Joint Office of Gas Transporters

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Demand Estimation Sub-Committee Minutes
Monday 22 July 2019
at Radcliffe House, Blenheim Court, Warwick Road, Solihull B91 2AA

Attendees

Chris Shanley (Chair)	(CS)	Joint Office	
Kully Jones (Secretary)	(KJ)	Joint Office	
Anupa Purewal	(AP)	E.ON	Voting Member Alternate
Emma Buckton*	(EB)	Northern Gas Networks	Voting Member
Fiona Cottam	(FC)	Xoserve	
Guv Dosanjh	(GD)	Cadent	Voting Member
James Hallam-Jones	(JHJ)	Xoserve	
Jason Blackmore	(JB)	British Gas	Voting Member
John Jones*	(JJ)	Scottish Power	
Josh Mallett	(JM)	npower	
Joseph Lloyd	(JL)	Xoserve	
Louise Hellyer	(LH)	Total Gas & Power	Voting Member
Luke Reeves	(LR)	EDF Energy	
Mandeep Pangli	(MPa)	Xoserve	
Mark Jones	(MJ)	SSE	Voting Member
Mark Palmer*	(MPa)	Orsted	
Nick Pollard*	(NP)	Northern Gas Networks	
Zachary Povey*	(ZP)	Gazprom Energy	Voting Member Alternate

Apologies

Connor Charles	(CC)	Gazprom Energy	Voting Member
Dave Mitchell	(DM)	Scotia Gas Networks	Voting Member
Lorraine Edgcumbe	(LE)	E.ON	Voting Member
Mark Perry	(MPe)	Xoserve	

via teleconference

Copies of papers are available at: http://www.gasgovernance.co.uk/DESC/0220719

1. Introduction and Status Review

CS welcomed everyone to the meeting.

1.1. Apologies for Absence

Please refer to the above table.

1.2. Note of Alternates

Anupa Purewal for Lorraine Edgcumbe
Emma Buckton for Smitha Coughlan (until 12pm)
Zachary Povey for Connor Charles
Xoserve for David Mitchell

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1.3. Approval of Minutes (08 July 2019)

The minutes from the previous DESC meetings were approved.

1.4. Review of Outstanding Actions

DESC 0701: Xoserve (MPe) to provide a proposed revision to the CWV formula to include rainfall, for consideration and approval.
Update: An update to this action was included under agenda item 4.0 so this action was closed.
Closed

DESC 0702: Xoserve (MPe) to contact Met Office to discuss current CCM output and its relevance to latest climate studies.
Update: An update to this action was included under agenda item 4.0 so this action was closed.
Closed

2. Update on the Enhanced Information Provision Initiative (National Grid)

CS explained that this item had been deferred from the last meeting but he had not had confirmation from National Grid that they would be able to attend the meeting. He highlighted that National Grid had provided a presentation on the Data Enhancement Project and he suggested that DESC members send any comments on the presentation directly to National Grid.

3. 2019/20 NDM Algorithms: Response to Industry Representations

Joseph Lloyd (JL) provided a presentation titled Response to Representations on 2019/20 NDN Algorithms. He provided a brief overview of the EUC and demand model lifecycle and 2019 Demand Estimation timetable before confirming the objectives for this meeting. He highlighted that the purpose is for DESC to review the derived factors – ALPs, DAFs and PLFs in order to approve the final versions to be used in Gemini and SAP-ISU for the new Gas Year.

He reminded DESC members that at the 08 July meeting, DESC approved all profiles for Gas Year 2019/20 except those relating to the Domestic Pre-payment EUCs. He added that for these EUCs, some inconsistencies and unusual results with the profiles and peak load factors had been highlighted and a number of options were discussed resulting in the two remaining options below:

- Apply the Domestic PPM demand model used in the MOD451AV adjustments process
- Select the standard Non-Prepayment Domestic profiles until additional years data is available to produce a more robust model.

JL explained that updated the profiles and factors based on the Domestic PPM demand model used in the MOD451AV adjustments process had been produced and circulated. The presentation (slide 5) indicates that no comments had been received on the revised set of Domestic Prepayment profiles and factors provided for DESC. However, since then some positive comments have been received from npower agreeing that results are more in line with expectations and there is less weather sensitivity. Other DESC members also supported and agreed with this view.

