
xserve



respect > commitment > teamwork

Demand Estimation Sub Committee Presentation of 2016 Models

6th July 2016

- DESC obligations as per Section H of UNC
- Recap on Timetable / Work plan
- Summarise modelling process followed in deriving this years NDM proposals and TWG's role in overseeing the results at key checkpoints
- Summarise TWG's responses to draft NDM proposals and their overall recommendation to DESC
- Next steps

- Each year, after consultation with the industry, DESC are collectively required by UNC to submit proposals to Transporters and Users for each Gas Year comprising:
 - End User Category (EUC) Definitions
 - Annual Load Profiles (ALP) and Daily Adjustment Factors (DAF)
 - Peak Load Factors

- In addition to these obligations, DESC should also:
 - Perform analysis of the accuracy of the allocation process
 - Derive the CWV and Seasonal Normal parameters

- Xoserve acts as the common NDM Demand Estimation service provider

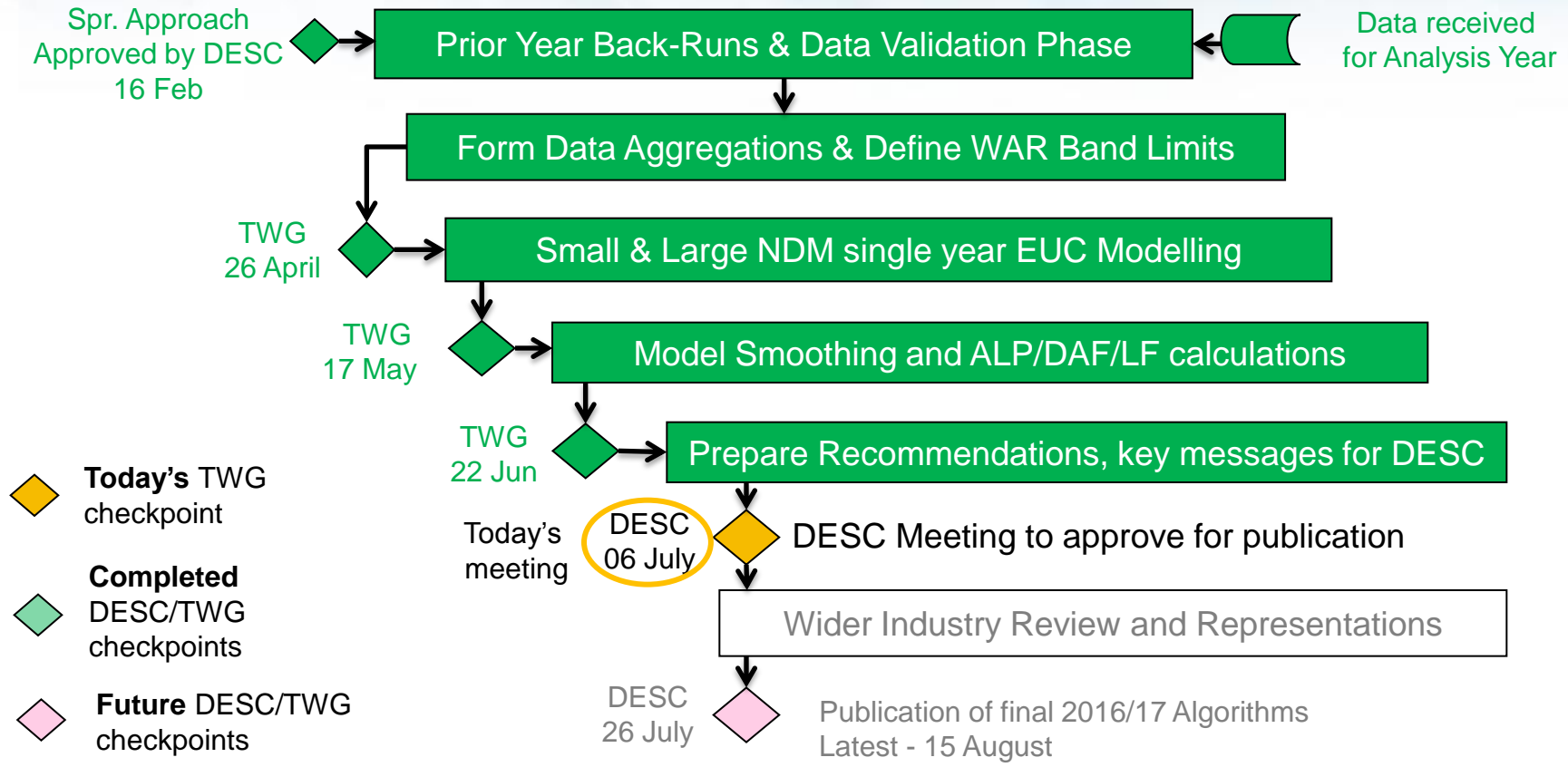
Purpose of NDM Modelling

- The DESC obligations are achieved from the results of demand modelling
- The demand models provide a method for:
 - Differentiating NDM loads and profiles of usage – i.e. EUC Definitions
 - Producing profiles of usage – i.e. ALPs and DAFs
 - Determining NDM supply point capacity – i.e. Peak Load Factors
- The underlying NDM EUC and aggregated NDM demand models derived each year are intended to deliver the DESC obligations only

Agreed 2016 Modelling Work plan

- Work plan for 2016 Modelling agreed at Feb DESC meeting
- Work plan designed to provide more transparency of process and include key checkpoints for TWG and DESC review
 - There have been 3 TWG meetings to date – April, May and June
 - Further interaction via email

Agreed 2016 Timetable



Basis of 2016 modelling

- The main principles for this year's modelling is described in the 'Spring Approach' document - approved at February DESC meeting
- Key inputs to the EUC demand modelling for Spring 2016 analysis are:
 - **Daily demand** data for period 1st April 2015 to 31st March 2016 which includes full Easter holiday period (as defined by the modelling system), sourced from:
 - 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) * NEW (see next slide)
 - **Weather data:**
