

SOFTWARE

# Allocation of Unidentified Gas Expert Methodology Review

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08 February 2017

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# Agenda

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- Introduction
- Project Overview
- Methodology Overview
  - Overall UG Estimation
  - EUC/Product Split
  - Conversion to Factors
  - Directly Estimated UG Components
  - Balancing Factor
  - Final UG Factors
- Q&A

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## Introduction

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- GL appointed as AUGER in 2011
  - Quantify Total UG (forecast)
  - Apportion between SSP/LSP
- Project Nexus
  - Individual Meter Point Reconciliation
  - Rolling AQ Calculation (monthly)
  - Settlement on basis of Nexus Daily UG
  - Product Classes
- Alignment of AUG year to Gas year
- New AUG process
  - Timeline
  - Deliverables
- Aim
  - Present methodology, answer questions & obtain feedback

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## Project Overview

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- AUG Expert appointed July 2016
- Review of Nexus & UG Implications
- Request for data
  - Xoserve, Industry, TRAS, Smart Energy GB
- Methodology Development -> First draft AUG Statement and Table of Factors
- Consultation Period - [AUGE.software@dnvgl.com](mailto:AUGE.software@dnvgl.com)

Key Dates	Description
01-Feb-17	First Draft AUG Statement published. Start of 42 day consultation period
08-Feb-17	Presentation of 1st draft AUG Statement
14-Mar-17	End of consultation period
13-Apr-17	Industry Meeting
12-May-17	Presentation of final AUG Statement
30-Jun-17	Publication of final AUG Table

## Methodology Overview

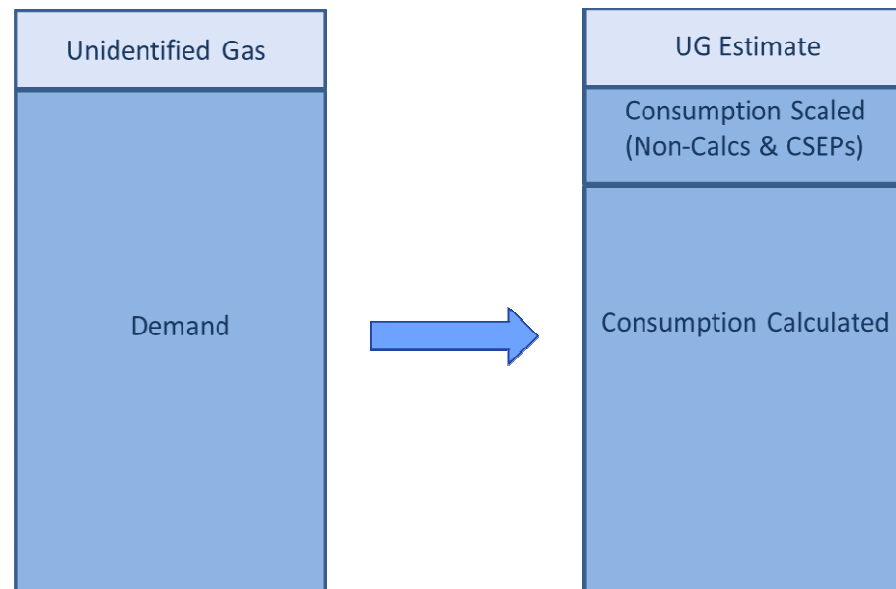
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- Evolving methodology
  - Year 1:
    - Only pre-Nexus data available
    - Similar methodology to previous years
    - Estimate Total UG & Split by EUC/Product class
  - Subsequent years:
    - Post-Nexus data available

## Total UG Estimation

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- Need estimate of Total UG to calculate factors (Consumption Method)
- Estimate Total UG = LDZ Input – Sum of Consumption for all MPRs
  - LDZ Input Metered
  - Consumption is estimated based on meter reads, AQ etc



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## Consumption Method Changes

