

Saturday 11th February 2012



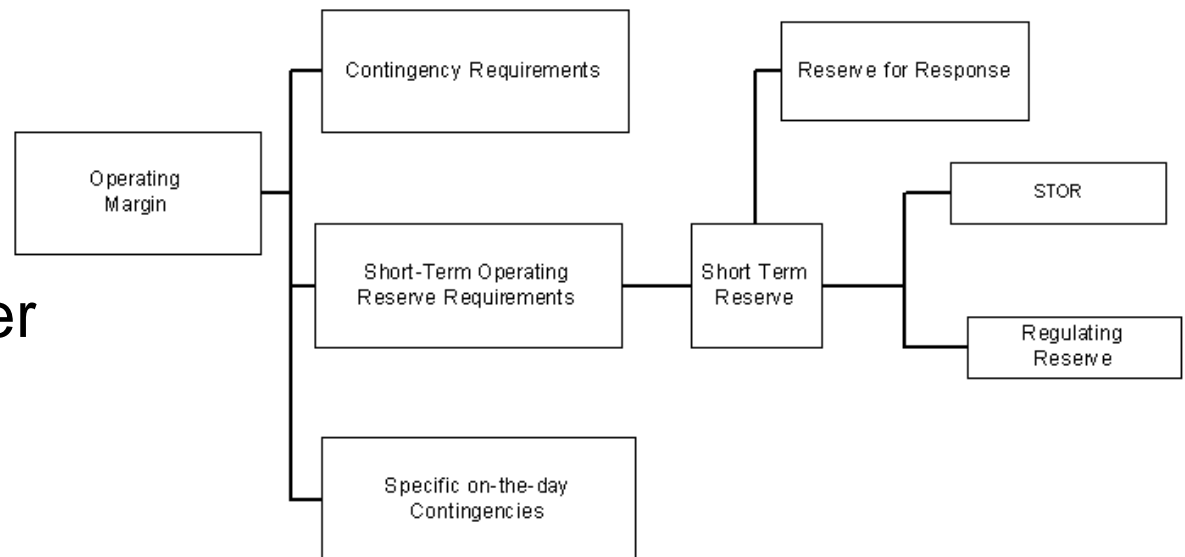
Sam Matthews, Balancing Services Manager
Electricity Operational Forum – February 2012

Agenda

- Overview of Operating Margin & System Warnings
- Background to Saturday 11th February 2012
 - Weather overview
 - Planning for the morning demand pickup
- Events across morning demand pickup
 - On the day generator performance
 - Demand forecasting performance
 - Reserve provider performance
- Conclusions

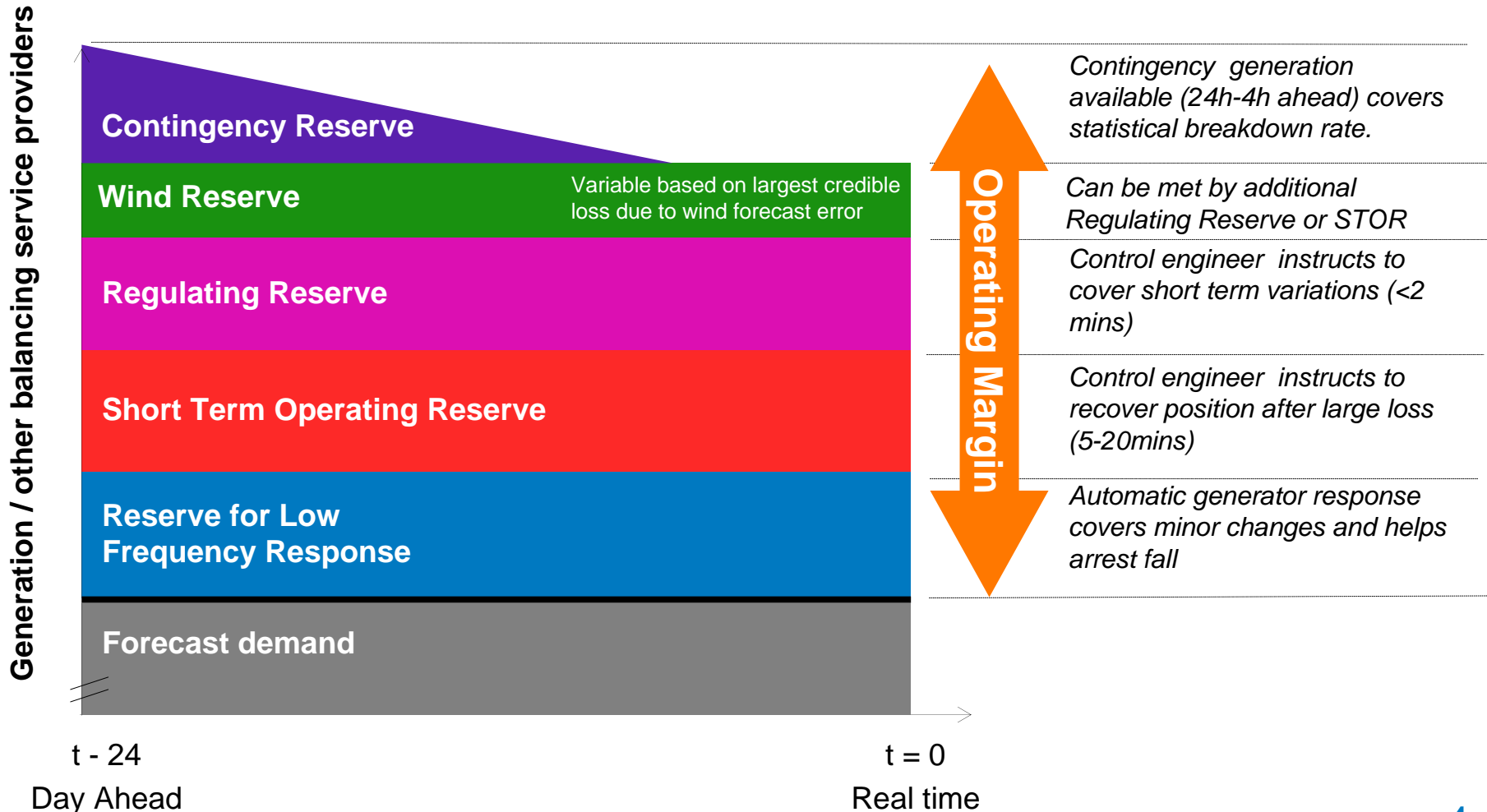
Operating Margin

- Level of available MWs above those required to meet forecast demand
 - derived via a statistical method to give a 1 in 365 level of security



- Required to cover
 - Plant loss
 - Plant shortfalls
 - Demand & wind forecast errors

National Grid Reserves



System Warnings

- Inadequate System Margin (NISM)
 - OC7.4.8.5 & BC1.5.4
- High Risk of Demand Reduction (HRDR)
 - OC7.4.8.6 & BC1.5.4
- Demand Control Imminent (DCI)
 - OC6.5.2 & OC7.4.8.7
- Risk of System Disturbance
 - OC7.4.8.8

THE GRID CODE

Issue 4 Revision 10
3rd January 2012

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Issue 4 Revision 10

CGSR- 1

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System Warnings

- Demand Control Imminent – OC6.5.2 & OC7.4.8.7
 - Issued “where possible”, when demand control is expected in following 30 minutes
 - Does not require a preceding NISM or HRDR

