2019 GSOO Forecast Accuracy and Proposed Methodology Changes

Comparison of the 2019 GSOO Forecast against latest 2019 estimates along with deployed methodology changes for the upcoming GSOO

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Agenda

1. Reporting of the 2019 (Calendar Year) East and South East Australian GSOO Forecasts against preliminary Actuals for 2019 for Tariff V and Tariff D

2. Tariff V and D methodology updates for the East and South East Australian 2020 Gas Statement of Opportunities (GSOO)

3. Reporting of the 2019 Gas Powered Generation (GPG) forecasts against actuals for 2019

4. Improvements for the 2020 GPG forecasts

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Tariff V and Tariff D

Forecast Accuracy

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Key Insights

- Tariff V 2019 actual estimates[1] are 0.4% (0.7 PJ) higher than the 2019 GSOO Tariff V Forecast
  - Largely driven by slightly higher usage in Vic and SA, slightly offset by lower consumption in NSW and QLD.
  - The variance is likely due to a combination of weather, connection and usage/other changes
- Tariff D 2019 actual estimates are 2.3% (6.0 PJ) lower than the 2019 GSOO Tariff V Forecast:
  - Largely driven by lower load in Vic, SA and QLD.
  - The variance is likely due to operational reasons (for large facilities) and an ongoing trend for Tariff D consumers having a lower consumption.
    - For example, in Victoria, since 2012 usage/MIRN has been trending downwards (~0.6% per year) for consumers that use < 500 TJ a year.
- Overall, the forecast for the 2019 GSOO Tariff V and Tariff D forecast is 1.2% (or 5.3 PJ) higher than the actuals.

1 Not all consumption data is available yet for 2019, in particular the transmission connected networks in QLD, SA and VIC along with Tas distribution data. Estimates are made for October – December period

