The National Grid Company plc

Minutes of the
Grid Code Review Panel
National Grid House, Coventry
8th February 2001

Members/Alternates		**Advisors**	
Mike Metcalfe	NGC (Chair)	Robert Lane, CMS Cameron McKenna	
David Payne	NGC (Secretary)	David Coates, NGC (Agenda item 6.1 only)	
Geoff Charter	NGC	Phil Collins, NGC (Agenda item 6.1 only)	
David Gray	NGC		
Phillip Johnson	NGC		
Ian Gray)			
Mike Kay)	PES		
Alan Laird)			
Brian Wharmby	OFGEM	Bridget Morgan	OFGEM
John Norbury)			
John Capener)	CD Generators over 5GW		
John France)			
David Ward	CD Generators 5GW and under		
Malcolm Taylor	Independent Generators		
Peter Clubb	EIP		
(No Rep)	PEC		

1 APPOINTMENT OF MEMBERS

849 The Chairman reminded Members that notification to NGC of new appointments to the Panel were required this month or confirmation (express or implied by no notification) that existing Members would continue. The only changes notified to the Secretary were:

Ph. Gaillet	replaced by	Francois Boulet
Bob Mitten	replaced by	Malcolm Taylor
Simon Ganley	replaced by	Alan Robinson
Alan Robb	replaced by	Phillip Johnson
John Capener	replaced by	Graham Trott

850 Under the Constitution and Rules therefore all other Members were automatically re-appointed.

2 APOLOGIES FOR ABSENCE

851 Apologies for absence were received from Graham Trott (represented by John Capener), Alan Robinson (represented by David Ward), Francois Boulet (represented by Peter Clubb) and Chris Rowell.

3 APPROVAL OF MINUTES OF PREVIOUS MEETING

852 There were no comments on the revised draft minutes of the last meeting and they were agreed as a true record.

4 MATTERS ARISING FROM PREVIOUS MEETING (not covered below)

4.1 Summary of actions (GCRP 01/01)

853 David Payne provided an update:

- Action 472 – Phil Johnson stated that only one NRAPM incident had occurred since February 2000. This low level is due to the fact that there is now substantial dialogue with power stations prior to the proposed issue of NRAPM. Operation under the new trading arrangements and the growth of embedded generation may have an effect on the situation, which will be kept under review.

- Action 754 – Geoff Charter stated that a further annual ROCOF report is due in September 2001 but by way of an interim report Geoff indicated that in the period between August 2000 and January 2001 there had been four incidents of a level which triggered the reporting mechanism. However there had been no reported tripping of generation as a result of these incidents.

- Action 763 – Phil Johnson stated that as considerable software changes would be required to deal with the issues relating to Time Tagging of Dynamic Parameters, NTO/NTB restrictions and application of QPN's, several months of operating experience would be desirable prior to reviewing each issue in turn. The application of QPN's was seen as the feature requiring to be progressed as soon as possible. Phil felt that up to twelve months of experience would be required to deal effectively with NTO/NTB restrictions, whereas time tagging of Dynamic Parameters may require up to six months experience. John Norbury expressed his disappointment with the expected long delay in dealing with NTO/NTB restrictions.

- Action 812 – Geoff reported that a 'Final Draft' of ER G5/4 had been issued along with a draft of ETR 122.

- Action 836 – A copy of an e-mail note from Peter Haggerty was circulated at the meeting. The note indicted that the scope of any review of CC.6.3.3 would be a matter for the GCRP or its sub-group to decide and should at least establish a minimum requirement for CC.6.3.3. John Capener expressed the view that the note was not clear on what the scope of the exercise should be or what the difference between this proposed review and the previous review would be. Brian Wharmby stated that CC.6.3.3 encompassed a range of activities and in his view Ofgem was not convinced that the previous review had resolve all issues. He suggested that it would be useful for any new review to consider a full range of issues initially.

- Action 840 – Geoff stated that the terms of reference for the proposed CC.6.3.3 working group would be revised prior to the first working group meeting.

- All other actions had been completed or covered by later agenda items.

5. REPORT ON PROGRESS OF CONSULTATION PAPERS (GRCP 01/02)

A/00 – Safety Co-ordination.

854 David Payne stated that one respondent still had a concern over proximity issues. A meeting is being arranged between NGC and the respondent to discuss and attempt to resolve the issue.

C/00 - Harmonics

855 Geoff Charter reported that all respondents issues had now been cleared and a report had been sent to Ofgem seeking approval for the proposed Grid Code changes.

856 Brian Wharmby was concerned that the report recommendations were based on a Draft of ER G5/4 and not the final version and that he would have preferred that a copy had been appended to the report. This may lead to the need for the report to be reconsidered when the final version of G5/4 is eventually issued. In particular he was concerned that G5/4 refers to 'compatibility levels' but these have not been defined. Geoff recognised that G5/4 was not clear in this respect and that ETR 122 may clarify the requirements.

857 NGC had no particular problem with a delay to approval of the proposed changes and can wait until such time that the final version of G5/4 is issued. It is expected that all issues will be clarified by that time. NGC will send the final version of G5/4 to Ofgem as soon as it has been issued.

858 **Action:** *NGC to send copy of the final version of G5/4 to Ofgem to assist with approval of Grid Code changes*

D/00 - Housekeeping Changes

859 David Payne explained that there was one remaining issue to be resolved internally within NGC. Approval of the proposed changes is expected to be sought for implementation shortly after NETA 'Go-Live'.

