

# I-SEM Trialing of EUPHEMIA

I-SEM EUPHEMIA Working Group  
Meeting 8  
7<sup>th</sup> December 2015



# EUPHEMIA Workshop – Agenda

- Update by SEMO
- Review of commercial phase batch two
- Discussion of commercial phase batch three
- Discussion of recent working group feedback
- Arrangements for unscripted phase training
- Next Steps



# Update by SEMO



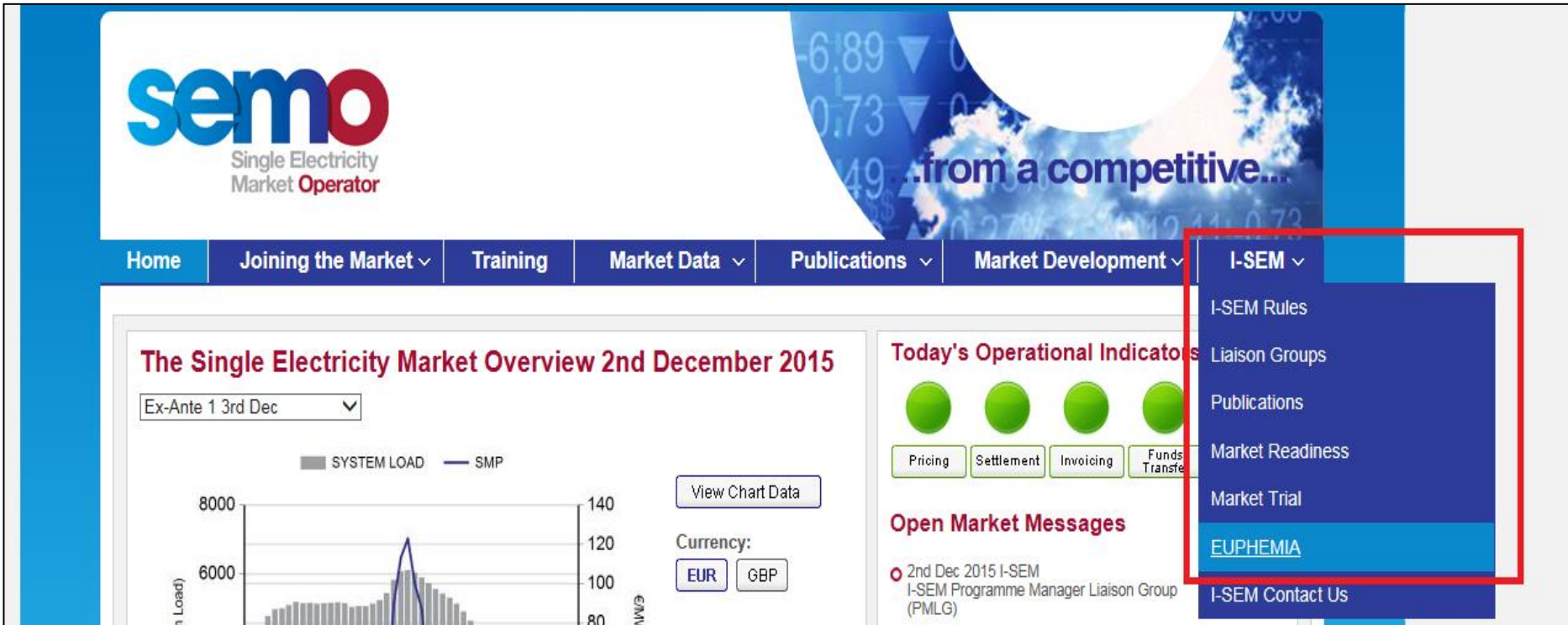
# Trialling Progress Update

- Batch two data executed in EUPHEMIA:
  - Aggregate results shared with WG
  - Issues highlighted by analysis
  - Details for discussion later in the meeting
  
- Further arrangements made for 2016:
  - Arrangements for training in place
  - List of proposed dates for upcoming meetings and workshops
  - All dates discussed with PEMR manager to avoid conflicts



# I-SEM Update – New Web Page

- New I-SEM web page launched – includes EUPHEMIA page



The screenshot displays the SEMO (Single Electricity Market Operator) website. The top navigation bar includes links for Home, Joining the Market, Training, Market Data, Publications, Market Development, and I-SEM. The I-SEM dropdown menu is open, showing options: I-SEM Rules, Liaison Groups, Publications, Market Readiness, Market Trial, EUPHEMIA (highlighted in blue), and I-SEM Contact Us. The main content area features a chart titled 'The Single Electricity Market Overview 2nd December 2015' showing System Load and SMP. To the right, there are 'Today's Operational Indicators' (Pricing, Settlement, Invoicing, Funds Transfer) and 'Open Market Messages' (2nd Dec 2015 I-SEM I-SEM Programme Manager Liaison Group (PMLG)).

- <http://www.sem-o.com/ISEM/Pages/Euphemia.aspx>



# EUPHEMIA Algorithm Update

- Previously discussed presentation by PCR on EUPHEMIA future:
  - ❑ Long term planning activity – no concrete developments
  - ❑ Mentions of new order types
  - ❑ Mentions of new pricing methodology
  - ❑ SEMO promised to give a further update
  
- Two key recent meetings:
  - ❑ **20/11** - Meeting between PCR and their vendor (nSide)
  - ❑ **03/12** - Presentation by PCR to ENTSO-E ESC



# EUPHEMIA Algorithm Update – Key Points

- Future developments must take account of:
  - ❑ Anticipated evolution of market and coupled regions
  - ❑ Some solutions require further R&D to be effective
  - ❑ The cost of further developments and R&D
  
- PCR are hosting a stakeholder forum (11/01/16) to discuss:
  - ❑ Open to wide range of PCR stakeholders
  - ❑ Discuss the current status and future developments
  - ❑ Forum to receive suggestions and feedback from stakeholders
  
- PCR issued letter to ACER 13/11/2015 seeking clarity on costs



# EUPHEMIA Update – PCR Memberships

## ➤ New Full PCR Memberships:

- ❑ TGE (Poland) & OPCOM (Romania) as full members
- ❑ NPS servicing IBEX (Bulgaria) and CROPEX (Croatia)
- ❑ EPEX servicing SEEPEX (Serbia and South Eastern Europe)

## ➤ Development on including 4MMC in full implicit allocation

## ➤ ESC slides available on ENTSO-E website:

<https://www.entsoe.eu/major-projects/network-code-implementation/stakeholder-committees/Pages/default.aspx>