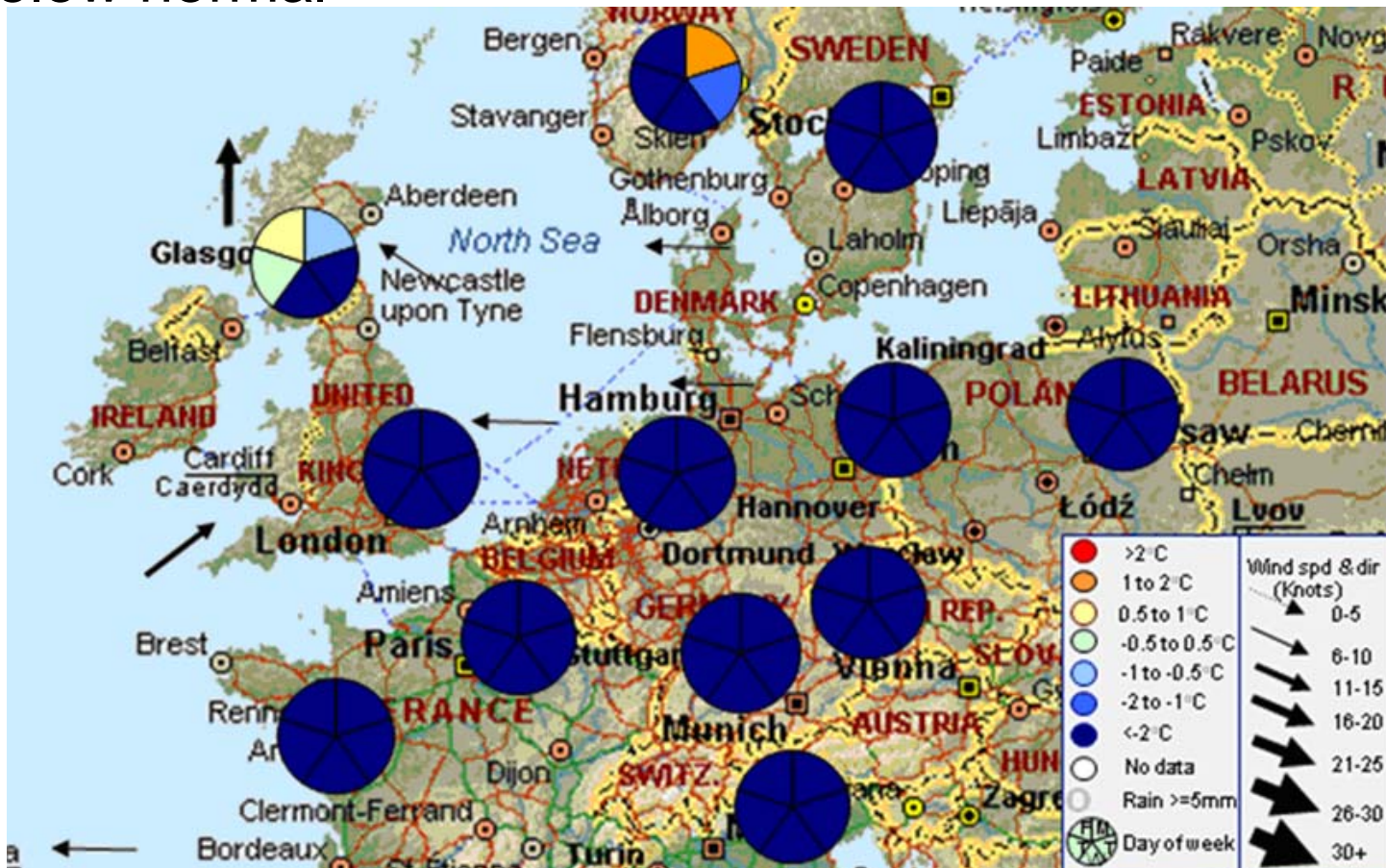
- Risk of System Disturbance – OC7.4.8.8
 - Issued when NGET is aware that “there is a risk of widespread and serious disturbance to whole or part” of the system
 - It “may be necessary to depart from normal Balancing Mechanism operation”

Weather & Planning overview



Background - Weather

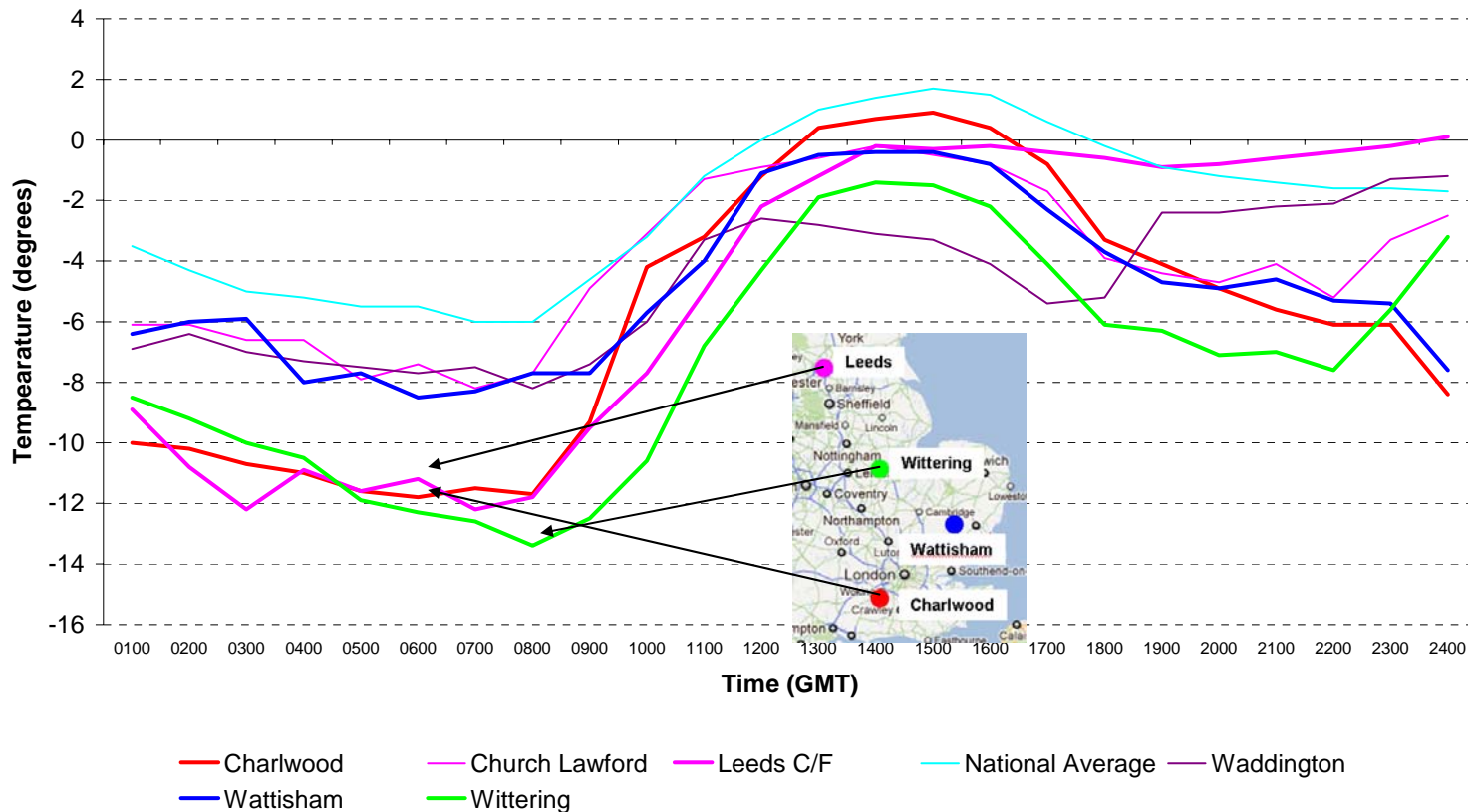
- Forecast for week is for continuation of temperatures below normal



