I-SEM Trialing of EUPHEMIA

I-SEM EUPHEMIA Working Group Meeting

12th October 2015

EUPHEMIA Workshop – Agenda

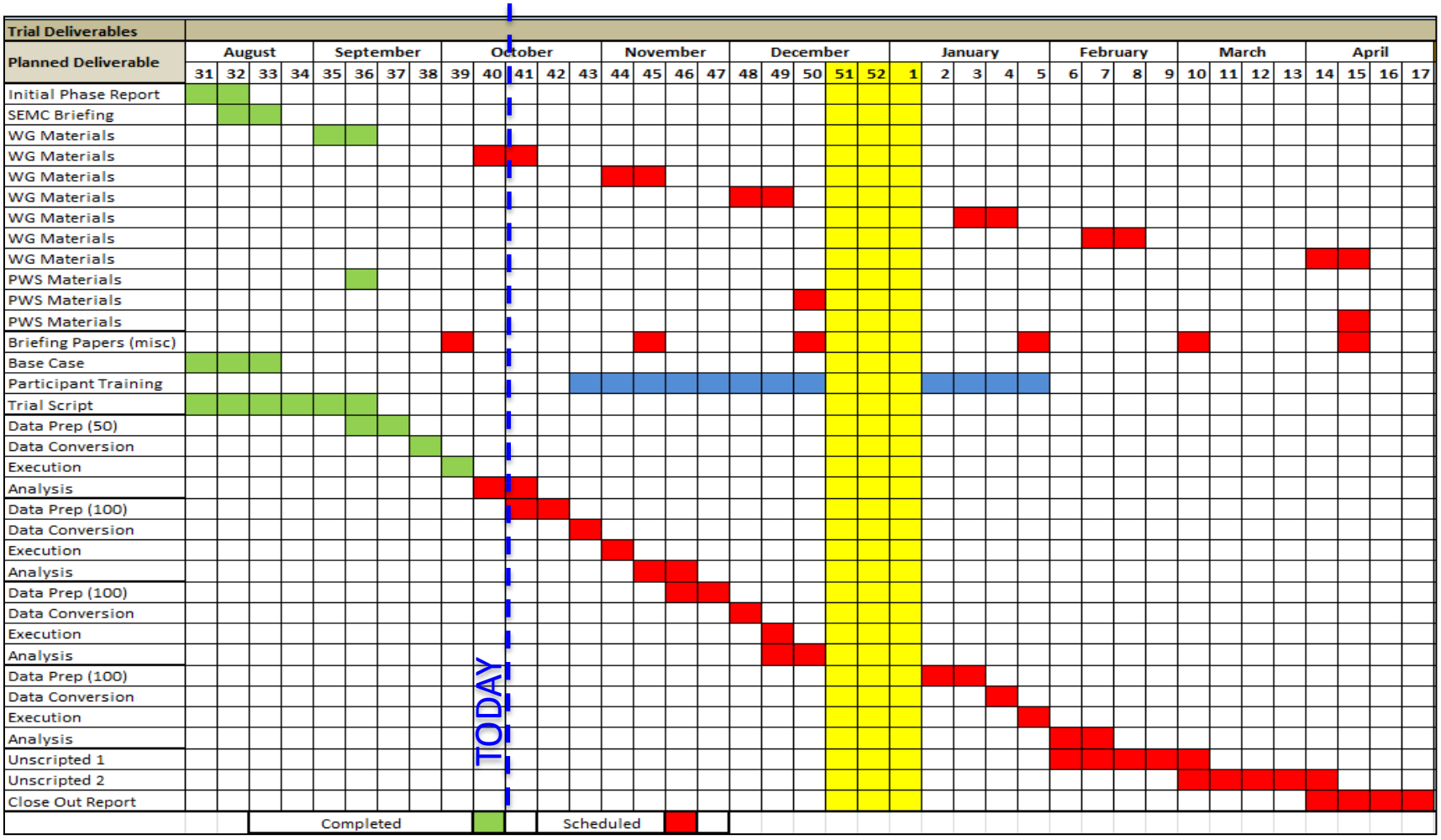
- Update by SEMO
- Review of commercial phase plan
- Algorithm expert
- Review of trial script and assumptions
- Next Steps

Update by SEMO

SEMO Update

- Initial Phase Report Published: Here
  - Feedback received from the RAs
  - Feedback received from members of PCR ALWG
  - WG contribution appreciated
- Commercial Phase Plan:
  - Batch one data created and sent for execution
  - Initial analysis of results expected this week
  - Suggestions for next 100 data-sets required
  - Minor issues but plan remains within agreed time scales

