Summer Scaling Factor Volatility

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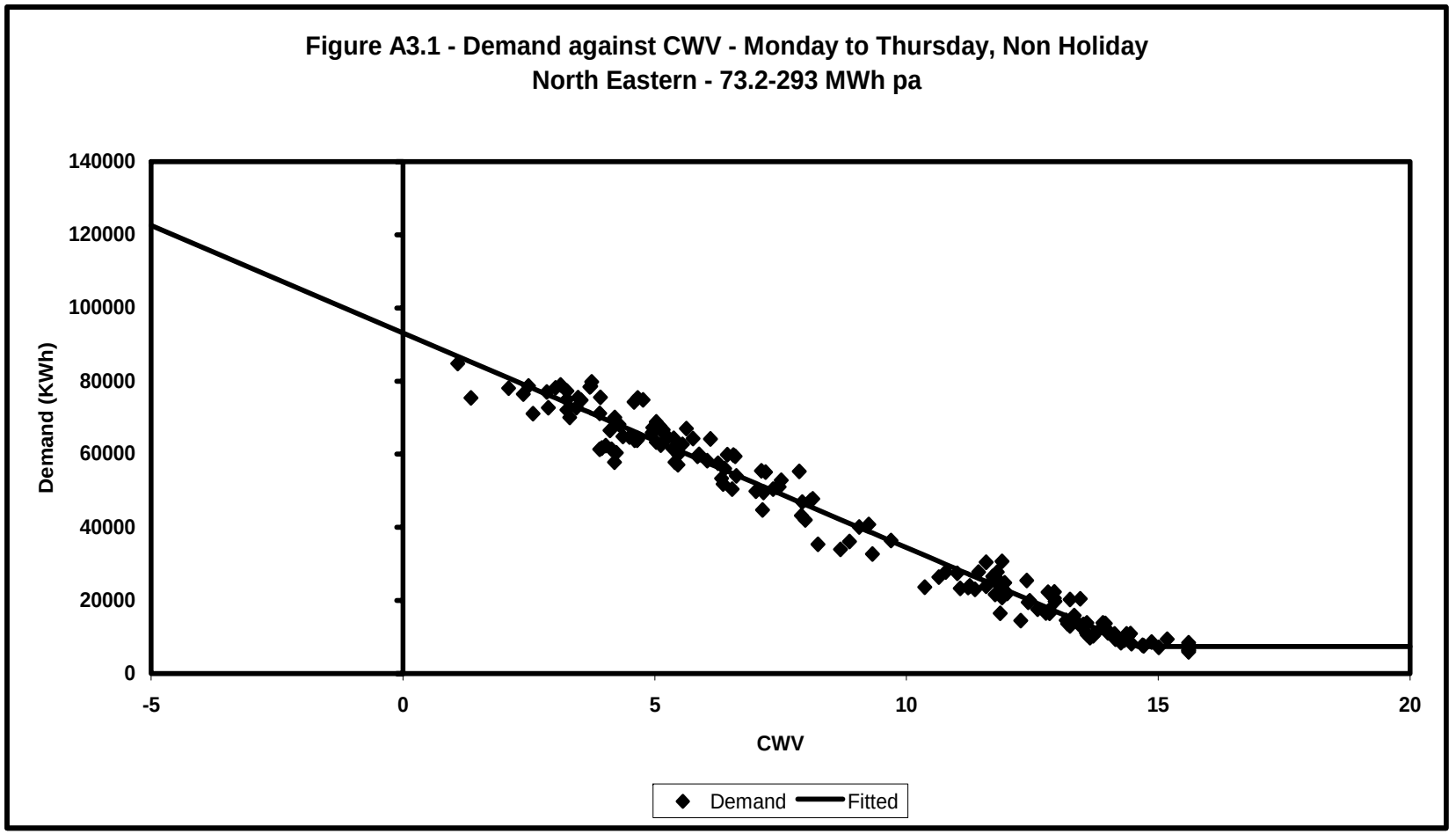
Example of Cut-off in EUC Demand Model



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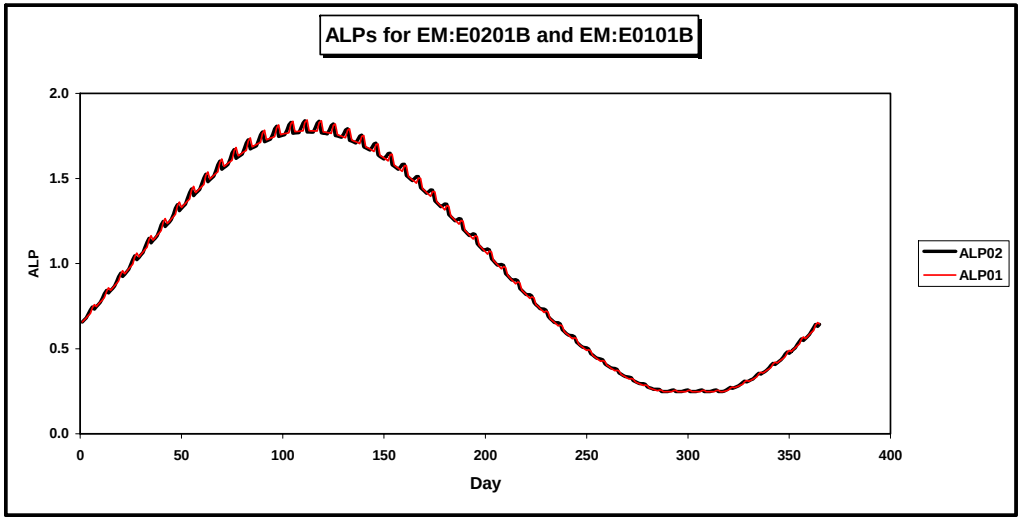
EUC Models – Spring 2001, Spring 2002 & Spring 2003

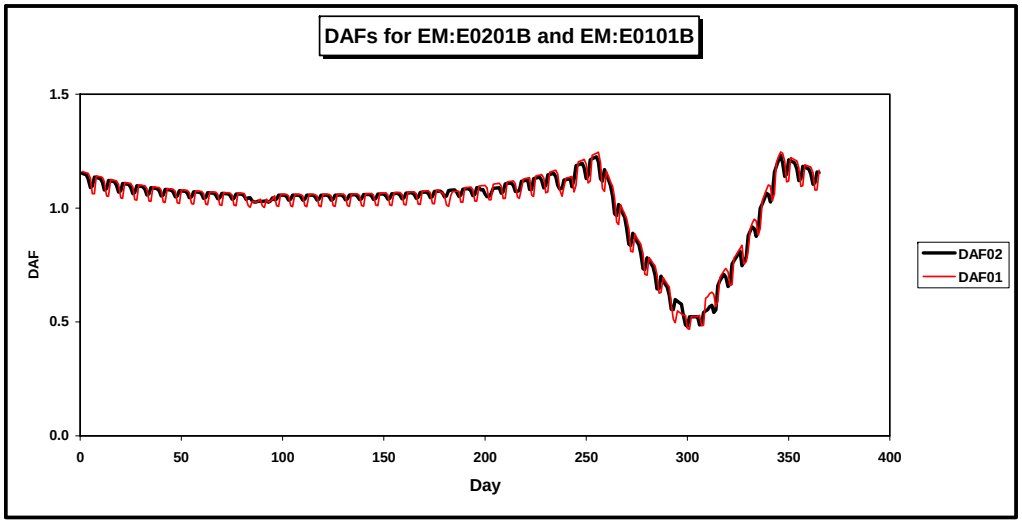
LDZ	Spring 2001 Cut-off Applied ?		Spring 2002 Cut-off Applied ?		Spring 2003 Cut-off Applied ?	
	"01B"	"02B"	"01B"	"02B"	"01B"	"02B"
SC	✓	✓	✓	✓		
NO	✓	✓	✓	✓		✓
NW	✓	✓	✓	✓		✓
NE	✓	✓	✓	✓		
EM	✓	✓	✓	✓		
WM	✓		✓			✓
WN	✓	✓	✓	✓		✓
WS		✓		✓		✓
EA	✓		✓			✓
NT					✓	✓
SE	✓		✓		✓	✓
SO	✓	✓	✓			
SW	✓		✓	✓		

Characteristics of a Cut-off in a EUC Demand Model (1)

- Data shows demand flattening off OR
- Demand model intercepts CWV axis steeply (at less than Max. CWV) so that negative (or very small positive) demands (and hence ALPs) are possible in very warm weather
- Flat demand model implies zero weather sensitivity – however, methodology agreed and applied since Spring 1997 leads to DAF reduction being phased in around the point of change of slope
- Demand model is not date related.
- ALPs and DAFs are date related
- Profile of SNCWVs (and thence SNDs) relates demand model to dates
- Results in reduced DAFs over specific dates

ALP and DAF with Cut-off





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Characteristics of a Cut-off in a EUC Demand Model (2)

- The dates in the summer over which the DAF reduces, may actually experience weather different to the point of cut-off on the demand model
- The DAF will not be appropriate for the conditions that prevail on the day, in particular it will be too low in colder summer weather
- The effect will be most marked in respect of the weather sensitive, high volume EUCs - Bands “01B” and “02B”
- The Scaling Factor has to compensate and does so in a volatile manner over the summer

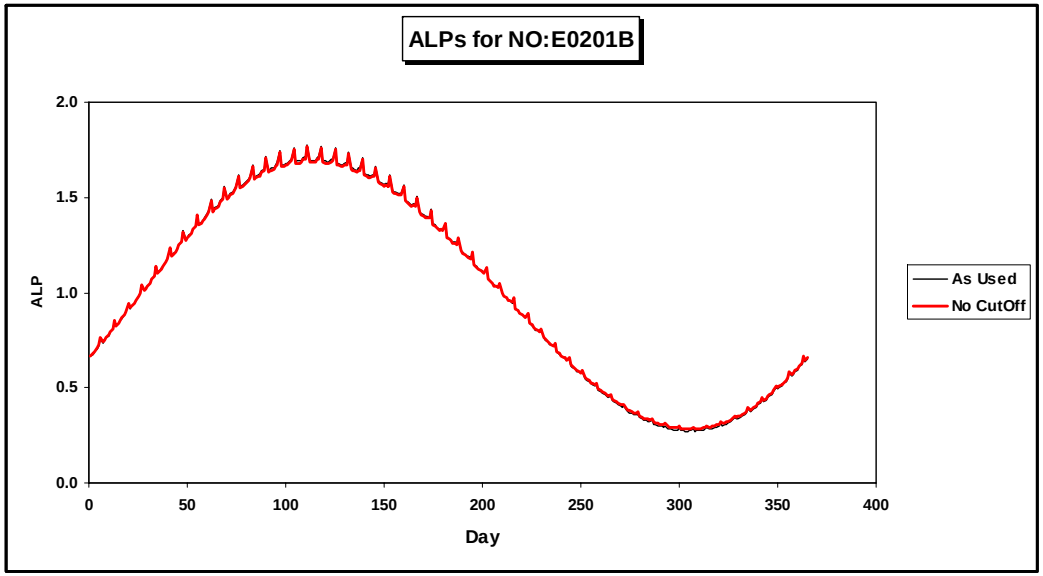
Hypothesis:

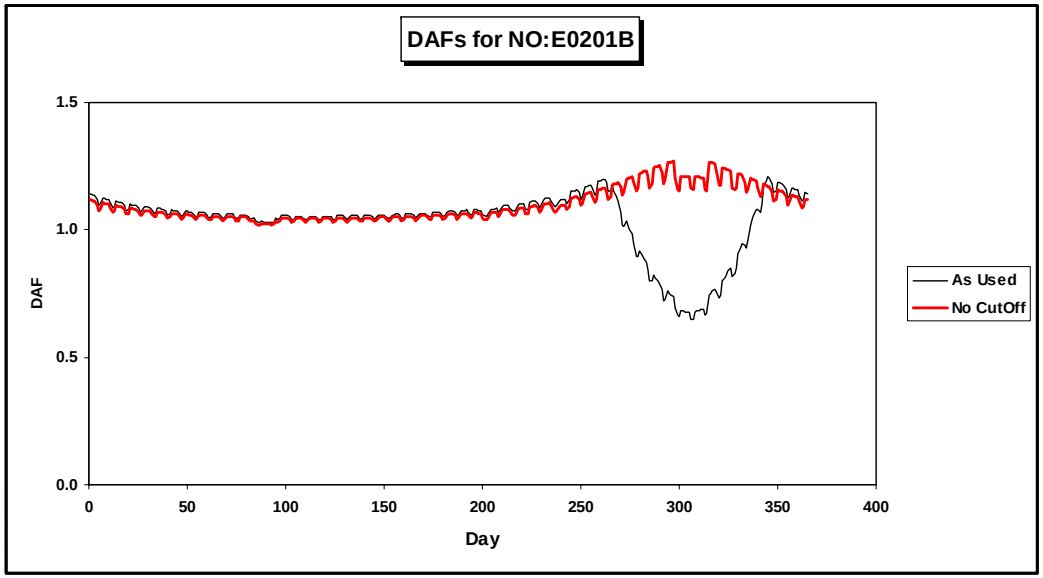
Summer SF volatility is caused in part by reductions to the DAF imposed by modelling summer-cut off and is mainly driven by the impact of this effect on the “01B” and “02B” EUC bands

