Grid Code Forum

24th March 2004

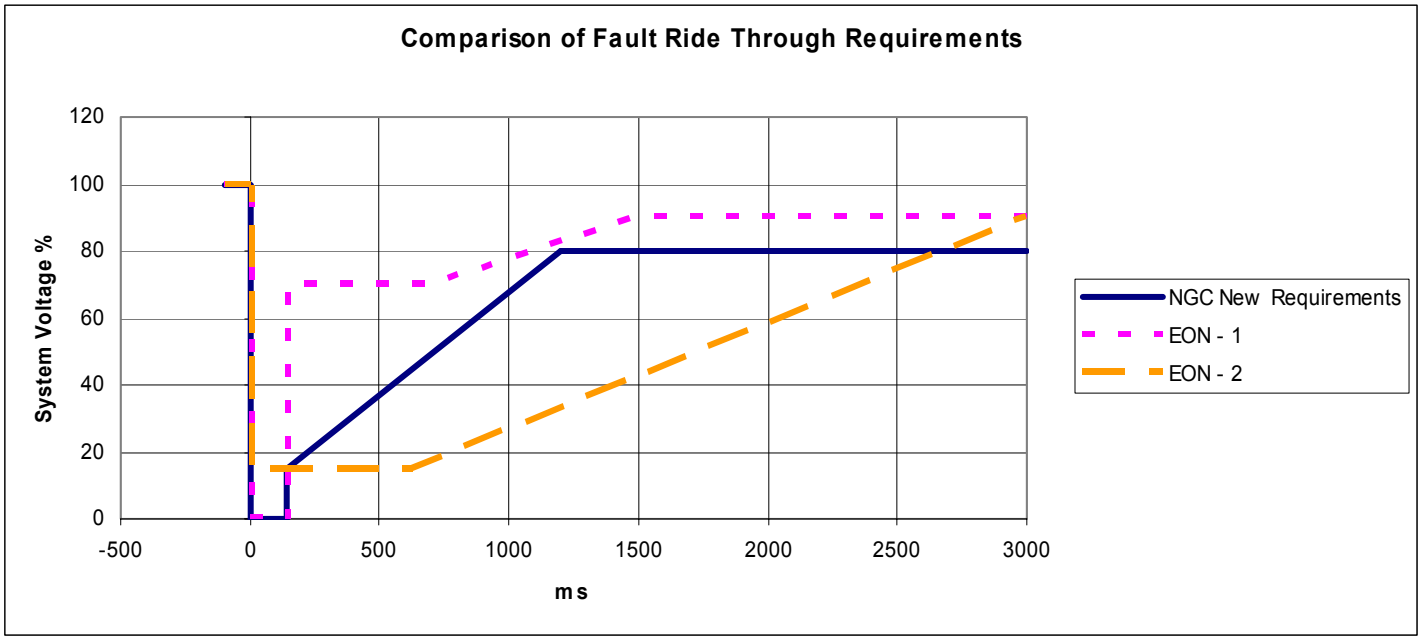
General Issues

- Alignment of Codes
- Time allowed for comments
- Wind Turbine Control Technology
- Compliance and testing
- Round 2 issues
- Market Solutions
- Grid Code and Technology Selection

Fault ride through

- Synchronous generators
- Justification for voltage profile
- Fault Ride Through - Comparison
- Allowing Power reduction/disconnection
- Unbalanced faults – 80% Voltage for 3 minutes
- Implementation date

