



Investigation into lowering the [1+(DAF*WCF)] Constraint

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Background

- NDM profiling formula:
NDM demand = $(AQ/365) * ALP * [1+(DAF*WCF)] * SF$
- In application of formula, $[1+(DAF*WCF)]$ is currently constrained to be no less than 0.3.
- Constraint is set up via a Gemini system interface file.
- A constraint (>0) is needed to prevent negative allocations.
- However constraint could be lowered (to 0.01 say).
- This could improve SFs on warm days (WCF ~ -0.35 or lower)
- On these days, current constraint means formula may overallocate to more weather sensitive WAR band EUCs (with DAFs ~ 2 or higher), resulting in lower SF values.

Summary of Analysis

- Ad-hoc analysis has been carried out to estimate the impact of lowering the $[1+(DAF*WCF)]$ constraint.
- A lower constraint value of 0.01 chosen for investigation (a 1% value similar to constraint imposed on minimum ALP)
- Demand attribution replicated over gas year 2009/10 with lower constraint
 - Using same “as used” daily 2009/10 EUC AQ, ALP, DAF, pseudo SND and aggregate NDM demand values.
- Revised SFs calculated using lower constraint.
 - Note WCF values were unaffected.
- SF values only changed on warm days (other days unaffected).

Average Values of SF

Difference between Gas Year 2009/10 – Actual vs Revised

Red: Greater SF deviation from 1 in Revised – **Green:** Lower SF deviation from 1 in Revised

LDZ	Mon-Thur	Friday	Saturday	Sunday	Winter	Summer	Warm Days
SC	0.0003	0.0005	0.0004	0.0004	0.0001	0.0007	0.0029
NO	0.0003	0.0002	0.0002	0.0002	0.0000	0.0005	0.0023
NW	0.0001	0.0001	0.0002	0.0001	0.0000	0.0003	0.0028
NE	0.0002	0.0002	0.0002	0.0002	0.0000	0.0004	0.0031
EM	0.0002	0.0001	0.0001	0.0002	0.0000	0.0003	0.0026
WM	0.0003	0.0003	0.0002	0.0002	0.0000	0.0006	0.0031
WN	0.0001	0.0002	0.0001	0.0001	0.0000	0.0003	0.0019
WS	0.0002	0.0003	0.0001	0.0001	0.0000	0.0004	0.0021
EA	0.0001	0.0001	0.0001	0.0001	0.0000	0.0002	0.0023
NT	0.0000	0.0001	0.0000	0.0001	0.0000	0.0002	0.0031
SE	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0020
SO	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002	0.0031
SW	0.0001	0.0001	0.0001	0.0002	0.0000	0.0002	0.0038
AVG	0.0001	0.0002	0.0002	0.0002	0.0000	0.0003	0.0026

Average Values of Root Mean Square Deviation of SF from 1 Difference between Actual and Revised - Gas Year 09/10

