

## GC0063 - Power Available Grid Code Modification



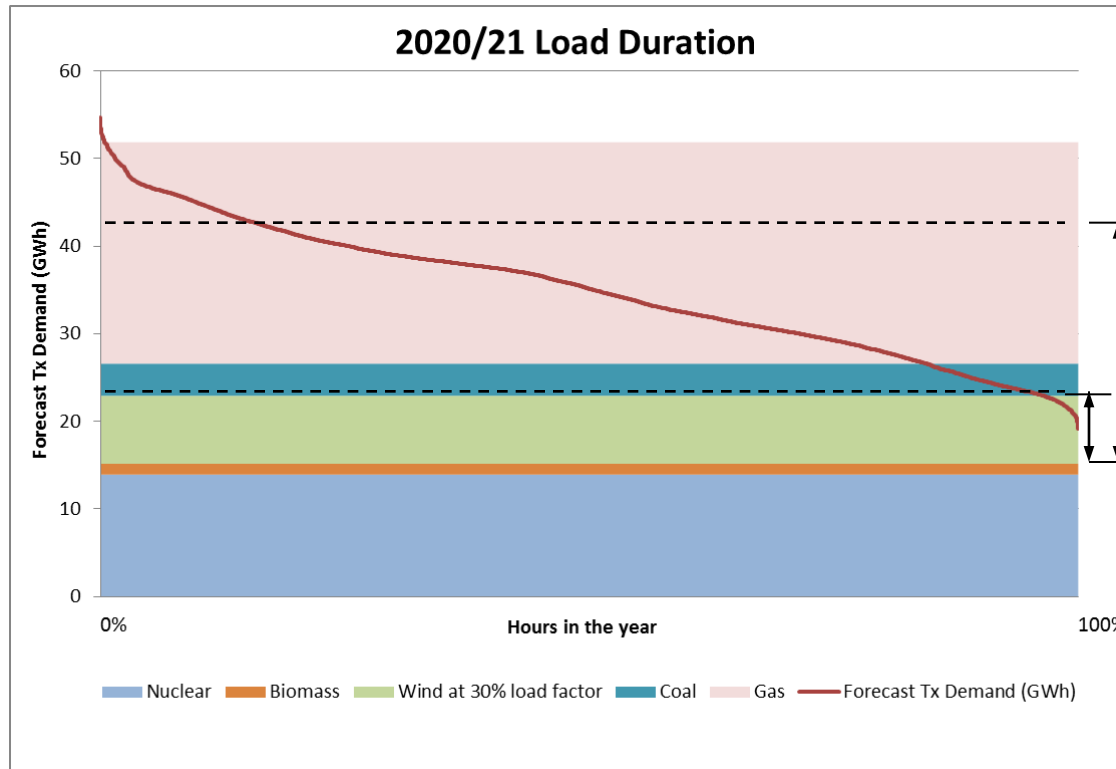
GCRP Update  
19<sup>th</sup> November 2014

# Recap

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- To operate and balance the system the System Operator needs to instruct generators to:
  - Provide frequency response
  - Provide reserves that can be used in case of a system event
- All generators are capable of doing this – with capability dependent on loading point ie presence of **headroom**
- Currently such instructions are typically given to the most **marginal plant** subject to frequency response prices

# Projection of Generation Types by 2020 (Slow Progression model)



**Key message:**  
As wind capacity increases it will more frequently be the **marginal plant** and therefore the most economic provider of balancing services

