Demand Estimation Sub Committee

2.0 Gas Demand EUC Modelling Results (3 of 3) Results – Large NDM

24 May 2023

Contents

2.0 Gas Demand EUC Modelling Results

BACKGROUND: LARGE NDM

Total NDM Population Counts: AQ and Supply Point

Small NDM is the main component of the overall NDM:

- Band 1 (0-73.2 MWh pa) constitutes nearly 3/4 of overall NDM (on an AQ basis)
- Bands 1 to 2 (0-293 MWh pa) constitutes nearly 4/5 of overall NDM
- Bands 1 to 4 (0-2196 MWh pa) constitutes nearly 9/10 of overall NDM

Large NDM is very much a minority component of overall NDM

EUC Bands: Range	**% of Total NDM**	
	Total AQ	**Total SP Count**
Band 1: 0 to 73.2 MWh pa	71.06%	98.99%
Bands 1 to 2: 0 to 293 MWh pa	77.41%	99.74%
Bands 1 to 4: 0 to 2,196 MWh pa	87.06%	99.97%
Bands 5 to 9: >2,196 MWh pa	12.94%	0.03%

Proposed EUC Bands / Consumption Ranges

- End User Category (EUC) definitions are not prescribed in Uniform Network Code and are the responsibility of DESC to review and confirm. This year's Modelling Approach document did not propose any changes to the EUC definitions for Gas Year 2023/24

Band / Range	Description	Meter Point Count
Band 5 2,196 to 5,860 MWh p.a.	All NDM Supply Points	4,128
Band 6 5,860 to 14,650 MWh p.a.		1,407
Bands 7 and 8 14,650 to 58,600 MWh p.a.		815
Band 9 over 58,600 MWh p.a.		33

- Bands 5-8 above also include 4 x Winter Annual Ratio (WAR) Bands alongside the Consumption Band EUC

Large NDM: Agreed Modelling Runs

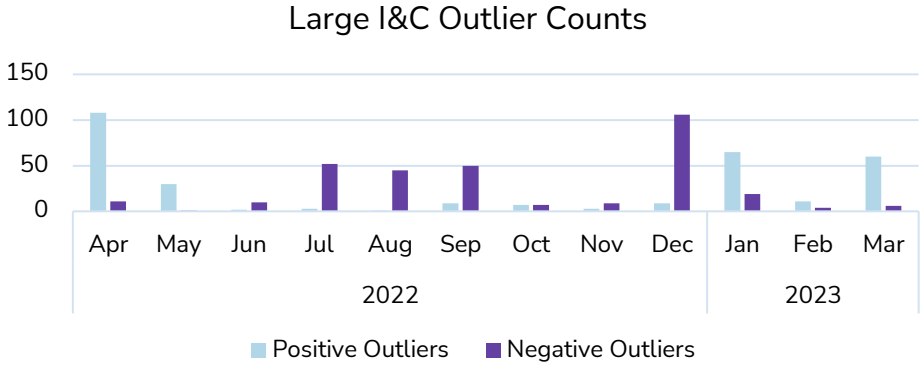
Band / Range	Description	EUC	Option 1	Option 2
Band 5 2,196 to 5,860 MWh p.a.	All NDM Supply Points	05B	Individual LDZ analysis with WN using sample data for WN/NW	N/A
Band 6 5,860 to 14,650 MWh p.a.		06B	Individual LDZ analysis with WN using sample data for WN/NW WS using sample data for WS/SW	Individual LDZ analysis with EA using sample data for NT/EA WN using sample data for WN/NW WS using sample data for WS/SW
Bands 7 and 8 14,650 to 58,600 MWh p.a.		07B and 08B	Individual LDZ analysis with WN using sample data for WN/NW WS and SW Combined EA and NT Combined SE and SO Combined	2 LDZ Group (North / South Split)
Band 9 over 58,600 MWh p.a.		09B	N/A – Band 7 and 8 model to be used	N/A

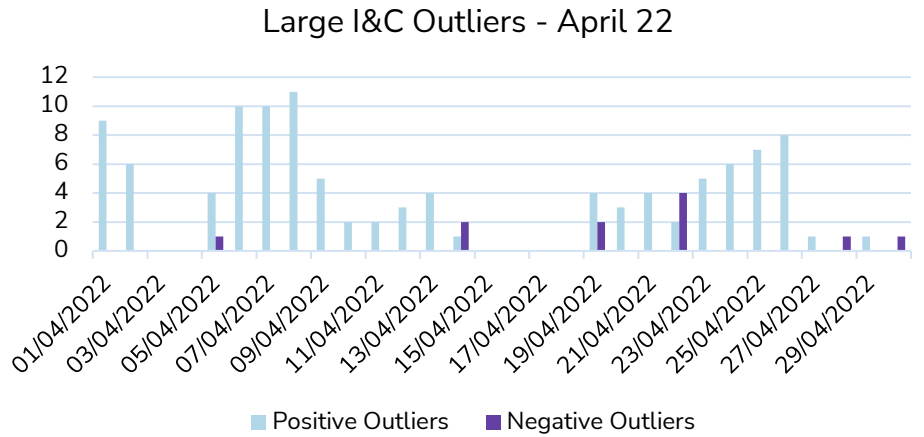
2.0 Gas Demand EUC Modelling Results

RESULTS: LARGE NDM CONSUMPTION BANDS

Results: Large NDM Outliers

- The chart on the right shows the frequency of outliers by month
  - Negative outliers are where consumption was much lower than the model predicted
  - Positive outliers are where consumption was much higher than the model predicted
- In all LDZs we have seen an increase in positive outliers at the beginning of the Analysis Period – the second chart shows the frequency of outliers by day for April
  - This is likely due to a fall in consumption over the Analysis Period (as a result of changes to customer behaviour related to the increased price of gas) and warmer than normal weather
- There is a large number of significantly negative outliers for the 19th September when the was an additional late notice Bank Holiday for the Queen's funeral
  - This impacted all I&C EUC models and has been removed from the analysis
- December outliers are during the Christmas Holiday period and will be smoothed out later in the modelling process
- Due to ongoing high gas prices, the recommendation is to leave all other outliers in the data





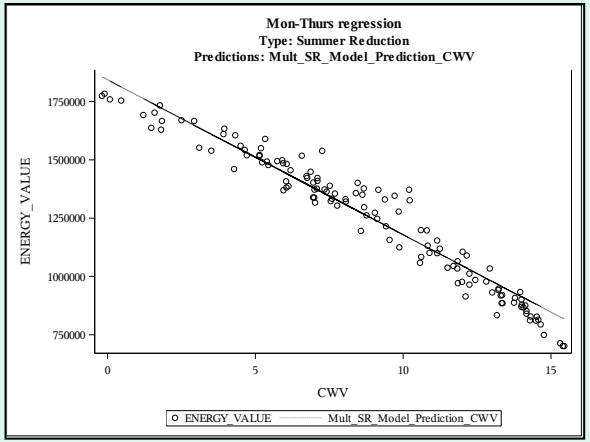
Results – Large NDM: 05B Summary

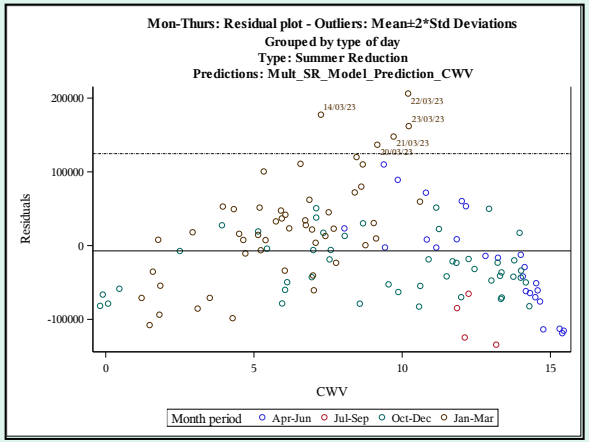
- Previous 2 years used in average are 2019/20 and 2021/22
- R^2 values are fairly similar to the previous 2 years average with the only significant change being SE which had deteriorated by 3.4%
- Sample Sizes were above the minimum for all areas
- ILF values are similar to previous years with the exception of NE, WS and SE which have increased by more than 3 and SW which has reduced by more than 3
- Model results are good and no alternatives were required

	R^2			Sample Size		ILF		
LDZ	Avg. prev 2 years	2022/23		2022/23		Avg. prev 2 years	2022/23	
SC	97.7%	↘	96.9%	●	179	44.0	↑	44.0
NO	97.4%	↘	95.9%	●	78	41.6	↑	43.1
NW	97.8%	↘	95.3%	●	101	43.1	↓	42.9
NE	97.5%	↘	95.7%	●	85	41.3	↑	44.9
EM	96.7%	↗	96.7%	●	84	41.5	↑	43.7
WM	97.5%	↘	96.0%	●	100	38.7	↑	40.0
WN	97.6%	↘	96.0%	●	113	44.1	↓	43.4
WS	96.9%	↘	94.7%	●	48	40.3	↑	43.4
EA	96.9%	↘	96.1%	●	60	41.5	↓	41.1
NT	98.1%	↘	97.0%	●	108	43.5	↓	42.9
SE	97.8%	↓	94.4%	●	110	43.5	↑	46.5
SO	97.7%	↘	96.8%	●	81	38.4	↑	40.0
SW	95.6%	↗	97.2%	●	38	43.1	↓	39.9

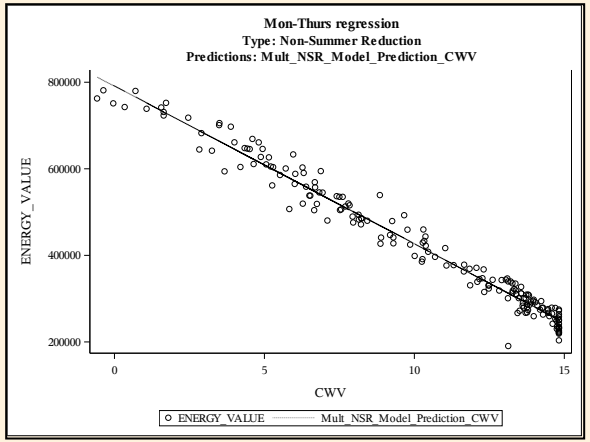
Results – Large NDM: 05B Summary

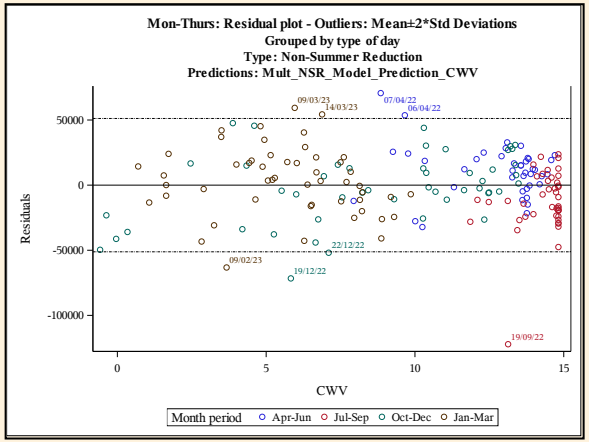
05B Scenario with **highest** ILF
Model: Summer Reduction
EUC: 05B
LDZ: SE
Demand: SE
R^2: 94.4%
ILF: 46.5
Sample Points: 110



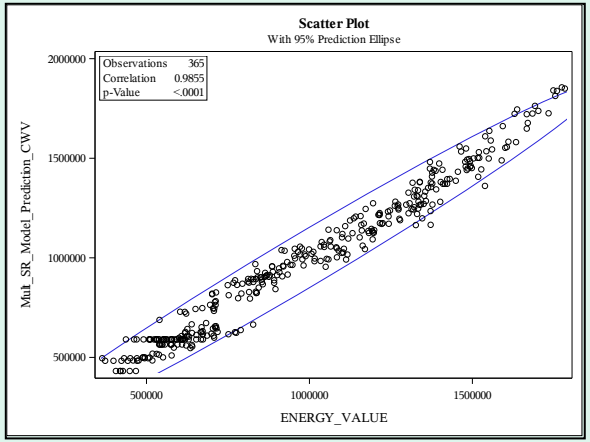


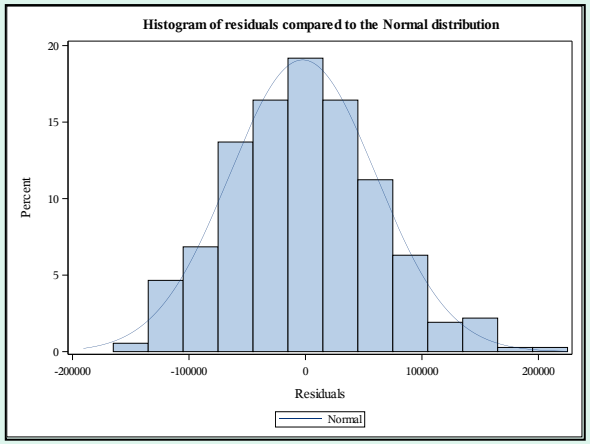
05B Scenario with **lowest** ILF
Model: No Summer Reduction
EUC: 05B
LDZ: SW
Demand: SW
R^2: 97.2%
ILF: 39.9
Sample Points: 38

