Joint Select Committee on Energy Matters – Hydro Tasmania - 12 November 2024 Hearing – Question on Notice response

The ability for a hydro power station to respond flexibly in response to changes in electricity demand and market prices is dictated by a range of factors, including both the inflows from rainfall, storage capacity of the associated lake and the generating capacity of the power station.

A significant proportion of Hydro Tasmania's portfolio can respond flexibly to changing conditions due to the way Hydro's power schemes have been constructed (cascading systems that utilise the same water multiple times through different power stations).

The table below provides a breakdown of Hydro Tasmania's hydro generation assets classification between Major storage, Head storage and Run of River (RoR).

Major storages can store energy in water for long periods of time, across seasons and years. Head storages have the ability to store energy in water over seasonal periods (typically multiple weeks to months).

Due to the cascading effect from our schemes, RoR stations utilise rainfall from rivers feeding into their location as well as water that has been released from Major and Head storages located up-river. For example, water released from either the Tungatinah Ponds or Lake King William Head storages will flow through seven power stations (either Tarraleah or Tungatinah and then all of the stations in the Lower Derwent Scheme).

This means that while RoR stations may be energy constrained at times, i.e. they cannot run 24/7 365 days a year, we do have the ability to generate flexibly by using storages to time generation to occur when it is most needed or valuable.

Scheme	Generator	Capacity MW	Annual GWh Generation*	Direct Storage	Flow from Head/Major Storages that cascade through	Classification
Upper Derwent	Butlers Gorge	12	67.9	Lake King William		Head
	Tarraleah	94	554.6	Lake King William		Head
Nive	Lake Echo	34	59.6	Lake Echo		Head
	Tungatinah	142	490.5	Tungatinah Ponds		Head
Lower Derwent	Liapootah	95		Lake Liapootah	Tungatinah Ponds + Lake King William	RoR
	Wayatinah	45	853.5	Waytinah lagoon	Tungatinah Ponds + Lake King William	RoR
	Catagunya	54		Lake Catagunya	Tungatinah Ponds + Lake King William	RoR
	Repulse	34	117.8	Lake Repulse	Tungatinah Ponds + Lake King William	RoR
	Cluny	22	73.3	Cluny Lagoon	Tungatinah Ponds + Lake King William	RoR
	Meadowbank	44	139.5	Lake Meadowbank	Tungatinah Ponds + Lake King William	RoR

Gordon	Gordon	432	1073.1	Lake Gordon + Lake Pedder		Major
Great Lake	Poatina	372	1134.1	Great Lake		Major
Trevallyn	Trevallyn	107	395.6	Great Lake	Great Lake	RoR
King	John Butters	144	546.4	Lake Burbury		Head
Anthony Pieman	Tribute	92	224.5	Lake Plimsoll		Head
	Mackintosh	89	350.9	Lake Murchison + Lake Mackintosh	Lake Murchison + Lake Mackintosh	Head
	Bastyan	88	340.3	Lake Rosebery	Lake Murchison + Lake Mackintosh	RoR
	Reece	238	930.6	Lake Pieman	Lake Murchison + Lake Mackintosh	RoR
Mersey-Forth	Fisher	46	195.6	Lake Mackenzie		Head
	Rowallan	11	31.2	Lake Rowallan		Head
	Lemonthyme	54	357.4	Lake Parangana	Lake Mackenzie + Lake Rowallan	RoR
	Wilmot	33		Lake Gairdner		RoR
	Cethana	100	331.2	Lake Cethana	Lake Mackenzie + Lake Rowallan	RoR
	Devils Gate	64	235.7	Lake Barrington	Lake Mackenzie + Lake Rowallan	RoR
	Paloona	32	105.9	Lake Paloona	Lake Mackenzie + Lake Rowallan	RoR

* Average generation per station over the calendar year 2015 to 2024 period

	MW Capacity	% of Total MW Capacity	Annual GWh	% of Total of Annual Generation
Run of River	**1010**	**41%**	**3880.8**	**45%**
Head	**664**	**27%**	**2521.2**	**29%**
Major	**804**	**32%**	**2207.2**	**26%**
Total	**2478**		**8609.2**	