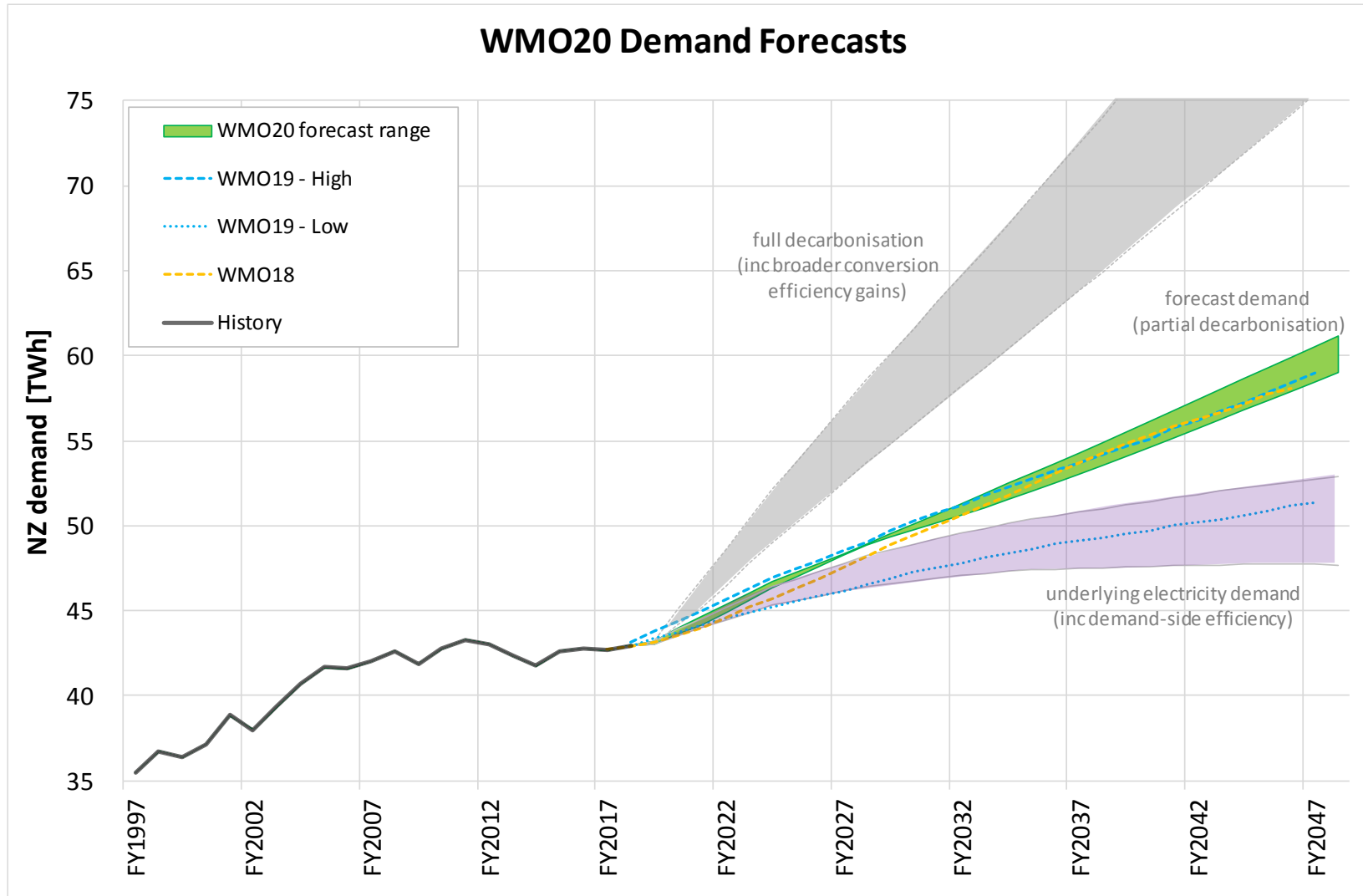


MARKET DESIGN AND INCREASED RENEWABLE ENERGY.



