



Demand Estimation Sub Committee

Presentation of 2015 Models

8th July 2015

- Key objectives of today's meeting:
 - Recap on DESC obligations following amendments to Section H of UNC
 - Inform DESC of process followed in derivation of NDM proposals
 - Provide summary of where TWG has reviewed the output and had the opportunity to challenge the decisions made
 - Provide summary of TWG responses to draft NDM proposals and their overall recommendation to DESC
- Outcome – Obtain DESC approval to submit NDM proposals to Transporters and Users as per UNC requirement

Xserve



respect > commitment > teamwork

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 equitable means of apportioning aggregate NDM demand (by EUC / shipper / LDZ) to allow 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 EUC profiles are used to apportion aggregate NDM demand and do not independently forecast NDM EUC demand

Xserve



respect > commitment > teamwork

Changes to UNC Section H

- 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

xoserve



respect > commitment > teamwork

Agreed 2015 Modelling Work plan

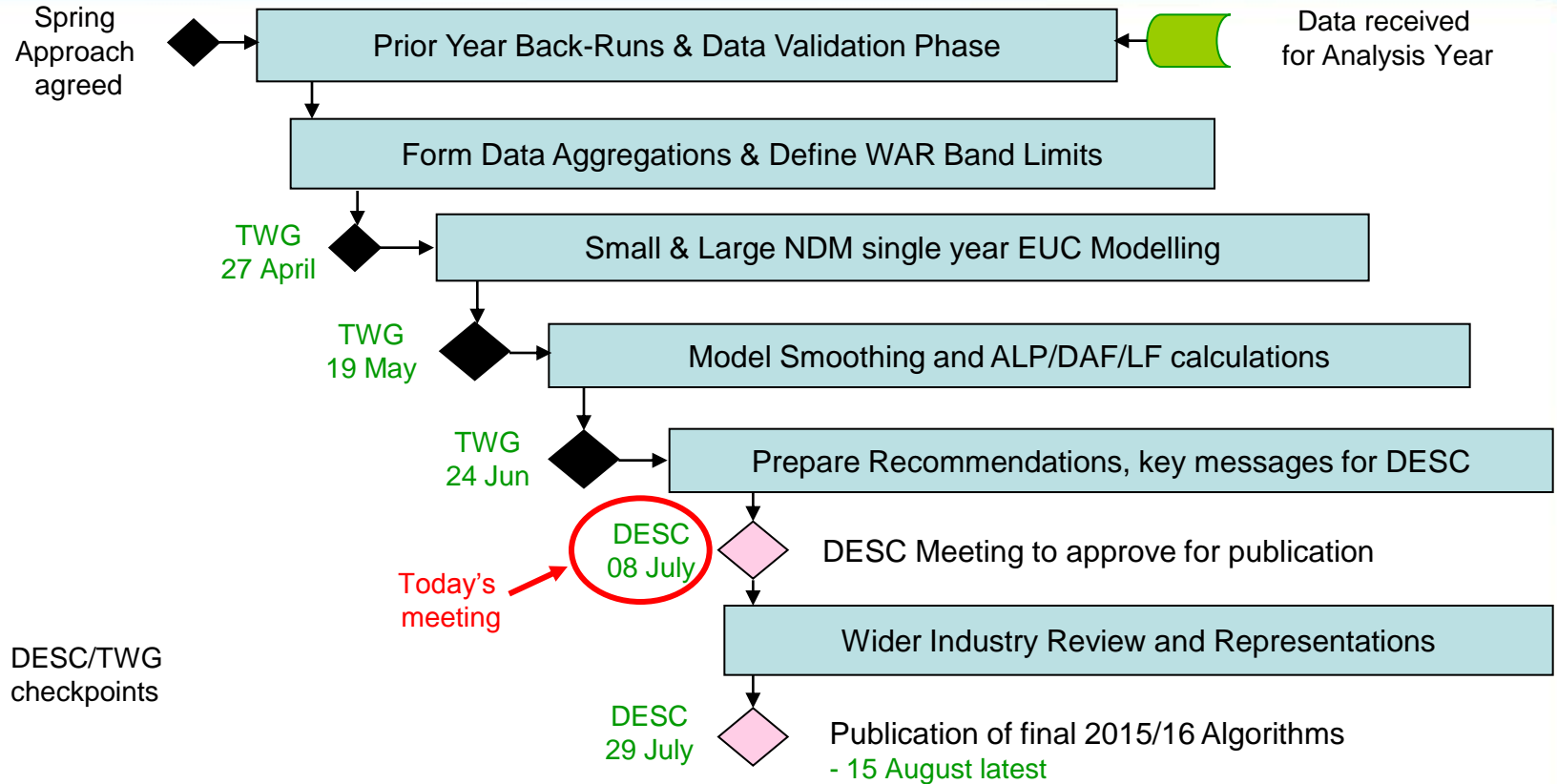
- Work plan for 2015 Modelling agreed at Feb DESC meeting
- Work plan aims to provide more transparency of process and introduce checkpoints for DESC/TWG review
 - 3 TWG meetings to date – April, May and June
 - Further interaction via email

