

Presentation to 8th Annual New Zealand Energy Summit

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TRANSPOWER



Content

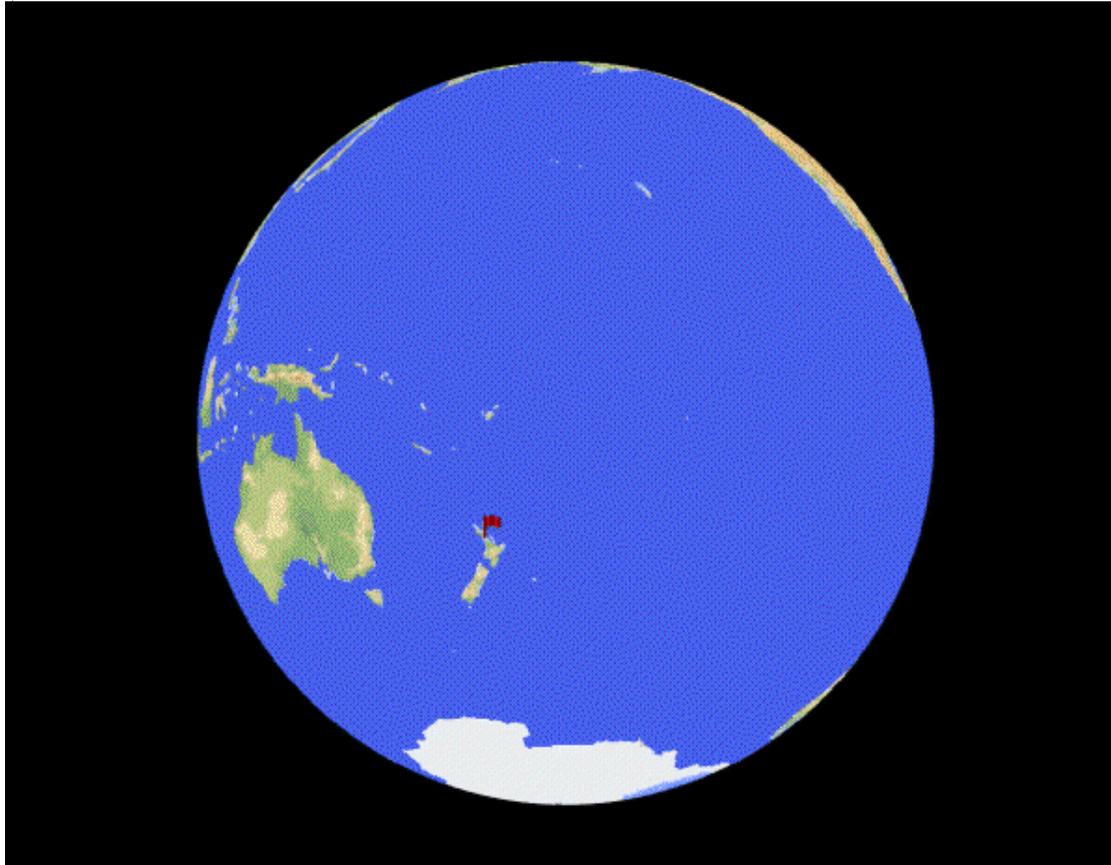
- The importance of transmission to New Zealand
- Tools available to Transpower in maintaining and developing its network to meet increased demand
- Planning the network
- Funding new investments
- Role of the regulator
- Moving to the holy grail of transmission investment



Why is transmission important to New Zealand?



Transmission is important to New Zealand because....



- We don't connect to any other country.
- We have to meet all our own electricity needs.
- Geography dictates that our network will always be linear.



