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DESC Technical Work group

Seasonal Normal Review: Use of CCM Increments

18 August 2014

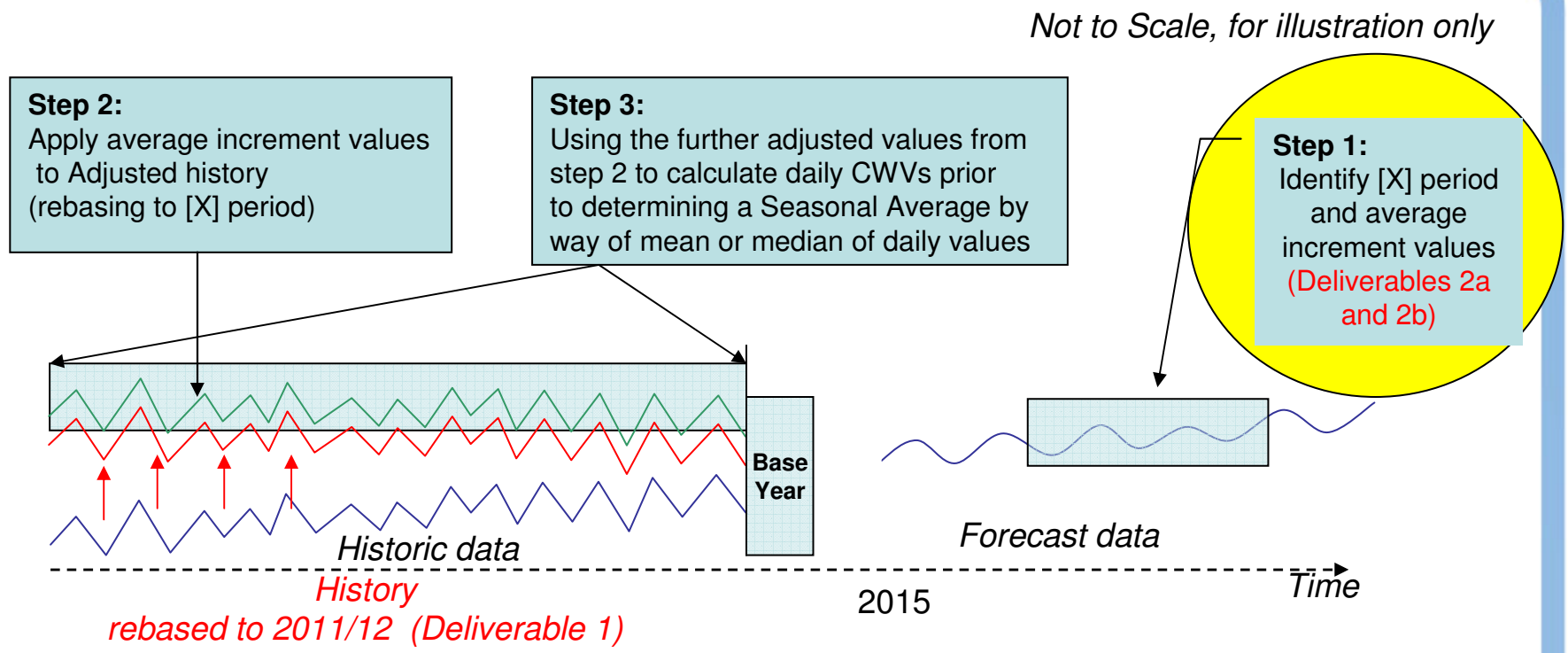
Summary of Updates

- Presentation from 30th July forms the basis of this presentation
- Slides 3, 4, 5 and 7 – same slides but retained to provide background for any new reader
- Slides 6, and 8 - revised with updated words shown in red font
- Slides 9 onwards - new material with results reflecting DESC's request for additional analysis

Background

- Current Seasonal Normal Basis (SNCWV) introduced in October 2010
  - Incorporated some outputs from Met Office EP2 Project – used estimated climate change increments
- UNC now states SNCWV should be based on output derived from 'Climate Change Methodology' (CCM)
- Requested outputs of CCM Project *(updated)*
  - 50+ years hourly historic data adjusted for estimated impacts of climate change v base year 2011/12
  - Predicted hourly average values for Gas Years 2012 to 2025
  - Predicted hourly increments – difference between base year and forecast year
- Stakeholder meeting on Nov 25th agreed how the outputs will be used in defining SNCWV for G.Yr 2015 onwards

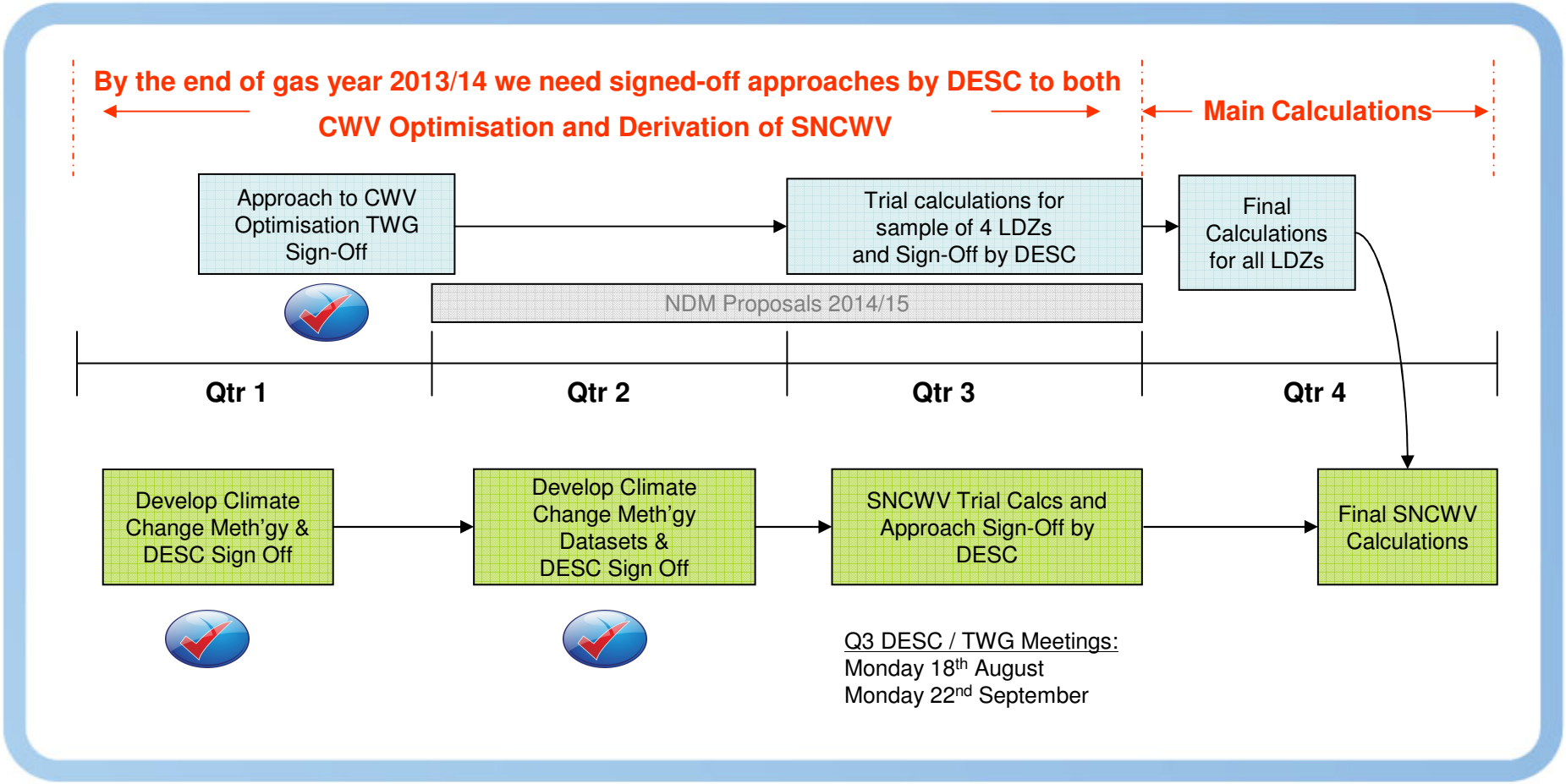
Use of Project Deliverables



Deliverables:

1) *An adjusted view of historic hourly weather datasets (derived from WSSM) reflecting estimated impacts of climate change based on results from base year 2011/12*
2) *a) Predicted hourly climatological average values for period 1st October 2012 to 30th September 2025 based on predicted impact of climate change trends for future period*
   b) Predicted hourly increments values – difference between predicted hourly climatological average values (i.e. from 2a) and base year (2011/12) averages

Seasonal Normal Review & CWV Optimisation Timeline



KEY: CWV Optimisation | Derivation of SNCWV

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Seasonal Normal Review – Q3 Objectives

- Proposed plan for developing Seasonal Normal approach document
- Follow agreed approach for using CCM output:
  - Identify [x] period and average increment values
  - Apply increments to adjusted history
  - Using adjusted history with increments applied calculate a set of daily CWVs for period 1st October 1960 to 30th September 2012
    - Q. SNCWV will be calculated using history no later than 30/09/2012?
      A: DESC agreed this was correct at 30th July 2014 meeting
  - During Q3 this will be done using EXISTING parameters
  - Select the Mean or Median for determining daily CWV values
  - Performed for 4 Trial LDZs ?
- Review shape and confirm level of smoothing (if required)
- Document the approach to deriving the new Seasonal Normal basis and obtain DESC sign-off

