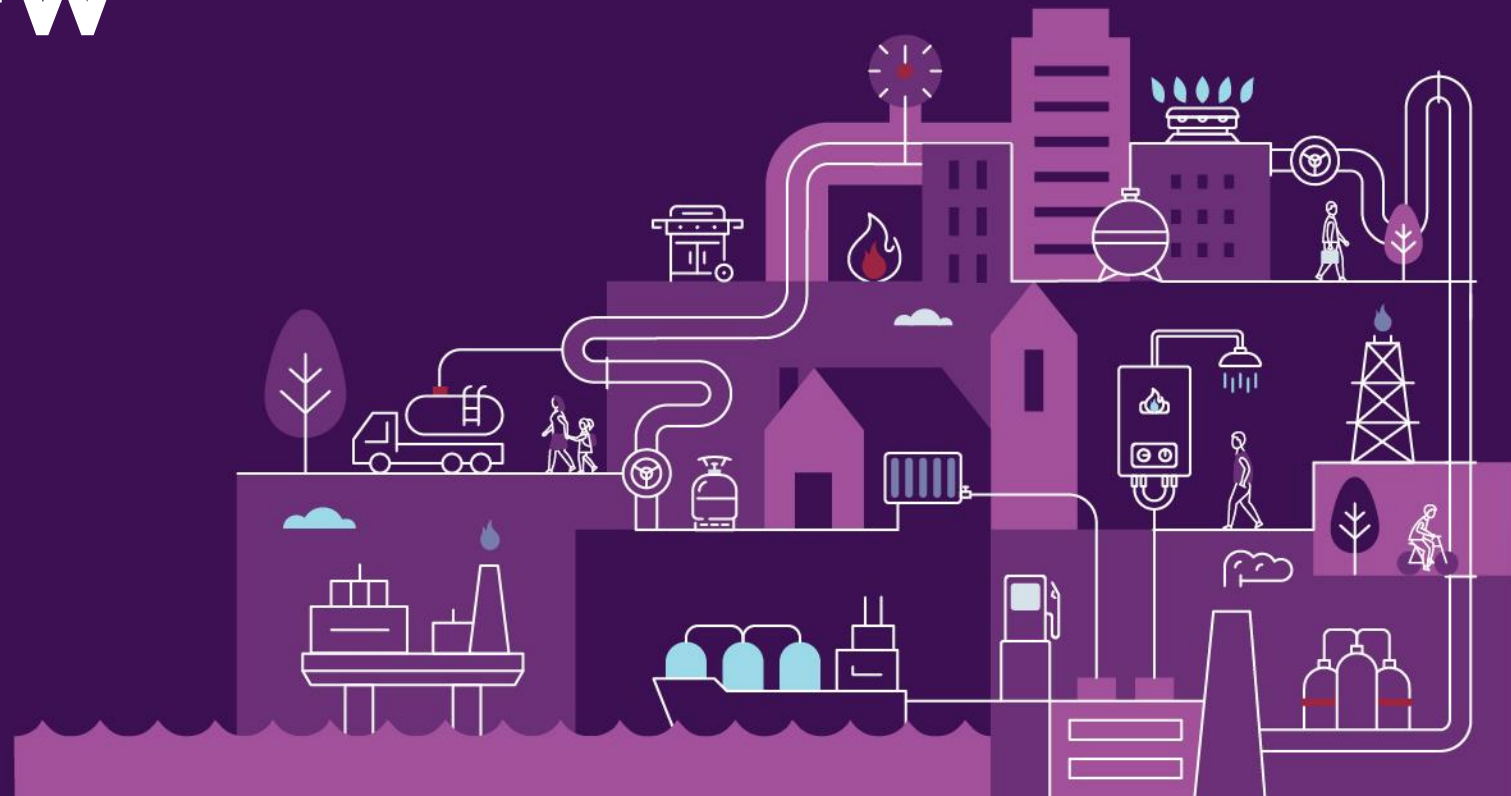


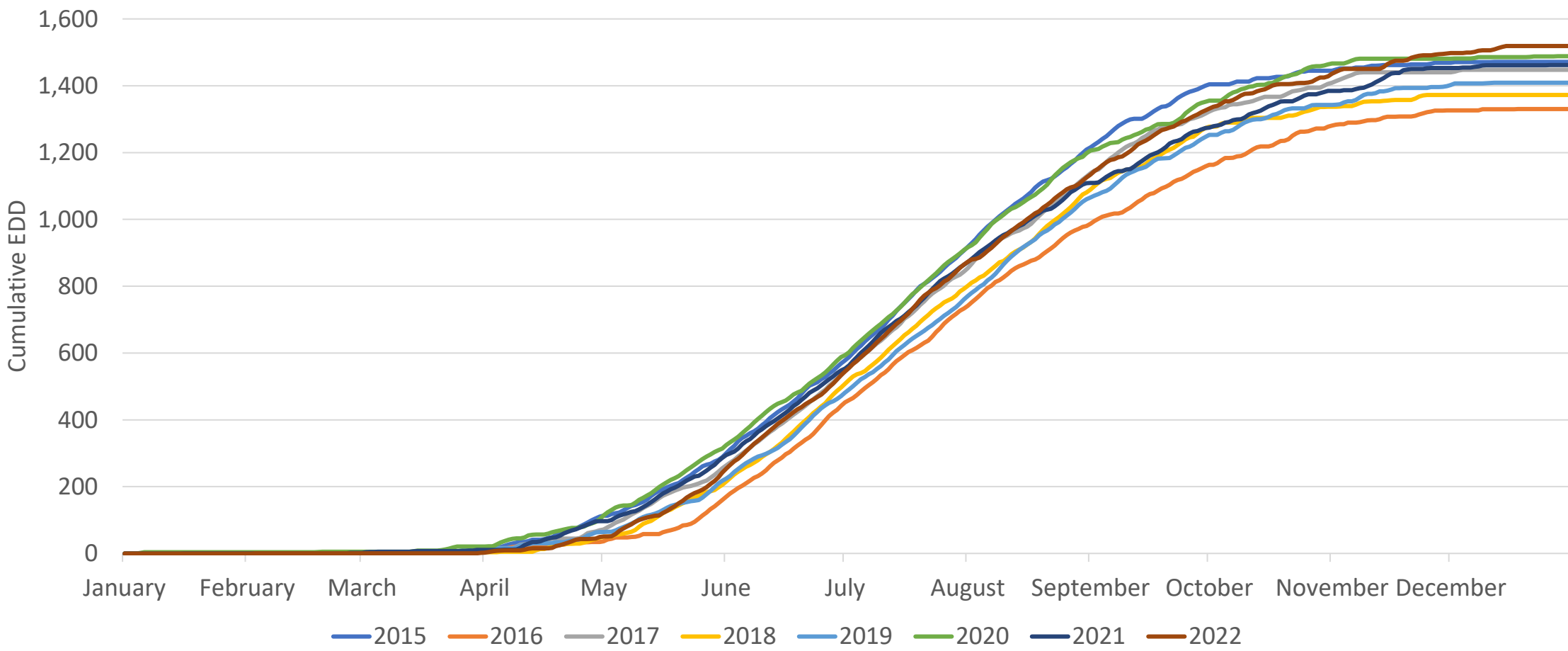
2022 in review



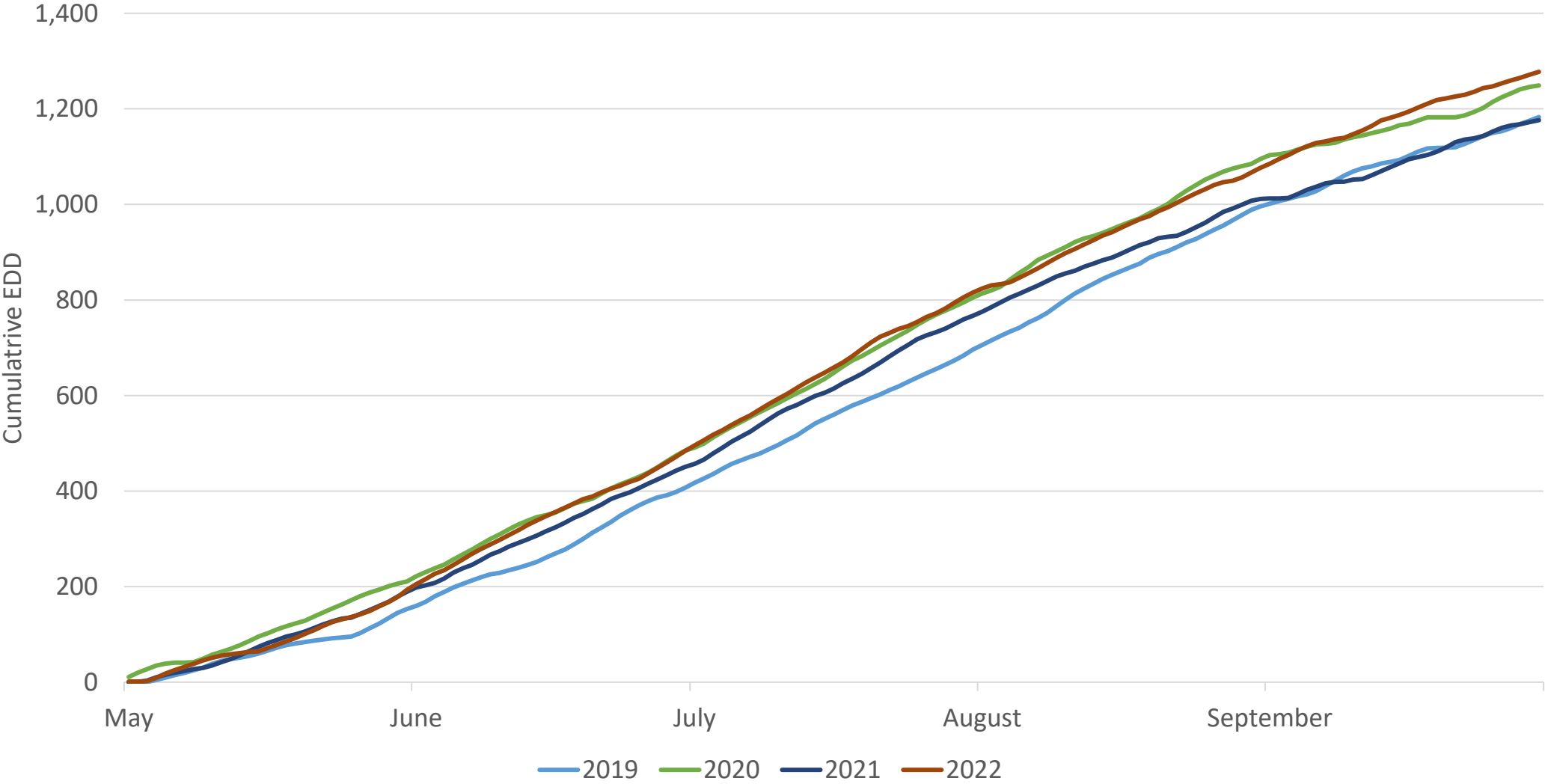
Supply and demand



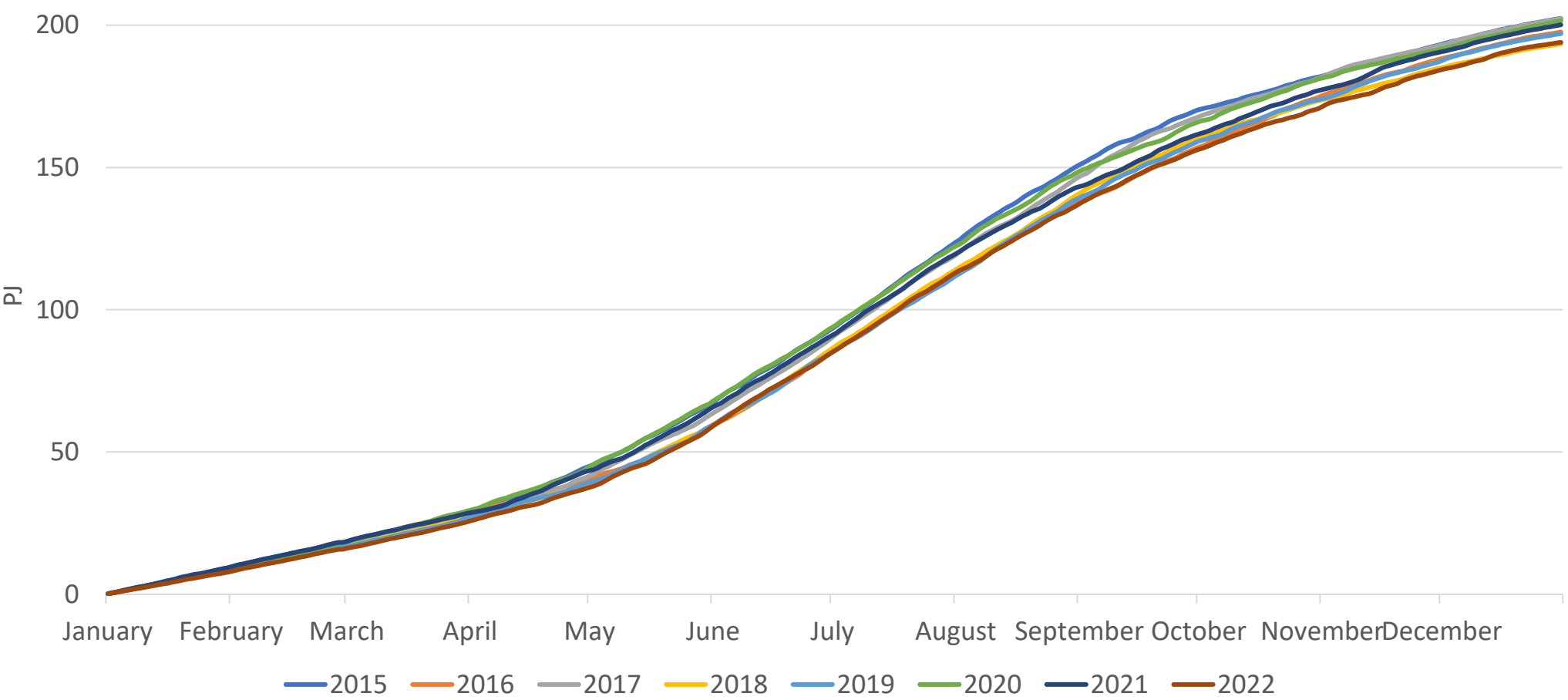
Cumulative DWGM EDD



Winter DWGM EDD



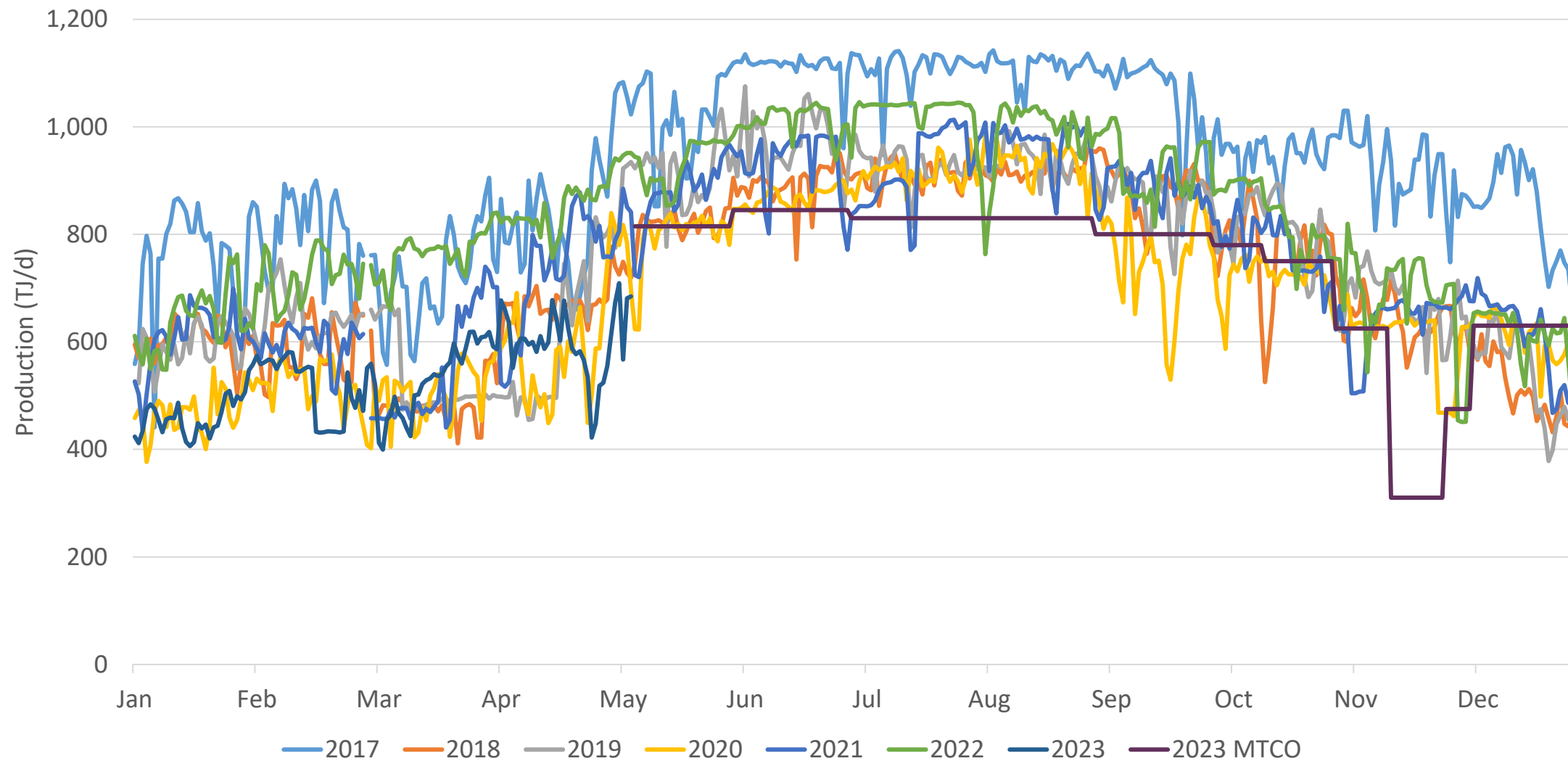
Cumulative DWGM System Demand



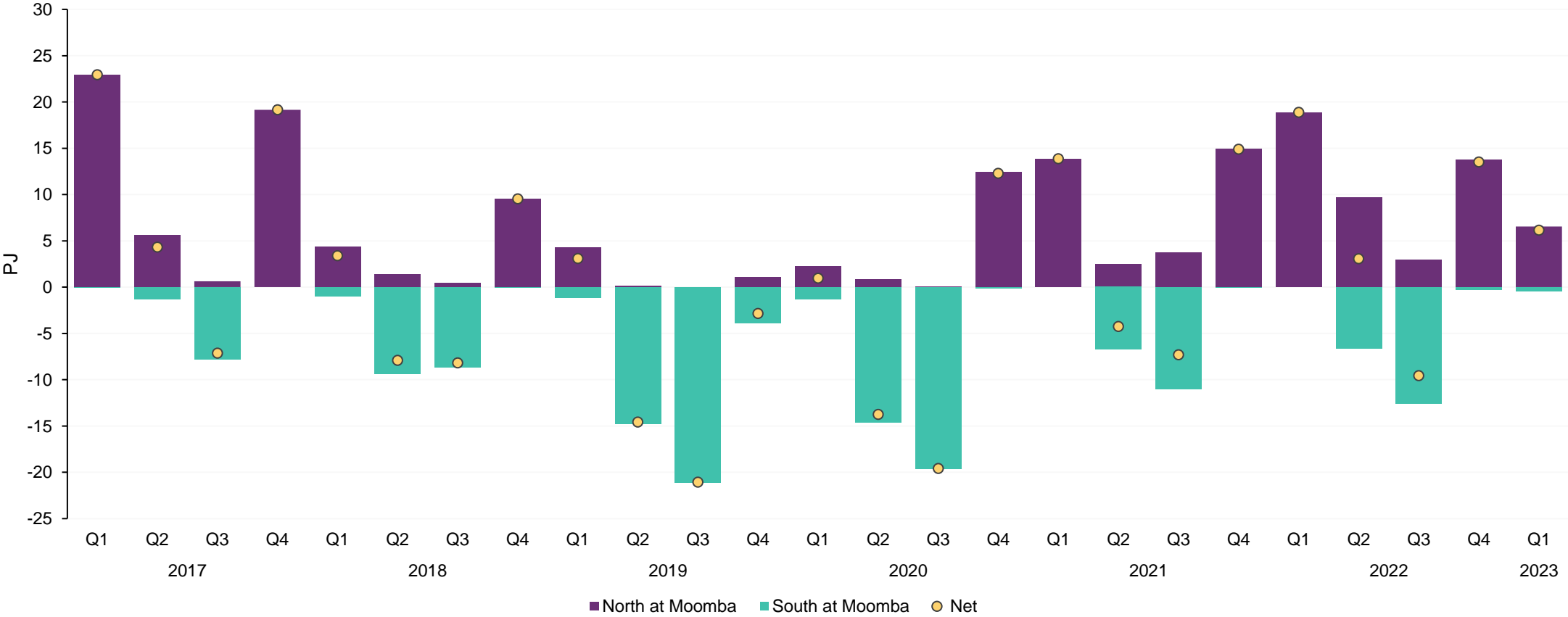
Winter 2022 DTS gas consumption

- Victorian DTS gas consumption was 207 PJ, a small increase on 2021 consumption.
- System consumption (by households and businesses) was 193 PJ:
 - Tariff D (industrial and large commercial) consumption was 65 PJ. The lowest since market start in 1999.
 - Caused by the closure of the Mobil Altona refinery and the mothballing of one plant at Qenos Altona in 2021, and the winding down of Saputo Dairy Australia's facility in Maffra.
 - Tariff V (small commercial and residential) consumption was 128 PJ. The third highest Tariff V consumption since market start (after 2020 and 2017).
 - Higher Tariff V demand driven by cold weather in 2022, particularly in early winter.
- Gas for power generation was 20.7 PJ in 2022, nearly double the 10.5 PJ used in 2021.
 - Driven by higher gas generation demand from late May due to an early winter cold snap coupled with low wind and solar generation
 - Continued high demand due to reduced coal generation in Victoria and New South Wales (including due to severe flooding) coinciding with high system demand for electricity.
 - Gas consumption for generation could have been even higher. Limitations on gas supply led to some generators running on liquid fuels instead.