Transmission is important to New Zealand because... (cont)

- We live in places like this:

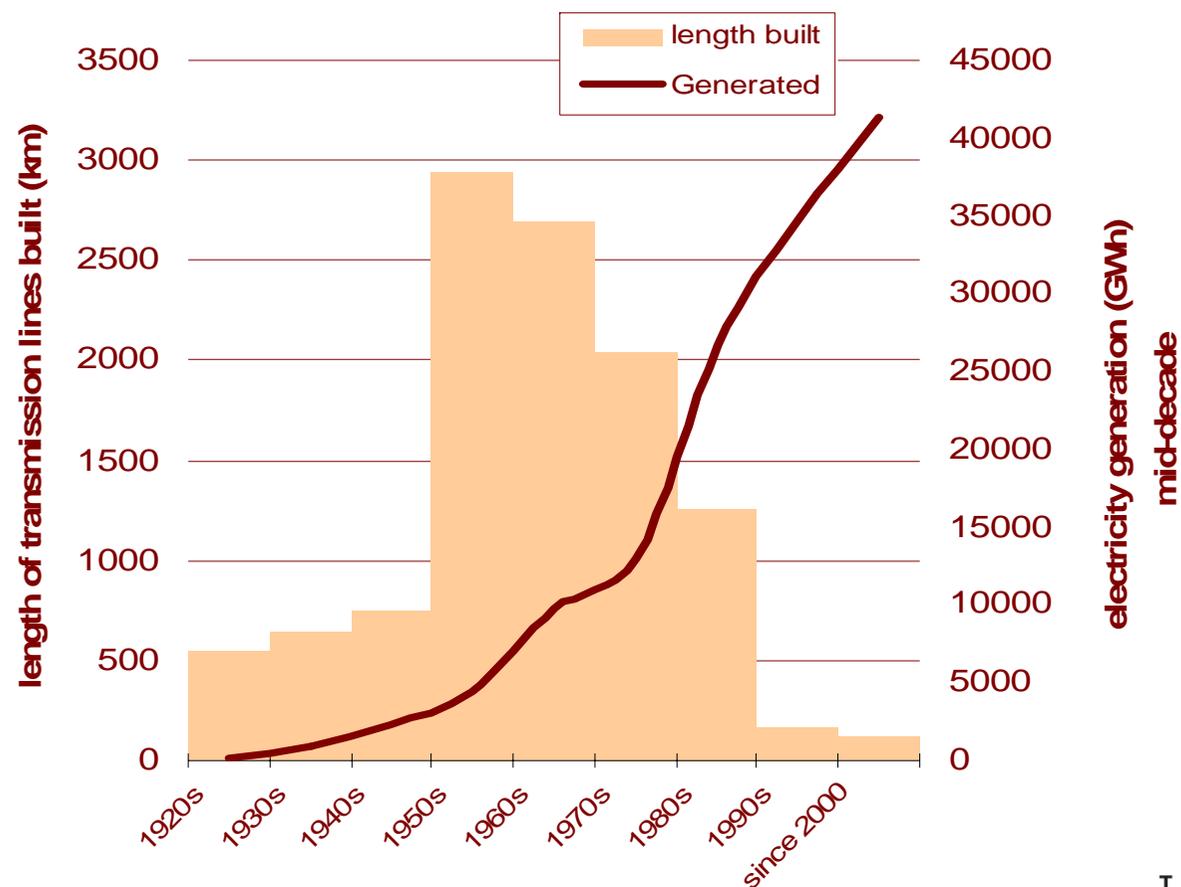


- ...and **not** in places like this:



Transmission is important to New Zealand because...(cont)

- We're running out of the capacity provided by the significant investment of the 50s and 60s:



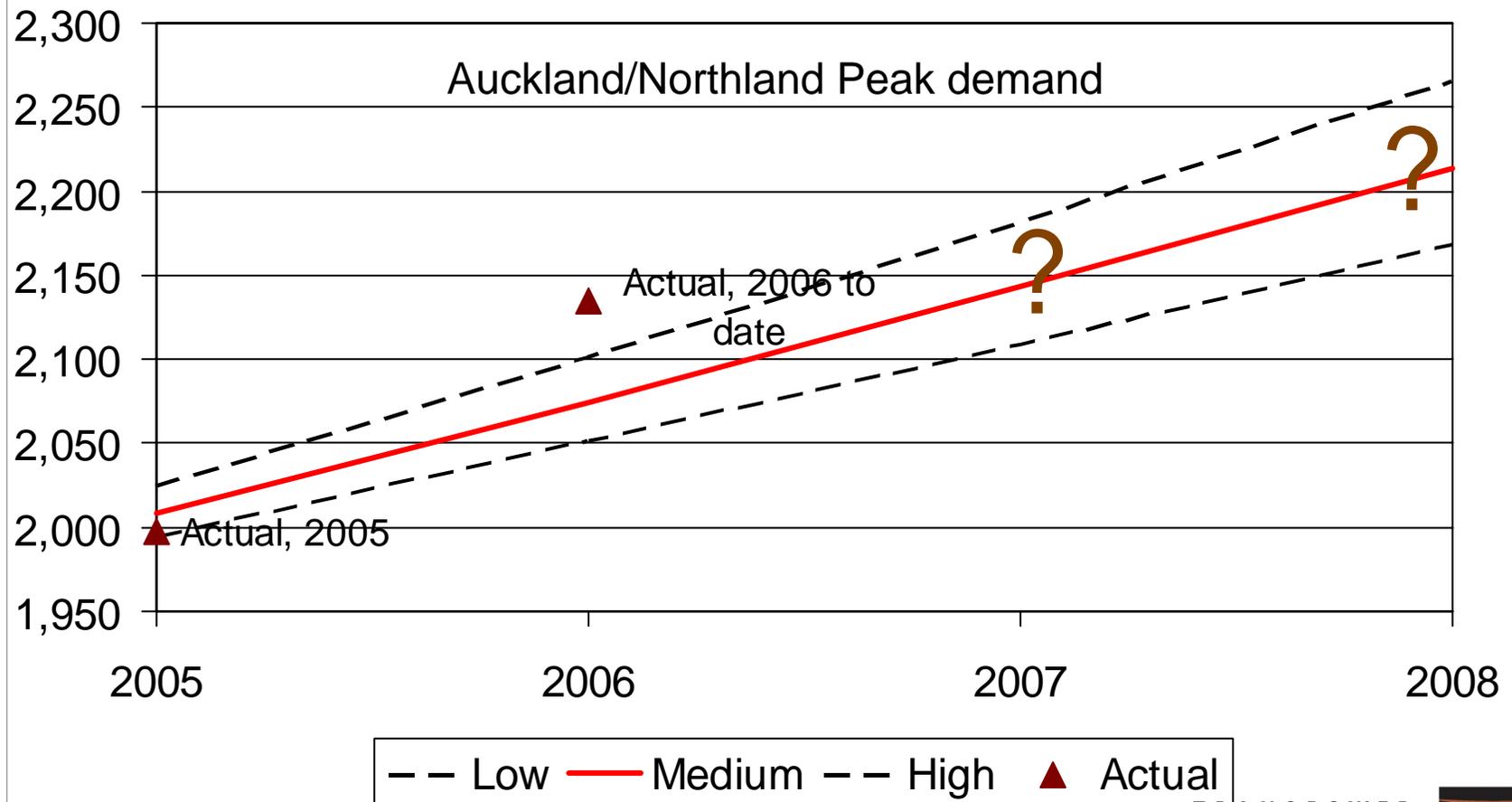
Transmission is important to New Zealand because...(cont)

- Our demand keeps growing:

2006 - A Winter of Records (so far)		
<i>Item</i>	<i>New Record (all in 2006)</i>	<i>% increase on last record</i>
Total New Zealand Demand	6748 MW	3.6%
North Island Demand	4505 MW	2.7%
South Island Demand	2252 MW	1.3%
Auckland/Northland Demand	2133 MW	6.8%
Wellington Demand	646 MW	6.8%
Christchurch and upper South Island Demand	1081 MW	4.0%

Transmission is important to New Zealand because...(cont)

- Sometimes our demand is in excess of what has been forecast:



Transmission is important to New Zealand because...(cont)

- The Government has indicated a preference for renewable forms of energy to be exploited in its terms of reference for a new energy strategy.
- This presents some challenges:
 - Economic wind energy does not normally coincide with areas of demand (Wellington is an exception).
 - Economic hydro energy almost certainly does not coincide with areas of demand.
 - Economic geothermal energy does not coincide with areas of demand.
 - Renewable fuel sources can't be transported to areas of demand.
- Only a robust transmission grid provides a level playing field for new renewable energy generation options against fossil fuelled alternatives.



Summary of why transmission is important

- New Zealand's system is isolated from other power systems.
- Populated areas are remote from areas of generation.
- Our existing grid is nearing capacity.
- Renewable generation options require a robust transmission grid.
- Demand continues to grow – unabated.