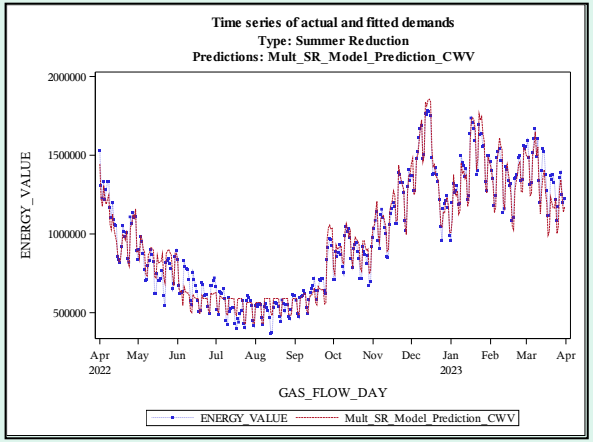


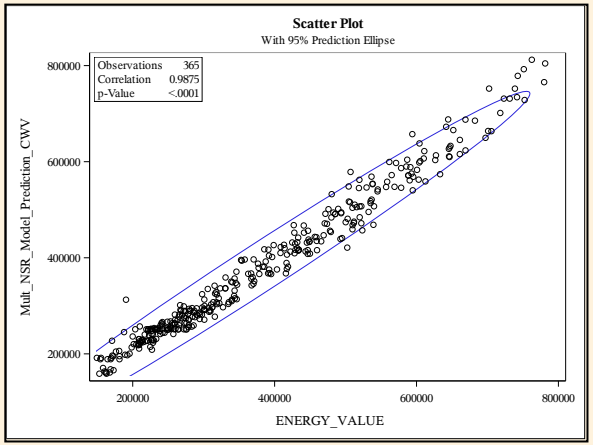


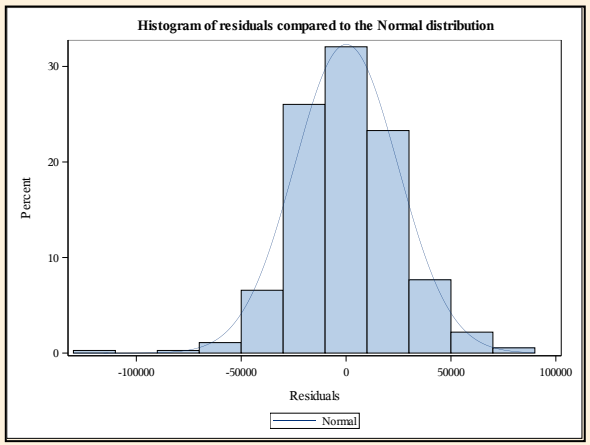
Results – Large NDM: 05B Summary

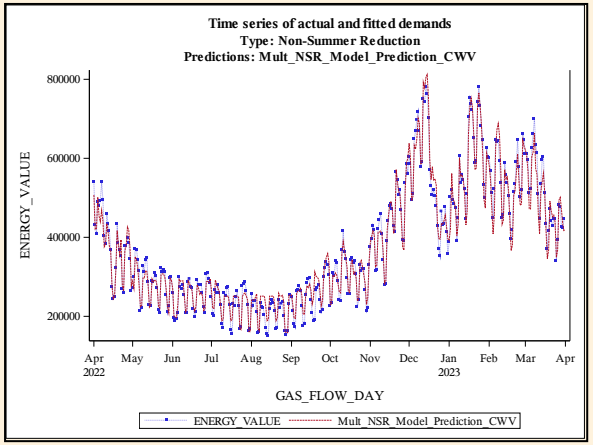












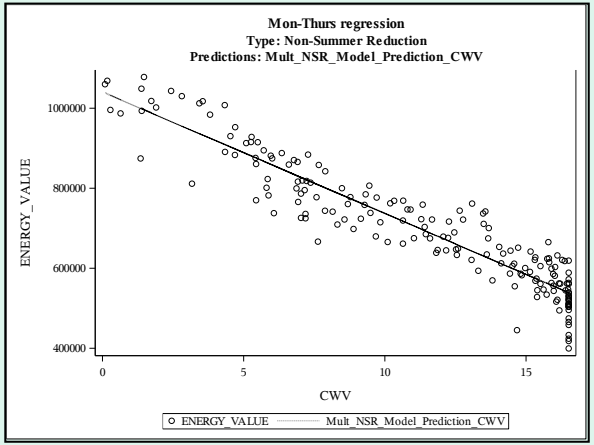
Results – Large NDM: 06B Summary

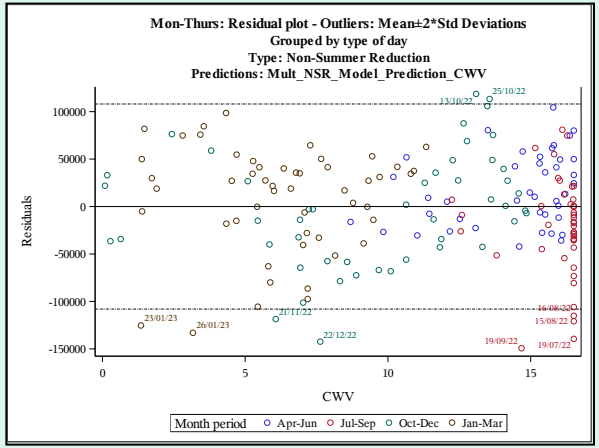
- Previous 2 years used in average are 2019/20 and 2021/22
- R^2 values are worse than the previous 2 years by around 2%
  - Option 2 applies to EA only and has an improved R^2
- Sample Sizes were above the minimum for all areas except EA where option 2 uses additional demand data from NT
- ILF values have increase for all LDZs indicating consumers are exhibiting less weather sensitivity

LDZ	R^2				Sample Size				ILF			
	Avg. prev 2 years	2022/23			2022/23				Avg. prev 2 years	2022/23		
		Option 1		Option 2	Option 1		Option 2			Option 1		Option 2	
SC	97.0%	↓	94.5%		67				48.8	↑	52.5		
NO	94.4%	↓	91.9%		34				52.2	↓	51.9		
NW	96.6%	↘	94.8%		48				48.7	↑	53.9		
NE	95.4%	↓	92.7%		53				58.3	↑	58.8		
EM	95.5%	↘	93.3%		45				49.9	↑	53.8		
WM	92.6%	↓	89.4%		31				48.7	↓	45.7		
WN	96.8%	↘	94.9%		52				49.0	↑	54.9		
WS	96.8%	↘	96.2%		49				44.1	↑	48.9		
EA	93.8%	↓	89.4%	↗ 94.5%	24		56		52.0	↓	51.9	↓	47.6
NT	96.6%	↘	94.5%		32				48.8	↓	44.8		
SE	96.3%	↘	95.1%		32				47.7	↑	49.1		
SO	95.3%	↘	95.1%		35				46.3	↓	44.3		
SW	96.7%	↘	95.1%		33				43.4	↑	46.9		

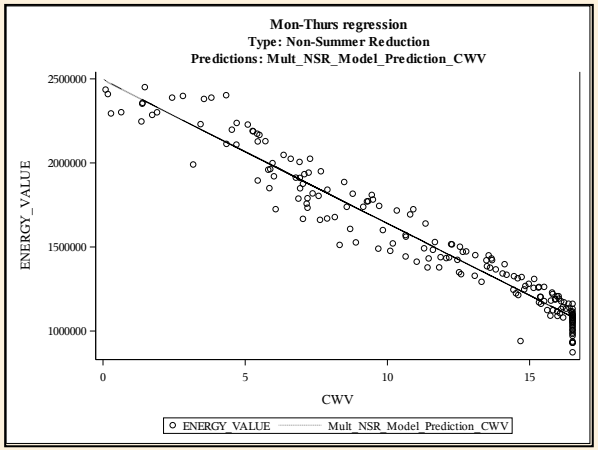
Results – Large NDM: 06B Summary

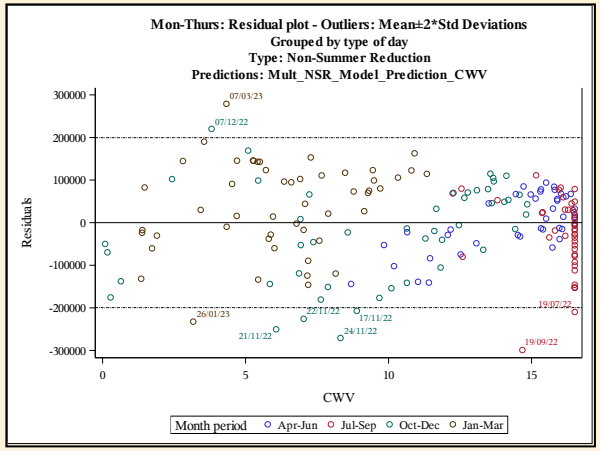
06B Scenario with Option 1
Model: No Summer Reduction
EUC: 06B
LDZ: EA
Demand: EA
R^2: 89.4%
ILF: 51.9
Sample Points: 24



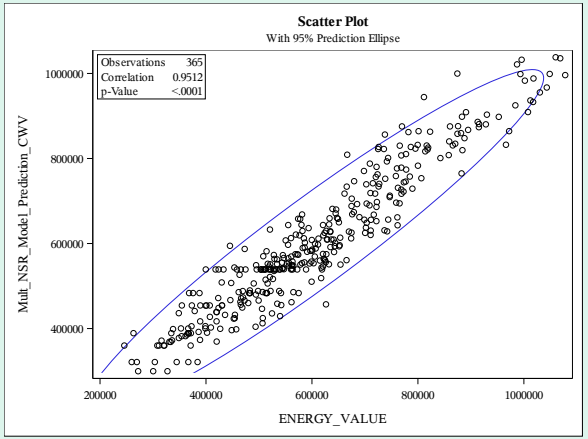


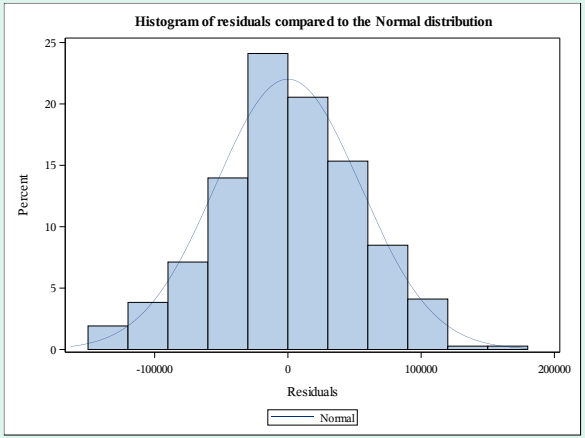
06B Scenario with Option 2
Model: No Summer Reduction
EUC: 06B
LDZ: EA
Demand: EA, NT
R^2: 94.5 %
ILF: 47.6
Sample Points: 56