> **DESC members supported using the latest version of PPM parameters.**

JL confirmed that there have been no additional comments received outside of DESC and TWG on this year's draft proposals before seeking final approval on the EUCs, demand models and derived factors for 2019/20.

> **DESC members approved the EUCs, Demand Models and Derived Factors for use in Gas Year 2019/20.**

JL invited Mandeep Pangli (MPa) to provide an update on the uplift factors (slides 7-19). She reminded members that analysis of UIG was provided in April to review the impacts during Gas Year 2018/19 and that this data has now been refreshed to include analysis up to the end of June 2019.

She added that in April, DESC approved the use of uplift factors for the DAF only for Gas Year 2019/20 and so for information a further strand of analysis for UIG for Gas Year 2018/19 applying a DAF uplift only has been undertaken.

She stated that the first objective was to review the impacts of UIG uplift factors for gas year 2018/19 so far. The data sources and statistical measures used for this analysis are described in slides 8 and 9.

DESC considered the analysis provided at national level. The chart (slide10) provides analysis for the daily national UIG percentage levels for actual UIG (with uplift factors applied) and what UIG would have been if no uplift factors had been applied. MPa highlighted that UIG values are reducing as expected.

UIG analysis at national level, by month and for all 13 LDZs was also provided (slide 11). In response to a question from Louise Hellyer (LH), Fiona Cottam (FC) clarified that the cells highlighted in green are the values closest to zero.

Slide 12 showed that 9 of the 13 LDZs have an average UIG closest to zero where the uplift factors had been applied indicating that the application of the uplift is working well.

MPa responded to a question about why NW was one of the LDZs that was better without the uplift and she said it was difficult to identify the reason for this. She also confirmed in response to a question from Mark Jones (MJ) that the analysis is the daily average and is not demand weighted.

In conclusion, MPa highlighted that:

- Applying an uplift to the ALP and DAF in gas year 2018/19 has reduced the average UIG (by month and by LDZ) and helped to marginally improve volatility
- However, the average UIG over the winter period (October '18 to March '19) has been negative which is unexpected and suggests the ALP uplift factors have increased the 01B NDM demand too much
- Over the summer period so far (Apr to Jun), UIG has on average been a smaller positive value.

MPa then took DESC members through the second objective of the analysis which was to review the impacts of UIG uplift factors (DAF only) for gas year 2018/19 so far. She showed analysis of national UIG percentage levels for actual UIG (with uplift factors applied), UIG if no uplift factors had been applied and UIG with uplift factors applied to DAF. This indicated that the uplift to DAF only in some instances made it worse i.e. there is more UIG.

Similarly, the table showing analysis by the 13 LDZs (slide 16) shows that for some months, UIG is higher when the DAF uplift is applied than when there is no uplift. A brief discussion was had on the results and the corresponding reconciliations. LH observed that the DAF only helped with the -ve UIG days and volatility overall. A discussion was also had on whether using the uplift for ALPs and DAFs was a better option.

In conclusion, MPa confirmed that application of an uplift only to the DAF in gas year 2018/19 has not reduced the average UIG (by monthly or LDZ analysis) or helped to significantly improve volatility. In addition, in most cases, applying a DAF uplift only has increased UIG on average. MPa therefore, asked DESC members if they wanted to review the decision to apply the DAF only uplifts in 2019/20.

A further brief discussion took place, and CS clarified that a decision had already been made and the analysis was provided as a sense check. The overall view was to continue with the original decision to apply the uplift only to the DAF.

JL confirmed the next steps are for the CDSP to inform the industry and Ofgem that the NDM proposals have been finalised and apply the uplift factors and produce a version to use in Gemini to support the NDM nominations and allocations.

CDSP will publish the final proposals (week beginning 29 July) and submit interface files to key systems no later than 15 August 2019.

JL also indicated that CDSP would be updating SAP-ISU with historical ALPs and DAFs for the new EUCs to enable subsequent AQ calculations post October 2019. To avoid large differences in AQ movement the historic values of ALPs and DAFs will be those relating to the consumption band at the time i.e. 01B and 02B respectively. DESC members supported this approach.

JL concluded the presentation by reminding DESC members where information can be found on the secure website (slide 20).

4. **Seasonal Normal Review Update**

JL provided a walkthrough of the presentation titled *Seasonal Normal Review 2020*. He briefly explained the key milestones before providing a reminder of the DESC decision on 8 July in relation to the inclusion of a solar radiation term in the CWV formula.