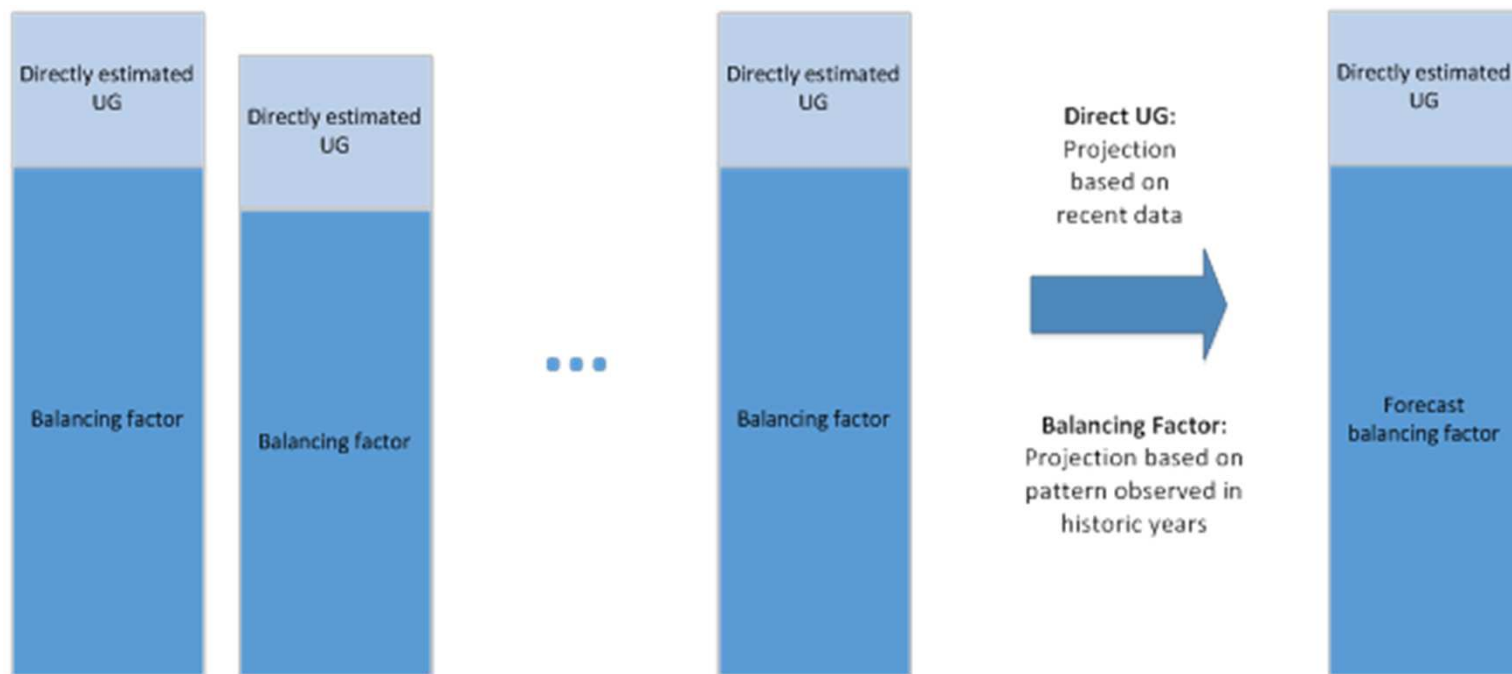
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- Align to Gas Year
- Prime/Sub Disaggregation
- CSEP consumption
  - Snapshot dates
  - NExA table updates
- Longer Data History (all Pre-Nexus)
- Improvement in Meter Asset Information