Longford Gas Plant Production

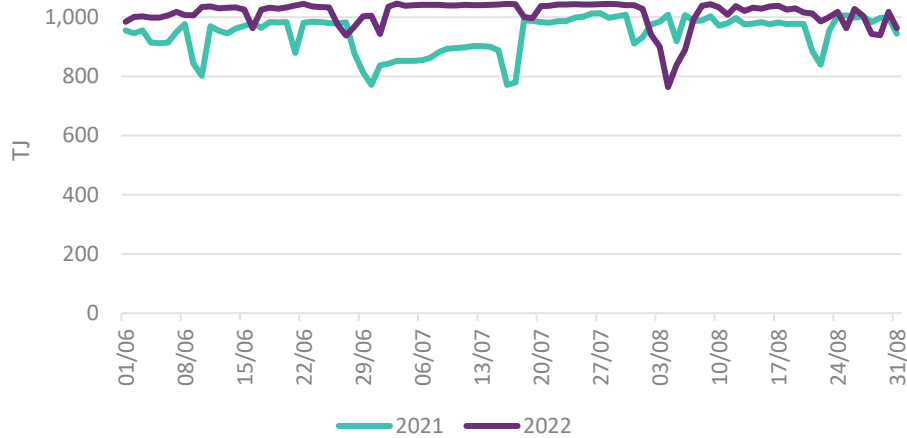


SWQP flows to / from Queensland

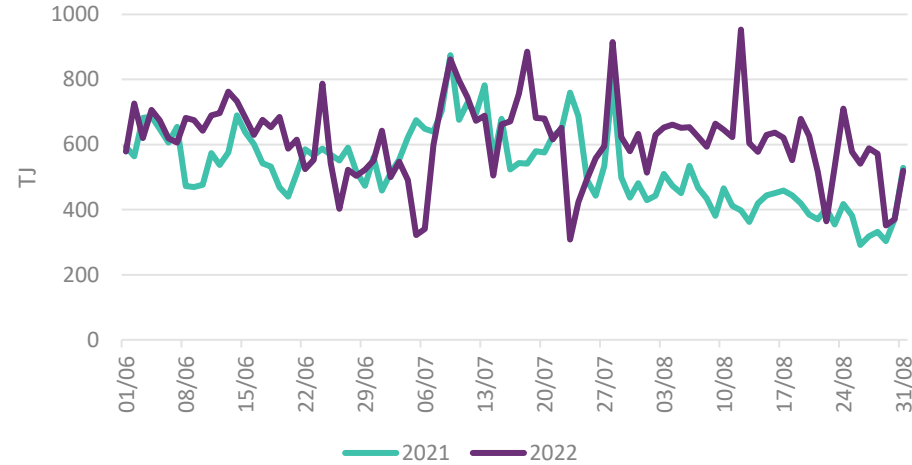


Supply – 2022 vs. 2021

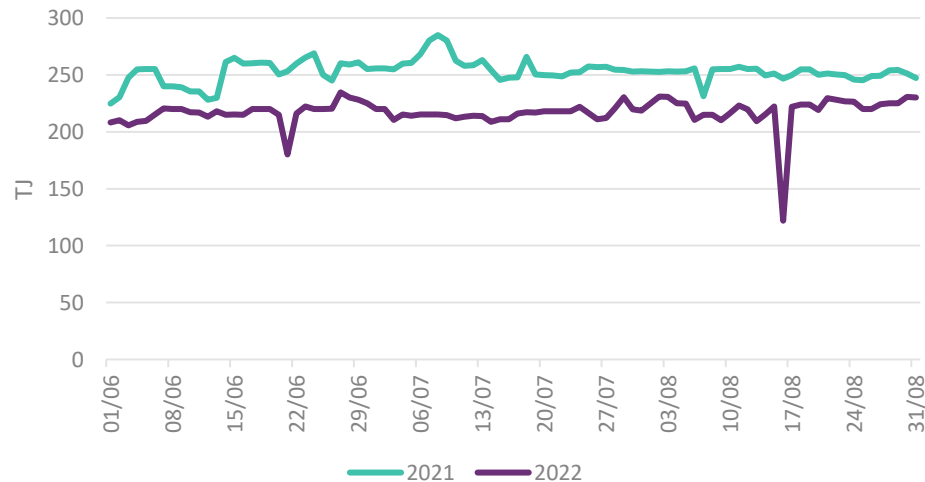
Longford Production



Net QLD Production to Domestic Mkt



Moomba Production



Longford production higher (+6.3 PJ)

Otway production higher (+3.4 PJ)

Bass Gas slightly lower (-0.4 PJ)

Orbost production higher (+0.9 PJ)

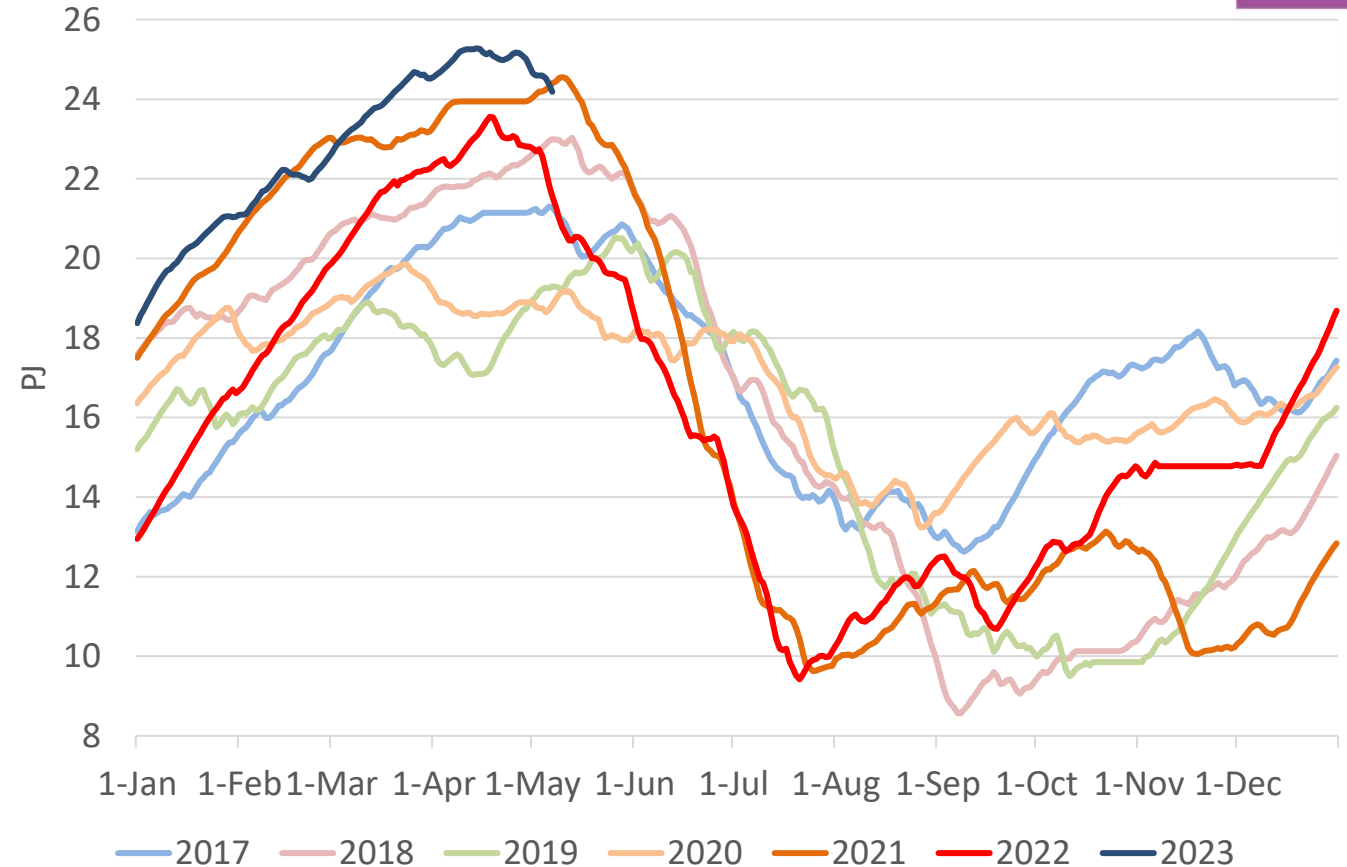
Moomba production lower (-3.3 PJ)

