implementation timeframes for the mechanism with commencement on 24 October 2021 (earlier than initially proposed i.e. 1 July 2022).

In support of the WDR Rule change process, AEMO published a high-level design document to assist stakeholders in understanding the implementation of the WDR mechanism.

https://aemo.com.au/initiatives/submissions/wholesale-demand-response-mechanism-high-level-design

WDR – Implications for participants

- AEMC closed first round of consultation on 23rd April.
- Final rule scheduled to be released 11th June 2020.
- Customers engaging in WDR will be tagged to DRSP and settled by AEMO for DR periods.
- DRSP's bid DR load and are issued dispatch instructions like generators.
- Retailers pay *pool price x baseline* (proxy for counterfactual) for participating customers.
- DRSP receives *pool price x baseline less actual demand* and pays Retailer via AEMO *wholesale contract rebate x baseline less actual demand*
- Prudential estimates for retailers will use baseline.
- Prudentials for DRSP's TBA pending final rule.

Next steps …

- Review participant feedback to draft consultation
- AEMO to engage participants in pre-consultation on baseline methodology
- AEMO to develop guidelines as per draft determination

RRO – Overview

The Retailer Reliability Obligation (RRO) implemented under the National Electricity Amendment (Retailer Reliability Obligation) Rule 2019, supports a reliable energy system by requiring energy retailers and some large energy users to hold contracts or invest directly in generation or demand response to support reliability in the NEM.

RRO Trigger

AEMO releases the ESOO annually which identifies any *forecast reliability gaps* (ie potential shortfall of supply) over a 5 year outlook.

I. T-3 instrument triggered if there is an identified regional shortfall in 3 years.

II. T-1 instrument triggered a year out if shortfall unresolved which obligations for participants.

Liable Entities

Retailers and opt in customers

Compliance

A *compliance TI* is where the actual peak demand in a gap trading interval exceeds the one-in-two year peak demand forecast for that region.

The AER will assess a *liable entity's net contract position for compliance and determine whether they are designated as a PoLR (Procurer of Last Resort) liable entity.*

PoLR Recovery Mechanism – Overview

- The PoLR recovery mechanism seeks to allocate the costs of the Reliability and Emergency Reserve Trader (RERT) scheme on the basis of causer pays.
- PoLR allows AEMO, to recover the costs of contracting reserves that are related to a reliability gap period where there are one or more PoLR liable entities.
- Costs recovered from liable entities via the PoLR mechanism are used to offset the cost of RERT and therefore minimise costs to customers.

Next Steps …

AEMO ESOO due to be published in August each year indicates the likelihood of a T-3 event being triggered.

AEMO is working on guidelines that detail the information flow, timing and calculations.

Can also reference CH4 of the NER.

MCL Shoulder 1 Removal

Presented by: Cheryl Huang

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First Year Without Shoulder 1 Season

The MCL seasons:

Season	Month Encompassed
Summer	December, January, February and March (no change)
Winter	April to August (changed to 5 months)
Shoulder	September to November (changed to 3 months)

MCL effective dates:

- 2020 Winter 1 April 2020
- 2020 Shoulder 1 September 2020
- 2021 Summer 1 December 2020

