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Technical Work Group
Action: DTW0801

3rd October 2012

UPDATED POST MEETING

Action DTW0801

- Action: "Complete analysis for options A, C and E by the end of September"
- Xoserve have started work on testing the Option E approach
- Reminder of the Option E methodology is shown on next slide

Action DTW0801: Option E Formula

Demand Formula

$$SPD_t = ((AQ/365) * ALP_t * (1 + (DAF_t * WCF_t))* SF_t$$

Weather Correction Factor Formula

$$WCF = CWV_t - SNCWV_t$$

Daily Adjustment Factor Formula

$$DAF_t = WSENS_t / SND_t$$ (from the EUC Model)

Scaling Factor Formula

$$SF = \frac{\text{Total LDZ Actual Demand}}{\text{Total Supply Point Actuals + Estimates}}$$

Action DTW0801: Objectives (1 of 2)

- Internally we wanted to clarify the objectives of the analysis. We decided upon:
  - 1) Find a method which provides a robust 'bottom up' estimate of NDM demand
  - 2) To be able to estimate the likely impacts of 'scaling' to all markets via Scaling Factor

Action DTW0801: Objectives (2 of 2)

- 1) Find a method which provides a robust 'bottom up' estimate of NDM demand.

  The blue font effectively represents the NDM estimate

- 2) To be able to estimate the likely impacts of 'scaling' to all markets via Scaling Factor.

  The red font represents the industry scaling effect

$$SPD_t = ((AQ/365) * ALP_t * (1 + (DAF_t * WCF_t)) * SF_t$$

Action DTW0801: Data Used

- *1) Find a method which provides a robust 'bottom up' estimate of NDM demand*

- Initially Gas Year 2009/10 has been analysed
- Analysis has been performed using data which is all readily available on UK Link Docs
- Actual NDM sample consumption has been compared with that predicted by Option E approach
- Analysis reports at Consumption band level only

Action DTW0801: Source Data

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	Data Recorders: (XXSM_DR)	Data Loggers: (XXSM_DL / LGNDM_CB)
Spring 2010	01/10/2009 to 16/03/2010	01/10/2009 to 31/03/2010
Spring 2011	17/03/2010 to 30/09/2010	01/04/2010 to 30/09/2010

- Actual consumption from files shown above
- AQ data from SMNDM_AQ and LGNDM_CBAQ – i.e. degree day adjusted
- ALP from SN10_ALPDAF0910.txt
- DAF from underlying EUC models

Derived from smooth model parameters calculated from 3 years consumption – 06/07,07/08,08/09

- CWV (CWV2812.txt) SNCWV (SNCWV12.txt)

Action DTW0801: Results

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- Differences between Actual consumption and Predicted consumption analysed
- For avoidance of doubt the residuals 'performance' have been expressed as the following statistic
- $$\text{MAPE} = \frac{\text{Sum}\left(\left|\text{Actual} - \text{Predicted}\right| / \text{Actual}\right)}{n} \times 100$$
- $$\text{MPE} = \frac{\text{Sum}\left(\text{Predicted} - \text{Actual} / \text{Actual}\right)}{n} \times 100$$
  - Negative MPE = Under Allocation
  - Positive MPE = Over Allocation
  - n = number of observations in group – e.g. Day of Week, Calendar month etc

Action DTW0801: Results by DOW

UPDATED POST MEETING

LDZ	ALL	Gas Year	2009/10

	Mon to Thurs		Fri		Sat		Sun	
Attribute	MAPE	MPE	MAPE	MPE	MAPE	MPE	MAPE	MPE
01B	7.60%	2.09%	7.69%	2.74%	8.29%	4.41%	7.22%	3.14%
02B	8.77%	-0.45%	9.31%	1.82%	12.20%	1.08%	11.72%	1.94%
03B	7.35%	-0.60%	7.22%	0.26%	9.97%	-1.60%	9.57%	0.70%
04B	5.95%	-2.76%	5.73%	-1.06%	7.05%	-1.12%	6.79%	0.70%
05B	5.15%	-3.09%	5.22%	-0.66%	6.93%	0.32%	7.60%	1.36%
06B	5.84%	-4.14%	5.72%	-1.53%	8.66%	0.00%	8.67%	0.64%
07B	9.06%	-3.22%	9.64%	-0.69%	14.46%	-1.53%	13.05%	-3.37%
08B	12.32%	-1.88%	12.15%	1.51%	16.38%	0.37%	14.26%	0.09%