Net QLD production to domestic market higher (+7.7 PJ)

Northern Territory supply to QLD lower (-2.5 PJ)

Iona Gas Storage

- Iona storage followed a similar pattern to winter 2021, with very fast depletion rates in June and July, followed by a recovery in August
- Fast depletion was caused by a cold weather, higher GPG and a tight supply situation in the first half of winter
- August saw a decrease in GPG demand, milder weather and strong flows from QLD (APLNG outage) to the southern markets which enabled storage level to recover
- QCLNG outages also provided for increased supply for Iona refilling



Gas Market Prices

	Average Price (\$/GJ)		Movement
	Winter 2022	Winter 2021	
DWGM	30.86	10.75	187% ▲
ADL STTM	33.27	12.47	167% ▲
SYD STTM	33.59	12.14	177% ▲
BRI STTM	31.49	11.44	175% ▲
GSH	29.78	10.96	172% ▲

- All markets recorded all time high average prices for any season
- Sydney and Brisbane were placed under administered price cap from 24 May to 7 June
- DWGM was capped at \$40/GJ from 30 May to 1 August due to CPT exceedance

System Demand

Demand Region	System Demand (PJ)			Max Demand (TJ)	HDD and EDD			
	2022	2021	Move	2022	2022	2021	Move	
Brisbane STTM	7.8	7.8	0% ▼	95	295	229	28% ▲	
Sydney STTM	28.2	25.2	12% ▲	365	522	524	0% ▼	
Victoria DWGM	78.1	77.9	0.4% ▲	1,179	883	821	8% ▲	
Adelaide STTM	6.3	6.6	- -	83	571	540	6% ▲	
Domestic Market Total	120.4	117.4	3% ▲					
QLD LNG	308.0	329.2	6% ▼	3,741				

- Sydney demand higher due to higher controllable demand bids by Snowy Hydro as well as higher customer load
- Victoria demand only a slight increase despite a much colder winter, due to lower industrial demand
- QLD LNG demand lower due to reduction in flows from all 3 projects, and GLNG and QCLNG in particular

Gas Powered Generation

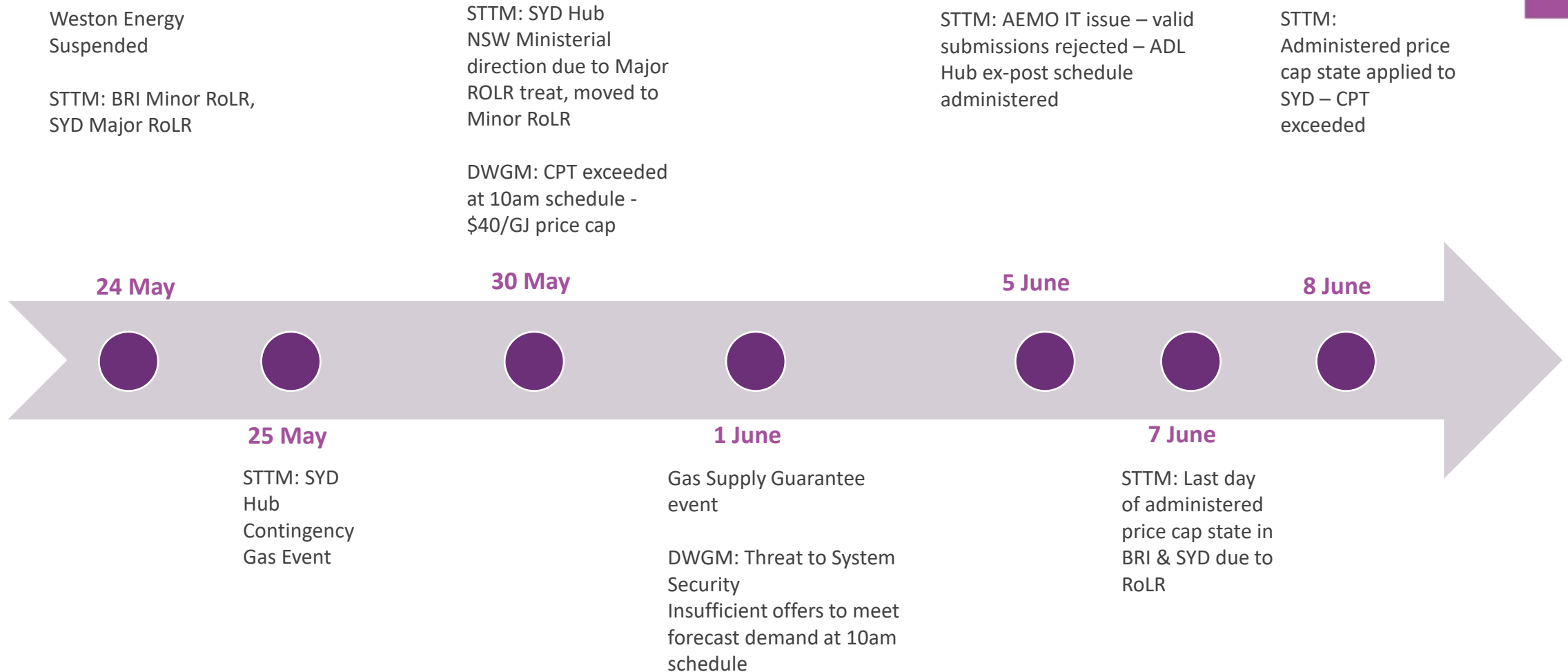
Demand Region	Total State GPG (PJ)			DWGM/STTM GPG (PJ)		
	Winter 2022	Winter 2021	Move	Winter 2022	Winter 2021	Move
QLD	14.8	15.0	2% ▼	0	1.2	100% ▼
NSW	9.0	4.6	93% ▲	-	-	-
VIC	9.2	6.7	36% ▲	5.5	4.0	37% ▲
SA	12.8	14.2	10% ▼	-	-	-
TAS	0.2	0.1	123% ▲	-	-	-
ΣGPG	45.9	40.7	13% ▲	5.5	5.3	5% ▲

- GPG lower in QLD and SA, large increases in NSW and VIC
- Notable changes: QLD – Swanbank E (-1.2 PJ), NSW – Tallawarra (+1.9 PJ), Colongra (+2.4 PJ) SA – Pelican Point (-1 PJ), TIPS (-1.2 PJ), VIC – Laverton (+0.7 PJ), Mortlake (+1.0 PJ)