100% wind

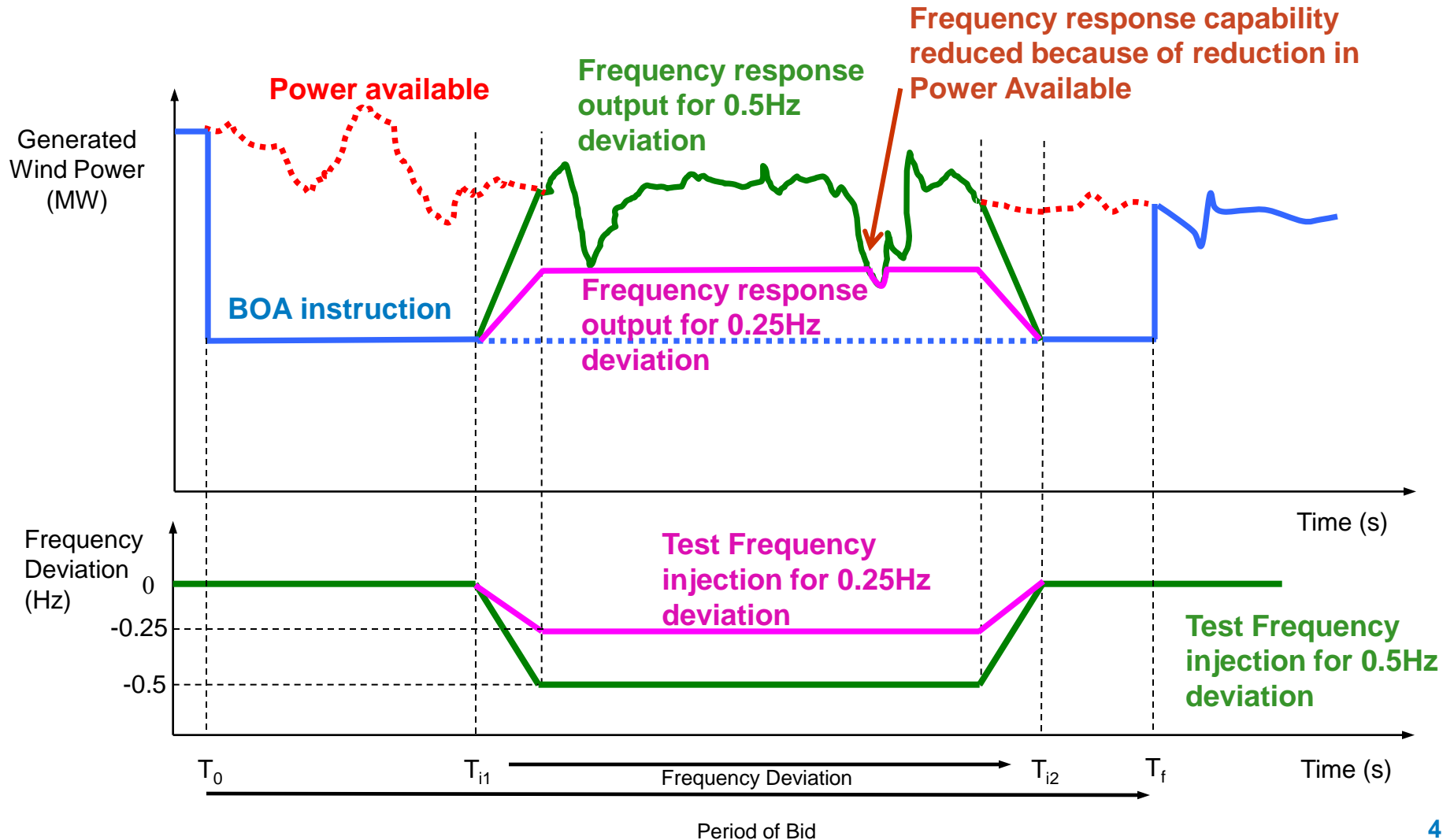
30% wind

Note:

- The data for this graph is based on the 'slow progression' model
- Windfarm load factor is assumed to be 30%. This may be debatable but is presented for illustrative purposes
- Demand is actually based on 2015 predictions so a genuine projection for 2020 may be slightly higher
- No assumptions on curtailment of generation to provide head room for reserve, downward regulation, response or inertia are included

- By 2020 for significant periods of time **very little** conventional flexible generation may be running.
- Alternative sources of ancillary services **must** be secured
- Faster adoption of renewables will bring these timescales forwards

# Low Frequency Response from a Wind Farm - during test using Power Available



# Progress - Power Available Workgroup

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Concepts of Power Available and High Wind Speed Shutdown presented at July 2012 GCRP.



Workgroup proposed with terms of reference approved by the GCRP following completion of the C/11 workgroup.



Workgroup reported findings to November 2013 GCRP.



Workgroup Consultation - 20 December 2013 to 27 January 2014.