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## Forecast UG

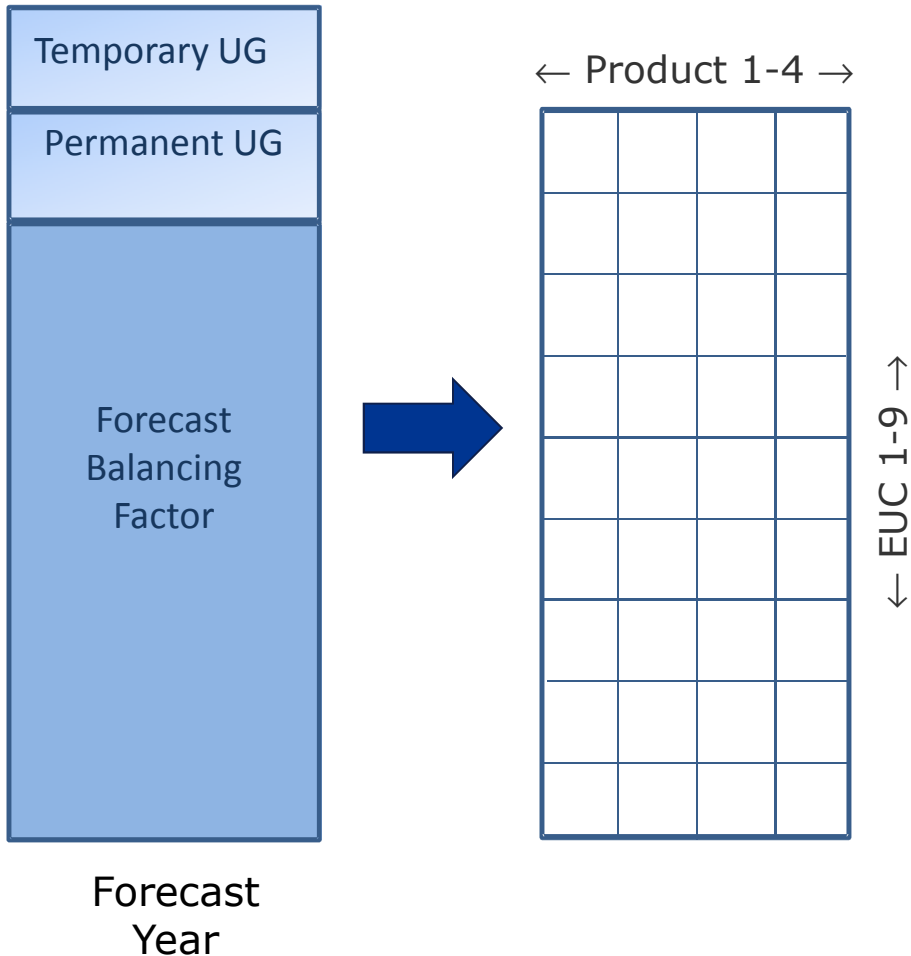
- Balancing Factor
  - $BF = \text{Total UG} - \text{Directly estimated UG}$
  - Projected forward using data up to 2014/15
- Directly estimated UG
  - Most recent data available



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# Forecast UG Components (GWh)



- Split of directly calculated UG categories is part of this calculation
- Balancing Factor is nearly all undetected theft
  - Split by throughput, amended for relative difficulty of stealing from different meter types and metering regimes
    - Smart meter, AMR, traditional meter
    - Daily meter readings, periodic meter readings
  - Input from experts
    - DNV GL metering team
    - TRAS/Industry

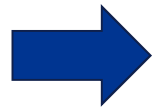
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# Energy → Factors

**Energy (GWh)** ... divide by ... **Throughput (AQ)** ... gives ... **Factors**

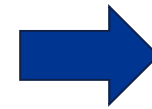
← Product 1-4 →


← EUC 1-9 →



← Product 1-4 →


← EUC 1-9 →



← Product 1-4 →


← EUC 1-9 →

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## Population/Throughput Estimate

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- Based on pre-Nexus data (existing market sectors)
  
- For each EUC
  - **Product 1 = DMM**
    - DMM and EUC 09B treated as the same thing for this calculation
    - Only EUC 09B will have any Product 1 population
  - **Product 2 = DMV + DME + (Smart Meters + AMR) \* Takeup Rate**
    - Existing DM element calculated as any DM below 09B AQ threshold
    - Takeup Rate defined through consultation with Xoserve
  - **Product 3 = (Smart Meters + AMR) \* Takeup Rate**
    - Takeup Rate defined through consultation with Xoserve
  - **Product 4 = Total EUC Population – Product 1 – Product 2 – Product 3**
    - Product 4 will contain the majority of the population at this stage for most EUCs
  
- Data available through asset information provided for Consumption Method

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## Population/Throughput Estimate

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- Modifiers to supplied asset data required
- Smart Meter roll-out completion percentage
  - At start of forecast year (October 2017)
- Regulations state that all sites in EUC 04B and above must have an advanced meter
- Assumptions used are:

<b>Parameter</b>	<b>Value</b>
Smart Meter Installation Programme Completion (start of forecast year)	20%
Product 2 Take Up (for Smart Meter and AMR Sites)	10%
Product 3 Take Up (for Smart Meter and AMR Sites)	15%

## Population Estimate by EUC and Product

1<sup>st</sup> October 2017

### Total Population

	01B	02B	03B	04B	05B	06B	07B	08B	09B
Product 1	0	0	0	0	0	0	0	0	293
Product 2	431,691	83	34	1,948	533	391	249	251	0
Product 3	647,481	92	21	2,838	683	221	76	28	0
Product 4	20,500,409	192,001	45,634	14,192	3,416	1,107	382	140	0