He highlighted that the Demand Estimation Methodology (DEM) document was recently changed by DESC to allow them to include precipitation as well as solar radiation in the CWV formula. In addition, analysis during this CWV formula review has concentrated on solar which on occasion will also work as a proxy for precipitation, however, may not capture all scenarios.

He added, that at the last meeting DESC discussed the change proposal XRN4772 which will be amending the CWV formula but members wanted more detailed precipitation/demand analysis to understand how the final precipitation term may look but agreed it was sensible to include the precipitation term in the changes associated with XRN4772 even if it would be zero until the precipitation analysis is undertaken. JB asked about the progress with the change and the issue of change congestion. CS clarified that the intention is to include as much as possible in the June 2020 Release, as far he was aware this would include this change. Discussion was ongoing about how changes after this release will be prioritised/delivered.

JL confirmed that there was no analysis yet to share with DESC before describing the additional changes to the proposed CWV formula definition for 20/21 onwards. The key change is the inclusion of a new parameter for the precipitation effect.

> **DESC members supported the inclusion of the new parameter for the precipitation effect.**

JL confirmed the next steps are to optimise the coefficients for all LDZs , publish final values and present the findings to the TWG/DESC in Q3 2019. In terms of setting the SNCWV, an update will be provided to DESC on the Met Office view of Climate Change Methodology (CCM) output produced in 2014 and its relevance to more recent studies/projects. He reminded DESC members that there are two scheduled meetings on 7 October and 9 December and indicated that there may need to be additional ad-hoc meetings of the TWG in September and November.

5. **Current Weather Station Review**

MPa provided a presentation titled *Current Weather Station Review*. She reminded DESC members that this is an annual exercise and indicated that CDSP have provided an updated table of the weather stations following liaison with the Met Office (slide 3). No new issues have been identified by the Met Office and no further concerns were raised by DESC members.

6.   **Agreement of Ad-hoc Work Plan**

JL provided a walkthrough of a presentation providing a review of the ad-hoc work plan. The key focus was the work that is needed to be undertaken during September 2019 to February 2020. JL reiterated the standard work plan items (slide 5) before outlining the additional work proposed for 2019/20 (slide 6) and the TWG ad-hoc work areas (slide 7). He also summarised the outstanding ad-hoc work plan items (slides 8 + 9) before outlining the following work areas which CDSP recommend DESC should focus on over the Autumn 2019/Winter 2020 period:

- Algorithm Performance for Gas Year 2018/19
- Spring Approach 2020 preparations (for Gas Year 2020/21)
- Seasonal Normal Review 2020
- Implement upgrades to CDSP's modelling processes / systems which develop Demand Estimation deliverables
- Implement changes to CDSP's sample data handling processes
- Implement changes to CDSP's weather data handling processes

CS asked if this meant that none of the outstanding adhoc work plan items, including holiday periods would be looked at this year and JL confirmed this was the case. JL also indicated that DESC members may wish if resources permit to undertake some of this work on behalf of DESC.

DESC members supported the approach and the proposed work activities outlined above.

MPa indicated that this was her last DESC meeting as she was moving to a new role within Xoserve. CS thanked MPa for her contribution to DESC and wished her good luck in her new role.

7.   *UIG Taskforce Recommendations for DESC – Machine Learning Next Steps*

James Hallam-Jones joined the meeting to present UIG Task force findings in relation to how Machine Learning can help improve NDM allocation calculations. He provided a walkthrough of the presentation titled UIG Task Force Machine Learning Next Steps which he explained have been enhanced from the previous iteration published for the last meeting.

He briefly explained what machine learning is before providing an overview of how the Task Force and the UIG analytics partner have used and tested machine learning to reduce base levels of UIG by up to 70% and volatility by up to 30%.

He stated that the Task Force is looking to produce a machine learning video to highlight the benefits, considerations and implementation challenges. He also indicated that options are being discussed which involve re-running the neural network performance comparison for more recent datasets for EUC 01; the development of more improved estimation models and building a UIG predictive model.

He concluded his presentation by outlining the benefits and recommending that industry consider moving from the current NDM allocation model to a machine learning based prediction. He then sought DESC views on how the industry could move forward with such an approach.

