



# Demand Estimation Technical Forum

3<sup>rd</sup> June 2005

Presentational Material

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3<sup>rd</sup> June 2005

**10:00 Presentation of work done to date**

**Modelling Basis**

**Large NDM**

**Small NDM**

**Discussion of results & issues arising**

**12:00 Lunch**

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**(13:30 Meeting of Demand Estimation Sub-Committee)**

## Consultation Process : NDM Demand Models & EUCs

3 June	Technical Forum / DESC meeting (to guide analysis)	(H 1.8.1)
30 June	NDM proposals published	(H 1.8.1)
15 July	Users make representation by now	(H 1.8.3)
	Consultation (DESC meeting 25 July)	(H 1.8.4/5/6)
15 Aug	Final proposals published by now	(H 1.9.1)

# Consultation Process - from Final Proposals

- Transporters' Final proposals published (say *date X*)  
no later than 15 August
- Transporter or User application for disapproval to Ofgem (say *date Y*)  
by 5 business days of *date X*
- Ofgem determination (if required)  
by 5 business days of *date Y*

# Modelling Basis

(previously agreed in consultation with DESC)

## Modelling basis broadly unchanged from spring 2004

i.e. Model smoothing (over 3 years) retained

Variable weekend weather sensitivity model

No warm-weather cut-offs applied to EUC models < 293 MWh pa  
(to help mitigate summer SF volatility)

12 month (Apr to Mar) analysis for most recent data set (2004/05)

*This most recent data set (for 2004/05) contains 365 days.*

*In spring 2004, the most recent data set (2003/04) contained 366 days; note however that AQs are always based on 365 days.*

*In spring 2003, most recent data set (2002/03) covered 13 months to ensure data set contained an Easter holiday period.*

## Comprehensive 5 yearly CWV review undertaken

All CWV definitions revised

New seasonal normal weather basis adopted (i.e. SNCWVs)

New CWVs and SNCWVs applied to spring 2005 analysis

# Model Smoothing

- For each EUC :
  - Models from last 3 years
  - Average ratio slope : constant
    - standardise models
    - take average of slopes
  - Average weekend / holiday effects

# Model Smoothing - Benefits

More robust models / profiles

Minimises year on year volatility

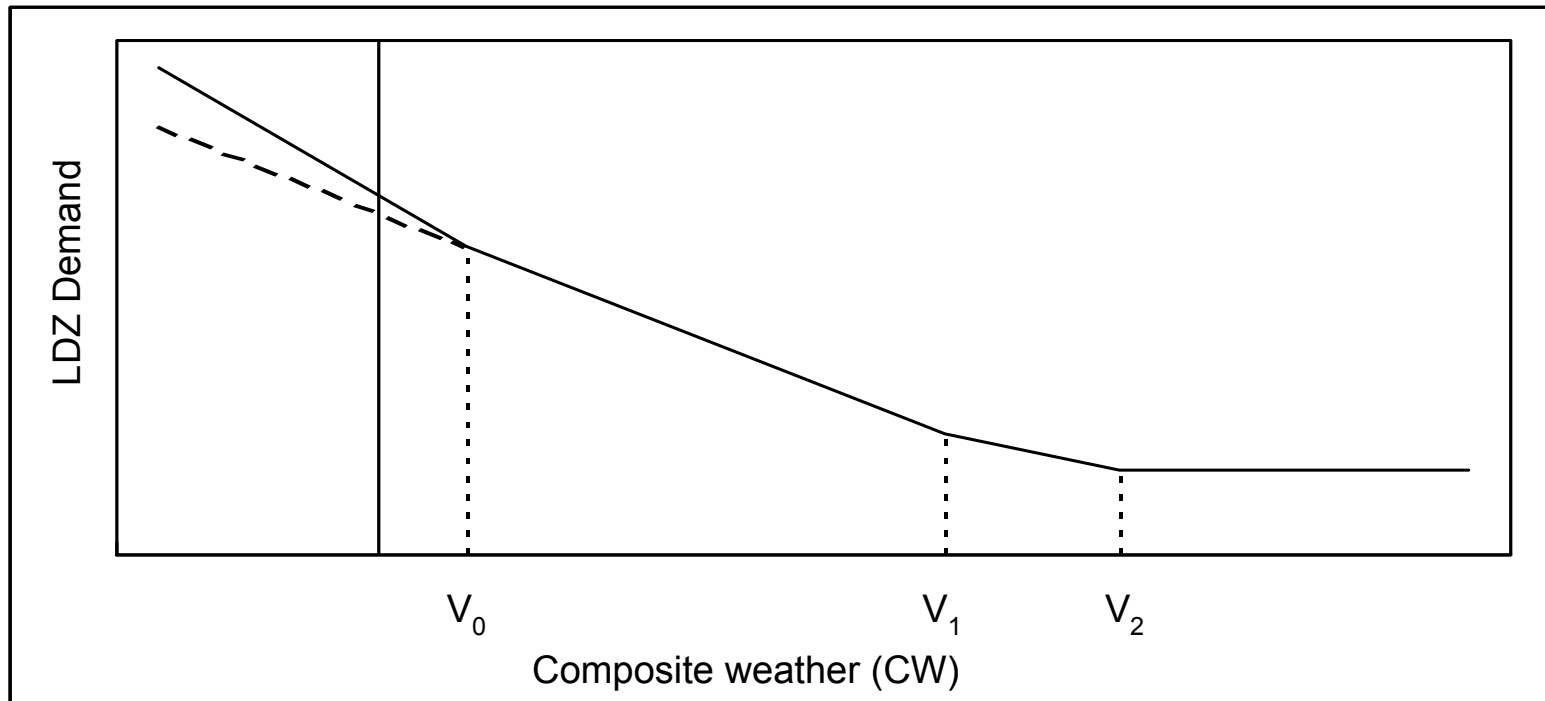
Less consequential commercial exposure to shippers

# Background to CWV Review

- NC (H1.4.2) and now UNC, requires that every 5 years in consultation with DESC, composite weather variable (CWV) definitions for each LDZ are reviewed and where appropriate revised with effect from the start of a gas year.
- Last such review carried out in autumn 1999 and implemented on 1<sup>st</sup> October 2000. (Some CWVs revised since then because of weather station changes).
- Therefore comprehensive review of all LDZ CWVs carried out in autumn 2004 for implementation on 1<sup>st</sup> October 2005.
- Revised CWVs have been used in spring 2005 NDM analysis.
- Approach used in CWV review agreed at DESC meeting on 24 February 2004 (following extensive pre-analysis of proposed approach).
- New CWVs agreed by DESC on 17 December 2004



# Definition of Composite Weather Variable (CWV)



$$\begin{aligned}
 CWV(t) = & \begin{cases} CW(t) + l_3^*(CW(t)-V_0), & CW(t) < V_0 \\ CW(t), & V_0 \leq CW(t) \leq V_1 \\ V_1 + q^*(CW(t)-V_1), & V_1 < CW(t) < V_2 \\ V_1 + q^*(V_2-V_1), & CW(t) \geq V_2 \end{cases}
 \end{aligned}$$

where

$$CW(t) = l_1^*E(t) + (1-l_1)^*S(t) - l_2^*WC(t)$$

# Characteristics of Previous CWVs

- Good fit to LDZ demand over year as a whole.

However:

- Demand models display seasonal effects (overestimate in spring, underestimate in autumn).
- Seasonal Normal Effective Temperature (SNET) profiles cause seasonal CWV degree day profiles to have different shapes to seasonal demand profiles. (Note that the old SNET profiles were based on 71 years data from 01/10/1928 to 30/09/1999).
- Most previous CWVs were derived from LDZ maximum potential demand (MPD) data. MPD includes DM demand (which can vary for reasons other than weather) and interruption estimates.

Note: “previous CWVs” mean the CWVs that are currently “live”

# Approach used for CWV review

- Derive most CWV parameters using aggregate NDM data only (8 gas years 1996/97 to 2003/04).
- Include MPD data (1981/82 to 1995/96) in derivation of cold weather parameters.
- Any days / years with incorrect demand data excluded / corrected.
- No change to underlying CWV formula
  - no system changes required to implement revised CWVs.
- Use different underlying seasonal profile - revised (“pseudo”) SNET
  - i.e. a demand adjusted profile with improved shape.
- All LDZ CWVs reviewed (including those revised within last 5 years).
- Revised CWV for NO LDZ based on weather data from Albermarle Barracks (Newcastle Tyneside weather station closes after this gas year).
- Revised CWV for WN LDZ same as revised CWV for NW LDZ

## Comparison of previous and revised CWVs

- Compare average seasonal bias of aggregate NDM demand models using the mean percentage residual error (MPRE):  
$$\text{MPRE} = 100 * \frac{\text{avg. actual demand} - \text{avg. fitted demand}}{\text{avg. actual demand}}$$
  
(for quarters Mar-May, Jun-Aug, Sep-Nov and Dec-Feb)
- Compare average fit of aggregate NDM demand models using adjusted R-squared, root mean squared error (RMSE), and mean absolute percentage error (MAPE) statistics.
- Compare 1 in 20 peak CWVs (derived from 76 years of weather).
- Compare 1 in 20 peak aggregate NDM demand estimates (calculated from demand models and 1 in 20 peak CWVs).

# CWV parameters (previous and revised) - 1

Parameters for previous and revised CWVs

LDZ	Weather Station	CWV Version	CWV Parameters						
			l1	l2	l3	v0	v1	v2	q
SC	Bishopton	Previous	0.628	0.0086	0.27	2	9.7	15.5	0.80
		Revised	0.656	0.0125	0.22	3	13.3	16.0	0.64
NO	Tyneside Albermarle	Previous	0.645	0.0096	0.61	2	12.2	16.2	0.64
		Revised	0.625	0.0116	0.50	0	12.6	15.7	0.55
NW	Hulme Library	Previous	0.646	0.0131	0.26	3	13.2	17.0	0.64
		Revised	0.661	0.0157	0.25	3	15.5	18.4	0.44
NE	Nottingham Watnall	Previous	0.642	0.0116	0.08	3	13.2	17.2	0.60
		Revised	0.703	0.0153	0.00	0	14.7	17.7	0.46
EM	Nottingham Watnall	Previous	0.666	0.0098	0.05	0	12.1	16.4	0.62
		Revised	0.716	0.0134	0.00	0	14.6	17.3	0.43
WM	Birmingham Edgbaston	Previous	0.734	0.0097	0.24	0	13.1	16.9	0.52
		Revised	0.717	0.0113	0.25	1	14.7	18.2	0.34
WN	Hulme Library	Previous	0.646	0.0131	0.26	3	13.2	17.0	0.64
		Revised	0.661	0.0157	0.25	3	15.5	18.4	0.44

# CWV parameters (previous and revised) - 2

Parameters for previous and revised CWVs (continued)

LDZ	Weather Station	CWV Version	CWV Parameters						
			l1	l2	l3	v0	v1	v2	q
WS	Cardiff	Previous	0.662	0.0113	0.38	1	14.4	17.0	0.80
		Revised	0.663	0.0133	0.18	2	15.7	19.3	0.39
EA	London Weather Centre	Previous	0.700	0.0096	0.03	1	15.4	18.9	0.41
		Revised	0.681	0.0125	0.00	0	15.9	19.5	0.37
NT	London Weather Centre	Previous	0.746	0.0078	0.10	2	15.3	18.9	0.38
		Revised	0.697	0.0125	0.05	3	16.0	20.1	0.30
SE	London Weather Centre	Previous	0.728	0.0077	0.15	2	14.6	18.4	0.44
		Revised	0.692	0.0120	0.09	3	15.6	19.3	0.38
SO	Southampton Oceanographic Centre	Previous	0.730	0.0120	0.34	2	14.4	17.7	0.44
		Revised	0.710	0.0137	0.31	2	15.0	18.1	0.41
SW	Filton	Previous	0.686	0.0096	0.04	2	13.9	17.2	0.46
		Revised	0.660	0.0094	0.05	3	14.5	17.8	0.36

# Fit of demand to CWV (previous and revised) - 1

Statistics for Monday to Thursday non-holiday aggregate NDM demand models (1996/97 to 2003/04)  
 (the aggregate NDM demand data for a few days in NO, WS, EA and NT LDZs has been excluded or corrected)

LDZ	CWV Version	1 in 20 Peak CWV (76 years)	Mean Abs. % Error (MAPE)	Average Adjusted R-squared	Average RMSE (MWh)	Average RMSE change	Average change in est. 1 in 20 peak agg. NDM demand
SC	Previous	-3.70	4.17%	98.65%	6,968	-	-
	Revised	-4.72	3.60%	98.94%	6,164	-11.5%	-0.70%
NO	Previous	-5.55	5.18%	97.88%	6,044	-	-
	Revised	-8.24	3.87%	98.84%	4,472	-26.0%	-1.24%
NW	Previous	-3.38	4.16%	98.78%	10,922	-	-
	Revised	-4.04	3.51%	99.11%	9,301	-14.8%	-0.85%
NE	Previous	-4.94	5.03%	98.12%	6,639	-	-
	Revised	-5.90	4.44%	98.53%	5,887	-11.3%	1.07%
EM	Previous	-4.27	4.26%	98.74%	9,301	-	-
	Revised	-5.43	3.63%	99.11%	7,829	-15.8%	0.38%
WM	Previous	-6.01	4.01%	98.86%	8,234	-	-
	Revised	-6.60	3.37%	99.19%	6,954	-15.5%	-0.47%
WN	Previous	-3.38	4.90%	98.04%	1,135	-	-
	Revised	-4.04	4.57%	98.27%	1,066	-6.1%	-0.85%

# Fit of demand to CWV (previous and revised) - 2

Statistics for Monday to Thursday non-holiday aggregate NDM demand models (1996/97 to 2003/04) - continued  
 (the aggregate NDM demand for a few days in NO, WS, EA and NT LDZs has been excluded or corrected)

LDZ	CWV Version	1 in 20 Peak CWV (76 years)	Mean Abs. % Error (MAPE)	Average Adjusted R-squared	Average RMSE (MWh)	Average RMSE change	Average change in est. 1 in 20 peak agg. NDM demand
WS	Previous	-4.05	5.10%	98.14%	3,834	-	-
	Revised	-3.95	3.91%	98.88%	2,983	-22.2%	-1.03%
EA	Previous	-2.69	4.51%	98.69%	7,497	-	-
	Revised	-3.06	3.73%	99.10%	6,211	-17.1%	0.94%
NT	Previous	-2.95	4.10%	98.89%	9,505	-	-
	Revised	-3.43	3.34%	99.23%	7,873	-17.2%	0.22%
SE	Previous	-2.97	4.49%	98.81%	9,632	-	-
	Revised	-3.52	3.77%	99.15%	8,105	-15.9%	-0.06%
SO	Previous	-5.58	5.13%	98.41%	7,641	-	-
	Revised	-5.49	4.02%	99.02%	5,990	-21.6%	-0.57%
SW	Previous	-5.01	4.34%	98.77%	5,193	-	-
	Revised	-4.63	3.67%	99.14%	4,369	-15.9%	-0.84%



# Seasonal bias of CWVs (previous and revised) - 1

Seasonal bias for Monday to Thursday non-holiday aggregate NDM demand models (1996/97 to 2003/04)  
 (the aggregate NDM demand data for a few days in NO, WS, EA and NT LDZs has been excluded or corrected)

LDZ	CWV Version	Average mean percentage residual error (MPRE)							
		December to February		March to May		June To August		September to November	
		MPRE	MAPE	MPRE	MAPE	MPRE	MAPE	MPRE	MAPE
SC	Previous	0.58%	2.65%	-3.12%	4.97%	2.37%	7.56%	1.06%	4.40%
	Revised	-0.14%	2.45%	-0.02%	4.02%	-0.43%	5.75%	0.37%	4.08%
NO	Previous	1.43%	3.20%	-6.68%	7.80%	-0.50%	7.08%	3.92%	5.10%
	Revised	0.03%	2.58%	-0.10%	5.06%	-0.84%	6.41%	0.32%	3.84%
NW	Previous	0.61%	2.53%	-3.78%	5.69%	-0.35%	6.44%	2.54%	4.50%
	Revised	0.13%	2.36%	0.09%	4.60%	-0.65%	5.51%	-0.05%	3.60%
NE	Previous	0.90%	3.36%	-4.57%	6.76%	2.93%	8.15%	1.72%	4.93%
	Revised	0.28%	3.24%	0.09%	5.39%	-0.13%	6.75%	-0.43%	4.61%
EM	Previous	0.52%	2.53%	-4.32%	6.00%	0.06%	6.87%	2.96%	4.48%
	Revised	0.03%	2.43%	0.23%	4.72%	-0.80%	5.91%	0.00%	3.75%
WM	Previous	0.85%	2.63%	-3.80%	5.33%	-1.29%	5.74%	2.49%	4.36%
	Revised	0.00%	2.38%	0.30%	4.17%	-1.36%	4.88%	0.16%	3.66%
WN	Previous	0.72%	3.64%	-3.12%	6.21%	0.13%	7.82%	1.66%	4.51%
	Revised	0.28%	3.47%	0.44%	5.55%	-0.16%	7.67%	-0.74%	4.19%

# Seasonal bias of CWVs (previous and revised) - 2

Seasonal bias for Monday to Thursday non-holiday aggregate NDM demand models (1996/97 to 2003/04)  
 (the aggregate NDM demand data for a few days in NO, WS, EA and NT LDZs has been excluded or corrected)

LDZ	CWV Version	Average mean percentage residual error (MPRE)							
		December to February		March to May		June To August		September to November	
		MPRE	MAPE	MPRE	MAPE	MPRE	MAPE	MPRE	MAPE
WS	Previous	0.93%	3.02%	-5.86%	7.02%	0.43%	7.19%	3.80%	5.76%
	Revised	0.13%	2.80%	-0.08%	4.64%	-0.28%	5.54%	-0.02%	4.36%
EA	Previous	1.03%	3.27%	-5.10%	6.50%	0.30%	5.42%	2.84%	4.40%
	Revised	0.02%	2.98%	0.12%	4.51%	-0.14%	5.02%	-0.09%	3.81%
NT	Previous	0.71%	2.90%	-3.42%	5.31%	-1.80%	5.46%	2.54%	4.44%
	Revised	0.06%	2.46%	0.07%	4.21%	-0.07%	4.78%	-0.13%	3.47%
SE	Previous	0.70%	3.14%	-3.47%	5.78%	-2.14%	6.49%	2.68%	4.87%
	Revised	-0.02%	2.77%	0.28%	4.66%	-0.16%	5.73%	-0.17%	3.95%
SO	Previous	0.88%	3.38%	-5.64%	7.24%	-2.60%	5.82%	4.56%	5.77%
	Revised	0.16%	3.11%	-0.03%	5.34%	-0.89%	4.98%	0.04%	3.96%
SW	Previous	0.78%	2.78%	-4.27%	6.16%	0.26%	5.37%	2.67%	4.78%
	Revised	-0.07%	2.57%	0.37%	5.06%	-0.46%	4.58%	-0.09%	3.83%

# Summary of Results of CWV Review

The revised CWVs:

display significantly less seasonal bias on average in all LDZs

and

produce better fit to aggregate NDM demand over year as a whole than the previous CWV for all LDZs

# New Seasonal Normal Weather Basis

- Under the terms of Section H (paragraphs. H1.4 & H1.5) of the Network Code (and now the Uniform Network Code) a new basis for seasonal normal weather conditions is required to take effect on 1st October 2005.
- The new basis developed and agreed in consultation with DESC, is the 17 years from October 1987 to September 2004.
- The new seasonal normal basis and the ensuing values of SNCWVs have been used in the spring 2005 NDM analysis.

