

# SONI Annual Performance Report

**2022 – 23**

**Appendix 1**

**Role 1 System Operation and Adequacy**

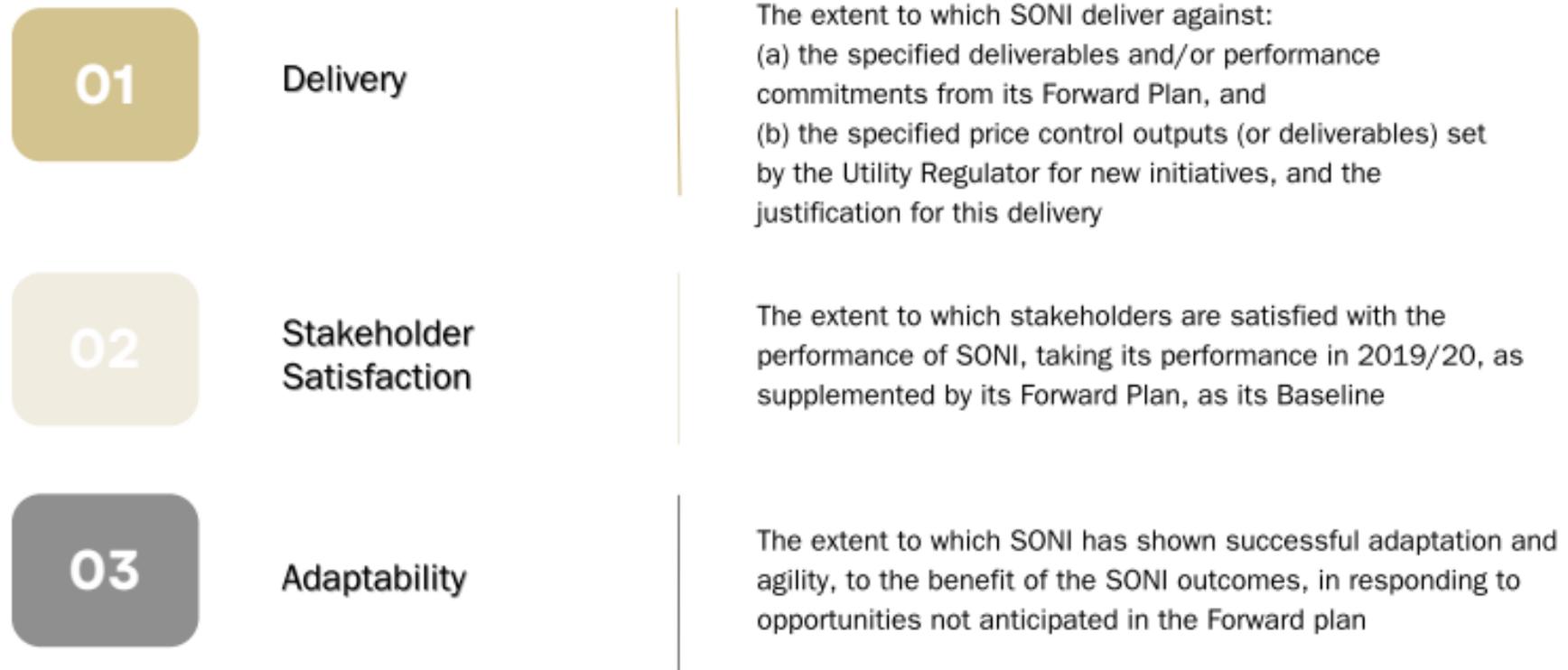
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## Role 1 System Operation and Adequacy – Assessment Criteria

SONI's performance will be assessed by an independent panel and the UR on the following criteria:



For consistency and based on the advice contained in the UR's Evaluative Performance Framework Guidance document<sup>1</sup>, we have applied the above criteria to the SONI Performance Report.

Figure 1 Assessment Criteria

<sup>1</sup> [epf-guidance.pdf \(uregni.gov.uk\)](#)

# Role 1 System Operation and Adequacy – Plan Delivery

Figure 2 summarises the position at end of September 2023 for each of the projects included in the 2022-23 SONI Forward Work Plan