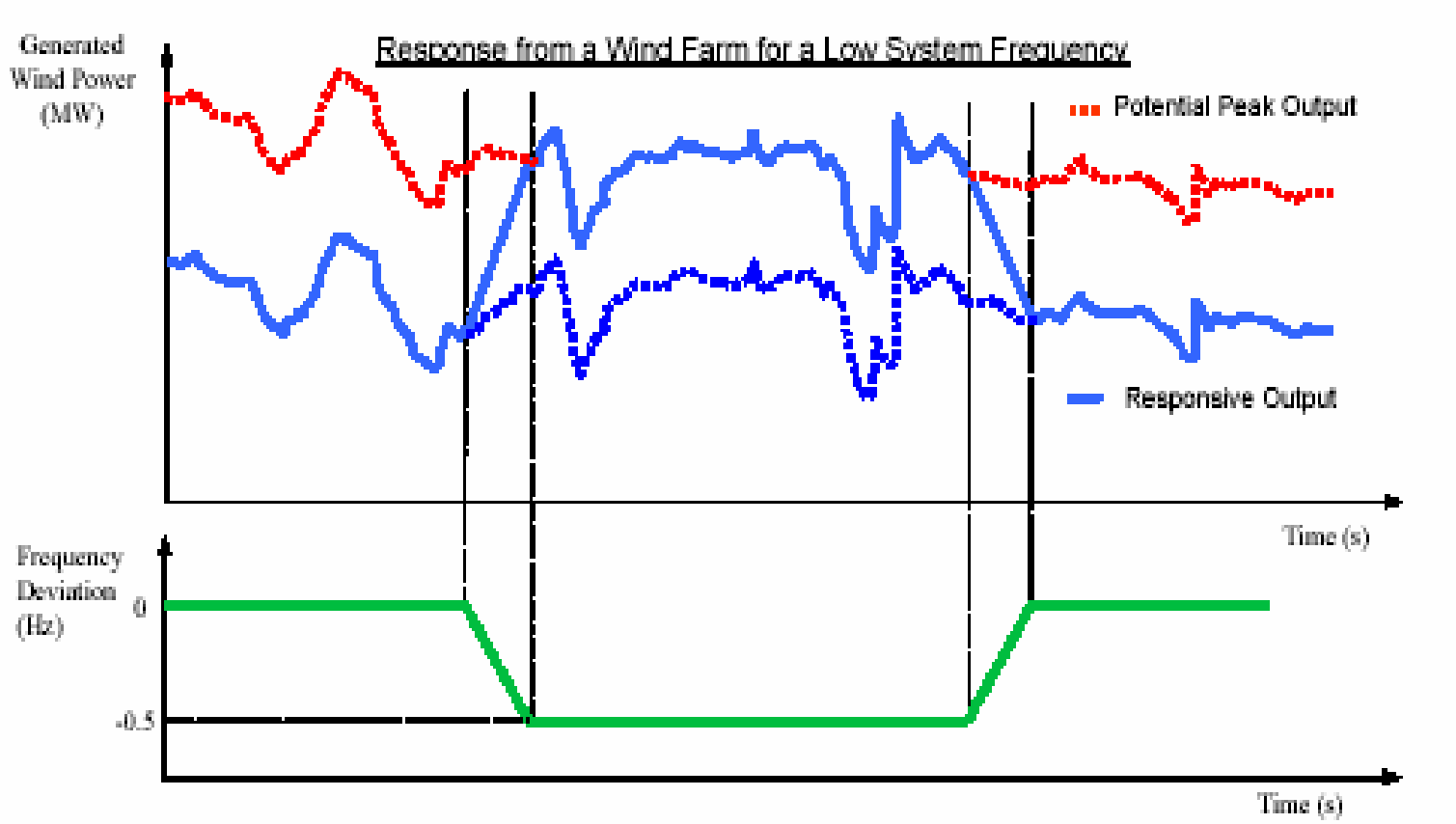
Fault Ride Through - Comparison



Frequency response

- Should reflect wind growth and capacity
- Only required after round 2 – ie. after 2007 {for Rd 2}. NGC have stated this publicly
- Intermittent plant – show diagram
- Frequency operating range – Recognition in Scotland for <30MW plant not required to operate at 52Hz

Frequency response



Var Requirements

- Specific Windfarm Practical Problem with High system voltage and exporting vars and vice versa
- Requirements for small Generators (Scotland)
- Unclear on requirements for dynamic capabilities
- Delay implementation till until 2007 (for Round 2)

Other issues

- Negative Phase Sequence
- Modelling
  - Design patents
  - verification
- Loss of Mains (Scotland)
- Registered Capacity definition
- CC.7.9 [E%W] Additional Requirement for manned control point

Summary

- Generally is more onerous especially fault ride through
- Impact on viability of small/medium windfarms
  - Licence Exemption of Medium Power Stations
- Delay implementation to round 2
- Verification and compliance is a worry to developers
  - Generator's have to carry the risk
- Discussions on issues towards Round 2 should be initiated