



TRANSPOWER

# Tararua Enabling Renewables: Major Capex Proposal Long List Consultation

Attachment 2: Demand and Generation Scenarios

May 2026



# 1 Scenarios

The purpose of this Attachment is to outline the demand and generation scenarios we propose to use for our Tararua Enabling Renewables Major Capex Proposal (MCP) investigation. To apply the regulated Investment Test, we must make assumptions about future demand and generation. This Attachment also outlines our proposed assumptions and explains how they will be used in our analysis.

In addition to the assumptions indicated in this attachment, at the same time as this long list consultation we are also consulting on some proposed changes to the benefit-based charges (BBC) Assumptions Book v3.0 (Assumptions Book).<sup>1</sup> They relate mainly to more general, and less regionally specific, updates to our assumptions. More background on the Transmission Pricing Methodology (TPM) can be found in Attachment 1 (section 3.2) and in Attachment 3 we note some of these assumptions as they relate to Investment Test parameters.

## Approach to developing demand and generation scenarios

We evaluate investment options under a range of market development scenarios. A market development scenario is an internally consistent set of input assumptions that represents a plausible future of the electricity system. Using a range of scenarios ensures our economic analysis is robust to different possible demand and generation futures.

Each market development scenario includes assumptions about:

- future electricity demand, including assumptions regarding base demand, electric vehicle (EV) uptake, solar PV uptake, distributed energy storage, etc.
- existing, decommissioned and future new generation connected to the national grid
- capital and operating costs for existing and future new generation
- fuel availability for generation
- fuel and carbon costs for generation
- grid connected energy storage.

The Investment Test requires us to use the *market development scenarios* produced by the Ministry of Business, Innovation and Employment (MBIE) or reasonable variations of their scenarios. MBIE's scenarios are called the Electricity Demand and Generation Scenarios (EDGS)<sup>2</sup> and were last updated in July 2024. They consist of five scenarios:

- **Reference:** Current trends continue
- **Growth:** Accelerated economic growth
- **Constraint:** Slower economic growth
- **Environmental:** More ambitious national emissions reduction targets are set than in the Reference scenario
- **Innovation:** Increased rates of development and uptake of new technologies.

For this investigation, we consider our use of MBIE's 2024 EDGS by separately discussing:

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<sup>1</sup> [Assumptions book | Transpower](#)

<sup>2</sup> [Electricity Demand and Generation Scenarios \(EDGS\)](#)

- **Demand assumptions:** MBIE’s EDGS 2024 contains mostly national level demand assumptions that we have used to inform the regional and grid exit point (GXP) level forecasts presented below.
- **Generation assumptions:** we propose to base our analysis on the assumptions set out in the Assumptions Book v3.0. The Assumptions Book contains detailed assumptions about generation, including a list of new potential generation projects, assumptions about the decommissioning of plants, fuel cost assumptions, etc. In section 3 we have focused on the regional level generation assumptions that are most relevant to this project. We are consulting on some changes to the Assumptions Book v3.0 in tandem with this consultation. We request that feedback on our consultation on changes to the Assumptions Book v3.0 is provided as part of that consultation.

## 2 Demand assumptions

This section presents the Tararua and Wairarapa regional EDGS peak load forecast variations we intend to use for this investigation.

### 2.1 Regional forecasts and assumptions

Figures 1 and 2 present our proposed peak load and energy demand forecasts, respectively, for the Tararua and Wairarapa region (referred to below as the Tararua region) for each of the five EDGS scenarios. Table 1 and Table 2 present the corresponding winter and summer peak load forecasts in 2030, 2040 and 2050, broken down by the factors that are contributing to that growth:

- Base growth – this relates to the underlying growth in demand driven by factors such as population and economic growth
- Step loads – this relates to new demand that might appear in the future from new developments, such as new commercial and residential developments
- EV – this relates to the uptake of EVs and the “smartness” of their charging
- Solar – this relates to the uptake of residential and commercial solar photovoltaic panels
- Battery – this relates to the uptake of residential and commercial battery storage packs
- Industrial electrification – this relates to the electrification of industrial processes such as the conversion of coal and diesel boilers to electric boilers.

Each scenario has different assumptions relating to each of these factors that leads to the overall variation in the forecasts. Growth rates across the scenarios vary from 0.2% per year to 1.4% per year on average between 2026 and 2055.

For this investigation, we have focused on the Tararua and Wairarapa 110 kV network demand as it is most relevant for informing potential transmission constraints on existing lines associated with new generation connecting in the region. The network demand represents aggregate demand at the following GXPs: Upper Hutt (UHT), Greytown (GYT), Masterton (MST), Mangamaire (MGM),

Woodville (WDV), Dannevirke (DVK), and Waipawa (WPW). GXP level demand forecasts are provided in a spreadsheet attachment.

