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Energy
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Seminar 4 Financial markets

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Australia Utilities & ESG

Australia Energy Markets

- Spot pool prices
- The merit order (kind of)
- The forward curve
- Missing money vs. revealed new entrant pricing

- Capacity markets?
- Retail compliance certificates
- Power Purchase Agreements (PPAs) and reverse auctions
- Financing and valuation

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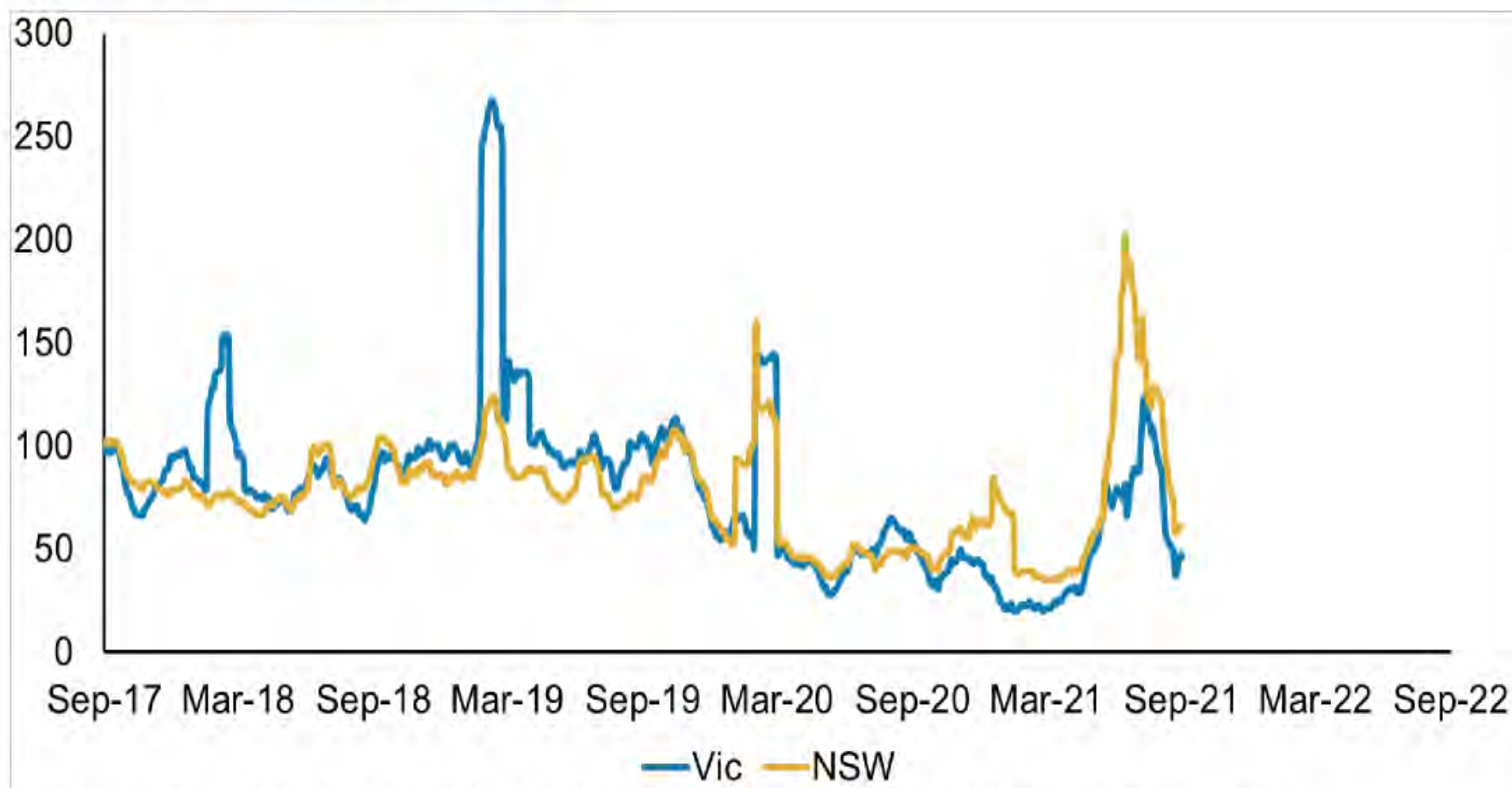
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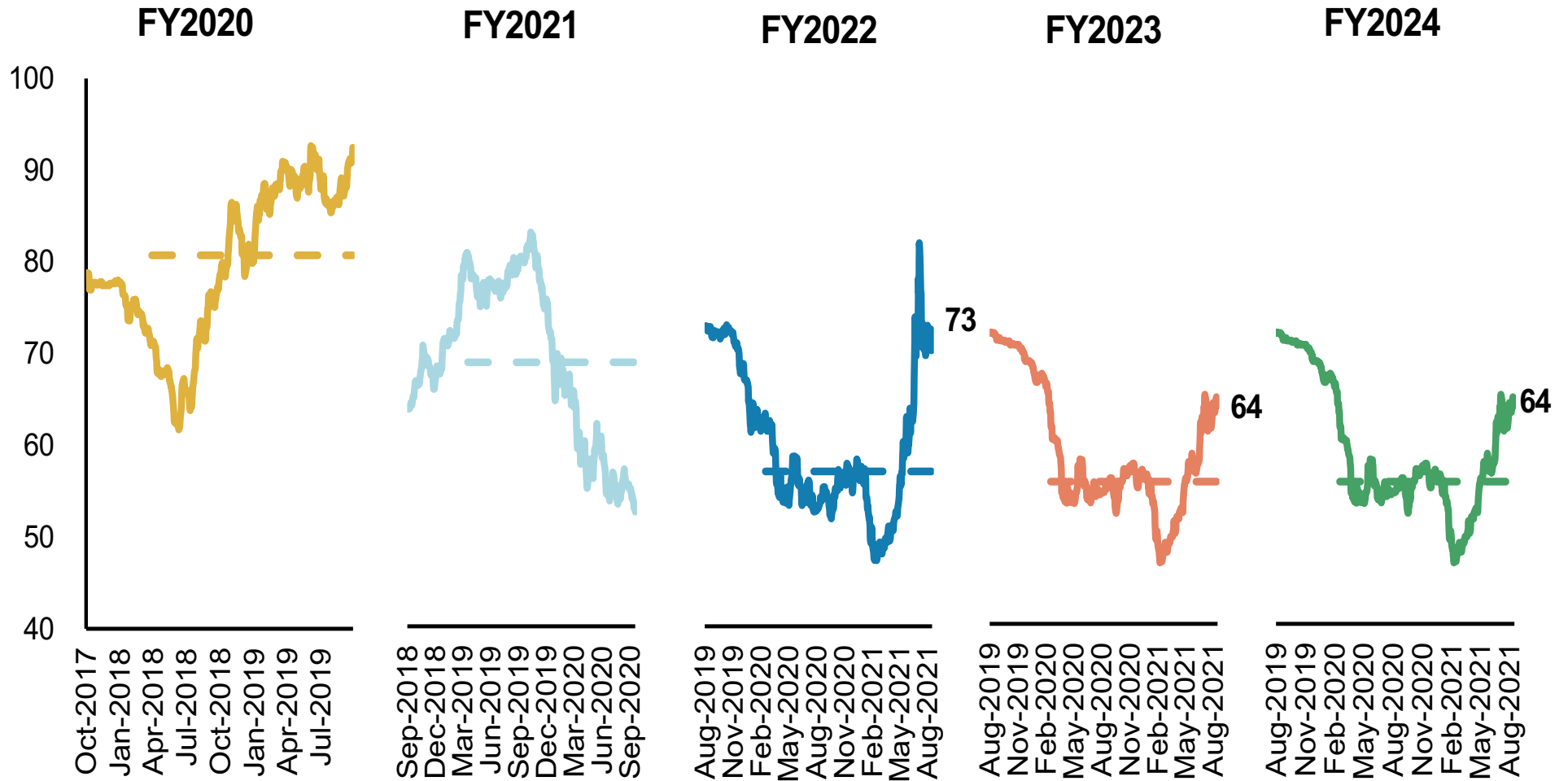
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Spot pool prices (A\$/MWh)



