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Demand Estimation Sub-Committee

1st February 2012

Cold Weather and Shoulder Periods Analysis

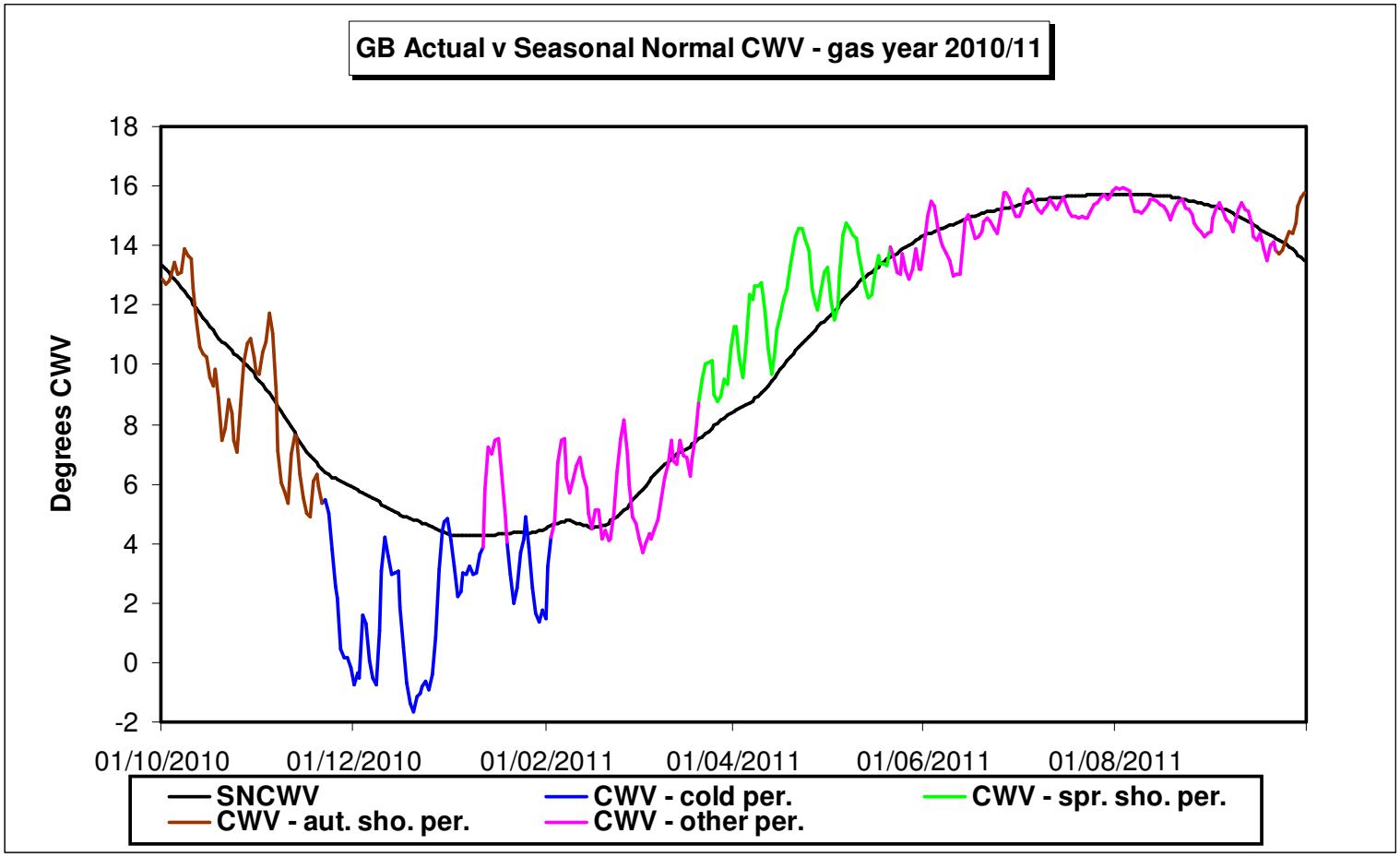
Background

- February 2011 DESC meeting requested some cold weather analysis to be carried out
- June 2011 DESC confirmed that this analysis should be added to the Work Plan and requested that the analysis should be extended to look at shoulder periods as well
- As per Action DE1107 (Demand Estimation Work Plan 2011), this analysis is based on data from the NDM sample analysis daily charts (showing actual consumption versus “best estimate10” and “best estimate 11”allocations from the NDM sample for each consumption band across all LDZs)
- Analysis used NDM sample data for most recent (2010/11) gas year i.e. 01/10/10 - 30/09/11

Periods of interest (in gas year 2010/11)

- Cold weather period: from 21st November 2010 to 2nd February 2011 (excluding a week of mild weather from 12th January 2011 to 18th January 2011)
- For Bands 02 to 08 (affected by holidays), cold weather period was sub-divided into two for statistics: holiday days (20th December 2010 to 7th January 2011) and non-holiday days (other days in cold weather period)
- Spring shoulder period: from 21st March 2011 to 21st May 2011, a period consistently warmer than seasonal normal
- Autumn shoulder period: from 1st October 2010 to 20th November 2010 and 21st September 2011 to 30th September 2011. On average, the weather was around or slightly below seasonal normal on these days
- Chart on next slide shows GB actual (calculated by National Grid) and seasonal normal composite weather variable in gas year 2010/11, showing above periods (each of approx. similar length)

Weather during gas year 2010/11



GB CWV is a weighted average of the LDZ CWVs, calculated by National Grid

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Methodology

- For each consumption band, allocation method ("best estimate 10" and best estimate 11") and period of interest (including other days in year), the following was calculated:

  Mean Error (ME) = mean (actual demand - alloc. demand)

  $$\text{Mean \% Err. (MPE)} = 100 * \frac{\text{mean (actual demand - alloc. demand)}}{\text{mean actual demand}}$$

  Mean Abs. Error (MAE) = mean (|actual demand - alloc. demand|)

  $$\text{Mn. Abs. \% Err (MAPE)} = \frac{100 * \text{mean (|actual demand - alloc. demand|)}}{\text{mean actual demand}}$$

- ME and MPE used to assess how much profiles under or over allocate on average during periods of interest
- MAE and MAPE used to assess average goodness of fit of profiles during periods of interest
- Charts used to examine fit & under/over allocation on daily basis

Analysis Results

- A full set of results for all bands are included in the appendix at the end of this presentation

- The following slides show selected results for consumption bands:

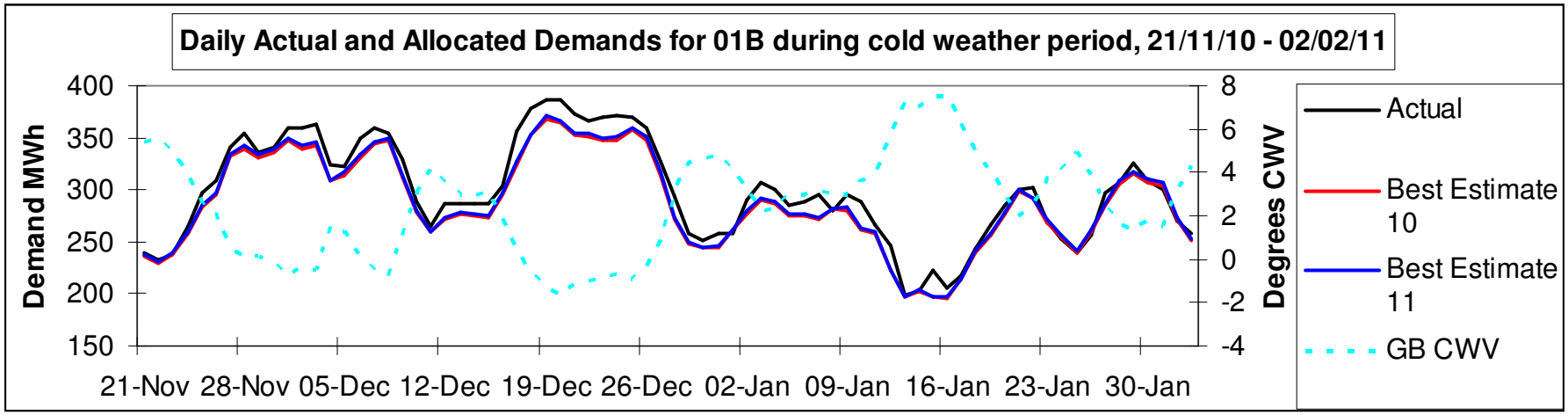
  – 01
  – 02
  – 06

Results – Consumption Band 01

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-10.4	-11.0	12.2	12.8	-10.0	-10.4	11.8	12.4
Autumn shoulder period	3.8	2.7	5.8	4.0	3.9	2.7	5.9	4.1
Cold weather period	10.9	3.5	11.4	3.7	9.0	2.9	9.9	3.2
Other periods	-1.8	-1.7	5.6	5.4	-1.3	-1.2	5.1	4.9
All periods	0.0	0.0	7.8	5.3	0.0	0.0	7.2	5.0

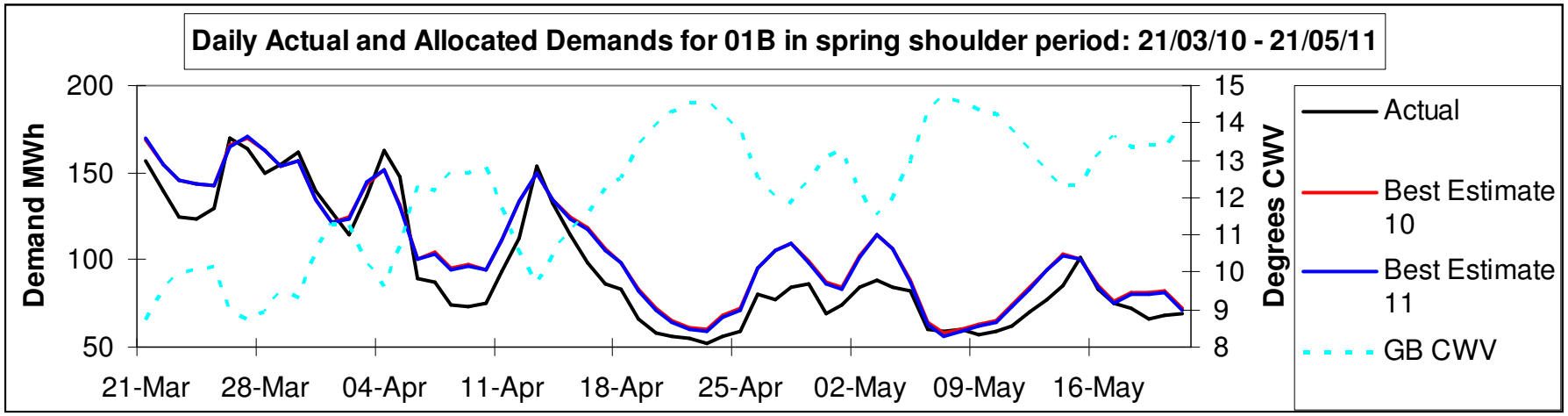
- Significant over allocation and worse fit during spring shoulder period
- Under allocation (but good fit) during cold weather period and in autumn shoulder period