Action DTW0801: Results by DOW

UPDATED POST MEETING

LDZ	WM	Gas Year	2009/10

	Mon to Thurs		Fri		Sat		Sun	
Attribute	MAPE	MPE	MAPE	MPE	MAPE	MPE	MAPE	MPE
01B	8.13%	3.65%	8.24%	3.67%	8.30%	4.52%	6.17%	3.36%
02B	8.60%	-3.35%	9.80%	7.55%	20.17%	19.58%	20.03%	18.85%
03B	9.30%	0.61%	8.78%	-3.87%	18.56%	-16.66%	15.54%	-10.72%
04B	7.61%	-4.42%	7.29%	-0.69%	9.09%	2.36%	9.01%	3.88%
05B	4.29%	-2.53%	4.51%	1.52%	9.84%	5.75%	11.60%	8.39%
06B	6.18%	-4.06%	7.50%	-3.32%	10.74%	-1.21%	10.53%	-1.31%
07B	9.72%	-6.07%	11.15%	-1.12%	15.48%	7.32%	11.00%	2.81%
08B	7.71%	0.65%	9.29%	-4.33%	11.17%	-10.74%	6.91%	-2.82%

Action DTW0801: Results by Month

UPDATED POST MEETING

LDZ	ALL	Gas Year	2009/10

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Attribute	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE
01B	7.95%	4.49%	4.16%	3.28%	3.66%	4.62%	10.59%	9.83%	11.55%	9.79%	11.80%	9.94%
02B	9.16%	7.53%	8.09%	5.97%	4.62%	6.66%	8.10%	14.02%	14.05%	14.27%	11.75%	12.46%
03B	9.00%	5.53%	7.30%	5.77%	4.44%	4.72%	6.92%	12.11%	9.59%	10.06%	10.46%	10.03%
04B	6.07%	4.55%	6.18%	4.66%	2.97%	3.85%	5.52%	8.17%	8.35%	8.73%	8.24%	6.73%
05B	4.75%	3.79%	5.34%	4.96%	4.17%	4.99%	4.60%	6.13%	7.53%	8.26%	7.73%	6.76%
06B	5.66%	4.22%	6.20%	6.15%	5.31%	6.61%	6.47%	7.57%	7.19%	8.33%	8.25%	7.39%
07B	8.66%	8.00%	9.50%	9.82%	9.24%	9.14%	10.84%	12.46%	11.36%	13.22%	13.27%	10.13%
08B	9.41%	8.65%	14.79%	12.65%	11.42%	10.68%	12.43%	11.81%	13.90%	18.40%	17.59%	15.86%

Action DTW0801: Results by Month

UPDATED POST MEETING

LDZ	ALL		Gas Year	2009/10

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Attribute	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE
01B	4.52%	-1.89%	-0.87%	-1.59%	-1.91%	-0.97%	7.09%	4.34%	6.15%	5.10%	7.27%	4.41%
02B	5.25%	2.52%	1.94%	1.39%	1.50%	-3.57%	-1.45%	0.88%	-4.63%	-8.08%	1.91%	7.68%
03B	5.23%	0.96%	1.33%	0.95%	-0.01%	-2.28%	-1.60%	-1.38%	-5.54%	-3.44%	-2.15%	2.70%
04B	2.99%	-0.04%	-0.14%	-0.47%	-0.58%	-2.62%	-1.54%	-1.17%	-5.98%	-6.68%	-5.67%	0.51%
05B	2.01%	-0.37%	-1.23%	-2.47%	-3.19%	-4.08%	0.13%	0.16%	-2.87%	-3.76%	-3.46%	-0.42%
06B	0.14%	-1.98%	-2.65%	-3.86%	-4.47%	-6.41%	-2.05%	-2.58%	-1.98%	-3.48%	-2.15%	1.50%
07B	0.63%	-0.05%	-2.23%	-0.82%	-2.58%	-6.33%	-4.18%	-3.96%	-4.07%	-3.35%	-2.43%	-2.30%
08B	-2.67%	-3.31%	1.16%	-0.48%	-0.77%	-5.23%	-1.03%	0.22%	-1.08%	1.08%	0.42%	2.14%