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The following comments were made in discussion:

a. Increased accuracy was regarded as a benefit.
b. FC confirmed that there is no off-the shelf package for machine learning and its use would need to be scoped by industry.
c. Machine learning could have helped with easy adoption of the May 2020 bank holiday changes as the model could easily recognise holiday days and this would be a quick benefit to industry.
d. Current model uses various inputs like weather and AQs and there is a defined formula which customers can replicate to work out NDM allocations. The outputs from machine learning would not be as transparent.
e. DESC members were also concerned how information will be made available to industry and from which interface. Members emphasised the need for industry to be able to replicate the outputs from machine learning or have confidence in the way allocations are produced.
f. JB indicated that British Gas already use machine learning for forecasting.
g. FC suggested a phase of parallel running and testing would help give confidence in a change in approach.
h. JHJ suggested that the inputs and outputs from machine learning would be transparent and the actual mathematics of the model would need to be discussed at DESC. He indicated that there would be a move from factors to a set of principles which would represent a seismic shift from how NDM is calculated and allocated now.
i. CS suggested that when more information is known following production of the video and discussion of options with the UIG analytics partner this will help to inform DESC and any subsequent industry discussions.
j. JHJ indicated that the Task Force is mindful of getting a proposal in place before the planned Gemini re-write.
k. JB reiterated that whilst there might be a few flaws, industry is familiar with and knows what to expect from the current model.
l. JHJ suggested that census data, longitudinal data and weather data items could all be captured and there are significant benefits as the model would not over-react for sudden weather changes and therefore provide more stability.
m. JHJ acknowledged that awareness will need to be raised through an education and partnership piece of work. JHJ acknowledged that the UIG task force had lots more information on the topic that could be shared with members.
n. JB stated that in the past a minimum change approach has been adopted to avoid turmoil to industry and previously DESC investigated options around the Nexus process to ensure smooth transition. He suggested these options could be revisited as part of any industry review to help illustrate the merits of machine learning and why it should be progressed ahead of them.
o. MJ suggested a hybrid model could be adopted with elements of machine learning within the current model.
p. LH asked if EUCs would need to be reset every year? JHJ suggested that there would be evolving EUCs and less updates which would benefit industry.
q. MJ asked if implementation could be part way through a Gas Year. FC suggested that this could be possible as the allocation process works day on day.

DESC members were interested to find out more information about machine learning as it becomes available. JHJ agreed to provide an update at the October meeting.

FC raised a point of caution indicating that this should not detract or undermine DESC business as usual (BAU) activities such as Seasonal Normal and CWV. Machine learning will become wider than a UIG Task Force activity as it closes down at the end of October and BAU owners will be assigned. She suggested that DESC and Xoserve would work together in future to develop ideas for how machine learning can benefit DESC objectives. For ease of transparency, MJ suggested a UNC Review Group should be used rather than DESC meetings.

CS echoed that a partnership approach would be beneficial as this would keep all interested parties involved. He confirmed that the next steps as:

- JHJ to keep DESC updated on UIG Task Force machine learning developments
- Consideration to be given to the development of a DESC sponsored/supported UNC Review Group.

8. DESC Related Modification/Change Updates

Change Proposals for EUC and weather changes were discussed as part of above agenda items.

9. Communication of Key Messages

A summary of the key message agreed during the meeting are published separately and can be accessed here: http://www.gasgovernance.co.uk/desc/summarykeymessages.

10. Any Other Business

None

11. Diary Planning

Further details of planned meetings are available at: https://www.gasgovernance.co.uk/events-calendar/month

Time / Date	Venue	Workgroup Programme
10:00 Monday 07 October 2019	Radcliffe House, Blenheim Court, Warwick Road, Solihull B91 2AA	Standard agenda, plus • NDM Sample Update • Seasonal Normal Review Update • Communication of Key Messages • Update on Machine Learning
10:00 Monday 09 December 2019	Radcliffe House, Blenheim Court, Warwick Road, Solihull B91 2AA	Standard agenda, plus • Evaluation of Algorithm Performance for Gas Year 2018/19 • Modelling Approach – Spring 2020 • Seasonal Normal Review Update • Communication of Key Messages

DESC Action Table (as at 22 July 2019)

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
DESC 0701	09/07/19	3.1	Xoserve (MPe) to provide a proposed revision to the CWV formula to include rainfall, for consideration and approval.	Xoserve (MPe)	**Closed**

DESC 0702	09/07/19	3.2	Xoserve (MPe) to contact Met Office to discuss current CCM output and its relevance to latest climate studies.	Xoserve (MPe)	**Closed**