Band 01 Chart – Cold Weather Period



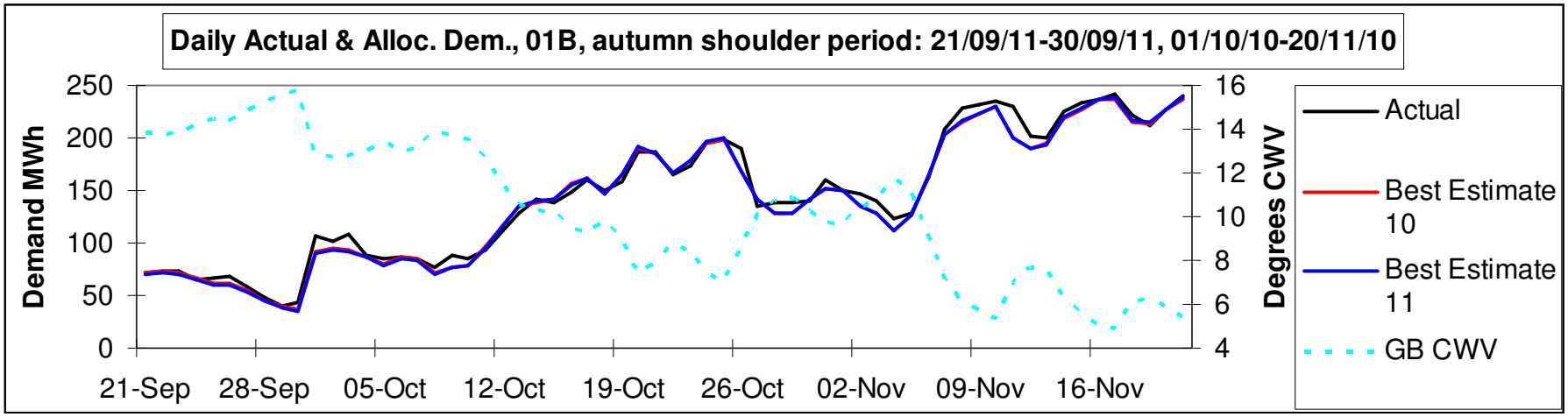
- Note that mild period (12/01/11 to 18/01/11) excluded from previous slide's stats
- Under allocation (for best estimate 10 and 11 bases), particularly on coldest days
- May be caused by EUC weather sensitivity (WSENS) being too low in 01B models (resulting in 01B DAF values being too low) in this period
- Alternatively, could be caused by cold weather upturn parameters in CWV definitions being too small, resulting in EWCF being too small in magnitude (EWCF = ($WSENS_{AGG\ NDM}$ /$SND_{AGG\ NDM}$)* (CWV-SNCWV))
- Could also be caused by more people working from home on snowy days (when some schools and business were closed)

Band 01 Chart – Spring Shoulder Period



- Significant over allocation during spring shoulder period, particularly on warmest days
- May be caused by EUC weather sensitivity (WSENS) being too low in 01B models (resulting in 01B DAF values being too low) as end users switched off space heating earlier than usual in the unseasonably warm weather (instead of just turning down the heating)
- "Pseudo SNET" captures average of non-weather impacts (including heating load switch on / off) in CWV definitions (currently based on average of gas years 1996/97 to 2008/09). When heating load is switched off earlier than usual, pseudo SNET value (and CWV) may be too low

Band 01 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- Slight under allocation during autumn shoulder period, but overall fit was good
- Weather quite close to seasonal normal overall and hence user behaviour (e.g. heating load switch on) was not too different from the norm

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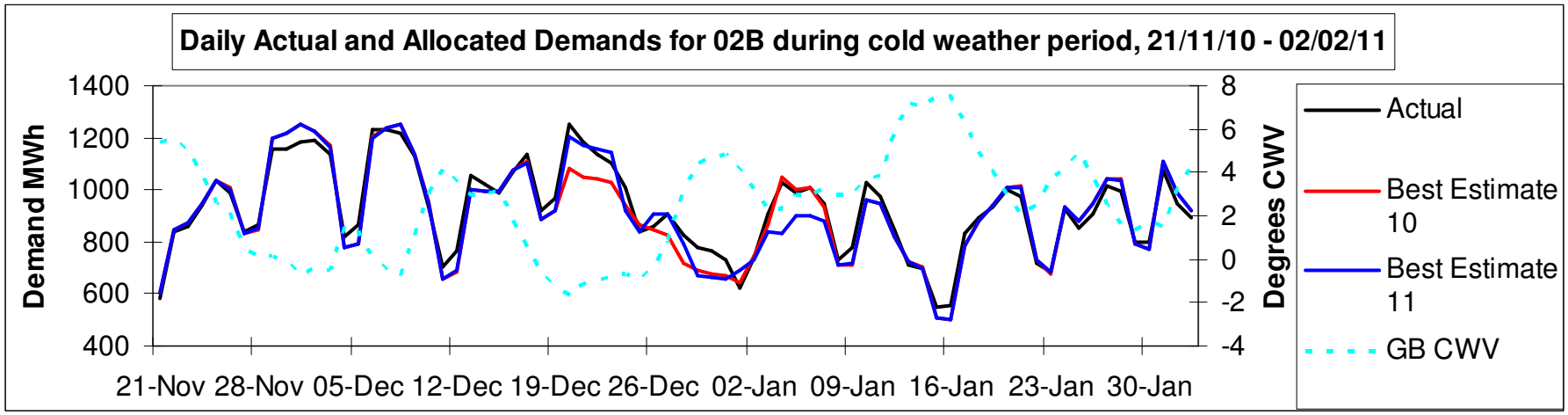
Results – Consumption Band 02

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-13.2	-3.7	24.2	6.8	-15.2	-4.3	24.9	7.0
Autumn shoulder period	-2.0	-0.4	20.1	4.2	-2.0	-0.4	19.8	4.2
Cold weather non-holiday days	-0.4	0.0	29.6	3.1	0.8	0.1	28.7	3.0
Cold weather holiday days	50.7	5.5	60.8	6.5	44.0	4.7	62.8	6.8
Other periods	1.6	0.4	16.2	4.5	2.3	0.6	16.0	4.4
All periods	0.8	0.2	22.3	4.6	0.6	0.1	22.3	4.6

- Significant under allocation and worse fit during holiday days in cold weather period
- Reasonable fit during other periods (but over allocation in spring)

Band 02 Chart – Cold Weather Period



- Note that mild period (12th to 18th January 2011) excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011). Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011

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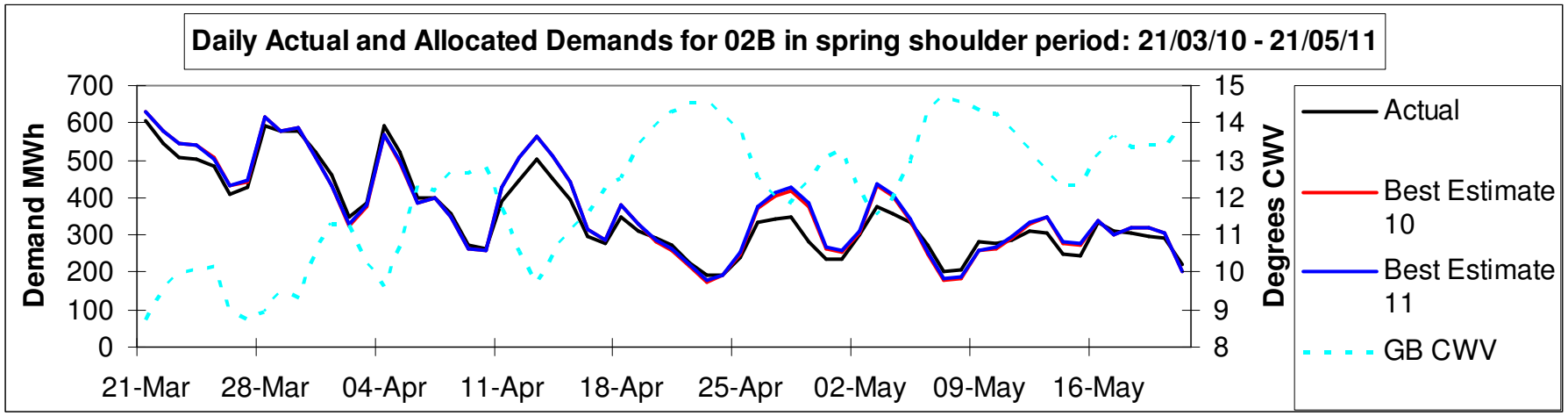
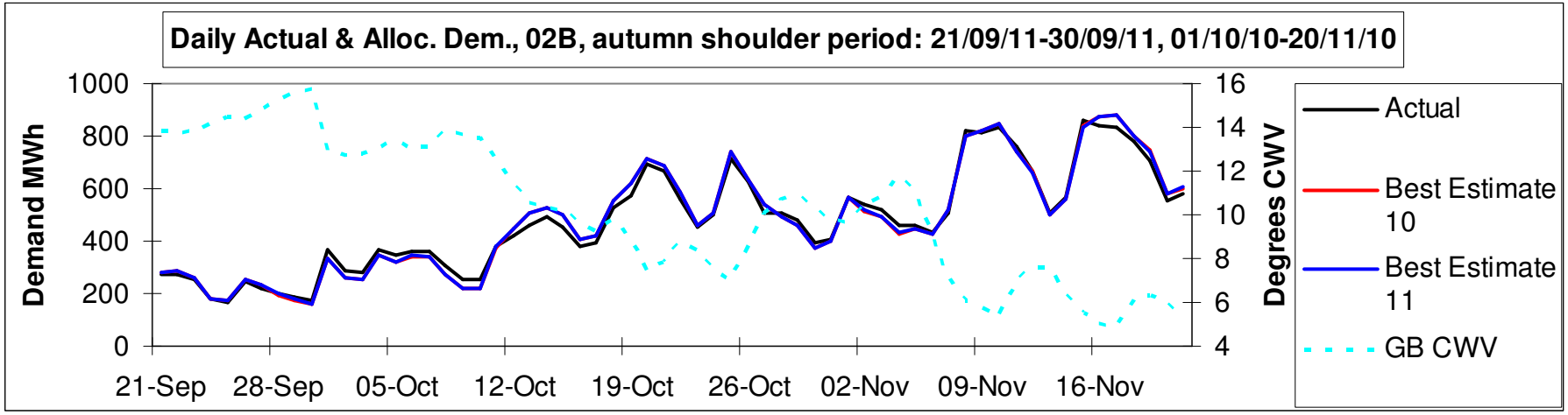
Band 02 Chart – Spring Shoulder Period



- Over allocation during spring shoulder period, particularly during Easter / May day holiday periods in late April / early May
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

