

Stage 02: Workgroup Report

0453:

Project Nexus – Demand Estimation

At what stage is this document in the process?



This modification is one of a number complementary proposals seeking to implement the requirements identified under Project Nexus. This modification identifies changes to the arrangements associated with NDM Demand Estimation



The Workgroup recommends that this modification should now proceed to consultation.



High Impact:
Users and Transporters

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About this document:

This report will be presented by the Workgroup to the panel on 21 November 2013.

The panel will consider whether the modification is sufficiently developed to proceed to Consultation and to submit any further recommendations in respect of the definition and assessment of this modification.


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1 Summary

Is this a Self-Governance Modification?

The Modification Panel determined that this is not a Self Governance modification.

Why Change?

As part of the outcome of the last Gas Distribution price control review, it was agreed that funding should be available to support a major Information Technology (IT) systems investment programme by the Transporters agent, Xoserve. This systems investment for UK-Link Replacement provides an opportunity to consider whether the existing UNC requirements remain appropriate. Rather than asking Xoserve to procure replacement systems that deliver the existing functionality, there is an expectation that introducing regime enhancements at this stage would be the most economic time to implement any such change. This is particularly opportune since it is coincident with the development of smart metering, such that requirements can be specified that recognise changes to metering arrangements rather than any changes to accommodate smart metering being retrofitted in due course. The requirements gathering exercise for the enhancements is entitled Project Nexus. This Modification Proposal is one of four which reflect the requirements. Complementary Modification Proposals have been raised and are under development in the following areas

- Allocation, Settlement and Reconciliation – UNC Modification Proposal 0432¹
- Retrospective adjustment - UNC Modification Proposal 0434²
- iGT Single Service Provision - UNC Modification Proposal 0440³

Solution

UNC Modification Proposal 0432 identifies a suite of changes to gas settlement arrangements, including the removal of Smaller Supply Point (SSP) aggregate reconciliation (Reconciliation by Difference (RbD)) and its replacement with an Allocation Scaling Adjustment mechanism. This will require a new approach to gas allocation to reduce the likelihood of cross-subsidies arising at the point of allocation. The current NDM allocation algorithm (as defined in UNC TPD Section H2.2.1) is not compatible with the regime identified by Modification 0432.

A Technical Working Group (TWG) under the supervision the Demand Estimation Sub-Committee (DESC) identified and assessed a range of options for the future Non-Daily Metered (NDM) estimation algorithm. A preferred model was subsequently developed. This is an adaptation of the current NDM estimation algorithm. In particular the Scaling Factor (SF) would be removed from the algorithm and the Weather Correction Factor (WCF) would be amended to be based on the difference between actual and seasonal normal weather.

It is proposed that the UNC be modified to describe the NDM Demand Estimation process at a high level, but that the specific details and methodologies, including any formulae, are set out in a UNC Related Document, which would require the approval of Uniform Network Code Committee (UNCC) for any subsequent amendments.

Relevant Objectives

¹ [UNC Mod Proposal 0432. Project Nexus - Gas Settlement Reform](#)

² [UNC Mod Proposal 0434. Project Nexus - Retrospective Adjustment](#)

³ [UNC Mod proposal 0440. Project Nexus - iGT Single Service Provision](#)

Implementation of the changes identified within this Modification Proposal is expected to facilitate the securing of effective competition between Users. Accurate cost allocations are a fundamental underpinning for effective competition and the proposed changes are expected to lead to more accurate allocation of costs between Users.

Implementation

No implementation timescales have been suggested for this modification at this stage.

2 Why Change?

Background

Ofgem stated with its Gas Distribution Price Control (GDPCR1) Final Proposals that Gas Distribution Networks' (GDNs') allowed revenues for 2008-13 include funding for the replacement of UK LINK on a like for like basis. The Proposals anticipated that:

- Replacement of the UK-LINK system towards the end of the GDPCR1 period would provide a cost effective opportunity for the industry to rationalise and put in place revised systems that are fit for purpose: and,
- Xoserve's planned consultation with stakeholders on the potential scope and design of revised systems would provide opportunity to consider future 'user driven' developments, and cited the specific examples of changes that might be required due to smart metering and the potential opportunity for iGTs to use a common industry platform.