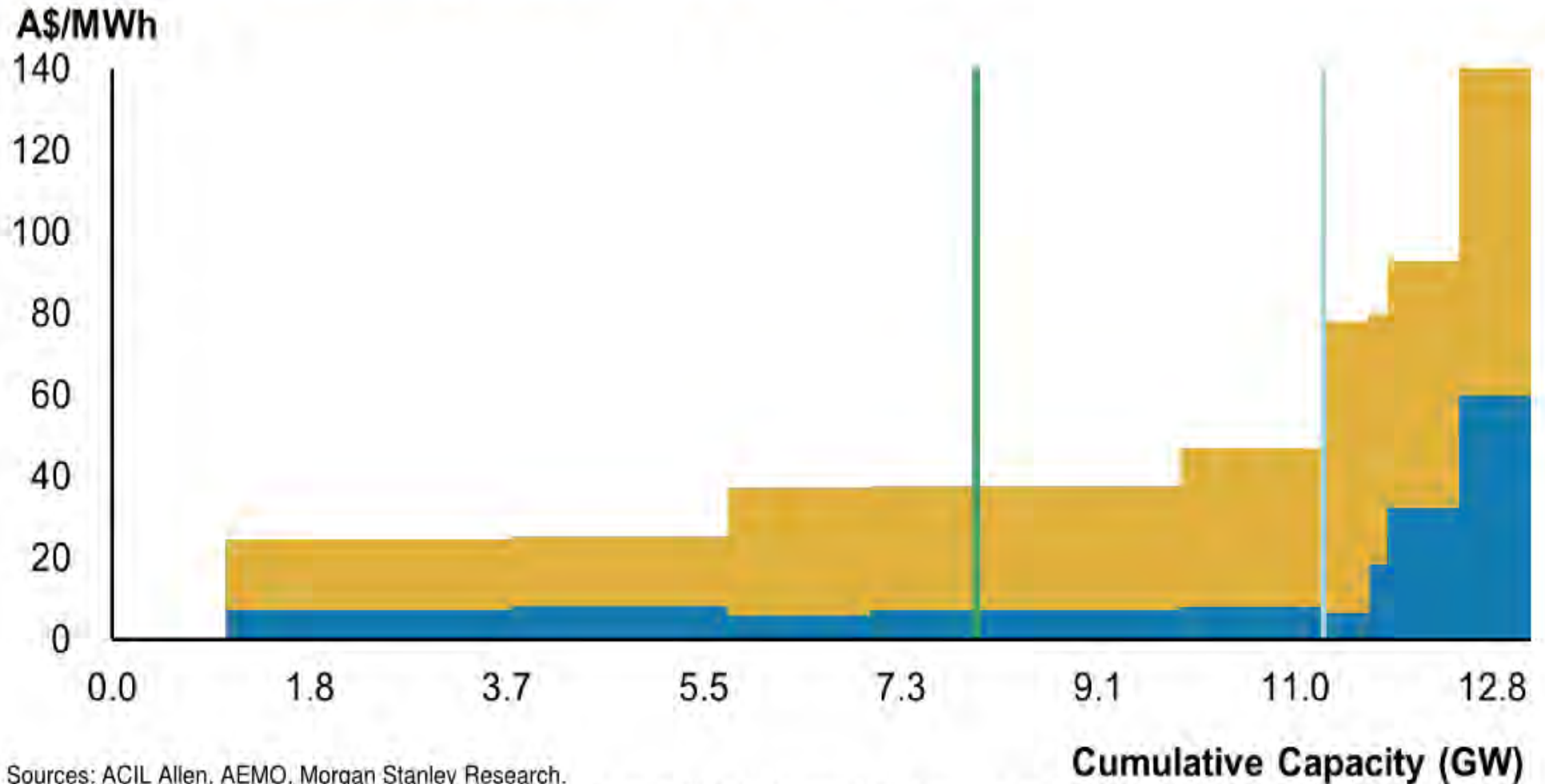
Sources: Australian Energy Market Operator (AEMO), Morgan Stanley Research. 30 day moving average of average daily prices.