Step 1: "Identify [X] period and Average Increment values"

- Following DESC's approval of the CCM datasets, attention can be drawn to using the data in the derivation of Seasonal Normal
- Xoserve have reviewed the data for 4 LDZs, namely those selected by TWG for the CWV Optimisation trial analysis - SC, NE, WM and SW
- To assist in the decision making of "selecting [x] period for averaging the increment values", the predicted hourly climatological average values (deliverable 2a) have been used, referred to as 'Projections'
- The 'Projections' will not be used in the calculation of the SNCWV, however they are being used to help determine which period should be used when applying the increment values

Step 1: "Identify [X] period and Average Increment values"

- Data files used for analysis :
  Temperature_WeatherStationID_Projections_2012_2025.txt

- The Met Office supplied data at GMT, prior to use in the analysis all relevant records have been corrected to 'local time'

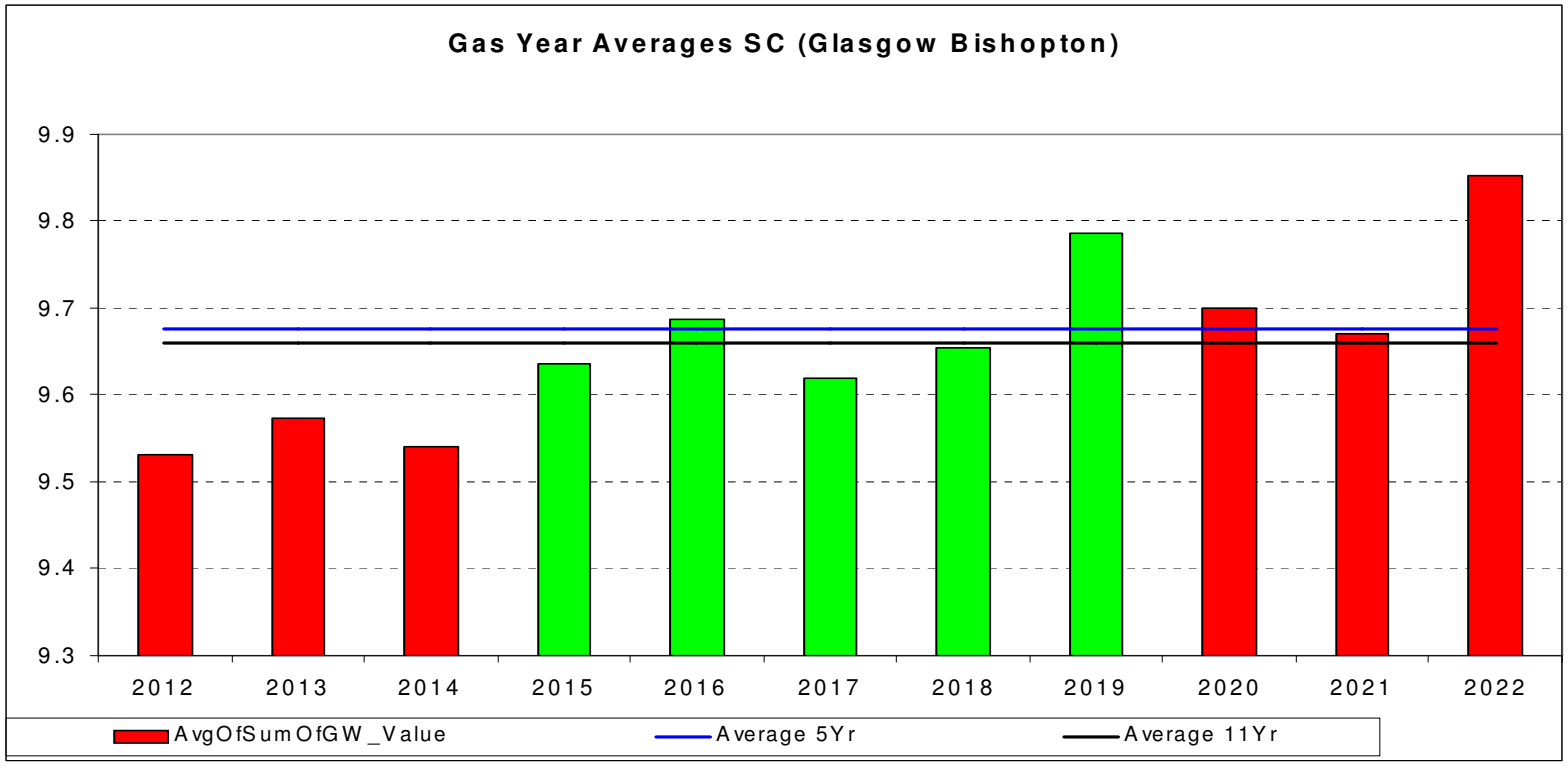
- Note: Further to the agreement made at DESC on 30th July, the twelve 2 hourly timeslots for temperature observations, used in this analysis, started at 5am and ended at 3am

- The 2 hourly timeslots used in the Actual Temperature (AT) calculation within the CWV formula have been selected with the appropriate weighting then applied in order to derive a 'Gas Weighted' daily average temperature

Step 1: "Identify [X] period and Average Increment values"

- Following the DESC TWG meeting on 30th July it was requested additional analysis be carried out to assist in the decision making, namely:
  - Widen the period reviewed to 3 years either side of target 5 years (2015 to 2019) i.e. 11 years of 2012 to 2022
  - Continue with the average annual temperature chart and the daily average profile chart
  - In addition perform Winter and Summer analysis
    - Winter (October to March) and Summer (April to September)
  - Perform all of above for at least the 4 Trial LDZs – SC, NE, WM & SW

SC Temp. Proj. – 'Gas Weighted' Annual Avge.



- Years highlighted green represent the 5 gas years SNCWV is expected to apply for

