LOWER SOUTH ISLAND RELIABILITY STAKEHOLDER FORUM

Venue: Stadium Southland, Invercargill
Date: 05 May 2010 at 10:30a.m.

Agenda

Introduction and Welcome
Brief Recap
Technical summary
Economic analysis and results
Next steps

Minutes

Greetings from Roger Paterson

- Welcome to the Transpower forum - a further step in consultation with stakeholders before a proposal is put to the EC to improve reliability in the southern region.

Introduction by John Clarke

- Thanks to organisers and stakeholders
- Recap on the process of consultation by Transpower
  - ~ Demand forecast and long list of options late 2008
  - ~ Consultation on this early 2009
  - ~ Progress update July 2009
- Demand forecast by Covec in summer 2008-09 indicated business confidence was high leading to prudent and mean forecast with large differences reflecting uncertainty
- Changes to prudent forecast
  - ~ Lowered by deferring growth at Gore by 2 years
  - ~ Defining trigger point for different study when combined load of Brydone and Edendale exceeds 48 MW
  - ~ Tiwai prudent demand to increase by 5MW per annum from 2015 to 2024 up to a maximum of 690 MW
  - ~ Assumed minimum generation at Manapouri to 250 MW daily average
  - ~ Reduces need for increased 220 kV capacity in short term
- Recap of the scope of investigations
  - ~ In scope
    - o Roxburgh and Invercargill interconnectors
    - o Roxburgh and south
    - o 220 kV and 110 kV
  - ~ Not in scope
    - o Clyde-Roxburgh and Clutha-Waitaki lines (part of LSI Renewables project – Electricity Commission – notice of intention to approve $190m upgrade)
    - o HWB substation including interconnector (separate study next year)

Nick Mulgan – recap of needs and options

- Load growth on 110 kV network requires the 110 kV to be reinforced
- Load growth in region requires increased core grid transmission to N-1 standard
- Bulk transfer need (220 kV)
  - ~ Capacity for southward flow under low hydro generation (dry year)
  - ~ Constrained by Roxburgh–Invercargill circuits
  - ~ Roxburgh–Invercargill capacity must exceed (Tiwai + NMA + Invercargill) load minus Manapouri generation
- Local Southland need (110 kV)
  - ~ Increasing demand – dairy conversions
  - ~ 110 kV and 220 kV systems in parallel
    - Currently 110 kV system limits the 220 kV capacity
  - ~ Voltage issues – Gore and Balclutha
  - ~ Non-core grid and therefore must be justified economically

Alex Joosten – Details of short list options

- Gore 110/33 kV supply transformers have insufficient capacity to meet forecast load growth and will be replaced
  - ~ Due to some options requiring transformers to be relocated within Gore substation there are some development synergies between replacement of Gore transformers and LSI reliability project
- 3 options – see presentation for details
  - ~ Option 0 – base case (N reliability on 110 kV)
  - ~ Option 7 – Build everything 2012-1015
  - ~ Option 8 – Staged development of option 7 utilising all available existing 110 kV network capacity for as long as possible
- Options 7 and 8 require new line section from Three Mile Hill-North Makarewa 220 kV circuit to Gore substation. There are options for configuration (220 kV or 110 kV) and location of this new line.
  - ~ If proposal to EC is approved, the line route will be determined following consultation with councils and community taking into account environmental, property, social and engineering constraints

Nick Mulgan – Economic analysis results

- Grid Investment Test
  - ~ Have to justify business case
  - ~ This is still a work in progress
  - ~ Uses Net Present Value (NPV) calculation
    - Compare future costs/benefits with costs now
    - Each year reduce value by 7% - value in delaying spending
    - Trade-off between grid build and unserved energy
- Unserved Energy
  - ~ Cost of Unserved energy = Value of Lost Load x Expected Unserved Energy
  - ~ VoLL = $20k/MWh except where we have clear evidence otherwise
  - ~ EUE = (Statistical) Expectation of Unserved Energy
  - ~ Average predicted power cuts

- Indicative GIT results

$M NPV to 2010	Option 0 base case	Option 7 ASAP	Option 8 staged
Capital	$ 30	$ 50	$ 45
$USE normal operation	$ 2	$ -	$ -
$USE maintenance	$ 3	$ -	$ 0.3
Total	$ 35	$ 50	$ 45.3

- Values are estimates only – to be revised
- Yet to include
  - ~ Variation in transmission losses across options (small)
  - ~ Operations and Maintenance (small)
  - ~ Market benefits
  - ~ Intangibles
- Next Steps
  - ~ To Transpower board May 2010
  - ~ Letter to stakeholders and potentially affected landowners May 2010
  - ~ Communication of preferred option May 2010
  - ~ Submission to Electricity Commission end May 2010
  - ~ Dependent on extent of stakeholder consultation required
  - ~ Electricity Commission approval may take 3 months
- Stakeholder engagement
  - ~ NOW - Opportunity for feedback - will feed this info the selection of the preferred solution:
    - Email vivien.winch@transpower.co.nz. or
    - Complete and mail the feedback form
  - ~ Formal Electricity Commission consultation process

Thanks from Transpower for input as stakeholders. Can all feedback on the project please be submitted by 15th May so Transpower can get submission to the Electricity Commission by end of May

Meeting closed at 12:50.

