

23/09/2025

Shaping Our Electricity Future Advisory Council

Meeting #12

The Europa Hotel, Belfast



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Moderator: Welcome Message



Colleen Savage



Agenda: SOEF Advisory Council #12

The Europa Hotel, Belfast, 23rd September, 2025

TIME	DURATION	TOPIC	DETAIL	PRESENTER/S
10:00	25 min	Coffee & Networking		All
10:25	10 min	Kick-Off: Introduction, Agenda, Open Actions	Welcome participants, introduce agenda, address open actions	Co-Chairs & Moderator
10:35	20 min	DfE: Achieving 80 by 30	Plenary presentation with time for Q&A	Rachel Sankannawar, DfE
10:55	60 min	SOEF Strategic Workstreams Panel	Update from EirGrid and SONI workstream leads, Q&A	Workstream Leads
11:55	60 min	Interactive Breakouts	Room breaks into 3 groups: Markets, Operations, Networks & Public Engagement	<i>Markets</i> - Stephen Gannon & Michael Atcheson <i>Operations</i> - David McGowan & Bryan Murray <i>Networks & Public Engagement</i> - Sinead Dooley, Eimear Watson
12:55	45 min	Lunch	Served in Penthouse Meeting Room	
13:40	30 min	RAs Update: SEM-C Strategy Overview	Engagement with council on upcoming SEM-C Strategy consultation	Robert O'Rourke & Marie-Therese Campbell
14:10	20 min	EirGrid Dispatch Down Working Group Update	Overview of the progress made by the Working Group	Marc Senouci & WG Members
14:30	10 min	Optional Comfort Break		
14:40	40 min	Northern Ireland: Minimum No. Of Units	Overview of the challenge, industry feedback and Q&A	David McGowan & Team
15:20	20 min	Reflection, Next Steps and Closing Messages		
15:40		Meeting End		

Meeting Chairs:



Eoin Kennedy Gerard Carlin



Moderator: Colleen Savage



A pre-read is shared ahead of the meeting.

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Welcome!



A word from our co-Chairs
Eoin Kennedy & Gerard Carlin



Actions

Action	Raised	Detail	Status
SOEF Workstreams engagement	AC11	EirGrid and SONI to consider focused workstream sessions at or before future Advisory Council meetings	Complete
Hackathon Event	AC11	EirGrid and SONI to consider ‘hackaton’ event to accelerate progress for SOEF.	Incomplete, further consideration required.



DfE: Achieving 80 by 30



Rachel Sankannawar

Director, Strategic Investment Board,
Department for the Economy (DfE), Northern
Ireland



