

Australia's coal-to-renewables transition

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Cape Town Symposium on a just coal
transition for South Africa

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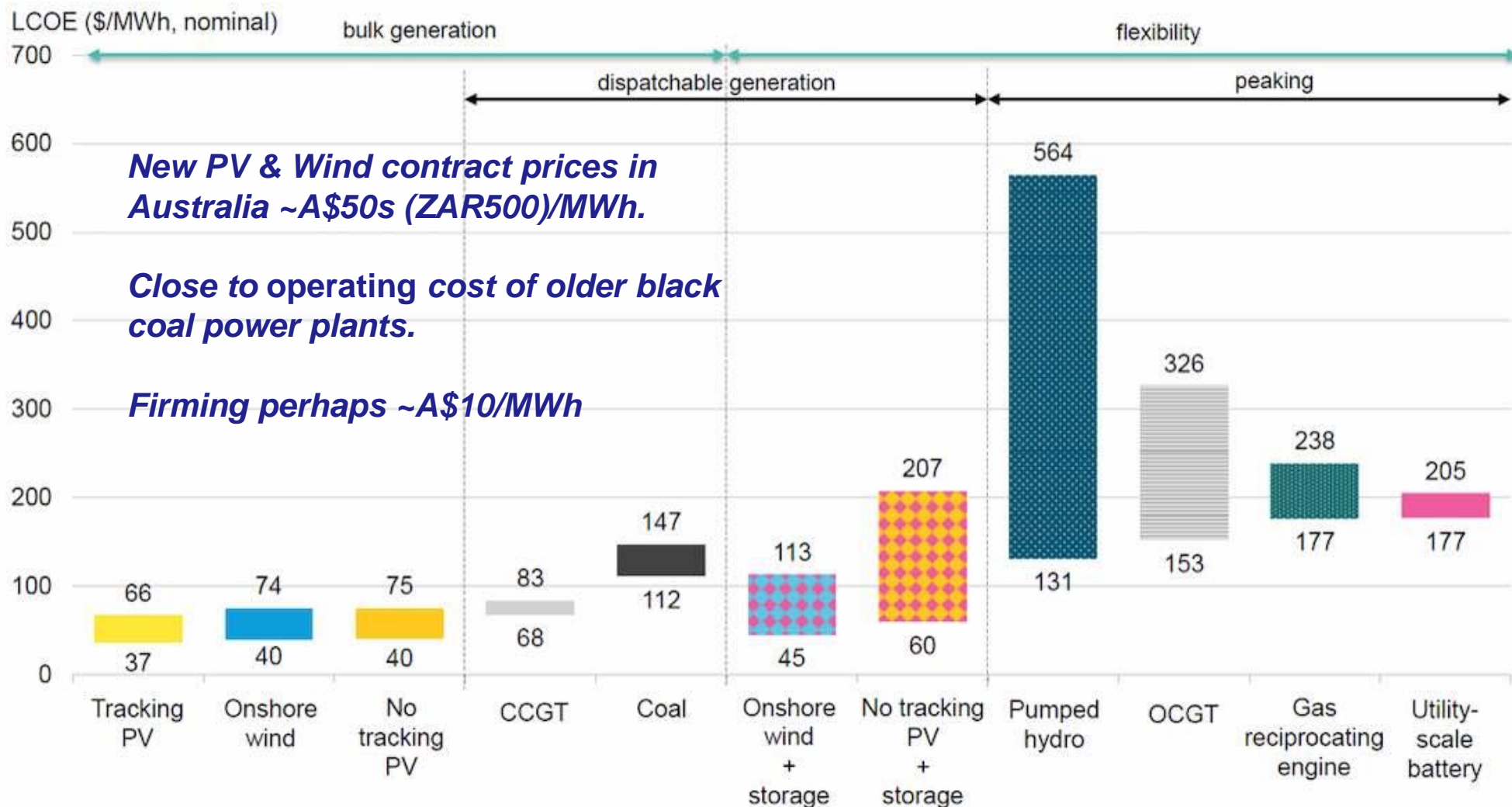
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Levelized cost of electricity