Test of Hypothesis

- Basis of investigation gas year 2002/03
- Derive cut-off free demand models for all EUCs in bands “01B” and “02B”. (i.e. ignore the established methodology for detecting and applying a cut-off)
- Generate ALPs and DAFs for these bands using the alternative models
- Replicate NDM demand attribution rigorously using alternative ALPs and DAFs

Amended & Original ALPS & DAFs – NO “01B”





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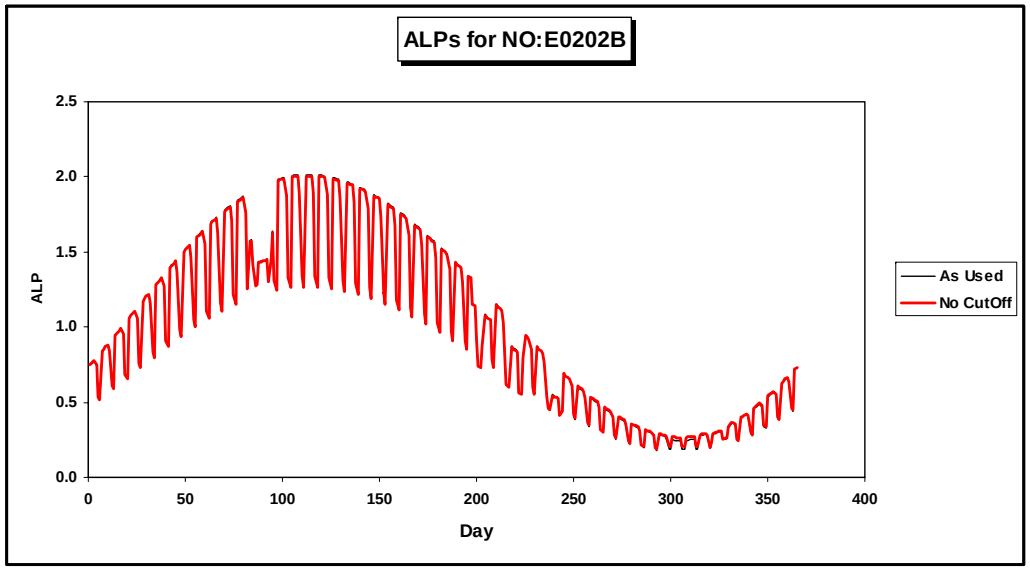
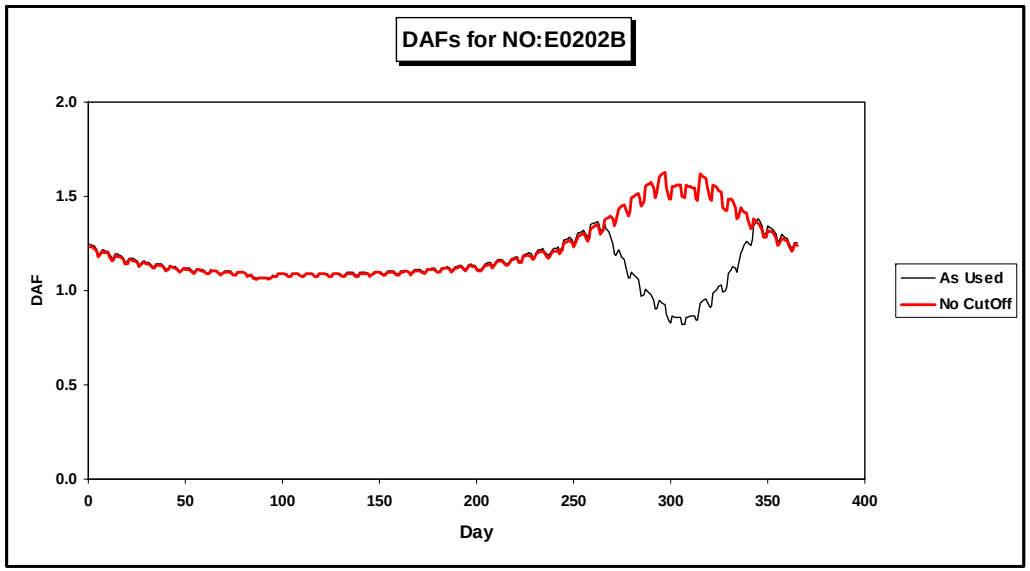
Amended & Original ALPS & DAFs – NO “02B”





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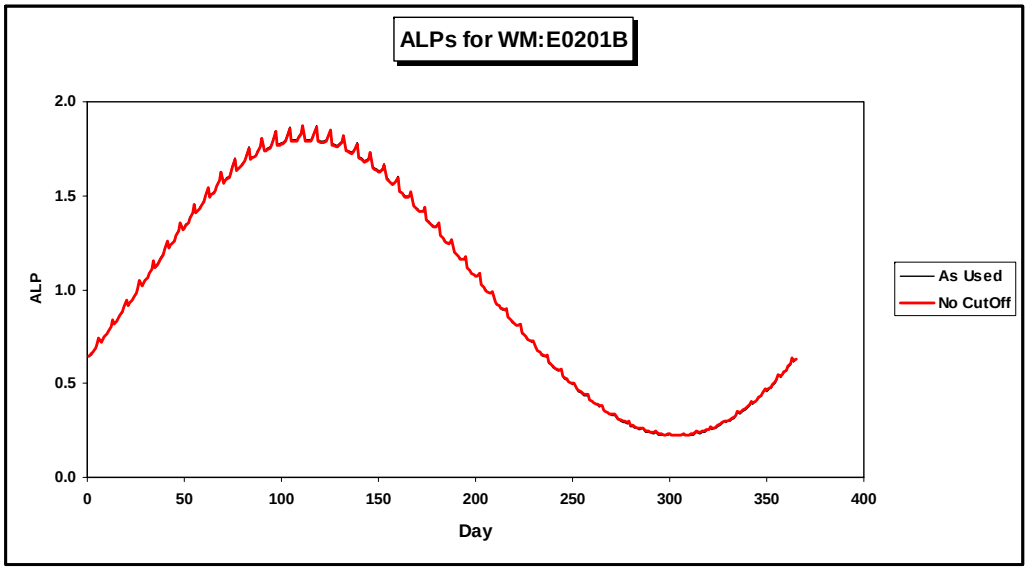
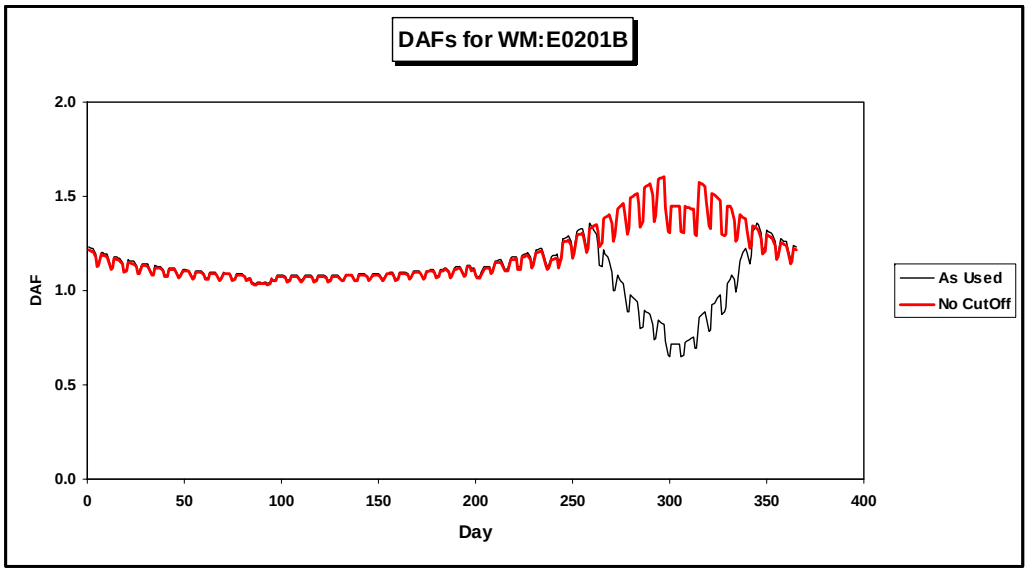
Amended & Original ALPS & DAFs – WM “01B”





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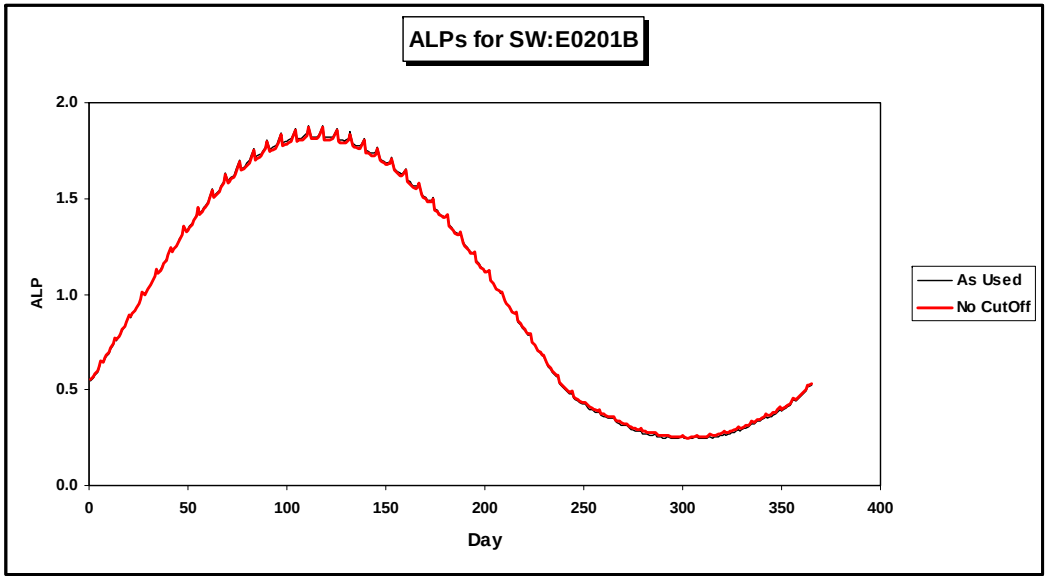
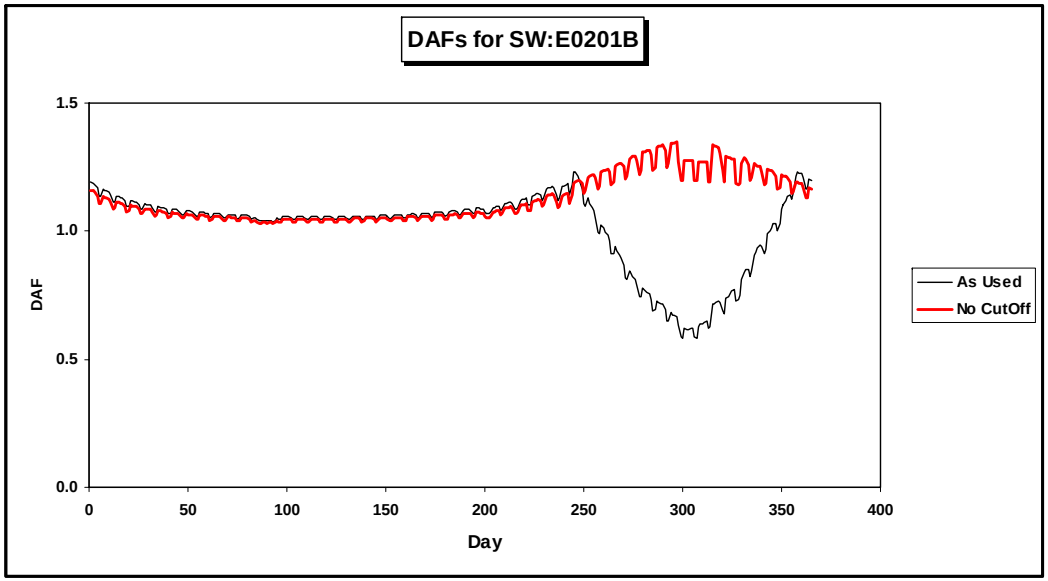
Amended & Original ALPS & DAFs – SW “01B”





