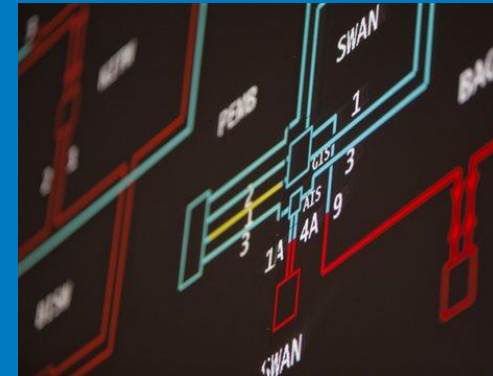


CMP237 Workgroup Meeting 1



7th November 2014

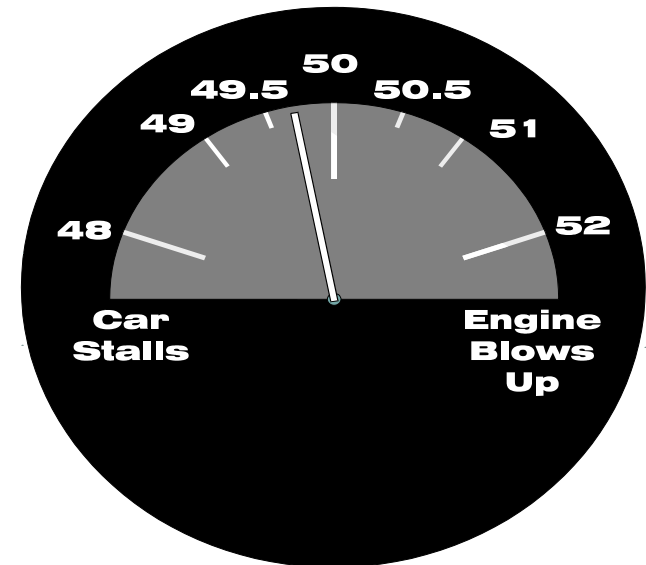
Agenda

- Welcome and introductions
- Administration
- Background
- Proposal
- Review Terms of Reference
- Next steps

Background

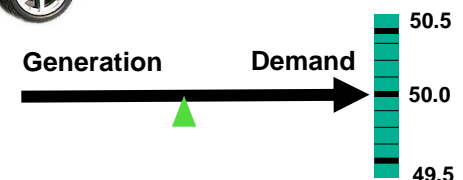
Real time balancing: keeping the frequency at 50Hz

- Statutory duty (License – balancing)
- To maintain secure operation of the system
- To maintain quality of supply
- To operate economically



Target speed 50 miles/hour
(+/- 0.5mph)

Accelerator = Generation
Hill = Demand



How do we manage Frequency?