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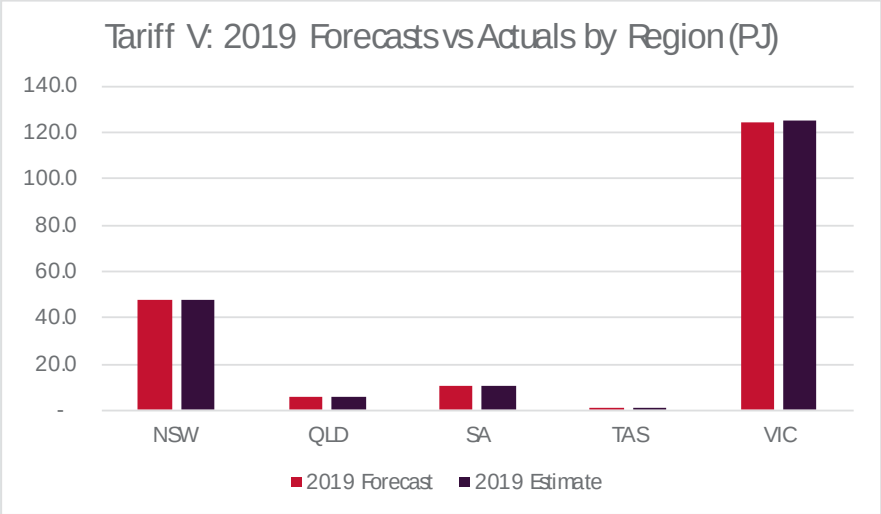
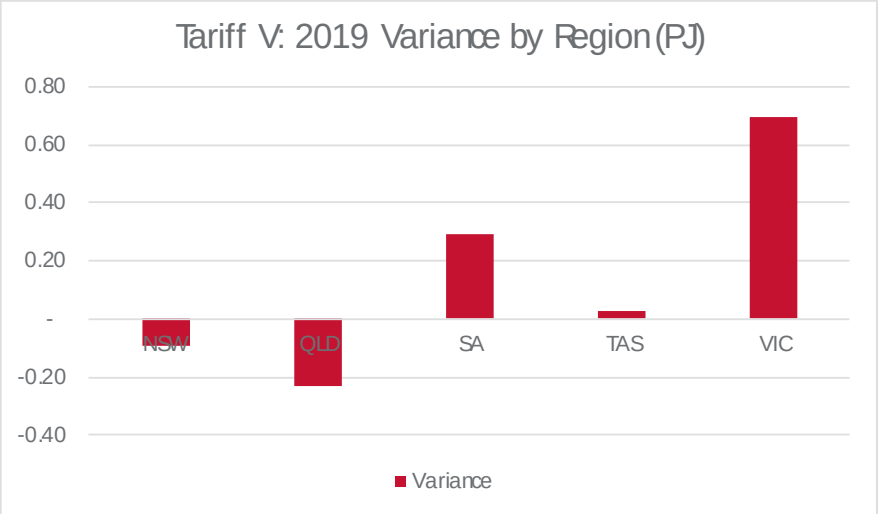
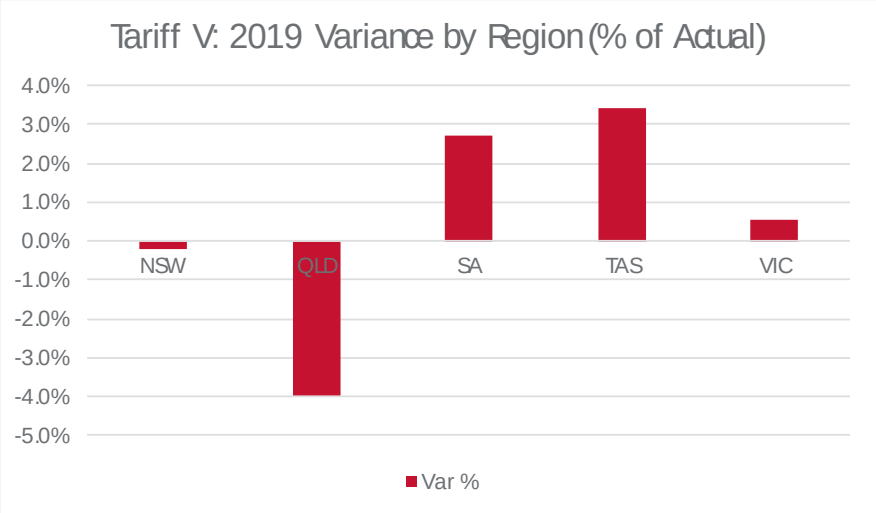
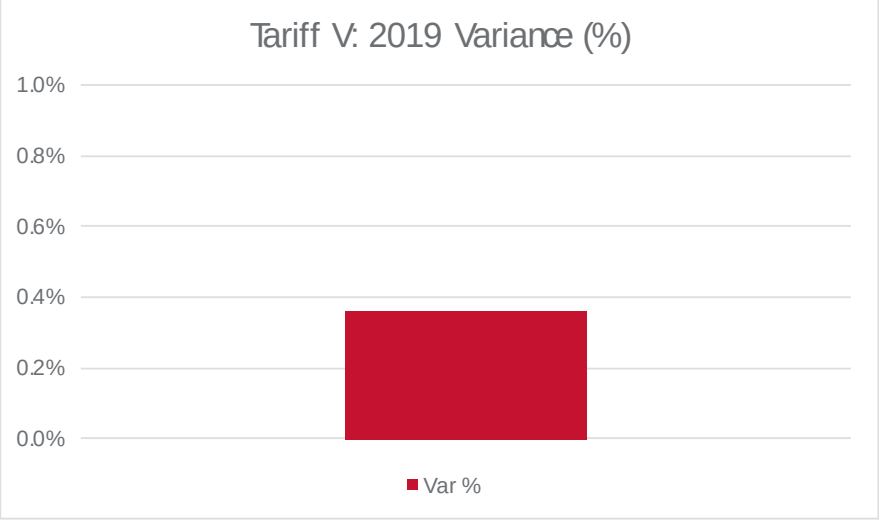
Tariff V