xserve



respect > commitment > teamwork

Agreed 2015 Timetable



Xserve



respect > commitment > teamwork

Summary of overall process

- Series of slides to summarise the data collection, modelling, outcomes and TWG involvement / decisions made

xserve



respect > commitment > teamwork

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

xserve



respect > commitment > teamwork

TWG Involvement: 27th April 2015

Objectives of Meeting

- First check point meeting of Technical Workgroup
- Key objectives of April 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
- Outcome – TWG finalised sample sizes, aggregations and WAR Band Limits
- Next phase was then able to commence:
Single Year modelling – 2014/15 data

Xserve



respect > commitment > teamwork

Total NDM Population Counts: AQ & Supply Point

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

Xserve



respect > commitment > teamwork

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

Xserve



respect > commitment > teamwork

Small NDM Supply Points (<2,196 MWh pa) Agreed Consumption Band Aggregations

	Consumption Band Analysis – 2014/15 data
Band 01 0 to 73.2 MWh pa	Individual LDZ (NW/WN Combined)
Band 02 73.2 to 293 MWh pa	Individual LDZ (NW/WN Combined)
Band 03 293 to 732 MWh pa	Individual LDZ (NW/WN Combined and WS/SW Combined)
Band 04 732 to 2,196 MWh pa	Individual LDZ (NW/WN Combined)

- Aggregations as agreed at April TWG
- In the main sufficient data available to allow individual LDZ analysis
- Band 03 required WS and SW to also be combined

Xserve



respect > commitment > teamwork

Small NDM Supply Points (<2,196 MWh pa) Agreed WAR Band Aggregations

Consumption Range	WAR Band Analysis – 2014/15 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 data merged for WAR Band Analysis: <u>Run 1:</u> Individual LDZ with NW/WN and WS/SW combined (Low number for LDZ 'NO' WB4) <u>Run 2:</u> Individual LDZ with NO/NW/WN, WS/SW, EA/NT and SE/SO combined
732 to 2,196 MWh pa (EUC Band 4)	

- Aggregations as agreed at April TWG
- Band 03 and 04 required 2 runs due to low sample numbers in 'NO' WB4

Xserve



respect > commitment > teamwork

Large NDM Supply Points (>2,196 MWh pa) Agreed Consumption Band Aggregations

	Consumption Band Analysis – 2014/15 data
Band 05 2,196 to 5,860 MWh pa	Individual LDZ (NW/WN Combined)
Band 06 5,860 to 14,650 MWh pa	<u>Run1</u> : Individual LDZ (NW/WN Combined) <u>Run 2</u> : Individual LDZ (NW/WN and WS/SW Combined)
Band 07 and Band 08 14,650 to 58,600 MWh pa	Individual LDZ (NW/WN, WS/SW and SE/SO Combined)
Band 09 >58,600 MWh pa	National

- Aggregation of sample data to allow sufficient sample analysis
- Options for aggregations as agreed at April TWG
- Decision to be made on model to be used for Band 06

Xserve



respect > commitment > teamwork

Large NDM Supply Points (>2,196 MWh pa) Agreed WAR Band Aggregations

Consumption Range	WAR Band Analysis – 2014/15 data
Band 05 2,196 to 5,860 MWh pa	<p><u>Run 1:</u> 7 LDZ Group – SC, NO/NE, NW/WN, EM/WM, WS/SW, EA/NT, SE/SO</p> <p><u>Run 2:</u> 4 LDZ Group – SC/NO/NW/WN, NE/EM/WM, EA/NT/SE, WS/SO/SW</p>
Band 06 5,860 to 14,650 MWh pa	<p><u>Run 1:</u> 4 LDZ Group - SC/NO/NW/WN, NE/EM/WM, EA/NT/SE, WS/SO/SW</p> <p><u>Run 2:</u> 3 LDZ Group – SC/NO/NW/WN, NE/EM/WM, WS/EA/NT/SE/SO/SW</p>
Band 07 and Band 08 14,650 to 58,600 MWh pa	<p><u>Run 1:</u> 3 LDZ Group - SC/NO/NW/WN, NE/EM/WM, WS/EA/NT/SE/SO/SW</p> <p><u>Run 2:</u> 2 LDZ Group – SC/NO/NW/WN/NE/WM/EM, WS/EA/NT/SE/SO/SW</p>