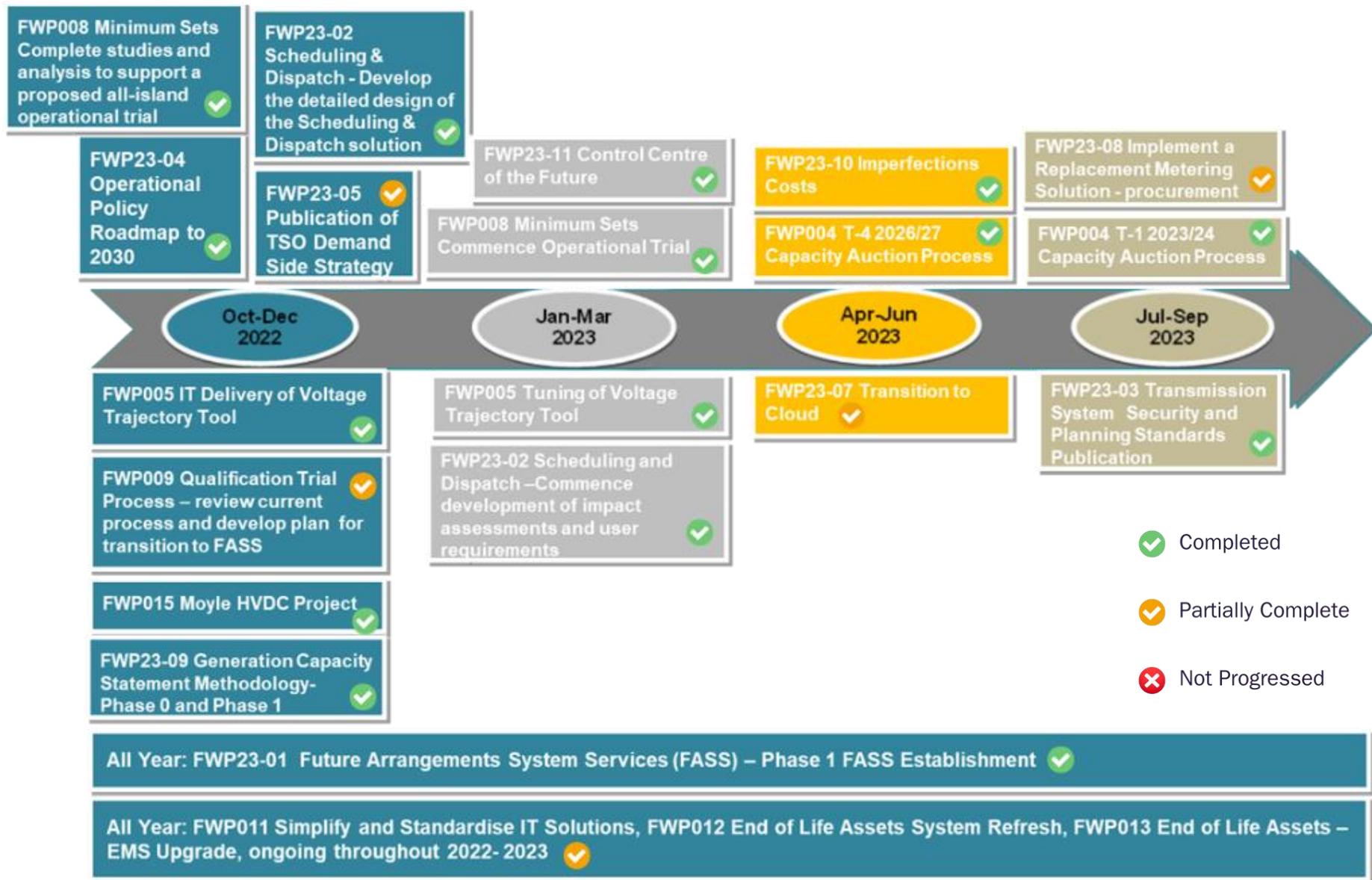


Figure 2 Overview of Projects

## Summary of Role 1 Deliverables

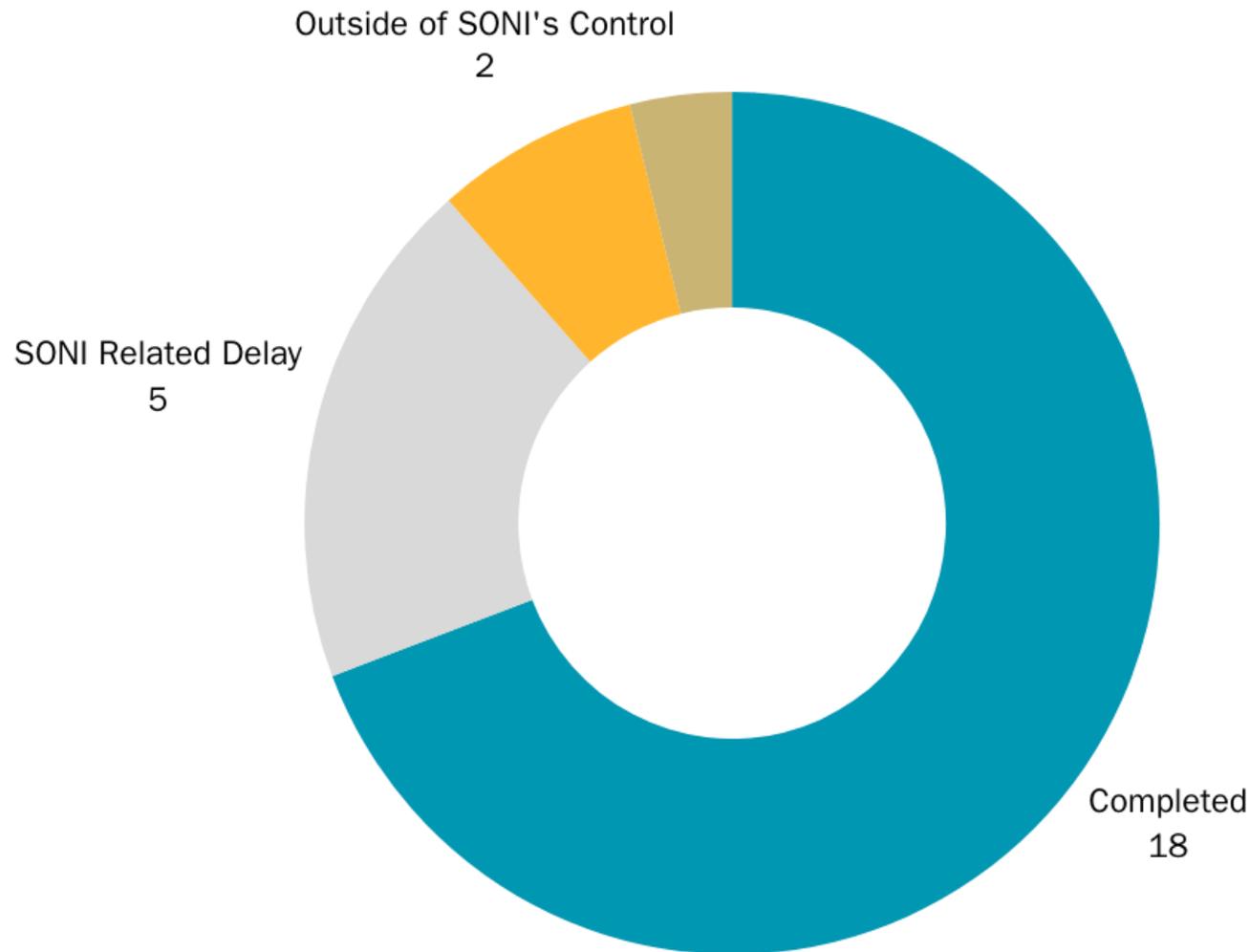


Figure 3 Role 1 Delivery Pie Chart

### 26 Milestones:

- **18** Completed ✓
- **8** Partially Completed 🟡

Of the 8 remaining milestones which are not complete:

- 5 are **SONI-related delays**
- 2 were delayed for reasons **outside of SONI's control.**
- 1 is postponed to secure **an improved outcome for consumers**

The tables below provide a complete view of the projects presented within the Forward Work Plan across Role 1 System Operation and Adequacy.

PROJECT ID	PROJECT NAME	MILESTONE	STATUS
FWP23-02	Scheduling & Dispatch	Develop the detailed design of the Scheduling & Dispatch solution, including requirements for the treatment of new non-priority dispatch renewable generators in the SEM	
FWP23-04	Operational Roadmap To 2030	Delivery of Publication	
FWP23-05	TSO Demand Side Strategy	Delivery of Publication	
FWP005	Control Centre Tools	Voltage Trajectory Tool (VTT) Go Live	
FWP008	Minimum Number of Sets	Complete studies and analysis to support a proposed all-island operational trial for operation with a minimum of 7 large synchronous units / 20,000 MWs inertia floor	
FWP009	Qualification Trial Process	Review the current QTP Process and develop a plan for the transition to the System Services Future Arrangements	
FWP011	Simplify & Standardise IT Solutions	Power System Analysis Tool	
FWP015	Moyle HVDC Project - Telecoms	Delivery of activities detailed	
FWP23-09	Generation capacity Methodology Statement	Completion Phase 0 and Phase 1	
FWP23-02	Scheduling & Dispatch	Develop impact assessments and detailed user requirements based on agreed / approved detailed design;	
FWP005	Control Centre Tools	Tuning	
FWP23-11	Control Centre of The Future	Development of a delivery plan to 2030	
FWP008	Minimum Number of Sets	Commence an the operational trial of this interim policy with of a minimum of 7 large synchronous units / 20,000MW's inertia floor	

Figure 4.1 Deliverables Part 1

PROJECT ID	PROJECT NAME	MILESTONE	STATUS
FWP23-10	Imperfection Costs	Annual review the list of Transmission Constraint Groups (TCGs)	
FWP23-10	Imperfection Costs	Improved modelling	
FWP004	Capacity Auctions	T-4 Auction	
FWP23-07	Transition to Cloud	Delivery of all activities	
FWP23-03	TSSPS Refresh	Delivery of Publication	
FWP004	Capacity Auctions	T-1 Auction	
FWP011	Simplify & Standardise IT Solutions	Capacity Market Platform	
FWP23-01	FASS	Progression of Phase 1	
FWP011	Simplify & Standardise IT Solutions	Application Rationalisation	
FWP012	End of Life Assets - System Refresh	Delivery of all activities	
FWP013	End of Life Assets- EMS Upgrade	Delivery of all activities	
FWP23-08	Implement a Replacement Energy Metering Solution	Procurement and supplier selection	
FWP009	Qualification Trial Process	Conduct Annual QTP Process to facilitate the integration of new technologies	

Figure 4.2 Deliverables Part 2

## Cost Scale

SONI have created a Cost Scale in order to assist the audience in understanding the scale and/or importance of a project, and detailed where on this scale each project lies. The costs indicated are SONI related costs and do not cover any costs accrued by any stakeholder SONI may be collaborating with on said project.

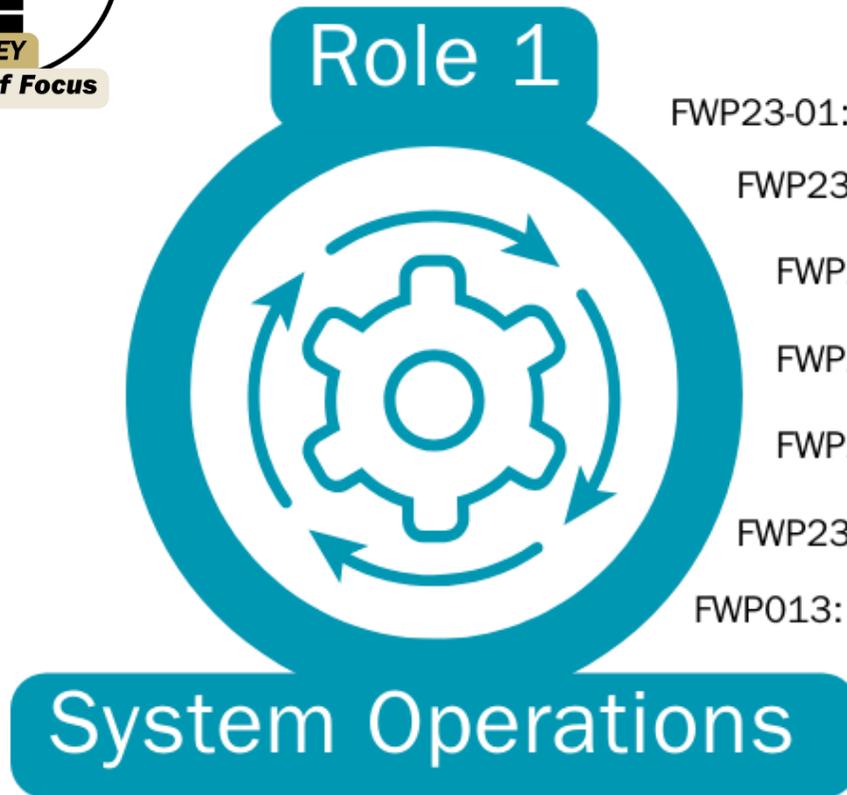
This scale applied is detailed below:

*Table 1 Cost Scale*

Low	Medium	High	Very High
£0 - £500k	£500k - £1M	£1M - £5M	£5M +

## Key Areas of Focus

In the 2022/23 Forward Work Plan, SONI highlighted our key areas of focus for the period, which include strategic projects that SONI deems to be of utmost importance for both SONI and Northern Ireland consumers. These projects are highlighted throughout this document and delivery of these areas of work is summarised below.



FWP23-01: Future Arrangements System Services (FASS) ✓

FWP23-02: Scheduling and Dispatch ✓

FWP23-04: Operational Roadmap to 2030 ✓

FWP23-05: TSO Demand Side Strategy ✓

FWP23-05: Control Centre Tools ✓

FWP23-11: Control Centre of the Future ✓

FWP013: End of Life Assets - EMS Upgrade ✓

Figure 4 Role 1 Key Areas of Focus

# Deliverables

Table 2 FWP23-01: Future Arrangements System Services

Deliverable	FWP23-01: Future Arrangements System Services	
Description of Activities	<p>On 18 July 2022 the SEM Committee published a letter to TSOs (<a href="#">SEM-22-039</a>) - System Services Future Arrangements Next Steps.</p> <p>Our Shaping Our Electricity Future Roadmap identifies 3 key phases:</p> <ul style="list-style-type: none"> <li>• Phase 1 New Daily Auction</li> <li>• Phase 1: Transition from DS3 System Services to Future Arrangements</li> <li>• Phase 2: Fixed Term Contracts for Zero Carbon</li> <li>• Phase 3: Development of new services and longer term risk management of Future Arrangements</li> </ul> <p>Below is an overview of the project deliverables, with the key activities over the period highlighted in <b>bold</b> below:</p> <ol style="list-style-type: none"> <li><b>1. High-level design of System Services products for inclusion in the first Future Arrangements auction, including</b> <ul style="list-style-type: none"> <li>• <b>Review of the efficacy of the existing system services products</b></li> <li>• <b>Redesign of the products as required.</b></li> </ul> </li> <li>2. Develop methodology and process for           <ul style="list-style-type: none"> <li>• Determining system services auction volumes (day/week ahead, dependent on regulatory design decisions)</li> <li>• Forecasting longer term system services requirements (e.g. year ahead horizon)</li> </ul> </li> <li>3. Implement:           <ul style="list-style-type: none"> <li>• Auction volume determination process ahead of first system services auction</li> <li>• Forecasting process for longer term system services requirements (e.g. year ahead horizon)</li> </ul> </li> <li>4. Ongoing review of efficacy of the system services arrangements and introduction of new services as required (e.g. congestion product)</li> </ol> <p>Funding has been secured for two primary deliverables:</p> <div style="text-align: center;"> <pre> graph LR     A[Progress the Auction Design • It is critical that the Auction Design is progressed as quickly as possible so the FASS Codification, Legal and IT costs can be accurately estimated] --&gt; B[Compile a detailed Project Plan • This will be used to fully cost out all the capital activities and associated resources required to deliver the FASS project.]           </pre> </div> <p>Based on SONI's understanding of the HLD the following items are expected to be progressed in this phase of work.</p> <ul style="list-style-type: none"> <li>• The work required to develop a plan to implement a new System Services Code, Panel and overarching regulatory framework including any required agreed procedures</li> <li>• The development of the High-level design into a detailed Auction design</li> <li>• The expected cost of the various IT systems required e.g. Auction platform, registration, website, data feeds etc</li> </ul>	

