



Technical Work Group

EUC Modelling 2015/16 – Data Validations and Aggregations

TWG – 27th April 2015

- Overview of Demand Estimation & Timetable
- Presentation of Current Completed Analysis
 - Modelling Basis
 - Small NDM – sample details, proposed aggregations and WAR band limits
 - Large NDM – sample details, proposed aggregations and WAR band limits
- Review and conclusions

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Demand Estimation changes for this year

- UNC Modification 432 is due to be implemented at 5am on 1st October 2015, along with UK Link replacement and changes to the Gemini system.
- The changes in this Modification include a revision of the NDM Nominations and Allocation formula – see new arrangements below:

$$\text{Supply Point Demand} = (\text{AQ}/365) * \text{ALP} * (1 + [\text{DAF} * \text{WCF}])$$

- The main points to note are:
 - WCF – The Weather Correction Factor will be based on the differences in weather variables (CWV and SNCWV)
 - DAF – The Daily Adjustment Factor will be calculated using only the EUC model weather sensitivities
 - SF – The Scaling Factor will be removed meaning NDM Allocation will no longer be the balancing figure
 - UG – Unidentified Gas will now become the balancing figure for the Total LDZ demand

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Purpose of NDM Modelling

- Provides a method to differentiate NDM loads and provide profiles of usage
i.e. End User Category (EUC) Definitions
- Provide a reasonable bottom up estimate of aggregate NDM demand (by EUC / shipper / LDZ) to allow the daily balancing regime to work
i.e. NDM profiles (ALPs & DAFs)
- Provide a means of determining NDM Supply Point capacity
i.e. NDM EUC Load Factors
- The underlying NDM EUC and aggregate NDM demand models derived each year are intended to deliver these obligations only
- NDM allocation is an initial estimate of demand which will be corrected by Meter Point Reconciliation

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Role of DESC and TWG

- Responsibilities for Demand Estimation changed following implementation of UNC Modification 331 on 3rd January 2012
- DESC collectively required by UNC to:
 - Submit proposals to Transporters and Users for each Gas Year comprising:
 - EUC Definitions
 - NDM Profiling Parameters
 - Capacity Estimation Parameters
 - In addition:
 - Analysis of accuracy of the allocation process
 - Derivation of CWV and Seasonal Normal
 - Consultation with Industry
- Xoserve acts as the common NDM Demand Estimation service provider

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Agreed 2015 Modelling Work plan

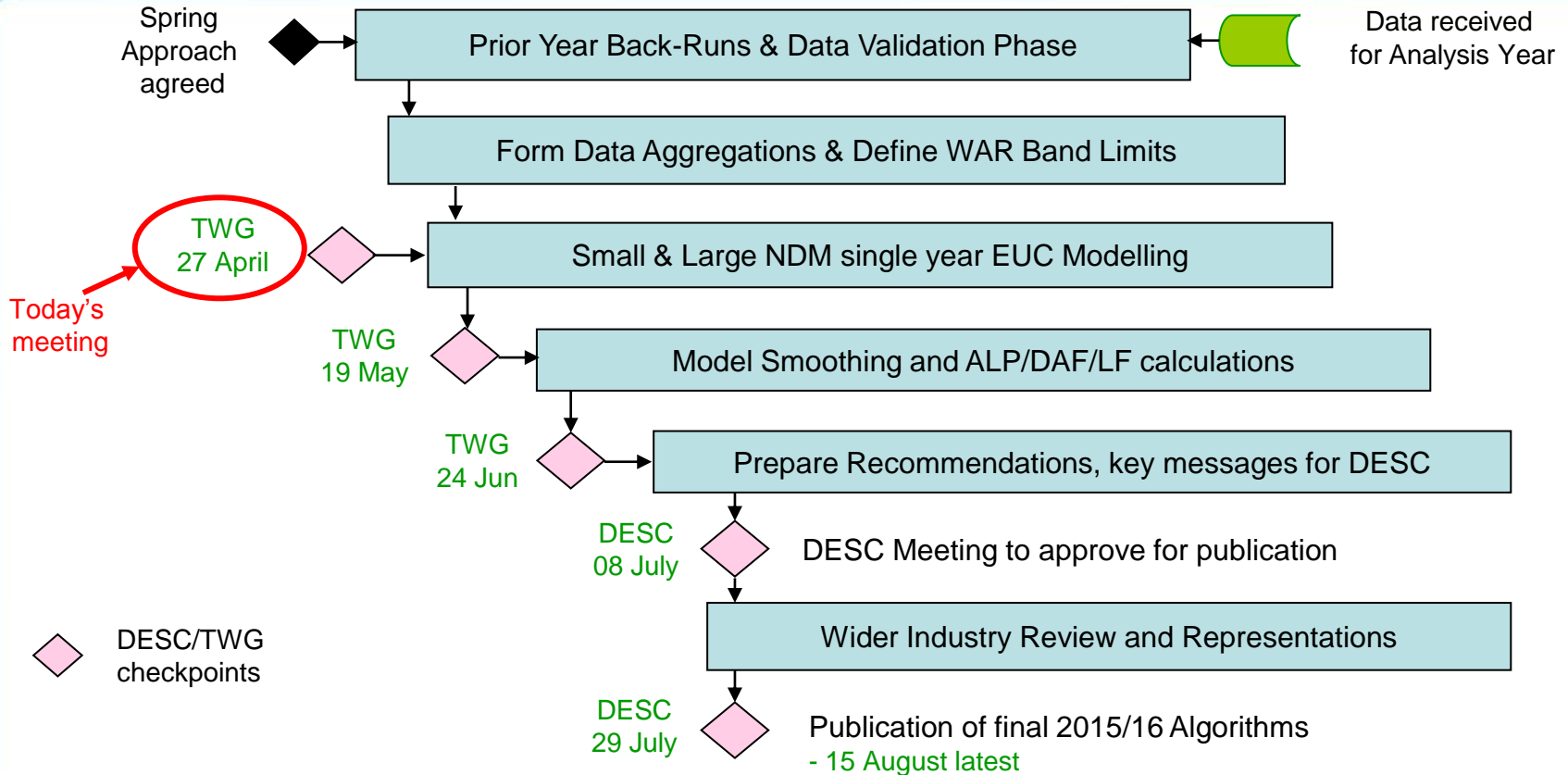
- Work plan for 2015 Modelling included as part of Spring Approach document which was confirmed and agreed at 11 February DESC meeting
- Work plan provides more transparency of process and includes checkpoints for DESC/TWG review

