

# Conventional Generator Commissioning and Testing Recommendations

8<sup>th</sup> October 2012



# Agenda

Agenda Item	Time	Speaker
1. Opening and Workshop Objectives	10:00-10:15	Sonya Twohig
2. Recap on Process	10:15 -10.30	Conor O'Doherty / Karl O'Keeffe
3. Recommendations <ul style="list-style-type: none"><li>•Feedback Summary</li><li>•Areas for Harmonisation</li><li>•Areas not Harmonised</li></ul>	10.30 -12:00	
4. Discussion for additional feedback & comments	12:00-12:30	All
5. Closing Remarks	12:30-1:00	Sonya Twohig

# Opening Remarks

- Importance of Testing
  - New units/plant connecting to the power system
  - Refurbishment of plant can address old problems
  - Costs to consumers and generators need to be fair and appropriate
- Process has not been reviewed with Industry
  - Feedback is important as it's a two-way process
  - Understanding of Generator and TSOs perspective
- Recommendations Must be Delivered
  - Next steps will track progress and delivery



# Workshop Objectives

1. Review Grid Code Testing Process from TSOs and IPP Perspective
  - SONI and EirGrid Testing Process Review
  - IPP Case Studies, Recent Commissioning Experiences
2. Discuss improvements to the process and the context for future developments such as Entso-E
3. In October 8<sup>th</sup> follow up workshop, agree recommendations for improvements and timeframe for changes to process



# Recap from 31<sup>st</sup> August Workshop

## Morning

1. Overview of EirGrid Commissioning
2. Specification and Construction
3. Testing Overview and Phase C Testing
  - Phase A and B Testing
4. Post Operations Certificate
5. Testing Tariffs and TOD

## Afternoon

6. SONI Commissioning and Performance Monitoring Proces
7. Case Study ESBPG
8. Case Study BGE
9. Network Codes Commissioning and Testing



# Recap – SONI Testing Process

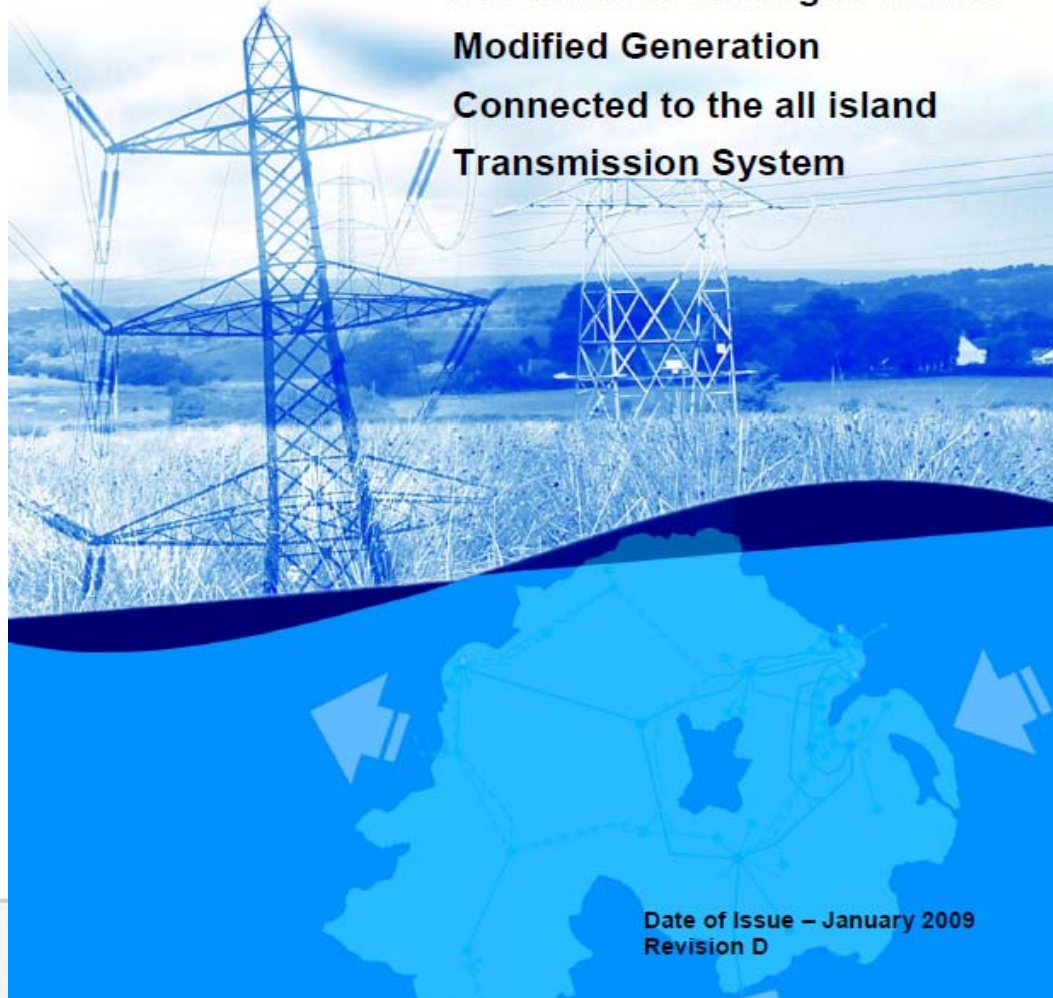
- Grid Operations Planning managing Connection and Commissioning of new units
- Grid Operations Near Time manage retesting and ongoing monitoring of new units.
- Testing at present is carried out using the *“Guidance for the Exchange of Data and for Testing of New or Modified Generation Connected to the All Island Transmission System”*