### Treatment of EDGS and regional refinements

We have used the 2024 EDGS as a basis for the forecasts but we have updated some aspects.

- At a national level we have attempted to align with MBIE's energy forecasts, but we have not attempted to align with MBIE's peak load forecasts. We have detailed models that model demand profiles at a GXP level that we consider better capture the impact of the scenarios on peak demand.
- We have also moderated the speed of process heat electrification in the early years to be more heavily informed by known potential heat electrification steps rather than on scenario level assumptions about the uptake of electrification. The rate of process electrification is particularly high in MBIE's Environmental and Innovation scenarios.
- MBIE's 2024 EDGS demand assumptions are mostly described at a national level. As such, we have allocated the national level assumptions to a regional and GXP level. We have also used updated historical and GXP level information and information from electricity lines businesses to inform the forecasts.
- In this way the forecasts are based on MBIE's 2024 EDGS but are variations of those scenarios.

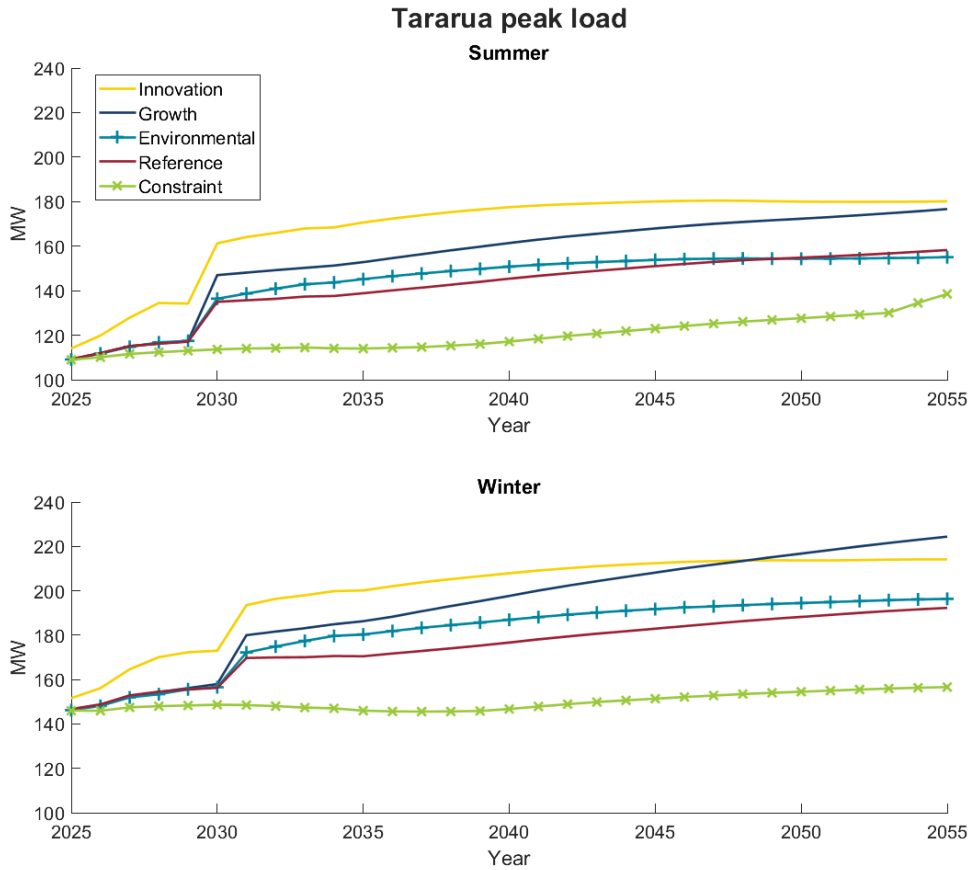


Figure 1: Tararua region peak load forecast, in MW<sup>3</sup>

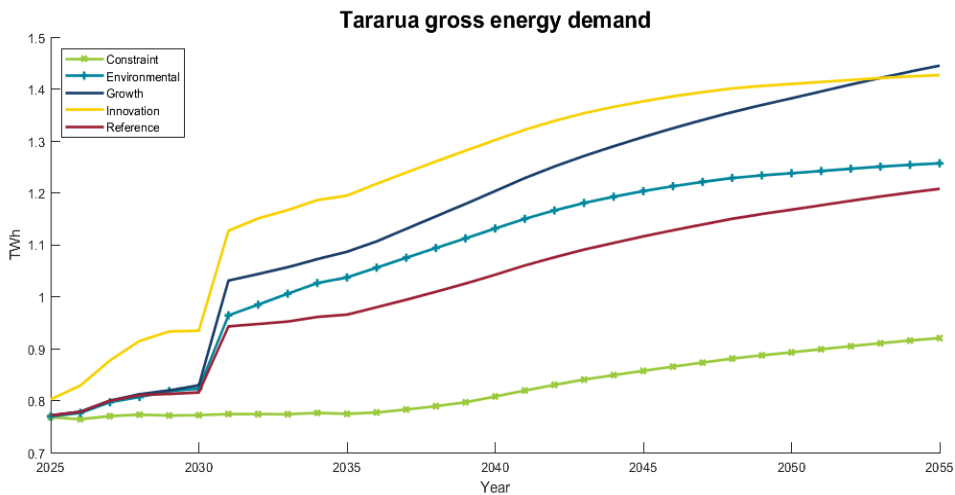


Figure 2: Tararua region gross energy demand forecast, in TWh

<sup>3</sup> Figures 1 and 3 show the peak load, net of embedded generation. The gross load values are represented in the accompanying tables and spreadsheet.

**Table 1: Tararua region winter peak demand forecast, in MW**

Scenarios	Year	Peak	Base	Step loads <sup>4</sup>	EV	Solar	Battery	Electrification
Innovation	2030	176.7	152.2	24.6	1.3	-0.8	-1.1	0.9
	2040	211.6	155.5	52.5	5.1	-1.9	-6.8	14.3
	2050	217.3	155.6	52.5	9.9	-2.3	-13.6	23.3
Growth	2030	161.6	154.6	7.5	1.6	-0.5	-1.1	0
	2040	201.3	167.6	36.6	6.7	-1.2	-5.1	5.8
	2050	220.4	176.0	36.6	13.7	-1.5	-8.6	13.8
Environmental	2030	160.2	152.5	7.5	1.3	-0.5	-1.1	1.0
	2040	190.6	158.7	26.2	4.8	-1.5	-6.7	15.0
	2050	198.1	158.8	26.2	9.6	-1.4	-13.5	25.0