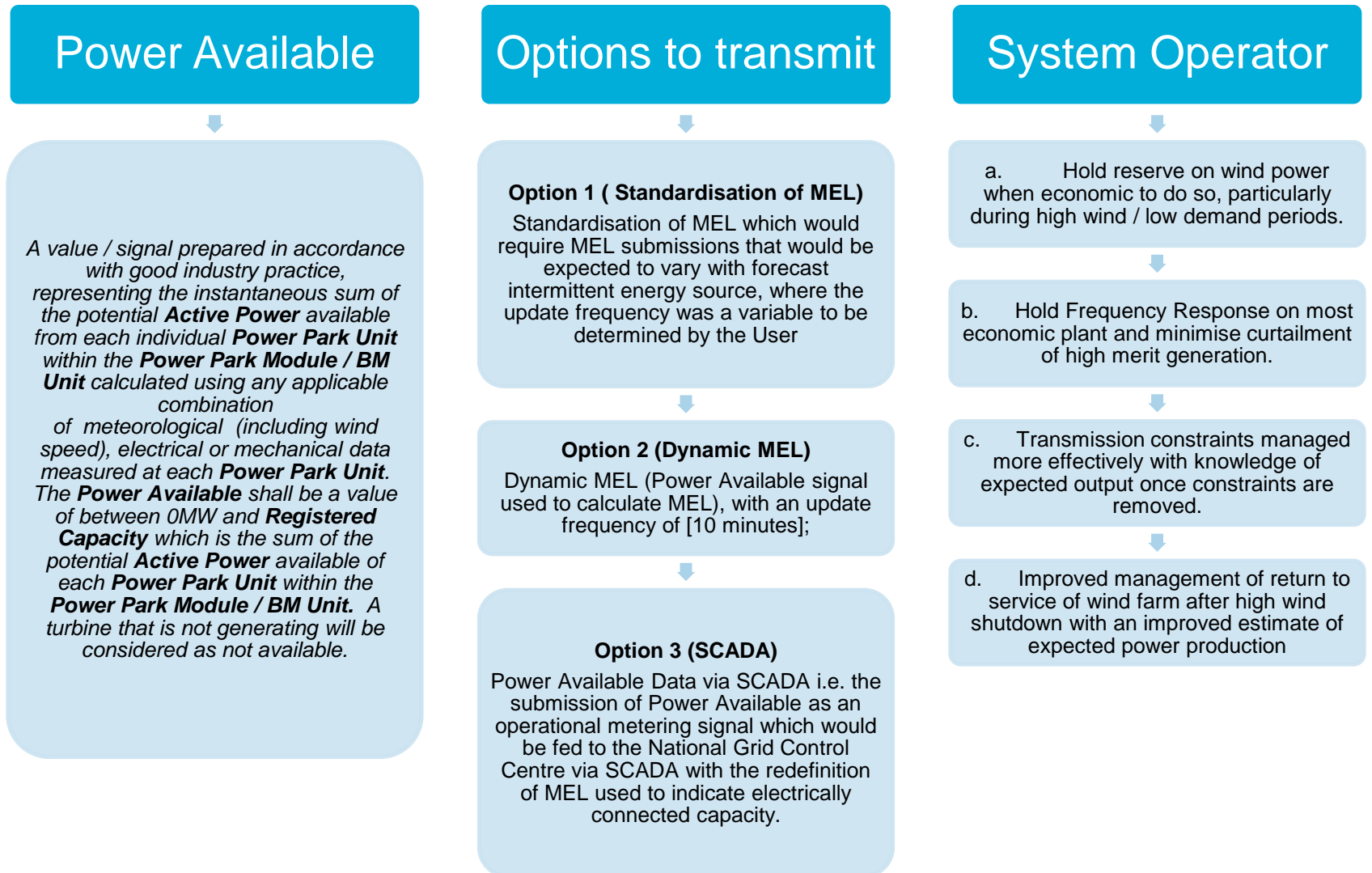


Industry Consultation - 7 March to 7 April 2014.