### Percentage Population Split

	01B	02B	03B	04B	05B	06B	07B	08B	09B
Product 1	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%
Product 2	1.976%	0.000%	0.000%	0.009%	0.002%	0.002%	0.001%	0.001%	0.000%
Product 3	2.964%	0.000%	0.000%	0.013%	0.003%	0.001%	0.000%	0.000%	0.000%
Product 4	93.848%	0.879%	0.209%	0.065%	0.016%	0.005%	0.002%	0.001%	0.000%

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## Throughput Estimate by EUC and Product

1<sup>st</sup> October 2017

### Aggregate AQ (GWh)

	01B	02B	03B	04B	05B	06B	07B	08B	09B
Product 1	0	0	0	0	0	0	0	0	41,019
Product 2	5,860	10	15	2,325	1,896	3,886	5,270	10,791	0
Product 3	8,790	12	10	3,377	2,375	1,982	1,546	1,106	0
Product 4	278,267	26,246	20,560	16,887	11,874	9,912	7,732	5,532	0

### Percentage AQ Split

	01B	02B	03B	04B	05B	06B	07B	08B	09B
Product 1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.78%
Product 2	1.25%	0.00%	0.00%	0.50%	0.41%	0.83%	1.13%	2.31%	0.00%
Product 3	1.88%	0.00%	0.00%	0.72%	0.51%	0.42%	0.33%	0.24%	0.00%
Product 4	59.55%	5.62%	4.40%	3.61%	2.54%	2.12%	1.65%	1.18%	0.00%

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## Shipperless/Unregistered Sites

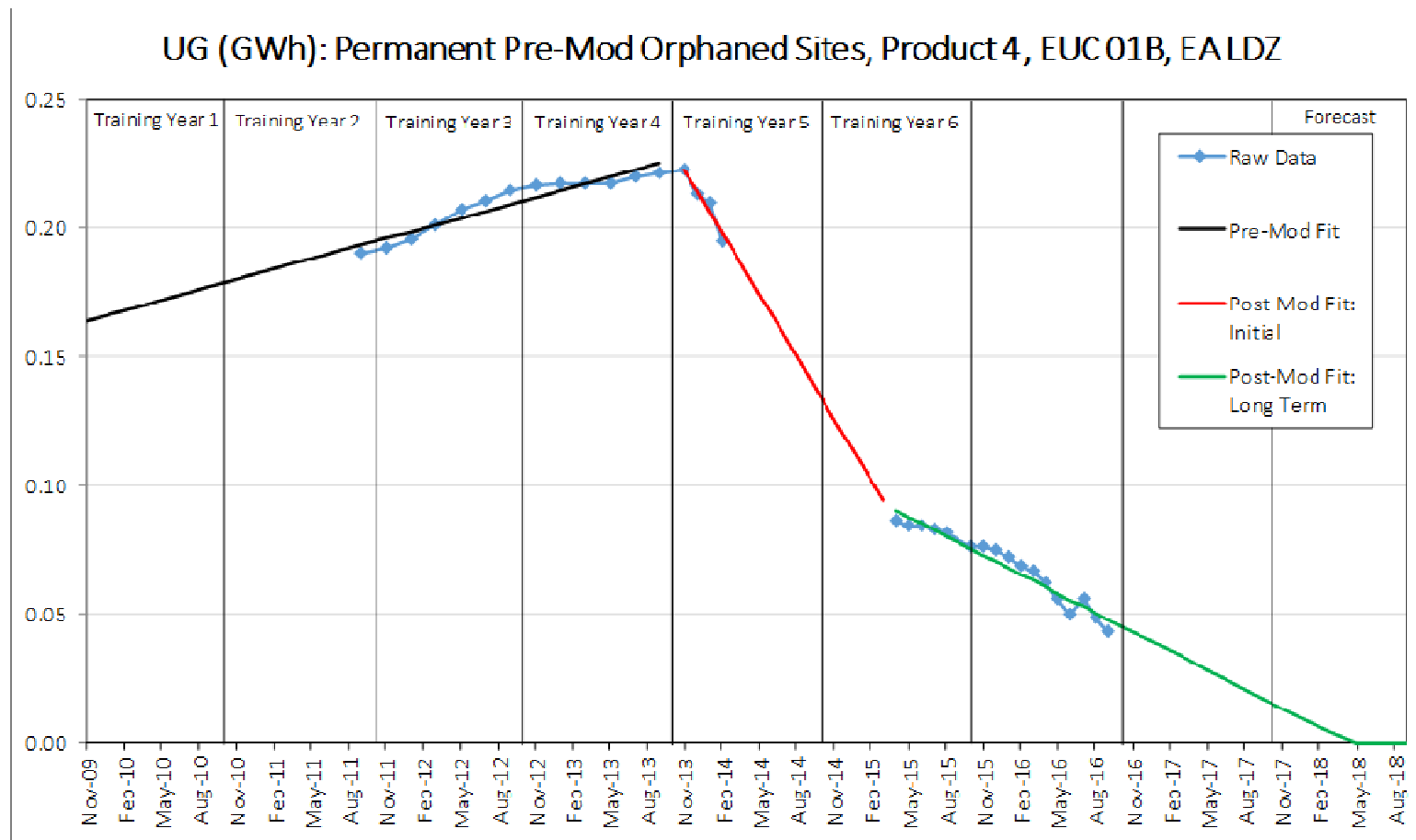
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- Snapshots Sep 2011 – Sep 2016
- EUC from AQ (supplied in snapshots)
- Split as appropriate for
  - Pre/post Mod 410A (using Effective Date)
  - Pre/post Mod 424 (using Isolation Date)
  - Pre/post Mod 425 (using Isolation Date)
- Split between Temporary and Permanent using existing rules
- Split between Products for each EUC
  - Use rules previously defined
- Trend over time → extrapolate to forecast year