What tools does Transpower use in maintaining and developing its network to meet increased demand?



The Transmission Toolbox

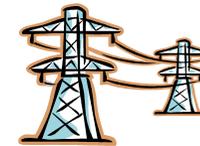
Maintenance



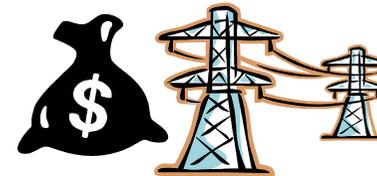
Customer Needs



Tactical Upgrades



Step Change in Investment



Applying the transmission tools

Upper North Island Example

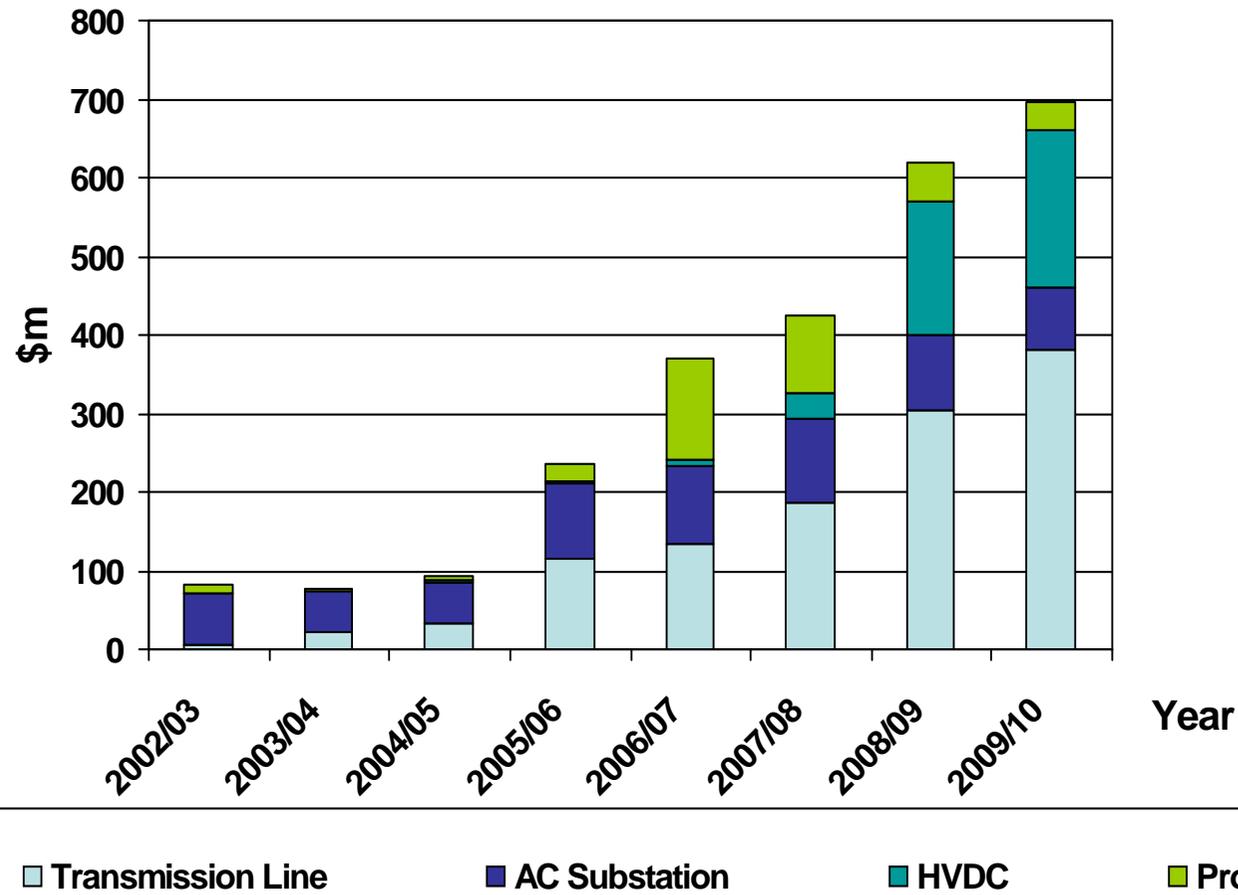
Maintenance 	<ul style="list-style-type: none">▪ Ongoing – over \$25 million in upper North Island this year.
Customer needs 	<ul style="list-style-type: none">▪ New Grid Exit Point (GXP) at Te Kowhai.▪ Decommissioning of Western Road GXP.
Tactical Upgrades 	<ul style="list-style-type: none">▪ Thermal upgrade of the 110 kV Hamilton-Waihou circuits.▪ Thermal upgrade of the 220 kV Huntly – Otahuhu 1 circuit.▪ Thermal upgrade of the 220 kV Otahuhu – Penrose 5&6 circuits.▪ New capacitors at Penrose and Hepburn Rd.
Step Change in Investment 	<ul style="list-style-type: none">▪ Proposed 400 kV transmission line from Otahuhu to Whakamaru.