Background - Weather

■ Overnight temperatures experienced in GB

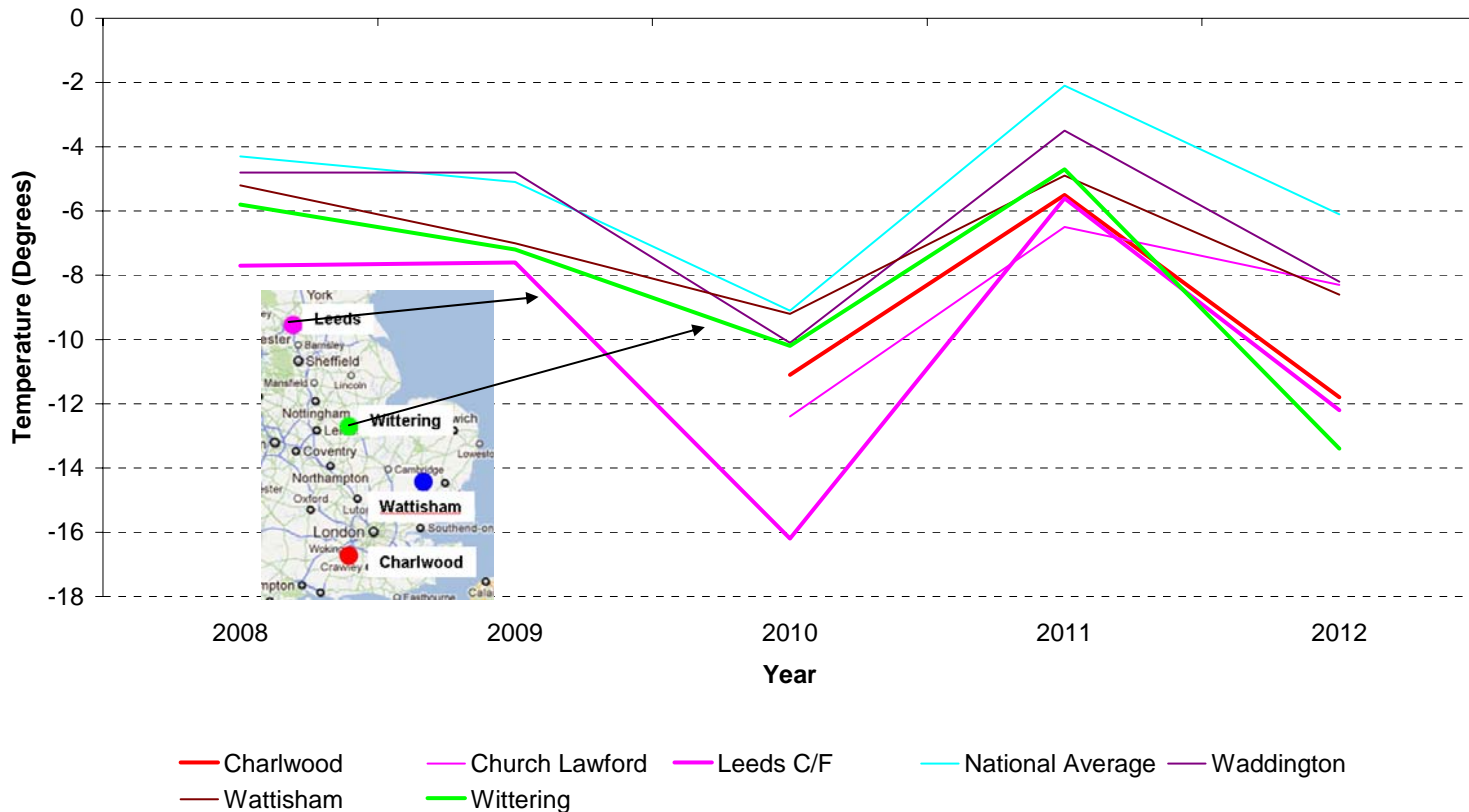
Observed Temperatures Saturday 11th Feb 2012 at Coldest Sites Versus National Average



Background - Weather

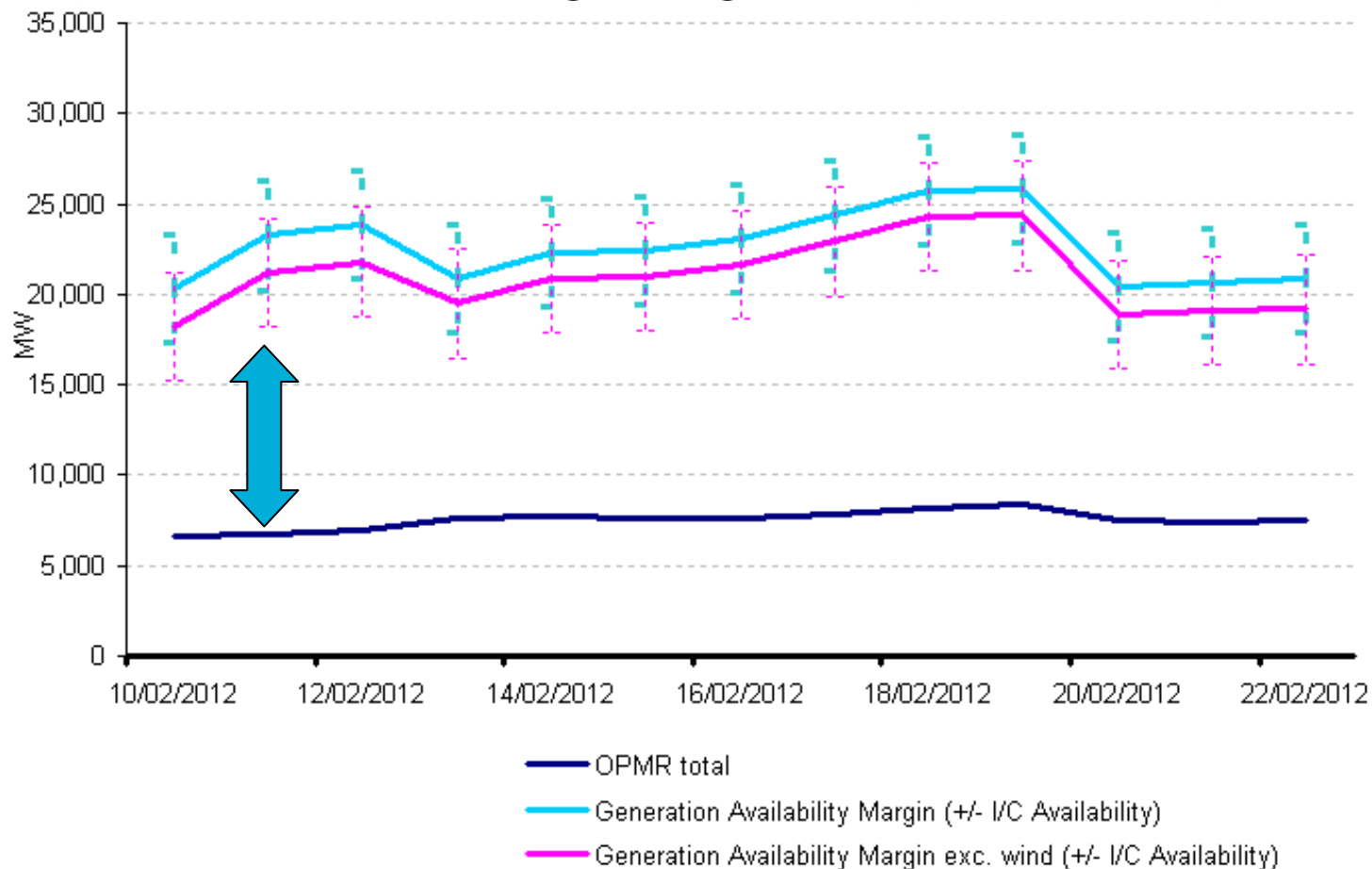
- Have observed lower GB temperatures in 2010

