DS3 Programme Advisory Council Meeting Minutes

Date: 21/05/2015
Time: 10:00 – 15:00
Venue: Sandymount Hotel, Dublin.
Chair: Andrew Cooke

Attendees:

Name	Surname	Organisation
Rodney	Ballentine	NIE
Paul	Bell	UREGNI
Paul	Brandon	CER
Joe	Duddy	RES Group
Paddy	Finn	Electricity Exchange
Peter	Harte	Element Power
Tony	Hearne	ESB Networks
David	Hill	NIE
Carsten	Junge	GE Energy
Kenneth	Matthews	IWEA
Andrew	McCorriston	UREGNI
Gerry	McTiernan	DCENR
Gráinne	O'Shea	ESB
Jonathan	Pollock	NIE
Donal	Smith	Brookfield Renewable Energy Group
Colin	Spain	Gaelectric
Peter	Thomas	Nordex
Robbie	Aherne	EirGrid
Michael	Burke	EirGrid
David	Cashman	EirGrid
Andrew	Cooke	EirGrid
Louis	Fisher	EirGrid
Eoin	Kennedy	EirGrid
Tom	McCartan	SONI
Lisa	McMullan	EirGrid
Norman	Watson	SONI
Brendan	Woods	SONI

Introduction

- Andrew Cooke introduced the new members of the Advisory Council.
- Kenneth Matthews of IWEA has replaced Caitriona Diviney and Mark McGranaghan of EPRI has replaced Mark O'Malley. Paul Bell was also welcomed as the new URegNI representative.

DS3 Programme Update

- Robbie Aherne gave a general status update on the DS3 programme and all 11 workstreams.
- An update was provided on reports which have gone through the Operational Policy Review (OPR) process.
- The TSOs have developed a cutting edge Automated Dynamic Studies Tool which is now operational and has significantly increased the speed at which studies can be completed.
- It was noted that Demand Side Management, and in particular Demand Side Unit capacity, is rapidly growing in Ireland and Northern Ireland with 10 DSUs presently, representing approximately 231MW.
- Robbie Aherne noted that the new Great Island 4 plant has been deemed compliant with 1Hz RoCoF standard by the TSOs.
- A discussion was held on the current 300MW EWIC export limit due to a high frequency limit on the island. It was queried whether this would have any effect on the ability to handle higher levels of SNSP. Andrew Cooke confirmed that this is currently being addressed and it is expected to be resolved in the foreseeable future.
- It was agreed that since Pamela Walsh has decided to step down from the Advisory Council, the TSOs should go out to industry in order to add a new representative from existing conventional generators. It was also agreed that the TSOs would look to appoint someone from the banking and finance industry to aid with investment discussions and System Service over the coming years. Additionally the TSOs will now monitor attendance going forward and will contact any members who have not attended three meetings in a row.
- The DS3 Programme Operational Capability Outlook for 2015 (OCO) was also discussed. This briefing paper sets out the TSOs' view of how operational capability metrics for the Irish and Northern Irish power system are expected to change out to 2020. In particular, it highlights the likely changes to the System Non Synchronous Penetration (SNSP) metric. The precision detailed in previous versions of SNSP trajectory projections via step changes has been intentionally removed and replaced with a more graduated, indicative curve. The DS3 Advisory Council were broadly happy with the document.
- Joe Duddy suggested that it may be useful to include in the OCO indicative levels of SNSP (e.g. based on All Island Renewable Connection Report and 36 month forecasts) were there to be no restriction and how this may or may not exceed the projected SNSP limit over the years thus indicating how a lack of progress in increasing the SNSP limit is likely to affect non-synchronous generation.
- Peter Harte raised concern with the potential curtailment levels in 2017 post REFIT.
- Robbie Aherne noted that the TSOs are looking into performing dispatch down analysis out to 2017 in line with the expected changes in SNSP levels outlined in the Operational Capability Outlook and will provide an update on this at the next advisory council meeting.
- A discussion was held around I-SEM, the new market and general uncertainty with regard to renewable incentives beyond 2017.
- An update was provided on the frequency oscillation seen on the system at the end of 2014. The TSOs have carried out quantitative analysis and now Alstom have been brought in to provide specialised frequency oscillation quantitative analysis and will shortly conclude a "diagnosis and recommendation" report.
- An update was provided on an action taken at the last meeting with regard to older generators' equipment and the potential difficulty in complying with the new 1Hz/s RoCoF standard. Links to previous reports that outline old system records which provide evidence of high RoCoF and significant frequency events on the system will be circulated with the minutes of this meeting. Grainne O'Shea highlighted that ESB had responded to these reports when they were published originally and would look to email these to the Advisory Council.
- Concern was raised that the minimum number of sets constraint could potentially be as big as the SNSP constraint and this needs to be addressed. Andrew Cooke highlighted that the

SNSP metric is an aggregation of a number of constraints including min gen, inertia and others and that the TSOs keep all power system metrics under regular review through internal assessment and analysis.

