

### 14.8.3 Scenario 3: Medium Renewables

**Table 14-10: Generation Development for Medium Renewables Scenario**

Year	Name	Type	Size MW	Diversified Peak	Grid Injection Point
2010	Titokura	Wind	45	9	Whirinaki

This scenario's new generation connected at Whirinaki presents no issues.

### 14.8.4 Scenario 4 (Demand-side Participation)

**Table 14-11: Generation Development for Demand Side Participation Scenario**

Year	Name	Type	Size MW	Diversified Peak	Grid Injection Point
2012	Te Waka	Wind	102	20.4	Whirinaki

This scenario's new generation connected at Whirinaki presents no issues.

### 14.8.5 Scenario 5: High Gas discovery

This scenario presents no generation proposals in Hawke's Bay within the forecast period.

## 14.9 Hawke's Bay Generation Proposals and Opportunities

This section details relevant regional issues for selected generation proposals under investigation by developers which are in the public domain, or other generation opportunities. These are in addition to, or expand on, the five generation scenarios in the previous section.

The maximum generation that can be connected depends on several factors and usually falls within a range. See Chapter 2, Section 2.3 for more information. Generation developers should consult with Transpower at an early stage of their investigations to discuss connection issues. See the Transpower website for more information about connecting generation.<sup>88</sup>

### 14.9.1 Titokura and Hawke's Bay Wind Farms

The Titokura and Hawke's Bay wind farms are immediately adjacent to each other, approximately 27 km from Whirinaki, with a 220 kV double circuit line traversing the combined sites. The 220 kV line is the main supply to the Hawke's Bay area from Wairakei. The combined wind capacity may be up to approximately 330 MW.

There are no issues connecting this generation.

### 14.9.2 Cogeneration in Gisborne

An investigation is underway for 8-12 MW of cogeneration embedded behind Gisborne. The project has a five year timeframe.

### 14.9.3 Additional Generation Connected to the 110 kV Network

There are a number of potential wind and hydro generation prospects that could connect into one or more of the 110 kV circuits in the region.

The impact new generation has on circuit loading highly depends on the connection's location and configuration. For some connection locations and configurations,

<sup>88</sup> <http://www.transpower.co.nz/connecting-new-generation>

altering the hydro generation at Tuai removes the circuit overloads, although this may have adverse impacts on the energy market. To increase transmission capacity, the circuits would need to be reconducted and/or the Tuai–Fernhill circuit unbonded.

The Redclyffe 220/110 kV interconnecting transformer capacity may also need to be increased to avoid overloading when there is high generation and low load, as power flows from the 110 kV transmission network into the 220 kV transmission network.

See generation Scenario 1 for more information.

14.9.4 Maximum Generation Export

All generation in excess of the load is exported from the Hawke's Bay region over the 220 kV double circuit line to Wairakei. Each circuit is rated at 478/583 MVA (subject to replacing some substation equipment), and there is scope to thermally upgrade the circuits to approximately 690/760 MVA. The circuits are relatively long (137 km), and the reactive power they absorb when highly loaded may require reactive power sources such as capacitors.

The proposed Tauhara geothermal power station in the Central North Island region also connects to the 220 kV double-circuit line to Wairakei. This also forms part of the 'export limit' from Hawke's Bay region, although it would be easier to increase the transmission capacity between Tauhara and Wairakei given the proximity of these locations to each other (see Chapter 12, Section 12.9.3 for more information).

14.10 Future Hawke's Bay Transmission Configuration

Figure 14-6 shows the possible configuration of Hawke's Bay transmission in 2019, with new and upgraded assets shown in red.

Figure 14-6: Hawke's Bay Transmission Configuration in 2019