 - In line with last year we shall be using Composite Weather Variable (CWV) definitions and Seasonal Normal basis (SNCWV) agreed by DESC at the end of 2014 and effective from 1st October 2015

- 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
- DESC recently requested analysis to be undertaken to review the suitability of additional data being used with the existing sample
- Following analysis presented at the 17th Nov ‘15 meeting, DESC approved the use of third party supplied data, starting with Spring ‘16 modelling work
- Joint Office issued a note on 15th Feb ‘16 requesting support from third parties in providing data to boost sample numbers. One party came forward with a data stream suitable for modelling in the timescales required

Summary of modelling engagement

- Series of slides now summarise this year's process centred around the TWG involvement / checkpoints – see below:
 - 26th April TWG meeting: Review of validated sample data
 - Agree data aggregations and WAR Band limits
 - 17th May TWG meeting: Review of single year modelling results
 - Agree models for latest year to be used in Model Smoothing process
 - 22nd June TWG meeting: Review of draft NDM proposals
 - Review responses and agree key messages for DESC

- 26th April TWG meeting: Review of validated sample data
 - Agree data aggregations and WAR Band limits
- Objectives of 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. 2015/16

Summary of validated data

- Validated sample counts – numbers provided are supply points

EUC Bands: Range <i>Source data</i>	2015/16 data	2014/15 data
Band 1: 0 to 73.2 MWh pa <i>Xoserve-managed</i>	2,616 Domestic (-219)	2,835 Domestic
Bands 2 to 4: 73.2 to 2,196 MWh pa <i>Xoserve-managed, Transporter-managed and Third party provided</i>	6,250 (+1,536)	4,714
Bands 5 to 9: > 2,196 MWh pa <i>Transporter-managed and Third party provided</i>	3,055 (+181)	2,874

- Band 1: Reduction in numbers as expected due to impacts of battery replacement programme
- Bands 2 and above: There has been a boost to sample numbers for two main reasons:
 - Third party provided data has contributed **678** supply points to Bands 2 to 4 and **84** to Bands 5 to 9
 - Consequential impacts of UNC Modification 428 being fully implemented

Small NDM Supply Points (<2,196 MWh pa)

