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Technical Work Group

EUC Modelling 2013/14 – Single Year Modelling Results

22nd May 2013

Agenda

- Overview of Demand Estimation & Timetable
- Presentation of Current Completed Analysis
 - Modelling Basis
 - Small NDM – Modelling results for single year
 - Large NDM – Modelling results for single year
- Review and conclusions

Purpose of NDM Modelling

- Provides a method to differentiate NDM loads and provide profiles of usage
i.e. End User Category (EUC) Definitions
- Provide a reasonable equitable means of apportioning aggregate NDM demand (by EUC / shipper / LDZ) to allow daily balancing regime to work
i.e. NDM profiles (ALPs & DAFs)
- Provide a means of determining NDM Supply Point capacity
i.e. NDM EUC Load Factors
- The underlying NDM EUC and aggregate NDM demand models derived each year are intended to deliver these obligations only
- NDM EUC profiles are used to apportion aggregate NDM demand and do not independently forecast NDM EUC demand

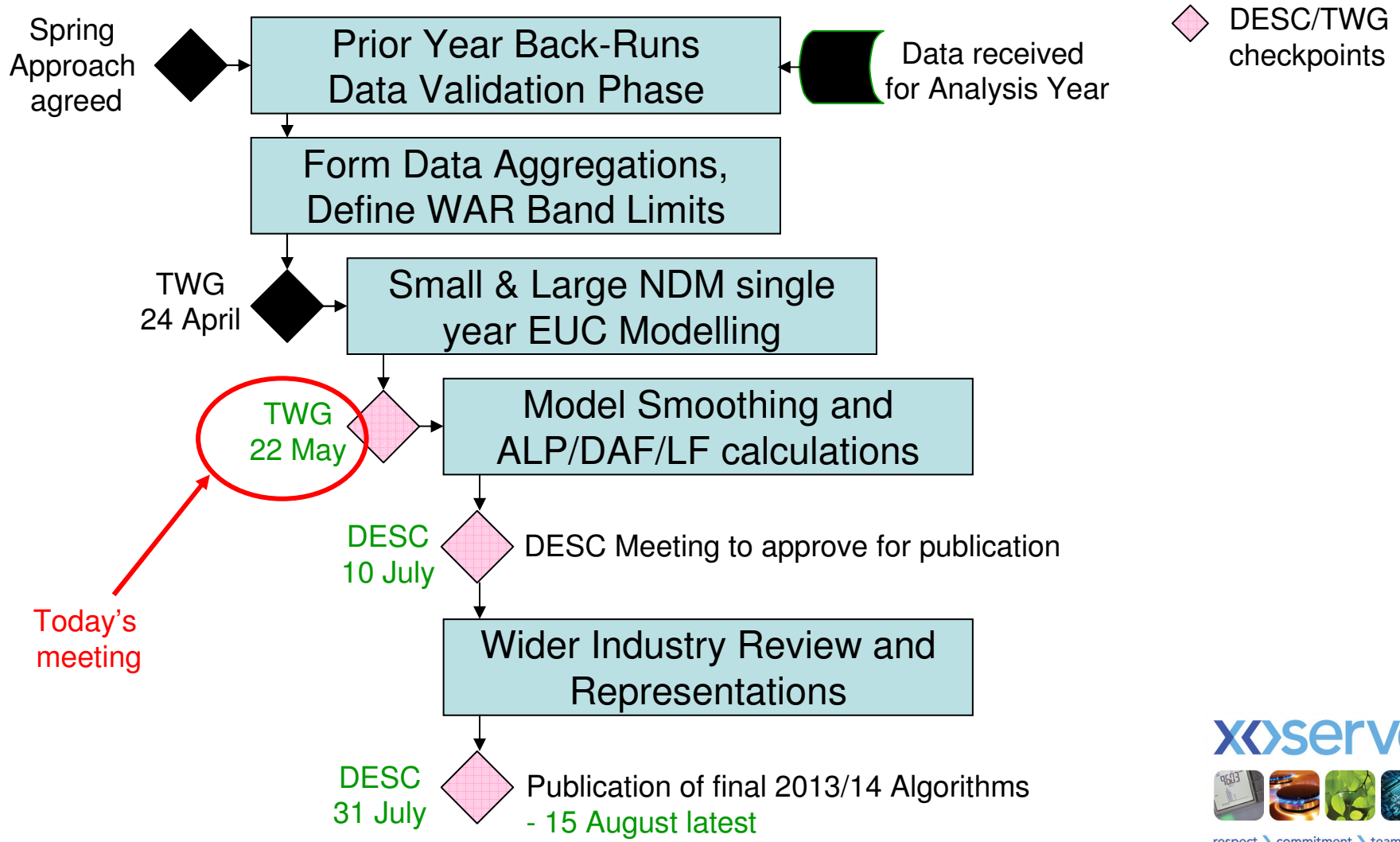
Changes to UNC Section H

- Responsibilities for Demand Estimation changed following implementation of UNC Modification 331 on 3rd January 2012
- DESC collectively required by UNC to:
 - Submit proposals to Transporters and Users for each Gas Year comprising:
 - EUC Definitions
 - NDM Profiling Parameters
 - Capacity Estimation Parameters
 - In addition:
 - Analysis of accuracy of the allocation process
 - Derivation of CWV and Seasonal Normal
 - Consultation with Industry
- Xoserve acts as the common NDM Demand Estimation service provider

Agreed 2013 Modelling Workplan

- Workplan for 2013 Modelling agreed at Feb DESC meeting
- Workplan provides more transparency of process and includes checkpoints for DESC/TWG review
- Timetable inserted as an Appendix to Spring Approach document

Agreed 2013 Timetable



Objectives of this Meeting

- Second checkpoint meeting of this year's modelling process
- Checkpoint required prior to commencing 3-year model smoothing
- Key objectives of May meeting
 - Review and confirm results of single year EUC Modelling
- Required Outcome – TWG agreement to single year models – needed prior to commencing next phase of modelling

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2013 Modelling Basis 1

- Methodology described in “Spring Approach” document, approved at February 2013 meeting
- Key aspects of EUC demand modelling basis for Spring 2013 analysis:
 - 12 month analysis for AMR and datalogger data sets covering 1st April 2012 to 31st March 2013
 - Sample data collected, validated and options for aggregations agreed by TWG during April
 - CWV definitions and SN basis same as Spring 2012
 - All demand modelling is data driven – if the modelling results indicate then Holiday & Weekend Factors, Summer Reductions & Cut-Offs will be applied

2013 Modelling Basis 2

- Holiday codes and rules applicable to Christmas / New Year period are same as used in Spring 2012 (changes last made at the November 2011 DESC meeting)
- Warm-weather cut-offs:
 - Not applied to EUC models < 293 MWh pa to help mitigate the identified impact of summer Scaling Factor volatility
 - Therefore no cut-off is placed on warm weather demand reduction in EUC models representing nearly 80% of NDM load
 - Any cut-offs are based on modelling results from 3 years
- Summer Reductions:
 - Summer reductions can apply to EUC models over the period 3rd June to 30th September 2012 (Spring Bank Holiday Monday to last Sunday in September)
 - Applies along with the more general summer holiday period in July and August
 - Applied by modelling results over 3 years
- Modelling methodology described in NDM Report (Appendices 3 & 4)

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Purpose of Analysis

- Analysis carried out...
 - Aims to assist in the creation of profiles based on the relationship between demand to weather
 - Identify the best fit model based on available data samples
 - View of results so far and highlight any issues raised
- Tools used to identify best model :
 - R^2 Multiple Correlation Coefficient – statistical tool for identifying ‘goodness of fit’ (100% = perfect fit / direct relationship)
 - Variations in Indicative Load Factors.....

Indicative Load Factors (ILF) & Load Factors (LF)

- ILF used to compare variations in models
 - $LF = \text{average daily demand (i.e. } AQ/365) / 1 \text{ in } 20 \text{ peak demand}$
 - $ILF = (AQ/365) / \text{model demand corresponding to } 1 \text{ in } 20 \text{ CWV}$
- ILF based on available 1 in 20 CWV against demand to create replicated LF
- ILFs are only used to compare prospective demand models as an aid to making decisions on model choice
- ILFs are not the same as proper LFs and their values are not an indicator of the values of proper LFs (ILFs not used for determining NDM capacities)
- There should be distinguishable ILF values between consumption and WAR bandings

Feedback on Analysis Content / Format

- Although no feedback has been received from TWG on material format, Xoserve has looked back to minutes from last year's meeting
- Following improvements made which should assist TWG with the decision making process:
 - For EUC bands where only one model has been run and no decision is necessary then certain LDZs have been highlighted for information purposes e.g. lower R-squared value
 - For EUC bands where multiple models have been run and TWG need to make a decision on their preferred option then further statistical information has been added e.g. summary of residuals and T-Stats

Small NDM Analysis

<2,196 MWh

Small NDM Analysis

- Current EUC Bands Small NDM :
 - 0 – 73.2 MWh pa
 - 73.2 – 293 MWh pa
 - 293 – 732 MWh pa
 - 732 – 2,196 MWh pa

Total NDM Population Summary: Supply Point & AQ

Consumption Range	% of Total NDM	
	% of Total NDM AQ	% of Total NDM Count
0 – 73.2 MWh pa	72.5%	98.78%
0 – 293 MWh pa	78.5%	99.67%
0 – 2,196 MWh pa	88.8%	99.96%
>2,196 MWh pa	11.2%	0.04%

- On an AQ basis:
 - Small NDM is by far the main component of the overall NDM sector
 - The range 0-73.2 MWh pa constitutes nearly 3/4 of overall NDM
 - The range 0-293 MWh pa constitutes nearly 4/5 of overall NDM
 - The range 0-2196 MWh pa constitutes nearly 9/10 of overall NDM
 - Large NDM is very much a minority component of overall NDM

