



delivered by  correla

Demand Estimation Sub Committee

4.1 Climate Change Methodology Update Seasonal Normal Review 2025

8 October 2024

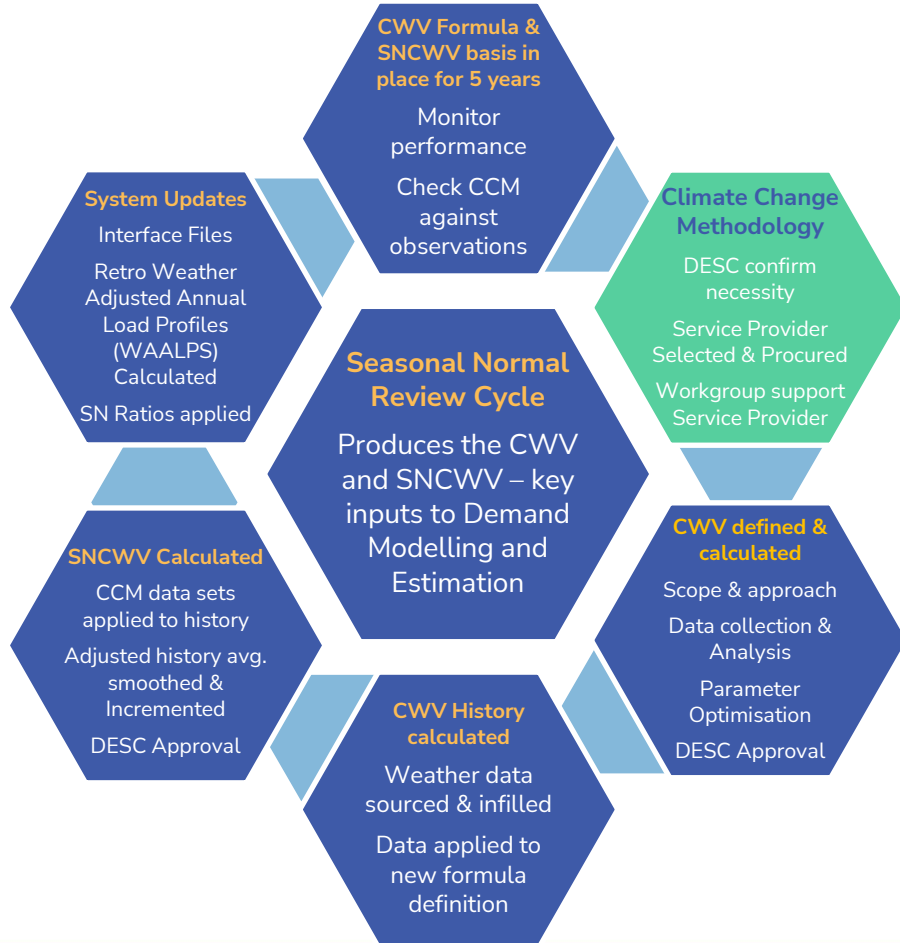
Contents

- Background, Overview and Objectives
- Timeline and Key Milestones
- DESC Review
- Conclusions and Next Steps

Background

- DESC are responsible for a number of obligations in Section H of UNC, amongst them are the requirements to:
 - Review the Composite Weather Variable (CWV) (H 1.4.3) and
 - Review the Seasonal Normal equivalent referred to as the SNCWV (H 1.5.3)
 - Consider use of Climate Change Methodology in derivation of SNCWV (H 1.4.6)
- Reviews of the CWV formula and Seasonal Normal basis are normally only carried out by DESC every 5 years due to the time taken to perform the review and the need for stability
- The latest DESC review in 2019 derived a new CWV formula and new basis for the Seasonal Normal, which both came into effect from the 01 October 2020
- This means the next Seasonal Normal basis is scheduled to take effect from 01 October 2025 with the detailed analysis performed during 2024