During the GDPCR1 consultation process, Ofgem proposed an industry dialogue leading to an agreement between Users and Transporters on what central information system services would be required from Xoserve in its capacity as the Transporters' agent and how the associated costs should be met. Ofgem prepared a Terms of Engagement for the dialogue, which took place under the auspices of a Xoserve Services Workgroup.

The Workgroup's activities included consideration of the potential high level features of UK-LINK replacement and identified that the contractual and governance framework would be developed by the GTs and Shippers in agreement with Ofgem. The group identified that following this agreement the Transporters would, through the UNC Modification Process, raise and progress the required UNC Modification.

Entitled 'Project Nexus' the gathering of requirements for the contractual framework was undertaken under UNC governance and a dedicated Workgroup established for this purpose. The Workgroup is nearing completion of its work and has identified that it is now timely that relevant UNC Modification Proposals be raised.

Demand Estimation

UNC Modification Proposal 0432 proposes a number of changes to Gas Settlement arrangements, including the removal of Reconciliation by Difference (RbD) and its replacement with a universal 'Allocation Scaling Adjustment'. This would require a new approach to gas allocation to reduce the likelihood of cross-subsidies arising at the point of allocation. The current NDM allocation algorithm (as defined in UNC TPD H2.2.1) would not be sustainable under Project Nexus arrangements.

The TWG has developed a range of options for the future NDM Estimation Algorithm and assessed these. A preferred option to operate as part of Project Nexus has been accepted by DESC and forms the basis of this Modification Proposal.

The TWG recommended an adaptation of the current NDM algorithm. The SF would be removed from the algorithm and the WCF would be amended to be based on the difference between actual and Seasonal Normal (SN) weather.

3 Solution

The current NDM allocation formula works in aggregate and is a 'top-down' approach. The prevailing WCF does not take account of actual weather measurements. Instead it is simply the ratio of Actual LDZ NDM Demand to SN LDZ NDM Demand. Since Gas Year 2008/09, the view of SN Demand used in NDM allocation has been based on the LDZ NDM connected load as per the UK-Link Gemini system, and is no longer dependent on the Transporter's Demand forecasting processes.

The current SF is a balancing correction to make sure that all NDM Energy is attributed across the NDM Supply Points within the LDZ.

Impacts of Project Nexus Business Requirements

Project Nexus Requirements for the Settlement and Reconciliation Topics include (amongst others) the following significant proposed changes to the gas settlement regime:

- Identification of an amount of Unidentified Gas each day within an LDZ and apportionment of that energy to all live Supply Points in the LDZ termed an 'Allocation Scaling Adjustment')
- Individual Meter Point Reconciliation for all Supply Points, including SSPs
- Removal of RbD, to be replaced with an adjustment to the Unidentified Gas across all live Supply Points in the LDZ termed a 'Reconciliation Scaling Adjustment'

The impact of those changes is that a new approach to NDM allocation is required. Allocation processes would need to derive a more robust bottom-up estimate of daily Demand for NDM Supply Points. These estimates would be combined with Daily Metered (DM) measurements to derive an initial estimate of Unidentified Gas for the LDZ for the day.

The current NDM allocation algorithm would not be sustainable in the new environment as it includes a SF to ensure that all remaining NDM Energy is allocated. It would not be feasible to simply remove the SF from the current formula, as the WCF uses actual LDZ NDM Energy as its start point. NDM Energy is the balancing figure in today's allocation, whereas in the future world a stand-alone estimate of NDM Energy is required. Therefore a new NDM estimation formula for Supply Point Demand is required, which is a better estimate of Demand under the prevailing weather conditions. It is proposed that the current NDM allocation algorithm be replaced by an NDM estimation algorithm. This has been developed by DESC and supports the arrangements proposed by Modification Proposal 0432.

It is proposed that the UNC be modified to describe the NDM Demand Estimation process at a high level, but that the specific details and methodologies, including any formulae, are set out in a UNC Related Document, which would require the approval of the UNCC for any subsequent amendments. The initial version of the UNC Related Document will contain the NDM estimation allocation identified by DESC.