5MS - Reallocation

Presented by: Pedro Riveros

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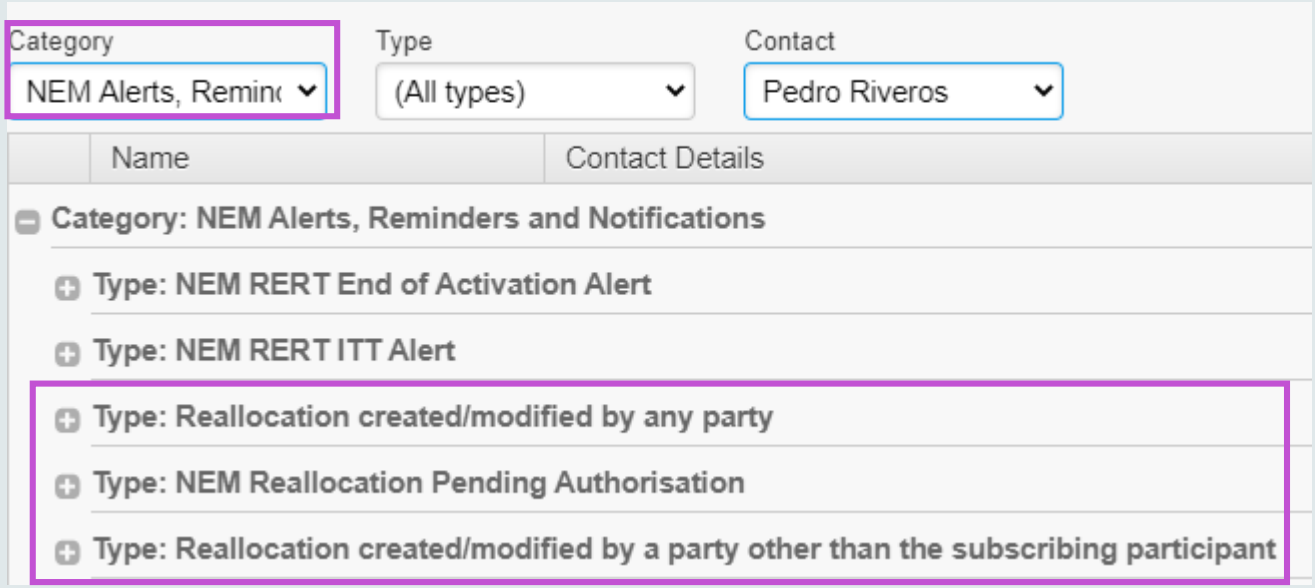
Feedback and Alerts

- New Reallocation Alerts



- Any feedback on the new web pages?
  - Good comments are also accepted!

Prudential Performance and Risk

Presented by: Katalin Foran

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Calculating MCL

- Simplified MCL calculation (from our Credit Limit Procedures (CLP)

MCL= Load x Price x Volatility Factor x Days of Exposure x PRAF

- MCL parameters (prices and volatility factors) are set to meet the 2% prudential standard (for market overall over life of the NEM).
- 2% prudential standard – setting MCLs so no shortfall occurs in 98 out of 100 times a participant is removed from the market. This is a theoretical calculation, we haven't had a shortfall to date!
- The CLP is reviewed yearly for effectiveness (2019 report).
- If the prudential standard isn't met (as has happened a few times over the past few years) change are made either in modelling variables and/or methodology.
- This assessment is retrospective. It doesn't outline how MCL levels are tracking for coming seasons.

How Are MCLs Tracking?

- Over the past few years we've had MCL seasons where we all knew our forecast prices were below market expectations.
- However, we have no latitude according to the Rule and/or Procedures to take this into account when assessing market participant MCL.
- Now we actively track of how forecast MCL variables compared with actuals or other forecast (i.e. futures prices).
- This gives the team a clearer understanding of the level of prudential risk the market is facing overall, i.e. are MCL levels are on track for a particular season?
- Also allows us to enact any modelling/parameter changes quicker to get MCLs back on track quicker (as opposed to through the yearly CLP review process).

Forecast vs Actual - What Can We See ?

Prices - forecast vs actual

- Large divergence between forecasts and actuals over the past few years
- Forecast prices slowly increasing (feature of the model)
- Now getting back to being in line with actual/futures prices

