DS3:
Performance Monitoring &
Testing Workstream

CONTEXT

The nature of the all-island power system is changing to meet both Governments' policies with respect to renewable energy. The *"Ensuring a Secure, Reliable and Efficient Power System in a Changing Environment"*[1] report indicated that the power system in Ireland and Northern Ireland would change significantly by 2020. At the core of this change is the replacement of large thermal synchronous plant with variable non-synchronous renewable power plants. To manage this transformation it is essential that a detailed understanding of the changing characteristics of the power system is developed. At the core of this understanding is the need to systematically monitor the actual performance of all users over a wide range of operating conditions and disturbances. Performance monitoring, including both commissioning and on-going testing of generators, needs to evolve in the coming years to meet these challenges.

OBJECTIVE

The Performance Monitoring aspects of the workstream have the following objectives:
- Standardise the existing performance monitoring processes on an all-island basis;
- Develop the business processes and operational policies required for an enhanced performance monitoring process;
- Develop requirements for and build an IT system to monitor the performance of users of the system;
- Engage with stakeholders throughout the project to ensure their requirements are captured; and
- Investigate the use of improved data such as high speed data recording devices.

The testing aspects of the workstream have the following objectives:
- Carry out a review of the existing testing processes with stakeholders;
- Develop and implement recommendations to improve and standardise the testing processes; and
- Develop standardised testing processes arising from new Grid Code modifications.

The following benefits are expected if the objectives are achieved:
- Provide understanding and certainty as to how the system and the users connected to the power system are performing;
- Provide objective information on the actual performance of users of the system and use this to enforce all relevant Grid Code standards, and where appropriate Distribution Code standards;
- Using this information to inform operational policies and to improve the modelling of the power system in order to provide greater certainty in how the power system is likely to behave with higher penetrations of wind power plant; and

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[1] Ensuring a Secure, Reliable and Efficient Power System in a Changing Environment, June 2011

- Facilitating the appropriate regulation and incentivisation of Generator Performance Incentives and System Services products to ensure that the necessary aggregate portfolio performance is delivered.

WORK COMPLETED IN 2012

The first phase of the Performance Monitoring aspects of the workstream focused on standardising and documenting the existing processes in EirGrid and SONI. Monthly and quarterly all-island reports are now produced on the aggregated portfolio performance which feed into the development of operational policy. The initial phase of Performance Monitoring also focused on identifying and documenting the TSO high-level business requirements for an enhanced all-island performance monitoring process.

The first phase Testing and Commissioning section of the workstream focused on carrying out an industry review of the current Commissioning and Testing process and presenting recommendations to industry on areas for improvement in the current processes. The industry review was discussed at the Joint Grid Code Review Panel meeting in May 2012 and it was agreed to set up all-island workshops to review the current processes employed for both conventional and wind farm power stations. The conventional generator testing review workshop and the publication of the recommendations took place in late 2012. The windfarm testing review workshop took place in late 2012.

WORK COMPLETED IN 2013

The high level requirements for the enhanced performance monitoring system, developed in 2012, were presented to industry for comment in 2013 through a number of all-island workshops. The findings from these workshops were published by the TSOs and where applicable will be incorporated into the enhanced process. The TSOs are currently developing the detailed IT design specification and this is expected to be completed in early 2014. The wind farm testing review recommendations were published in January 2013. Regular updates on the project progress and upcoming work have been presented at the various DS3 Industry Forums and also at each Joint Grid Code Review Panel meeting.

FOCUS AREAS IN 2013-2015

The upcoming focus areas for the Performance Monitoring workstream involve implementing the enhanced performance monitoring requirements as follows:
- The high-level requirements developed for the enhanced performance monitoring system are developed into a detailed IT requirements specification;
- Following this, a procurement process will result in a suitable vendor being appointed and then detailed development and testing of the new enhanced IT system can be progressed. This is a significant body of work and initial estimates indicate a delivery date of Q3 2015;

- A business case for the roll-out of high speed recorders is progressing including a trial project to help scope out the requirements for a full roll out;
- Extensive engagement with stakeholders on the enhanced system including the proposed workflow, worked examples, business processes, key performance indicators, operational policies, Grid Code modifications, testing and training;
- Finally, the required documentation and processes will be developed to allow for the roll out of the enhanced performance monitoring process.

There is ongoing engagement with the System Services workstream to ensure that performance monitoring metrics for the new System Services products are included in the design specification to leverage the new IT system being procured. There is a dependency on the regulatory approval of these new System Services before the performance monitoring designs can be finalised.