Mandatory Frequency Response

- All licensed BMU generators in accordance with Grid Code

Optional (Commercial) Frequency Response

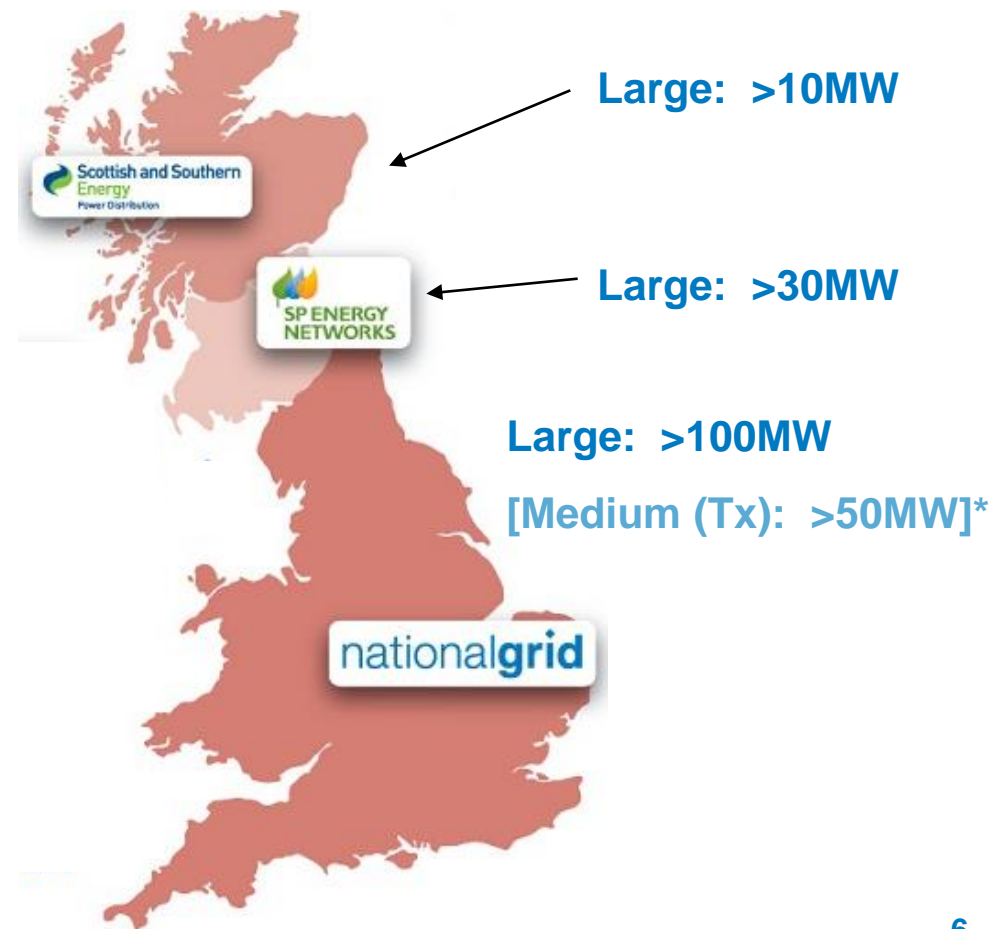
- Firm Frequency Response
- Frequency Control by Demand Management