	<ul style="list-style-type: none"> <li>• Documentation of the transitional arrangements.</li> <li>• Decommissioning and re registering activities.</li> <li>• Additional TSO / DSO processes and procedures, information sharing technical processes.</li> <li>• Identification of the necessary legislative and licence changes required to implement the FASS in Northern Ireland and Ireland</li> <li>• Enduring business processes end-to-end design including service registration, service scheduling, service dispatch, service monitoring, service settlement and the associated IT systems impacted or required to enable – consideration may include the volume of service providers, the range of services and service providers.</li> <li>• Data: data acquisition from the service providers, how we manage data and information exchange in the operational &amp; commercial space and how we provide data/ insights back to the service providers and industry is a major consideration.</li> </ul>
<b>Delivery</b>	<p><b>Position as of 30 September 2023 - Complete</b></p> <p>The auction design has been progressed in two regards –</p> <p>(a) the further development of the daily auction design proposals (DASSA) with a proposal for the DASSA design published by the TSOs’ auction design partners DotEcon and Afry in September 2023 and</p> <p>(b) assessment and scoping of the proposed Layered Procurement Framework (LPF) quarterly auctions as directed by the Regulatory Authorities. Note (b) was a change in the original project scope requested by the Regulatory Authorities in January 2023.</p> <p>A detailed assessment of existing system service products and volumes will be a key input to final auction design. A workstream has been mobilised and dynamic simulation studies have commenced in Q4 2023</p> <p>A detailed project plan for the parallel development of both designs has been developed. A confirmed roadmap for implementation will be published when a decision is published for the SEMC-23-043 consultation.</p>
<b>Date Revision</b>	<p>Progression of work has been noted above. The Regulatory Authorities increased the scope of the programme in January 2023 by adding a proposed Layered Procurement Framework quarterly auction to be implemented in addition to daily auctions and by requesting SONI to prioritise work in that area. This had not been in scope at the time of writing of the Forward Work Plan.</p>
<b>Stakeholder Satisfaction/Engagement</b>	<p>There has been extensive stakeholder engagement during the project including:</p> <ul style="list-style-type: none"> <li>• Weekly engagement with the Regulatory Authorities (and daily engagement during certain phases of the project).</li> <li>• Seven TSO/Industry bilateral meetings with industry groups in January/February 2023.</li> <li>• TSO presentation at Regulatory Authorities’ workshop on July 6<sup>th</sup> 2023.</li> <li>• TSO/industry webinar on DASSA proposals on September 20<sup>th</sup> 2023.</li> <li>• Eleven TSO/Industry bilateral meetings with industry groups in October/November 2023.</li> </ul> <p>RAs have indicated a project panel will be established at the beginning of 2024 to encourage further engagement and collaboration with industry.</p>
<b>Adaptability</b>	<p>SONI has responded in an agile manner to changing regulatory priorities – diverting resources to work on the Layered Procurement Framework (LPF) quarterly auctions design, at the request of the Regulatory Authorities.</p> <p>In addition, industry feedback from Jan/Feb 2023 bilateral meetings has been used to develop the DASSA proposals to facilitate improved participation from a wider range of technologies.</p> <p>Daily stand-ups and twice weekly workshops were held with the RAs to fast track the LPF design in Feb/ Mar 23.</p>
<b>Cost Scale</b>	Very High

Table 3 FWP23-02: Scheduling & Dispatch

Deliverable	FWP23-02: Scheduling & Dispatch	
<p>Description of Activities</p>	<p>Electricity wholesale market - Alignment and Implementation Scheduling and Dispatch</p> <p>Alignment of the energy market with high penetration of renewable generators - leading to scheduling and dispatch changes to ensure all market technologies and participants have equal access and opportunities.</p> <p>Over the period the following activities will be progressed:</p> <ul style="list-style-type: none"> <li>• A series of industry workshops are to be held post publication of SEMC decision to develop the detailed solution to be proposed. ✓</li> <li>• Develop the detailed design of the Scheduling &amp; Dispatch solution, including requirements for the treatment of new non-priority dispatch renewable generators in the SEM - November 2022. ✓</li> <li>• Develop impact assessments and detailed user requirements based on agreed / approved detailed design; - commence January 2023 ✓</li> <li>• SEMC decision on submitted solution for treatment of new non-priority dispatch renewable generation under CEP – SEMC to determine the timeframe for its decision. ✓</li> </ul>	
<p>Delivery</p>	<p><b>Position as of 30 September 2023:</b></p> <p>Part 1 – Develop the detailed design of the Scheduling &amp; Dispatch solution – <b>Complete</b></p>	
	<p>Part 2 – Develop impact assessments and detailed user requirements based on agreed / approved detailed design – <b>Complete</b></p>	
<p>Date Revision</p>	<p>Not Applicable</p>	
<p>Stakeholder Satisfaction/ Engagement</p>	<p>While solutions development was under way, a stakeholder engagement plan was devised with a proposal to target key stakeholders for bilateral engagement in advance of an open industry workshop. This was circulated by the SEMO Market Helpdesk team with arrangements made to initially meet bilaterally with six stakeholders (both participants and representative bodies). There was extensive response from members of industry and the planned bilateral engagement was expanded as a result. Over the course of autumn and winter of 2022/2023, the project team held 22 separate engagements with interested parties including bodies such as Wind Energy Ireland, Renewables Northern Ireland, Irish Solar Energy Association, Energy Storage Ireland, the Demand Response Association of Ireland, as well as participants Bord Na Mona, Captured Carbon, SSE Airtricity, ESB, Covotna, Indaver, Energia, Enerco, Aughinish Alumina, ESB, and RWE.</p> <p>An open industry workshop was held in Dublin on November 16th to provide an outline of the final design and to provide opportunity for further feedback. The event was in person with virtual attendance via MS Teams. Over 150 registered for the event with a high attendance virtually.</p> <p>There was no formal follow up to measure stakeholder satisfaction; however, all engagements were positive, supportive, and well received.</p> <p>27 bilateral meetings with stakeholders were held in Aug-Oct 2022 during phase 1 of the SDP prior to the commencement of this milestone. A stakeholder workshop was also held during phase 1 in Nov 2022.</p> <p>An update to industry was given at the SOEF Advisory Council on 18th Jan '23, communicating the delay in the close out of phase 1 and commencement of phase 2 as well as the TSOs' and SEMO's intention to reassess the delivery approach of the SDP to achieve maximum efficiency in delivery timelines. A paper outlining a functional explanation of the TSOs' and SEMO's interim solution for the treatment of variable non-priority dispatch renewables was submitted to the RAs on 21st March 2023 as requested in SEM-21-027.</p>	

Adaptability	During the development of solutions with key subject matter experts, draft Use Cases and High-Level Requirements were shared internally in advance. This allowed for analysis of proposed solutions to consider what could be delivered within the proposed timeline of the project. The intent of this approach is to give confidence that the market design proposals that are put forward can be implemented and to have this confidence ahead of vendor engagement.
Cost Scale	High

Table 4 FWP23-03: Transmission System Security and Planning Standards (TSSPS) Review and Refresh

Deliverable	FWP23-03: Transmission System Security and Planning Standards (TSSPS) Review and Refresh
Description of Activities	<p>The set of Transmission System Security and Planning Standards were developed, consulted on and approved by the Utility Regulator in 2015. It is planned in 2022/23 that these standards will be reviewed.</p> <p>The TSSPS will be reviewed in the context of the NI Energy Strategy. In particular the target of achieving 80% of electricity consumption from renewable generation by 2030 will require a review of the dispatch assumptions used in deterministic assessments.</p> <p>The scope of the review has yet to be finalised. Items that are expected to be included are as follows:</p> <ul style="list-style-type: none"> <li>• The standards refer to a set of Electricity Networks Association Engineering Recommendations that were current in 2015. The review will focus on the need or otherwise to align with any updates.</li> <li>• The standards would make provision for hybrid generator/load connections.</li> <li>• The dispatch assumptions for deterministic studies will be reviewed.</li> <li>• The standards relating to an offshore transmission system will be reviewed.</li> </ul> <p>As set out in Condition 20.3 of the TSO Licence, SONI must hold a consultation on proposed revisions to the TSSPS. Key stakeholders will include NIE Networks, EirGrid and parties liable to be impacted by the proposed revisions. Over the course of the review, a version of the TSSPS will be published for consultation, alongside a report on the findings of the consultation and the approved TSSPS will be required to be published following UR approval, as described in the TSO Licence.</p>
Delivery	<b>Position as of 30 September 2023 – In Progress</b>
Date Revision	<p>The full review and update of the TSSPS is not yet complete. An urgent need to update voltage requirements meant this area was prioritised initially and a short consultation and update to the TSSPS was carried out in Q2 2023. The wider review of the TSSPS is progressing, however, the process had a number of dependencies including:</p> <ul style="list-style-type: none"> <li>• Engagement with DfE on the connection arrangements for offshore generation.</li> <li>• Consider recently published updates to Engineering Recommendations.</li> <li>• Align the update of some aspects of the TSSPS with NIE Networks, who are currently reviewing the DSSPS.</li> </ul> <p>SONI regularly considers this TSSPS and will continue to do so in line with the NI Energy strategy (e.g. changes for offshore) and this will be treated as 'Business as Usual' going forward.</p>
Stakeholder Satisfaction/Engagement	<p>We engaged with stakeholders as part of the short consultation period when updating the voltage requirements in the TSSPS. No objections were received to our proposals.</p>
Adaptability	<p>To meet differing requirements, the process around delivering the full TSSPS review was adapted. SONI prioritised an urgent need to update voltage standards and delivered that update in advance of the target completion date.</p> <p>To allow us to be informed by the latest Engineering Recommendations, emerging offshore policy and ensure alignment with NIE Networks where relevant in their update to the DSSPS, we have extended the timeline for when the full TSSPS update will be delivered.</p>
Cost Scale	Low