Annual Minimum Recorded Temperatures



Planning for morning pickup

- Day ahead surpluses significantly above our Operational Planning Margin Requirements (OPMR)



Planning for morning pickup

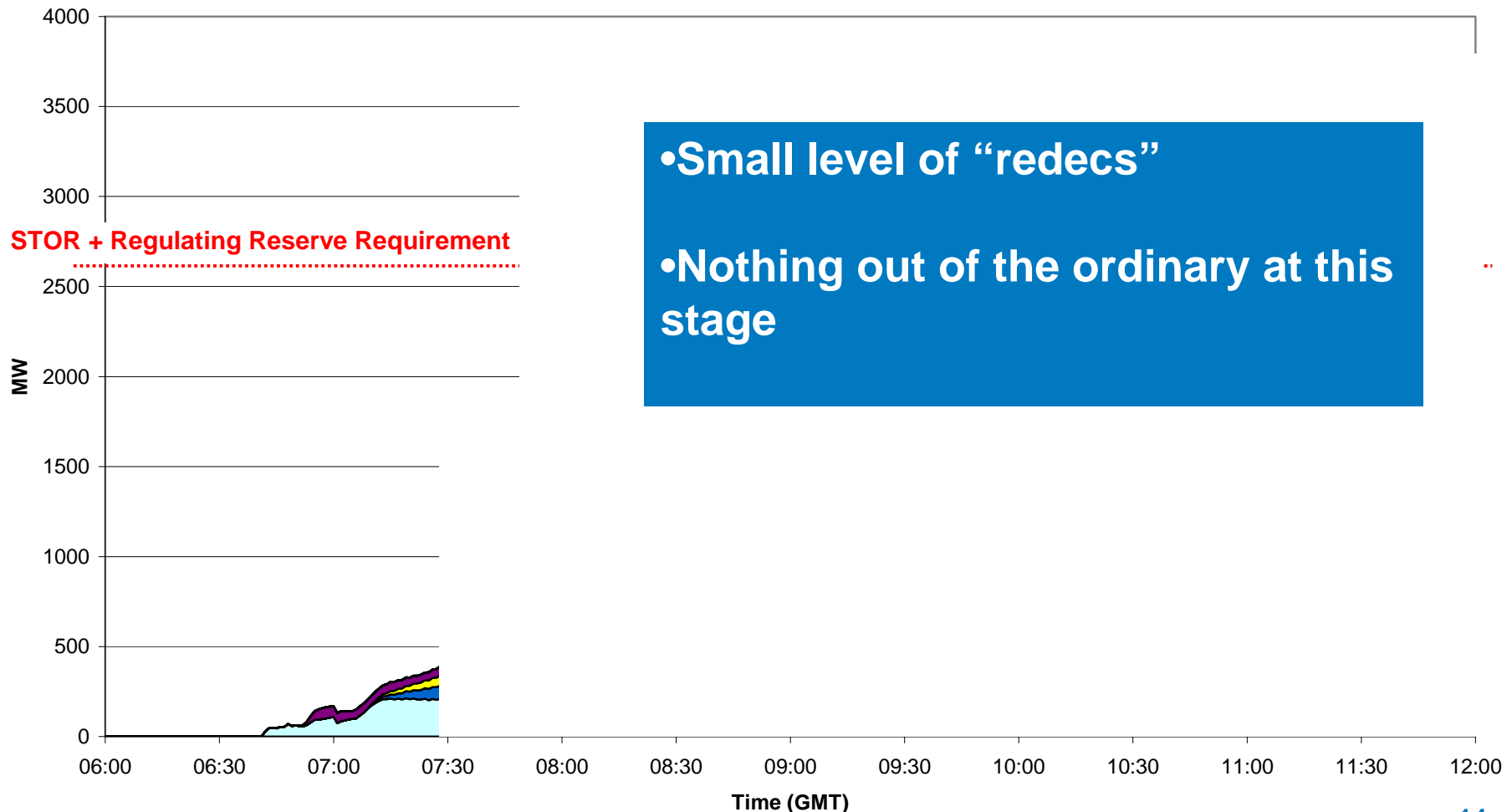
- Final Control Room Plan produced at 05:36 for the morning “2A” cardinal point (10:30am)
 - National demand estimate = 45,177MW
- Synchronising additional generation for the morning
 - to fill remaining Operating Margin requirement
 - to cover for the market imbalance (NIV is short)
- In planning timescales, no issues identified.