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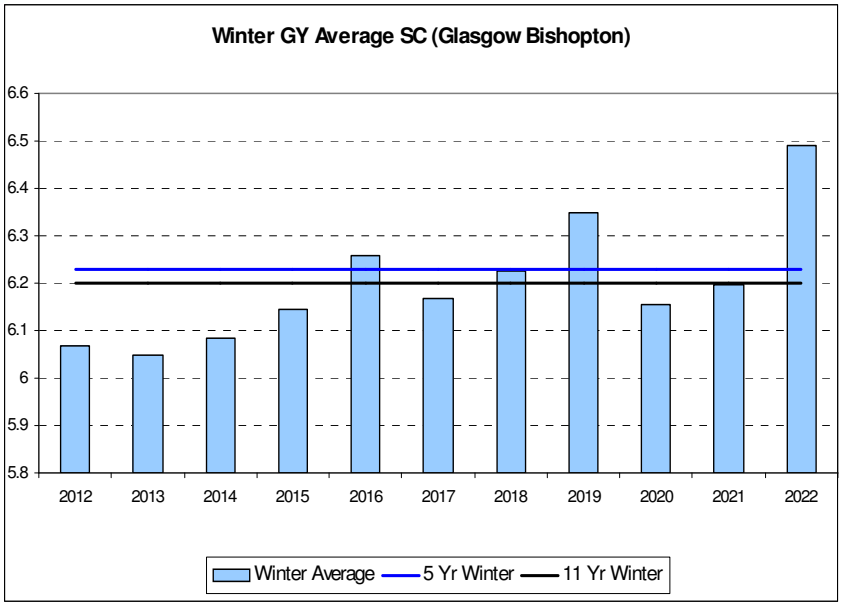
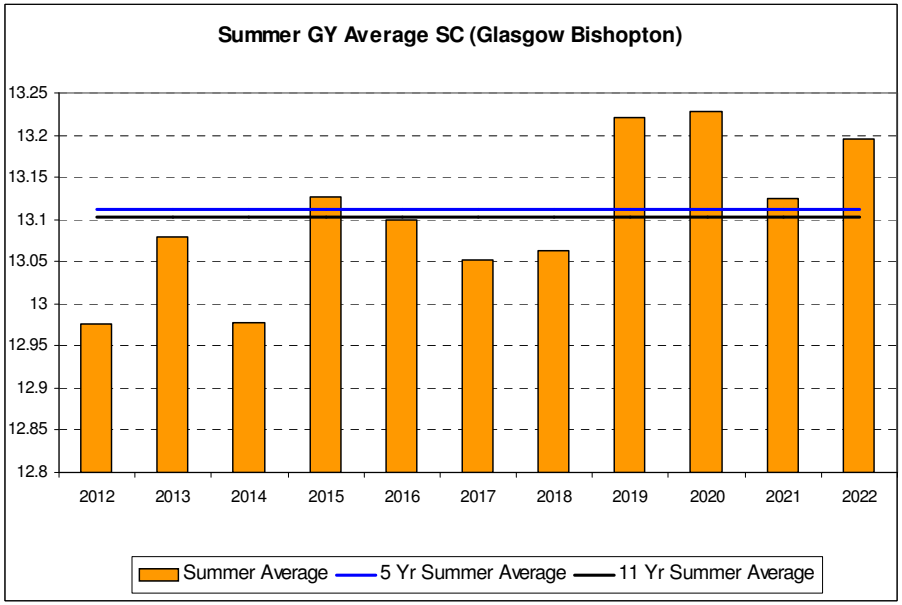
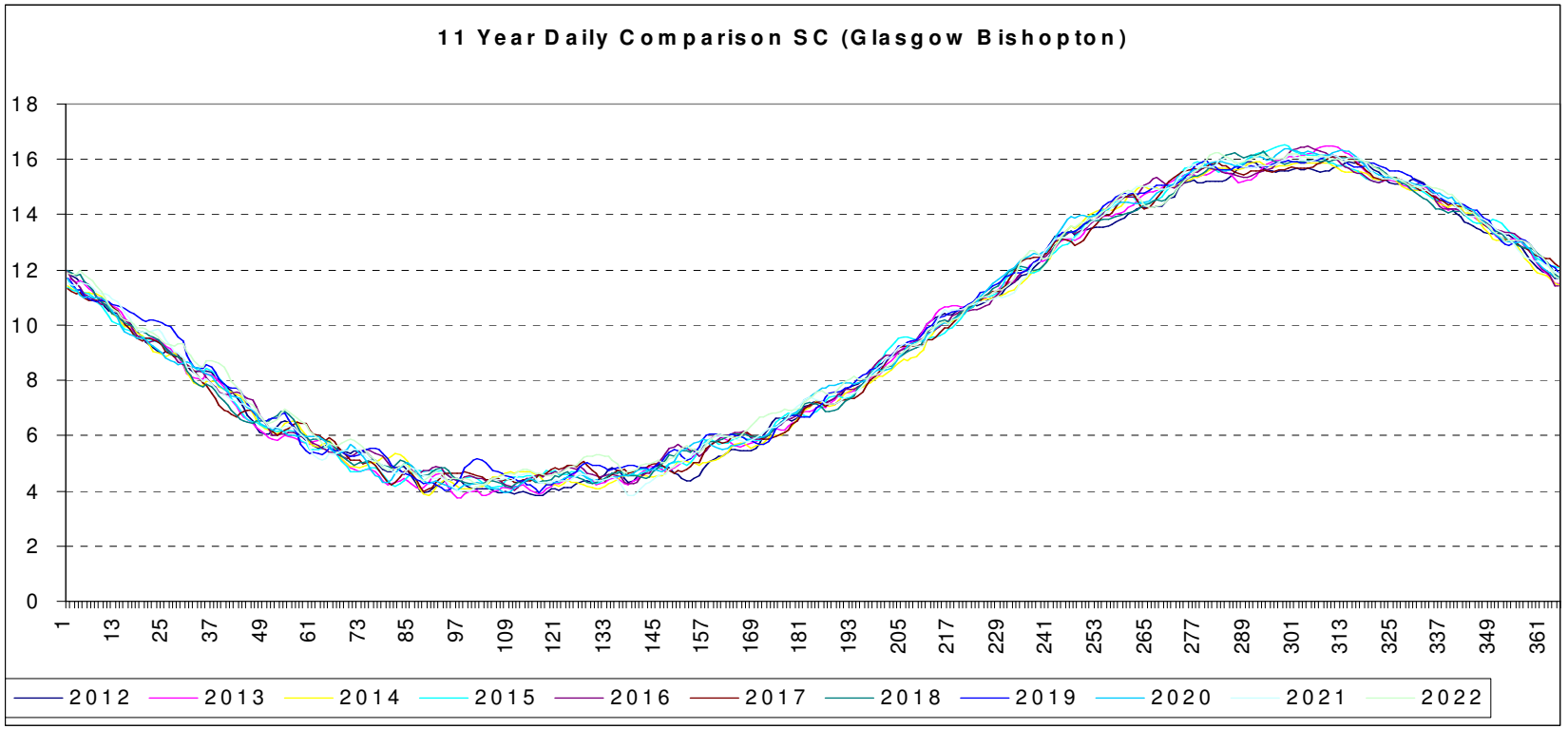
SC Temp. Proj. – Winter and Summer Annual Avge.



	Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.04	0.09	-0.01
2016	-0.01	-0.03	0.01
2017	0.06	0.06	0.06
2018	0.02	0.00	0.05
2019	-0.11	-0.12	-0.11



SC Temp. Proj. – Individual Gas Years Avg. Profile



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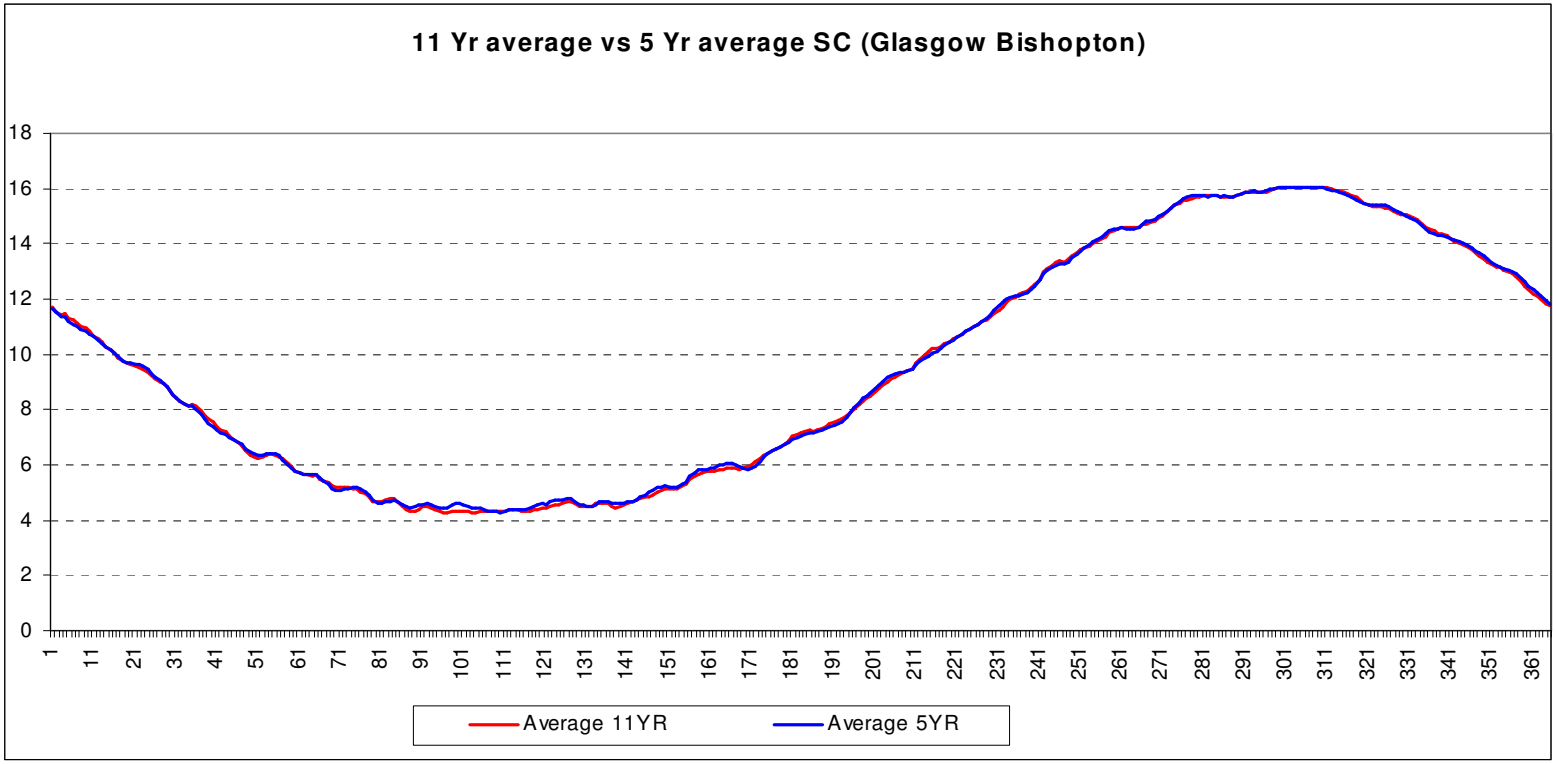
SC Temp. Proj. – 5 and 11 Years Avg. Profile



