



Regional Infrastructure – Electricity Distribution Supply & Demand considerations

Jason Franklin, Chief Executive

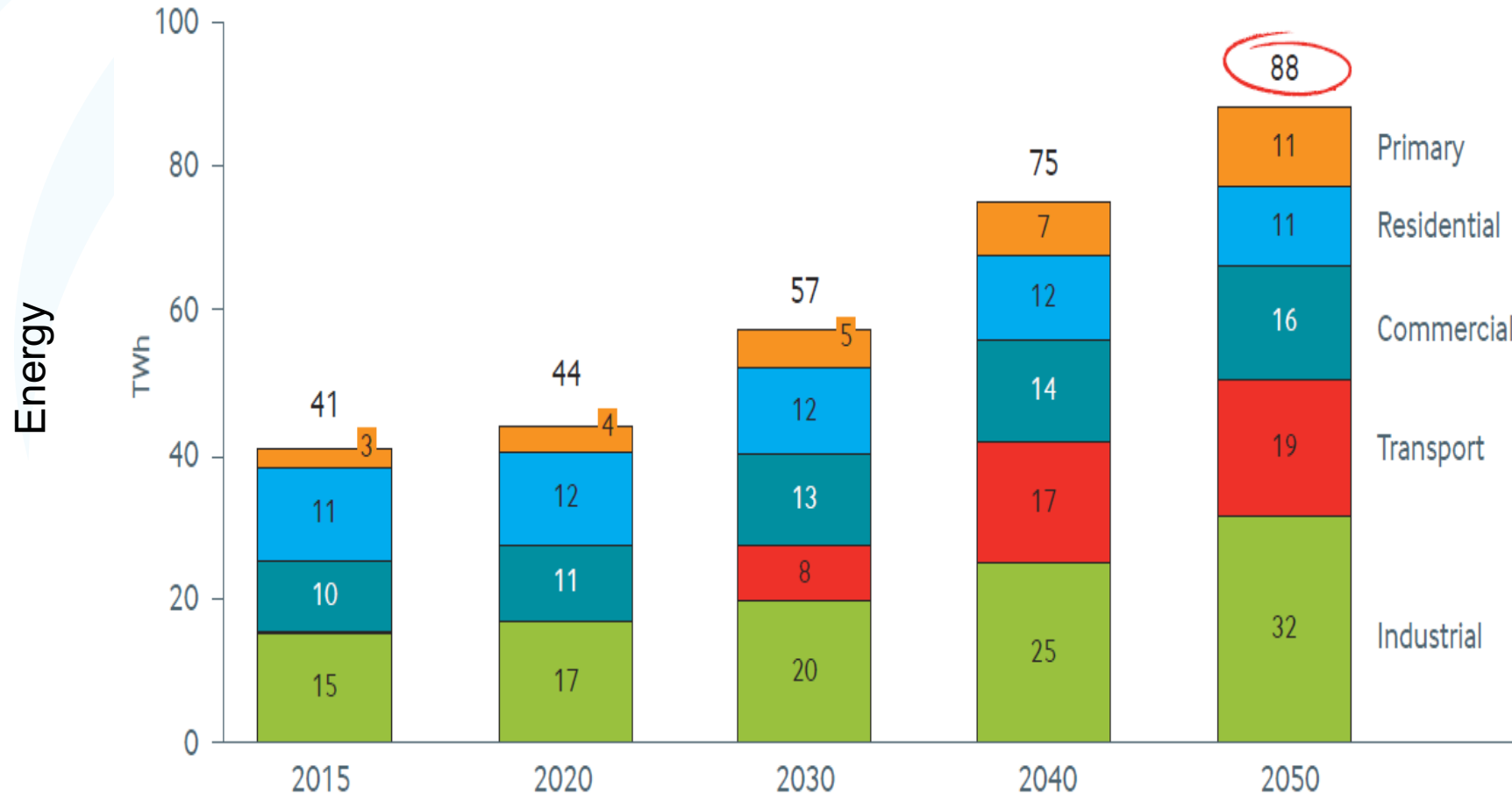
23 May 2023





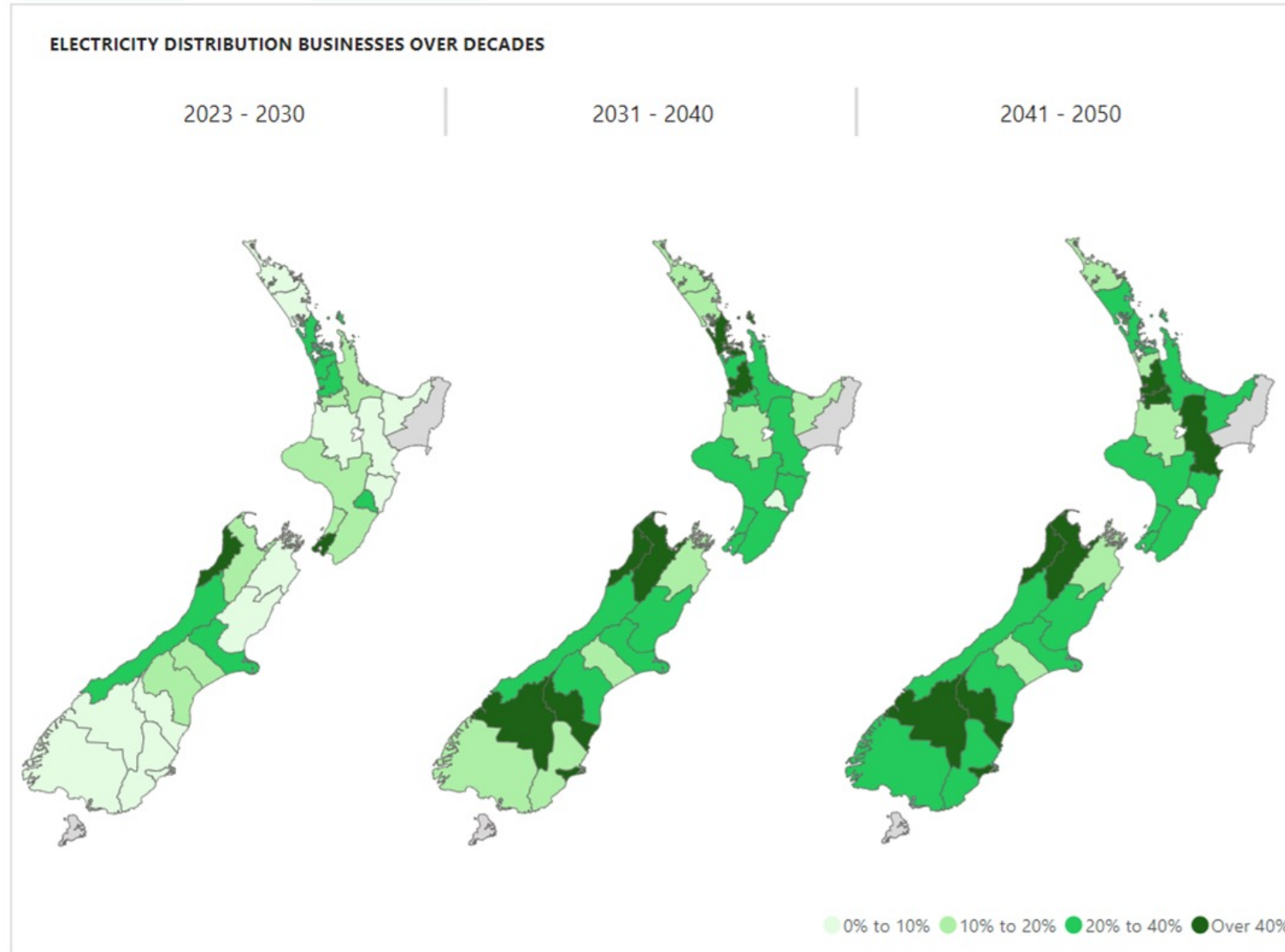
PowerNet managed electricity distribution region