Morning Events



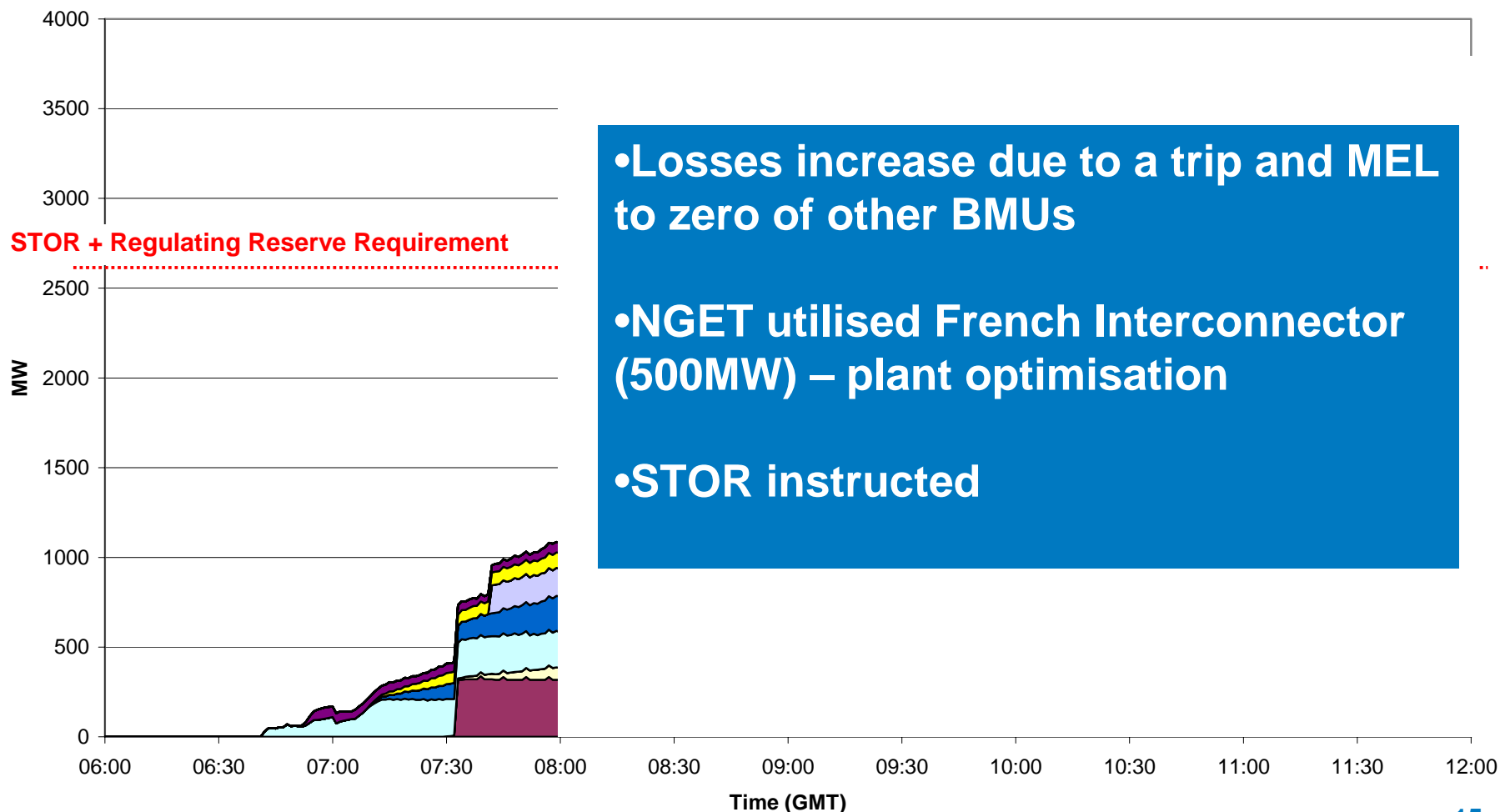
Morning Generation Losses – 07:30

Initial Analysis of cumulative losses from GB Generation on Saturday 11th February 2012



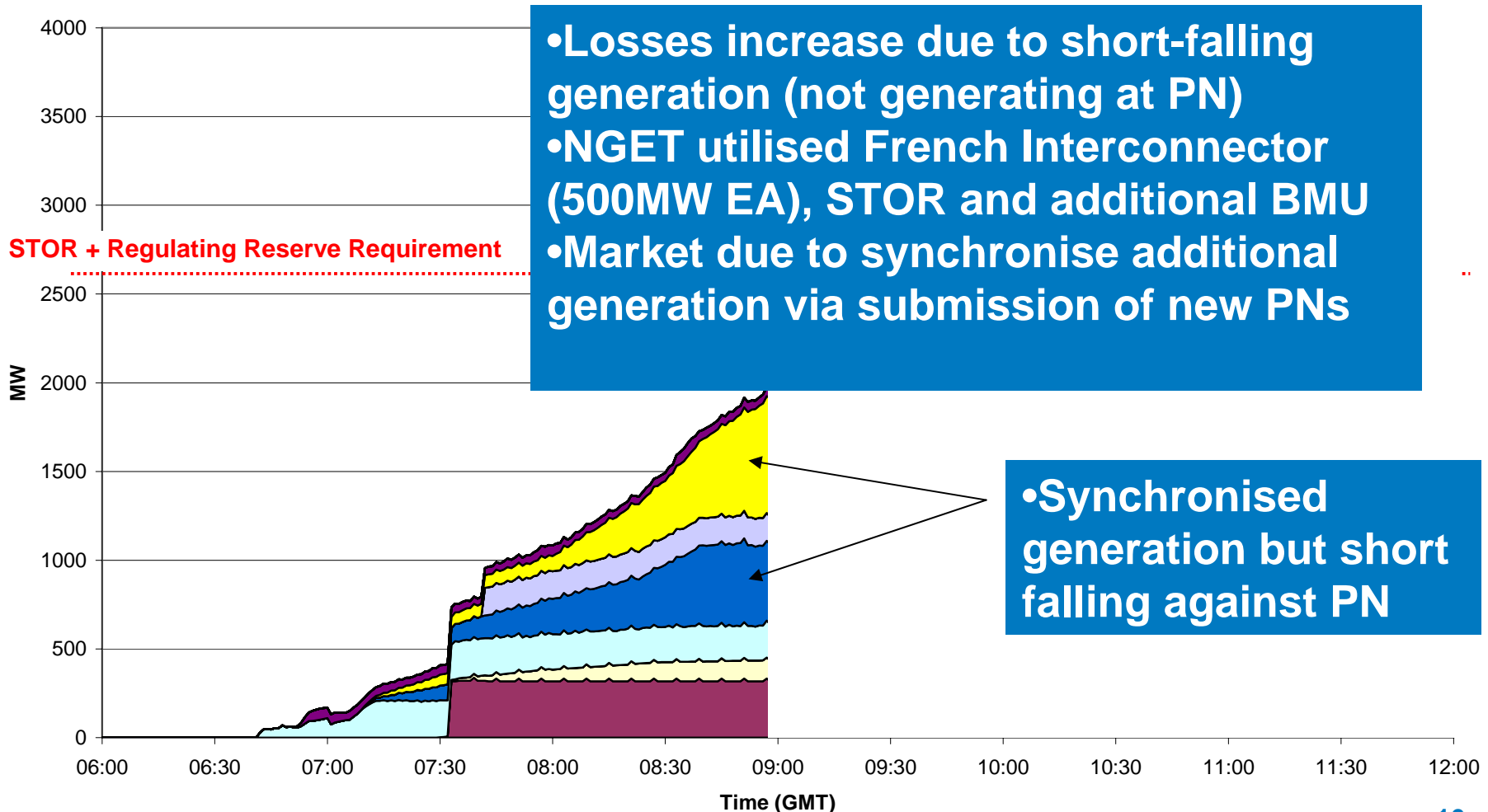
Morning Generation Losses – 08:00

Initial Analysis of cumulative losses from GB Generation on Saturday 11th February 2012