Table 5 FWP23-04: Operational Roadmap to 2030

Deliverable	FWP23-04: Operational Policy Roadmap to 2030	
Description of Activities	<p>Publication of the SONI Operational Policy Roadmap to 2030</p> <p>A key activity over 2022-2023 is the development and publication of an “Operational Roadmap to 2030” to set out our plans for evolving operational policy. This roadmap will set out target timelines for:</p> <ul style="list-style-type: none"> <li>• Increasing SNSP from 75% to 95% in 2030</li> <li>• Reducing the minimum number of large conventional units from 8 to 4 or less in 2030</li> <li>• Lowering the inertia floor from 23,000 MWs to 17,500 MWs in 2030</li> </ul> <p>The Roadmap will then be updated every 2 years to detail the progress of our achievements and the plan as it evolves to 2030.</p>	
Delivery	<b>Position as of 30 September 2023 - Complete</b>	
Date Revision	Not Applicable	
Stakeholder Satisfaction/Engagement	<p>Our intent to develop and publish an Operational Policy Roadmap was flagged in our Shaping Our Electricity Future programme in 2021. The Roadmap was subsequently published on the SONI website, <a href="#">here</a>, on 20<sup>th</sup> December 2022. SONI briefed UR on its contents on 13<sup>th</sup> January 2023 and broader industry on 18<sup>th</sup> January 2023 at the Shaping Our Electricity Future Advisory Council. There was a general welcome for the clarity that this Roadmap provided.</p>	
Adaptability	<p>SONI engaged external expertise to assist in the development of the Roadmap. This provided additional insight to, and benchmarking of, our operational policy development relative to other TSOs.</p>	
Cost Scale	Low	

Table 6 FWP23-05: TSO Demand Side Strategy

Deliverable	FWP23-05: TSO Demand Side Strategy	
Description of Activities	<p>Development of a TSO Demand Side Strategy</p> <p>This strategy will consider:</p> <ul style="list-style-type: none"> <li>• The drivers for the development of demand side response into the future</li> <li>• Understanding the existing and potential future categories of types and sources for response</li> <li>• Understanding the general characteristics of demand side response</li> <li>• Outlining the TSOs’ broad high-level views on the development of demand side response</li> <li>• Outlining how demand side response can currently meet TSO needs and how it could meet these needs in the future</li> <li>• Outlining areas of work which would be required to enable demand side response to provide the most value it can, and</li> <li>• Engaging with stakeholders to incorporate their views into this strategy.</li> </ul> <p>Engaging further with stakeholders will form part of the next steps after the publication of this strategy, which SONI will use to help take appropriate steps to identify, prioritise and plan the work required to analyse and develop the initiatives and solutions to resolve the challenges to demand side response raised in the strategy.</p>	
Delivery	<b>Position as of 30 September 2023 – In Progress</b>	
Date Revision	<p>The development of the strategy was delayed for an <b>Improved Outcome for Consumers</b>, in order to enable further engagement with the relevant internal and external stakeholders, incorporating the feedback, and enabling the process for approving the document, to create an improved outcome for consumers by having a more considered and holistic approach to considering the potential roles and required changes for demand response meeting TSO requirements. What was intended by the strategy, and the document to publish the strategy, has been reframed a number of times based on this feedback. Since this is an all-island initiative, it also needs to consider the Energy Demand Strategy from the CRU in Ireland, where a call for evidence was published in June 2023. The drafting of the call for input document which is the primary output of this milestone is largely complete, with the final review and approval step yet to be completed prior to publication and completion of this milestone in Q1 2024.</p>	
Stakeholder Satisfaction/Engagement	<p>A number of calls were held with the demand response associations, DRAI and FERA, during the development of the strategy. There was also engagement with the DSOs, NIE Networks and ESB Networks, and the regulators, UR and CRU. Particular recommendations and suggestions received from each engagement were incorporated into the document. The messaging from the DSOs and the RAs appeared to be positive in reception of a presentation on what is being considered in the strategy and the general approach. There was a mix of positive feedback and constructive criticism following engagements with the demand side response associations, where there was a general positive view of what the TSOs are considering in the strategy, but also a desire to see particular pieces of work that they have suggested being developed and worked on sooner.</p>	
Adaptability	<p>Feedback was received from the demand response associations, DRAI and FERA, had differing messages on similar topics which needed to be navigated in order to reflect it in the best way possible. On one hand there was a concern at a lack of a more detailed plan of work and milestones, but on the other hand there was a concern that the pieces of work to be done would be defined without sufficient input from the industry. In order to address this, we attempted to find a balance – the document which is the main output of this work is being reframed to form a call for input, which will be used to develop a more detailed implementation plan for the demand side strategy, with work on this implementation plan to begin soon after publication of the call for input with input and further engagement feeding into it during the development process.</p> <p>From industry association feedback there was also a desire to gain an understanding of the potential roles of different aspects of demand response in being able to meet the needs of the TSOs into the future. We recognised that this would be a valuable exercise to undertake and message to provide. In particular, given the reframed nature of the document it could provide a prompt for input to help in developing a more detailed and prioritised</p>	

	implementation plan afterwards, outlining the views of the TSOs so that they can be compared against the views of others. Therefore, analysis was carried out to include this in the document.
Cost Scale	Low

Table 7 FWP004: Capacity Auctions to be Completed

**FWP004: Capacity Auctions to be Completed**

**Deliverable**

**Description of Activities**

Capacity Auction process to be completed for T-1 2023/2024 capacity auction and T-4 2026/2027 capacity auction. Complete TIA (Transmission Impact Assessment) Reports for the qualified T-3/T-4 generation applications

The timetables for completion of both capacity auctions are detailed below.

**Capacity Auction Timetable 2023/2024 T-1 Capacity Auction**

Category	Appendix C	Event	Date & Time
Info	A.1	Initial Auction Information Pack Date	05/12/2022
Qualification	A.2	Opt-out Notification Date	19/12/2022
Qualification	A.3	Exception Application Date	16/01/2023
Qualification	A.4	Qualification Application Date	03/02/2023
Qualification	A.5	Provisional Qualification Results Date	14/04/2023
Review	B.19	Application for Review Date	18/04/2023
Review	B.20	Non-complying Application for Review rejection Date	20/04/2023
Review	B.22	System Operators request for further information Date	25/04/2023
Review	B.21	Participant provision of further information Date	27/04/2023
Review	B.22	System Operators notification of outcome Date	05/05/2023
Disputes	B.24	Qualification Dispute Notice Date	10/05/2023
Disputes	B.25	Qualification Dispute Decision Date	07/06/2023
Qualification	A.6	Final Qualification Submission Date	12/06/2023
Info	A.9	Final Locational Capacity Constraint Limits Date	30/06/2023
Qualification	A.7	Final Qualification Results Date	30/06/2023
Qualification	A.8	Qualification Results Publication Date	30/06/2023
Info	A.10	Final Auction Information Pack Date	30/06/2023
Auction	A.11	Capacity Auction Submission Commencement	06/07/2023
Auction	A.12	Capacity Auction Submission End	18/07/2023 10:00
Auction	A.13	Capacity Auction Run Start	18/07/2023 12:00
Auction	A.14	Capacity Auction Completion Date	25/07/2023
Auction	A.15	Capacity Auction Provisional Results Date	25/07/2023
Auction	A.15A	Capacity Auction Provisional Results Publication Date	31/07/2023
Post Auction	A.16	Capacity Auction Approval Date	31/08/2023
Post Auction	A.17	Capacity Auction Results Date	07/09/2023
Post Auction	A.18	Performance Security Date	25/09/2023

Note: Appendix C of the Capacity Market Code is referenced above.

## Capacity Auction Timetable 2026/2027 T-4 Capacity Auction

Category	Appendix C	Event	Date & Time
Info	A.1	Initial Auction Information Pack Date	08/09/2022
Qualification	A.2	Opt-out Notification Date	22/09/2022
Qualification	A.3	Exception Application Date	06/10/2022
Qualification	A.4	Qualification Application Date	06/10/2022
Qualification	A.5	Provisional Qualification Results Date	01/12/2022
Review	B.19	Application for Review Date	05/12/2022
Review	B.20	Non-complying Application for Review rejection Date	07/12/2022
Review	B.22	System Operators request for further information Date	12/12/2022
Review	B.21	Participant provision of further information Date	14/12/2022
Review	B.22	System Operators notification of outcome Date	09/01/2023
Disputes	B.24	Qualification Dispute Notice Date	12/01/2023
Disputes	B.25	Qualification Dispute Decision Date	09/02/2023
Qualification	A.6	Final Qualification Submission Date	14/02/2023
Info	A.9	Final Locational Capacity Constraint Limits Date	01/03/2023
Qualification	A.7	Final Qualification Results Date	01/03/2023
Qualification	A.8	Qualification Results Publication Date	01/03/2023
Info	A.10	Final Auction Information Pack Date	01/03/2023
Auction	A.11	Capacity Auction Submission Commencement	15/03/2023
Auction	A.12	Capacity Auction Submission End	23/03/2023 10:00
Auction	A.13	Capacity Auction Run Start	23/03/2023 12:00
Auction	A.14	Capacity Auction Completion Date	28/03/2023
Auction	A.15	Capacity Auction Provisional Results Date	28/03/2023
Auction	A.15A	Capacity Auction Provisional Results Publication Date	04/04/2023
Post Auction	A.16	Capacity Auction Approval Date	02/05/2023
Post Auction	A.17	Capacity Auction Results Date	04/05/2023
Post Auction	A.18	Performance Security Date	15/06/2023

### Delivery

**Position as of 30 September 2023:**

T-1 2023/2024 Capacity Auction – July 2023 – **Complete**

T-4 2026/2027 Capacity Auction – May 2023 – **Complete**

### Date Revision

Not Applicable

### Stakeholder Satisfaction/Engagement

As part of the Qualification process for an auction, the System Operator's host an Information Session before the Application for Qualification Date. This provides participants the opportunity to raise questions, engage with the TSOs, and familiarise themselves with the Qualification process. These sessions are mainly held for T-4 auctions, with the last Information Session held for the period in question being Thursday 22<sup>nd</sup> September 2022. These sessions regularly attract large numbers of participants and positive feedback, with the opportunity to submit any questions they have via email beforehand.