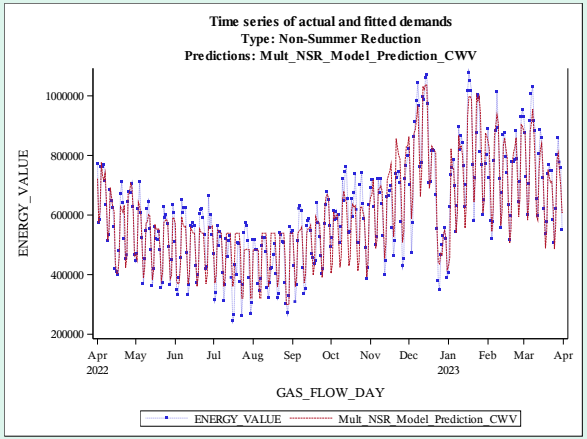


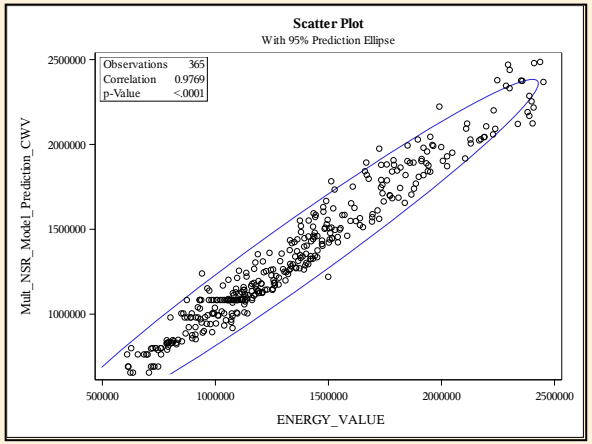


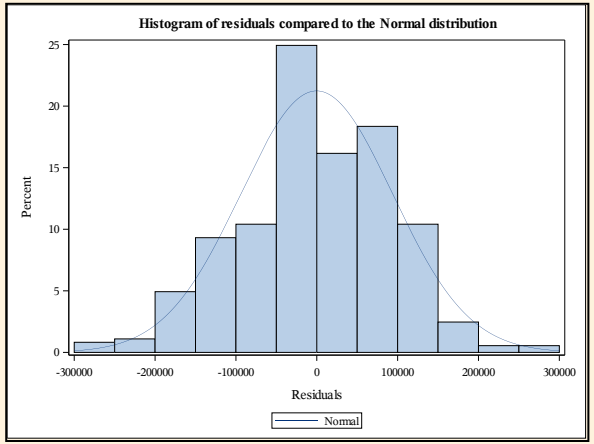
Results – Large NDM: 06B Summary

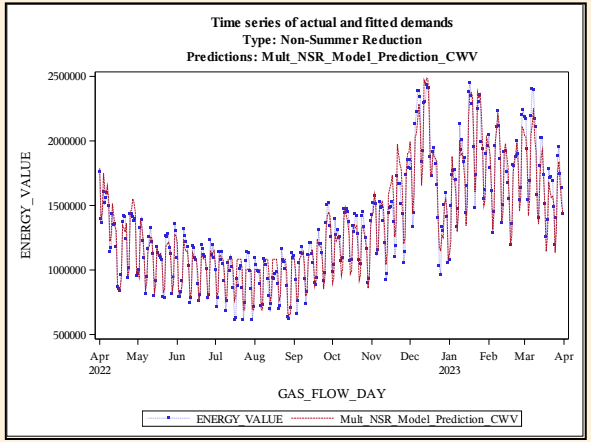






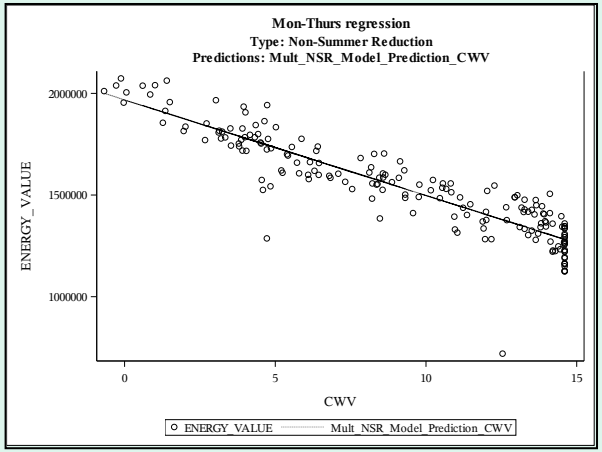


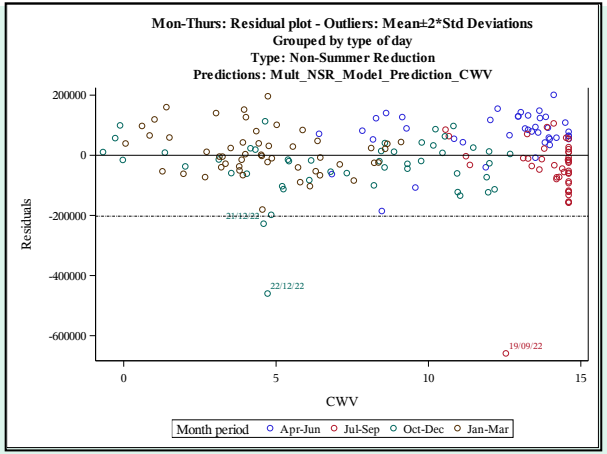




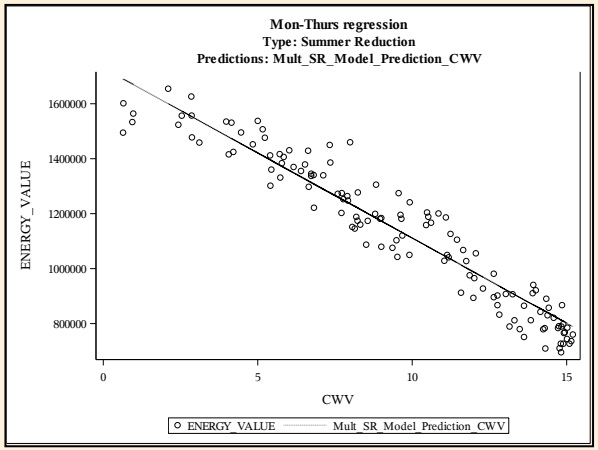
Results – Large NDM: 06B Summary

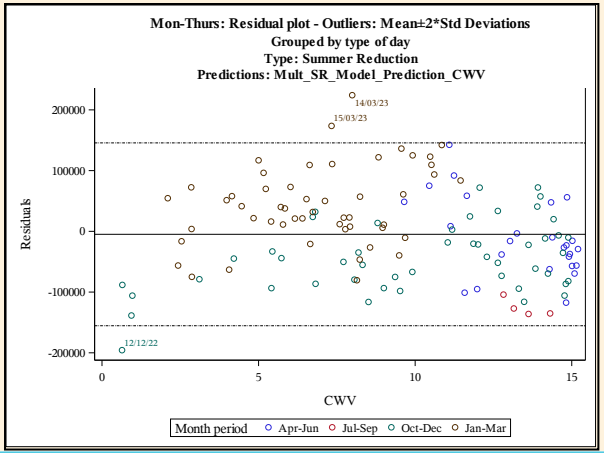
06B Scenario with **highest** ILF
Model: No Summer Reduction
EUC: 06B
LDZ: NE
Demand: NE
R^2: 92.7%
ILF: 58.8
Sample Points: 53



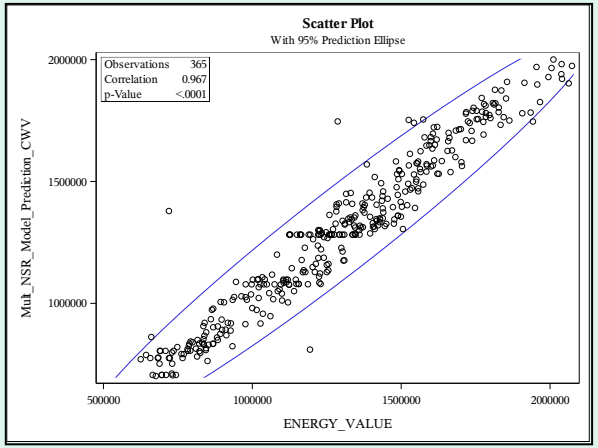


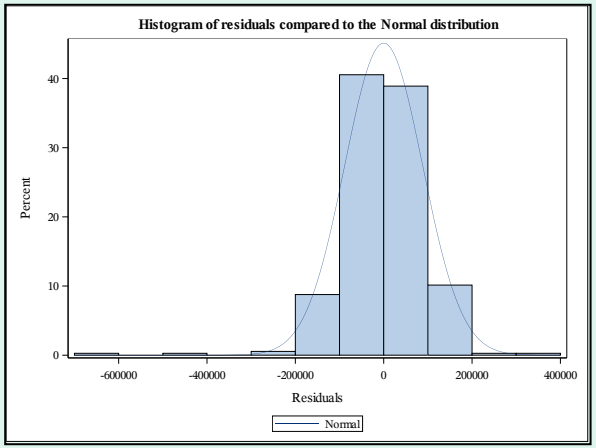
06B Scenario with **lowest** ILF
Model: Summer Reduction
EUC: 06B
LDZ: SO
Demand: SO
R^2: 95.1%
ILF: 44.3
Sample Points: 35

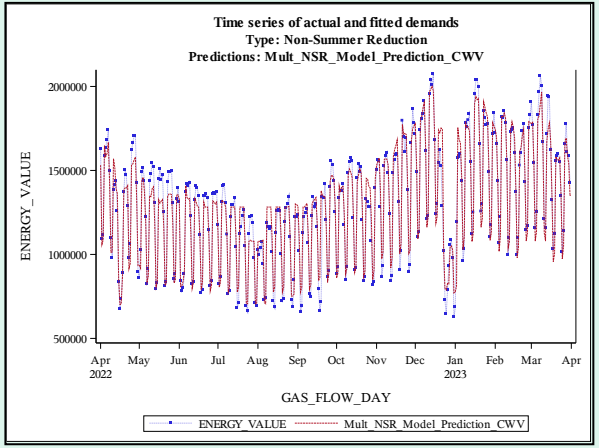


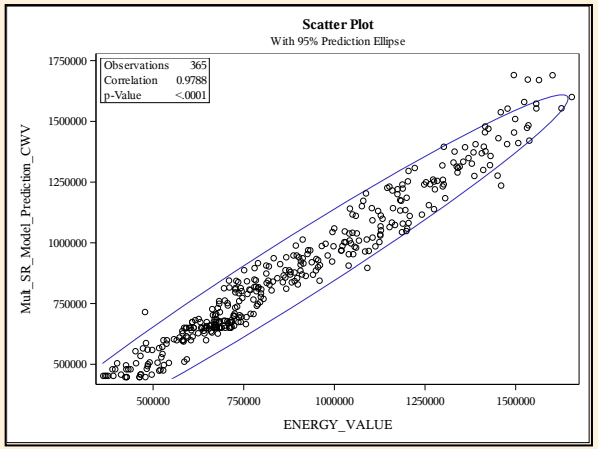


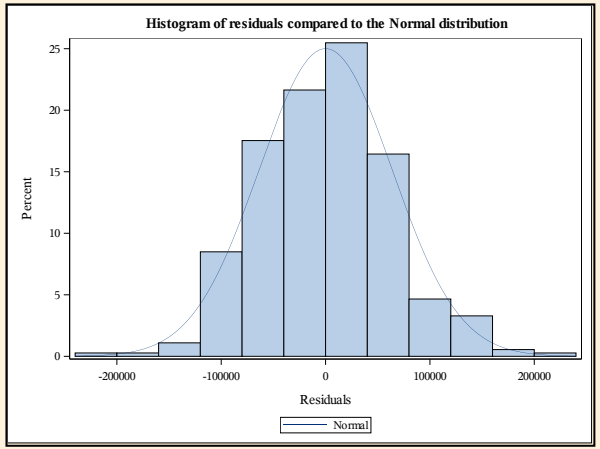
Results – Large NDM: 06B Summary

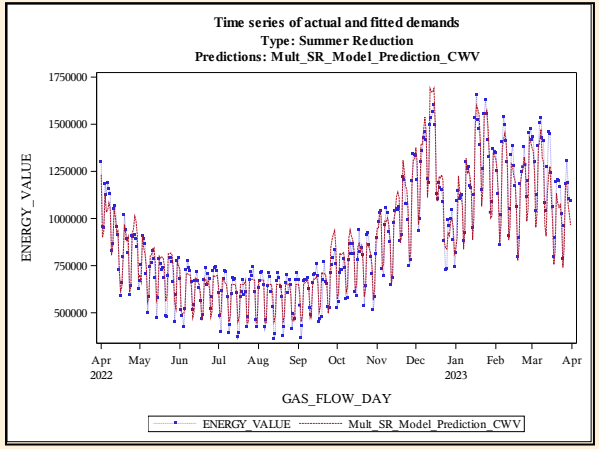












Recommendation – 06B

Option 1 – Individual LDZ for most LDZs except WN being combined with NW and WS combined with SW

- ➕ Retains regional Integrity
- ➕ Little change to ILF for EA
- ➖ Deterioration in R^2
- ➖ Low sample count for EA

Option 2 – As Option 1 except EA combined with NT

- ➕ Improved R^2 for EA
- ➖ Fairly significant change to ILF for EA but comparable to regional LDZs

Recommendation

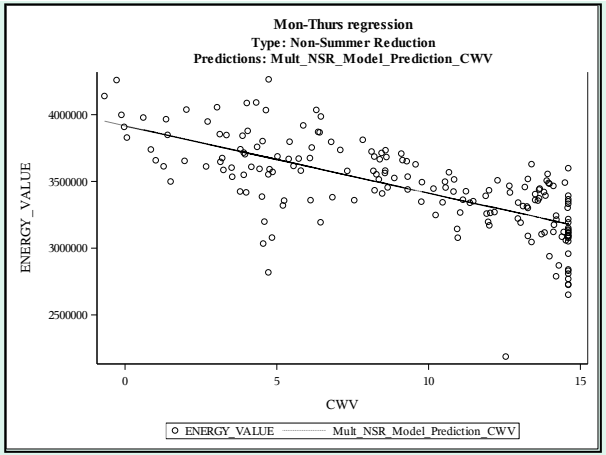
Results – Large NDM: 07B and 08B Summary