Seasonal Normal Review

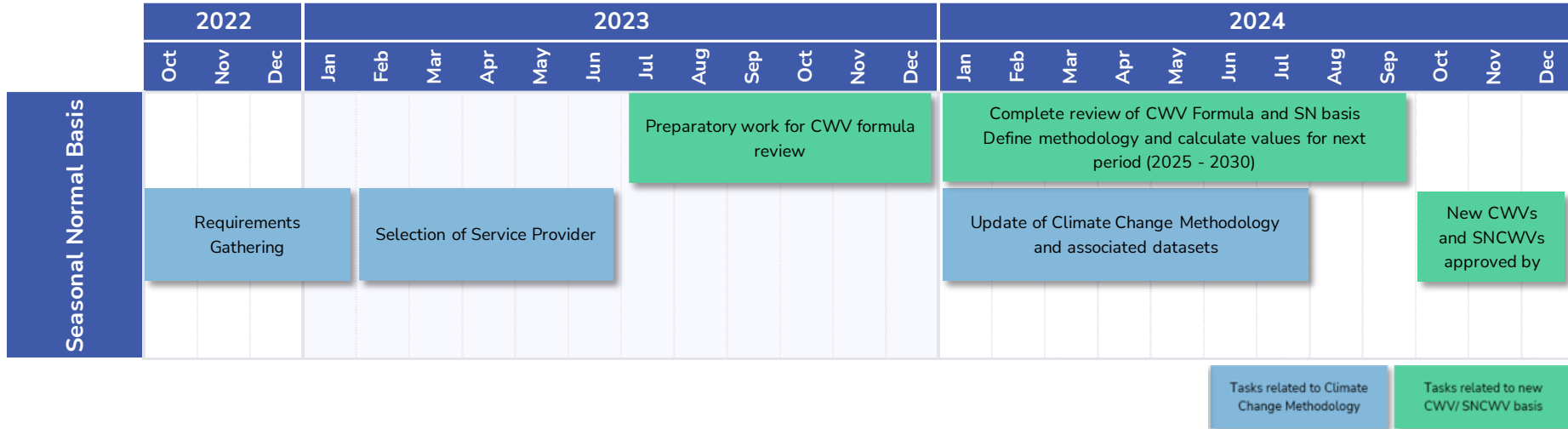


- An overview of the Demand Estimation process and output can be found [here](#)
- Composite Weather Variable (CWV) and Seasonal Normal CWV (SNCWV) are key inputs to the Demand Estimation process
- Seasonal Normal Review (SNR) cycle, undertaken at minimum once every 5 years, represented in diagram opposite
- This presentation relates to updates on the **Climate Change Methodology (CCM)** phase of the SNR cycle

Objective

- To consider and review DESC responses to Climate Change Methodology (CCM) output
- To seek DESC approval for CCM project closure and confirm next steps

Climate Change Methodology: High Level Timeline



- Reminder of key phases associated with Climate Change Methodology work alongside the CWV and SNCWV review deliverables

Climate Change Methodology: Key Milestones

Milestone	Lead	Status	When
Kick-Off Discussions for Climate Change Methodology (CCM)	DESC	Complete	<u>July '22</u>
Confirmed requirement to procure CCM	DESC	Complete	<u>Oct '22</u>
Technical Requirements for CCM Approved	DESC	Complete	<u>Mar '23</u>
Confirmed preference to refresh CCM with latest observations and projections	DESC	Complete	<u>July '23</u>
Met Office selected as CCM Service Provider	CDSP	Complete	Sep '23
2 x DESC Technical Workgroup Representatives selected to support CCM assignment	DESC TWG	Complete	Dec '23
CCM Assignment	Met Office	Complete	Dec '23 – Jul '24*
CCM Output (Report and Data) delivered for review	Met Office	Complete	Aug '24
CCM Output reviewed	CDSP & DESC TWG	Complete	Aug-Sep '24
Update DESC on CCM Assignment status	CDSP & Met Office	Complete	12 Sep '24
DESC Review	DESC	Complete	16 – 27 Sep'24
DESC Approval of CCM Output	DESC	Pending	8 Oct '24

* Update meetings between Met Office, CDSP and DESC TWG to discuss CCM Assignment progress held Dec '23, Feb '24, Apr '24 and Jul '24