### Adaptability

The auctions have to meet strict timelines and to an agreed timetable by SEMC. These milestones were met.

### Cost Scale

Very High

Table 8 FWP005: Control Centre Tools

Deliverable	FWP005: Control Centre Tools	
<p>Description of Activities</p>	<p>IT Delivery of the Voltage Trajectory Tool</p> <p>Voltage Trajectory Tool (VTT): enables Grid Controllers to assess the impact of varying sources of reactive power across the power system to ensure that local voltage management issues are managed. Enhanced voltage control management capability in the control centre is critical to facilitate increased levels of SNSP.</p> <p>Voltage management in Northern Ireland is becoming more challenging due to the reduction of available reactive power resources (through displacement of conventional plant) and the disperse location of wind farms (with different capability characteristics), combined with increasing installation of HV underground cables. Currently, an active transmission constraint dictates that there must be a minimum of 8 large synchronous machines on-load at all times in the all-island system. To accommodate increasing amounts of non-synchronous renewable generation, this constraint must be relaxed. VTT will determine optimal reactive targets for different types of device, developing voltage trajectory plans secure against contingency events for a near time horizon (typically intra-day and day-ahead).</p> <p>This groundbreaking decision support tool will enable operation with reduced number of conventional plan on-line and, thus, will facilitate increased levels of SNSP in the All Island system. The Voltage Trajectory Tool has been scoped and developed throughout 2021 and 2022. Agile development, testing and validation are underway in cooperation with vendors and external consultants. SONI (and EirGrid) will be the first TSOs in the world to include this within their scheduling and dispatch processes.</p>	
<p>Delivery</p>	<p><b>Position as of 30 September 2023:</b> Part 1 – IT Delivery of the Voltage Trajectory Tool – <b>Complete</b></p>	
	<p>Part 2 – Tuning of the Voltage Trajectory Tool – <b>Complete</b></p>	
<p>Date Revision</p>	<p>The date for the Voltage Trajectory Tool (VTT) to Go Live was revised from <b>December 2023</b> to <b>September 2023</b> and subsequently the operational tuning of the tool had also been amended from <b>March 2023</b> to <b>September 2023</b> for an <b>Improved Outcome for Consumers</b>.</p> <p>VTT is a very complex solution which is a first of its kind therefore significant development and testing effort is required to ensure it meets the desired outcomes. This resulted in movements in the milestones. For the Single Timepoint Optimised solution, the User Acceptance Testing completed in <b>June 2023</b> and Tuning of the solution completed in <b>September 2023</b>. The application was introduced to the Control Room for operational familiarisation and initial stakeholder feedback <b>September 2023</b>.</p>	
<p>Stakeholder Satisfaction/Engagement</p>	<p>Due to the extremely complex and highly innovative nature of the Voltage Trajectory Tool, a high level of specialised knowledge was required from inception to delivery of this tool. Business subject matter experts were involved from the outset of the tendering process with procurement to working directly with the vendor through the full software development lifecycle of initiation, design and implementation of the product.</p> <p>Stakeholder familiarisation and feedback analysis commenced following the completion of tuning for the single timepoint optimisation completed in September 2023.</p>	
<p>Adaptability</p>	<p>The Voltage Trajectory Tool is extremely complex and highly innovative - there is no “off-the-shelf” solution to leverage and when complete, SONI and EirGrid will be the only TSOs in the world with this capability. The project was delivered using an Agile methodology. Development followed an Agile Scrum sprint delivery roadmap.</p>	
<p>Cost Scale</p>	<p>Medium</p>	



Table 9 FWP23-11: Control Centre of the Future

Deliverable	FWP23-11: Control Centre of the Future	
Description of Activities	<p>Implement the Control Centre of the Future Foundations                      Develop a delivery plan for the tools and capability we need to operate the power system to 2030, including but not limited to</p> <ul style="list-style-type: none"> <li>• Interface with DSOs on visibility, management and forecasting of DER</li> <li>• Management congestion</li> <li>• Control new network devices</li> <li>• Improve models</li> <li>• Enable probabilistic operations</li> </ul> <p>This plan will also cover the development of associated IT, data management and physical infrastructure to support the control centre tools programme.</p>	
Status	<b>Position as of 30 September 2023 - Complete</b>	
Date Revision	<p>The date for the development of a Delivery Plan to 2030 had been revised from <b>March 2023</b> to <b>April 2023</b> for an <b>Improved Outcome for Consumers</b>.                      Following the publication of SONI's Operational Policy Roadmap to 2030 in December 2022, SONI took some additional time to ensure that the Control Centre of the Future implementation plan was fully aligned with that roadmap.</p>	
Stakeholder Satisfaction/Engagement	<p>The high-level objectives and scope of the project (which has subsequently been re-framed as the Operational Tools and Capability Enhancement programme) were communicated to the Shaping Our Electricity Future Advisory Council in October 2023.</p> <p>The Operational Tools &amp; Capability Enhancement (OTCE) programme is being established to deliver the Control Centre of the Future as well as broader operational capability development initiatives.</p>	
Adaptability	<p>The project objectives were to develop a programme plan and identify priority projects to be progressed. The project was coordinated across Subject Matter Experts across the TSOs with the support of external, international experts in the area of future power system operations.</p>	
Cost Scale	Low	

Table 10 FWP008: Minimum Sets

Deliverable	FWP008: Minimum Sets
Description of Activities	<p>Reduction of the operational constraints related to the minimum number of large synchronous units and the system inertia floor.</p> <ol style="list-style-type: none"> <li>1. Complete studies and analysis to support a proposed all-island operational trial for operation with a minimum of 7 large synchronous units / 20,000 MW.s inertia floor by <b>December 2022</b></li> <li>2. Commence the operational trial with a minimum of 7 large synchronous units / 20,000MW. s inertia floor by <b>March 2023</b></li> <li>3. Commence work on the transition to system operation with 3 large conventional units or less (the interim steps will be laid out in the Operational Policy Roadmap to 2030 which was to be published by <b>December 2022</b>. This work will commence in 2023 out to 2030.</li> </ol>
Status	<p><b>Position as of 30 September 2023:</b>            Part 1 - Complete studies and analysis to support a proposed all-island operational trial – <b>Complete</b>            Part 2 - Commence the operational trial - <b>Complete</b></p>
Date Revision	<p>The date for commencing the operational trial of this interim policy with a minimum of 7 large synchronous units / 20,000MW’s inertia floor was revised from <b>March 2023</b> to <b>June 2023</b> for an <b>Improved Outcome for Consumers</b>.</p> <p>The Minimum Number of Sets project encompassed a wide range of studies, including system strength, ramping margin, PLEXOS analysis, and voltage and dynamic stability. The bulk of the studies were completed on schedule by the end of 2022.</p> <p>However, the finalisation of the studies was extended due to a number of factors. We encountered some challenges during the early phase, such as the need to update our models and develop a Python-based tool that could handle the high volume of calculations required. Furthermore, a significant amount of time was spent addressing the high volume of observed voltage violations.</p> <p>Lastly, SONI took the opportunity to hold several discussions with international TSOs and external stakeholders to ensure that our calculation methodologies were in line with best practices. As a result, time was spent developing a new tool to extract results and calculate dynamic stability, which enhanced the study outcomes. We consider that this additional collaboration has been very beneficial.</p> <p>The commencement of the operational trial was also reliant on the successful completion of the RoCoF trial which was extended and completed in <b>May 2023</b>. Hence the earliest the Min 7 trial was able to commence was <b>May 2023</b>. The operational trial is progressing well with continuous monitoring of the impact of the trial ongoing ahead of a decision to confirm it as enduring operational policy in 2024.</p>
Stakeholder Satisfaction/Engagement	<p>The DS3 and the Shaping Our Electricity Future Advisory Councils were kept informed of the progress of all system operational trials over the life of the project. The Operational Policy Roadmap to 2030 was launched in December 2022 and the Operational Constraints weekly publication at the end of May 2023 contained information relating to the start of the 7 sets trial. (<a href="https://www.sem-o.com/documents/general-publications/Wk22_2023_Weekly_Operational_Constraints_Update.pdf">https://www.sem-o.com/documents/general-publications/Wk22_2023_Weekly_Operational_Constraints_Update.pdf</a>)</p> <p>The first phase of the Operational Policy Roadmap contains information on the reduction of minimum number of units and was published in June 2022 and can be found <a href="#">here</a>. A second more detailed phase of this Roadmap, setting out our plans for evolving operational policy from 2023 to 2030 was published <a href="#">here</a> in December 2022.</p>
Adaptability	<p>Originally the scope assumed that reducing the inertia floor would be required in order to trial a reduction in the number of large sets. However, it transpired that with the addition of new technology to the system (e.g. synchronous condenser) we could keep the inertia floor high without significantly increasing the carbon output. Hence, we adapted the study to incorporate this learning.</p>
Cost Scale	<p>Low</p>

Table 11 FWP009: Qualification Trial Process (QTP)