Determination of Supply Meter Point Demand

UNC TPD Sections H2.2 to H2.5 currently set out the details of the key parameters used in NDM Demand Estimation. It is proposed that relevant sections be removed from UNC and form the basis of a UNC Related Document which describes the parameters and high level data sources and processes.

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It is proposed that UNC TPD Section H2.2 refers to the UNC Related Document and set out the arrangements for governance along the following lines:

NDM Supply Point Demand for a day is determined by the relationship of historic demand for that End User Category (EUC) to Composite Weather Variable (CWV) and other factors, including day of the week and holidays and by applying actual CWV values for the Gas Day in question in the derived Demand model.

The intention is that TPD Section H as amended would provide a high level overview which explains to current and future market participants what the key inputs are, and directs the user to the relevant document(s) to gain a fuller understanding. The aim is to balance flexibility for DESC in defining the estimation algorithm (subject to system requirements) with transparency for other market participants. The determination of the values of the parameters (ALP, DAF, CWV, SNCWV) would remain the responsibility of DESC.

Estimated Reads for use in NDM Reconciliation

UNC TPD Section H2.2.2 currently sets out the formula for defining NDM Demand when estimating a 'change of User' Meter Reading for use in NDM Individual Meter Point Reconciliation. That formula is somewhat simpler than the full estimation formula. It is envisaged that the H2.2.2 formula be left unchanged, or subject to systems/process limitations, is aligned more closely with the new estimation algorithm.

NDM Annual Quantities (AQs)

UNC TPD Section H3 currently sets out the process and formula for setting an NDM AQ. It is proposed that the formula for AQ be amended to use WCF in the denominator as it would be based on actual weather data. EWCF would no longer be needed for AQ calculation.

NDM Capacity

UNC TPD Section H4 presently sets out the formulae for defining NDM Capacity. The proposed estimation algorithm would continue to allow for the calculation of a peak day Demand, so it is proposed that this section is not changed.

UNC Related Document

Much of current UNC TPD Sections H2.2 to H2.5 would form the basis of the proposed UNC Related Document, with amendment as necessary to reflect the requirements of the solution identified within this Modification Proposal

In summary:

SPD_t (NDM Supply Meter Point Demand for a Day) = $((AQ/365) * ALP_t * (1 + (DAF_t * WCF_t)))$

Where, $WCF = CWV_t - SNCWV_t$ (Seasonal Normal CWV for a Day)

And, $DAF_t = WSENS_t / SND_t$

The formula for the ALP would be unchanged.

The derivation of the new Allocations Scaling Adjustment and Reconciliation Scaling Adjustment would no longer be (directly) a part of Demand Estimation and would be defined within TPD Sections E and H of the UNC.

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NDM Nominations

UNC C1.5 (NDM Output Nominations) currently refers to Section H2 for the determination of Demand ahead of the Gas Day (i.e. Nominations). For the purpose of Nominations, the UNC Related Document would specify that NDM Supply Point predicted Demand for a day would be determined using the Supply Point Demand formula, substituting a forecast value for CWV for the day:

$$SPD_t = ((AQ/365) * ALP_t * (1 + (DAF_t * WCF_t))) \text{ Where, } WCF = \text{Forecast CWV}_t - SNCWV_t$$

User Pays
Classification of the modification as User Pays, or not, and the justification for such classification.
<p>Since substantial changes to central systems are envisaged in this modification, and those changes involve enhancements to the existing UNC regime, this modification falls with the definition of a User Pays Modification. Xoserve has indicated that the additional costs of implementing this [modification, over and above the cost of replacing UK Link systems on a like for like basis with existing functionality, amount to about £20m]. The actual difference in costs between a like for like and enhanced systems development will never be known since only one procurement and development exercise will be undertaken, based on the identified requirements.</p> <p>Ofgem believe that all reasonably foreseen costs arising from the UK Link replacement have been considered when price controls were set, and funding provided. If significant additional costs beyond this can be demonstrated and justified, these should be considered in the context of the arrangements for funding which are in place following the review of Xoserve's governance and funding. On this basis, the modification has not been put forward as a User Pays Modification by the Proposer.</p> <p>The transporters nonetheless wish to emphasise that not all costs have been identified and some, such as the cost of changing Gemini to be consistent with the modification, were clearly not included in price control submissions. As such, additional cost recovery from Shippers is likely to be required in future.</p>
Identification of Users of the service, the proposed split of the recovery between Gas Transporters and Users for User Pays costs and the justification for such view.
To be determined
Proposed charge(s) for application of User Pays charges to Shippers.
To be determined
Proposed charge for inclusion in the Agency Charging Statement (ACS) – to be completed upon receipt of a cost estimate from Xoserve.
To be determined