# Recap



## Guidance for the Exchange of Data and for Testing of New or Modified Generation Connected to the all island Transmission System



Date of Issue – January 2009  
Revision D



# Recap – SONI Testing Process

- Generators did not comment on the Testing Process
- Some concerns over the On-going Testing/Monitoring
  - How often would retesting be required?
  - What will be extent of the retesting? (i.e. is a full retest required)



# Recap – SONI Testing Process

- Minimum Functional Specification (MFS)
  - Details the exact technical requirements a Generator must fulfil in order to be allowed connection to the Transmission System
  - The use of an MFS is a robust process that can be modified for harmonisation where practical
  - Technical areas specified for **Plant Control Equipment** include:
    - Voltage Control
      - Excitation Control
      - Power System Stabiliser
      - On-Load-Tap-Changer (OLTC)
    - Frequency Control
    - Load Control



# Recap – SONI MFS

- Technical areas specified for **Plant Performance Requirements** include:
  - Minimum Generation Level
  - Reactive Power Capability
  - Short Circuit Ratio
  - Frequency Response Capability
  - Frequency Variation
  - Start-Up and Ramp Rates
  - Load Cycling
- The MFS should be adhered to by the Generator in conjunction with the NI Grid Code (particularly the Connection Conditions)

# Recap – EirGrid Testing Process

PHASE  
A

Starting <2 yrs from energisation for new units  
Starting <1 yr from energisation for existing units



PHASE  
B

Duration of 4 wks new units  
Duration of 2 wks existing units



PHASE  
C / D / E

Duration  
2-3 mths



**Energise Generator  
Transformer**

**Synchronise Generator**

**Operational Certificate**



# Feedback – EirGrid Testing Process

- Process is generally good
  - Understanding of why testing is required
- Specific Feedback
  - Need for All Island Harmonisation
  - Clarity around requirements i.e. document/publish clearly what the test is looking for and possible methodologies
  - Some tests can be removed/harmonised with other tests
  - Cost of going under test can be significant, need to look at the impact on the generator

# Areas for Harmonisation

## 1. Testing

- Process and Requirements

## 2. Tariffs

- Review cost impact when under test

## 3. Operations Certification

- Process and Timelines

## 4. Website(s)

- Contacts and documentation



# Areas for Harmonisation - Testing

Proposer	Feedback	Recommendation	Resp	Timeline
TSO	Harmonise Testing	Test TOD values such as <ul style="list-style-type: none"> <li>•Operating Reserve</li> <li>•Max Continuous Rating</li> <li>•Measurement of Block Load</li> <li>•Minimum Generation Level</li> <li>•Cold/Warm/Hot Starts</li> </ul>	TSOs	June 2013
TSO	Harmonise Testing	Verification of ambient values	TSOs	June 2013
TSO	Harmonise Testing	Frequency Response - ramping frequency, +ive freq injections, ROCOF	TSOs	June 2013

# Areas for Harmonisation - Testing

Proposer	Feedback	Recommendation	Resp	Timeline
TSO	Harmonise Testing	Min Load and Registered Capacity test durations will be reviewed	TSOs	June 2013
TSO	Harmonise Testing	PSSe models should be validated and re-submitted at the end of the testing cycle	Gen	June 2013
TSO	Harmonise Testing	Update documentation to reflect rules around tariffs / units being available in the market	TSOs	June 2013

# Areas for Harmonisation - Testing

- Testing Requirements - Generator Feedback:
  - *Phase A, some of these tests could be covered by a DOF*
  - *Phase B, includes duplication of testing with e.g. the AVR specialists. A DOF could be given for AVR*
  - *Could some testing be covered with DOFs or self assessment?*
  - *GC requirements for warmth state cold/warm/hot need to be reviewed in light of CCGT technology. Time to synch is too long while time to min load is too short*
  - *With the increase of non-synchronous penetration on the system, will priority dispatch impact on the opportunity to test in future?*