Commercial Phase Plan



Final Plan Working Group Feedback

- Plan is based on working group feedback:
  - Feedback from meetings 3 and 4
  - Desire for a more iterative approach to trialling

- Plan is subject to constraints:
  - Terms of contract with APX
  - Resource constraints
  - Process constraints – tools available to perform work
  - Batched process – usefulness of consecutive periods
  - Aim to mitigate impacts on final delivery

Algorithm Expert

Algorithm Expert

- APX representative attendance today:
  - Expert in the functioning of EUPHEMIA
  - Member of algorithm working group
  - Familiar with SEMO trials

- Arrangements made following WG4/5:
  - Participants provided questions by 11/09
  - Feedback collated by SEMO and shared with APX representative
  - SEMO will co-ordinate attendance at future WG meetings

Discussion - Algorithm Expert

- Overview solving of the algorithm:
  - Process and price determination sub-problem
  - Order type interaction with algorithm
  - Block order function as price bounding at small volumes

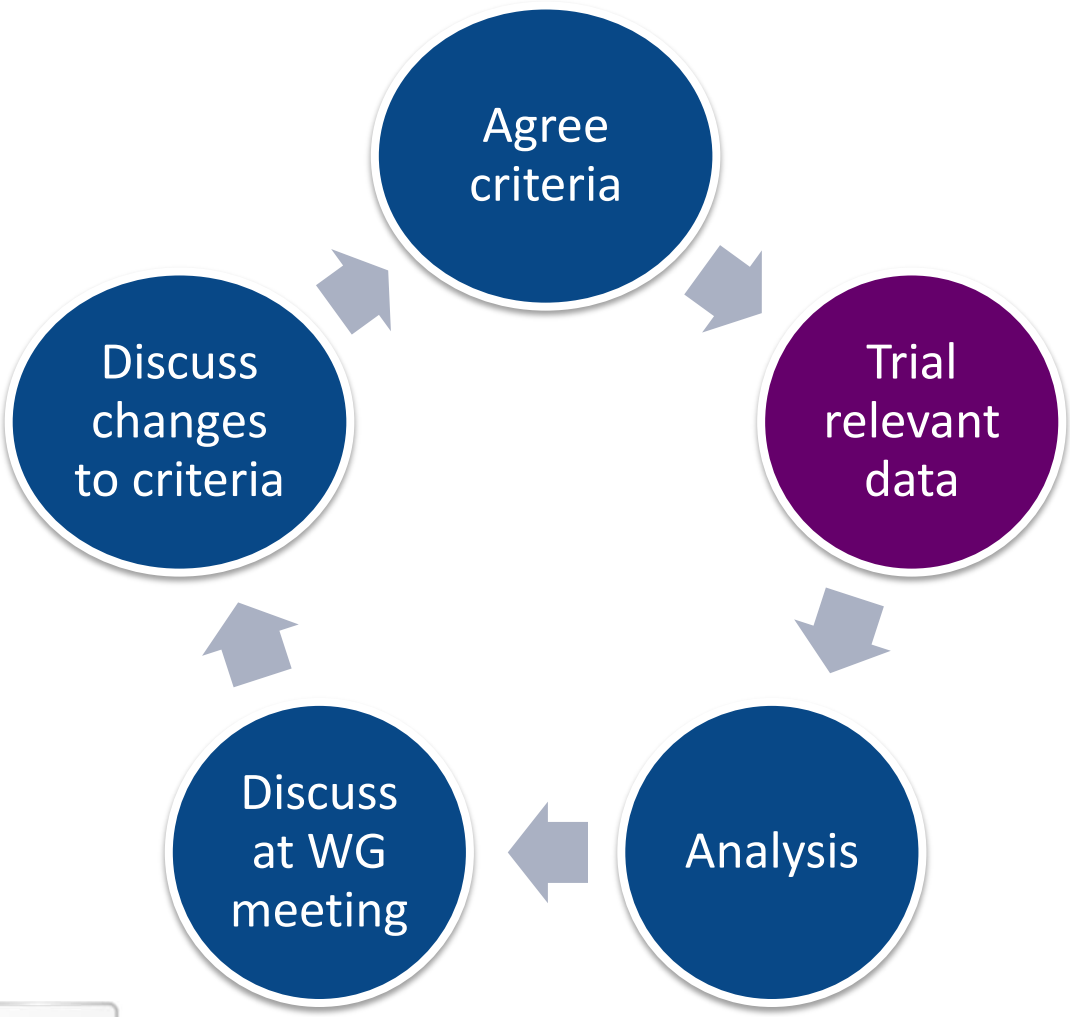
- Discussion of order types:
  - Order type and how units typically use orders i.e. Base load, hydro
  - Observations of SEM specifics i.e. small number of units, high wind
  - Is a mix of orders appropriate for the small number of units in SEM?