NSW baseload strip futures (A\$/MWh)



Source: ASX Energy, Bloomberg, Morgan Stanley Research.

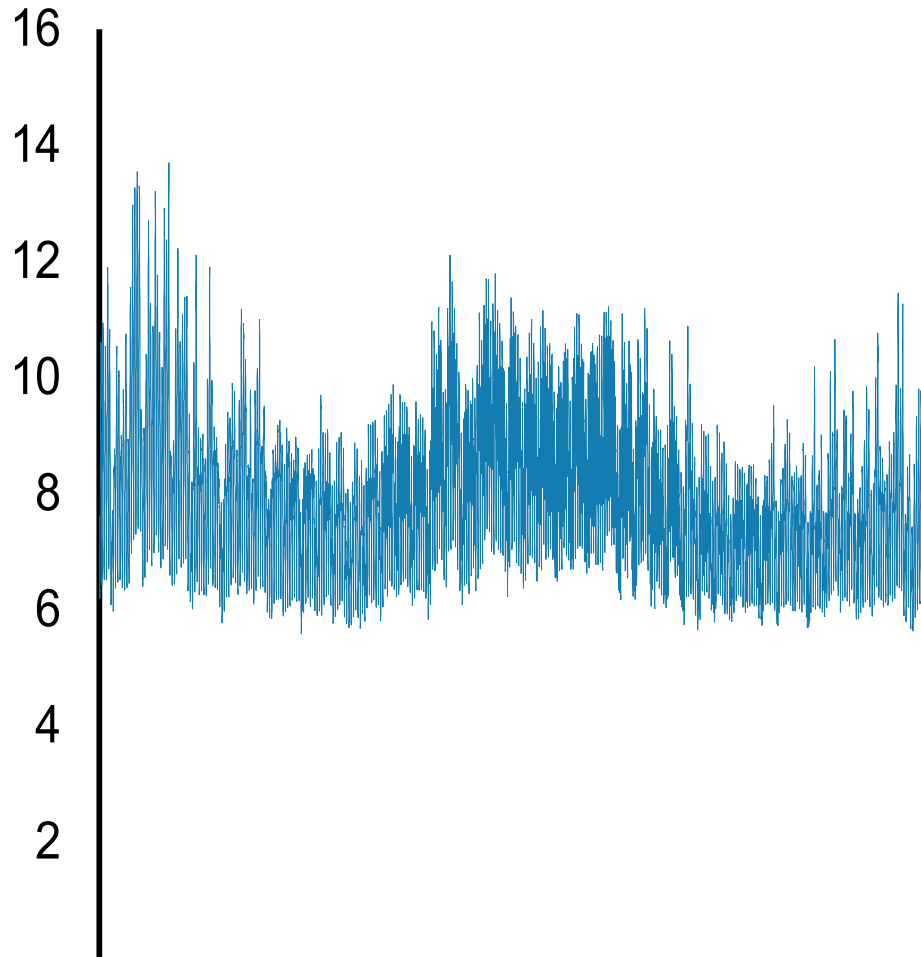
New South Wales adjusted merit order



Sources: ACIL Allen, AEMO, Morgan Stanley Research.

Blue = variable running costs, Yellow = fuel cost, Green = average off-peak demand, Light Blue = average peak demand.

