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DESC Technical Work Group

EUC Modelling 2017/18: Data Validations and Aggregations

TWG 26th April 2017

Agenda

- Section 1: Background, Timetable and Objectives of Meeting
- Section 2: Summary of Validated Sample Data
- Section 3: Review of Sample Data for Small NDM
- Section 4: Review of Sample Data for Large NDM
- Section 5: Meeting Summary – Review, Conclusions and Next Steps

Section 1:

Background, Timetable and Objectives of Meeting

Demand Estimation: 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

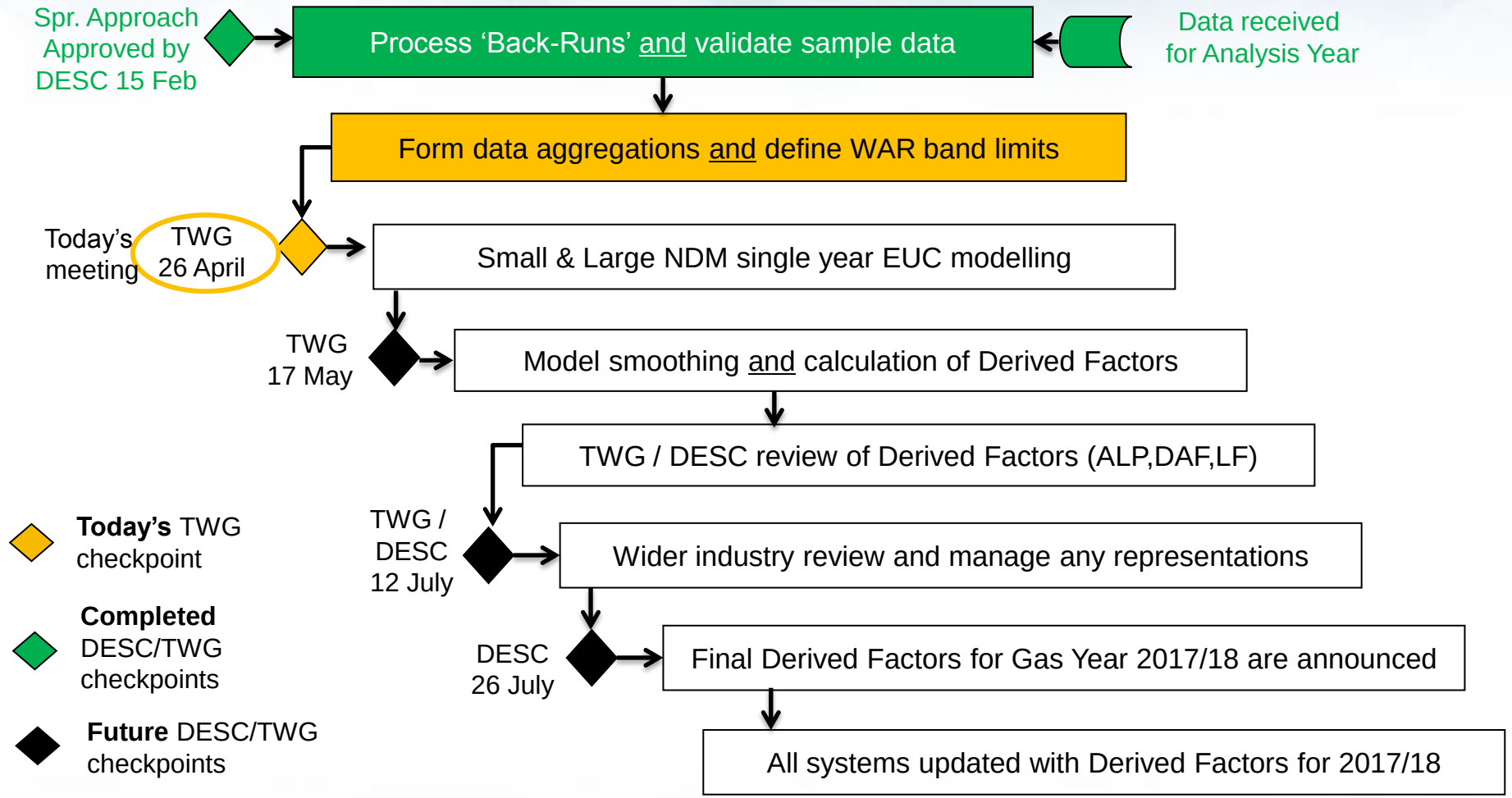
- The underlying NDM EUC and aggregate NDM demand models derived each year are intended to deliver these obligations only

- NDM allocation is an initial estimate of demand which will be corrected by Meter Point Reconciliation