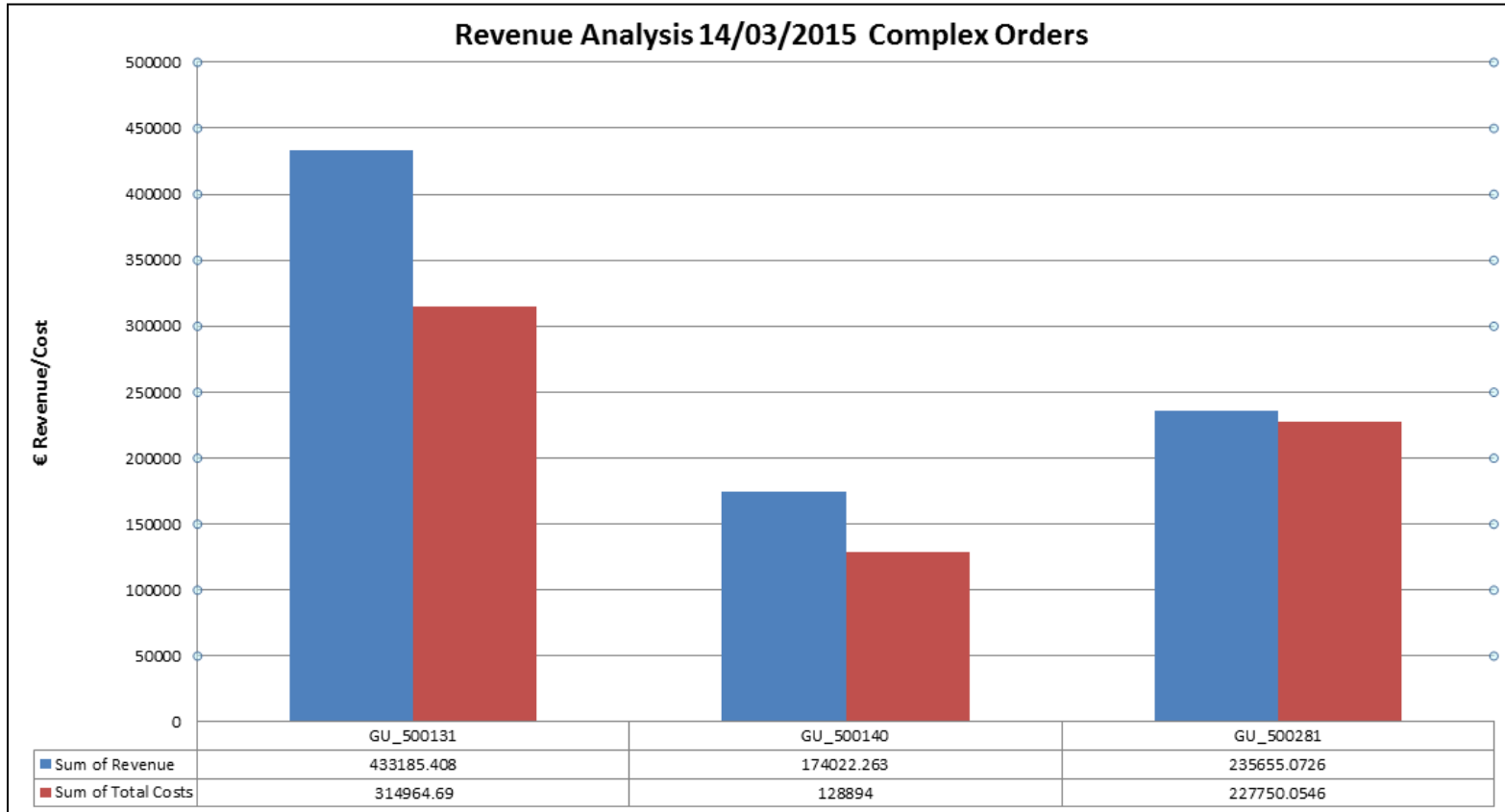




# Commercial Phase Batch One

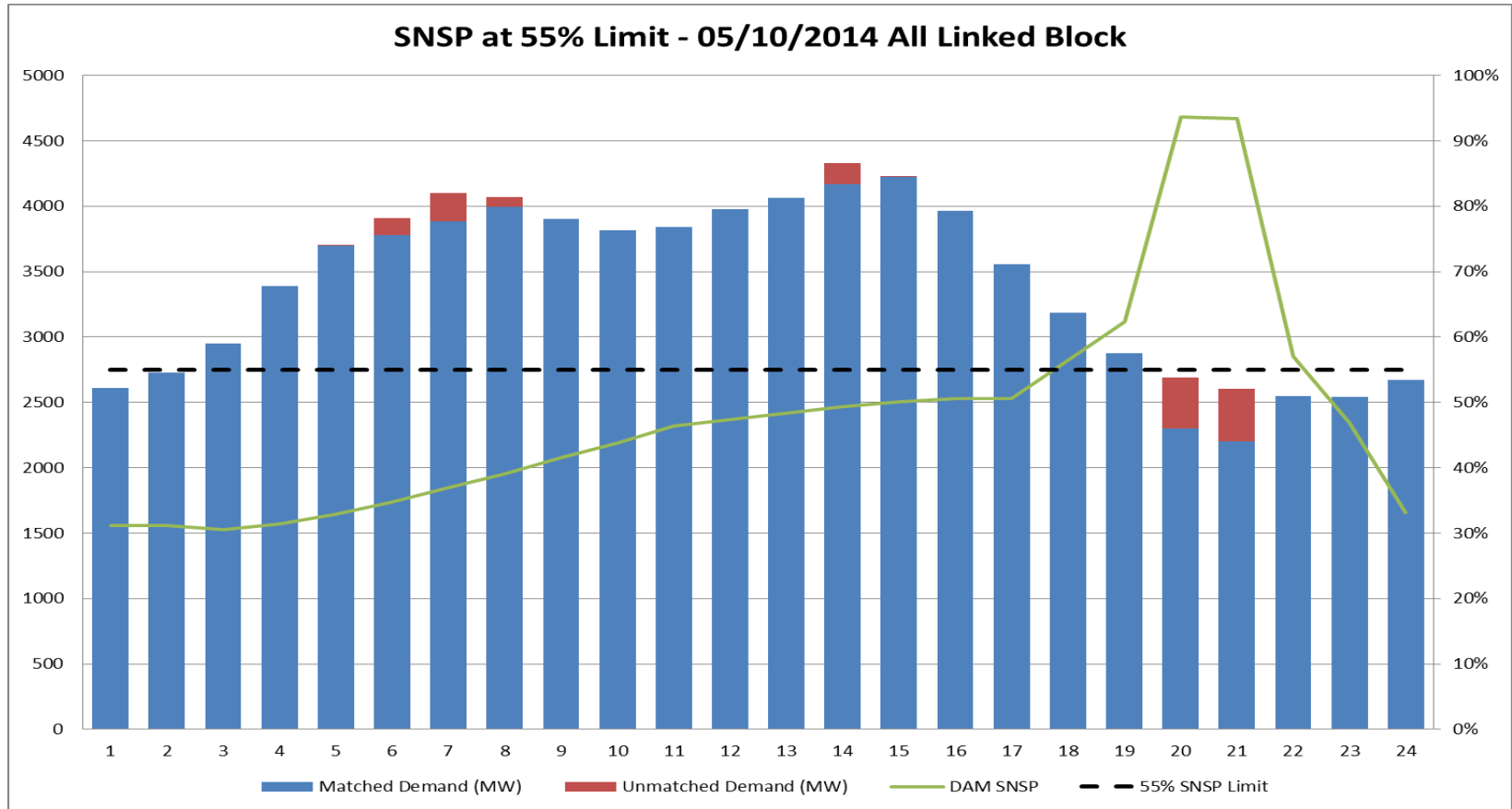


# Batch One Revenue Analysis



➤ No complex order was observed to have under recovered costs

# Effect of Price Making Demand



- 90/1200 trading periods breached the 55% SNSP limit
- 10/1200 trading periods breached the 75% SNSP limit