How are transmission upgrades funded?



Planned Grid Investment over next 4 years

Grid Capital Expenditure



Transmission Line

AC Substation

HVDC

Property

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Transpower New Zealand Ltd • The National Grid

Transpower Investments

- Are set out in an investment proposal that may form part of a formal Grid Upgrade Plan to the regulator.
- Transpower must obtain approval from the regulator for any such investment. Approval means:
 - Transpower can include the project cost in its rated asset base.
 - Transpower can recover the costs of the project through its regulated rate of return.



To what standard does Transpower plan its network?



Planning Parameters

- The system is generally planned so that the loss of a transmission or generation element will not cause loss of supply to end users. (N-1)
- For major load centres, like Auckland, the system is planned so that the loss of a transmission **and** a generation element will not cause loss of supply to end users. (N-g-1)
- Beyond the issue of security of supply Transpower
 - follows “good electricity industry practice” for new investments as required by Part F of the Rules; and
 - is a reasonable and prudent operator of the power system as required by Part C of the Rules.



“Good Electricity Industry Practice”

- Encompasses:
 - Planning
 - Commissioning
 - Operating
 - Maintaining
 - Decommissioning

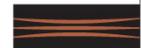
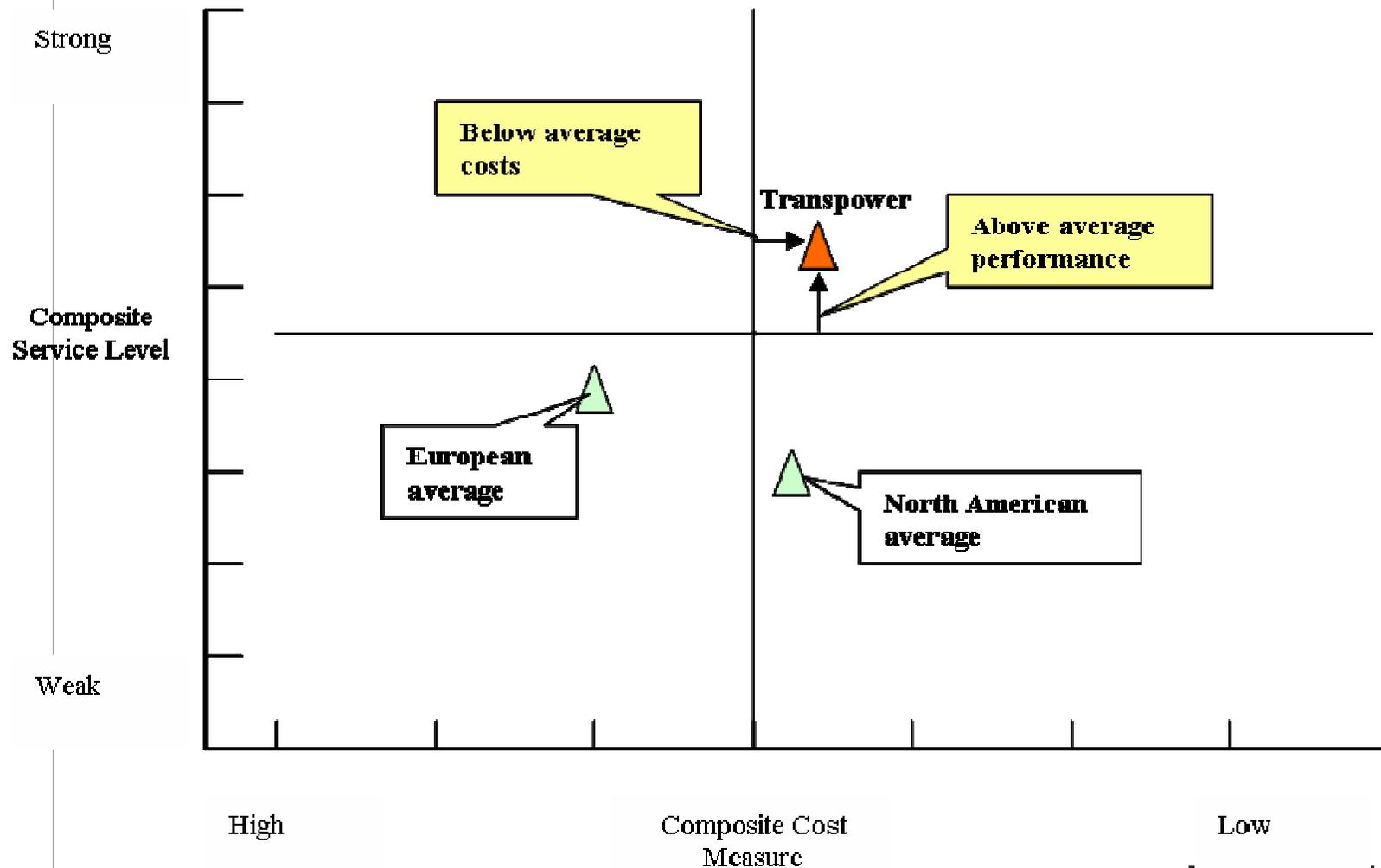
Including the consideration of the wider social, economic and environmental impacts.