E/00 - Changes due to CUSC Implementation.

860 David Payne stated that all issues had been resolved, the report to Ofgem was in preparation and it was desirable for the proposed changes to be implemented in parallel with the implementation of the CUSC.

6 PROGRESS ON CURRENT GRID CODE MODIFICATION PROPOSALS (GCRP 01/03)

861 David Payne stated that nominations for the working groups for OC5 and CC.6.3.3 reviews had been received. The first meeting of the OC5 group had been arranged for 15th February 2001 and the first meeting of the CC.6.3.3 group was in the process of being arranged.

6.1 Review of Reactive Requirements (GCRP 01/04)

862 Geoff Charter provided a report from the working group detailing progress and recommendations to the GCRP. The slides used for Geoff's presentation are attached with these minutes. David Coates also gave a presentation on the technical issues involved with the review. His slides are also attached.

863 There was a short discussion on Technical issues related to constant terminal voltage control versus constant power factor control.

864 Geoff pointed out that there were two minor typographical errors in the main report. Section 4.6.2 should refer to 'Part 3 Ancillary Services in the last sentence. Also

footnote 2 should reference issue 1.1 of the document referred to. With these amendments the Panel was asked to approve the report and this was agreed.

865 The panel was invited to forward the report to TUG. Mike Metcalfe suggested that as the next TUG meeting was the following day (Friday 9th February), the report should be forwarded for discussion at the subsequent TUG meeting and he would explain this at the imminent TUG meeting. The panel agreed to this proposal.

866 With respect to the third recommendation it was suggested that the request should be modified to ask TUG to review the current market provisions to determine any changes which would be required if the Grid Code proposals outlined in the report were to go ahead. Mike Metcalfe would raise this at the appropriate TUG meeting. This suggestion was agreed by the Panel.

867 It was suggested that the final recommendation should be amended to 'Progress the recommended Grid Code changes in parallel with the implementation of any necessary changes to the reactive market.' This was agreed by the Panel.

868 **Action:** *NGC to amend working group report as indicated in minute 864; then forward to TUG with appropriate recommendations.*

7 OTHER GRID CODE RELATED ISSUES.

7.1 Neta – Update on Progress

869 Geoff Charter provided a verbal update, stating that the implementation date of NETA 'Go-Live' was still targeted for 27th March 2001.

870 It was possible that there may need to be some changes to the designated version of the Grid Code (Issue2) prior to NETA 'Go-Live'. These changes relate to:

i) The Direction from Ofgem in relation to Ramp Rates. It may be determined that the text of the Grid Code should be amended to include the revised rates referred to in the Direction, rather than just referencing the Direction.

ii) As a result of an Ofgem Consultation of BSC Changes, it may be necessary to change the version number of the Data Validity, Consistency and Defaulting Rules referenced in Issue 2 of the Grid Code.

iii) It is likely that Ofgem will issue a Consultation Document relating to operation in the event of computer systems being out of service. NGC is considering appropriate text to replace the requirements in Issue 2 of the Grid Code.

John Norbury expressed concern with NGC's proposal, that the buffering arrangements set out in the post-NETA Grid Code BC1.4.1.(c)(i) will not be implemented in the event of NGC computer systems being out of service for planned maintenance, given that the proposed buffering arrangements had been previously discussed and agreed by the Grid Code NETA sub-group. It was pointed out that the issue had been discussed with Ofgem and an Ofgem Consultation Paper was about to be issued, giving the opportunity to comment.

7.2 Panel Membership and Constitution (GCRP 01/05)

871 Geoff Charter introduced the paper which was intended to initiate a discussion on a wider review of GCRP membership as suggested to the Panel in paper GCRP 00/09 – February 2000. The current paper included a copy of the appendix from GCRP 00/09 suggesting one view of the proposals for the makeup of Panel membership.

872 Geoff pointed out that generators are currently represented by 5 members, 3 representing >5GW, 1 representing <5GW and one representing small independent generators. He said that at vesting this was a good representation for the industry at that time. However in the intervening years the <5GW group has grown considerably with currently 30-40 power stations, many being single company stations.

873 John Norbury and John France stated that they would not wish to support any move to reduce generator representation to less than 5 members, as suggested in the paper appendix.

874 Alan Laird believed that representation should continue to be allocated in terms of class of User. However there was a need to determine the various classes that the Grid Code now concerns. In addition changes to the PES licence would result in a split between Network Operators and Suppliers, and Suppliers should be represented on the GCRP.

875 There was a discussion on how a Supplier representative could be nominated. As it was recognised that this was an issue for post NETA 'Go-Live', it was agreed that a Panel paper should be prepared for the May GCRP meeting to include proposals for changes to representation. Following Panel discussion, a Grid Code consultation paper could be issued giving the opportunity for all parties to comment on membership.

876 **Action:** *NGC to prepare paper for May Panel meeting with proposals for changes to Panel Membership.*

8 TUG Issues

8.1 Feedback from TUG meetings

877 Geoff Charter provided feedback from the last TUG meeting held on 15th December 2000.

878 Work has continued to progress on three subcommittees.

- Reactive Issues – RPMWG
  This group has been discussing only a few items recently.

- R2P2
  This group continues to consider the market mechanisms for Frequency Response and intend to produce a written report before the end of March 2001.