- Options for aggregations as agreed at April TWG
- In each case, as requested by TWG, there were 2 modelling runs in case the results were poor where there were instances of low sample numbers



respect > commitment > teamwork

TWG Involvement: 19th May 2015

Objectives of Meeting

- Second check point meeting of Technical Workgroup (old Technical Forum)
- Key objectives of May meeting:
 - Review and confirm results of single year EUC Modelling
- Analysis carried out:
 - Identify the best fit model based on available data samples
 - Assist in creation of profiles based on relationship between demand and weather
 - 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
 - In some instances to support decision making T-Stats and Residuals also provided

Xserve



respect > commitment > teamwork

Small NDM Modelling Results

EUC Band 1: 0 – 73.2 MWh pa Domestic Sites

	Indicative Load Factor	R ² Multiple Correlation Coefficient	Sample Size
SC	34%	98%	224
NO	35%	98%	221
NW / WN	32%	98%	225
NE	35%	98%	254
EM	33%	99%	241
WM	32%	99%	244
WS	32%	98%	226
EA	32%	99%	261
NT	30%	99%	233
SE	29%	99%	227
SO	30%	99%	245
SW	30%	99%	234

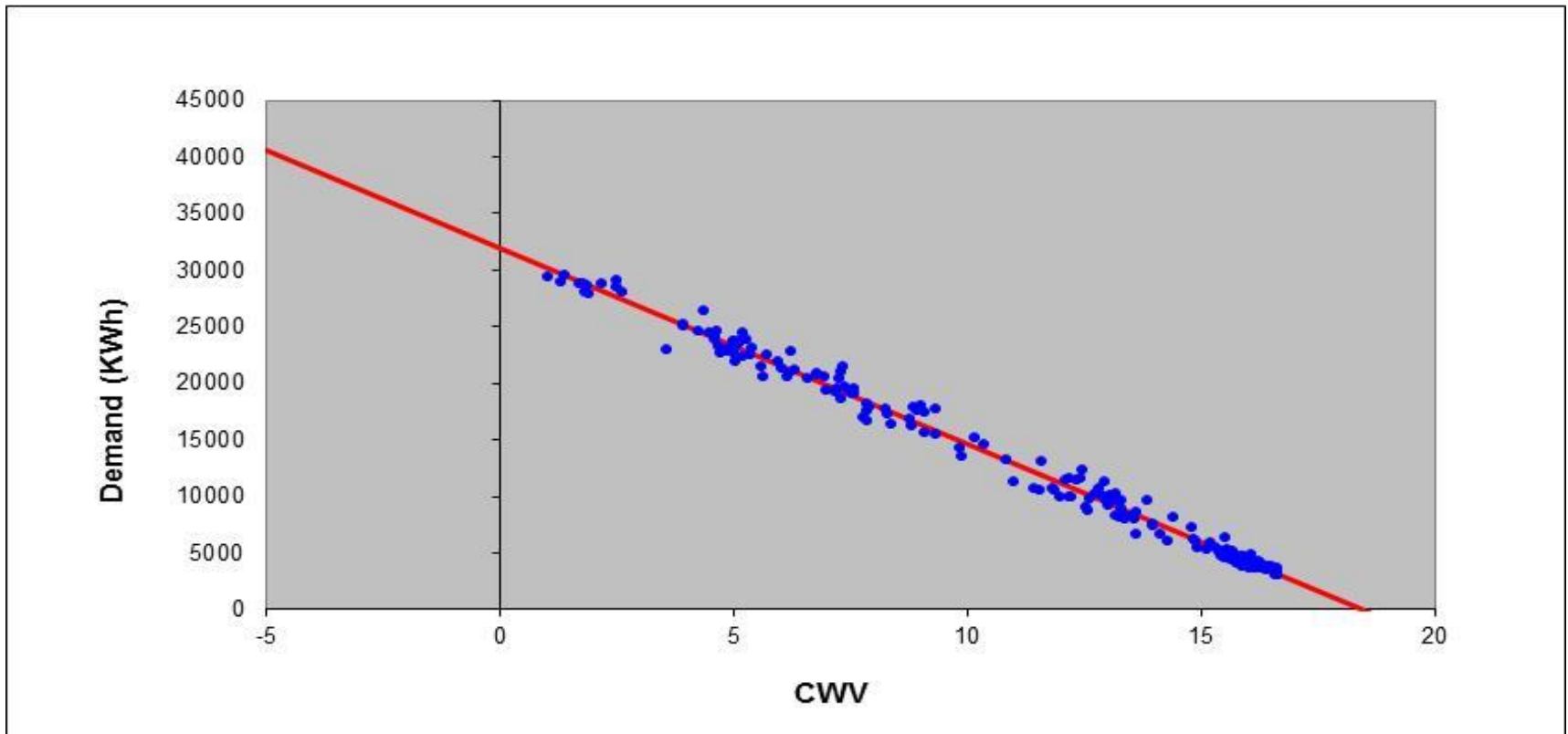
Xserve



respect > commitment > teamwork

Small NDM Modelling Results

EA LDZ, EUC Band 1: 0 - 73.2 MWh pa



Demand against EA CWV – Monday to Thursday - Holidays included

Xserve



respect > commitment > teamwork

TWG Involvement: 19th May 2015

- Outcome – TWG discussed and agreed single year models to be used including aggregations to take forward for all NDM consumption band and WAR band models:
 - Band 3/4 WAR Bands - TWG agreed to model NO individually
 - Band 6 – TWG agreed to model SW and WS individually
 - Band 5 WAR Bands – TWG agreed to 7 LDZ Grouping
 - Band 6 WAR Bands – TWG agreed to 3 LDZ Grouping
 - Band 7/8 WAR Bands – TWG agreed to 2 LDZ Grouping
- Next phase was then able to commence:

Model Smoothing and derivation of draft NDM proposals

xserve



respect > commitment > teamwork

Model Smoothing and Derivation of Parameters

- Model Smoothing process carried out on 3 years of sample data (2012/13, 2013/14 and 2014/15)
- Smoothed EUC model parameter values created represent the average value from across the 3 years (in place to address year on year volatility)
- Smoothed model parameter values were then used to derive the various NDM proposals such as the ALPs
- During this phase there was further TWG interaction where details of amendments to weekend factor results were shared

xserve



respect > commitment > teamwork

TWG Review: 5th June to 23rd June 2015

- Draft NDM proposals were published and available for review on 5th June