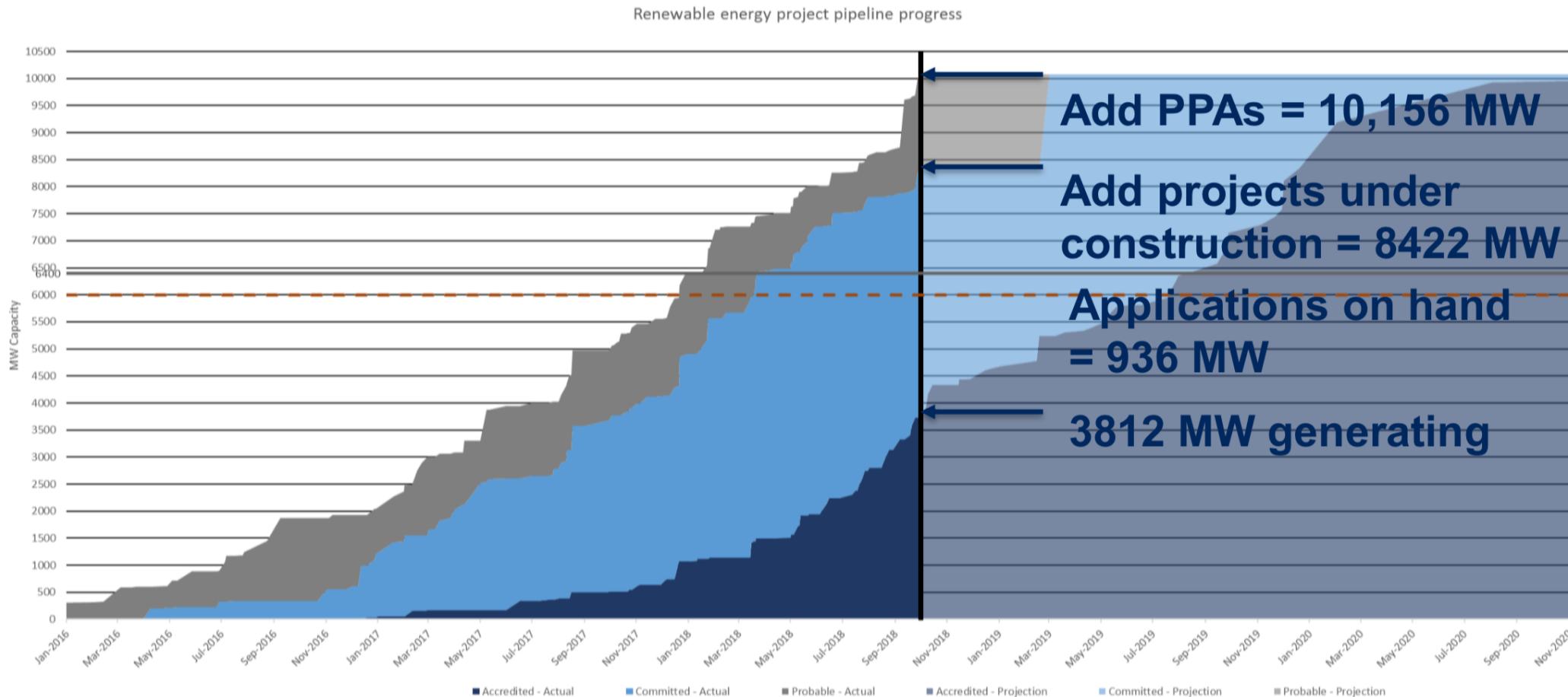
Source: Bloomberg New Energy Finance, Nov 20
Units: USD/MWh



Source: BloombergNEF. Note: The LCOE range represents a range of costs and capacity factors. Battery storage systems (co-located and stand-alone) presented here have four-hour storage. In the case of solar- and wind-plus-battery systems, the range is a combination of capacity factors and size of the battery relative to the power generating asset (25% to 100% of total installed capacity). All LCOE calculations are unsubsidized. Categorization of technologies is based on their primary use case.