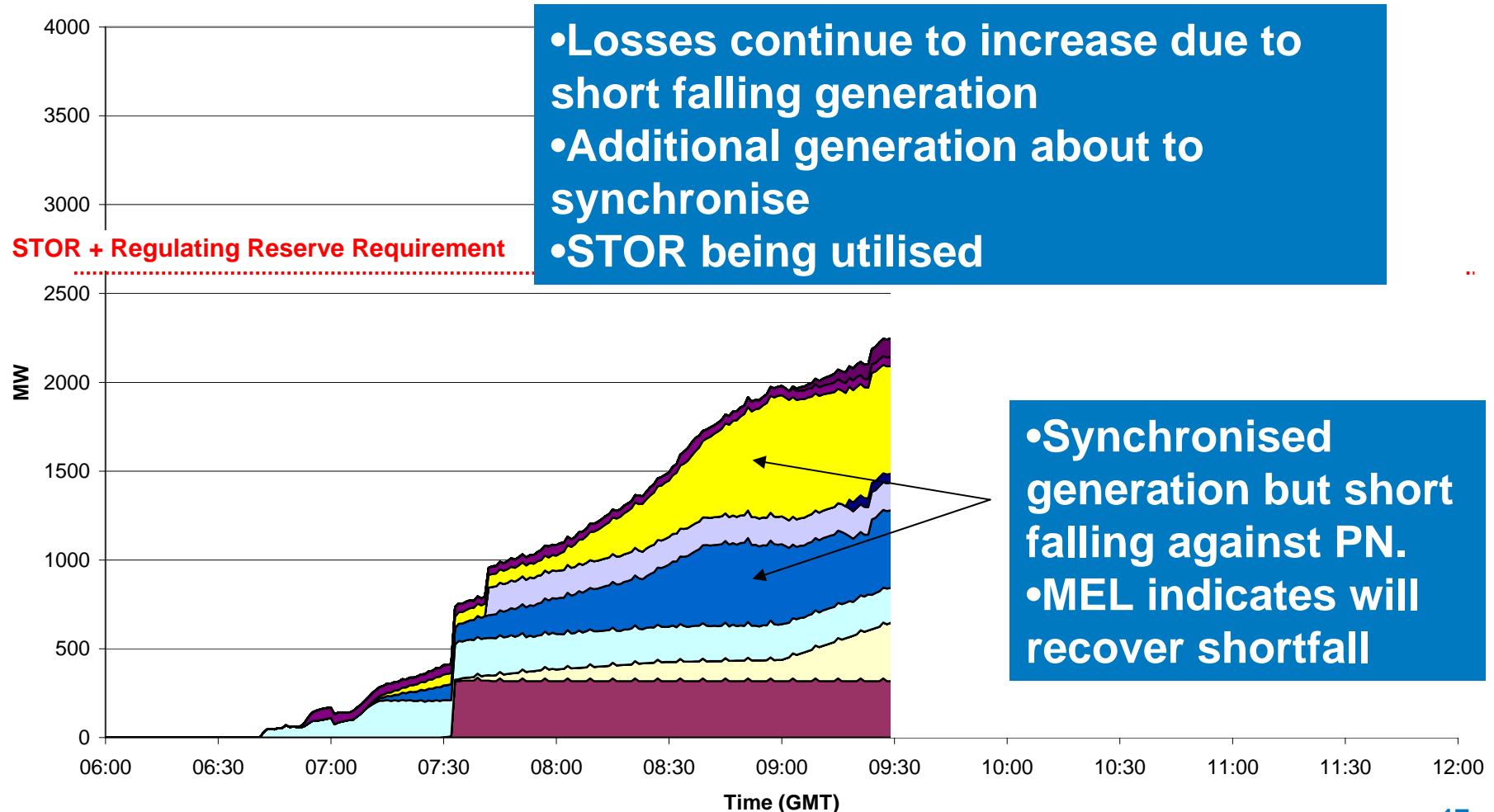
Morning Generation Losses – 09:00

Initial Analysis of cumulative losses from GB Generation on Saturday 11th February 2012



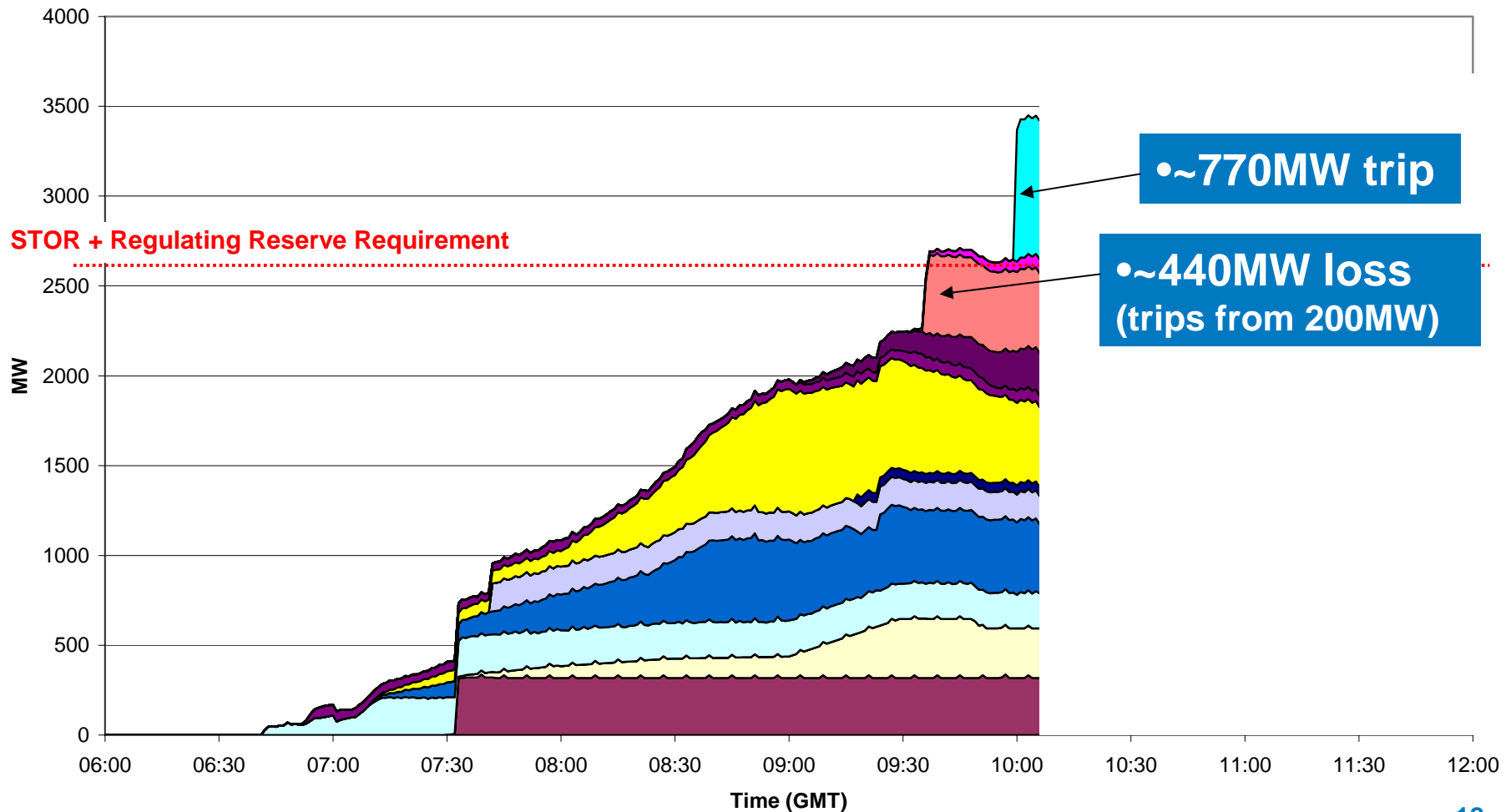
Morning Generation Losses – 09:30

Initial Analysis of cumulative losses from GB Generation on Saturday 11th February 2012