MSA (Mandatory Service Agreement)

Grid Code defines minimum required capability for an obligatory MSA

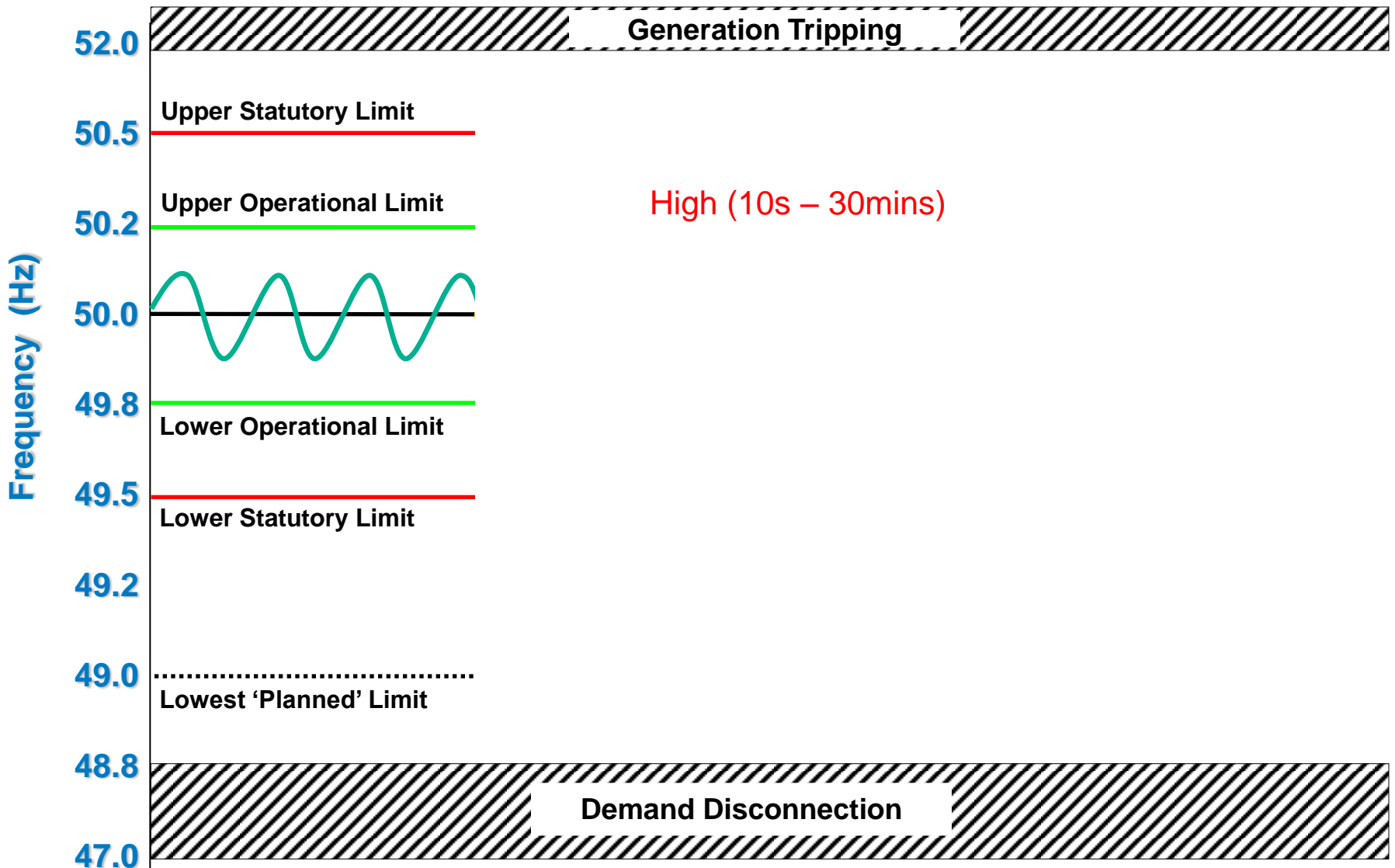
MSA set out requirements for Reactive Power and Mandatory Frequency Response