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Agreed 2015 Timetable



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Objectives of this Meeting

- Key objectives of April TWG Meeting
 - Inform TWG of numbers of validated data sets collected
 - Consider the most appropriate data sets and aggregations to apply to the most recently available sample data - i.e. 2014/15
 - Validation and analysis for Small NDM (up to 2196 MWh pa) and Large NDM (> 2196 MWh pa) are considered separately
- Tight timescales and unpredictable timings mean that Teleconference is chosen means of engagement
- Required Outcome – TWG agreement to sample sizes, agreed aggregations and WAR Band Limits – needed prior to commencing next phase of Modelling

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Basis of 2015 Modelling

- Described in “Spring Approach” document, approved at February 2015 meeting
- Key aspects of EUC demand modelling basis for Spring 2015 analysis:
 - 12 month analysis for datalogger data sets (2014/15)
 - Data sets cover 1st April to 31st March which includes full Easter
 - 12 month analysis for AMR data sets (2014/15)
 - Data sets cover 1st April to 31st March which includes full Easter
 - Weather data used in the analysis will use a set of Composite Weather Variable (CWV) values using the new definitions and the new Seasonal Normal basis both agreed by DESC at the end of 2014

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Summary of Validated Data

– All EUCs

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Summary of Validated Data

- Both AMRs & Dataloggers used in Small NDM Analysis (<2,196 MWh pa)
- NDM Sample Counts:

<i>Sample Counts</i>	<i>2014/15 data</i>	<i>2013/14 data</i>
0 to 73.2 MWh pa Range – AMR	2,835 Domestic	2,981 Domestic
73.2 to 2,196 MWh pa Range – AMR & Dataloggers	4,714	4,900
> 2,196 MWh pa Range – Dataloggers	2,874	2,972

- See spreadsheet TW_A_SAMPLE_VAL_SUMM_V1_270415.xls for further details of validation outcomes

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Small NDM Analysis

<2,196 MWh

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- Small NDM for Demand Estimation purposes <2,196,000 kWh
- Represents 88.3% of total NDM load (71.6% <73,200) and 99.97% of all supply points
- EUC consumption ranges not prescribed in Uniform Network Code
- Purpose of analysis:
 - Present validated sample data available and proposed data sets
 - View of results so far and proposed aggregations
 - Highlight any issues raised

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Small NDM: Review of Validated Data

<i>Consumption Range</i>	<i>Comments on 2014/15 data</i>
0 to 73.2 MWh pa (EUC Band 1)	No sample size issues
73.2 to 293 MWh pa (EUC Band 2)	No sample size issues
293 to 732 MWh pa (EUC Band 3)	Low sample size in 1 LDZ – see spreadsheet TW_B_SAMPLE_POP_SMALL_V1_270415 for recommendation
732 to 2,196 MWh pa (EUC Band 4)	No sample size issues

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Proposed Small NDM Investigations

- Current EUC Bands Small NDM:
 - 0 – 73.2 MWh pa
 - 73.2 – 293 MWh pa
 - 293 – 732 MWh pa
 - 732 – 2,196 MWh pa
- There are no proposed changes to EUC definitions for Gas Year 2015/16