Reference	2030	159.9	153.1	7.5	1.3	-1.1	-1.1	0
	2040	180.3	154.8	26.1	5.8	-4.5	-4.5	4.9
	2050	191.9	155.2	26.1	12.7	-6.8	-6.8	12.1
Constraint	2030	152.3	149.6	3.0	1.2	-0.3	-1.0	0
	2040	150.4	143.8	3.0	5.4	-0.7	-3.4	2.7
	2050	158.2	137.7	3.0	13.7	-0.7	-4.1	8.9

<sup>4</sup> We give the maximum demand of each step load instead of their demand at the time of the Tararua peak. This gives a clearer indication of the variation in step loads between scenarios.

**Table 2: Tararua region summer peak demand forecast, in MW**

Scenarios	Year	Peak	Base	Step loads <sup>5</sup>	EV	Solar	Battery	Electrification
Innovation	2030	164.3	112.1	24.9	1.9	-3.0	-0.8	0
	2040	180.5	114.9	60.4	8.2	-2.9	-5.7	13.3
	2050	183.0	111.9	60.4	14.1	-3.1	-11.1	19.7
Growth	2030	150.0	112.9	6.9	2.2	-1.9	-0.8	0
	2040	164.4	118.9	41.2	9.4	-2.2	-4.4	5.8
	2050	175.3	118.9	41.2	17.7	-2.5	-7.2	12.0
Environmental	2030	139.4	113.1	6.9	1.7	-1.8	-0.9	1.9
	2040	153.8	116.3	29.2	6.8	-2.2	-6.0	13.8
	2050	157.4	113.5	29.2	12.5	-2.3	-11.7	21.2
Reference	2030	138.0	113.3	6.9	1.8	-0.8	-0.8	0
	2040	148.4	115.7	29.2	8.0	-3.7	-3.7	4.9
	2050	157.8	113.8	29.2	16.1	-5.9	-6.0	10.6
Constraint	2030	116.6	114.7	3.1	1.5	-1.2	-0.8	0
	2040	120.1	112.6	3.1	6.9	-1.3	-3.0	2.8
	2050	130.6	108.7	3.1	16.5	-0.8	-3.6	7.9

<sup>5</sup> We give the maximum demand of each step load instead of their demand at the time of the Tararua peak. This gives a clearer indication of the variation in step loads between scenarios.

### 2.1.1 Step loads

Distribution companies have provided us with some information about new step loads expected in the Tararua and Wairarapa region. Table 3 lists the capacities of major new developments we have incorporated into our scenarios. We have varied the inclusion of step loads across the scenarios, with all of them being included in the Innovation scenario where a widespread electrification of industry is seen as most likely. In the other scenarios we have omitted some of the least likely step changes. This process adds to the diversity across our scenarios and reflects that not all new step loads may appear or be as large as expected.