Australia: a large renewables investment pipeline

no coal investment; a small amount of new gas



Source: Clean Energy Regulator (Mark Williamson, Oct 2018)

Table 1. Australia's remaining coal fired power station fleet in the National Electricity

Name	State	Fuel	Comissioned from to		Capacity MW (nameplate)	Age in 2018 from to	
Liddell	NSW	Black	1971	1973	2,000	45	47
Gladstone (QAL)	QLD	Black	1973	1973	25	45	45
Yabulu (Coal)	QLD	Black	1974	1974	37.5	44	44
Yallourn W	VIC	Brown	1975	1982	1,480	36	43
Gladstone	QLD	Black	1976	1982	1,680	36	42
Vales Point B	NSW	Black	1978	1978	1,320	40	40
Eraring	NSW	Black	1982	1984	2,880	34	36
Bayswater	NSW	Black	1982	1984	2,640	34	36
Tarong	QLD	Black	1984	1986	1,400	32	34
Loy Yang A	VIC	Brown	1984	1987	2,210	31	34
Callide B	QLD	Black	1989	1989	700	29	29
Mt Piper	NSW	Black	1993	1993	1,400	25	25
Stanwell	QLD	Black	1993	1996	1,460	22	25
Loy Yang B	VIC	Brown	1993	1996	1,026	22	25
Callide C	QLD	Black	2001	2001	810	17	17
Millmerran	QLD	Black	2002	2002	851	16	16
Tarong North	QLD	Black	2002	2002	443	16	16
Kogan Creek	QLD	Black	2007	2007	750	11	11

Source: Updated from Australian Energy Council (2016).

Australia’s coal fired power plants

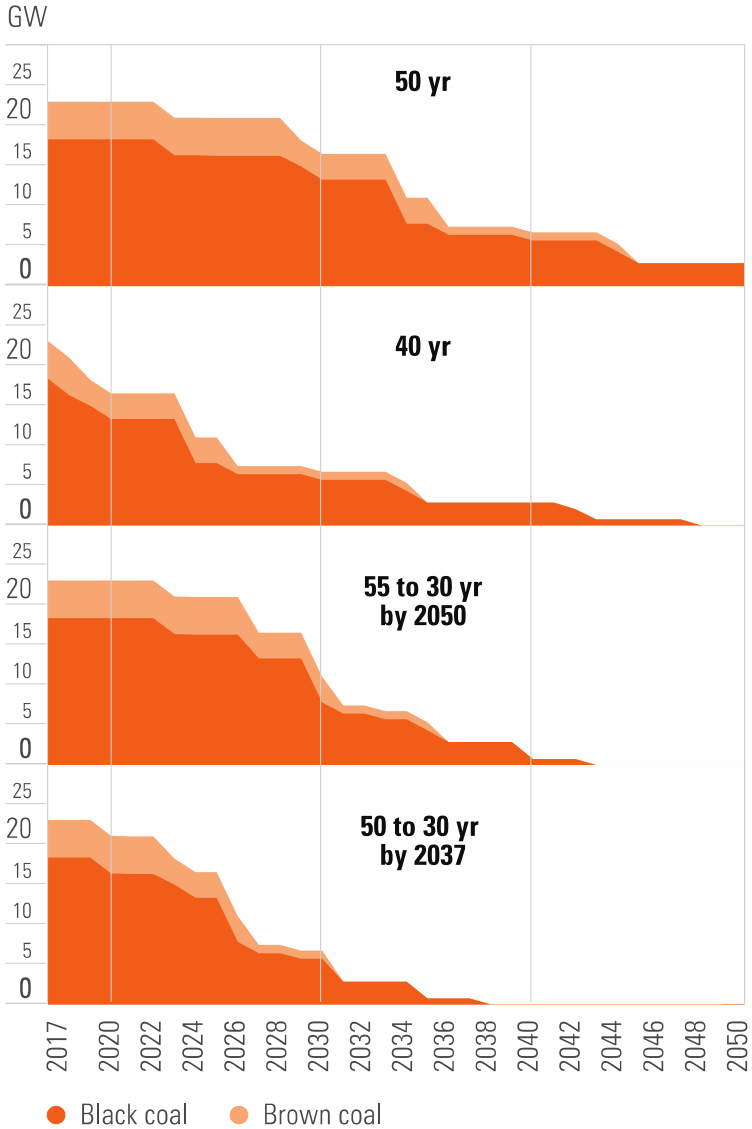
10 closed since 2012
Average age at closure 40 (42) years

18 left
10 older than 30 years



Preparing for exit of coal power plants, earlier than thought

Figure 10. Brown and black coal capacity remaining with different age based coal retirement trajectories



Source: Coal Transitions in Australia (Jotzo, Mazouz and Wiseman for IDDRI/CS) 2018, coaltransitions.org