Requirement largely dependant on Generator size



* Only for reactive power

Managing Frequency



Procuring Frequency Response

- National Grid assesses how much frequency response is required to cover the largest loss on the system
- This is procured from mandatory and commercial services based on an economic assessment
- Commercial services either have tendered or bilaterally agreed prices
- The pricing for mandatory services is set out in CUSC 4
 - Holding Payment – covers cost of holding response
 - Response Energy Payment (REP) – covers cost of changing energy output
 - BOAs may be required to change contractual position

Bid/Offer Acceptance Interaction

- A generator may not have the necessary output position to provide response
 - A generator at SEL cannot provide High Response
 - A generator at MEL cannot provide Low Response
- Therefore sometimes they will be paid to change their position through a BOA before being instructed into frequency sensitive mode
- This cost is factored into the response despatch decision

Price of Mandatory Frequency Response

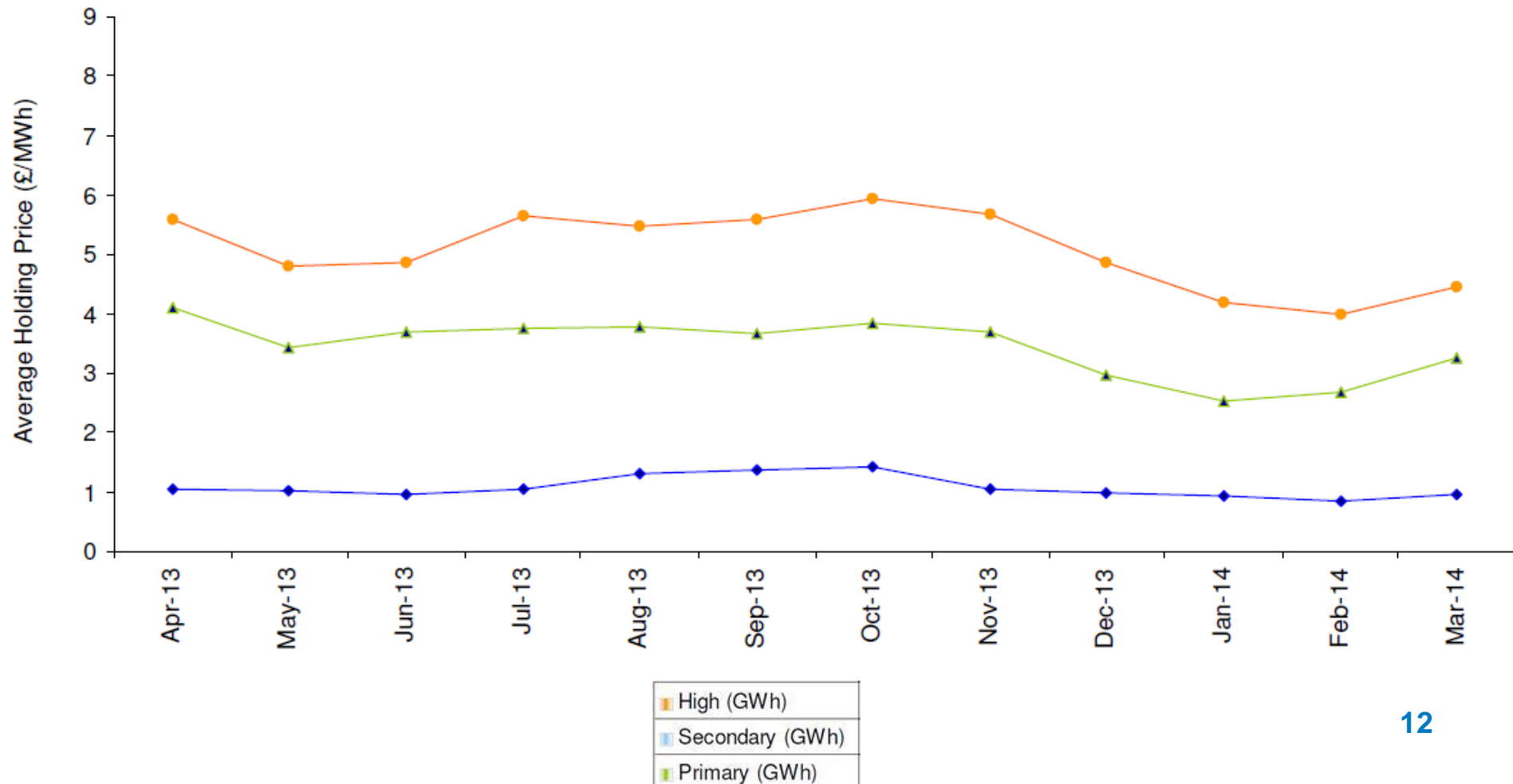
- Holding payments are posted by individual generators on a monthly basis for Primary, Secondary and High
- The REP is set out in CUSC 4 based on the Market Index Price (MIP):
 - For an increase in output, generator receives $MIP * 1.25$
 - For a decrease in output, generator pays $MIP * 0.75$
- Holding payments and REP are calculated on a minute by minute basis, then summed over a Settlement Period
- Note that imbalance does not apply when providing response

Price of Mandatory Frequency Response

- The value of the multipliers in the REP were identified from historical analysis undertaken as part of CAP107
 - They represent the average spread between the SBP and SSP, adjusted to achieve the smallest net monthly REP position
- CAP107 was raised in 2005/6 and introduced the REP calculation
 - Previously a single REP was used, which was the average of SBP and SSP for the previous month
- Other alternatives considered in CAP107 were:
 - Individual nominated REPs
 - Use of SSP and SBP per settlement period