- Charging Principles Forum
  At its meeting, presentations had been made on governance interactions and TUG-CPF; charging statements post NETA; CUSC and European cross-border charging.

Ofgem had been invited to talk to TUG about BETTA proposals. There was a desire to take the proposals forward as soon as possible but it was recognised that the original timescales for implementation were optimistic and not likely. It was also recognised that there is a need to resolve Transmission Access issues ahead of the implementation of BETTA.

8.2 Items to raise at TUG

879 Mike would raise the market issues related to the Reactive Review discussed under Agenda item 6.1

9 ANY OTHER BUSINESS

9.1 Large Embedded Power Stations and Distribution Constraints (GCRP 01/06)

880 Malcolm Taylor introduced the paper. It proposes that the final sentence of Balancing Code 1.6.1 (a) (i) of Issue 2 of the Grid Code should be deleted. This proposal arose from a detailed review of the provisions of Issue 2 of the Grid Code. This revealed that a change had been incorporated that would result in disadvantaging the group of embedded Large Power Stations (the current Centrally Despatched power stations) under the new market arrangements. The proposal seeks to restore the status quo.

881 Mike Metcalfe pointed out that formally that this was an Implementation Scheme issue as it related to the NETA version of the Grid Code, and is affected by the rules related to designation of the Grid Code. He therefore assumed that the issue would be taken up with the PDO. Malcolm felt that it was appropriate to raise with the Panel in addition as it was proposing an eventual change to the Grid Code, which would be required for implementation at NETA 'Go-Live'.

882 There was some discussion on how the new wording in the Grid Code had come about, but Mike Metcalfe felt it was clear that this was an issue of commercial property rights and not one for the GCRP. However there was nothing to prevent the GCRP considering a modification proposal in the usual way after NETA "Go-Live".

9.2 NGC Website

883 Geoff Charter explained that consideration was being given to the creation of a 'microsite' to cope with the demands of maintaining documents such as the CUSC which require frequent updates. It was suggested that it could be advantageous for certain Grid Code related documents, such as Panel minutes, Agendas and papers to be included on this site. There was assurance that any sensitive documents such as Panel meeting minutes would not be included until approved by the panel. It was intended that Panel members would continue to receive all papers via e-mail. Panel members raised no concerns with the proposal.

9.3 Retiring members

884 Alan Laird announced that as he had served a three year term as the chairman of the Distribution Code Review Group, he had also relinquished his seat on the GCRP.

885 Brian Wharmby announced that he would be leaving Ofgem at the end of March and so would also be retiring from the GCRP.

886 Mike Metcalfe thanked Alan and Brian on behalf of GCRP members for their efforts with the GCRP. He wished them both well for the future.

10 DATE, TIME & VENUE OF NEXT MEETING

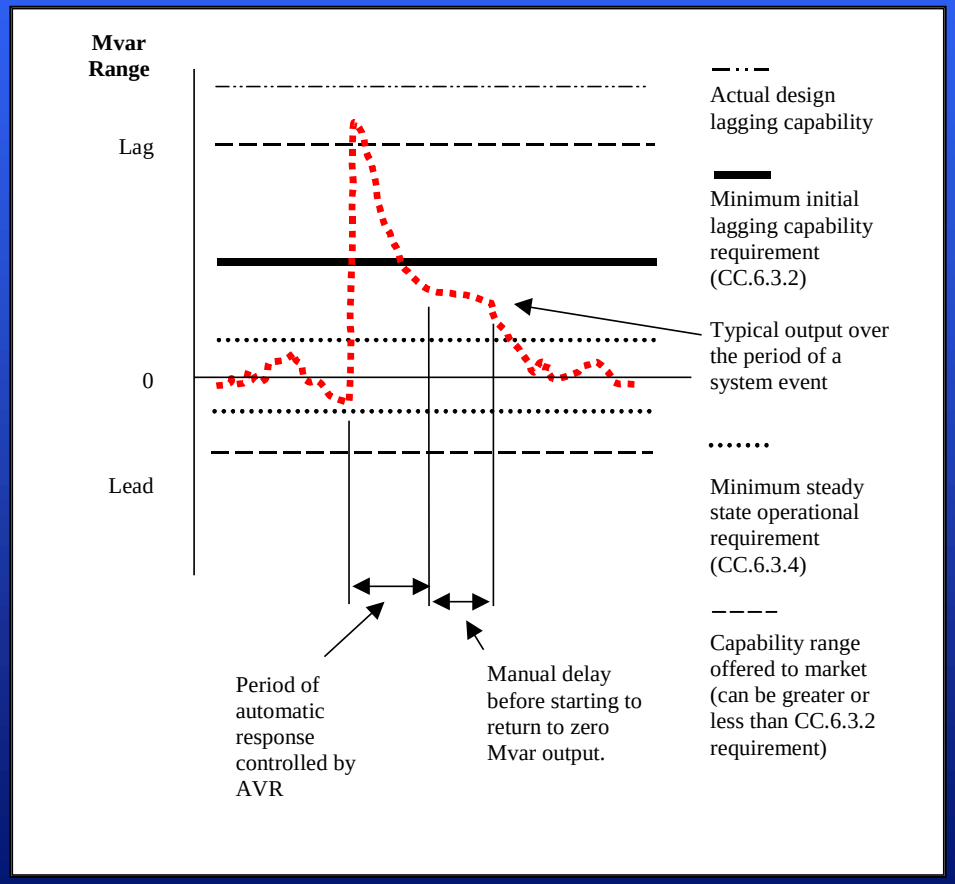
887 10:30 am Thursday 17th May 2001 at National Grid House.