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## Shipperless/Unregistered Sites – Example Trend

- Each trend needs to be constructed using a piecewise approach
- Effects of relevant Mod over time



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## Shipperless/Unregistered Sites

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- All relevant Mods well established
  - Latest is Mod 425, effective from 01/04/2014
- Effects can be tracked with the set of snapshots available
  - Construct piecewise trends
- Split each UG category into
  - Pre- and post-Mod sites
  - Permanent/Temporary
  - LDZ
  - EUC
  - Product
- 1872 trends for each main Shipperless/Unregistered UG category

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## iGT CSEPs

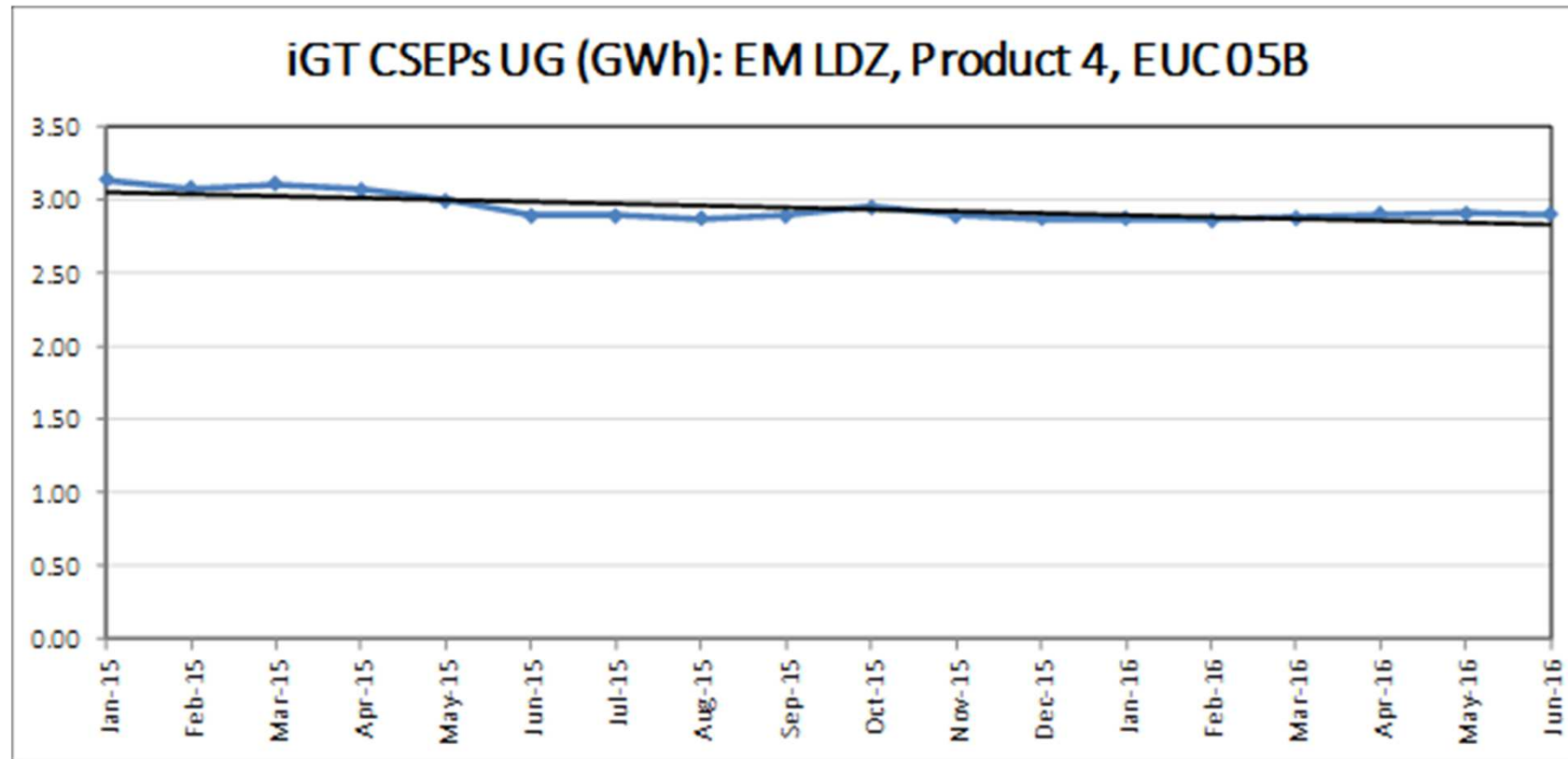
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- Snapshots Jan 2015 – Jun 2016 (Unknown Projects)
- Unregistered sites on known CSEPs
- Registered sites on known CSEPs
  
