

I-SEM Trialing of EUPHEMIA

I-SEM EUPHEMIA Working Group
Meeting 5
7th September 2015



EUPHEMIA Workshop – Agenda

- Update by SEMO
- Review of working group feedback
- Review of commercial phase plan
- Review of trial script
- Next Steps



Update by SEMO



SEMO Update

➤ Initial Phase Report Being Finalised:

- Feedback received from working group
- Feedback received from the RAs
- Feedback received from members of PCR ALWG

➤ Commercial Phase Plan Updated:

- Incorporating working group feedback
- Extension discussed with RAs
- Proceeding based on revised plan
- Subject to final approval



SEMO Update – SEM Committee Presentation

➤ Presented to SEM Committee on 27/08/2015:

- Overview of initial phase trials
- Discussed results and emerging thinking
- High level of interest in results
- High level of discussion



Working Group Feedback



Working Group Feedback

- SEMO asked WG for feedback following meeting 4:
 - Questions on wind and demand
 - Questions on the plan for the commercial phase

- Feedback received from a range of organisations:
 - Feedback on questions
 - General feedback
 - Suggestions

- Feedback from WG will be addressed throughout this meeting



Working Group Feedback – Goal of Project

➤ SEMO agreed the following with the RAs:

“The primary goal of the Commercial Phase is for market participants and SEMO to gain first-hand experience in the formation of orders and related strategies for EUPHEMIA and to share the key learnings gained with relevant stakeholders including the RAs.”

➤ Discussions underway to discuss milestones and RA decisions:

- What work is dependent on trial results
- How will the results feed into decision making
- Working group members will be updated in due course



Working Group Feedback – Assessment Criteria

- Working group noted concerns regarding criteria:
 - How are results being assessed?
 - Are all risks being fully assessed (e.g. production costs)?
- SEMO are proposing to handle this through the baseline assumptions:
 - Add baseline analysis as well as general criteria
 - Will help assess cost risk (e.g. production cost analysis)
 - Will help assess schedule risk (e.g. multi starting units)



Working Group Feedback – Benchmarking



EUPHEMIA

- MIP based
- Limited products
- I/C flow based on welfare
- Limited data
- No uplift



SEM MSP

- LR primary
- Specific products
- I/C flow based on trades
- COD and TOD
- Uplift function



Working Group Feedback – Algorithm Expert

- Call for algorithm expert to participate:
 - Would participate in a future meeting
 - Would help increase understanding
 - Could expand on order types and their functioning
- SEMO can investigate this item:
 - Allowed for in our contract with APX
 - Would need a list of topics for discussion
 - Would need to agree a date for participation
- Working group feedback will be sought on this item



Algorithm Expert – PCR ALWG Feedback

- Algorithm working group (ALWG) reviewed initial phase report:
 - ❑ APX, EPEX Spot and OMIE reviewed
 - ❑ Provided significant comment and some clarifications
- OMIE and Spanish participant feedback:
 - ❑ Treatment of pump storage consistent with Iberian market
 - ❑ Hydro could be treated using an exclusive group
 - ❑ Risks managed through flexible use of complex orders
 - ❑ Flexible use is not consistent with a BCOP
 - ❑ Risks viewed as manageable by Spanish participant



Algorithm Expert - Strawman

- SEMO has APX representative attend a WG meeting:
 - ❑ Expert in the functioning of EUPHEMIA
 - ❑ Member of algorithm working group
 - ❑ Familiar with SEMO trials

- Arrangements to be made following this meeting:
 - ❑ Participants provide questions by COB 11/09
 - ❑ Feedback is collated by SEMO into list of questions
 - ❑ SEMO will co-ordinate with APX on this point



Working Group Feedback – Working Arrangements

- WG made suggestions about working arrangements:
 - Materials released a week in advance
 - Results to include an overview of SEMO analysis
 - These items will be addressed on best endeavours basis

- Suggestion of industry pre-meeting ahead of WG meetings:
 - Meeting of WG members in advance of WG meeting
 - Meet to discuss the materials
 - Allow for a more informed participation in WG meetings