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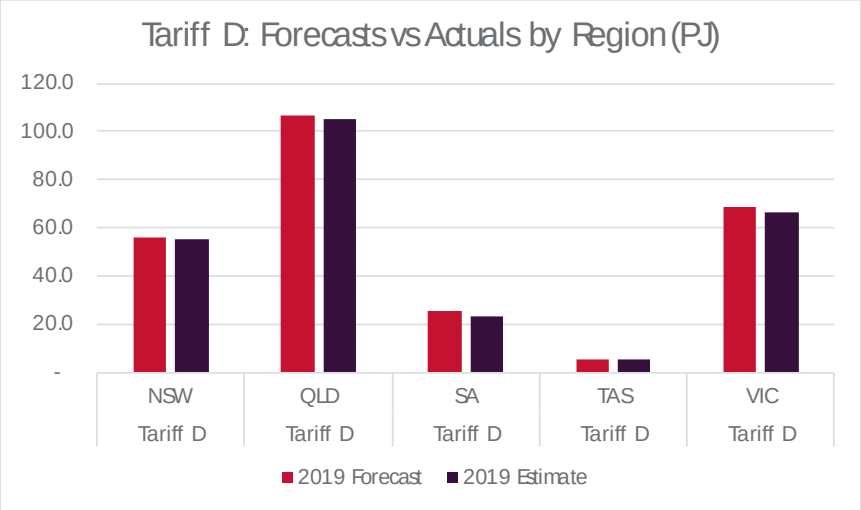
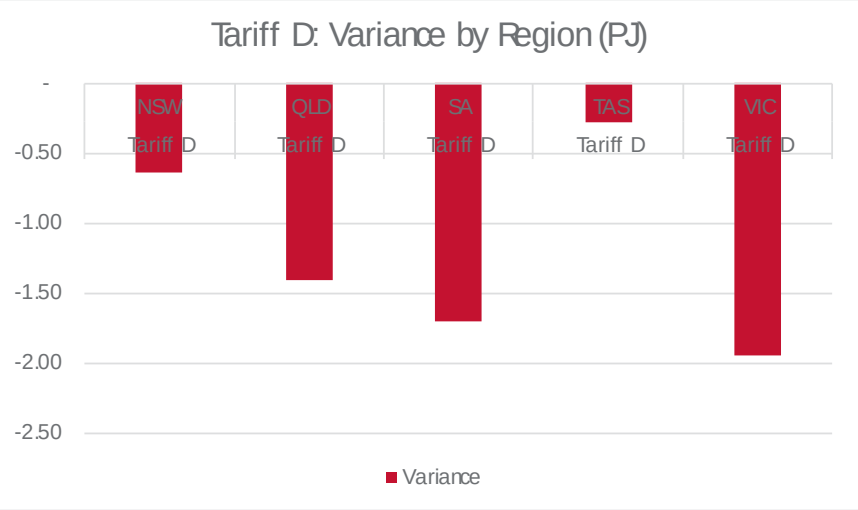
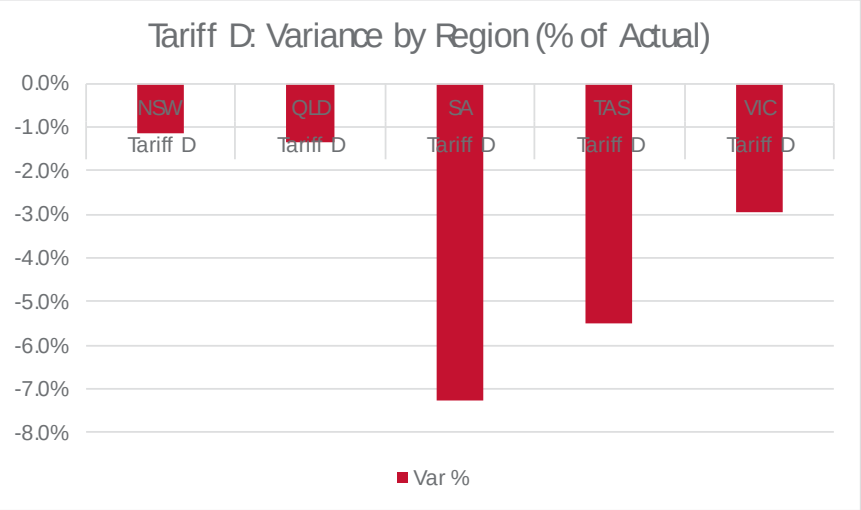
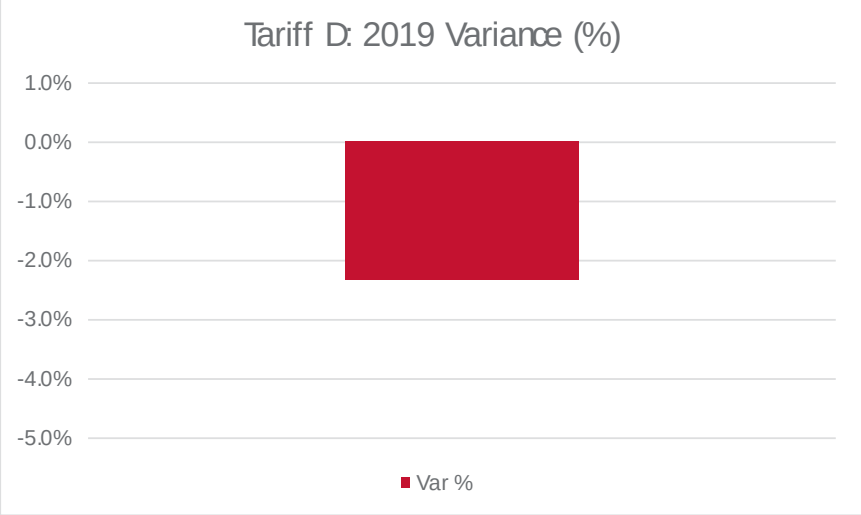
Tariff D









