














UNC Modification	At what stage is this document in the process?
<h1>UNC 0659S:</h1> <h2>Improvements to the Composite Weather Variable</h2>	<div>01 Modification</div> <div>02 Workgroup Report</div> <div>03 Draft Modification Report</div> <div>04 Final Modification Report</div>
<p>Purpose of Modification:</p> <p>This Modification seeks to amend the Composite Weather Variable (CWV) to include additional parameters to complement wind speeds and temperature, leading to improvements in the Weather Correction Factor (WCF).</p>	
	<p>The Proposer recommends that this modification should be:</p> <ul style="list-style-type: none"> subject to self-governance assessed by a Workgroup <p>This modification will be presented by the Proposer to the Panel on 21 June 2018. The Panel will consider the Proposer's recommendation and determine the appropriate route.</p>
	<p>High Impact:</p> <p>NA</p>
	<p>Medium Impact:</p> <p>Transporters, Shippers, CDSP</p>
	<p>Low Impact:</p> <p>NA</p>

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Timetable			
The Proposer recommends the following timetable:			Transporter: Insert name
Initial consideration by Workgroup	22 May 2018		email address
Workgroup Report presented to Panel	15 November 2018		telephone
Draft Modification Report issued for consultation	15 November 2018		Systems Provider: Xoserve
Consultation Close-out for representations	6 December 2018		UKLink@xoserve.com
Final Modification Report available for Panel	10 December 2018		Other: Sallyann Blackett
Modification Panel decision	20 December 2018		Sallyann.Blackett@eonenergy.com
			07912 806 290

1 Summary

What

During the development of '0644 - Improvements to nomination and reconciliation through the introduction of new EUC bands and improvements for the ALP and DAF' it was determined that enhancing the Composite Weather Variable (CWV) (as part of the Weather Correction Factor (WCF)) could require lengthy independent development compared to other aspects of the Modification; the End User Categories (EUC), Daily Adjustment Factors (DAF) and Annual Load Profiles (ALP).

This modification proposes to develop the CWV to incorporate more than just wind speeds and temperature to provide further stability and build on the EUCs developed as part of 0644¹.

Why

The benefit of making this change would be improvements to nominations and subsequently reconciliation because the profiled volume would be closer to the actual consumer consumption. It is also anticipated that Unidentified Gas (UIG) would be less volatile as a result, making energy purchasing less volatile for all Shippers. It is expected that the benefits of Improving nominations ahead of and on the day, and reconciliation after close out would outweigh any costs from this revised approach.

The proposed amendments would also improve the shaping of the EUC band profiles. There could be different shapes per profile, each being more reflective of the actual usage of the site.

How

To expand the data items included in the CWV to improve the WCF applied to all EUCs (including those proposed by Modification 0644) which is likely to require amendments to Section H 5.1.1.

2 Governance

Justification for Self-Governance Direction

This change is looking to amend elements of demand forecasting which will further improve UIG, although the topic is currently of material impact to some parties this change is just looking to amend the weather elements used within the calculation, we therefore recommend this change proceeds as self-governance rather than authority consent.

Requested Next Steps

This modification should:

- be considered a non-material change and subject to self-governance
- be assessed by a Workgroup

¹ Implementation is being progressed through CDSP change document 'XRN 4665 – Creation of new EUCs'

3 Why Change?

Why Change the Composite Weather Variable / Weather Correction Factors?

The CWV/WCF only takes into consideration two elements currently (wind speeds and temperature), however, consumer behaviour in all EUC bands, that are not process load based, are sensitive to more than just these elements. For example, on two consecutive days you may have the same temperature but one day is overcast with rain and the other day is dry and bright. It is acknowledged that behaviours change because on the greyer day you would see increased energy consumption because it is perceived to be colder. Fluctuations like these are not agnostic to the time of year and can occur at any time other than the peak of summer. Scenarios such as these are not catered for currently and it is our belief that expanding the CWV to incorporate further variable elements will improve accuracy.

Although Modification 0644 and subsequently XRN 4665 is delivering a pragmatic improvement this modification is seen as allowing a more analytical solution that should future proof the demand estimation process. The timing of this Modification would allow the results to feed into the seasonal normal revisions that DESC will be determining through 2019 for implementation in October 2020. Delivery any later may exclude the results from being used in this process.

4 Code Specific Matters

Reference Documents

NDM Demand Estimation Methodology

TPD Section H

Knowledge/Skills

These would include UIG, statistical analysis and demand modelling, nomination process and the reconciliation process.

5 Solution

Expand the data items included in the CWV to improve the WCF applied to all EUCs (including those proposed by ~~Modification 0644~~XRN 4665) which would require amendments to Section H 5.1.1 which extends the Transporter contact already in place for wind speed and temperature. -

Solution to include:

- Solar Radiation in j/cm2 for each weather station
- Precipitation in mm for each weather station

This solution requires the data to be obtained from standard weather stations which align to the data already received for temperature and wind speed where the data will be stored by the CDSP in the same way as the current data. This data is likely to require use in Gemini but just builds on what is already in place.

There is also a one-off requirement to obtain at least 12 months historic information to assist with DESC analysis and 2020 modelling. The period of 12 months would ideally be 01/10/2018 to 30/09/2019 if the

implementation date was 01/10/2019. Data is to be provided to the CDSP within 30 days of the implementation date.