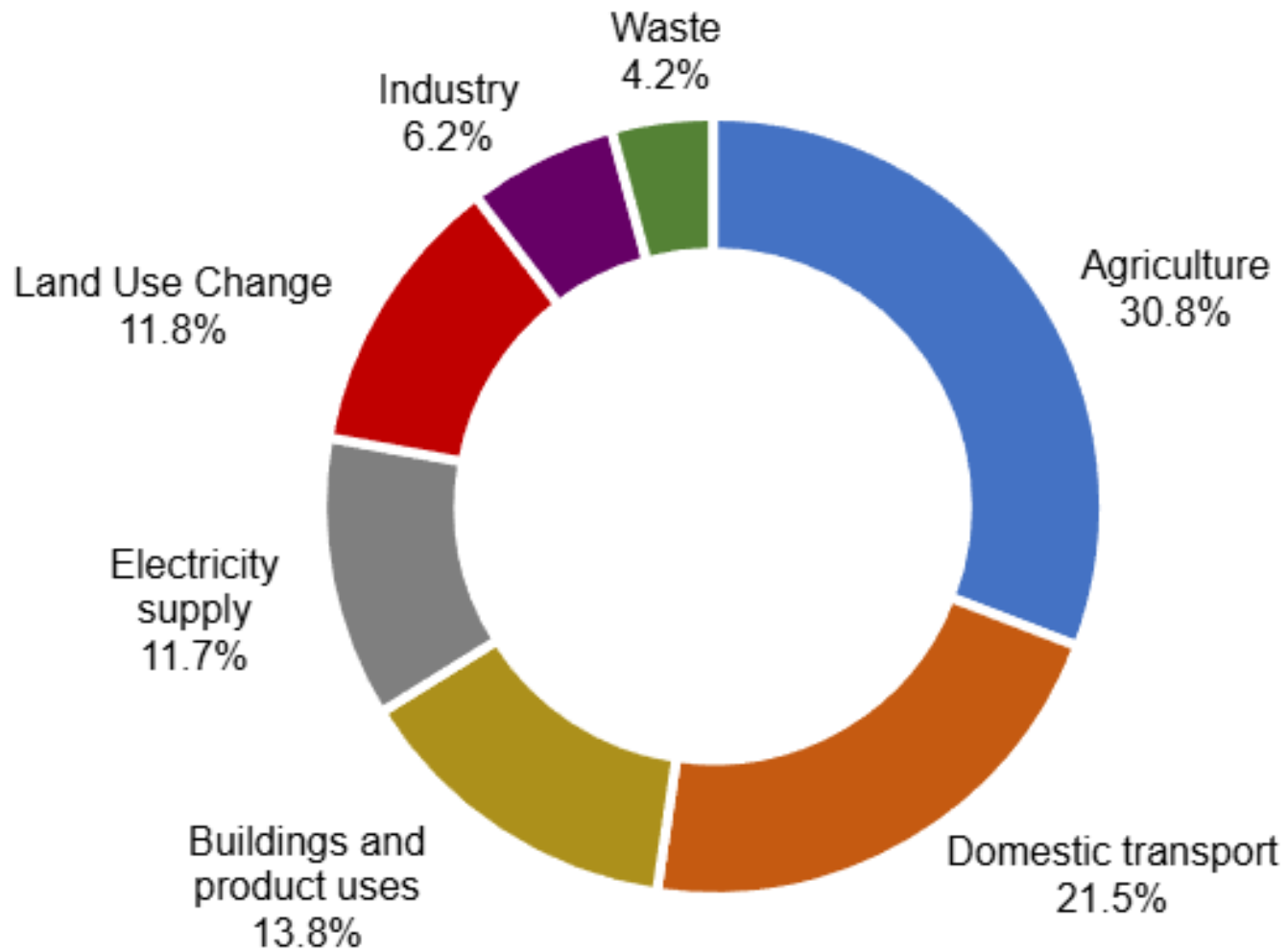
Path to 80% Renewable Electricity

SOEF Advisory Council

Climate Change
Act
(Northern Ireland)
2022

Section 15:

“The Department for the Economy must ensure that at least 80% of electricity consumption is from renewable sources by 2030”