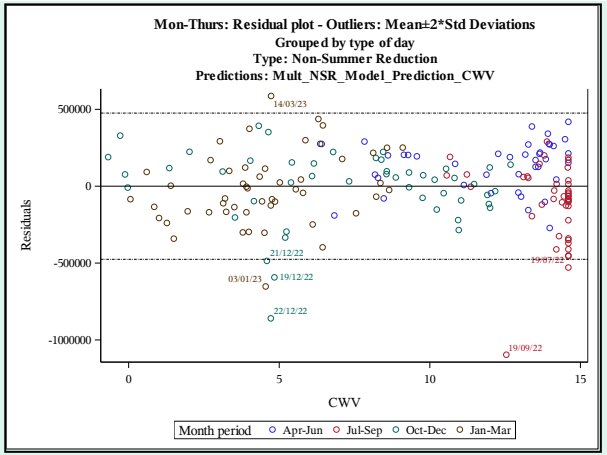
- Previous 2 years used in average are 2019/20 and 2021/22
- R^2 values
  - Option 1 some areas are quite a bit worse previously
  - Option 2 R^2 values are an improvement for most areas
- Sample Sizes were below the minimum for 3 areas, Option 2 increases the sample size for all areas
- ILF values have a wide range of movements
- Option 1 -7.5 to +8.8
- Option 2 -8.0 to +11.7

LDZ	R^2			Sample Size			ILF		
	Avg. prev 2 years	2022/23		2022/23		Avg. prev 2 years	2022/23	
		Option 1	Option 2	Option 1	Option 2		Option 1	Option 2
SC	90.8%	↓ 82.4%	↗ 92.8%	38	236	65.0	↑ 67.9	↓ 64.6
NO	83.3%	↘ 82.7%	↑ 92.0%	33	236	68.5	↓ 68.2	↓ 66.1
NW	84.6%	↗ 87.0%	↑ 92.5%	32	236	62.0	↓ 56.6	↑ 64.4
NE	85.3%	↓ 78.5%	↑ 92.8%	42	236	68.8	↑ 75.1	↓ 65.1
EM	90.3%	↓ 85.6%	↗ 92.6%	60	236	65.1	↓ 63.7	↓ 64.7
WM	93.2%	↓ 89.5%	↘ 92.4%	27	236	52.4	↑ 61.2	↑ 64.1
WN	84.0%	↓ 81.0%	↑ 92.8%	36	236	64.2	↓ 56.7	↑ 64.8
WS	72.7%	↑ 80.2%	↑ 92.5%	28	88	66.8	↑ 68.0	↓ 59.0
EA	81.9%	↑ 89.3%	↑ 93.8%	30	88	60.3	↓ 54.3	↓ 59.2
NT	90.3%	↘ 89.9%	↑ 94.1%	30	88	56.1	↓ 54.1	↑ 59.2
SE	87.4%	↘ 85.6%	↑ 93.5%	30	88	57.6	↑ 58.5	↑ 58.4
SO	87.0%	↘ 86.0%	↑ 93.4%	30	88	55.5	↑ 56.2	↑ 56.5
SW	73.4%	↑ 81.1%	↑ 92.6%	28	88	65.9	↑ 67.0	↓ 57.9

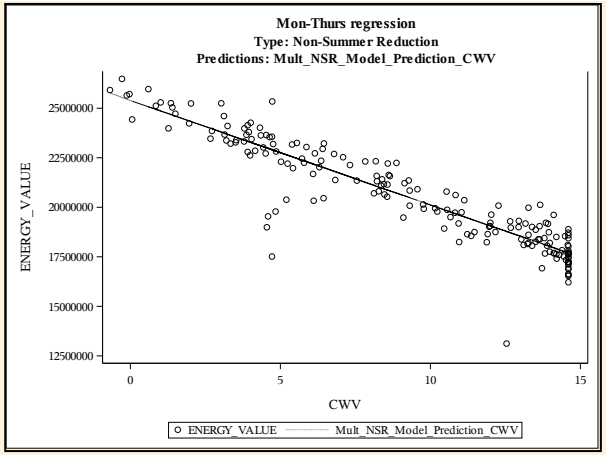
Results – Large NDM: 07B and 08B Summary

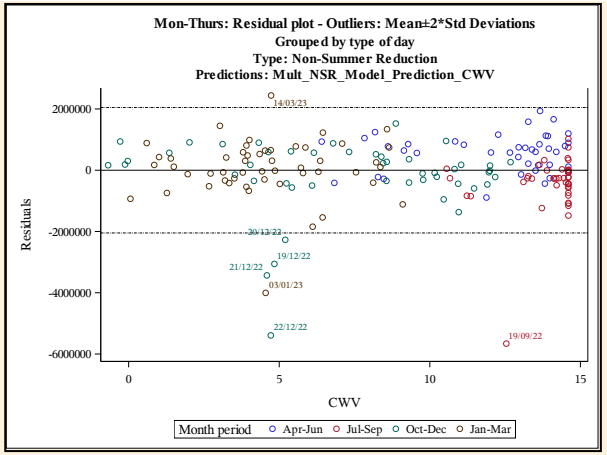
07B and 08B Scenario **Option** 1
Model: No Summer Reduction
EUC: 07B and 08B
LDZ: NE
Demand: NE
R^2: 78.5%
ILF: 75.1
Sample Points: 42



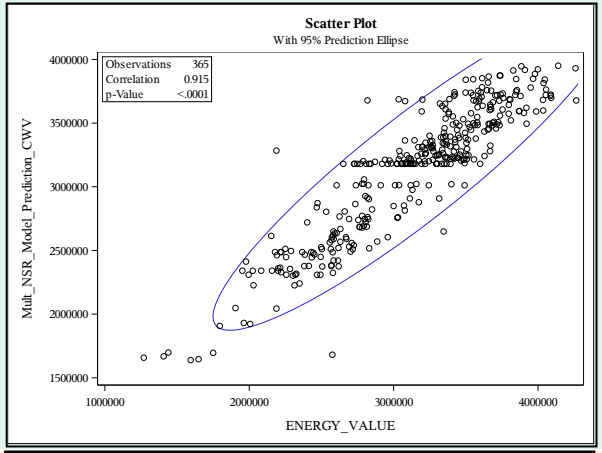


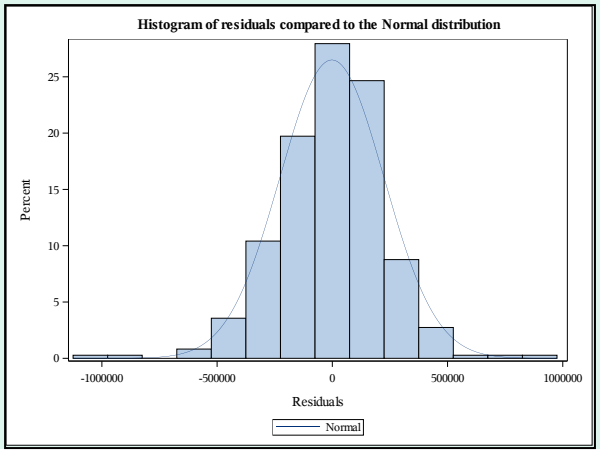
07B and 08B Scenario **Option** 2
Model: No Summer Reduction
EUC: 07B and 08B
LDZ: NE
Demand: Northern 7 LDZs
R^2: 92.8%
ILF: 65.1
Sample Points: 236

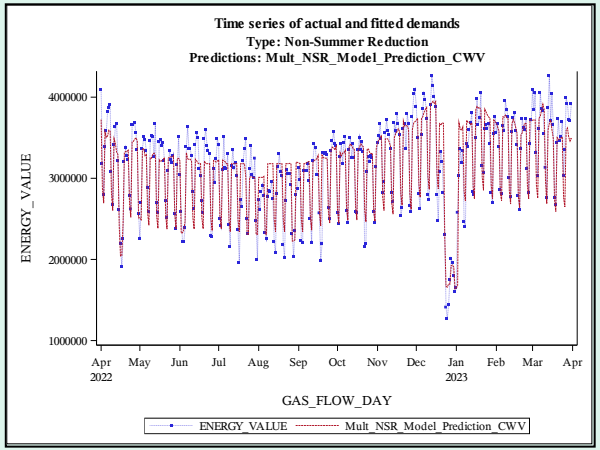


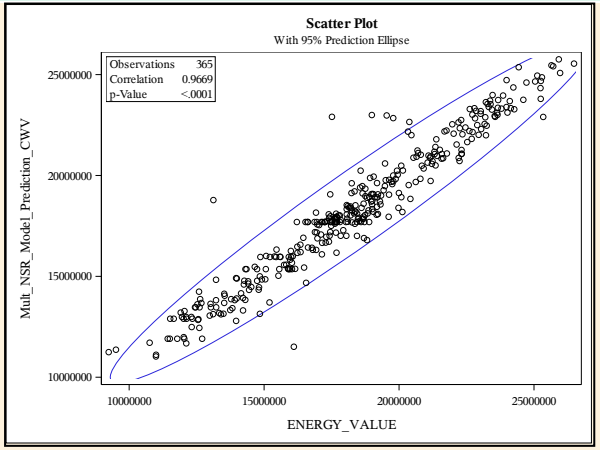


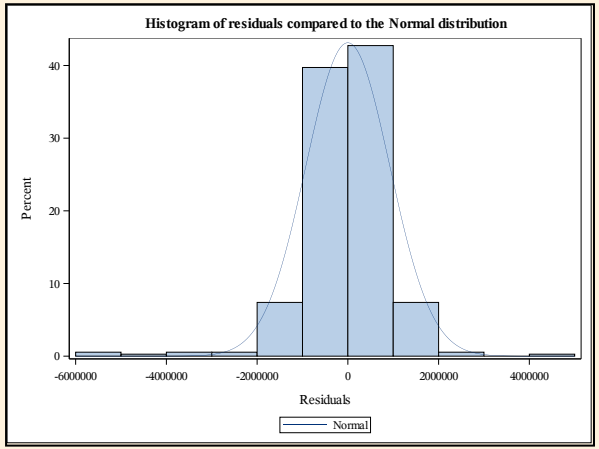
Results – Large NDM: 07B and 08B Summary

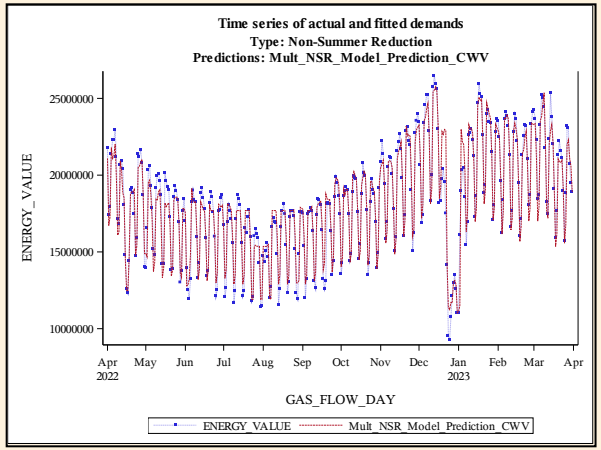






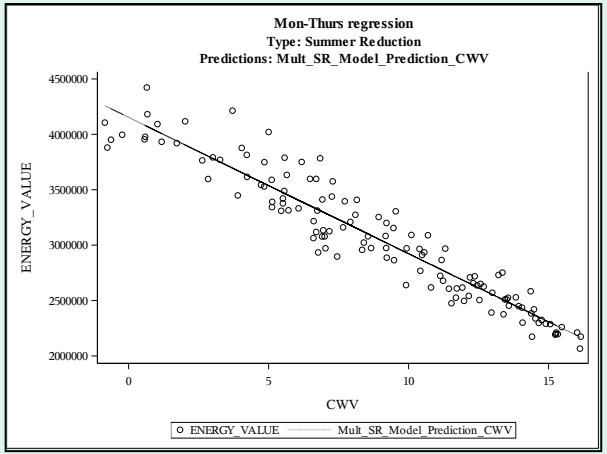


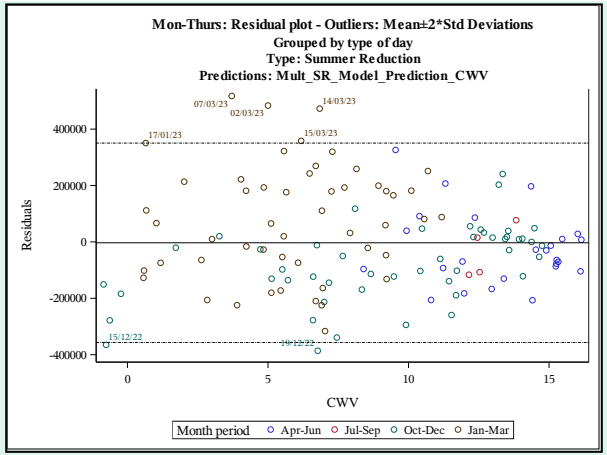




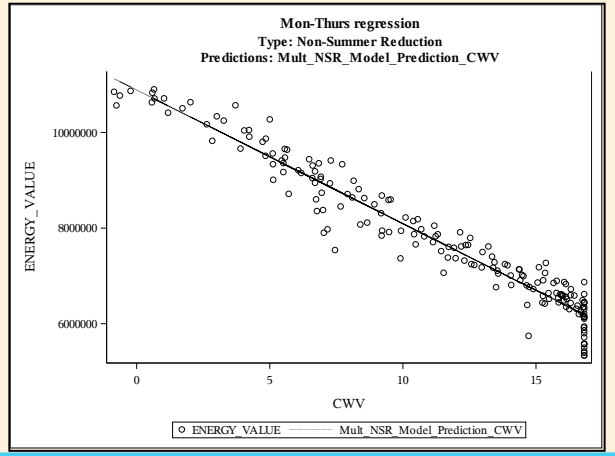
Results – Large NDM: 07B and 08B Summary