# New Seasonal Normal Basis - Summary of Analysis

The analysis undertaken examined changes in annual degree days.

Three options were evaluated

- Trend line
- Step change to a new lower level
- No warming before the change with a constant rate of warming after the change (i.e. trend line after change)

The year of introduction of the change was varied to investigate every usable combination of periods

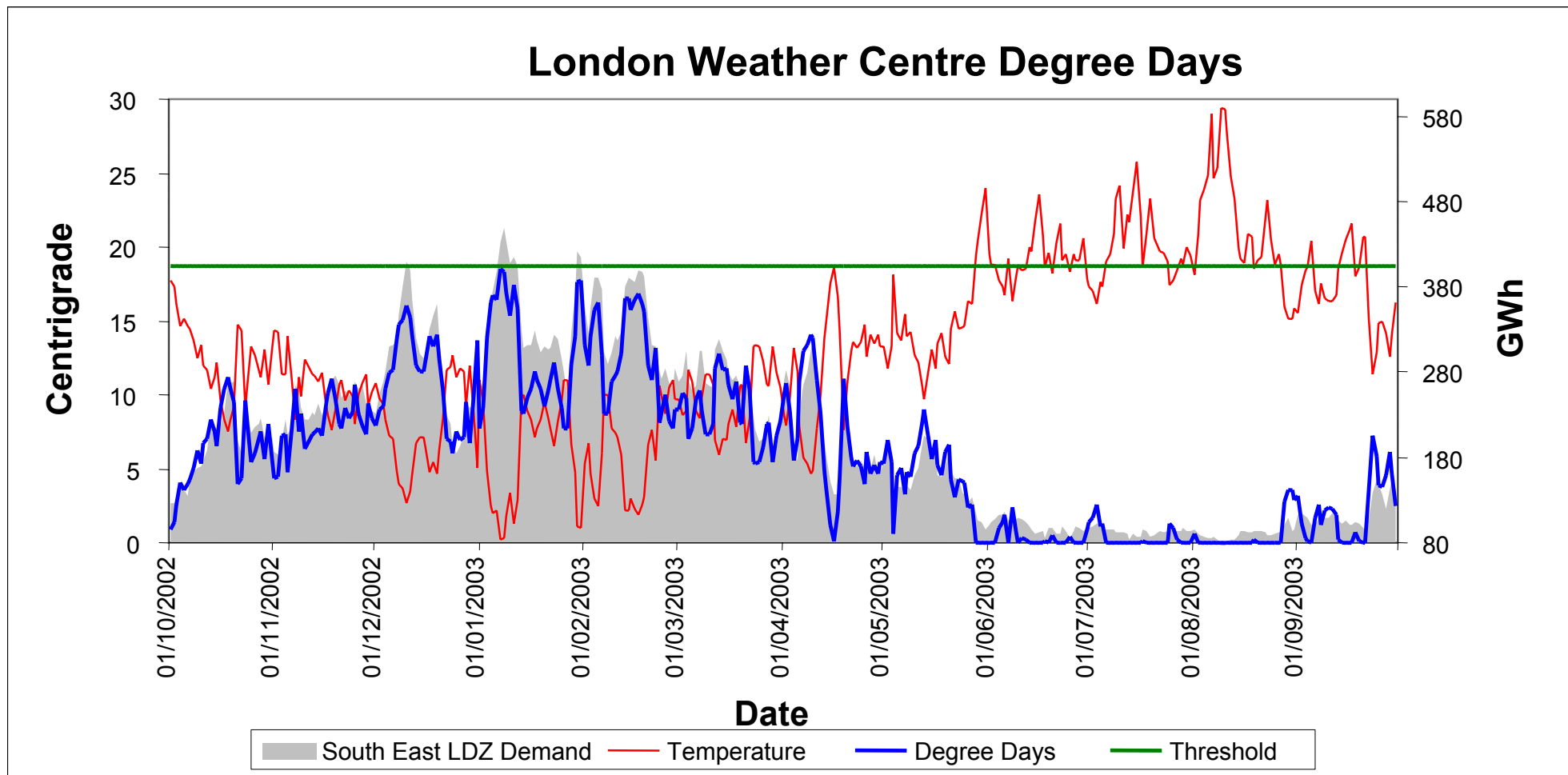
# Annual Degree Days

- Annual Degree Days are calculated for gas supply years (October to September) and are the sum of the daily degree days for the year.

Daily Degree Days =  $\text{Maximum}(\text{Threshold} - \text{Daily Temperature}, 0)$

- The threshold is set to the average warm weather cut off parameter in the CWV formulas using the weather station.
- This ensures that the analysis reflects changes in the weather that affects gas demand and ignores summer warming.

# Annual Profiles of Degree Days & Gas Demand



# Basis used for Evaluation of Options

A root mean squared error was calculated for each of the options evaluated for each point of change.

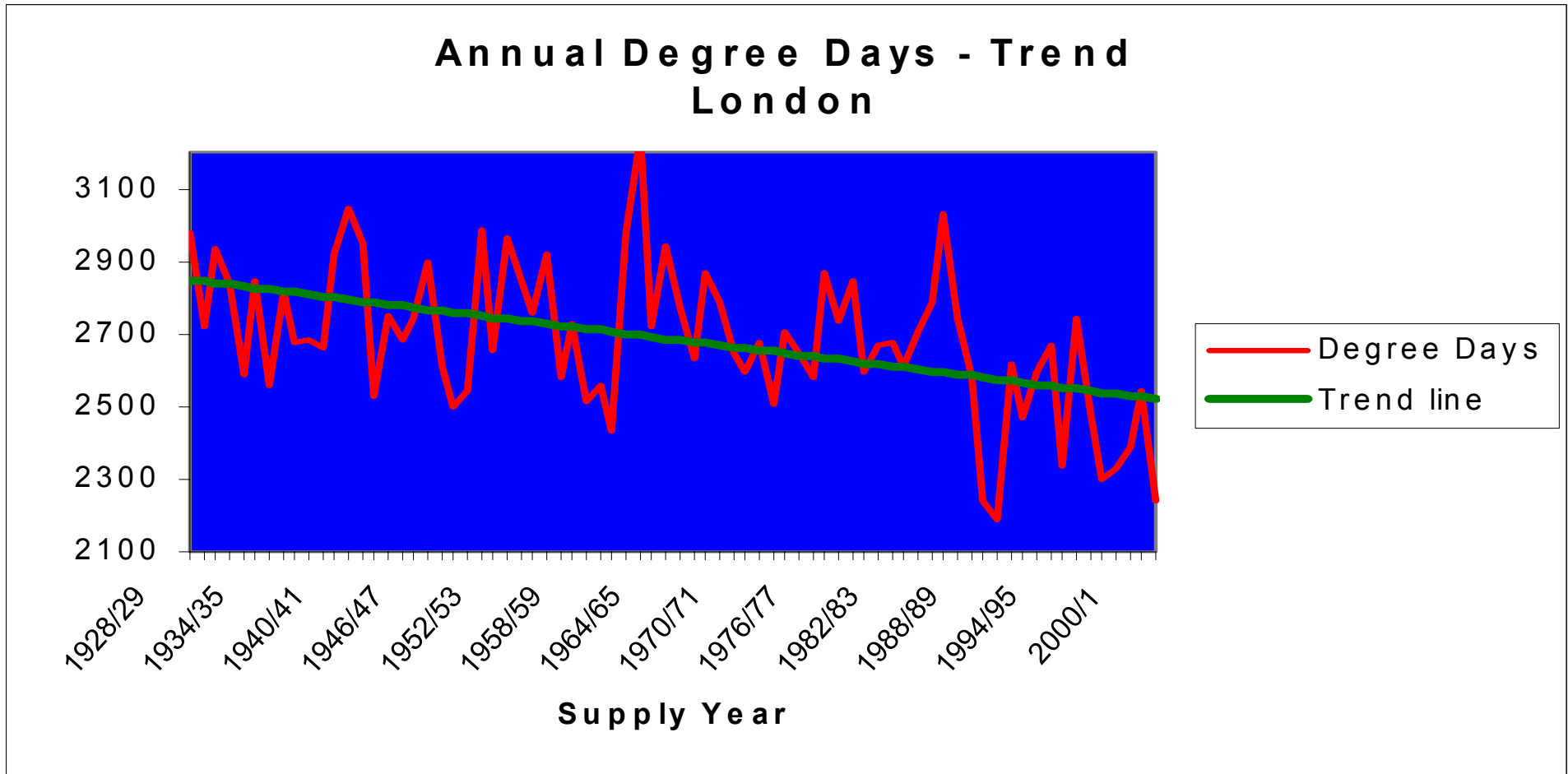
This measures the deviation from the mean or trend line value. The best choice is then the option with the lowest RMSE.

$$\text{RMSE} = \sqrt{\frac{\sum (\text{Annual degree days} - \text{mean or trend line value})^2}{\text{Number of gas supply years}}}$$

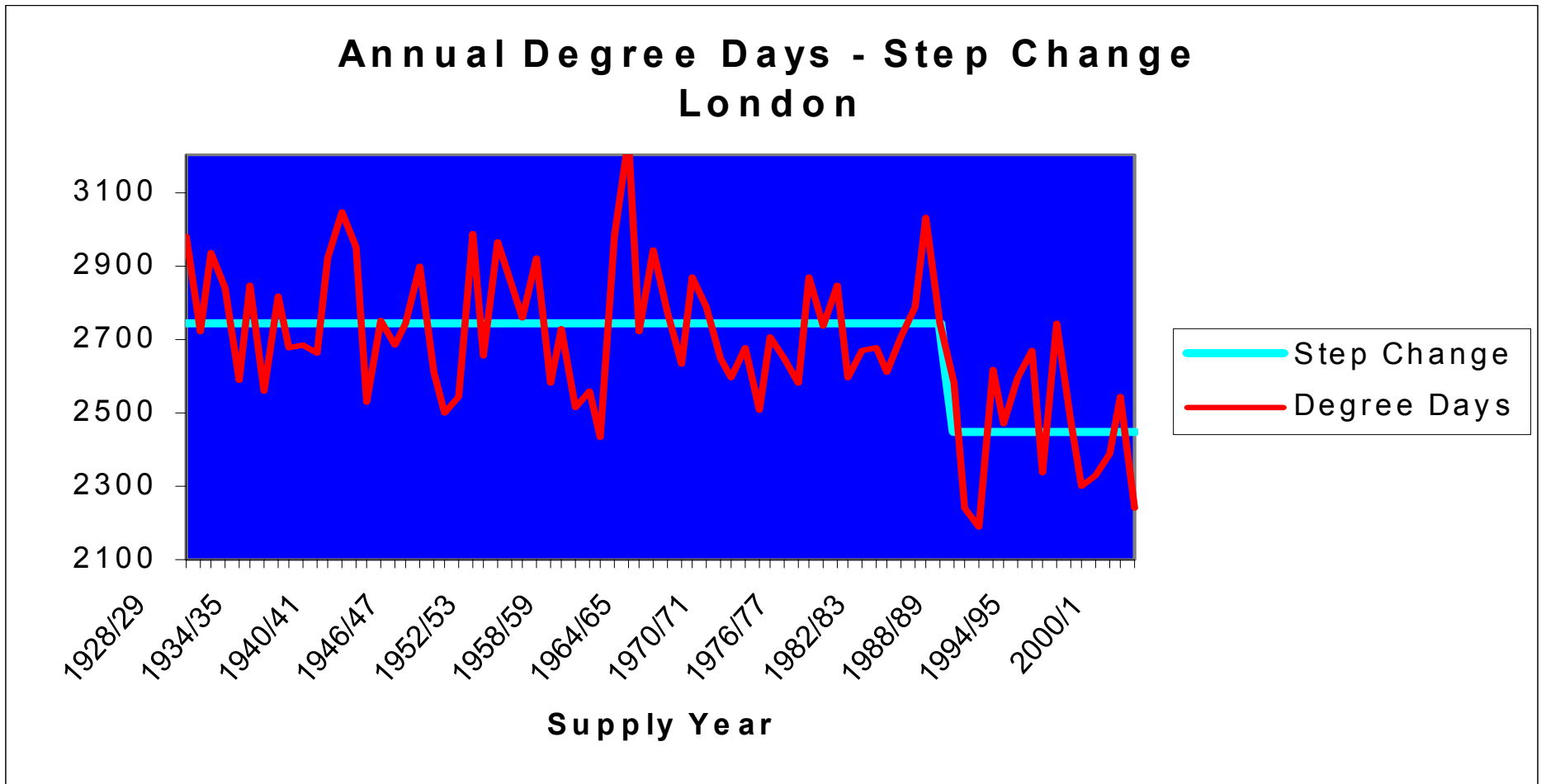
In every case assessed the RMSE was calculated for a change at the end of each gas supply year.



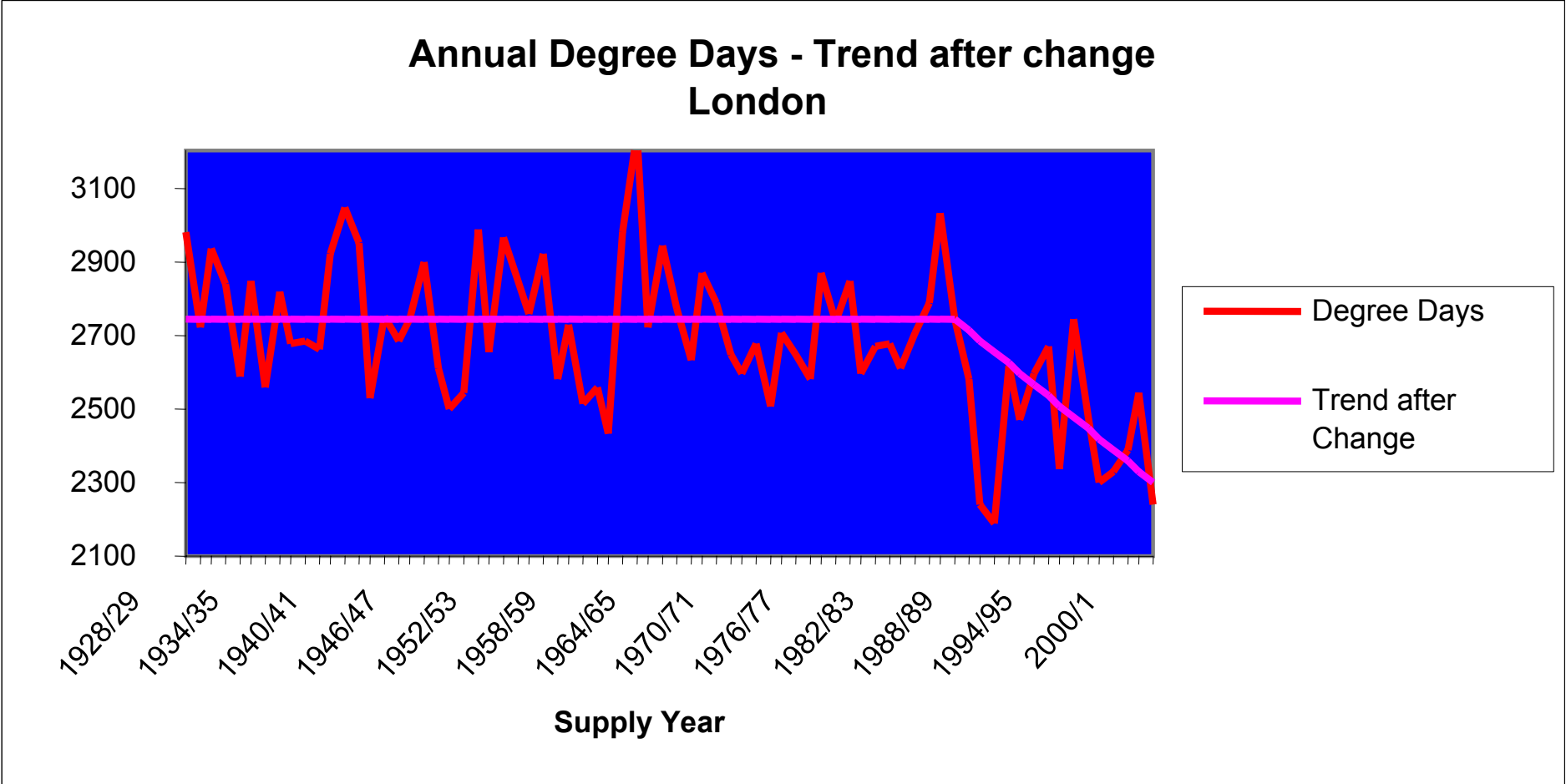
# Example - Trend Line (London Weather Centre)



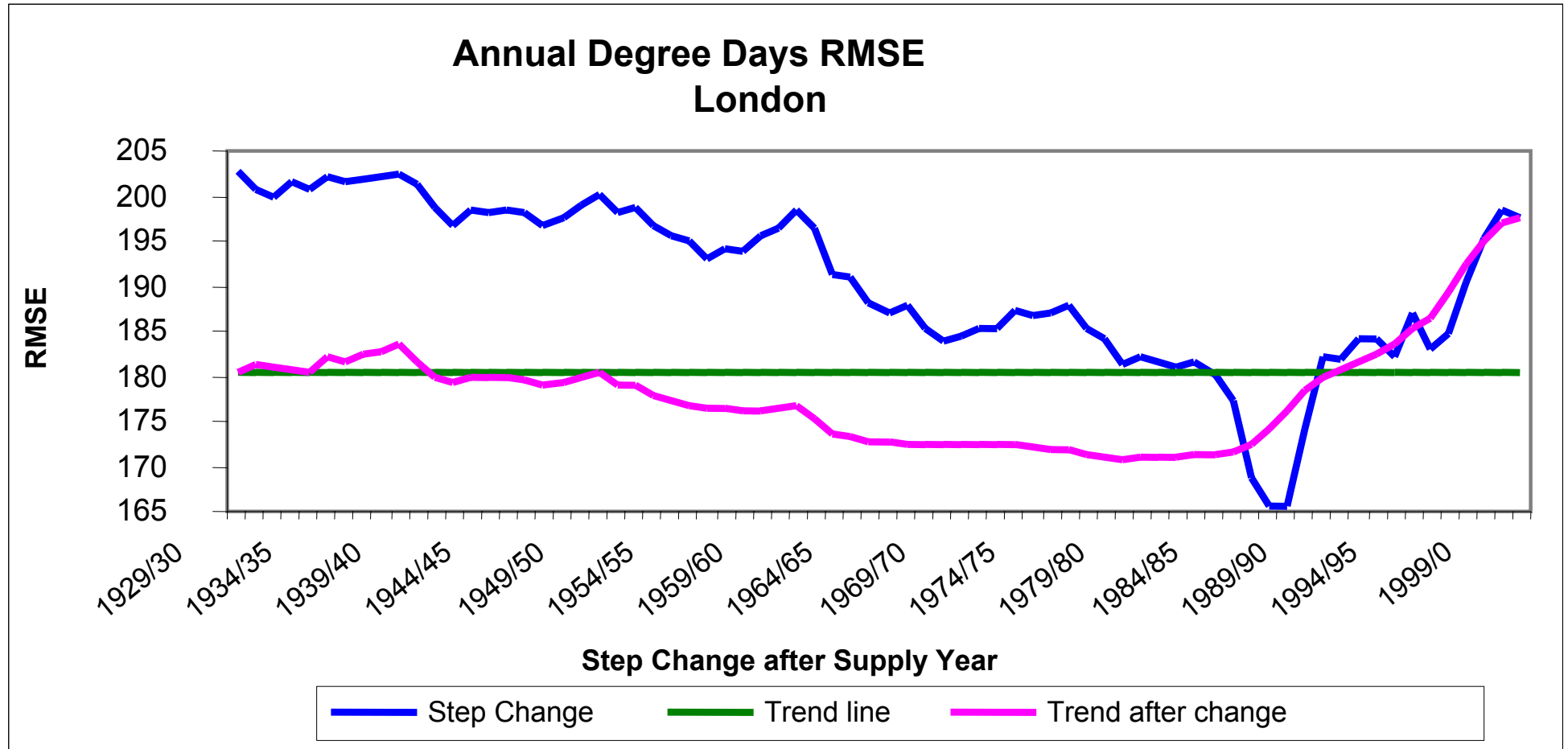
# Example - Step Change (London Weather Centre)