Northern Ireland Greenhouse Gas Emissions by Sector; 2023

Electricity Challenge



SECURITY OF SUPPLY



LEGISLATION

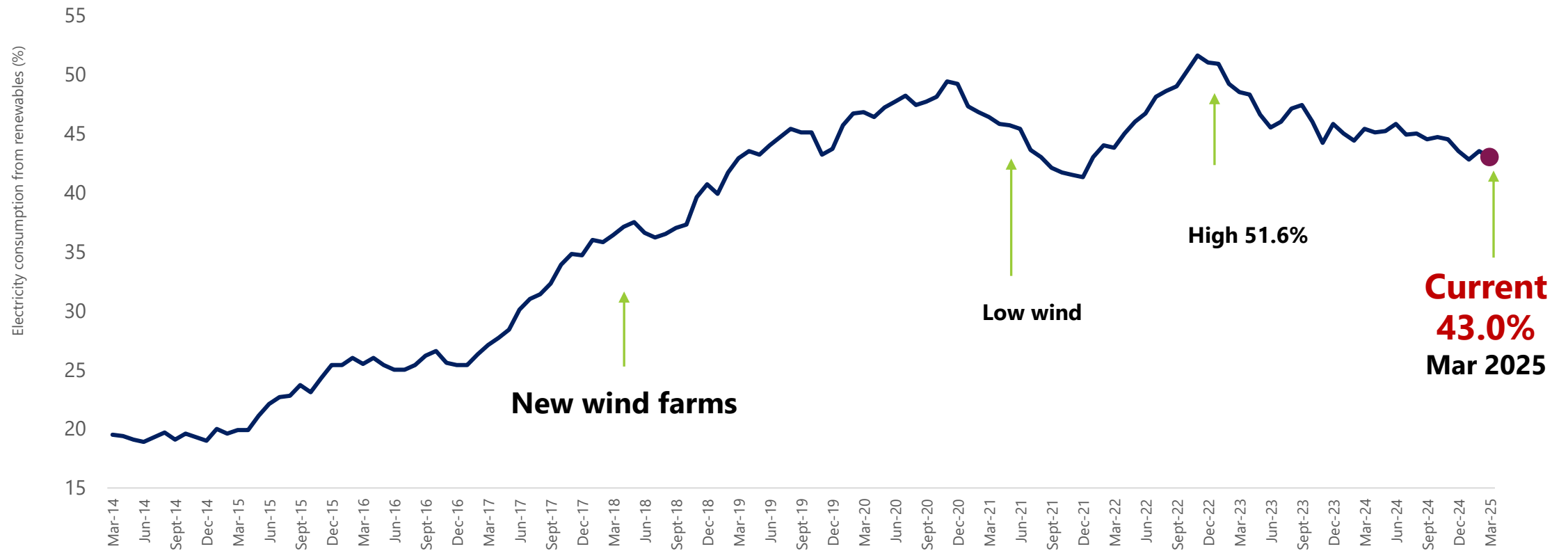


AFFORDABILITY

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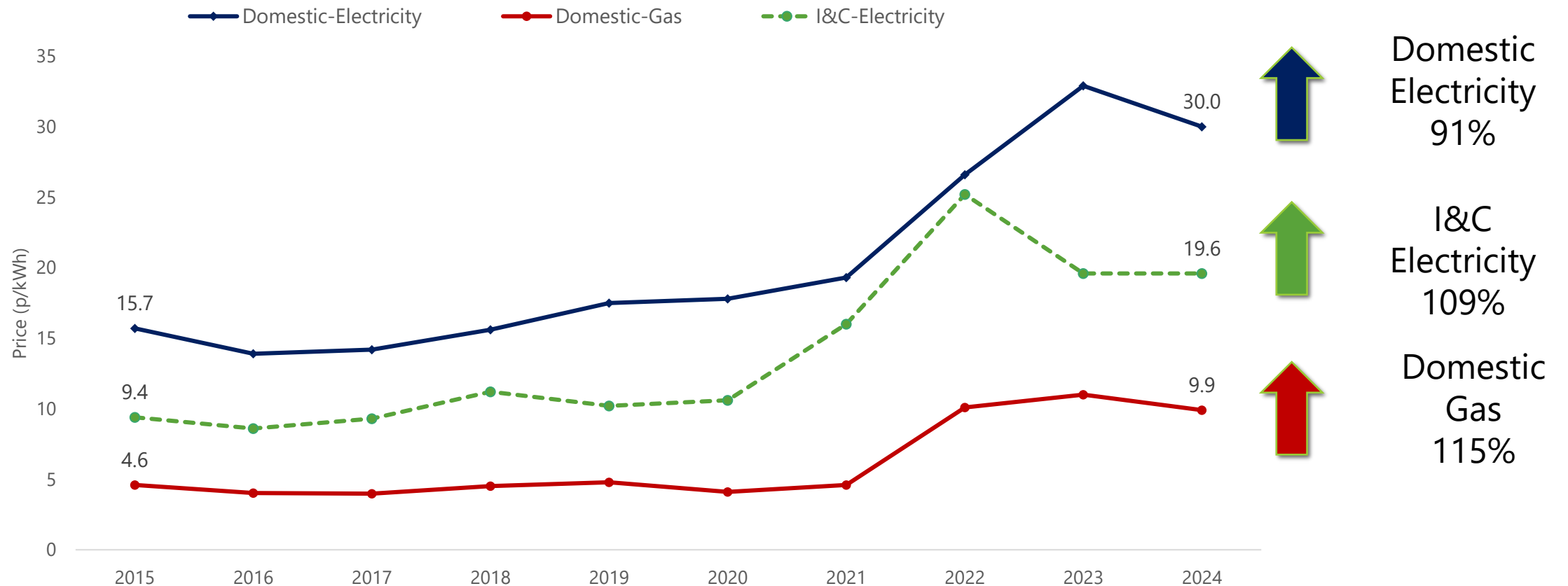
Bridging Perspectives & Unpacking the Challenges

Renewable Generation as a Percentage of Electricity Consumption in NI (rolling 12-month average)



Prices for Electricity and Gas

Electricity and gas prices for medium Domestic and I&C users, Jul to Dec 2015 to 2024



Total Yearly Electricity Demand

This line graph shows the total yearly electricity demand in terawatt-hours (TWh) for the I-SEM, Northern Ireland, and Republic of Ireland.

The total yearly electricity demand for Data Centres located in the Republic of Ireland is also included.