# Commercial Phase Batch Two



# Batch Two Review

Scenario	Demand	Wind	Coupling	Days
Complex order with no-load VT (min gen)	Price making	Price making	Coupled	5
Complex order with no-load VT (max avail)	Price making	Price making	Coupled	5
Complex negative bid at min gen (all plant)	Price making	Price making	Coupled	5
Base load complex negative min gen bid mid merit linked block	Price making	Price making	Coupled	5
Mid merit complex negative min gen bid base load linked block	Price making	Price making	Coupled	5
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All linked block @ MAR 95%	Price making	Price making	Coupled	5
All linked block @ MAR 75%	Price making	Price making	Coupled	5
All linked block @ MAR 75%/95%	Price making	Price making	Coupled	5
All linked block @ MAR 95%	Price taking	Price making	Coupled	5
All linked block @ MAR 75%	Price taking	Price making	Coupled	5
All linked block @ MAR 75%/95%	Price taking	Price making	Coupled	5
All linked block @ MAR 95%	Price making	Price making	De-coupled	5
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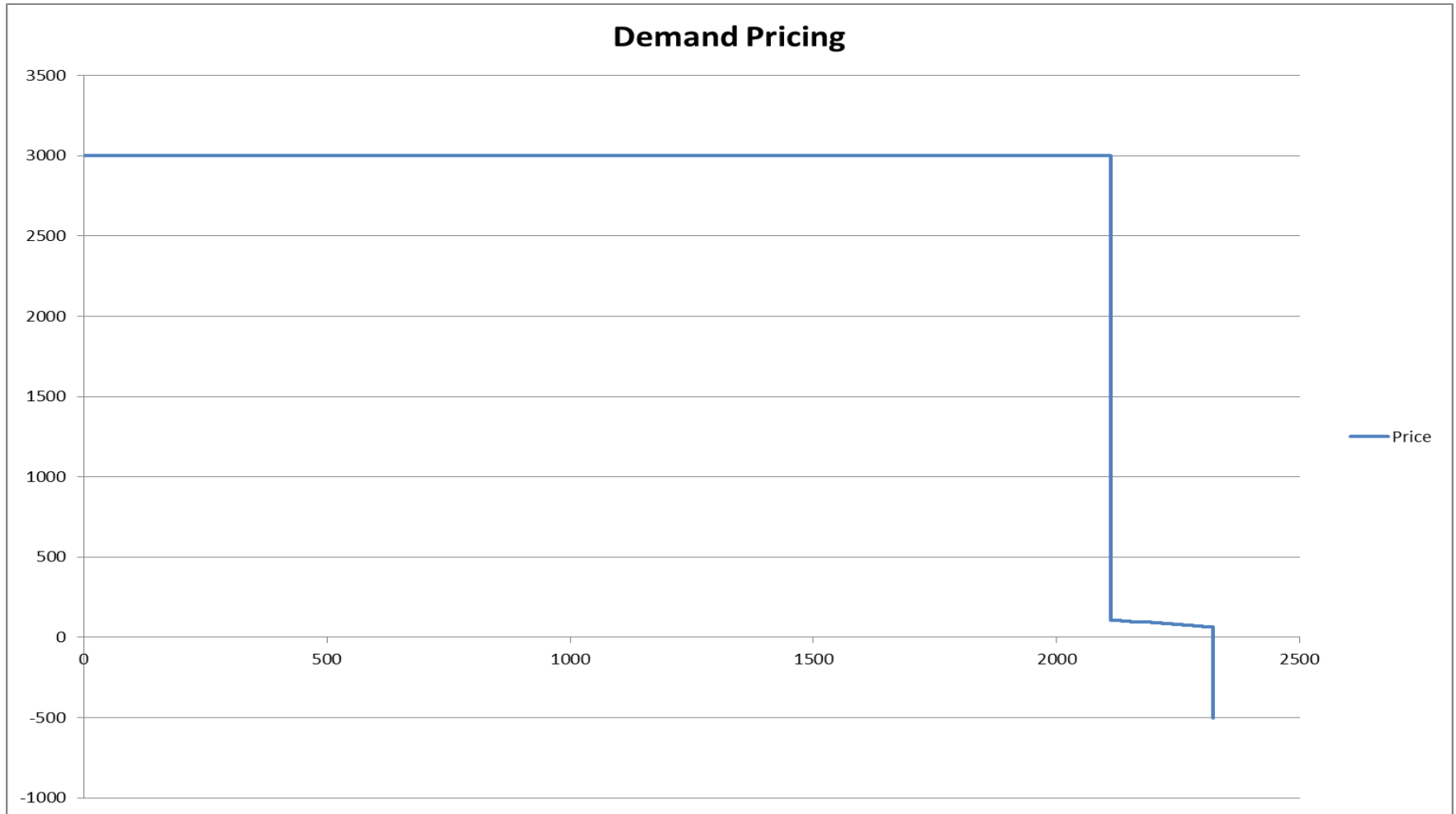


# Demand Participation

- Demand still studied in aggregate:
  - No need to separate by supplier
  - Cleared prices and volumes provide sufficient detail
  
- Volume and Price:
  - 90% as price takers
  - Remainder participate on a tiered scale
  - 1% increments of actual trading period SMP x 1.6, 1.7, 1.8, etc.
  - Final 1% = actual trading period SMP x 2.5



# Demand Participation



# Wind Participation

## ➤ Tiered structure for prices :

- Aggregated wind
- Cleared prices and volumes provide sufficient detail

## ➤ Volume and Price:

- 80% as price takers
- Remainder participate on a tiered scale
- 15% of volume at 1% increments of €7 from €-100 to €5
- 5% of volume at 1% increments of €6 from €5 to €35





# Wind Participation – Aggregate Generation Curve



# Issues Encountered

- Results showed some issues:
  - ❑ Erratic prices in a number of datasets
  - ❑ Instances of price cap in multiple hours
  
- Analysis showed issue with the input data:
  - ❑ For a number of sessions hydro and peaker data omitted
  - ❑ Effected runs with price making demand
  - ❑ Did not offer full range of prices to market

# Wind Participation – Aggregate Generation Curve



Peaker and hydro not present – less available MW  
Price moves from wind price to cap for generation

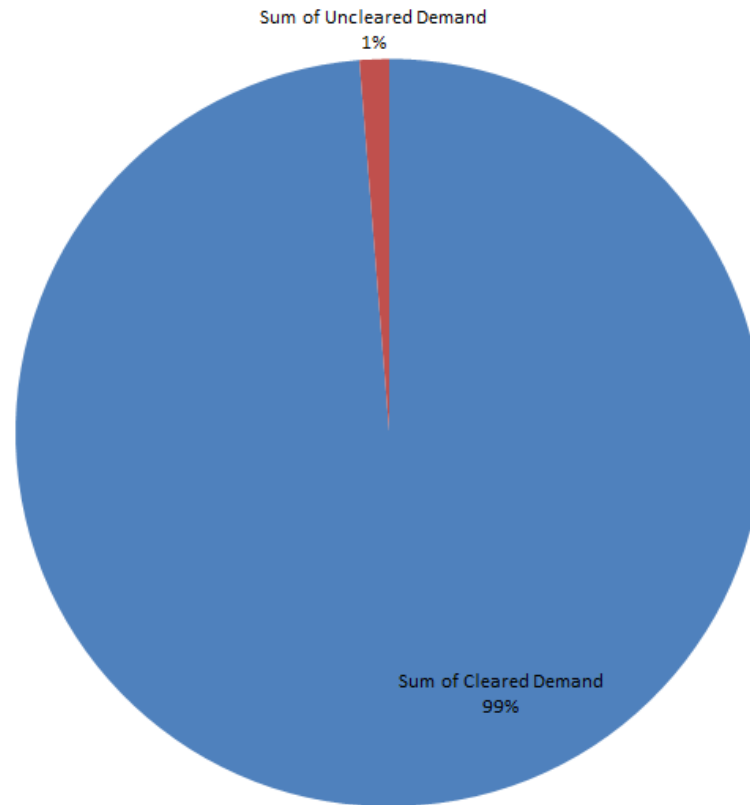
# Batch Two – Effected Datasets

Scenario	Demand	Wind	Coupling	Days
Complex order with no-load VT (min gen)	Price making	Price making	Coupled	5
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# Batch Two – Cleared Demand