# Example - Trend after Change (London Weather Centre)

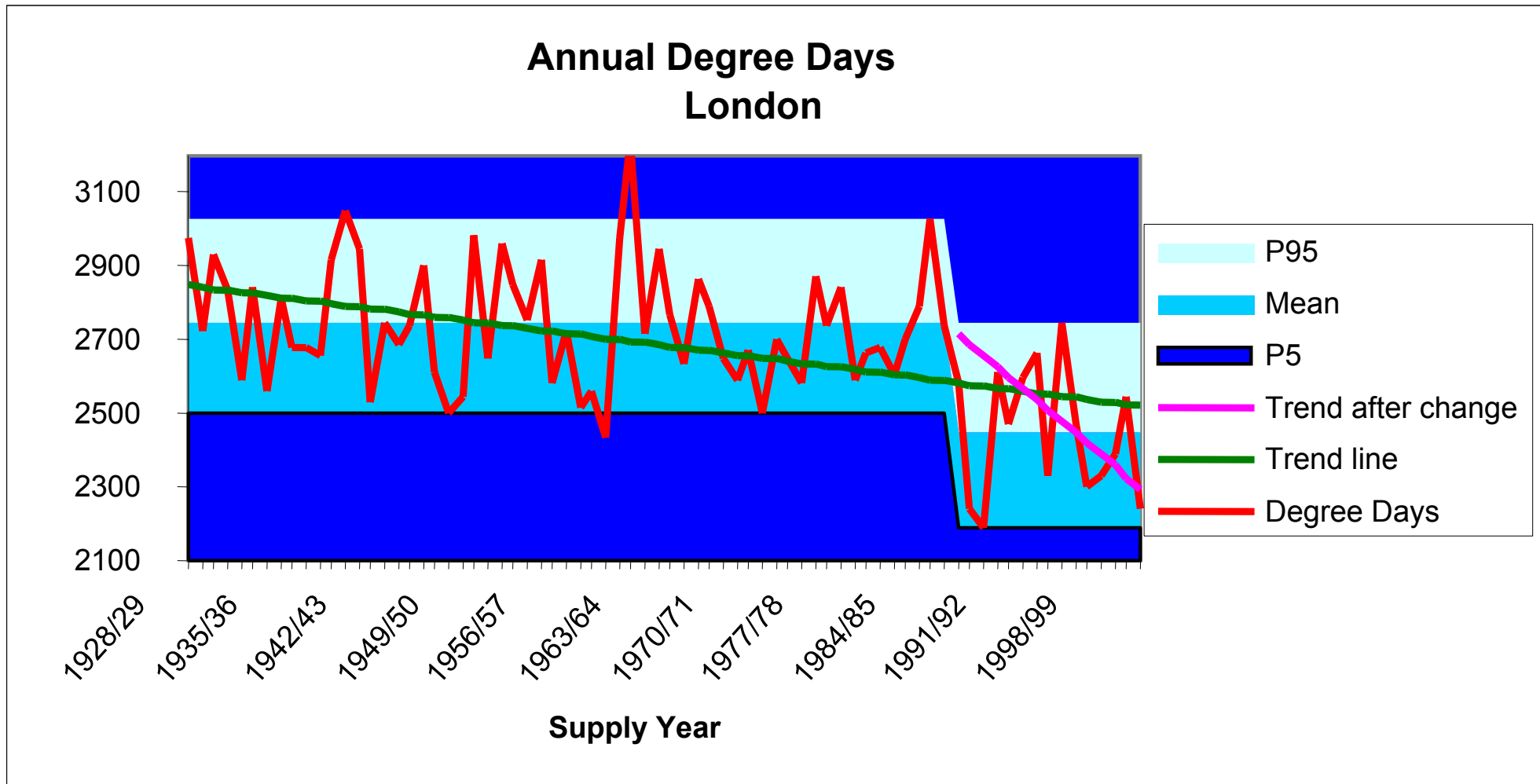


# Annual Degree Day RMSE - London Weather Centre



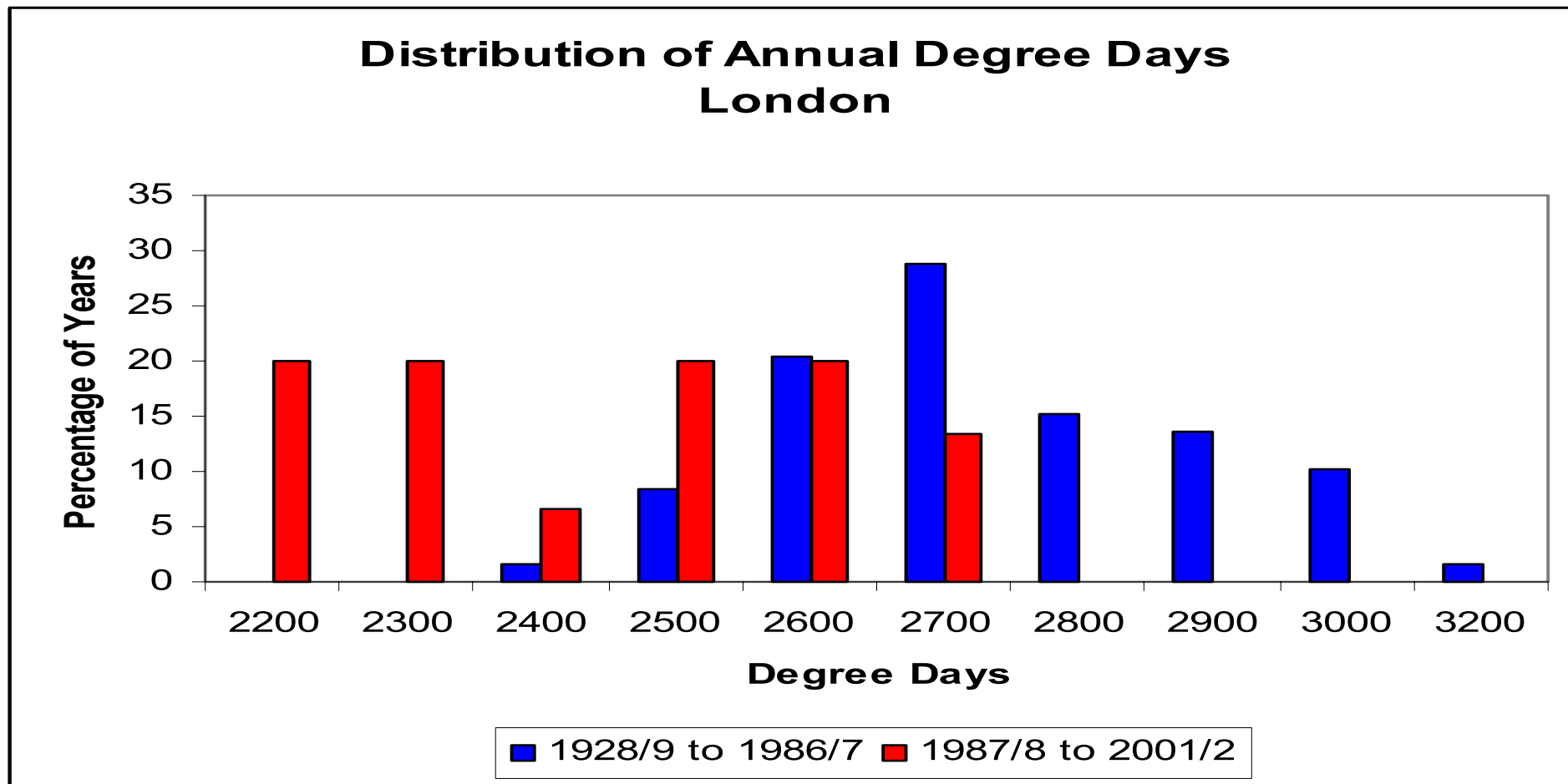
The RMSE is lowest for a step change in the late 1980s.

# Annual Degree Days- London Weather Centre Step Change between 1986/7 and 1987/8



# Annual Degree Days – London

## Distribution before and after step change



# New Seasonal Normal Basis

The proposed new basis agreed in consultation with DESC, is the 17 years from October 1987 to September 2004

The new seasonal normal basis:

satisfies Network Code (and now, UNC) obligations for review and revision.

is appropriate to its intended use in gas demand modelling (with a view therefore to addressing seasonal modelling deficiencies).

provides more appropriate weather correction of gas demand to deliver a more realistic basis for assessing AQs for Network Code (and now UNC) processes.

**The new basis is not intended to second guess climatologists nor suggest any novel insights about climatological phenomena.**





## Spring 2005 – ongoing analysis

Consider most appropriate data sets and aggregations to apply to the most recently available data - i.e. 2004/05

Small NDM (up to 2196 MWh pa) and large NDM (> 2196 MWh pa) considered separately

Previous years' data sets retain the levels of aggregation applied in those years - i.e. 2002/03 & 2003/04

Three years of data go into producing smoothed models

# Large NDM

Prescribed EUCs (in respect of consumption ranges):

2196	-	5860 MWh	} x 4 WAR bands + consumption band
5860	-	14650 MWh	
14650	-	29300 MWh	
29300	-	58600 MWh	
(58600+)			

Data available / proposed aggregations

# Data Available: Datalogged Supply Points

	Total	Small NDM
No. of active dataloggers as at 01/04/2004	17940	10814
<div style="border: 1px solid black; padding: 10px; margin: 10px 0;"><p>Data validation</p><ul style="list-style-type: none"><li>Missing Days</li><li>Consecutive Zeros</li><li>Spike Detection</li></ul></div>		
No. of validated dataloggers :	16290	10093
<hr/>		
No. of supply points after validation :		
Large NDM	5493	(6014)
Small NDM	5938	(5630)
Total	11431	(11644)
		(2004 analysis)

# New AQ Basis: Effect on Data Aggregations

- On the whole AQs decrease:
  - The reduction is related to weather sensitivity - i.e. less reduction at higher consumption ranges and/or for low weather sensitive EUCs
- The broad effect on NDM sample sizes is:
  - Increased validated sample numbers for small NDM (<2196 MWh pa)
  - Reduced validated sample numbers for large NDM (>2196 MWh pa)
- Data aggregations for large NDM consumption band analyses are nevertheless the same or better
- Each consumption band data set divides into 4 sub-sets for WAR band analyses
- Higher data aggregations are necessary for WAR band analyses in each large NDM consumption band

# Large NDM : Data Aggregations

	<b>Cons. Band Analysis</b> (last year)	<b>WAR Band Analysis</b> (last year)
<b>Band 05</b> (2196 - 5860 MWh pa)	<b>By LDZ</b> (By LDZ)	<b>By 5 LDZ Groups</b> (By LDZ)
<b>Band 06</b> (5860 - 14650 MWh pa)	<b>By LDZ</b> (By LDZ)	<b>By 3 LDZ Groups</b> (By 4 LDZ Groups)
<b>Band 07</b> (14650 - 29300 MWh pa)	<b>By 5 LDZ Groups</b> (By 5 LDZ Groups)	<b>National</b> (By 2 LDZ Groups)
<b>Band 08</b> (29300 - 58600 MWh pa)	<b>By 4 LDZ Groups</b> (By 3 LDZ Groups)	<b>National</b> (National)
<b>Band 09</b> (> 58600 MWh pa)	<b>National</b> (National)	--

# Large NDM Supply Points (>2196 MWh pa)

## Consumption Band Analyses – Disposition of Validated Sample

LDZ	2196-5860 MWh pa	5860-14650 MWh pa	14650-29300 MWh pa	29300-58600 MWh pa	>58600 MWh pa
SC	367	112	32	15	10
NO	200	77	21	18	14
NW & WN	432	181	47	29	31
NE	236	97	32	22	9
EM	286	123	56	34	24
WM	354	162	60	40	32
EA	232	102	28	12	2
NT	417	144	27	8	7
SE	314	80	18	13	8
WS	115	54	23	13	9
SO	244	86	36	10	6
SW	202	81	31	10	8
Total	3399	1299	411	224	160

# Large NDM Supply Points (>2196 MWh pa)

## Sample v- Population

Consumption Range	Validated Sample	Firm SP Population (1)
2196-5860 MWh pa	3399	7750
5860-14650 MWh pa	1299	2230
14650-29300 MWh pa	411	670
29300-58600 MWh pa	224	270
>58600 MWh pa	160 (2)	180 (3)

- Notes:**
- (1) Approx. figures for all Firm supply points as at mid-April 2005. Population figures are necessarily on old seasonal normal basis
  - (2) Sample data set includes all firm supply points that pass data validation because there are too few NDM supply points with AQ>58,600 MWh pa. Supply points with AQ>58,600 MWh pa should normally be DM.
  - (3) Number of NDM supply points with AQ>58,600 MWh pa as at mid-April 2005 was 13 (~0.17% of aggregate NDM AQ).

# NDM Population Disposition

Consumption Range	% of Total <b>NDM</b>	
	AQ Basis	Number Basis
0 - 73.2 MWh pa	72%	98%
0 - 2196 MWh pa (small NDM)	89%	99.9%
> 2196 MWh pa (large NDM)	11%	0.1%

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 more than 2/3 of overall NDM

Large NDM is very much a minority component of overall NDM

(Note: these figures are on the currently applicable seasonal normal basis)



# Indicative Load Factors & Load Factors

- Load Factor (LF):  
LF = average daily demand / 1 in 20 peak demand  
=  $(AQ/365) / 1 \text{ in } 20 \text{ peak demand}$
- Indicative Load Factor (ILF):  
ILF =  $(AQ/365) / \text{model demand corresponding to } 1 \text{ in } 20 \text{ CWV}$
- 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 are not used for determining NDM supply point capacities.

# Large NDM Supply Points (>2196 MWh pa)

## Consumption Band Analyses – Indicative Load Factors

LDZ	2196-5860 MWh pa	5860-14650 MWh pa	14650-29300 MWh pa	29300-58600 MWh pa	>58600 MWh pa
SC	43% 98% (367)	48% 99% (112)	53% 97% ( 32)	66% 94% ( 62)	68% 93% (160)
NO	37% 97% (200)	42% 97% ( 77)	50% 98% ( 68)		
NW/WN	41% 98% (432)	48% 98% (181)			
NE	37% 98% (236)	44% 97% ( 97)	51% 98% (148)	61% 97% ( 96)	
EM	40% 98% (286)	45% 98% (123)			
WM	35% 98% (354)	45% 98% (162)			
EA	38% 98% (232)	44% 98% (102)	53% 97% ( 73)	58% 92% ( 33)	
NT	41% 98% (417)	47% 99% (144)			
SE	38% 98% (314)	46% 98% ( 80)			
WS	39% 98% (115)	42% 98% ( 54)	44% 98% ( 90)	56% 92% ( 33)	
SO	36% 99% (244)	39% 98% ( 86)			
SW	39% 98% (202)	47% 97% ( 81)			