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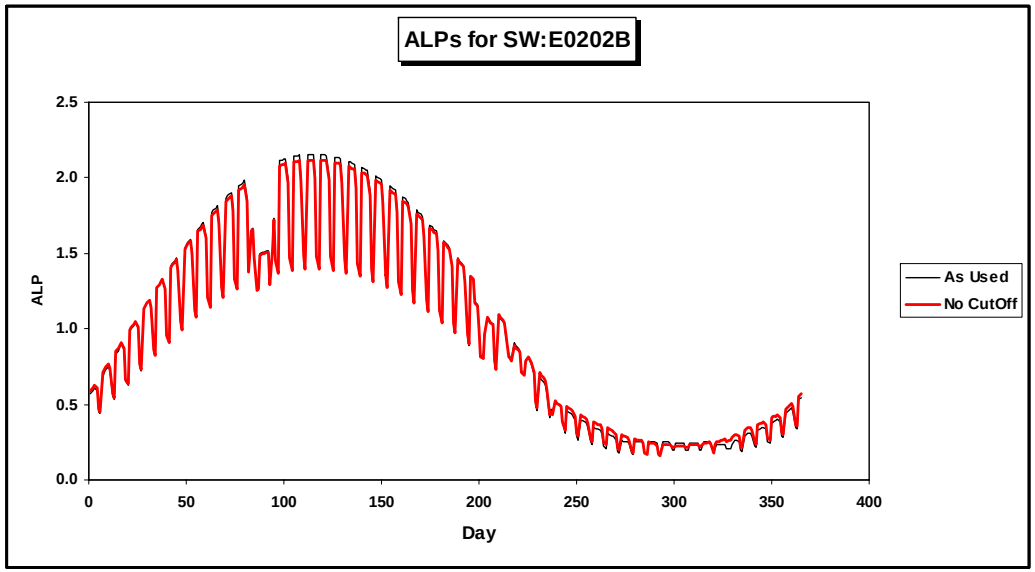
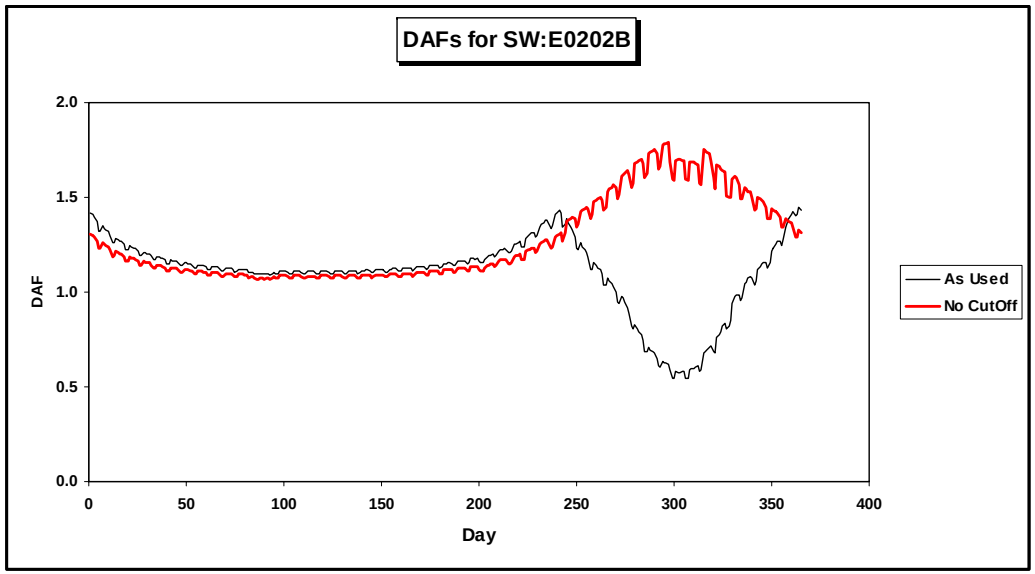
Amended & Original ALPS & DAFs – SW “02B”





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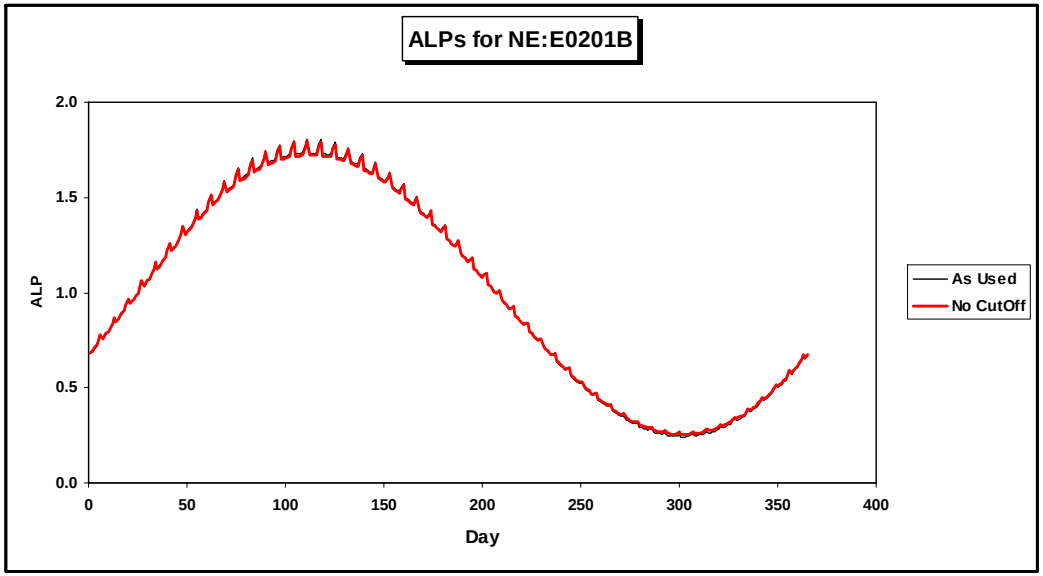
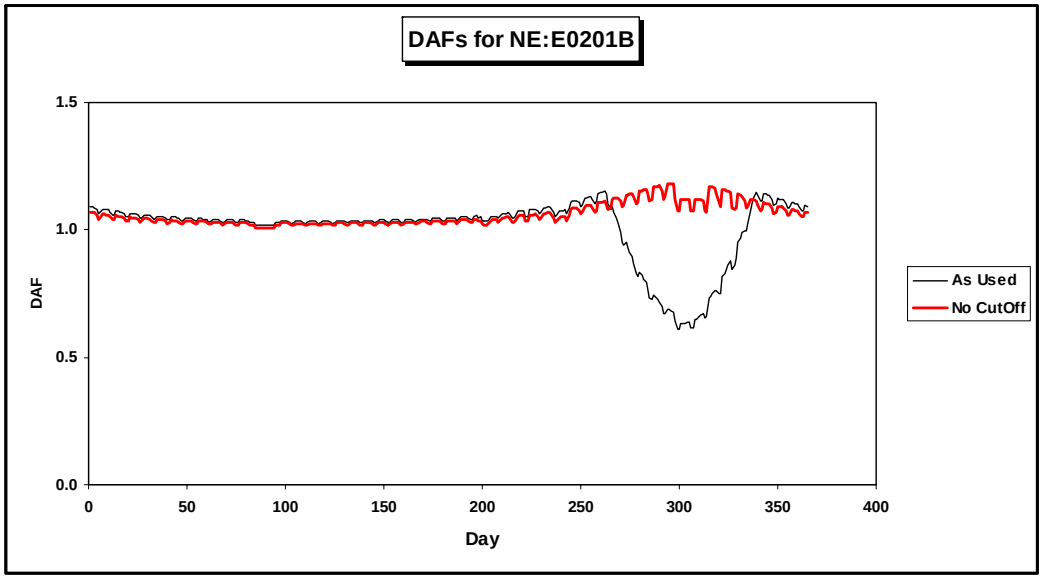
Amended & Original ALPS & DAFs – NE “01B”





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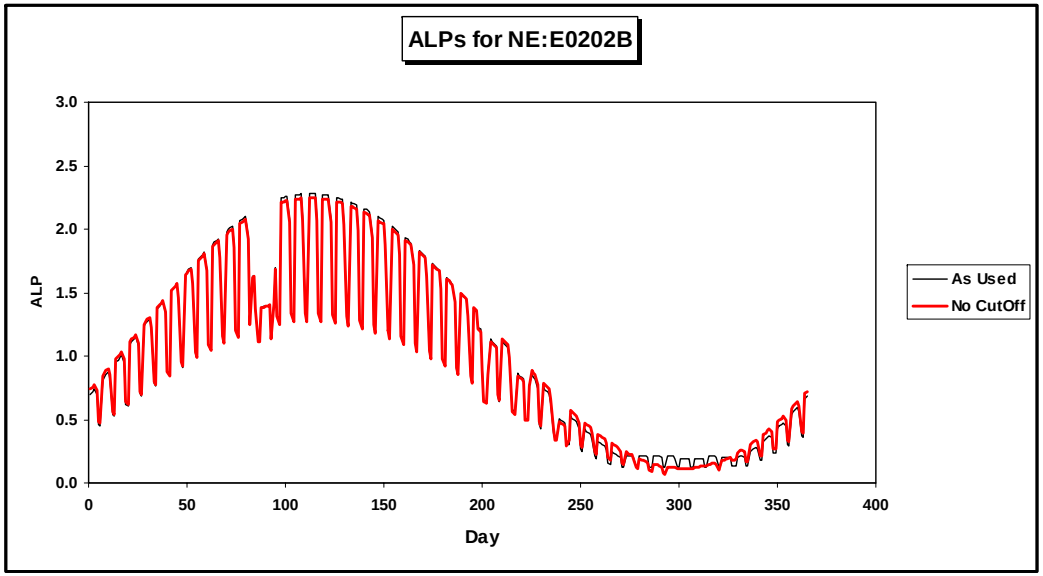
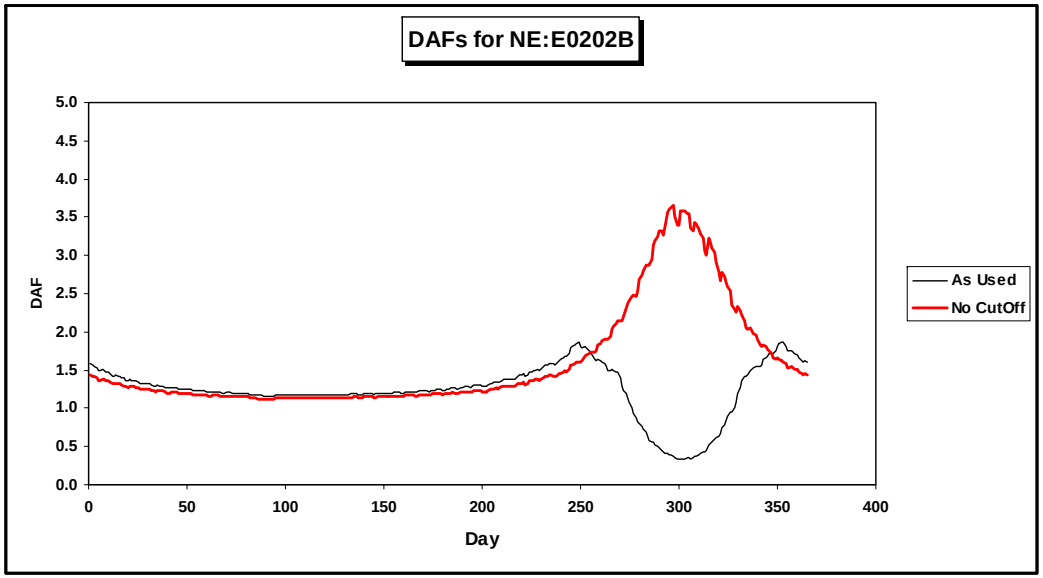
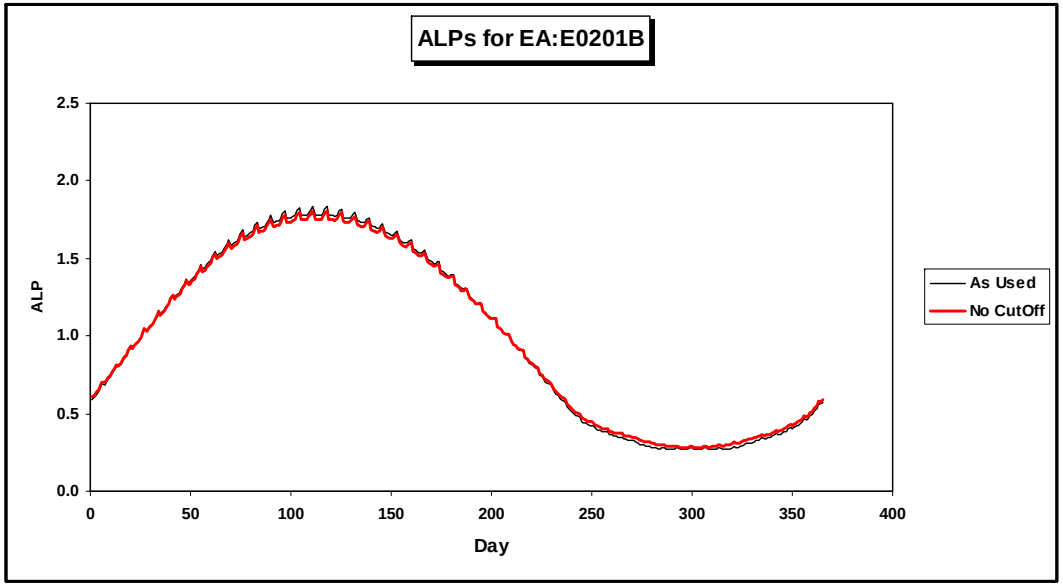
Amended & Original ALPS & DAFs – NE “02B”