Demand Estimation: Role of DESC, TWG and CDSP

- DESC collectively required by UNC Section H to:
  - Submit proposals to Transporters and Users for each Gas Year comprising:
    - End User Category (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, as the appointed Common Data Services Provider (CDSP), is required to perform the analysis to support DESC's UNC requirements

Demand Estimation: Agreed Work Plan for 2017



- Work plan for 2017 Modelling included as part of Spring Approach document which was confirmed and agreed at 15th February DESC meeting
- Work plan provides more transparency of process and includes checkpoints for DESC/TWG review

Demand Estimation: Objectives of this Meeting

- Key objectives of April TWG meeting:
  - Inform TWG of numbers of validated data sets collected from the most recently available sample data – i.e. 2016 /17 and highlight any issues
  - Review and agree the most appropriate data sets / aggregations to form this year's Demand Models
  - Results 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 on data aggregations and/or WAR band limits for each EUC, in order to develop the demand models in the next phase

Demand Estimation: UNC Modification 0432

- UNC Modification 432 is due to be implemented at 5am on 1st June 2017, 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:

Supply Point Demand =
(AQ/365) * ALP * (1 + [DAF * 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

Section 2:

Summary of Validated Sample Data

Demand Estimation: Daily Demand Data

- The requirement to develop Demand Models and End User Categories relies upon certain key inputs, these are daily demand data and weather data

- At this meeting the focus is on the daily demand data which this year covers the period 1st March 2016 to 31st March 2017

- The modelling system requires a full Easter holiday period to be present in the data stream, as Easter 2016 spanned March and April it has been necessary to collect data for a 13 month period

- The demand data has been provided from the following sources:

  - Xoserve-managed sample data sets (Bands 1 and 2)
  - Transporter-managed sample data sets (Bands 2 and above)
  - Third party provided sample data sets (Bands 2 and above)

Demand Estimation: Use of Third party data

- Over recent years the numbers of sample points available for modelling has been decreasing (other than consequential boost from UNC Mod 428 – “Single Meter Supply Point”)
- UNC allows Transporters to obtain NDM sample data from third parties
- Following analysis presented at the 17th Nov ‘15 meeting, DESC approved the use of third party supplied data, which was then used for the first time in last year’s modelling
- The 2017 demand data has again been boosted by the provision of data from a Third Party (same source as last year)
- As the traditional source of sample data dwindles, Xoserve continues to request support and assistance from other third parties where they are able to do so

Demand Estimation: Summary of Validated Data

- Validated sample counts – numbers provided are supply points

EUC Bands: Range *Source data*	2016/17 data	2015/16 data
Band 1: 0 to 73.2 MWh pa *Xoserve-managed*	2,377 Domestic (-239)	2,616 Domestic
Bands 2 to 4: 73.2 to 2,196 MWh pa *Xoserve-managed, Transporter-managed and Third party provided*	6,231 (-19)	6,250
Bands 5 to 9: > 2,196 MWh pa *Transporter-managed and Third party provided*	2,947 (-108)	3,055

- Band 1: Reduction in numbers due to a rise in installation of non-loggable meters
- Bands 2 and above: There has been a small reduction in the overall sample numbers for Bands 2 to 4 and Bands 5 to 9
  - Note: Third party provided data has contributed 517 supply points to Bands 2 to 4 and 74 supply points to Bands 5 to 9

- Spreadsheet **TW_A_SAMPLE_VAL_SUMM_V1_260417.xlsx** provides details of validation outcomes, including reasons for validation failures

Section 3:
Review of Sample Data for Small NDM

Sample numbers & Proposed aggregations for EUC Consumption Bands: 1 to 4

AQ Range: <2,196 MWh

Small NDM (<2,196 MWh pa)

- Small NDM for Demand Estimation purposes <2,196 MWh
- EUC consumption ranges not prescribed in Uniform Network Code
- Current EUC Bands / Consumption Ranges for Small NDM:
  - Band 1: 0 – 73.2 MWh pa
  - Band 2: 73.2 – 293 MWh pa
  - Band 3: 293 – 732 MWh pa
  - Band 4: 732 – 2,196 MWh pa
- There are no proposed changes to EUC definitions for Gas Year 2017/18

Total NDM Population Counts: AQ & Supply Point

EUC Bands: Range	% of Total NDM	
	Total AQ	Total SP Count
Band 1: 0 to 73.2 MWh pa	71.72%	98.79%
Bands 1 to 2: 0 to 293 MWh pa	78.11%	99.67%
Bands 1 to 4: 0 to 2,196 MWh pa	88.65%	99.97%
Bands 5 to 9: >2,196 MWh pa	11.35%	0.03%