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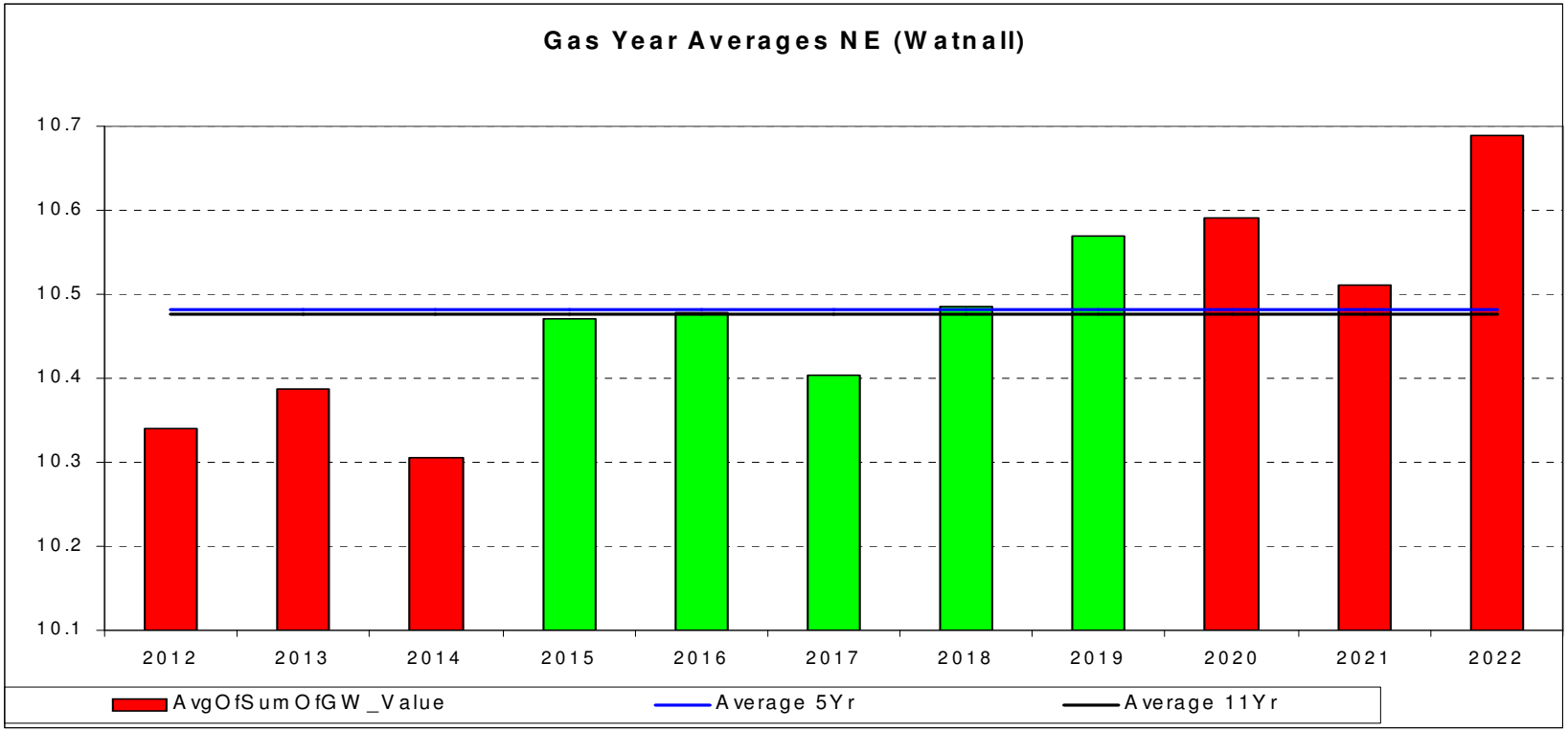
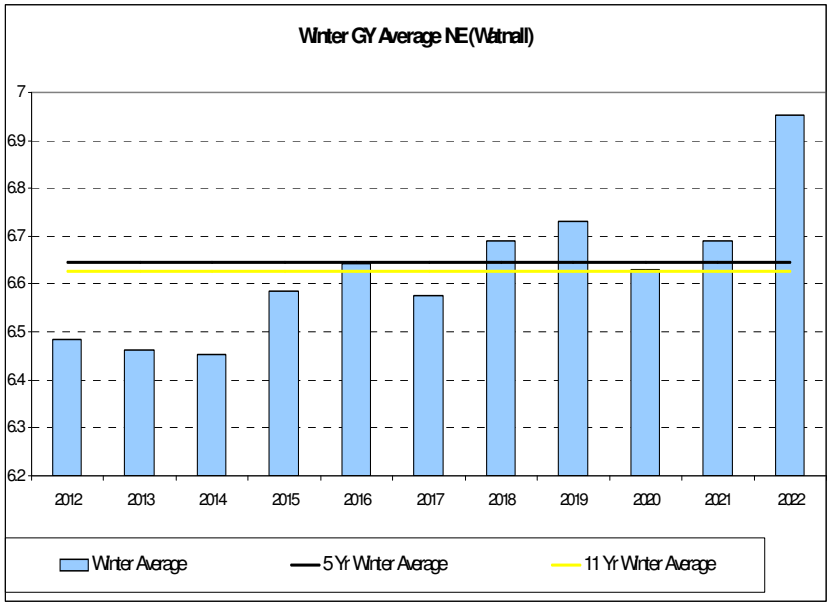
NE Temp. Proj. – 'Gas Weighted' Annual Avge.

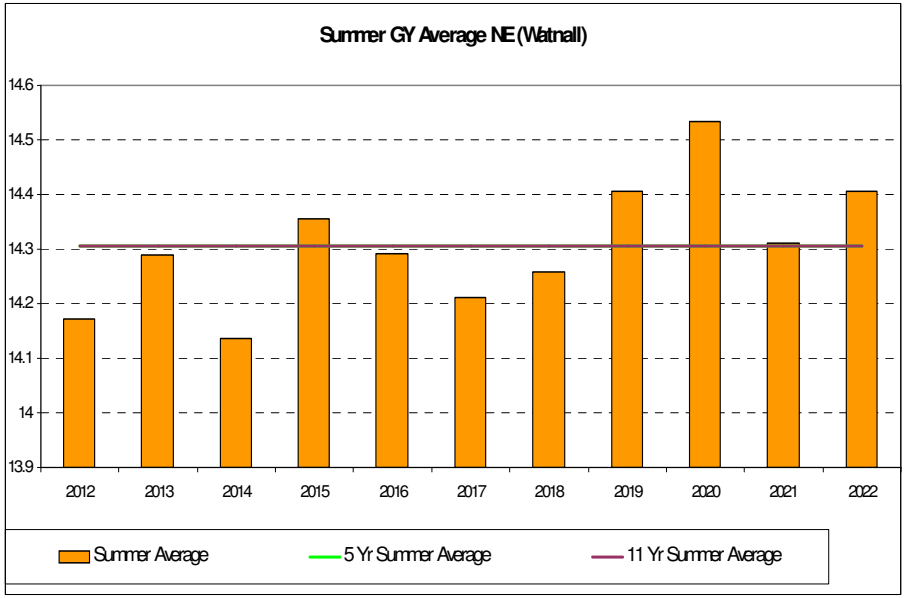


- Years highlighted green represent the 5 gas years SNCWV is expected to apply for

NE Temp. Proj. – Winter and Summer Annual Avge.



	Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.01	0.06	-0.05
2016	0.00	0.00	0.01
2017	0.08	0.07	0.09
2018	0.00	-0.05	0.05
2019	-0.09	-0.09	-0.10



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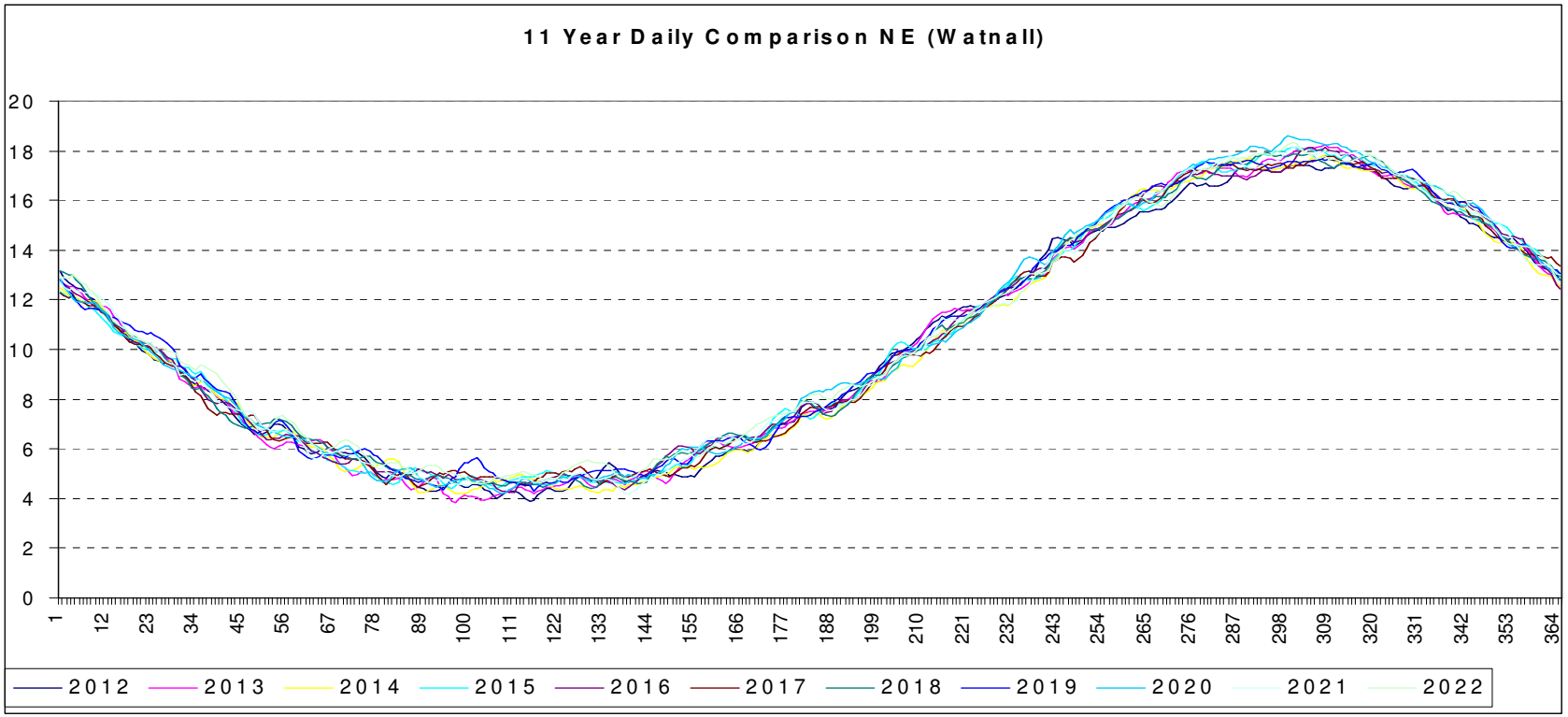
NE Temp. Proj. – Individual Gas Years Avg. Profile