Small NDM Supply Points (<2,196 MWh pa) Agreed Sample Data Aggregations

Consumption Band Analysis – 2012/13 data	
Band 01 0 to 73.2 MWh pa	Individual LDZ
Band 02 73.2 to 293 MWh pa	Individual LDZ
Band 03 293 to 732 MWh pa	Individual LDZ WS/SW Combined
Band 04 732 to 2,196 MWh pa	Individual LDZ

- Aggregations as agreed at April TWG
- In the main sufficient data available to allow individual LDZ analysis
- Decision to be made on model to be used for Band 03 – results to follow

Small NDM Modelling Results

EUC Band 1: 0 – 73.2 MWh pa Domestic Sites

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	40%	98%	236
NO	33%	98%	238
NW / WN	36%	98%	245
NE	37%	97%	266
EM	35%	99%	255
WM	32%	99%	257
WS	34%	97%	244
EA	33%	99%	281
NT	32%	99%	247
SE	31%	99%	243
SO	29%	99%	263
SW	31%	99%	261

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

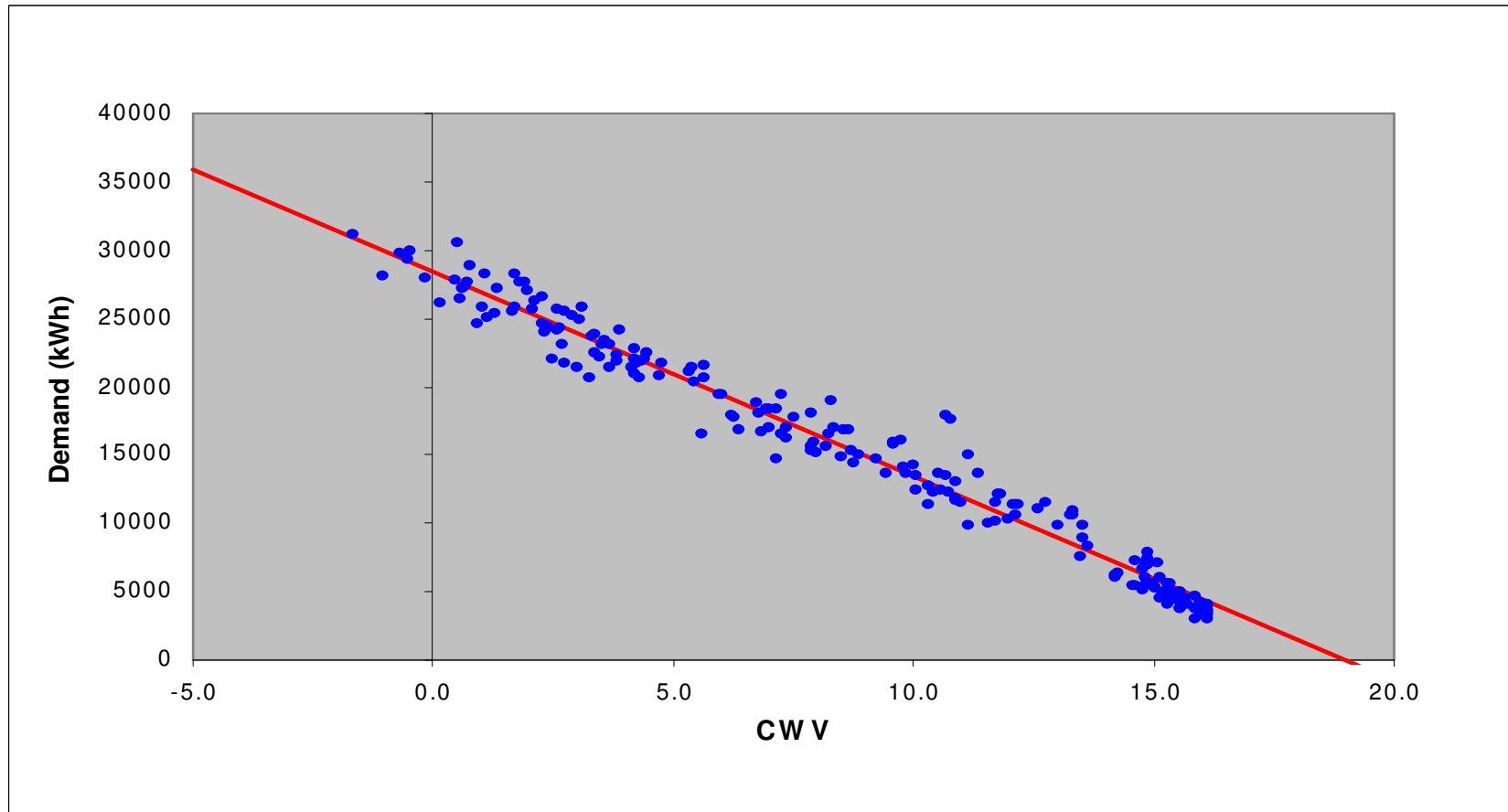
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Small NDM Modelling Results

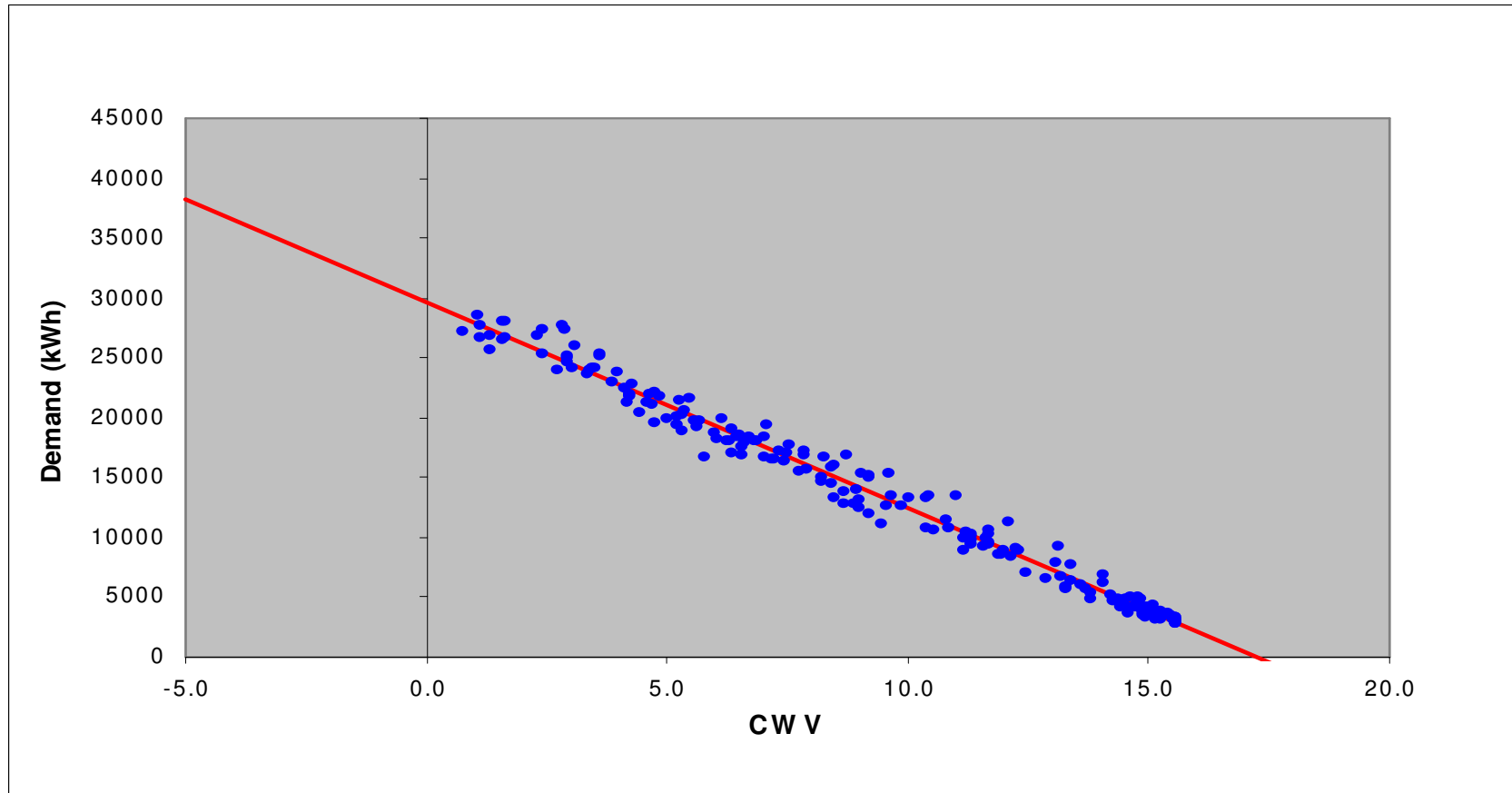
NE LDZ, EUC Band 1: 0 - 73.2 MWh pa



Demand against NE CWV – Monday to Thursday - Holidays included

Small NDM Modelling Results

SW LDZ, EUC Band 1: 0 - 73.2 MWh pa



Demand against SW CWV – Monday to Thursday - Holidays included

Small NDM Modelling Results

EUC Band 2: 73.2 – 293 MWh pa

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	38%	97%	118
NO	31%	97%	77
NW / WN	32%	96%	120
NE	31%	95%	106
EM	32%	97%	118
WM	29%	96%	102
WS	31%	97%	84
EA	29%	96%	126
NT	31%	97%	149
SE	31%	98%	135
SO	29%	98%	108
SW	33%	96%	112