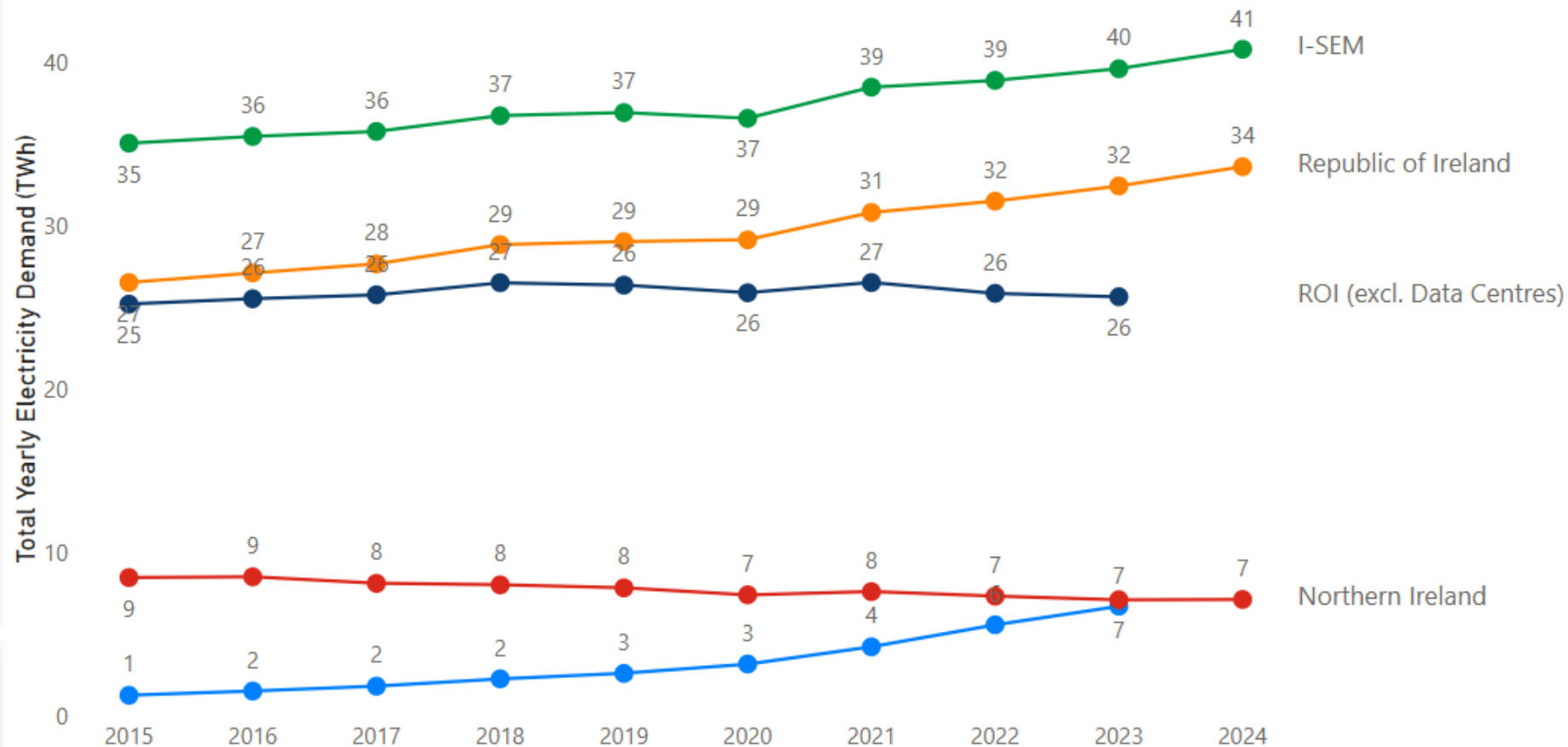


Select category below:

- ☒ Select all
- ☒ Data Centres (ROI only)
- ☒ I-SEM
- ☒ Northern Ireland
- ☒ Republic of Ireland
- ☒ ROI (excl. Data Centres)

2015

2024



"Source: Montel"

Fiscal constraints

Demand

Delayed infrastructure investment

High dispatch down

Minimal growth in storage

Impact of min gen

Context & Assumptions

Key Policy Developments

Renewable Electricity Price
Guarantee

Design Plan for Smart Meters

Increased Socialisation of
Connection Costs

NIE Networks
announce "once in a
generation" rebuild of
electricity network



19/06/2025

Low Carbon Inertia Service (LCIS) Procurement Phase 2

Webinar



Dispatch Down Draft Action Plan

Northern Ireland Dispatch Down Contributing Factors and
Mitigation Recommendations

System Operator for Northern Ireland

December 2024



Transmission Development Plan



Developments across the Grid Ecosystem

Key Groups & Leadership for 80 by 30



Grid Development Monitoring Group



Energy Production and Sector Supply Working Group (CAP)



Future Energy Modelling Group



Renewable Electricity Price Guarantee Working Group

80%
by
2030

WHAT CAN WE DO NOW TO MAKE THE GRID MORE
RENEWABLES RECEPTIVE?



HOW MUCH WILL IT MOVE THE DIAL TOWARDS
80%?



WHAT WILL IT MEAN FOR THE CONSUMER?

Focus on Optimisation

Thank you for
listening



Join at
slido.com
#3127 981



Opportunity for Members Questions and Insights

Panel: SOEF Workstream Leads



Michael Atcheson
Head of Future Power
Markets, SONI



Bryan Murray
Head of Future
Operations, EirGrid



Sinead Dooley
Head of Public
Engagement, EirGrid



Stephen Gannon
Head of Future Power
Markets, EirGrid



David McGowan
Head of Future
Power Systems, SONI



Eimear Watson
Head of Networks,
SONI



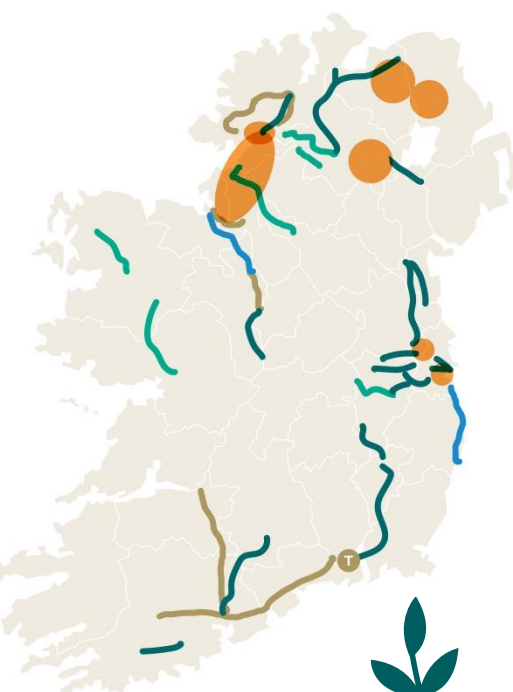
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Shaping Our Electricity Future Roadmap - Recent Achievements



SOEF v1.1: June - Sep '25



Network Infra Enablers & Engagement

The Celtic Interconnector system impact studies have been completed; these will be reviewed by the Operational Policy Review Committee

- SONI's Proposed Transmission Cluster Policy was published for consultation in June.
- ROI -Significant progress in terms of Planning Consents/ Project Agreements/Tendering/ land acquisition for a number of the large SOEF Capital projects.
- Powering Up Offshore-Maritime Usage Licence for marine and beach surveys awarded in early July.
- Celtic Interconnector-Second phase of community benefit fund of €821k released.

The Qualification Trial Process (QTP) call for information response paper was published



The Low Carbon Inertia Services (LCIS) Phase 2 procurement arrangements consultation was closed in September

Markets

Scheduling and Dispatch (SDP)

-Programme is progressing test execution and detailed planning activity to support the go-live of SDP-02 (ESPS) on 11-Nov-25 and SDP-04 (WDI) on 26-Nov-25.

Future Arrangements System Services (FASS)

-Phased Implementation Roadmap (PIR) V3.0 published in June reflecting a revised go live of May 2027.
-SEMC Decision on 'The Gap' received, extending DS3 until DASSA Go-Live.