# Areas for Harmonisation - Testing

- Testing Requirements – Generator Feedback
  - *Test requirements e.g Reg Cap for 12 hours needs to be known in advance to set testing schedules*
  - *Could the TSO state the criteria for compliance for test procedures that could be written into contracts in advance of works starting?*
  - *Provide standard site acceptance templates for tests, agreed with industry in advance and controlled*
  - *More information/clarity on test requirements and purpose (e.g. provided in the progress summary) would be good*

# Areas for Harmonisation - Testing

Proposer	Feedback	Recommendation	Resp	Timeline
Gen	Templates should be provided	Templates will be provided for standard test procedures and test reports	TSOs	June 2013
TSO	Test profiles should be more detailed	Higher resolution test profile template will be provided on the website	TSOs	Nov 2012
Gen	Requirements for testing secondary fuel should be clarified	Requirements will be clarified as part of a review of the progress summary	TSOs	June 2013

# Areas for Harmonisation - Tariffs

- Testing Tariffs – Generator Feedback
  - *Units have to go under full Day test for a full 24 hours in the market but for Grid Code only a fraction of that time can be used for testing (e.g. nominal 9 to 5)*
  - *Increase the number of hours for within day testing, allow a delta of 500 MWHrs (from MSQ) rather than a sum of 500 MWHrs*
  - *Cost of putting a unit under test is expensive and may impact on units uptake on new system services i.e. the cost of testing outweighing the AS payment*
  - *Cost incurred through GPs can outweigh cost of testing to correct them*

# Areas for Harmonisation - Tariffs

Proposer	Feedback	Recommendation	Resp	Timeline
Gen	Review cost of testing	Consider setting Testing Tariff B to zero for TY 2013-2014. Trip charge when trip is seen during testing.	TSOs	Subject to Consultation Spring 2013
Gen	Should AS values be declared to zero while under test?	This is a process improvement and should be addressed immediately	TSOs	Immediately
TSO	Current cancellation time frame is 2 days which is too long	Modification to TSC - Change SEM Appendix F to allow for cancellation of under test notice at 9.30am on TD-1	TSOs	Dependent on TSC/RA approval

# Areas for Harmonisation – Ops Cert

- Ops Cert – Generator Feedback
  - *What are the Criteria for re-issuing of Ops Cert?*
  - *Performance Monitoring issues should not delay an Ops Cert*
  - *When should an Ops Cert be revoked?*

# Areas for Harmonisation – Ops Cert

Proposer	Feedback	Recommendation	Responsibility	Timeline
Gen	Harmonise Certification Process	Harmonise certification process in light of upcoming ENTSO-E Codes	TSOs	June 2013
Gen	Provide clarity around when an Op Cert can be revoked	Conditions are now included in the Ops Certs	TSOs	Going forward for all Ops Certs
Gen	Provide clarity around when an Op Cert is reissued/revoked	TSOs will provide clarity on criteria as part of testing documentaton	TSOs	June 2013

# Areas for Harmonisation – Ops Cert

Proposer	Feedback	Recommendation	Responsibility	Timeline
Gen	Performance Monitoring (PM) issues should not prevent issuing Op Cert	Options for handling outstanding PM issues will be discussed with Gen – Ops Cert will reflect the agreed approach	TSOs	November 2012
TSO	Compliance issues not addressed /Derogations not valid in time for issuing of Ops Cert date	If a derogation is required, it should be submitted and accepted as valid before Op Cert is issued	Gen	November 2012

# Areas for Harmonisation - Websites

Proposer	Feedback	Recommendation	Resp	Timeline
TSO	Improve Website for Customer Focus	Update documentation	SONI TSO	June 2013
		Publish templates for testing procedures / reports	EirGrid TSO	June 2013
		Add link to Guide to going under test in the market	TSOs	November 2012
		Update contact details for testing teams	TSOs	November 2012



# Areas not Harmonised

- Need to recognise two Grid Codes
  - MCR vs. Registered Capacity
  - Min Load Requirements
  - Fault Ride Through
  - Operating Reserve Requirements
  - Restricted Operational Certificate
- Organisational / Structural Differences
  - Commissioning Panel vs. C&T coordinator
  - EirGrid (TAM) is involved in construction phase – NIE performs equivalent role in Northern Ireland



# Closing Remarks

- Review and Feedback of Testing Process
  - August 31<sup>st</sup> 2012 and October 8<sup>th</sup> 2012
- Recommendations
  - **Testing** Process and Documentation
  - **Tariffs** and Process for Under Test
  - **Operations Certificates**
  - **Website** Improvements
- Next Steps
  - Publish slides for this workshop on websites w/e 12<sup>th</sup> October
  - Provide updates on outcome of Testing review at November 2012 JGCRP
  - Provide update on progress of Recommendations at JGCRP in Summer of 2013