Commercial Phase Plan



Final Plan Working Group Feedback

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

- Final 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



Evolution of Final Plan

Original

365

14

14

Strawman

50

50

50

50

50

50

50

14

14

Final Plan

50

50

50

50

50

50

50

14

14

Final Commercial Phase Plan

Commercial Phase Initial Plan																																											
Trial Deliverables	August				September				October					November					December				January					February				March				April				May			
Planned Deliverable	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Initial Phase Report																																											
SEMC Briefing																																											
WG Materials																																											
PWS Materials																																											
Briefing Papers (misc)																																											
Base Case																																											
Participant Training																																											
Trial Script																																											
Data Prep (50)																																											
Data Conversion																																											
Execution																																											
Analysis																																											
Data Prep (100)																																											
Data Conversion																																											
Execution																																											
Analysis																																											
Data Prep (100)																																											
Data Conversion																																											
Execution																																											
Analysis																																											
Unscripted 1																																											
Unscripted 2																																											
Close Out Report																																											
Key																																											



➤ SEMO can report progress against this at WG meetings

Final Plan - Training

- The unscripted phase will require training:
 - How to use SEMO's tools
 - How to check inputs before submission
 - What to send to SEMO

- Training not currently scheduled:
 - Provision made in plan (Nov 15 – Jan 16 timeframe)
 - Relevant working group resources required
 - Point for discussion



Final Plan – Training Strawman

- SEMO will provide training in January 2016:
 - Adequate time for resource mobilisation
 - 2015 will focus on finishing scripted batches
 - Time required to develop training materials

- SEMO will provide two training sessions:
 - One each in Dublin and Belfast
 - Half day sessions
 - Could combine with half day on trial thus far for new staff



Final Plan – Unscripted Phase Arrangements

- The unscripted phase will require additional participation:
 - ❑ Creation of datasets for members' units
 - ❑ This may require additional interactions with SEMO (i.e. Q+A)
 - ❑ Scheduled to begin February 2016

- Arrangements need to be finalised:
 - ❑ Level of confidentiality (inputs and outputs)
 - ❑ Level of freedom with bids

- SEMO is looking for initial feedback on these arrangements



Final Plan – Unscripted Phase Strawman

- Unscripted batch one will not be confidential:
 - All inputs and outputs are shared with the WG by SEMO
 - Will function similarly to initial/scripted trials
- Unscripted batch two will be confidential:
 - SEMO will co-ordinate sending outputs
 - Members will only receive their own information
 - Aggregate hourly prices and volumes will be made available
 - This will more closely match EUPHEMIA arrangements



