

# **The Curious Case of ... Renewable Spill**

EPOC Sep-2025

Grant Telfar, Industry Advisor

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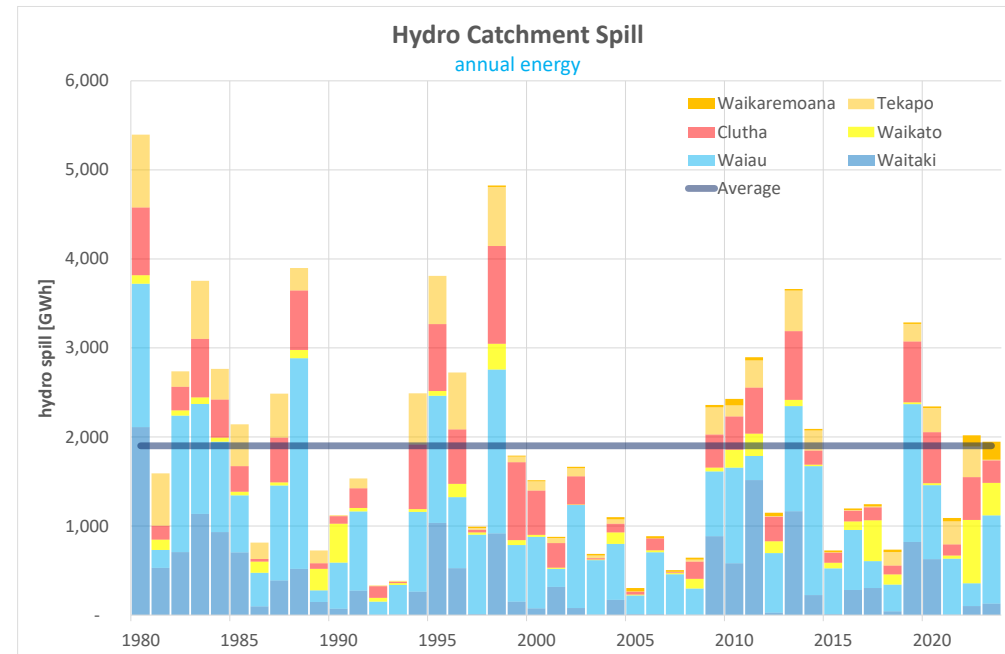
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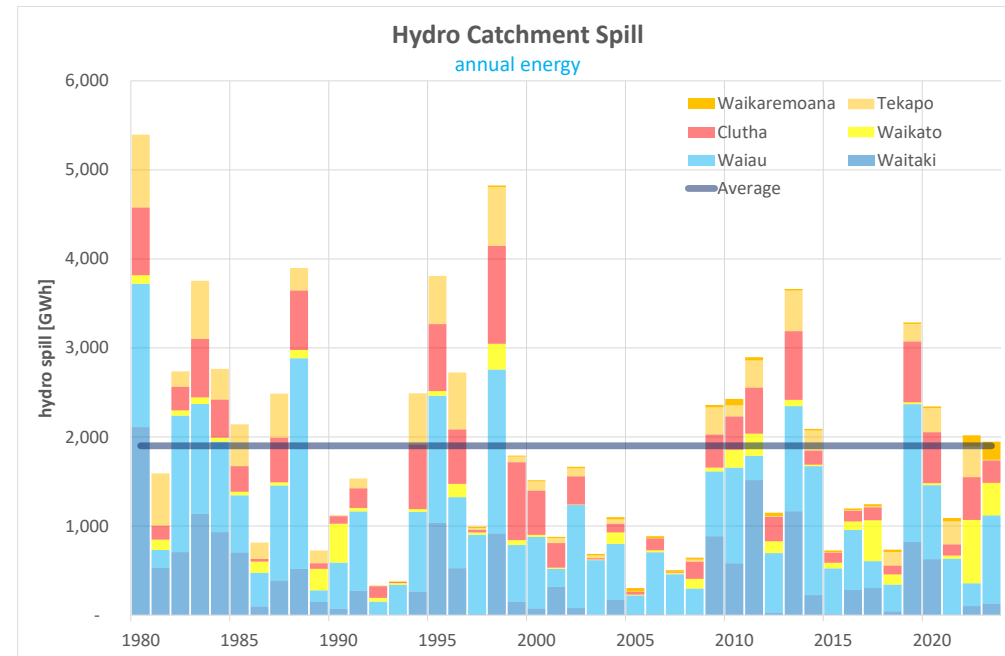
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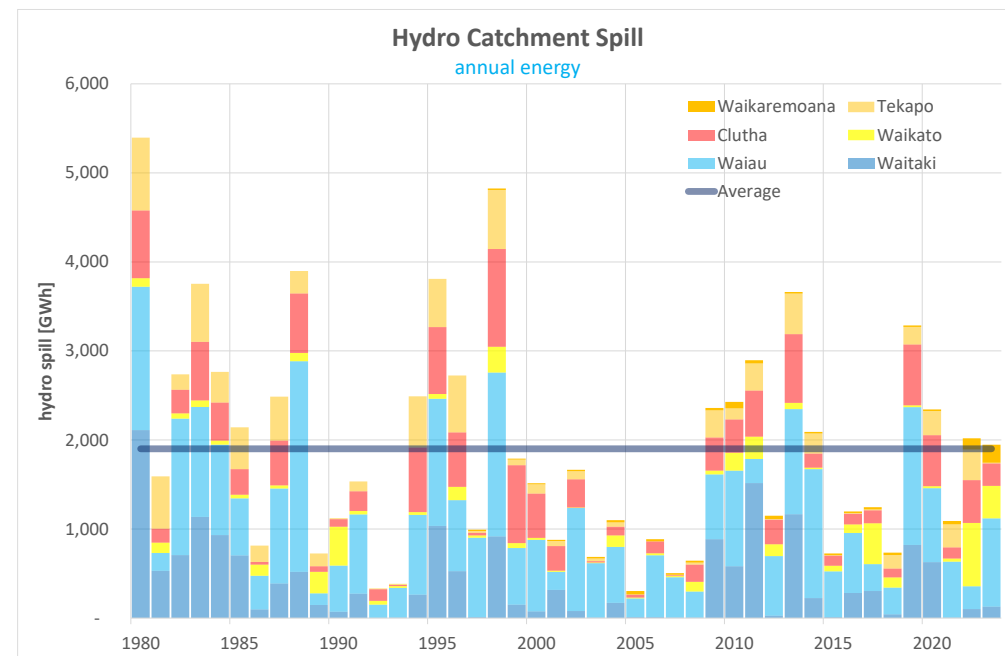
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- Modest in capacity (months),
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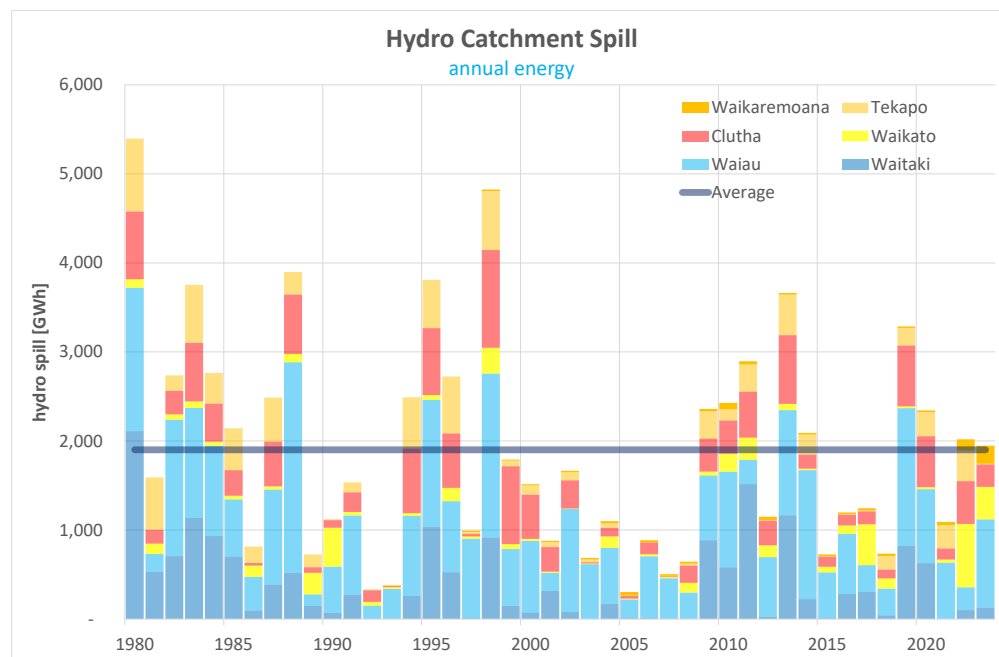
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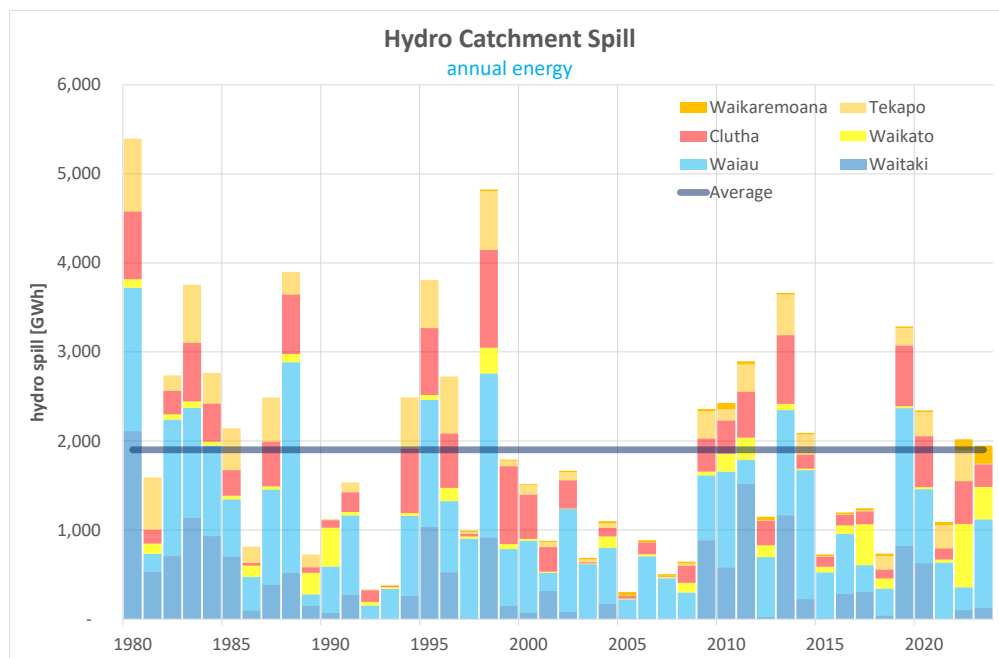
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What happens to renewable energy spill?  
And should we care?