- Small NDM is the main component of the overall NDM
  - Band 1 (0-73.2 MWh pa) constitutes nearly 3/4 of overall NDM (on an AQ basis)
  - Bands 1 to 2 (0-293 MWh pa) constitutes nearly 4/5 of overall NDM
  - Bands 1 to 4 (0-2196 MWh pa) constitutes nearly 9/10 of overall NDM
- Large NDM is very much a minority component of overall NDM

Small NDM Consumption Bands: Review of data

EUC Bands: Range	Comments on 2016/17 data Proposed Aggregations	Final Aggregations for 2015/16
Band 1: 0 to 73.2 MWh pa	No sample size issues * Individual LDZ analysis	Individual LDZ analysis
Band 2: 73.2 to 293 MWh pa	No sample size issues Individual LDZ analysis	Individual LDZ analysis
Band 3: 293 to 732 MWh pa	No sample size issues Individual LDZ analysis	Individual LDZ analysis
Band 4: 732 to 2,196 MWh pa	No sample size issues Individual LDZ analysis	Individual LDZ analysis

- * Validated sample numbers have fallen below 200 target for a number of LDZs

- Spreadsheet **TW_B_SAMPLE_POP_SMALL_2604017.xlsx** provides sample numbers per LDZ for Bands 1 to 4 and any recommendations for additional runs

Section 3:
Review of Sample Data for Small NDM

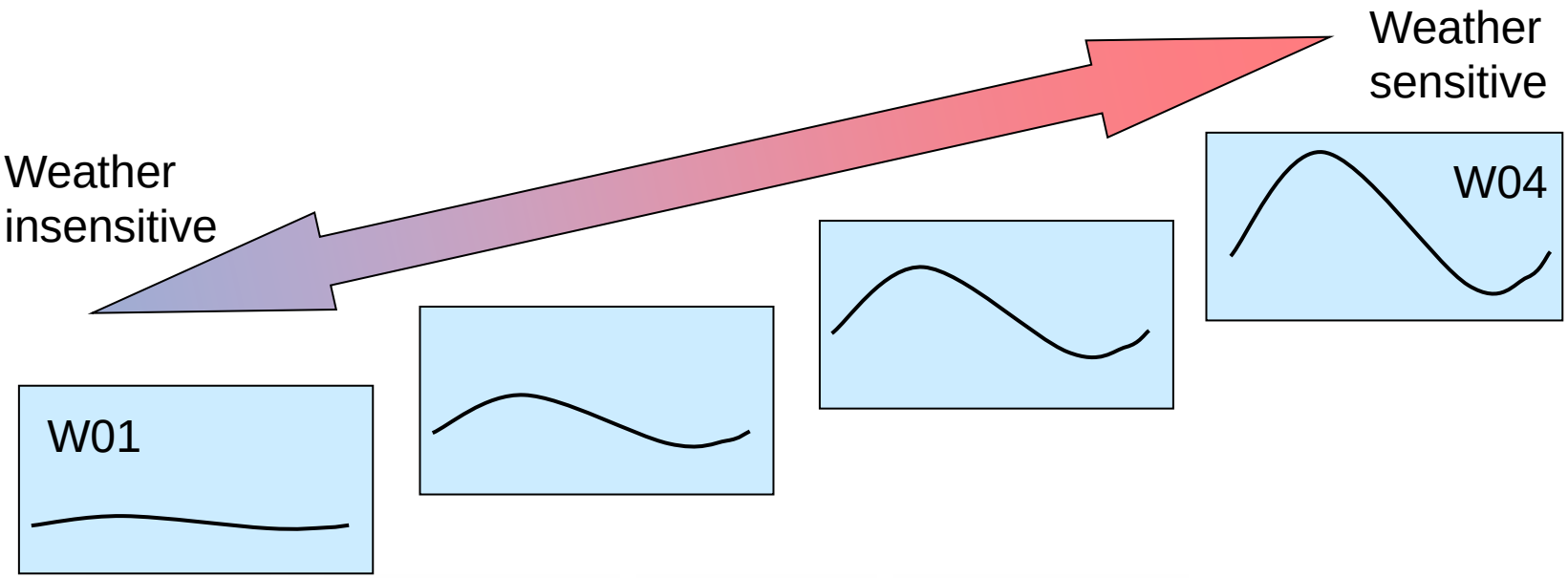
Sample numbers, Proposed aggregations and WAR band limits for EUC WAR Bands: 3 to 4

AQ Range: 293 to 2,196 MWh

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



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 actual demand and the denominator is 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 2016/17)
- This is essential because supply points will be assigned to these newly defined WAR band EUCs (for 2017/18) based on their (Dec-Mar) consumption behaviour over winter 2016/17