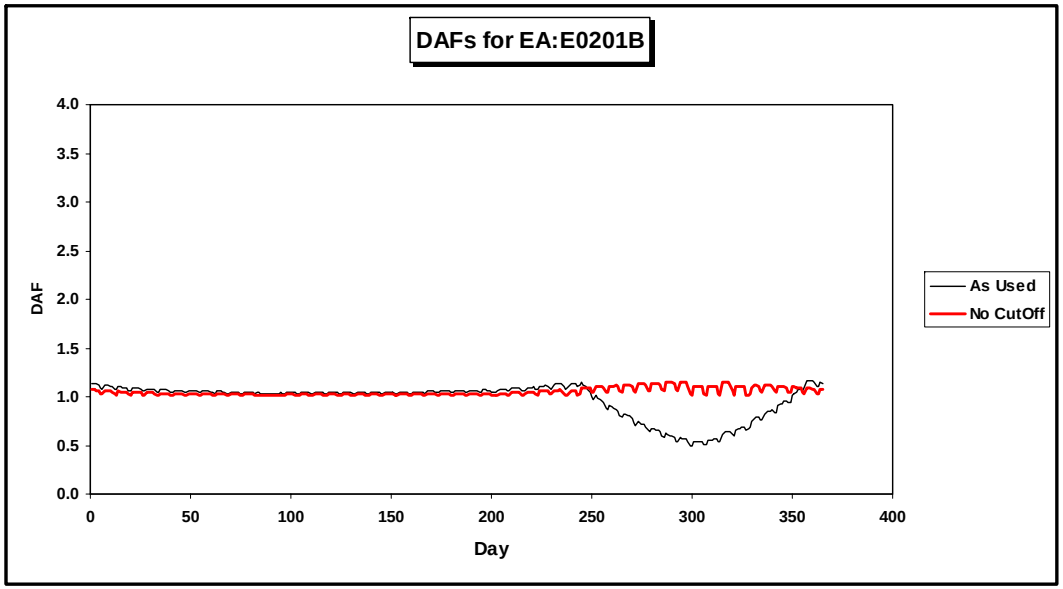




National Grid Transco

Amended & Original ALPS & DAFs – EA “01B”





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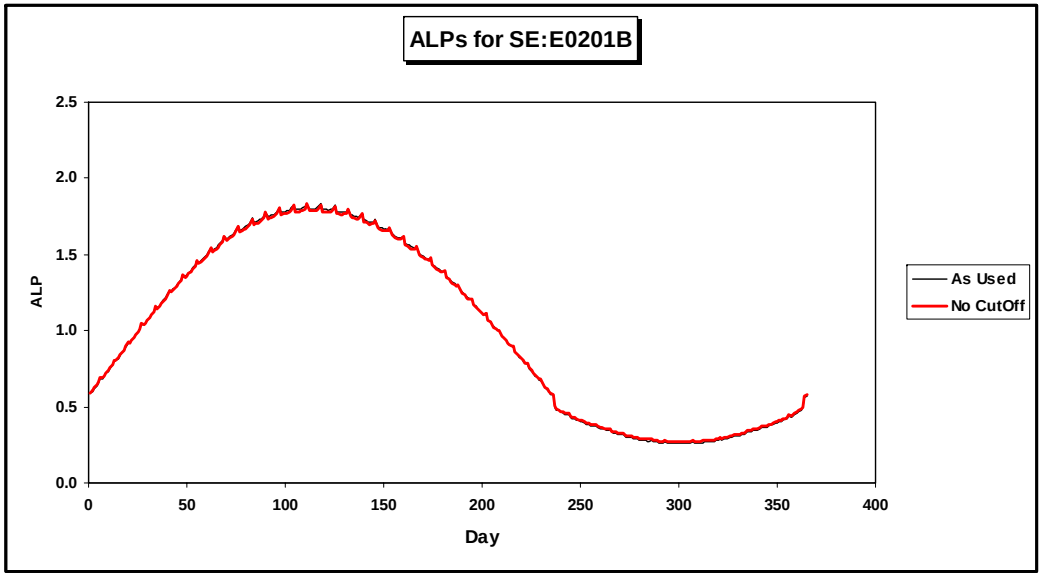
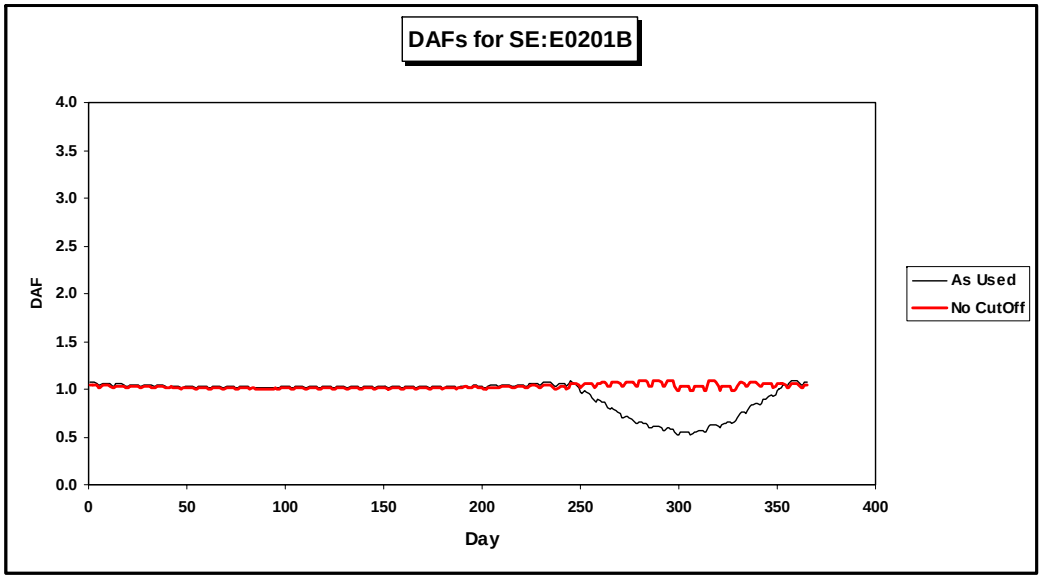
Amended & Original ALPS & DAFs – SE “01B”





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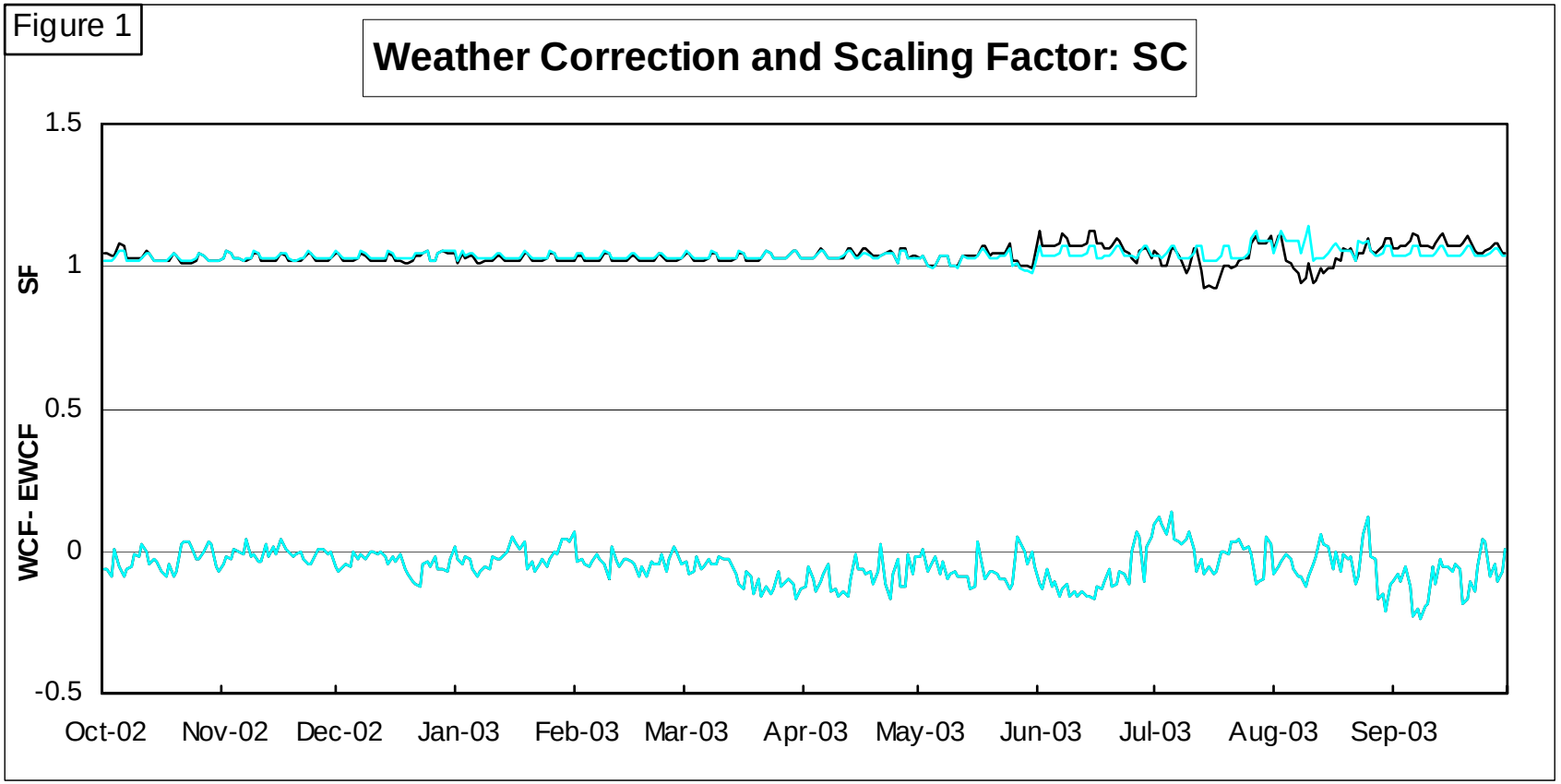
Original and Alternative SFs for SC