Discussion - Algorithm Expert

- Opinion of SEMO process for trials
  - Is SEMO process robust i.e. assumptions, goals
  - Potential improvements for future trials
- EUPHEMIA interactions with participants:
  - Can EUPHEMIA indicate how “out of the money” an order is and how this is communicated to the participant submitting the order
- Further discussion points?

Review of Trial Script and Assumptions

Trial Script – Iterations



SEMO & Industry

SEMO Only

Trial Script – Iterations

- Trial dates will remain the same:
  - Allows comparison across iterations
  - Allows for operational efficiencies
  - Allows observation of the change against baseline

- Conditions/assumptions changed as required:
  - Wind/load price entered
  - Proportion of complex/block orders entered
  - Costs included in MICs
  - Minimum acceptance ratios entered – i.e. Parent and Child blocks

Trial Script - Dates

Scenario Profiles	Trade Date	Day	Season	Load	Wind
Summer Weekend - Low Demand\Low Wind	22/06/2014	Sunday	Summer	Low Demand	Low Wind
Summer Weekend - Low Demand \Average Wind	06/07/2014	Sunday	Summer	Low Demand	Average Wind
Winter Weekend -High Demand\High Wind	24/01/2015	Saturday	Winter	High Demand	High Wind
Winter weekend - High Demand\Average Wind	03/11/2014	Monday	Winter	High Demand	Average Wind
Winter Weekday - Average Demand\Average Wind	25/12/2014	Thursday	Winter	Average Demand	Average Wind
Winter Weekday - High Demand\Low Wind	25/11/2014	Tuesday	Winter	High Demand	Low Wind
Autumn Weekday - Average Demand\Low Wind	19/09/2014	Friday	Autumn	Average Demand	Low Wind
Autumn Weekend - Average Demand\High Wind	05/10/2014	Sunday	Autumn	Average Demand	High Wind
Spring Weekend -Average Demand\ High Wind	11/04/2015	Saturday	Spring	Average Demand	High Wind
Spring Weekend - Average Demand\Low Wind	14/03/2015	Sunday	Spring	Average Demand	Low Wind

- Includes ten days:
  - Allows for a cross section of yearly values
  - Little value to consecutive periods in batched trials
  - Allows days to be observed under multiple conditions

Trial Script – Conditions

Thermal Non-Peaker Order Type	Peaker	Wind - Simple	Demand - Simple	IC's - ATC
Complex\Linked Blocks	Simple	Price Making	Price Making	Fully Available
Complex\Exclusive Group	Simple	Price Making	Price Making	Fully Available
Complex\Linked Blocks	Simple	Price Taking	Price Making	Fully Available
Complex\Exclusive Group	Simple	Price Taking	Price Making	Fully Available
Linked Blocks	Simple	Price Making	Price Making	Fully Available

- Favours a mix of order types:
  - Initial phase results suggest mix offers best results
  - Allows separate assessment of wind and demand
  - Allows for efficiency in creation of data

Trial Script – Assumptions for 1st 50 Data-Sets

- Price making wind will bid at a price of €0 as per submitted scenario
- Price making demand will bid at a price of EP2 SMP *1.2 as per submitted scenario
- 50% of demand will be price taking and 50% of demand will be price making so that effects can be isolated to price makers
- As supplier prices are the same, no distinction will be made between suppliers *(within the anonymous price / curve, it becomes a block of energy traded at a single price)*
- Coal, Great Island, Whitegate and Aghada 2 will use linked blocks/exclusive groups. Other units will use complex orders as per submitted scenario
- Linked Block limitation set at 3 blocks of 8 hours and 4 PQ points (12)
- Exclusive Group limitations set at 10 blocks