meridian

Demand Growth Forecasts

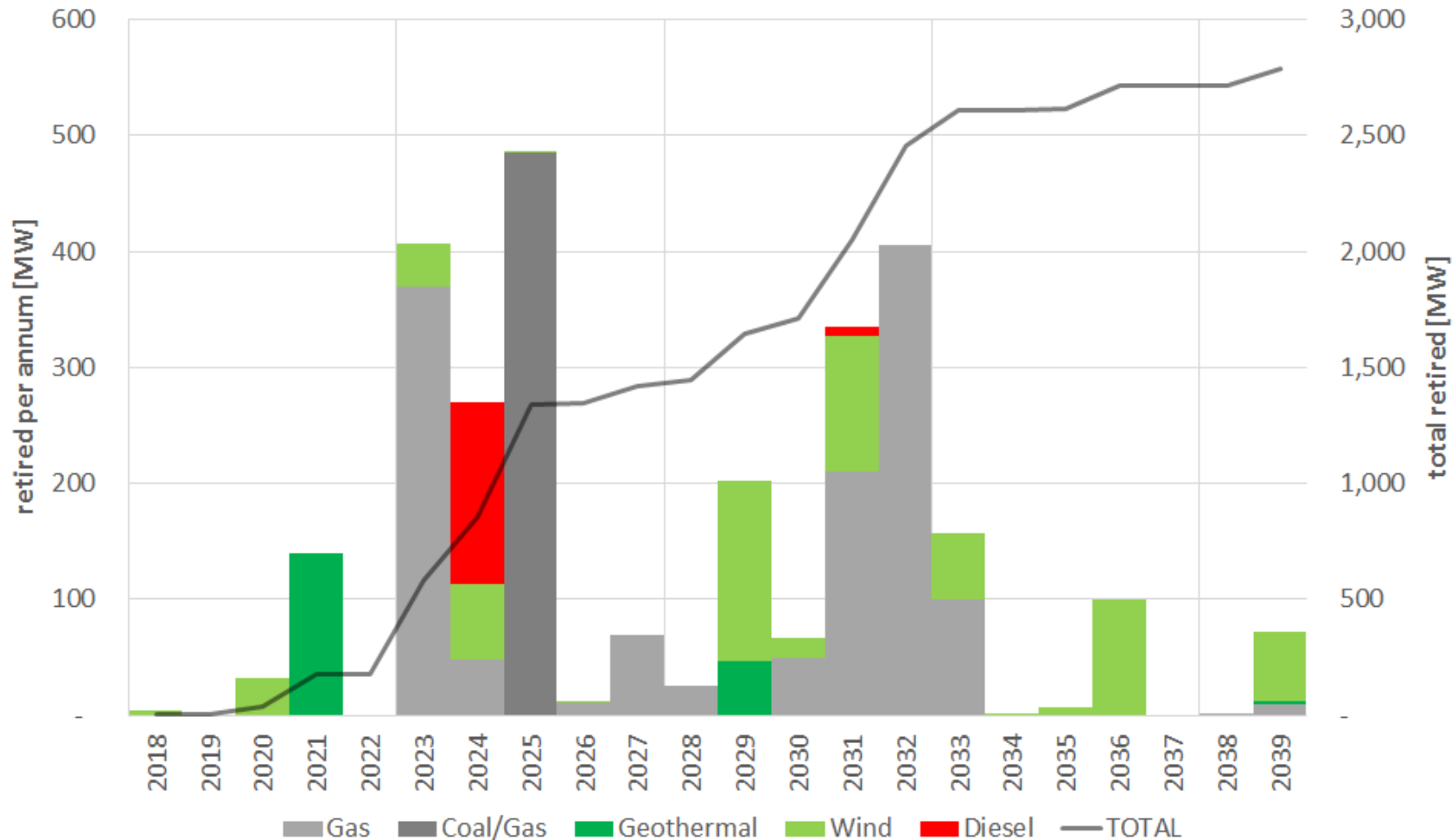


Key take-outs:

- Common ground is for demand growth to return.
- The extent is unknown and will depend on the amount of decarbonisation. Range could be anywhere from 1-2.5% pa.
- Demand in the near-term is still expected to grow but more slowly than seen historically.
- Near term is more relevant from a planning perspective and will enable forecasts to be recalibrated.