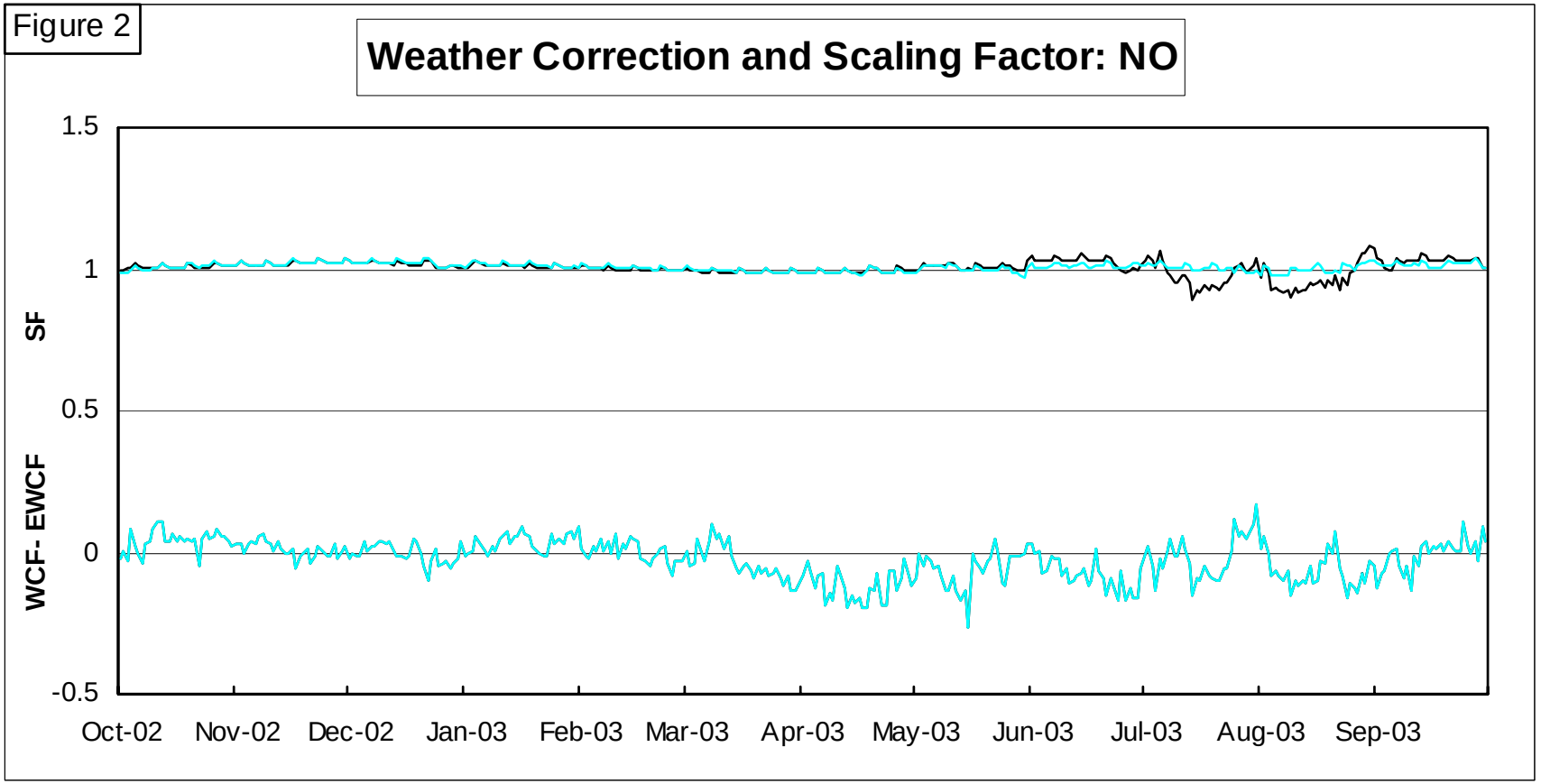
Figure 1



National Grid Transco

Original and Alternative SFs for NO

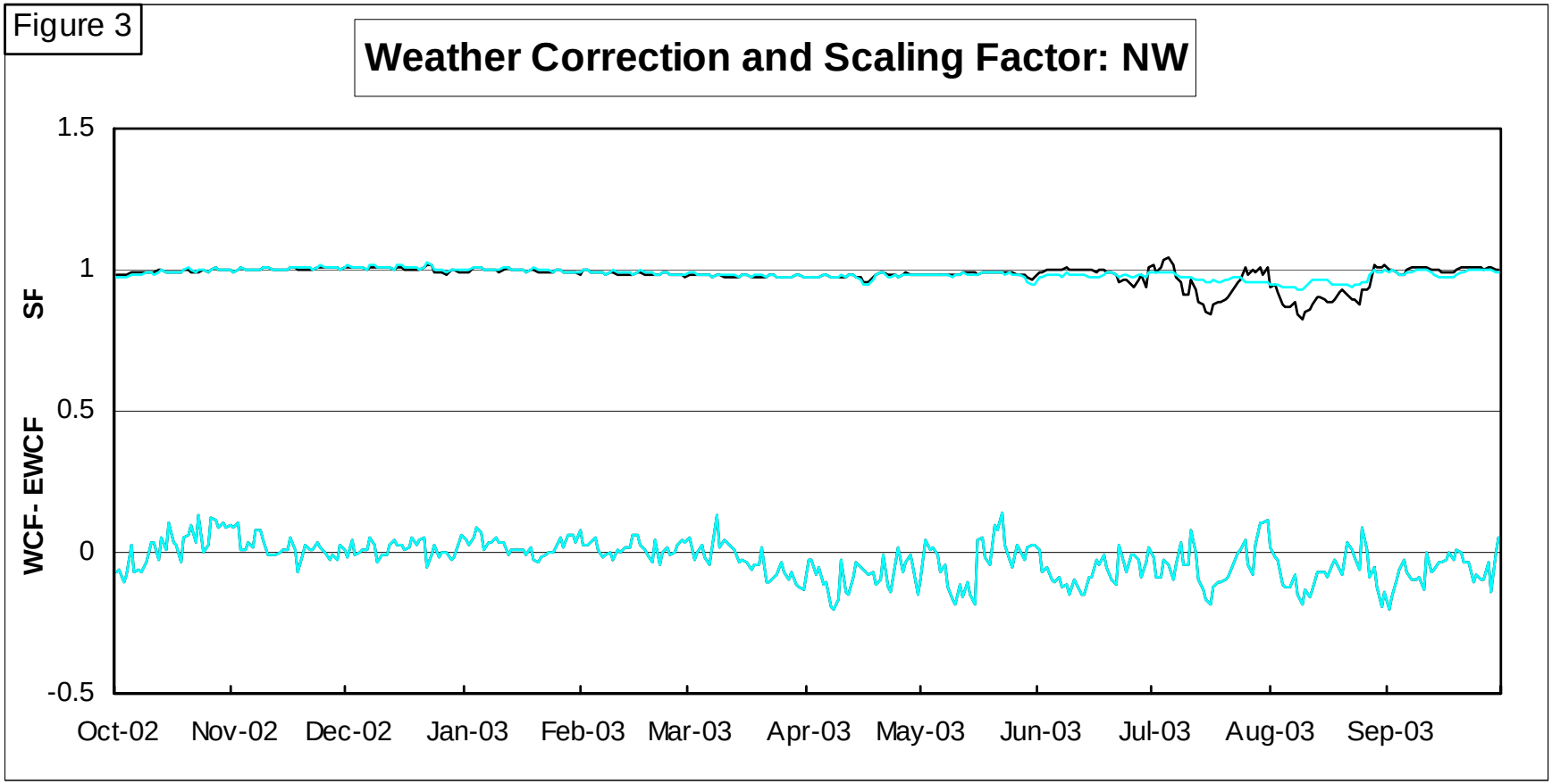
Figure 2



National Grid Transco

Original and Alternative SFs for NW

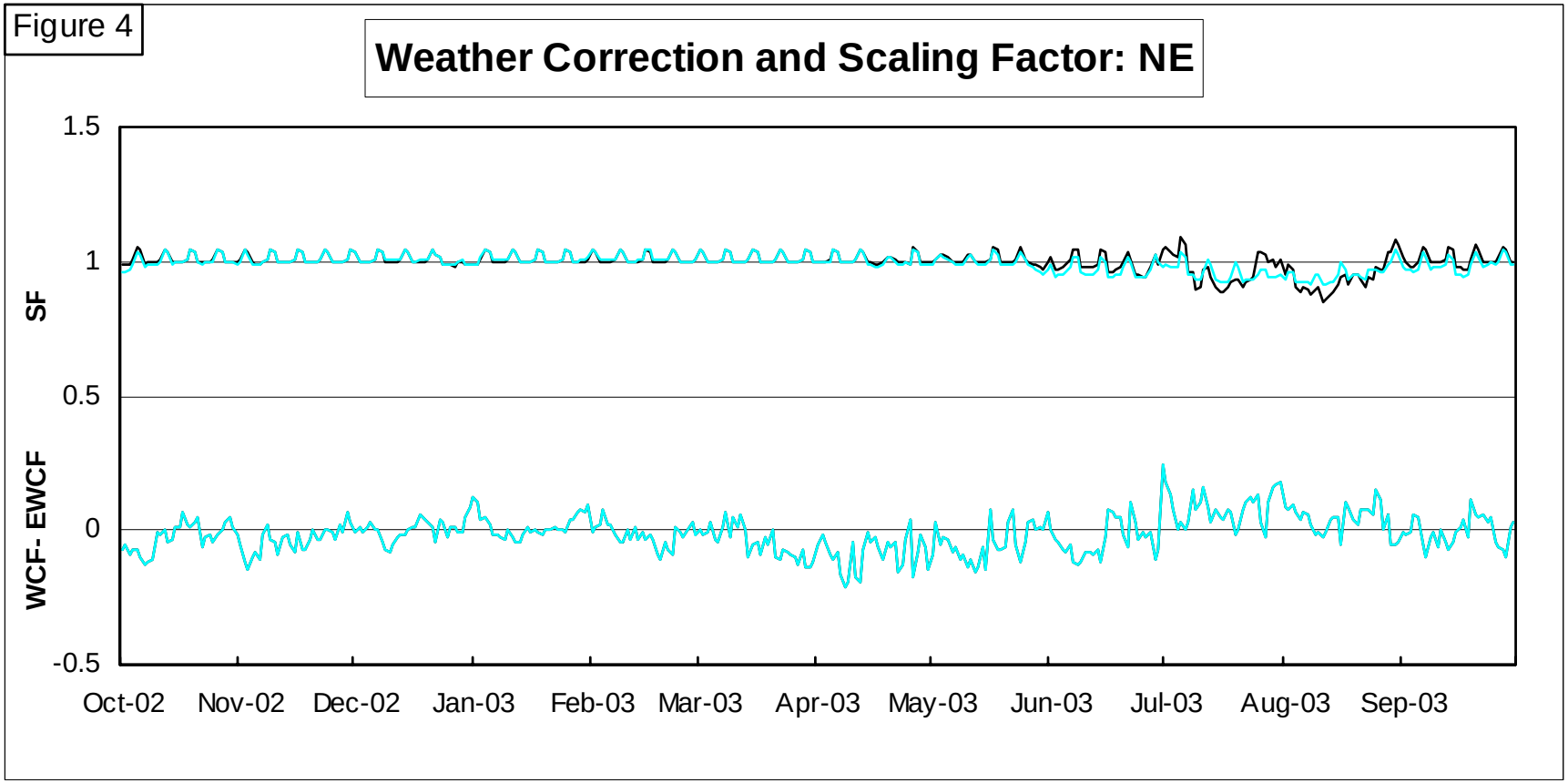
Figure 3



National Grid Transco

Original and Alternative SFs for NE

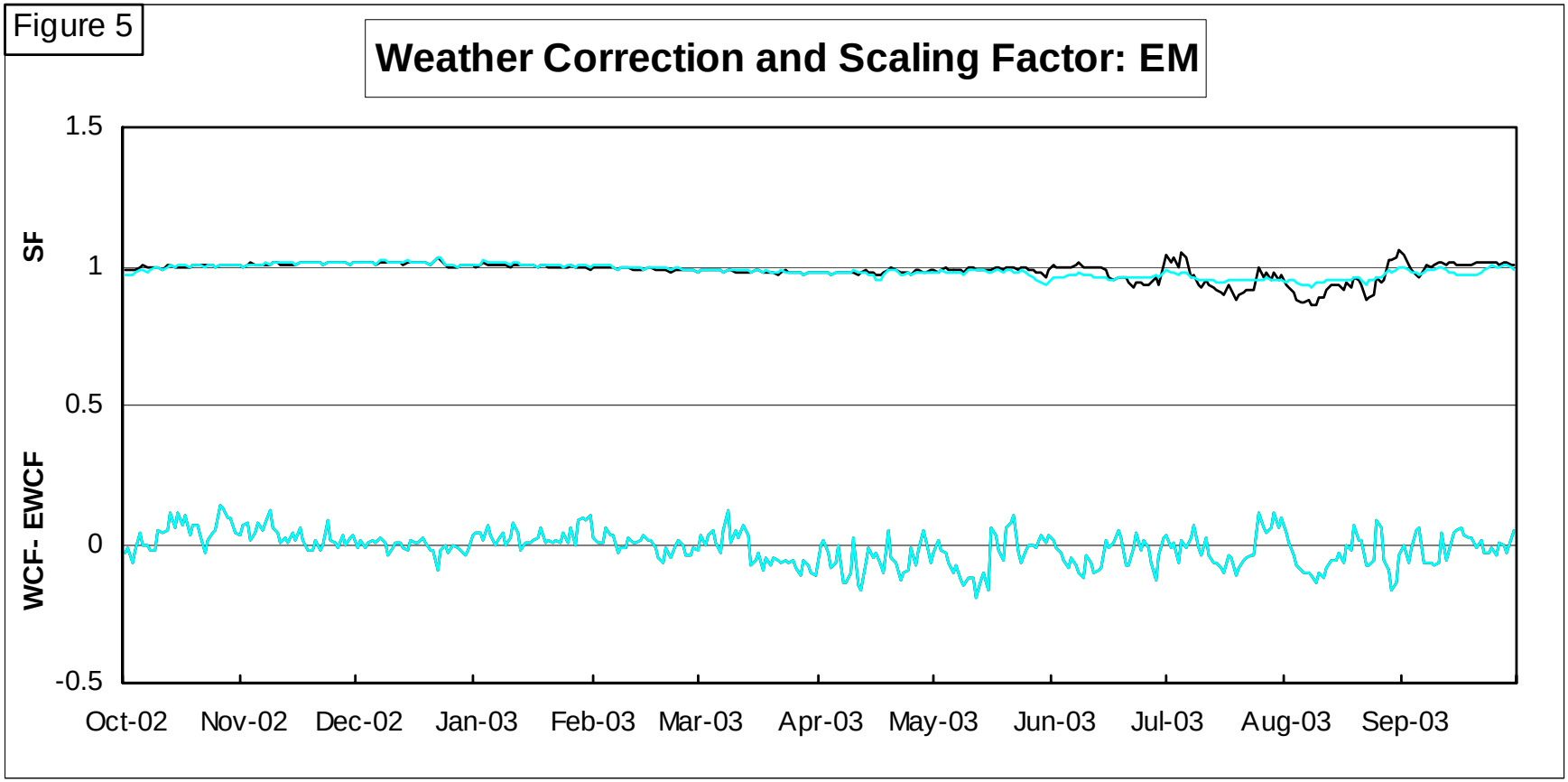
Figure 4



National Grid Transco