The next phase of the Testing and Commissioning section of the workstream will involve the documentation and standardisation of testing procedures where applicable on an all-island basis. In particular, the development of the commissioning and testing procedures for the new System Services will be on an all-island basis. In addition, where appropriate, standard processes will be developed based on new Grid Code modifications.

HIGH-LEVEL PLAN[2]

TASK NO.	DELIVERABLE	RESPONSIBLE	ORIGINAL DUE DATE	DUE DATE
Documented All-Island Performance Monitoring process and reports				
PM&T.1.1	Defining the current processes in EirGrid and SONI	TSOs	Q2 2012	Complete
All-Island Performance Monitoring Reporting				
PM&T.2.1	Publish all-island monthly system level Performance Monitoring statistics	TSOs	Q4 2011	Complete
PM&T.2.2	Delivery of EirGrid unit-level quarterly Performance Monitoring reports	TSOs	Q4 2011	Complete
PM&T.2.3	Delivery of all-island unit-level quarterly Performance Monitoring reports	TSOs	Q2 2012	Complete
Enhanced All-Island Performance Monitoring				
PM&T.3.01	Development of requirements for standardized Performance Monitoring on All-Island basis	TSOs	Q1 2013	Complete
PM&T.3.02	Implementation plan for roll-out of Enhanced Performance Monitoring system	TSOs	Q1 2013	Complete
PM&T.3.03	Hold briefing sessions with Industry on new approach and the high-level proposals for the new system	TSOs/Industry	Q2 2013	Complete
PM&T.3.04	Publish findings and actions arising from workshops on the high-level proposals for the enhanced system	TSOs	Q3 2013	Complete
PM&T.3.05	Delivery of Performance Monitoring IT System	TSOs	Q3 2014	Q3 2015
PM&T.3.06	Develop business case and scope for trial roll out of high speed data recorders	TSOs	Q1 2014	Q1 2014
PM&T.3.07	Development of Performance Monitoring Business Processes			
PM&T.3.07.1	TSO/DSO agree on enhanced process and engagement plan	TSOs/DSOs	New	Complete
PM&T.3.07.2	Engagement with Industry on workflow and report templates	TSOs/Industry	New	Q1 2014
PM&T.3.07.3	Engagement with Industry through workshops to present proposed business processes and worked examples	TSOs/Industry	Q1 2014	Q2 2014
PM&T.3.07.4	Engagement with Industry through workshops to present final business processes	TSOs/Industry	New	Q3 2014
PM&T.3.07.5	Develop and raise Modification to the Grid Codes and Distribution Codes where relevant	TSOs/DSOs/Industry	New	Q1 2015
PM&T.3.07.6	Development of detailed user guide and business processes for enhanced system	TSOs	Q3 2014	Q2 2015
PM&T.3.08	Parallel run of enhanced system through trial run with small group of existing customers	TSOs/DSOs/Industry	Q3 2014	Q3 2015
PM&T.3.09	Industry training of enhanced system through one-to-one sessions	TSOs/Industry	Q3 2014	Q3 2015
PM&T.3.10	Go-Live of enhanced performance monitoring system	TSOs	Q4 2014	Q3 2015

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2 The IT timelines in PM&T3.5 are based on the high level requirements for the Enhanced Performance Monitoring system. These timelines are subject to change once the detailed requirements specification is reviewed.

Feedback of Performance Monitoring results into Operational Policy				
PM&T.4.1	EirGrid System Portfolio Performance Monitoring results aggregated	TSOs	Q4 2011	Complete
PM&T.4.2	All-Island System Portfolio Performance Monitoring results aggregated	TSOs	Q2 2012	Complete
PM&T.4.3	Operational Policy Review	TSOs	Q2 2012	Complete
PM&T.4.4	Enhanced system portfolio performance monitoring capability aggregated	TSOs	Q4 2014	Q3 2015
Enhanced Testing Processes				
PM&T.5.1	Update on Industry review of Commissioning and Testing process to Joint Grid Code Review Panel	TSOs	Q1 2013	Complete
PM&T.5.2	Documented All-Island recommendations to improve and harmonise (where possible) commissioning and testing process	TSOs	Q1 2013	Complete
PM&T.5.3	Implement enhanced testing recommendations received from workshops	TSOs	Q4 2013	Q4 2014
PM&T.5.4	Develop standard testing processes based on new Grid Code modifications where applicable	TSOs	Q4 2013	Q4 2014
PM&T.5.5	Consideration of standardised testing processes arising from Distribution Code modifications	DSOs	Q4 2013	Q4 2014