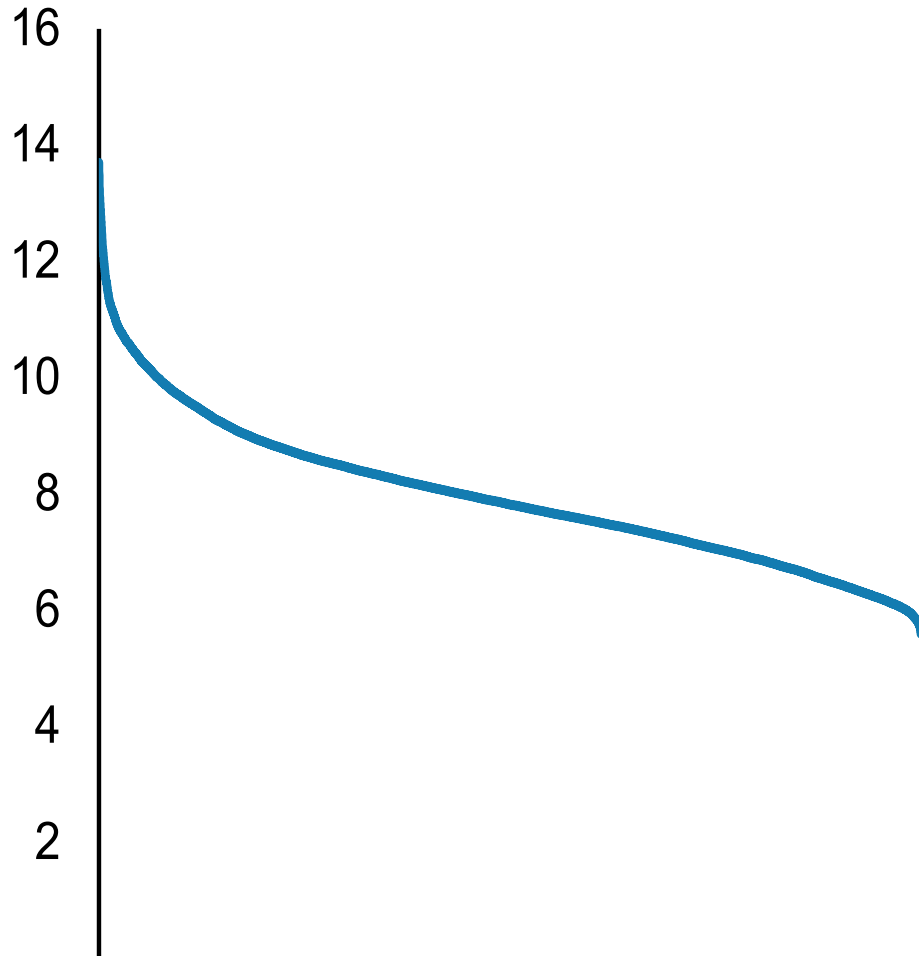
NSW 2019 demand (GW)



Sources: AEMO, Morgan Stanley Research.

NSW merit order 2021							
Cumulative	MW			TRUE			SRMC
1,058	1,058	VRE		0.0%	Coal	97.8%	45
3,698	2,640	Bayswater	Coal	0.0%	Gas	2.1%	80
5,378	1,680	Liddell	Coal	0.0%	Diesel	0.2%	300
6,698	1,320	Mt Piper	Coal	15.4%			46.20
9,578	2,880	Eraring	Coal	73.7%			
10,898	1,320	Vales Point	Coal	8.7%			
11,333	435	Tallawarra	Gas	1.0%			
11,493	160	Smithfield	Gas	0.2%			
12,157	664	Uranquinty	Gas	0.6%			
12,821	664	Colongra	Gas	0.3%			
12,871	50	Hunter ValleyGT	Gas	0.0%			
			Diesel	0.2%			
NSW merit order 2021 + renewables - Liddell - Vales							
				TRUE			SRMC
1,747	1,747	VRE		0.0%	Coal	73.4%	45
4,387	2,640	Bayswater	Coal	0.0%	Gas	22.9%	80
5,707	1,320	Mt Piper	Coal	0.1%	Diesel	3.8%	300
8,587	2,880	Eraring	Coal	73.2%			62.58
9,022	435	Tallawarra	Gas	8.8%			
9,182	160	Smithfield	Gas	2.3%			
9,846	664	Uranquinty	Gas	7.2%			
10,510	664	Colongra	Gas	4.4%			
10,560	50	Hunter ValleyGT	Gas	0.2%			
			Diesel	3.8%			