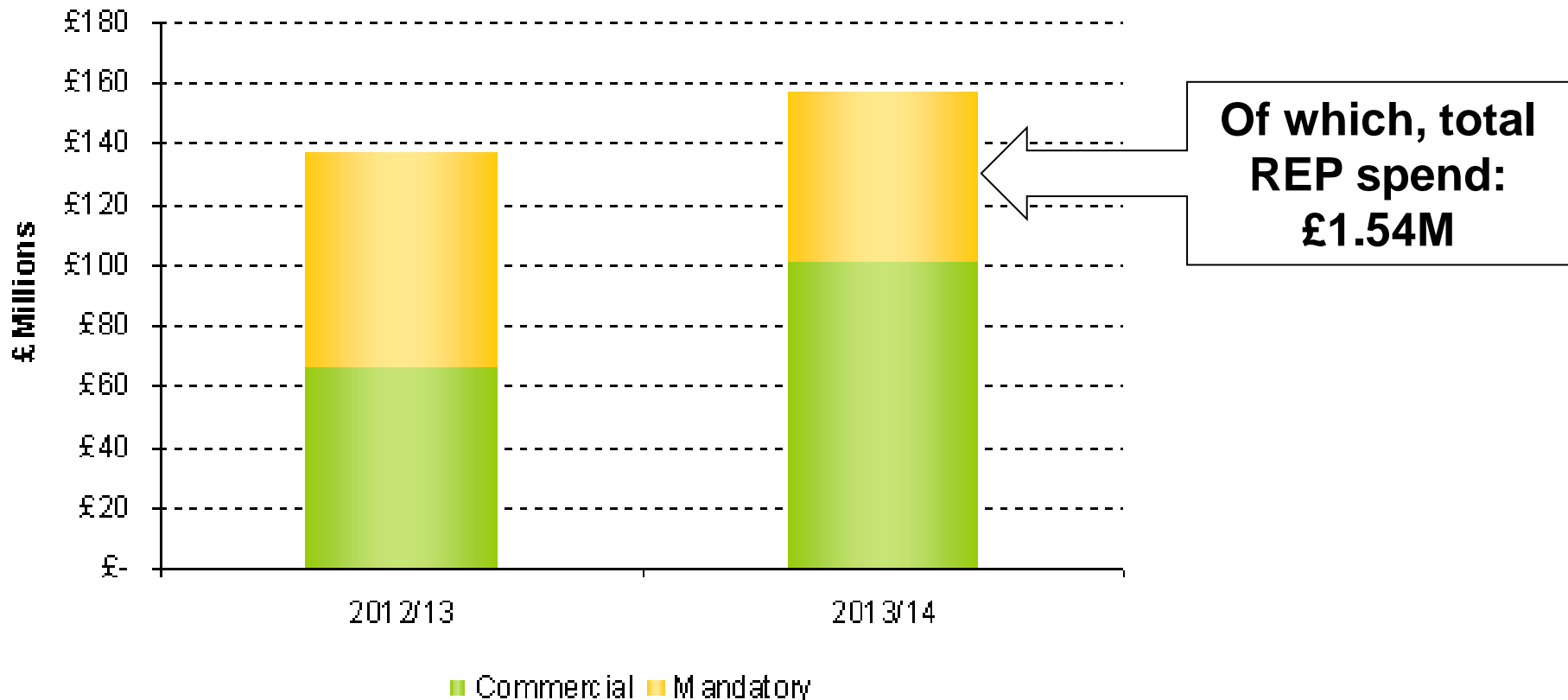
Historical Mandatory Frequency Response

Mandatory Frequency Response Average Holding Price



Annual Spend on Response

Total Response Holding Costs (Commercial/ Mandatory)



What is the Issue with REP?

- The purpose of the REP is to cover changes in fuel costs as a result of changing output to provide response
- For plant that does not pay to generate, e.g. wind, solar, tidal, there are no fuel costs