Band 02 Chart – Autumn Shoulder Period



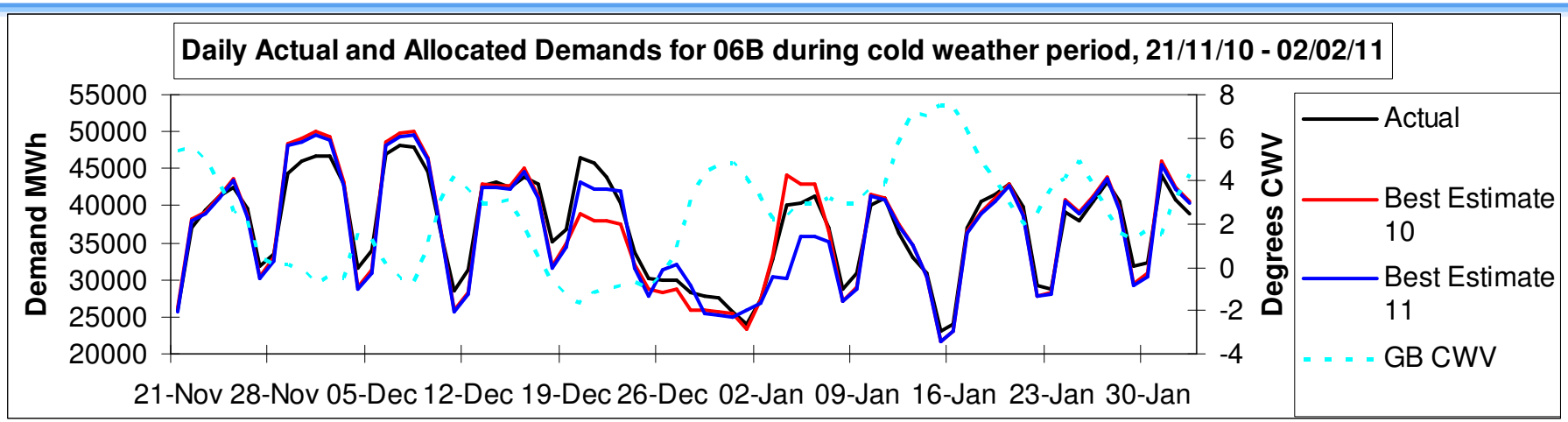
- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- Very slight over allocation during autumn shoulder period, but overall fit good

Results – Consumption Band 06

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-246.7	-1.1	859.2	3.9	-349.2	-1.6	835.9	3.8
Autumn shoulder period	322.7	1.2	703.9	2.7	300.1	1.2	695.9	2.7
Cold weather non-holiday days	-63.8	-0.2	1443.6	3.7	249.3	0.6	1422.5	3.7
Cold weather holiday days	1524.4	4.4	2462.3	7.2	1861.4	5.4	2682.4	7.8
Other periods	-123.1	-0.6	807.8	3.7	-209.5	-1.0	798.2	3.7
All periods	24.0	0.1	968.9	3.8	20.1	0.1	967.7	3.8

- Under allocation and worse fit during holiday days in cold weather period
- Good fit during other periods (and not much under / over allocation)

Band 06 Chart – Cold Weather Period



- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011). Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011
- Over allocation on cold days in late November / early December (possibly caused by some business being closed on snowy days)

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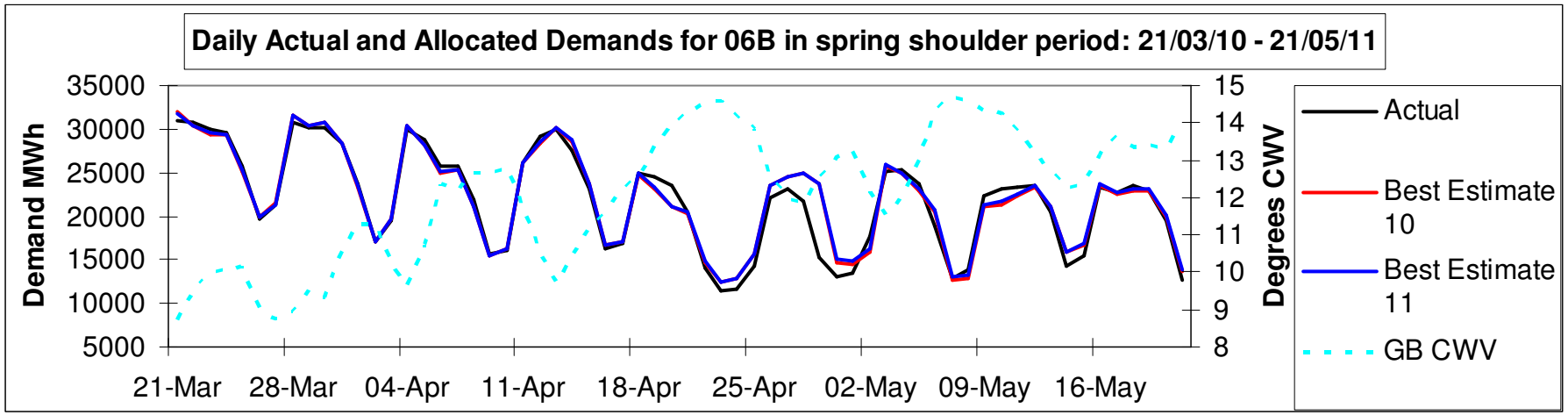
Band 06 Chart – Spring Shoulder Period



- Slight over allocation during Easter / May day holiday periods in late April / early May 2011
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

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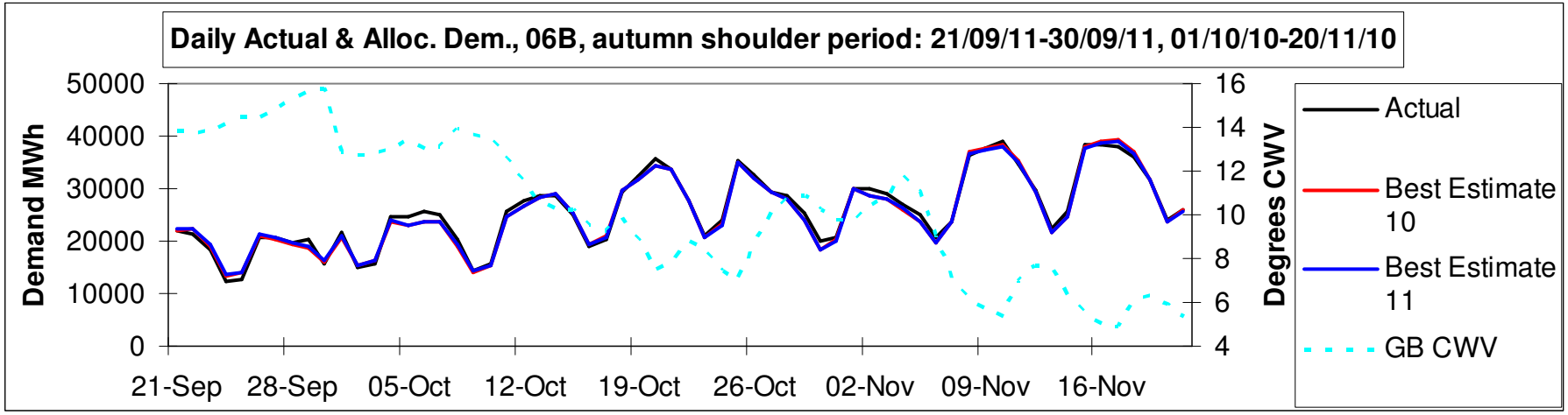
Band 06 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- During autumn shoulder period, overall fit was good and allocation was close to actual demand

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Summary Of Key Results

- For Band 01, significant over allocation during unseasonably warm spring shoulder period (probably caused by heating load being switched off earlier than usual). Pseudo SNET in CWV definitions may not be appropriate when weather is unseasonably warm in spring
- Also for Band 01, under allocation during unseasonably cold weather, possibly due to EUC model weather sensitivity being too low, CWV cold weather upturn being too small or more working from home due to snow
- For most bands, fit during autumn shoulder period was good without much over / under allocation. Note that the weather was around seasonal normal in this period
- For bands 02 to 08, significant under allocation during Christmas holiday period (20th December 2010 to 7th January 2011). Some over allocation in most bands on other cold days (possibly due to snow disruption)
- For bands 02 to 07, some over allocation during spring shoulder period, particularly during Easter / May day holiday periods in late April /early May. (Note 29th April 2011 was an extra Bank Holiday for Royal wedding, not anticipated in best estimate profiles)

Recommendations

- When CWV definitions are next reviewed:

  -consider basing pseudo SNET on more recent period of years to capture any change in customer behaviour e.g. change in heating load switch on / off.

  -consider basing cold weather upturn parameters on a more recent period to capture any change in cold weather upturn behaviour.

- Check proposed 2012/13 band 01 DAFs in spring 2012 to see if winter / spring values are larger (more weather sensitive).

- Check performance of new Christmas holiday code rules (agreed at the DESC meeting on 8th November 2011) - first opportunity with the “Best estimate 12” basis in the Autumn 2012 NDM sample analysis.

- Give 29th April 2011 the same holiday code as the first bank holiday in May for spring 2012 models.

- Check performance of spring holiday codes in Autumn 2012 NDM sample analysis.

Analysis Results

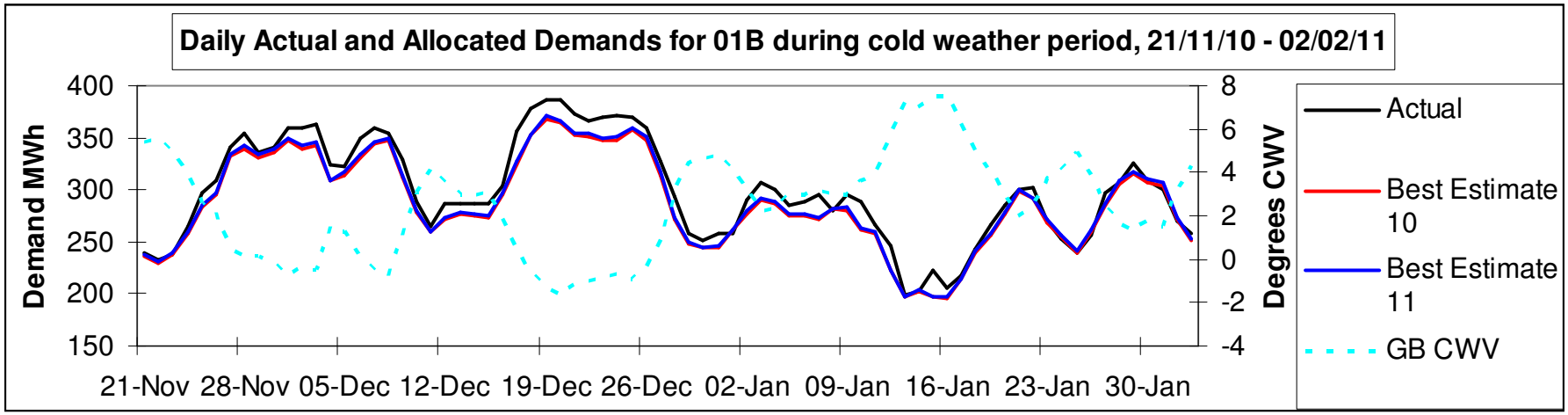
APPENDIX

Results – Consumption Band 01

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-10.4	-11.0	12.2	12.8	-10.0	-10.4	11.8	12.4
Autumn shoulder period	3.8	2.7	5.8	4.0	3.9	2.7	5.9	4.1
Cold weather period	10.9	3.5	11.4	3.7	9.0	2.9	9.9	3.2
Other periods	-1.8	-1.7	5.6	5.4	-1.3	-1.2	5.1	4.9
All periods	0.0	0.0	7.8	5.3	0.0	0.0	7.2	5.0

