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An investment view on the future of the electricity sector and the role of wind

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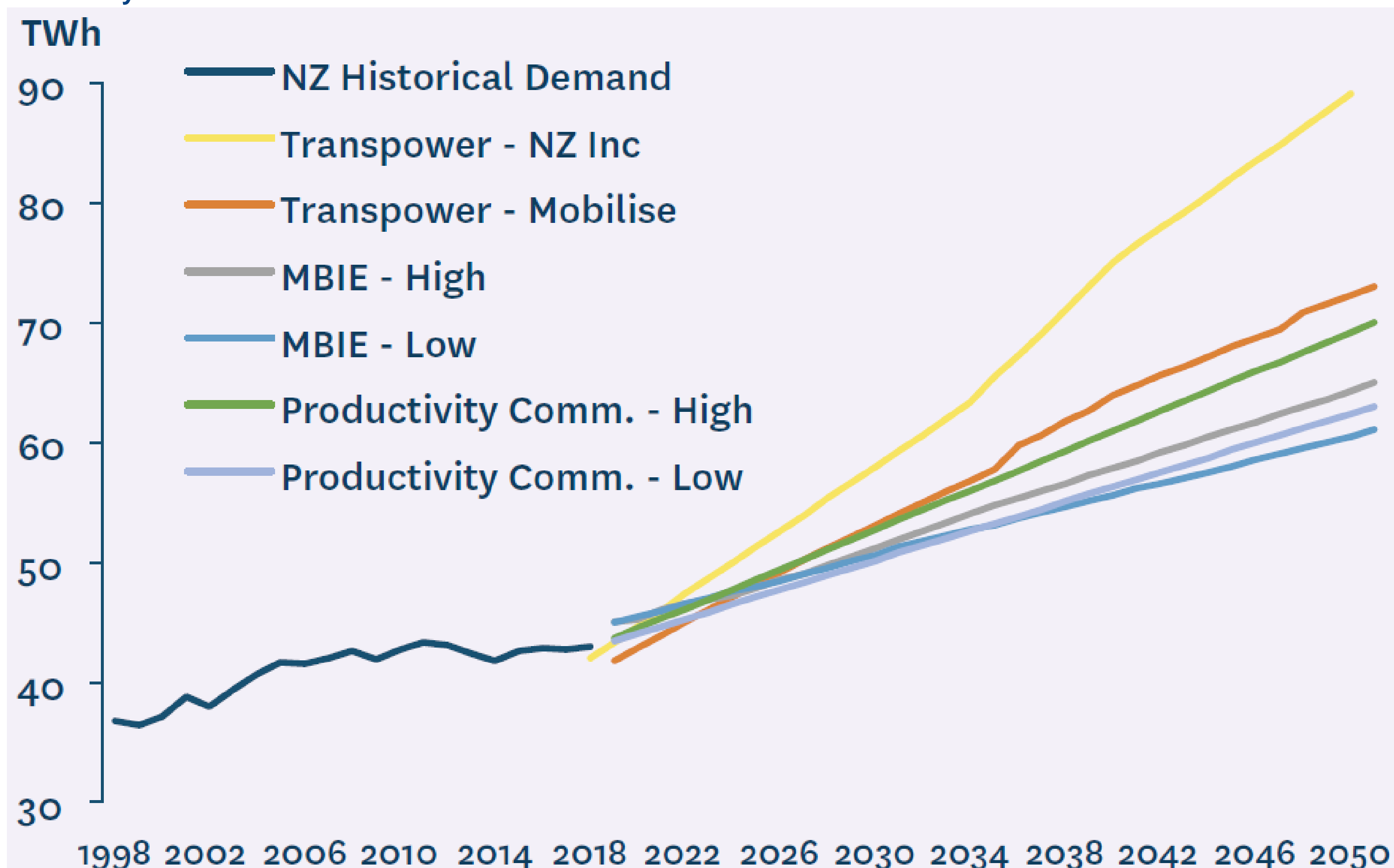
Market regards electricity demand growth as likely

Modest underlying growth plus Government's zero carbon ambition likely to drive electrification.

- **Underlying demand growth probably back on 0.5%-1% track (i.e. 200-400GWhpa) – no longer hearing concerns of potential demand stagnation**
- **Electrification might drive growth up by a further 500-1,000GWhpa - but two key dependencies: unknown Zero Carbon Bill measures (resolved soon?) and EV uptake rate (probably unclear for years)**

