

General Steps for CWV Optimisation

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- 1) A historic calculation of CWV is made based upon the 2015 definition and parameters and our history of weather data to confirm accuracy that our weather data and CWV calculation is correct.
 - a. Observed 2015 CWV: Source Xoserve, from 01/04/2019 from data item explorer.
 - b. Calculated CWV: based upon history up to 2010 from the weather substitution methodology and after our own datasets provided by our weather provider.
 - c. Note: Following the closure of Bristol Filton weather station, the Yeovililton weather station will be used for LDZ SW, therefore CWV will differ.

- 2) Pseudo SNET profiles are produced, following the guidance given in document Pseudo_SNET_HighLevelPrinciples_V1.pdf. Pseudo SNET is a representation of a seasonal normal series of demand represented in terms of Effective Temperature. The model:
 - a. Excludes holiday dates
 - b. Optimises based upon amending the Effective Temperature/AT Weight (currently fixed at 0.5) and keeping observations within a range of ETmin/max. Values outside this range are subject to a cut-off at the ETmin/max.
 - c. Values of ETmin/max are allowed to differ for each year and the resulting Effective Temperature/AT Weight is averaged across X years.
 - d. Prior CWV optimisation presented a variety of results for different levels of ETmin/max to help select results. For the 2020 parameters the best ETmin/max is calculated and used in the subsequence CWV calculation.
 - e. A table of ETmin/max values is shown below for the LDZ EA results. These values are set by choosing the best model (highest R2) and where ET is outside this range, values are cutoff and kept in the model. This was compared with excluding such values from the model, however that tended to produce unusual SNET profiles.

Year	2010	2011	2012	2013	2014	2015	2016	2017
ETmin	-1.09	-2.48	-0.94	0.41	-0.79	-0.09	-1.92	-2.99
ETmax	15.62	15.92	15.32	15.90	16.14	16.26	16.12	15.74

- 3) The Effective Temperature/AT Weights for each of the X years are reviewed and averaged. These averages are applied to each of the X years to produce the final view of SNET for the following CWV optimisation.
- 4) CWV parameters are optimised in four stages. The values of these parameters are iteratively amended to improve model fit, as measured by SSE/R2. Upper and lower bounds are set for each of the parameters.

- 1) I1,
- 2) I2, I3, V0
- 3) V1, V2, q
- 4) W0, T0

- 5) This optimisation is done for each of the X years, using the New SNET. These parameters are reviewed and the average of the parameters over X years is applied to each separate year to produce a set of results. The results compare the R2 based upon the 2015 definition and this optimisation.
- 6) A visualisation tool has been created to help visualise how the parameter changes impact the CWV calculation. For more info see: [CWV - Temp and Wind Speed Analysis.pdf](#)