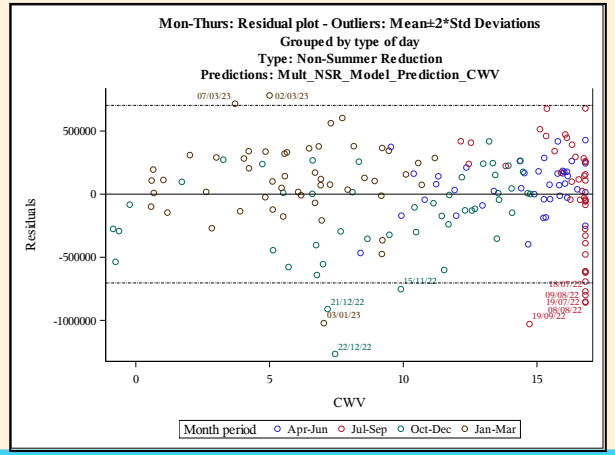
07B and 08B Scenario **Option** 1
Model: Summer Reduction
EUC: 07B
LDZ: NT
Demand: NT and EA
R^2: 89.9%
ILF: 54.1
Sample Points: 30



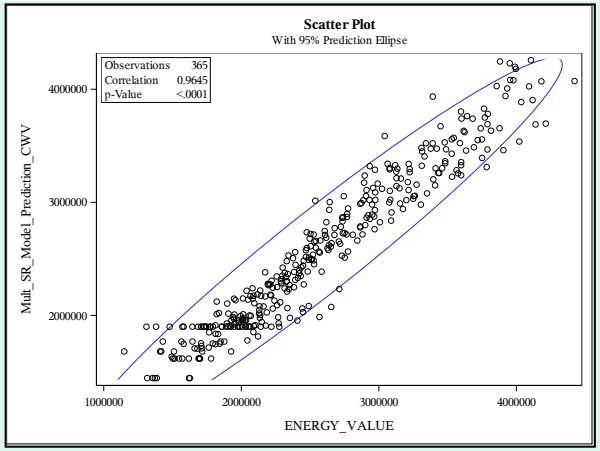


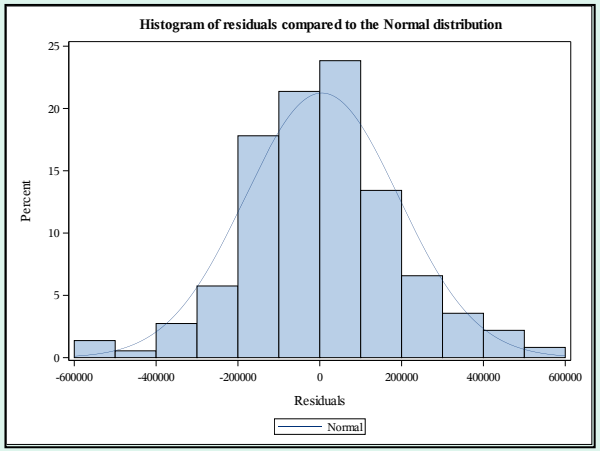
07B and 08B Scenario **Option** 2
Model: No Summer Reduction
EUC: 07B and 08B
LDZ: NT
Demand: Southern 6 LDZs
R^2: 94.1%
ILF: 59.2
Sample Points: 88

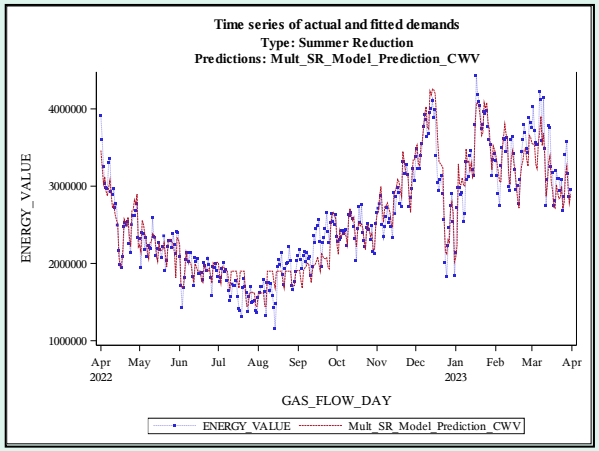


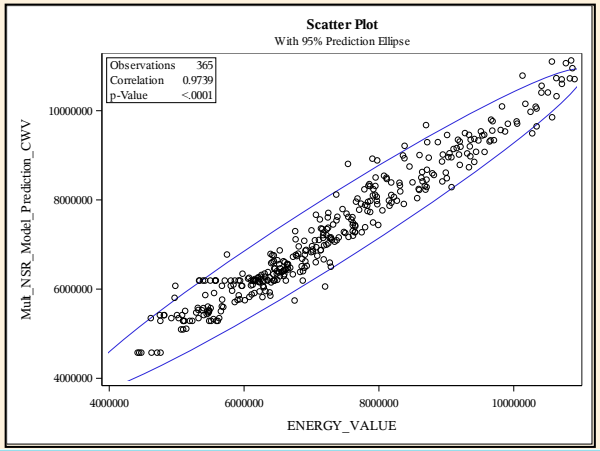


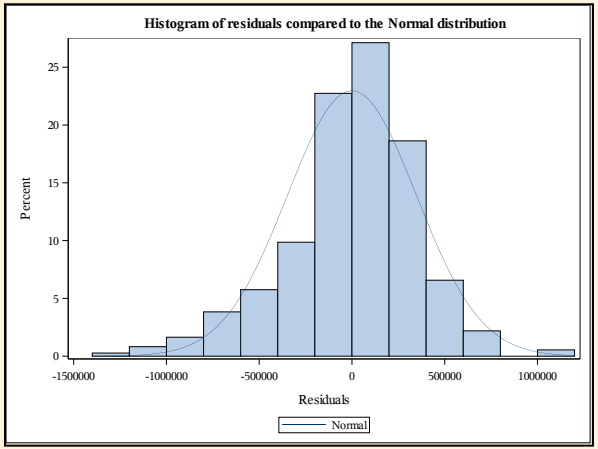
Results – Large NDM: 07B and 08B Summary

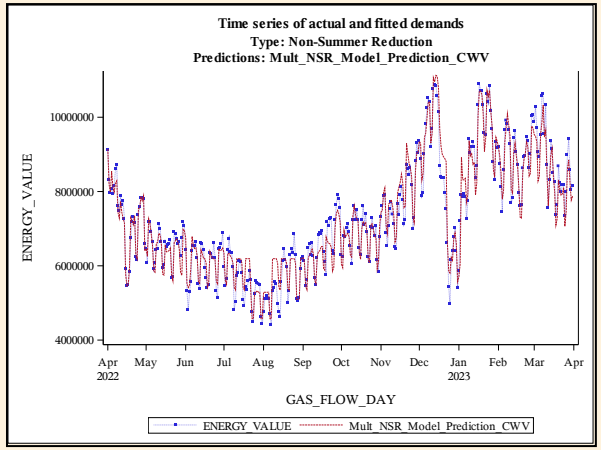












Recommendation – 07B and 08B

Option 1 – Individual LDZ for most LDZs except WS combined with SW, EA combined with NT, SE combined with SO and NW combined with WN

- \+ More Regional Integrity
- − Deterioration of R^2 for most LDZs

Option 2 – LDZ Group (North / South Split)

- \+ Improved R^2 for most areas
- − Significant data aggregation

Recommendation

2.0 Gas Demand EUC Modelling Results

RESULTS: LARGE NDM I&C WAR BANDS

Large NDM WAR Bands: Agreed Modelling Runs

EUC Bands: Range	**Description**	**EUCs**	**2022/23 Proposed Modelling Runs**
Band 5: 2,196 to 5,860 MWh pa	All NDM Supply Points	05 W01-04	SC at Individual LDZ, Others in groups of 2 (for 7 LDZs) or 3 (for 5 LDZs) LDZs
Band 6,7 and 8 (combined): 5,860 to **58,600** MWh pa		06W01-04, 07W01-04, 08W01-04	Combined with sample data for 05W01-04 for Modelling purposes: Individual LDZs (for 5 LDZs) or groups of 2 LDZs (for 8 LDZs)
Band 9: >58,600 MWh pa		N/A	N/A - No WAR Bands

Large NDM WAR Bands: Agreed Modelling Runs

EUC Bands: Range	**Description**	**EUCs**	**2022/23 Proposed Modelling Runs**
Band 5: 2,196 to 5,860 MWh pa	All NDM Supply Points	05 W01-04	SC at Individual LDZ, Others in groups of 2 (for 7 LDZs) or 3 (for 5 LDZs) LDZs
Band 6,7 and 8 (combined): 5,860 to **58,600** MWh pa		06W01-04, 07W01-04, 08W01-04	Combined with sample data for 05W01-04 for Modelling purposes: Option 1: Individual LDZs (for 5 LDZs) or groups of 2 LDZs (for 8 LDZs)
			Option 2: **Individual LDZs (for 5 LDZs) or groups of 2 LDZs (for 2 LDZs) or groups of 3 LDZs (for 6 LDZs)**
Band 9: >58,600 MWh pa		N/A	N/A - No WAR Bands

Results – Large NDM: 05W01-04 Summary

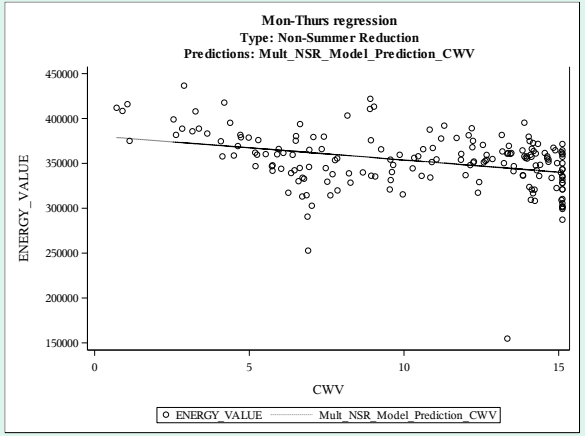
	05W01 (0 to 0.358)			05W02 (0.359 to 0.444)			05W03 (0.445 to 0.525)			05W04 (0.526 to 1)		
LDZ	R^2	Sample Size	ILF	R^2	Sample Size	ILF	R^2	Sample Size	ILF	R^2	Sample Size	ILF
SC	↗ 89.1%	🟢 32	↑ 76.5	↗ 97.1%	🟢 58	↑ 52.1	↘ 96.0%	🟢 58	↑ 39.6	↘ 92.2%	🟢 31	↓ 27.5
NO	↘ 94.3%	🟢 42	↑ 69.0	↓ 93.6%	🟢 47	↓ 51.6	↘ 96.5%	🟢 47	↑ 41.8	↓ 91.5%	🔴 27	↑ 26.7
NW	↓ 91.2%	🟢 44	↑ 69.9	↓ 91.8%	🟢 52	↑ 51.9	↘ 95.4%	🟢 50	↑ 39.4	↘ 94.1%	🟢 33	↓ 23.6
NE	↘ 94.3%	🟢 42	↑ 68.8	↓ 94.1%	🟢 47	↑ 50.1	↘ 96.4%	🟢 47	↑ 40.3	↓ 92.7%	🔴 27	↓ 24.7
EM	↓ 89.1%	🟢 53	↑ 69.4	↘ 94.6%	🟢 52	↑ 48.7	↘ 96.5%	🟢 35	↓ 38.7	↗ 95.9%	🟢 44	↑ 26.1
WM	↓ 89.2%	🟢 53	↑ 68.9	↘ 94.9%	🟢 52	↑ 47.9	↘ 96.2%	🟢 35	↑ 38.2	↗ 97.3%	🟢 44	↑ 25.9
WN	↓ 91.2%	🟢 46	↑ 70.8	↓ 92.1%	🟢 52	↑ 52.6	↘ 96.0%	🟢 58	↑ 40.2	↘ 94.8%	🟢 35	↓ 24.4
WS	↘ 89.7%	🟢 31	↓ 73.2	↘ 92.3%	🟢 54	↑ 53.3	↘ 95.2%	🟢 41	↑ 39.0	↗ 97.9%	🟢 41	↑ 28.1
EA	↑ 88.3%	🔴 29	↑ 80.7	↓ 89.3%	🟢 87	↑ 58.2	↘ 96.6%	🟢 111	↑ 42.0	↘ 97.5%	🟢 51	↑ 28.5
NT	↑ 88.3%	🔴 29	↑ 80.5	↓ 89.9%	🟢 87	↑ 58.1	↘ 96.9%	🟢 111	↑ 41.9	↘ 97.5%	🟢 51	↑ 28.4
SE	↑ 92.4%	🔴 28	↑ 78.8	↓ 88.5%	🟢 62	↑ 57.0	↘ 94.6%	🟢 64	↑ 40.6	↘ 96.9%	🟢 37	↑ 29.3
SO	↗ 92.5%	🔴 28	↑ 78.4	↓ 86.9%	🟢 62	↑ 55.7	↓ 93.3%	🟢 64	↑ 39.4	↘ 96.4%	🟢 37	↑ 28.4
SW	↘ 89.8%	🟢 31	↓ 72.7	↘ 92.2%	🟢 54	↑ 52.8	↘ 94.9%	🟢 41	↑ 38.3	↘ 97.5%	🟢 41	↑ 27.6