Questions and Answers raised during the meeting

Steve Canny, Venture Southland: Why had the prudent forecast been lowered?
Response: Covec report showed loads occurring now which haven't eventuated, due to the world financial situation. These growths have not been removed but have been deferred for 2 years in the prudent forecast.

Steve Canny, Venture Southland: If there was a hypothetical new industry needing 100 MW by 2013-14, how would Transpower respond – given that robust supply would be key?

Response: Would depend on where the load was centered. Would most likely be okay if connected on 220 kV network, may initially be on N-security during low Manapouri generation if the load increase occurred before the grid upgrade. Connection into the 110 kV would not be economic because, as it is currently configured, the lines are not rated for 100 MW and thus would require upgrading such as reconductoring. 20-30 MW would be the difficult question as there is not sufficient capacity for this in the current 110 kV network, but expensive to connect this at 220 kV.

Lindsay McLennan – Delta Utility Services: question with regards to understanding the Base Case (option 0) – in this case is the 110 kV network 'built' to N security? And can we quantify the number of hours at risk on n-security?

Response: the hours at risk would be during peak time, but also dependent on a second variable which is generation, particularly Manapouri. The issue is not as simple as elsewhere on the grid. The existing system has n-1 security, but as the load increases due to load growth the system will increasingly become more N.

Lindsay McLennan – Delta Utility Services: will it be taken into account?

Response: yes and it is important, the hours at risk will have a substantial effect. Most likely to have issues when Manapouri Generation is low or during maintenance outages. We are looking at intangible benefits such as versatility and consumer confidence. It is a significant contributor towards the benefits with material impact on the economics and we will continue to look at it more closely and rigorously

Lindsay McLennan – Delta Utility Services: Regarding the options to build everything now versus deferring - What is the impact on current network constraints (i.e. Roxburgh and Invercargill interconnecting transformers)?

Response: we have to replace the ICTs at Roxburgh and Invercargill and this is included in all scenarios so that the capacity of the 110 kV network can be maximized and deliver more technical flexibility. The ICTs at Halfway Bush will be covered in a separate study which will be dependent on the final proposal for the LSI Reliability GUP.

Boyd Brinsdon - Contact Energy: Contact is planning to migrate 1 generator from 110 kV Roxburgh bus to 220 kV Roxburgh bus during its next financial year (July 2010 – 2011). This would leave 2 generators on Roxburgh 110 kV bus – one of which is in a run-to-failure state (after meeting note: the generator would be repaired). How does this affect plans?

Response: This can only strengthen need to reinforce 110 kV network as there is lessening ability to rely on generation into 110 kV network.

Question – where are we with the submission?

Response – every endeavour is being made to submit by the end of May 2010

Question – do we have a preferred option?

Response – Not yet, we would like to put option 8 forward but need to be able to justify it, and economically it looks marginal.

Rowan Maxwell – Genesis Energy: Can we assume on the 220 kV circuit that everything is ok if the circuit with the series caps trips?

Response: yes. Biggest issue is contingency planning for an extended Invercargill-Roxburgh 220 kV outage.

Shirley Ferguson – Wind Prospect: Is the series capacitor (which will prevent other connections) going to be connected on the Northern or Southern NMA-TMH circuit?

Response: It is currently intended that Series capacitors will be on the Southern NMA-TMH circuit because the Northern circuit is closest to Gore substation and will be the one used to connect into 110 kV network at Gore.

Clive Bull – Strata Consulting: Is the location of Gore substation fixed - why not relocate it to the 220 kV line?

Response: Location of Gore substation is fixed for two reasons. Firstly if Gore substation is shifted to beside the 220 kV NMA-TMH line, there is limited ability to connect into and reinforce the 110 kV network. Secondly, PowerNet's distribution lines come into the existing Gore substation and to build new 33 kV lines from the new Gore substation to the new Gore substation will be expensive, will need a very large quad conductor with structures that are a serious feature on the landscape – i.e. may have much more visual impact than a new 110 kV or 220 kV transmission line.

Clive Bull – Strata Energy Consulting: What impact does the current Electricity Commission review of the Value of Lost Load have?

Response: If Grid Investment Test economic assessment results are close for the options, Transpower will apply a sensitivity analysis for the VoLL if it seems the VoLL is under represented.

Clive Bull – Strata Energy Consulting: interesting timing issue – Transpower are racing to get the proposal to the EC now, but could gain a $20k to $40k difference in VoLL if we wait?

Response: It is unlikely that the EC will reset the VoLL in the short term and we don't have the time to wait. Which is why it is important for us to know what else, significant, is in the region where $20k is not an actual accurate representation.

Steve Canny, Venture Southland: Is there a provision made in demand forecast to account for energy source change as opposed to embedded coal fired generation as substitution is likely to occur under the Emissions Trading Scheme?

Response: Yes – Forecasts take into account the shift away from solid fuel heaters to electrical (heatpump) heating. There is also some analysis looking at the mix of sources of electricity generation and there is some expectation of a shift away from carbon emitting cogeneration/ heat sources for industry.