Currently, our forecasts have been informed by the feedback we received from electricity lines businesses a year ago. We intend to update our forecasts to reflect more recent information, including information we receive as part of this consultation. We would welcome any information regarding significant new loads that could emerge in the region. We would be interested in the size and profile of the new load (e.g., when and how the new load would vary by day and season) as well as its location.

**Table 3: Step loads in the Tararua region by scenario<sup>6</sup>**

GXP	Total step loads at the end of 2030	Total step loads at the end of 2035
<b>UHT:</b> EV charging stations, residential, commercial & industrial developments	3.0, 3.0, 3.0, 3.0, 3.9	0, 0, 0, 0, 0
<b>GYT</b>	0, 0, 0, 0, 0	0, 0, 0, 0, 0
<b>MST:</b> Industrial and transport loads	0, 4.8, 4.8, 4.8, 6.8	0, 0, 0, 0, 0.3
<b>MGM:</b> Potential dairy factory electrification in 2031	0, 0, 0, 0, 0	0, 22, 22, 34, 34
<b>WDV:</b> Residential & commercial car chargers, residential connections	0, 0, 0, 0, 0.2	0, 0, 0, 0, 0
<b>DVK:</b> Residential & commercial car chargers, residential connections, gas to electric heating conversion: wool spinners, alliance, metal form	0.1, 0.7, 0.7, 0.7, 5.5	0, 0.4, 0.4, 0.4, 1
<b>WPW:</b> Heavy industry and residential steps	0, 0, 0, 0, 11.7	0, 0, 0, 0, 0

### 2.1.2 Prudent forecast

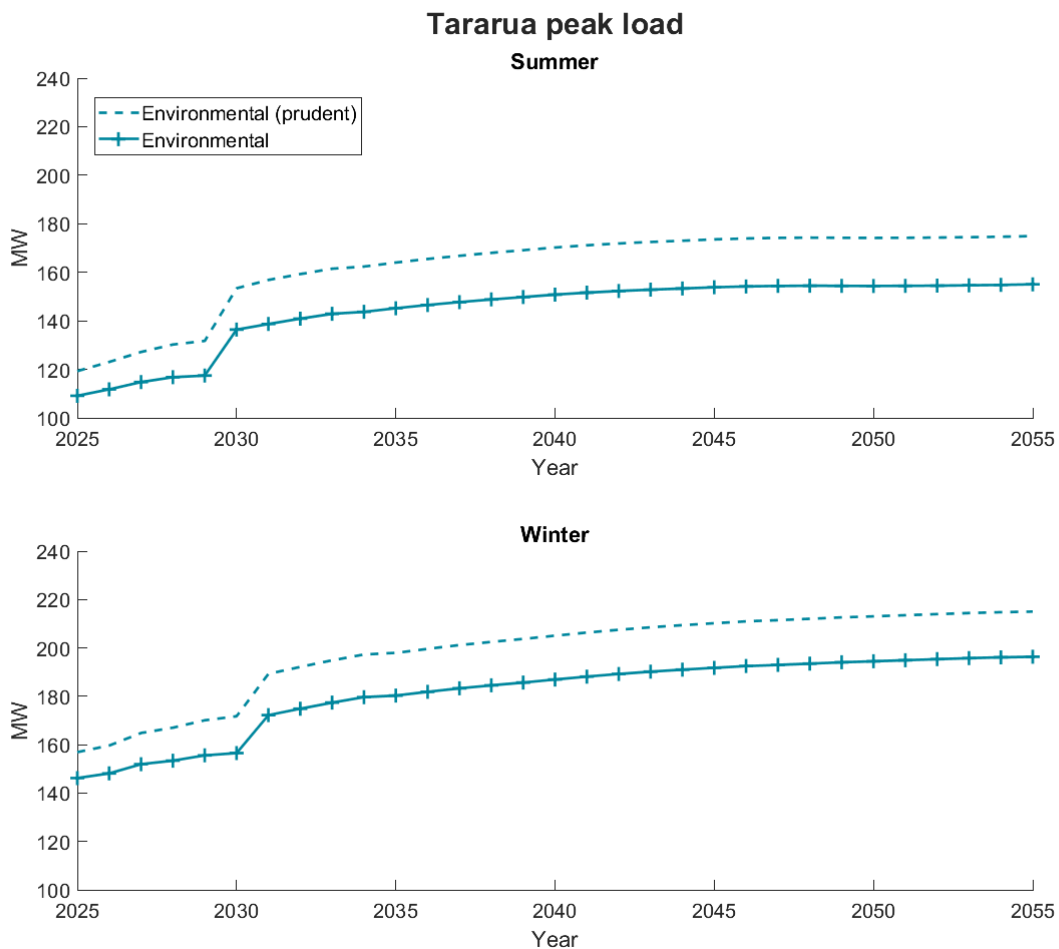
In addition to the ‘expected’ forecasts presented above, we have also produced a ‘prudent’ peak load forecast that is intended to be a reasonable upper bound for load growth. The five EDGS

<sup>6</sup> All load amounts are in MW, and the scenario order follows Constraint, Reference, Environmental, Growth, Innovation.

variations we have produced are ‘expected’ forecasts with a starting point based on trends from historical data, i.e., they assume an average starting point based on historical trend levels of growth.