Original and Alternative SFs for EM

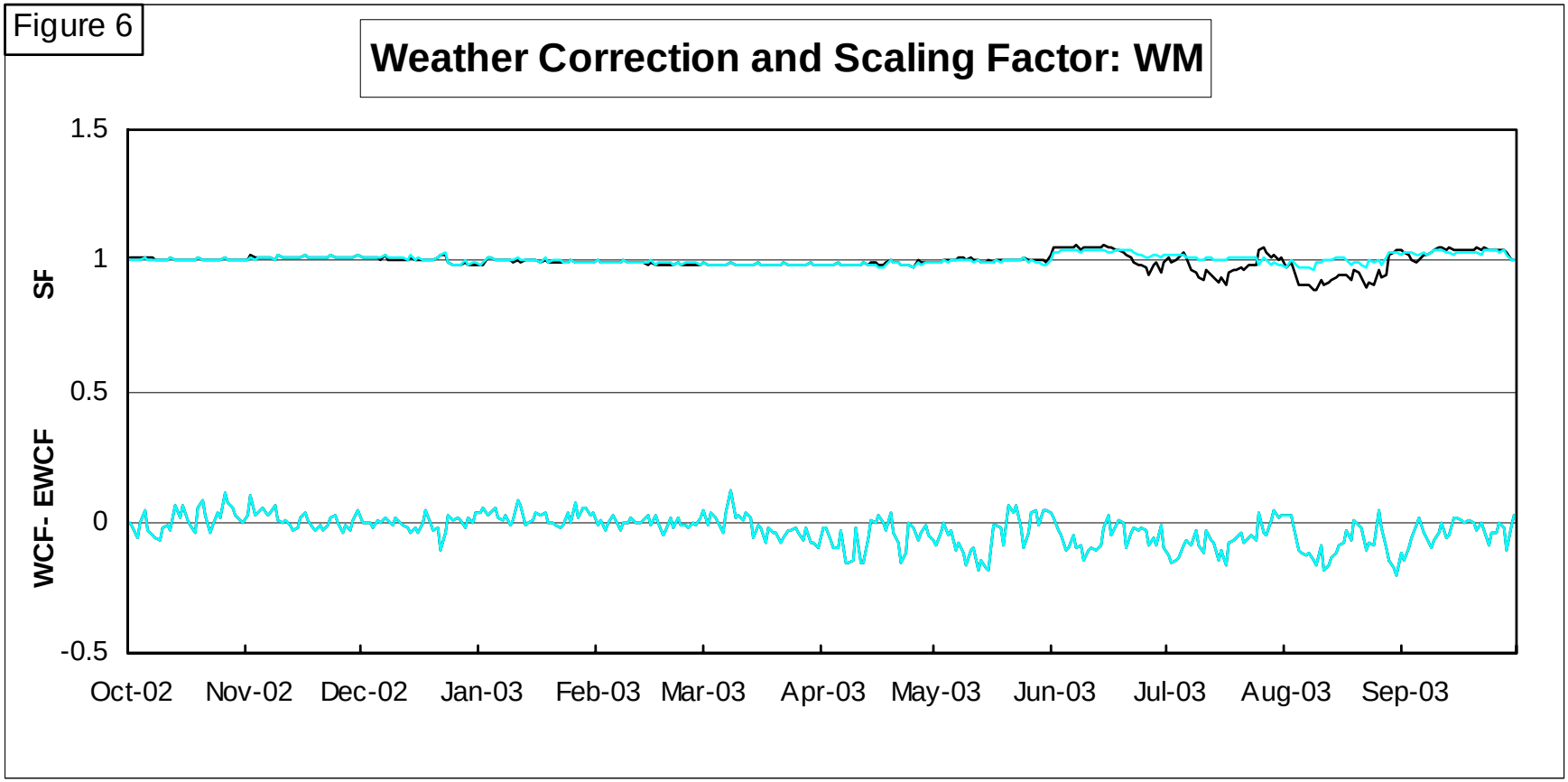
Figure 5



National Grid Transco

Original and Alternative SFs for WM

Figure 6



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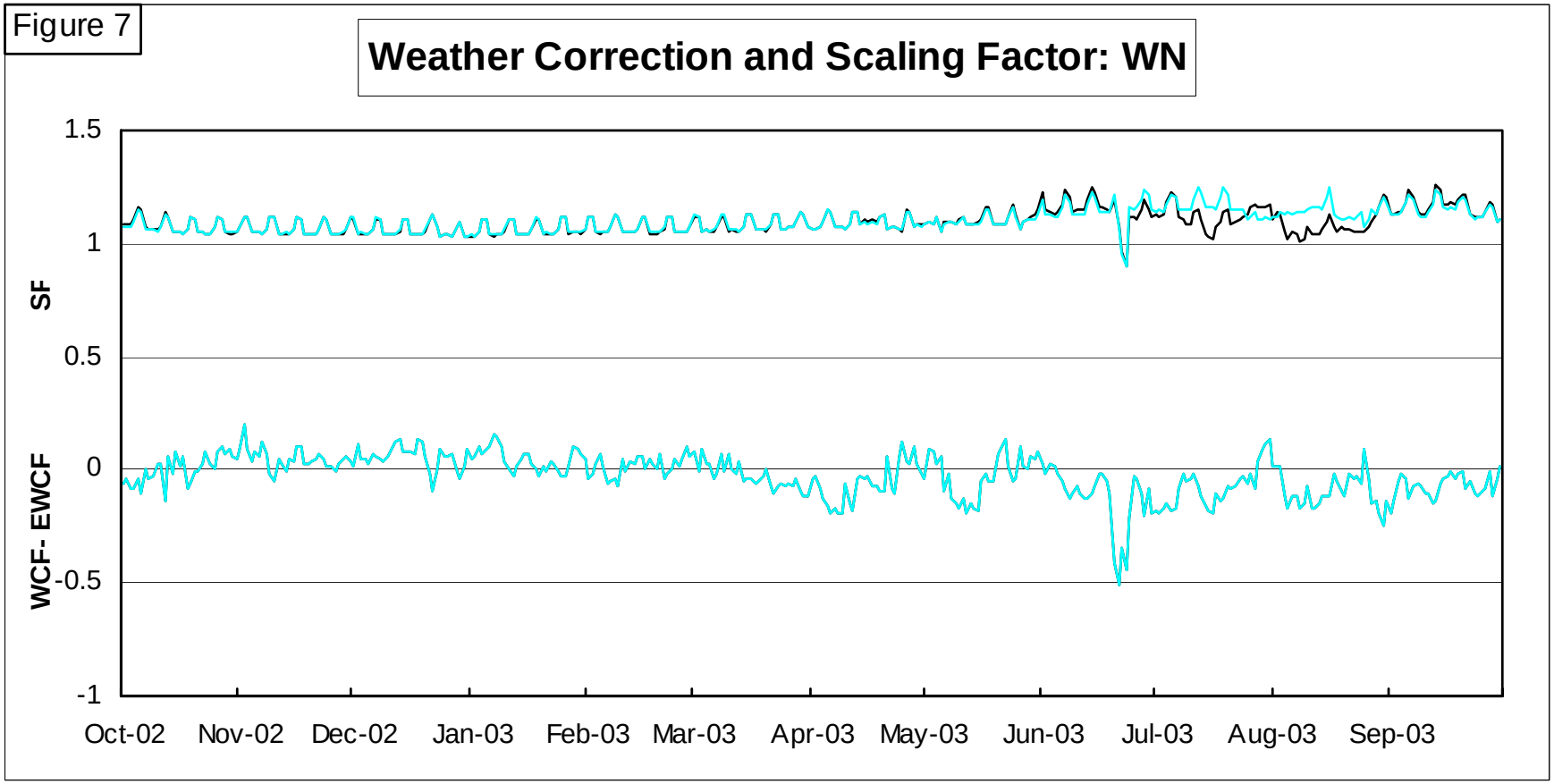
Original and Alternative SFs for WN

Figure 7



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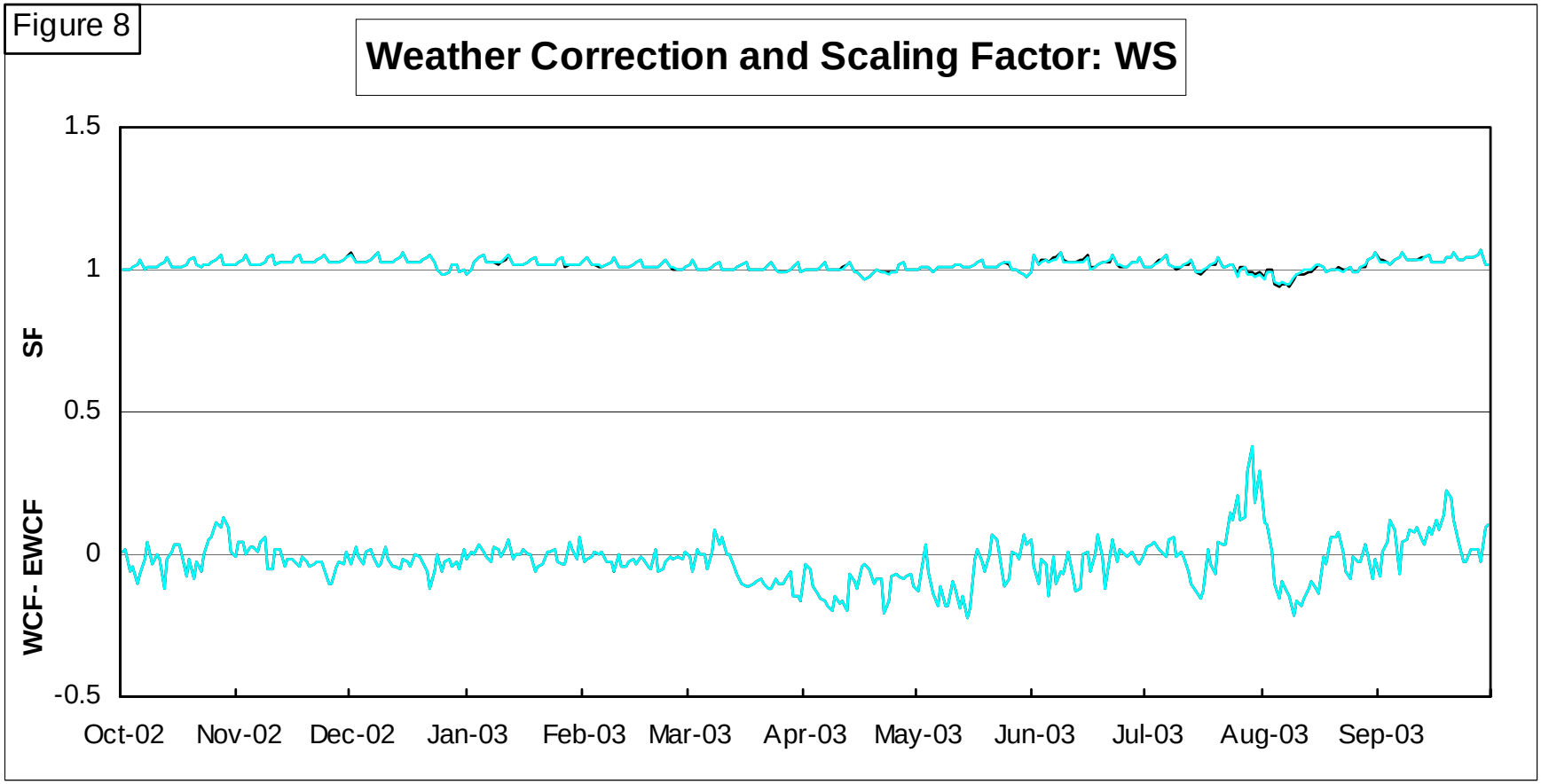
Original and Alternative SFs for WS