Load - forecast vs actual

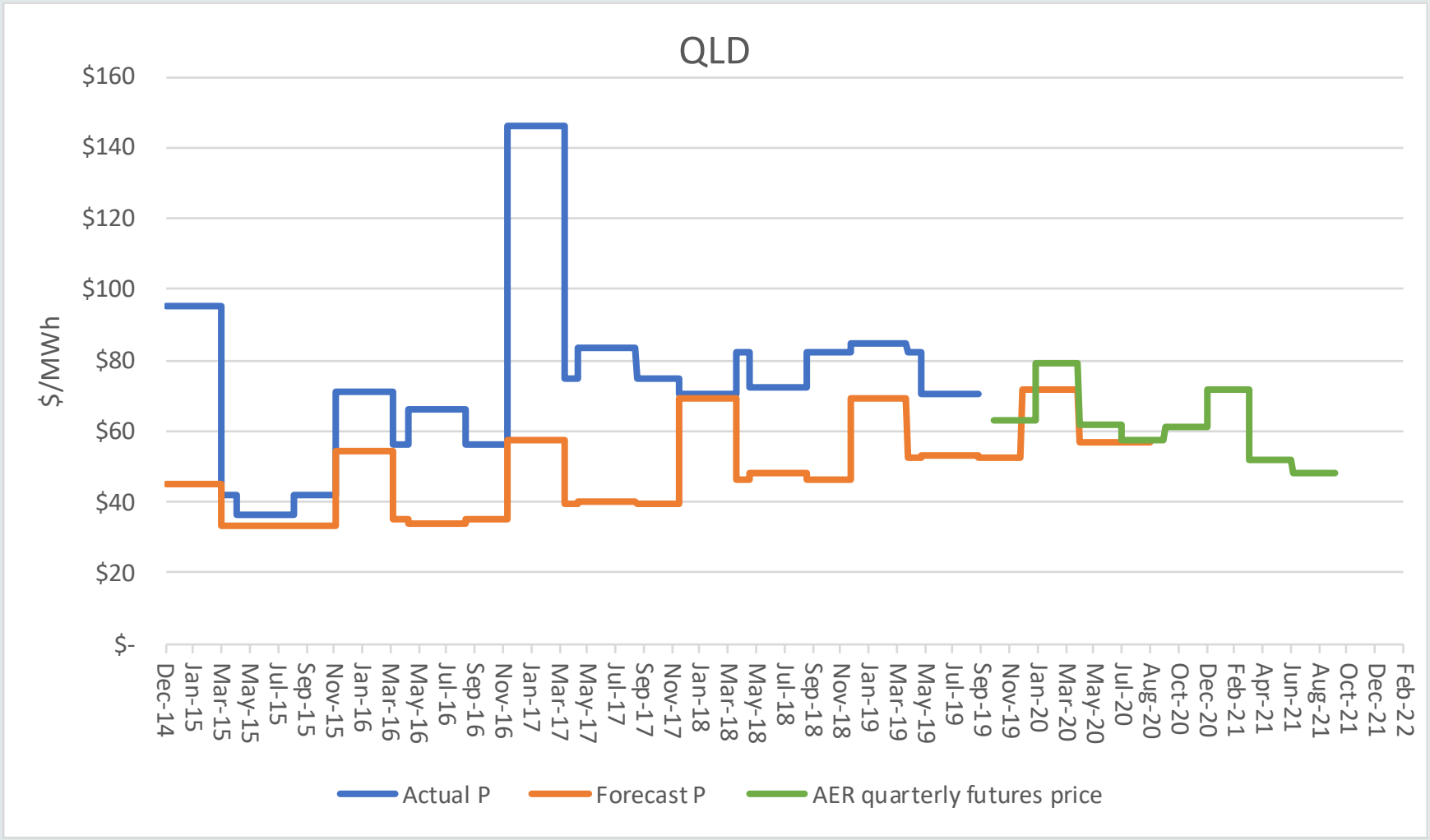
- Pretty accurate for most seasons and all states