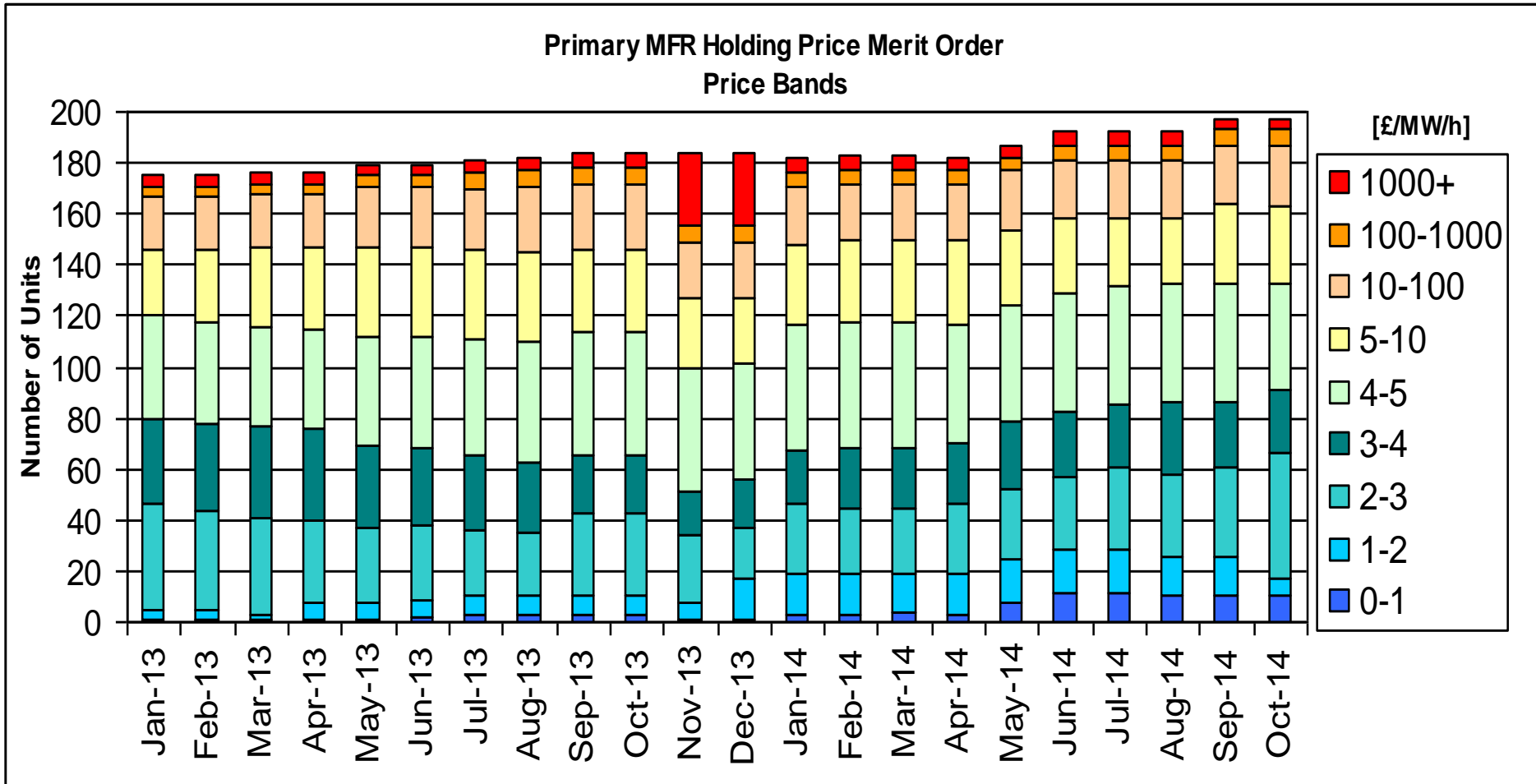
What is the Issue with REP?

Plant Type	Response Type	Cost	Benefit
Conventional	High Frequency	MIP*-0.75 [Increased output]	Avoided fuel [BOA payment]
	Low Frequency	Used fuel [Reduced output]	MIP*1.25 [BOA payment]
Low Carbon	High Frequency	MIP*-0.75	x
	Low Frequency	Reduced output x	BOA payment MIP*1.25