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

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Small NDM Modelling Results

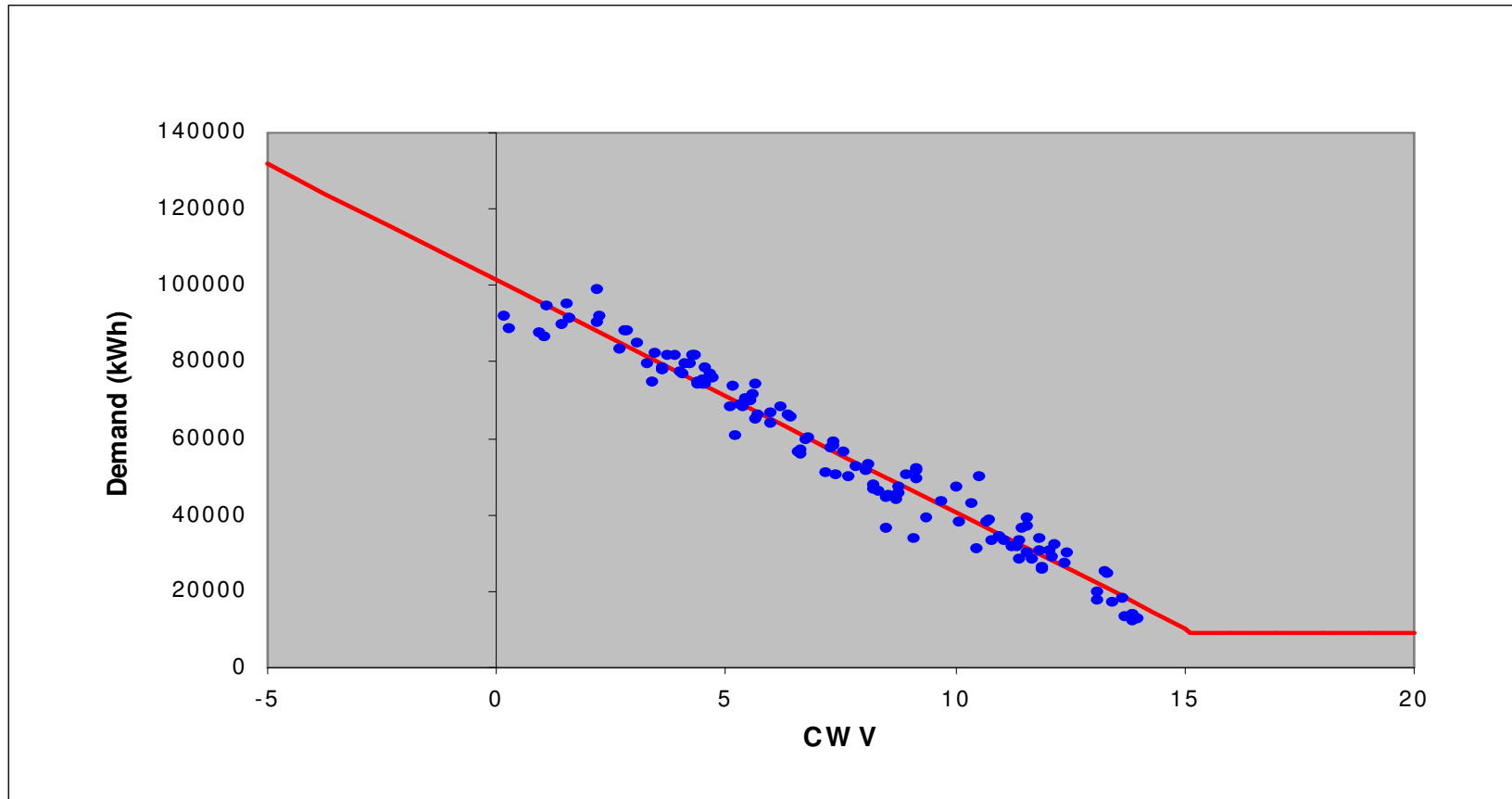
DECISION: EUC Band 3: 293 – 732 MWh pa

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	39%	98%	147
NO	32%	98%	86
NW / WN	32%	96%	120
NE	33%	95%	113
EM	33%	97%	132
WM	26%	95%	98
WS	26%	94%	25
EA	31%	98%	135
NT	33%	98%	141
SE	30%	98%	124
SO	27%	97%	109
SW	27%	97%	77
WS / SW	27%	96%	102

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

Small NDM Modelling Results

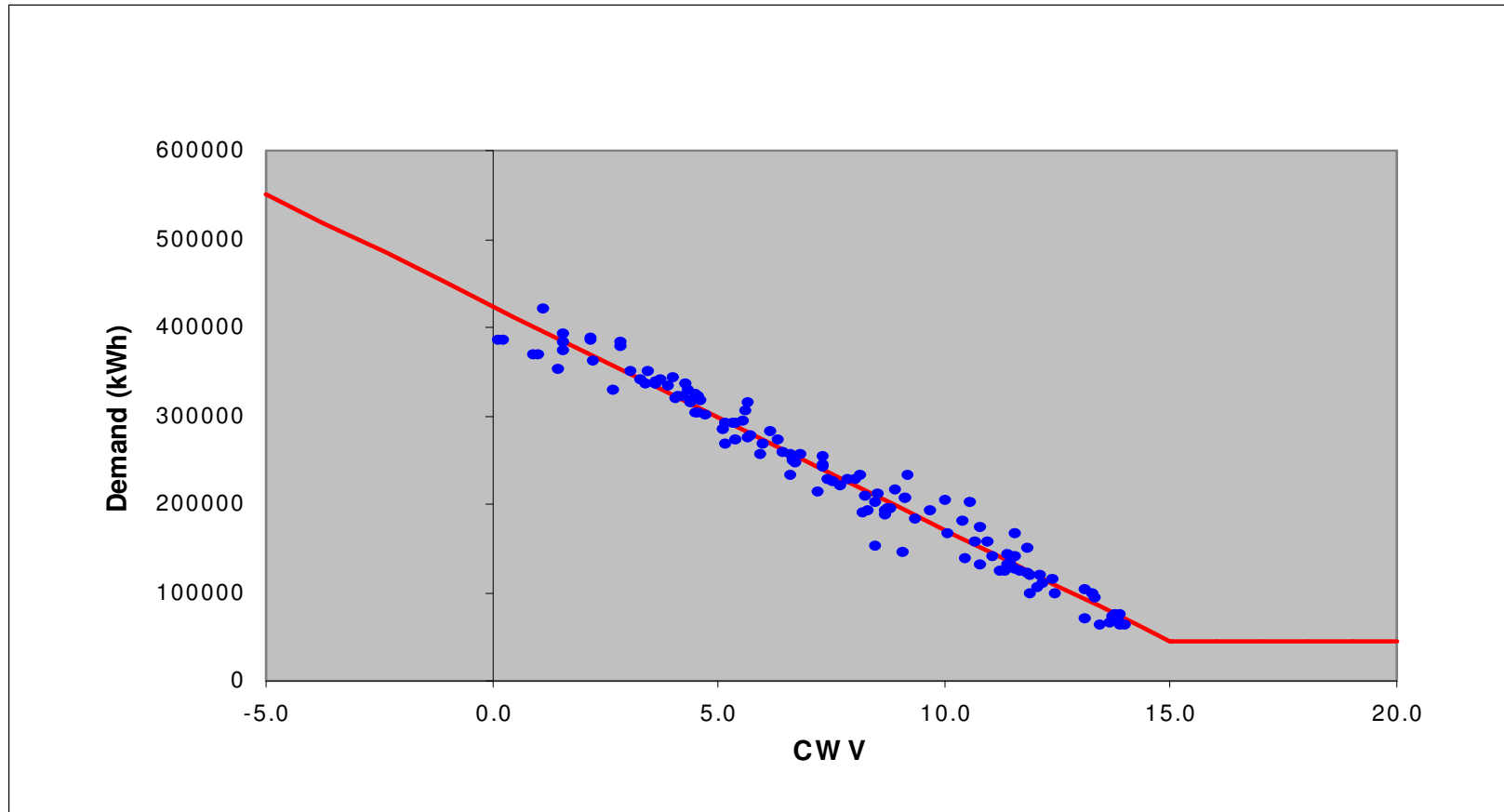
WS LDZ, EUC Band 3: 293 - 732 MWh pa



- **WS Demand** against WS CWV – Non Holiday Monday to Thursday -
Sample size: 25

Small NDM Modelling Results

WS LDZ, EUC Band 3: 293 - 732 MWh pa



- **Combined WS/SW Demand** against WS CWV – Non Holiday Monday to Thursday - Sample size: 102
- **DECISION** required by TWG on which model to choose, further statistical information to follow

Small NDM Modelling Results

Model Comparison - EUC Band 3: 293 - 732 MWh pa

T-Statistic:

- The use of the T-Statistic has been suggested for comparing models.
- The T-Statistic from least squares regression has been used:
 - Applied to Independent variable
 - It is the regression coefficient (of a given independent variable) divided by its standard error.
 - Tests if X is significantly related to Y
 - Significant if T-Statistic > 2
- Note: Where the T-Statistic is being used to compare models with different demands, i.e. the dependent variable Y, the T-Statistic requires normalization due to the different scales involved.