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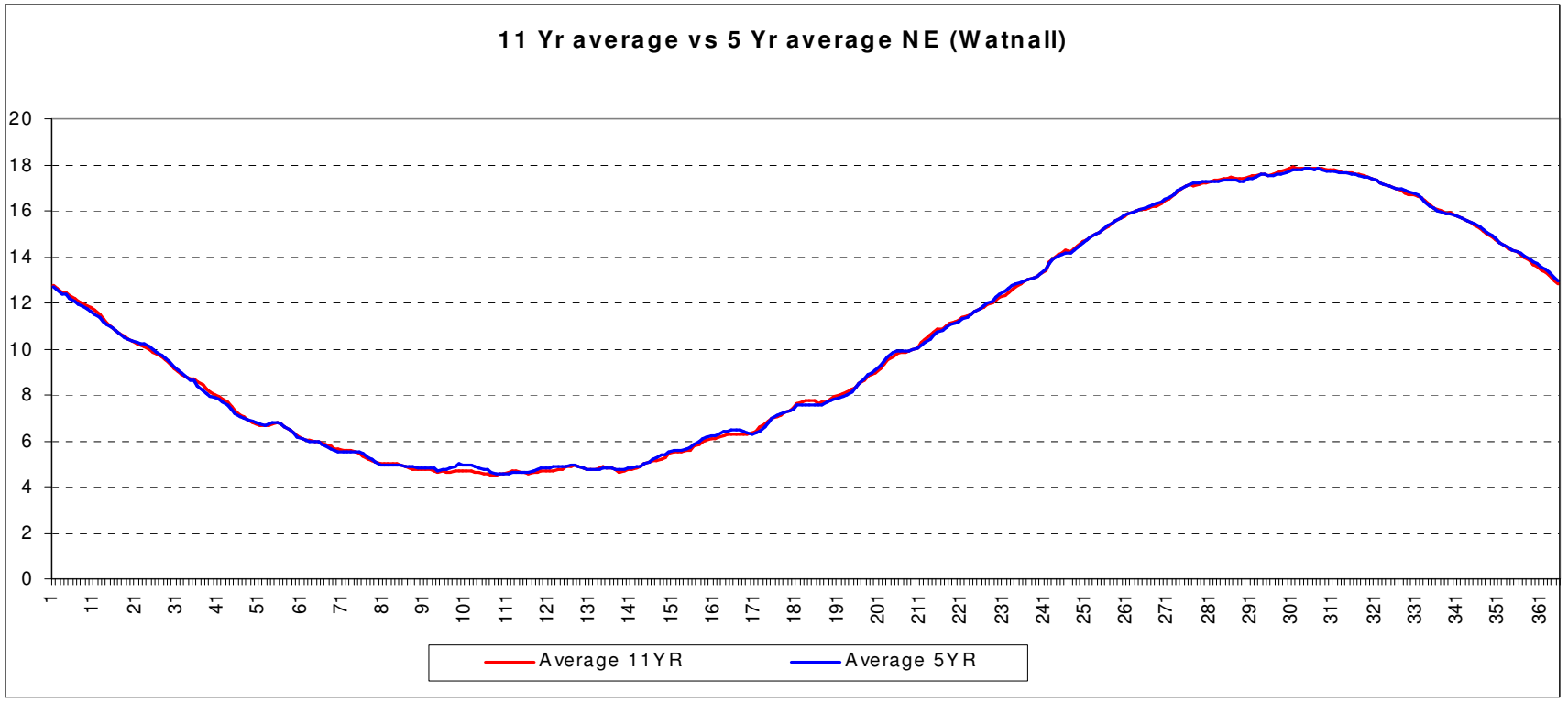
NE Temp. Proj. – 5 and 11 Years Avg. Profile



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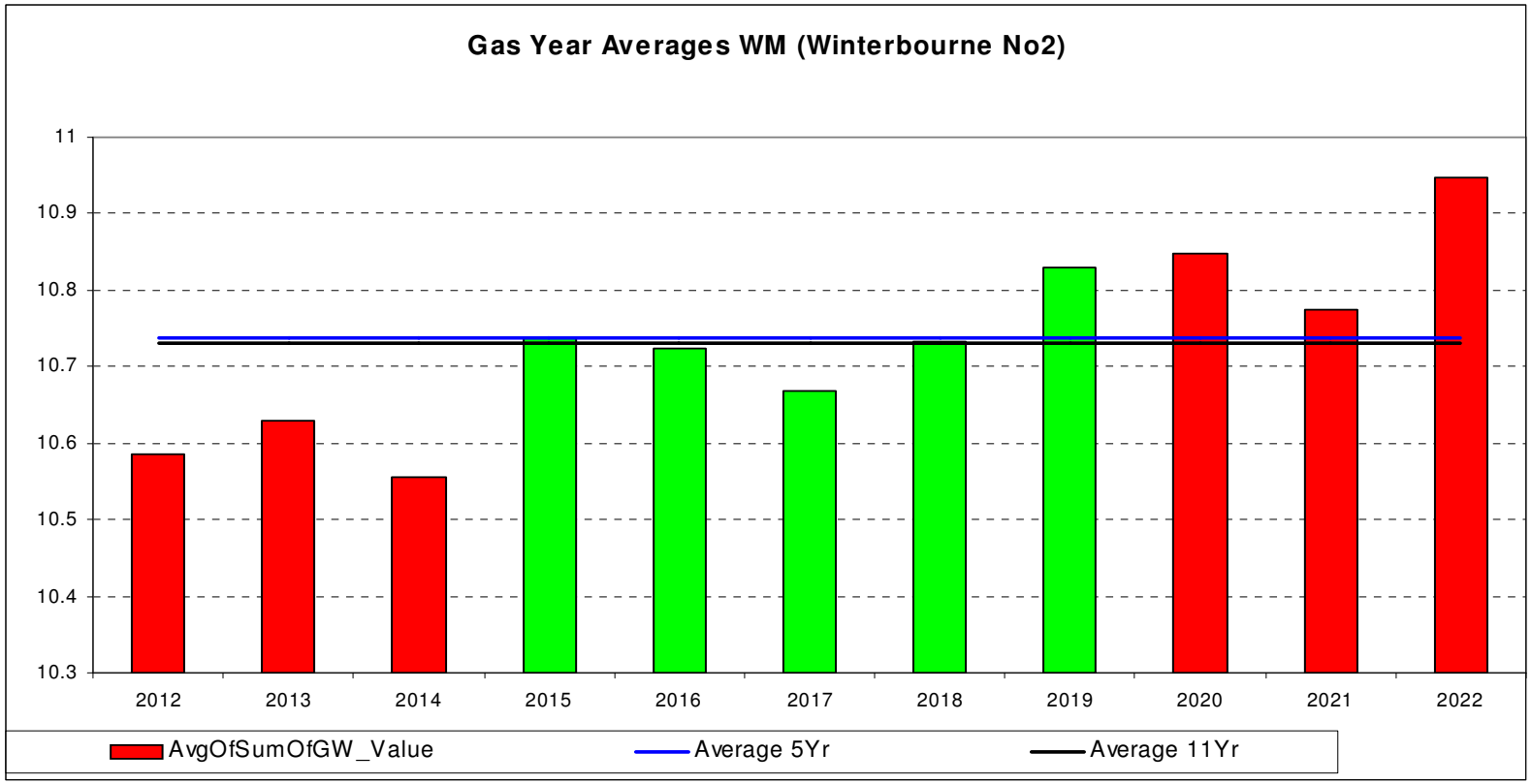
WM Temp. Proj. – 'Gas Weighted' Annual Avge.