Historical peaks do vary from year to year such that demand could be higher than indicated by the ‘expected’ starting value. For example, if there was a 1-in-10-year storm associated with very cold temperatures we would expect that demand could be significantly higher than for an average year. To account for this risk, we developed a prudent forecast by scaling the Environmental scenario using the ratio between the P90 and P50 probability of exceedance figures derived from regressions of historical demand. This scaling is applied over the first seven years of the forecast to reflect short-term variability in peak demand, after which the P90/P50 ratio is assumed to remain constant for the remainder of the forecast horizon. As such, the prudent forecast exhibits higher peak demand in the early years relative to the expected forecast, while maintaining the same underlying long-term growth trajectory.

We have chosen the Environmental scenario as the basis for calculating a prudent forecast as it assumes a high level of electrification and contains most new known step changes but excludes some of the more speculative new loads.



**Figure 3: Tararua region expected and prudent peak load forecast (Environmental scenario)<sup>7</sup>**

<sup>7</sup> Figures 1 and 3 show the peak load, net of embedded generation. The gross load values are represented in the accompanying tables and spreadsheet.

- Q7. Are you aware of any new industrial, commercial, residential or other developments that will significantly impact demand that are not mentioned above? If so, what are they?
- Q8. Do you consider our demand assumptions appropriate for this investigation? Please provide us with any information about developments in the region that could help inform our forecasts.

## 3 Generation assumptions

This section presents information relating to the generation assumptions that we intend to use for this project.

Generation assumptions apply to our:

- **OptGen Generation expansion plan model**, which determines the location, timing, and technology of new (modelled) generation.
- **SDDP wholesale market model**, which simulates the wholesale electricity market by calculating a least cost optimal dispatch over the study horizon.

We use these models to evaluate the net electricity market benefit of different investment options. Because this investigation is driven by the potential new renewable generators in the Tararua and Wairarapa region, a key focus is ensuring the regional generation pipeline assumptions used in modelling reflect the best available information. We would welcome any information regarding additional generation projects in the region, especially on project timing, location and preferred grid connection.

### 3.1 Assumptions Book v3.0

For generation assumptions we propose to base our analysis on the assumptions set out in the benefit-based charges (BBC) Assumptions Book v3.0.<sup>8</sup> We are consulting on changes to the Assumptions Book in tandem with this consultation. If changes are subsequently made to the Assumptions Book v3.0, it is most likely we will use the assumptions from the updated Assumptions Book.

We have already identified some variations we intend to apply from Assumptions Book v3.0. These relate directly to the region under investigation and are listed below:

- Dannevirke solar farm, Ongaonga/Wakarara solar farm, and Te Rere Hau wind farm repowering will be modelled as “committed”
- The proposed wind farms Mt Munro, Pahiatua, Puketoi and Castle Hill farms were reclassified from Manawatu to Wairarapa region and will be modelled with 47% capacity factor instead of 38%
- The maximum capacity and commissioning dates of the projects will be modelled as specified in Table 5 which indicates the most recent information and may vary from the Assumptions Book.

Q9. Do you agree with our proposal to use our BBC Assumptions Book v3.0 variations as the basis for our market scenarios for this investigation?

<sup>8</sup> [Assumptions Book | Transpower](#): The Assumptions Book contains inputs and assumptions we use to calculate benefit-based charges customer allocations under the transmission pricing methodology.

### 3.2 Regional Generation

Figure 4 presents the current Tararua and Wairarapa regional network.