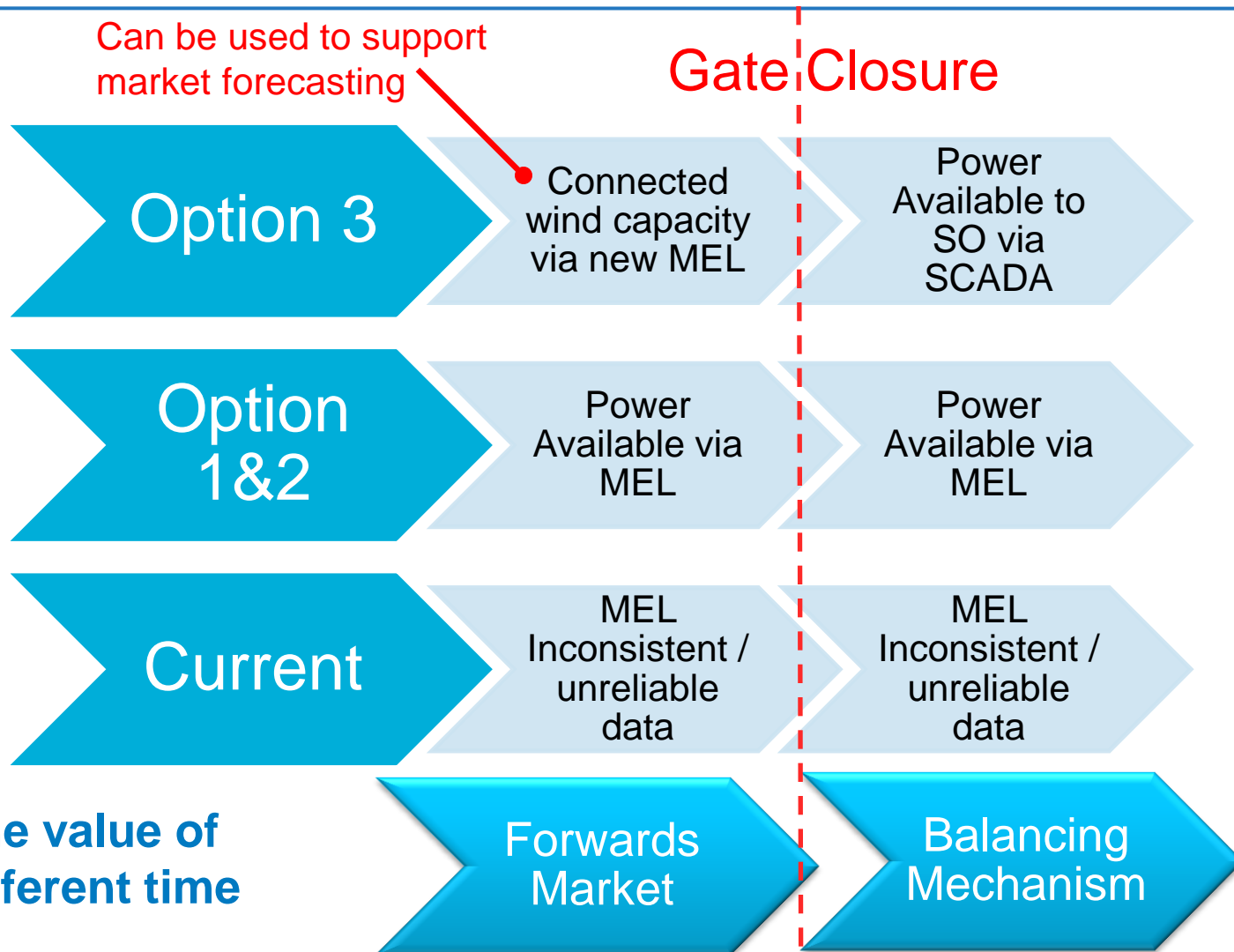


Draft report to Authority – presented to May 2014 GCRP.

# Options to employ Power Available: (as developed by workgroup)



# Potential Data Changes



What is the value of data in different time frames?