This modification is to act as an enabler for the provision of the data to the CDSP so it is available for central analysis rather than individual Shipper analysis. The modelling for which the data will be used for will be developed via DESC and will be updated within the NDM Demand Estimation Methodology document for use in gas year 2020/21 with analysis starting in 2019 as per DESC timetables.

This will require amendment to any internal CWV calculations to enable use of the additional parameter in the base CWV calculation.

For example:

Current CWV calculation is $CW_t = I_1 * E_t + (1.0 - I_1) * S_t - I_2 * \max(0, W_t - W_0) * \max(0, T_0 - AT_t)$

Incorporating summer cut-offs, transition and cold weather upturn then gives the final form of the CWV:

$CWV_t = V_1 + q * (V_2 - V_1)$ if $V_2 \leq CW_t$ (summer cut-off)

$CWV_t = V_1 + q * (CW_t - V_1)$ if $V_1 < CW_t < V_2$ (transition)

$CWV_t = CW_t$ if $V_0 \leq CW_t \leq V_1$ (normal)

$CWV_t = CW_t + I_3 * (CW_t - V_0)$ if $V_0 > CW_t$ (cold weather upturn)

The revisions would amend CW_t in the form similar to

$CW_t = I_1 * E_t + (1.0 - I_1) * S_t - I_2 * \max(0, W_t - W_0) * \max(0, T_0 - AT_t) + I_3 * \text{Solar} + I_4 * \text{Precipitation}$

Note this additive form is likely, but the final parameters and impacts of cut offs will be determined by DESC.

New weather data items would be added to the model the NDM Demand Estimation Methodology document (3.2.1) and Section H (5.1.1). Sections 3.2.1 a) and b) of the NDM Demand Estimation Methodology document explicitly lists temperature and wind speed and the solution would be to extend this data set to include other variables (e.g. rain) to introduce improved accuracy in profiling.

~~Solution to include:~~

- ~~• Windspeed outside of the current parameters~~
- ~~• Cloud/solar radiation~~
- ~~• Rainfall/snow (Precipitation variables)~~
- ~~• humidity~~
- ~~• Flexing the cold weather and summer cut off turning points as required~~
- ~~• Consideration of time of year impacts on demand reactions to weather change~~

6 Impacts & Other Considerations

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

None

Consumer Impacts

No direct impacts identified – although improved allocation will ensure a closer match between Transporters invoiced charges and customer actual demand, minimising reconciliation flows and improving volatility in energy purchasing.

Cross Code Impacts

None identified – it is not believed any SPAA impacts exist, however, there may be IGT UNC changes required to complement this modification, these assumptions will be ratified by the Workgroup and an IGT modification will be sponsored if required.

EU Code Impacts

None

Central Systems Impacts

Changes would be required to central systems to introduce the new weather variables and Gemini would need amending for CWV ~~and WCF~~ changes so a ROM would be required. In addition, the CDSP will need to procure the additional weather items, as such we expect the initial analysis may need to be done by Shipper organisations who have the data available.

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:

Relevant Objective	Identified impact
a) Efficient and economic operation of the pipe-line system.	None
b) Coordinated, efficient and economic operation of (i) the combined pipe-line system, and/ or (ii) the pipe-line system of one or more other relevant gas transporters.	None
c) Efficient discharge of the licensee's obligations.	None
d) Securing of effective competition: (i) between relevant shippers; (ii) between relevant suppliers; and/or (iii) between DN operators (who have entered into transportation arrangements with other relevant gas transporters) and relevant shippers.	Positive
e) Provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards... are satisfied as respects the availability of gas to their domestic customers.	None
f) Promotion of efficiency in the implementation and administration of the Code.	None
g) Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.	None

This modification delivers positive impacts to Objective (d) as it improves accuracy in nominations and reduces reconciliation and UIG. It would therefore promote accurate cost targeting and improve effective competition furthering relevant objective d).

8 Implementation

~~No implementation timescales are proposed. However, implementation would be most beneficial at the start of the gas year so it is proposed as 01 October 2019~~ with the provision of the historic data being within 30 days of the implementation date.

9 Legal Text

Text Commentary

To be provided by the Transporters but an initial suggestion for enduring text is:

5.1 Weather forecasting

5.1.1 Transporters will obtain (from a reputable meteorological services provider) at certain times within each Day:

(a) forecasts of temperatures and wind speeds at a number of weather stations at intervals during the remainder of that Day and the following Day;

(b) details of the temperatures and wind speeds recorded at such weather stations at intervals during that Day and the preceding Day;

(c) details of solar radiation in j/cm2 at such weather stations at intervals during that Day and the preceding Day;

(d) details of the precipitation in mm at such weather station at intervals during that Day and the preceding Day. -

5.1.2 The times at which each Transporter will obtain weather data under paragraph 5.1.1 include the following approximate times: 11:30 hours, 15:15 hours and 23:30 hours on the Preceding Day and 07:30 hours, 11:30 hours and 15:15 hours on the Gas Flow Day.

10 Recommendations

Proposer's Recommendation to Panel

Panel is asked to:

- Agree that self-governance procedures should apply
- Refer this proposal to a Workgroup for assessment.