Electricity demand by sector

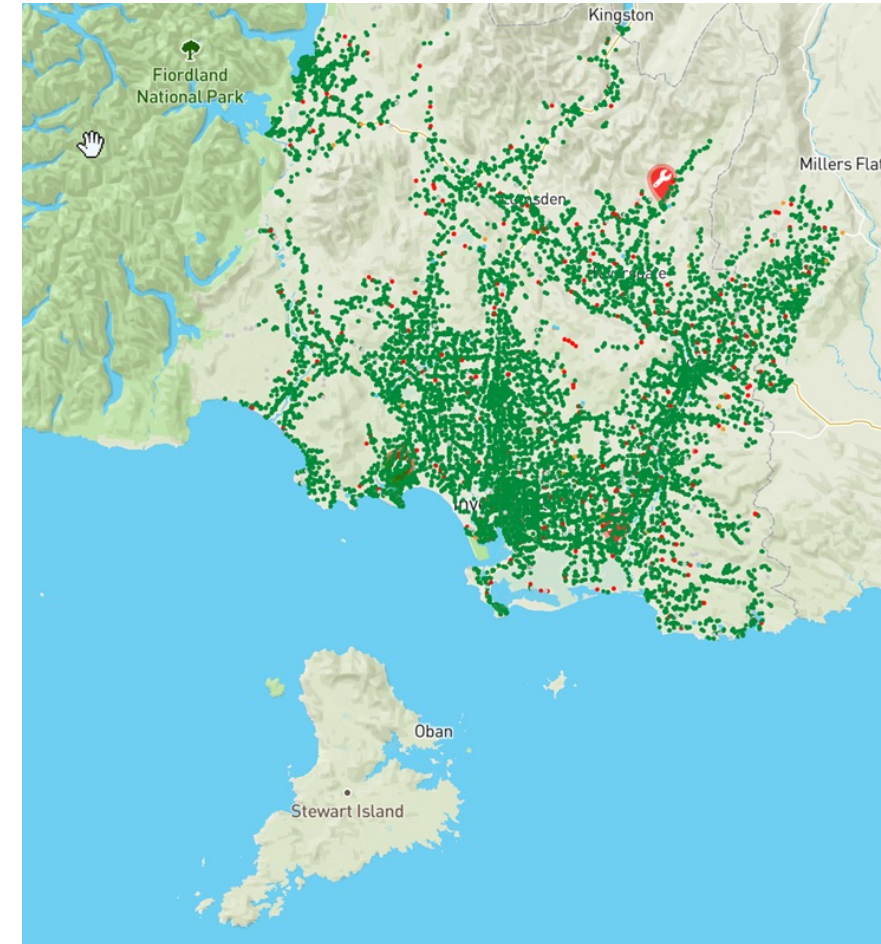
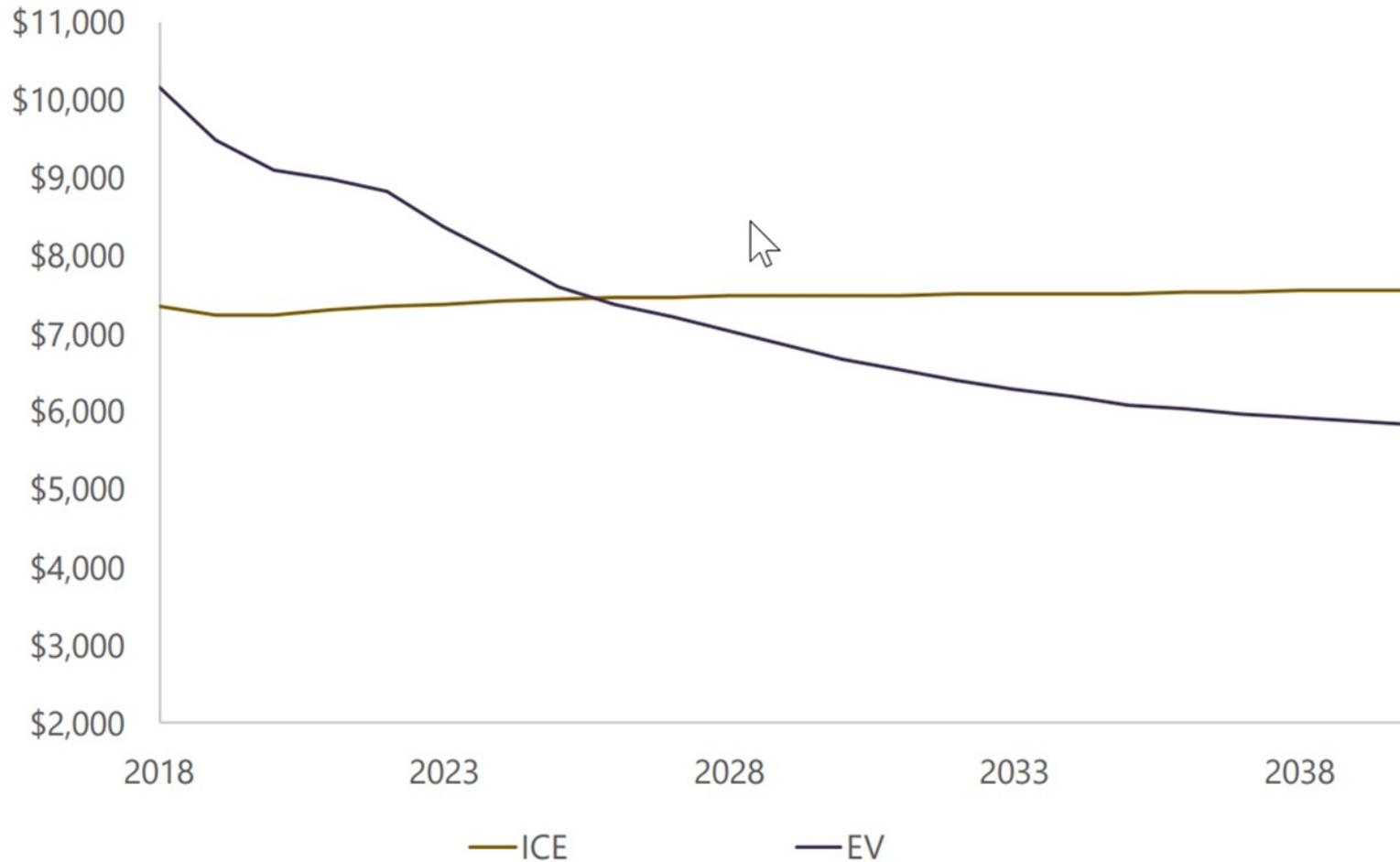