- EUC split taken from Registered sites on known CSEPs
  - Applied to Unknown Projects
- Add UG from Unregistered sites on known CSEPs
  
- Split between Products for each EUC
  - Use rules previously defined
  
- Split between Temporary and Permanent using existing rules
- Trend over time → extrapolate to forecast year

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## iGT CSEPs – Example Trend

Example from EM LDZ – one of 468 trends for iGT CSEPs UG



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## Consumer Meter Errors

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- Limited data available
- Meter capacity report
  
- Identify meters operating at extremes of their range
- Use AQ and Meter Capacity from report
  - Under 1% of capacity → under-read
  - Over 95% of capacity → over-read
  
- EUC from AQ
- Split between Products for each EUC
  - Use rules previously defined

## Consumer Meter Errors

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- Calculate net over/under read for each EUC/Product combination
- UG from this source all Permanent
- Data limited to single point in time
  - No trend
  - Assume consistent over training period and forecast period

## Theft

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- Undetected Theft is the main component of the Balancing Factor
- Historic detected Theft affects the total UG calculation for the training period
- Theft data for full training period available
- Required as aggregate figure for each LDZ only
  - Individual figures for each training year
- Most UG from detected Theft is temporary
  - When it is detected within reconciliation period
  - UG from Thefts detected later than this goes into Balancing Factor
- Feeds into Consumption Method calculation for total UG

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## Balancing Factor Split

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- Mainly undetected theft
- Split based on throughput for site categories that can be subject to theft
  - 08B and 09B excluded
- High limit: Smart Meters and AMRs have the same theft levels as other meters
- Low limit: Smart Meters and AMRs have no undetected theft
- Best estimate – midpoint

	01B	02B	03B	04B	05B	06B	07B	08B	09B
Product 1	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Product 2	0.717%	0.001%	0.002%	0.284%	0.232%	0.475%	0.644%	0.000%	0.000%
Product 3	1.075%	0.001%	0.001%	0.413%	0.290%	0.242%	0.189%	0.000%	0.000%
Product 4	75.723%	7.869%	6.164%	2.065%	1.452%	1.212%	0.946%	0.000%	0.000%