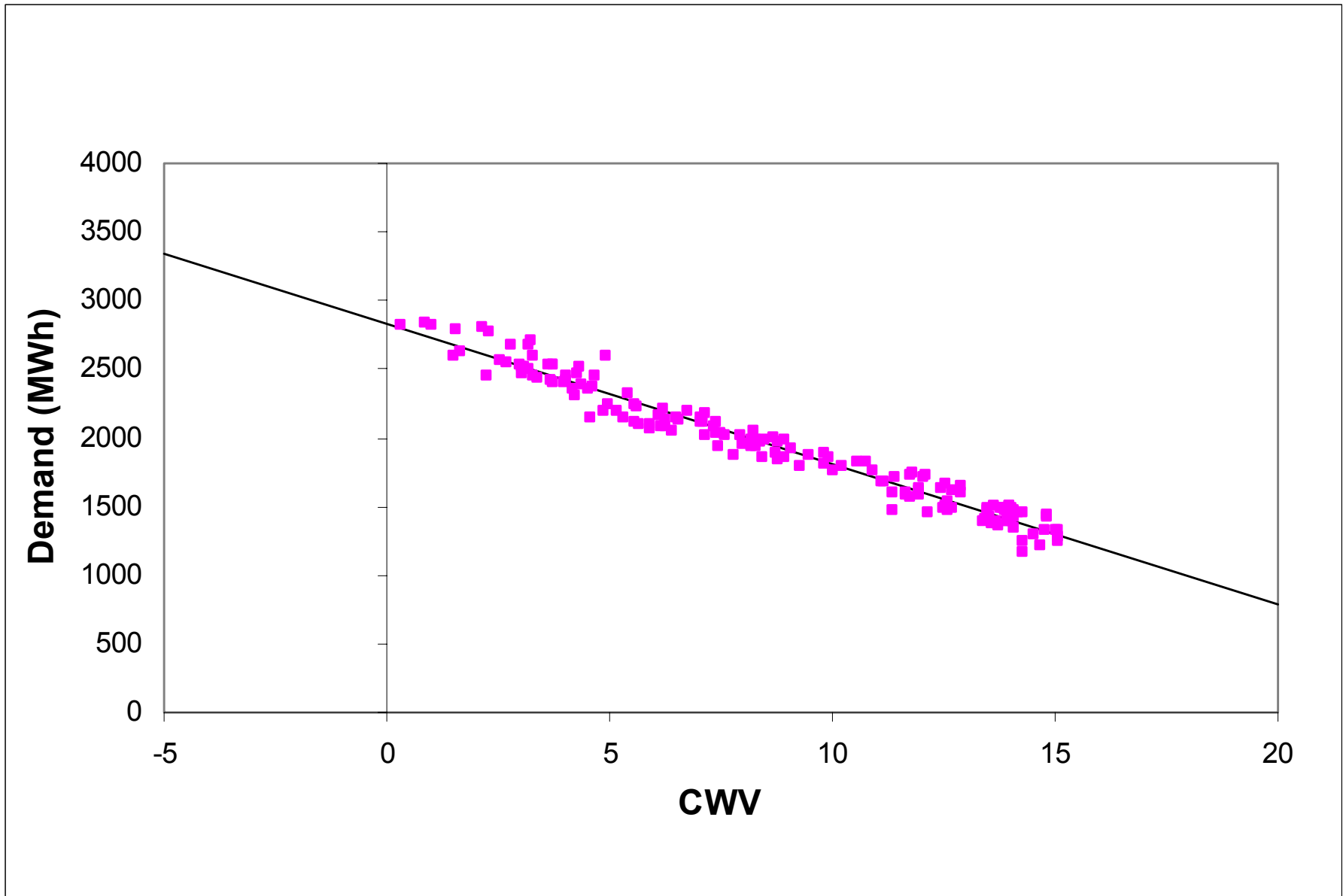
Indicative Load Factor

R<sup>2</sup> Multiple Correlation Coefficient

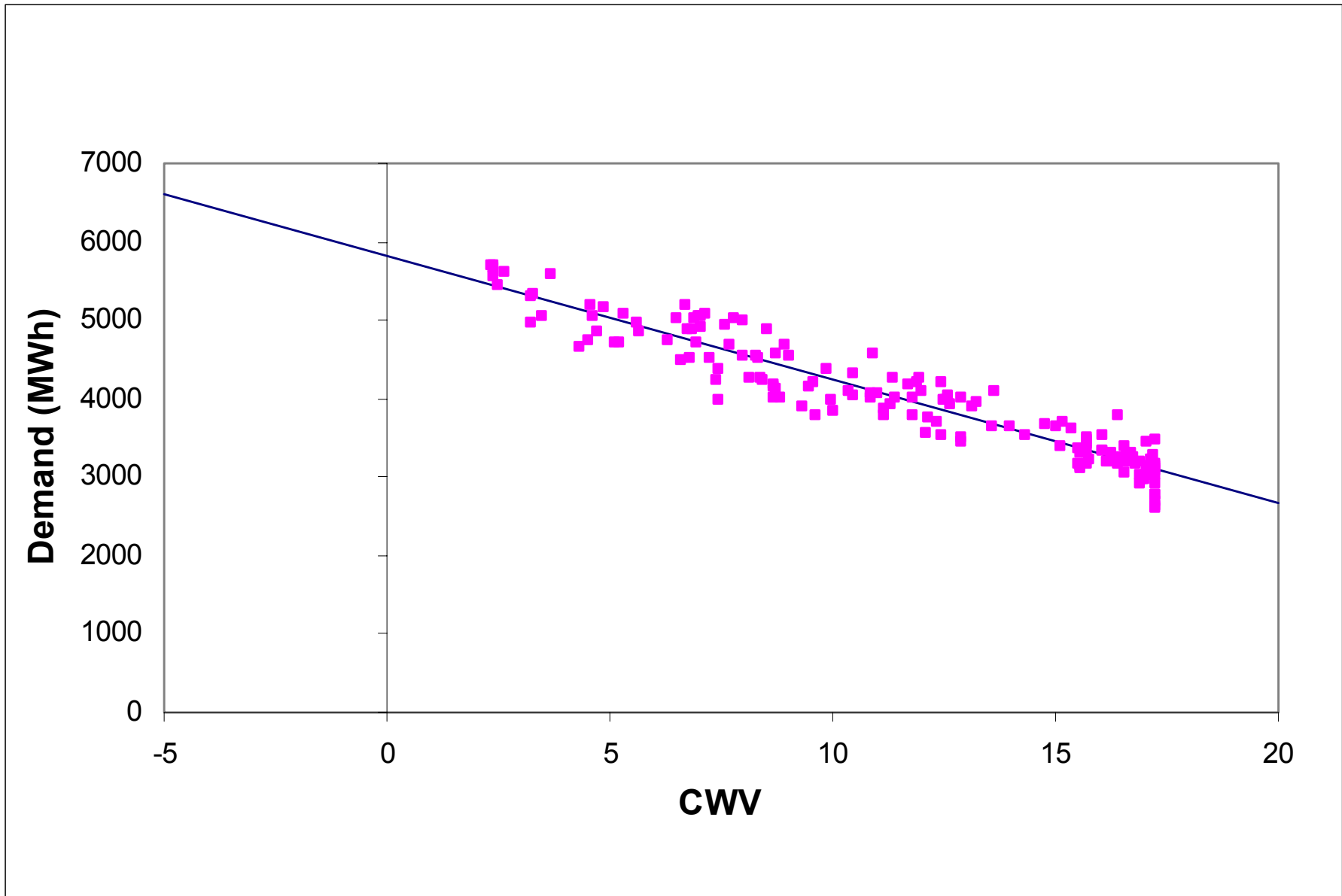
(Sample Size)

# Demand Against CWV, Monday to Thursday, Non-Holiday

SC LDZ (5 LDZ Group Analysis), 14650-29300 MWh pa, Consumption Band, SC CWV

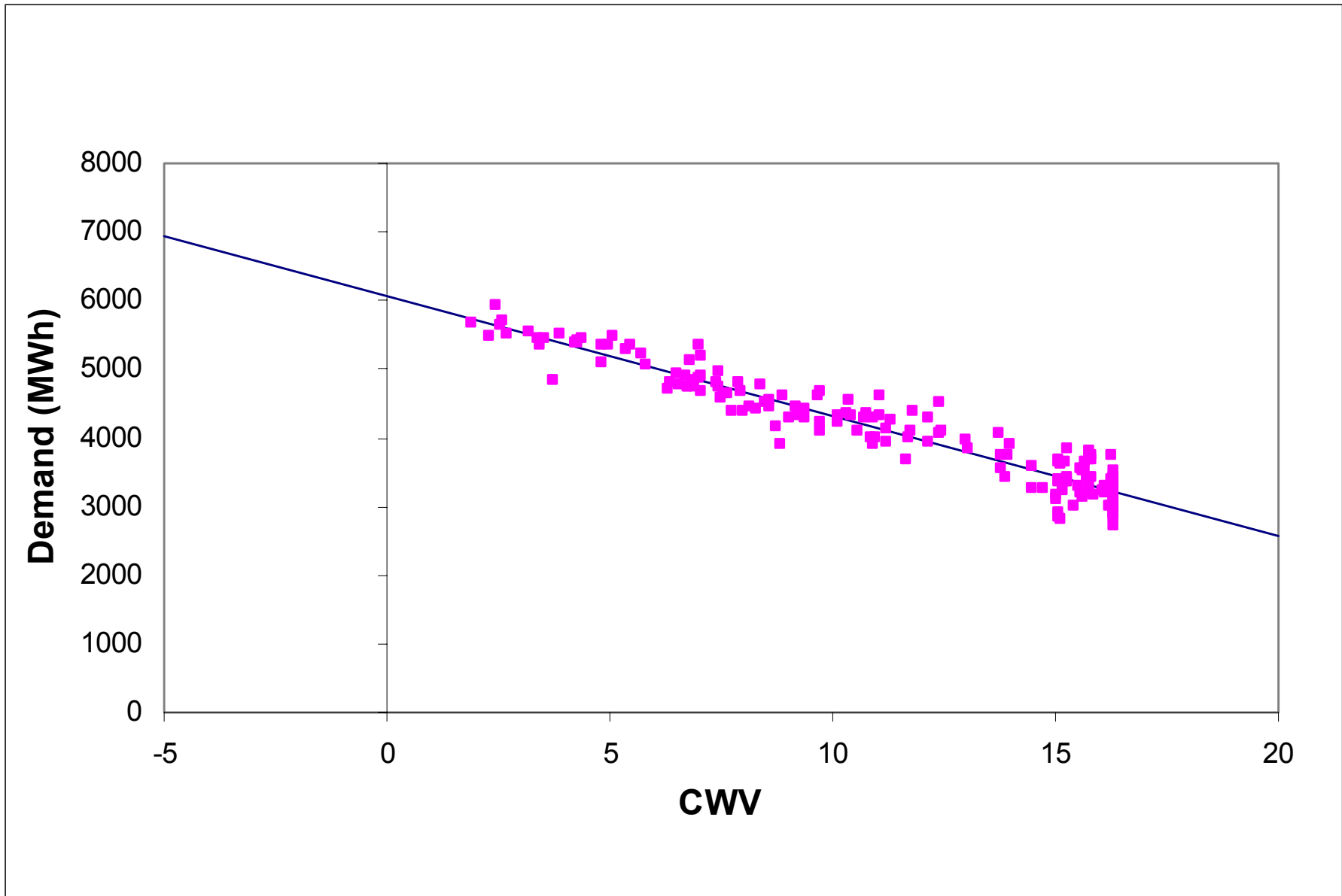


# Demand Against CWV, Monday to Thursday, Non-Holiday EA/NT/SE (4 LDZ Group Analysis), 29300-58600 MWh pa, Consumption Band, NT CWV

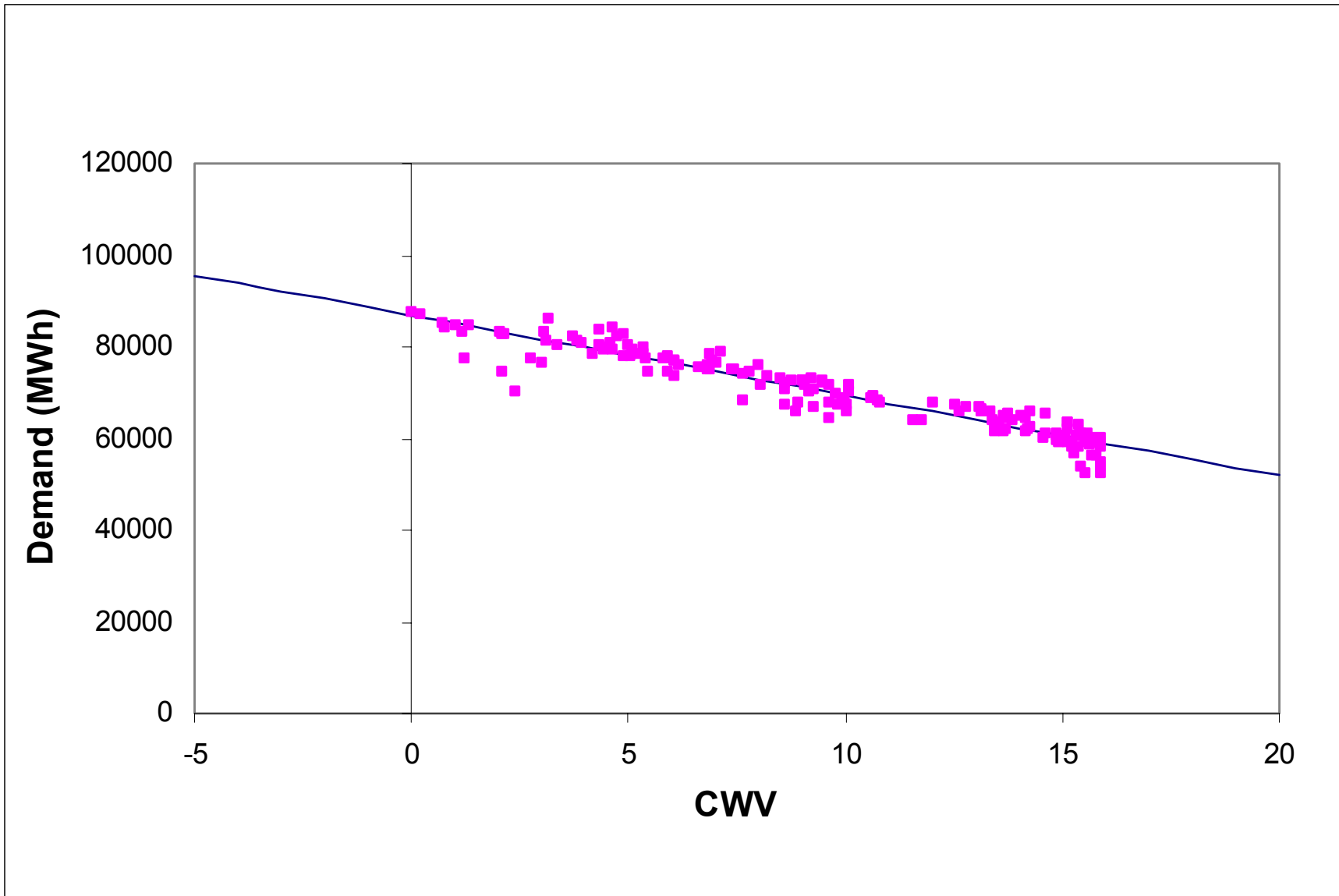


# Demand Against CWV, Monday to Thursday, Non-Holiday

WS/SO/SW (4 LDZ Group Analysis), 29300-58600 MWh pa, Consumption Band, SO CWV



# Demand Against CWV, Monday to Thursday, Non-Holiday National Aggregation, >58600 MWh pa, Consumption Band, WM CWV



# Large NDM Supply Points (>2196 MWh pa)

## WAR Band Analyses – Disposition of Validated Sample

LDZ	2196-5860 MWh pa	5860-14650 MWh pa	14650-29300 MWh pa	29300-58600 MWh pa	>58600 MWh pa
SC	367	112	32	15	10
NO	200	77	21	18	14
NW & WN	432	181	47	29	31
NE	236	97	32	22	9
EM	286	123	56	34	24
WM	354	162	60	40	32
EA	232	102	28	12	2
NT	417	144	27	8	7
SE	314	80	18	13	8
WS	115	54	23	13	9
SO	244	86	36	10	6
SW	202	81	31	10	8
Total	3399	1299	411	224	160

# Large NDM Supply Points (>2196 MWh pa)

## WAR Band Analyses – Disposition of Validated Sample

### Consumption Band : 2196 - 5860 MWh pa

LDZ	0.00 - 0.39	0.39 - 0.46	0.46 - 0.54	0.54 - 1.00	Total
SC	75	127	118	47	367
NO	39	56	66	39	200
NW/WN	126	127	101	78	432
NE	52	60	58	66	236
EM	74	75	78	59	286
WM	60	101	88	105	354
WS	23	27	40	25	115
EA	38	53	64	77	232
NT	44	128	161	84	417
SE	36	82	108	88	314
SO	35	66	78	65	244
SW	57	52	44	49	202
<b>Total</b>	<b>659</b>	<b>954</b>	<b>1004</b>	<b>782</b>	<b>3399</b>



# Large NDM Supply Points (>2196 MWh pa)

## 5 LDZ Group WAR Band Analyses – Disposition of Validated Sample

LDZ Group	Consumption Band : 2196 - 5860 MWh pa			
	0.00 - 0.39	0.39 - 0.46	0.46 - 0.54	0.54 - 1.00
SC	75	127	118	47
NO/NW/WN	165	183	167	117
NE/EM/WM	186	236	224	230
EA/NT/SE	118	263	333	249
WS/SO/SW	115	145	162	139
<b>TOTAL</b>	<b>659</b>	<b>954</b>	<b>1004</b>	<b>782</b>

# Large NDM Supply Points (>2196 MWh pa)

## 5 LDZ Group WAR Band Analysis – Indicative Load Factors

Consumption Band : 2196 - 5860 MWh pa

LDZ	0.00 - 0.39	0.39 - 0.46	0.46 - 0.54	0.54 - 1.00
SC	66% 96% ( 75)	50% 98% (127)	36% 98% (118)	28% 97% ( 47)
NO/NW/WN	63% 98% (165)	49% 98% (183)	34% 97% (167)	24% 96% (117)
NE/EM/WM	64% 99% (186)	47% 98% (236)	35% 98% (224)	24% 97% (230)
EA/NT/SE	68% 96% (118)	51% 98% (263)	40% 97% (333)	27% 98% (249)
WS/SO./SW	67% 95% (115)	47% 98% (145)	36% 98% (162)	24% 98% (139)

Indicative Load Factor

R<sup>2</sup> Multiple Correlation Coefficient

(Sample Size)

# Large NDM Supply Points (>2196 MWh pa)

## WAR Band Analyses – Indicative Load Factors

Consumption Band : 2196 - 5860 MWh pa

LDZ	0.00 - 0.39	0.39 - 0.46	0.46 - 0.54	0.54 - 1.00
SC	66% 96% ( 75)	50% 98% (127)	36% 98% (118)	28% 97% ( 47)
NO	62% 96% ( 39)	47% 97% ( 56)	32% 97% ( 66)	24% 95% ( 39)
NW/WN	64% 97% (126)	50% 98% (127)	35% 97% (101)	25% 96% ( 78)
NE	64% 97% ( 52)	47% 97% ( 60)	36% 98% ( 58)	25% 96% ( 66)
EM	63% 98% ( 74)	48% 98% ( 75)	36% 98% ( 78)	25% 97% ( 59)
WM	67% 97% ( 60)	46% 98% (101)	34% 98% ( 88)	23% 97% (105)
EA	64% 96% ( 38)	52% 96% ( 53)	38% 98% ( 64)	27% 98% ( 77)
NT	74% 90% ( 44)	50% 97% (128)	41% 97% (161)	28% 98% ( 84)
SE	67% 95% ( 36)	50% 97% ( 82)	38% 97% (108)	26% 98% ( 88)
WS	66% 92% ( 23)	47% 98% ( 27)	36% 98% ( 40)	25% 95% ( 25)
SO	66% 86% ( 35)	47% 98% ( 66)	35% 98% ( 78)	24% 98% ( 65)
SW	67% 96% ( 57)	47% 95% ( 52)	36% 98% ( 44)	25% 97% ( 49)