Climate Change Methodology: CDSP and DESC TWG Review

- The CDSP and DESC's Technical Workgroup (TWG) have maintained regular progress updates with the Met Office since the start of the year
- Following delivery of the CCM output in August, the CDSP provided a summary of its review at the DESC meeting in September and concluded that DESC's Technical Requirements had been met – link to material [here](#)
- One of [DESC's Technical Requirements](#) was:
“The methodology and datasets delivered by the Service Provider to Xoserve must then be approved by the Demand Estimation Sub-Committee prior to their use by the GB Gas Industry”
- The window for the DESC review was 12 to 27 September – see next slide for more details

Climate Change Methodology: DESC Review (September DESC slide)

- DESC are invited to review the CCM output which is located in the secured area of www.xoserve.com (UKLink Docs). Links to secured area and access request form can be found by following this [link](#)

18. NDM Profiling and Capacity Algorithms

Climate Change Methodology 2024

1. Draft Methodology

3a. Draft Datasets for review

1. Adjusted Histories

2. Future Projections

3. Updated Histories

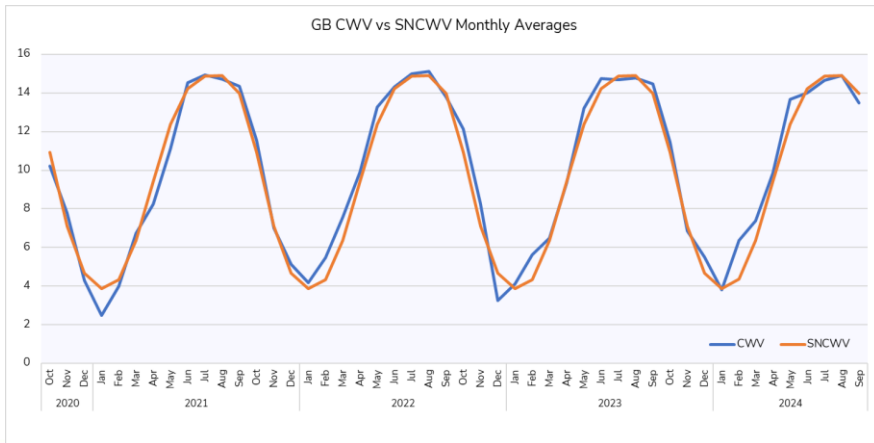
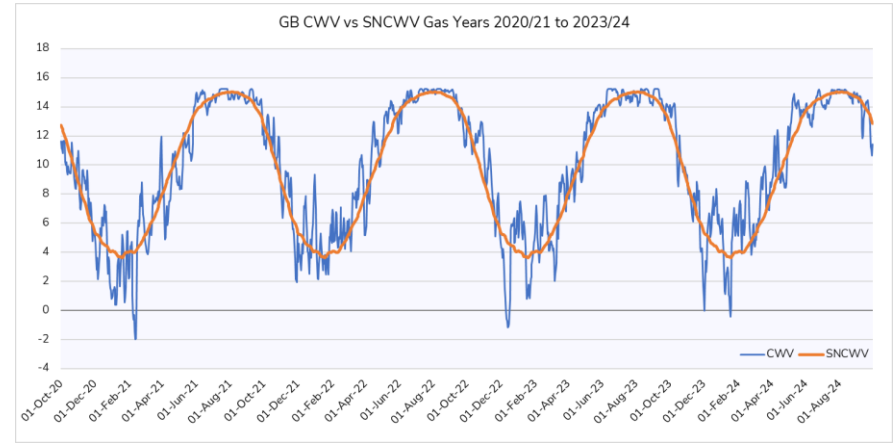
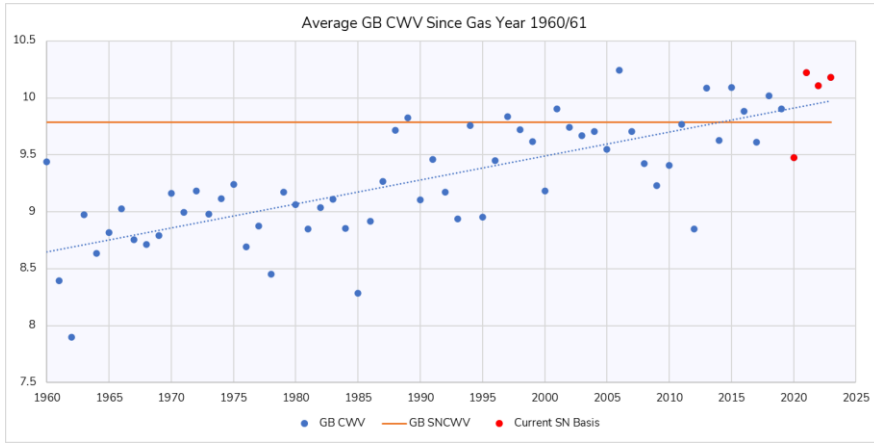
3b. Read Me files for Review Datasets