Agreed Sample Data Aggregations

EUC Bands: Range	Comments on 2015/16 data TWG Agreed Aggregations
Band 1: 0 to 73.2 MWh pa	Individual LDZ analysis (NW/WN combined)
Band 2: 73.2 to 293 MWh pa	Individual LDZ analysis (NW/WN combined)
Band 3: 293 to 732 MWh pa	Individual LDZ analysis (NW/WN combined) AND Individual LDZ analysis (NW/WN and WS/SW combined)
Band 4: 732 to 2,196 MWh pa	Individual LDZ analysis (NW/WN combined)

- Aggregations as agreed at April TWG
- In the main sufficient data available to allow individual LDZ analysis
- Low sample number in WS in Band 03, therefore 2 modelling runs undertaken

Small NDM Supply Points (<2,196 MWh pa)

Agreed Sample Data Aggregations

EUC Bands: Range	Comments on 2015/16 data TWG Agreed Aggregations
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 and WS/SW combined)

- Aggregations as agreed at April TWG
- WAR Band limits for Band 3 and 4 also agreed

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

Agreed Sample Data Aggregations

EUC Bands: Range	Comments on 2015/16 data TWG Agreed Aggregations
Band 5: 2,196 to 5,860 MWh pa	Individual LDZ analysis (NW/WN combined) AND Individual LDZ analysis (NW/WN and WS/SW combined)
Band 6: 5,860 to 14,650 MWh pa	Individual LDZ analysis (NW/WN combined) AND Individual LDZ analysis (NW/WN and WS/SW combined)
Band 7 and Band 8 (combined): 14,650 to 58,600 MWh pa	Individual LDZ analysis (NW/WN combined) AND Individual LDZ analysis (NW/WN, WS/SW and SE/SO combined)
Band 9: >58,600 MWh pa	National

- Aggregations as agreed at April TWG
- Decisions to be made on models for Consumption bands 5,6,7 and 8

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

Agreed Sample Data Aggregations

EUC Bands: Range	Comments on 2015/16 data TWG Agreed Aggregations
Band 5: 2,196 to 5,860 MWh pa	5 LDZ Group (SC, NO/NW/WN, NE/EM/WM, EA/NT/SE and WS/SO/SW) AND 4 LDZ Group (SC/NO/NW/WN, NE/EM/WM, EA/NT/SE and WS/SO/SW)
Band 6: 5,860 to 14,650 MWh pa	3 LDZ Group (SC/NO/NW/WN, NE/EM/WM, EA/NT/SE/WS/SO/SW) AND 2 LDZ Group (SC/NO/NW/WN/NE/EM/WM, EA/NT/SE/WS/SO/SW)
Band 7 and Band 8 (combined): 14,650 to 58,600 MWh pa	3 LDZ Group (SC/NO/NW/WN, NE/EM/WM, EA/NT/SE/WS/SO/SW)

- Aggregations as agreed at April TWG
- Decisions to be made on models for Bands 5 and 6
- WAR Band limits for Band 5 to 8 also agreed

- 26th April TWG meeting: Review of validated sample data
 - Agree data aggregations and WAR Band limits
- Outcome of meeting:
 - TWG finalised sample sizes, aggregations and WAR band limits
 - Next phase was then able to commence:
Single year modelling of the 2015/16 sample data

- 17th May TWG meeting: Review single year modelling results
 - Agree models for latest year to be used in Model Smoothing process
- Objectives of meeting:
 - Review and confirm results of single year EUC modelling
 - Tools used to identify best model:
 - R² Multiple Correlation Coefficient – statistical tool for identifying ‘goodness of fit’ (100% = perfect fit / direct relationship)
 - Variations in Indicative Load Factors (ILFs)
 - Charts of Monday to Thursday demands vs CWVs with seasons highlighted
 - In some instances to support decision making Monthly Residuals also provided