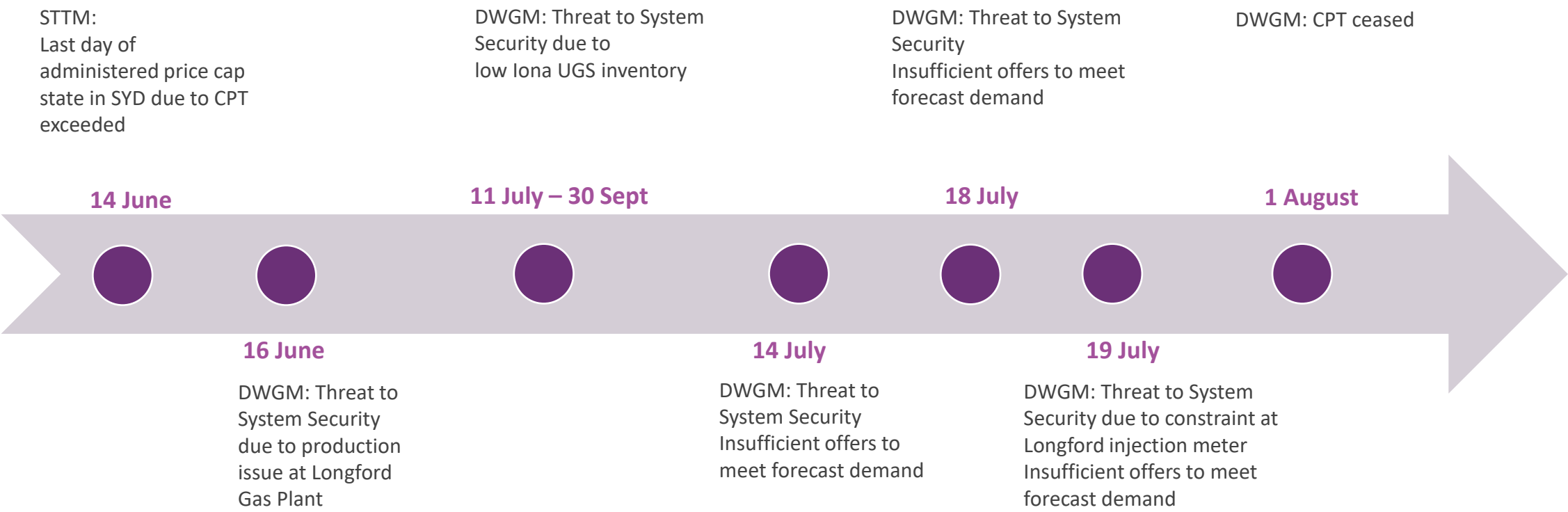
Significant events



Timeline of Significant 2022 Events



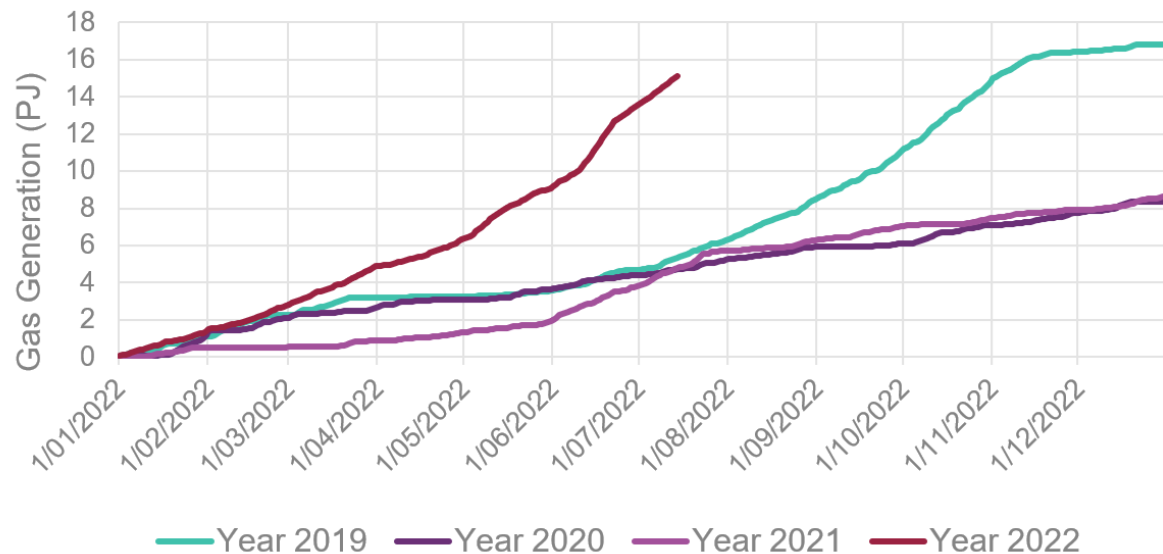
Timeline of Significant 2022 Events



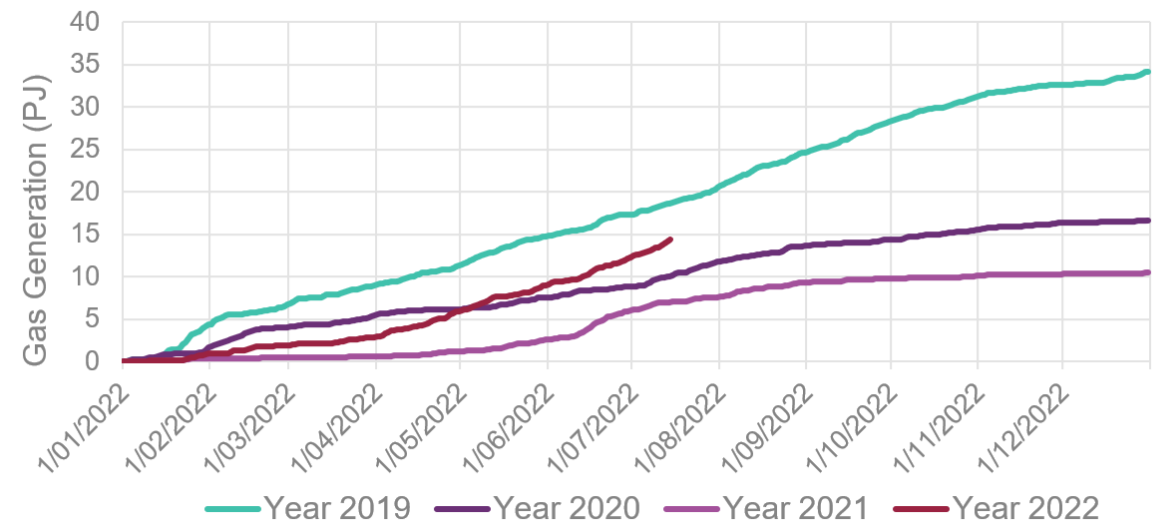
High gas generation demand

- NSW black supply issues, coal generation outages and hydro issues. Year to date NSW gas generation was approx. 15 PJ, three times previous three years (approx. 5 PJ).
- Victoria unplanned coal generation outages and hydro issues. Year to date Victorian gas generation was approx. 14 PJ, twice winter 2021 (7 PJ).
- Gas generation for 2Q 2022 (9 PJ) higher than 2Q 2019 (8 PJ) when Loy Yang A2 last had an extended unplanned outage and Yallourn Power Station last experienced high unplanned unavailability.