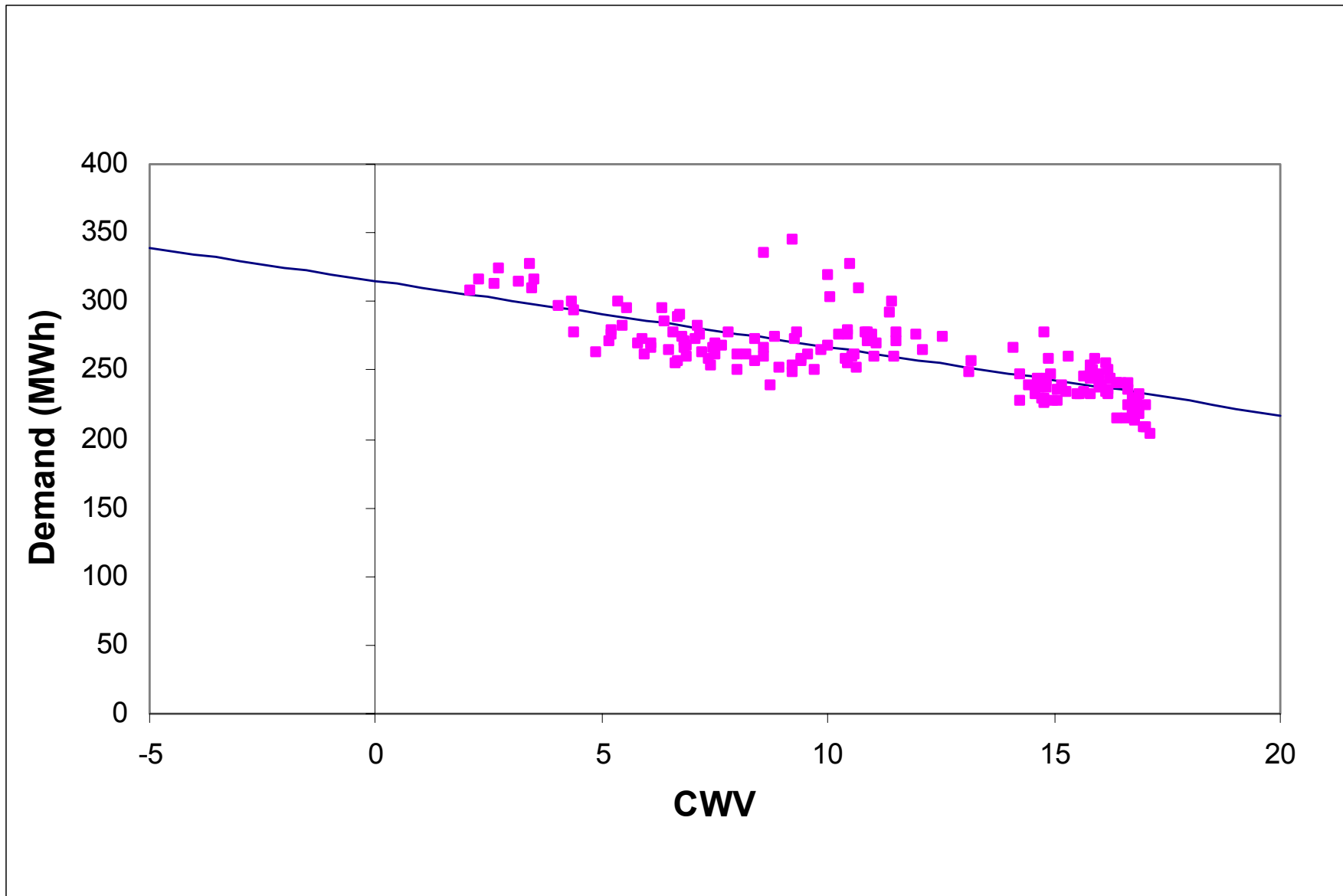
Indicative Load Factor

R<sup>2</sup> Multiple Correlation Coefficient

(Sample Size)

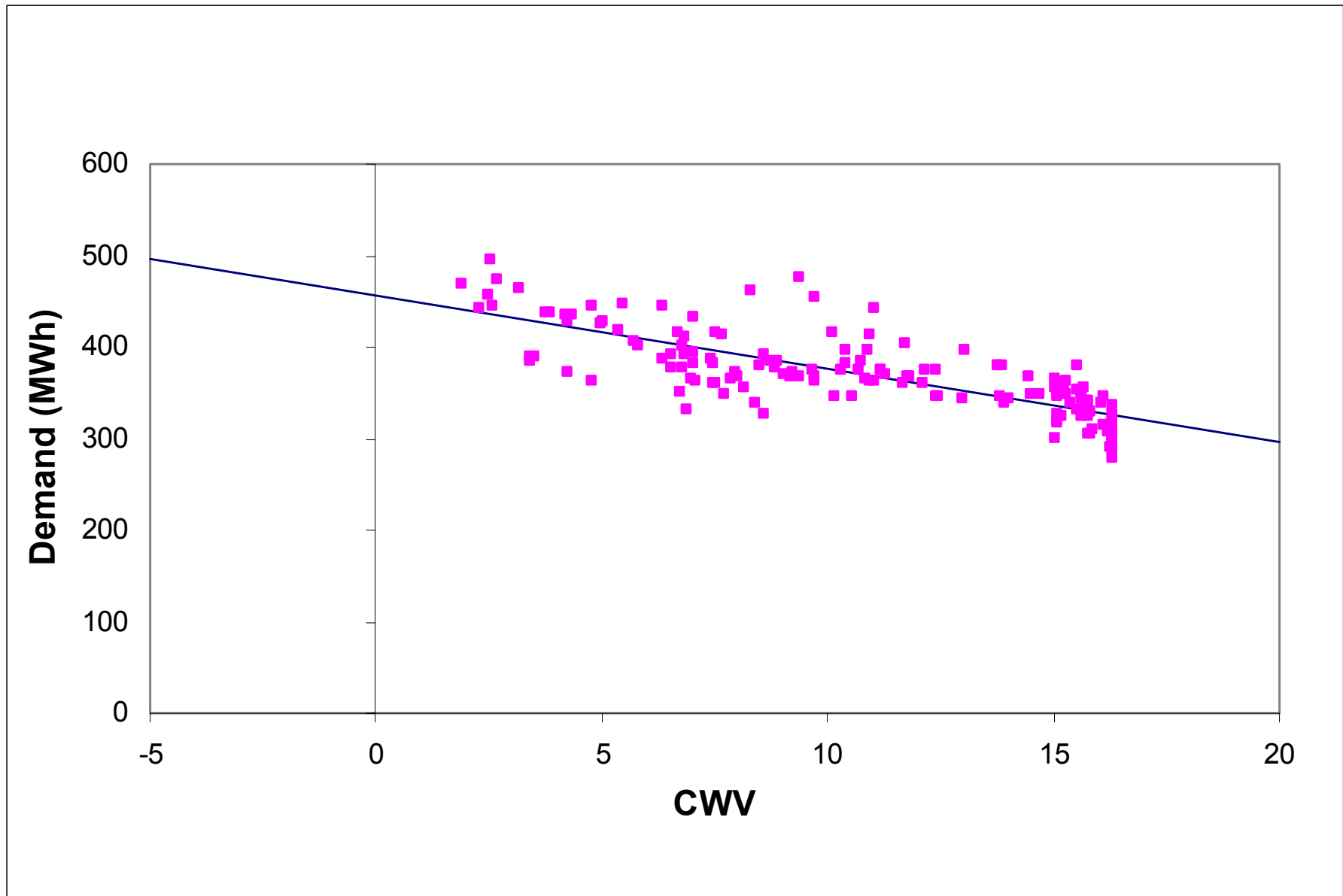
# Demand Against CWV, Monday to Thursday, Non-Holiday

## Individual LDZ Analysis, WS LDZ, 2196-5860 MWh pa, WAR Band 1



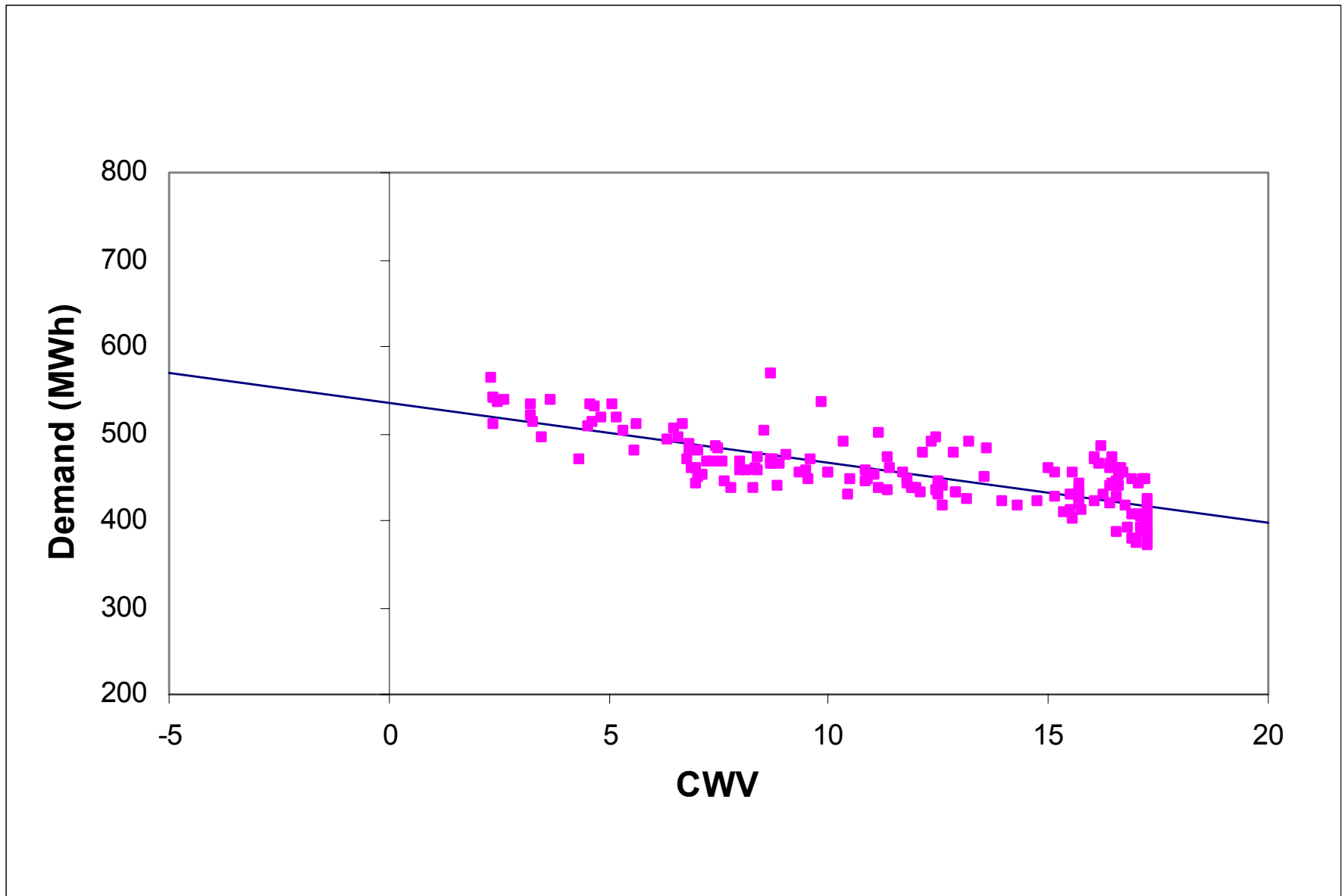
# Demand Against CWV, Monday to Thursday, Non-Holiday

## Individual LDZ Analysis, SO LDZ, 2196-5860 MWh pa, WAR Band 1



# Demand Against CWV, Monday to Thursday, Non-Holiday

## Individual LDZ Analysis, NT LDZ, 2196-5860 MWh pa, WAR Band 1



## Large NDM Supply Points (>2196 MWh pa) WAR Band Analyses – Disposition of Validated Sample

### Consumption Band : 5860 - 14650 MWh pa

LDZ Group	0.00 - 0.34	0.34 - 0.42	0.42 - 0.51	0.51 - 1.00
SC/NO/NW/WN	77	129	107	57
NE/EM/WM	88	127	89	78
EA/NT/SE/ WS/SO/SW	78	146	191	132
<b>TOTAL</b>	<b>243</b>	<b>402</b>	<b>387</b>	<b>267</b>

### Consumption Band : 14650 - 29300 MWh pa

LDZ Group	0.00 - 0.34	0.34 - 0.39	0.39 - 0.47	0.47 - 1.00
All LDZs	99	114	111	87

### Consumption Band : 29300 - 58600 MWh pa

LDZ Group	0.00 - 0.31	0.31 - 0.35	0.35 - 0.43	0.43 - 1.00
All LDZs	38	79	62	45

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

### Consumption Band : 5860 - 14650 MWh pa

LDZ Group	0.00 - 0.34	0.34 - 0.42	0.42 - 0.51	0.51 - 1.00
SC/NO/NW/WN	78% 96% (77)	56% 98% (129)	42% 98% (107)	25% 96% ( 57)
NE/EM/WM	79% 97% (88)	54% 98% (127)	39% 99% ( 89)	27% 97% ( 78)
EA/NT/SE/WS/SO/SW	84% 97% (78)	57% 98% (146)	43% 98% (191)	29% 98% (132)

### Consumption Band : 14650 - 29300 MWh pa

LDZ Group	0.00 - 0.34	0.34 - 0.39	0.39 - 0.47	0.47 - 1.00
All LDZs	77% 98% (99)	62% 98% (114)	45% 98% (111)	31% 97% ( 87)

### Consumption Band : 29300 - 58600 MWh pa

LDZ Group	0.00 - 0.31	0.31 - 0.35	0.35 - 0.43	0.43 - 1.00
All LDZs	93% 66% (38)	81% 92% (79)	58% 96% (62)	37% 96% ( 45)

Indicative Load Factor

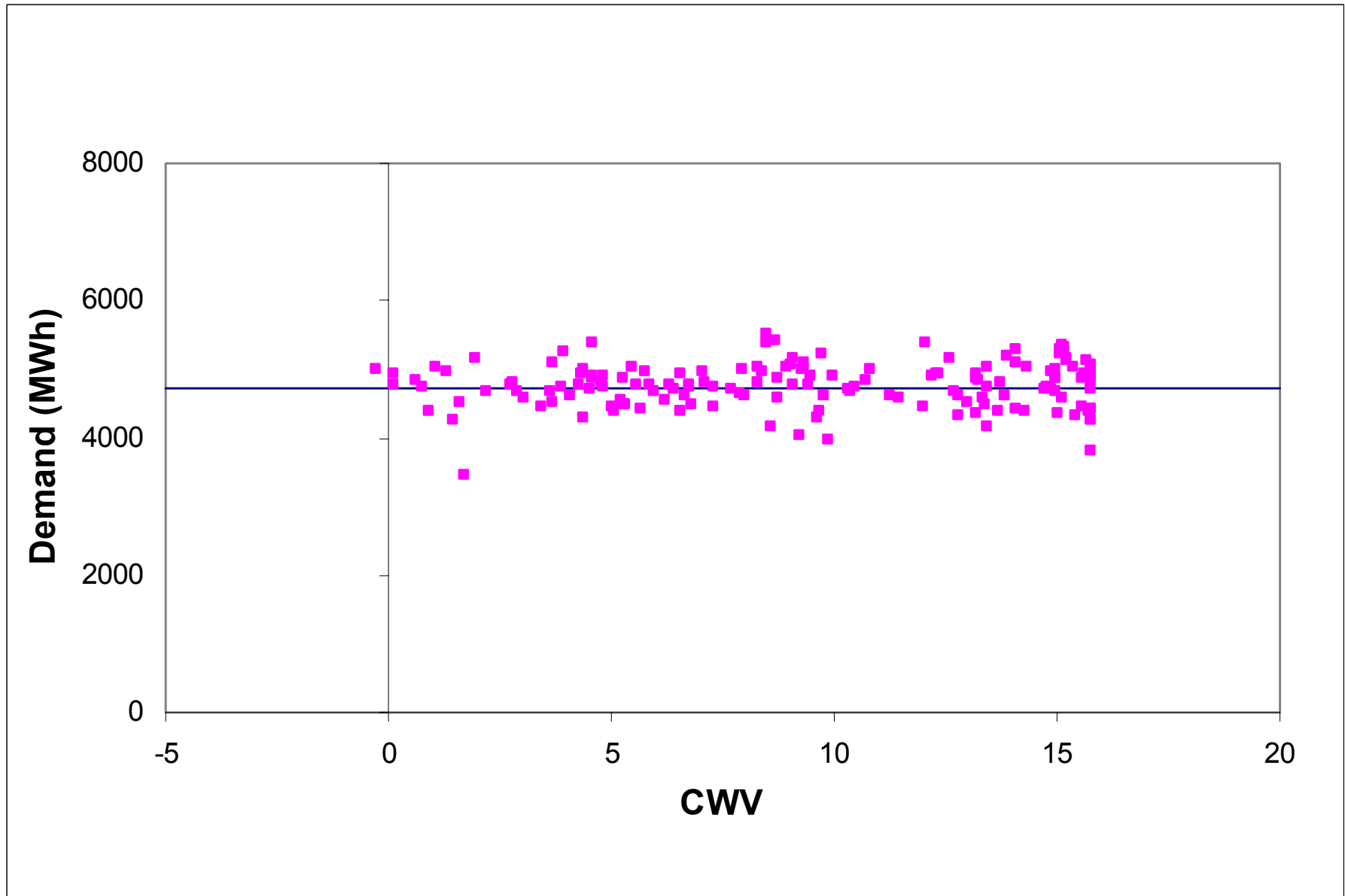
R<sup>2</sup> Multiple Correlation Coefficient

(Sample Size)



# Demand Against CWV, Monday to Thursday, Non-Holiday

National Aggregation, 29300-58600 MWh pa, WAR Band 1, EM CWV



# Large NDM : Proposed Data Aggregations

	<b>Cons. Band Analysis</b> (last year)	<b>WAR Band Analysis</b> (last year)
<b>Band 05</b> (2196 - 5860 MWh pa)	<b>By LDZ</b> (By LDZ)	<b>By 5 LDZ Groups</b> (By LDZ)
<b>Band 06</b> (5860 - 14650 MWh pa)	<b>By LDZ</b> (By LDZ)	<b>By 3 LDZ Groups</b> (By 4 LDZ Groups)
<b>Band 07</b> (14650 - 29300 MWh pa)	<b>By 5 LDZ Groups</b> (By 5 LDZ Groups)	<b>National</b> (By 2 LDZ Groups)
<b>Band 08</b> (29300 - 58600 MWh pa)	<b>By 4 LDZ Groups</b> (By 3 LDZ Groups)	<b>National</b> (National)
<b>Band 09</b> (> 58600 MWh pa)	<b>National</b> (National)	--

## Large NDM EUC Smoothed Models (provisional)

Number “straight”	169	(179)
Number with cut-off	38	( 43)
Number with summer reductions	61	( 61)
Number with no slope	13	( 0)
Number with cut-offs and reductions	8	( 10)

NB: last year’s figures in brackets

# Small NDM

(EUC consumption ranges not prescribed in Code)

Data available / proposed data sets

Results so far / proposed EUCs / proposed aggregations

Issues raised

## Data Available: Small NDM Data Recorders

Active data recorders at 17/03/2004	3938
Sample site terminations over previous 12 months	199
Sample site replacements over previous 12 months	212
New installations over previous 12 months	120
Active data recorders at 17/03/2005	4071
Data recorders with data successfully gathered	3960
Of these: data recorders active at 17/03/04	3679
Total no. of validated data recorders	3478
Total no. of validated supply points (3270 in spring 2004)	3456

[of these 3456 supply points, 2566 are domestic and in the 0-73.2 MWh pa range and 711 are in the 73.2-293 MWh pa range]

## Small NDM Data Recorders

### Domestic supply points <73.2 MWh pa

LDZ	No. active at 17/03/2005	Of these, no. collected	Of these, no. active at 17/03/2004	Of these, no. passing validation	% passing validation
SC	242	239	232	230	99.14%
NO	245	238	228	212	92.98%
NW/WN	242	228	210	198	94.29%
NE	267	262	238	231	97.06%
EM	249	244	222	215	96.85%
WM	248	240	231	222	96.10%
WS	244	236	219	207	94.52%
EA	243	235	222	215	96.85%
NT	251	245	215	198	92.09%
SE	243	241	228	218	95.61%
SO	244	241	213	205	96.24%
SW	248	244	223	215	96.41%
<b>TOTAL</b>	<b>2966</b>	<b>2893</b>	<b>2681</b>	<b>2566</b>	<b>95.71%</b>

## Data Available: Small NDM Dataloggers

Active dataloggers at start of analysis period : 10814  
(at 01/04/2004)

Total number of validated dataloggers : 10093

Total number of validated supply points : 5938

(Note: 5443 of this set of 5938 are in 293 – 2196 MWh pa range)

# 2005 NDM Analysis – Overall Sample Disposition

Analysis Year	No. of <u>meter points</u> in active sample			No. of <u>supply points</u> in validated sample			No. of supply points <u>used</u> for analysis
	Datalogger based	Data recorder based	All	Datalogger based	Data recorder based	All	All
2005	17940	4071	22011	11431	3456	14887	14708
2004	18494	3938	22432	11644	3270	14914	14739
Change	-554	+133	-421	-213	+186	-27	-31

**Note:** datalogger based data and non-domestic data recorder based data is not used below 73.2 MWh pa and data recorder based data is not used above 293 MWh pa



# 2005 NDM Analysis – Overall Sample Disposition

Band	2005	2004	Change
0-73.2 MWh pa	2566	2400	+166
73.2-293 MWh pa	1206	1119	+87
293-2196 MWh pa	5443	5206	+237
All Small NDM	9215	8725	+490
> 2196 MWh pa All Large NDM	5493	6014	-521
Overall	14708	14739	-31

Note: These are validated supply point numbers used in the analysis

# Small NDM

## EUCs

0 - 73.2

73.2 - 293

293 - 732

732 - 2196



## Issues

constitution of data sets

split at 145 ?

combine data for modelling ?

split at 1465 ?