CC.6.3.2 Backstop Values

- Minimum SCR of 0.4
- Maximum Rated Lagging Power Factor of 0.9

National Grid

Generating Unit Reactive Response



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Operational Drivers

- System voltage range
- Generator inherent response and excitation control (stability requirements)
- Voltage variations, large and small
- Practical control and despatch
- Effects of shortfalls

National Grid

Voltage Range

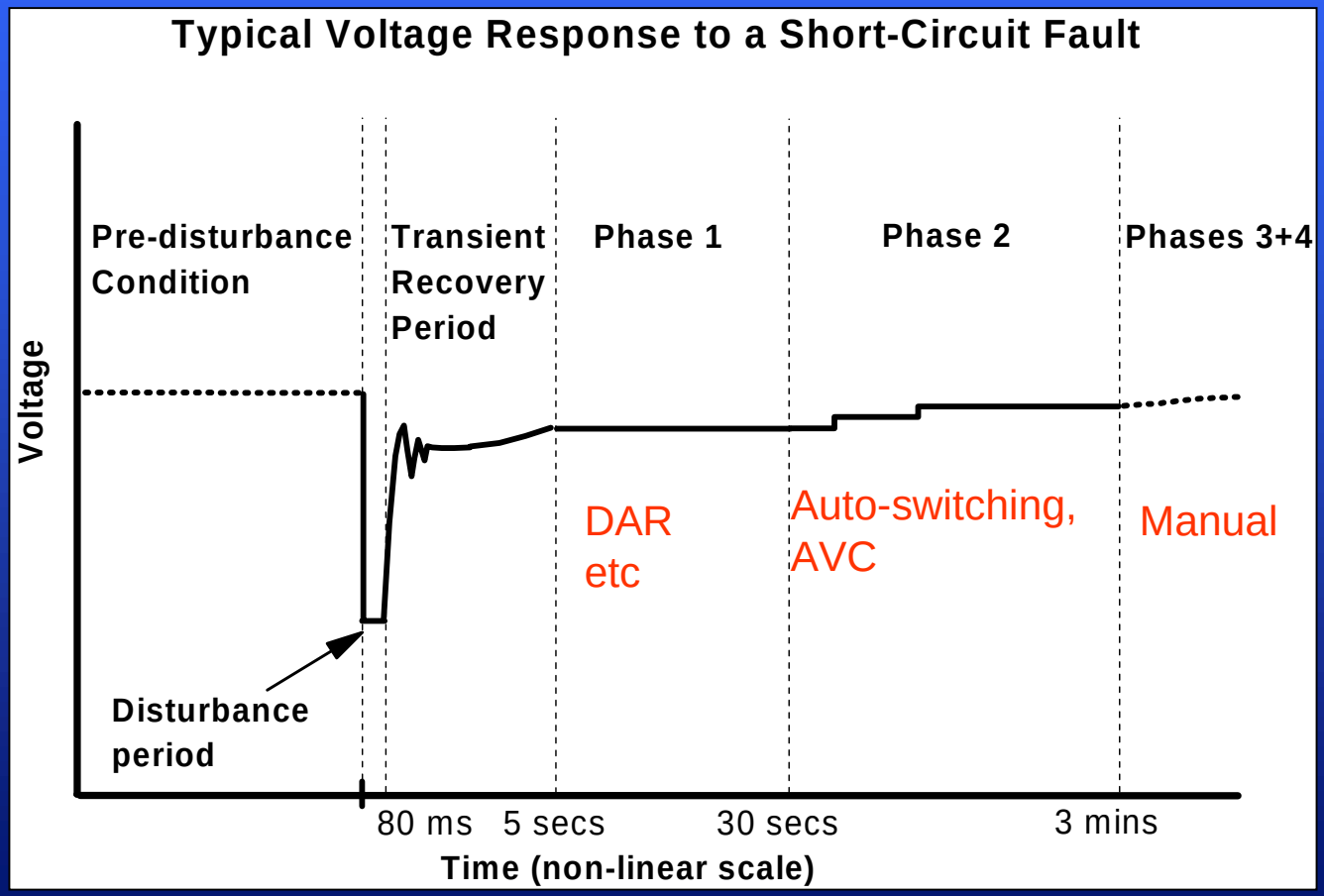
- Achieve 0 Mvar at HV (subject to tolerance)
- Over normal voltage ranges in CC.6.1.4

Consequences of non-compliance:

- Mvar circulation
- MW Constraints, insecurity, Mvar market constraint

National Grid

Timescales for Voltage Disturbances (from CI01)



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Generator Control Following Disturbance

- AVR responds to aid post-fault recovery, control rotor angle and damp oscillations
- Further fault may occur in Phase 1 (DAR); or else Mvar may restore to previous value
- Phase 2 considerations: re-secure system and minimum customer disturbance
- Generator Mvar control by tap-changing, during Phase 3