Small NDM Modelling Results

Model Comparison – WS EUC Band 3: 293 - 732 MWh pa

•Summary of Key Statistics:

	WS Individual		WS / SW combined	
	Coefficient	Standard Error	Coefficient	Standard Error
C1 (Intercept)	101358	886	423624	3448
C2 (Slope)	-6088	106	-25297	411
R ²	94%		96%	
ILF	26%		27%	
Sample Size	25		102	
T stat C1 (Normalised)	114.39 (1)		122.86 (1)	
T stat C2 (Normalised)	-57.43 (-0.5020)		-61.5 (-0.5010)	

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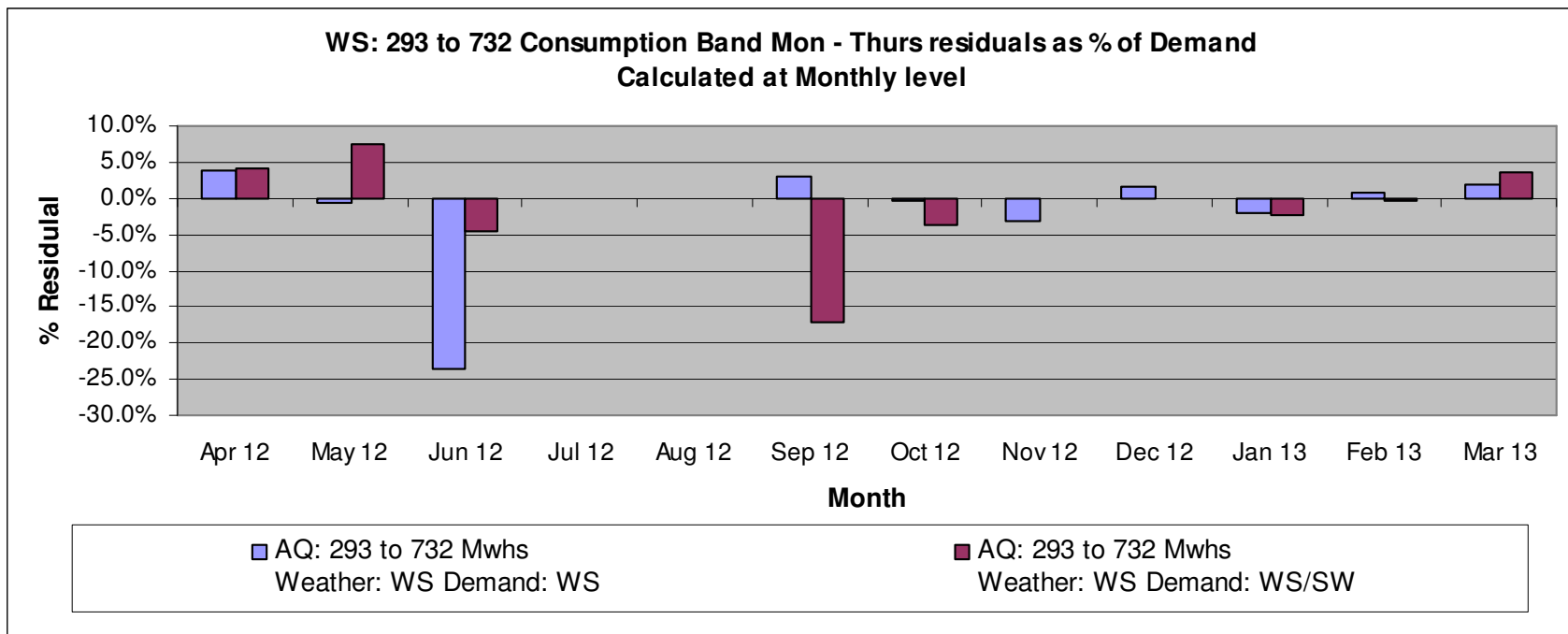
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Small NDM Modelling Results

Model Comparison – WS EUC Band 3: 293 - 732 MWh pa

- **Monthly Residuals:**

- The following chart shows the residuals as percentage of demand calculated at monthly level for the two models being proposed for WS band 293 – 732 MWhs.



- **Xoserve recommendation:**

- To proceed with combined WS / SW model for this band

Small NDM Modelling Results

EUC Band 4: 732 – 2196 MWh pa

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	39%	98%	300
NO	31%	97%	141
NW / WN	35%	97%	315
NE	35%	97%	227
EM	33%	98%	262
WM	31%	97%	243
WS	32%	96%	63
EA	33%	98%	268
NT	35%	98%	319
SE	35%	99%	266
SO	29%	98%	220
SW	31%	97%	159

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

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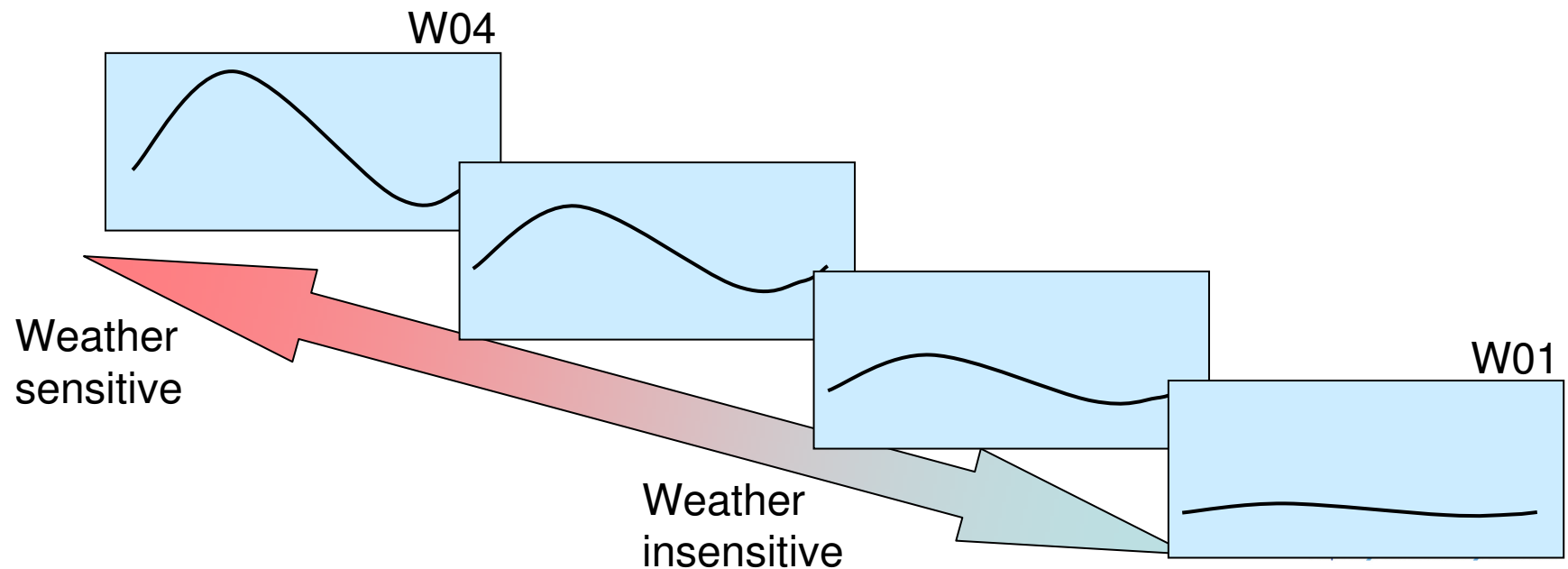
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Small NDM <2,196 MWh WAR Band Analysis



Winter:Annual Ratio (WAR) Band EUC

- Higher AQ Bands where meter points are monthly read have a standard EUC plus 4 differential EUCs based on ratio of winter consumption to total annual consumption
- Sites with adequate read history allocated automatically to a WAR Band based on system calculation during AQ review



Winter:Annual Ratio (WAR) Band EUC

- The WAR value of a supply point is defined as the actual consumption in the months December to March divided by the new supply point AQ
- Since the numerator is an actual demand and the denominator is a weather corrected annual consumption, WAR values change from year to year as they are affected by December to March weather experience
- The limits defining WAR band EUCs are those applicable to the most recent winter (in this case winter 2012/13)
 - This is essential because supply points will be assigned to these newly defined WAR band EUCs (for 2013/14) based on their (Dec-Mar) consumption behaviour over winter 2012/13
 - 2012/13 was colder than 2011/12, so thresholds can expect to increase this year
- WAR Band Limits for Spring 2013 Analysis were discussed and agreed at April TWG

All Small NDM EUCs

Agreed WAR Band Analysis (April TWG)

Consumption Range	Comments on 2012/13 data
0 to 73.2 MWh pa (EUC Band 1)	Not generally Monthly read – no WAR Bands
73.2 to 293 MWh pa (EUC Band 2)	Not generally Monthly read – no WAR Bands
293 to 732 MWh pa (EUC Band 3)	Agreed to merge Band 3 & 4 data for WAR Band Analysis – Model all LDZs separately except: NW/WN combined WS/SW combined
732 to 2,196 MWh pa (EUC Band 4)	

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Small NDM Modelling Results

WAR Band Analysis: 293 to 2196 MWh pa

	WAR Banding											
	0.00 – 0.49			0.49 – 0.58			0.58 – 0.68			0.68 – 1.00		
SC	59%	90%	131	40%	97%	171	31%	97%	118	25%	95%	27
NO	53%	92%	55	36%	98%	67	26%	97%	75	20%	94%	30
NW / WN	54%	95%	105	40%	98%	122	30%	96%	115	22%	94%	93
NE	54%	96%	61	43%	97%	115	30%	96%	96	23%	95%	68
EM	60%	91%	66	42%	98%	95	31%	97%	122	23%	97%	111
WM	51%	94%	53	37%	96%	81	29%	96%	101	21%	96%	106
WS / SW	51%	95%	60	40%	96%	76	28%	97%	87	21%	96%	101
EA	56%	93%	53	42%	97%	102	30%	97%	141	24%	97%	107
NT	60%	85%	85	42%	97%	148	31%	98%	129	23%	97%	98
SE	57%	88%	54	42%	98%	134	31%	98%	106	23%	97%	96
SO	56%	81%	51	37%	97%	76	27%	97%	104	20%	96%	98