# Small NDM Proposed Data Sets

0 – 73.2 MWh pa	12 months Recorder Data	<u>2566 Supply Points</u> (domestic sub-set) or 2614 Supply Points (inc. some non-Domestic)
73.2 – 293 MWh pa	12 months Combined Data	1206 Supply Points
293 – 2196 MWh pa	12 months Logger Data	5443 Supply Points

## Representing 0 - 73.2 MWh pa

- Non-domestic component not precisely known: pre-competition figures (~1992) indicate around 2%
- Market sector flag (MSF) instituted some years ago to enable industry to meet supplier licence condition of domestic supplier of last resort
- No MSF information available for ~12 million meter points (May 2005)
- ~9 million meter points classified to date ~1.7% of total is non-domestic (one year ago ~7.5M meter points had been classified and ~1.7% of total were non-domestic)
- Issues of accuracy and verification with MSF
- Be that as it may, separate treatment of domestic/non-domestic is not feasible: MSF is not universally available
- Load factor differences across LDZs more significant than differences across consumption sub-bands  
(3 percentage points or less across sub-bands in 0-73.2 MWh pa range; 9 percentage points or more across LDZs from north to south)

# Representing 0 - 73.2 MWh pa – SF effects

- Weekend (Fri/Sat/Sun) SF patterns indicate under-estimation of demand
- Inclusion of a proportion of non-domestic sample points leads to lower positive or even negative weekend factors in the resulting “01B” model
- Will lead to greater weekend positive SF offsets

# Small NDM Indicative Load Factors

0 – 73.2 MWh pa Domestic Sites Only/(inc. Some non-Domestic Sites)

LDZ	Domestic Sites Only			Including Some Non-Domestic Sites		
	Indicative Load Factor	R <sup>2</sup>	Multiple Correlation Coefficient	Indicative Load Factor	R <sup>2</sup>	Multiple Correlation Coefficient
SC	40 %	98%	(230)	40 %	98 %	(234)
NO	36 %	98 %	(212)	36 %	98 %	(216)
NW/WN	39 %	98 %	(198)	39 %	98 %	(202)
NE	38 %	98 %	(231)	38 %	98 %	(235)
EM	38 %	99 %	(215)	38 %	99 %	(219)
WM	35 %	99 %	(222)	34 %	99 %	(226)
WS	35 %	98 %	(207)	35 %	98 %	(211)
EA	36 %	98 %	(215)	36 %	98 %	(219)
NT	34 %	99 %	(198)	34 %	99 %	(202)
SE	33 %	99 %	(218)	33 %	99 %	(222)
SO	31 %	99 %	(205)	30 %	99 %	(209)
SW	33 %	98 %	(215)	33 %	99 %	(219)

Indicative Load Factor

R<sup>2</sup> Multiple Correlation Coefficient

(Sample Size)

# EUC 01B – Smoothed Model Results

Smoothed model based on domestic only data sets

LDZ	C1 (Constant)	C2 (Slope)	C3 (Fri)	C4 (Sat)	C5 (Sun)
SC	27200	-1596	132	421	371
NO	23478	-1427	186	329	550
NW	25082	-1325	148	375	449
NE	25483	-1402	66	255	449
EM	23324	-1290	41	243	362
WM	25656	-1448	114	413	502
WN	25082	-1325	148	375	449
WS	27156	-1435	106	250	332
EA	26970	-1366	182	414	412
NT	30661	-1617	93	285	277
SE	30186	-1599	95	255	330
SO	26595	-1465	58	176	273
SW	26249	-1486	95	210	290

Smoothed model based on data sets including some non-domestic

LDZ	C1 (Constant)	C2 (Slope)	C3 (Fri)	C4 (Sat)	C5 (Sun)
SC	28547	-1670	159	378	276
NO	24499	-1495	180	269	521
NW	25926	-1364	95	143	100
NE	26772	-1473	237	112	116
EM	24888	-1363	-52	149	324
WM	27108	-1505	-37	208	291
WN	25926	-1364	95	143	100
WS	29181	-1551	57	90	285
EA	28566	-1456	171	400	398
NT	32416	-1716	65	105	4
SE	31747	-1684	103	227	249
SO	28861	-1600	29	70	156
SW	28171	-1622	57	134	223

With some non-domestic in the samples:

Weekend factors generally less positive and some even negative

Will adversely impact weekend Scaling Factor offsets

## Representing 0 - 73.2 MWh pa – Proposed Approach

- Consequences of using smoothed models derived for “01B” EUC for gas year 2005/06 with non-domestic data
- Will have adverse effects on Weekend SF values
- *Estimated effect:*
  - Fri: small effect up to 0.5% pts.*
  - Sat. up to 1% pts.*
  - Sun. up to 1.5%pts.*

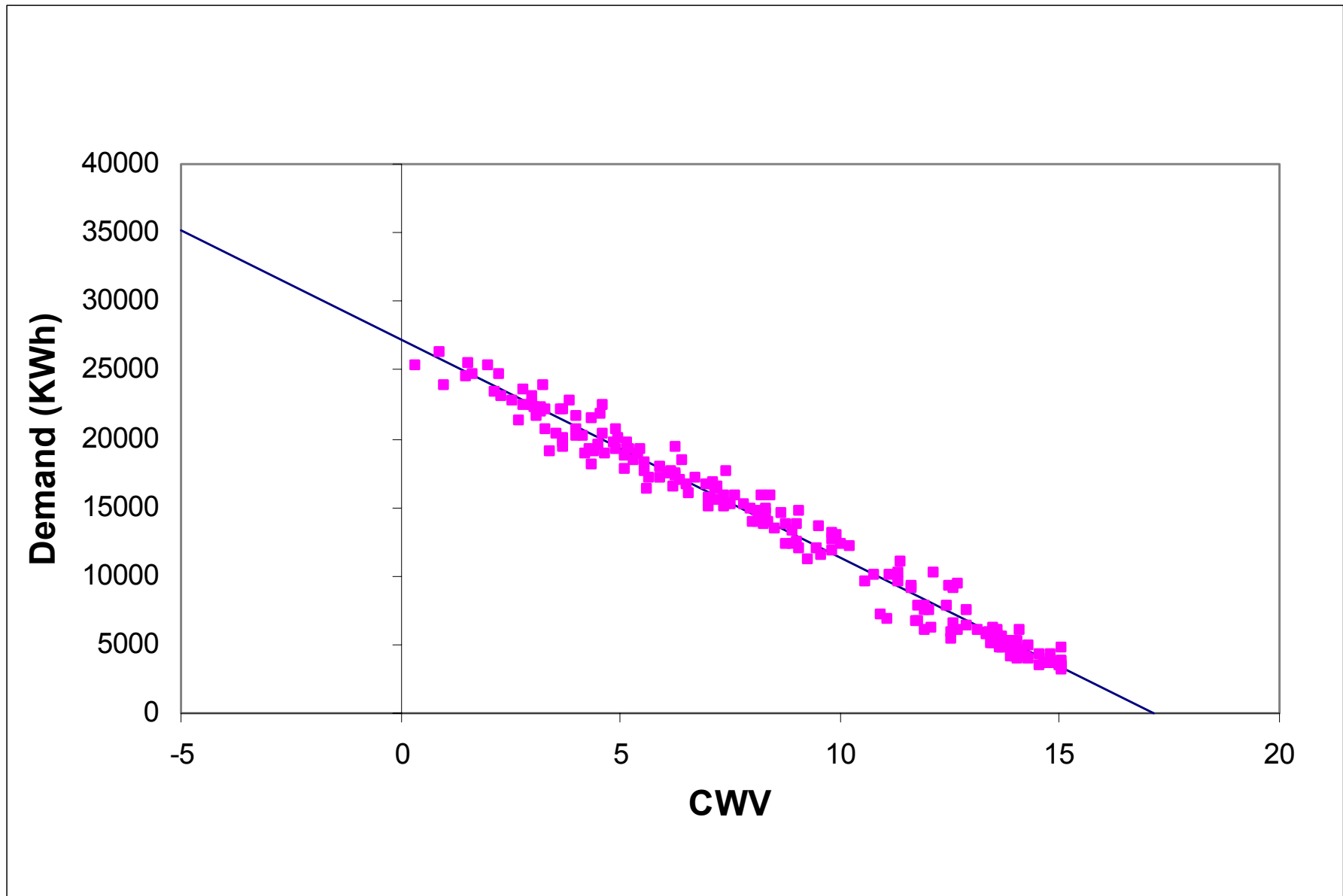
*10 / 13 / 13 LDZs worse in respect of Fri / Sat / Sun*

Therefore proposed approach is: (same as spring 2004)

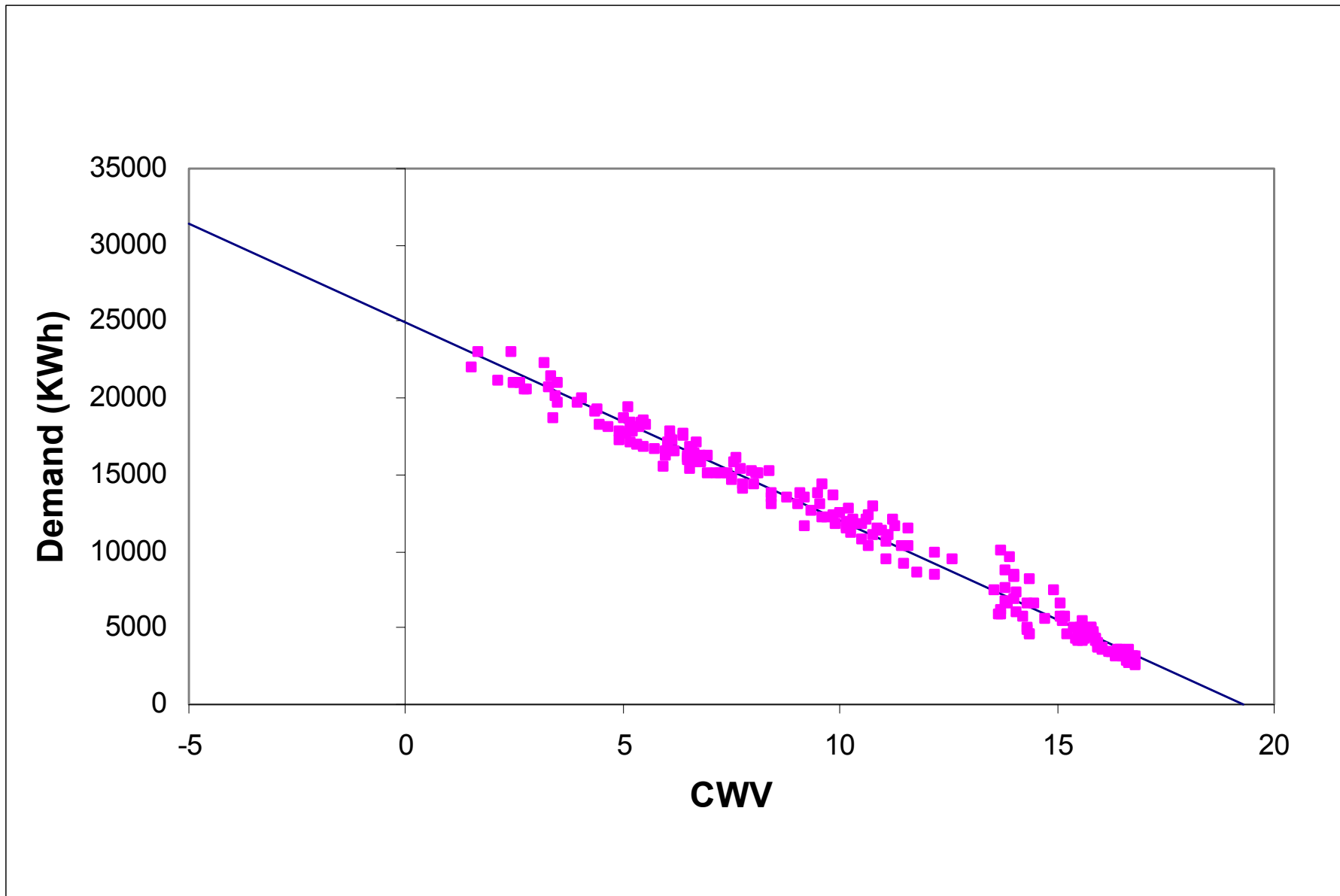
- Domestic only smoothed model
- Consistently positive Fri/Sat/Sun weekend factors in smoothed model



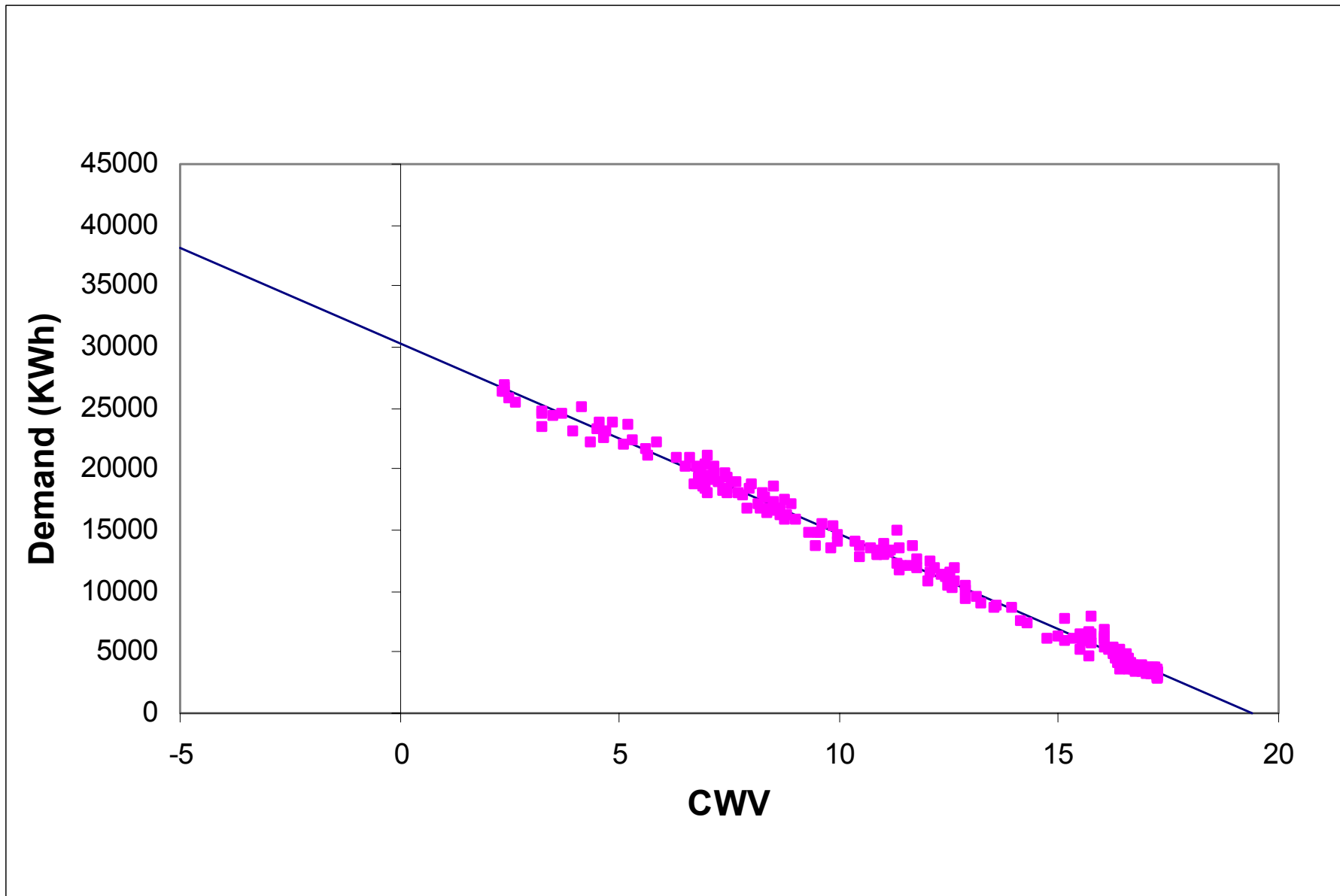
# Demand against CWV, Monday to Thursday, holidays included, SC LDZ, 0 - 73.2 MWh pa