Load x volatility - forecast vs actual

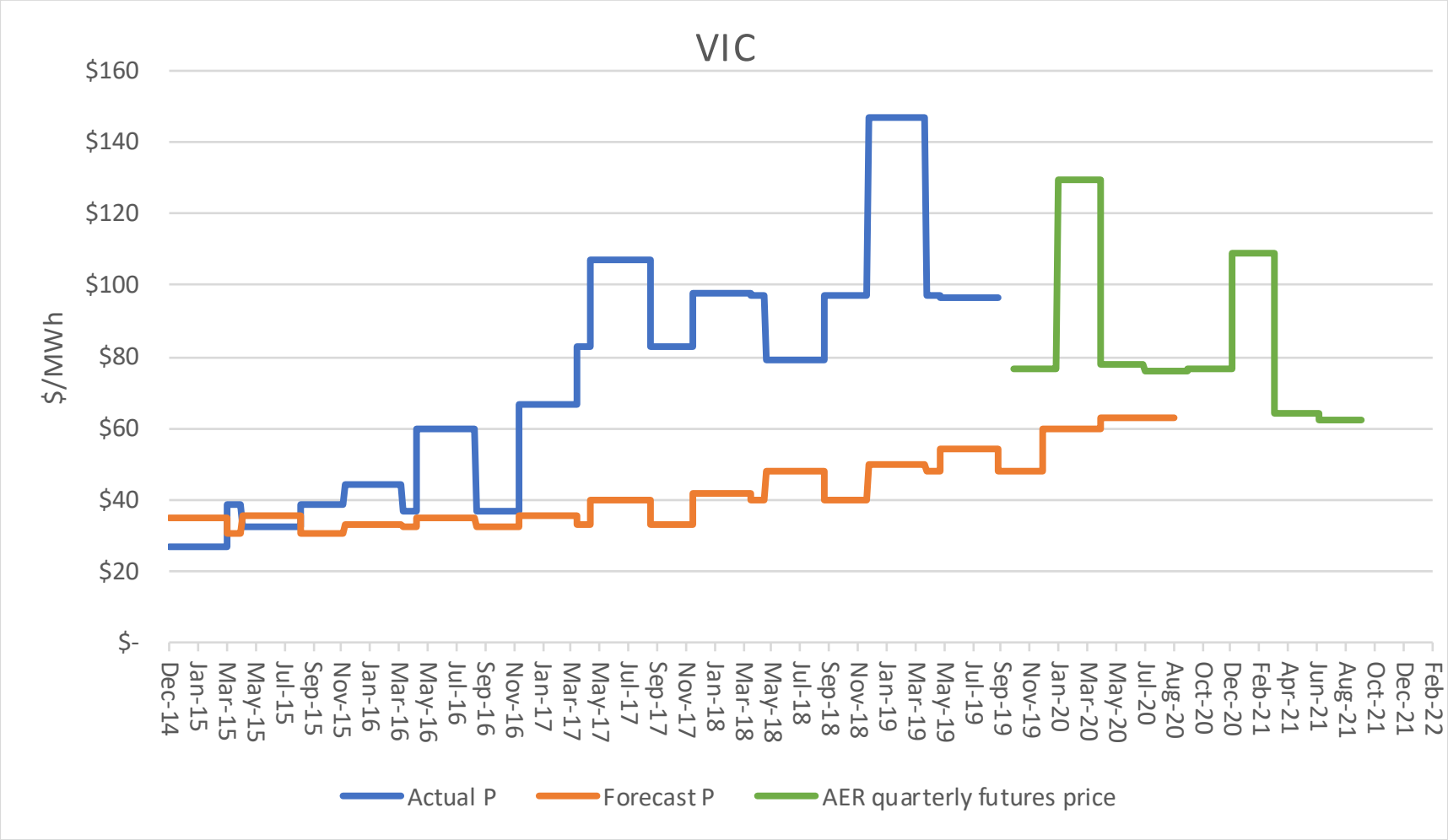
- There is a divergence between forecast and actuals.
- However higher volatility was compensating for the lower prices to give MCL that was closer to where it was meant to be.
- The way the model works with forecast prices more closer to actuals we would expect to see volatilities to fall.