- Folder 1. contains Draft CCM Report and Appendix
- Folder 3a. and subfolders (highlighted in green) contain CCM output datasets for all Weather Stations
- Folder 3b. contains Read Me documents with instructions on how to interpret the output files
- Please send any comments or questions to the CDSP by no later than Friday 27 September:
Xoserve.demand.estimate@xoserve.co.uk
- If required Met Office will be available to answer any questions at DESC on 8 October

Climate Change Methodology: DESC Review

- Follow up email sent on 16 September asked DESC for feedback by no later than close of play 27 September, in order to prepare for today's meeting
- At time of publication no feedback has been received from DESC members during the formal review period
- Feedback from DESC at September meeting has been used for discussion topics today:
 - Topic 1: DESC expectations that new Seasonal Normal Composite Weather Variable (SNCWV) is going to be much warmer than current basis, given recent very warm years
 - Topic 2: Proposed approach of how DESC use CCM output in derivation of SNCWV
- Thoughts on the next review period are also provided by the Service Provider alongside closing remarks

Climate Change Methodology: Topic 1 Overview



Season	Month	2020/21	2021/22	2022/23	2023/24
Autumn	October	10% Colder	10% Warmer	22% Warmer	9% Warmer
	November	7% Warmer	1% Colder	12% Warmer	2% Colder
	December	3% Colder	4% Warmer	10% Colder	7% Warmer
Winter	January	9% Colder	2% Warmer	2% Warmer	1% Colder
	February	2% Colder	10% Warmer	11% Warmer	18% Warmer
	March	3% Warmer	12% Warmer	1% Warmer	10% Warmer
Spring	April	13% Colder	7% Warmer	1% Colder	6% Warmer
	May	20% Colder	21% Warmer	19% Warmer	34% Warmer
	June	10% Warmer	3% Warmer	19% Warmer	7% Colder
Summer	July	3% Warmer	5% Warmer	7% Colder	8% Colder
	August	7% Colder	10% Warmer	5% Colder	0% Colder
	September	12% Warmer	5% Colder	17% Warmer	12% Colder

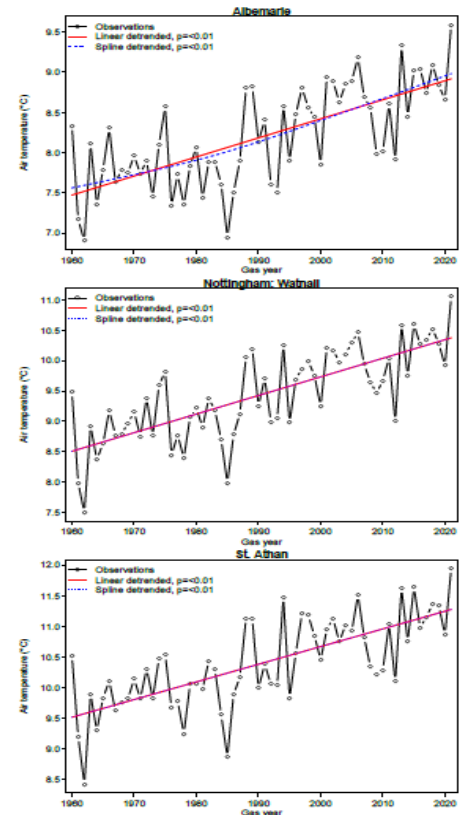
In Top 3 warmest CWV months on record 11