Morning Generation Losses – 10:00

Initial Analysis of cumulative losses from GB Generation on Saturday 11th February 2012



Morning Generation Losses

- Around 3500MW of losses across morning
 - Significantly above reserve holding requirement
- Majority of reserve now deployed (have ~500MW of STOR to cover next loss but demand is still increasing)
 - Have utilised French Interconnector commercial services
- 10:00 - Decision taken to issue system warnings
 - Risk of System Disturbance
 - Demand Control Imminent

Morning Generation Losses

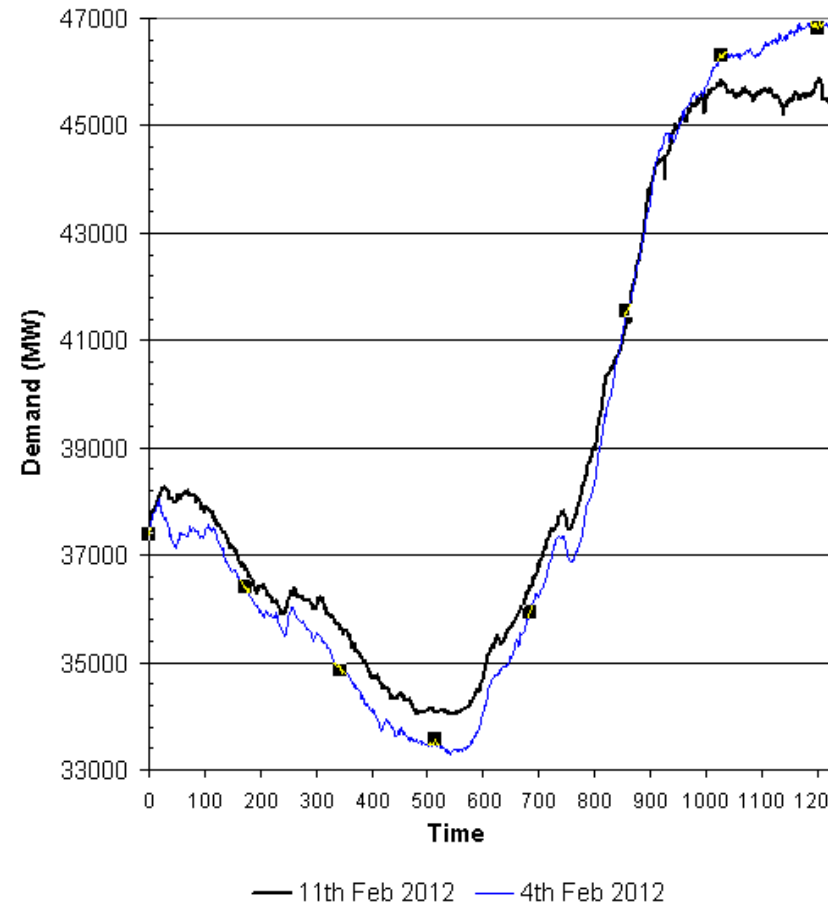
- 10:00 - decision taken to operate outside of normal BM practice
 - Hold remaining STOR to cover next loss
 - Instruct demand control
- 10:01 - NGET start to issue Bid Offer Acceptances (BOAs) to multiple BMUs to synchronise to manage future uncertainty.
- 10:06 - start to issue demand control instructions
 - 5 DNOs (Distribution Network Operators) instructed

Demand Control

- Demand control active from 10:06
- Instructions to cease demand control from 11:15
- DCI warning ceased at 12:45
- Initial indications are ~600MW of demand control achieved by voltage reduction
 - No customers directly disconnected from returns received thus far from DNOs
 - Still waiting for a return from a DNO to allow a complete analysis of demand control performance

Demand Forecasting

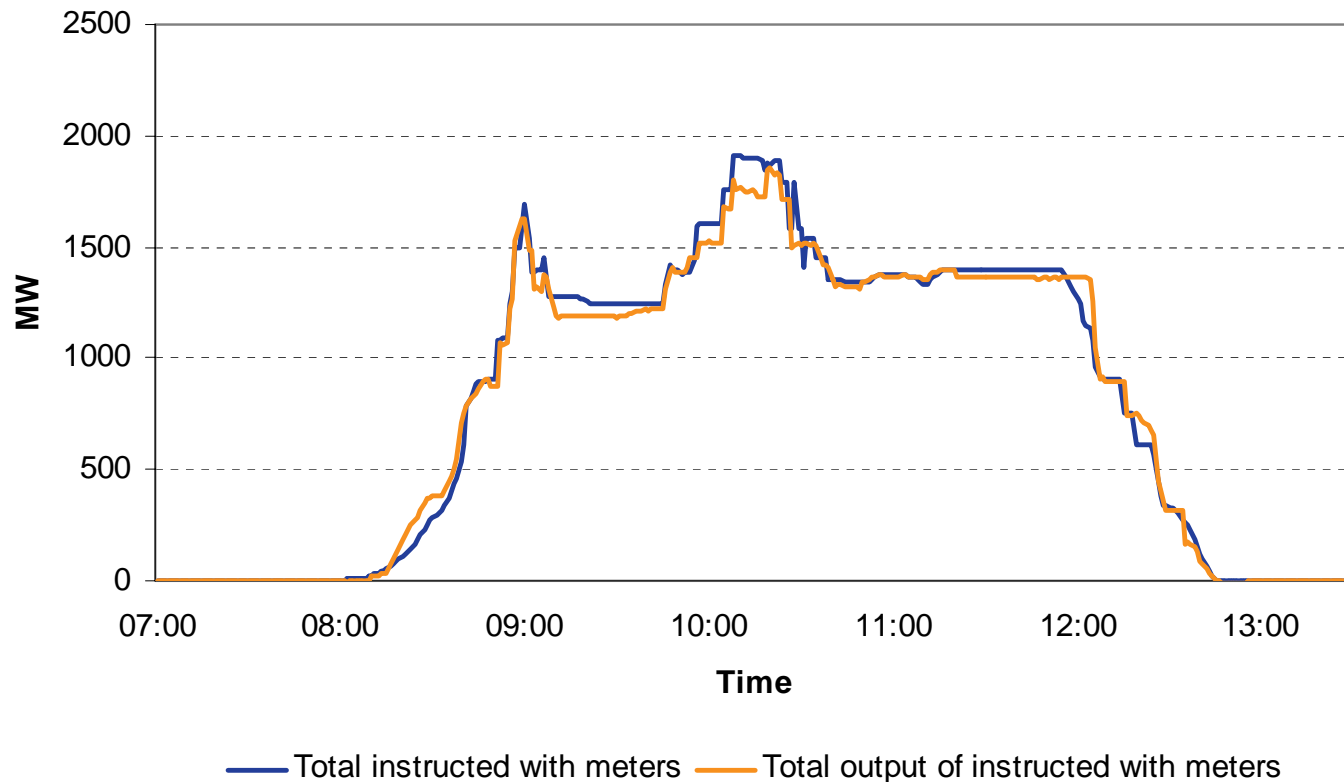
- Demand shape follows previous week
- Initial estimate is demand forecast error of 700 to 900MW
 - About half due to weather forecast error
- Not considered exceptional by NGET