Deliverable	FWP009: Qualification Trial Process (QTP)
<p>Description of Activities</p>	<p>The QTP is the mechanism through which the TSOs are managing the transition to a wider portfolio of System Services' Providers and is a key element of the Operations pillar of our Shaping Our Electricity Future programme.</p> <p>The action to review the QTP process and develop a plan for the transition to System Services Future Arrangements was planned for Q4 2022. The launch of the new QTP trials will take place in advance of the launch of System Services Future Arrangements.</p> <p>The main activity for the period was:</p> <ol style="list-style-type: none"> <li>1. Review the current QTP Process and develop a plan for the transition to the System Services Future Arrangements by <b>December 2022</b>. ✓</li> <li>2. Conduct Annual QTP Process to facilitate the integration of new technologies (<b>Annually</b>)</li> </ol> <p>By 2030, we are planning to operate at System Non-Synchronous Penetration (SNSP) levels up to 95%; to have a reduced inertia floor; to continue to operate with a Rate of Change of Frequency (RoCoF) limit of 1Hz/s; and to have a significantly reduced minimum number of large synchronous units requirement.</p> <p>As we increase the current operational limits, we will have to increasingly rely on new technologies to provide the system resilience. The QTP will remain an important process for trialling the provision of new or existing system services from such new technologies.</p>
<p>Status</p>	<p><b>Position as of 30 September 2023:</b></p> <p>Part 1 – Review the current QTP Process – <b>Complete</b></p>
	<p>Part 2 – Conduct Annual QTP Process – <b>In Progress</b></p>
<p>Date Revision</p>	<p>Part 1 - Completed in December 2022.</p> <p>Part 2 – The tender process for the QTP was launched on 15<sup>th</sup> December 2023. The trial is planned to take place during 2024 (this is dependent on there being a successful outcome to the procurement process i.e. that potential participants bid proposals into the process).</p>
<p>Stakeholder Satisfaction/Engagement</p>	<p><u>Part 1</u></p> <p>The QTP was redeveloped following an industry consultation at the end of 2021 and following publication of the 'SEM Committee High Level Design for System Services Future Arrangements'. Following the SEMC publication, the TSOs set about redeveloping the current QTP and submitted a new QTP framework that was accepted by CRU and UR in <b>December of 2022</b>.</p> <p><u>Part 2</u></p> <p><b>Stakeholder:</b> Public/Industry  <b>Activity:</b> Running the 'Call for Information'  <b>Engagement:</b> Received feedback on QTP process and technology area industry wants TSOs to focus on.</p> <p><b>Stakeholder:</b> UR / CRU  <b>Activity:</b> Approval for using the "Call for Information" instead of running another 'Call for Evidence'</p>

	<b>Engagement:</b> It was expected that the feedback from the 2021 “Call for Information” would be very similar to what would be obtained by running a new “Call for Evidence”. To commence a QTP procurement process during 2023, the information from “Call for Information” was used instead of re-running or reviewing a new “Call for Evidence”.
<b>Adaptability</b>	To facilitate the inclusion of a wide range of emerging new technologies, an open Lot approach was adopted in the tender process.
<b>Cost Scale</b>	Low

Table 12 FWP011: Simplify & Standardise IT Solutions

Deliverable	FWP011: Simplify & Standardise IT Solutions
<p>Description of Activities</p>	<p><u>Application Rationalisation</u>                      This relates to a general and ongoing activity to reduce the number of individual business solutions that are part of the application landscape.</p> <p>In FY21/22 SONI commenced a trial of the move of Plexos, a key energy modelling software platform, to the Cloud to investigate options around optimisation of performance and productivity for the teams that utilize it. This trial will continue into FY22/23. In addition, the move of Power Factory, a power system analysis tool, to centralized licencing is on track for completion on 31<sup>st</sup> October 2022 which provides many additional user benefits and improves productivity and efficiency.</p> <p>In FY21/22 SONI commenced a Database Rationalisation project to create a new central database repository which will be used to replace many of the corporate database estate. In FY22/23 SONI will continue Database Rationalisation. The new technologies will replace outdated technology which has been in use for 20+ years.</p> <p>In FY22/23 SONI planned to implement an EDIL Layered Product Upgrade which brings the EDIL platform up to date with supported version of Windows server 2019 and Oracle 19c. Currently, EDIL is running on Windows server 2012 and Oracle 12c which are end of life.</p> <p><u>Capacity Market Platform (CMP)</u>                      The Capacity management Platform (CMP) went live in October 2018. There is an ongoing requirement to make small to medium changes to the platform to accommodate changing industry requirements and business and technical platform improvements.</p> <p><i>In FY21/22, SONI commenced the planning of an online qualification hub to capture and validate market participant applications, which can be audited for qualification for capacity auctions and streamlines the data capture process and will complete the implementation in alignment with the capacity auctions in FY 22/23.</i></p>
<p>Delivery</p>	<p><b>Position as of 30 September 2023:</b>                      Power System Analysis Tool - <b>Complete</b>                      Application Rationalisation – <b>In Progress</b>                      Capacity Market Platform - <b>Complete</b></p>
<p>Date Revision</p>	<p>The date for delivery of the Power System Analysis tool was revised from <b>October 2022</b> to <b>May 2023</b> for an <b>Improved Outcome for Consumers</b>.</p> <p><u>Power System Analysis Tool</u> changes as described have been delivered.</p> <p><u>Application Rationalisation</u> while some rationalisation has taken place additional work will continue into 2023-24:</p> <p>Plexos – The trial for the move of Plexos to the Cloud has been completed, however it will not be implemented due to cost considerations.</p> <p>Database Rationalisation – A substantial amount of this project is complete. The remaining database estate requires further investigation.</p> <p>EDIL – The layered Procurement Upgrade is in progress, with a target completion date of June 2024.</p>

	<p><u>Capacity Market Platform</u> changes were implemented in alignment with requests and scheduled auctions. These requests will however continue in line with new requirements and upcoming auctions year on year.</p> <p>Further changes in all these areas will be required, the work surrounding these is and will remain ongoing given the applications and the technologies involved.</p>
Stakeholder Satisfaction/Engagement	All stakeholders are internal to SONI/EirGrid and have been engaged throughout the change process for the above applications as would be normal practice when implementing application changes.
Adaptability	Not Applicable
Cost Scale	Low

Table 13 FWP012: End of Life Assets

Deliverable	FWP012: End of Life Assets
<p>Description of Activities</p>	<p><b>System Refresh</b></p> <p><b>Desktop Equipment Refresh</b>  <i>In FY22/23 SONI will be in Windows 10 technology which was rolled out in FY21/22 (upgrade of both Corporate and Energy Management System PCs). This project will now progress to the refresh of display monitors in the control rooms. Ongoing hardware replacements of equipment 5 years or more will continue in line with industry best practice.</i></p> <p><b>VMware/Citrix Upgrades</b>  <i>VMWare is a virtual platform that hosts the majority of SONI Enterprise applications, which reduces the need for physical hardware. In FY 22/23 SONI will continue with the virtual platform upgrade and migration of Enterprise servers. Decommissioning activities will also commence in Q1 which will reduce the overall data centre footprint.</i></p> <p><b>Server OS Upgrades</b></p> <p><u>Email Server Upgrade</u>  <i>SONI will continue migrating email capability to the Cloud which will provide greater resilience and facilitate collaboration. SONI will commence the decommissioning of on-premise email servers which will be no longer required.</i></p> <p><u>Backup Upgrade</u>  <i>SONI will continue to upgrade the backup hardware as the existing backup hardware is approaching end of life and needs to be replaced. Additional cyber security hardening enhancements will also be delivered on top of FY21/22 improvements.</i></p> <p><b>Data Centre Switching Upgrade</b>  <i>SONI will continue the ongoing replacement of the data centre switches (every five years) to maintain support, ensure security and to cater for growing data volumes.</i></p> <p><u>Network Switch Life Cycle Management</u>  <i>The network switch hardware equipment is approaching end of life and will no longer be capable of accepting new firmware updates, and the hardware is no longer supported by the vendor. This exposes a risk to the SONI network infrastructure in terms of security and supportability. In FY21/22 SONI completed the refurbishment of network equipment in three data centre cabinets in the SONI Control Centre and in FY 22/23 will complete an additional six data centre cabinets.</i></p> <p><b>Floor Access Switching Upgrade</b>  <i>In FY22/23 SONI will continue with the ongoing replacement of network equipment required to maintain support, ensure security and to cater for growing data volumes.</i></p> <p><b>Wireless IS Upgrade</b>  <i>Phase 1 and Phase 2 of the Wireless LAN Upgrade Project is complete. In FY 22/23 SONI will continue with Phase 3 however SONI are experiencing supply chain issues with the delivery of the wireless access points which may delay the completion of Phase 3.</i></p> <ul style="list-style-type: none"> <li>• Phase 1 - replace the existing wireless LAN infrastructure due to end-of-life elements;</li> <li>• Phase 2 - redesign the wireless LAN services to provide new functional and security features; and</li> </ul>

- Phase 3 - add additional wireless LAN access points to increase service coverage throughout the SONI Control Centre building.

**Oracle Database Refresh ODS/ODH/CB upgrades**  
 In FY22/22 SONI will implement the high-level hardware designs (delivered in FY 21/22) for the dispatch systems and finance systems and a number of downstream support systems (compute, storage and network costs). The current hardware is approaching end of life and will provide SONI with the opportunity to upgrade the underlying software stack.

**Dynamic AX Upgrade**  
 The current Microsoft Dynamics AX platform, the Enterprise Resource Planning (ERP) solution has reached end of life and is out of service support. The upgrade to the Cloud-based version will deliver improved security. A modern ERP system in the Cloud will ensure that there is continued support for the Microsoft's Dynamics AX solution and alignment with the Dynamics AX 'out of the box' capability. In FY22/23, SONI will conclude the design for a new ERP Platform and commence the build out and testing of the new solution.

NOTE: SONI is experiencing supply chain issues which could impact any of the above projects.

Delivery

Position as of 30 September 2023 - In Progress

Date Revision

Activities Delivered:

Activity	Description/Commentary
<b>Desktop Equipment Refresh</b>	New Windows 10 workstations installed in Control Rooms New Windows 10 workstations installed for the Trading Desk
<b>VMware/Citrix Upgrades</b>	VMWare infrastructure upgrade completed. Citrix Desktop upgraded primarily for external user access.
<b>Server OS Upgrades</b>	Email capability has been migrated to cloud. Backup Server upgrades are in progress – due for completion in Q4 2024 (dependent on an IT Network upgrade). Windows Server 2008 – Decommissioning or upgrades completed for 99% of servers. 2 servers outstanding due for completion Dec 2023. Windows Server 2012 – Decommissioning and Upgrades underway – due for completion Sep 2024. Linux Upgrades – Planned for 2024.
<b>Data Centre Switching Upgrade</b>	Data Centre Cabinet switches have been upgraded.
<b>Floor Access Switching Upgrade</b>	Floor access switches have not been completed yet – a project is in place to complete before Sep 2024
<b>Wireless IS Upgrade</b>	This is a work in progress – expected completion Sep 2024
<b>Oracle Database Refresh</b>	All Oracle databases running on versions 11G and 12C have been upgraded.
<b>Dynamic AX Upgrade</b>	The design work for the new cloud based Dynamics ERP solution concluded in August 2023 and the next phase (Construction) has commenced.