WAR Band basics

- WAR values are affected by December to March weather experience:
  - 2016/17 was comparable overall to 2015/16, so thresholds can be expected to be similar 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
  - WAR band ratio boundaries will again be defined at 3 decimal points 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

Small NDM WAR Bands: Review of data

EUC Bands: Range	Comments on 2016/17 data Proposed Aggregations	Final Aggregations for 2015/16
Band 1: 0 to 73.2 MWh pa	Not generally Monthly read – no WAR Bands	
Band 2: 73.2 to 293 MWh pa	Not generally Monthly read – no WAR Bands	
Band 3 and Band 4 (combined): 293 to 2196 MWh pa	Individual LDZ analysis (NW/WN, WS/SW combined)* *Lower than preferred sample number for LDZ 'NO' WAR Band 4	Individual LDZ analysis (NW/WN, WS/SW combined)

- See spreadsheet **TW_B_SAMPLE_POP_SMALL_260417.xlsx** (Table B.5) for recommendation on aggregations and WAR Band definitions

Section 4:
Review of Sample Data for Large NDM

Sample numbers & Proposed aggregations for
EUC Consumption Bands: 5 to 9
AQ Range: >2,196 MWh

Large NDM (>2,196 MWh pa)

- Current EUC Bands / Consumption Ranges for Large NDM:
  - Band 5: 2,196 to 5,860 MWh
  - Band 6: 5,860 to 14,650 MWh
  - Band 7: 14,650 to 29,300 MWh
  - Band 8: 29,300 to 58,600 MWh

  } 1 Consumption Band
  x4 Winter Annual Ratio (WAR) Bands

  - Band 9: >58,600 MWh — 1 Contingency Band for sites which should be DM
- There are no proposed changes to EUC definitions for Gas Year 2017/18
- 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) could be merged for modelling purposes if necessary

Total NDM Population Counts: AQ & Supply Point

EUC Bands: Range	% of Total NDM	
	Total AQ	Total SP Count
Band 1: 0 to 73.2 MWh pa	71.72%	98.79%
Bands 1 to 2: 0 to 293 MWh pa	78.11%	99.67%
Bands 1 to 4: 0 to 2,196 MWh pa	88.65%	99.97%
Bands 5 to 9: >2,196 MWh pa	11.35%	0.03%

- Large NDM is very much a minority component of overall NDM
  - Bands 5 to 9 (>2,196 MWh pa) constitutes approx 1/10 of overall NDM (on an AQ basis)
- Small NDM is the main component of the overall NDM

Large NDM Consumption Bands: Review of data

EUC Bands: Range	Comments on 2016/17 data Proposed Aggregations	Final Aggregations for 2015/16
Band 5: 2,196 to 5,860 MWh pa	Individual LDZ analysis	Individual LDZ analysis
Band 6: 5,860 to 14,650 MWh pa	Low sample size in WS See s/sheet for recommendation (Table C.2)	Individual LDZ analysis
Band 7 and Band 8 (combined): 14,650 to 58,600 MWh pa	Low sample sizes in WS, SE & SO See s/sheet for recommendation (Table C.3)	Individual LDZ analysis (NW/WN, WS/SW, SE/SO combined)
Band 9: >58,600 MWh pa	National	National

- Spreadsheet **TW_C_SAMPLE_POP_LARGE_2604017.xlsx** provides sample numbers per LDZ for Bands 5 to 9 and any recommendations for additional runs

Section 4:
Review of Sample Data for Large NDM

Sample numbers, Proposed aggregations and WAR band limits for EUC WAR Bands: 5 to 8

AQ Range: 2,196 to 58,600 MWh

Large NDM WAR Bands: Review of Data

EUC Bands: Range	Comments on 2016/17 data Proposed Aggregations	Final Aggregations for 2015/16
Band 5: 2,196 to 5,860 MWh pa	5 or 4 LDZ Groups See s/sheet for recommendation (Table C.5)	By 5 LDZ Groups
Band 6: 5,860 to 14,650 MWh pa	3 LDZ Groups (Table C.6)	By 3 LDZ Groups
Band 7 and Band 8 (combined): 14,650 to 58,600 MWh pa	3 LDZ Groups (Table C.7)	By 3 LDZ Groups
Band 9: >58,600 MWh pa	N/A - No WAR Bands	

- Spreadsheet **TW_C_SAMPLE_POP_LARGE_2604017.xlsx** provides sample numbers per LDZ for Bands 5 to 8 and any recommendations for additional runs

Section 5:

Meeting Summary

Meeting Summary

- Summary of decisions reached
- Recap on agreed actions, owners and timescales
- Any further questions about this stage ?
- Next steps towards TWG check point in May:
  - 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 Wednesday 17th May