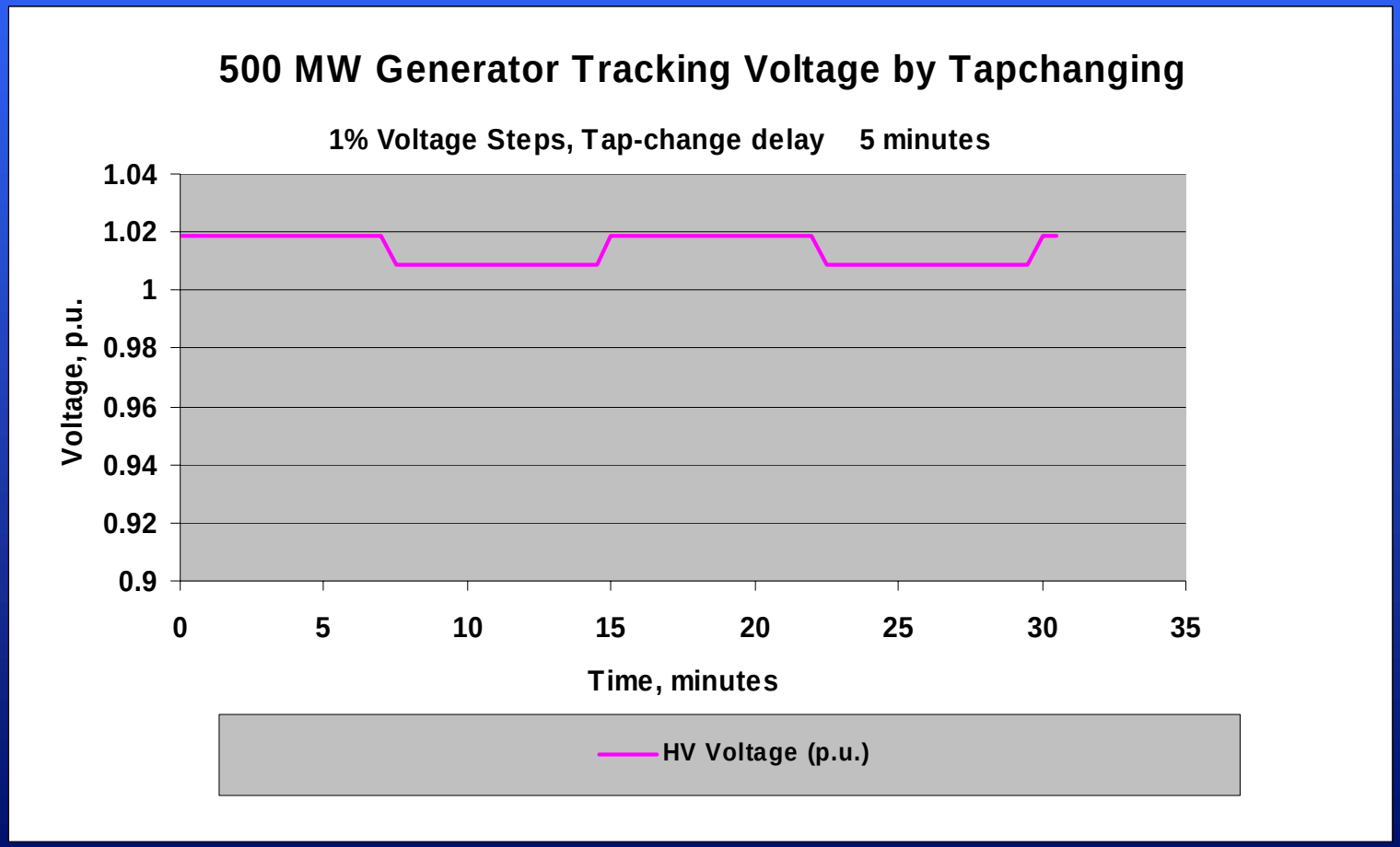
National Grid

Voltage Changes and Fluctuations

- Voltage change takes Mvar outside deadband
- Can restore in not less than 5 minutes
- Must handle voltage fluctuations (CC.6.1.7)
  - e.g. 1% step changes (may occur up to several times per minute