## Cleared Demand All Sessions

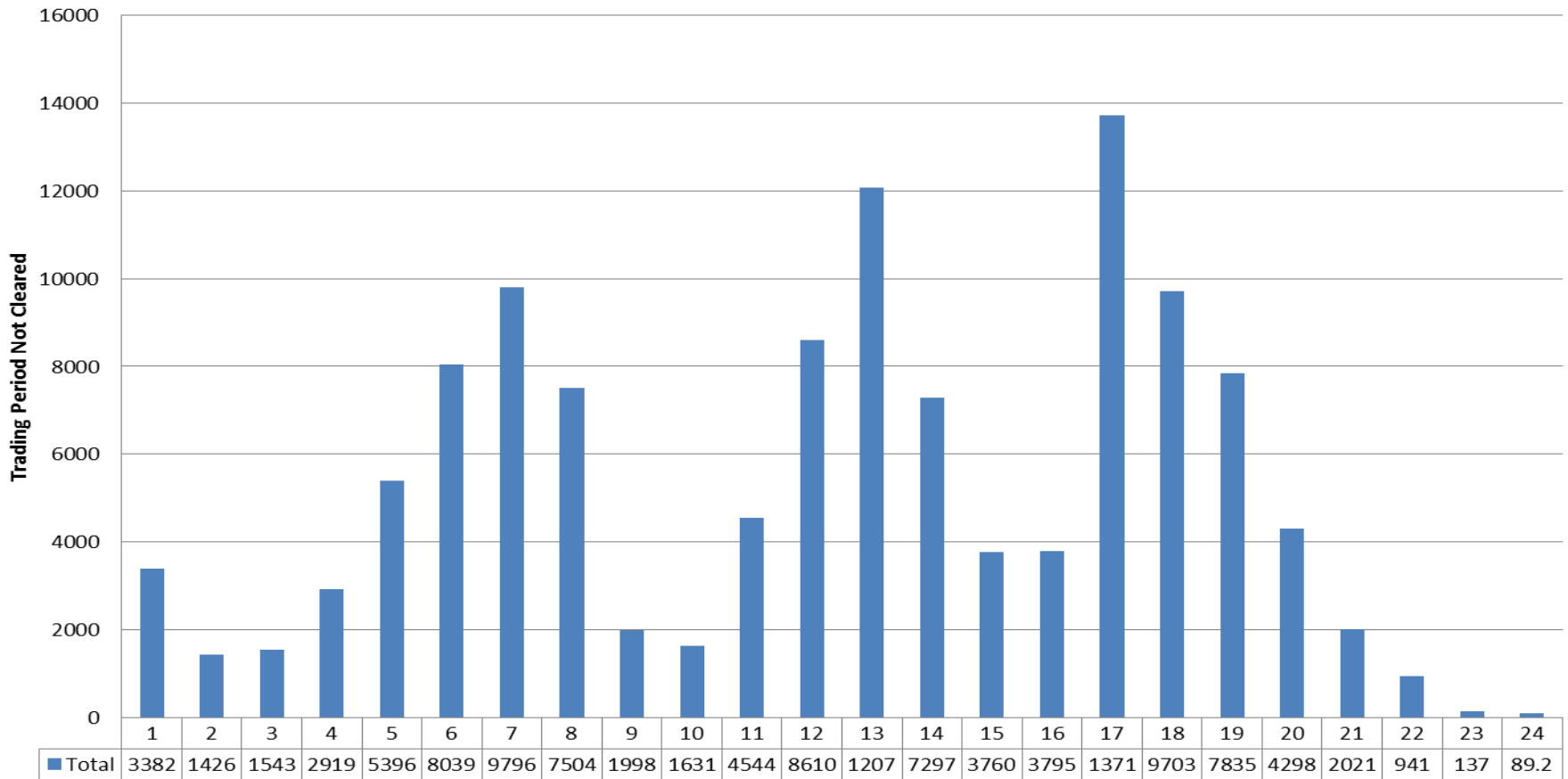


➤ 99% of Demand volume cleared



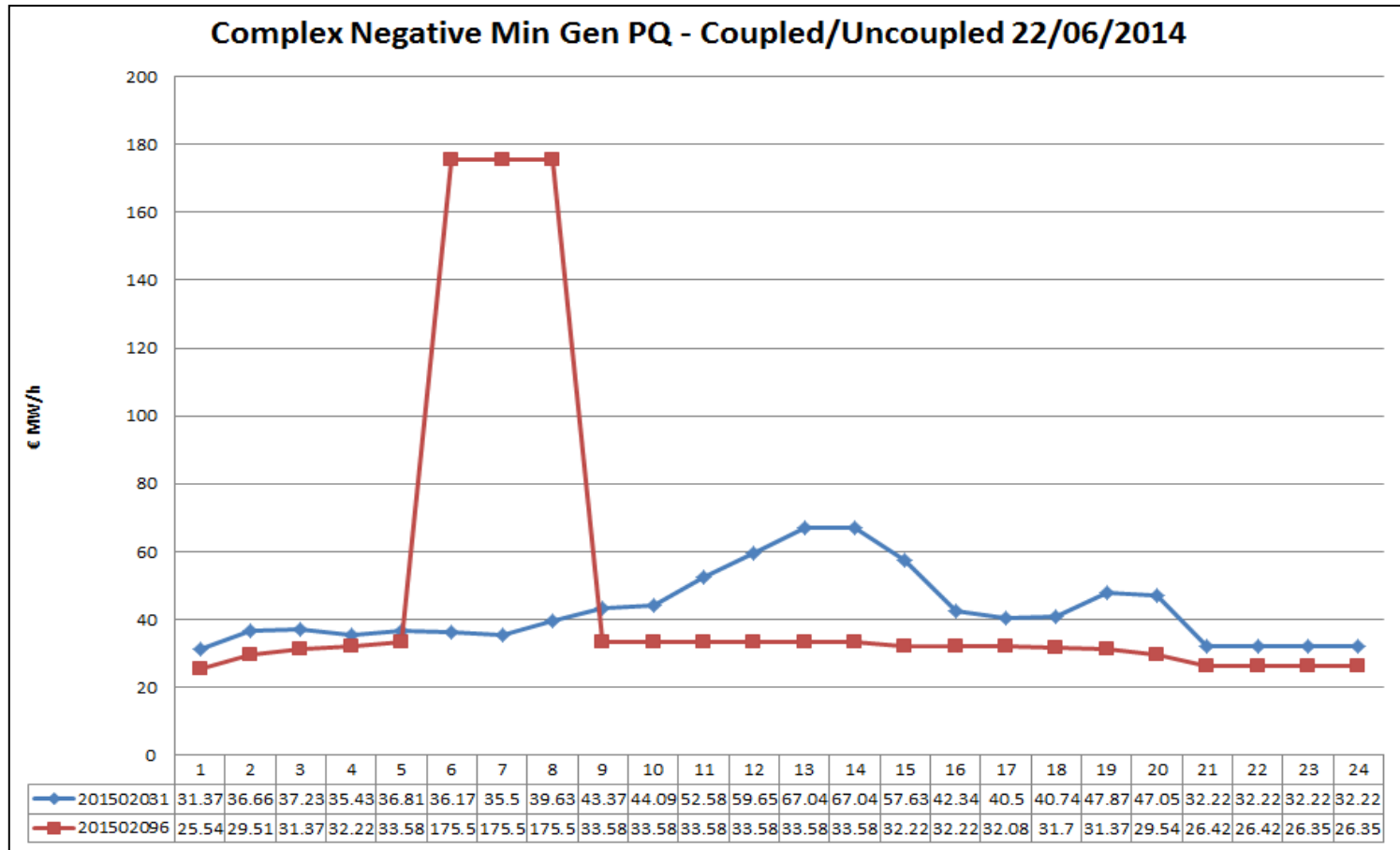
# Batch Two – Cleared Demand

## All Sessions Uncleared Demand by Period



➤ 558/2400 Trading periods did not fully clear

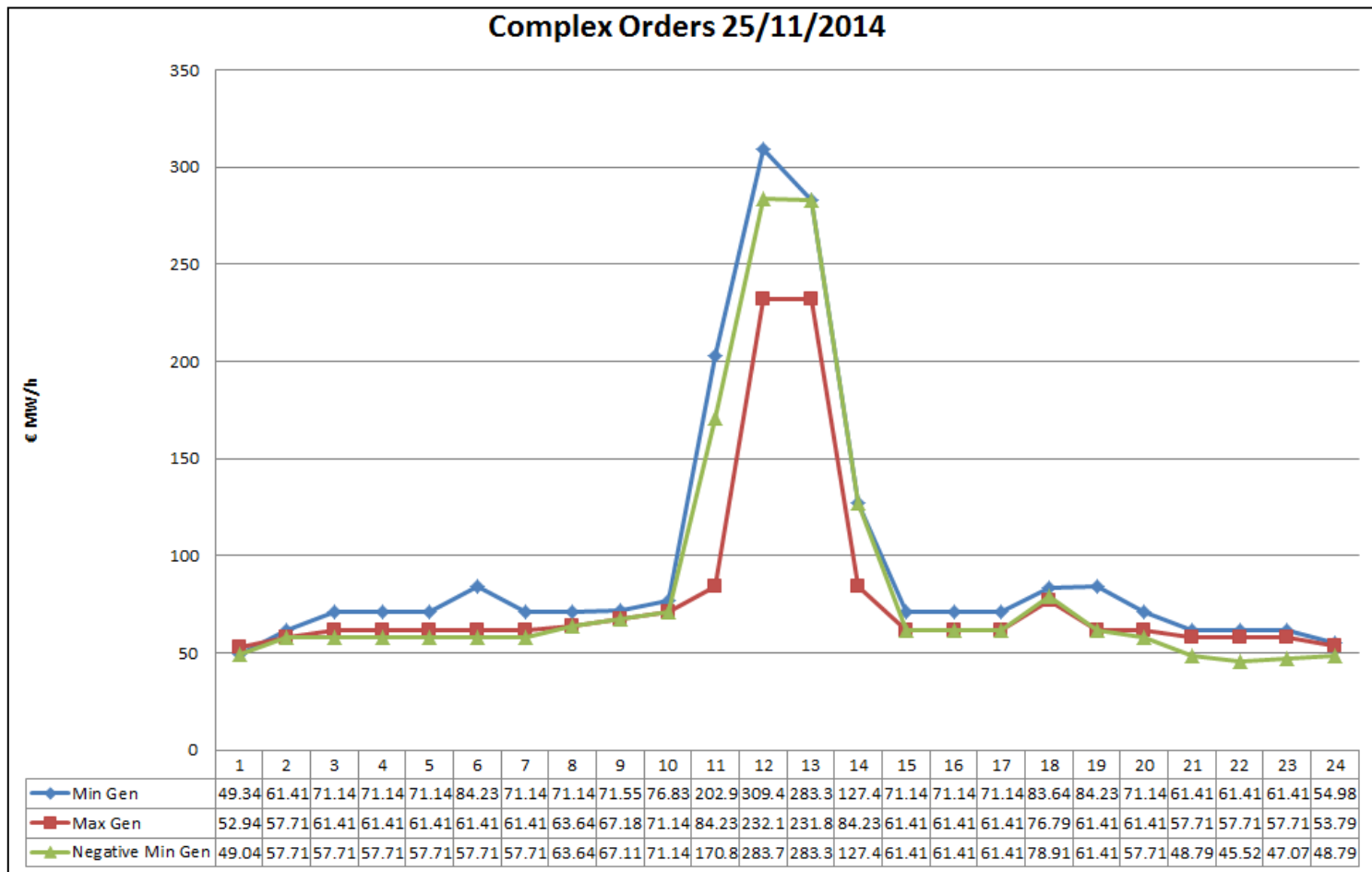
# Batch Two – Uncoupled Prices



➤ Uncoupled sessions – no access to price makers in GB

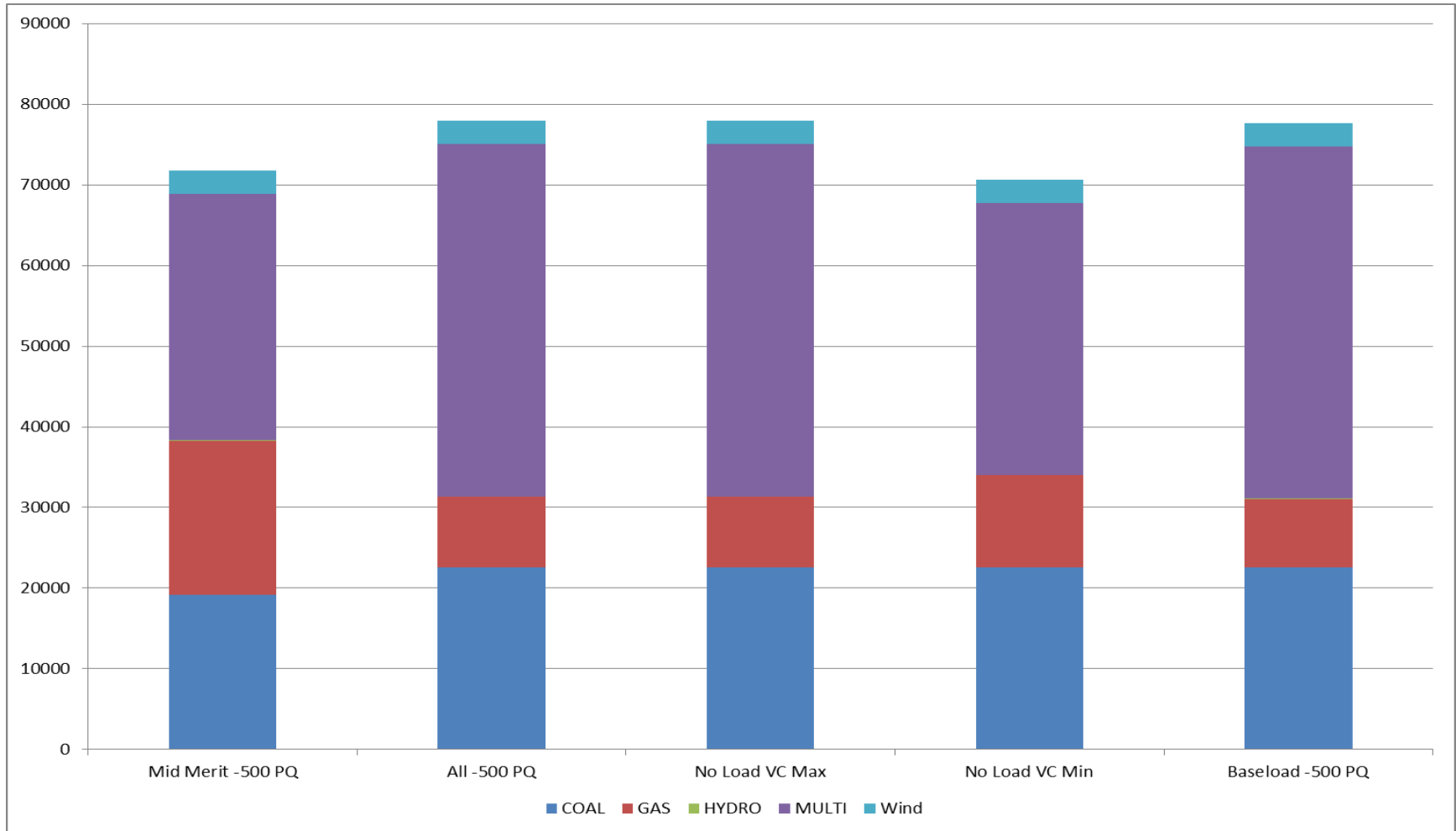


# Batch Two – Complex Order Prices



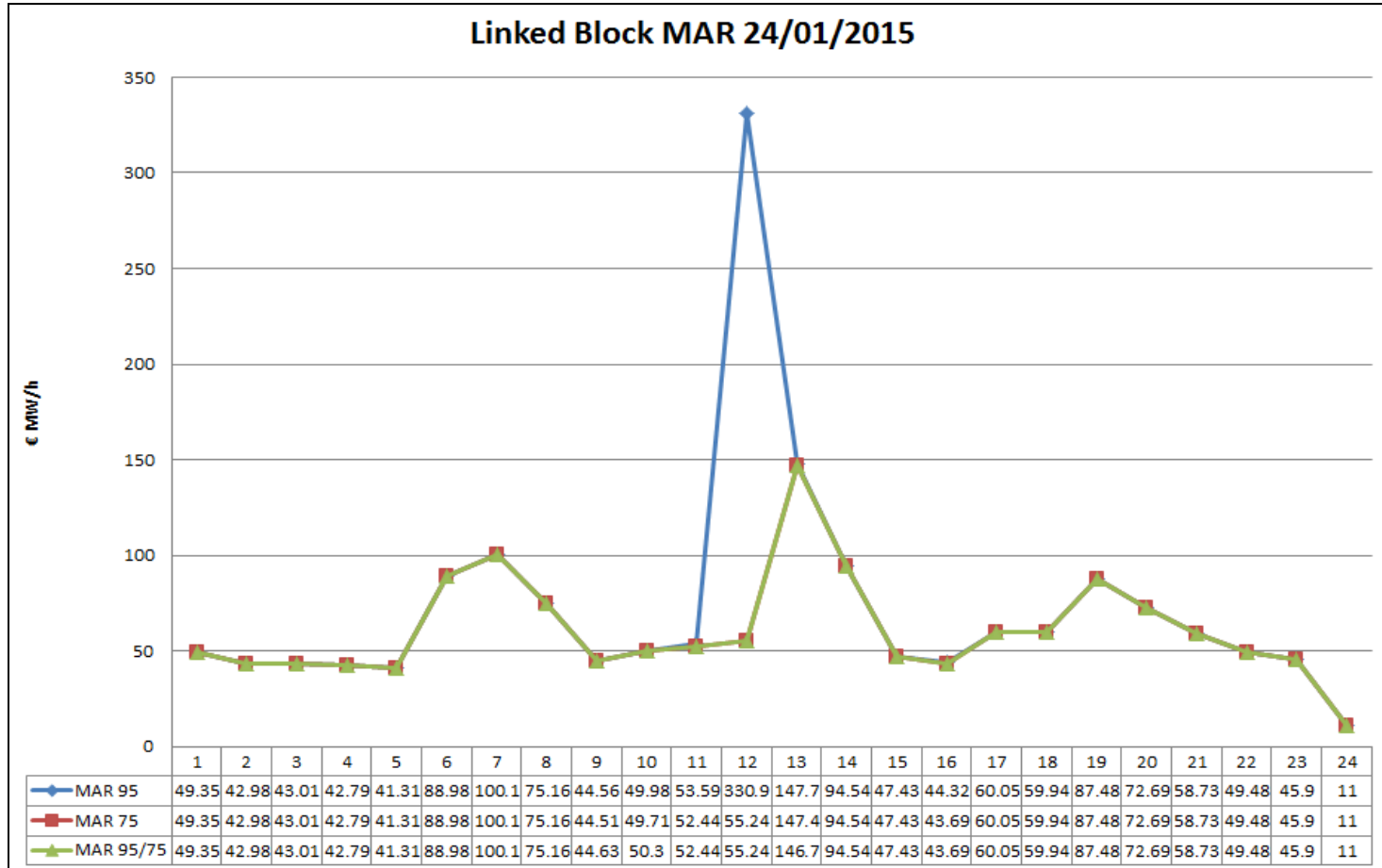


# Batch Two – Complex Order Unit Commitment

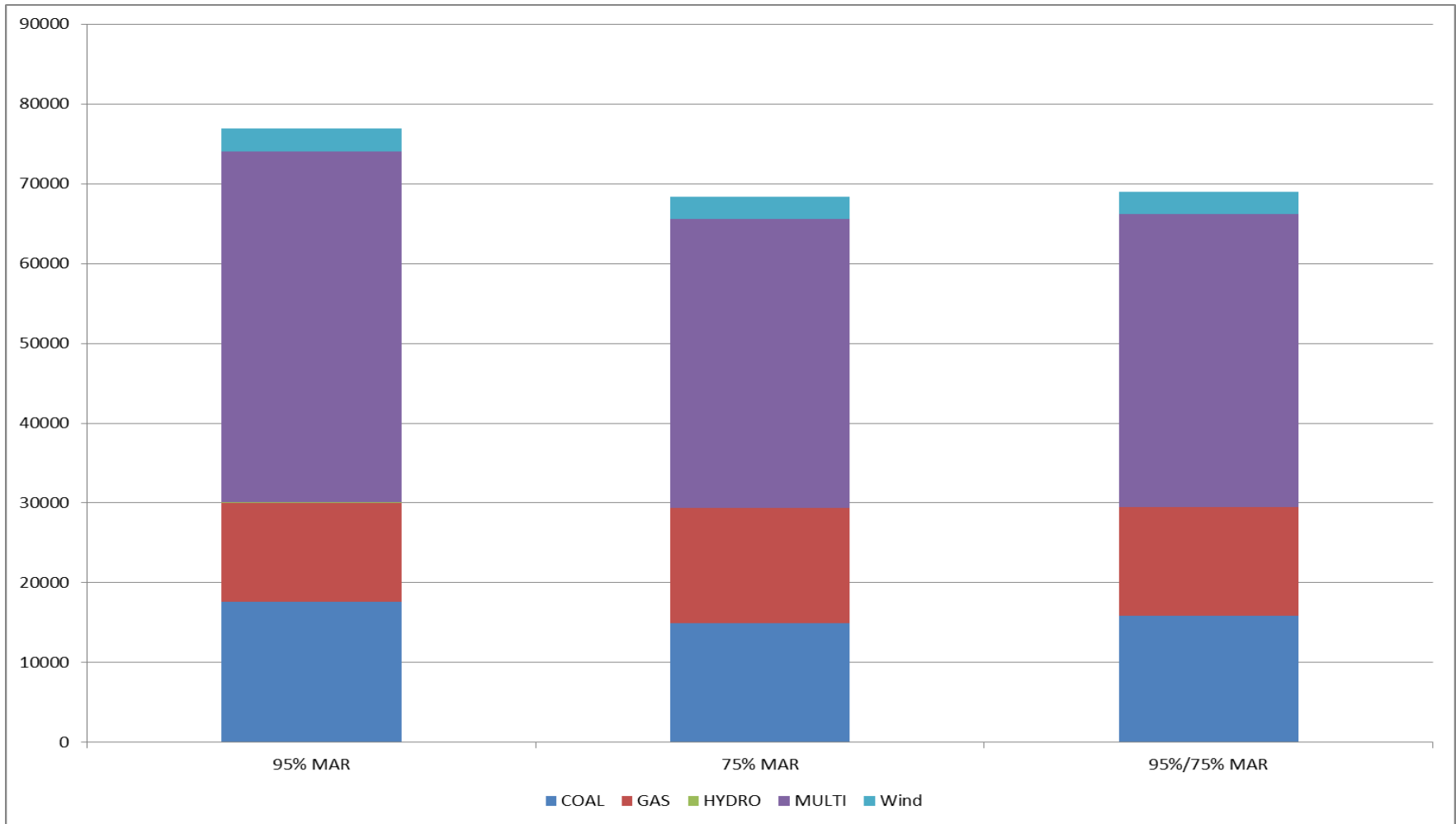


- Findings are currently preliminary
- Noted effect on scheduling of the method used

# Batch Two – Linked Block MAR Prices



# Batch Two – Linked Block MAR Commitment Levels



- Findings are currently preliminary
- Noted effect on scheduling of the method used

# Commercial Phase Batch Three



# Commercial Phase Batch Three - Overview

- Batch of 100 trial dates:
  - ❑ Further iteration of commercial phase data
  - ❑ Build on the findings of batches one and two
  - ❑ Batch 3 of 4 scripted batches
  
- Further explore assumptions of commercial phase:
  - ❑ Amendments to batch one and two
  - ❑ Potential for new amendments
  - ❑ Similar in structure to batch two
  
- SEMO will be seeking feedback on potential uses of 100 datasets



# Commercial Phase Batch Three – Demand and Wind

- Different range of prices:
  - Currently using many small steps
  - Revision of the number of steps
  - Revision of the volume in each step
  - Revision of the prices being used
  
- Different price taking volumes:
  - New % volumes applied
  - What volumes are more reflective of predictions for the DAM



# Commercial Phase Batch Three – Linked Block & Complex

- Further refinement of assumptions:
  - Revision of block pricing
  - Revision of complex order prices (e.g. 0 instead of -500)
  - Revision of MAR levels
  
- Different mixes of units:
  - Different units using linked block or complex orders
  
- Different levels of coupling:
  - Coupled, de-coupled or partially coupled runs



# Commercial Phase Batch Three - Timeline

- Feedback requested from WG:
  - Input on what should be examined using datasets
  - Will feed into trial script as in batch two
  
- Trial script following feedback:
  - Will take feedback and feasibility into account
  - Will outline all 100 datasets
  
- Data will be prepared based on trial script:
  - Data submitted will be shared with WG





# Unscripted Phase Training



# Unscripted Phase Training - Feedback

## ➤ Feedback in line with SEMO assumptions:

- Dublin and Belfast preferred
- Two part session preferred
- Proposed content met expectations
- Proposed timeframe was acceptable

## ➤ High level of interest:

- Organisations looking to send multiple attendees
- Higher interest in Dublin than Belfast
- Second Dublin session added to manage attendance



