DS3:
Demand Side Management Workstream (2013-2015)

CONTEXT

This workstream, together with the other DS3 workstreams, considers the integration of renewables in terms of the operational management of demand side activity.

There is provision within the SEM for Demand Side Units (DSU) and Aggregated Generator Units (AGU). Essentially these units are the aggregation of small loads/generators by an intermediary actor in the market. These units operate commercially within the SEM and are centrally dispatched. Units like these can assist with the operational integration of renewable generation by providing flexible system services. At present, there is one AGU and two DSUs operational in the SEM and there is substantial interest from industry in the development of further DSUs.

Demand Side Management (demand flexibility in its broadest context – the ability to control the increase and/or decrease of demand) will play a role in facilitating the management of more renewables. In addition, the future role of domestic appliances, electric vehicles, heat pumps etc. also needs to be factored into the DS3 programme.

The RAs have undertaken a programme of work to develop a Strategic Demand Response Programme for the island of Ireland. In this regard, a Decision Paper entitled "Demand Side Vision for 2020"[1] was published in May 2011 and follows a Consultation Paper (SEM-10-052) published in August 2010. This Decision Paper is a key driver of the DSM workstream.

OBJECTIVE

A key objective of this workstream is to increase participation of DSUs and AGUs in the SEM. This may require changes to the Grid Codes, Trading and Settlement Code and the Regulatory Authorities' Supply Licence.

WORK COMPLETED

In late 2011 and early 2012, the Regulatory Authorities/SEM Committee approved changes to the Ireland and Northern Ireland Grid Codes, the Trading and Settlement Code and the CER Supply Licence which removed many of the barriers to DSUs and AGUs participating in the SEM and becoming operational.

In 2012, two DSUs became operational in Ireland in addition to the existing AGU in Northern Ireland. A DSU section of the EirGrid website was developed, a key component of which is a DSU application form. Grid Code testing procedures were put in place by EirGrid and SONI. DSU Workshops were held in Dublin, Cork and Belfast during the summer and autumn to promote demand side participation in the SEM. A review and analysis of more appropriate communications mechanisms

[1] http://www.allislandproject.org/en/overview_1.aspx?article=185b17f5-e666-4943-8237-f2bdbd3df33f&mode=author

for aggregated units from the Control Centres was completed; in addition to the existing Remote Terminal Unit (RTU) option, a Secure ICCP connection over the Internet has now been implemented.

In 2013, following the experience gained from the application process and operation of DSUs, a review of the Grid Code standards took place. A proposed DSU Grid Code modification was brought to the Ireland and Northern Ireland Grid Code Review Panels in May 2013. The Ireland DSU Grid Code modification was approved by the CER in autumn 2013 and it is anticipated that URegNI will make a decision on the Northern Ireland Grid Code modifications shortly. A decision was made to trial the Secure ICCP connection over the Internet for real-time communications between aggregators and EirGrid's National Control Centre. The new mechanism has been fully implemented since September 2013 and is currently waiting on a DSU to become operational in order to begin an evaluation period. DSU Workshops were again held in Dublin and Cork during the summer and autumn to promote demand side participation in the SEM. EirGrid and SONI also developed a DSU System Operator Interface Agreement which covers liabilities on both sides. In November 2013 a DSU Joint Grid Code Working Group was established with the aim of reviewing and discussing current and future requirements for DSUs in the Ireland and Northern Ireland Grid Codes.

As of November 2013, there are two DSUs operational in Ireland (with 4 more at various stages of the application process) and one AGU in Northern Ireland. Significant growth in this space is expected in the coming years.

FOCUS AREAS IN 2013-2015

Looking forward, some of the key areas of focus will include:

- DSU Joint Grid Code Working Group review of Ireland and Northern Ireland Grid Code requirements
- An assessment of large-scale DSM penetration on the transmission system
- Review of Ancillary/System Service provision by DSUs and AGUs

DEMONSTRATION PROJECTS AND INNOVATION HUB

In April 2012, the TSOs issued an open invitation to take part in demonstration projects to develop, trial and prove new transmission system concepts and technologies. Two projects were initially chosen, one in the area of demand side management, i.e. the Glen Dimplex Quantum Greenway Project.

The aim of this project is to demonstrate how the Glen Dimplex Quantum space and water heating system can be deployed as an aggregated demand side management tool. Phase 1 of the project was initiated in November 2012 and looked to demonstrate the principles and capabilities of demand side scheduling with units installed across two test sites located in the Dublin area. Phase 2 of the project focused on the frequency response capabilities of these units. A follow on project focusing on commercialising this proposal (Phase 3) is due to begin in Q4 2013. The objectives of this phase

are to develop and test the communications and technology that were set up in Phases 1 and 2 in an emulated commercial environment. Additionally, a business case for the large-scale deployment of the tool will be evaluated.