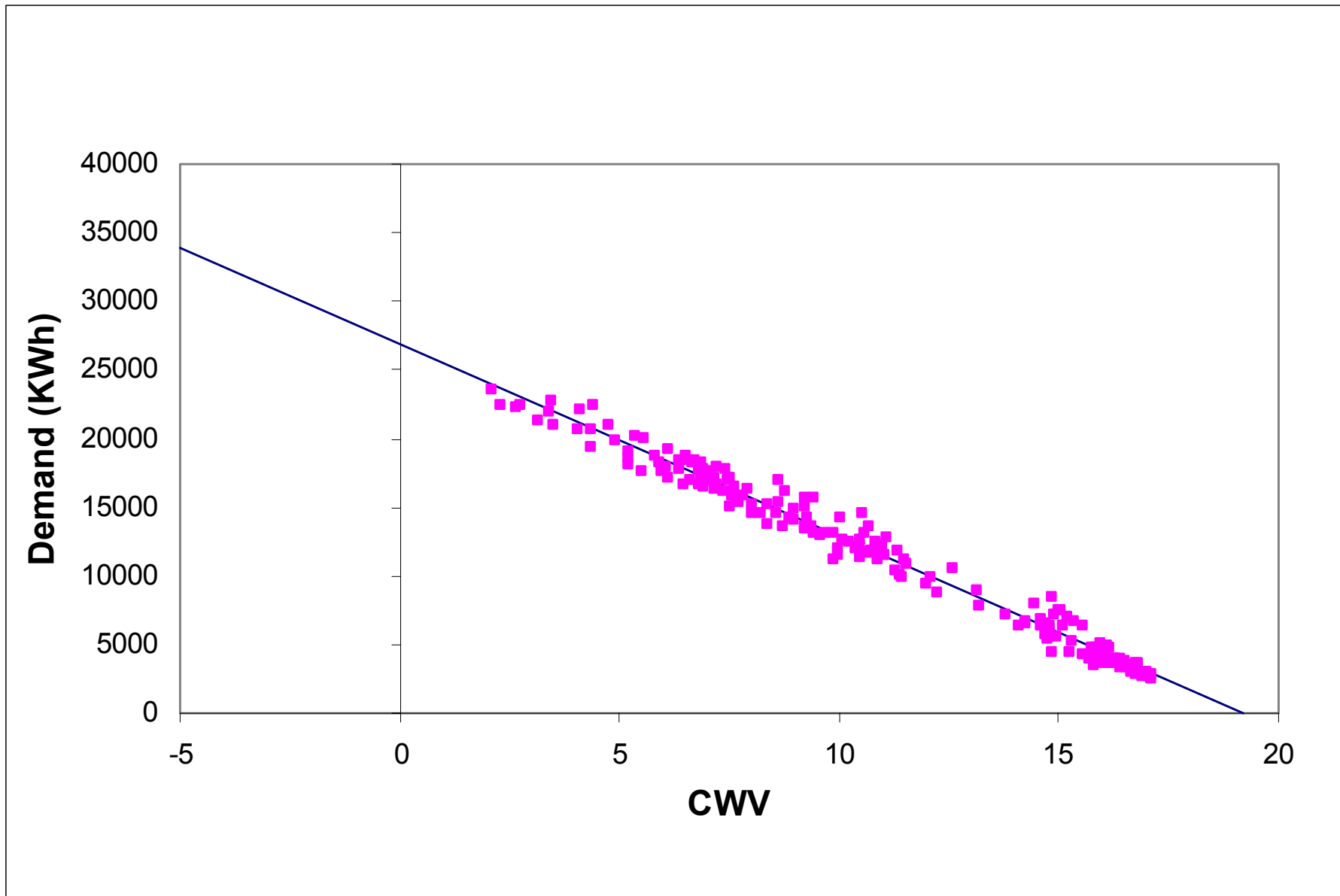
# Demand against CWV, Monday to Thursday, holidays included, NW LDZ, 0 - 73.2 MWh pa



# Demand against CWV, Monday to Thursday, holidays included, NT LDZ, 0 - 73.2 MWh pa



# Demand against CWV, Monday to Thursday, holidays included, WS LDZ, 0 – 73.2 MWh pa



## Small NDM Indicative Load Factors

	73.2 – 293 MWh pa			73.2 – 145 MWh pa			145 – 293 MWh pa		
<b>SC/NO/NW/WN</b>	<b>32 %</b>	<b>95 %</b>	<b>(313)</b>	<b>33%</b>	<b>96 %</b>	<b>(119)</b>	<b>32 %</b>	<b>95 %</b>	<b>(194)</b>
<b>NE/EM/WM</b>	<b>30 %</b>	<b>96 %</b>	<b>(267)</b>	<b>29 %</b>	<b>96 %</b>	<b>(130)</b>	<b>30 %</b>	<b>95 %</b>	<b>(137)</b>
<b>EA/NT/SE</b>	<b>33 %</b>	<b>97 %</b>	<b>(348)</b>	<b>32 %</b>	<b>97 %</b>	<b>(133)</b>	<b>33 %</b>	<b>96 %</b>	<b>(215)</b>
<b>WS/SO/SW</b>	<b>30 %</b>	<b>97 %</b>	<b>(278)</b>	<b>30 %</b>	<b>97 %</b>	<b>(149)</b>	<b>30 %</b>	<b>97 %</b>	<b>(129)</b>

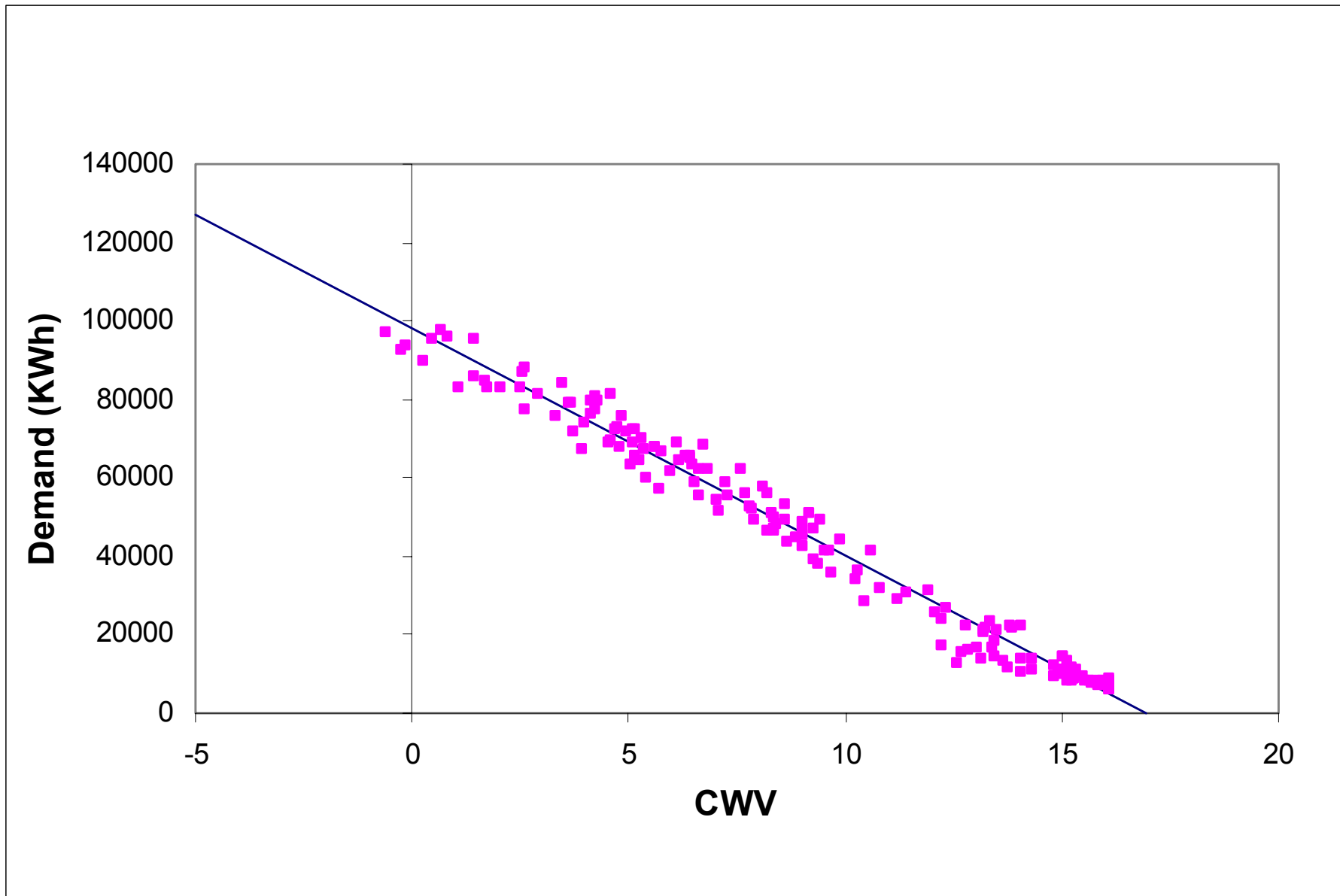
**Indicative Load Factor**      **R2 Multiple Correlation Coefficient**      **(Sample Size)**

## Small NDM Indicative Load Factors

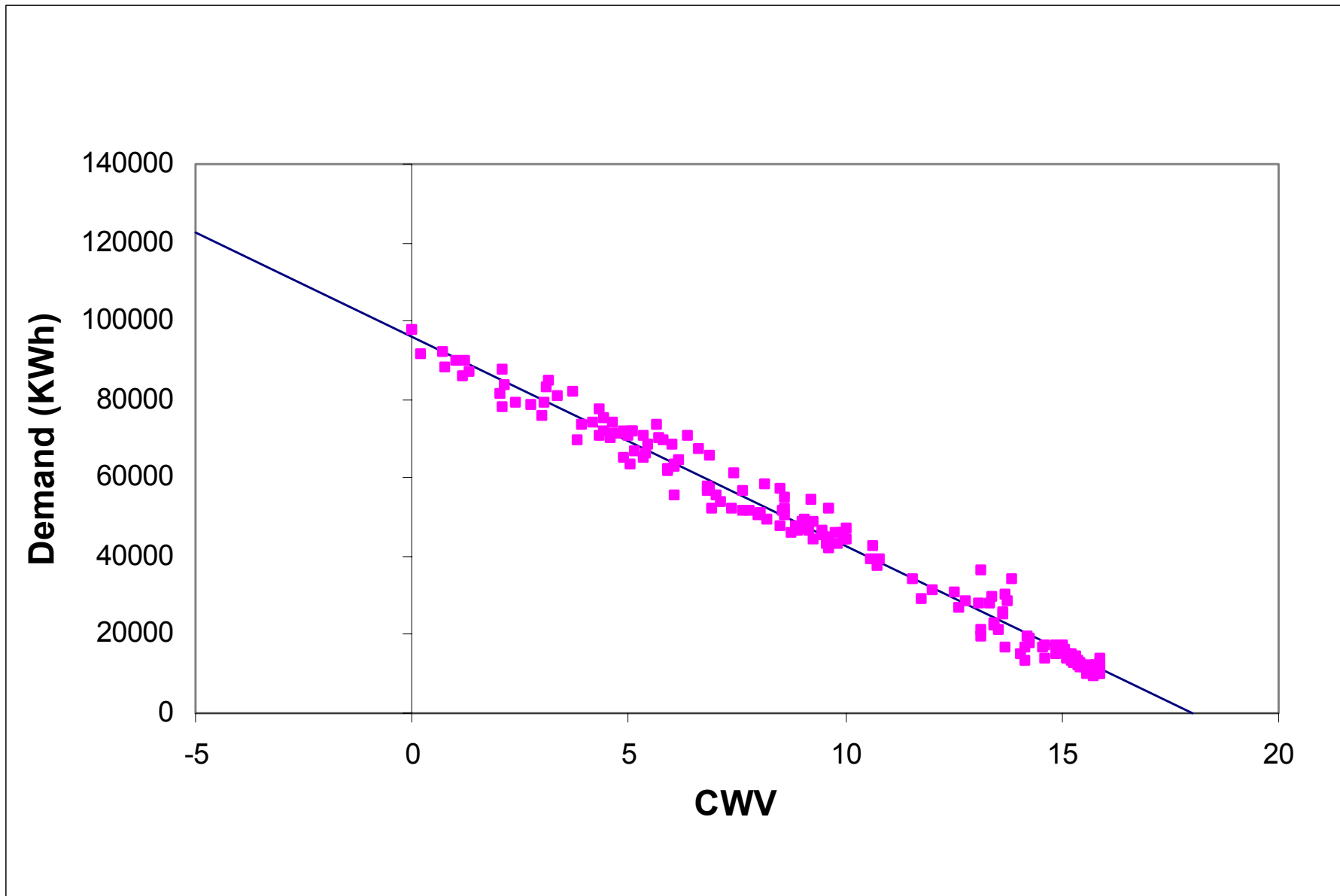
### 73.2 – 293 MWh pa

	Indicative Load Factor	R <sup>2</sup> Multiple Correlation Coefficient	(Sample Size)
SC	36 %	97 %	( 96)
NO	28 %	94 %	( 99)
NW/WN	32 %	95 %	(118)
NE	29 %	93 %	( 85)
EM	31 %	95 %	( 96)
WM	30 %	97 %	( 86)
WS	29 %	96 %	( 78)
EA	32 %	96 %	(111)
NT	35 %	96 %	(129)
SE	31 %	96 %	(108)
SO	32 %	99 %	(100)
SW	29 %	96 %	(100)

# Demand against CWV, Monday to Thursday, holidays included, NE LDZ, 73.2 – 293 MWh pa

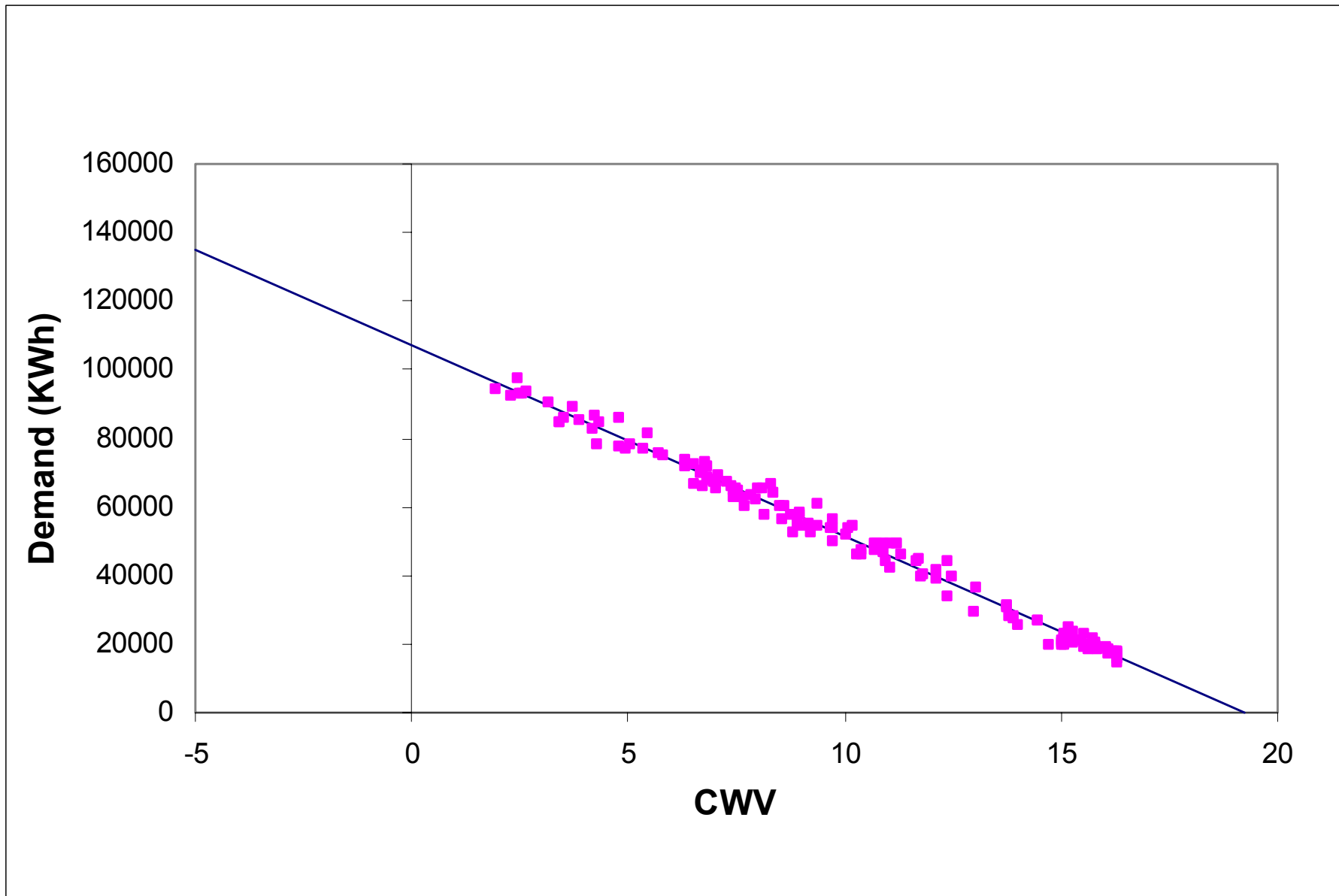


# Demand against CWV, Monday to Thursday, holidays included, WM LDZ, 73.2 – 293 MWh pa





# Demand against CWV, Monday to Thursday, holidays included, SO LDZ, 73.2 – 293 MWh pa



# Small NDM

## Consumption Band Analysis – Indicative Load Factors

LDZ Group	732-1465 MWh pa	1465-2196 MWh pa
SC	40% 98% (224)	40% 98% (161)
NO/NW/WN	33% 96% (364)	36% 97% (362)
NE/EM/WM	33% 97% (538)	34% 97% (453)
EA/NT/SE	35% 98% (732)	37% 98% (577)
WS/SO/SW	32% 97% (433)	34% 97% (318)

Indicative Load Factor

R<sup>2</sup> Multiple Correlation Coefficient

(Sample Size)

# Consumption Band Break at 1465 MWh pa

## Indicative Load Factors

LDZ Group	2002/03 Data Set		2003/04 Data Set		2004/05 Data Set	
	732-1465 MWh pa	1465-2196 MWh pa	732-1465 MWh pa	1465-2196 MWh pa	732-1465 MWh pa	1465-2196 MWh pa
SC	41	39	39	40	40	40
NO/NW/WN	33	35	35	36	33	36
NE/EM/WM	33	33	33	34	33	34
EA/NT/SE	36	36	36	36	35	37
WS/SO/SW	31	35	32	34	32	34

**No consistent differences in ILF above and below 1465 MWh pa across all LDZ groups in all three years**

# Small NDM

## Consumption Band Analysis – Indicative Load Factors

LDZ Group	293-732 MWh pa	732-2196 MWh pa	293-2196 MWh pa
SC	39% 98% ( 103)	40% 98% (385)	40% 98% (488)
NO	31% 97% ( 77)	32% 96% (260)	32% 96% (337)
NW/WN	35% 96% (136)	36% 97% (466)	36% 97% (602)
NE	32% 96% ( 80)	35% 97% (305)	34% 97% (385)
EM	34% 98% (125)	34% 98% (370)	34% 98% (495)
WM	27% 94% ( 64)	30% 97% (316)	30% 97% (380)
EA	35% 97% (122)	35% 97% (390)	35% 97% (512)
NT	34% 97% (160)	36% 98% (429)	36% 98% (589)
SE	33% 97% (170)	36% 98% (490)	35% 98% (660)
WS	31% 95% ( 72)	33% 97% (168)	33% 97% (240)
SO	30% 97% ( 84)	31% 98% (320)	31% 98% (404)
SW	30% 97% ( 88)	34% 97% (263)	34% 97% (351)

Indicative Load Factor      R<sup>2</sup> Multiple Correlation Coefficient      (Sample Size)