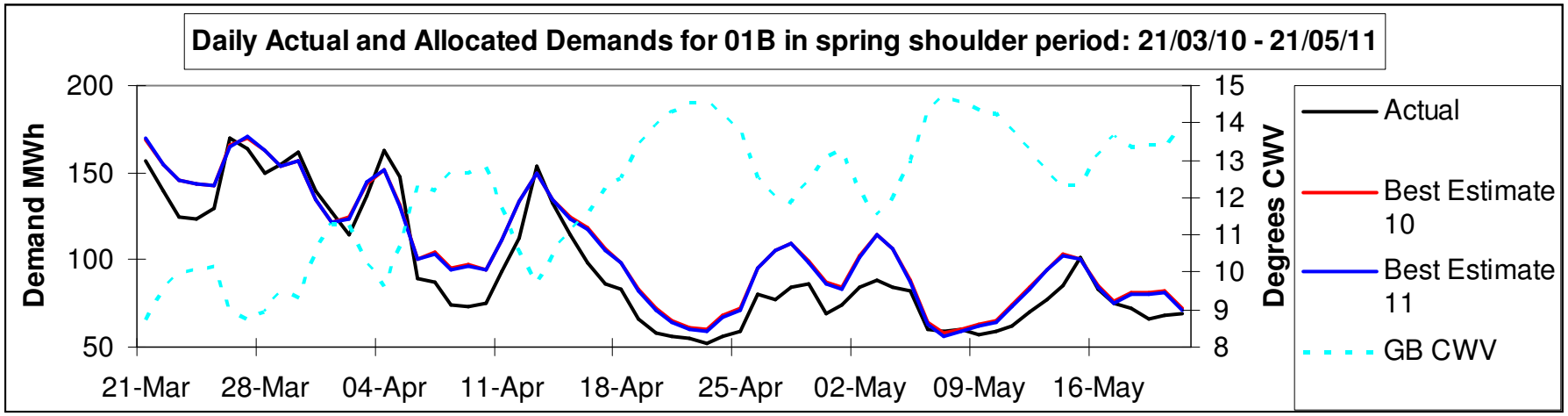
- Significant over allocation and worse fit during spring shoulder period
- Under allocation (but good fit) during cold weather period and in autumn shoulder period

Band 01 Chart – Cold Weather Period



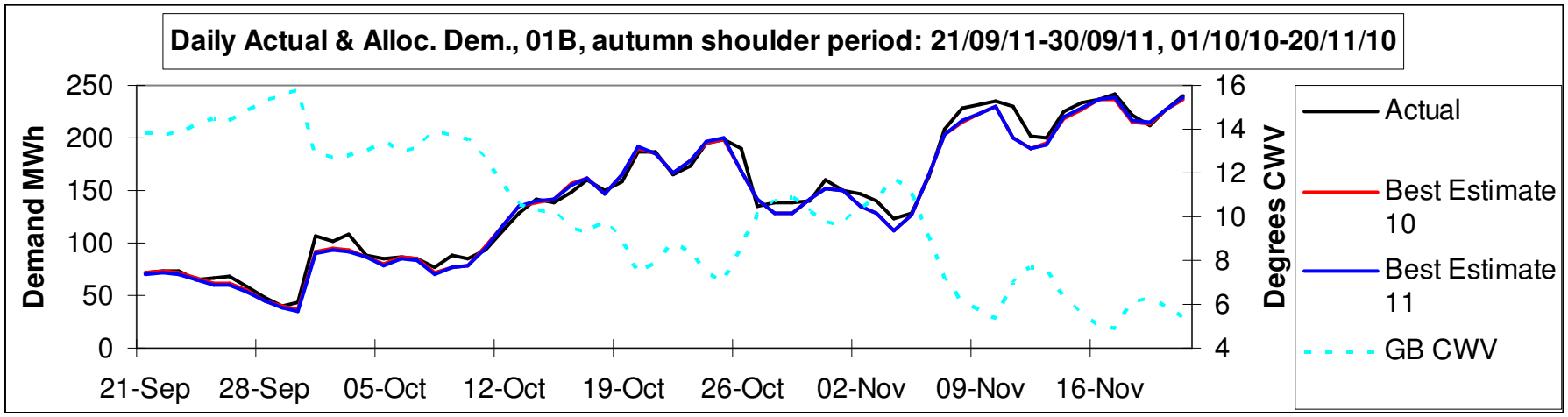
- Note that mild period (12/01/11 to 18/01/11) excluded from previous slide's stats
- Under allocation (for best estimate 10 and 11 bases), particularly on coldest days
- May be caused by EUC weather sensitivity (WSENS) being too low in 01B models (resulting in 01B DAF values being too low) in this period
- Alternatively, could be caused by cold weather upturn parameters in CWV definitions being too small, resulting in EWCF being too small in magnitude (EWCF = ($WSENS_{AGG\ NDM}$ /$SND_{AGG\ NDM}$)* (CWV-SNCWV))
- Could also be caused by more people working from home on snowy days (when some schools and business were closed)

Band 01 Chart – Spring Shoulder Period



- Significant over allocation during spring shoulder period, particularly on warmest days
- May be caused by EUC weather sensitivity (WSENS) being too low in 01B models (resulting in 01B DAF values being too low) as end users switched off space heating earlier than usual in the unseasonably warm weather (instead of just turning down the heating)
- "Pseudo SNET" captures average of non-weather impacts (including heating load switch on / off) in CWV definitions (currently based on average of gas years 1996/97 to 2008/09). When heating load is switched off earlier than usual, pseudo SNET value (and CWV) may be too low

Band 01 Chart – Autumn Shoulder Period



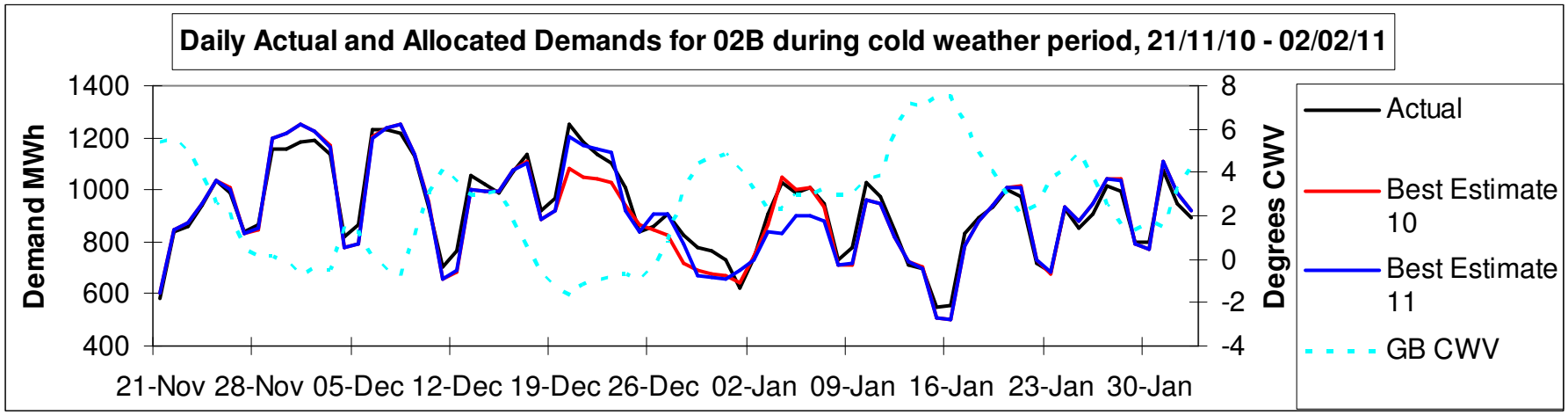
- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- Slight under allocation during autumn shoulder period, but overall fit was good
- Weather quite close to seasonal normal overall and hence user behaviour (e.g. heating load switch on) was not too different from the norm

Results – Consumption Band 02

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-13.2	-3.7	24.2	6.8	-15.2	-4.3	24.9	7.0
Autumn shoulder period	-2.0	-0.4	20.1	4.2	-2.0	-0.4	19.8	4.2
Cold weather non-holiday days	-0.4	0.0	29.6	3.1	0.8	0.1	28.7	3.0
Cold weather holiday days	50.7	5.5	60.8	6.5	44.0	4.7	62.8	6.8
Other periods	1.6	0.4	16.2	4.5	2.3	0.6	16.0	4.4
All periods	0.8	0.2	22.3	4.6	0.6	0.1	22.3	4.6

- Significant under allocation and worse fit during holiday days in cold weather period
- Reasonable fit during other periods (but over allocation in spring)

Band 02 Chart – Cold Weather Period



- Note that mild period (12th to 18th January 2011) excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011). Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011

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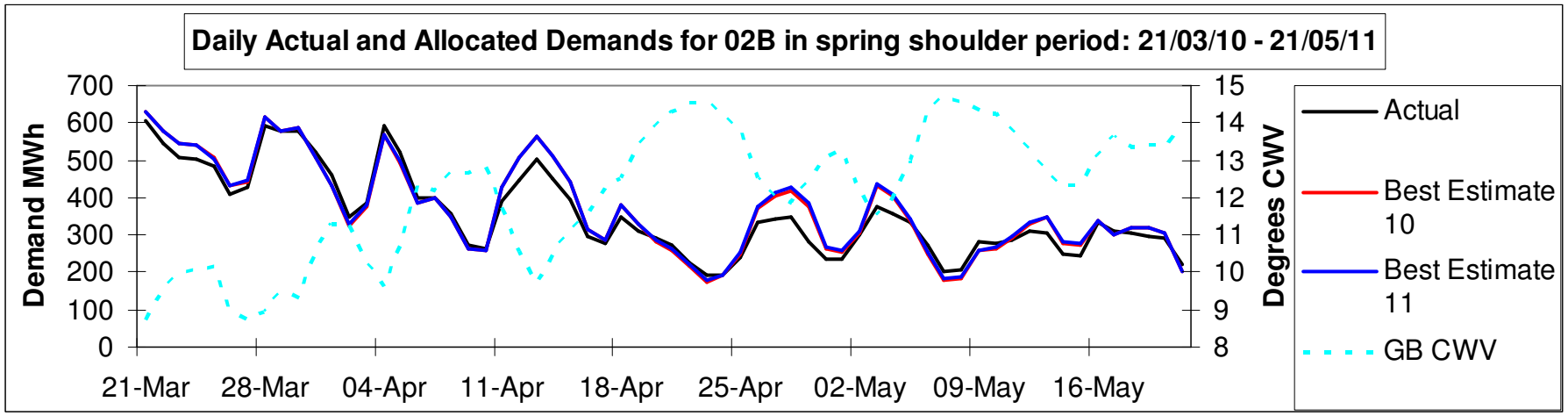
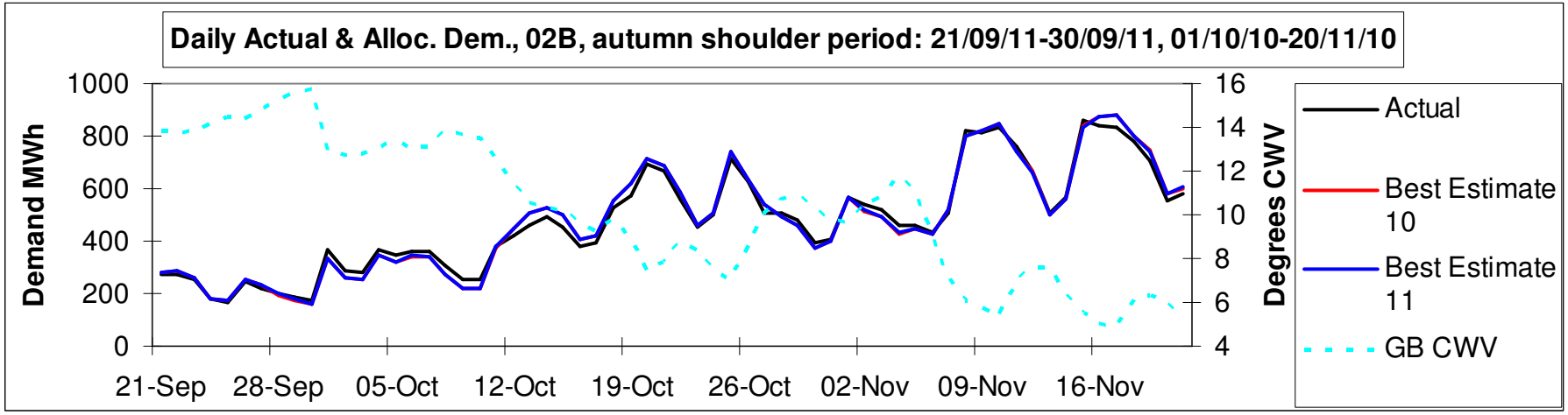
Band 02 Chart – Spring Shoulder Period