Climate Change Methodology: Topic 1 Response

- **Service Provider (Met Office) view:**

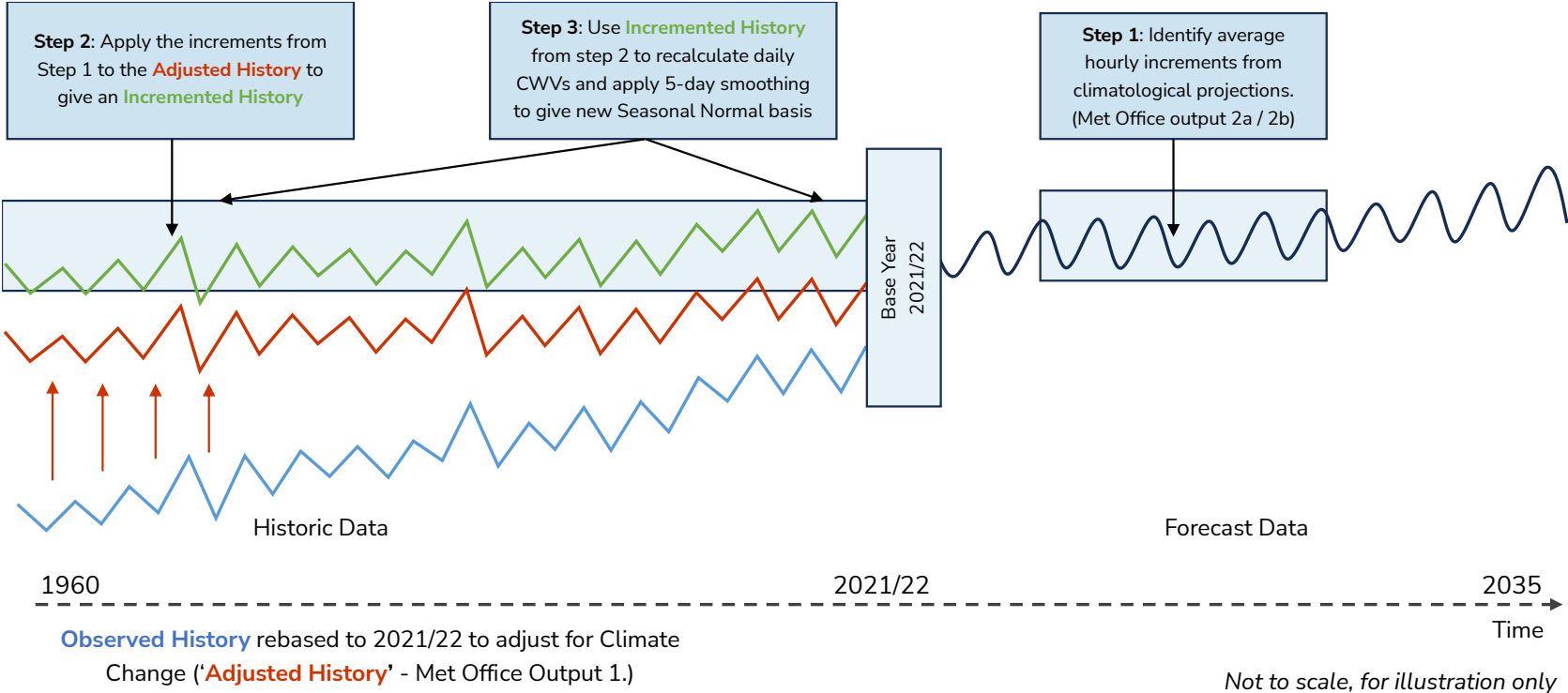
- *UK climate is dominated by natural variability, represented by scatter around the trend lines (see Fig. 1 – extract from CCM Appendix). 2022 was exceptional and 2023 was only slightly cooler, however there are several other instances of two successive hot (or cold) years after which more average (or even extreme in the other direction) values for the time resume. This is natural variability*
- *We do not expect temperatures to continue at the level of 2022/23 though they will become more common as the warming trend continues (and at some point in the future will likely become an average Gas Year)*
- *The seasonal normal should reflect the continuation of the trend, not the ‘dramatic’ conditions of 2022/23, thus will probably only reflect 0.1-0.3C warming since it was last updated*

Fig. 1: Time series of annual means



Climate Change Methodology: Topic 2 - Use of CCM Output in SNCWV

- Diagram below summarises how CCM output is proposed to be used in the derivation of the SNCWV:



Climate Change Methodology: Topic 2 Response

- **Service Provider (Met Office) view:**

- *Based on methodology described, there is no problem simply using the projections rather than the adjusted histories (plus increments). This is because the projections are constructed as increments plus climatology derived from the adjusted histories*
- *The daily CWV obtained from the projections or from the increments plus adjusted histories are theoretically identical, they will differ only by the smoothing applied. In the projections, we have already applied smoothing in the construction of the climatology, whereas the histories plus increments method (previous slide) applies smoothing at the end*
- *We would suggest that the true value in the histories lies in exploring the variability/uncertainty in the CWV, which could be assessed by adding the increments to the adjusted histories, but calculating the seasonal normal for each gas year individually, giving you 60+ plausible samples of the seasonal normal*

Climate Change Methodology: Refresh

- DESC Technical Requirement: “The Service Provider should include a recommendation for when a next review is required to refresh the results derived from the Methodology”
- **Service Provider (Met Office) view:**
- *UK climate is dominated by natural year-on-year variability that is very large compared to current rate of climate change*
- *Detecting any deviation from the climatological conditions projected in the latest climate change assessment would require at least 5-10 years of observations, so no review for at least 5 years is advised*
- *Deviations from projections unlikely to arise due to errors in establishing the 2021/22 baseline since all current stations have been reporting for >10 years, giving sufficient data to establish the baseline climatology for each station and variable*
- *Rate of climate change also currently very low, so overall risk of significant deviations from the projections over next 10 years is very low, especially for the key temperature variable. Therefore, impact on the Composite Weather Variable (CWV) is likely to be limited*
- *Comparison of projected against observed annual means after 5 years (comparing back to the previous 10 years for context), might begin to reveal any systematic deviations from the projections. However, any apparent deviations from the projections should be evaluated by considering the coverage of the hourly projections (the proportion of observations lying within the confidence intervals provided)*
- *If coverage remains satisfactory due to dominance of natural variability, then no refresh is necessary. Note: Given no. of sites and variables analysed, it would be surprising if none exhibited deviations from projections. Deviations in one or two sites or variables might not be sufficient to trigger a full refresh if the impact on the CWV and Seasonal Normal is limited.*
- *In short, we don't anticipate any problems using this to update the Seasonal Normal for 2030*

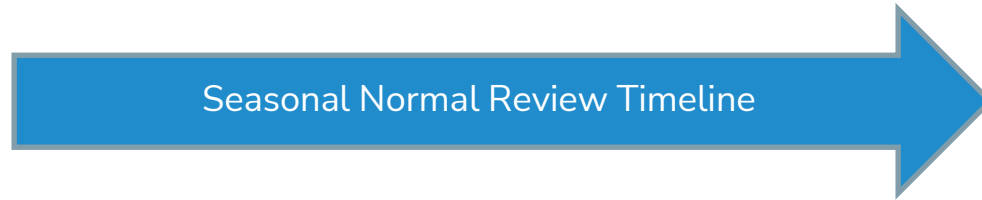
Climate Change Methodology: Project Closure

- Service Provider (Met Office) Closing remarks:
- Improvements in this CCM:
 - Advanced non-linear regression methods to produce adjusted weather histories for all variables
 - Projections based on latest UKCP18 climate projections
 - Improved methodology for smoother climate change increments
- Further opportunities:
 - Alternative data sources for the weather histories
 - Exploiting decadal climate predictions
- Any final questions for Service Provider on CCM output ?

Conclusions

- The CDSP is satisfied that DESC's Climate Change Methodology (CCM) Technical Requirements have been met by the Service Provider output (report and data)
- The CDSP has reviewed the data and is satisfied the downstream calculations of the new Seasonal Normal basis (SNCWV) can be calculated and will reflect an upto date view of average climate for the next 5 years
- DESC (and its Technical Workgroup) have had opportunity to review the CCM output and ask questions of the Service Provider
- Are DESC now happy to provide its approval of the CCM output delivered by the Service Provider ?

Next Steps



CCM output
finalised and shared
on secure area

October

Draft SNCWV
Profiles prepared

October-December

DESC Review
SNCWV Profiles

14 November

DESC Approval of
SNCWV Profiles

12 December