

At a Glance Transpower's Amended North Island Grid Upgrade Proposal

- Who Is Transpower?** Transpower is the state-owned enterprise that owns and operates the National Grid – or high voltage transmission network – that carries electricity around the country.
- Why is a new transmission line needed in the upper North Island?** To meet the growing demand for electricity in the upper North Island and to ensure that homes and workplaces have a secure electricity supply, new investment is required.
- There are six transmission lines running north to Auckland. The last of these was built in the 1960s. In the intervening 40 years, the population of the upper North Island has more than doubled and electricity use has more than trebled.
- What has been the process to date?**
- 2003:** Transpower began investigating the need for a major upgrade of the transmission network in the upper North Island.
- 2004:** Transpower announced in October 2004 it was seeking a route for a proposed 400 kilovolt transmission line from Whakamaru, north of Lake Taupo, to Otahuhu in South Auckland.
- 2005:** A detailed funding proposal was submitted to the Electricity Commission in May and was resubmitted as part of a wider Grid Upgrade Plan in September 2005.
- 2006:** In April the Electricity Commission issued a draft no decision to Transpower's proposal. In May Transpower suspended its application, to allow discussions to be held with the Commission about the best way to proceed. In October Transpower submitted an amended proposal.

THE AMENDED PROPOSAL – THE DETAILS

- An overhead transmission line from Whakamaru to near the South Auckland urban boundary, which will be 400 kV capable but will operate initially at 220 kV.
- A transition station near the South Auckland urban boundary, where the overhead line will connect to underground cables.
- An underground 220 kV cable section from the transition station to Pakuranga substation.
- A second underground cable section to Otahuhu substation at a future date.
- The voltage of the overhead line to be raised from 220 kV to 400 kV at a future date.
- Estimated cost of \$683 million (in 2006 dollars, including contingencies, interest during construction and foreign exchange risk management)

- What changes have been made to the original proposal?**
- By operating the overhead line initially at 220 kV, expenditure on costly transformer equipment can be delayed.
 - Triplex conductor (a bundle of three wires) rather than duplex conductor (a bundle of two wires) will be used to maximise the capacity of the line.
 - The first underground cable section will connect to Pakuranga substation rather than Otahuhu, to provide greater diversity of supply into Auckland.

What other options were considered?

Since the beginning of the original project, a wide range of alternatives have been looked at including:

- The use of HVDC technology
- The use of new conductor types
- Different voltages including 500 kV, 330 kV and 220 kV
- Undergrounding more of the route
- Different termination points
- Generation and other non-transmission options.

In recent months ten specific transmission options were assessed, which were then reduced to a short-list of four. The four options are:

- 1 A new 220 kV transmission line from Whakamaru to Pakuranga (with an underground cable section in South Auckland), with a second 220 kV line between Whakamaru and Otahuhu built by 2031.
- 2 A new 400 kV transmission line, operating initially at 220 kV, with a cable section to Pakuranga and at a later date, to Otahuhu substation.
- 3 Duplex (replace the single conductor with twin conductor) the existing Whakamaru to Otahuhu A and B lines and connect them to Pakuranga via an underground cable, build a new 220 kV line by 2020 and a second 220 kV line by 2035.
- 4 Duplex the existing lines using a new high-temperature conductor, and build a new 220 kV line by 2029.

THE AMENDED PROPOSAL – WHY WAS IT CHOSEN?

Option 2 was chosen because it represents;

- The most cost effective option
- The best option for promoting renewable generation
- The least ‘land hungry’ option (no additional new line is required in the next 35 years)
- The most strategic option (it fits in with the long term development plan for the National Grid)
- The best option for promoting confidence to business investors

What about new generation?

In developing its proposal, Transpower has taken into account the possibility of new generation in Auckland. Transpower has used the Electricity Commission’s future scenarios, which envisage new generation in the region as early as 2010.

All of the major generators have repeatedly stated that new generation in the Auckland area is not an alternative to transmission investment. Long term security of supply for the upper North Island requires new investment in both transmission and generation.

What happens now?

The Electricity Commission is seeking submissions on the amended proposal and intends to make a draft decision around the end of the year, with a final decision expected around May 2007.

Transpower will consult with those communities potentially affected by the South Auckland transition station and the underground cable route through to Pakuranga substation.