- Although it is currently expected that the SNSP metric will be in operation for the next number of years, this regular review process will likely lead to its replacement with other, more suitable operational capability measures. These will be identified by the DS3 Programme and communicated to industry. These are likely to include, but not limited to, minimum inertia limits, RoCoF standard, minimum number of conventional generators etc.

Action Items

1. TSOs to follow up with adding representatives from Conventional Generators and a representative from the Banking and Finance industry **(TSOs)**

2. Links to the previous reports that outline old system records which provide evidence of high RoCoF and significant frequency events on the system to be included with the minutes of this meeting. **(TSOs)**

3. Grainne O'Shea to email original ESB comments on the aforementioned reports which highlight high RoCoF and significant frequency events on the system. **(GOS)**

Regulatory Authorities Update

- Paul Bell provided a Regulatory Authorities update on behalf of URegNI and the CER. The focus of this presentation was on the 2017 new market including energy trading arrangements, capacity remuneration mechanism and ancillary services.
- The DETINI Consultation on CfD Implementation in Northern Ireland and the possibility of the 40% renewable target being removed was also discussed.
- Paul Bell highlighted that despite this possibility the DS3 programme would likely remain a positive value proposition for NI consumers.
- Kenneth Matthews raised concern that the uncertainty around CfDs in NI will affect the all island build out of wind and more proactive measures need to be taken now to mitigate this. Concern was also raised that I-SEM and reliability options could have a detrimental effect to DSM growth and this would need to be considered in the detailed design.
- Paul Brandon noted that although the timelines for DS3 are very challenging, and in particular the delivery of System Services, there are aspects which could be accelerated and these will be looked at as the programme progresses (e.g.) bringing forward the final phase (36 month delivery) of the RoCoF implementation project.

Industry Perspective

- Kenneth Matthews of IWEA presented on IWEA's thoughts on the DS3 Programme and related issues. Topics included the necessary 2020 grid build out rate, the signals coming out of DS3 needed to secure appropriate investment, the impact of curtailment on Industry as a whole and the key success factors to reach 75% SNSP and deliver upon the 2020 targets.
- It was noted that there is significant interest in Ireland coming from data centres and the TSOs should investigate the effect of increased data centre loads on curtailment.
- Kenneth Matthews suggested that the Advisory Council write to DCENR in order to highlight the importance of the delivery of DS3 and that it should be included in the Government's upcoming energy policy white paper.
- Colin Spain raised concern with regard to System Services procurement and how this would work if NI and IE were to go down different routes with regard to policy.

Action Items

4. Kenneth Matthews to draft a letter in response to the Governments white paper consultation highlighting the importance of DS3 and forward this letter to Robbie Aherne to circulate to the Advisory Council **(Kenneth Matthews)**

5. TSOs to look into performing dispatch down analysis out to 2017 in line with the expected changes in SNSP levels outlined in the Operational Capability Outlook **(TSOs)**

6. TSOs to investigate the effect of increased data centre loads on curtailment. **(TSOs)**

Control Centre Tools and Capability

- Michael Burke provided an update on Control Centre Tools and Capability developments over the past year. Recent developments such as a real time short circuit tool, real time phasor monitoring and an all island energy management system were presented on. The importance of key DS3 inputs (frequency control, voltage control and system services) to development of tools and capabilities was also presented as were a number of possible future tools. The DS3 Advisory Council recognised that it is essential to develop the necessary tools and capability to compliment workstreams such as System Services and the overall delivery of the DS3 Programme.

System Services:

- Eoin Kennedy provided an overview of the System Services project plan for the detailed design and implementation phase as agreed by the TSOs and Regulatory Authorities on 20/05/2015. The approach being taken by the TSOs and the Regulatory Authorities in delivering the arrangements and engaging with stakeholders was also described. The TSOs and Regulatory Authorities will continue to work to assess and refine the plan during the implementation of the project. It is intended that the project plan will be finalised by September 2015 following a more detailed review of some of the design aspects.
- It was also noted that the TSO Procurement strategy is expected to be published shortly. This document is expected to be updated periodically during the course of the Implementation Project as decisions are made and key design aspects become clearer.
- The TSOs are engaging techno-economic consultancy support and expertise to assist with development of the principles and methodologies of particular challenging design aspects such as the auction and BNE tariff methodology.
- Due to the complexity of the design and implementation, Colin Spain suggested that decisions be made in a way that they can be revisited following further clarification of the I-SEM arrangements.
- There will be a large number of consultations over the coming years (including at least 12 from the TSOs or SEM Committee regarding DS3 system services) and Paul Brandon noted that as much as is possible the timing of the I-SEM and DS3 consultations will be co-ordinated to ensure that that these don't overlap. The DS3 System Services Project Plan discusses the possibility of amalgamating some of the consultations and Advisory Committee members welcomed any proposals to relieve the burden of managing consultation responses.
- Joe Duddy requested that consulting bodies should provide feedback to consultees on their consultation responses.
- PF raised concern around the auction and the length of contracts particularly with relation to DSUs. DSUs by nature are very flexible and locking them in for long term contracts could significantly hinder growth and innovation in the sector.