# Small NDM

## WAR Band Analyses – Disposition of Validated Sample

**293 - 2196 MWh pa**

<b>LDZ</b>	<b>0.00 - 0.42</b>	<b>0.42 - 0.50</b>	<b>0.50 - 0.58</b>	<b>0.58 - 1.00</b>	<b>Total</b>
<b>SC</b>	152	167	116	53	<b>488</b>
<b>NO</b>	63	101	125	48	<b>337</b>
<b>NW/WN</b>	162	163	191	86	<b>602</b>
<b>NE</b>	78	112	106	89	<b>385</b>
<b>EM</b>	89	138	142	126	<b>495</b>
<b>WM</b>	75	84	106	115	<b>380</b>
<b>EA</b>	85	144	145	138	<b>512</b>
<b>NT</b>	93	194	171	131	<b>589</b>
<b>SE</b>	64	242	191	163	<b>660</b>
<b>WS</b>	43	64	80	53	<b>240</b>
<b>SO</b>	73	97	109	125	<b>404</b>
<b>SW</b>	78	86	88	99	<b>351</b>
<b>TOTAL</b>	<b>1055</b>	<b>1592</b>	<b>1570</b>	<b>1226</b>	<b>5443</b>

# Small NDM

## WAR Band Analyses – Indicative Load Factors

**293 - 2196 MWh pa**

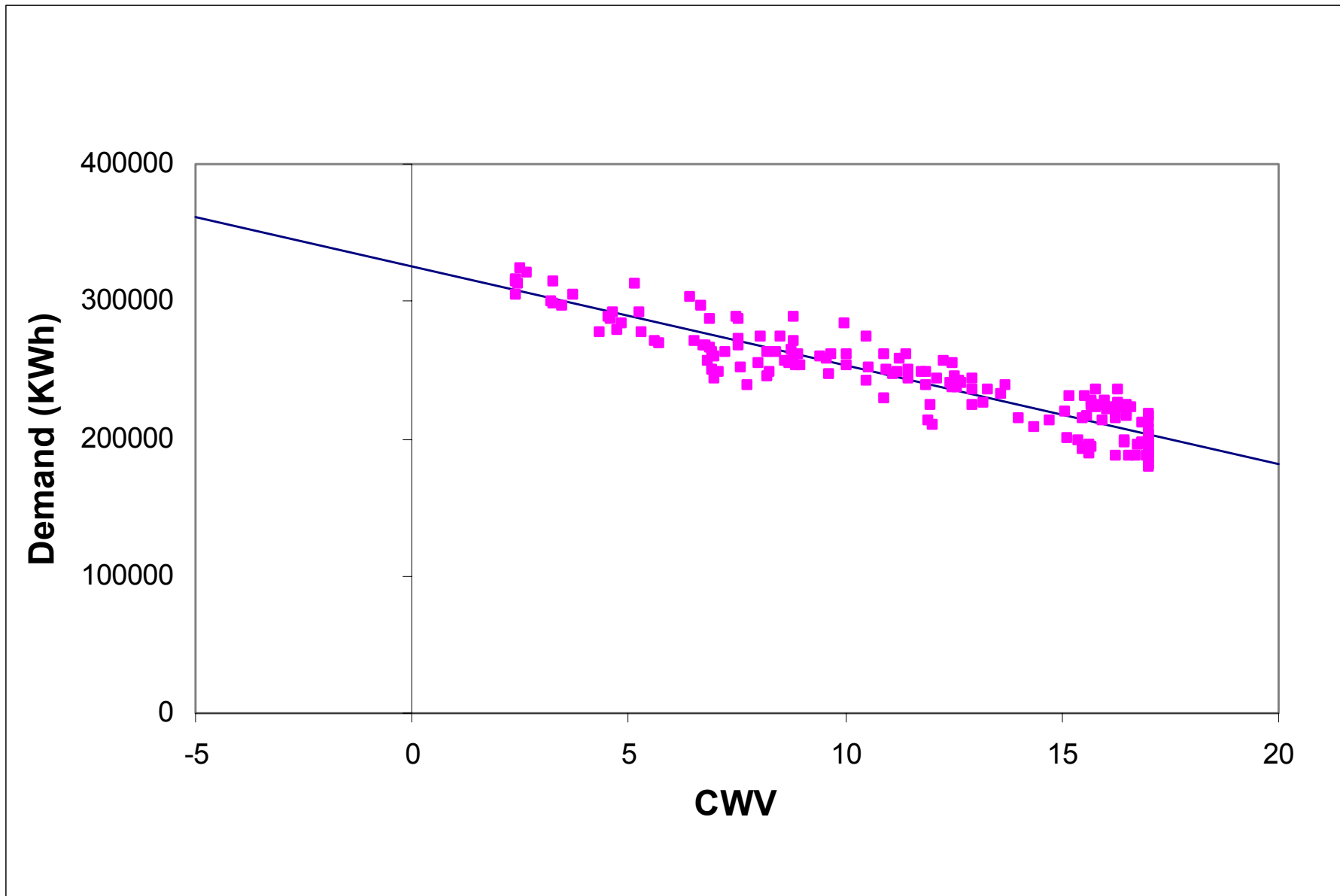
LDZ	0.00 - 0.42	0.42 - 0.50	0.50 - 0.58	0.58 - 1.00
SC	60% 97% (152)	42% 98% (167)	31% 97% (116)	25% 97% ( 53)
NO	58% 92% ( 63)	38% 95% (101)	27% 94% (125)	21% 96% ( 48)
NW/WN	62% 94% (162)	42% 97% (163)	28% 95% (191)	24% 97% ( 86)
NE	58% 96% ( 78)	43% 98% (112)	30% 96% (106)	23% 95% ( 89)
EM	63% 95% ( 89)	43% 98% (138)	31% 97% (142)	23% 97% (126)
WM	55% 97% ( 75)	39% 97% ( 84)	28% 96% (106)	21% 96% (115)
EA	61% 96% ( 85)	46% 97% (144)	32% 95% (145)	25% 97% (138)
NT	64% 93% ( 93)	45% 97% (194)	32% 98% (171)	25% 96% (131)
SE	63% 88% ( 64)	46% 97% (242)	32% 97% (191)	24% 97% (163)
WS	59% 89% ( 43)	42% 97% ( 64)	29% 94% ( 80)	22% 96% ( 53)
SO	60% 92% ( 73)	42% 97% ( 97)	30% 97% (109)	22% 96% (125)
SW	62% 94% ( 78)	43% 96% ( 86)	29% 96% ( 88)	23% 96% ( 99)

Indicative Load Factor

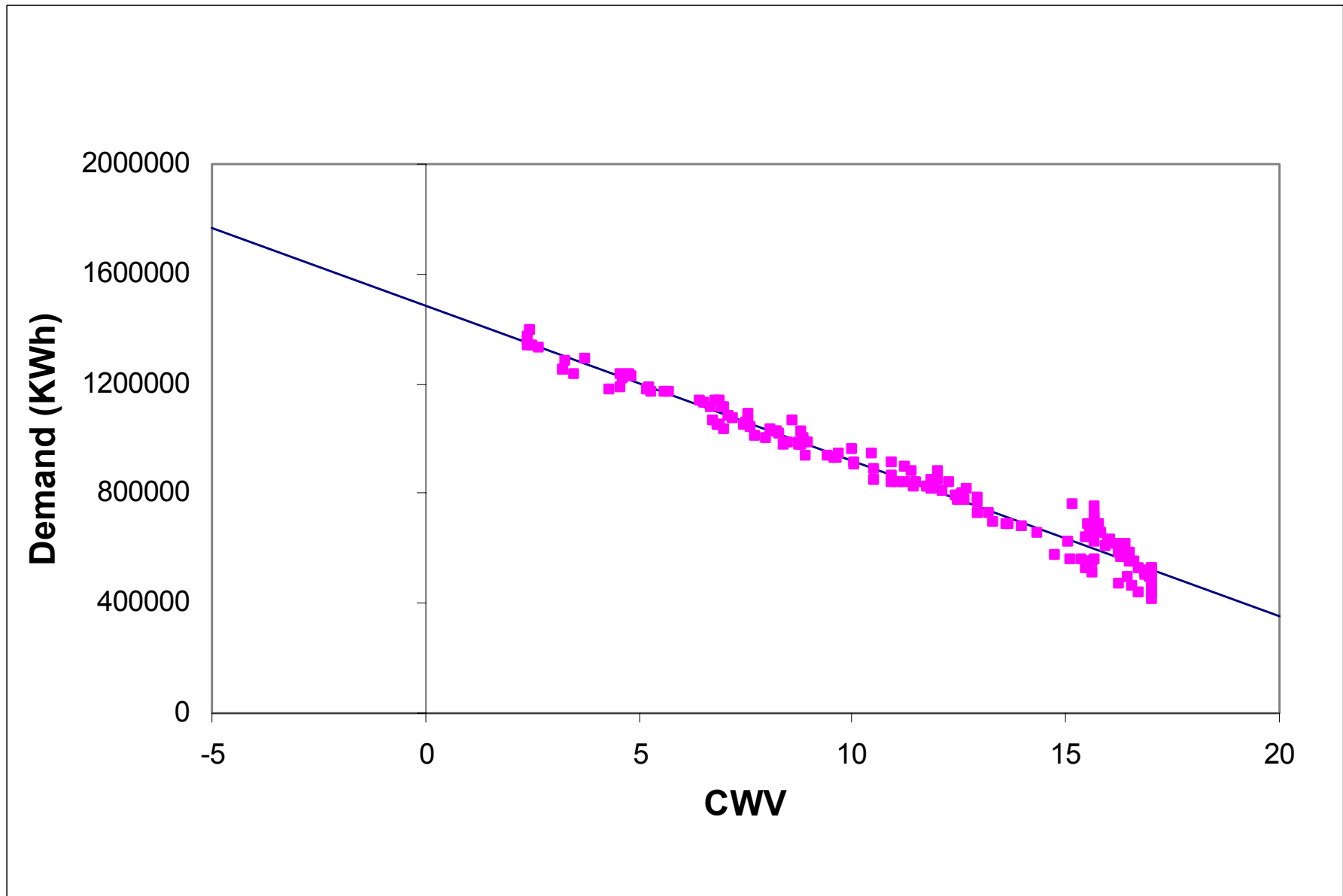
R<sup>2</sup> Multiple Correlation Coefficient

(Sample Size)

# Demand against CWV, Monday to Thursday, holidays excluded, SE LDZ, 293 – 2196 MWh pa, WAR band 1

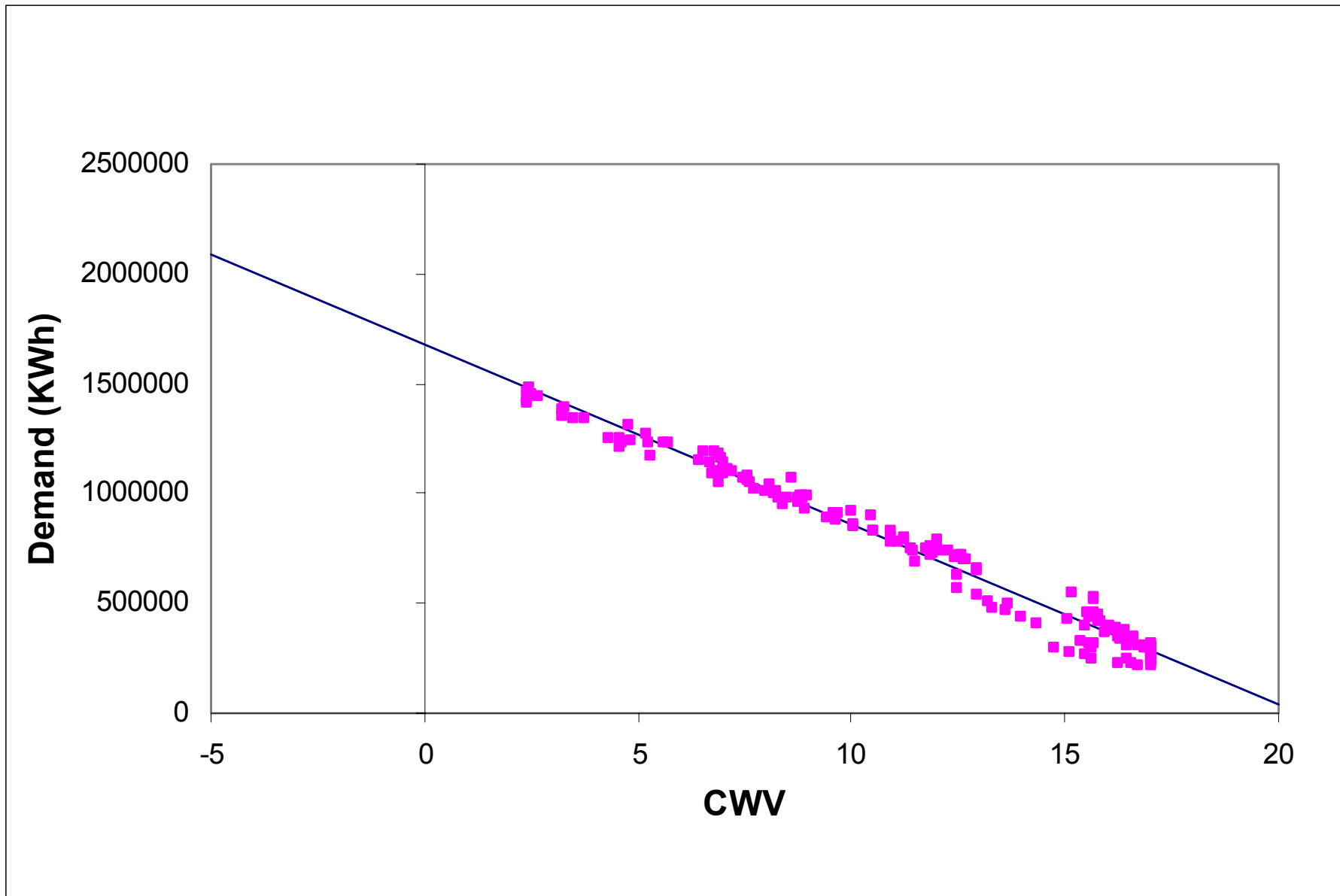


# Demand against CWV, Monday to Thursday, holidays excluded, SE LDZ, 293 – 2196 MWh pa, WAR band 2

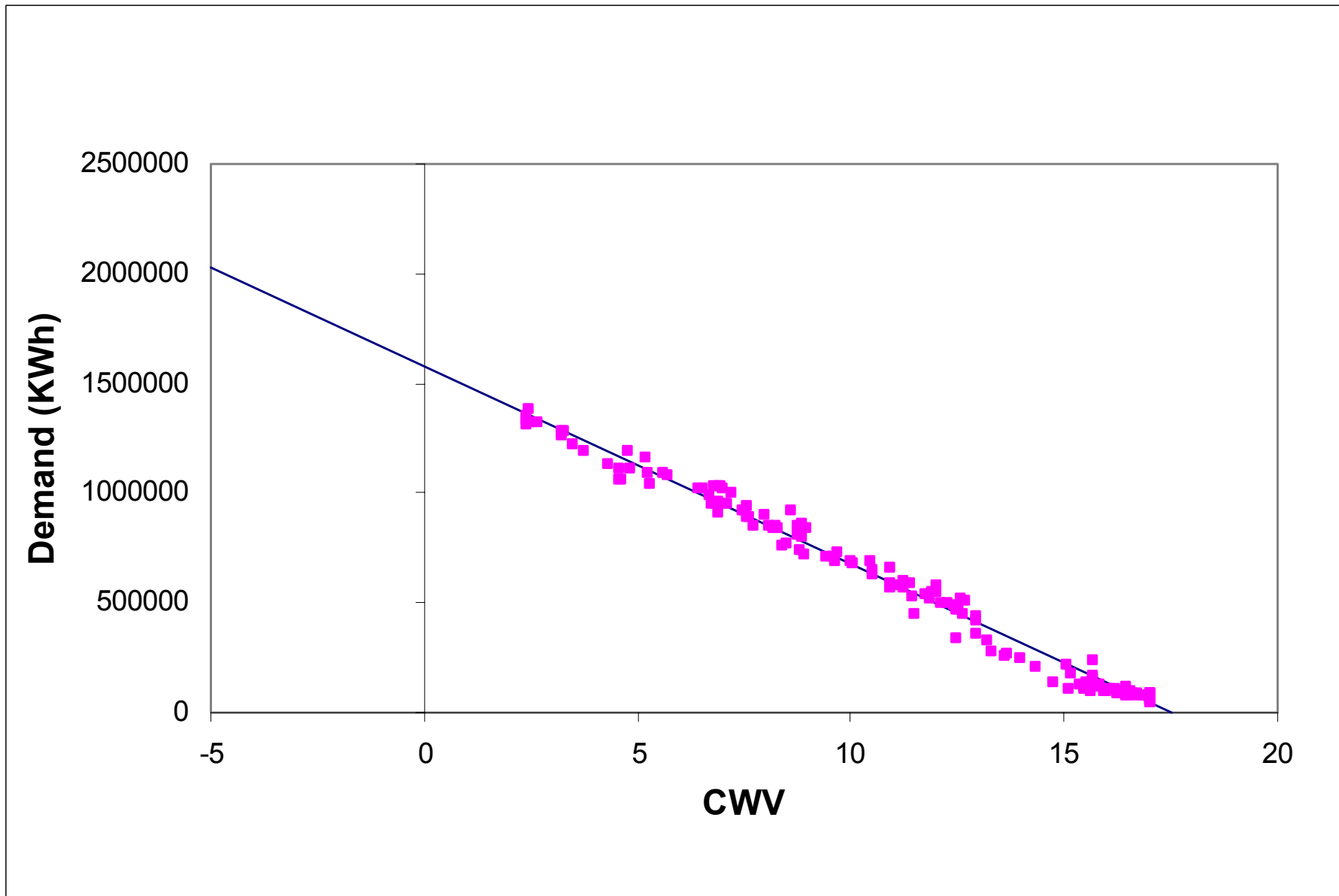




# Demand against CWV, Monday to Thursday, holidays excluded, SE LDZ, 293 – 2196 MWh pa, WAR band 3



# Demand against CWV, Monday to Thursday, holidays excluded, SE LDZ, 293 – 2196 MWh pa, WAR band 4



# Small NDM - Proposed Data Aggregations

0 – 73.2 MWh pa

Analyse by LDZ  
(domestic sites only)

73.2 – 293 MWh pa

Analyse by LDZ

293 – 2196 MWh pa

WAR band analysis by LDZ  
Consumption Band analysis by LDZ  
(split 293-732 & 732-2196 MWh pa  
for consumption band analysis)

## Small NDM EUC Smoothed Models (provisional)

Number “straight”	37	( 46)
Number with cut-off	29	( 36)
Number with summer reduction	110	( 89)
Number with no slope	0	( 0)
Number with cut-offs and reductions	20	( 15)

Note: last year’s figures in brackets

# 2005 NDM Proposals (end June)

Report - Proposals  
(incl. Appendices) - ALPs, DAFs, load factors  
+ - model parameters  
- performance evaluation  
CD