- Over allocation during spring shoulder period, particularly during Easter / May day holiday periods in late April / early May
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

Band 02 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- Very slight over allocation during autumn shoulder period, but overall fit good

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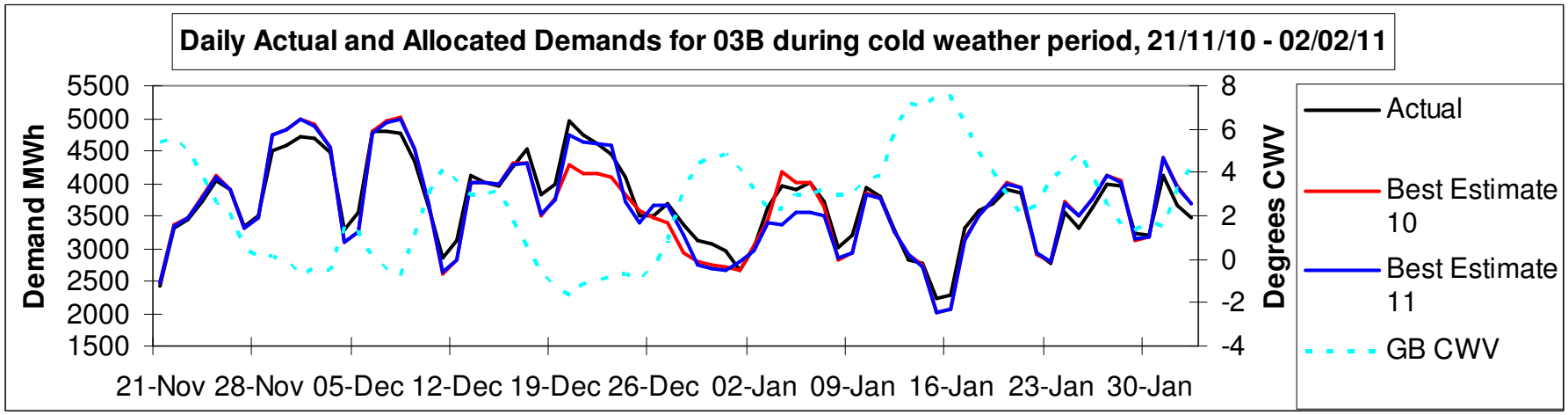
Results – Consumption Band 03

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-26.5	-1.8	85.7	5.9	-35.2	-2.4	84.4	5.8
Autumn shoulder period	24.3	1.3	81.7	4.2	21.6	1.1	79.8	4.1
Cold weather non-holiday days	-25.4	-0.7	137.3	3.6	-18.7	-0.5	130.4	3.4
Cold weather holiday days	201.9	5.4	244.9	6.6	187.5	5.0	233.3	6.2
Other periods	5.3	0.4	62.3	4.3	5.4	0.4	62.0	4.3
All periods	9.3	0.5	88.9	4.5	7.5	0.4	86.7	4.4

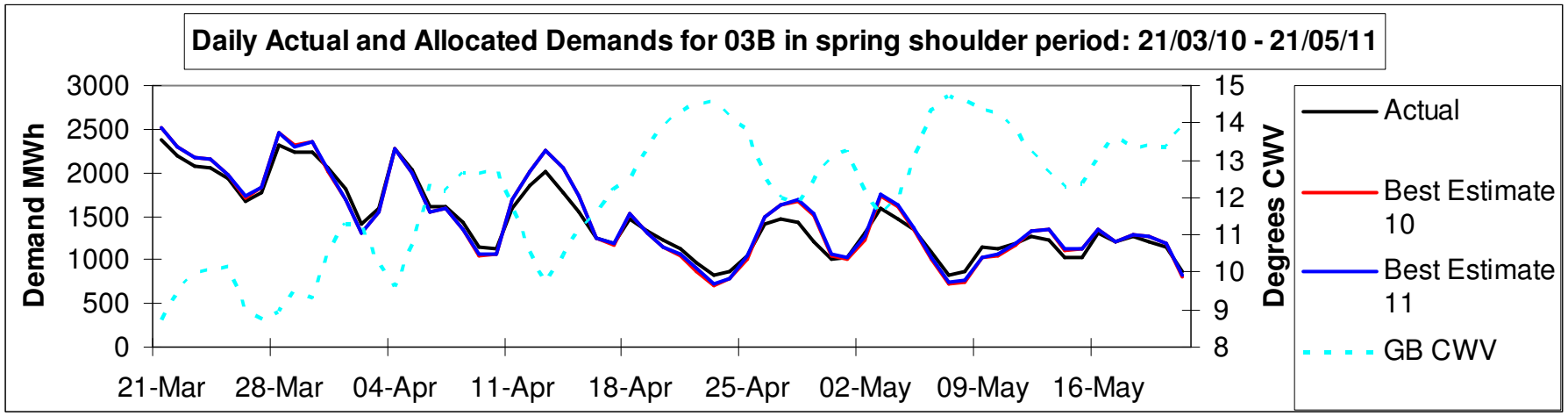
- Significant under allocation and worse fit during holiday days in cold weather period
- Reasonable fit during other periods (slight over allocation in spring)

Band 03 Chart – Cold Weather Period



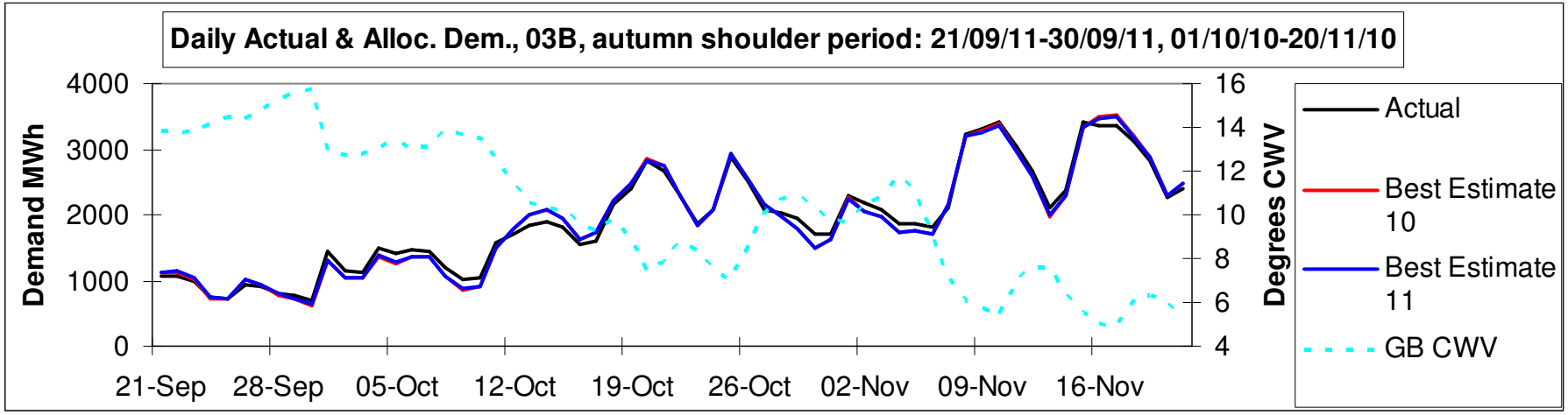
- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011) and weekends. Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011
- Over allocation on cold days in late November / early December (possibly caused by some business being closed on snowy days)

Band 03 Chart – Spring Shoulder Period



- Slight over allocation during spring shoulder period, particularly during Easter / May day holiday periods in late April / early May
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

Band 03 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- Very slight under allocation during autumn shoulder period, but overall fit good

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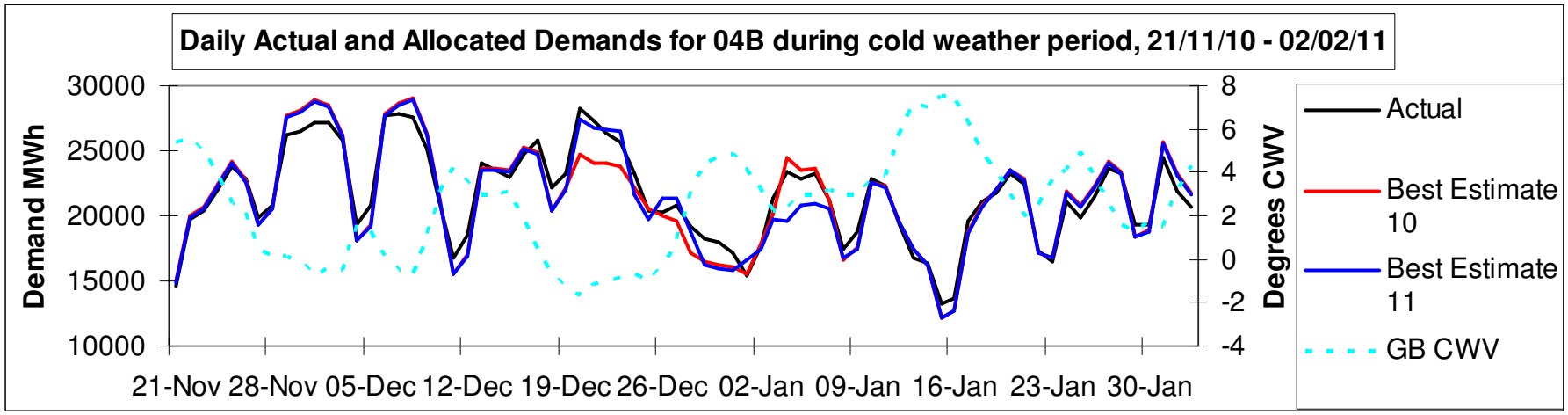
Results – Consumption Band 04

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-210.1	-2.3	431.1	4.6	-213.9	-2.3	428.7	4.6
Autumn shoulder period	10.6	0.1	403.9	3.4	42.2	0.4	405.4	3.4
Cold weather non-holiday days	-149.1	-0.7	745.9	3.4	-58.3	-0.3	698.4	3.1
Cold weather holiday days	993.0	4.6	1253.6	5.8	878.3	4.1	1270.3	5.9
Other periods	68.2	0.7	344.4	3.7	35.9	0.4	317.2	3.4
All periods	30.9	0.3	469.2	3.9	26.0	0.2	450.6	3.8