NSW 2019 load duration curve (GW)



Source: AEMO, Morgan Stanley Research.

Cap prices

- A\$300/MWh caps
- Required revenue for a new entrant gas peaker?

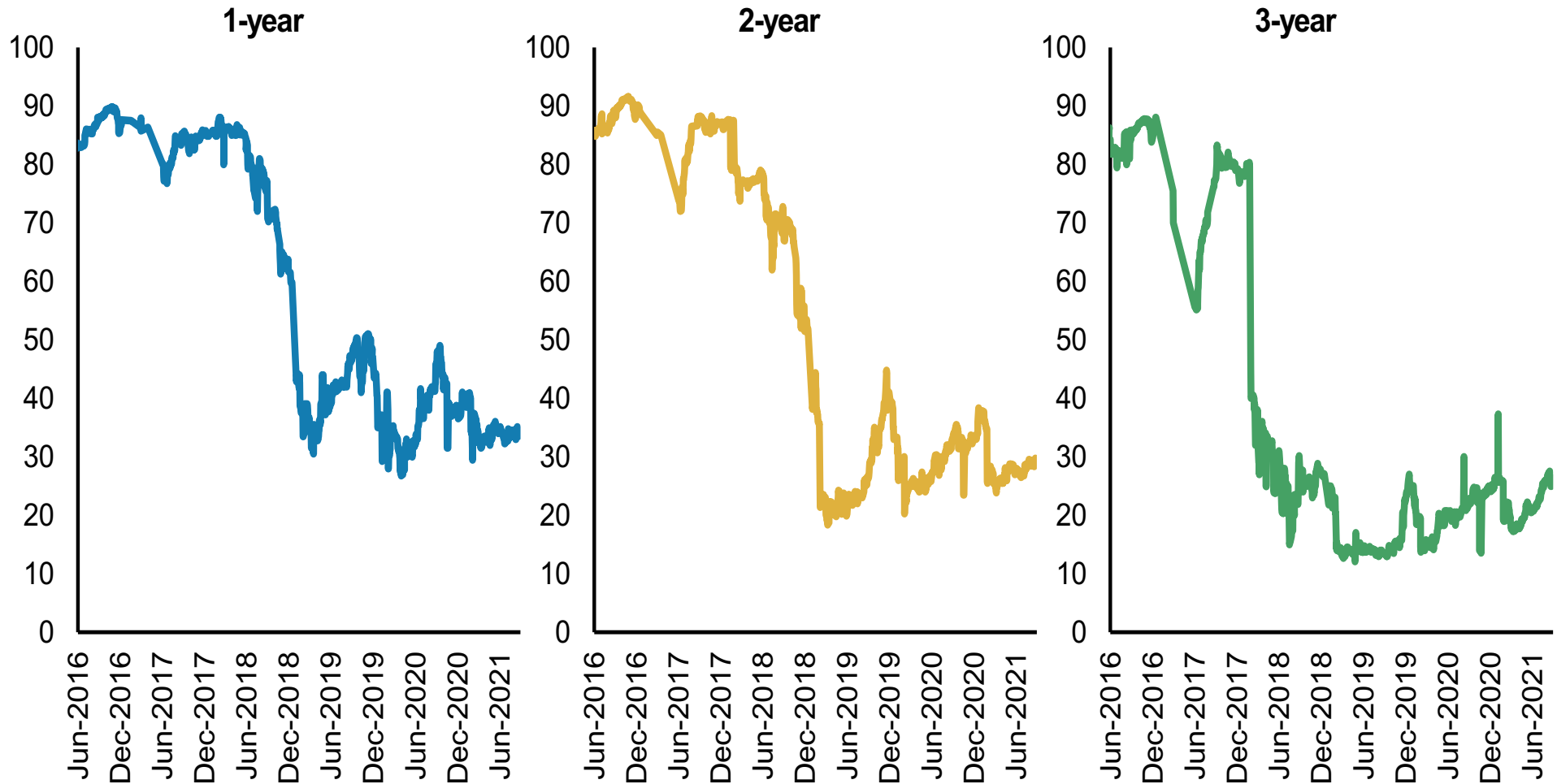
Capacity market considerations?