4 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

NB: Modification 0432 and 0453 are linked. If Modification 0432 were not implemented, implementation of Modification 0453 as a standalone modification would not further the Relevant Objectives.

Implementation of the changes identified within this modification is expected to facilitate the securing of effective competition between Users. Accurate cost allocations are a fundamental underpinning for effective competition and the changes are expected to lead to more accurate allocation of costs between Users. This results from improved NDM Demand Estimation arrangements and allocation scaling. This should not only increase the accuracy of costs allocated on a daily basis but also the remaining Supply Meter Points since the total allocated to those Supply Meter Points would be expected to be more accurate.

Increased predictability and certainty of allocations would be expected to allow Users to purchase energy that more closely matches true requirements. This will reduce costs for Users and support the development of effective competition.

The BRDs indicated the following benefits for AQ, are these appropriate to this modification and if so how?

- **Site AQ will more accurately reflect site consumption**

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- Utilises reads received from remotely read meters
- More accurate allocations
- Simplified Shipper and GT processes
- Reduction in manual intervention due to systematised approach
- Spreads out workload
- Incentivises more frequent read submission
- Greater User confidence in the AQ calculation regime

5 Implementation

No implementation timescales have been suggested in this modification. However, it would be beneficial if this modification could be implemented in conjunction with Modification 0432 under the Project Nexus programme.

It is suggested that where possible, the solution should be implemented to coincide with the start of a new Gas Year, to minimise the work of TWG and DESC in developing the NDM algorithm parameters. This would remove the potential inefficiencies of the industry developing a set of NDM algorithms under the current process, which would only be used for part of a year, and then developing (related but different) parameters to apply later in the same Gas Year, when the new algorithm went live.

For the proposed solution there is no expectation of any immediate change to other Demand Estimation processes. For instance, the current NDM sample of Supply Meter Points should still be fit for purpose and not require any immediate change to support the new approach.

A lead time of approximately 12 months would be required to enable DESC to agree the detailed approach to developing the new algorithms (similar to the current Spring Approach document) prior to the new algorithm going live. For example, agreement in principle by 30 September 2014 for a 1 October 2015 implementation would be necessary.

At this stage, detailed costs have not been assessed. However this new approach is not expected to be materially different in ongoing cost from the current approach.

Impact on processes

The solution identified within this modification would require a process very similar to the current arrangements to develop the new NDM estimation parameters.

- Data is gathered from a geographically distributed sample of Supply Points, across the full range of AQs
- Once validated, data is aggregated by EUC and statistical relationships to weather in the LDZ are determined
- The current weather data items are temperature and wind speed, but future arrangements may include additional weather items, so the UNC and its Related Document must give the flexibility to expand the list of weather items
- The impacts of holidays and weekends on typical behaviours are also evaluated
- The statistical relationships between demand and weather (plus holidays and weekends) would be combined with the values for weather under seasonal normal conditions to derive the following parameters (to support the new approach):
 - Daily values of the Annual Load Profile (ALP) for each EUC (including Winter to Annual ratio (WAR) Band EUCs if DESC determines that these are still required)
 - Daily values of the Daily Adjustment Factor (DAF) for each End User Category, expressed as a sensitivity to changes in the CWV away from seasonal normal
 - Peak Load Factor, to predict peak day consumption, derived from a long run of actual Great Britain weather experience, mapped against current relationships to demand

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6 Legal Text

The following Text has been prepared by National Grid Distribution and is published alongside this modification.

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7 Recommendation

The Workgroup invites the Panel to:

- AGREE that this modification should be submitted for consultation.