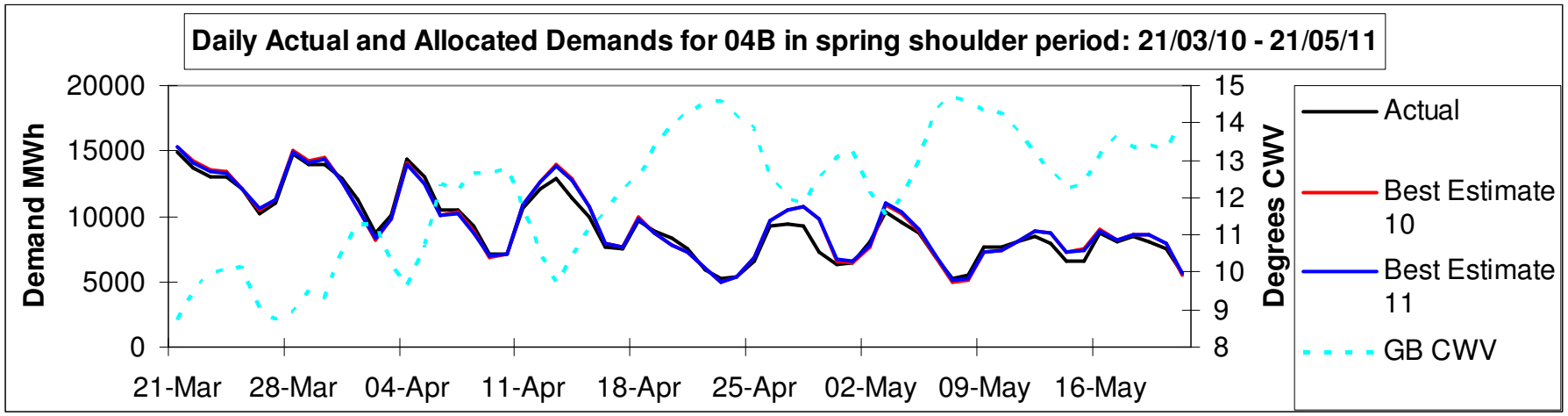
- Significant under allocation and worse fit during holiday days in cold weather period
- Reasonable fit during other periods (slight over allocation in spring)

Band 04 Chart – Cold Weather Period



- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011) and weekends. Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011
- Over allocation on cold days in late November / early December (possibly caused by some business being closed on snowy days)

Band 04 Chart – Spring Shoulder Period



- Slight over allocation during spring shoulder period, particularly during Easter / May day holiday periods in late April / early May
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

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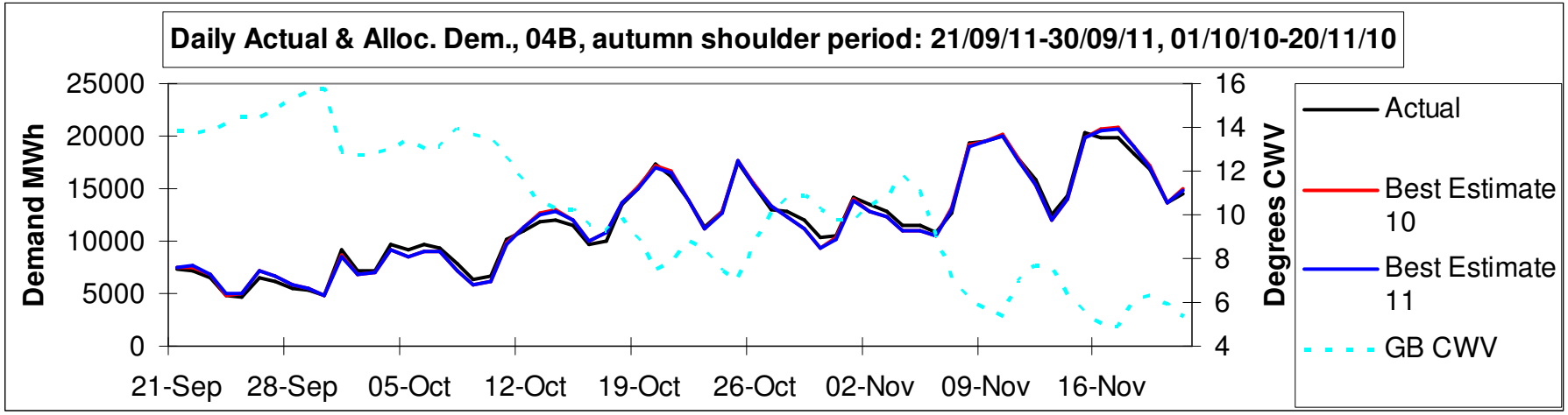
Band 04 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- During autumn shoulder period, overall fit was good and allocation was close to actual demand

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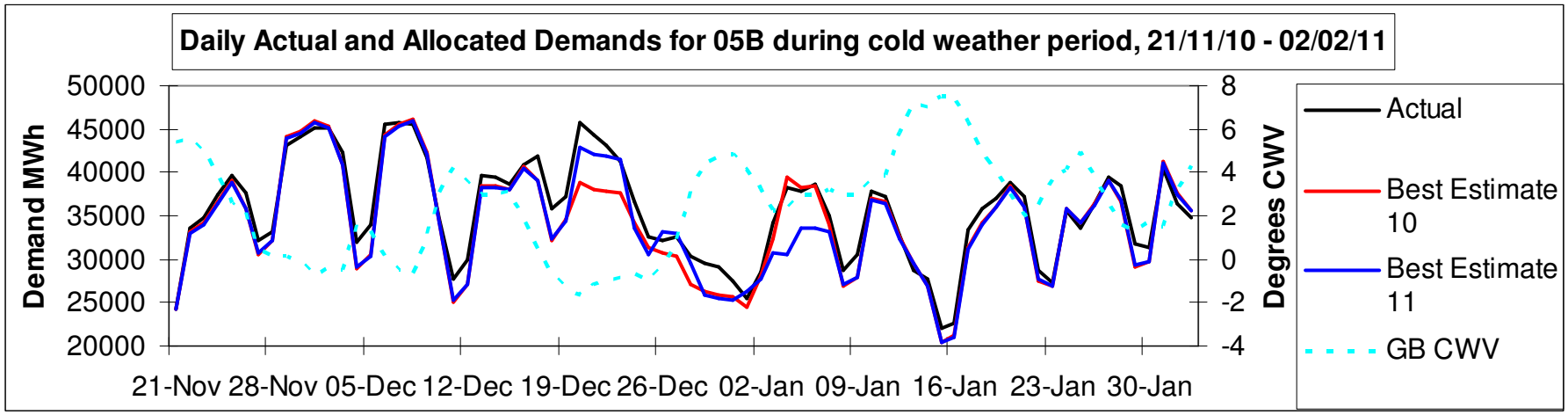
Results – Consumption Band 05

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-731.4	-4.4	849.0	5.1	-687.2	-4.1	826.0	4.9
Autumn shoulder period	24.7	0.1	619.2	3.0	82.3	0.4	642.9	3.1
Cold weather non-holiday days	900.4	2.4	1218.8	3.3	974.0	2.6	1218.9	3.3
Cold weather holiday days	2309.3	6.6	2494.4	7.2	2218.0	6.4	2506.1	7.2
Other periods	-176.3	-1.0	627.2	3.7	-204.7	-1.2	663.8	4.0
All periods	34.0	0.2	838.5	4.0	42.4	0.2	856.7	4.1

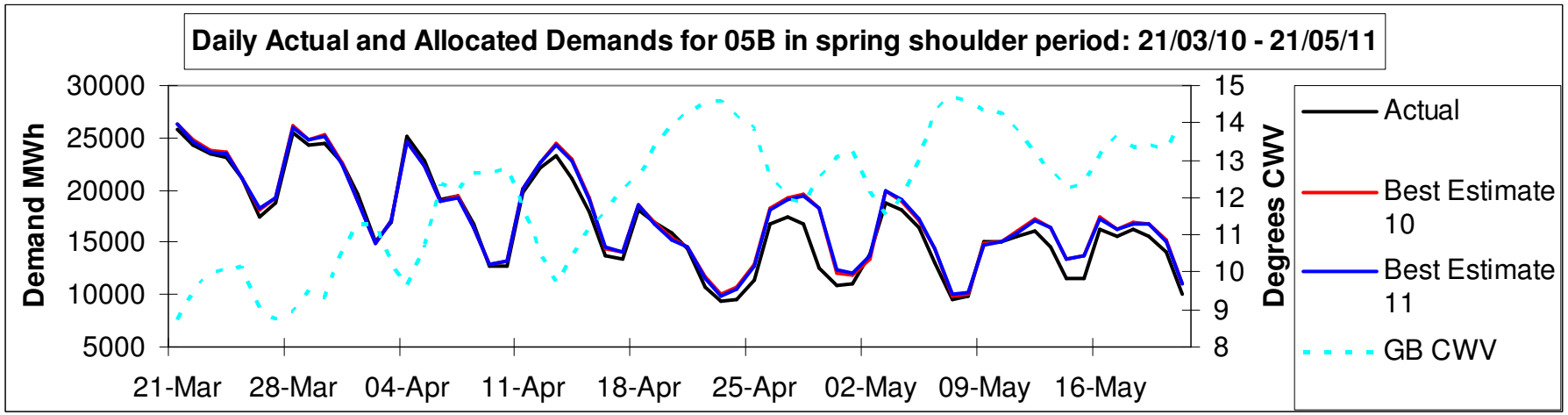
- Under allocation and worse fit during holiday days in cold weather
- Reasonable fit during other periods (slight under allocation in non-holiday cold days & over allocation in spring shoulder period)

Band 05 Chart – Cold Weather Period



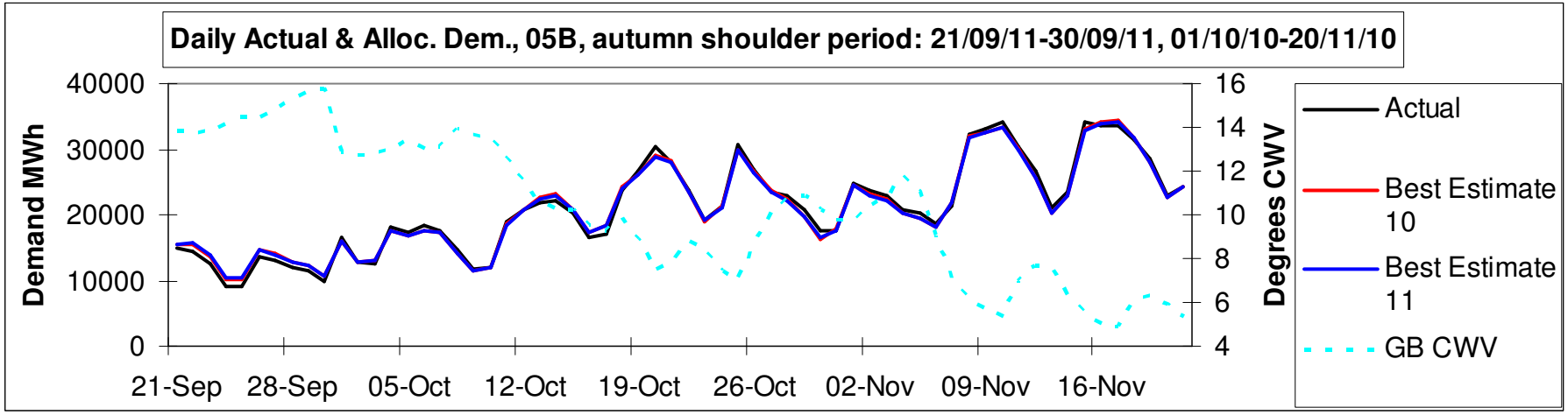
- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011) and weekends. Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011

Band 05 Chart – Spring Shoulder Period



- Over allocation during spring shoulder period, particularly during Easter / May day holiday periods in late April / early May
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

Band 05 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- During autumn shoulder period, overall fit was good and allocation was close to actual demand