National Grid

Voltage Changes and Fluctuations: 1% Steps



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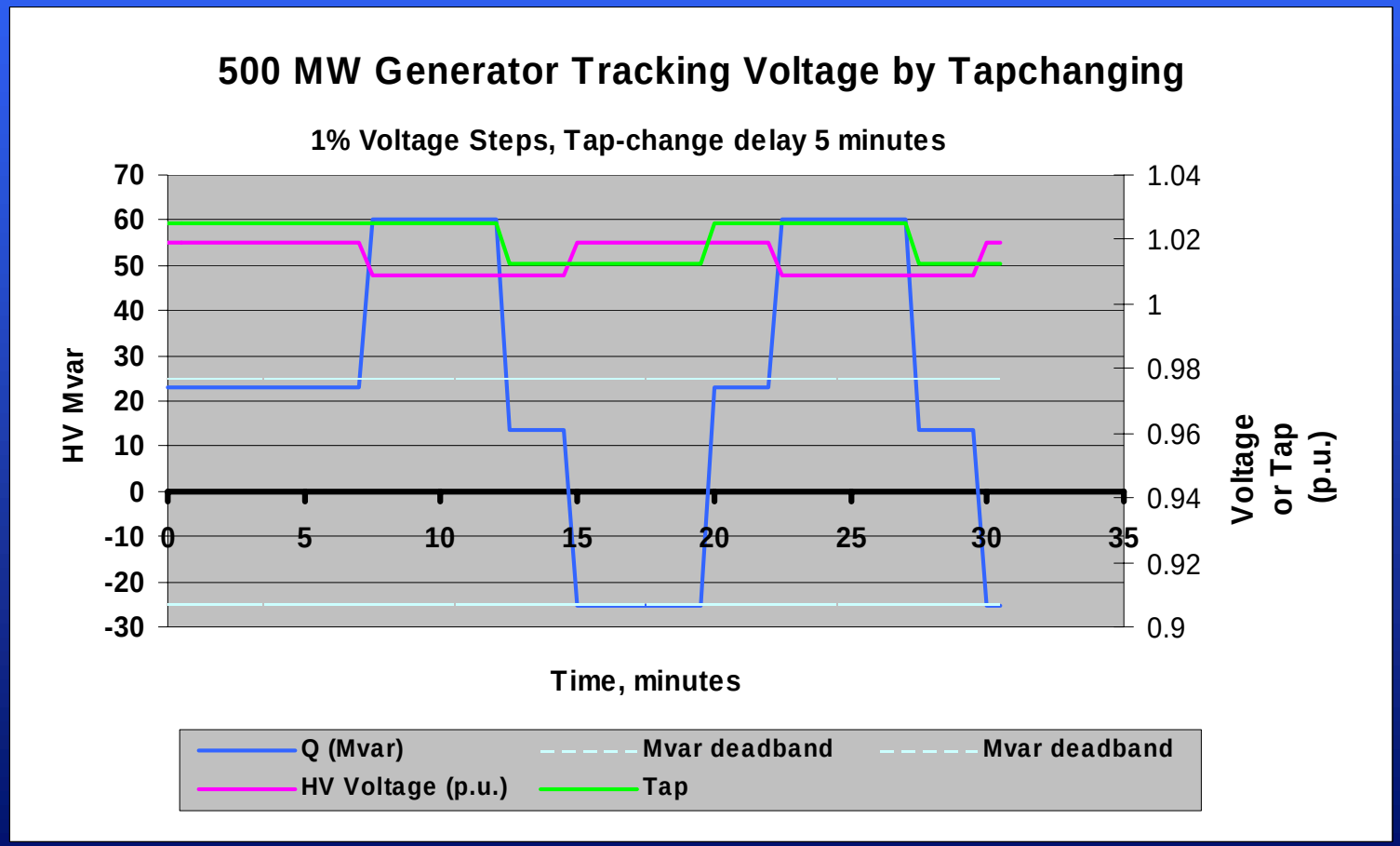
Voltage Changes and Fluctuations: 1% Steps



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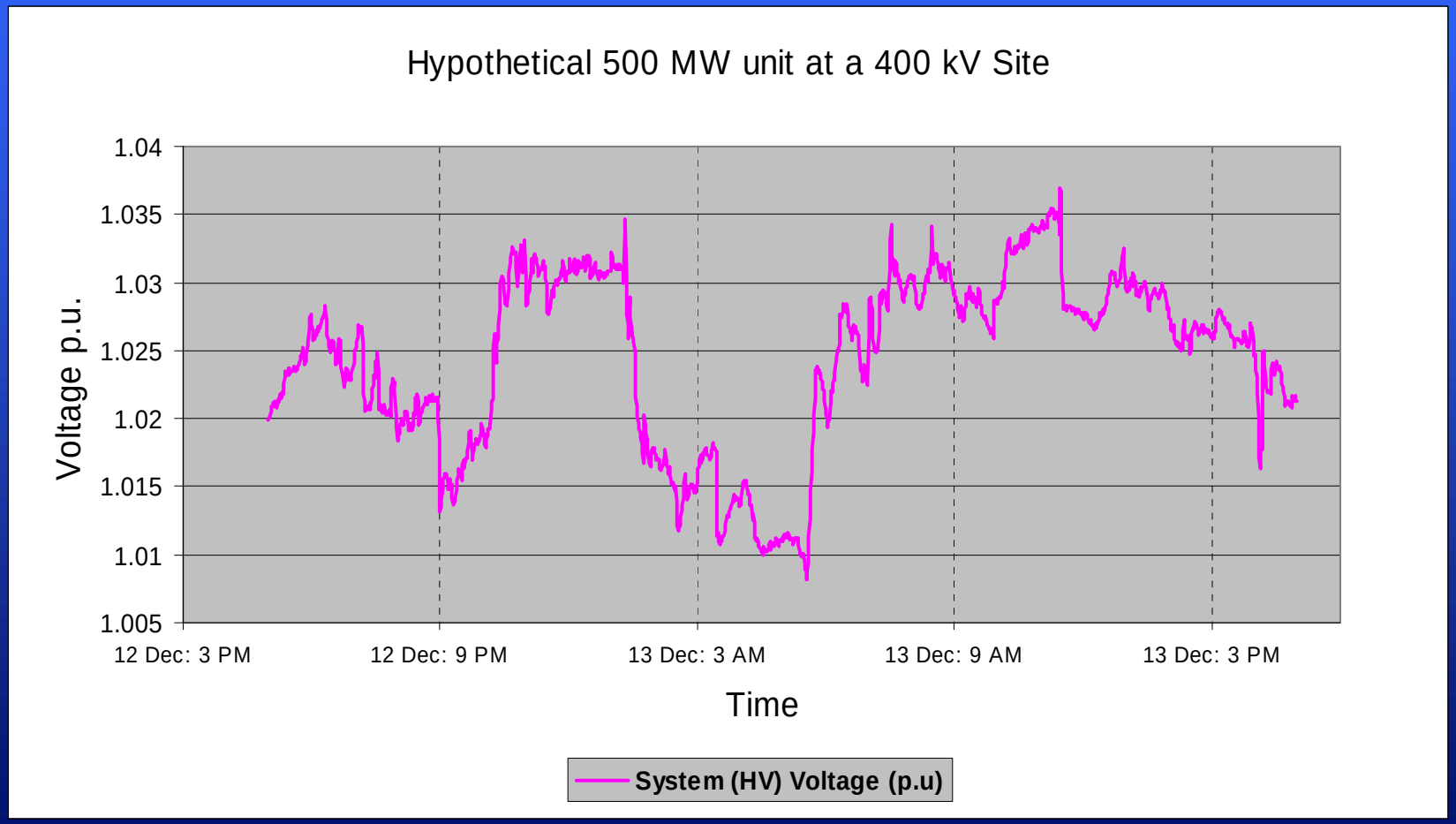
Response to Voltage Variations