Forecast Prices - NSW

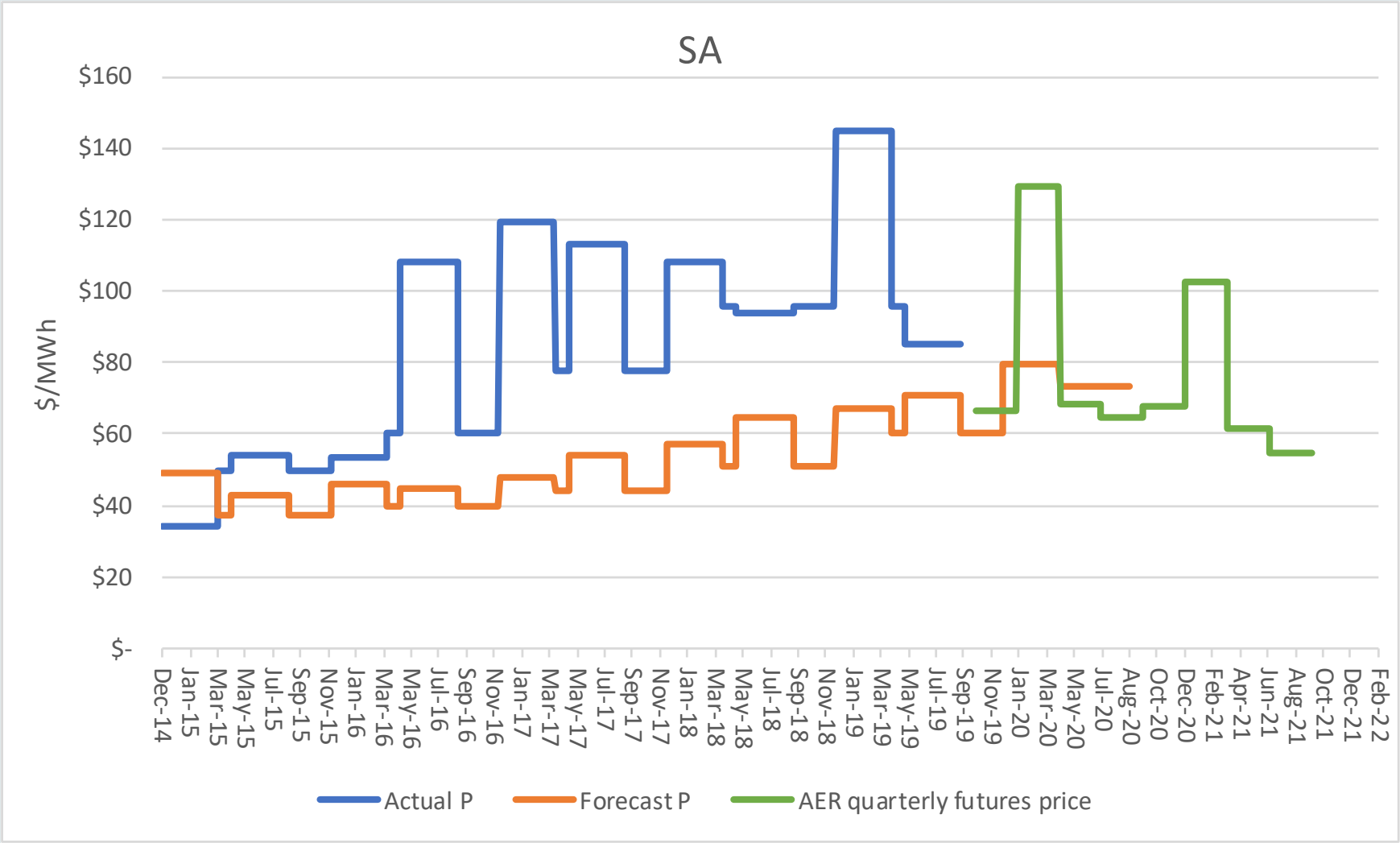
Forecast Prices - QLD



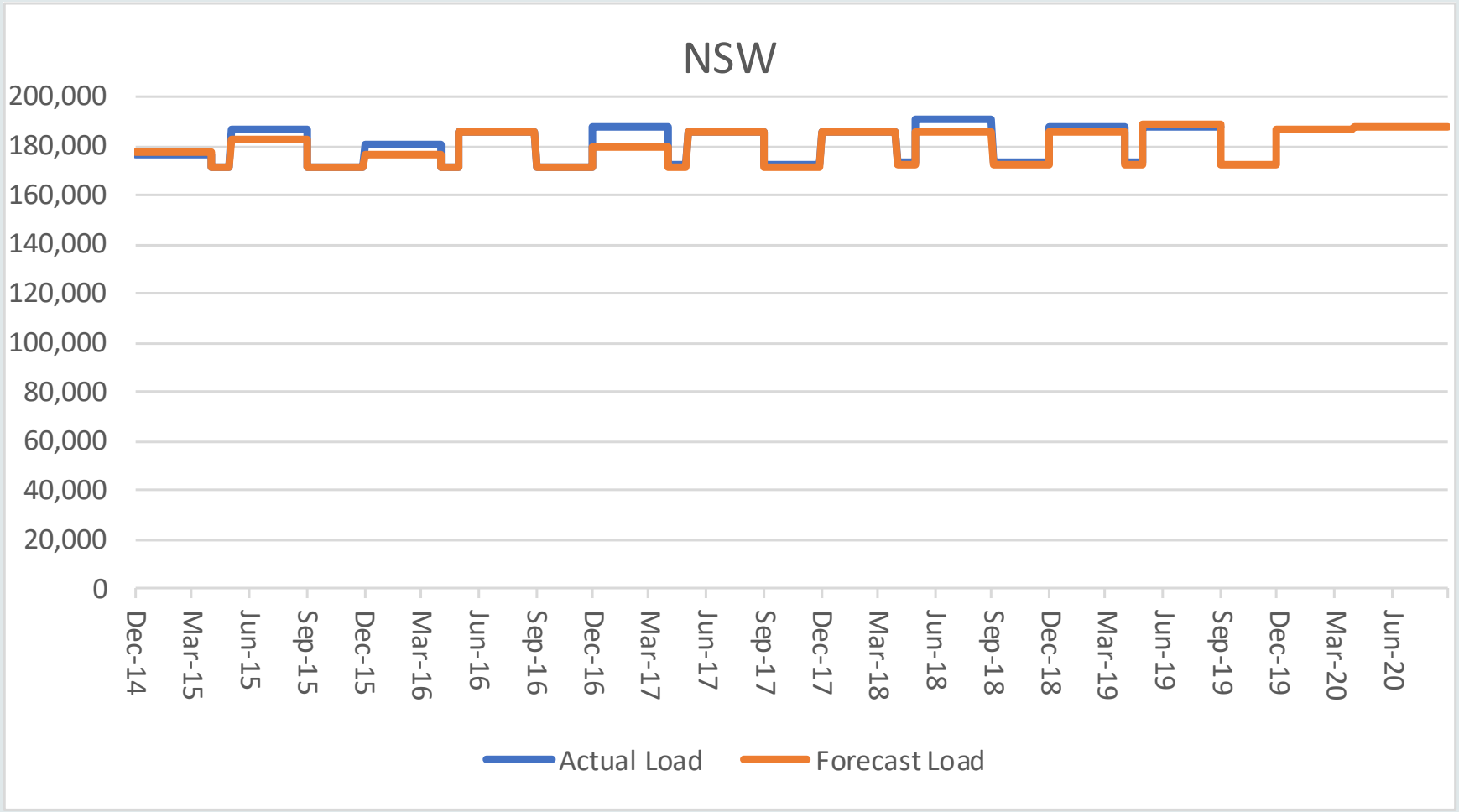
Forecast Prices - VIC



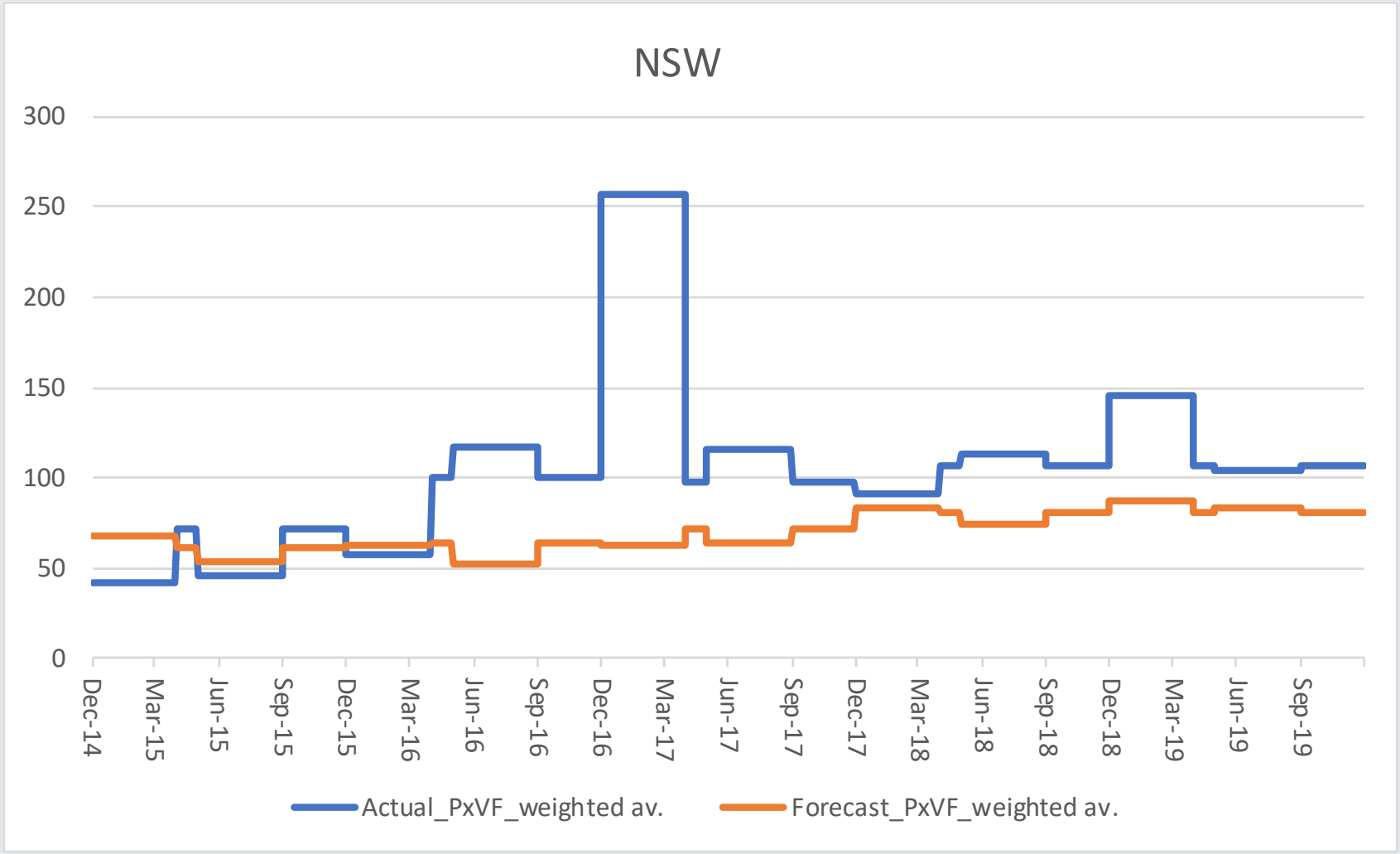
Forecast Prices - SA



Load Forecast - NSW



Price x Volatility Forecast (NSW)



DWGM – Special Revision

Presented by: Nipun Saxena

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Content

1. At a Glance
    - Definition
    - NGR obligation
    - Special Revision guidelines

2. Special Revisions issued since April 2019
    - Financial impact

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At a Glance

- Special Revisions are conducted to correct any errors that materially affect the participants.
  - Can be conducted within 18 months of issue of a revised statement
    - Affected Market participants are informed within 5 business days of AEMO deciding if the error is material.
    - Timetable is communicated to the market well in advance for any feedback regarding the publishing/payment dates.

- NGR Part 19 (249) provides the relevant information regarding special revision which is supplemented by the gas market settlement revision guideline published on AEMO website.

Financial Impact

- Sep 2017 – Sep 2018
- Special Revisions published – 8
- Net Market Impact - $977,000

- Feb 2018 – Feb 2019
- Special Revisions published – 7
- Net Market Impact - $2,973,000

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