# Unscripted Phase Training - Feedback

- Request for sessions on separate weeks:
  - Second Dublin session in week following the initial sessions
  - Allow for potential annual leave
  
- Differing opinions on timing:
  - Some felt additional time for planning welcome
  - Some felt less time between training and unscripted phase welcome
  - Timeline unchanged due to lack of consensus
  - Potential to participate in the later training session

# Unscripted Phase Training – Session Content

## Morning

## Afternoon

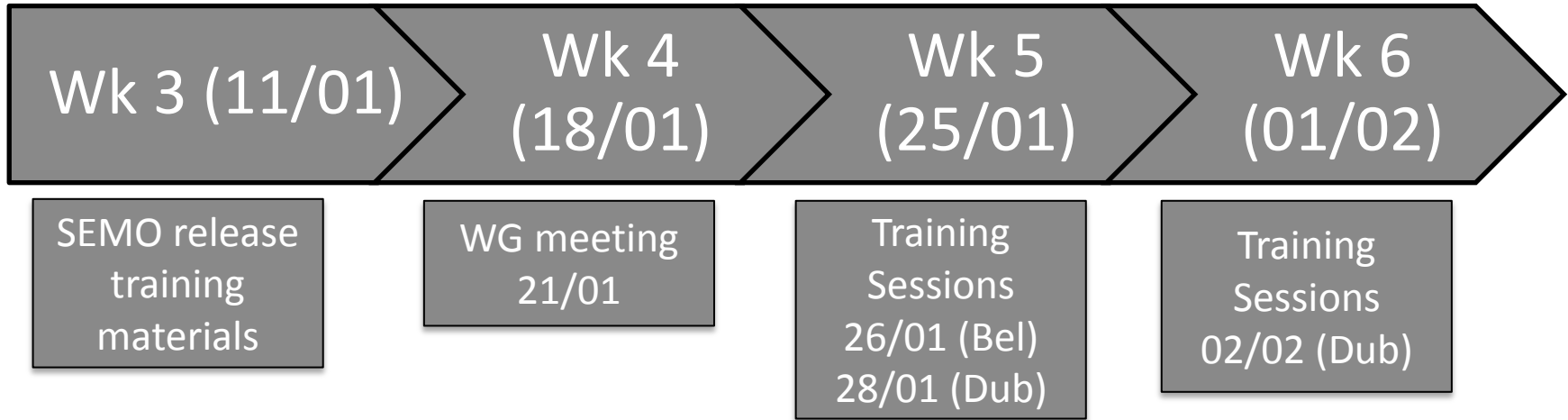
- Recap of trial thus far
- Recap of order types
- Recap of emerging results
- Chance for Q&A with SEMO
- Primarily for new staff
- Will have limited scope

- Practical training session
- Tutorial of SEMO tools
- Tools shared in advance
- Will cover all order types
- Will cover all steps required
- New and existing staff

- Three full day sessions:
- Dublin (x2) and Belfast (x1)
  - Open to WG and non WG members