NSW Gas Consumption for Electricity Generation

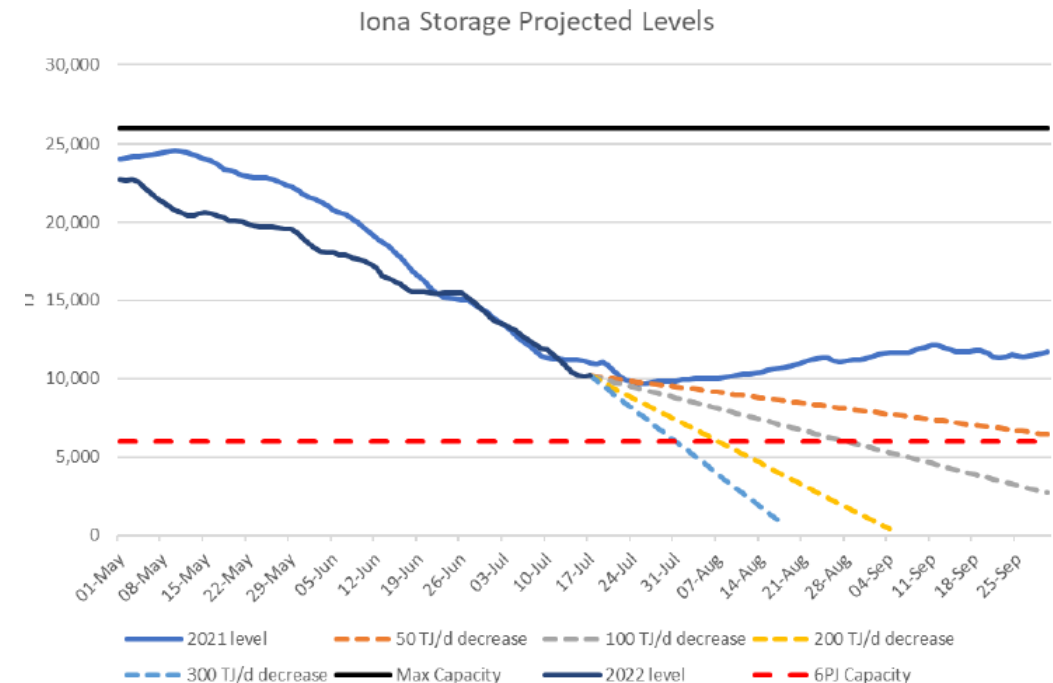


Victorian Gas Consumption for Electricity Generation



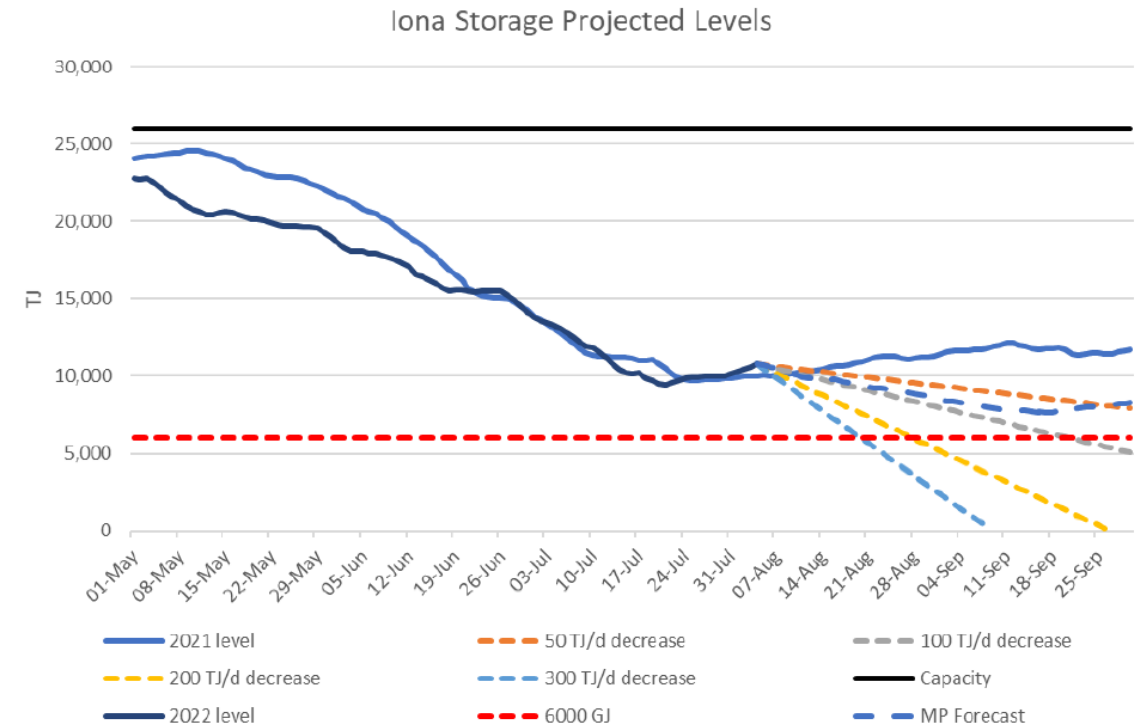
Iona Storage Depletion

- AEMO issued a Notice of a Threat to System Security on 11 July 2022 and published an additional threat notice on 18 July 2022 due to low Iona underground gas storage inventory and the risk of supply shortfalls due to Iona inventory depletion over winter
- In the threat notice, AEMO requested:
 - Market Participants to cease purchasing gas from the DWGM to ship to other jurisdictions
 - Victorian gas generators connected to the DTS are not to generate using gas without supplying a corresponding quantity of gas into the DTS
- Iona storage inventory reduced at an average daily rate of approx. 200 TJ/d from 1-11 July
- If this rate of decline continued, Iona storage inventory would reduce to 6 PJ by 6 August
- At this inventory level, Iona supply delivery capacity may begin to reduce, with this supply capacity reduction increasing if the Iona inventory continued to decline



Iona Storage Depletion

- On 10 August, AEMO issued an updated notice, noting that since 21 July Iona inventory increased from 9.4 PJ to 11 PJ on 7 August. Based on information provided at the time Iona inventory was expected to stay above 6 PJ
- As such, from 2 August participants were no longer requested to support controllable withdrawals from the DTS into Iona UGS with corresponding supply, and from 11 August allow limited net withdrawals from the DWGM by Victorian gas generators
- Participants were still requested to cease purchasing gas from the GWGM via controllable withdrawals from the DTS, unless withdrawing into Iona UGS
- The threat was in place until 30 September 2022



Winter 2022 summary

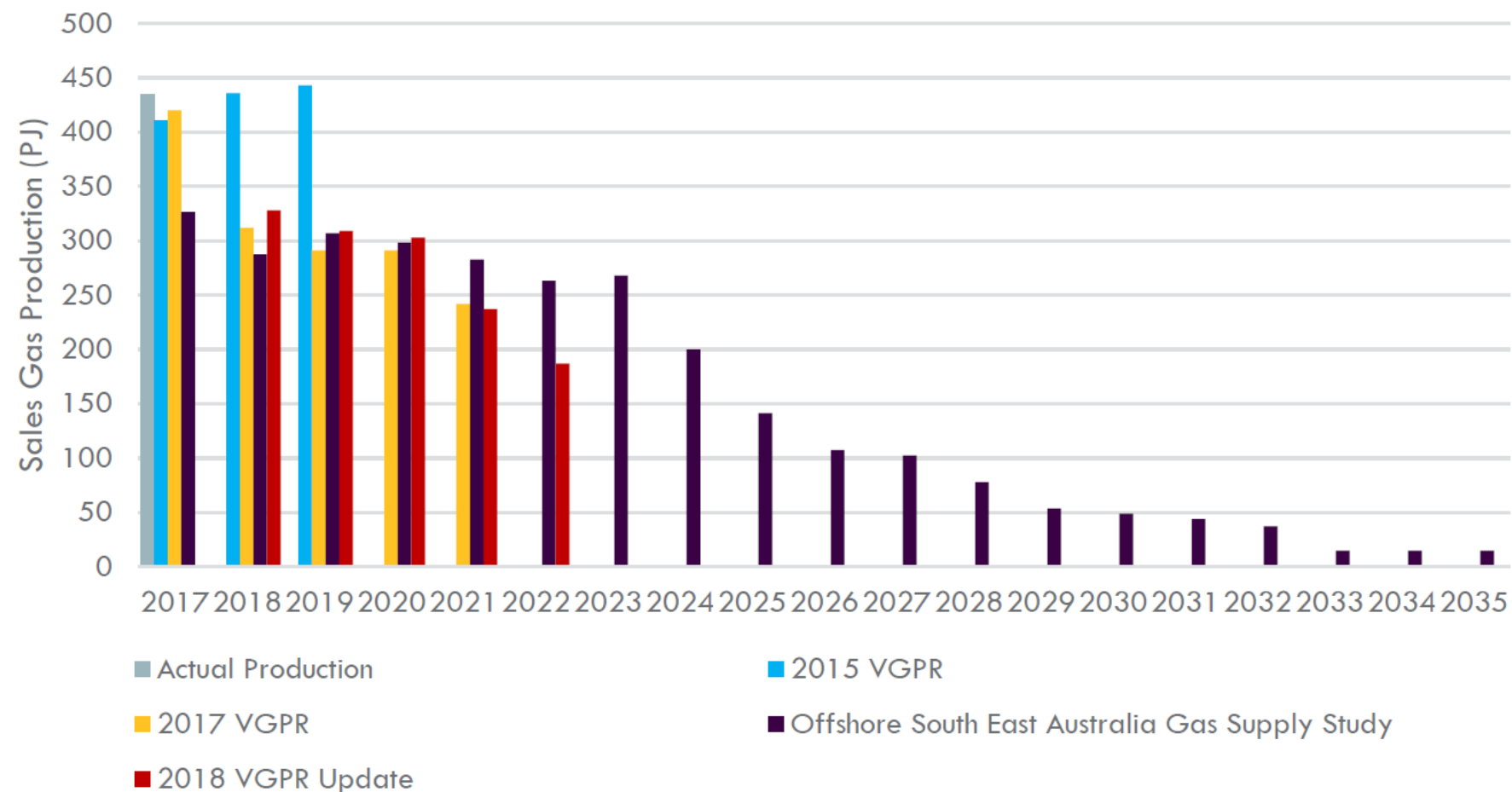
- Gas prices in all regions were at record levels for any time of the year
 - Average \$31.80/GJ compared to \$11.55/GJ in winter 2021
- QLD LNG exports were lower than winter 2021 and significantly lower than autumn 2022, and were the lowest season flows since winter 2020
 - QLD LNG -21.2 PJ due to GLNG (-12.1 PJ), QCLNG (-8.1 PJ), APLNG (-1.0 PJ)
 - GPG demand up 5.3 PJ, mostly due to NSW and VIC
 - Non GPG demand was up 3 PJ, mostly due to higher Sydney demand despite similar HDDs
- Iona Gas Storage levels rapidly decreased at a similar rate to Winter 2021 during June and July
- A record number of significant events affected STTM hubs (particularly Sydney) and DWGM, including five Threats to System Security and the price cap of \$40/GJ was triggered for all of June and July