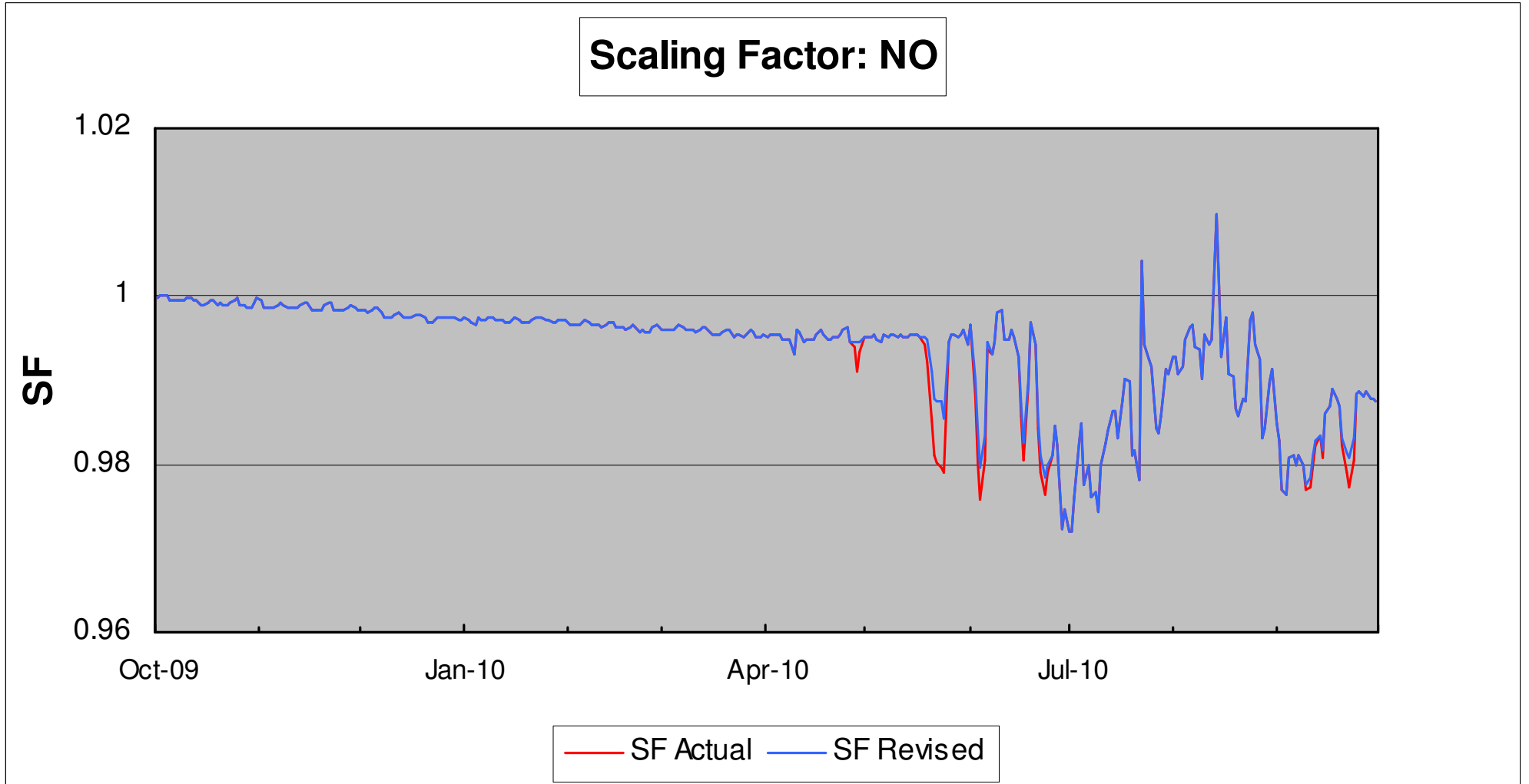
Red: Greater SF deviation from 1 in 2009/10 – **Green:** Lower SF deviation from 1 in 2009/10

LDZ	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
SC	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0031	0.0003	0.0000	0.0000
NO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0023	0.0009	0.0000	0.0000	0.0005
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0026	0.0004	0.0000	0.0000	0.0002
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0027	0.0004	0.0000	0.0000	0.0004
EM	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0023	0.0004	0.0000	0.0000	0.0005
WM	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0034	0.0005	0.0000	0.0000	0.0004
VN	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0003	0.0000	0.0000	0.0003
WS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0025	0.0007	0.0000	0.0000	0.0001
EA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0018	0.0002	0.0000	0.0000	0.0001
NT	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0001	0.0000	0.0000	0.0000
SO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0018	0.0002	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0025	0.0000	0.0000	0.0000	0.0000
AVG	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0022	0.0005	0.0000	0.0000	0.0002

Conclusions from analysis

- The revised average SF showed a slight improvement (i.e. was closer to one) in a majority of LDZs on all days of the week and over the summer period compared to the actual average SF in 2009/10.
- There was a more noticeable improvement in revised average SF on warm days where current $[1+(DAF*WCF)]$ constraint was reached for the more weather sensitive EUCs.
- Results of monthly RMS values of SF showed a slight overall improvement in 5 months of the year, with the other 7 months remaining the same.
- Although the improvement in SF was relatively small, there were no days where the revised SF was further away from one than the actual SF.
- DESC to consider lowering the $[1+(DAF*WCF)]$ constraint applied in future gas years (via the relevant Gemini interface file).

Example SF graph: NO



Example SF graph: WS