RoCoF:

Generator Studies Project

- David Cashman provided an update on the RoCoF implementation project including the overall project timelines. It was noted that all category one generators have commenced their studies and that category one generators have twelve months to complete these.
- The CER recently published a quarterly update and all generators are on track to conclude their studies by May 2016. It was also noted that one generator (GI4) has already declared compliance to the new standard and further meetings with generators and OEMs are scheduled for June.

TSO-DSO Implementation Project

- In Ireland, ESBN are expected to finalise frequency injection bench testing of RoCoF relays imminently and a database of distribution connected settings is currently being compiled.
- In Northern Ireland, it was noted that RoCoF project timelines for settings changes were revised based on NIE projections and Rodney Ballentine noted that the project is due for completion in Q3 2017. Similarly in NI, a database of settings for distribution connected wind generation has been compiled and work is ongoing to obtain embedded generation settings and volumes.
- Tony Hearne provided an update on Reactive Power / Voltage Control as well as on RoCoF.
- A discussion was held on ESBN's testing of interface relays for voltage and frequency settings. It was noted that settings D, E and H are causing issues and further testing of these is required.
- PF highlighted that the settings for CHP plants are very tight and should be considered further.

RoCoF Alternative / Complementary Solutions Project

- David Cashman provided an update on the Alternative / Complementary Solutions Project. DNV GL were appointed at the end of March by the TSOs to provide analysis and this is due to conclude at the end of June. This analysis included an assessment of non-synchronous device capability to provide RoCoF mitigation, as well as an investigation of RoCoF detection methodologies and the response times of devices.
- Andrew Cooke highlighted that the purpose of phase 1 is to provide a representation of the technologies that can provide a solution to the inertia issue and also how these technologies might be deployed in order to give an indication to investors and developers of the potential payment for such technologies and services.
- This exercise is not to determine winners and losers and it was noted that the result is likely to include a mix of existing network devices and emerging technologies.
- A final report on this is due to be published for industry comment by the end of June and the industry will have 2 weeks to respond before the TSOs move to phase 2.
- Phase 2 will involve a more detailed analysis likely including technical and economic studies of shortlisted options. This is due to commence in July 2015 with publication of draft results by December 2015.

Voltage Dip Induced Frequency Dip:

- Lisa McMullan presented on recent Voltage Dip Induced Frequency Dip (VDIFD) analysis. This presentation included an explanation of a VDIFD event, the study setup, validation of model performance against real system records and the simulation results.
- The study analysed the impact of a number of 3 phase bolted busbar faults on 10 snapshot cases taken from across 2013 and 2014.
- Wind Fault Ride Through behaviours were validated against real system fault records and the results show that there is a wide variation in active power recovery times across turbine types. Based on this validation, the active power recovery rate assumptions for different turbine types were revised.
- Concern was raised that the validation showed that some wind farms are not showing Grid Code Compliance for Fault Ride Through and this is currently being followed up with the relevant wind farms.
- The TSOs emphasised that having all connected wind farms Grid Code compliant is vital for increasing the level of wind on the system.
- The validation also highlighted the importance of DS3 System Services in the future, for example fast post fault active power recovery.
- Additionally the simulation voltage dip propagation shows a robust correlation with the real system behaviour.
- The simulation results show that for a range of 3 phase bolted busbar fault and current levels of wind the system is secure; however there are low frequency nadirs and high RoCoFs seen for some faults.

- The TSOs are currently validating protection relay behaviour and the ESB networks bench testing of protection relays will be an important part of this validation. Any revised RoCoF relay modelling will feed into further analysis.
- The TSOs will continue to carry out analysis for different faults at this time.
- Additionally, David Cashman highlighted that some wind farms have temporary derogations against Grid Code fault ride through clauses which are shortly expiring and this will need to be managed carefully.
- Grid Code compliance across all aspects of DS3 is essential to reach 75% SNSP and deliver upon the 2020 targets - therefore it is important that all turbines achieve the standards set in the codes.

Action Item

7. TSOs to look at progressing the VDIFD analysis with a view to presenting an update on this topic again at the next Advisory Council. **(TSOs)**

Frequency Regulation Study:

- Norman Watson of SONI presented on a recent All-Island System Frequency Regulation Investigation.
- This study looked at average frequency deviations over 2014 and confirmed that there is a correlation between system parameters such as SNSP and frequency regulation.
- The study shows that an increase in maximum frequency deviations are marginal as SNSP increases. Historical data indicates that the system could be securely operated at higher levels of SNSP; however an incremental approach should be implemented when increasing SNSP.
- It was highlighted that frequency regulation will require diligent management into the future.
- Donal Smith welcomed these findings and progress in this area and noted that it is a good news story for DS3.

AOB:

- The next DS3 Industry Forum is scheduled for June 3rd in the Ballsbridge Hotel, Dublin. However it was noted that the Department of Communications, Energy and Natural Resources has announced an update on the emerging policy options for 'Ireland's Energy Policy 2015 – 2030' also for June 3rd. It is likely that the TSOs will now reschedule DS3 Industry Forum.
- The next DS3 Advisory Council meeting is scheduled for September 22nd in Belfast.