The Innovation Hub is a collaborative initiative by EirGrid Group and the NDRC (National Digital Research Centre) to promote the development of innovative Smart Grid solutions, with a focus on entrepreneurial initiatives by companies, academics and entrepreneurs in Ireland and Northern Ireland. Many of the relationships established so far with Innovation Hub partners show potential in the area of demand side management. More information can be found at http://www.smartgridinnovate.com/.

HIGH-LEVEL PLAN

TASK NO.	TASK	RESPONSIBLE	ORIGINAL DUE DATE	DUE DATE
DSU Readiness				
DSM.1.1	Approval of Grid Code Modification for DSU (MOD_36_10)	CER	Q4 2011	Complete
DSM.1.2	Northern Ireland Grid Code Modification Consultation	TSOs & RAs	Q4 2011	Complete
DSM.1.3	Northern Ireland Approval of DSU Modification	UReg	Q1 2012	Complete
DSM.1.4	Delivering T&SC Modification	SEMC	Q1 2012	Complete
DSM.1.5	System Services Consultation #1	TSOs / RAs	Q4 2011	Complete
DSM.1.6	System Services Consultation #2	TSOs / RAs	Q3 2012	Complete
DSM.1.7	WPDRS phase out	EirGrid / CER	2012 – 2013	Complete
DSM.1.8	DSU Operation (Ireland Pilot)	TSOs / Industry	Q2 2012	Complete
DSM.1.9	Review of System Services arrangements for DSUs and AGUs	TSOs	Q3 2013	Q1 2014
DSM.1.10	DS3 TSO-DSO Engagement Strategy modified to take account of DSM	TSOs/DSOs	New Task	Q2 2014
DSM.1.11	Review of relevant Network Codes from perspective of DSM	TSOs	New Task	Q1 2014
DSM.1.12	TSO review of long-term operational issues associated with DSM	TSOs	New Task	Q3 2014
DSM.1.13	Remove barriers to DSU and AGU System Service provision	TSOs	New Task	Q3 2014
DSM.1.14	Assessment of need for DSM Tool in Control Centres	TSOs	New Task	Q2 2015
DSM.1.15	Review TSO DSU performance monitoring and testing capability for large-scale DSM penetration	TSOs	New Task	Q2 2015
DSM.1.16	Review communications requirements for large-scale DSM penetration	TSOs	New Task	Q2 2015
DSM.1.17	Develop long-term Operational Policy for large-scale DSM penetration	TSOs	New Task	Q4 2015
Contracts & Licensing				
DSM.2.1	Review of licensing arrangements for AGU	RAs	Q2 2012	Complete
DSM.2.2	Development of regulatory contract for AGU	RAs	Q2 2012	Complete
DSM.2.3	Decision on DSU supplier license & tie in with Bidding Code of Practice	RAs	Q4 2011	Complete
DSM.2.4	Review if a DSU – SO contract is required		New Task	Complete
DSM.2.5	Review of existing GASOA (Generator Aggregator System Operator Agreement) from Ireland and Northern Ireland perspective	TSOs	Q3 2012	Q1 2014
Commissioning & Testing				
DSM.3.1	Review and analysis of appropriate communications mechanisms for aggregated units from the Control Centres	TSOs	Q4 2012	Complete
DSM.3.2	Decision on communications mechanisms from Control Centres	TSOs	Q1 2013	Complete

DSM.3.2.1	Design and implementation of new communications mechanism from Control Centres	TSOs	New Task	Complete
DSM.3.3	Investigate metering mechanisms for AGU	TSOs	Q1 2012	Complete
DSM.3.4	Develop Grid Code testing procedures for AGU/DSU	TSOs	Q1 2012	Complete
DSM.3.5	Development of process for performance validation for DSU	TSOs	Q2 2012	Complete
Grid Code				
DSM.4.1	Review of Grid Code standards for AGUs and DSUs	TSOs	New Task	Complete
DSM.4.2	Bring modification to Grid Code Review Panel based on review	TSOs	New Task	Complete
DSM.4.3	Decision on Ireland Grid Code DSU modification	CER	New Task	Complete
DSM.4.4	Decision on submitted Northern Ireland Grid Code DSU modification	URegNI	New Task	Q1 2014
DSM.4.6	Bring DSU modifications arising from DSU JGCRP WG to Ireland and Northern Ireland GCRP for review	TSOs	New Task	Q3 2014
DSM.4.7	Decision on Ireland Grid Code DSU modification	CER	New Task	Q4 2014
DSM.4.8	Decision on Northern Ireland Grid Code DSU modification	URegNI	New Task	Q4 2014