Reserve provider performance

- STOR provider performance considered good

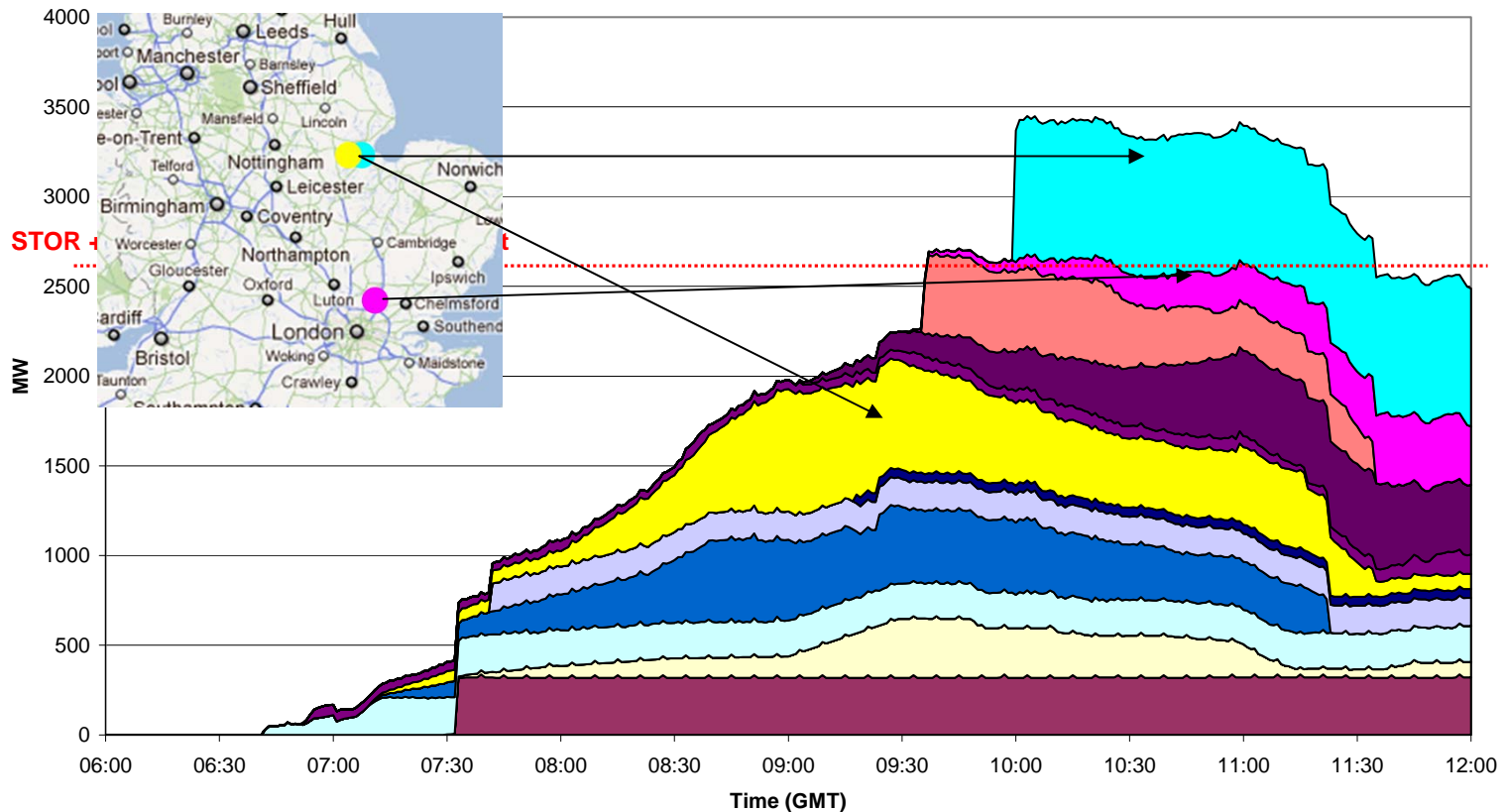
STOR units with metering available. Instructed vs output



Conclusions

- Certain Generators have post event indicated that had problems related to cold weather

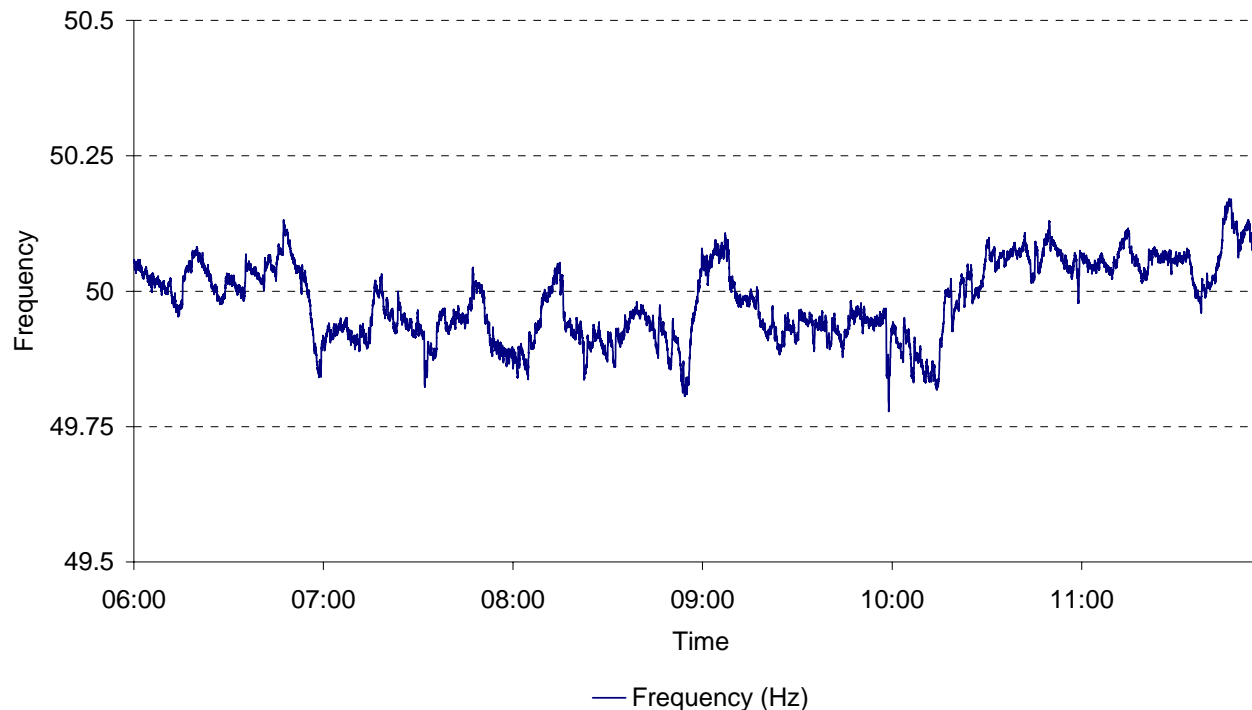
Initial Analysis of cumulative losses from GB Generation on Saturday 11th February 2012



Conclusions

- GB System security was maintained and frequency was kept within licence limits across this stressed period
- Investigations continue.

Frequency across morning of Saturday 11th Feb 2012



Q&A

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