

Accessing South Island peaking capacity – a proposed thought experiment

IAG, Feb 2010

- HAMI allocation of HVDC charge may be preventing investment in South Island peaking capacity
- Up to 300 MW of low-cost South Island peaking capacity?
 - Incremental gains from existing plant
 - Design of new plant
- But incremental capacity would attract very high exposure to HVDC charge (in \$/MWh terms)
- *“This potential barrier to investment in low cost incremental generation capacity should be fully investigated”*

EC focus is on investment signals

- HAMI has effects on both operation and investment of generation
 - EC reasonably sanguine about operational effects
 - HAMI waivers during GENs
 - Scarcity pricing
 - Transmission upgrades
- Stronger price signals to use existing capability*
- More concern about investment

Proposed thought experiment

- Assume X MW of low-cost South Island peaking capacity at \$Y/MW
 - Modification of existing hydro schemes
 - Higher-capacity versions of new hydro schemes
- Run Generation Expansion Model (GEM) with:
 - HAMI allocation of HVDC charge
 - per-MWh allocation of HVDC charge to South Island generators
 - No HVDC charge
- Which run produces the most efficient outcome, in terms of overall system costs?

Feeds into TPTG process

- Pricing structure to be covered in Stage 2 of Transmission Pricing Review
- Various options
 - *“Actual MWh*
 - *ToU MWh*
 - *Peak offtakes/injections*
 - *Nameplate or contracted MW”*
- If transmission charges based on peak injection can produce inefficiencies, this is relevant information

Recent TPTG work

- March 2010 – GEM study compared ‘postage stamp’ to locational transmission pricing
 - Relatively little difference in system benefit
- April 2010 – follow up
 - Firmed up some numbers, but no change to overall conclusion
 - Proposed a new study – “focus on reliability investments”
 - Proposed a new study – “back to 1996”
- Question remains open – should there be locational transmission pricing?
- *This proposed thought experiment is more low-level*
 - *Focus in on the effects of the way DC costs are allocated*

What is this low cost capacity??

- Have discussed with Trustpower, Meridian and Contact
 - Civil, mechanical, electrical enhancements to existing hydro schemes
 - Different designs for new hydro schemes (lower CF)
- Challenges
 - Resource consent
 - Transmission (AC/DC)
 - Uncertainty about scarcity pricing
 - Cost-benefit
 - *HAMI*
- Some opportunities have already been missed
 - Others can still be accessed
- Seeking hard data re. options, costs and benefits
 - Will be kept confidential
 - Should be arriving any day now

Potential benefits that could be accessed

- Reduced need for North Island peaking capacity
- Deferred transmission investment
- Reduced spill
- ...?

Could we access this benefit under the current framework, by providing HAMI waivers where the alternative would be to spill?

North Island equivalents

- The North Island has no HAMI allocation of HVDC charge
- So... are opportunities for cheap capacity enhancements being taken up?
- Contact: 'yes'
 - Otahuhu B, Taranaki CC, Ohaaki, Stratford peakers

(Cannot be attributed only to absence of HAMI charge, but...)