Plant Retirements

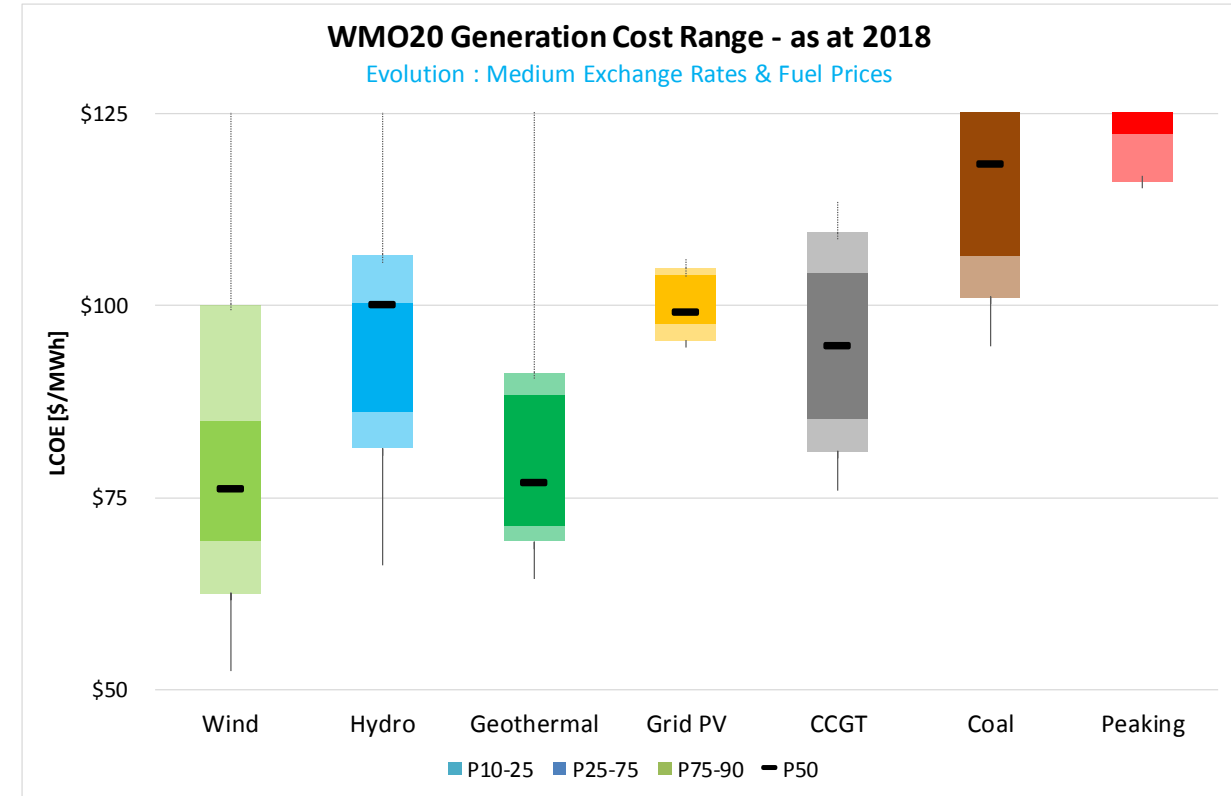