Strategic Markets Program (SMP)

• SEM EU & MNA: Detailed design in progress for release 1, with vendor contracting and core hub procurement underway.

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MARKETS

Overall Summary and Status

- **SDP (The Scheduling and Dispatch Programme):** Revised go-live is now November 2025 for battery changes (SDP_02) and Wind Dispatch Improvements (SDP_04).
- **FASS (The Future Arrangements for System Services):** FASS Programme continues at pace; however, the overall programme status is amber reflecting delays to vendor contracting and finalisation of consultation/recommendation/decision papers.
- **LDES (Long Duration Energy Storage):** The EirGrid LDES team is progressing the development of a consultation paper that is targeted for issuance at the end of September.
- **SMP:** The delivery of the Celtic Interconnector has been delayed due to adjustments in the subsea marine cable manufacturing. The expected commissioning date of Celtic Interconnector is spring 2028. The programme has completed an impact assessment and is currently validating the updated plan with external stakeholders. Release 1 delivery is progressing with vendors, and planning and analysis for Balancing Market Reform and Post Brexit Arrangements is progressing.



Key Highlights

- **SDP:**
 - Programme targeting go-live of SDP-02 (Energy Storage Power Stations (ESPS)) on 11-Nov-25 and SDP-04 (Wind Dispatch Improvements (WDI)) on 26-Nov-25.
 - RAs and SEMC assessment of Mod_13_23 Treatment of NPDRs is continuing. The programme is assessing the delivery schedule of Tranche 2 initiatives.
- **FASS:**
 - Overall programme status remains amber. SEMC Decision on 'The Gap' received, extending DS3 until DASSA Go-Live. Confirmation is needed on final 'Day One' design and associated implementation activities.
- **LDES:**
 - Decision to split LDES procurement consultation into two: one consultation on the procurement process and operational / contractual considerations and a second one on the contractual arrangements.
- **SMP:**
 - Detailed Design is progressing for SDAC/SIDC, Multi-NEMO Arrangements and CORE CCR.



Upcoming Milestones

- **SDP:**
 - Programme is progressing test execution for SDP-02 (ESPS) and SDP-04 (WDI). SDP-02 Participant Interface Testing (PIT) preparation is ongoing, and Programme is engaging with ESPS operators directly.
- **FASS:**
 - Parameters & Scalars recommendation paper drafting is underway. RAD Recommendation Paper submitted to RAs; SEMC decision expected shortly. Non-Reserves Consultation Paper remains delayed. Readiness Workstream mobilised and progressing System Services Code development and legal drafting activities ongoing.
- **LDES:**
 - LDES Programme is preparing to publish a consultation paper on procurement models by the end of September, following engagement with CRU and DECC.
- **SMP:**
 - Vendor delivery for Release 1 is progressing, and the baseline plan is being validated with stakeholders following the Celtic Interconnector impact assessment.



Key Risks or Issues

- **Multi Year Plan:** Work is ongoing with RAs on developing a multiyear market plan, which is essential in sequencing the overall changes in the markets; this will support longer term resource and system planning across the ecosystem.
- **SDP:** Testing ongoing. Mitigation actions are in place to reduce knock-on effects across other programmes.
- **FASS:** There is a risk that overlapping design activities may impact programme timelines. Additionally, the transition from DS3 System Services Regulated Arrangements to FASS may result in a complex implementation approach, requiring resource reallocation and potentially delaying the FASS go-live.
- **SMP:** Due to the extended timeline for the Celtic Interconnector, there is an increased risk that EU and regulatory changes (e.g. CACM 2.0) may require updates to already designed and delivered systems and processes.



Where we need your help: FASS Question

As we move toward the implementation of the Future Arrangements for System Services (FASS)...

i. Do you see any *barriers to entry* for new participants?

And

ii. Where do you believe the greatest *opportunities* lie for *innovation, competition, and system value*?



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OPERATIONS

Overall Summary and Status

- Good progress has been made across a range of areas.
- The Low Carbon Inertia Services (LCIS) Phase 2 procurement arrangements consultation has closed.
- The Celtic Interconnector system impact studies have been completed; these will be reviewed by the Operational Policy Review Committee (OPRC).
- The overall SOEF Operations programme status is Amber. Commencement of the 80% SNSP trial is delayed pending further OPRC consideration of the existing Demand Facility fault ride through issue.



Key Highlights

- Call for information response for Qualification Trial Process (QTP) was published on 20 August 2025.
- LCIS phase 2 procurement arrangements published in July 2025. Consultation closed on 05 September.
- Updated SNSP calculation published in Sept 2025.
- Celtic Interconnector system impact studies completed with a draft report for review by OPRC in Sept 2025.
- Operational Tools & Capability Enhancement (OTCE) programme tranche 1 projects are underway.
- SONI completed studies for operating with 2 MUON in NI.