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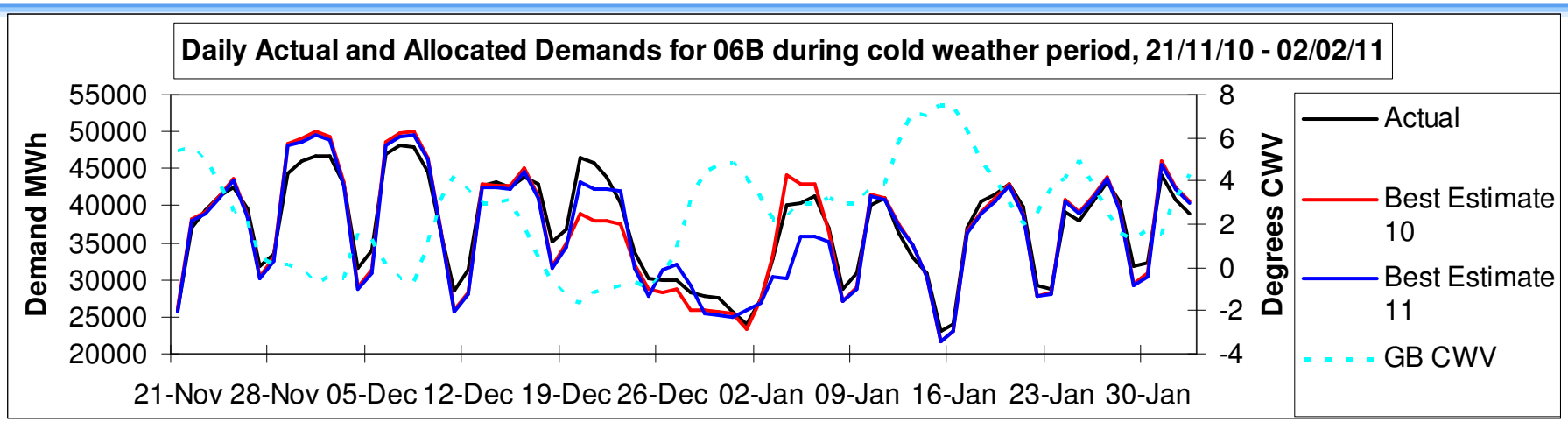
Results – Consumption Band 06

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	-246.7	-1.1	859.2	3.9	-349.2	-1.6	835.9	3.8
Autumn shoulder period	322.7	1.2	703.9	2.7	300.1	1.2	695.9	2.7
Cold weather non-holiday days	-63.8	-0.2	1443.6	3.7	249.3	0.6	1422.5	3.7
Cold weather holiday days	1524.4	4.4	2462.3	7.2	1861.4	5.4	2682.4	7.8
Other periods	-123.1	-0.6	807.8	3.7	-209.5	-1.0	798.2	3.7
All periods	24.0	0.1	968.9	3.8	20.1	0.1	967.7	3.8

- Under allocation and worse fit during holiday days in cold weather period
- Good fit during other periods (and not much under / over allocation)

Band 06 Chart – Cold Weather Period



- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011). Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011
- Over allocation on cold days in late November / early December (possibly caused by some business being closed on snowy days)

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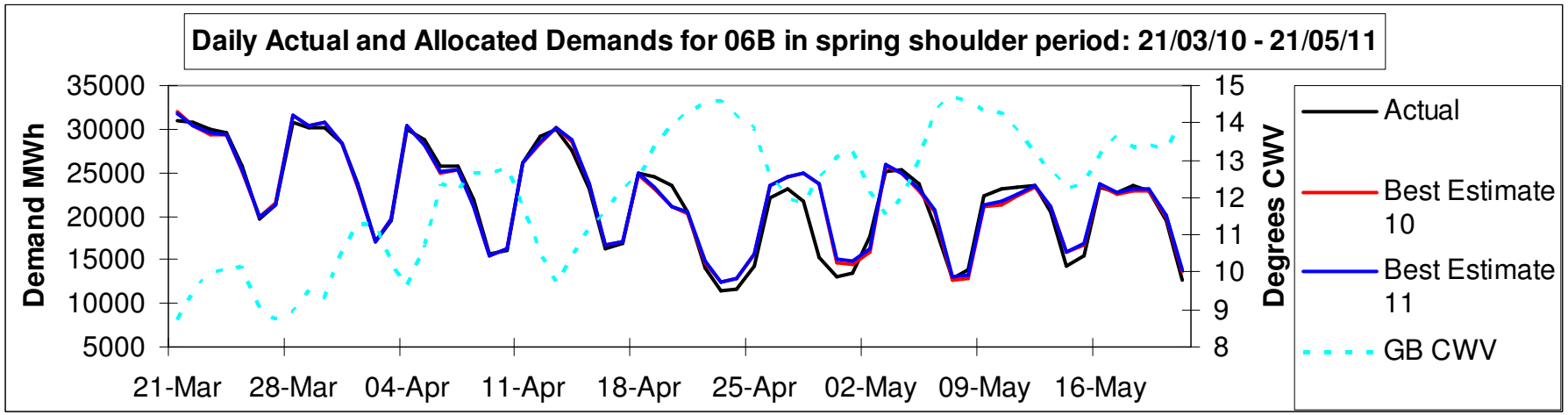
Band 06 Chart – Spring Shoulder Period



- Slight over allocation during Easter / May day holiday periods in late April / early May 2011
- Rest of period, fit was reasonable and allocation was close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

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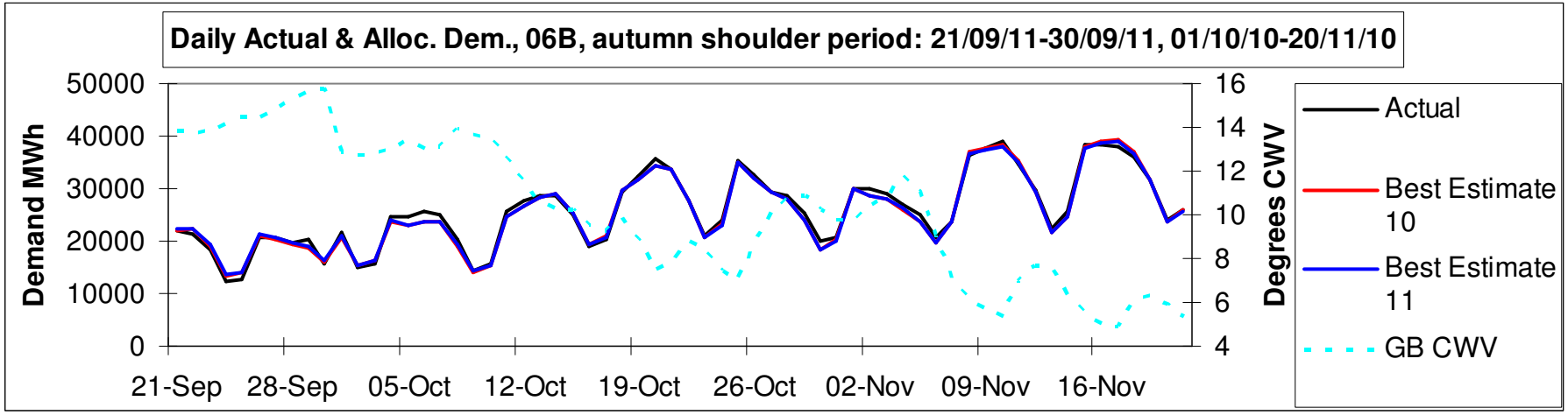
Band 06 Chart – Autumn Shoulder Period



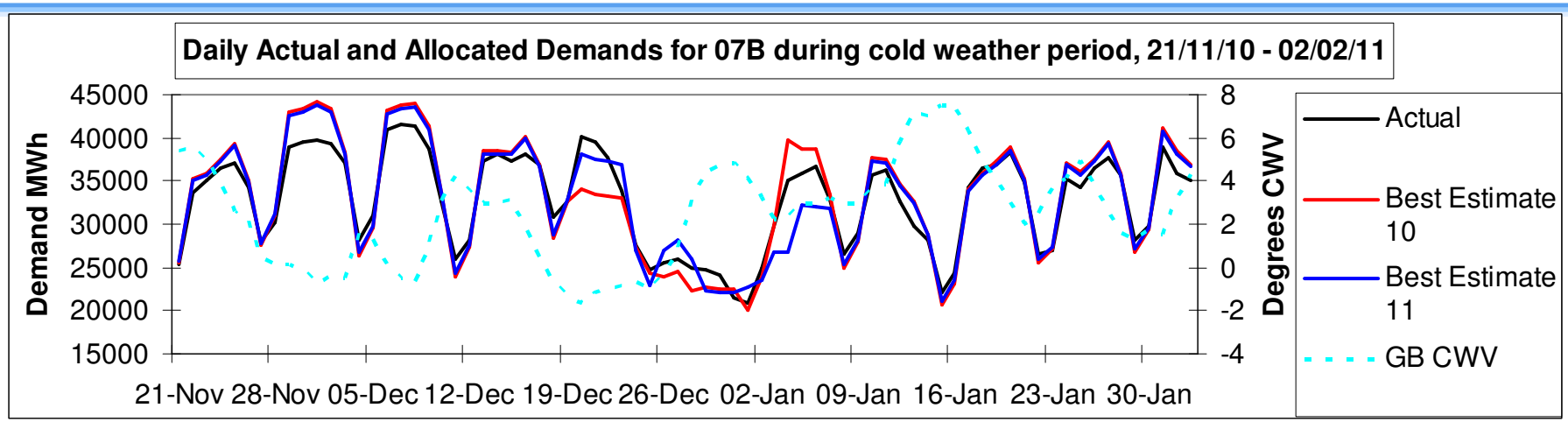
- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- During autumn shoulder period, overall fit was good and allocation was close to actual demand

Results – Consumption Band 07

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	536.9	2.3	967.4	4.2	388.3	1.7	840.3	3.7
Autumn shoulder period	96.4	0.4	822.8	3.3	30.1	0.1	705.8	2.8
Cold weather non-holiday days	-913.5	-2.7	1528.9	4.4	-800.6	-2.3	1284.2	3.7
Cold weather holiday days	974.9	3.3	2133.6	7.2	1243.9	4.2	2293.8	7.7
Other periods	-40.3	-0.2	730.7	3.3	-8.2	0.0	689.2	3.1
All periods	536.9	2.3	964.3	3.9	26.5	0.1	879.4	3.5

- Under allocation and worse fit during holiday days in cold weather
- Reasonable fit during other periods (slight over allocation in non-holiday cold days & slight under allocation in spring shoulder period)

Band 07 Chart – Cold Weather Period



- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011). Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011
- Over allocation on cold days in late November / early December (possibly caused by some business being closed on snowy days)