- Requires constant referral to international best practice.



We measure up well internationally...

Overall Composite Benchmark – Weighted Average



“Reasonable and Prudent” System Operator

- The New Zealand power system is co-ordinated by Transpower in its role as System Operator (contracted to the Electricity Commission).
- The System Operator is to act reasonably and prudently in:
 - avoiding cascade failure;
 - maintaining frequency;
 - limiting fluctuations on the system; and
 - maintaining other standards.
- The rules governing the System Operator accept that at some times a reasonable and prudent System Operator will need to instruct lines companies to shed load.



Where does the regulator fit in?



Where does the regulator fit in?

- Because Transpower is a monopoly provider of transmission services, a regulator is needed to review that:
 - Terms and charges for using the transmission network are fair and reasonable.
 - Solutions are not over-designed or over-built.
 - Transpower's proposals are economically sound.
- Since the suspension of the 400 kV proposal, Transpower has been working closely with the regulator to ensure a workable framework for assessing future investment proposals.



Moving to the “holy grail” of transmission investment

- Ideally we want an environment where:
 - Transmission development is signalled well ahead of when it is needed through robust and transparent planning methodology;
 - The electricity industry and business generally can plan with confidence around the well signalled plans of investment and a robust and transparent process for approving them;
 - Regulatory oversight enhances the investment decisions of the transmission company.
 - Investment is timely.
 - Clear responsibilities and accountabilities.
- Do we have that here.....?



Moving to the “holy grail” of transmission investment (cont)

- We're heading in the right direction:
 - Transpower is incrementally improving its planning processes.
 - Transpower is being more transparent about its investment plans (publication of Annual Planning Report this year forecasting 10 years of issues and possible solutions).
 - Regulatory processes becoming more enshrined in Transpower's project paths (e.g. RFIs, consideration of alternatives, preparation of proposals).
 - The Commission has now approved some \$200 million of Transpower's investments representing about 30 projects.
 - Both Transpower and the Commission continuing to learn from the inaugural application of the Grid Investment Test to a major investment (the 400 kV proposal).



Final Comments

- New Zealand will always need a robust transmission network that provides future certainty for investors.
- The network needs to be upgraded to meet increasing demand for power across the country.
- Transpower has signalled the need for about \$4 billion of investment over the next ten years.
- The processes for planning, assessing and approving transmission investments are improving all the time.