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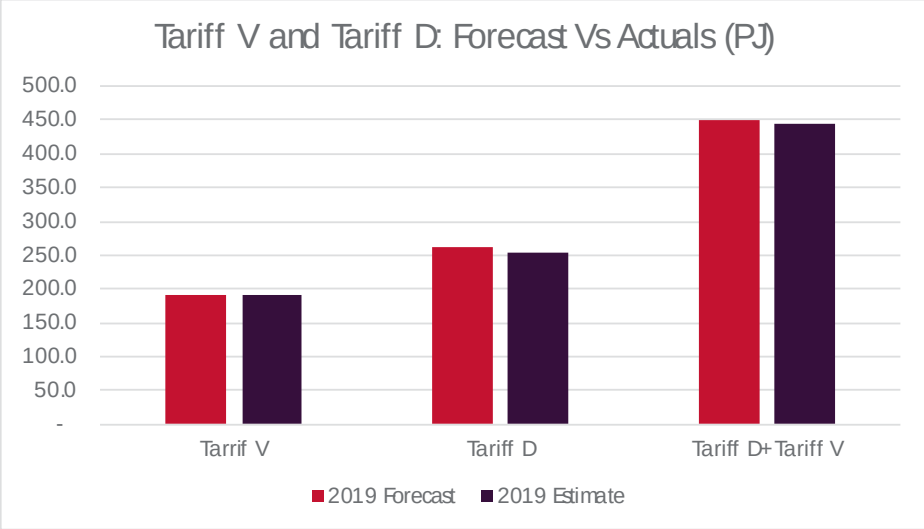
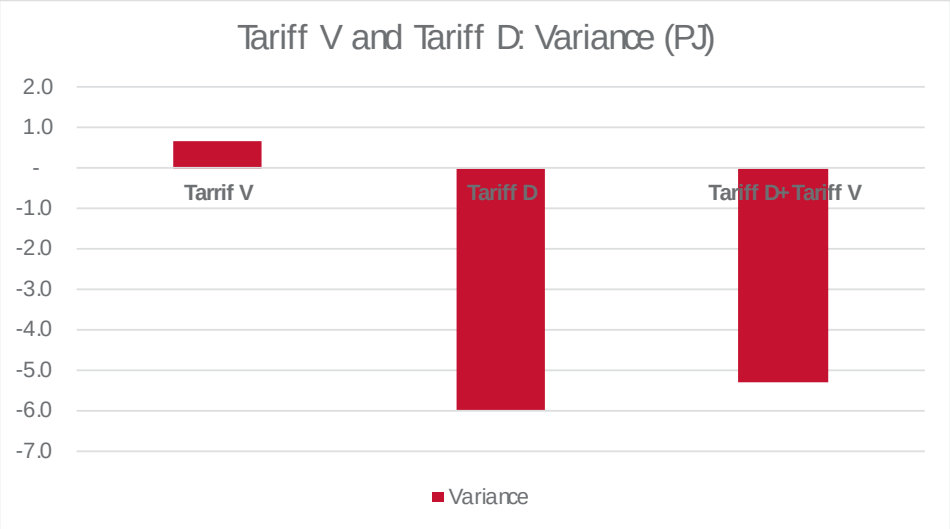
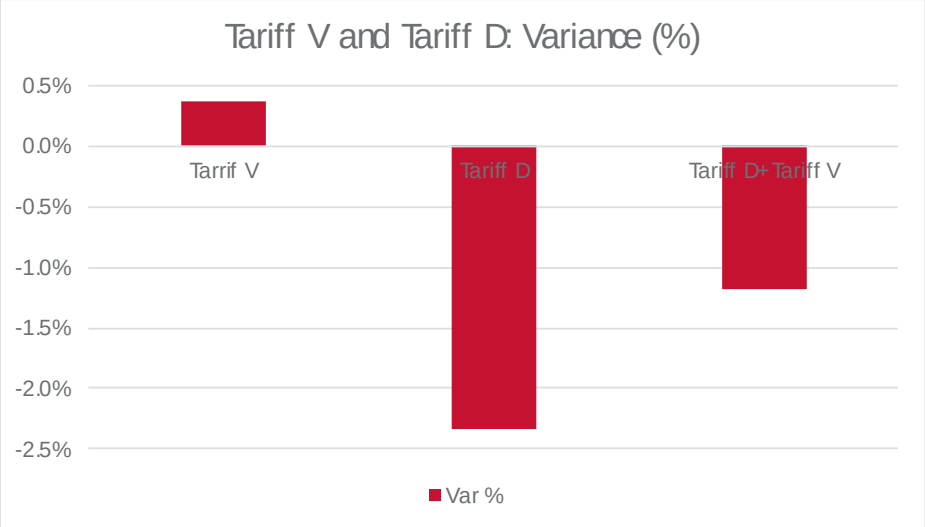
Total Tariff V and Tariff D Variance:







Tariff V and Tariff D

Forecast improvements ahead of the 2020 GSOO

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Methodology Update: *Tariff V*

Focused on improving understanding of usage changes, sub-regional trends and new connections.

Updates for 2020 GSOO include:

1. Updated Energy Efficiency and Fuel Switching methodology
2. Surveying distributors (last completed in 2016) to source long-term sub-regional trends, split by residential and commercial, and use historical growth rates to inform forecasts
3. Benchmarking against sub-regional trend information from Tariff V manual meter reads to guide GSOO sub-regional disaggregation
4. Utilising five-year historical meter data to inform short- to medium-term trend of connections forecast
5. A separate ACT model component in the Tariff V model for the NSW gas region

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Methodology Update – Tariff V

Energy Efficiency

Measures
National Construction Codes (NCC)
NSW Energy Savings Scheme
VIC Energy Upgrades (VEU) Program

Element	Description	Effect on EE Forecasts in 2019
Scenarios (AEMO)	2018: Weak -10%, Moderate and Strong + 10% 2019: Policy-driven	Forecasts do not have a default proportional relationship. Step Change grows faster than Central and Slow Change
NCC Occupancy factor (SPR)	2018: 50% 2019: 50-90%	Forecasts significantly reduced
NCC Residential stock model (SPR)	2019: Significant revisions to exclude census data due to anomalies	Forecasts reduced
NCC base star rating (SPR)	2019: Changed from 2★ to 3★	Forecasts reduced
Heating/ Baseload split (AEMO)	2018: AEMO adjusted SPR savings, resulting in higher overall savings 2019: AEMO provided SPR with HB split	Forecasts comparatively lower
State schemes (AEMO)	2019: Continued 75% savings beyond deeming period	Forecasts increased
	Data from NSW & VIC state govts	Forecasts significantly reduced for NSW & VIC

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Methodology Update – Tariff V

Fuel Switching: Residential water & space heating

2018
BASE: Rheem data and AEMO-assumed rate of change from 3★ to 5★ gas appliances.
HEAT: AEMO estimate of growth rates of gas to electric appliances.

2019
BASE and HEAT:
Base FS stock model* updated with DoEE data that AEMO adjusted for scenarios.

Step change has strongest decarbonisation pathway and highest adoption rates.