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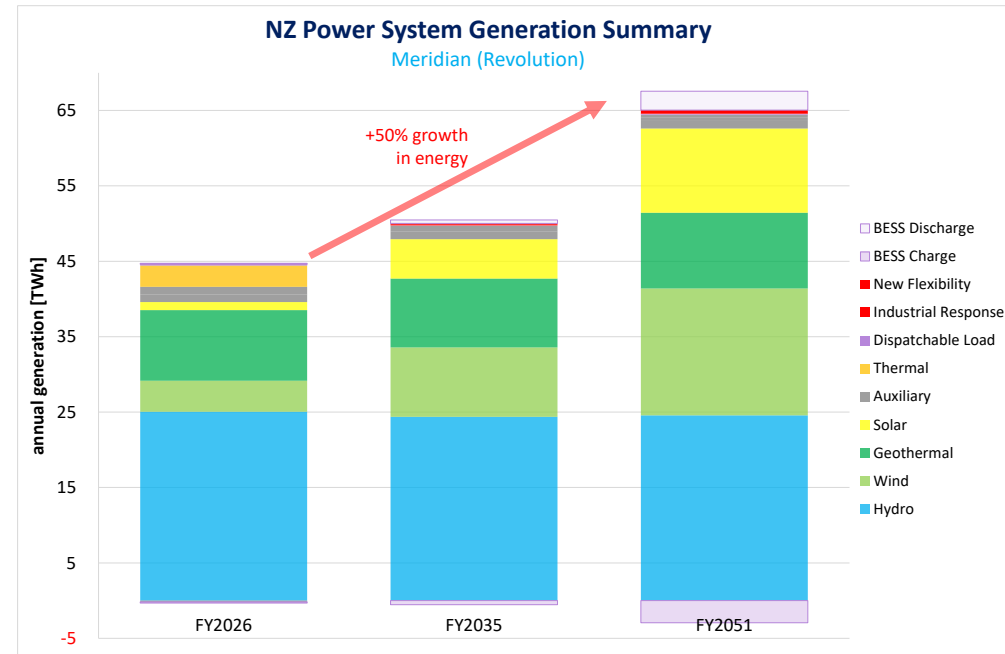
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- 35TWh of new generation: grid & roof,
- 2.5GW of grid BESS,
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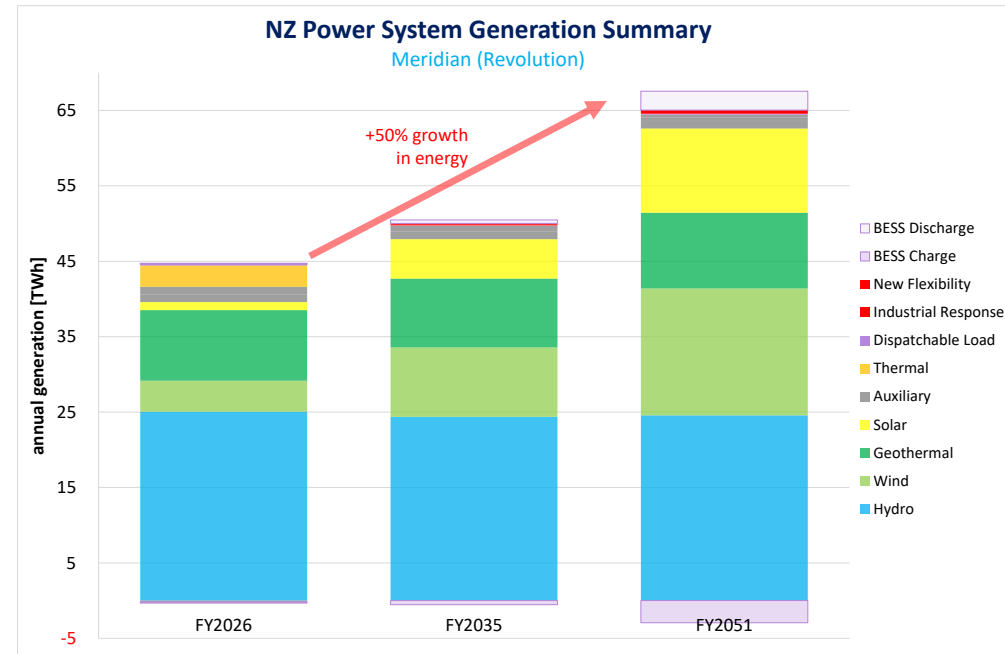
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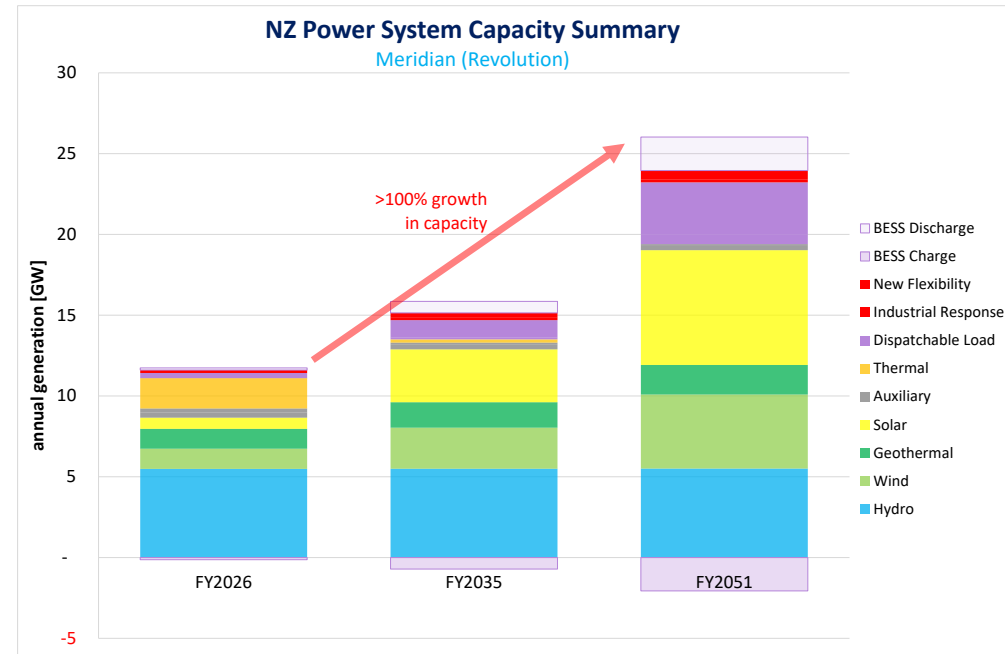
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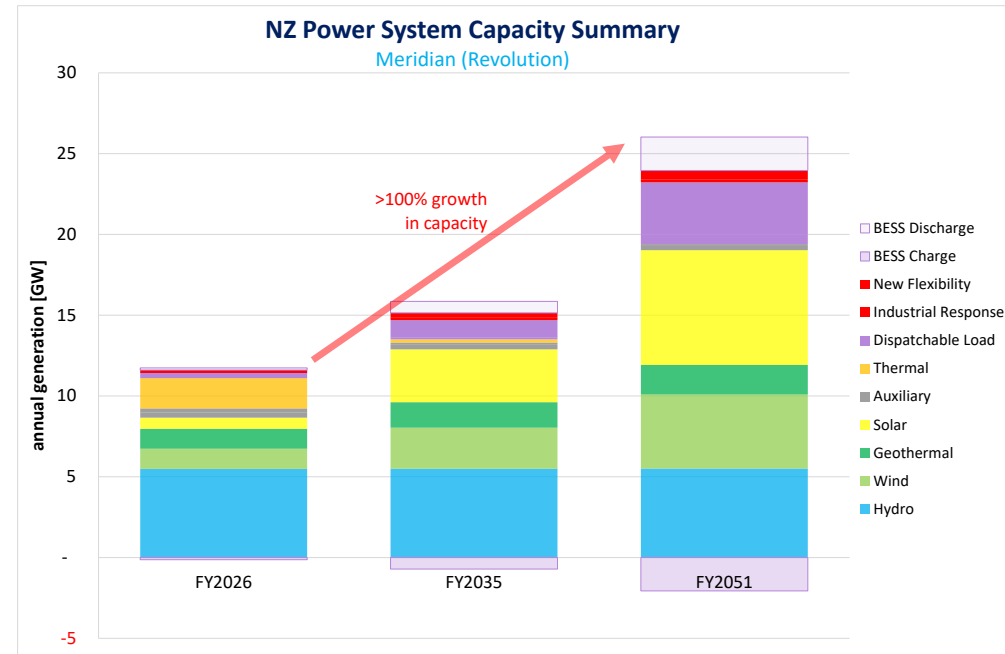
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Hydro's role becomes that of a swing plant:

- From week-to-week where large-scale storage is available: ~50%,
- Within-day and from day-to-day where run-of-river head-ponds exist ~50%,
- Lake storage held higher as insurance against low energy events.

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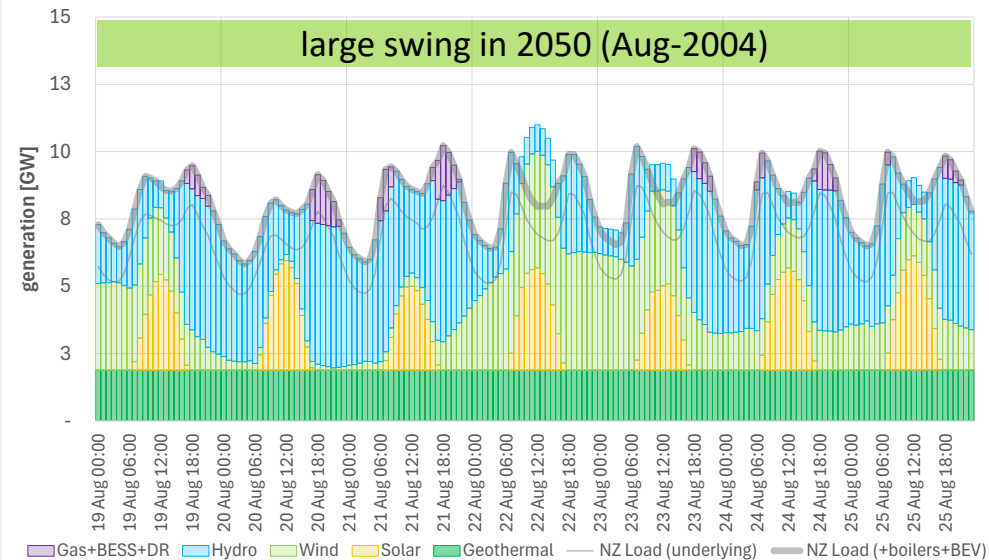
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## Illustrative intermittent schematic