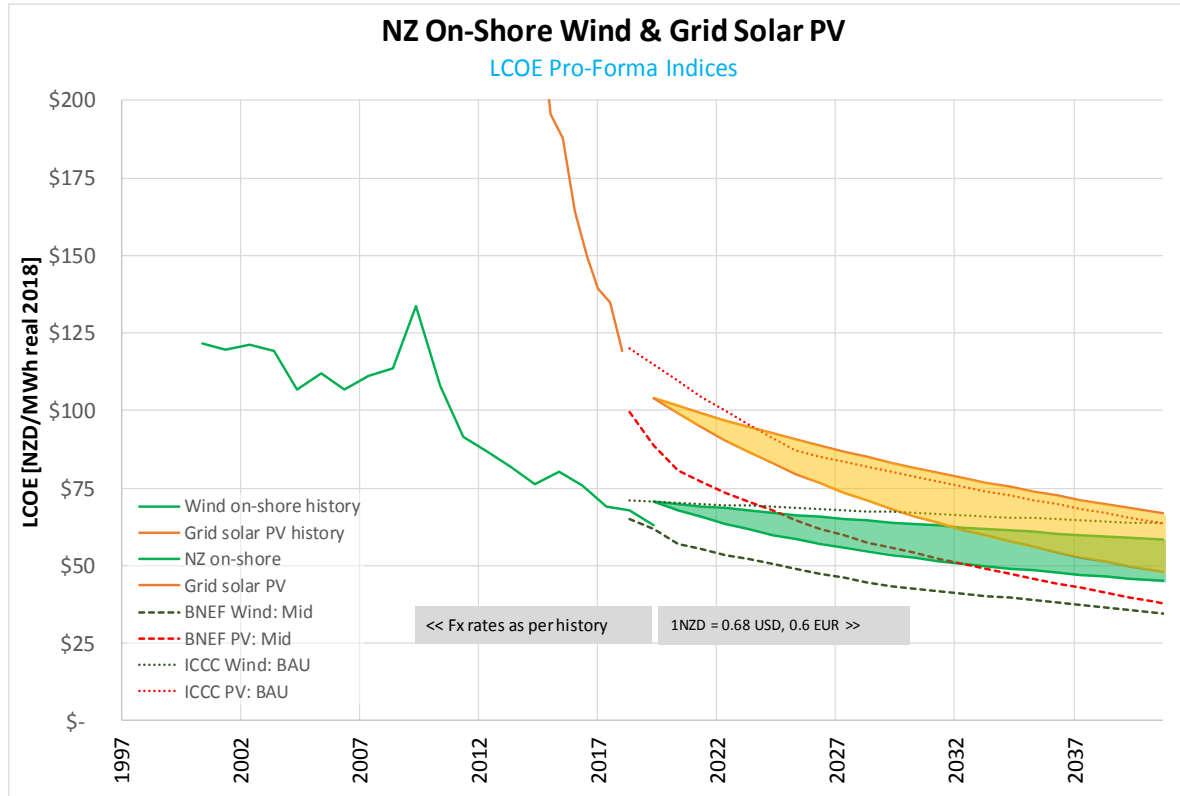
NZ Power Plant Retirement Schedule
end of life profile



