

Upper South Island Security

Winter 08 Planning

27 March 2008

TRANSPower



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USI Forum

- Purpose
 - Update USI participants on information and studies completed to date for Winter 08
- Approach
 - Gathered information about winter 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



Winter 08 – Scenarios Studied

- Scenarios considered for Winter 08
 - All equipment in service
 - TKA/TKB generator outages
 - HBK available / unavailable
 - Medium & High regional generation
 - AUVLS disabled / enabled

Scenario	TKB	TKA	HBK
1	YY 2 x 80MW	Y 1 x 25MW	Y
2	out	out	Y
3	Y 1 x 80MW	Y 1 x 12.5MW	Y
4	Y 1 x 80MW	out	Y
5	YY 2 x 80MW	Y 1 x 25MW	N

Winter 08 – Generation Assumptions

	High Generation (MW)	Medium Generation (MW)
Arnold	3	3
Argyle	8	8
Cobb	30	21
Coleridge	31	28
Highbank	25	20
Kumara	8	6
Tekapo A	25	20
Tekapo B	160	140
	290	246

- Low regional generation scenario may be further studied in mid April

Winter 08 – Load Assumptions AMPK

Upper South Island Winter 2008 AMPK Load Estimate (morning)

	2007	2008	%growth	2008	%growth
	Peak Actual (MW)	Expected (MW)	from 2007 Actual	Prudent (MW)	from 2007 Actual
Network Tasman	137.7	131.5	-4.50%	136.9	-0.58%
Marlborough Lines	62.3	61.4	-1.44%	62.3	0.00%
Buller	10.7	15.0	40.19%	15.7	46.73%
Mainpower	81.0	79.0	-2.47%	81.4	0.49%
Orion	616.2	584.3	-5.18%	617.6	0.23%
Electronet	22.1	37.7	70.59%	46.0	108.14%
Electricity Ashburton	26.0	52.2	100.77%	60.9	134.23%
Alpine	75.8	82.3	8.58%	92.1	21.50%
Total	1031.8	1043.4	1.12%	1112.9	7.86%

- Avalon data used for Actual loads
- 2007 USI Average Half Hour AM Peak 16/7/07 @ 8:20
- Diversity included in 2008 Expected loads
- Expected 2008 loads calculated from customer data and diversified used Zone 3 AMPK
- % increase between customer Expected and Prudent load data used to calculate Prudent 2008 loads

Winter 08 – Load Assumptions PMPK

Upper South Island Winter 2008 PMPK Load Estimate (evening)

	2007	2008	%growth	2008	%growth
	Peak Actual (MW)	Expected (MW)	from 2007 Actual	Prudent (MW)	from 2007 Actual
Network Tasman	141.5	132.6	-6.3%	138.0	-2.5%
Marlborough Lines	64.0	62.0	-3.1%	62.9	-1.7%
Buller	10.8	15.2	40.2%	15.9	46.7%
Mainpower	86.3	80.4	-6.8%	82.9	-3.9%
Orion	617.5	622.5	0.8%	658.0	6.6%
Electronet	20.0	38.3	91.5%	46.7	133.5%
Electricity Ashburton	23.1	53.1	129.9%	62.0	168.4%
Alpine	78.8	83.0	5.4%	92.9	18.0%
Total	1042.0	1087.1	4.3%	1159.3	11.3%

- Avalon data used for Actual loads
- 2007 USI Average Half Hour PM Peak 9/7/07 @ 17:40
- Diversity included in 2008 Expected loads
- Expected 2008 loads calculated from customer data and diversified used Zone 3 PMPK
- % increase between customer Expected and Prudent load data used to calculate Prudent 2008 loads

Winter 08 – Other Assumptions

- STK condenser de-commissioned
- Zone 3 power factors
 - AMPK 0.98
 - PMPK 0.985
- HVDC = 700MW
- Estimations used for projects yet to be commissioned
 - ISL Caps (45MW), ASB Bussing (100MW)



Winter 08 – Outages

- Notified generator outages (as per POCP 18/3/08)

Outage Block	GIP/GXPs	Start	End	Type	MW Loss
TKB2	TKB	28/05/2008 06:00	28/05/2008 18:00	continuous	80
TKB3	TKB	16/06/2008 06:00	16/06/2008 18:00	continuous	80
TKA1	TKA	16/06/2008 06:30	16/06/2008 18:00	continuous	25.2
TKB	TKB	16/06/2008 07:30	16/06/2008 17:00	continuous	160
TKB2	TKB	1/09/2008 06:30	6/09/2008 18:00	continuous	80
TKA1	TKA	2/09/2008 07:00	2/09/2008 21:00	continuous	25.2
TKB2	TKB	3/09/2008 07:00	3/09/2008 21:00	continuous	80
TKA1	TKA	8/09/2008 06:30	8/09/2008 18:00	continuous	25.2
TKB3	TKB	8/09/2008 06:30	8/09/2008 18:00	continuous	80

Winter 08 – Outages

- Notified transmission outages (as per POCP 19/3/08)
 - BRY ISL 1: 26 May 08
 - ISL LIV : 27-29 May 08
 - ISL TIM TWZ 1 : 19-23 May 08
 - ISL TKB 1 : 8-16 May 08
- Outages to be managed through normal outage planning process



Winter 08 – Voltage Stability Limits

- AMPK Zone 3 voltage stability limits calculated with currently available information

Scenario	Peak	power factor	Generation Profile	Contingency	AUVLS disabled	AUVLS enabled
1	AMPK	0.98	Medium	ASB TWZ	1266	1291
2	AMPK	0.98	Medium	ASB TWZ	1241	1271
3	AMPK	0.98	Medium	ASB TWZ	1256	1281
4	AMPK	0.98	Medium	ASB TWZ	1246	1276
5	AMPK	0.98	Medium	ASB TWZ	1246	1271

1	AMPK	0.98	High	ASB TWZ	1271	1301
2	AMPK	0.98	High	ASB TWZ	1251	1281
3	AMPK	0.98	High	ASB TWZ	1266	1291
4	AMPK	0.98	High	ASB TWZ	1256	1281
5	AMPK	0.98	High	ASB TWZ	1251	1276

Winter 08 – Voltage Stability Limits

- PMPK Zone 3 voltage stability limits calculated with currently available information

Scenario	Peak	power factor	Generation Profile	Contingency	AUVLS disabled	AUVLS enabled
1	PMPK	0.985	Medium	ASB TWZ	1281	1306
2	PMPK	0.985	Medium	ASB TWZ	1256	1286
3	PMPK	0.985	Medium	ASB TWZ	1276	1301
4	PMPK	0.985	Medium	ASB TWZ	1266	1291
5	PMPK	0.985	Medium	ASB TWZ	1261	1291

1	PMPK	0.985	High	ASB TWZ	1286	1316
2	PMPK	0.985	High	ASB TWZ	1271	1296
3	PMPK	0.985	High	ASB TWZ	1286	1311
4	PMPK	0.985	High	ASB TWZ	1276	1301
5	PMPK	0.985	High	ASB TWZ	1266	1296



Winter 08 – Summary

- With currently available information studies show that USI peak winter demand can be met with all available plant in service
- AUVLS give additional 30MW (approx.)
- Based on margins available no current requirements for:
 - NIWA report
 - USI Contingency plan
- Will be re-assessed if situation changes:
 - Unexpected outages on generators
 - Dry year for USI
 - Significant delays on major projects



Winter 08 – What's Next

Next meeting:

- in 4 weeks (end April)
- will re-convene earlier if issues arise