**NZ wind and solar fleet intermittent hourly supply & demand**  
scaled to WMO totals in 2050; wind 4.5GW, solar 7.0GW



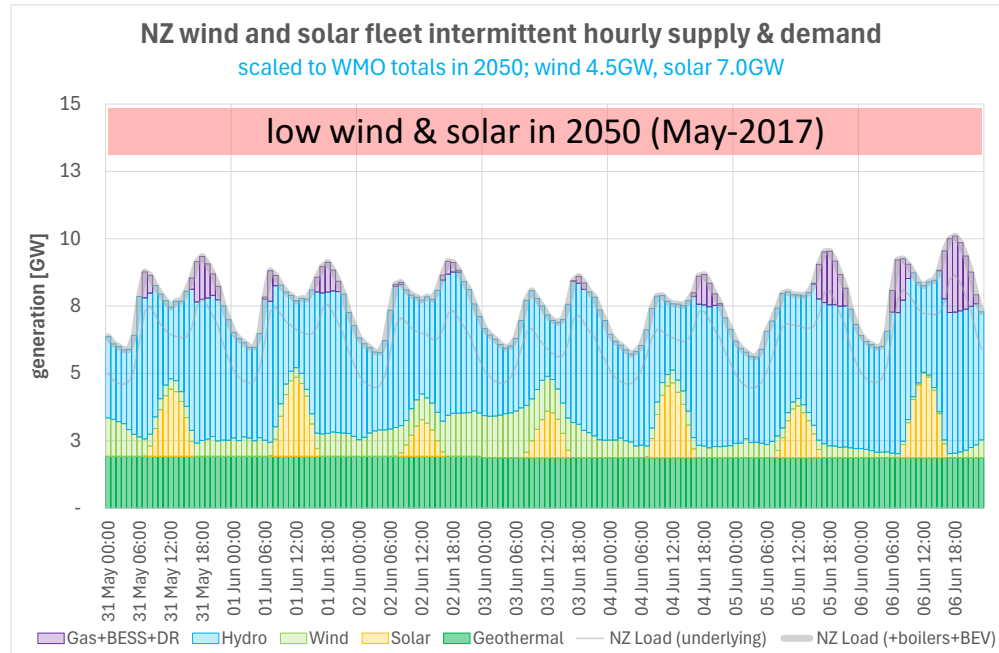
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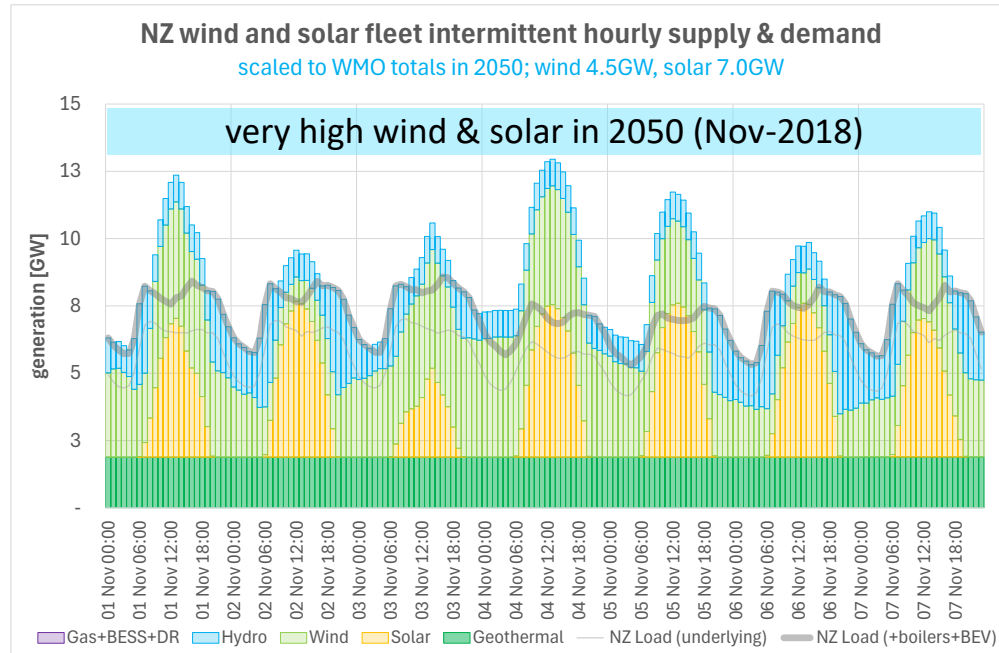
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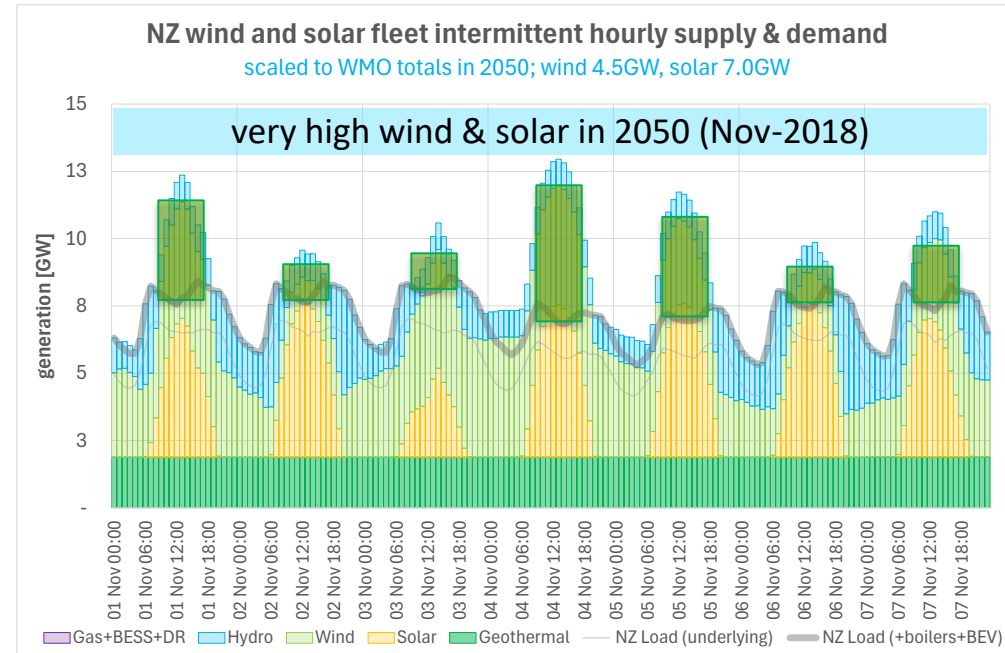
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.... unless you find large, cheap to build load, that doesn't need to be running 24x7, capable of spinning up during unpredictable periods of surplus.