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Small NDM <2,196 MWh

WAR Band Analysis

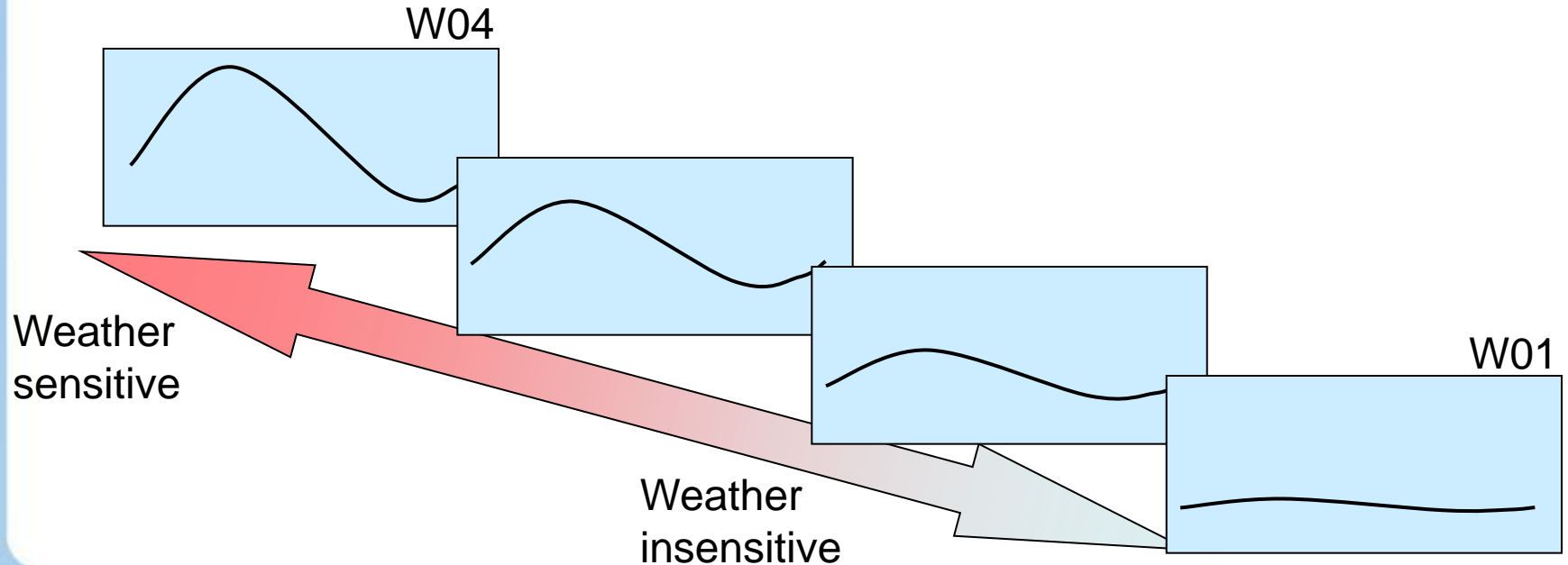
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Winter: Annual Ratio (WAR) Band EUCs

- Higher AQ Bands where meter points are monthly read have a standard EUC plus 4 differential EUCs based on ratio of winter consumption to total annual consumption
- Sites with adequate read history allocated automatically to a WAR Band based on system calculation during AQ review



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Winter to Annual Ratio (WAR) Band EUCs

- The WAR value of a supply point is defined as the actual consumption in the months December to March divided by the new supply point AQ
- Since the numerator is an actual demand and the denominator is a weather corrected annual consumption, WAR values change from year to year
- The limits defining WAR band EUCs are those applicable to the most recent winter (in this case winter 2014/15)
- This is essential because supply points will be assigned to these newly defined WAR band EUCs (for 2015/16) based on their (Dec-Mar) consumption behaviour over winter 2014/15

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- WAR values are affected by December to March weather experience:
 - 2014/15 was colder than 2013/14, so thresholds can be expected to increase this year
- When setting WAR band limits, the approach previously adopted is to aim for a 20%:30%:30%:20% split of sample numbers on a national basis
- There are practical limitations due to the actual distribution of WAR values of individual sample supply points in the consumption band
 - Following feedback from TWG last year we are able to define the WAR ratio at 3 d.c.ps to make it easier to get closer to the target % splits
- For practical reasons we can only proceed to the modelling stage with one WAR band definition per band

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Small NDM EUCs: Proposed WAR Band Analysis

Consumption Range	Comments on 2013/14 data
0 to 73.2 MWh pa (EUC Band 1)	Not generally Monthly read – no WAR Bands
73.2 to 293 MWh pa (EUC Band 2)	Not generally Monthly read – no WAR Bands
293 to 732 MWh pa (EUC Band 3)	Band 3 & 4 historically modelled in aggregate for WAR Band Analysis Issue WAR band 4 'NO' sample size of 18 See slide 21
732 to 2,196 MWh pa (EUC Band 4)	