Source: Te Mauri Hiko Energy Futures, Transpower

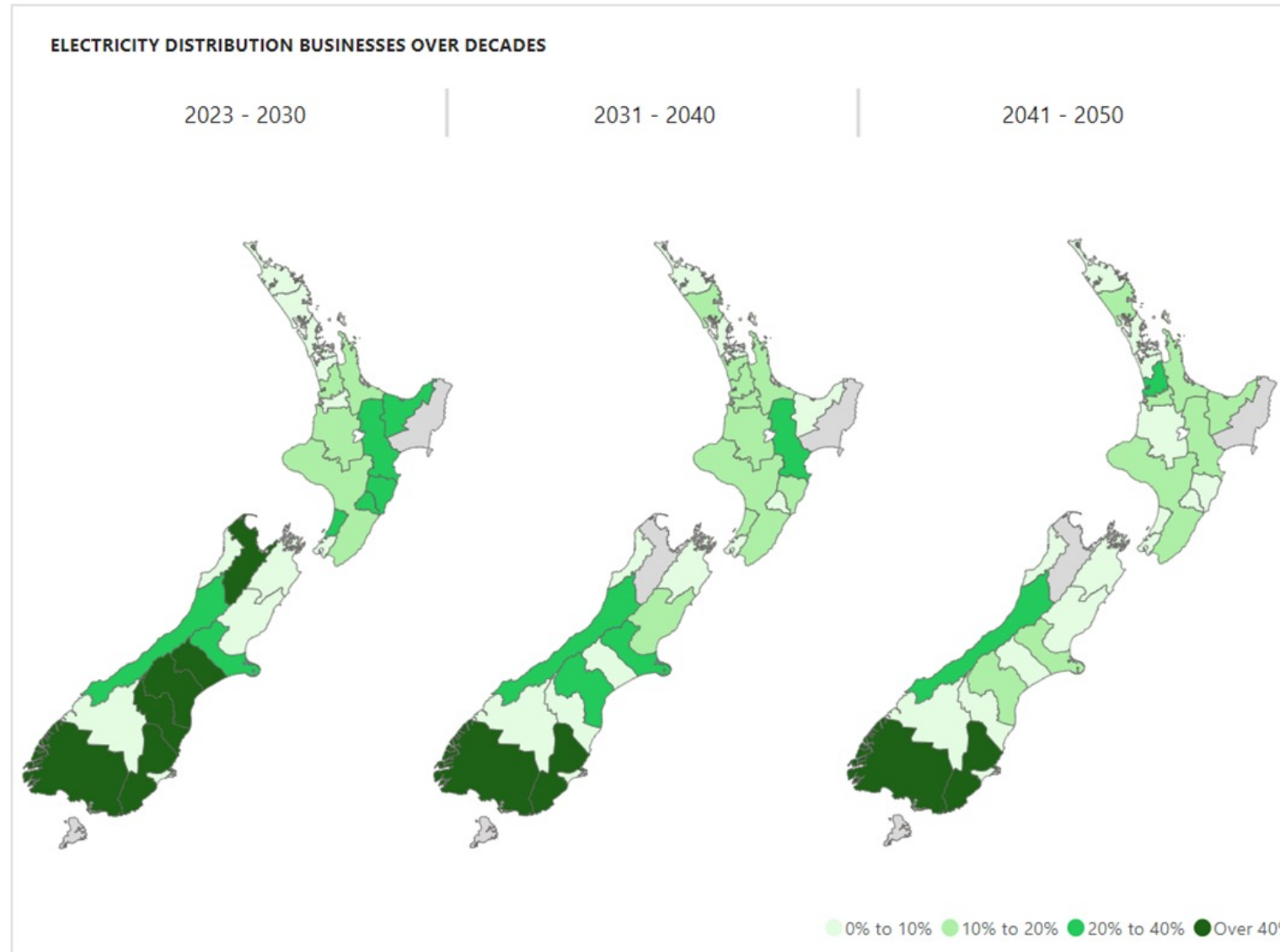
Transport Electrification



Transport Electrification – EV vs ICE

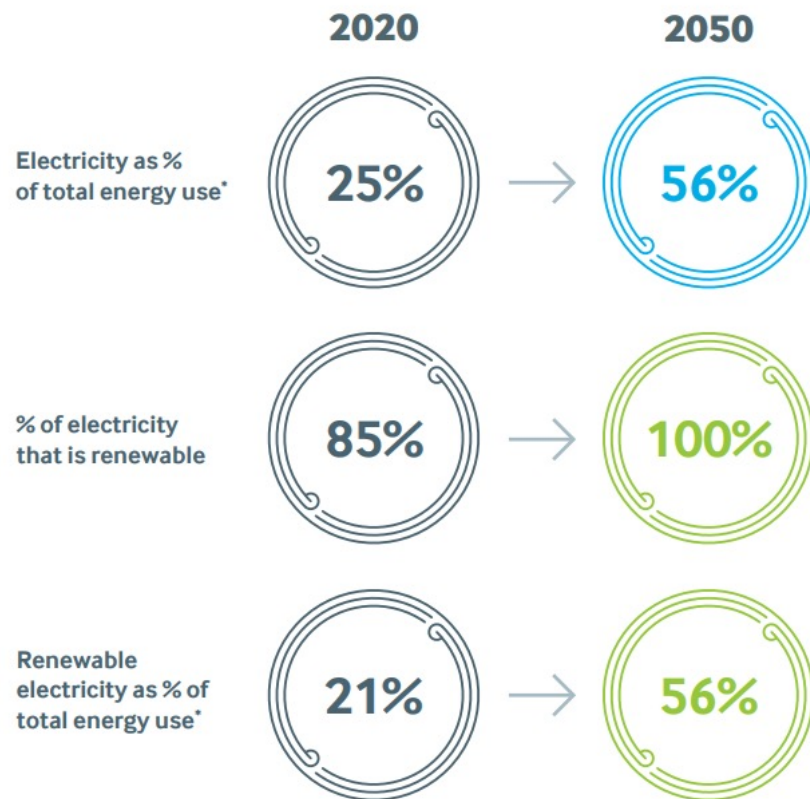


Industrial Process Heat Electrification



The opportunity from decarbonisation

New Zealand has made globally binding climate change commitments to reduce greenhouse gases - Net zero emissions 2050 target