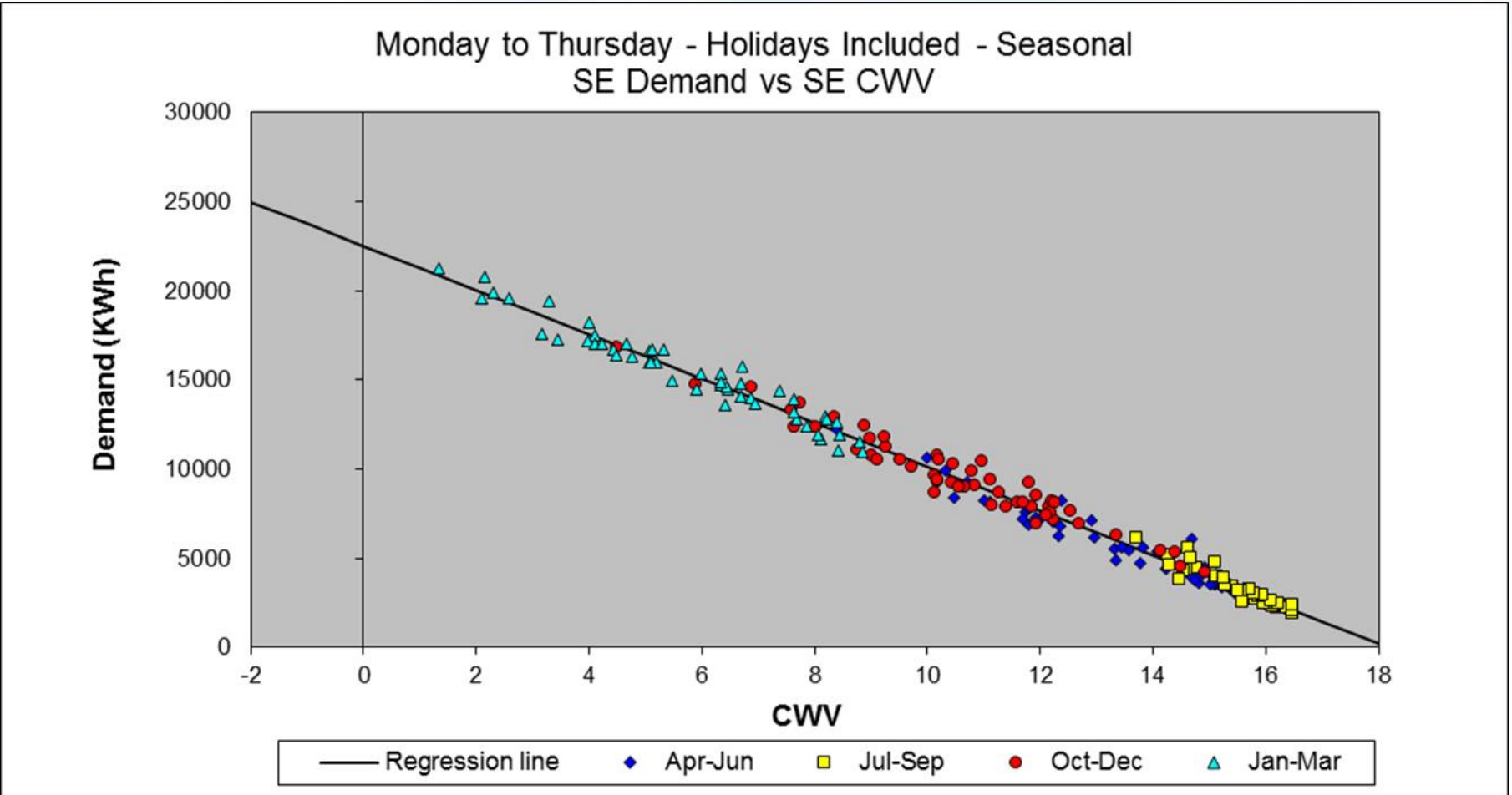
Small NDM Modelling Results

EUC Band 1: 0 – 73.2 MWh pa Domestic Sites

	Indicative Load Factor (ILF)	R ² Multiple Correlation Coefficient (All days)	Sample Size (Supply Points)
SC	34%	98%	211
NO	35%	98%	208
NW / WN	32%	97%	209
NE	34%	97%	218
EM	32%	98%	234
WM	31%	98%	218
WS	31%	97%	210
EA	32%	98%	250
NT	30%	99%	213
SE	29%	99%	207
SO	29%	99%	224
SW	29%	98%	214