Upcoming Milestones

- Publish information paper on the Demand Facility Fault Ride Through (FRT) issue in Sept 2025.
- Approval of interim operational policy aimed at managing FRT issues.
- Submit grid code modification proposal for the Demand Facility fault ride through requirements in December 2025.
- LCIS recommendations paper to be submitted to SEMC by end of October 2025.
- LDES Consultation paper to be published at end of Sept on the procurement mechanism for LDE.
- Following successful testing, full trial on NI negative reserves to commence in Jan 2026 subject to OPRC approval.
- SONI are currently operating a two-set minimum units on trial, subject to the normal overarching dependencies



Key Risks or Issues

- The Demand Facility FRT issue is a risk that is currently being assessed by the future operations team; this is causing delays to other workstreams, including the commencement of the 80% SNSP trial.
- SONI working with Utility Regulator NI on funding submission for OTCE.





PUBLIC ENGAGEMENT

Overall Summary and Status

- The SOEF Roadmap underpins all Consultations, engagements and initiatives undertaken across the Public Engagement Team and is a key enabler to the delivery of an accelerated grid expansion programme.



Key Highlights

Celtic Interconnector

- Sustained engagement with local councils and communities during beach works over the summer. These works have now been completed.
- Significant engagement with coastal communities and local fishers to facilitate marine surveys and cable laying activities which are currently ongoing.
- Second phase of community benefit fund released of €821k, across community, sustainability and biodiversity projects.

Powering Up Offshore - South Coast

- Maritime Usage Licence for marine and beach surveys awarded in early July.
- Engagement with local councils and Seafood ORE Working Group ahead of all activities.
- Extensive engagement with local fisheries ahead of summer survey campaign. Over 60 agreements in place with fishers to facilitate surveys.

Central Substation Engagement

- Consultation completed on substation design to address local issues ahead of planning application.

Fingal East Meath Reinforcement Project

- Landowner engagement to support decision on Fingal Best Performing Site decision.

Kildare Dublin Reinforcement Project

- Landowner team active on the ground with landowners over the last number of months to shortlist suitable site locations.



Upcoming Milestones

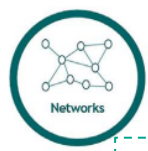
- **Biodiversity Strategy** - being finalised ahead of planned launch in October.



Key Risks or Issues

- Third Party access to lands.
- Acquisition of private lands.
- Third party objections to planning applications.
- Public acceptance continues to be challenging.





NETWORKS INFRASTRUCTURE ROI

Overall Summary and Status

- Significant progress in terms of Planning Consents/ Project Agreements/ Tendering/ land acquisition for a number of the large SOEF Capital projects.



Key Highlights

Planning Applications

- **Great Island - Kellis 220kV Line Uprate:** Planning Grant received in June '25.
- **Cashla - Salthill 110kV Thermal Uprate:** Planning Grant received in June '25.
- **Athlone - Lanesboro 110 kV circuit 1:** Planning Grant received in July '25
- **Letterkenny Station Redevelopment:** Planning Grant received in Aug '25

Capital Approvals

- **Cashla - Prospect 220kV line Refurbishment:** June '25.
- **Blake-Maynooth-Newbridge 110kV OHL Uprate:** June '25.

Project Agreements

- **Cushaling - Newbridge 110 kV line refurbishment:** May '25
- **Newbridge - Portlaoise 110 kV Thermal Uprate:** June '25
- **Gorman - Platin 110 kV line uprate:** July '25

Project Energisations

- **Corduff 220 kV Station Deep Works:** June '25
- **Aghada 220 kV Station Busbar Reconfiguration:** July '25
- **Flagford - Sliabh Bawn 110 kV circuit uprate:** July '25
- **Galway 110 kV Station Redevelopment Project:** Aug '25
- **Coolroe, Inniscarra protection upgrade:** Sept '25
- **Intel 110kV Line Diversion:** Sept '25 (9-months acceleration)

Project Updates

- **N/S Interconnector:** ESB has submitted all relevant documentation to Meath, Monaghan and Cavan Local Authorities to discharge all conditions of planning in advance of commencement of construction.
- **Flagford-Sligo Capacity Needs:** Public Consultation to commence in September and engagement with existing landowners ongoing.
- **Fingal East Meath Grid Reinforcement:** Surveys and landowner engagement ongoing, regarding best performing site location.
- **Kildare Dublin Grid Reinforcement:** Landowner engagement continues with best performing options for both substations under review. 400kV station requirements to be finalised.
- **Kildare Meath New 400kV Cable:** Project Implementation Plan agreed in August. Targeting Project Agreement in September.

Powering Up Dublin:

- **Dublin 220kV Cables:** EPC contractor tender progressed for Finglas Northwall. Carrickmines/Poolbeg: MUL (marine surveys) and MAC approvals in delay with good progress being made on onshore section. Poolbeg/ Northwall: MAC for Liffey Crossing also delayed impacting on planning application with good progress being made on onshore section on Dublin Port lands. Plans for next phase of Inchicore/Poolbeg circuits being developed.
- **Belcamp 220kV station:** Contractor procurement well advanced ahead of construction start in early 2026. EPC contractor procurement also nearing completion for **Poolbeg 220kV station**.
- **Dublin Central Bulk Supply Project:** Planning application submitted to An Coimisiún Pleanála in late July 2025.



Upcoming Milestones

Upcoming Capital Approvals

- **Letterkenny-Golagh T 110kV Uprate:** Sept '25
- **Drumline 110 kV Station Busbar Uprate:** Nov '25
- **Flagford Sligo Capacity Needs:** Dec '25



Key Risks or Issues

- Third party Land Acquisition.
- MARA/MAC application time.
- Outage availability and utilisation.