Enablers

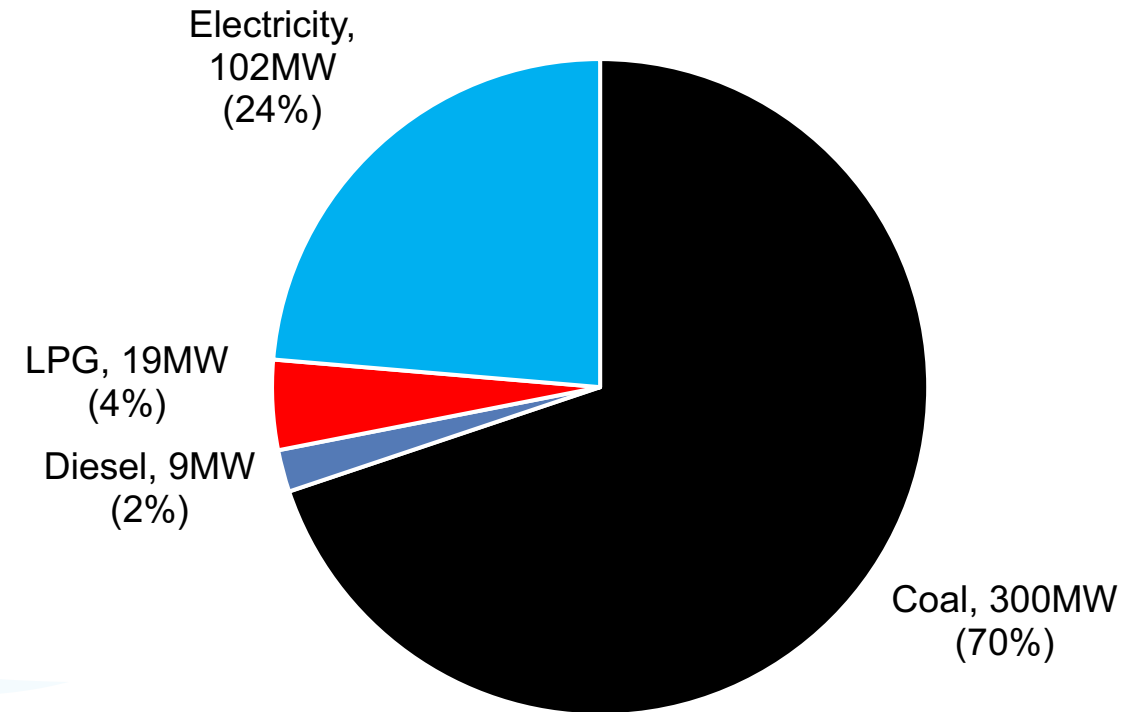
- Infrastructure investments: electricity distribution and transmission networks, generation, energy storage, smart energy management systems
- Emissions Trading Scheme
- Government Investment in Decarbonising Industry (GIDI) fund - \$650 million (2022-2025)