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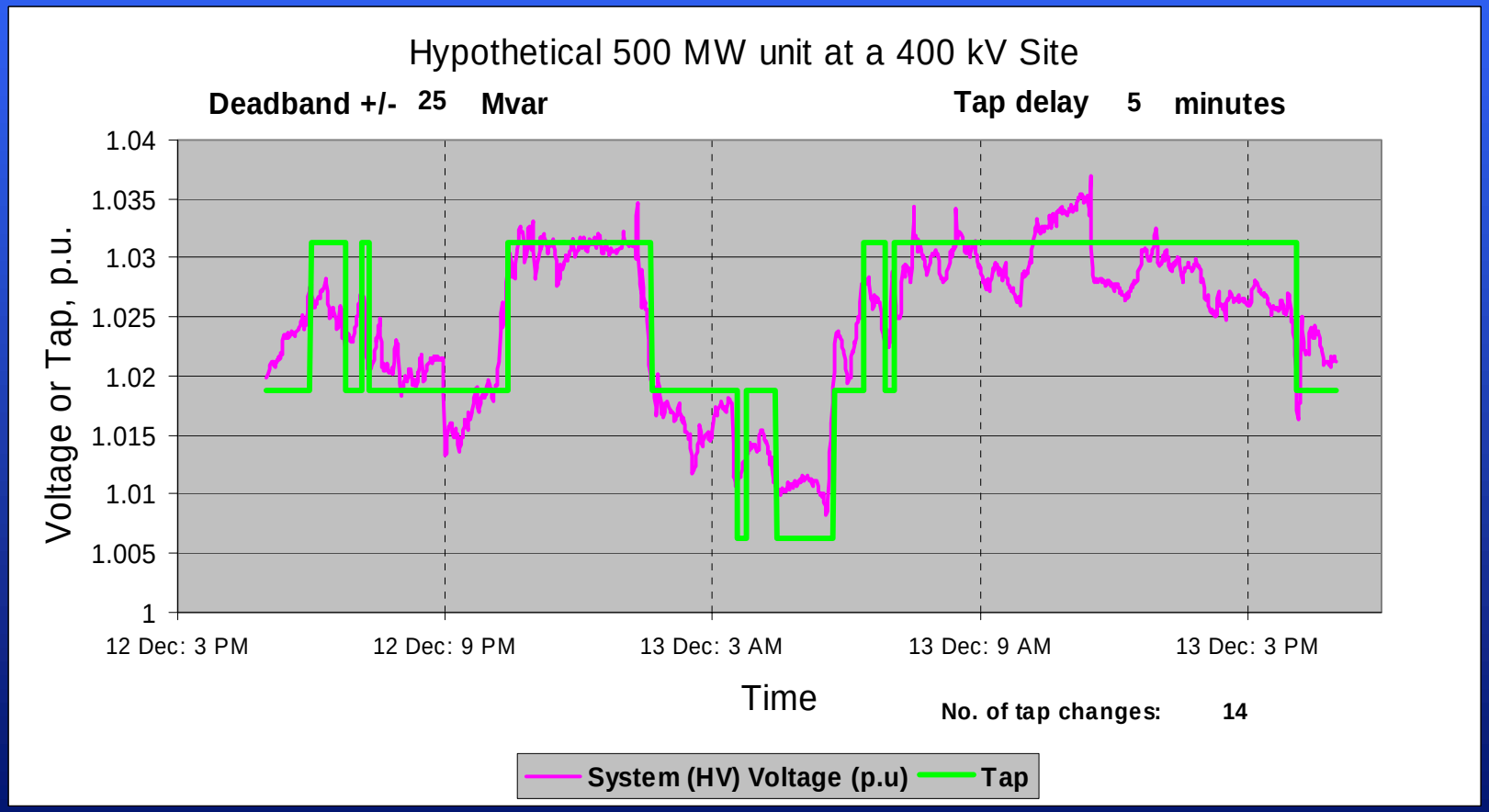
Response to Voltage Variations