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Action DTW0801: Results by Month

UPDATED POST MEETING

LDZ	WM	Gas Year	2009/10

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Attribute	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE	MAPE
01B	5.88%	3.98%	4.20%	3.20%	3.31%	3.91%	9.07%	12.73%	13.63%	11.59%	12.37%	10.60%
02B	10.40%	11.49%	10.86%	6.90%	5.39%	8.32%	8.18%	23.88%	17.70%	13.63%	11.44%	15.88%
03B	11.99%	6.69%	10.57%	9.08%	8.08%	7.03%	10.38%	19.26%	15.35%	14.42%	11.67%	12.31%
04B	6.20%	6.09%	7.18%	4.61%	2.21%	3.51%	5.62%	13.62%	8.96%	14.11%	13.68%	9.30%
05B	4.43%	3.27%	5.00%	4.95%	3.87%	5.52%	4.02%	9.48%	8.43%	9.38%	6.93%	8.31%
06B	4.42%	2.97%	8.43%	9.83%	7.11%	7.67%	7.30%	8.05%	8.52%	11.87%	8.82%	6.47%
07B	11.29%	8.65%	11.77%	16.29%	15.81%	13.73%	7.48%	6.53%	8.95%	12.14%	11.93%	6.67%
08B	6.36%	4.17%	8.44%	8.37%	11.51%	10.82%	10.29%	6.35%	6.86%	7.52%	12.53%	6.66%