Source: Whakamana i Te Mauri Hiko, Transpower

Process heat decarbonisation in our region

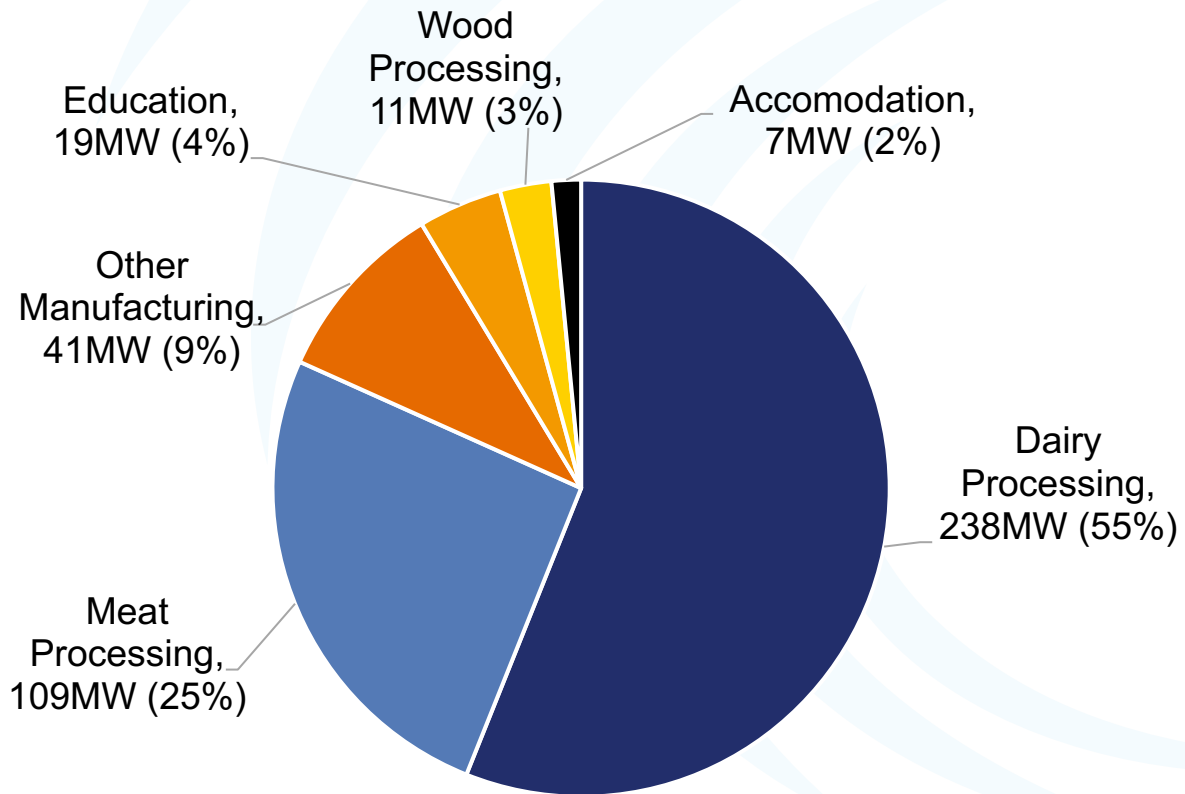
- Stocktake of 44 customers
- 10% of NZ manufacturing emissions
- 1.2% of all NZ greenhouse gas emissions
- 430 MW of electrical capacity
 - 190 MW high temp (>85°C)
 - 240 MW low temp (<85°C)