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

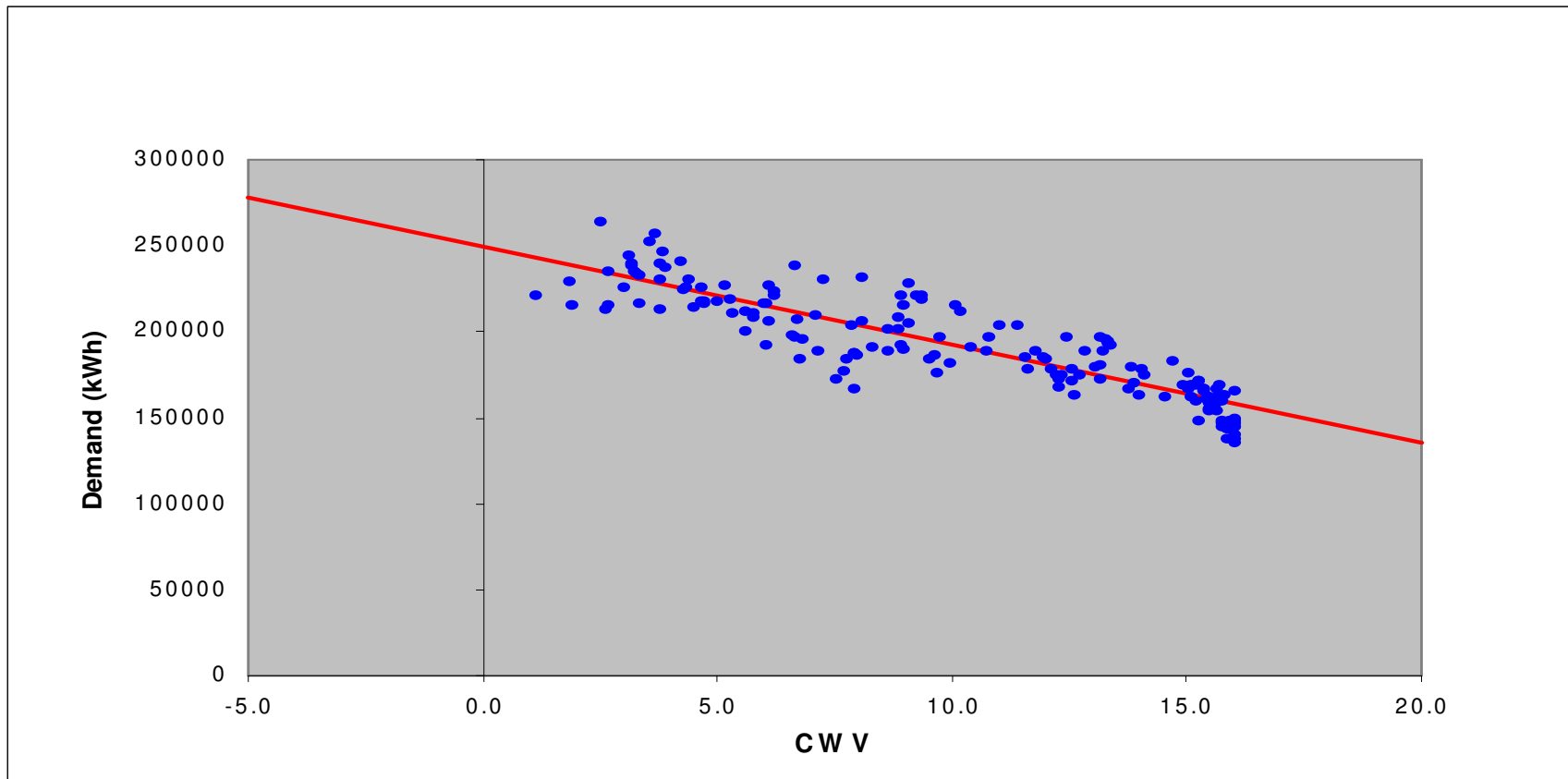
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Small NDM Modelling Results

SO LDZ, EUC Band 293 - 2196 MWh pa WAR Band 1



- Demand against SO CWV – Non Holiday Monday to Thursday
- Lower R Squared value due to expected scatter which can be more prevalent in WAR Band 1

Small NDM Analysis Summary

- Good R^2 Coefficients for majority of models, including WAR Bands
- Sample sizes remain acceptable
- *Recap on decisions made*
- Are TWG happy to move to model smoothing with the results previously presented?

Large NDM Analysis >2196 MWh p.a.

Large NDM Analysis (>2,196 MWh pa)

- Defined for Demand Estimation purposes > 2,196,000 kWh
 - Current EUC Bands Large NDM:
 - 2,196 to 5,860 MWH
 - 5,860 to 14,650 MWH
 - 14,650 to 29,300 MWH
 - 29,300 to 58,600 MWH
 - >58,600 MWH
- } 1 Consumption Band
 x4 Winter Annual Ratio
 (WAR) Bands
 } 1 Contingency Band for sites which should be DM
- Large NDM represents approx 11.2% of total NDM load and 0.4% of supply points.
 - Subsequently, lower sample numbers available in Large NDM sector so underlying demand modelling can be done on basis of more broadly aggregated bands
 - For example - DESC already agreed 14,650 to 29,300 and 29,300 to 58,600 could be done as a combined range, if necessary

Large NDM Supply Points (>2,196 MWh pa) Agreed Sample Data Aggregations

Consumption Band Analysis – 2012/13 data	
Band 05 2,196 to 5,860 MWh pa	Individual LDZ
Band 06 5,860 to 14,650 MWh pa	Individual LDZ
Band 07 14,650 to 29,300 MWh pa	By 5 or 4 LDZ Groups
Band 08 29,300 to 58,600 MWh pa	By 4 or 3 LDZ Groups
Band 09 >58,600 MWh pa	National

- Aggregation of sample data to allow sufficient sample analysis
- Options for aggregations as agreed at April TWG

Large NDM Modelling Results

Band 5: 2,196 – 5,860 MWh pa

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	42%	98%	236
NO	35%	97%	89
NW / WN	38%	97%	219
NE	41%	98%	127
EM	39%	97%	178
WM	35%	98%	223
WS	38%	97%	42
EA	37%	98%	132
NT	38%	99%	227
SE	38%	99%	145
SO	32%	99%	123
SW	36%	94%	96

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

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Large NDM Modelling Results

Band 6: 5,860 – 14,650 MWh pa

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	52%	97%	83
NO	45%	96%	59
NW / WN	47%	97%	96
NE	48%	97%	76
EM	46%	98%	93
WM	42%	97%	89
WS	45%	97%	41
EA	46%	96%	72
NT	42%	99%	81
SE	37%	98%	40
SO	36%	98%	48
SW	43%	97%	66



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- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

Large NDM Modelling Results

DECISION: Band 7: 14,650 – 29,300 MWh pa

	5 LDZ GROUPINGS			4 LDZ GROUPINGS		
SC	57%	76%	31	56%	94%	101
NO	55%	94%	70			
NW / WN						
NE				53%	97%	147
EM	53%	97%	147			
WM						
EA				52%	93%	61
NT	52%	93%	61			
SE						
WS				47%	97%	52
SO	47%	97%	52			
SW						

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

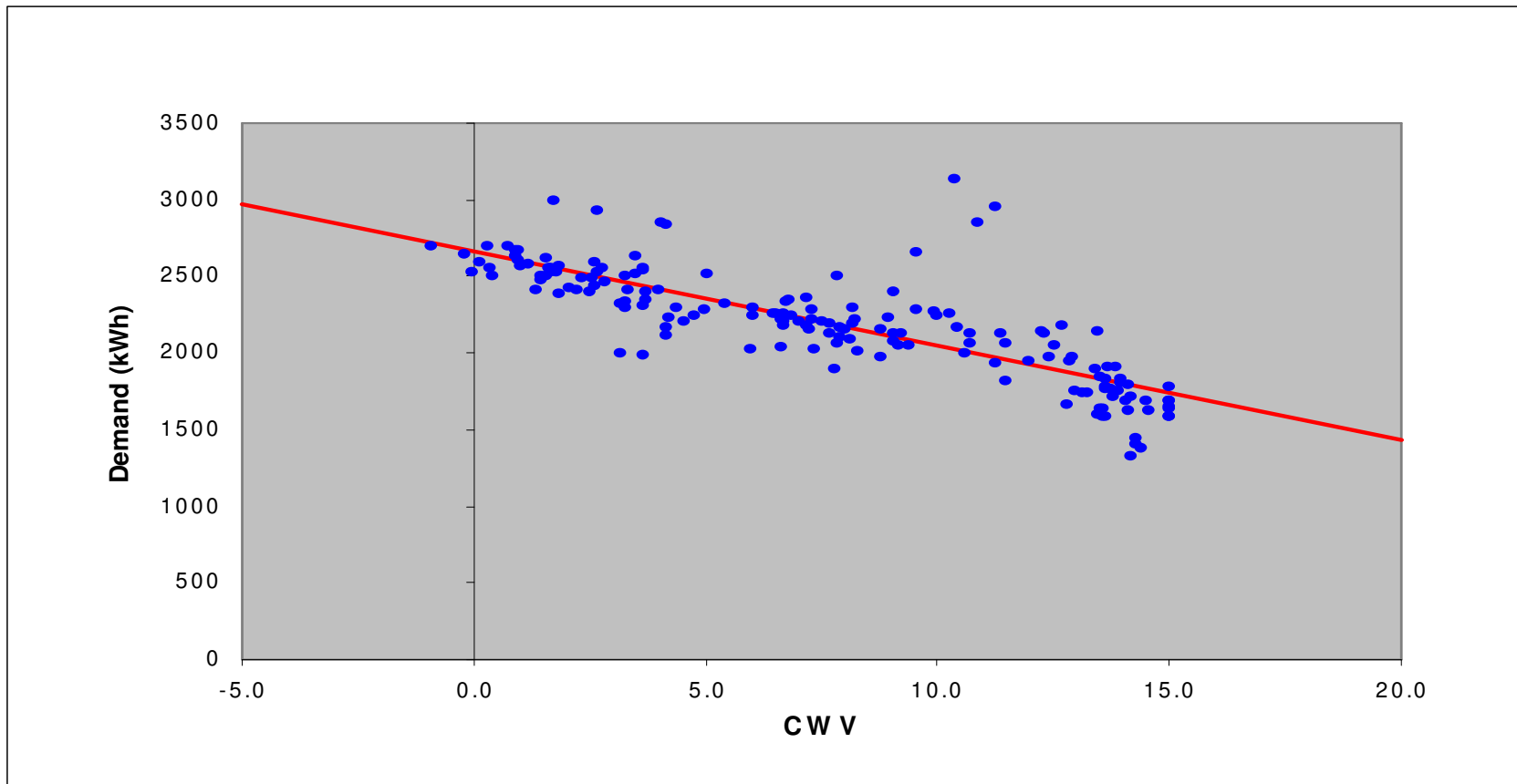
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Large NDM Modelling Results