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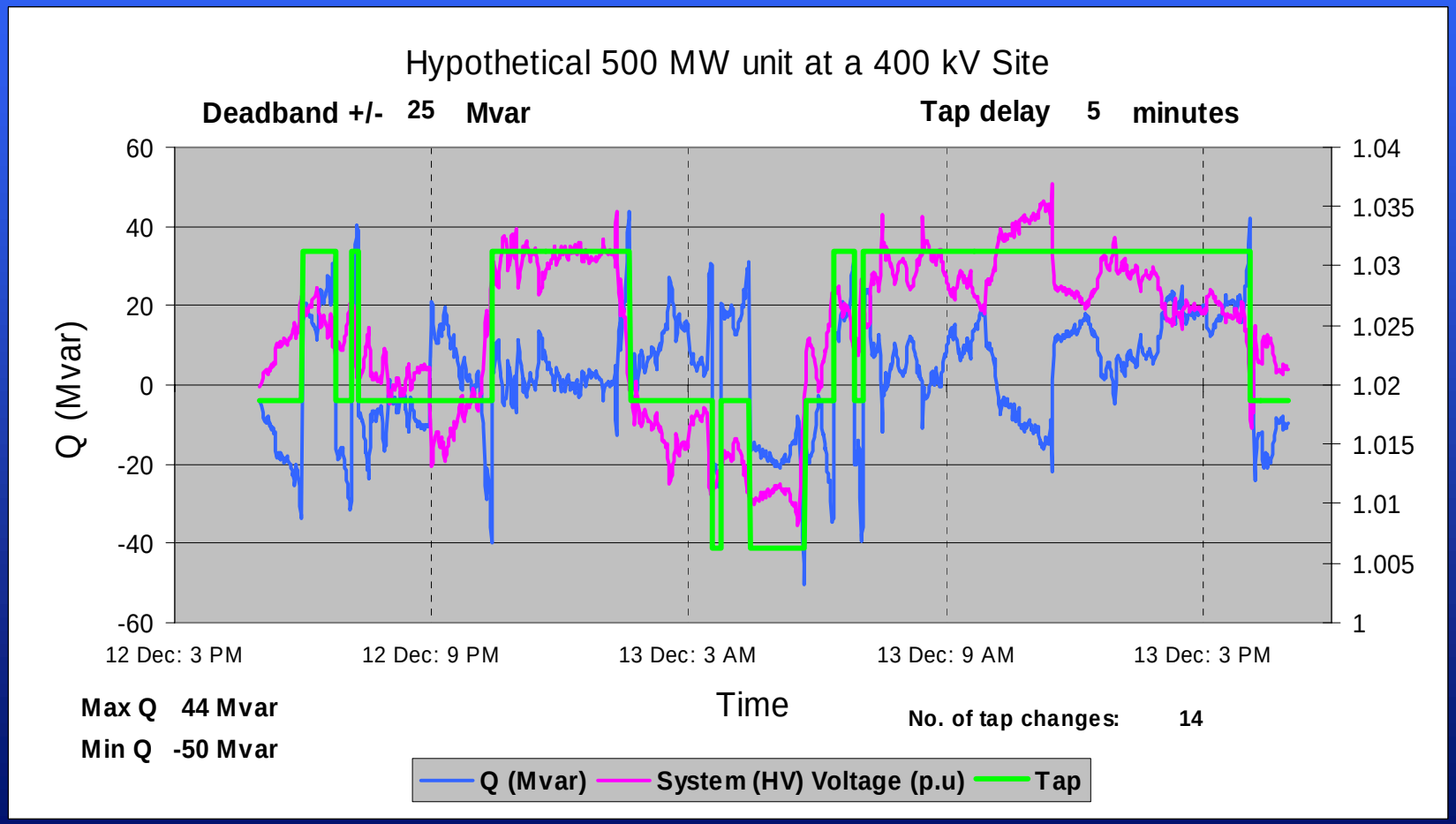
Response to Voltage Variations



National Grid

National Grid

Report from Reactive Review Working Group

GCRP - 8th February 2001

Background

- Review requested by TUG
- Assist development of Reactive Market

National Grid

Terms of Reference (1)

- Review Grid Code reactive provisions
- Investigate implications of designing new plant to IEC 34-3
- Identify minimum operational performance requirements, if different from above

National Grid

Terms of Reference (2)

- Develop Grid Code wording to:
  - enable maximum reactive range to be offered under discretionary commercial contracts
  - avoid unnecessary cost and constraints on generation market
  - permit secure, stable and economic operation of system
- Distinguish between obligations at time of connection and operating requirements
- Review impact on existing plant and consider derogations

National Grid

Working Group Proposals

- New plant designed to meet requirements of EN 60034 - 3 (IEC 34-3) in reactive areas
- Minimum operational requirement - be capable of operating at zero hv Mvar (with a tolerance to accommodate one tap of generator transformer) across range of system voltages

National Grid

Proposed Grid Code changes

- CC.6.3.2 - major change
  - Replacement of “lifetime” pf range by “Day 1” capability requirements
- CC.6.3.4 - Introduction of requirement to be capable of operating at “about” zero hv Mvar across range of system voltages
- Other consequential changes

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Next Steps

- GCRP to approve report for submission to TUG
- TUG to arrange development of commercial arrangements
- Simultaneous implementation

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Messages for TUG

- Current Grid Code obligations provide capability
- Proposed Grid Code obligations provide limited capability upon commissioning of new generation
- Changes to Grid Code obligations may imply changes to payment mechanisms
- Market contracts must secure capability

National Grid