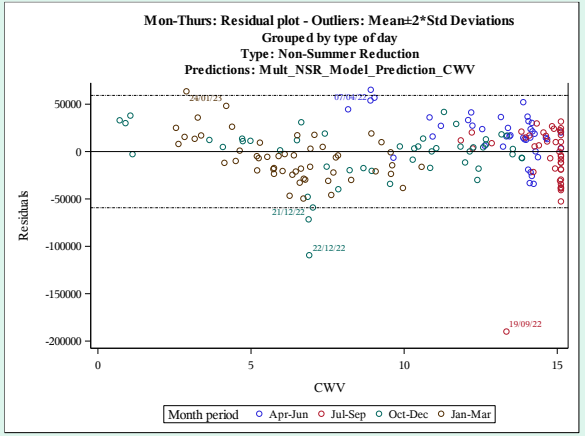
Results – Large NDM: 05W01-04 Summary

- Previous 2 years used in average are 2019/20 and 2021/22
  - These values are not shown due to lack of space but drive the movement arrows
- Many R^2 values are similar to the previous 2 years average particularly for W02-04
- W01 has seen some fairly significant deterioration in R^2, however we expect WAR band 1 to have the least seasonality, and therefore lower R^2 values
- Charts for WS:W01 and WS:W04 are shown on the following slides
- Sample Sizes were above the minimum for most areas and only slightly below for a few in W01 and W04
- ILF values have changed a little, more so for W01
- There is clear separation in the ILF values between the bands
- Model results are adequate with no alternatives required

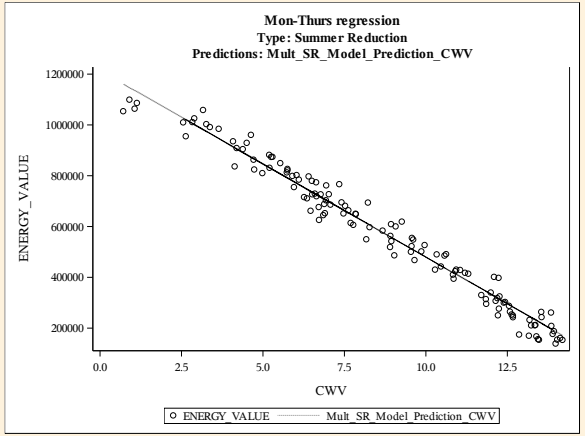
Results – Large NDM: 05W01-04 Summary

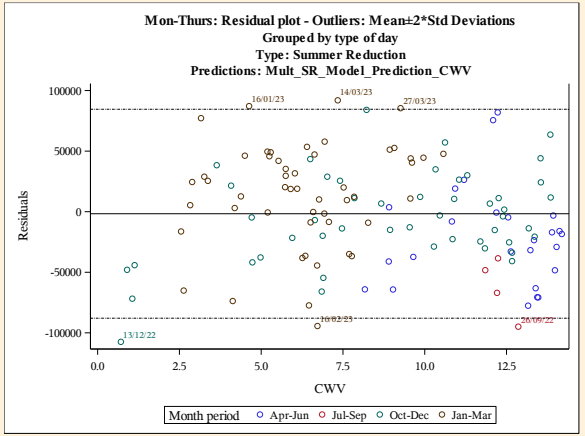
05W01 Scenario
Model: No Summer Reduction
EUC: 05W01
LDZ: WS
Demand: WS, SW, SO
R^2: 89.7%
ILF: 73.2
Sample Points: 31



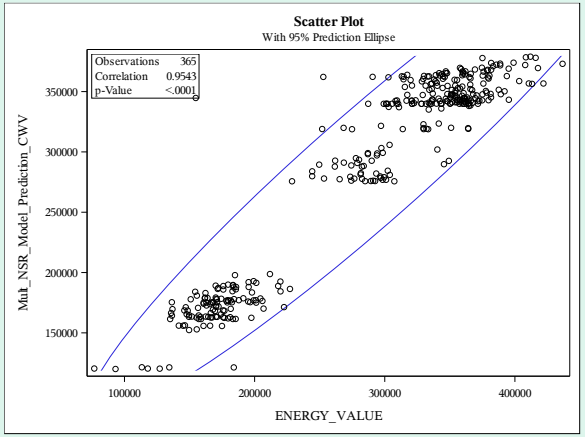


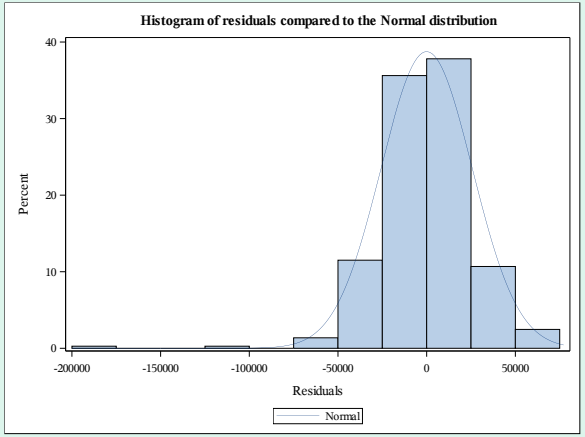
05W04 Scenario
Model: Summer Reduction
EUC: 05W04
LDZ: WS
Demand: WS, SW, SO
R^2: 97.9%
ILF: 28.1
Sample Points: 41

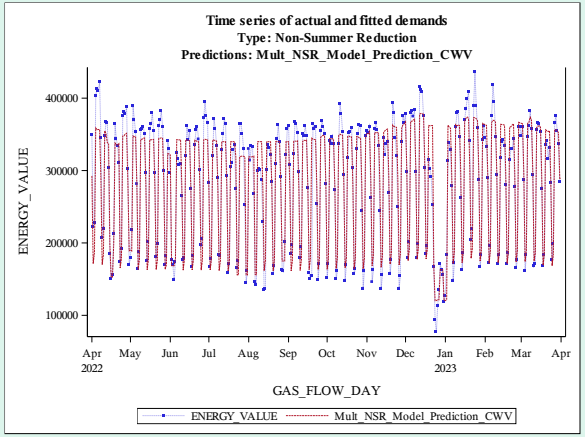


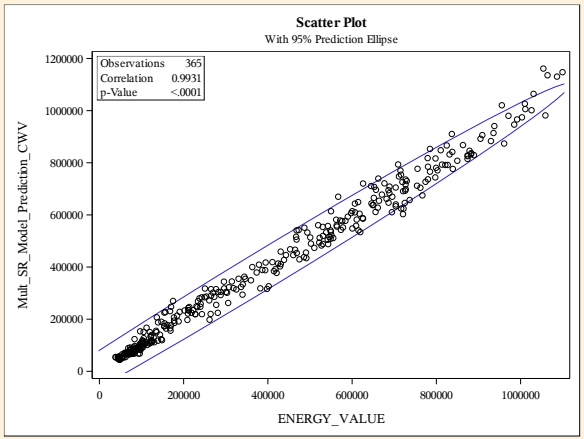


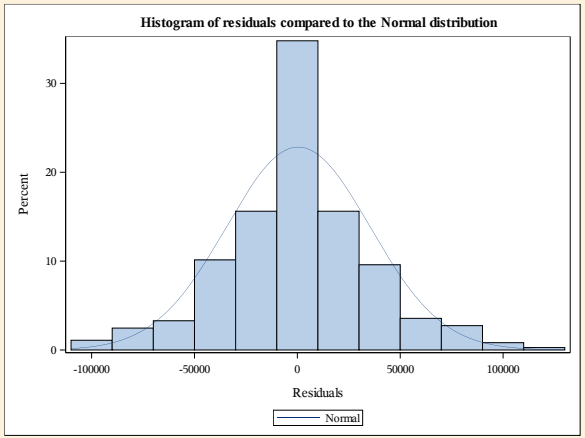
Results – Large NDM: 05W01-04 Summary

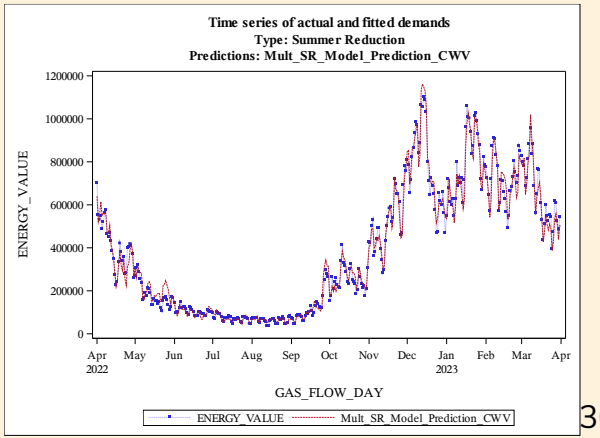












Results – Large NDM: 06-08 W01-04 Option 1

	06-08 W01 (0 to 0.328)			06-08 W02 (0.329 to 0.409)			06-08 W03 (0.410 to 0.506)			06-08 W04 (0.507 to 1)		
LDZ	R^2	Sample Size	ILF	R^2	Sample Size	ILF	R^2	Sample Size	ILF	R^2	Sample Size	ILF
SC	↓ 80.9%	🟢 50	↑ 84.3	↓ 88.0%	🟢 76	↑ 63.7	↘ 95.8%	🟢 113	↓ 45.0	↘ 94.1%	🟢 45	↓ 27.9
NO	↓ 77.2%	🟢 41	↑ 85.5	↓ 88.0%	🟢 34	↓ 60.7	↗ 97.7%	🟢 42	↓ 45.5	↘ 95.6%	🔴 28	↓ 29.6
NW	↓ 82.2%	🟢 36	↑ 86.1	↓ 85.1%	🟢 65	↑ 66.0	↓ 89.1%	🟢 45	↓ 41.1	↘ 94.6%	🟢 35	↓ 27.8
NE	↓ 80.8%	🟢 99	↑ 87.3	↓ 92.5%	🟢 93	↓ 59.7	↗ 97.4%	🟢 82	↑ 44.2	↗ 96.5%	🟢 51	↓ 28.7
EM	↓ 70.9%	🟢 61	↑ 84.0	↓ 89.4%	🟢 65	↓ 57.8	↓ 86.6%	🔴 28	↓ 41.6	↘ 95.1%	🟢 35	↑ 31.2
WM	↓ 83.7%	🟢 36	↑ 85.9	↓ 88.8%	🟢 48	↑ 63.2	↘ 94.7%	🟢 41	↓ 39.4	↗ 95.3%	🟢 33	↓ 27.9
WN	↓ 81.5%	🟢 40	↑ 87.4	↓ 80.1%	🟢 70	↑ 65.5	↘ 92.6%	🟢 52	↓ 42.2	↘ 95.2%	🟢 39	↓ 28.4
WS	↓ 50.8%	🔴 27	↑ 92.5	↓ 92.5%	🟢 64	↓ 64.3	↓ 90.1%	🟢 37	↓ 41.7	↗ 97.0%	🟢 35	↓ 28.8
EA	↓ 49.4%	🔴 27	↑ 92.3	↓ 87.5%	🟢 61	↓ 65.1	↓ 92.0%	🟢 102	↑ 46.6	↓ 93.1%	🟢 64	↓ 26.8
NT	↓ 49.4%	🔴 27	↑ 92.2	↓ 87.9%	🟢 61	↓ 65.1	↓ 92.7%	🟢 102	↑ 46.4	↓ 93.8%	🟢 64	↓ 26.9
SE	↓ 71.3%	🟢 36	↓ 68.5	↓ 89.2%	🟢 81	↑ 66.0	↓ 94.2%	🟢 105	↓ 43.7	↘ 94.9%	🟢 66	↑ 30.4
SO	↓ 71.3%	🟢 36	↓ 66.5	↓ 87.2%	🟢 81	↑ 66.0	↓ 93.0%	🟢 105	↓ 42.5	↓ 93.3%	🟢 66	↑ 29.5
SW	↓ 50.4%	🔴 27	↑ 92.2	↓ 92.9%	🟢 64	↓ 63.4	↓ 88.6%	🟢 37	↓ 41.4	↘ 95.8%	🟢 35	↓ 28.4