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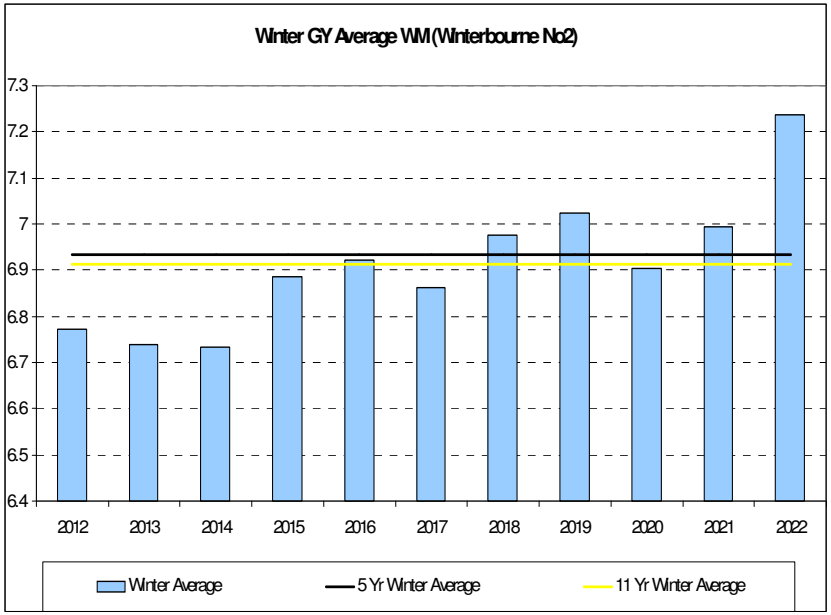
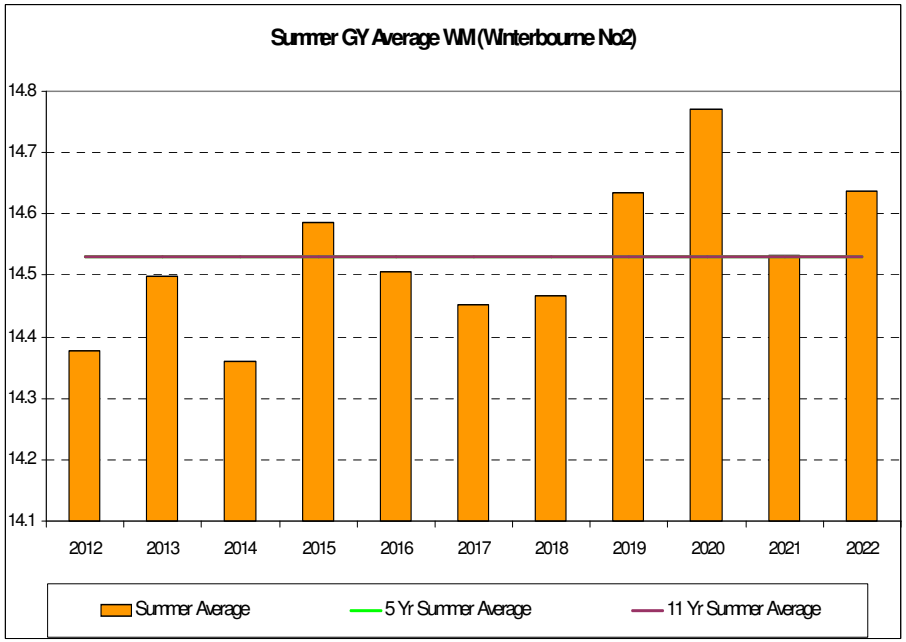
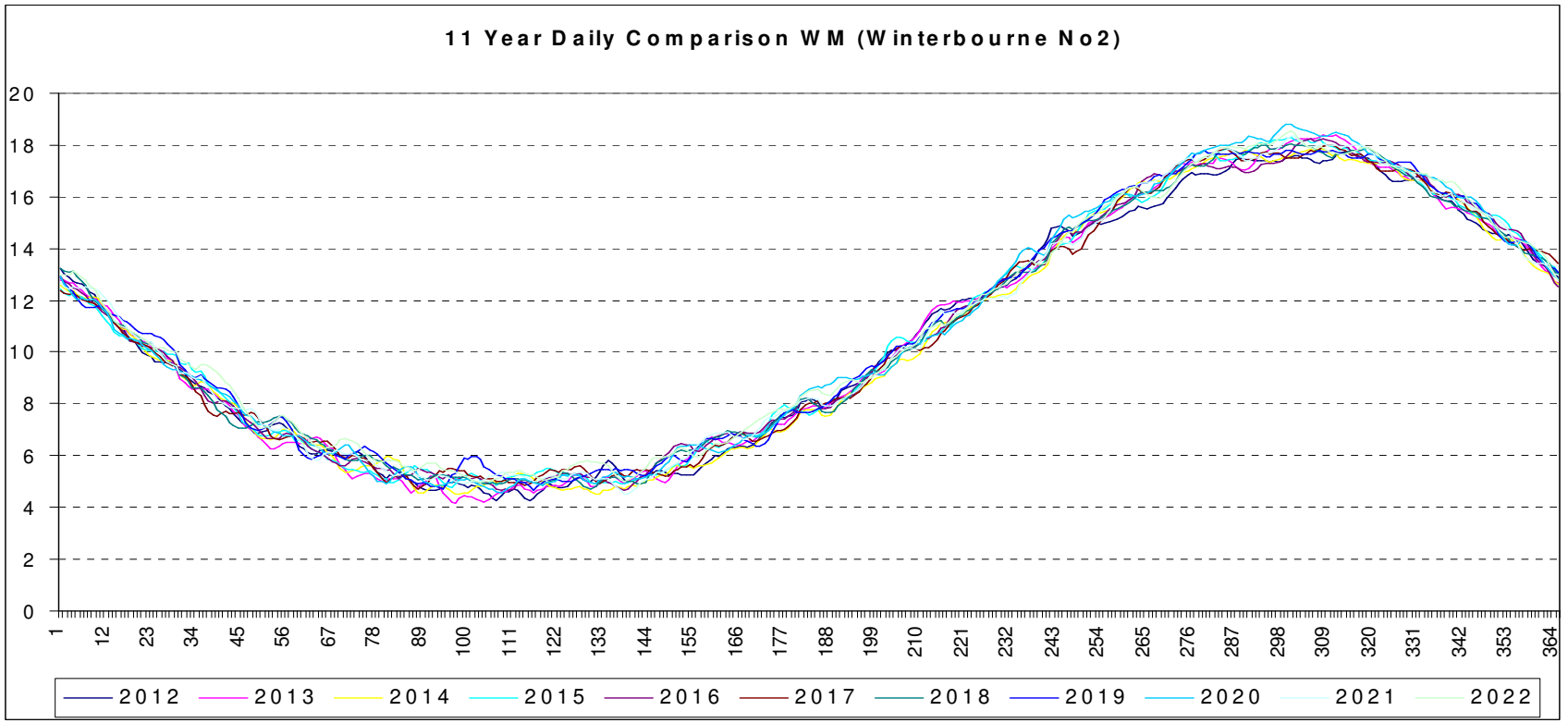
WM Temp. Proj. – Winter and Summer Annual Avge.



	Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.00	0.05	-0.06
2016	0.01	0.01	0.02
2017	0.07	0.07	0.08
2018	0.01	-0.04	0.06
2019	-0.09	-0.09	-0.11



WM Temp. Proj. – Individual Gas Years Avg. Profile



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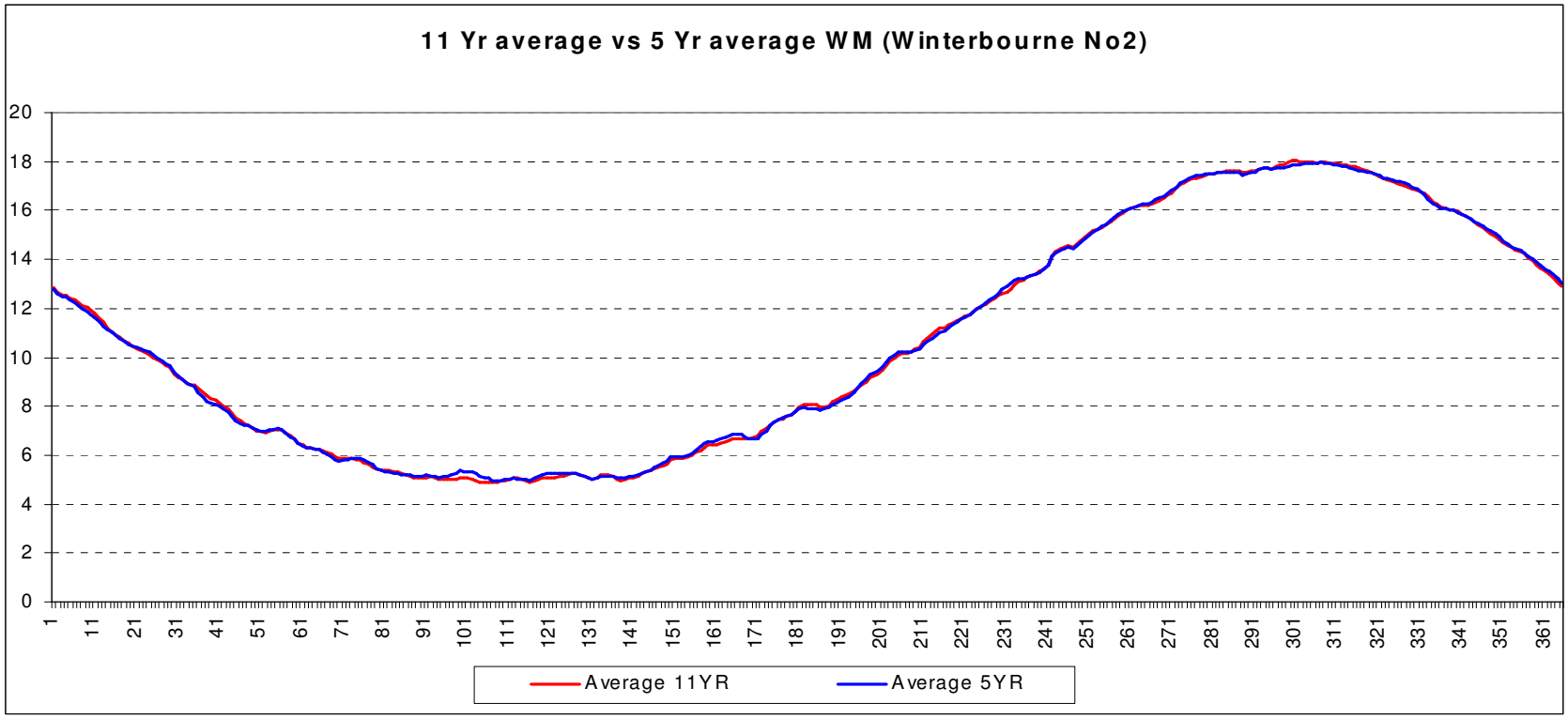
WM Temp. Proj. – 5 and 11 Years Avg. Profile