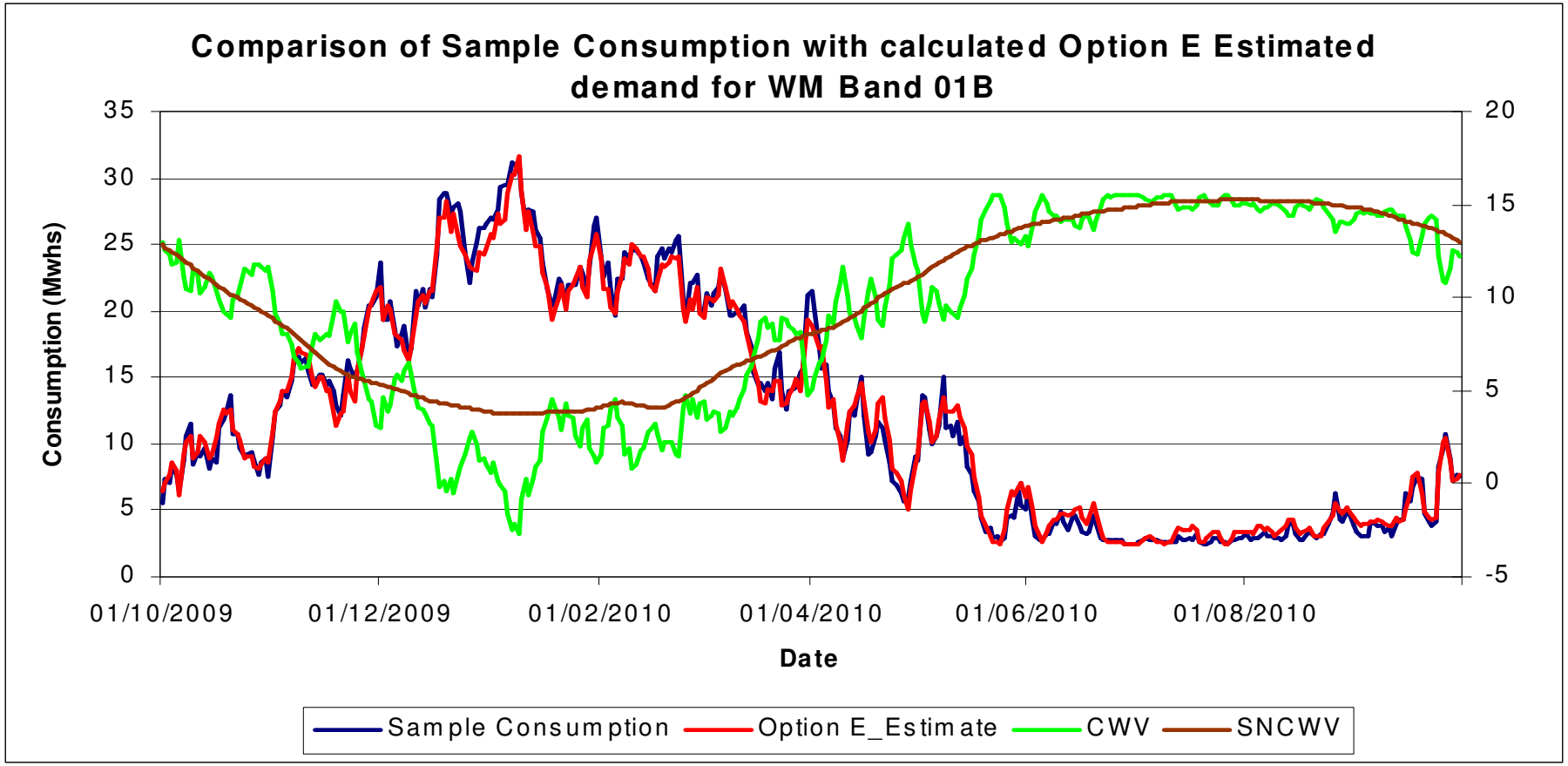
Action DTW0801: Results by Month

UPDATED POST MEETING

LDZ	WM	Gas Year	2009/10

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Attribute	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE	MPE
01B	3.18%	-1.45%	-2.56%	-2.81%	-2.59%	-1.79%	3.79%	8.67%	10.94%	10.81%	11.09%	7.10%
02B	7.68%	4.24%	-0.10%	-0.94%	-0.30%	-2.45%	1.10%	15.77%	10.17%	-0.49%	7.73%	13.03%
03B	8.09%	0.66%	-1.81%	-2.43%	-2.13%	-4.41%	0.39%	-5.98%	-14.25%	-12.00%	-10.43%	-4.81%
04B	5.34%	4.17%	1.51%	-0.84%	0.07%	-1.68%	1.99%	3.24%	-7.31%	-13.97%	-13.68%	0.64%
05B	2.51%	-0.53%	-0.56%	-3.66%	-3.33%	-5.13%	1.15%	5.74%	4.75%	0.73%	2.85%	4.69%
06B	2.78%	-1.79%	-6.99%	-9.70%	-6.59%	-7.62%	5.53%	2.76%	-3.72%	-7.21%	-5.10%	-0.21%
07B	5.99%	-7.45%	-10.95%	-16.29%	-15.81%	-13.58%	-0.80%	1.12%	7.86%	10.05%	7.71%	4.92%
08B	-1.75%	-1.58%	0.55%	-6.48%	-11.51%	-10.82%	-1.77%	-5.26%	-0.87%	4.30%	8.35%	-0.07%