Key take-outs:

- In addition we can expect in excess of 2500 MW of plant retirements over the same period.
- Covers all technologies including repowering wind.
- Plant closure removes energy and in some cases important system flexibility.
- Exactly when plant close (or repower) is uncertain.

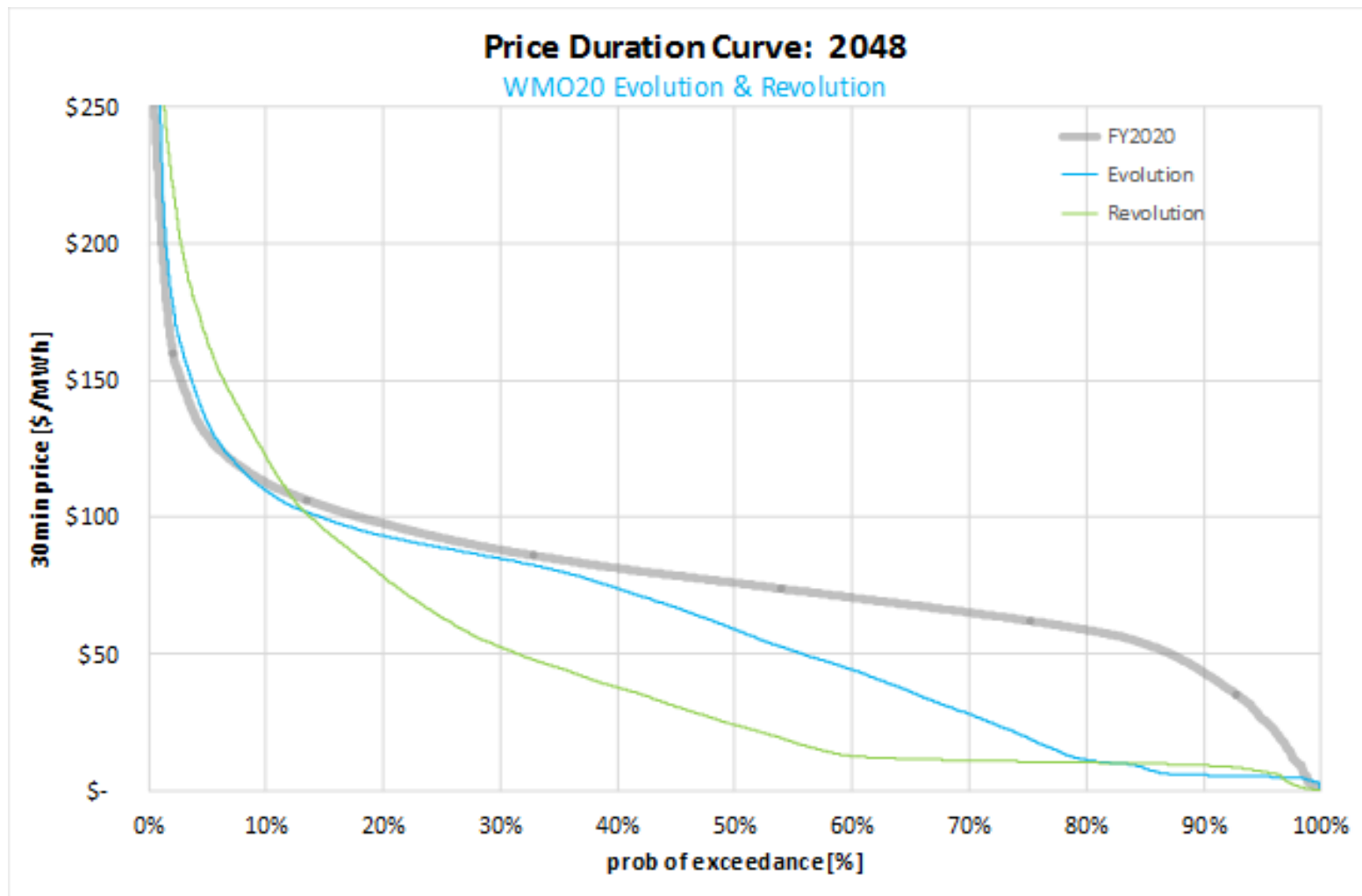
New Generation Costs



Key take-outs:

- NZ is well served by cheap, diverse, and unsubsidised renewable generation options.
- Other sources of renewable generation are unlikely to be needed (off-shore, marine, CCS, ...).
- Large scale thermal is unlikely to occur again in NZ.
- New wind and solar grid costs have become significantly cheaper over the last 10 years.

Price Duration Curves



Key take-outs:

- Sustained periods of lower prices.
- Also greater exposure to higher peak pricing.

Market Design Considerations

- The market we have today has evolved significantly since established in 1996.
 - Ancillary services, Futures, Financial Transmission Rights, Operational enhancements
- The current model has performed well.
 - Managing scarcity (no energy driven shortage since the market started)
 - New Investment in generation (\$10B) and transmission
 - Increased renewables and declining emissions (4MT CO₂E down from 10MT in 2005)
- Development of the system has significant uncertainty.
 - Demand growth
 - Technology Costs
 - Location (impact on transmission)
- Evolve with change as it unfolds rather than “build it and they will come” would seem to be the smart option.