	<p>All elements of the work planned for FY23 have commenced and most of them have concluded during that year. Some were not concluded and have rolled in to FY24 – the details of which are in the table above.</p> <p>Resources were prioritised onto a number of key operational matters to support business activities. As a result a number of the planned deliverables were rescheduled as detailed in the table above.</p>
Stakeholder Satisfaction/Engagement	<p>Progress on Technology Refresh activities has been reported to Enterprise Security and Business Continuity fora on a monthly basis throughout the year.</p>
Adaptability	<p>This project includes the delivery of a series of activities across a broad range of technologies. It is delivered by a combination of upgrading technologies already in place, replacing the constituent technology components with the latest versions of those available and migrating to newer appropriate technologies (such as cloud based solutions). The migration to cloud based technologies in particular will provide a means to ensure the organisation always uses the most up to date supported systems without the need to run major upgrade projects.</p>
Cost Scale	<p>Where appropriate we will migrate to cloud based systems. For those systems the “upgrades” in future will be performed by the cloud vendor</p> <p>High</p>

Table 14 FWP013: End of Life Assets

Deliverable	FWP013: End of Life Assets
<p>Description of Activities</p>	<p><b>Energy Management System Midlife Upgrade Programme Phase 2</b></p> <p>The EMS is a mission-critical platform utilised in our control centres to enable the monitoring and control of the power system of Northern Ireland and Ireland. The current platform is reaching end of life and the hardware, software and telecoms components must now be upgraded so that the resilience and availability of the critical process related to managing the power system can be maintained. This upgrade will ensure that the critical supporting systems are robust, resilient and modern and maintain appropriate support arrangements with vendors, ensuring access to new functionality, bug fixes, security patches etc. The primary objective of the current upgrade project is to address upcoming obsolescence of our EMS platform by upgrading from GE eterra v3.0 to v3.3.</p> <p>The project commenced in FY21/22. In FY 22/23 some of the key programme delivery activities/outputs planned were as follows:</p> <ol style="list-style-type: none"> <li>1. Delivery of the non-production and production environments across SONI primary and secondary data centres</li> <li>2. Delivery of the new network infrastructure across SONI primary and secondary data centres</li> <li>3. Delivery of GE application baseline (eterra v3.3)</li> <li>4. Integrations testing</li> <li>5. FAT testing</li> <li>6. SAT testing</li> <li>7. User Acceptance Testing</li> <li>8. Non-Functional Testing</li> </ol> <p>NOTE: SONI is experiencing supply chain issues which could impact this project.</p>
<p>Delivery</p>	<p><b>Position as of 30 September 2023 – In Progress</b></p>
<p>Date Revision</p>	<p>Delivery postponed until <b>September 2024</b></p> <p>The completion of the milestones within this project were delayed for reasons <b>outside of SONI's control</b>. The primary reason for the delay on this work was due to delays on the delivery of critical network hardware equipment (all of which has now been delivered).</p>
<p>Stakeholder Satisfaction/Engagement</p>	<p>Engagement with all stakeholder and SMEs across organisation is aligned to the agreed EMS upgrade governance model. This engagement is executed through the below governance forums:</p> <ol style="list-style-type: none"> <li>1. Daily workstream stand ups.</li> <li>2. Weekly team lead checkpoints</li> <li>3. Fortnightly heads of function reviews</li> <li>4. Monthly programme board</li> <li>5. Bi-monthly Executive Steering</li> </ol>
<p>Adaptability</p>	<p>As outlined in the milestone section the programme has had to adapt to a number of hardware procurement dependencies not being delivered in FY 22/23. There have been a number of replans, changes in delivery approach and mitigations that have had to be taken to maintain progress in spite of these issues – all of which were agreed and executed in line with the agreed governance model outlined above.</p>
<p>Cost Scale</p>	<p>High</p>



Table 15 FWP23-07: Transition to Cloud

Deliverable	FWP23-07: Transition to Cloud												
<p><b>Description of Activities</b></p>	<p>Cloud-hosting of software systems at SONI is a means of delivering our evolving IT solutions more quickly and operating them more cost-effectively. Cloud computing is scalable and elastic as well as more secure and reliable. This initiative therefore aligns with the requirement for SONI to build long-term resilience into our systems and processes.</p> <table border="1"> <thead> <tr> <th>Project</th> <th>Activity</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="3"> <p><b>Initiative D2 Cloud Adoption</b></p> </td> <td> <p>Server re-location</p> </td> <td> <p>Relocation of servers that will not be moved to co-located data centres to Cloud service providers (Infrastructure as a Service)</p> </td> </tr> <tr> <td> <p>Cloud based applications</p> </td> <td> <p>Transition to Cloud-based applications rather than installing on-premises versions (Software as a Service)</p> </td> </tr> <tr> <td> <p>Cloud based services</p> </td> <td> <p>Deployment of new Cloud-based services such as advanced analytics (Platform as a Service)</p> </td> </tr> </tbody> </table> <p>In FY21/22 SONI commenced the preparation for the implementation of a number of Cloud foundation programmes.</p> <p>In FY22/23 SONI planned to deliver Cloud foundations including implementing a Microsoft Azure Landing Zone and associated Cloud Operating Model which enables other Cloud related initiatives, reducing the footprint of our on-premise data centre and leverage Microsoft enhanced security and platforms. ✓</p> <p>SONI implemented “InTune” for effective Mobile Device Management which enables mobile collaboration on MS Project Online, OneDrive and SharePoint and deliver enhanced mobile security. ✓</p> <p>SONI will implement enhanced enterprise tooling including; SharePoint Online, OneDrive and MS Project Online which will enable real time collaboration and which will leverage Microsoft Cloud Infrastructure. – In Progress</p>			Project	Activity	Description	<p><b>Initiative D2 Cloud Adoption</b></p>	<p>Server re-location</p>	<p>Relocation of servers that will not be moved to co-located data centres to Cloud service providers (Infrastructure as a Service)</p>	<p>Cloud based applications</p>	<p>Transition to Cloud-based applications rather than installing on-premises versions (Software as a Service)</p>	<p>Cloud based services</p>	<p>Deployment of new Cloud-based services such as advanced analytics (Platform as a Service)</p>
Project	Activity	Description											
<p><b>Initiative D2 Cloud Adoption</b></p>	<p>Server re-location</p>	<p>Relocation of servers that will not be moved to co-located data centres to Cloud service providers (Infrastructure as a Service)</p>											
	<p>Cloud based applications</p>	<p>Transition to Cloud-based applications rather than installing on-premises versions (Software as a Service)</p>											
	<p>Cloud based services</p>	<p>Deployment of new Cloud-based services such as advanced analytics (Platform as a Service)</p>											
<p><b>Delivery</b></p>	<p><b>Position as of 30 September 2023:</b></p> <p>Part 1 - Complete</p> <p>Part 2 - Complete</p> <p>Part 3 - In Progress</p>												
<p><b>Date Revision</b></p>	<p>The following activities have been delivered:</p> <ul style="list-style-type: none"> <li>• Cloud foundations have been delivered using Microsoft’s Azure platform. This facilitates SONI developing solutions using Microsoft’s infrastructure instead of depending on infrastructure in SONI data centres.</li> </ul>												

	<ul style="list-style-type: none"> <li>• Mobile device management has been migrated to the InTune product providing greater collaboration capability.</li> <li>• User email management has been migrated to Microsoft’s M365 platform.</li> <li>• Several projects are underway to migrate applications to Microsoft Software as a Service model including, Enterprise Resource Planning (to Dynamics 365), SharePoint, OneDrive and Microsoft Project On-line. The capability in these cases has been established and projects have been initiated to migrate the processes and data to the on-line solutions.</li> </ul> <p>The design work associated with this transition was concluded before June 2023. In most cases the cloud-based capability has been established but SONI are still working through migrating the process and data associated with these solutions the respective cloud solutions.</p>
<b>Stakeholder Satisfaction/Engagement</b>	SONI has a project governance structure in place that provides for project boards and project steering committees for individual projects. This initiative includes several individual projects each of which involves project stakeholders on its project board. Project board meetings are typically held monthly.
<b>Adaptability</b>	The delivery approach for each individual project is determined at the outset of the project. Many of these projects are using an “agile” approach, where the initial concepts and capabilities are proven in the first instance and subsequently rolled out over a series of use cases.
<b>Cost Scale</b>	Low

Table 16 FWP015: Moyle HVDC Project - Telecoms

Deliverable	FWP015: Moyle HVDC Project - Telecoms
Description of Activities	<p>SONI requires IT hardware, software &amp; resilient telecommunications circuits to replace current assets now at 18 years old.</p> <p>The HVDC Moyle Interconnector is the 500 MW HVDC link between Auchencrosh, South Ayrshire in Scotland and Ballycronan More, County Antrim in Northern Ireland, which went into service in 2001 and is owned and operated by Mutual Energy.</p> <p>The control systems installed at the Moyle site were end of life and Mutual Energy contacted SONI to initiate a project to integrate the new control system into the SONI EMS. This included the SCADA connectivity back to the SONI control rooms. This was operating on an analogue system utilising IEC 101, and needed to be replaced with an IP Solution utilising IEC 104. In addition, there a new set of requirements for the data to be dispatched, displayed and captured in the SONI EMS.</p> <p>To support Mutual Energy, SONI required IT hardware, software and resilient telecommunications circuits to replace the previous aging assets.</p> <p>The project had an estimated final delivery date of <b>November 2022</b>. The original estimated completion was September 2022 which was achieved as the project went commercial ahead of the original testing plan, but SONI has experienced supply chain delays for satellite communication infrastructure which will complete by <b>November 2022</b>.</p>
Delivery	<b>Position as of 30 September 2023 - Complete</b>
Date Revision	<p>The project was delivered by early October 2023. Delays were due to the inability to have diverse physical links into the Auchencrosh site in Scotland, which necessitated a redesign with a diverse satellite link which needed approval, planning, installation, and testing.</p> <p>This did not hold up the system testing between SONI and Mutual energy as we were able to avail of Mutual energy's undersea fibre to provide a temporary circuit.</p>
Stakeholder Satisfaction/Engagement	<p>Stakeholder engagement included Mutual energy, SONI, EirGrid and Vodafone. Regarding the telecom's activities, all stakeholders were engaged via the weekly and monthly project review meetings. Mutual Energy were grateful to SONI for delivering system connectivity on time.</p>
Adaptability	<p>Mutual Energy provided access to their subsea fibre cable to facilitate system testing and integration on a temporary basis to ensure we achieved the Go-live date.</p> <p>Early engagement between SONI telecoms and Mutual energy allowed for an open, positive and transparent relationship, which helped deliver success for the project.</p>
Cost Scale	Low