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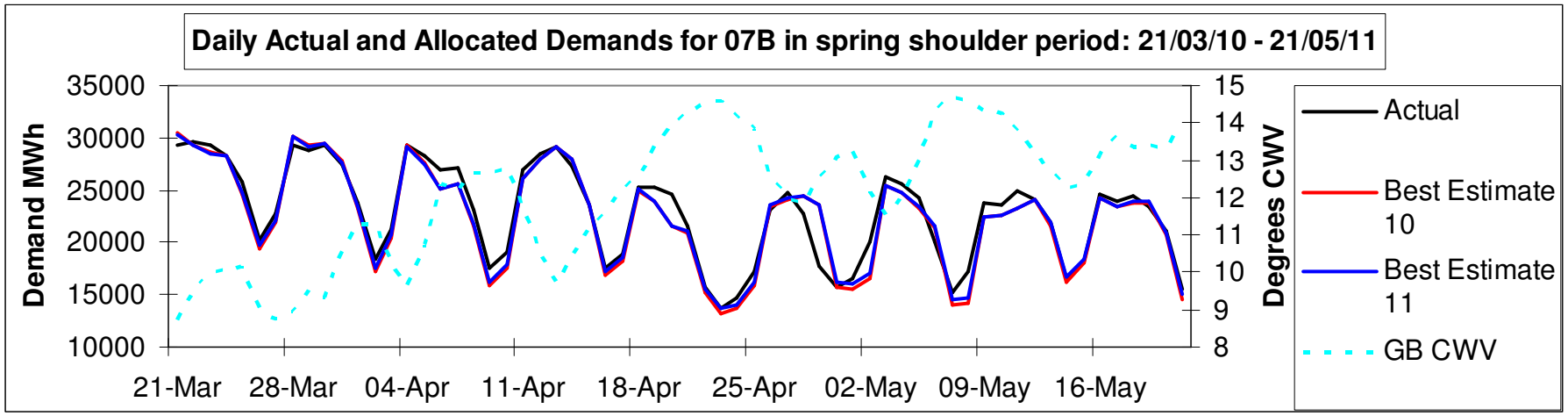
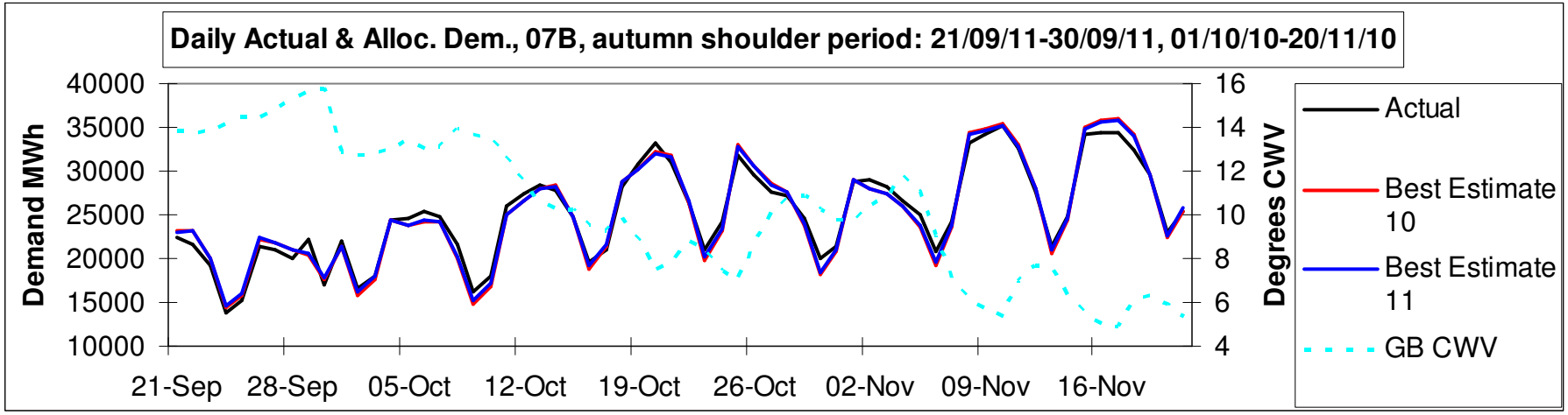
Band 07 Chart – Spring Shoulder Period



- Slight under allocation overall during spring shoulder period
- In general, fit was reasonable with allocation quite close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

Band 07 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- During autumn shoulder period, overall fit was good and allocation was close to actual demand

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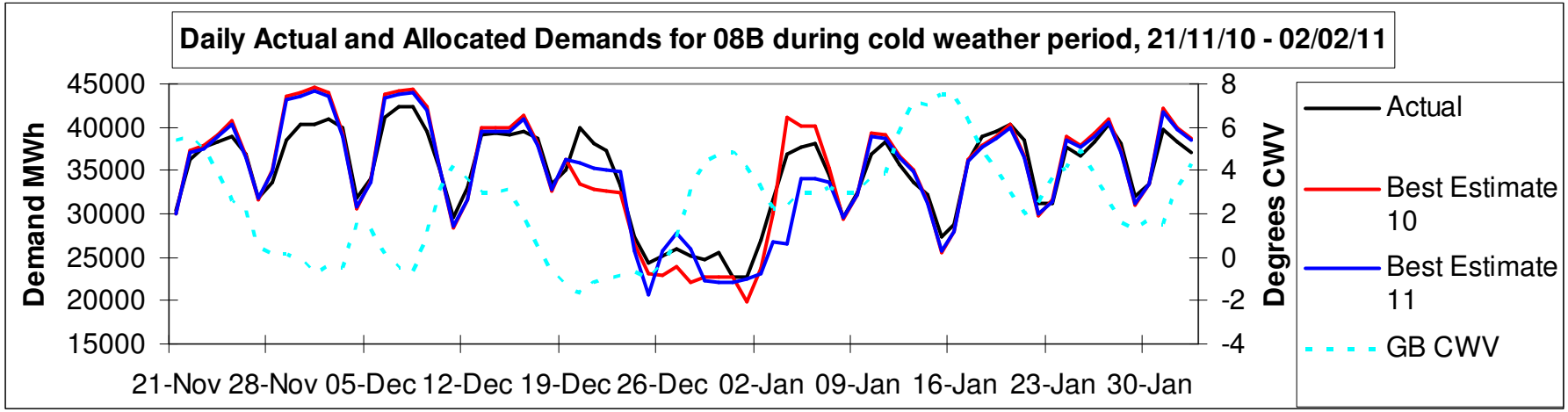
Results – Consumption Band 08

Period	Best Estimate 10				Best Estimate 11			
	ME MWh	MPE %	MAE MWh	MAPE %	ME MWh	MPE %	MAE MWh	MAPE %
Spring shoulder period	67.1	0.3	974.1	3.7	27.7	0.1	903.4	3.4
Autumn shoulder period	36.4	0.1	1027.9	3.5	55.0	0.2	948.3	3.3
Cold weather non-holiday days	-758.1	-2.1	1311.2	3.6	-558.0	-1.5	1130.2	3.1
Cold weather holiday days	1550.4	5.1	2546.1	8.4	2306.2	7.6	2827.1	9.3
Other periods	40.3	0.2	926.6	3.5	-70.1	-0.3	836.4	3.2
All periods	17.8	0.1	1086.5	3.8	27.0	0.1	1008.8	3.5

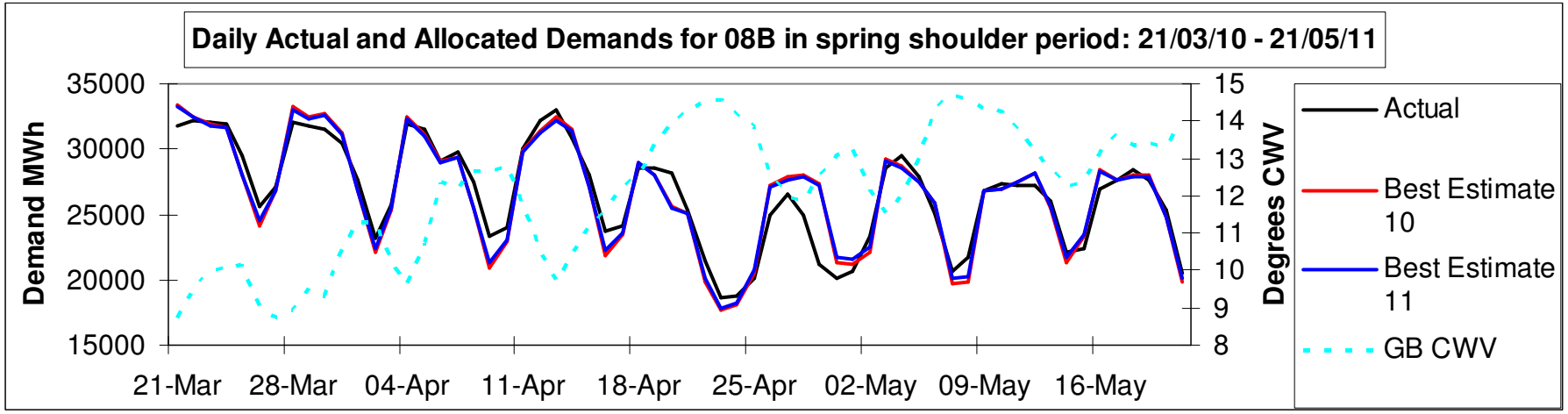
- Under allocation and worse fit during holiday days in cold weather
- Reasonable fit during other periods (slight over allocation in non-holiday cold days)

Band 08 Chart – Cold Weather Period



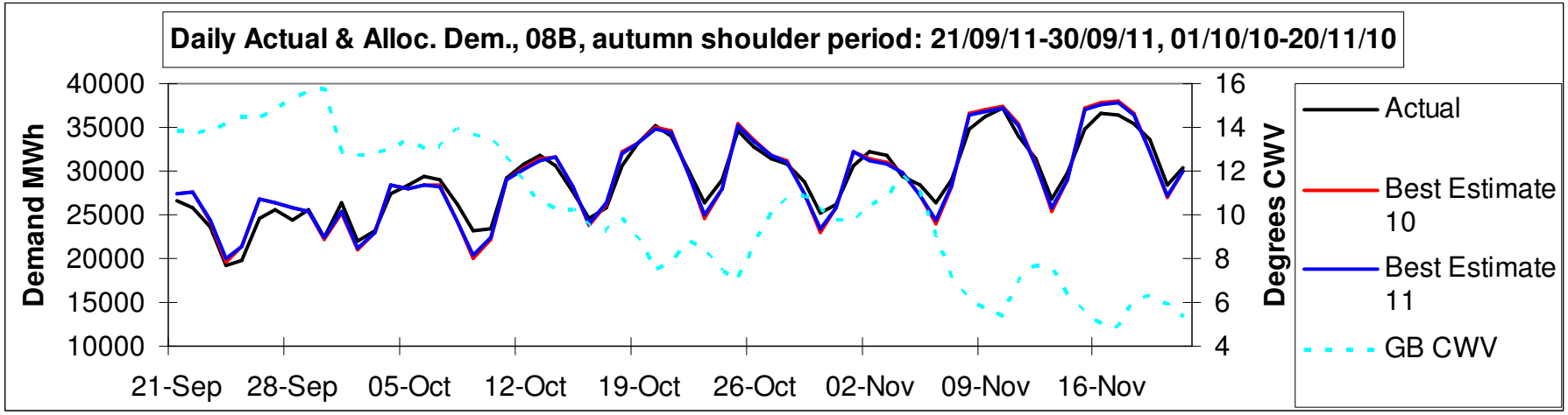
- Note that mild period (12th to 18th January 2011) was excluded from previous slide's statistics
- Under allocation (for best estimate 10 and 11 bases) during holiday days (20th December 2010 to 7th January 2011). Note that best estimate 10 used a shorter holiday period (ending 4th January 2011) in EUC models
- Note that changes to the Christmas holiday code rules were agreed at the DESC meeting on 8th November 2011
- Over allocation on cold days in late November / early December (possibly caused by some business being closed on snowy days)

Band 08 Chart – Spring Shoulder Period



- Overall fit was reasonable with allocation quite close to actual demand
- Note that 29th April 2011 was an extra Bank Holiday (for Royal wedding), not anticipated in Best Estimate 10 and 11 profiles

Band 08 Chart – Autumn Shoulder Period



- Note that data for September in above chart was in calendar year 2011 and data for October and November was in calendar year 2010
- During autumn shoulder period, overall fit was good and allocation was close to actual demand