

# Upper South Island Security

Summer 10/11 Planning Update  
10<sup>th</sup> December 2010



SYSTEM OPERATOR



# USI Forum

- Purpose
  - Update USI participants on information and studies completed to date for Summer 10/11.
- Approach
  - Gathered information about summer security issues for Upper South Island.
  - Assumptions made for peak load, power factor, and regional generation availability.
  - Voltage stability limits reviewed across a range of scenarios with currently available information, limits indicative only.
  - Determine whether a contingency plan is required.



# Summer 10/11 – Scenarios Studied

- Potential scenarios considered for Summer 10/11:
  - All equipment in service
  - HBK unavailable
  - Low regional generation and HBK unavailable
  - TKA/TKB generator outages and HBK unavailable

Scenario	TKB	TKA	HBK
1	2 x 80 MW	1 x 25 MW	Available
2	2 x 80 MW	1 x 25 MW	Out
3	1 x 80 MW	1 x 12.5 MW	Out
4	Out	Out	Out



# Summer 10/11 – Assumptions

- Generation:

Station	Generation (MW)
Arnold	3
Argyle	6
Cobb	22
Coleridge	28
Highbank	25
Kumara	5
Tekapo A	25
Tekapo B	160
<b>Total</b>	<b>274</b>



# Summer 10/11 – Assumptions

- Load:

	2010	2011	%growth	2011	%growth
	Peak Actual** (MW)	Expected (MW)	from 2010 Actual	Prudent (MW)	from 2010 Actual
Alpine Energy*	93.5	93.8	0.3%	107.1	14.5%
Buller Networks	11.7	17.7	51.3%	18.4	57.3%
Electricity Ash	89.9	140.0	55.7%	143.0	59.1%
Mainpower	83.5	101.0	21.0%	104.0	24.6%
Marlborough Lines	56.2	60.0	6.8%	65.0	15.7%
Network Tasman	119.7	138.0	15.3%	141.0	17.8%
Orion Group	489.6	540.0	10.3%	580.0	18.5%
Westpower	39.0	44.0	12.8%	47.0	20.5%
<b>Total Zone 3</b>	<b>983.1</b>	<b>1134.5</b>	<b>15.4%</b>	<b>1205.5</b>	<b>22.6%</b>

- No load control assumed.
- 2010 USI Peak recorded on 29 March at 08:10.
- 2011 Expected/Prudent network loads supplied by distributors.
- \* Alpine Energy load does not include STU loadings.
- \*\* Actual peaks as recorded concurrent to the Zone 3 2010 peak – individual peaks for network companies is likely to be higher.



# Summer 10/11 – Assumptions

- Zone 3 peak power factor of 0.987
- Islington dynamic reactive support
  - SVC3: -50/+59 MVar capacity
  - SVC9: +150/-75 MVar capacity
- Kikiwa STATCOMs
  - 2 x 20MVar
- HVDC = 200 MW North
- Rest of the South Island modelled for GZ loads as per summer peak





# Summer 10/11 – Outages

- Notified transmission outages (as per POCP 10/12/10) to be managed through the normal outage planning process.

Outage Block	Start	End	Type	Planning Status
ABY_TIM_1	14/02/2011 07:00	18/02/2011 18:00	daily	Confirmed
ABY_TKA_1	14/03/2011 07:00	18/03/2011 18:00	daily	Tentative
ASB_BRY_1	28/03/2011 07:30	1/04/2011 17:30	continuous	Tentative
ASB_ISL_1	7/03/2011 07:00	11/03/2011 18:00	continuous	Tentative
ASB_TIM_TWZ_1	26/03/2011 07:00	27/03/2011 18:00	daily	Tentative
ASB_TIM_TWZ_2	12/03/2011 07:00	13/03/2011 18:00	continuous	Tentative
	19/03/2011 07:00	20/03/2011 18:00	continuous	Tentative
	25/03/2011 07:30	25/03/2011 15:00	daily	Tentative
BRY_ISL_1	21/03/2011 07:00	25/03/2011 18:00	continuous	Tentative
ISL_LIV_1	31/01/2011 07:00	4/02/2011 18:00	continuous	Confirmed
ISL_SC_4	24/01/2011 08:00	24/01/2011 18:00	daily	Tentative
	25/01/2011 08:00	25/01/2011 18:00	daily	Tentative
	26/01/2011 08:00	26/01/2011 18:00	daily	Tentative
ISL_SC_5	24/01/2011 08:00	24/01/2011 18:00	daily	Tentative
	25/01/2011 08:00	25/01/2011 18:00	daily	Tentative
	26/01/2011 08:00	26/01/2011 18:00	daily	Tentative
ISL_SVC_3	24/01/2011 08:00	24/01/2011 18:00	daily	Tentative
	25/01/2011 08:00	25/01/2011 18:00	daily	Tentative
	21/02/2011 07:00	25/02/2011 18:00	continuous	Tentative
ISL_SVC_9	11/01/2011 07:30	12/01/2011 18:00	daily	Confirmed
ISL_TKB_1	14/02/2011 08:00	18/02/2011 18:00	continuous	Confirmed



# Summer 10/11 – Stability Limits

- Zone 3 voltage stability limits calculated with currently available information

Scenario	Power Factor	N-1 Stability Limit	
		Contingency	USI Load Limit (MW)
1	0.987	ISL TKB	1303
2	0.987	ISL TKB	1293
3	0.987	ASB TWZ 1 or 2	1273
4	0.987	ASB TWZ 1 or 2	1263

➤ Approximately 30 MW of additional benefit if AUVLS is armed.



# Summer 10/11 – Summary

- With currently available information studies show that USI peak summer demand can be met with all available plant in service
- Based on margins available no current requirements for:
  - NIWA report
  - USI Contingency plan
- Will be re-assessed if situation changes:
  - Unexpected outages on generators
  - Unexpected outages on transmission plant
- Next update:
  - Reconvene if any generation/transmission issues arise