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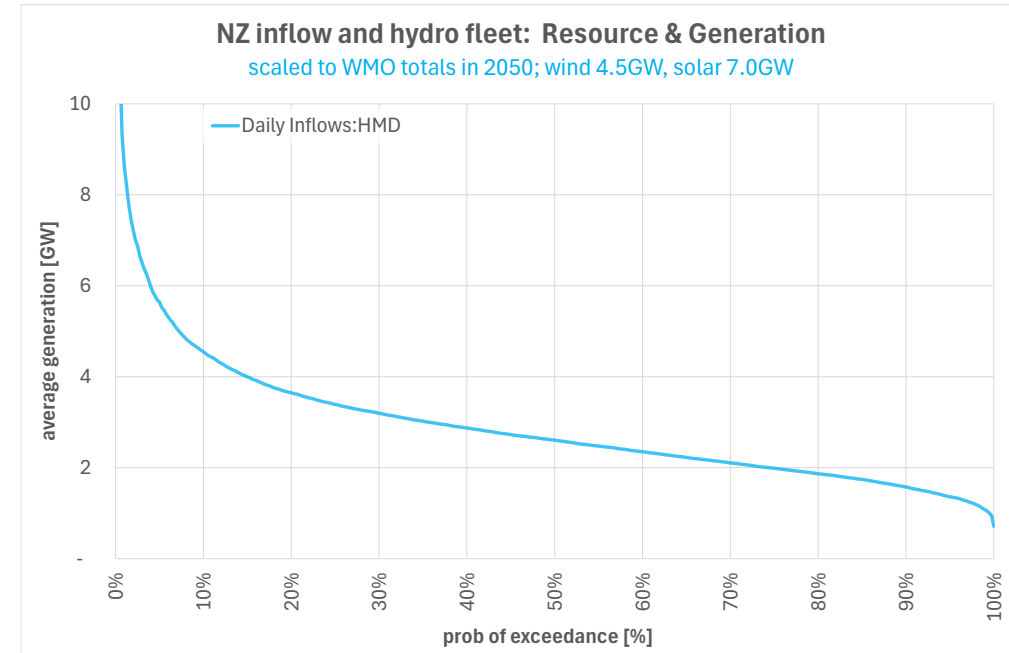
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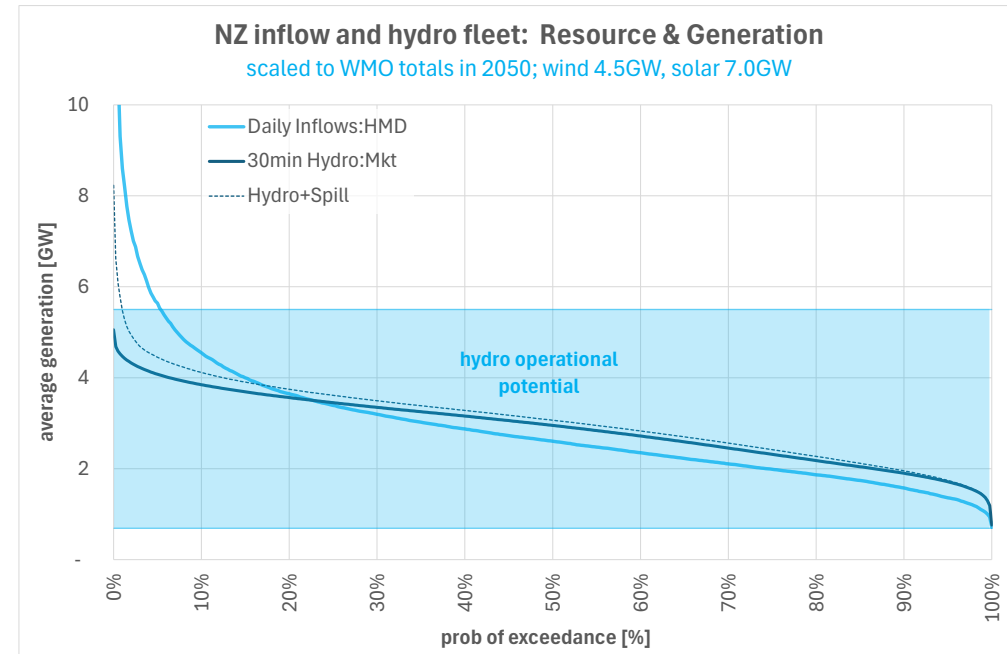
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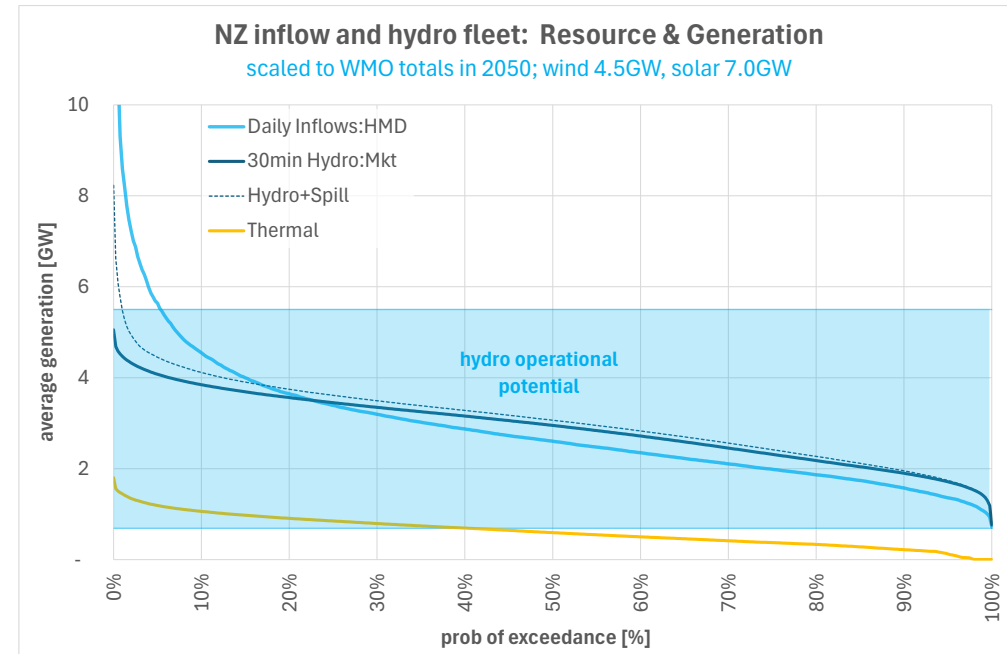
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- Building to an acceptable security standard is the only pragmatic solution, given cost, but ...
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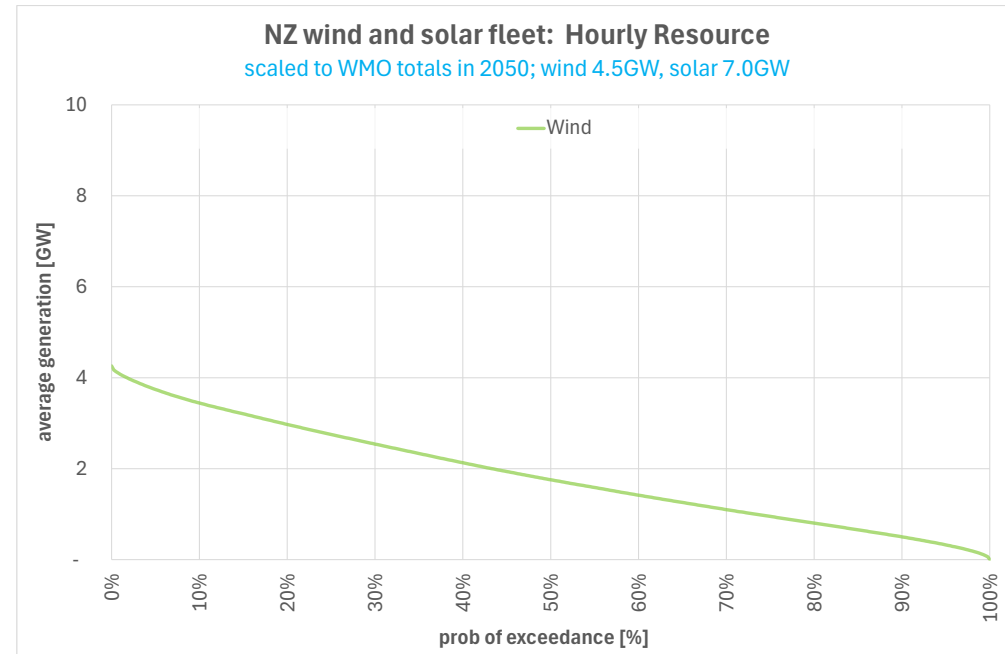
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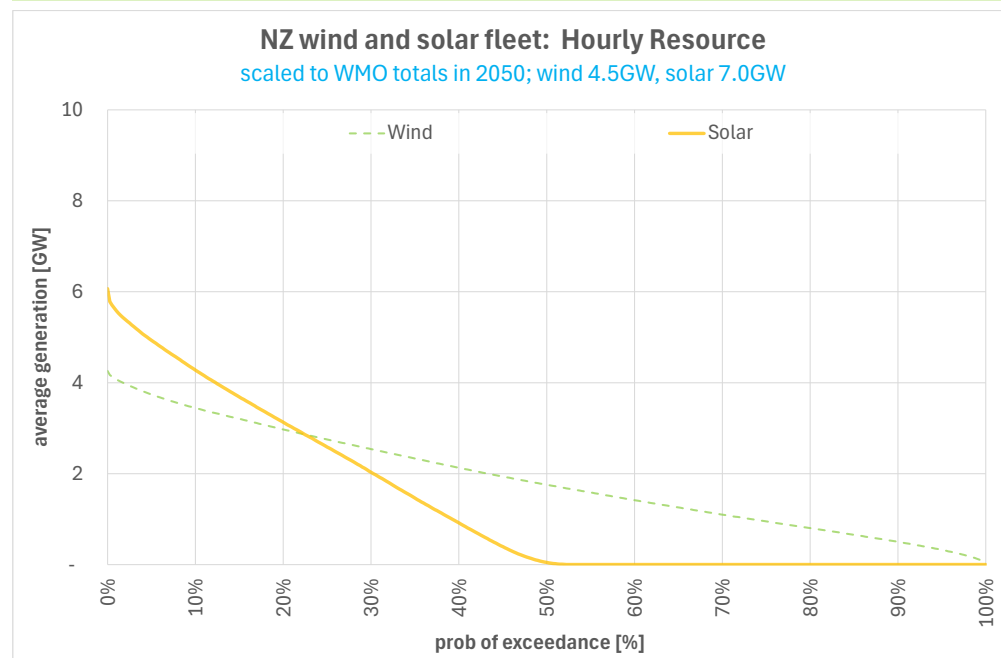
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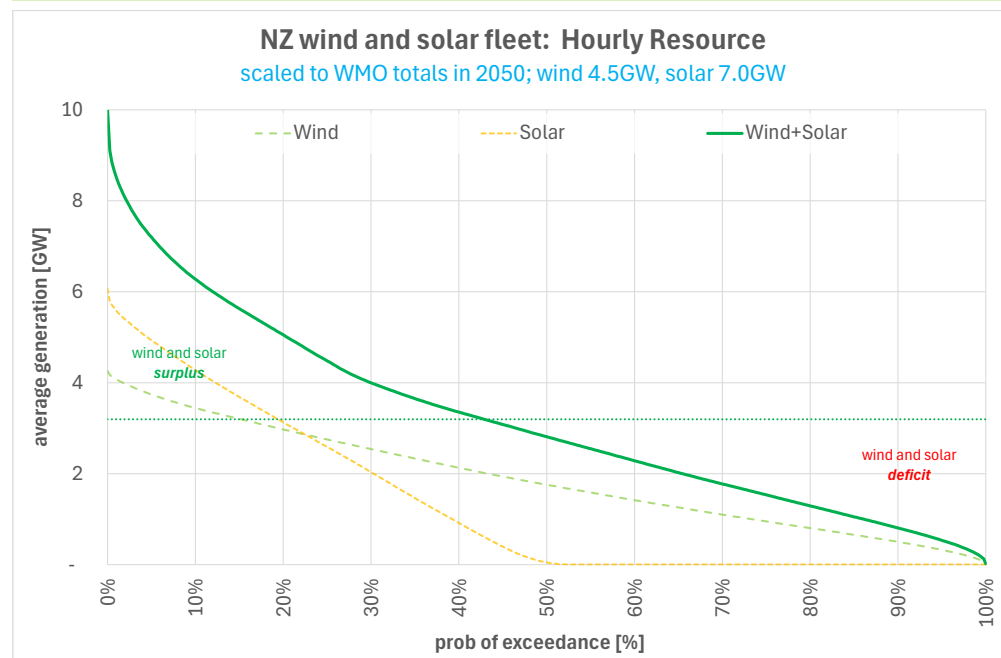
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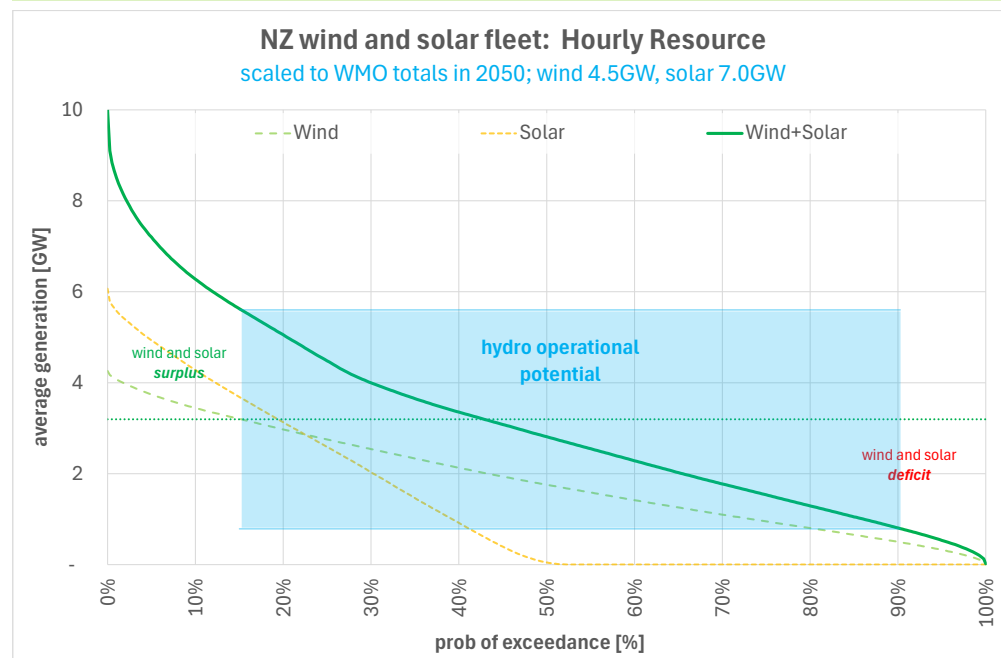
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Managing periods of surplus and deficit, maximizing current asset capabilities, moderated by technology and investment, will define the appropriate balance between spill on one hand and shortage on the other.