## Feedback from May GCRP

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- Option 3 proposed but overall lack of consensus became apparent
- GCRP members sought:
  - More information on the defect that Power Available sought to address
  - Greater confidence in the costs that would be incurred
  - Clarity on any retrospective application



## Engagement After May GCRP

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- 16<sup>th</sup> September Generator Services Group meeting – special session
- 8<sup>th</sup> October Workgroup meeting

## Additional Points Considered

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- Further options proposed:
  - 3(a) Similar to option 3 – but without the redefinition of MEL.  
So purely the provision of a power available signal
  - 3(b) Retrospective application of option 3
  - Do nothing
- Trialling
- Associated BSC modification

# Final Report Rewritten

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- Executive summary added to:
  - Define defect
  - Improve narrative and summarise options
  - Set out conclusions
- GCRP feedback also addressed in terms of:
  - Retrospectivity/application
  - Costs

## Retrospectivity

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- Options 1&2 – retrospective by default as redefine MEL
- Option 3 - consultation document stated effective date for new connections from April 2015
  - Adjusted in draft report to May GCRP to April 2016 to take account of consultation responses
  - Likely that NGET will approach certain existing Users with a view to reaching a mutual agreement

## Costs

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- Option 1 – consultation responses included:
  - We are already doing this
  - Unknown
  - Greater than option 3
- Option 2 – highlighted potentially significant costs for retrospective application
- Option 3 – majority view cheapest option if implemented during design phase; signal already exists and used for testing

# Options - Pros and Cons

	Option 1 - MEL standardisation	Option 2 - Dynamic MEL	Option 3 - Power Available data feed
<b>Refresh rate</b>	Inconsistent - determined by generator	10 minutes	5 seconds is current SCADA refresh rate norm & may be no more onerous than 10 mins
<b>Refresh mechanism</b>	Possibly manual - determined by generator	Automatic	Automatic via SCADA
<b>Application</b>	All parties as single definition of MEL	All parties as single definition of MEL	New connectees only from April 2016. Existing parties by agreement only
<b>Cost</b>	Potentially low - improvement in good industry practice	Likely to be higher for existing parties in providing power available signal	Low for new windfarms - power available signal is widely available and is used in commissioning
<b>Data complexity</b>	Improves existing signal	Improves existing signal - but via some complexity	New signal provided to SO
<b>How would the spot value of MEL be calculated?</b>	To be determined by User	To be determined by User but every 10 mins	SO will do this
<b>Ability of windfarms to enter reserve/response market</b>	Somewhat improved - but headroom will still lack consistency and accuracy	Helps all windfarms, functionally similar to option 3	Similar to option 2 but only helps new connectees unless by agreement

NB A much more detailed version of this table is in the final report

## National Grid View

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- Any of the options proposed could achieve the desired end of sufficiently accurate MEL to allow better calculation of headroom and windfarm participation in reserve & response markets
- Options 1&2 are essentially similar. Option 2 is better than Option 1 as it includes automatic updates and is more consistent
- Option 2 is preferred to Option 3 as it applies to all BM participants. However, this would impose significant costs on existing parties in providing and using the power available signal
- Option 3 is a reasonable compromise; and if applied only to new connectees would be low cost
  - There would still be the potential for existing parties to reach an agreement with National Grid to provide the power available signal and enhance their participation in the reserve & response market but this would not be mandated
  - Options 3a/b would work similarly to 3; and 3b would in addition be closer to option 2 in applying to all parties

# Conclusions

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- Option 3 is still the preferred way forward:
  - Option 1 does not give consistent improvement
  - Option 2 is more complex/costly for existing generators as is option 3(b)
  - Option 3(a) misses the opportunity to address issues with MEL
  - 'Do nothing' is not an option – defect has been well defined
- This will apply to new intermittent generators from April 2016 onwards
- Trialling not included – did not appear to be an appetite for this & in effect already proven
- May facilitate a future BSC modification if considered necessary (eg in the light of cashout review) – to settle BOAs against Power Available rather than FPNs



## Next Steps

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- Revised report circulated to workgroup and GCRP
- Workgroup were asked two questions:
  - Should we reconsult? **No, sufficient engagement has taken place and the conclusion has not changed**
  - Does the outcome need to be presented to GCRP again? **Yes, since it addresses the points raised at GCRP in May**
- Next steps:
  - Submit report to authority?
  - Consider lessons learned for a subsequent GCRP