Small NDM Modelling Results

SE LDZ EUC Band 1: 0 – 73.2 MWh pa



- SE demand against SE CWV – Monday to Thursday – Holidays included

- TWG made the following model decisions where more than one modelling run was presented:
 - Band 3 – selected WS and SW individually (rather than WS/SW combined)
 - Band 5 – selected WS and SW individually (rather than WS/SW combined)
 - Band 6 – selected WS and SW individually (rather than WS/SW combined)
 - Band 7&8 – selected combined WS/SW and SE/SO (rather than individually)
 - Band 5 WAR Bands – selected 5 LDZ Grouping (rather than 4 LDZ Grouping)
 - Band 6 WAR Bands – selected 3 LDZ Grouping (rather than 2 LDZ Grouping)

- 17th May TWG meeting: Review single year modelling results
 - Agree models for latest year to be used in Model Smoothing process
- Outcome of meeting:
 - TWG discussed and agreed single year models to be used including aggregations to take forward for all NDM consumption band and WAR band models:
 - Next phase was then able to commence:

Model smoothing and derivation of draft NDM proposals

Model smoothing and derivation of parameters²²

- Model smoothing process carried out on 3 years of sample data (2013/14, 2014/15 and 2015/16)
- Smoothed EUC model parameter values created represent the average value from across the 3 years (in place to address year on year volatility)
- During this phase there was further TWG interaction where details of amendments to weekend factor results were shared
- Smoothed model parameter values were then used to derive the various NDM proposals such as the ALPs
- Draft NDM proposals were published and available for review on 3rd June

- Revised Folder structure on secure website:

18. NDM Profiling and Capacity Estimation Algorithms

2016-17 Gas Year

1. Spring Approach Document

2. Demand Estimation Sample Data

3. Demand Estimation Parameters

a. End User Categories and Derived Factors

b. Demand Model Supporting Files

4. NDM Algorithms Booklet

- Folders highlighted green contain data published on 3rd June

- Note issued to TWG inviting feedback and comments on this years draft NDM proposals on Friday 3rd June
- Two responses received from British Gas and E.On TWG representatives, covering :
 - Queries with changes to levels of ALP – e.g. movement from peaky profile to flat profile
 - Queries with changes to DAF ‘shape’ compared to previous years model
- Next phase was then able to commence:

Investigate TWG comments and provide feedback at meeting on 22nd June

June checkpoint meeting

- 22nd June TWG meeting: Review of draft NDM proposals
 - Review responses and agree key messages for DESC
- Objectives of meeting:
 - Review TWG comments and agree any actions
 - Agree approach to presentation of proposals to DESC
- Response to TWG queries summary:
 - The variations in ALP and DAF shapes were generally due to the new models exhibiting characteristics different from last year e.g. summer reductions, cut-offs, change in weather sensitivities and impacts of holiday factors
- Outcome of meeting:
 - Following discussion about queries received, TWG provided support for proposals and recommended they be presented to DESC

- Objective: Obtain DESC approval to submit NDM proposals to Transporters and Users as per UNC requirement
- Draft NDM proposals are ready to be submitted to wider industry for review
- TWG have been involved throughout the process and provided their recommendation to proceed
- NDM Algorithms booklet will be published soon including Section 12 which summarises NDM algorithm performance for Gas Year 2014/15
- DESC majority now required to proceed to next phase

- Email sent to DESC members asking for feedback
- Do DESC have any additional comments regarding this year's proposals ?
- Are DESC happy with process overseen by the TWG ?
- Following TWG's recommendation, are DESC happy to approve this year's proposals for wider industry review ?

- w/c 4th July
 - Prepare documentation and apply any final revisions
 - Xoserve publish DESC's proposals by 8th July for industry to review

- w/c 11th July
 - Users and Transporters have 5 b.ds to review and submit representations to DESC

- w/c 18th July and 25th July
 - DESC to review representations and consider response
 - DESC meet on Tuesday 26th July to discuss representations / finalise proposals

- w/c 1st August
 - DESC provide formal response to representations (via Xoserve)

- w/c 8th August
 - Xoserve on behalf of Transporters publish final proposals to industry (no later than 15th August) and submit interface files to key systems