*Residential Energy Baseline Study (2016) data

Measure	Notes
VIC Solar Homes **2019**	From all 3yo systems to solar electric
NCC 2022 (all) **2023**	From gas instant to heat pump Uptake: Step 75%, Central 50% and Slow 25%
ACT Climate Change Strategy **2025**	Additional to NCC From gas to electric (mainly heat pump)
ACT Gas Heater Rebate **2019**	From ducted gas to ducted RCAC
E3 Program Zoned Label (excl ACT) **2023**	Potential to significantly reduce VIC gas consumption. AEMO applied conservative impact estimates to Base FS stock model, using data from Dept of Environment and Energy (DoEE) as follows: Step Change 25% of estimated stock change, Central 5% and Slow Change 2.5%.
ACT Climate Change Strategy **2025**	Additional to ACT Gas Heater Rebate Gas to split RCAC (mainly)

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Methodology Update: Tariff D

Focused on improving understanding of usage changes and sub-regional trends, and improving Tariff D segmentation.

Updates for 2020 GSOO:

1. Meter data usage has been utilised for the first time allowing up-to-date meter data analysis to segment Tariff D.
2. Increased number of surveys, interviews and separate customer forecasts (covering 70% of consumption in Tariff D).
3. A separate economic aggregate model has been applied for the smaller users to be more in-line with the ESOO methodology (previously split by 'Manufacturing' and 'Other').
4. Recent GSOO zonal trends have been used to guide long-term aggregate forecasts that exhibit different trends in a sub-region.

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Methodology Update: Tariff D *Large Industrial Loads (LILs)*

- LILs were surveyed where their historical demand has exceeded 800 TJ in at least one year.
- Direct interviews were conducted for the largest LILs.
- 54 LILs contacted to request survey responses or interviews.
  - 35 responses to either the survey request or interview request were received and 22 of the largest facilities were interviewed
  - Decisions to shut down facilities in specific scenarios were workshopped by the forecasting team, considering interview/survey feedback, publicly available information, and previous forecast assumptions.
  - Consistent with previous LIL forecasts, where responses were not provided forecasts are based on extrapolation of latest actuals.
  - Facilities with maximum consumption between 500 TJ/yr and 800 TJ/yr were also considered separately (these equate to approximately 4% of Tariff D).
- Insights were gained from the interviews, surveys and follow up phone calls with LIL representatives, these include:
  - Papermills are seriously considering waste to energy projects to completely replace gas consumption. Papermills are also struggling due to current low prices for Asian newsprint (a key reason for Albury papermill's shut down[1])
  - For some LILs it is currently cheaper to import products than to make them locally, predominantly due to high energy prices.
  - Many large energy consumers flagged high energy prices as a big commercial impact and in some cases noted potential shut downs if prices stayed high.

1 https://www.norskeskog.com/About-Norske-Skog/Press-room/Press-releases/English-press-releases/Norske-Skog-announces-sale-and-closure-of-Albury-mill?PID=4123&M=NewsV2&Action=1

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Methodology Update: Tariff D *Aggregate Consumers*

1. Separating out larger uses that have significant effects on the overall historical data allows long-term structural trends to be more readily analysed:
   - For example in Vic, the increase in connections has largely come from smaller users (< 500 TJ per year).
2. For all regions, a long-term economic regression model was produced to guide the long term view, with price elasticity adjustments on future consumption informed by latest price forecasts.

Region	Economic Indicator	Proportion of Tariff D Sector modelled
Vic	Industrial Production	50%
NSW	Industrial Production (coefficient based on Vic analysis)	50%
Qld	GSP	10%
SA	Industrial Production	25%
Tas	GSP	40%