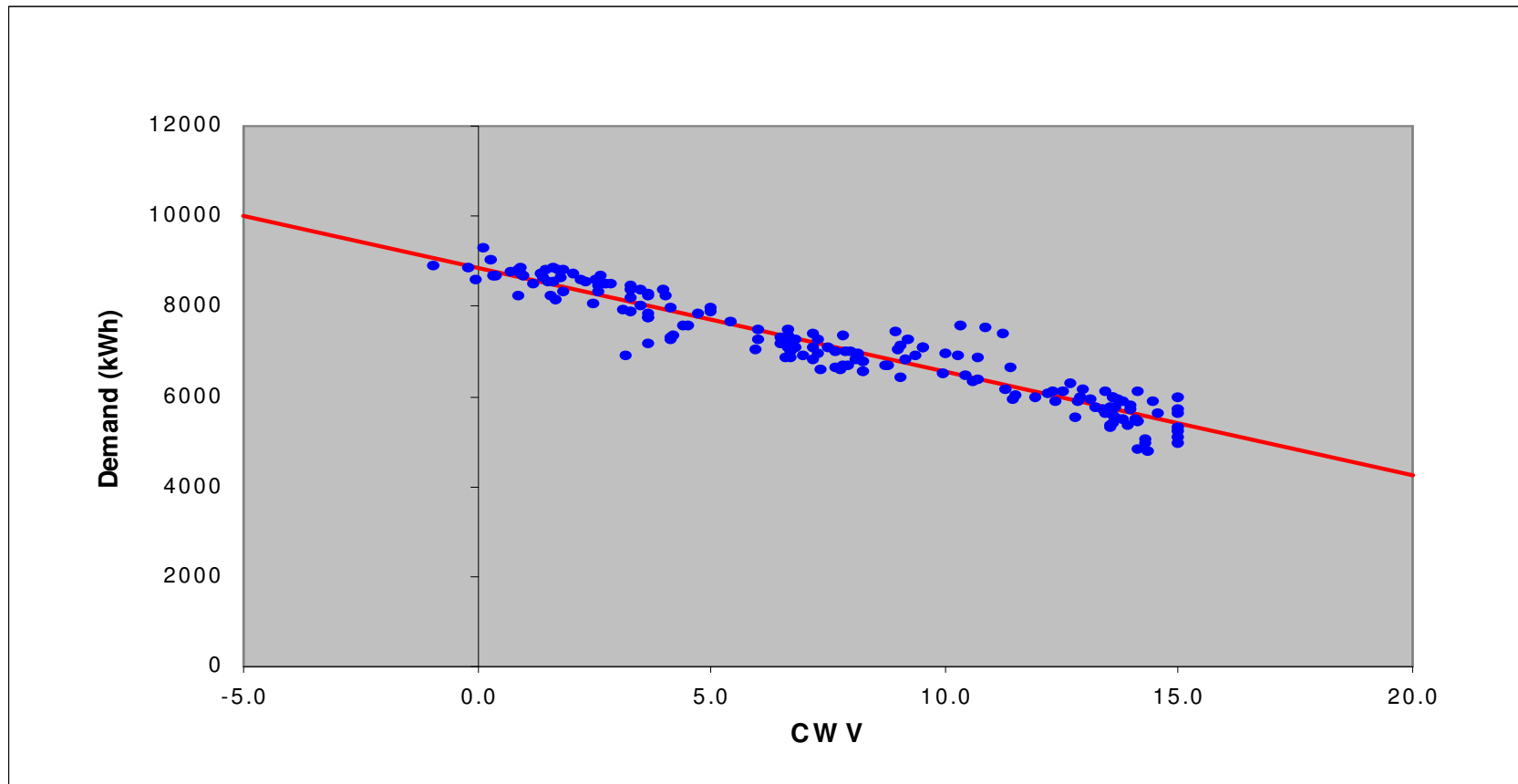
SC LDZ, EUC Band 14,650 – 29,300 MWh pa (5 LDZ Groupings)



- Demand against SC CWV – Non Holiday Monday to Thursday
- Based on 5 LDZ groupings i.e. SC demand only

Large NDM Modelling Results

SC LDZ, EUC Band 14,650 – 29,300 MWh pa (4 LDZ Groupings)



- Demand against SC CWV – Non Holiday Monday to Thursday
- Based on 4 LDZ groupings i.e. SC/NO/NW/WN demand aggregated
- **DECISION** required by TWG on which model to choose, further statistical information to follow

Large NDM Modelling Results

Model Comparison – SC EUC Band 14,650 – 29,300 MWh pa

•Summary of Key Statistics:

	5 LDZ Group – SC Individual		4 LDZ Group – SC combined with NO NW and WN	
	Coefficient	Standard Error	Coefficient	Standard Error
C1 (Intercept)	2660.1	30.9	8860.6	50.5
C2 (Slope)	-61.1	3.4	-231.6	5.6
R ²	76%		94%	
ILF	57%		56%	
Sample Size	31		101	
T stat C1 (Normalised)	86.09 (1)		175.46 (1)	
T stat C2 (Normalised)	-17.97 (-0.2087)		-41.36 (-0.2357)	

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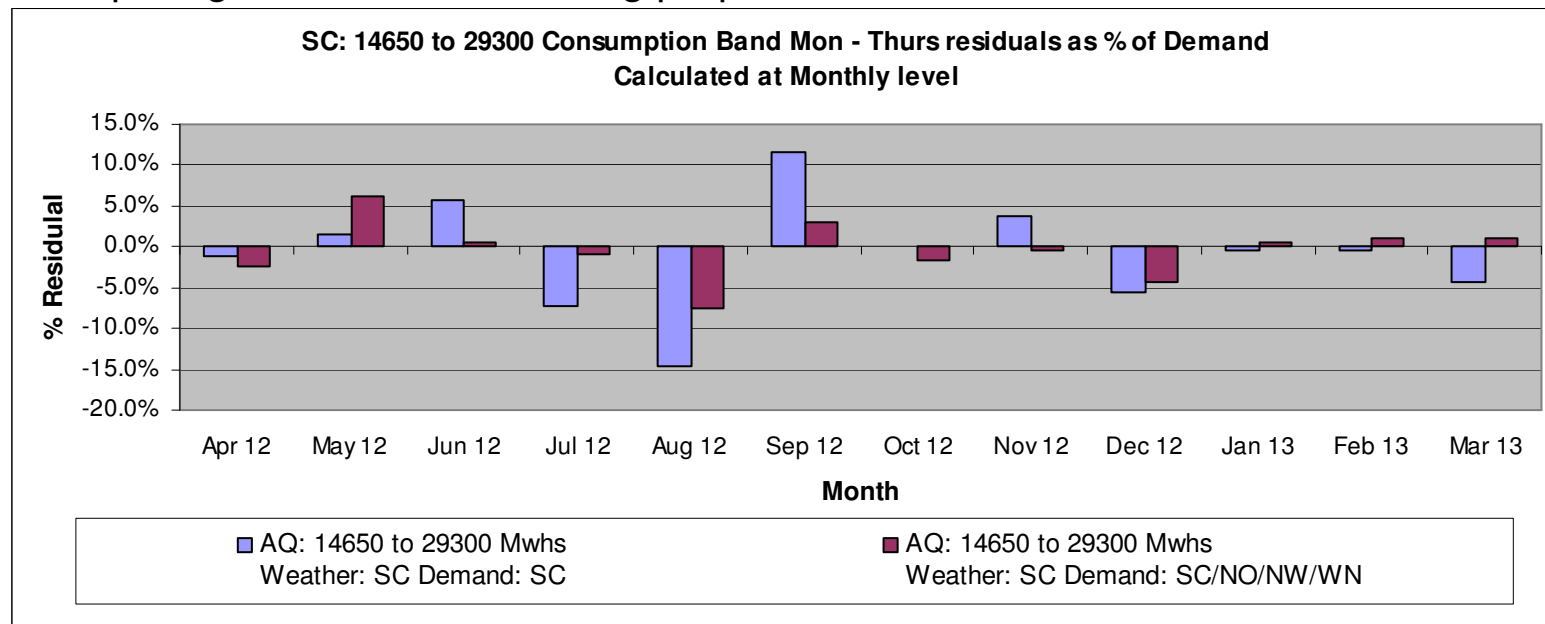


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Large NDM Modelling Results

Model Comparison - SC EUC Band 14,650 – 29,300 MWh pa

- **Monthly Residuals:**
- The following chart shows the Monthly Residuals aggregated by month for comparing the two models being proposed for this band.



•Xoserve recommendation:

- To proceed with the 4 LDZ Groups where SC Demand is combined with NO, NW and WN.