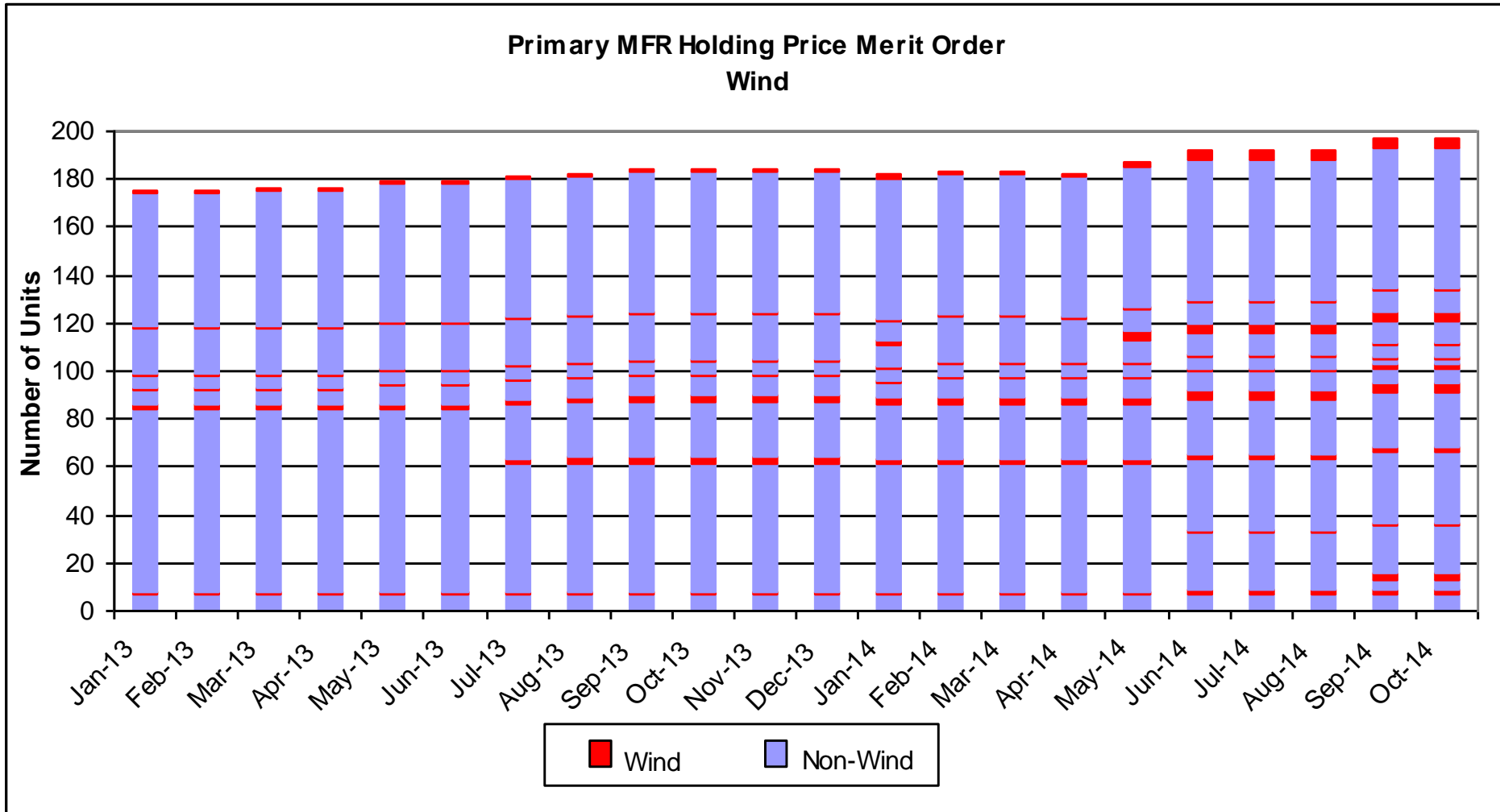
Why is this a Problem?

- The REP does not reflect the costs experienced by these generators in providing frequency response
- This is deterring participation in the response market by members of a sizeable and growing market segment
- Lack of liquidity in the market will result in increased balancing costs
- Some wind generators are pricing themselves out of the market entirely

Submitted Holding Price Bands (Primary)



Submitted Holding Price Bands (Primary)



Proposal

Proposed Change

- For plant with no fuel cost, the REP is settled at £0/MWh
- No change to plant with a fuel cost

Why remove the REP?

- Conceptually, the REP is intended to reflect the cost of providing the energy for response
- Low carbon plant can provide response energy at zero short-term marginal cost, i.e. excluding longer term costs such as assets and staff
- There may be lost opportunity costs, e.g. subsidies, however this is not the cost of providing the energy

What plant should be included?