Results – Large NDM: 06-08 W01-04 Option 2

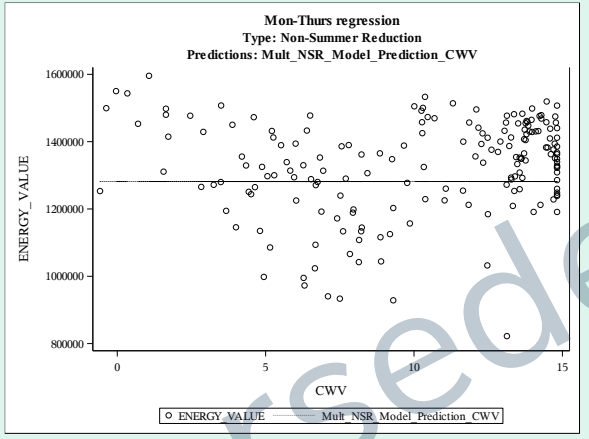
	06-08 W01 (0 to 0.328)			06-08 W02 (0.329 to 0.409)			06-08 W03 (0.410 to 0.506)			06-08 W04 (0.507 to 1)		
LDZ	R^2	Sample Size	ILF	R^2	Sample Size	ILF	R^2	Sample Size	ILF	R^2	Sample Size	ILF
SC	↓ 80.9%	50	↑ 84.3	↓ 88.0%	76	↑ 63.7	↘ 95.8%	113	↓ 45.0	↘ 94.1%	45	↓ 27.9
NO	↓ 77.2%	41	↑ 85.5	↓ 88.0%	34	↓ 60.7	↗ 97.7%	42	↓ 45.5	↘ 95.6%	28	↓ 29.6
NW	↓ 82.2%	36	↑ 86.1	↓ 85.1%	65	↑ 66.0	↓ 89.1%	45	↓ 41.1	↘ 94.6%	35	↓ 27.8
NE	↓ 80.8%	99	↑ 87.3	↓ 92.5%	93	↓ 59.7	↗ 97.4%	82	↑ 44.2	↗ 96.5%	51	↓ 28.7
EM	↓ 70.9%	61	↑ 84.0	↓ 89.4%	65	↓ 57.8	↓ 86.6%	28	↓ 41.6	↘ 95.1%	35	↑ 31.2
WM	↓ 83.7%	36	↑ 85.9	↓ 88.8%	48	↑ 63.2	↘ 94.7%	41	↓ 39.4	↗ 95.3%	33	↓ 27.9
WN	↓ 81.5%	40	↑ 87.4	↓ 80.1%	70	↑ 65.5	↘ 92.6%	52	↓ 42.2	↘ 95.2%	39	↓ 28.4
WS	↓ 79.1%	63	↑ 89.3	↓ 94.4%	112	↓ 63.2	↘ 94.2%	78	↓ 41.1	↘ 96.5%	68	↓ 28.6
EA	↓ 73.9%	44	↑ 89.7	↓ 88.4%	105	↑ 67.5	↓ 93.4%	168	↑ 46.4	↘ 96.9%	98	↓ 28.9
NT	↓ 73.9%	44	↑ 89.6	↓ 89.0%	105	↑ 67.4	↓ 94.0%	168	↑ 46.3	↘ 96.9%	98	↓ 28.9
SE	↓ 73.6%	47	↑ 87.3	↓ 92.0%	114	↓ 65.1	↘ 94.6%	173	↓ 44.3	↔ 96.7%	106	↓ 28.3
SO	↓ 73.5%	47	↑ 87.2	↓ 91.1%	114	↑ 65.2	↓ 93.2%	173	↑ 43.2	↘ 95.9%	106	↓ 27.3
SW	↓ 79.0%	63	↑ 89.2	↓ 94.4%	112	↓ 64.1	↓ 93.6%	78	↓ 40.6	↘ 95.1%	68	↓ 28.2

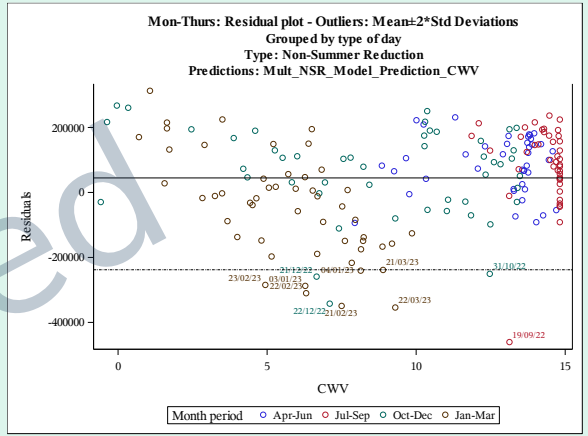
Results – Large NDM: 06-08 W01-04 Summary

- Previous 2 years used in average are 2019/20 and 2021/22
  - These values are not shown due to lack of space but drive the movement arrows
- Many R^2 values are similar to the previous 2 years average particularly for W02-04
- W01 has seen some fairly significant deterioration in R^2, however we expect WAR band 1 to have the least seasonality, and therefore lower R^2 values
- Charts for W01 and W04 for SW in are show on the following slides
  - The model has struggled to for W01 due to the unusual consumption pattern. This has resulted in a fairly low R2 of 50.4%
- Sample Sizes were above the minimum for most areas and slightly below for a few LDZs
- ILF values have changed a little, more so for W01. There is clear separation in the ILF values between the bands
- Model results are adequate with no alternatives required

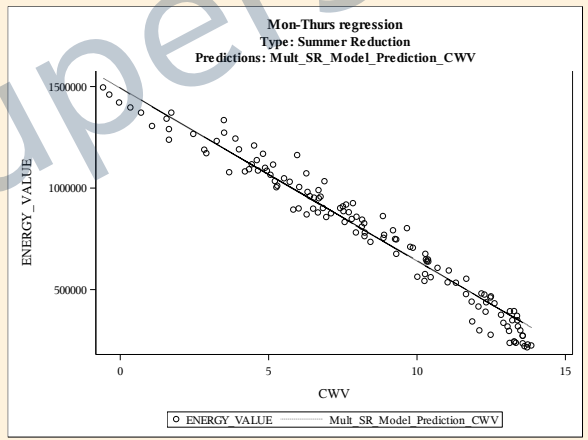
Results – Large NDM: 06-08 W01-04 Summary

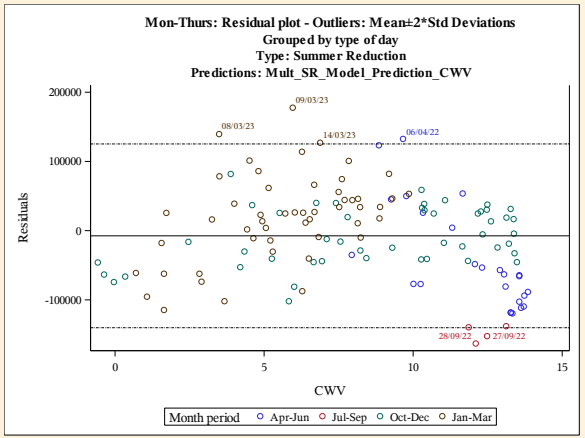
<u>06-08 W01 Scenario</u>
Model: No Summer Reduction
EUC: 06-08 W01
LDZ: SW
Demand: WS, SW
R^2: 50.4%
ILF: 92.2
Sample Points: 27



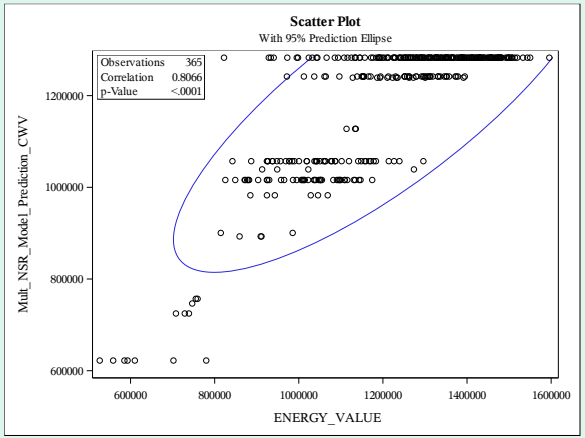


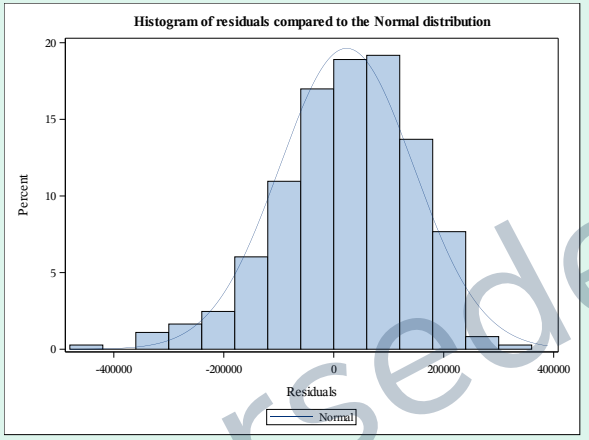
<u>06-08 W04 Scenario</u>
Model: Summer Reduction
EUC: 06-08 W04
LDZ: SW
Demand: WS, SW
R^2: 95.8%
ILF: 28.4
Sample Points: 35

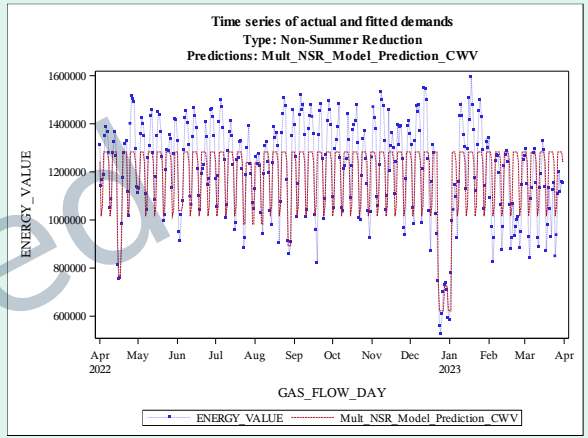


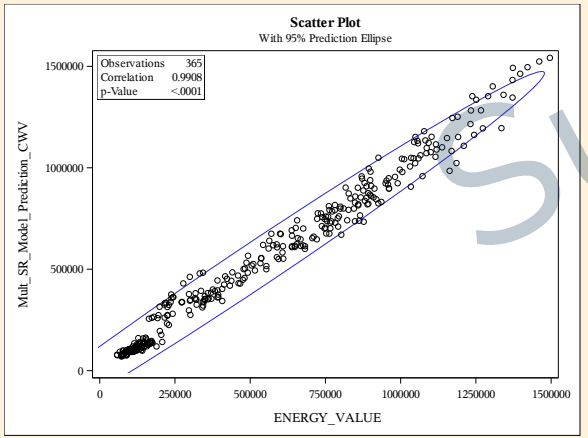


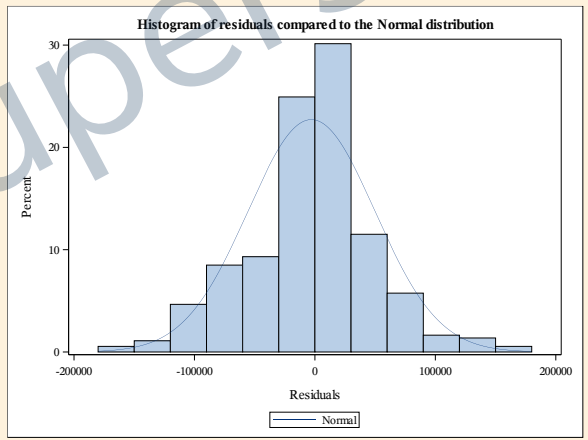
Results – Large NDM: 06-08 W01-04 Summary