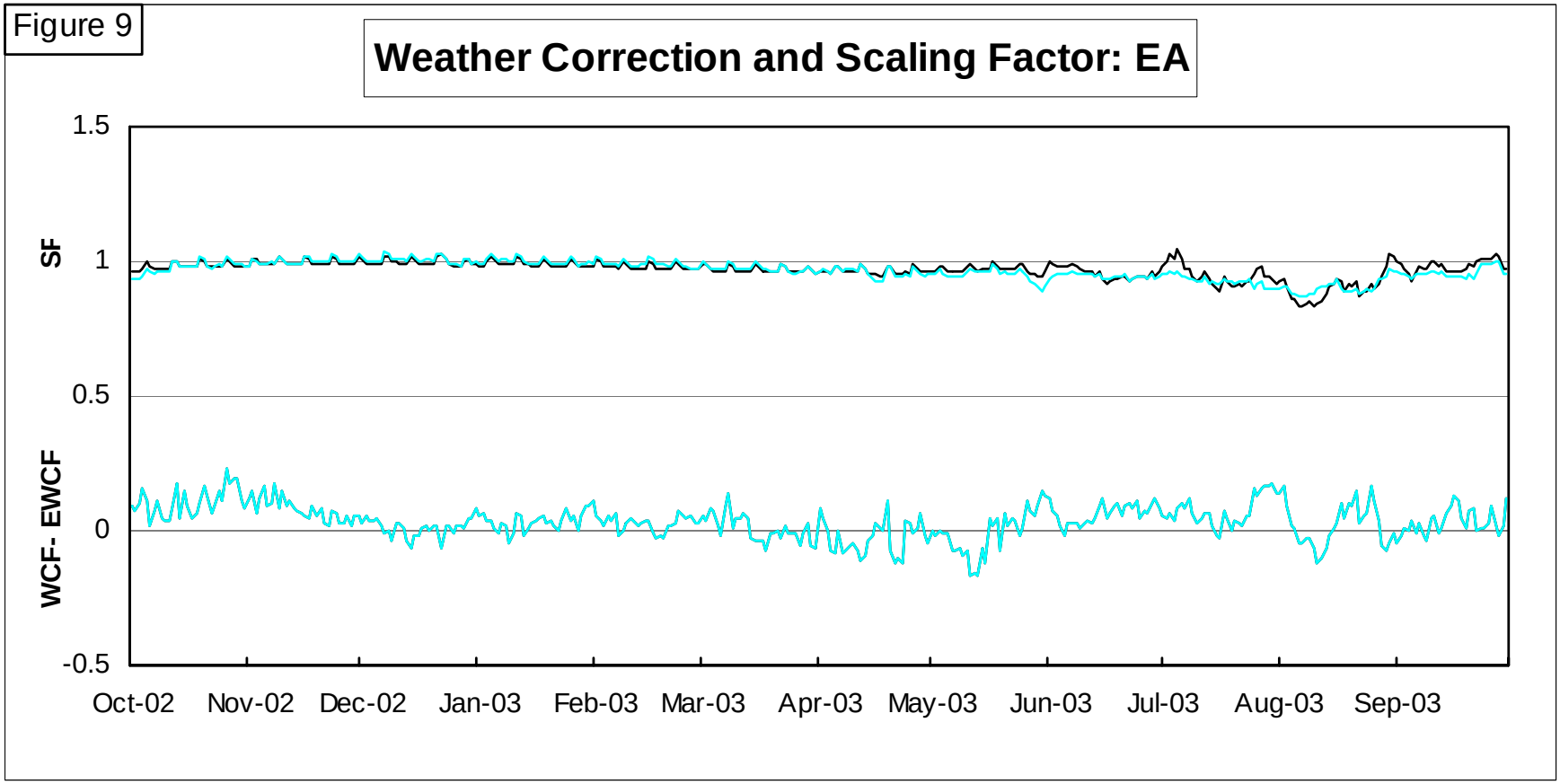
Figure 8



National Grid Transco

Original and Alternative SFs for EA

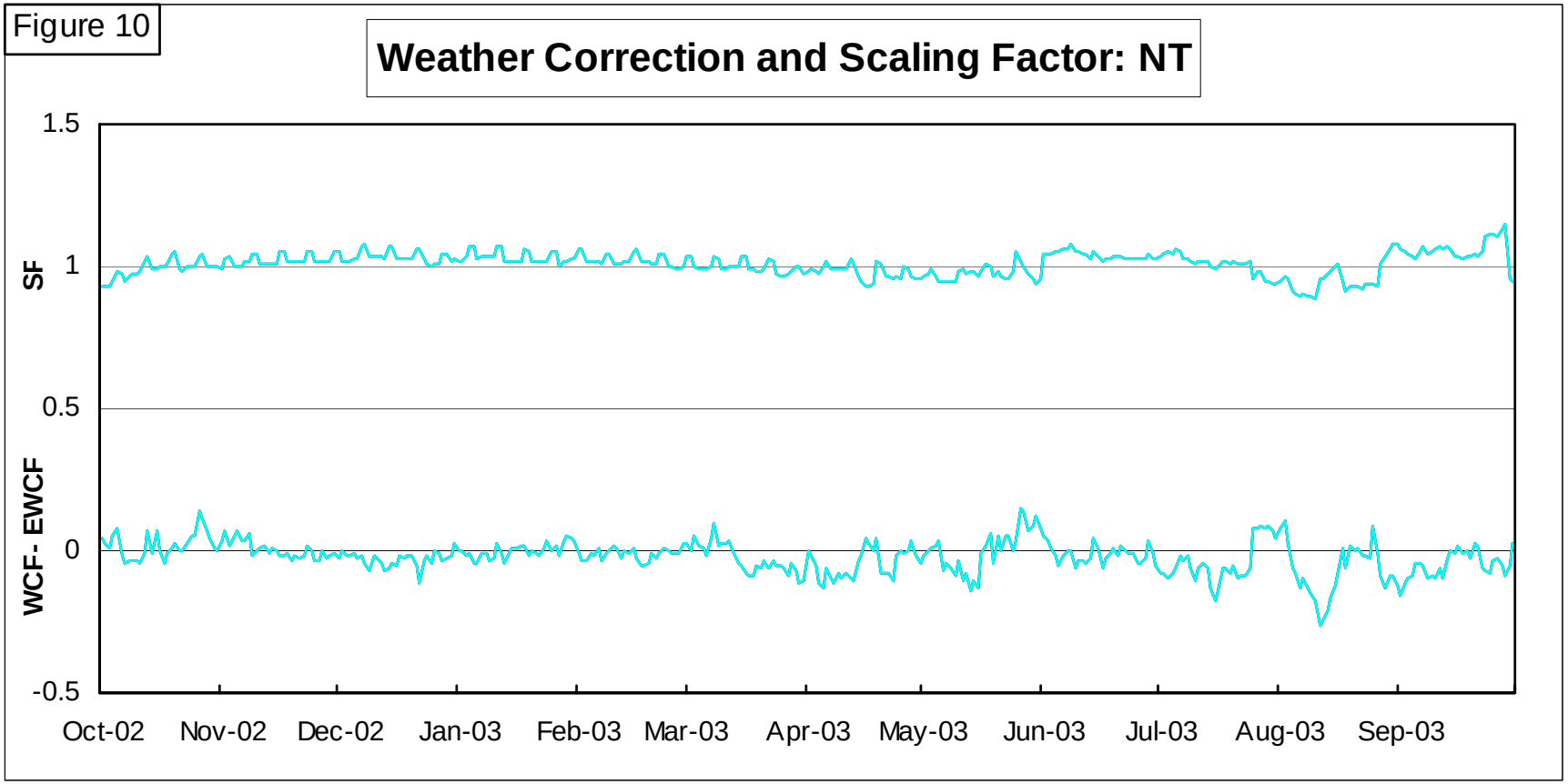
Figure 9



National Grid Transco

Original and Alternative SFs for NT

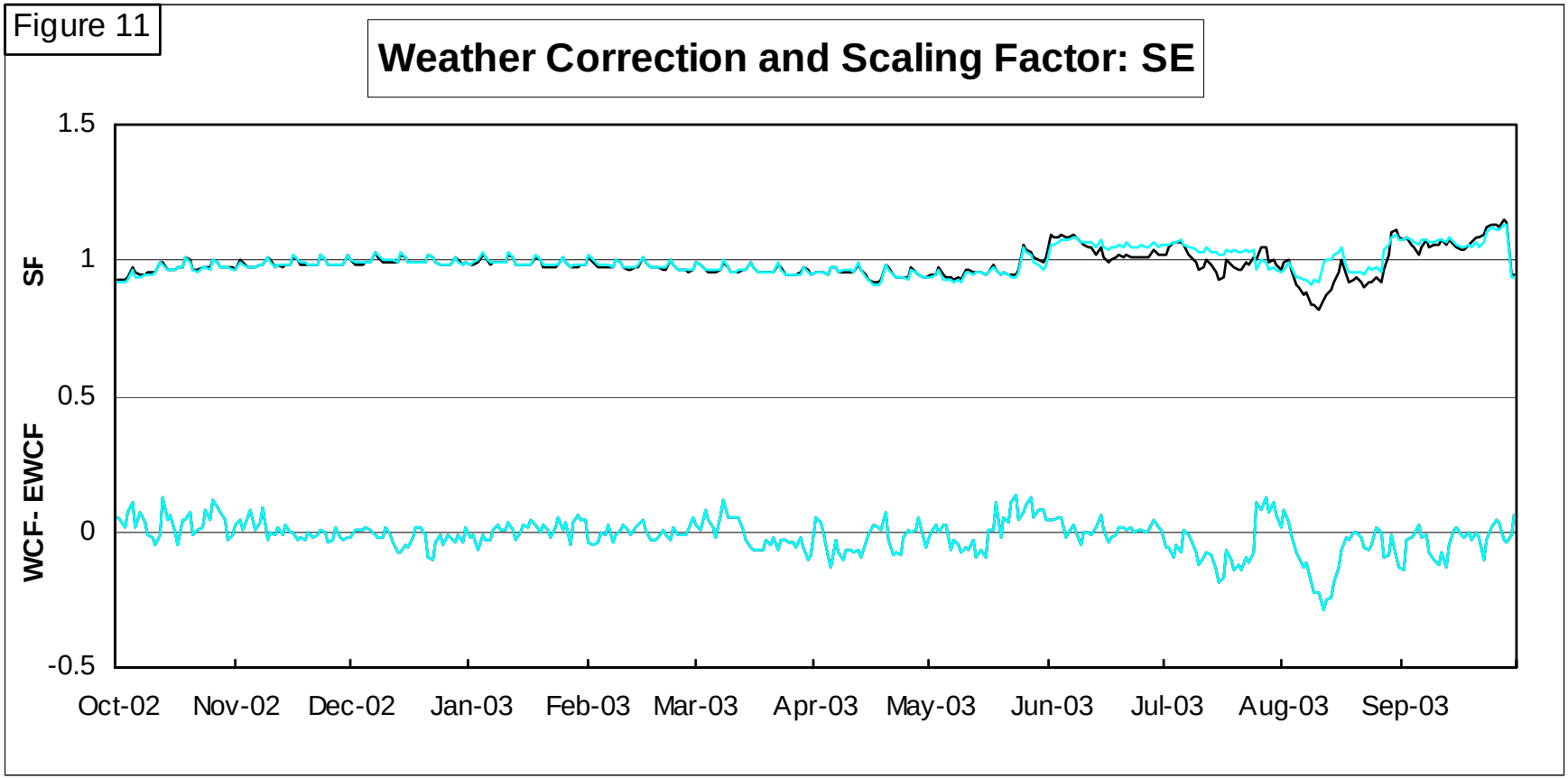
Figure 10



National Grid Transco

Original and Alternative SFs for SE

Figure 11



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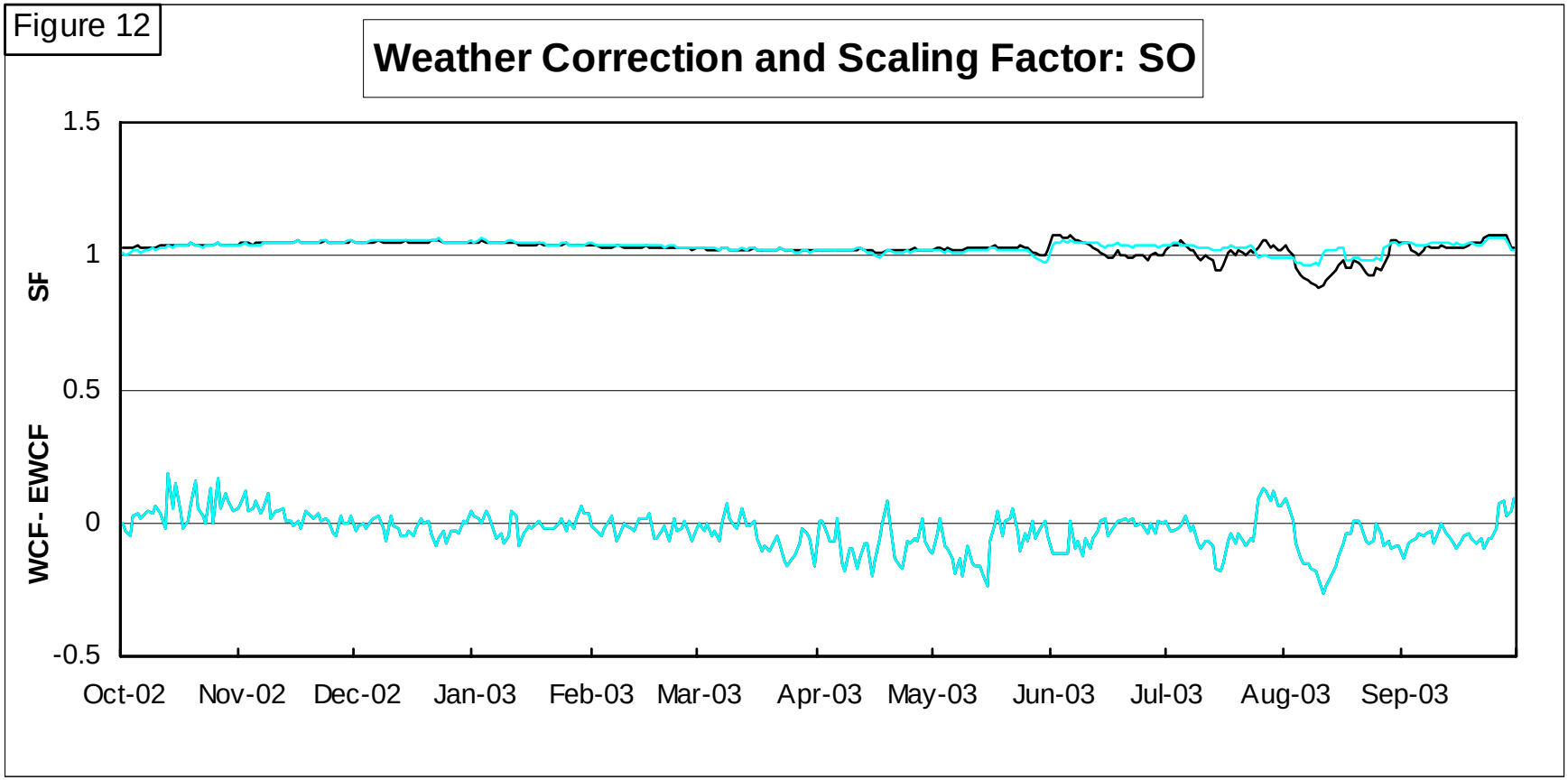
Original and Alternative SFs for SO

