



DS3:
Wind Security Assessment Tool
(WSAT)
(2013–2015)

CONTEXT

The All-Island *Wind Security Assessment Tool (WSAT)* has been developed and installed in the Dublin and Belfast Control Centres since November 2012. The tool assists Grid Controllers in maximising the utilisation of wind energy whilst continuing secure, reliable and economic operation of the power system of Ireland and Northern Ireland.

WSAT has been in operation in the Dublin Control Centre since September 2010 as a **Phase 1** of the system roll-out. The tool was initially developed for the power system of Ireland and was utilised by Grid Controllers for guidance in operating the system securely in terms of voltage and transient stability.

Phase 2 of the project involved developing WSAT for the all-island power system – this version was launched simultaneously in both the Dublin and Belfast Control Centres on 19 November 2012.

Phase 3 of the project involves further developing all-island WSAT as a core on-line tool in the Control Centres through maintaining its reliable and efficient operation, on-going model validation and an enhancement process. Also, frequency security criteria are to be included in WSAT.

This document contains a description of the plan to further develop WSAT as a core Control Centre on-line tool that assesses the real-time system security every 15-minutes and supports off-line analysis that EirGrid and SONI conduct to maximize wind generation in Ireland and Northern Ireland.

OBJECTIVES –PHASES 3-4

The key objectives of these phases are to further improve the accuracy of the WSAT real-time model and extend the functionality of on-line WSAT. This will involve the use of newer data sources i.e. PMU records. In addition, a specification of further software enhancements to include frequency response, overload analysis, on-line calculation of the amount of constrained and released wind will be developed.

HIGH-LEVEL PLAN

TASK NO.	TASK	RESPONSIBLE	ORIGINAL DUE DATE	DUE DATE
Get buy-in to approach for functionality extensions from stakeholders				
WSAT.6.1	Set-up acceptance criteria for extended AI WSAT	TSOs	Q2 2013	Complete
WSAT.6.2	Establish WSAT as a core system operations tool	TSOs	Q4 2013	Complete
Validation and tuning of on-line all-island TSAT dynamic models				
WSAT.7.1	Update TSAT model comparison process and reports to include all-island model	TSOs	Q1 2013	Complete
WSAT.7.2	Complete all-island TSAT model comparison against actual frequency events using PMR data	TSOs	Q2 2013	Complete
WSAT.7.3	Complete all-island TSAT model comparison against actual frequency events using PMU data	TSOs	New Task	Q1 2014
WSAT.7.4	Adjust models where possible according to validation process	TSOs	New Task	Q2 2014
WSAT.7.5	Develop new models for existing plant where adjustment is impossible	TSOs	New Task	Q3 2014
Continuous monitoring and bringing new functionality into WSAT				
WSAT.8.1	Continue to monitor and update on-line WSAT	TSOs	On-going	On-going
WSAT.8.2	Update all-island dynamic files where appropriate	TSOs	On-going	On-going
WSAT.8.3	Implement frequency criteria in AI WSAT	TSOs	Q4 2013	Q4 2014
Additional Functionality				
WSAT.9.1	Develop and test capability of reverse power transfers	TSOs	Q3 2013	Complete
WSAT.9.2	Develop and test capability of new power transfers, i.e. forecast transfers and 2D-transfers	TSOs	Q3 2013	Complete
WSAT.9.3	Develop a roadmap detailing preferred functionality extensions to WSAT	TSOs	Q4 2013	Q1 2014
WSAT Performance				
WSAT.10	Confirm that AI WSAT is performing as expected and has improved on previous WSAT version	TSOs	Q2 2013	Complete
WSAT Development				
WSAT.11.1	Develop and implement models for new plant (Great Island CCGT)	TSOs	New Task	Q1 2014
WSAT.11.4	Manage and coordinate possible changes in WSAT according to NCC/CHCC requirements	TSOs	New Task	On-going
WSAT.11.5	Implement new enhanced WSAT forward looking capability	TSOs	New Task	Q2 2015