Longford depletion



Victorian Production decline highlighted in the 2018 VGPR Update

Figure 2 Victorian production forecasts by year (PJ/a)



Notes from the 2018 VGPR Update

- The 2018 VGPR Update noted that Victorian production reached new heights in 2017, with Victorian producers supplying 435 PJ to the east coast gas market (including record Longford Gas Plant production). The report noted that this trend will not be sustained.
- Richard Owens, Esso Australia Chairman, noted that:
 - *“accelerated extraction inevitably means accelerated decline”, and*
 - *“the Gippsland basin is not a magic pudding – we are not sitting on a great big endless gas resource, as some seem to think”. (18 October 2017)*
- The ACCC, 2017-2020 Gas Inquiry: Interim report noted that:
 - *“One of the GBJV’s large original gas fields has depleted earlier than expected, with another two expected to deplete in the early 2020s. The GBJV has accelerated production from its legacy gas fields over the last two years to meet increasing demand, including the drawdown of gas cycled through reservoirs used to increase system capacity during peak winter demand months. However, Esso stated that the GBJV is unable to sustain these production levels as low impurity resources from its legacy fields decline.”*
- The Australian Government, Department of Industry, Innovation and Science, 2017 Offshore South East Australia Future Gas Supply Study, noted that:
 - *“Any forced increases to upstream gas production from producing fields for input into onshore markets will result in a faster erosion of reserves, which, when combined with the mature nature of hydrocarbon exploration and production in the Gippsland Basin and south east Australia in general, will have implications for long-term security of supply.”*

Longford facility retirements

Positioning gas production for the future

Offshore



Longford



Long Island Point



	2010	Today	Future		Today	Future		Today	Future
Operating Platforms	8	6	6	Crude Stabilization Plant	1	0	Fractionation Trains	2	1
Operating Wells	122	68	36	Gas Processing Plants	3	2	Crude Storage	1	1
Pipelines	35	26	11	Gas Conditioning Plant	1	1	LPG Storage	1	1

Longford – Gas Supply Limited

Esso Commercial Director, David Berman spoke at the ADGO conference:

- Longford gas production was historically onshore facility constrained or market demand constrained.
- If an offshore platform was unavailable, another offshore platform could cover this outage and production from Longford would remain unaffected.
- In 2022 the Snapper field played an important role offsetting reduced production from other fields three times. For example, in November last year, a platform went offline for unexpected repairs. That platform was returned to production over the course of 33 hours and during this time, Snapper production was increased to cover the gap.
- Once Snapper is depleted, likely within the next 12 – 24 months, it will no longer be able to perform that vital role.
- As more legacy fields cease production in the future, we will need to continue to match onshore capacity with reduced offshore capacity.
- In the past, offshore capacity was provided by strong water drive fields. With the continued decline of water drive reservoirs such as Snapper and Barracouta the production system will also become more reliant on offshore compression.
- At this conference in 2014, ExxonMobil called for additional investment in storage.

<https://www.exxonmobil.com.au/news/newsroom/speeches/the-evolving-role-of-gippsland-gas-in-australias-east-coast-gas-market>

Longford Resilience Risks

- Permanent retirement of Longford Gas Plant 1 (GP1) inlet section at the end of 2021.
 - If either the GP2 or GP3 inlet section is unavailable, capacity will fall to approx. 550 to 650 TJ/d.
 - AEMO threat to system security notice due to insufficient Dandenong LNG capacity, with Emergency Reserve capacity contracted from January 2022.
- Full GP1 retirement after winter 2023.
 - Remaining Longford capacity capped at approx. 800 TJ/d.
 - Loss of either GP2 or GP3 reduces Longford capacity by approx. 50%.
 - Unplanned outages: Three weeks June – July 2021, 9-14 September 2022, Five days from 27 April 2023
- Depletion of large legacy gas fields degrades the current high resilience of the Longford production system.
 - Inability to cover equipment trips and unplanned outages, increased reliance on Gas Conditioning Plant
- Periods of reduced or no customer ethane offtake can constrain Longford production
 - Q1 2023 capacity limited to 615 TJ/d during ethane customer outage
 - Hastings Generation Project

Dandenong LNG Contracting

- In response to increasing supply risks the Victorian Government initiated a rule change to make AEMO the buyer and supplier of last resort for Dandenong LNG storage facility
- Rule determination made by the AEMC in December 2022
- Obligations in effect from 1 March 2023 to 31 December 2025
- Increases Dandenong LNG supply availability for responding to threat to system security events even if market participants do not contract LNG capacity themselves
- Rules and Procedures include processes for AEMO to purchase and relinquish LNG stock
- Long term future for Dandenong LNG facility needs to be addressed



Addressing Longford decline

- Gippsland peak day production forecast for winter 2023 is 915 TJ/d, 211 TJ/d lower than actual 2022 peak production of 1,126 TJ/d
- Gippsland production is forecast to reduce further to 771 TJ/d (144 TJ/d lower) prior to winter 2024 with increased risk due to Longford GP1 retirement.
- The only increase in supply capacity to the southern states is the Stage 2 Moomba to Sydney Pipeline (MSP) expansion adding 90 TJ/d of capacity for winter 2024.
- No further expansion of the Victorian South West Pipeline has been proposed (which releases Longford capacity to supply NSW).
- Narrabri, Golden Beach, and Port Kembla (or another import terminal) – online before 2026?



Thank you

- There has been a large amount of gas reform implemented over the last year
- This has been challenging for everyone including AEMO
- We thank you for your patience and for constructively engaging with AEMO





For more information visit

aemo.com.au