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GPG forecasts

Forecast Accuracy + Improvements

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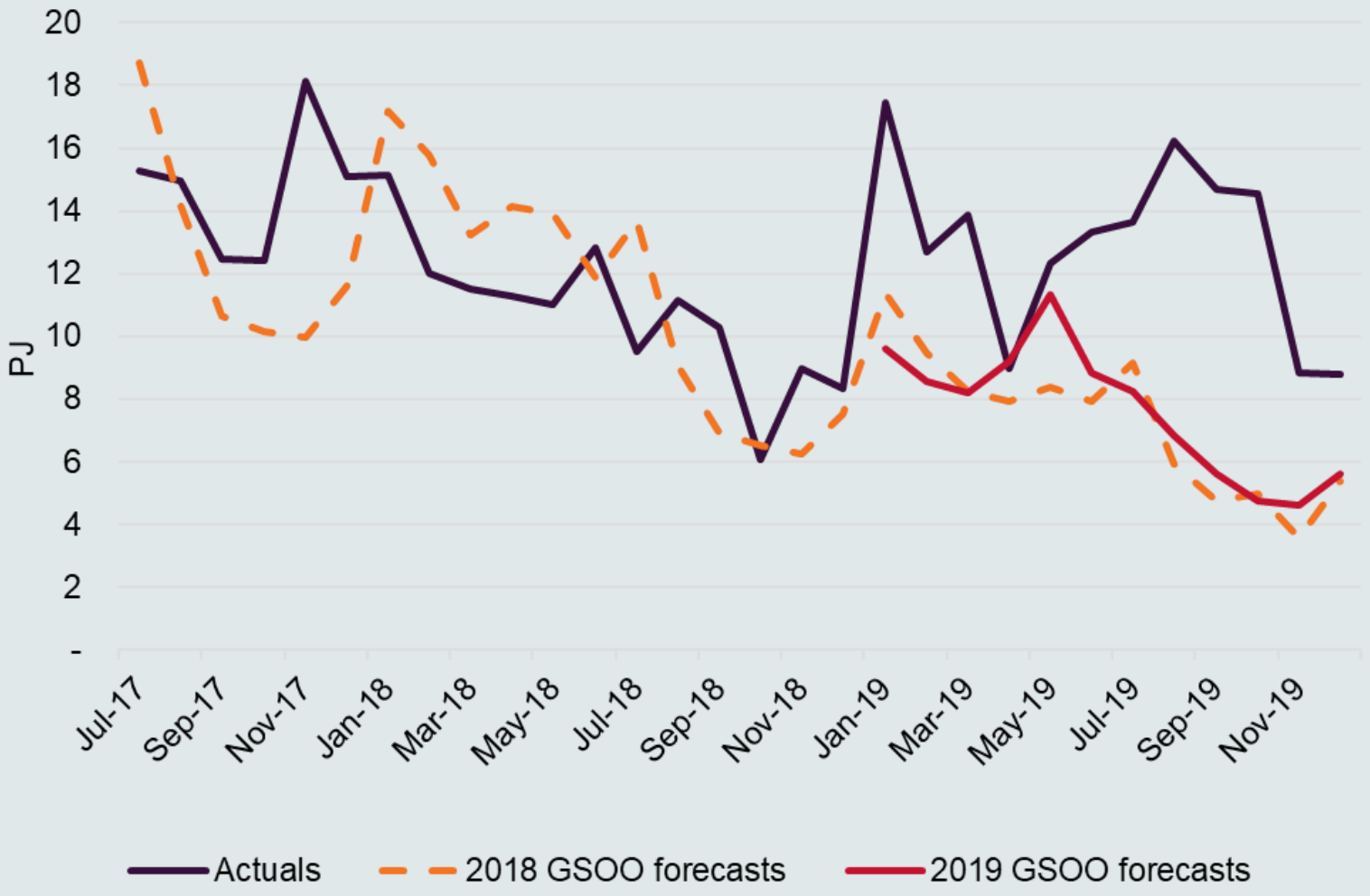
Actual and forecast monthly GPG

Forecasts reasonably accurate until January 2019.



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January - December 2019

January:

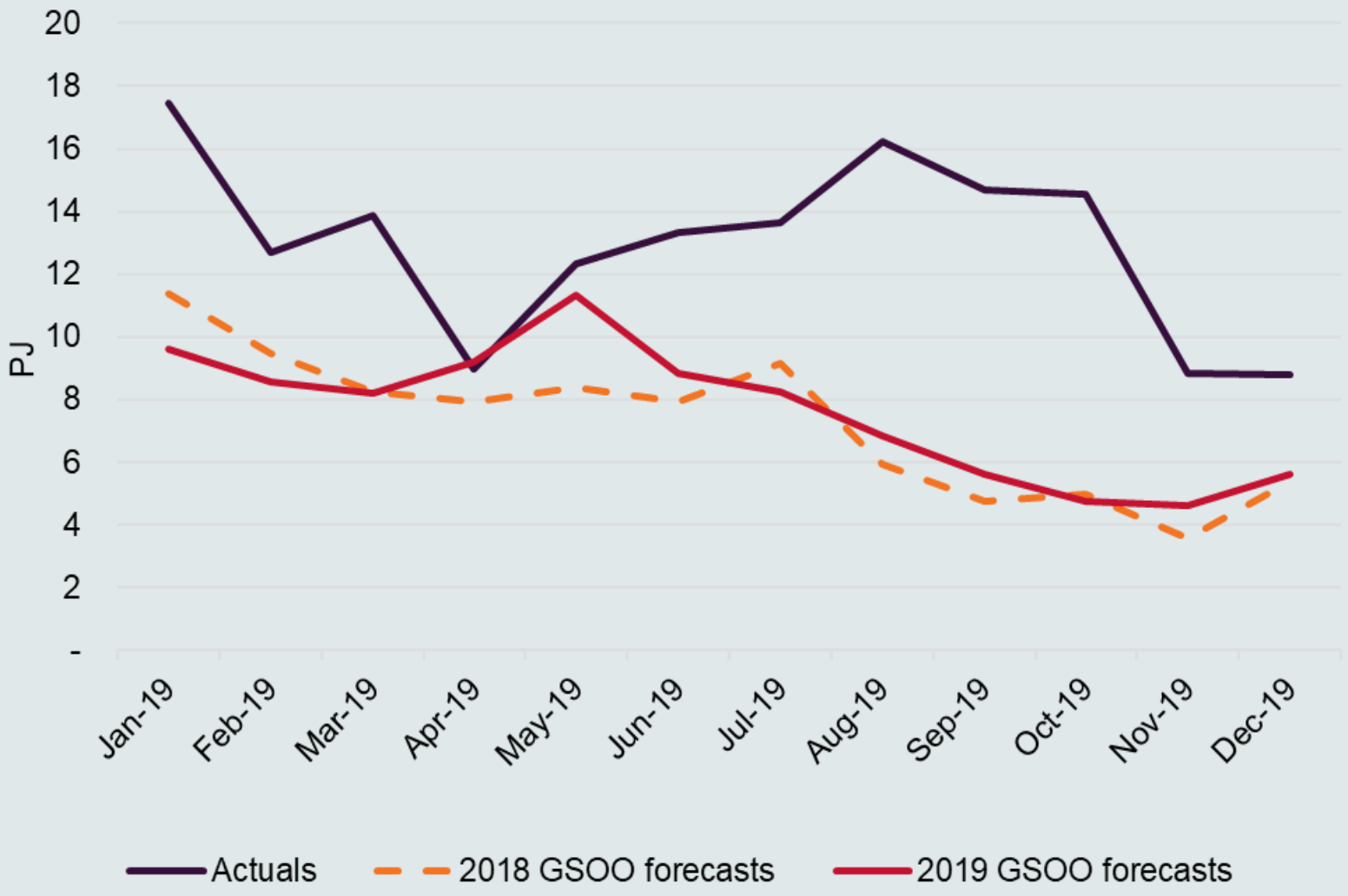
- extreme hot weather
- unit failures at Yallourn and Loy Yang coal power stations

End of May onwards:

- Loy Yang A unit 2 outage

Most of 2019:

- Low output from Mt Piper coal power station across the year due to coal quality issues



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Improvements for 2020 GPG forecasts

- Based on the Draft ISP scenarios and expansion plans.
- Updated the Forced Outage Rates (probability any single unit will fail, and how long it will take to repair) based on the most recent Electricity Statement of Opportunities data.
- Similar to 2019 GSOO forecasts, the short term outlook is based on bidding behaviour of individual units and their behaviour within portfolios. This logic has been updated for most recent conditions.
- However, event-driven outcomes will not feature in our GPG forecasts, and may need to be considered in additional sensitivities instead. For example, the key reasons behind the forecast inaccuracy for the 2019 calendar year:
  - Extreme weather events – the normal range of POE 10 & 50 weather conditions across reference years has been captured in our modelling, but not the more extreme events including extended heat waves such as that seen in 2019.
  - Extended unit outages, e.g. Loy Yang A2 which tripped and has been out of service since mid-May. It has been assumed that Loy Yang A2 will return to normal service in 2020, and return to its recent forced outage performance statistics (excluding the 2019 event).
  - Poor coal quality – AEMO understands that Mt Piper has secured a alternate source of coal, and expects the capacity factor of Mt. Piper to increase.

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Q&A