Large NDM Modelling Results

DECISION: Band 8: 29,300 – 58,600 MWh pa

	4 LDZ GROUPINGS			3 LDZ GROUPINGS		
SC						
NO	61%	94%	57	61%	94%	57
NW / WN						
NE						
EM	59%	95%	83	59%	95%	83
WM						
EA						
NT	46%	96%	42			
SE						
WS				49%	95%	67
SO	56%	84%	25			
SW						

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

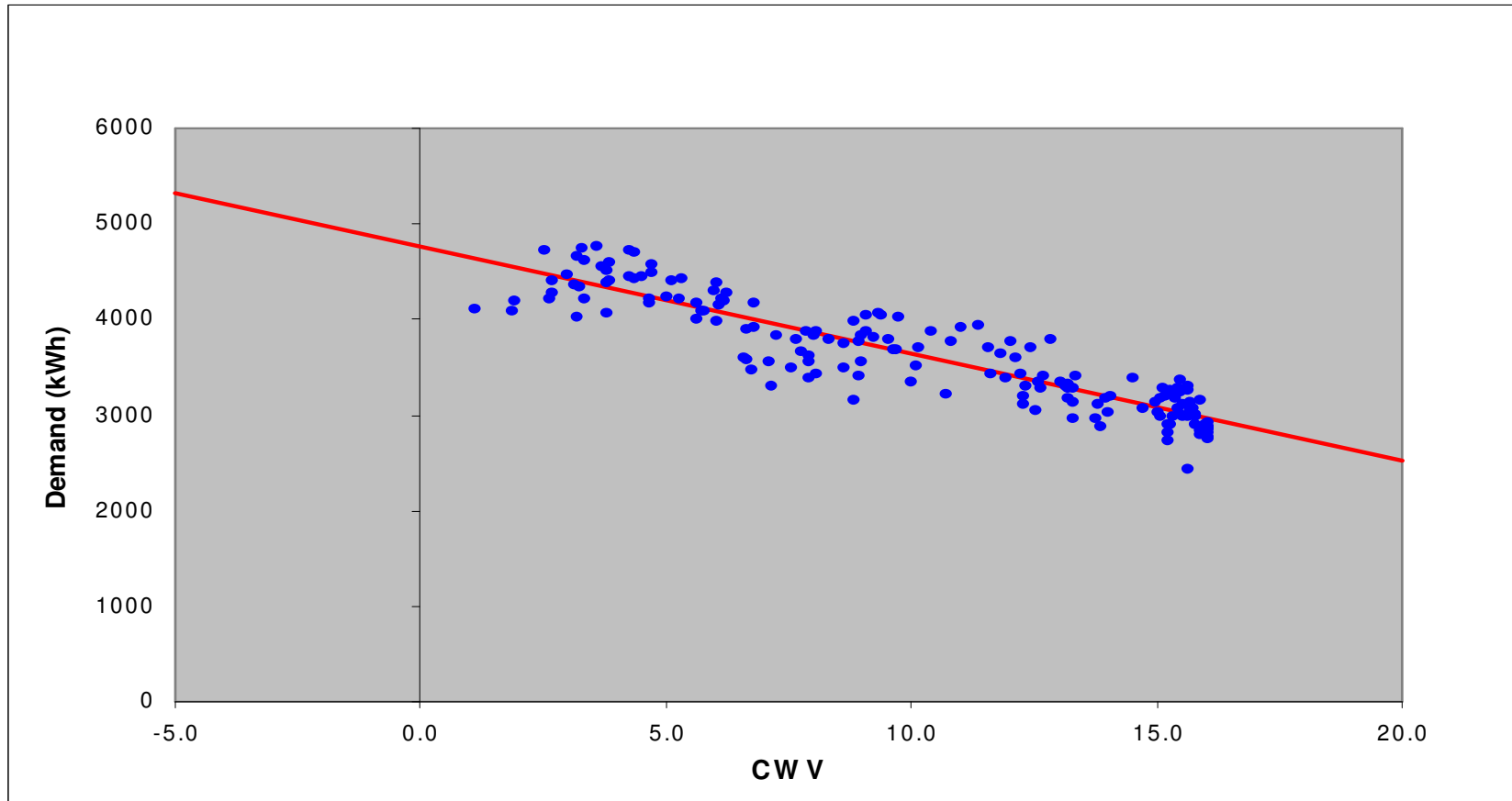
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Large NDM Modelling Results

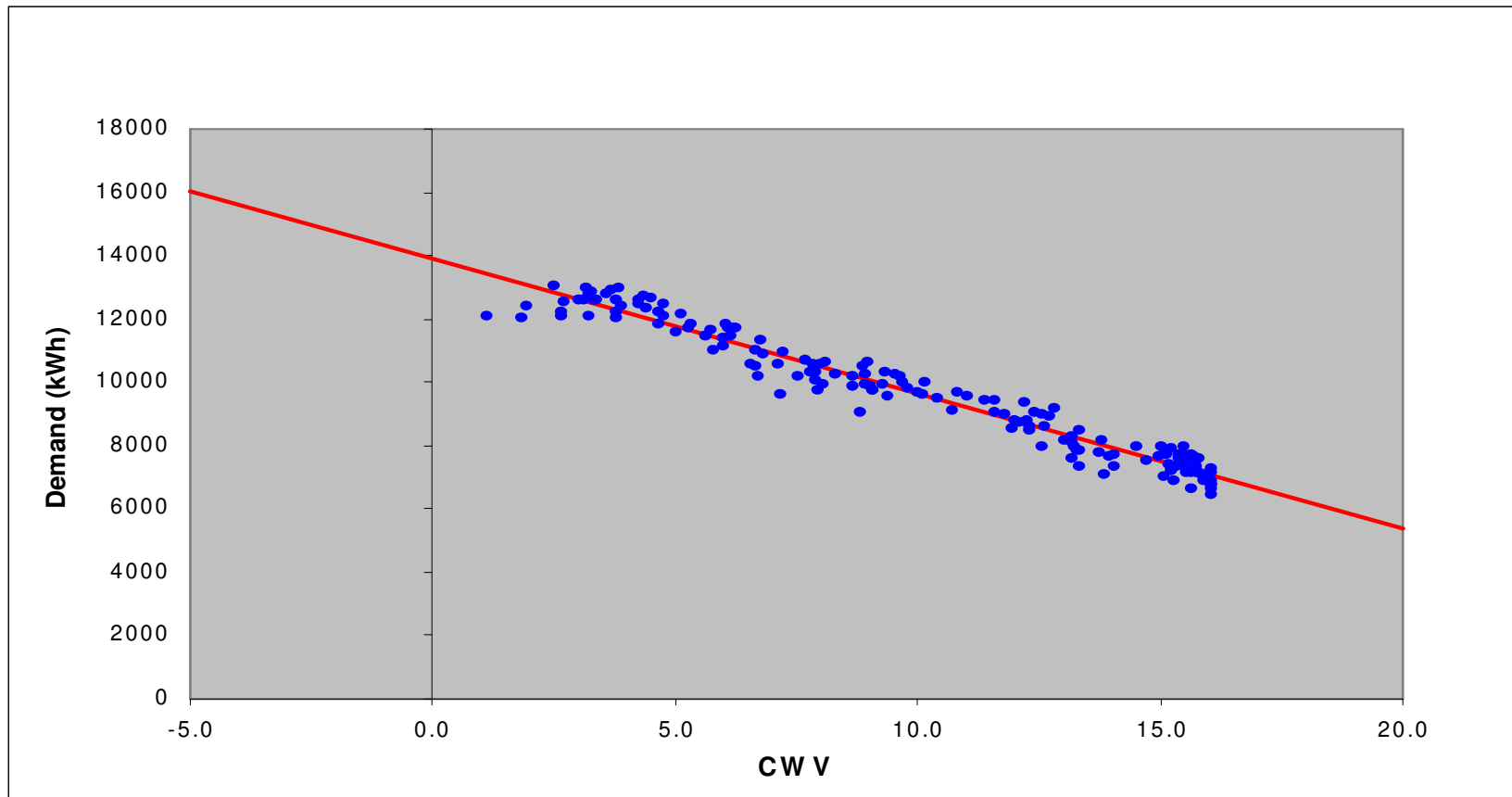
SO LDZ, EUC Band 29,300 – 58,600 MWh pa (4 LDZ Groupings)



- Demand against SO CWV – Non Holiday Monday to Thursday
- Based on 4 LDZ groupings i.e. WS/SO/SW

Large NDM Modelling Results

SO LDZ, EUC Band 29,300 – 58,600 MWh pa (3 LDZ Groupings)



- Demand against SO CWV – Non Holiday Monday to Thursday
- Based on 3 LDZ groupings i.e. WS/EA/NT/SE/SO/SW
- **DECISION** required by TWG on which model to choose, further statistical information to follow

Large NDM Modelling Results

Model Comparison – SO EUC Band 29,300 – 58,600 MWh pa

•Summary of Key Statistics:

	5 LDZ Group – SC Individual		4 LDZ Group – SC combined with NO NW and WN	
	Coefficient	Standard Error	Coefficient	Standard Error
C1 (Intercept)	4754.1	43.9	13898.3	75.8
C2 (Slope)	-111.9	3.9	-425.3	6.8
R ²	84%		95%	
ILF	56%		49%	
Sample Size	25		67	
T stat C1 (Normalised)	108.29 (1)		183.35 (1)	
T stat C2 (Normalised)	-28.69 (-0.2649)		-62.54 (-0.3411)	