- Note issued to TWG inviting feedback and comments
- One response received (23rd June) from E.On representative on TWG covering :
 - Queries with changes to DAF shape year on year for some EUCs
 - Queries with extended Christmas holiday shape for EUC EA:09B and general treatment of Christmas in 2015/16 profiles
- Next phase was then able to commence:

Investigate TWG comments and provide feedback at meeting on 24th June

Xserve



respect > commitment > teamwork

TWG Involvement: 24th June 2015

Objectives of Meeting

- Third check point meeting of Technical Work Group
- Key objectives of June meeting:
 - Review TWG comments and agree any actions
 - Agree approach to presentation of proposals to DESC
- Response to E.On queries summary:
 - The variations in DAF shapes were due to year on year changes in smoothed model outcomes e.g. model with slope/no slope and with/without cut-offs
 - The Band 9 ALP query had almost identical holiday factors for codes 2 and 3
 - The application of current Christmas holiday code rules to Gas Year 2015/16 resulted in an extra 6 days at the end of the defined Christmas holiday period
- Outcome: Following discussion about queries received, TWG provided support for proposals and recommended they be presented to DESC

Xserve



respect > commitment > teamwork

TWG Recommendations 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 Proposals report has been published including Appendix 13 which summarises NDM algorithm performance for Gas Year 2013/14
- DESC majority now required to proceed to next phase

xserve



respect > commitment > teamwork

DESC Comments / Responses on Proposals

- Email sent to DESC members asking for feedback by close of play 6th July in order to prepare for meeting on 8th July
- Do DESC have any comments regarding this years proposals ?
- Following TWG's recommendation, are DESC happy to approve this year's proposals for wider industry review ?

Xserve



respect > commitment > teamwork

- w/c 13th July
 - Prepare documentation and apply any final revisions
 - Xoserve publish DESC's proposals by 17th July for industry to review
- w/c 20th July
 - Users and Transporters have 5 b.ds to review and submit representations to DESC
- w/c 27th July
 - DESC meeting to review representations and consider response
 - Proposed meeting date – Wed 29th July
- w/c 3rd August
 - DESC provide formal response to representations (via Xoserve)
- w/c 10th August
 - Xoserve on behalf of Transporters publish final proposals to industry (no later than 15th August) and submit interface files to key systems

Xoserve



respect > commitment > teamwork