Figure 12



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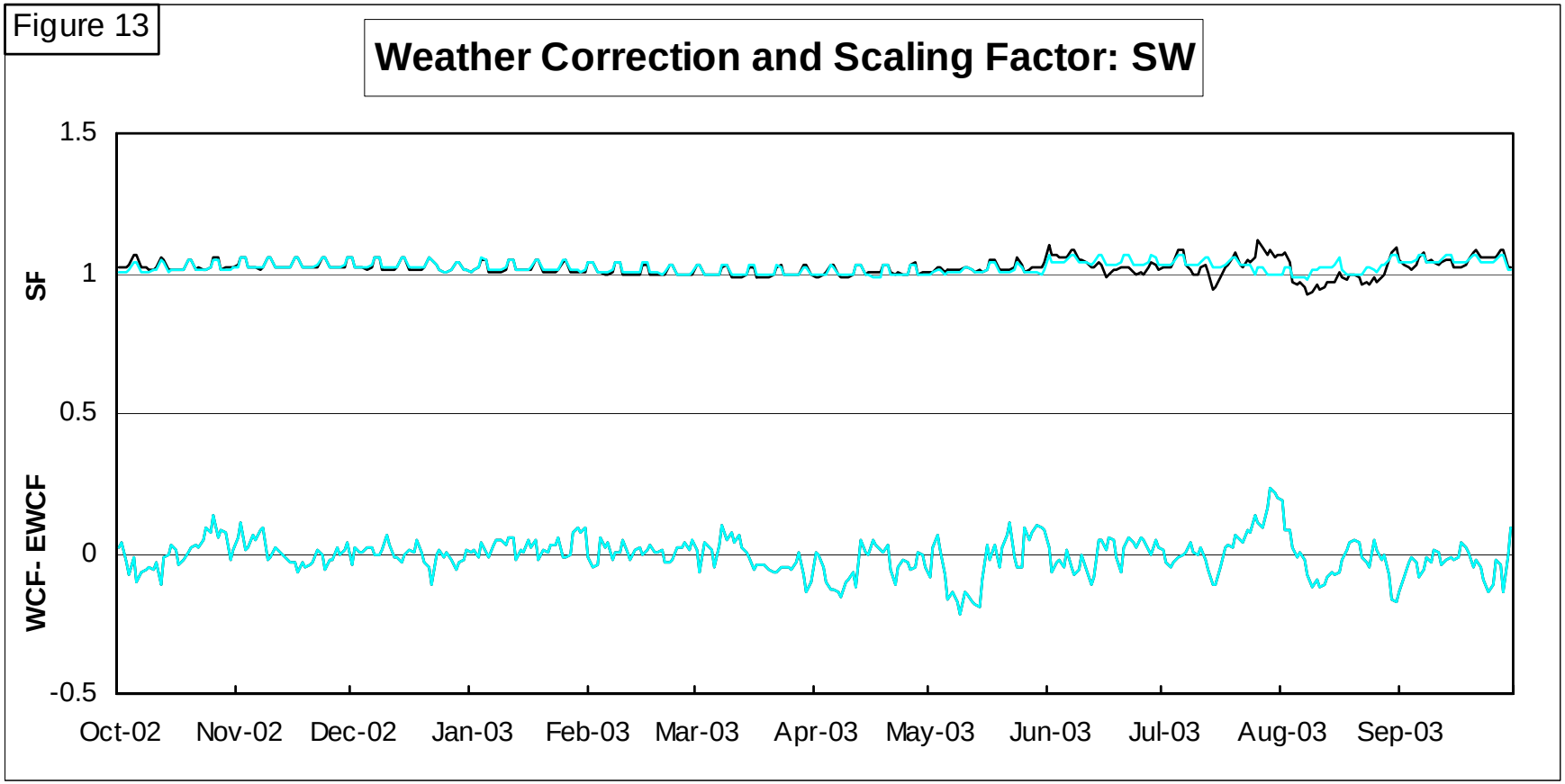
Original and Alternative SFs for SW

Figure 13



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Results

- Reduced SF volatility in the summer (June-Sept) in most LDZs
  i.e. SFs are “better behaved” – fewer instances of large fluctuations
- Effect applies when only “01B” profiles were changed and when both “01B and “02B” profiles were changed
- LDZs for which there were no cut-offs in “01B” in the original models show no change to summer SFs (WS and NT)
- Improvement in summer SF volatility almost as good if alternative profiles are applied only to “01B”
- Imposing “no cut-off” regime did not cause any ALPS to go negative (i.e. for the amended EUCs, SND was always positive)
- Winter ALPs change very slightly when summer ALPs are changed (due to “no cut-off models) – ALPs by definition sum to 365 (or 366) over the year
- Consequential smaller increase in winter SF volatility

Changes in Winter SF Volatility

“01B” & “02B” amended -v- original

LDZ	October	November	December	January	February	March
SC	-0.0050	0.0025	0.0052	0.0068	0.0067	0.0019
NO	0.0006	0.0017	0.0031	0.0036	0.0016	-0.0009
NW	0.0040	0.0010	0.0016	-0.0006	-0.0029	-0.0010
NE	0.0008	0.0000	0.0015	0.0022	0.0025	0.0005
EM	0.0072	0.0020	0.0040	0.0034	-0.0042	-0.0014
WM	-0.0020	0.0006	0.0006	-0.0005	-0.0019	-0.0006
WN	-0.0027	0.0012	0.0026	0.0029	0.0029	0.0009
WS	-0.0003	-0.0001	0.0002	0.0003	0.0002	-0.0001
EA	0.0099	0.0005	0.0023	-0.0015	-0.0067	-0.0031
NT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0054	-0.0001	-0.0006	-0.0021	-0.0035	-0.0010
SO	-0.0040	0.0007	0.0037	0.0053	0.0051	0.0020
SW	-0.0054	0.0000	0.0031	0.0040	0.0022	-0.0003
AVG	0.0006	0.0008	0.0021	0.0018	0.0002	-0.0002

Changes in Winter SF Volatility

“01B” only amended –v- original

LDZ	October	November	December	January	February	March
SC	-0.0050	0.0023	0.0049	0.0063	0.0061	0.0017
NO	0.0005	0.0016	0.0030	0.0035	0.0015	-0.0008
NW	0.0037	0.0009	0.0015	-0.0006	-0.0027	-0.0009
NE	-0.0001	0.0004	0.0014	0.0020	0.0023	0.0008
EM	0.0071	0.0020	0.0039	0.0033	-0.0041	-0.0013
WM	-0.0020	0.0006	0.0006	-0.0005	-0.0019	-0.0006
WN	-0.0026	0.0011	0.0024	0.0027	0.0027	0.0008
WS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
EA	0.0099	0.0005	0.0023	-0.0015	-0.0067	-0.0031
NT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0054	-0.0001	-0.0006	-0.0021	-0.0035	-0.0010
SO	-0.0040	0.0007	0.0037	0.0053	0.0051	0.0020
SW	-0.0043	0.0003	0.0027	0.0034	0.0019	-0.0001
AVG	0.0007	0.0008	0.0020	0.0017	0.0001	-0.0002

Changes in Summer SF Volatility

“01B” & “02B” amended -v- original

Changes in RMS Deviations of SF from 1				
LDZ	June	July	August	September
SC	-0.0269	0.0025	0.0157	-0.0272
NO	-0.0164	-0.0349	-0.0431	-0.0121
NW	-0.0044	-0.0409	-0.0551	0.0061
NE	0.0067	-0.0140	-0.0263	-0.0003
EM	0.0002	-0.0210	-0.0390	0.0047
WM	-0.0094	-0.0298	-0.0519	-0.0066
WN	-0.0003	0.0338	0.0528	-0.0125
WS	-0.0005	0.0013	-0.0034	-0.0012
EA	0.0072	0.0102	-0.0093	0.0162
NT	0.0000	0.0000	0.0000	0.0000
SE	0.0098	0.0048	-0.0435	-0.0014
SO	0.0049	-0.0011	-0.0381	0.0008
SW	0.0030	-0.0176	-0.0155	-0.0012
AVG	-0.0020	-0.0082	-0.0197	-0.0027

“01B” only amended –v- original

Changes in RMS Deviations from 1				
LDZ	June	July	August	September
SC	-0.0256	0.0019	0.0135	-0.0255
NO	-0.0162	-0.0350	-0.0416	-0.0118
NW	-0.0042	-0.0383	-0.0507	0.0056
NE	0.0045	-0.0015	-0.0114	-0.0017
EM	0.0013	-0.0191	-0.0355	0.0046
WM	-0.0094	-0.0298	-0.0519	-0.0066
WN	-0.0011	0.0293	0.0467	-0.0119
WS	0.0000	0.0000	-0.0001	0.0000
EA	0.0072	0.0102	-0.0093	0.0162
NT	0.0000	0.0000	0.0000	0.0000
SE	0.0098	0.0048	-0.0435	-0.0014
SO	0.0049	-0.0011	-0.0381	0.0008
SW	0.0041	-0.0196	-0.0156	0.0005
AVG	-0.0019	-0.0076	-0.0183	-0.0024

EUC Models – Spring 2001, Spring 2002 & Spring 2003

LDZ	Spring 2001 Cut-off Applied ?		Spring 2002 Cut-off Applied ?		Spring 2003 Cut-off Applied ?	
	"01B"	"02B"	"01B"	"02B"	"01B"	"02B"
SC	✓	✓	✓	✓		
NO	✓	✓	✓	✓		✓
NW	✓	✓	✓	✓		✓
NE	✓	✓	✓	✓		
EM	✓	✓	✓	✓		
WM	✓		✓			✓
WN	✓	✓	✓	✓		✓
WS		✓		✓		✓
EA	✓		✓			✓
NT					✓	✓
SE	✓		✓		✓	✓
SO	✓	✓	✓			
SW	✓		✓	✓		

A “Prediction” & Suggested Way Forward

- Models for EUC “01B” for current gas year (2003/04) have far fewer cut-offs (only NT and SE)
- Therefore, likely to see less summer volatility generally in 2003/04
- IF DESC agrees:

  Spring 2004 NDM analysis undertaken with no cut-offs applied in EUC bands “01B” and “02B”
  Possibility of ALPs going negative addressed by an agreed bottom-stop rule
  (e.g. ALPs constrained to take on a value of no less than 1% of avg. ALP or 1% of max. ALP)
- Note that there is a consequential impact, albeit much smaller, on Winter SFs

Minimum WALPs

- Gas years 2002/03 & 2003/04 – both on post-Mod 496 basis
- Gas Year 2002/03
  - Lowest ALP was 0.031
  - Lowest % of Max ALP was 1.23%
  - Lowest ALP in “01B or “02B” was 0.12
- Gas Year 2003/04
  - Lowest ALP was 0.027
  - Lowest % of Max ALP was 1.07%
  - Lowest ALP in “01B or “02B” was 0.12
- Lowest ALP from “01B or “02B” models with no-cut off was 0.07 (3.24% of Max)
- Bottom stop lower limit to ALPs of 1% of avg. (i.e. 0.01) or 1% of Max. ALP, appears reasonable