Table 17 FWP23-08: Implement a Replacement Energy Metering Solution

Deliverable	FWP23-08: Implement a Replacement Energy Metering Solution
Description of Activities	<p>The various phases associated with this project are detailed as follows:</p> <p><b>Analysis and Solution Specification, Solution Tender Development – FY23</b>                      The detailed requirements are gathered and documented, reviewed and agreed, the business rules are defined, a high-level solution is created, a detailed tender containing requirements, high-level solution design and evaluation framework is defined, reviewed and agreed.</p> <p><b>Procurement and Supplier Selection - FY23</b>                      A PQQ is written with the associated evaluation framework and issued and a short-list of vendors is created, the detailed RFP is issued to the short-listed vendors, the tender responses are evaluated and clarified if required, meetings are held with selected vendors, the winning vendor is selected following a detailed assessment.                      Future plans may include:</p> <ul style="list-style-type: none"> <li>• Solution Implementation and Validation</li> <li>• Migration of Existing Energy Meters Data Feeds</li> <li>• Parallel Operation</li> <li>• Historical Data Migration</li> </ul> <p>Over the period SONI will be progressing the first two stages:</p> <ol style="list-style-type: none"> <li>1. Analysis and Solution Specification, Solution Tender Development and</li> <li>2. Procurement and Supplier Selection</li> </ol>
Delivery	<b>Position as of 30 September 2023 – In Progress</b>
Date Revision	<p>The first stage, Analysis and Solution Specification, Solution Tender Development was completed in FY23. However, the second stage, Supplier Selection, was complete as of December 2023. The delay was the result of the scale and complexity of the tender requirements, and the time necessary firstly to shortlist candidate responses and then to evaluate these thoroughly in order to arrive at the decision as to the successful vendor.</p> <p>SONI ensured that a robust procurement process was undertaken. The duration required for an evaluation process is dependent on the volume of responses and the complexity of each, therefore on this occasion additional time was needed to complete this process, due to a large number of returns.</p>
Stakeholder Satisfaction/Engagement	All stakeholders are internal, in this case, and all were represented on the project with the chance to review both the tender package and the responses and take full part in the selection of the vendor.
Adaptability	Not Applicable
Cost Scale	High

Table 18 FWP23-09: Generation Capacity Statement

Deliverable	FWP23-09: Generation Capacity Statement Methodology
Description of Activities	<p>Improve the GCS methodology to meet the needs of the Island while aligning with National Resource Adequacy Assessment (NRAA) process (legal requirement)</p> <p>SONI as TSO for Northern Ireland works collaboratively with EirGrid (TSO for Ireland) in the preparation of the All-Island Generation Capacity Statement.</p> <p>In the Generation Capacity Statement, we outline the expected electricity demand and the level of generation capacity that will be required on the island over the next ten years. In order to prepare this annual publication, SONI carries out generation adequacy studies to assess the balance between supply and demand for a number of realistic scenarios.</p> <p>For Northern Ireland, the United Kingdom’s Committee on Climate Change recently advised that it is necessary, feasible and cost-effective for the UK to set a target of net-zero Green House Gas (GHG) emissions by 2050. The Climate Change Act 2008 (2050 Target Amendment) Order 2019 came into effect on the 27 June 2019. The revised legally binding target towards net zero emissions covers all sectors of the economy. This update to the Order demonstrates the UK’s and Northern Ireland’s commitment to targeting a challenging ambition in line with the requirements of the Paris Agreement.</p> <p>Over the period SONI will be reviewing our modelling systems to transition to Plexos and ensure that our methodology is aligned with the NRAA process. Moving to a new adequacy assessment methodology will enable us to model a power system with at least 80% renewables; we are moving to a system where the greatest risk is no longer the loss of a thermal power plant, but uncertainties of disruption to gas supply and weather, particularly during extended periods of low renewable output.</p> <p>The associated deliverables for this project over the period were:</p> <ul style="list-style-type: none"> <li>• Phase 0: Develop a high-level plan on what is required to deliver a new resource adequacy</li> <li>• Phase 1: Develop a high-level design for the modelling framework and a project migration implementation plan</li> </ul>
Delivery	<b>Position as of 30 September 2023 - Complete</b>
Date Revision	Not Applicable
Stakeholder Satisfaction/Engagement	<p>The current stakeholders involved in the development of the NRAA has been both regulators and government departments. Initial engagement has been to understand the implications of the Clean Energy Package obligations for Northern Ireland.</p> <p>The outcome from the stakeholder interaction is there is agreement that the full implementation of the resource adequacy methodology update programme is to progress for Northern Ireland and Ireland over the next number of years.</p>
Adaptability	<p>At the start of this programme there was some ambiguity in the relevance of NRAA to the Northern Ireland power system. The NRAA implementation programme was designed in four phases, background research, delivery of an implementation plan, delivery of a modelling framework and linking the NRAA into the capacity market.</p> <p>The programme approach was to progress the initial two phases on an all-island basis, but with both jurisdictions in mind, so that early termination of the programme for either jurisdiction was an option. The background research and implementation plan were split out into the first two project phases meaning we could progress the programme at lower risk to cost and resourcing. The phased programme approach meant the uncertainties around the applicability of NRAA to Northern Ireland could be clarified over time. The programme flexibility made provision for programme breaks so that reprioritisation of resources could be achieved without impacting the ability of either jurisdiction progress their part of the programme.</p>

	Ultimately the decision has been made to progress the NRAA into the next phase of the programme on a joint TSO basis, so the flexibility option was not actioned, the programme moved together into Phase II.
Cost Scale	Low

Table 19 FWP23-10: Imperfections Costs

Deliverable	FWP23-10: Imperfections Costs
Description of Activities	<p>Improved modelling of imperfections costs</p> <p>SONI will annually review the list of Transmission Constraint Groups (TCGs) for which the associated imperfections costs will be calculated, using the latest available Plexos backcast all-island model. This model represents actual data, from the latest completed full tariff year, i.e. 'Y-1' Cost determination will commence when the Backcast model is complete – March 2023.</p> <p>SONI will annually develop the imperfections cost savings achieved by SONI's activities and the imperfections costs associated with the list of TCGs, as calculated using the Y-1 backcast model – April 2023</p> <p>Note: To maximise process timelines, the study will focus on the more significant / material TCGs, which have the most impact on imperfections.</p> <p>SONI intends to use the backcast model, considering it to be the best model to use, when estimating the annual imperfections costs associated with constraints. The backcast contains actual data, rather than using a forecast model, which contains assumptions forecasted more than six months before the beginning of the tariff year. The design of a backcast model is to enable individual inputs and their impacts to be investigated in detail, whereas the intent of a forecast model is to determine the estimated total cost of Y+1.</p> <p>In terms of future constraint costs, assumptions such as fuel are very volatile and have a significant impact on the imperfections cost associated with constraints. No method of estimating the future annual imperfections costs, associated with constraints, is perfect but it is SONI's opinion that using backcast models to determine these costs would be annually consistent, not susceptible to unknown volatility, and less open to challenge, as we are using actual inputs rather than assumptions that will, no doubt, change and either increase, or decrease, imperfection costs.</p> <ul style="list-style-type: none"> <li>• Forecast models are the TSO's best estimate of the year ahead imperfections – what happens in reality can significantly vary from assumptions, as noted in the 2021/22 year with large increases in fuel prices.</li> <li>• Backcast models provide an up to date model reflecting actual events and removes any issues that were outside the TSO's control.</li> </ul> <p>SONI produce 4 Quarterly Imperfections Cost Reports which are published on the SEM-O website (TSO Responsibilities<sup>2</sup>), which will provide clear evidence of the imperfections reduction actions, progress on the plan, and the future improvements that SONI will make to remove or reduce the cost of each constraint in the next period.</p>
Delivery	<p><b>Position as of 30 September 2023: Complete</b></p> <p>Part 1 - Transmission Constraint Groups (TCGs)</p> <p>SONI has reviewed and identified the TCGs which have been relaxed in the 2021/22 Tariff Year. SONI has then used the 2021/22 all island Imperfections Backcast model to evaluate the cost savings associated with relaxing these TCGs.</p>

<sup>2</sup> [TSO Responsibilities \(sem-o.com\)](https://www.sem-o.com)

Part 2 - Imperfections Cost Savings

The calculated imperfections cost savings all island for the 2021/22 tariff year are:

TSO Actions	Imperfections Savings
Removing Ireland Negative Reserve	€1m
Dynamic Primary Reserve Requirement Reduction	€3.3m
Reducing conventional requirement from all reserve categories	€7.2m

When the three changes above are combined as a single change the calculated imperfections cost savings are:

	Contribution to Imperfections Cost in 2020/21 Reforecast
All Workstream Initiatives	€10.2m

This combined change is completed to avoid double accounting that would result from adding up the individual imperfections cost savings. This combined change is typically less than the sum of the individual changes, due to efficiencies working in tandem.

It should be noted that the calculations of the Imperfections costs is carried out on an 'all island' basis - we work together with EirGrid on these savings. Imperfections Costs will continue to be an 'all island' function as it is a Market Operator obligation.

Date Revision	Not Applicable
Stakeholder Satisfaction/Engagement	SONI has continued to publish the Quarterly Imperfections Cost Reports ensuring all stakeholders have access to this information.
Adaptability	In addition to the Quarterly Reports, SONI also undertook additional assessments resulting in the publication of a Mid-Year Imperfections Report 2022-2023 <sup>3</sup>
Cost Scale	Low

<sup>3</sup> [2223-Imperfections-Mid-Year-Report-v3.0.pdf](#)