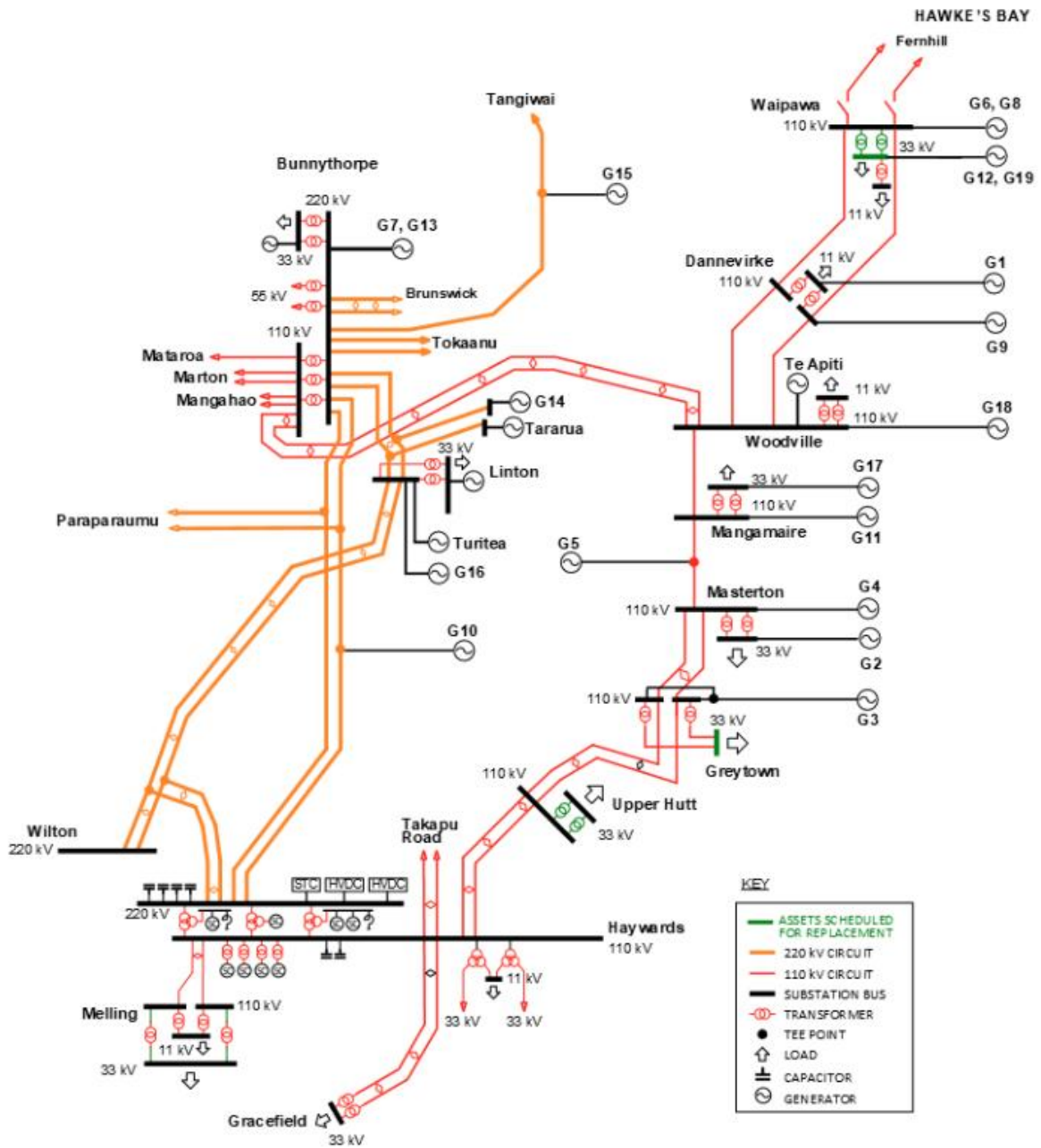


Figure 4: Tararua and Wairarapa region transmission network

### 3.2.1 Existing generation

Existing generation in the Tararua and Wairarapa region includes the generators listed in Table 4. We assume that these generators will continue to operate throughout the investigation period, including potential repowering of existing wind farms at the end of their technical life (Tararua, Te Āpiti, and Te Rere Hau). Te Rere Hau repowering is expected to be completed in 2029, delivering an increase of capacity to 170 MW.<sup>9</sup>

Table 4: summarises the plant locations and installed capacities. Note that some of the generators are not directly connected to the transmission grid but are embedded in the distribution grid. Smaller embedded generation below 10 MW is included in the GXP demand forecasts as a reduction in gross demand.

**Table 4: Existing Tararua and Wairarapa Generation**

Type	Modelled Transmission Node <sup>10</sup>	Modelled Generator Name	Installed Capacity (MW)
Wind	WIL220	Mill Creek	60
Wind	BPE220	Tararua 1	34
Wind	LTN220B	Tararua 2	34
Wind	TWC220	Tararua 3	93
Wind	WDV110	Te Āpiti	91
Wind	TWC220	Te Rere Hau	46
Wind	LTN220B	Turitea	221
Wind	WWD110	WestWind	143
Hydro	MHO110	Mangahao	42

### 3.2.2 Committed generation

In our generation expansion modelling we include ‘committed’ generation projects which we judge are likely to be commissioned. The timing of this build is exogenously specified in the generation expansion model based on publicly reported development schedules. The conditions by which a project is considered committed are specified in the Capex IM.

Based on these criteria, the committed generation projects we are aware of are the Dannevirke Solar Farm (Bright Fern Energy, 25 MW, G1) and the Ongaonga/Wakarara Solar Farm (Centralines, 26 MW, embedded), both of which will be commissioned this year.

