Background

Under the Project Nexus proposals (as documented in the Business Requirements Definition documents, and summarised in the Executive Summary) there will be a new approach to daily gas allocation. Under current arrangements, NDM Allocation is the balancing figure in the LDZ each day, to ensure that all energy is accounted for. NDM Allocations are therefore a "top-down" estimate of gas usage. Any "unidentified gas" in the LDZ is included in NDM Allocations, due to their nature as a balancing figure.

The proposed future arrangement is that "unidentified gas" in an LDZ is borne equally across all market sectors, including NDM and DM sites. Unidentified gas will be estimated for the gas day and attributed to all sectors in proportion to Shipper [AQs], via a new "Allocation Scaling Adjustment". In order to derive the daily estimate of Unidentified Gas, a more robust "bottom-up" estimate of site-level NDM demand is required for each gas day. These bottom-up estimates can then be combined with DM demands and compared to total LDZ demand (net of Shrinkage and stock change) to give an initial estimate of unidentified gas. This estimate will be subject to subsequent reconciliation as actual NDM consumptions become available.

The rest of this document deals only with the derivation of the site level estimates. Items in square brackets are still under review/discussion.

Development of an Estimation Methodology

The Demand Estimation Sub-Committee (DESC) has been asked to develop a proposed methodology for estimating daily consumption at NDM sites. The detailed analysis has been delegated to the Technical Workgroup of DESC (TWG) but DESC will make the final decision and recommendation, based on an agreed set of success criteria.

TWG identified a number of possible approaches, and after an initial assessment selected three leading options for further investigation. These approaches will be explained in further detail below but in summary they are:

- Option A – average demand from a sample of smart meters scaled up/down to other sites in the same "class" (EUC or similar grouping)

- Option C – regression formula based on relationship of gas demand for a "class" to up to [six] weather data items and other non-weather parameters such as day of week, time of year; use of actual weather data each day to predict demand for that "class" based on the formula

- Options E – amendment to current allocation formula, to use actual weather data in deriving the weather correction factor and to remove the Scaling Factor from the formula (to be replaced by the Allocation Scaling Adjustment which shares out Unidentified Gas across the LDZ)

Summary of Potential UNC changes

Option	NDM Daily Estimates of Demand	NDM Day Ahead Nominations	AQ Calculation
Option A – scaled up Smart Meter data	NDM Supply Point demand for a day would be determined by reference to the demands of a group of Sampled NDM Supply Points within a class. SPD = (Sample demand/ Sample AQ) x SPAQ Daily demands would be obtained by the Transporter under its existing ability to procure meter reads from 3rd parties (e.g. from DCC). Sample size disposition for each class of Supply Point would be agreed by DESC. References to ALPs, DAFs, Weather Correction Factor and Scaling factor would no longer be required, although there might be a new term for the daily demand factor to be derived from sample demand	[*NDM Supply Point predicted demand would be determined by reference to the D-7 demands of a group of Sampled NDM Supply Points within a class, with the demands adjusted for the impacts of the difference between actual weather for D-7 and forecast weather for the Gas Day under consideration, plus other demand related factors e.g. Bank Holidays. Weather sensitivity would be assessed ahead of the gas year, using historic Sampled demands and a measure of weather, e.g. CWV or similar.*]	AQ would be derived from metered consumption and adjusted to seasonal normal demand, taking account of: - difference between actual and seasonal normal weather for the Relevant Metered Period - sensitivity of the class of meter point to weather - difference in number of days between the Relevant Metered Period and 365

Option	NDM Daily Estimates of Demand	NDM Day Ahead Nominations	AQ Calculation
Option C – Demand v Weather Relationship Regression Formula	NDM Supply Point demand for a day would be determined by the relationship of historic demand for that class of Supply Points to selected historic reference data items, including weather and day of the week, and by applying actual values for those weather data items for the Gas Day in question in the derived demand model. The method for determining the relationship, including the list of potential data items, would be set out in a UNC Related Document. Amendments to the document would be [agreed at DESC and ratified by UNCC]. References to ALPs, DAFs, Weather Correction Factor and Scaling factor would no longer be required, although there might be a new term for the daily demand factor to be derived from the use of actual weather data items in the demand model for a day.	NDM Supply Point predicted demand for a day would be determined by the relationship of historic demand for that class of Supply Points to selected historic reference data items, including weather and day of the week, and by applying forecast values for those weather data items for the Gas Day in question in the derived demand model.	AQ would be derived from metered consumption and adjusted to seasonal normal demand, taking account of: - difference between actual and seasonal normal weather for the Relevant Metered Period - sensitivity of the class of meter point to weather - difference in number of days between the Relevant Metered Period and 365

Option	NDM Daily Estimates of Demand	NDM Day Ahead Nominations	AQ Calculation
Option E – Revised NDM Allocation Formula	NDM Supply Point demand for a day would be determined by the relationship of historic demand for that class of Supply Points to CWV, and by applying actual CWV values for the Gas Day in question in the derived demand model. $SPD_t = \big((AQ/365) * ALP_t * (1 + (DAF_t * WCF_t))\big)$ Where, $WCF = CWV_t - SNCWV_t$ And, $DAF_t = WSENS_t / SND_t$ The determination of the values of the parameters (ALP, DAF, CWV, SNCWV) would remain the responsibility of DESC.	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. $SPD_t = \big((AQ/365) * ALP_t * (1 + (DAF_t * WCF_t))\big)$ Where, $WCF = \text{Forecast } CWV_t - SNCWV_t$	AQ would be derived from metered consumption and adjusted to seasonal normal demand, using the daily demand factors derived by using the non-AQ-specific elements of the SPD formula: $AQ = RMQ \times 365/\Sigma\big(ALP_t * (1 + (DAF_t * WCF_t))\big)$

Other Considerations

NDM Peak Load Factors

Peak Load Factors would still be required to determine SOQ from AQ, and would still be determined using simulation. All 3 Options require a sample of supply points, so the current definition could be retained.

WAALPs (Weather Adjusted Annual Load Factors)

WAALP is not a defined UNC term, but is the recognised industry term for the individual gas day values used in the denominator of the AQ formula in TPD H3.4.1. As shown above, the formula for AQ varies between the 3 Options, so the nature of the WAALP would change. The industry may continue to use the term WAALP or may adopt a new term to refer to the factor used in the derivation of AQ.

Glossary

{Abc}   = UNC Defined Term

ALP	Annual Load Profile
AQ	Annual Quantity
CWV	Composite Weather Variable
DAF	Daily Adjustment Factor
DCC	Data Comms Company *(future Smart Metering service provider)*
DESC	Demand Estimation Sub-Committee (of UNCC)
DM	Daily Metered (i.e. Daily Read)
D-7	7 Gas Days earlier
EUC	End User Category
LDZ	Local Distribution Zone
NDM	Non-Daily Metered (i.e. Non-Daily Read)
RMQ	Relevant Metered Quantity
SNCWV	Seasonal Normal Value of CWV
SND	Seasonal Normal Demand
SOQ	System Offtake Quantity, i.e. Supply Point Capacity

Glossary

{Abc}   = UNC Defined Term

SPAQ	Supply Point AQ
SPD	Supply Meter Point Demand
WAALP	Weather Adjusted Annual Load Profile
WSENS	Weather Sensitivity
UNCC	UNC (Uniform Network Code) Committee

End