Boiler Process Heat Capacity by Fuel Type (MW)

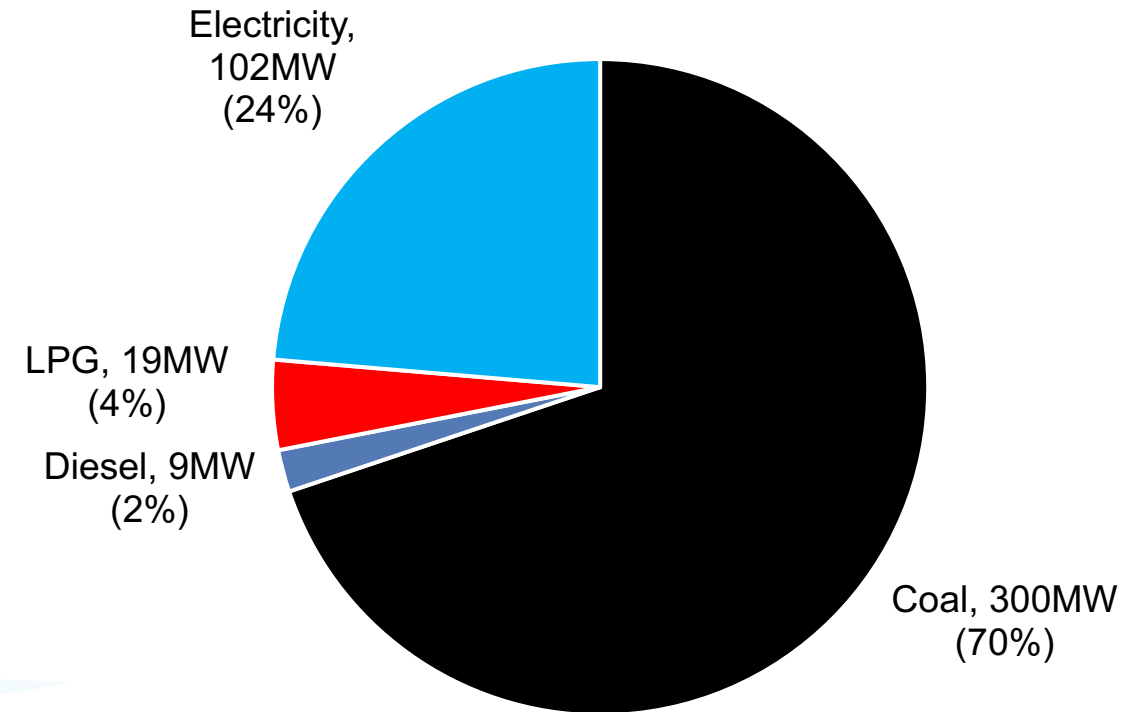


PowerNet region – what are the opportunities

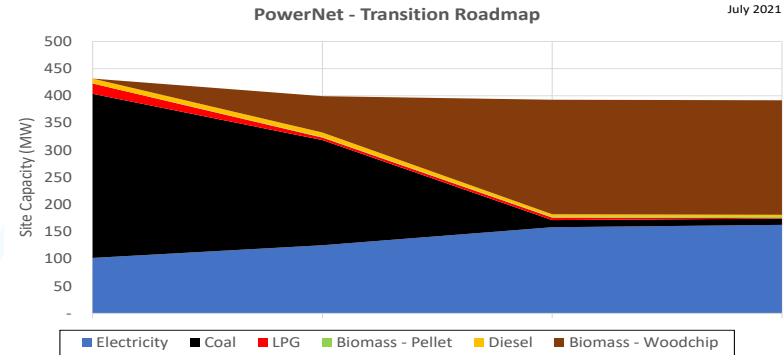
Boiler Process Heat Capacity by Sector (MW)



Boiler Process Heat Capacity by Fuel Type (MW)