Electricity demand forecasts



Source: Meridian Energy

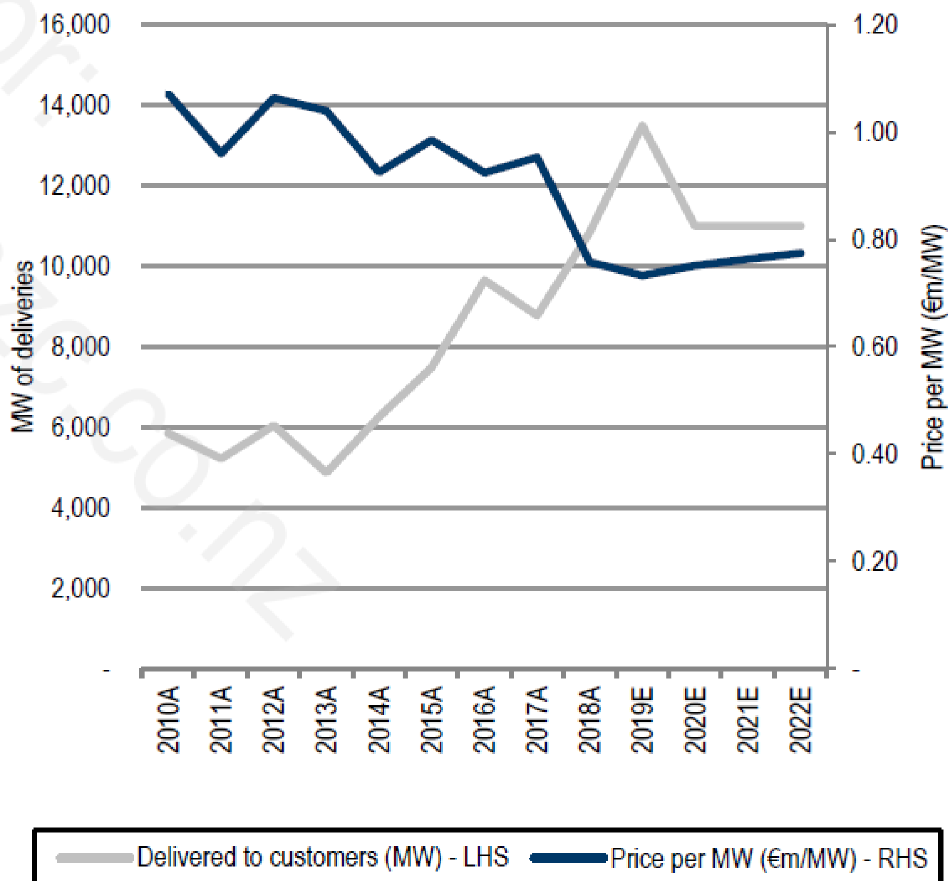
- Key uncertainties driving the wide range of forecast variances are 1) the rate of industrial heat boiler electrification, and 2) rate of large-scale EV uptake
- Investors sceptical of baking this view into investment commitments now – want to see firm demand growth first

Current market mechanisms can deliver renewable growth

Wind and geothermal most attractive options to meet growth, and expected to replace some thermal baseload.

- **Investors expect bulk of generation investment from wind and Tauhara geothermal. Carbon and gas costs expected to rise for fossil plant – no need for market intervention to increase renewable share.**
- **Also need for plant to serve wind firming/regulation and peak demand growth (low CF gas plant, say) – but low cost renewables form the core of generation expansion.**

Credit Suisse: Vestas' higher turbine volumes merely offset lower ASPs (EURmn/MW)



Source: Credit-Suisse estimates, Company data

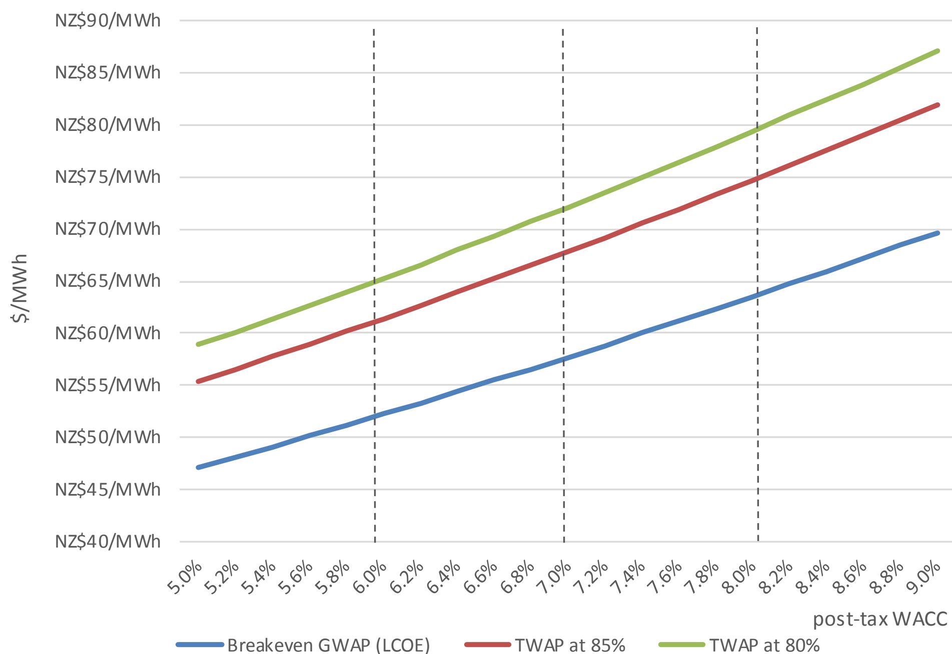
- LCOE estimates for wind cost currently $55-$65/MWh (assuming 30-year life, 8% WACC for major gentailer, $37.5k/MW O&M, 42% CF, $1.9mn/MW)
- Even after allowing for an 85% participation rate, these would be NPV positive at $75/MWh (TWAP) long-run price outlook
- Larger pool of economic wind sites than previous investment phase, due to better yields at lower wind-speeds from modern turbines?
- Tauhara geothermal options (2,000GWh+) indicative LCOEs ~$60-$69/MWh
- Baseload fossil-fuelled generation decline likely (but not necessarily closure - economics may favour retaining these for swing/backup at low CFs)