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## UG Factors

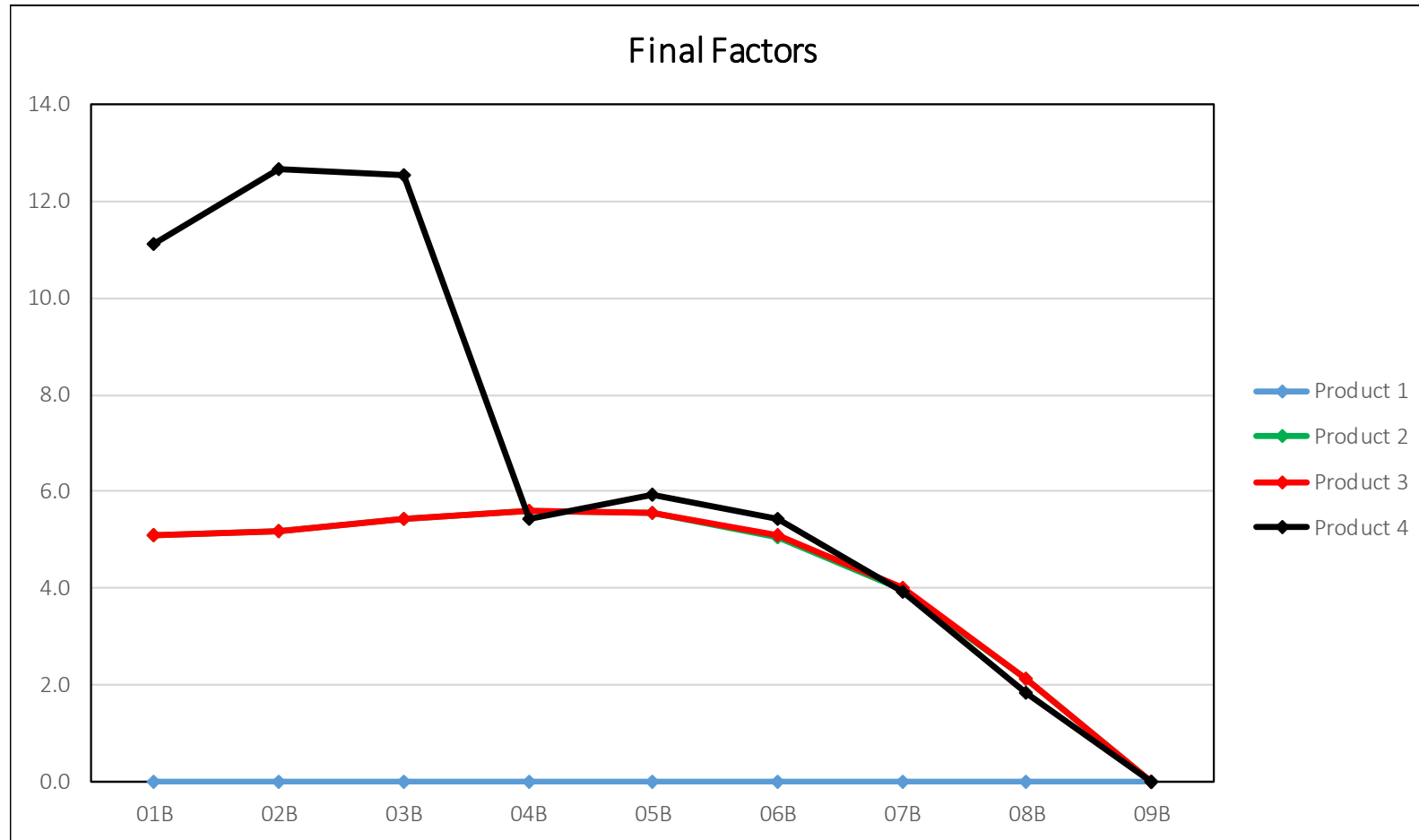
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Supply Meter Point Classification	Product 1	Product 2	Product 3	Product 4
EUC Band 1	0.00	5.10	5.10	11.12
EUC Band 2	0.00	5.19	5.18	12.64
EUC Band 3	0.00	5.42	5.42	12.52
EUC Band 4	0.00	5.60	5.61	5.45
EUC Band 5	0.00	5.54	5.57	5.93
EUC Band 6	0.00	5.07	5.10	5.42
EUC Band 7	0.00	3.99	4.03	3.93
EUC Band 8	0.00	2.13	2.15	1.82
EUC Band 9	0.00	0.00	0.00	0.00

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# Final UG Factors



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## What Next?

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- Questions?
- Consultation Period 1 Feb – 14 Mar 2017
  - [AUGE.software@dnvgl.com](mailto:AUGE.software@dnvgl.com)
- Next Meeting 13 April 2017

# Thank you

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