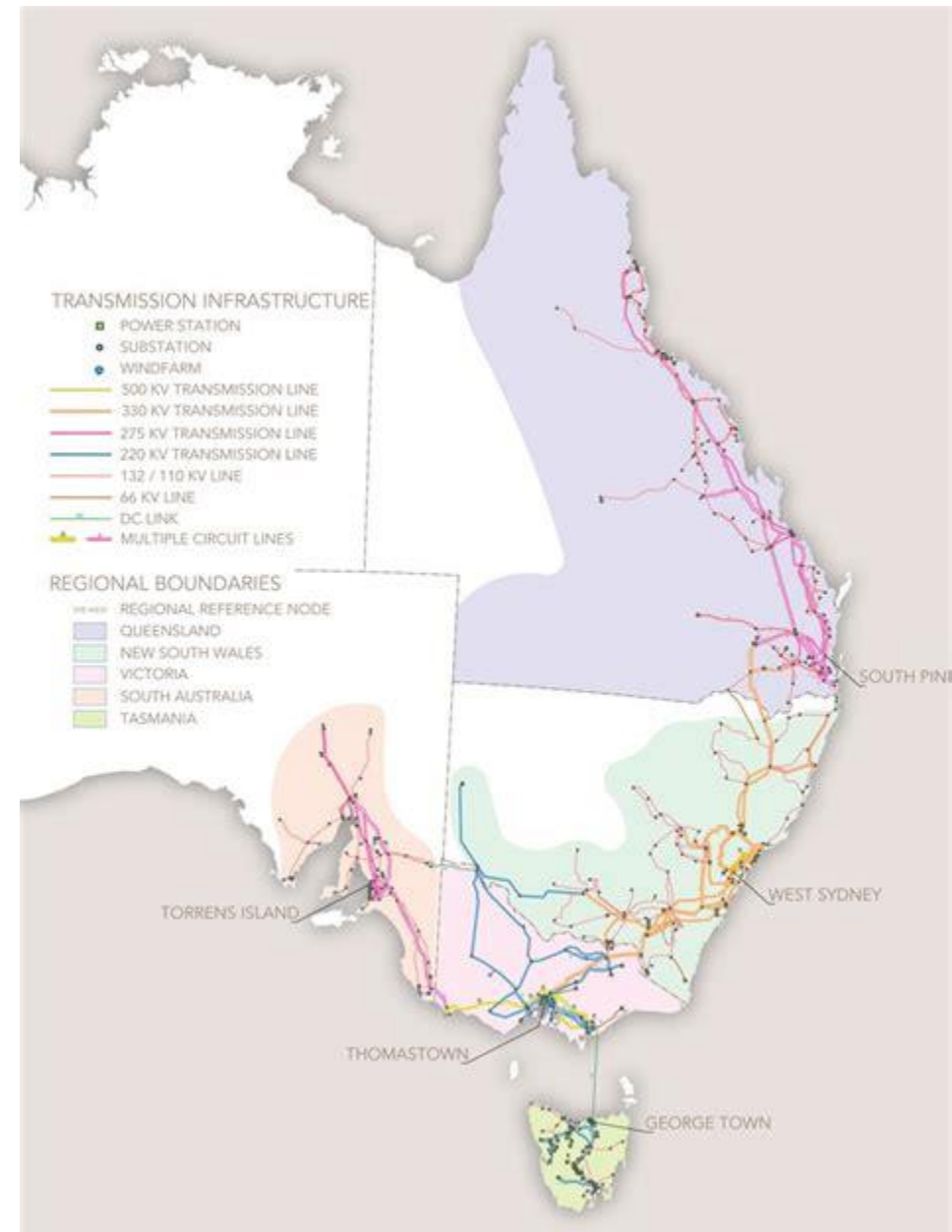
Energy storage and transmission investments needed



Pumped hydro storage



Hornsdale (Tesla) battery



The future: Power-to-X exports, 'energy superpower in a low-carbon world'

Green Hydrogen: direct exports, ammonia etc, steel, energy storage for electricity...