NETWORKS INFRASTRUCTURE (NI)

Overall Summary and Status

- **SONI and NIE Networks Joint Programme Management Office (JPMO)** has concluded its work to develop revised estimated completion dates for our Transmission Network Delivery Portfolio. Publication has been delayed to allow for stakeholder engagement, but will be published in line with the Draft Transmission Development Plan NI 2025.
- **Ten-Year Transmission Forecast Statement (TYTFS) 2024** was published following successful collaboration with the DfE and the UR include facilitation of offshore generation to support the DfE's ambition of 1GW of offshore generation from 2030.
- **2nd North-South Interconnector:** Construction continues and SONI is executing a further batch of easements. We continue to engage with the DfE on the Necessary Wayleave applications.
- **Mid-Antrim Upgrade:** Optimal switching station site and preferred overhead line route corridor selected. Design and landowner engagement along the corridor continues. The UR has endorsed the proposed model for easements so Transmission Network Preconstruction Project (TNPP) uplift underway.
- **Tamnamore-Drumnakelly Reinforcement:** conductor selection concluded.
- **Cam Cluster Extension:** Final Part 2c Public Consultation event held June 25 ahead of planning submission in Autumn 2025.
- **Connect West & Coolkeeragh-Strabane:** Preliminary preferred options determined with TNPP submissions being prepared.



Key Highlights

- **SONI's Proposed Transmission Cluster Policy** was published for consultation in June. If implemented would represent a significant step forward in moving to a plan-led approach and providing investment in the grid in an anticipatory manner.
- JR in relation to the approval of the discharge of a pre-commencement condition of the the **2nd North-South Interconnector** was withdrawn by the applicant.
- **SONI and NIE Networks JPMO** has informed the UR and the DfE of its findings including estimated completion dates for our Transmission Network Delivery Portfolio.



Upcoming Milestones

- Consultation on **SONI's proposed Transmission Cluster policy** closes end of September 2025.
- **Draft Transmission Development Plan NI 2025** to be published for consultation in Autumn 2025, with SONI-NIE Joint Networks Programme Management Office findings including estimated completion dates for our Transmission Network Delivery Portfolio.



Key Risks or Issues

- Further legal challenge on 2nd North-South Interconnector.
- Elements of grid delivery are outside the control of SONI & NIEN so we will continue to engage with the relevant stakeholders on these elements of grid delivery.

Interactive Breakouts

- Opportunity for discussion in smaller groups
- Each table facilitating ideas, suggestions, observations on one of three areas
- Focussed across the core areas of SOEF
- Total 60min segment:
- 20mins discussion in groups (3 in person, 1 online):
 - Operations: Identifying and overcoming our most urgent operational issues
 - Network & Public Engagement: Overcoming barriers to grid delivery
 - Markets: Identifying Barriers and Opportunities enabling FASS
- 8mins per group (3 in person, 1 online) playback - total 32mins
- 8mins for reflection & concluding remarks



Interactive Breakouts

- 20mins discussion in groups (3 in person, 1 online):
 - **Operations:** *Identify an operational change which you feel should be prioritised. Suggest ways to effectively implement this.*
 - **Network & Public Engagement:** *Identify the top policy or regulatory change that would most accelerate grid delivery in Ireland. Prepare one concrete recommendation to share back with the group.*
 - *What does impactful engagement mean to you as a key stakeholder?*
 - **Markets:** *As we move toward the implementation of the Future Arrangements for System Services (FASS)...
Do you see any barriers to entry for new participants?
And... Where do you believe the greatest opportunities lie for innovation, competition, and system value?*

Operations



Networks &
Public
Engagement



Markets



23/09/2025

Regulatory Authority Update



Marie-Therese Campbell
Utility Regulator
Northern Ireland
(URNI)



Robert O'Rourke
Commission for
Regulation of Utilities
(CRU)





RA Update SOEF – September 23rd 2025

Marie-Therese Campbell (UR) & Robert O'Rourke (CRU)

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EirGrid Dispatch Down Working Group

- Update on progress so far.
- Stakeholder presentations for October solutioning workshops are welcome.



Dispatch Down Working Group



Objective

The Dispatch Down Working Group aims to create a collaborative forum to further understand the management of dispatch down and work together to identify additional actions that could improve levels of dispatch down.

Scope



Conduct a timebound focused review to assess dispatch down within the Irish power system under EirGrid’s remit as TSO.



Conduct an assessment of existing levels of dispatch down and current actions being taken by EirGrid to manage the level of dispatch down within the system as well as EirGrid’s plans to manage dispatch down over the coming years.



Identify additional actions that could be considered to manage dispatch down across operations, markets and networks as aligned to Shaping Our Electricity Future (SOEF)



Provide effective stakeholder engagement clear communication outputs and further engagement via the SOEF Advisory Council

Out of Scope



Incentives / penalties and displaced emissions in relation to Dispatch Down.