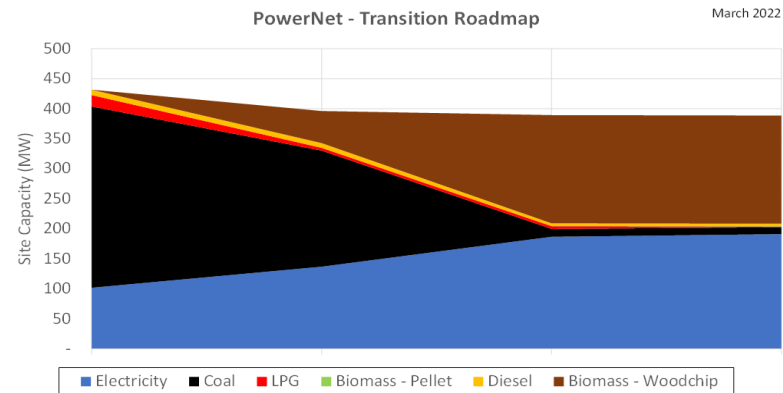
Decarbonisation Stocktake



Customer plans from 2021 through to 2035

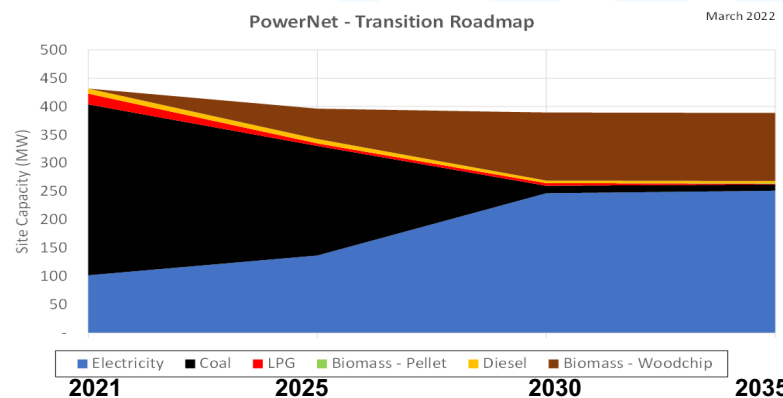
July 2021 detailed survey:

- biomass is the dominant renewable fuel of choice
- electricity is less favoured – perceived higher cost



March 2022 resurvey:

- views on biomass are changing
- biomass is becoming less favoured, concerns around availability and cost



March 2022 resurvey scenario:

- sensitivity analysis by PowerNet
- sites move to 50/50 biomass/electric conversion

Demand

- **Decarbonisation of process heat** around large milk and meat processing plants
 - North Makarewa to Awarua
 - Eastern Southland
- **Transport electrification** around urban areas initially, driven by socioeconomics
 - heavy vehicles – hydrogen has a role to play
- **New, large demand customers** (e.g. data centres) location decisions are typically driven around optimising infrastructure spend to support their business cases

Supply

- Generation development in the Southern region is driven by project economics nationally
- Generation projects will be developed by commercial developers based on best LRMC
- Southland should not target 'energy balance' for the sake of it
- Historically, hydro (Manapouri, Monowai) and wind (White Hill, Flat Hill)
- Significant wind resource potential, some advancing
 - Kaiwera Downs (Mercury), Slopedown (Contact), Jericho (Southern Generation)
- Eastern and Western Southland have significant wind potential
- Electricity network infrastructure planning and build focusing in these regions

Challenges

- Optimisation of electricity infrastructure build is the aim – ‘do it once, do it right’
- Different timing of when new infrastructure is required for different customers can be challenging
- Government Policy and Programmes impact on timing and decisions
- New Zealand’s historic approach of delivering infrastructure has been based on ‘Just In Time’ culture
- Regulatory settings (Commerce Commission, MBIE) for electricity infrastructure businesses incentivise the ‘Just In Time’ culture and disincentivise ‘Build Ahead’
- Households and Businesses don’t want to pay for infrastructure builds long before it is required
- However, this will need to change somewhat, given we are in transformational times
- Not all investments will get it exactly right
- As well as demand growth, need to cater for climate change and infrastructure resilience
- Who pays (ROI) for infrastructure that is “built ahead”?

Solutions

- Understanding customers' plans, both demand and supply, and working closely with them
new customers, decarbonising customers, customers growth plans and new generation projects
- Demand forecasting through technology, data analytics
- Demand side management and load shifting will be critical, so we don't build infrastructure for the uncontrolled peaks (e.g. off-peak EV charging, similar to hot water heating)
- Working in tandem with Transpower – linking national grid planning with local electricity distribution networks
- Changes to electricity industry regulatory settings to move growth capital spend out of the price control regime (Commerce Commission, MBIE)

Questions