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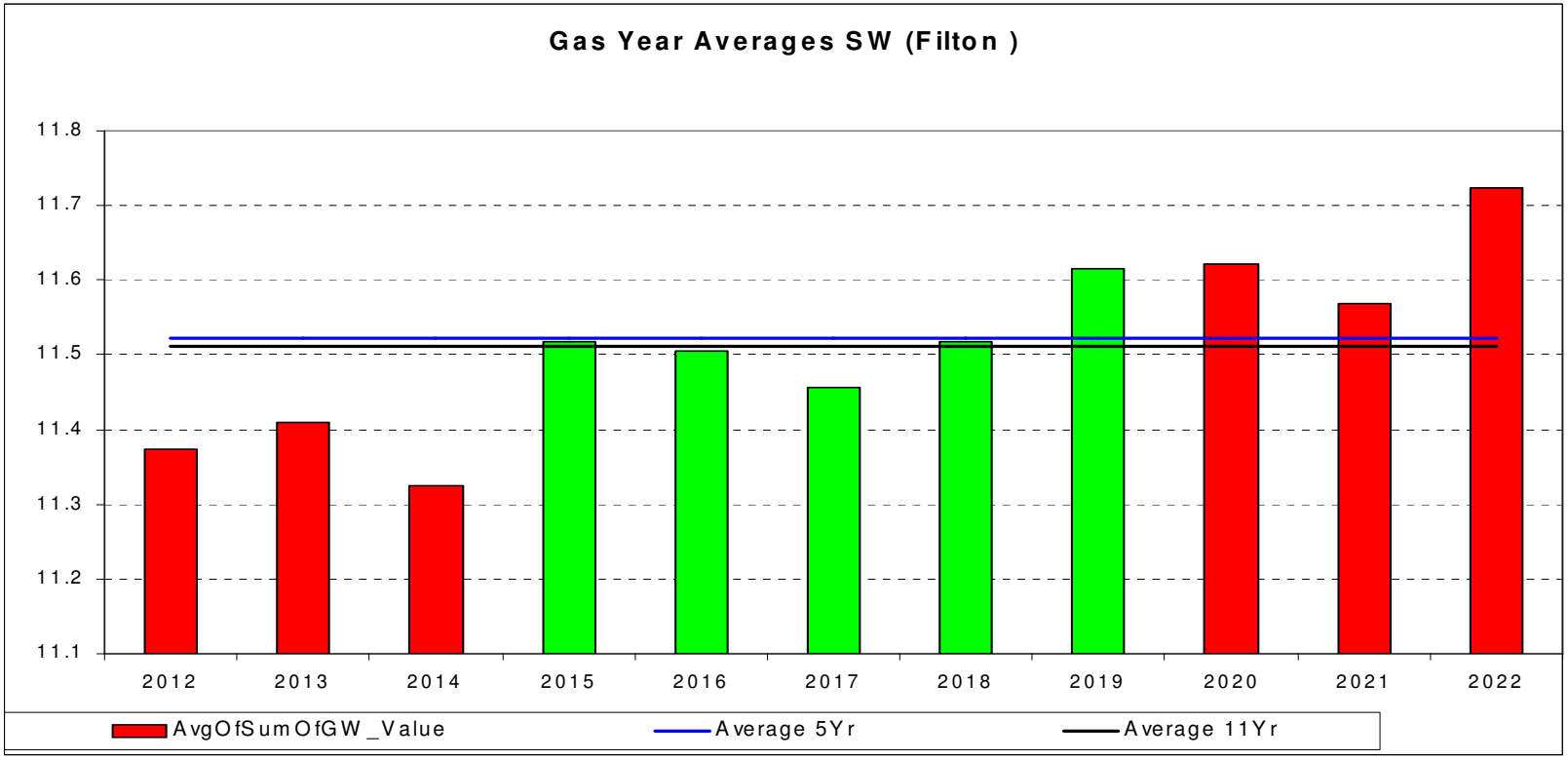
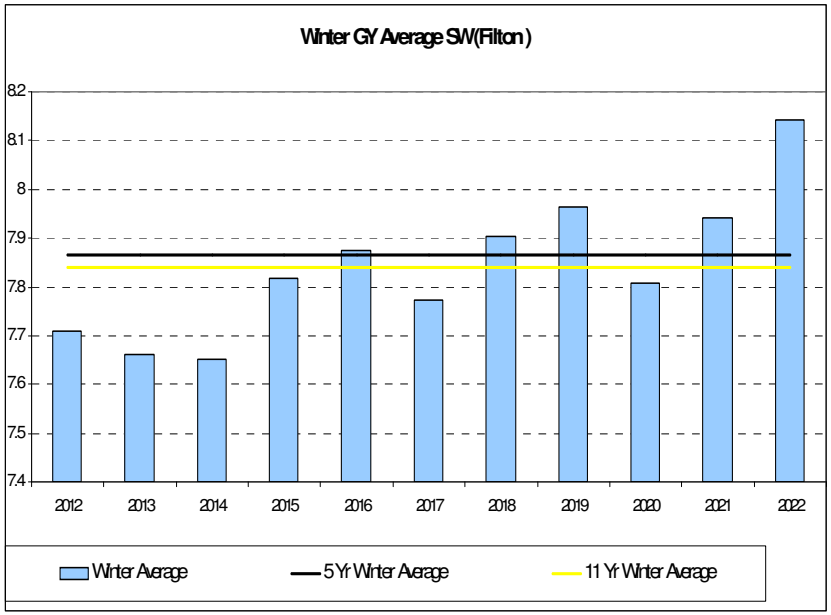
SW Temp. Proj. – 'Gas Weighted' Annual Avge.

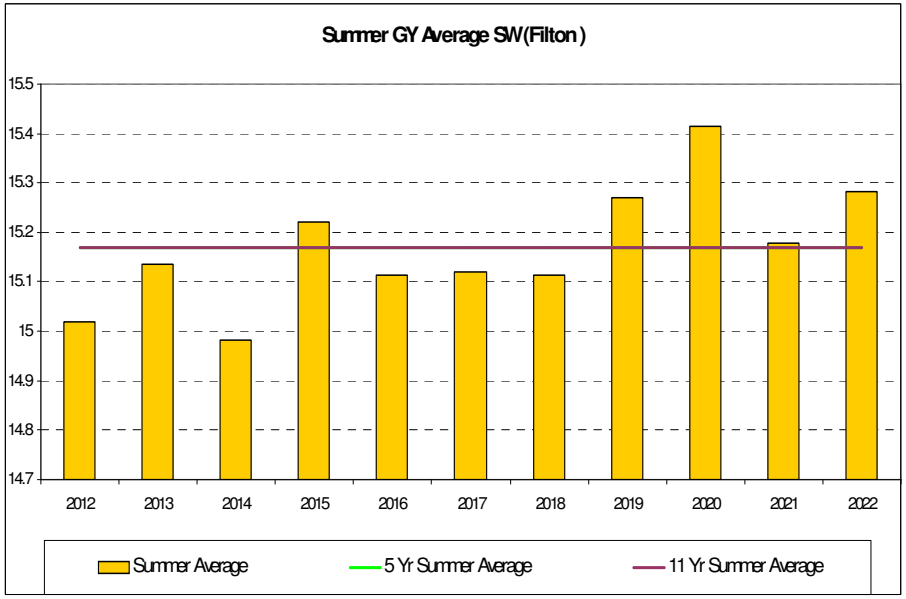


- Years highlighted green represent the 5 gas years SNCWV is expected to apply for