<sup>9</sup> [Te Rere Hau Wind Farm | Meridian Energy](#)

<sup>10</sup> We model the AC transmission network down to 66 kV in SDDP. Generation which connects below this level is represented at a nearby model node. Hence, the node labels do not correspond to the actual nodes in the system and do not indicate the connection voltages of the respective plants.

### 3.2.3 Potential generation (generation stack)

The Tararua and Wairarapa region has significant potential for development of wind and solar (including solar + BESS) generation projects. There is considerable interest from established and prospective generators in the region, as demonstrated by the more than 1 GW of generation projects registered through Transpower's generation connections pipeline.<sup>11</sup>

Our generation stack is a list of candidate projects which are included in the generation expansion model. The model determines a capacity expansion plan from these candidate projects based on a least cost optimisation condition (i.e., the capacity expansion plan provides the lowest cost mix of generation to meet forecast demand).

Table 5 summarises the Tararua and Wairarapa candidate projects included in the stack for this investigation. Our full generation stack also includes candidate projects in other regions of New Zealand. Note that both the naming and connection node may differ from the information given in the Overview document, as the table here provides the terms used in our modelling and is in line with the information provided in the Assumptions Book. In some cases, we have associated the generation with the closest existing node, but if built these projects may be connected to a new node.

Our generation stack draws on the Generation Stack Report produced by Beca and Concept<sup>12</sup> and has been updated to include projects reflected in Transpower's connection pipeline. We welcome feedback on whether the candidate projects and assumptions we propose to use for the Tararua and Wairarapa region are appropriate for this investigation, including indicative project timing and any relevant project updates.

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<sup>11</sup> [Connection enquiry information | Transpower](#): 1 GW of generation projects are aiming to connect to the regional 110 kV grid; there are further large-scale projects aiming to connect to the 220 kV grid and early-stage projects that have not yet applied for a grid connection.

<sup>12</sup> Beca and Concept Consulting: [2025 Generation Stack Report](#)

**Table 5: Tararua and Wairarapa region generation stack<sup>13</sup> (with costs expressed in 2025 NZD values)**

Type	Name	Generator Reference <sup>14</sup>	Modelled Transmission Node <sup>15</sup>	Max Build Capacity (MW <sub>AC</sub> )	Capital cost if constructed in 2025 (\$/kW)	Fixed O&M costs if constructed in 2025 (\$/kW/yr)	Average Capacity Factor	Earliest Commissioning Year
BESS	BESS_BPE2h		BPE220	300	1,700	25.1		2027
BESS	BESS_WIL2h		WIL220	300	1,700	25.1		2027
Solar	S_BridgeStre	G12	WPW110A	43	1,825	27.4	24.2%	2031
Solar	S_Bunnythor1	G7	BPE110	300	1,900	27.4	23.3%	2027
Solar	S_Bunnythor2	G13	BPE110	525	1,975	27.4	23.3%	2029
Solar	S_Bunnythor3		BPE110	19	1,825	27.4	23.3%	2031
Solar	S_Carterton	G4	MST110	100	1,975	27.4	23.7%	2031
Solar	S_Dannevirik2	G9	DVK110A	72	1,975	27.4	23.3%	2027
Solar	S_Foxton0		MHO110	39	1,825	27.4	23.3%	2031
Solar	S_Foxton1	G10	MHO110	180	1,975	27.4	23.3%	2027
Solar	S_genWairara		MST110	200	1,975	27.4	23.7%	2031
Solar	S_Greytown0	G3	GYT110A	158	1,975	27.4	23.7%	2027
Solar	S_Greytown1		GYT110A	85	1,825	27.4	23.7%	2027
Solar	S_Kairanga		BPE110	20	1,825	27.4	23.3%	2031
Solar	S_Manawatu0		BPE110	17	1,825	27.4	23.3%	2031
Solar	S_Manawatu1		BPE110	17	1,825	27.4	23.3%	2031
Solar	S_Manawatu2		BPE110	100	1,975	27.4	23.3%	2031
Solar	S_Marton0		MTN110A	21	1,975	27.4	23.3%	2027

<sup>13</sup> Selected plant details vary from Assumptions Book v3 as consulted to capture most recent information.

<sup>14</sup> See Figure 4. The plants without generator reference are from a wider generation stack outside the Transpower connection pipeline.

<sup>15</sup> We model the AC transmission network down to 66 kV in SDDP. Generation which connects below this level is represented at a nearby model node, which does not necessarily align with the targeted grid connection. The project names given in this table are in accordance with our model setup and the BBC Assumptions Book.