Trial Script – Baseline Assumptions

Unit Type	Order Type	Bid Price	Assumptions
Wind	Simple	Price Maker	Based on 100% of best available wind profile; any split is based on the GU IDs in the wind forecast file
Demand	Simple	Price Maker	Based on 100% participation and load forecast; any split required is based on retail market report proportions
Hydro	Simple	COD	Subject to enery limit; bid into hours of highest margin; fixed costs recovered in bids
Peaker	Simple	COD	Ramp up and down in <=1 hour; fixed costs recovered in bids; profile reflects ramping up and down and not max availability
Thermal Non-peaker	Complex	COD	Fixed MIC covers 1 start (if relevant) and 24 no-loads; fixed and variable MIC; load gradient is average of ramping; variable MIC is average of PQ pairs
Thermal Non-peaker	Linked Block	COD	Covers incurred costs; block split according to cost; limit on number of links in a profile
Thermal Non-peaker	Exclusive Group	COD	Covers incurred costs; mutually exclusive profiles; limit on number of profiles in a group
Pump Storage	Linked Block	COD	LB used to represent technical capabilities and respect reservior limits; buy in the morning sell in the evening; buy in evening to return to target
Demand Side Unit	Flexi Order	COD	Offer only one hour of full capcaity; capable of delivering in any hour
Interconnectors	Flow based capacity	n/a	Trading day ATC, losses and ramping; Losses as 1 - TLAF; seperate representation of Moyle and EWIC

- Similar to set of initial phase assumptions:
  - Small changes initially
  - Limits placed on block orders
  - Wind/load to be treated as price makers

Trial Script – Potential changes for 2nd 100 Data-Sets

Order Type	Strategy Suggestions
Complex	Strategy A: All Complex Orders recover their Start Costs in the FT element of the MIC, and their No Load cost and weighted average of the PQ Pair through the VT of the MIC at MSG
Complex	Strategy B: All Complex Orders recover their Start Costs in the FT element of the MIC, and their No Load cost & weighted average of the PQ Pair through the VT of the MIC at Max Gen
Complex	Strategy C: All Complex Orders recover their Start Costs in the FT element of the MIC, and include No Load costs along with their PQ Pairs and represent the VT as the weighted average of these pairs
Linked Block	Strategy D: Profiling from SEMO Initial Phase results but move all MAR values set at 100% to 75% i.e. Parent block includes all costs
Linked Block	Strategy E: Set the MAR to 100% for the parent block and recover the start cost and relevant number of hours of No Load too, then all subsequent costs in child blocks with a MAR of 50%
Linked Block	Strategy F: Set the MAR to 100% for the parent block and recover the start cost and relevant number of hours of No Load too, then all subsequent costs in child blocks with a MAR of 0%
Linked Block	Strategy G: Set the MAR to 75% for the parent block and recover the start cost and relevant number of hours of No Load too, then all subsequent costs in child blocks with a MAR of 50%

Trial Script – Baseline Analysis

Baseline Analysis to be Performed		
1	Revenue and Cost Recovery Analysis	Are units recovering costs?
2	Prodcution Cost Analysis	What are production costs? How do these compare aross runs?
3	Multi Shifting Units	Does this issue persist?
4	Effect of Coupling	What are interconnector flows?
5	SNSP	How is this altered by the assumptions?
6	Price Making Wind and Demand	What impact does this have?

- Analysis which will be performed at a minimum:
  - Attempting to highlight the common issues
  - Can be supplemented as required
  - Can be altered as trials progress

Next Steps

Working Group Meeting 6 – Next Steps

- Working Group will have time to form opinion and shape input for next batch of data-sets (100)
  - Trial continuity must be maintained to meet timelines i.e. SEMO working at all times
  - Possible interim WG meeting / conf call to agree changes to data
- SEMO looking for feedback:
  - Changes to data-sets for next 100
  - Comments on analysis when results available
  - Questions on the unscripted phase
- SEMO to provide analysis of 1st batch of 50
  - SEMO to collate and communicate changes to the next iteration of 100 data-sets based on feedback from WG

I-SEM and EU Network Codes – Project Update
4th November 2015, Crowne Plaza Hotel, Dundalk

Introduction
I-SEM Project Programme of Work

I-SEM Project Plan
Regulatory Programme of Work

Roles and Responsibilities
Balancing Market
Aggregator of Last Resort
Nominated Electricity Market Operator

Work streams
Central Arrangements
Central Systems and Services
Operational Capability
Market Readiness

Liaison Groups
Programme Managers Group
Business Liaison Group
Technical Liaison Group
Rules Liaison Group

Communications
Communication Channels and Next Steps

Questions & Answers

EIRGRID semo SONI

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