Extract from DCRP Minutes

6. Joint GCRP/DCRP Workgroup Frequency Changes during Large Disturbances

Referencing paper DCRP_13_04_07 GS provided the Panel with a latest update on the progress of the above joint Panel workgroup. Full details can be found in the paper but the key points from update were as follows;

- August-September 2013 public consultation and subsequent stakeholder responses
- The workgroup has met twice, on 21 October and 25 November, to review responses and to re-evaluate the case for change.
- It was suggested by respondents that further information was required on the costs of implementing the consultation's proposals and the benefits accrued as a result.
- The workgroup subsequently revised the assessment which was developed after consideration of consultation responses.
- The revised assessment quantification
- The main conclusions of the assessment
- The Workgroup main recommendations

GE asked the question as to why the changes to the smaller scale generators frequency setting (ie G83) could not be made now thus avoiding having to wait until 2016. It was agreed that this question would be taken back to the workgroup for consideration in its recommendations.

Action: GS/MK

Post meeting note *– any changes to the D Code would be expected to apply to all new generators from either the date of the change of the D Code, or some future date that would be agreed when the changes are proposed. As such it is to be expected that the change for new generators would take effect soon after the Code change was agreed.*

GE also asked if there is a list of generators who have been contacted by the DNOs and could this information be available as part of the Report to Authority. It was agreed that this information is available and will be included in the Report to Authority.

Action: MK/GS

JN questioned the costs associated with the onsite risk assessment process.
GE responded by informing the JN that the Workgroup did not consider commercial related issues but he would consider the points raised by JN. KM also supported JN comments.

It was agreed that the WG would provide a formal response to each comment submitted by stakeholders during the public consultation.

Action: MK/GS

Options for Discussion

	Option 1			Option 2			Option 3		
	Existing by 1/14/16	New from now[1] to 1/4/16	All from 1/4/16	Existing by 1/14/16	New from now to 1/4/16	All from 1/4/16	Existing by 1/14/16	New from now to 1/4/16	All from 1/4/16
Synchronous >5MW	Progressive Change to 0.5Hzs^{-1}	0.5Hzs^{-1}	1Hzs^{-1}	Progressive Change to 0.5Hzs^{-1}	0.5Hzs^{-1}	1Hzs^{-1}	Progressive Change to 0.5Hzs^{-1}	0.5Hzs^{-1}	1Hzs^{-1}
Synchronous <5MW	No change	No change	No change	No change	1Hzs^{-1}	1Hzs^{-1}	No change	1Hzs^{-1}	1Hzs^{-1}
Asynchronous >5MW	Progressive change to 1Hzs^{-1}	Progressive change to 1Hzs^{-1}	1Hzs^{-1}	Progressive change to 1Hzs^{-1}	Progressive change to 1Hzs^{-1}	1Hzs^{-1}	Progressive change to 1Hzs^{-1}	1Hzs^{-1}	1Hzs^{-1}
Asynchronous <5MW	No change	No change	No change	No change	1Hzs^{-1}	1Hzs^{-1}	No change	1Hzs^{-1}	1Hzs^{-1}

[1] Now = whenever D Code change is made

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Response to Questions on Cost Benefit Assessment

WG 16 December 2013

Slide 16 from November Pack: Implementation Costs vs Savings

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All Costs £m (2013/14 prices)

Total Balancing Services Cost Summary

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Total Cost of Managing Existing Infeed Loss Risks	9.5	11.2	48.5	51.6	57.3	49.1	87.8	104.2	123.5	217.8	310.4	330.6	475.4
Total Cost Including New Infeed Loss Risks	9.5	11.2	48.5	63.5	187.0	253.4	316.5	393.4	545.7	704.8	962.8	1,003.6	1,181.3
Total Cost if Settings are Changed for <5MW plant only	8.5	10.1	43.5	58.1	181.0	248.4	307.9	383.9	535.2	692.4	949.2	991.8	1,168.4
Total Cost if Limit is set to 0.5Hz/s	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.8	16.2	45.4	158.4

Total Achievable Savings

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Cumulative Savings ($1Hzs^{-1}$): 2017 Completion					187.0	440.4	756.8	1,150.2	1,695.9	2,400.8	3,363.5	4,367.1	5,548.5
Cumulative Savings ($1Hzs^{-1}$ >=5MW only): 2016 Completion				5.3	11.2	16.3	24.9	34.4	44.8	57.2	70.9	82.7	95.6
Opportunity lost for a setting change to $0.5Hzs^{-1}$ compared to $1Hzs^{-1}$					.0	.0	.0	.0	.0	1.8	16.2	45.4	158.4