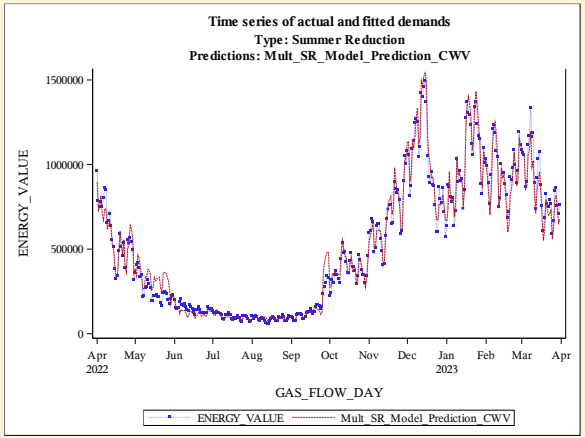










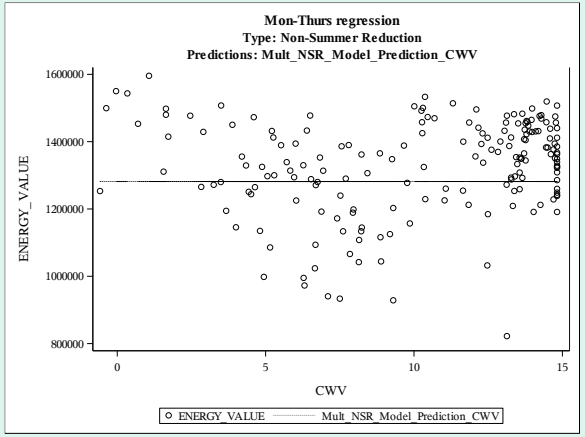


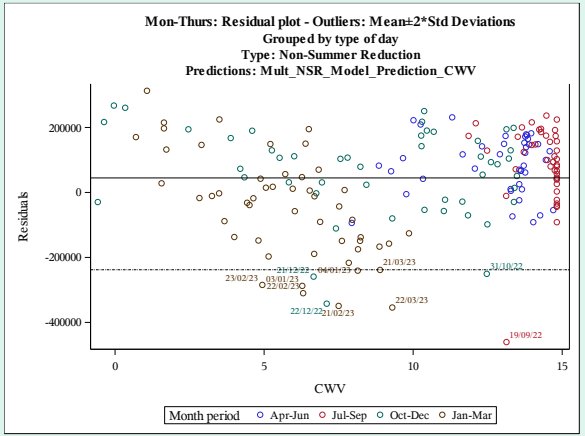
Results – Large NDM: 06-08 W01-04 Summary

- Previous 2 years used in average are 2019/20 and 2021/22
  - These values are not shown due to lack of space but drive the movement arrows
  - Previous years values used in comparison are for 06W01-04, so some differences are expected
- Many R^2 values are similar to the previous 2 years average particularly for W02-04
- W01 has seen some fairly significant deterioration in R^2 average
  - Option 1 is on average reduced by 22%, with 4 LDZs below 51%
  - Option 2 is on average reduced by 14%, lowest is 70.9%
- Sample Sizes were below the minimum for 6 LDZs for Option 1 and 2 LDZs for Option2
  - The 2 below minimum for Option 2 performed well and did not require aggregation
- ILF values have changed, however this is expected due to changes in EUC aggregation for modelling
  - Option 1 did not provide clear ILF separation for 2 LDZs
  - Option 2 results show a clear separation between ILFs

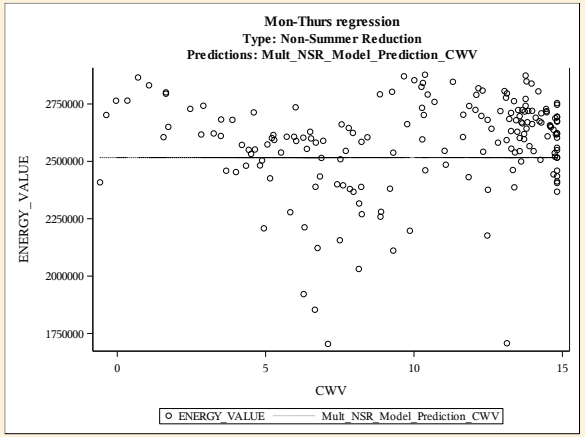
Results – Large NDM: 06-08 W01-04 Summary

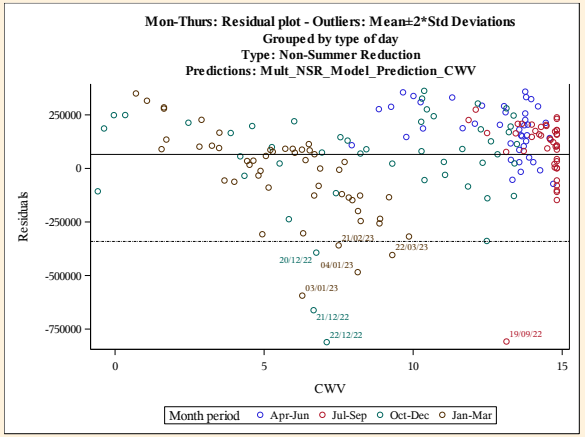
06-08 W01 Scenario Option 1
Model: No Summer Reduction
EUC: 06-08 W01
LDZ: SW
Demand: WS, SW
R^2: 50.4%
ILF: 92.2
Sample Points: 27



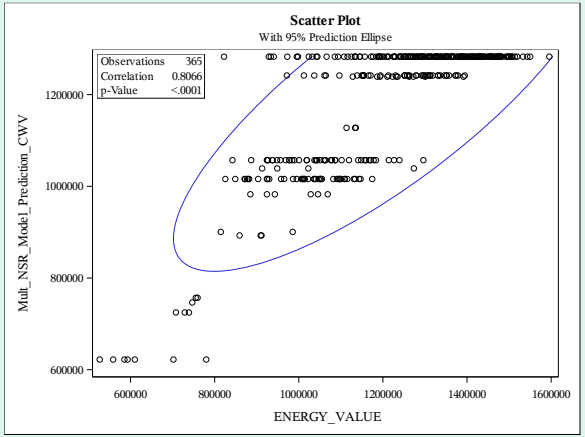


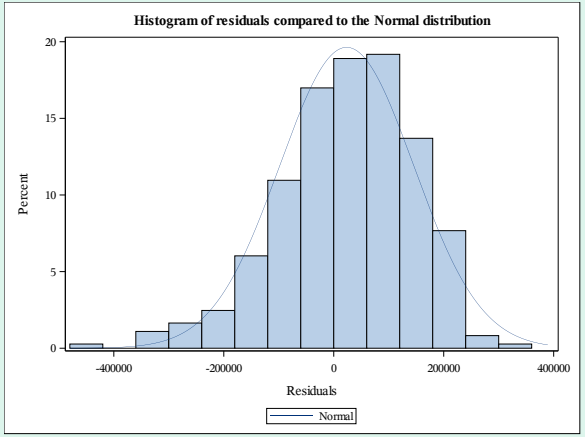
06-08 W01 Scenario Option 2
Model: No Summer Reduction
EUC: 06-08 W01
LDZ: SW
Demand: WS, SW, WM
R^2: 79.0%
ILF: 89.2
Sample Points: 63

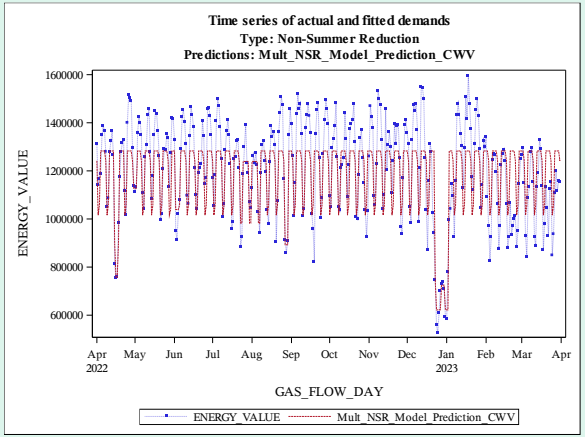


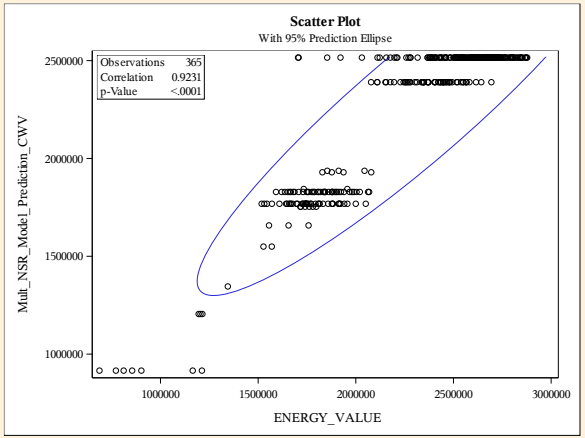


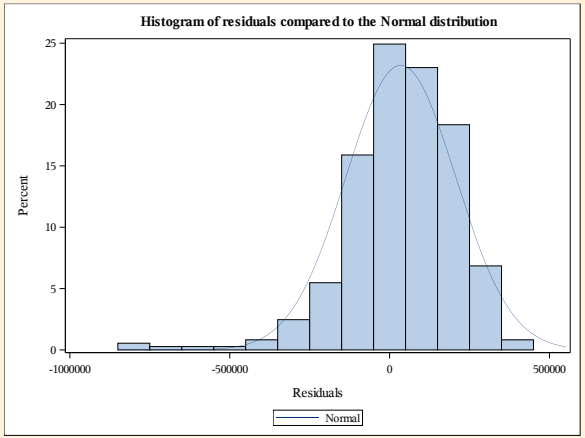
Results – Large NDM: 06-08 W01-04 Summary

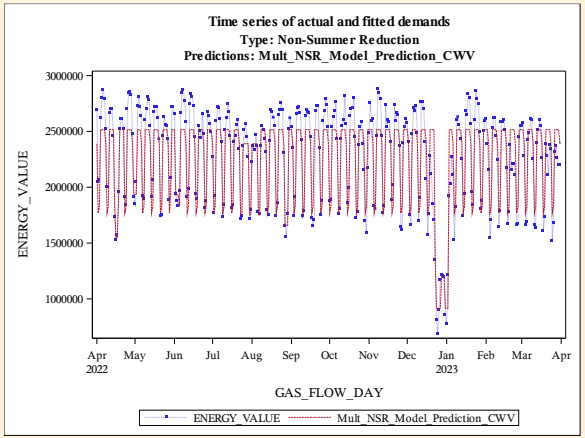












Recommendation – 06-08 W01-04

Option 1 – Individual LDZs (for 5 LDZs) or groups of 2 LDZs (for 8 LDZs)

- ➕ More Regional Integrity
- ➖ Significantly worse R^2 for Some W01 LDZs
- ➖ No ILF Separation between W01 and W02 for 2 LDZs

Option 2 - Individual LDZs (for 5 LDZs) or groups of 2 LDZs (for 2 LDZs) or groups of 3 LDZs (for 6 LDZs)

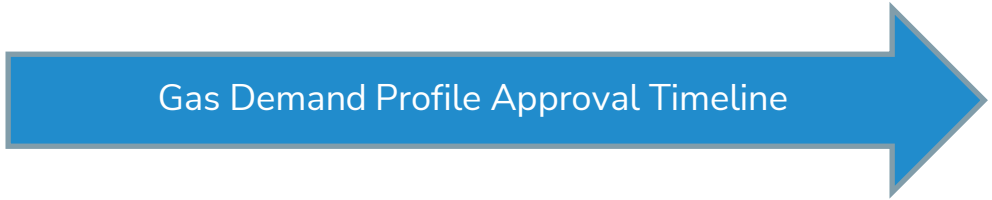
- ➕ Less R^2 deterioration for most areas when compared with Option 1
- ➖ More data aggregation

Recommendation

Conclusions

- Modelling results for Consumption Bands are fairly good, with no significant deterioration in R^2
- Results for most WAR Bands are good with the exception of 06-08 W01
- Sample data for Large NDM continues to be low
- ILFs are in line with previous years
- All models have produced good or adequate results that can be carried forward into model smoothing

Next Steps



Model Smoothing and publication of draft Gas Demand Profiles

25th May to 9th June

DESC review of draft Gas Demand Profiles

12th to 23rd June

Seek DESC approval of draft Gas Demand Profiles

5th July

Industry review of Gas Demand Profiles

5th to 19th July