Type	Name	Generator Reference <sup>14</sup>	Modelled Transmission Node <sup>15</sup>	Max Build Capacity (MW <sub>ac</sub> )	Capital cost if constructed in 2025 (\$/kW)	Fixed O&M costs if constructed in 2025 (\$/kW/yr)	Average Capacity Factor	Earliest Commissioning Year
Solar	S_Marton1		MTN110A	35	1,825	27.4	23.3%	2027
Solar	S_Marton2		MTN110A	74	1,975	27.4	23.3%	2029
Solar	S_Marton3		MTN110A	84	1,975	27.4	23.3%	2031
Solar	S_Masterton2	G2	MST110	91	1,975	27.4	23.7%	2027
Solar	S_Ongaonga1	G6	WPW110A	100	1,975	27.4	24.2%	2027
Solar	S_Ongaonga2	G8	WPW110A	100	1,975	27.4	24.2%	2027
Solar	S_TararuaTar	G17	MGM110	40	1,900	27.4	24.2%	2029
Wind	W_CastleHill	G18	MGM110	300	3,777	43.5	47.0%	2030
Wind	W_genRManaw1		BPE110	200	3,657	43.5	38.0%	2031
Wind	W_genRManaw2		BPE110	200	3,657	43.5	38.0%	2031
Wind	W_genRWairar		MST110	200	3,657	43.5	47.0%	2031
Wind	W_Huriwaka	G15	BPE110	300	3,594	43.5	38.0%	2028
Wind	W_Manawatu		BPE110	200	3,419	43.5	38.0%	2031
Wind	W_Motorimu		LTN220B	168	3,461	43.5	38.0%	2031
Wind	W_MtMunro	G5	MGM110	90	3,468	43.5	47.0%	2028
Wind	W_Otupaefarm		BPE110	400	3,400	43.5	38.0%	2030
Wind	W_Pahiatua	G11	MGM110	50	3,281	43.5	47.0%	2028
Wind	W_Puketoi	G16	LTN220B	230	3,753	43.5	47.0%	2030
Wind	W_Ratahiwi		BPE110	90	3,668	43.5	38.0%	2031
Wind	W_Santoft		MTN110A	250	3,247	43.5	38.0%	2031

### 3.2.4 Generation modelling approach

For this investigation, we are using our modelling to understand the interaction between transmission and generation development. For each grid development plan, we will determine a generation expansion plan which satisfies demand for each selected EDGS variation. The expansion plan is influenced by the assumptions around generation capital costs, ongoing costs, fuel and emissions costs. Critically, we are seeking information on generation development in the region to help inform the assumptions we make.

This MCP investigation aims to evaluate the 'unlocking effect' of transmission investments on generation projects—specifically, to determine how transmission constraints may restrict connection and dispatch, and the potential impact of increased regional transmission capacity. To examine the interdependencies between grid and generation investments, we will analyse prospective generation expansion plans in conjunction with proposed grid development plans, comparing changes in dispatch, curtailment and emissions outcomes as well as the corresponding electricity market benefits relative to the costs associated with each plan.

To ensure credible model outcomes regarding the share of generation in the Tararua and Wairarapa region compared to the rest of the country, and to get to some high/low sensitivities, the analysis will be highly model-driven. However, we may apply some manual interventions to the optimised model outcome based on consultation feedback. This should allow us to analyse the tipping points for unlocking generation investments, in other words, what generation scenario would need to materialise to make the various transmission investments economic.

- Q10. Are you developing a generation project in the Tararua and Wairarapa area? At what stage are you in developing it (e.g. investigating, consenting, in design, financial investment decision approved, in construction)? If there was sufficient transmission capacity, when would you expect your project to be built?
- Q11. Are you aware of any additional generation projects in or near the Tararua and Wairarapa region that could materially affect our modelling for this investigation?
- Q12. Do you consider our generation assumptions (including assumed capacities, costs and capacity factors) appropriate for this investigation?

## 3.3 Transmission network

A simplified representation of the AC grid is also included in our generation expansion and generation dispatch modelling. Key aspects of our AC grid model include:

- Only circuits 66 kV and above are included
- We “gross up” demand to account for losses when determining either our least cost generation expansion plans or generation dispatch as described in the Assumptions Book v3.0. Losses on circuits are estimated as a post processing step (after the model has been run), based on dispatch circuit flows, when estimating benefits

- Circuit constraints are only considered for those areas of the grid relevant to this investigation; circuit constraints include thermal limits and pre-contingent overload limits.

For the HVDC link we will align with the draft Assumptions Book v3.0 and assume:

- The approval of our NGZP1 MCP which will see the installation of additional reactive support equipment (including a STATCOM) by June 2028. This will increase transfer limits to 1,200 MW north and 950 MW south
- The installation of a fourth submarine cable from 2032. This will increase transfer limits to 1,400 MW north and 950 MW south.

Q13. What aspects of the regional transmission development plan would be most important for your generation projects (e.g., timing certainty, connection configuration)?