Implementation Cost

		2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Generators at Stations of >=5MW	Cost		5.0	5.0										
	Cumulative Cost		5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Generators at Stations of<5MW	Cost			15.0	15.0									
	Cumulative Cost		.0	15.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total	Cost		5.0	20.0	15.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Cumulative Cost		5.0	25.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0

- Points to note
  - Break even is achieved in the first year if settings are raised for all plant to $1.0Hzs^{-1}$
  - Break even is achieved in 2 years if only plant >=5MW is modified
  - A lower setting makes a re-visit likely at which point the costs of making a change will be different

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WG Questions to be addressed

What are the costs and savings for changing settings to 0.5Hz^{-1} on all distributed generators at stations of 5MW and larger?

- The savings generated by National Grid's current model for this change will be similar to the savings for a 1.0Hz/ setting
- The implementation costs of this option would be less for synchronous generators than previously discussed, with the ~£4m allocated to mitigation measures for synchronous generators reduced significantly (as our calculated NOA risk decreases by a factor of 10). The estimated reduction is to half or less. The cost of initial implementation for non-synchronous generators is unchanged
- This change carries with it the risk of a revisit in ~5 years time with new synchronous and asynchronous installations affected meaning the cost will be larger. This means you would spend ~£7m this time round and ~£20m the second time around with considerable user disruption
- Under this view break even takes 4 years

What are the costs and savings for changing settings to 1Hzs^{-1} on all distributed generators at stations of 5MW and larger, with the exception of existing synchronous distributed generators at stations of 5MW and larger where a minimum setting of 0.5Hz/s applies?

- The savings generated by National Grid's current model for this change will be similar to the savings for a 1.0Hz/ setting
- Again, the costs of this option would be less than previously discussed for synchronous generators. The cost of implementation for non-synchronous generators is unchanged
- This change carries with it the risk of a revisit in ~5 years time with new synchronous installations meaning the cost will be larger. This means you would spend ~£7m this time round and ~£4m the second time around under a programme of manageable scope
- Under this view break even takes 2 years

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All Costs £m (2013/14 prices)

Total Balancing Services Cost Summary

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Total Cost of Managing Existing Infeed Loss Risks	9.5	11.2	48.5	51.6	57.3	49.1	87.8	104.2	123.5	217.8	310.4	330.6	475.4
Total Cost Including New Infeed Loss Risks	9.5	11.2	48.5	63.5	187.0	253.4	316.5	393.4	545.7	704.8	962.8	1,003.6	1,181.3
Total Cost if Settings are Raised to 0.5Hzs^{-1} or above for >=5MW plant only	8.5	10.1	43.5	58.1	181.0	248.4	307.9	383.9	535.2	692.4	949.2	991.8	1,168.4
Total Cost if Limit is set to 0.5Hzs^{-1}	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.8	16.2	45.4	158.4

Total Achievable Savings

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Cumulative Savings (1Hzs^{-1}): 2017 Completion					187.0	440.4	756.8	1,150.2	1,695.9	2,400.8	3,363.5	4,367.1	5,548.5
Cumulative Savings (>=0.5Hzs^{-1} >=5MW only): 2016 Completion				5.8	11.2	16.6	24.9	34.4	44.8	57.2	70.9	82.7	95.6
Opportunity lost for a setting change to 0.5Hzs^{-1} compared to 1Hzs^{-1}					.0	.0	.0	.0	.0	1.8	16.2	45.4	158.4

Implementation Cost 1Hzs^{-1}

		2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Generators at Stations of >=5MW	Cost		5.0	5.0										
	Cumulative Cost		5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Generators at Stations of<5MW	Cost			15.0	15.0									
	Cumulative Cost		.0	15.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total	Cost		5.0	20.0	15.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Cumulative Cost		5.0	25.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0

Implementation Cost 0.5Hzs^{-1} (>=5MW only)

		2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Generators at Stations of >=5MW	Cost		3.5	3.5			10.0	10.0						
	Cumulative Cost		3.5	7.0	7.0	7.0	17.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0

Implementation Cost 1.0Hzs^{-1} for all except exisiting sync at 0.5Hzs^{-1} (>=5MW only)

		2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Generators at Stations of >=5MW	Cost		3.5	3.5			2.0	2.0						
	Cumulative Cost		3.5	7.0	7.0	7.0	9.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0