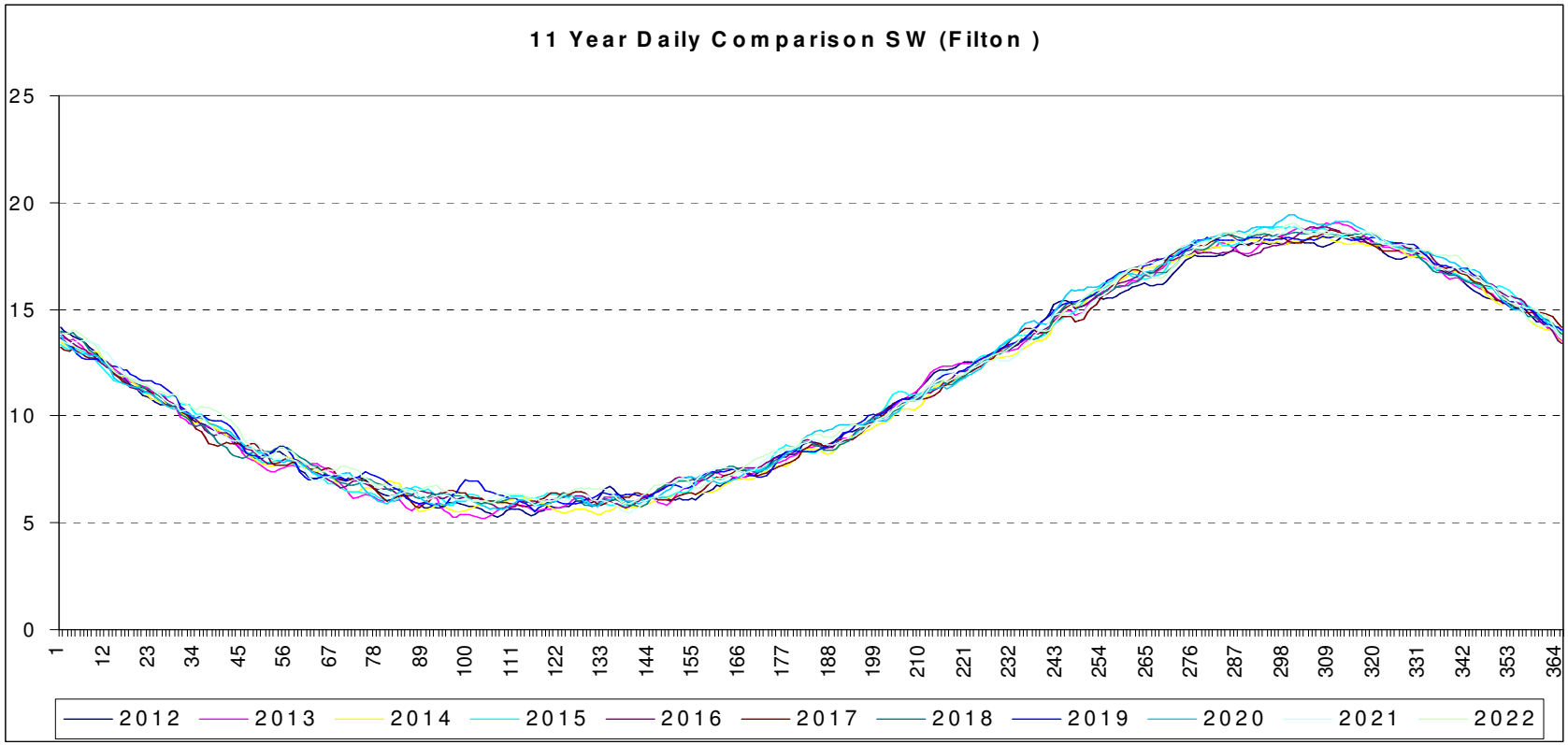
SW Temp. Proj. – Winter and Summer Annual Avge.



	Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.00	0.05	-0.05
2016	0.02	-0.01	0.05
2017	0.07	0.09	0.05
2018	0.00	-0.04	0.05
2019	-0.09	-0.10	-0.10



SW Temp. Proj. – Individual Gas Years Avg. Profile



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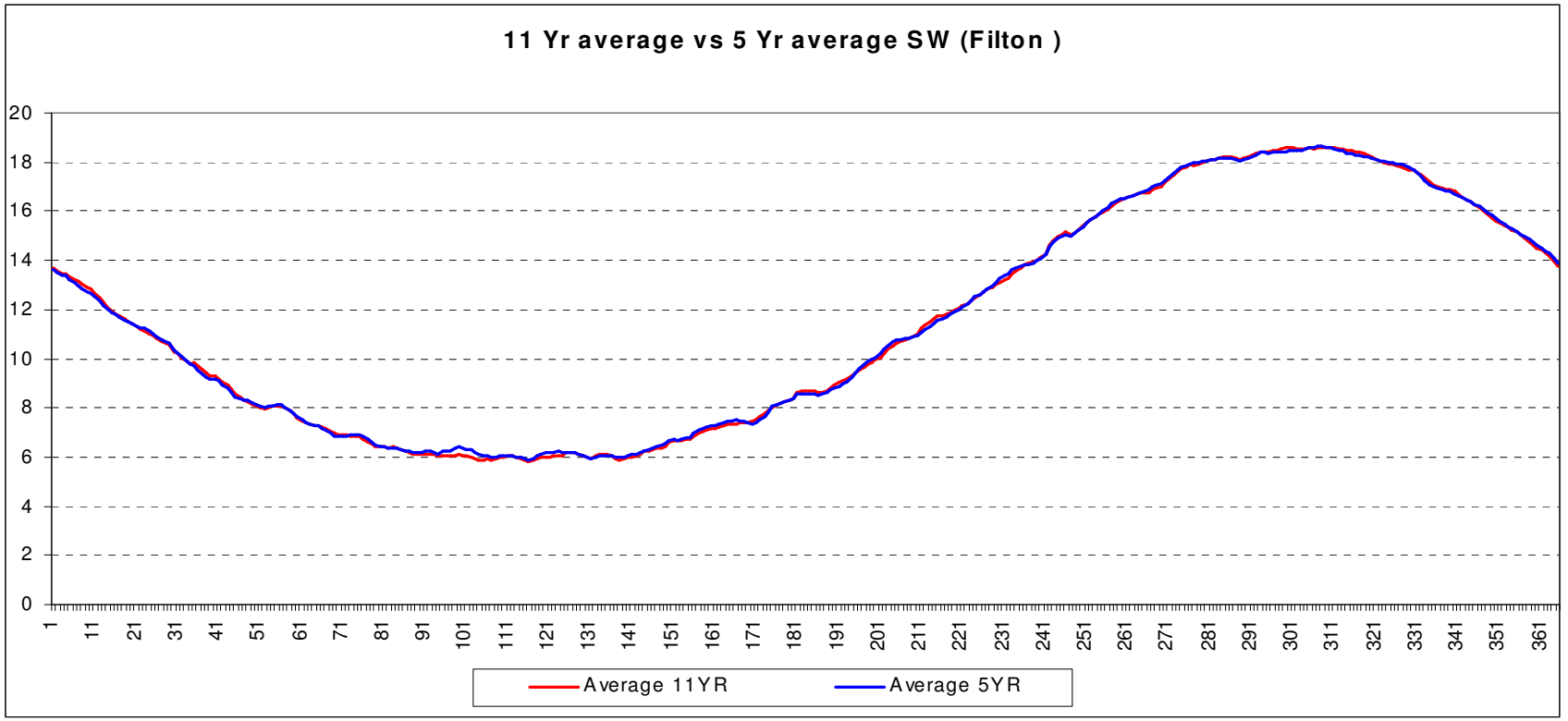
SW Temp. Proj. – 5 and 11 Years Avg. Profile



Projections – 4 LDZ Summary Comparison to 5 yr avge.

	SC Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.04	0.09	-0.01
2016	-0.01	-0.03	0.01
2017	0.06	0.06	0.06
2018	0.02	0.00	0.05
2019	-0.11	-0.12	-0.11

	NE Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.01	0.06	-0.05
2016	0.00	0.00	0.01
2017	0.08	0.07	0.09
2018	0.00	-0.05	0.05
2019	-0.09	-0.09	-0.10

	WM Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.00	0.05	-0.06
2016	0.01	0.01	0.02
2017	0.07	0.07	0.08
2018	0.01	-0.04	0.06
2019	-0.09	-0.09	-0.11

	SW Compared to 5 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.00	0.05	-0.05
2016	0.02	-0.01	0.05
2017	0.07	0.09	0.05
2018	0.00	-0.04	0.05
2019	-0.09	-0.10	-0.10

- Tables reflect difference between 5 yr Avge. Temp. and Individual yr Avge. Temp.
- For example, the Annual 5yr Avge Temp is 0.04 degrees warmer than 2015 Annual Avge. Temp

Projections: 4 LDZ Summary Comparison to 11 yr avge.

	SC Compared to 11Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.02	0.05	-0.02
2016	-0.03	-0.06	0.01
2017	0.04	0.03	0.05
2018	0.01	-0.03	0.04
2019	-0.13	-0.15	-0.12

	NE Compared to 11 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	0.00	0.04	-0.05
2016	0.00	-0.02	0.01
2017	0.07	0.05	0.10
2018	-0.01	-0.06	0.05
2019	-0.09	-0.10	-0.10

	WM Compared to 11 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	-0.01	0.03	-0.06
2016	0.01	-0.01	0.02
2017	0.06	0.05	0.08
2018	0.00	-0.06	0.06
2019	-0.10	-0.11	-0.11

	SW Compared to 11 Yr Avge.		
Gas Year	Annual	Winter	Summer
2015	-0.01	0.02	-0.05
2016	0.01	-0.04	0.05
2017	0.06	0.07	0.05
2018	-0.01	-0.06	0.05
2019	-0.10	-0.12	-0.10

- Tables reflect difference between 11 yr Avge. Temp. and Individual yr Avge. Temp.
- For example, the Annual 11 yr Avge. Temp is 0.02 degrees warmer than 2015 Annual Avge. Temp

Options & Next Steps

- Does the analysis carried out provide enough information to select [x] period for averaging the increments ?
- Observing the 'target' 5 years in context with surrounding years doesn't suggest using the average of all 5 years would be unreasonable
- Hopefully reach decision on [x] period today in order that progress can continue to be made to preparing a methodology for SNCWV derivation which can be signed off by DESC at end of Q3
- DESC / TWG Meeting in September to further progress both CWV Optimisation and Seasonal Normal Review preparations