# Unscripted Phase Training - Schedule



➤ Goal is to balance work:

- Avoid unnecessary overlaps
- Provide sufficient time to review materials
- Unscripted phase starting wk 8 (15/02)

# Unscripted Phase Training - Applications

- Request for formal applications for training:
  - Applications to [euphemia@sem-o.com](mailto:euphemia@sem-o.com)
  - Name, email address, preferred location for each attendee
  - Applications to be sent by 08/01/2016
  
- For Dublin sessions, numbers need to be managed:
  - Limited availability in meeting room
  - Need to split numbers across both sessions
  - Attendance at each session will be managed bilaterally by SEMO



# Unscripted Phase



# Unscripted Phase - Scheduling

- Multiple pulls on WG time for I-SEM:
  - ❑ Various WG, TLG, BLG, PMLG and other commitments
  - ❑ Inputs for various meetings/review of materials
  
- Efforts made to avoid scheduling conflicts:
  - ❑ Liaison with internal contacts
  - ❑ Communication between EirGrid and the RAs
  - ❑ Efforts towards a joint project calendar
  
- Early 2016 a busy time period for EUPHEMIA Trialling





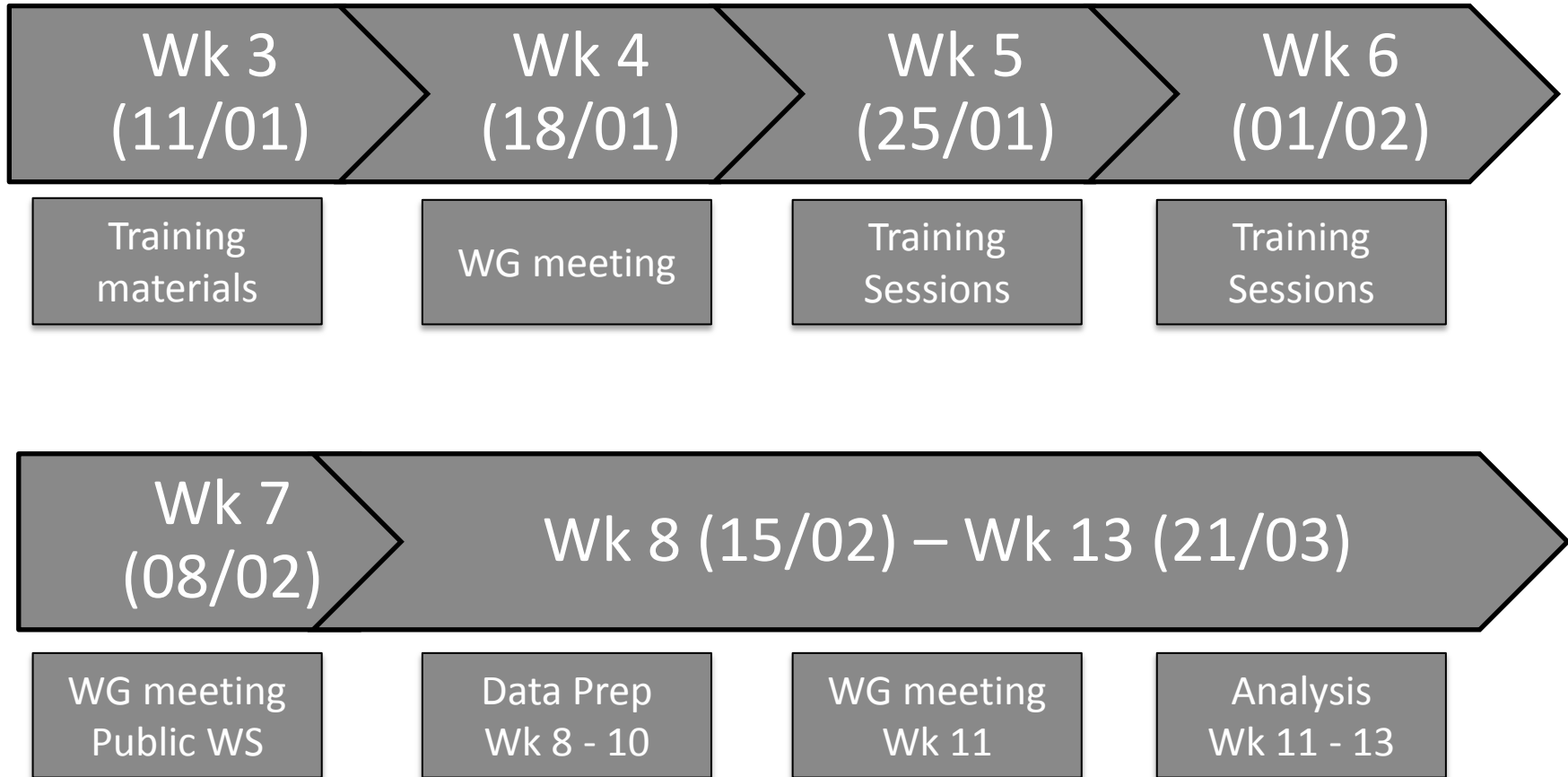
## Unscripted Phase – Full Meeting Schedule

Meeting	Date	Location	Type
WG Meeting 9	21/01/2016	Belfast	Closed
Training Session 1	26/01/2016	Belfast	Closed
Training Session 2	28/01/2016	Dublin	Closed
Training Session 3	02/02/2016	Dublin	Closed
WG Meeting 10	09/02/2016	Dublin	Closed
Public Workshop 5	11/02/2016	Dublin/Belfast	Open

- Public events being discussed with PEMR workstream
- Working group meetings will alternate location



# Unscripted Phase – Initial Timeline



# Unscripted Phase – Participation Requirements

- Participants must have gone through training:
  - At least one member of organisation at one session
  - Internal training or other arrangements accepted
  - Ensures that standard processes have been followed
  - Insufficient time to manage ad hoc training
  
- Participants must submit data using SEMO standard forms:
  - Will be covered in training
  - Required for conversion to EUPHEMIA format by SEMO
  - Other tools (e.g. profiler or market data) are not required



# Unscripted Phase – Participation

- Participants will be responsible for bids:
  - SEMO will not have sight of participant strategy
  - Only surface level checks will be possible
  - Bids should cover all applicable units
  
- SEMO will provide data for non-participating units:
  - Datasets will cover the entire market
  - Non-participating units based on training attendance
  - Data will be entered based on simplest assumption
  - Assumptions will be based on scripted phase



# Unscripted Phase – Market Data

## ➤ Thermal Units:

- TOD and COD available from market

## ➤ Pump storage and hydro units:

- TOD including reservoir levels and energy limits available

## ➤ Wind units:

- Individual data from wind forecast file

## ➤ Supplier Units:

- Aggregate values from the load forecast – need to be separated



# Unscripted Phase – Participation

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  - ❑ Data will be entered based on simplest assumption
  - ❑ Assumptions will be based on scripted phase



# Next Steps



## Working Group Meeting 8 – Next Steps

- WG to provide feedback on batch 3:
  - Based on proposals from today
  - Covers next 100 trial batches
  
- SEMO will prepare for and begin work on batch 3:
  - Provide trial script following feedback
  
- WG to confirm attendance for training:
  - Applications to be submitted by 08/01/2016
  
- WG to provide feedback on unscripted phase arrangements:
  - SEMO to provide template for responses





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