Action DTW0801: Daily Profile



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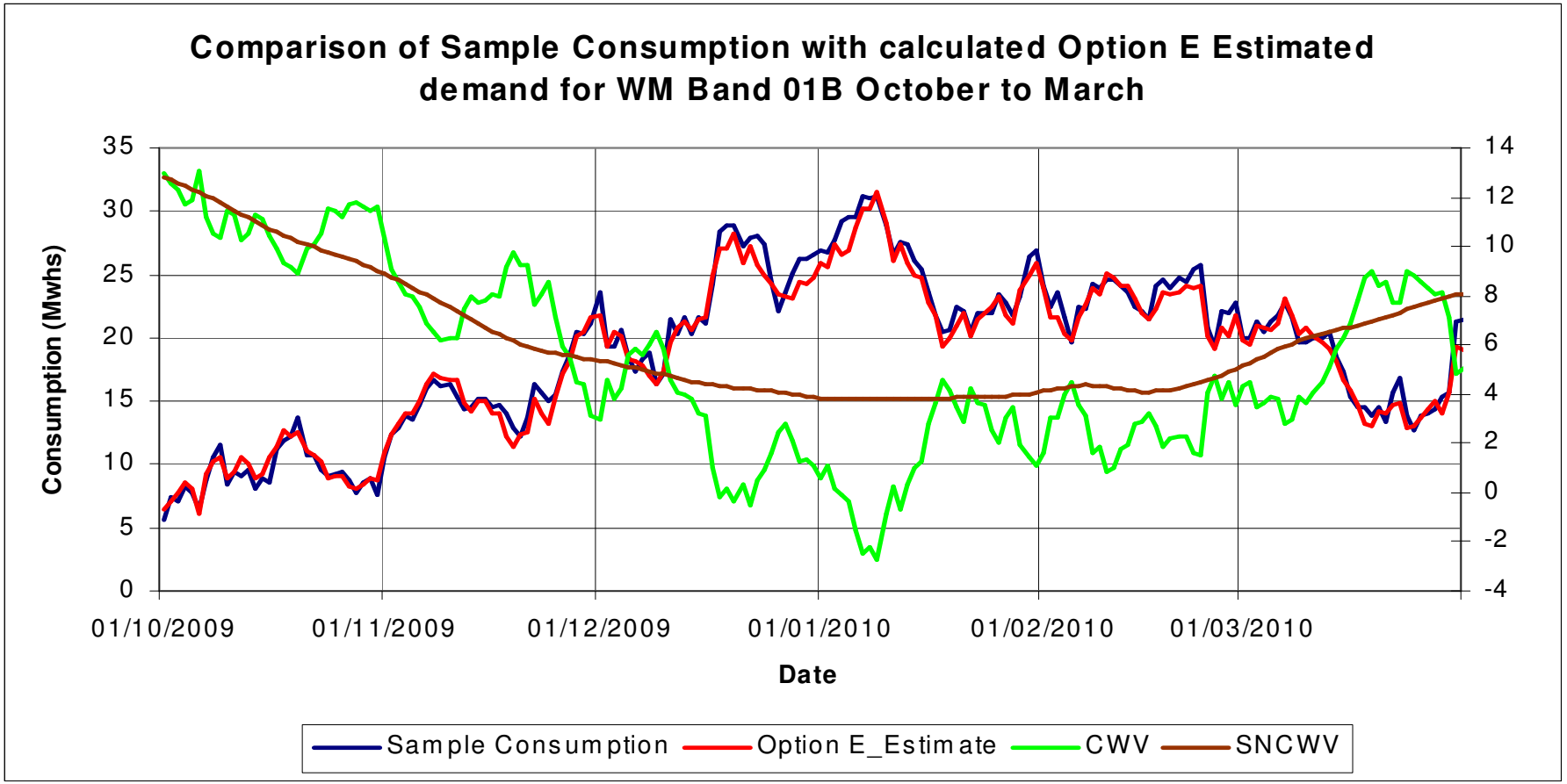