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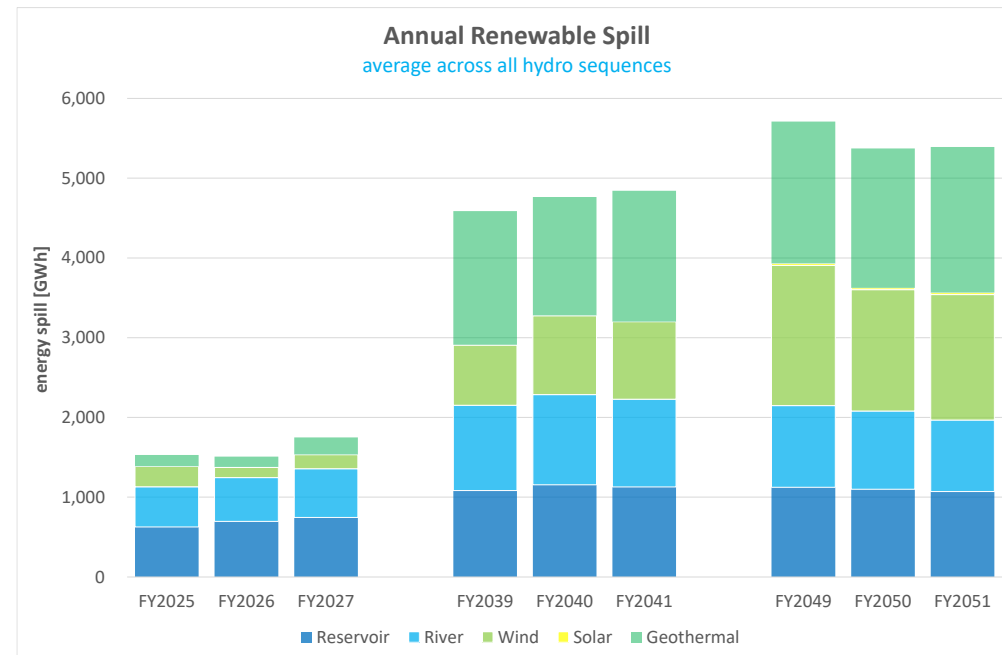
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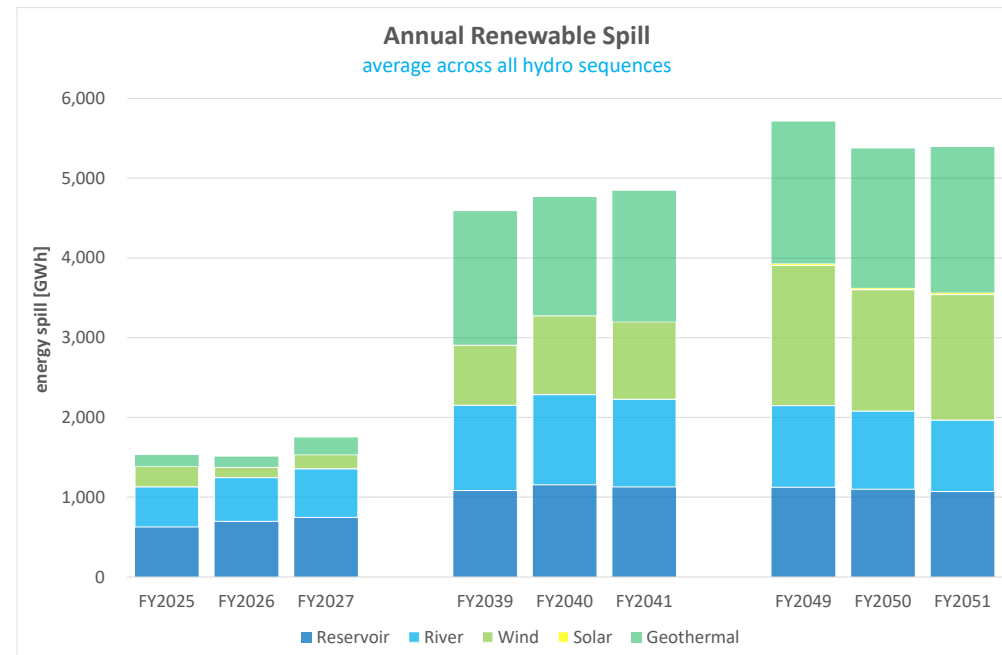
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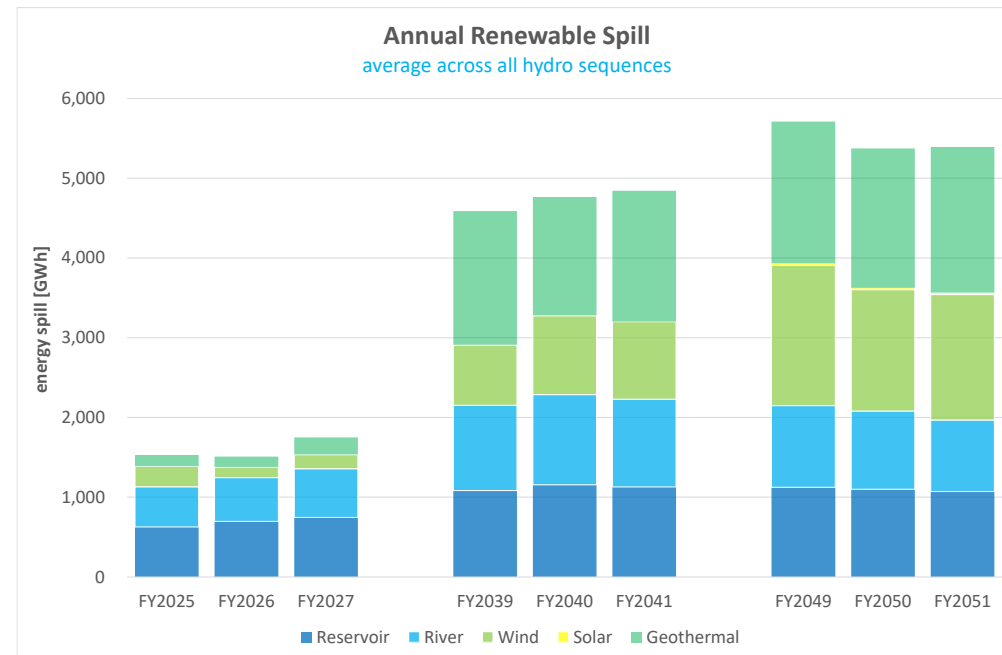
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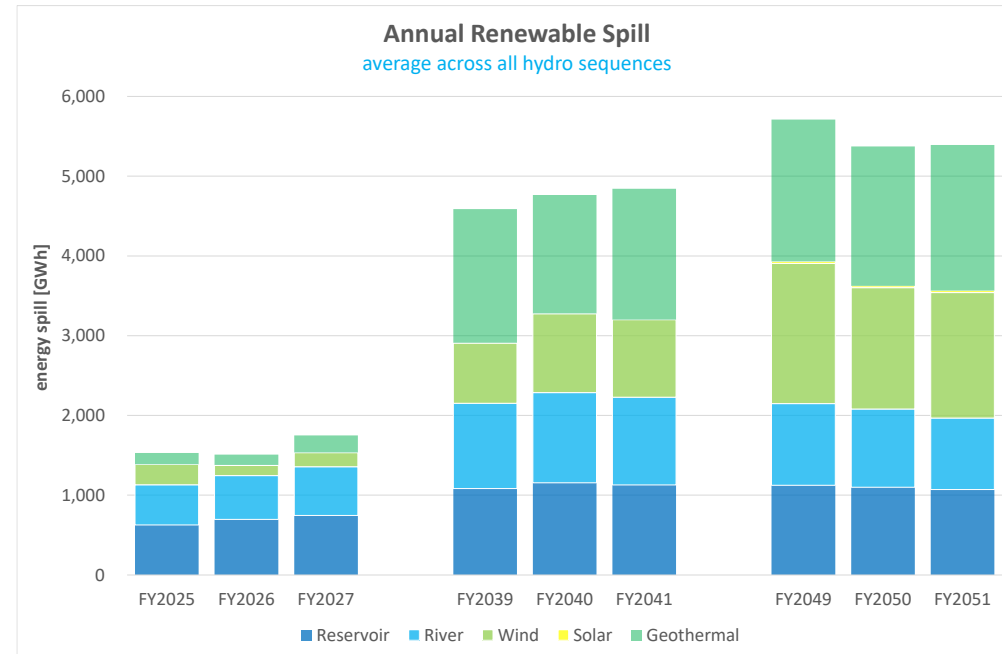
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## Related areas of particular interest:

1. Dry-year management,
2. Spot prices, especially seasonal,
3. Generation investment dynamics.

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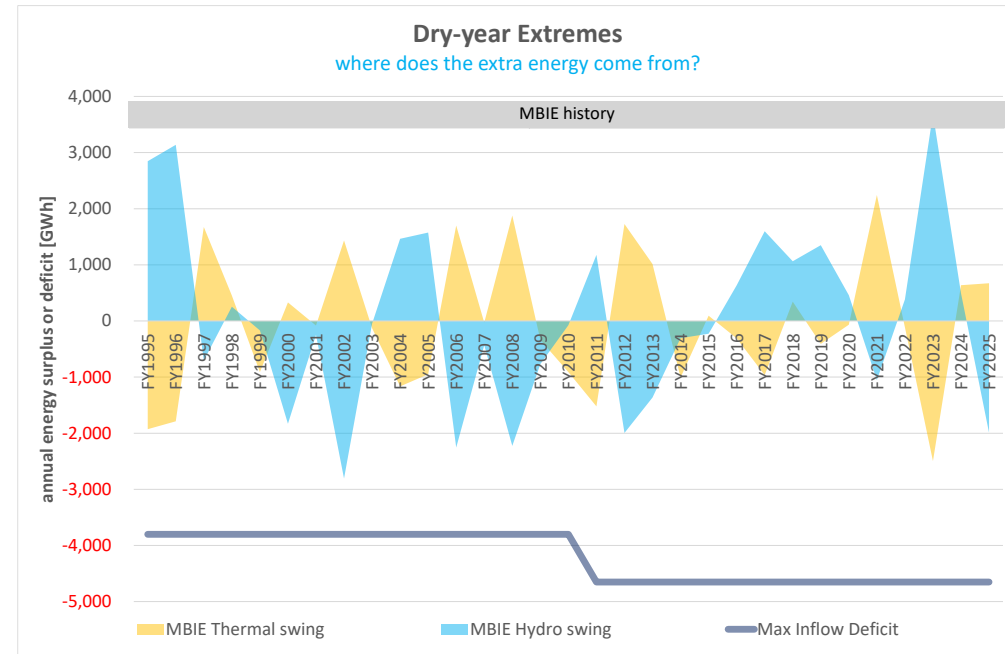
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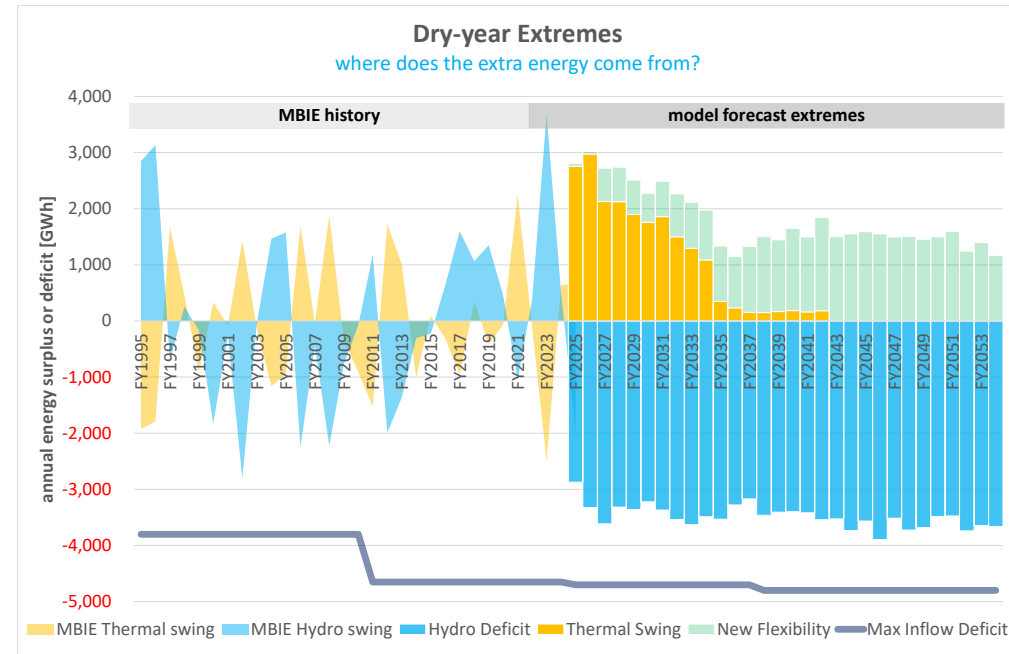
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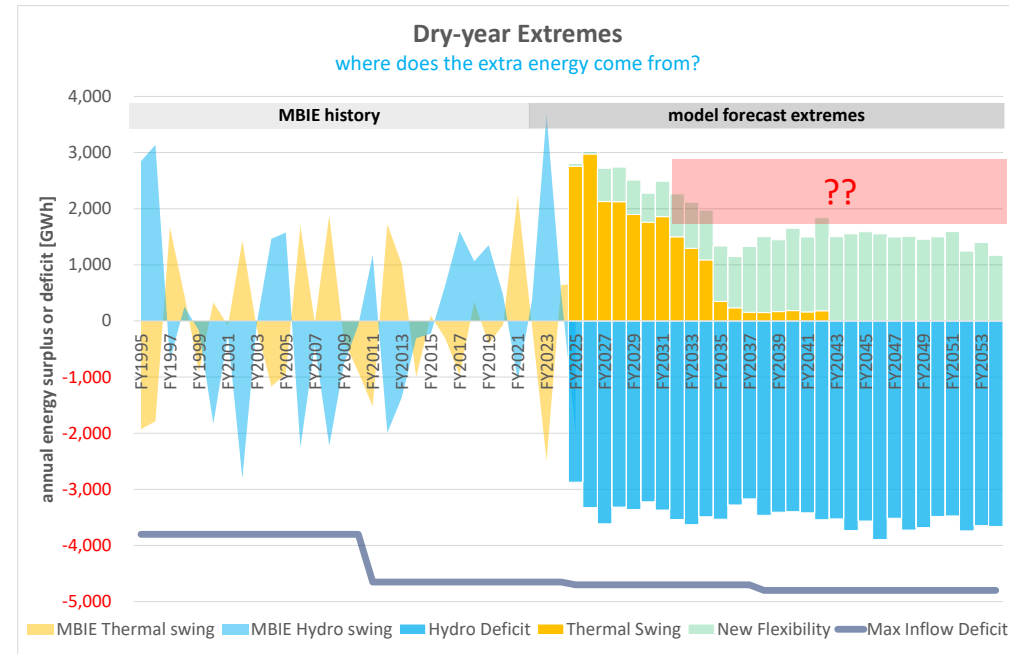
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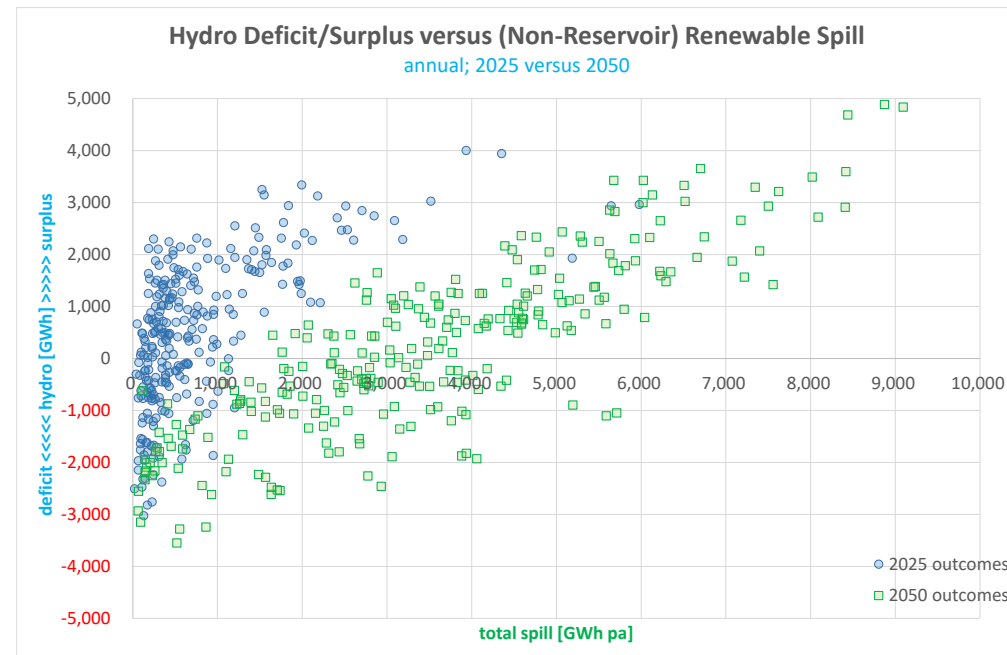
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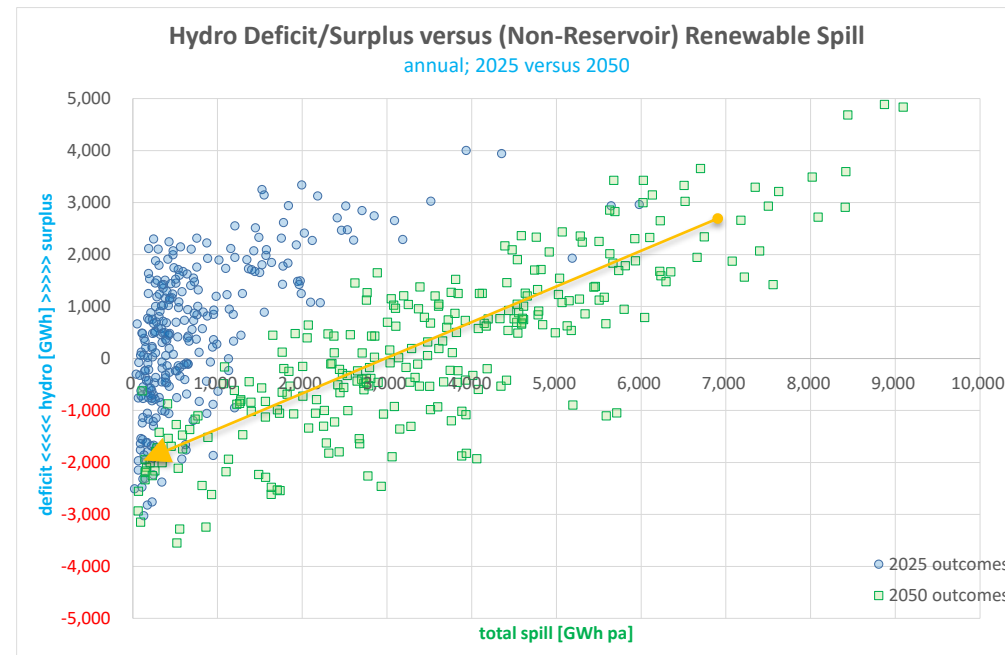
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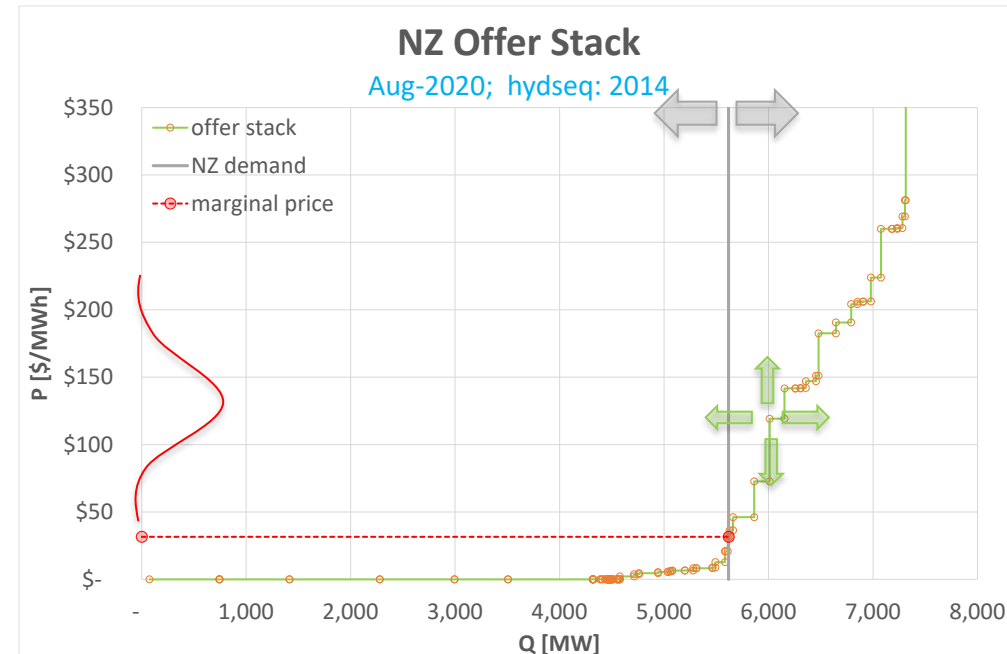
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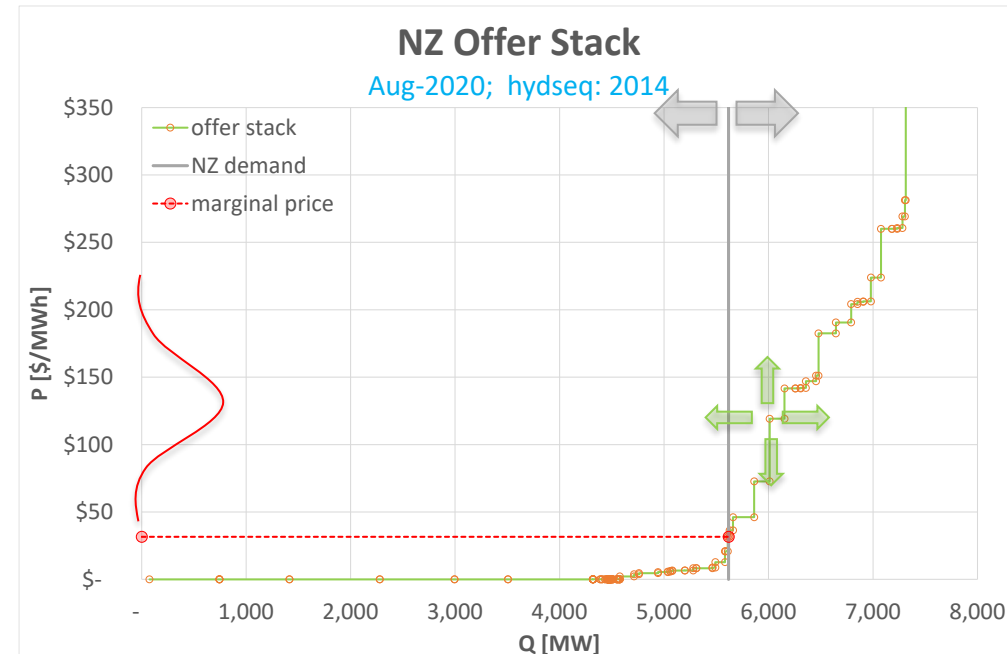


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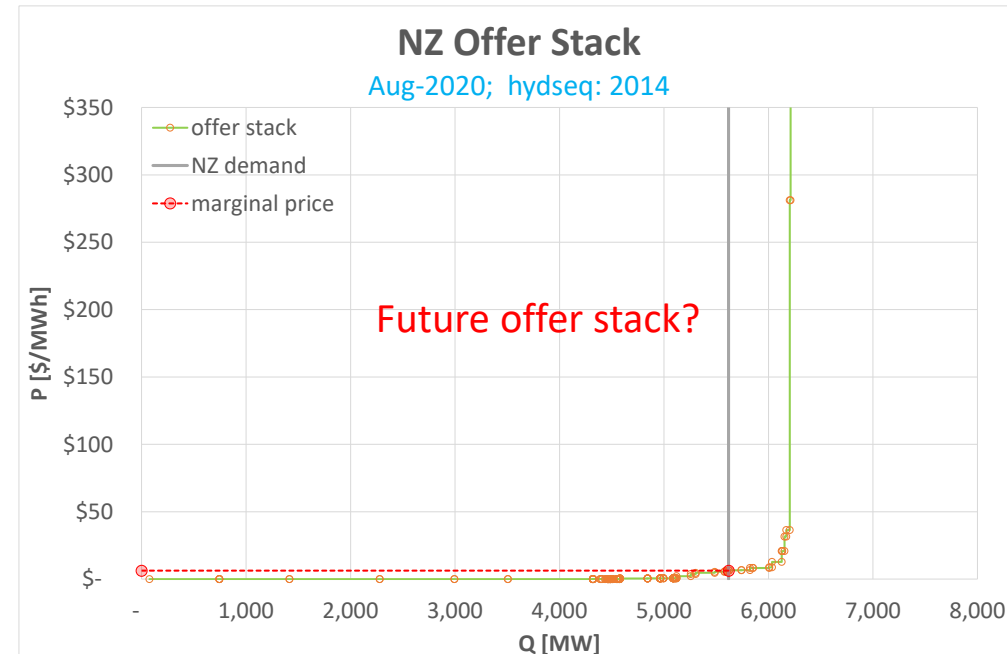