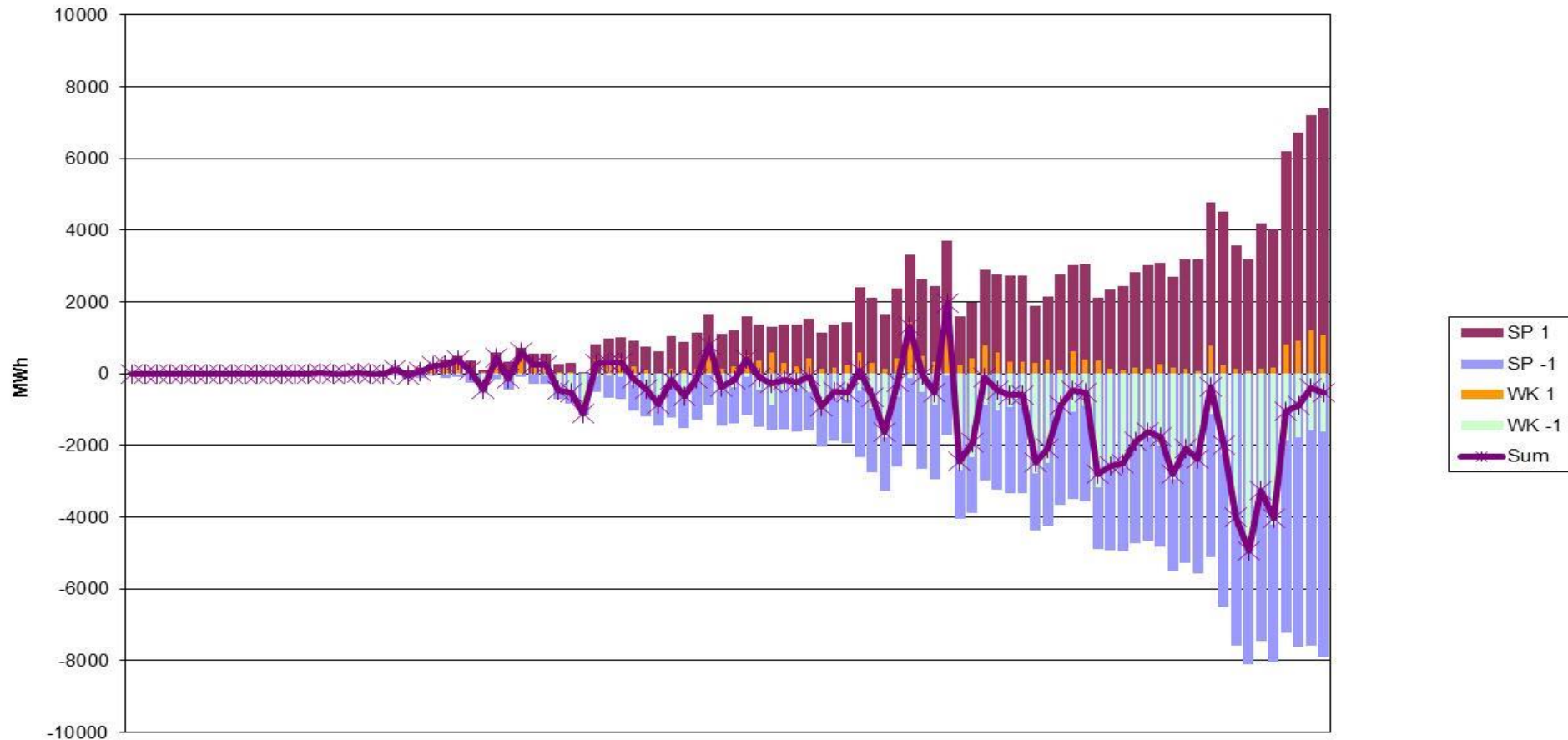
Fuel Cost	No Fuel Cost
Gas	Onshore Wind
Coal	Offshore Wind
Oil	Solar
Nuclear	Tidal
Biomass	Wave
Hydro (pumped storage)	Hydro (run of river)
	Battery

How would this work in practice?

- Despatch decisions do not consider REP at present, therefore no impact is expected as a direct result of the proposal
- However, the proposal will remove a perceived barrier to wind participating in the response market
- Should more wind be accepted for response, this would displace conventional plant, and this would reduce the total REP spend
 - On average, mandatory market provides more low frequency response, which results in a positive net REP

Response Energy Volumes

2013/14 RE volume
MFR units only



Next Steps

CMP237 Workgroup Timetable

26th September 2014	Proposal presented to CUSC Panel
26th September 2014	Send out draft TOR and WG nominations for 1 week
3rd September 2014	Deadline for comments/nominations
7th November 2014	Workgroup meeting 1
21st November 2014	Workgroup meeting 2
27th November 2014	Workgroup Consultation issued for 1 week Workgroup comment
4th December 2014	Deadline for comments
8th December 2014	Workgroup Consultation published
5th January 2015	Deadline for responses
W/C 12th January 2015	Workgroup meeting 3
14th January 2015	Circulate draft Workgroup Report
21st January 2015	Deadline for comment
22nd January 2015	Submit final Workgroup Report to Panel
30th January 2015	Present Workgroup report at CUSC Modifications Panel

Next Steps

- Next meeting 21st November
- Draft alternate proposals from group