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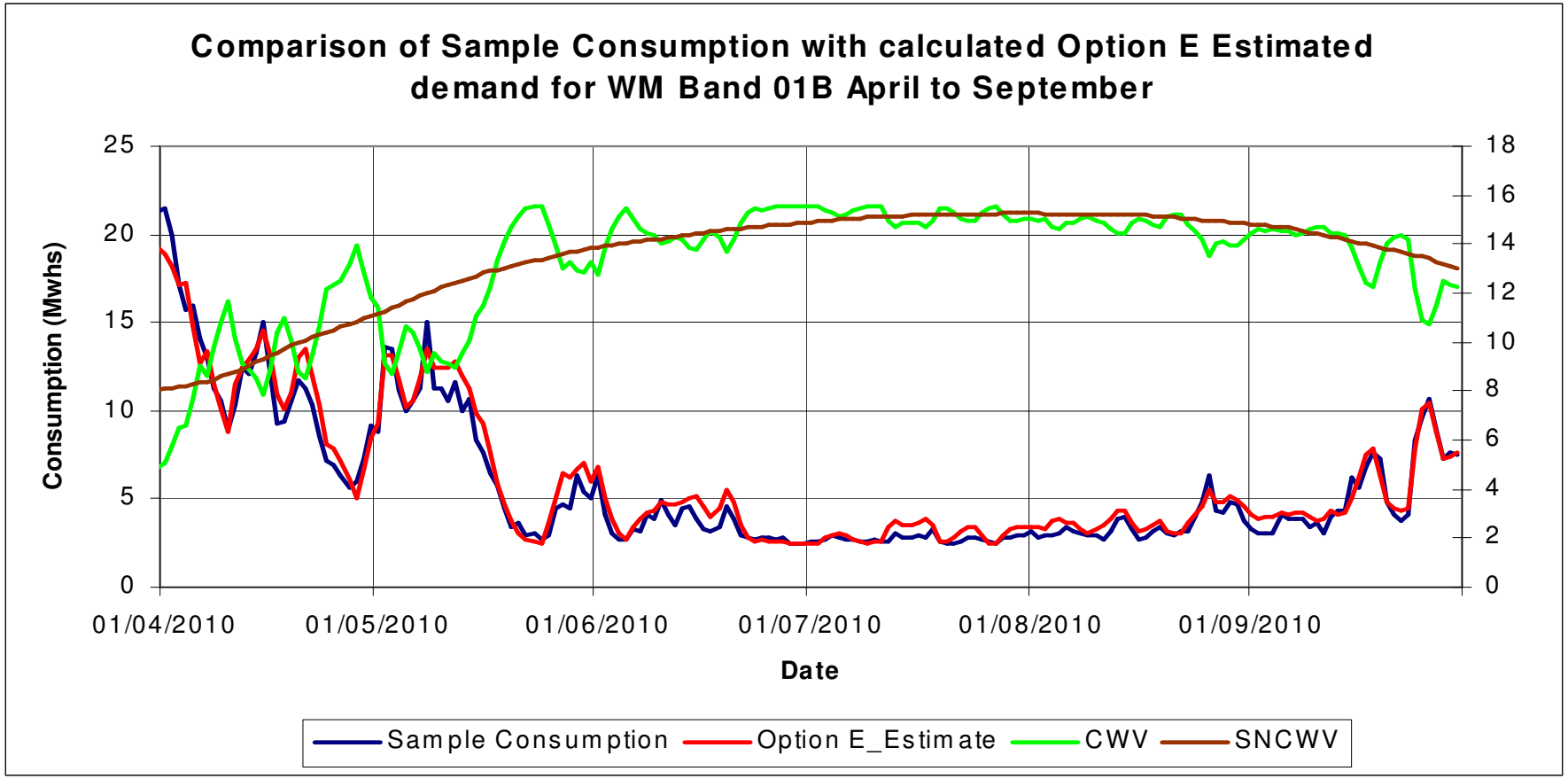
Action DTW0801: Daily Profile



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Action DTW0801: Next Steps

- TWG need to agree on approach for comparing various Options in a consistent manner
- Statistical Measures / Tests to be agreed ?