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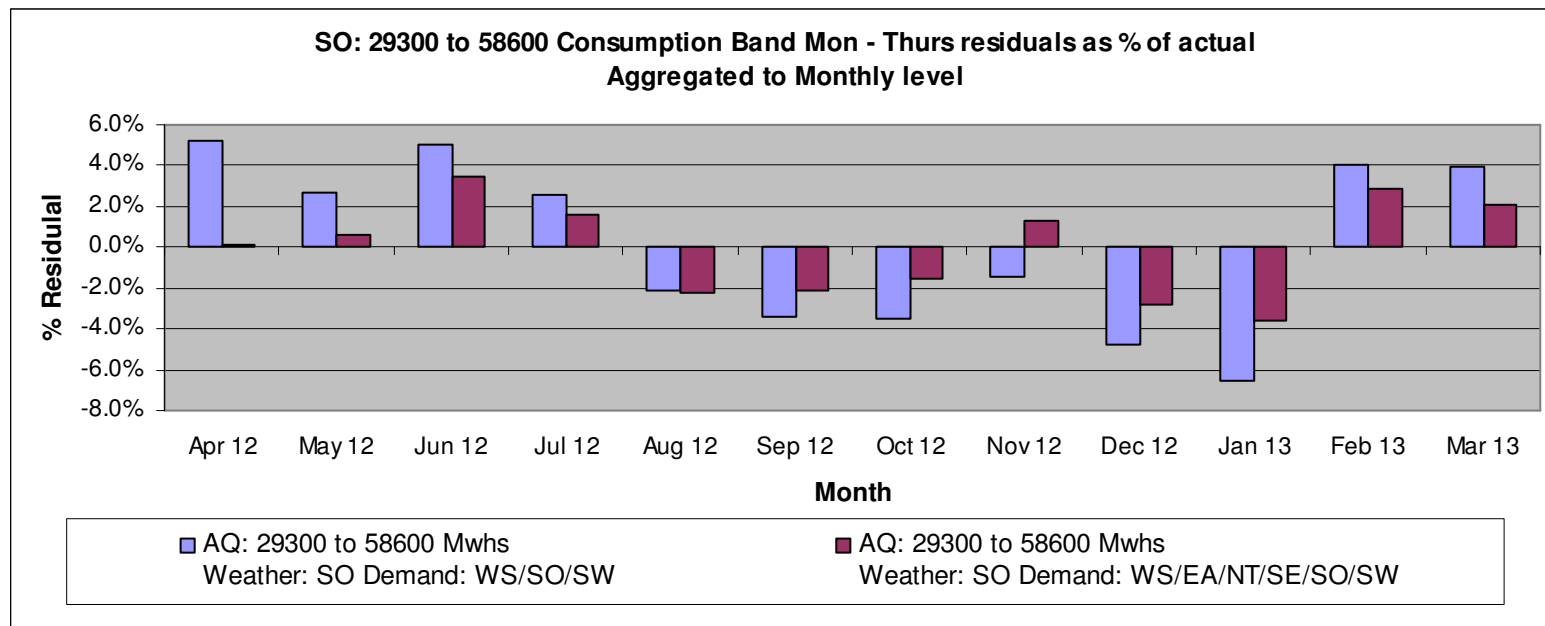


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Large NDM Modelling Results

Model Comparison - SO EUC Band 29,300 – 58,600 MWh pa

- **Monthly Residuals:**
- The following chart shows the Monthly Residuals aggregated by month for comparing the two models being proposed for this band.



•Xoserve recommendation:

- To proceed with the 3 LDZ group where demands for WS, SO and SW are combined with EA, NT and SE.

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Large NDM Modelling Results

Band 9: above 58,600 MWh pa

	NATIONAL GROUPINGS		
SC	63%	93%	163
NO			
NW / WN			
NE			
EM			
WM			
WS			
EA			
NT			
SE			
SO			
SW			

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

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Large NDM >2,196 MWh WAR Band Analysis

Large NDM Bands 5 to 8: >2,196 MWh pa

Agreed WAR Band Analysis

Consumption Range	2012/13 Analysis
Band 05 2,196 to 5,860 MWh pa	By 5 LDZ Groups*
Band 06 5,860 to 14,650 MWh pa	By 3 LDZ Groups
Band 07 14,650 to 29,300 MWh pa	National
Band 08 29,300 to 58,600 MWh pa	National
Band 09 >58,600 MWh pa	N/A - No WAR Bands

- Aggregation of sample data to allow sufficient sample analysis
- Options for aggregations as agreed at April TWG
- *As per email, new aggregations could not be accommodated

Large NDM Supply Points (>2196 MWh pa) WAR Band Analysis – Indicative Load Factors

- **Consumption Band 5:** 2,196 to 5,860 MWh pa : 5 LDZ Aggregations Applied

	WAR Banding											
	0.00 – 0.44			0.44 – 0.53			0.53 – 0.63			0.63 – 1.00		
SC	65%	96%	40	48%	97%	97	36%	98%	73	28%	97%	26
NO / NW / WN	58%	97%	70	46%	98%	109	34%	97%	74	22%	95%	55
NE / EM / WM	61%	97%	124	45%	97%	142	35%	98%	137	25%	97%	125
EA / NT / SE	67%	93%	58	48%	97%	139	37%	98%	194	25%	98%	113
WS / SO / SW	61%	89%	48	43%	96%	64	34%	98%	77	23%	97%	72

- **Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**

Large NDM Supply Points (>2196 MWh pa) WAR Band Analysis – Indicative Load Factors

- Consumption Band 6:** 5,860 to 14,650 MWh pa : 3 LDZ Aggregations Applied

	WAR Banding											
	0.00 – 0.38			0.38 – 0.48			0.48 – 0.58			0.58 – 1.00		
SC/NO/NW/WN	74%	96%	53	53%	98%	84	41%	98%	76	29%	96%	25
NE/EM/WM	71%	95%	58	52%	97%	89	40%	98%	61	28%	96%	50
EA/NT/SE/WS/SO/SW	71%	93%	43	53%	97%	95	41%	98%	119	28%	98%	91

- Consumption Band 7:** 14,650 to 29,300 MWh pa : National Aggregations Applied

	0.00 – 0.37			0.37 – 0.41			0.41 – 0.51			0.51 – 1.00		
	ALL LDZs	75%	91%	74	65%	93%	108	50%	96%	107	34%	97%

- Consumption Band 8:** 29,300 to 58,600 MWh pa : National Aggregations Applied

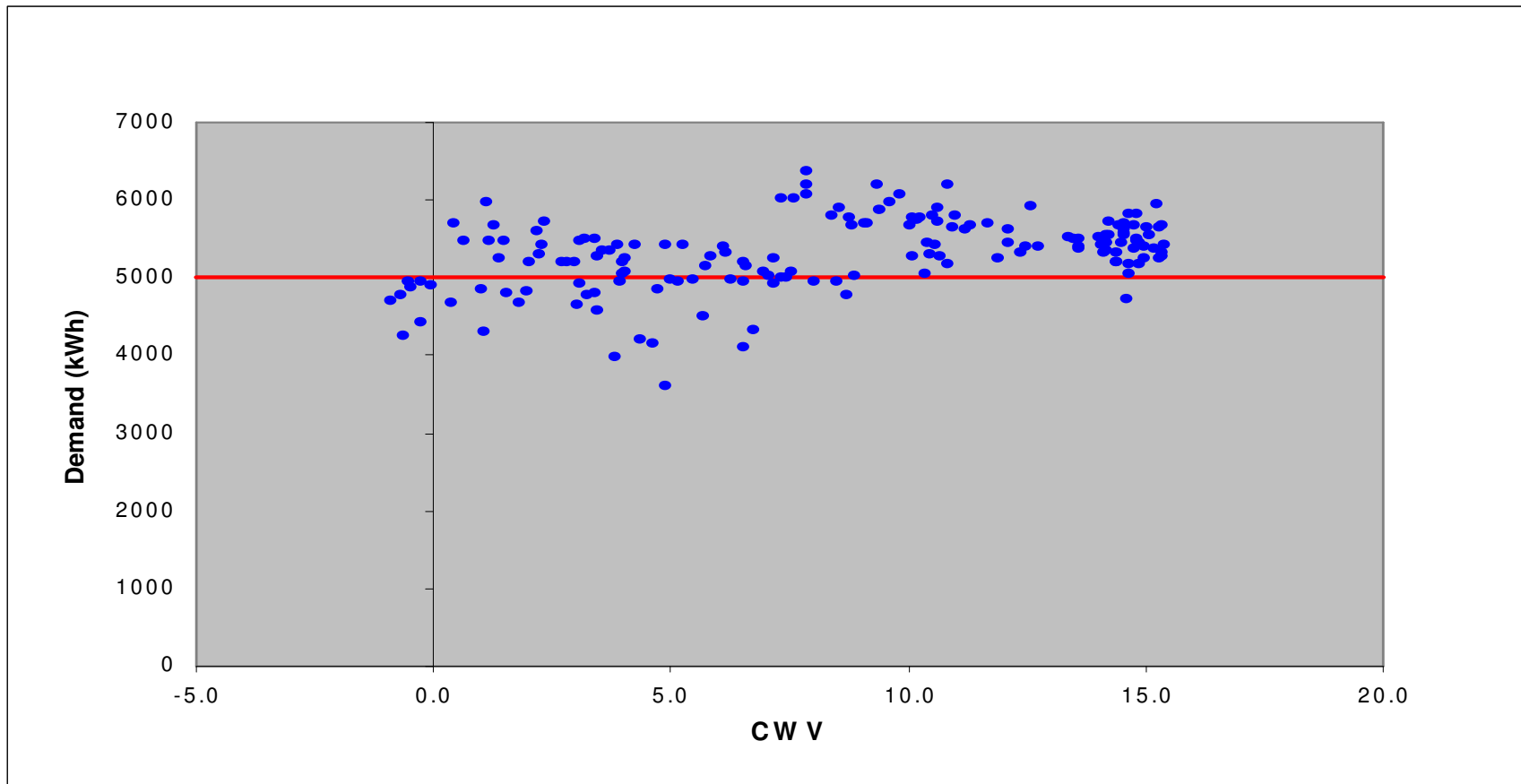
	0.00 – 0.36			0.36 – 0.41			0.41 – 0.51			0.51 – 1.00		
	ALL LDZs	84%	74%	37	68%	92%	68	55%	96%	62	34%	97%

- Indicative Load Factor** : **R² Multiple Correlation Coefficient** : **Sample Size**



Large NDM Modelling Results

WM LDZ, EUC Band 29,300 – 58,600 MWh pa WAR Band 1



- Demand against WM CWV – Non Holiday Monday to Thursday
- Based on National Aggregation

Large NDM Analysis Summary

- Good R^2 Coefficients for majority of models, including WAR Bands
- Sample sizes remain acceptable
- *Recap on decisions made*
- Are TWG happy to move to model smoothing with the results previously presented?

Next steps

- Xoserve to commence model smoothing once all single year models have been agreed
- Xoserve may contact TWG for further prompt decisions on modelling analysis (probably by email)
- w/c 10th June Xoserve to publish draft parameter values i.e. ALPs, DAFs, LFs for DESC and TWG to review and provide feedback
- TWG meeting planned for 26th June to review feedback received
- DESC meeting 10th July to finalise proposals in order to publish to wider industry participants