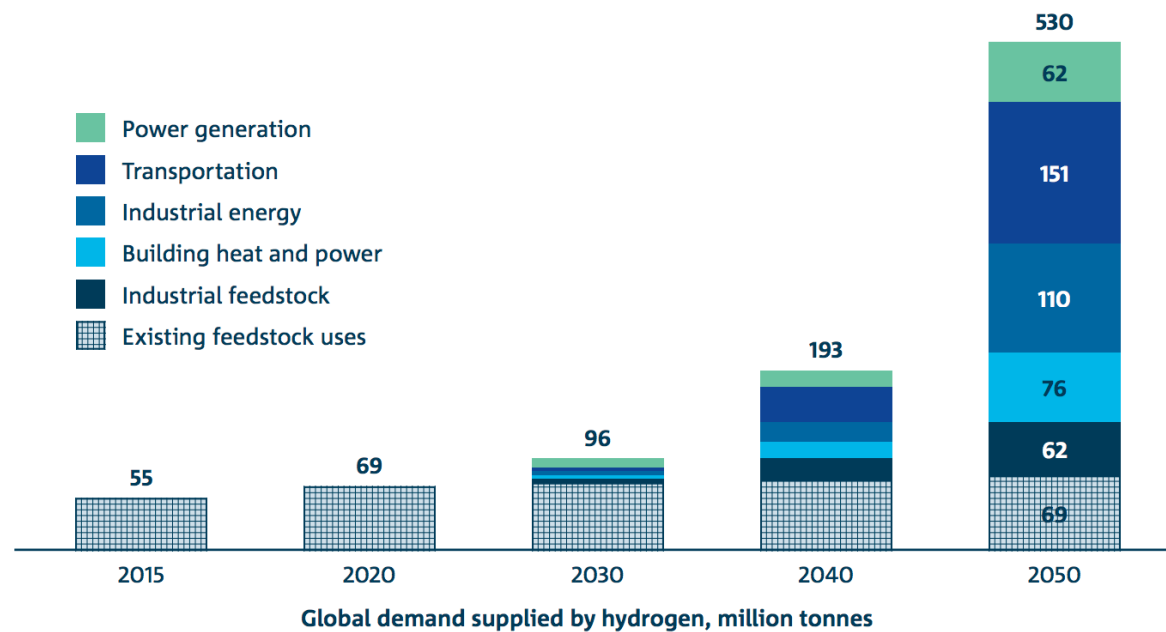
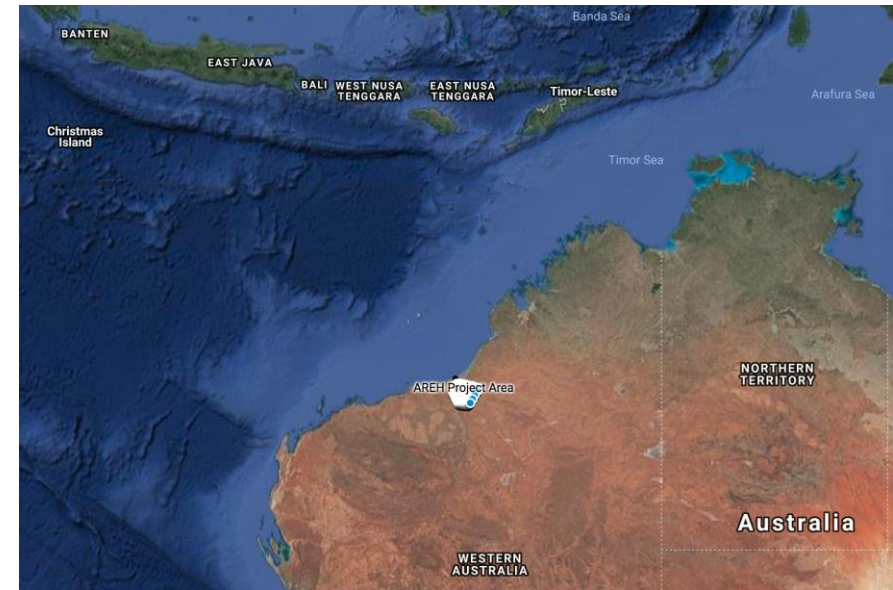


Figure 6: The Hydrogen Council's forecast growth in demand for hydrogen to 2050.⁵⁷



⁵⁷ Adapted from Hydrogen Council, *Hydrogen scaling up: A sustainable pathway for the global energy transition*, 2017. Assumes 55Mt demand in 2015 and growth rates as per report.

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