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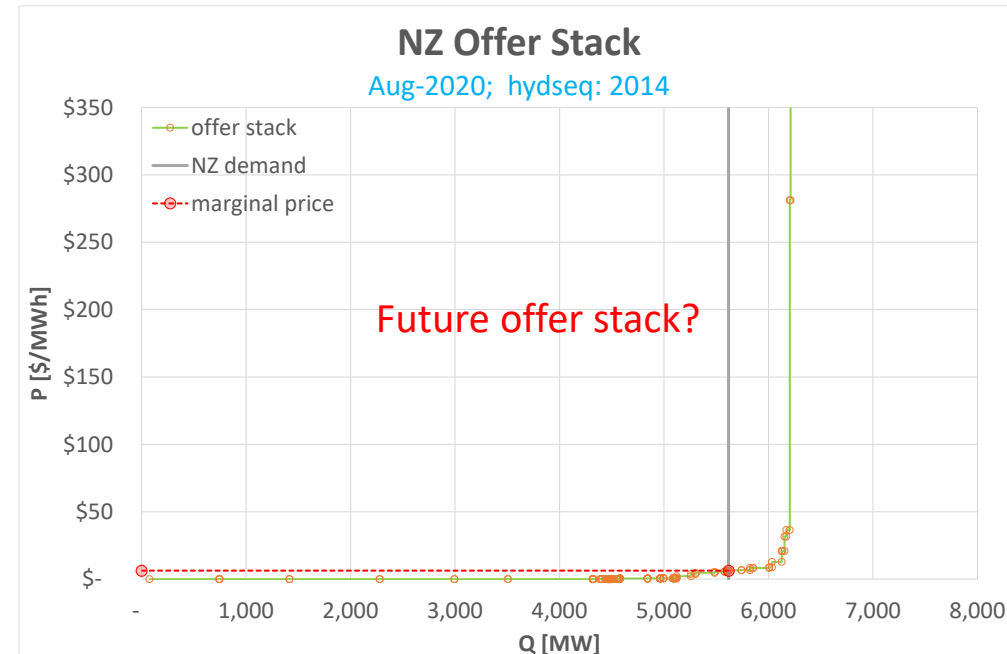


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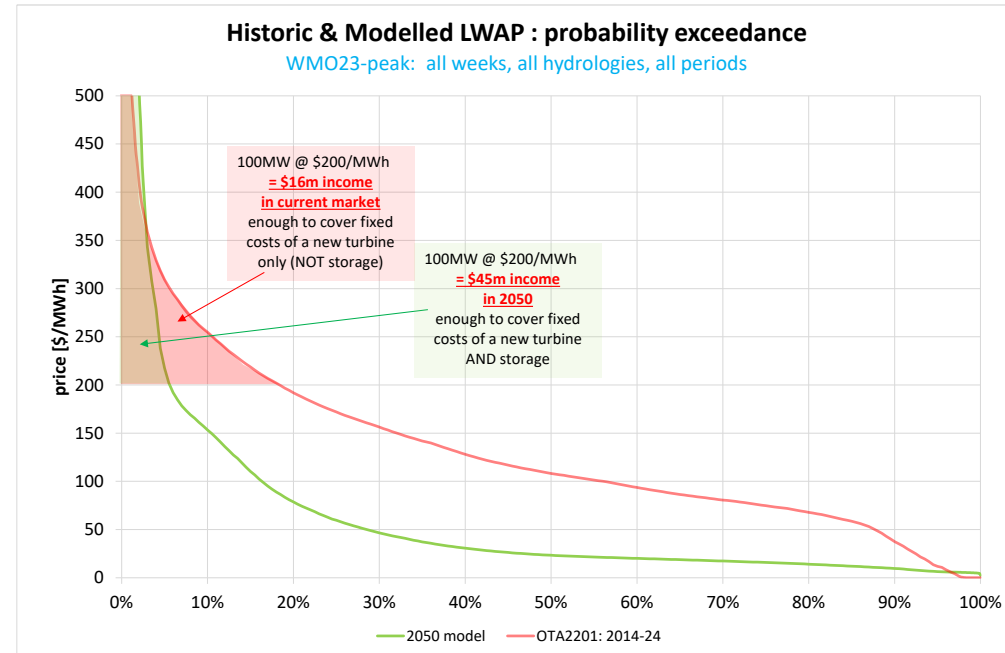
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Periodic surplus capacity combined with low SRMC drives bulk of pricing towards \$0/MWh:

- Peak prices during deficit increase to compensate, otherwise efficient peaking or energy investment doesn't happen,