Low interest rates create opportunity to further reduce wind cost

Are offshore investors willing to fund projects at much lower WACCs than gentailers?

- Windfarms with long-term O&M agreements and credit-worthy PPA offtakes should be attractive to some offshore investors (reflecting global appetite for renewable revenue).
- Investors with much lower required returns could create opportunity for gentailers (sell down completed projects at a profit and then recycle capital into subsequent new builds) and for independent developers (partner with cheap capital providers to build cost-competitive windfarms).
- Access to PPA deals becomes the key enabler for realising lower cost of capital. But are there any counterparties other than major gentailers able to absorb wind-following PPA supply?

Turitea LCOE and breakeven TWAP sensitivity to WACC ($/MWh)



Source: FNZC estimates

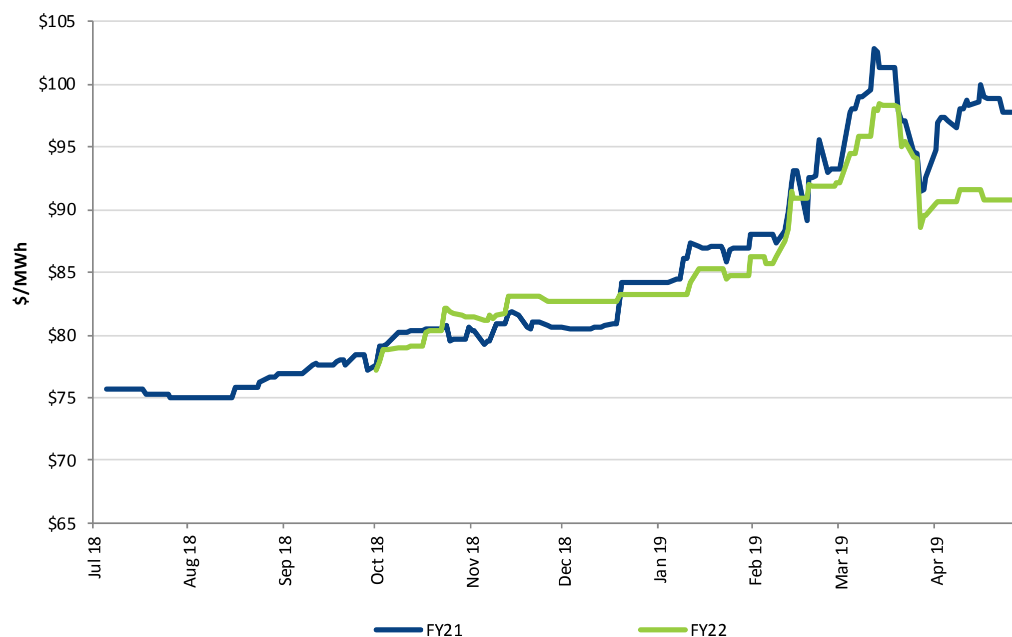
- Previous investment cycles funded projects from a generator/retailer's own capital base
- Our wind and geothermal LCOEs assume 8% post-tax nominal WACC for gentailers, which in turn assumes long-run reversion to ~4.6% yields on long-dated bonds
- Long-dated bonds today are trading nearer 2%
- Wind LCOE is clearly sensitive to cost of capital – NPV breakeven revenue falls by ~$6/MWh per 100bp WACC reduction

Do wholesale prices need to rise as renewables grow?

Demand-driven expansion usually lifts prices. But steady or lower prices plausible, despite increased volatility.

- **Wind growth expected to be accommodated by existing energy-only market design**
- **Price duration curve must steepen to reward flexible plant, and price volatility will increase.**
- **Higher prices likely to prevail in the near-term: modest new build because investors are reluctant to see listed generators move too early, before demand growth actually arrives.**
- **But steady or lower prices could eventuate over medium term – cheap periods become cheaper, and $75/MWh TWAPs are sufficient for wind to be economic at $60/MWh LCOE.**

ASX electricity futures Otahuhu FY21 and FY22 ($/MWh)



Source: ASX

- **Current high prices due to uncertainty of gas availability (i.e. uncertain gas supply to TCC)**
- **Could this be a sampler of a “new normal” price volatility, as renewable generation share grows at expense of baseload fossil fuel stations?**
- **None of the major generator/retailers will base investment decisions on observed forward curves (neither are they about to disclose internal price-path views)**

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