- See spreadsheet TW_B_SAMPLE_POP_SMALL_V1_270415.xls for recommendations

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EUC Band 3 and 4 - WAR Band 4 sample size

- Small sample size (18) for LDZ NO in WAR Band 4 based on target WAR % splits
- EUC bands 3 and 4 are modelled in aggregate for WAR bands
- Options:
 - Adjust target WAR % splits to increase NO WAR Band 4 sample size
 - Select an existing aggregation which groups NO (e.g. column 'AC' in WAR band spreadsheet worksheet 'CB0304')
 - Identify and code a new aggregation to combine NO with another LDZ – could delay results by up to a week

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Large NDM Analysis

>2196 MWh p.a.

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Total NDM Population Counts: Supply Point & AQ

Consumption Range	% of Total NDM	
	Total AQ	Total Count
0 – 73.2 MWh pa	71.6%	98.80%
0 – 293 MWh pa	77.7%	99.67%
0 – 2,196 MWh pa	88.3%	99.97%
>2,196 MWh pa	11.7%	0.03%

- On an AQ basis:

- Small NDM is by far the main component of the overall NDM sector
- The range 0-73.2 MWh pa constitutes nearly 3/4 of overall NDM
- The range 0-293 MWh pa constitutes nearly 4/5 of overall NDM
- The range 0-2196 MWh pa constitutes nearly 9/10 of overall NDM
- Large NDM is very much a minority component of overall NDM

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Large NDM Analysis (>2,196 MWh pa)

- Current EUC Bands Large NDM:

- 2,196 to 5,860 MWh
 - 5,860 to 14,650 MWh
 - 14,650 to 29,300 MWh
 - 29,300 to 58,600 MWh
 - >58,600 MWh
- } 1 Consumption Band
x4 Winter Annual Ratio (WAR) Bands
- 1 Contingency Band for sites which should be DM

- However, underlying demand modelling can be done on basis of more broadly aggregated bands

- DESC agreed in Spring 2014, as part of the adhoc analysis of EUC Definitions, that the bands 14,650 to 29,300 (Band 7) and 29,300 to 58,600 (Band 8) should be merged for modelling purposes if necessary

- Identify sample data available post validation and propose aggregations

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Large NDM Supply Points (>2,196 MWh pa)

Proposed Sample Data Aggregations

Consumption Band Analysis – 2014/15 data	
Band 05 2,196 to 5,860 MWh pa	Individual LDZ (<i>Individual LDZ</i>)
Band 06 5,860 to 14,650 MWh pa	Individual LDZ and in parallel also run WS/SW combined (<i>Individual LDZ</i>)
Band 07 and Band 08 combined 14,650 to 58,600 MWh pa	Individual LDZs with NW/WN, SE/SO and WS/SW combined (<i>8 LDZ Group with NO/NW/WN, WS/SW, EA/NT and SE/SO combined</i>)
Band 09 >58,600 MWh pa	National (<i>National</i>)

- Aggregation of sample data to allow sufficient sample analysis
- Overall mostly consistent with 2013/14 Analysis - values shown (x) for bands 5 to 9
- See spreadsheet TW_C_SAMPLE_POP_LARGE_V1_270415.xls for recommendations

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Large NDM >2,196 MWh

WAR Band Analysis

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Large NDM Bands 5 to 8: 2,196 MWh – 58,600 MWh pa

Proposed WAR Band Analysis

<i>Consumption Range</i>	<i>2014/15 Analysis</i>	<i>2013/14 Analysis</i>
Band 05 2,196 to 5,860 MWh pa	By 4 LDZ Groups	By 4 LDZ Groups
Band 06 5,860 to 14,650 MWh pa	By 3 LDZ Groups	By 3 LDZ Groups
Band 07 14,650 to 29,300 MWh pa	By 2 LDZ Groups	By 2 LDZ Groups
Band 08 29,300 to 58,600 MWh pa		
Band 09 >58,600 MWh pa	N/A - No WAR Bands	N/A - No WAR Bands

- Aggregation of sample data to allow sufficient sample analysis
- Overall consistent with 2013/14 Analysis - values shown for bands 5 to 8
- See spreadsheet TW_C_SAMPLE_POP_LARGE_V1_270415.xls for recommendations

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Meeting Summary

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- Summary of decisions reached
- Recap on agreed actions, owners and timescales
- Next steps:
 - Xoserve to commence single year modelling once all aggregations have been agreed
 - Xoserve may contact TWG for prompt decisions on modelling analysis (probably by email)
 - TWG meeting booked for Tuesday 19th May

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