- Annual peak – summer or winter?
- Ramp rates?
- Who forecasts the peak?
- Required market price cap approach?
- Contract markets (grandfathering)
- Conjoined markets
- The Ouroborous Effect?

Market peak forecasts

- Ex post or ex ante?
- Oligopsony and vertical integration
- Cost of capital?

Large-Scale Generation Certificates forward prices (A\$/MWh)



Source: Bloomberg New Energy Finance, ANZ, Mercari.

Federation of Renewable Energy Targets

Jurisdiction	TWh	2020a	2020e	2025e	2030e	2050e	Mechanism
Qld	63.5	15.2%	20%		50%	Net zero	Renewables400, CleanCo, Renewable Energy Zones (REZ)
NSW	72.5	19.3%			50%	Net zero	Electricity Infrastructure Roadmap (price guarantees for 12GW renewables, 2-3GW dispatchable)
ACT	⬆	⬆	100%			Net zero	Sustainable Energy Policy 2020-25 under development
Vic	49.2	25.6%	25%	40%	50%	Net zero	Victorian Renewable Energy Target (reverse auctions)
SA	15.0	58.5%			100%	Net zero	Climate Change Action Plan, RenewablesSA
Tas	12.1	99.2%	100%			Net zero	Renewable Energy Action Plan, including the Battery of the Nation projects (2.5GW)
NEM	202.8	26.4%			59%		UNGI, DCIT, PEMM, RRO, Snowy 2.0 (2GW)
NT	1.6	5.0%		50%		Net zero	Climate Change Response
WA (SWIS)	19.7	26.2%			50%	Net zero	Energy Transformation Strategy
Total/Average	224.1	26.2%	20%	44%	58%	Net zero	RET, CEFC, ARENA
Renewable capacity (GW)		37		55	67		Assumes flat demand, Liddell closure, linear targets to 2030
Capacity factor		18%		21%	22%		30% average capacity factor for new generation

Source: Government websites, Morgan Stanley Research estimates.

Finance modelling and valuation

Inputs

- MWAC capacity
- Cost-to-construct, land costs, connection agreement
- Developer fee

- Contract terms
- Merchant tail prices
- Marginal loss factors
- Degradation
- Capacity factors (P50, P90, P99)

- Opex / Maintenance (e.g., mid-life inverter replacement)
- Rehab

- Debt (contract and asset life, interest rates, refinancings)
- Tax (stapled trust?)

- Discount rate?

Outputs

- Free Cash Flow
 - DSCR, PLCR
 - Debt/EBITDA, Debt/Assets
 - EV/MW
 - EV/EBITDA

- Free Cash Flow to Equity
 - NPV, IRR, Yield, LCOE
 - PPA/NPV

Expansion/Re-powering

Integration?

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1500	43%	414	48%	28%	666	44%
Equal-weight/Hold	1492	43%	376	43%	25%	670	44%
Not-Rated/Hold	1	0%	0	0%	0%	0	0%
Underweight/Sell	513	15%	80	9%	16%	191	13%
TOTAL	3,506		870			1527	

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