Review of Trial Script and Assumptions



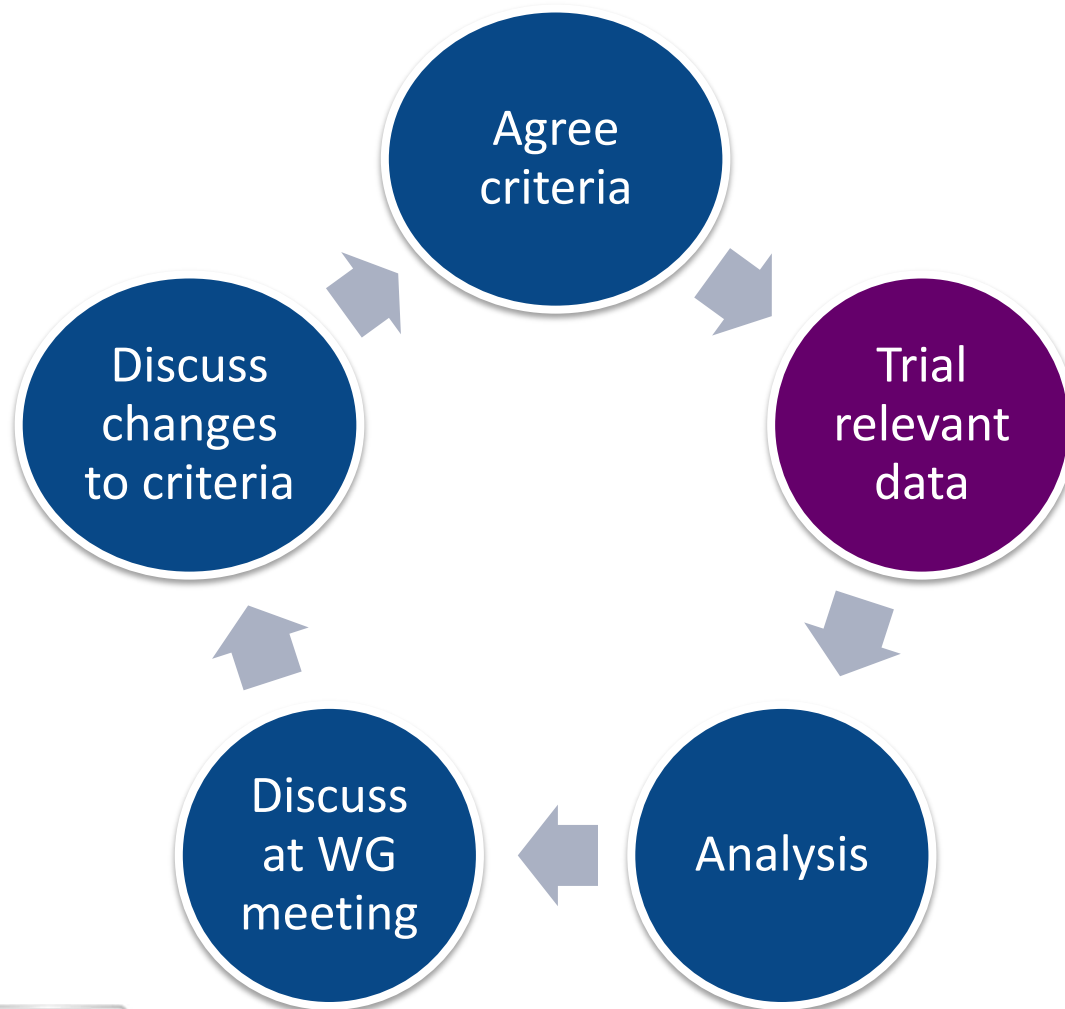
Trial Script - Baseline

- Trial script will cover all aspects of proposed trials:
 - Dates to be trialled
 - Order types to be used
 - Conditions to be used (e.g. price making wind)

- First trial script to act as a baseline:
 - Will set out conditions for first 50 trial datasets
 - These datasets will form the basis of the commercial phase
 - Will be altered through further iterations



Trial Script – Proposal for iterations



SEMO & Industry

SEMO Only

Trial Script – Proposal for 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



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

- Will include 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 – 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 GUIDs 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 energy 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 reservoir 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 capacity; capable of delivering in any hour
Interconnectors	Flow based capacity	n/a	Trading day ATC, losses and ramping; Losses as 1 - TLAF; separate representation of Moyle and EWIC

➤ Similar to set of initial phase assumptions:

- Small changes initially
- Limits to be placed on block orders
- Wind/load to be treated as price makers

Trial Script – Treatment of demand

Supplier	Domestic	Small Business	Medium Business	LEU	Total MWs	Market Share %
Electric Ireland	1,065,335	326,103	342,595	830,977	2,565,010	44.78%
SSE Airtricity	390,679	149,563	196,381	473,800	1,210,423	21.13%
Bord Gáis Energy	318,003	75,159	76,559	215,686	685,407	11.96%
PrePayPower	75,436	0	0	0	75,436	1.32%
Energia	32,393	279,333	331,175	328,798	971,699	16.96%
Vayu	0	0	21,040	64,449	85,489	1.49%
Others	8,907	4,747	2,715	118,637	135,006	2.36%

➤ Use retail market report to assign supplier values:

- Market share percentage to be used
- Offers a publicly available proxy for suppliers
- Initial iterations will be proof of concept and not full representation
- Can be reviewed in future

Trial Script – Baseline Analysis

<u>Baseline Analysis to be Performed</u>		
1	Revenue and Cost Recovery Analysis	Are units recovering costs?
2	Production Cost Analysis	What are production costs? How do these compare across 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 5 – Next Steps

- SEMO looking for feedback:
 - Questions for industry expert
 - Questions on training
 - Questions on the unscripted phase

- SEMO to host public workshop 16/09/15
 - Covering material from WG meetings 4 & 5

- SEMO to proceed with trials based on script:
 - Data scheduled to be sent to APX week 1 October



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