

Upper North Island Security

Winter 08 Planning

3 April 2008

TRANSPower



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UNI Forum

- Purpose
 - Update UNI participants on information and studies completed to date for Winter 08
- Approach
 - Gathered information about winter security issues for Upper North 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
 - Outage of Otahuhu B
 - Outage of Huntly E3P
 - Outage of Otahuhu B & 1 Huntly unit

Scenario	Huntly	Otahuhu B	HLY_OTA_2	OTA_WKM_3
1	YYYYYY 4 x 250 MW @ 172 MVar 1 x 50 MW @ 2 MVar 1 x 405 MW @ 26 MVar	Y 1 x 395 MW @ -60MVar	Y	Y
2	YYYYYY 4 x 250 MW @ 121 MVar 1 x 50 MW @ 38 MVar 1 x 405 MW @ 200 MVar	out	Y	Y
3	YYYYY 4 x 250 MW @ 121 MVar 1 x 50 MW @ 38 MVar	Y 1 x 395 MW @ 202MVar	Y	Y
4	YYYYY 3 x 250 MW @ 121 MVar 1 x 50 MW @ 38 MVar 1 x 405 MW @ 200 MVar	out	Y	Y

Winter 08 – Generation Assumptions

- Southdown generation = 2 x 53 MW @ 12 MVA_r, 1 x 38 MW @ 9MVA_r, 1 x 50 MW @ 8MVA_r
 - Glenbrook generation = 74 MW @ 16 MVA_r
 - Waikato generation = 650 MW
 - NPL = 0
 - ANC = 0
 - Two Otahuhu Syn. Condensers
 - S.C. 1 & 2; -58/+102 MVA_r total capability
 - S.C. 4, 5, & 6; -29/+31MVA_r each
- Low regional generation scenario may be further studied in mid April

Winter 08 – Load Assumptions

Upper North 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
Top Energy	51.8	52.1	0.58%	63.3	22.20%
Northpower	144.3	150.5	4.30%	157.6	9.22%
Vector	1658.0	1730.0	4.34%	1799.0	8.50%
Counties Power	90.3	93.0	2.99%	98.6	9.19%
NZ Steel	115.0	102.8	-10.61%	121.5	5.65%
WEL Networks	6.4	8.7	35.94%	9.6	50.00%
Total	2065.8	2137.1	3.45%	2249.6	8.90%

- AM&PM Peak loads and power factors very similar so morning scenario used for studies
- Avalon data used for Actual loads
- 2007 UNI Average Half Hour AM Peak 23/7/07 @ 8:00
- Diversity included in 2008 Expected loads
- Expected 2008 loads calculated from customer data and diversified used Zone 1 AMPK
- % increase between customer Expected and Prudent load data used to calculate Prudent 2008 loads

Winter 08 – Other Assumptions

- Zone 1 power factors
 - AMPK & PMPK 0.985
- Marsden C2 unavailable
- HVDC = 400MW (500MW for Scenario 4)
- Rest of the North Island modelled for GZ loads as per winter peak
- Estimations used for projects yet to be commissioned
 - ALB SVC, PEN Caps, HEP cap, Ohinewai –combined effect 125MW

Winter 08 – Outages

- Notified generator outages (as per POCP 28/3/08)

Outage Block	Start	End	Type	Planning Status	MW Loss
SWN_1	10/05/2008 00:00	10/05/2008 18:00	continuous	Tentative	42
SWN_3	10/05/2008 00:00	10/05/2008 18:00	continuous	Tentative	20
HLY6	17/05/2008 00:01	17/05/2008 23:59	continuous	Confirmed	50.8
SWN_2	24/05/2008 00:00	24/05/2008 18:00	continuous	Tentative	42
SWN_3	24/05/2008 00:00	24/05/2008 18:00	continuous	Tentative	20
SWN_5	24/05/2008 00:00	24/05/2008 18:00	continuous	Tentative	50
SWN_1	21/06/2008 00:00	21/06/2008 18:00	continuous	Tentative	42
SWN_3	21/06/2008 00:00	21/06/2008 18:00	continuous	Tentative	20
HLY6	21/06/2008 00:01	21/06/2008 23:59	continuous	Confirmed	50.8
SWN_2	19/07/2008 00:00	19/07/2008 18:00	continuous	Tentative	42
SWN_3	19/07/2008 00:00	19/07/2008 18:00	continuous	Tentative	20
SWN_5	19/07/2008 00:00	19/07/2008 18:00	continuous	Tentative	50
HLY6	19/07/2008 00:01	19/07/2008 23:59	continuous	Confirmed	50.8
SWN_1	16/08/2008 00:00	16/08/2008 18:00	continuous	Tentative	42
SWN_3	16/08/2008 00:00	16/08/2008 18:00	continuous	Tentative	20
HLY6	16/08/2008 00:01	16/08/2008 23:59	continuous	Confirmed	50.8
SWN_2	13/09/2008 00:00	13/09/2008 18:00	continuous	Tentative	42
SWN_3	13/09/2008 00:00	13/09/2008 18:00	continuous	Tentative	20
SWN_5	13/09/2008 00:00	13/09/2008 18:00	continuous	Tentative	50
HLY6	13/09/2008 00:01	13/09/2008 23:59	continuous	Confirmed	50.8
TCC_Stn	7/10/2008 00:01	11/10/2008 23:59	continuous	Confirmed	350
HLY6	10/10/2008 00:01	12/10/2008 23:59	continuous	Confirmed	50.8
SWN_1	11/10/2008 00:00	11/10/2008 18:00	continuous	Tentative	42
SWN_3	11/10/2008 00:00	11/10/2008 18:00	continuous	Tentative	20

Winter 08 – Outages

- Notified transmission outages (as per POCP 28/3/08)
 - OTA WKM 3: 15-16 May
 - OTA PEN 6: 16-18 May
 - OTA WKM 2: 22 May
 - HLY OTA 1: 23-25 May
 - OTA PEN 5: 23-25 May
 - HAM HLY 1: 30 May-1 June
- Outages to be managed through normal outage planning process



Winter 08 – Voltage Stability Limits

- Zone 1 voltage stability limits calculated with currently available information

Scenario	N-1 Stability Limit		
	power factor	Contingency	Zone 1 Load limit
1	0.985	Otahuhu B	2541
2	0.985	HLY_OTA_2	2351
3	0.985	Otahuhu B	2416
4	0.985	HLY 5 HLY OTA 2	2321 2326

Winter 08 – Summary

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



Winter 08 – What's Next

Next update:

- in 4 weeks (early May) – by email
- will re-convene earlier if issues arise