### Modelled outcomes



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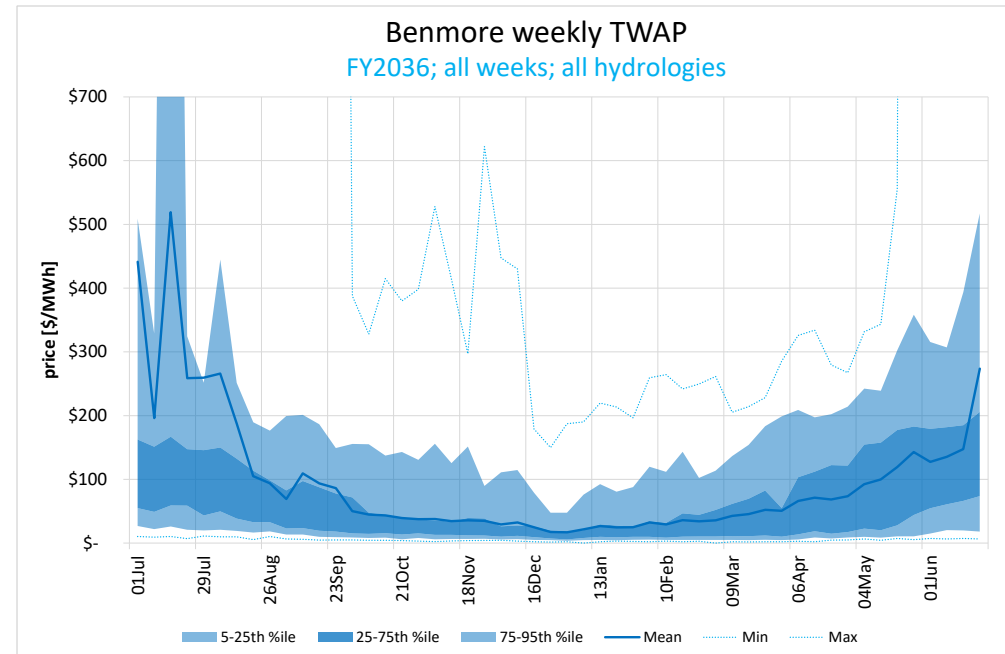
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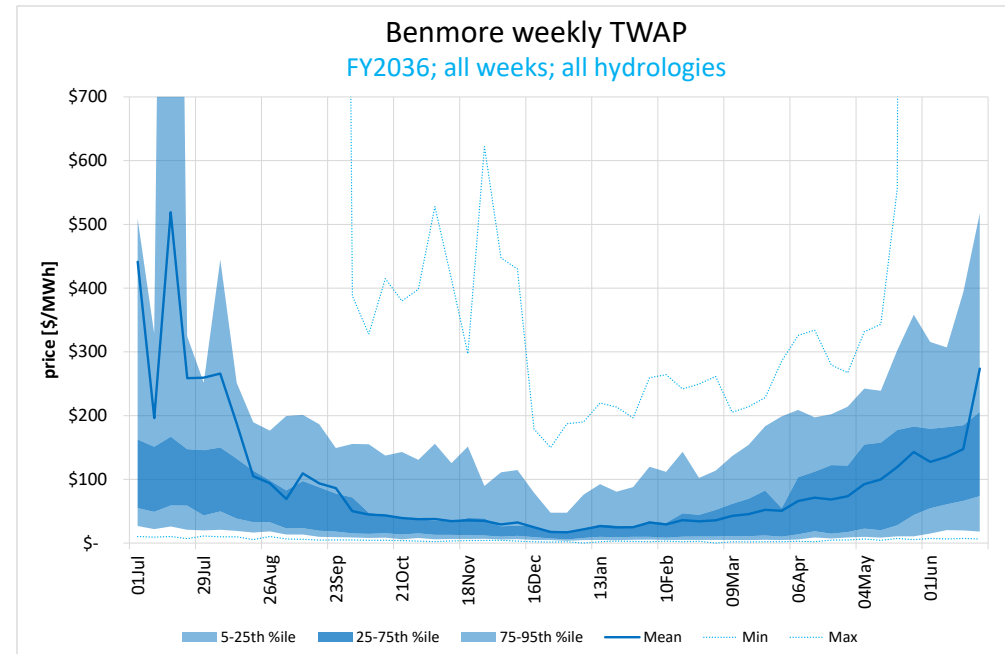
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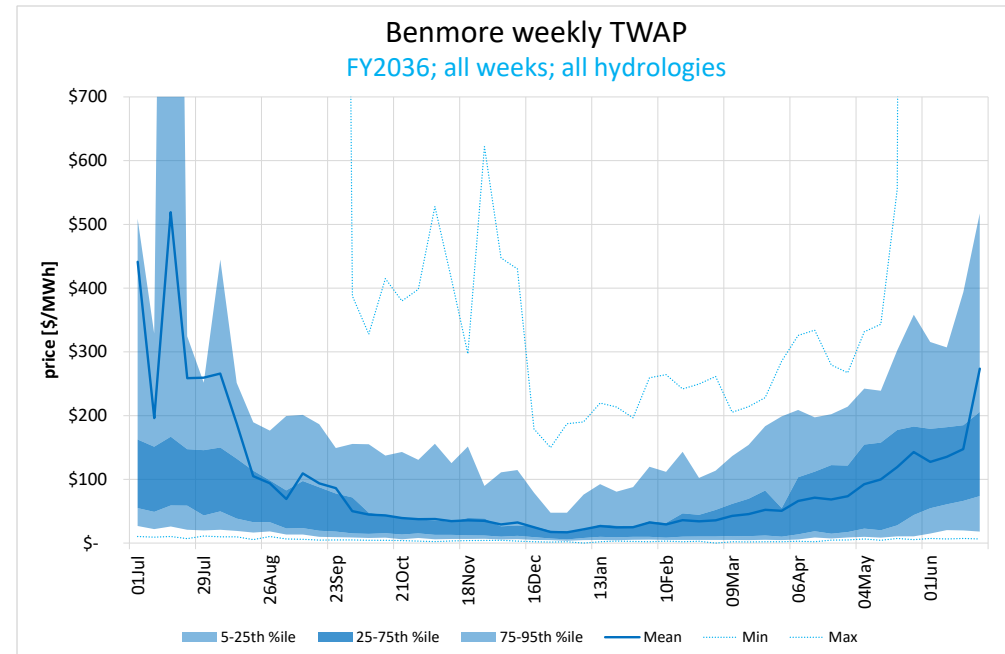
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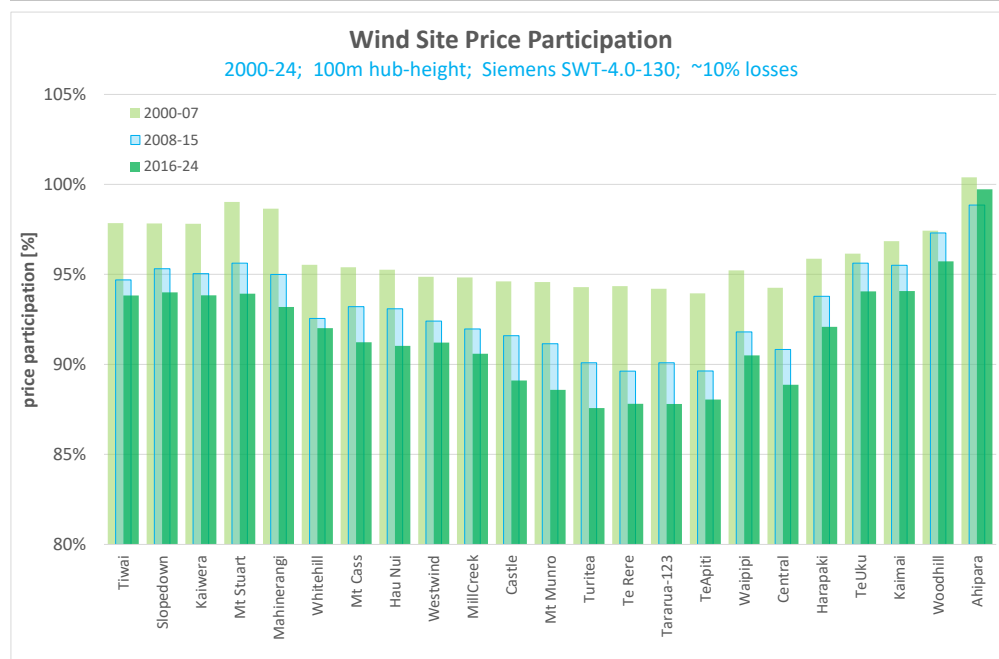
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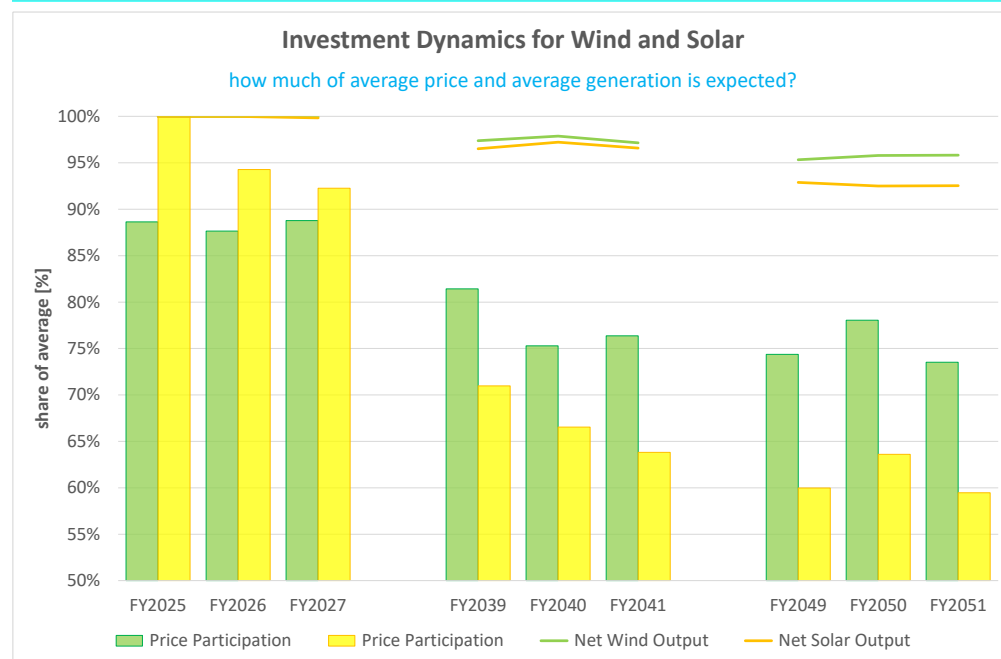
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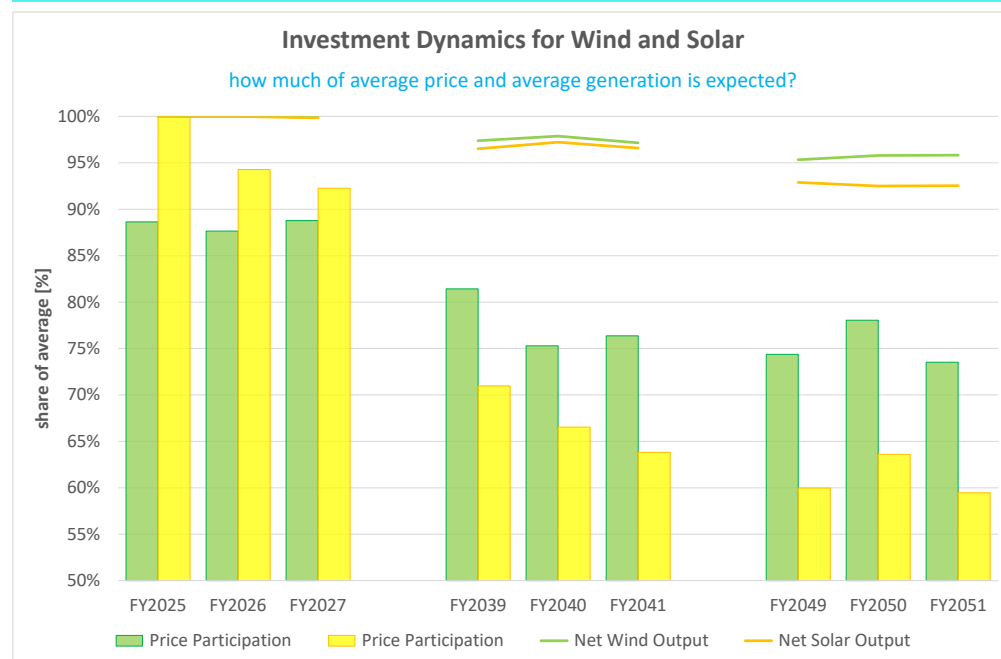
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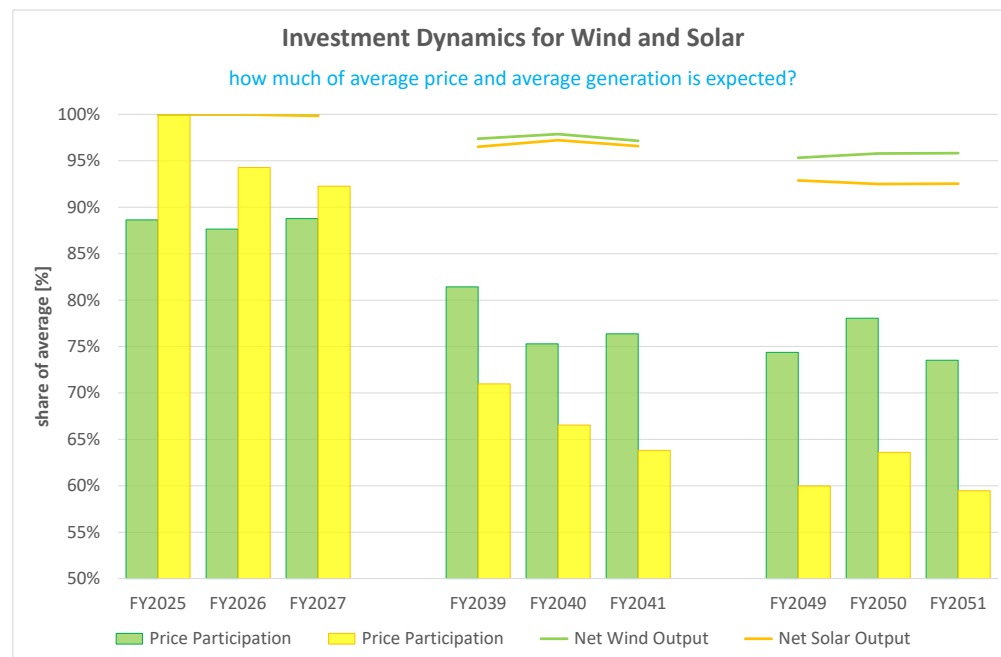
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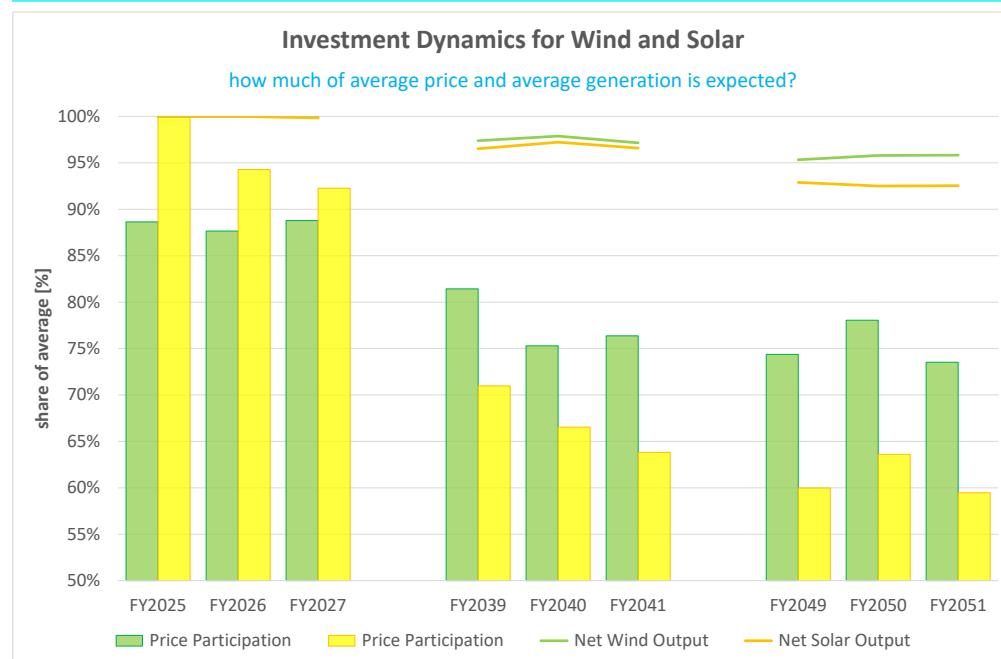
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Spill is a prominent feature of the future system – in-and-off-itself not a bad thing:

- Helps with efficient investment – especially avoiding over building,
- In the absence of new lines, helps with regional investment decisions,
- Can help with dry-year management,
- Is part of efficient price discovery.

**Fin**