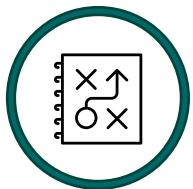
The topic of compensation associated with Dispatch Down

Working Group Members

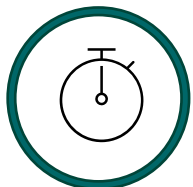
Renewable Industry Members	EirGrid Members
Marcos Byrne (Wind Energy Ireland)	Eoin Kennedy (CTT00)
Maria Hallinan (Solar Ireland)	Diarmaid Gillespie (COAMO)
Margaret Nee (Statkraft)	Jason Kenna (C100)
Laura Mehigan (Orsted)	Marc Senouci (CTT00)
Kenny Conway (TNEI)	
Peter Lynn (MullanGrid)	

Dispatch Down Working Group

Key Milestones



Established on 19 June 2025



Timebound Working Group due to conclude in early 2026



The Working Group reports into the Shaping Our Electricity Future Advisory Council



WORKSHOP	OBJECTIVE	
 Working Group 1	Agreement on working group objective and terms of reference	Scene Setting
 Working Group 2	Presentations on current work done on Dispatch Down	
 Working Group 3	Presentations on Dispatch Down Reporting and Analysis	
 Working Group 4 - 07/10	Solutioning Workshop	Solutioning Phase
 Working Group 5 - 15/10	Solutioning Workshop	
 Working Group 6	Solutioning Workshop	
 Working Group 7	Review and finalisation of outcomes	Finalising

Northern Ireland: Minimum No. Of units



David McGowan
Head of
Future Power Systems,
SONI



Gareth McLorn
Senior Lead, Future Power
Systems, SONI



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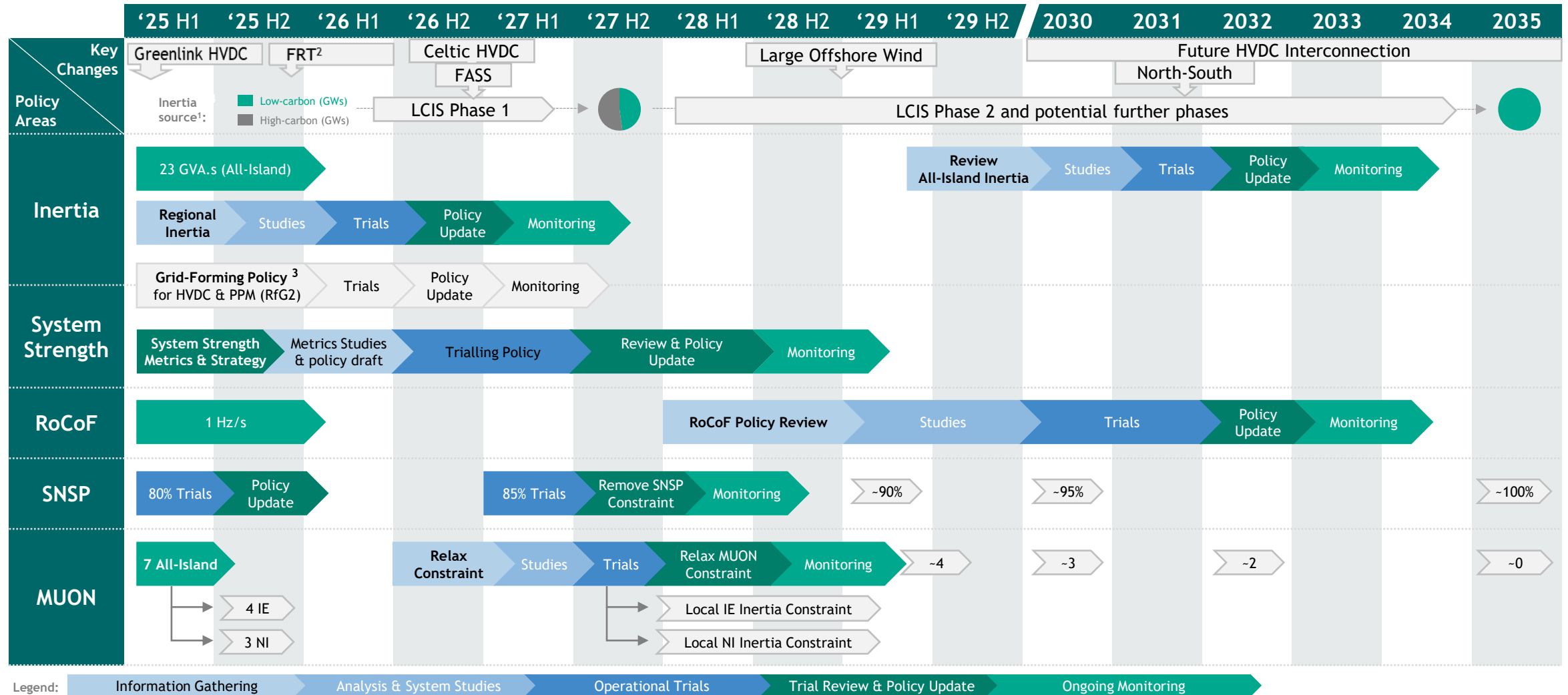


Delivering a cleaner
energy future

Relaxing the MUON constraint in Northern Ireland ***Future Power Systems***



Dynamic Stability - Milestones & Timeline 2025-2035*



Operational Policy Change Process

EirGrid and SONI's joint **Operational Policy Review Committee (OPRC)** governs the process of operational policy changes. The OPRC comprises members with extensive experience and expert knowledge of system operations. The members consider the proposed changes, review all related materials/reports, and approve or reject the proposed changes following an operational trial period and assessment of same. Operational policy in EirGrid and SONI is monitored, reviewed, and updated according to a **five-stage continuous cycle process**, described below.

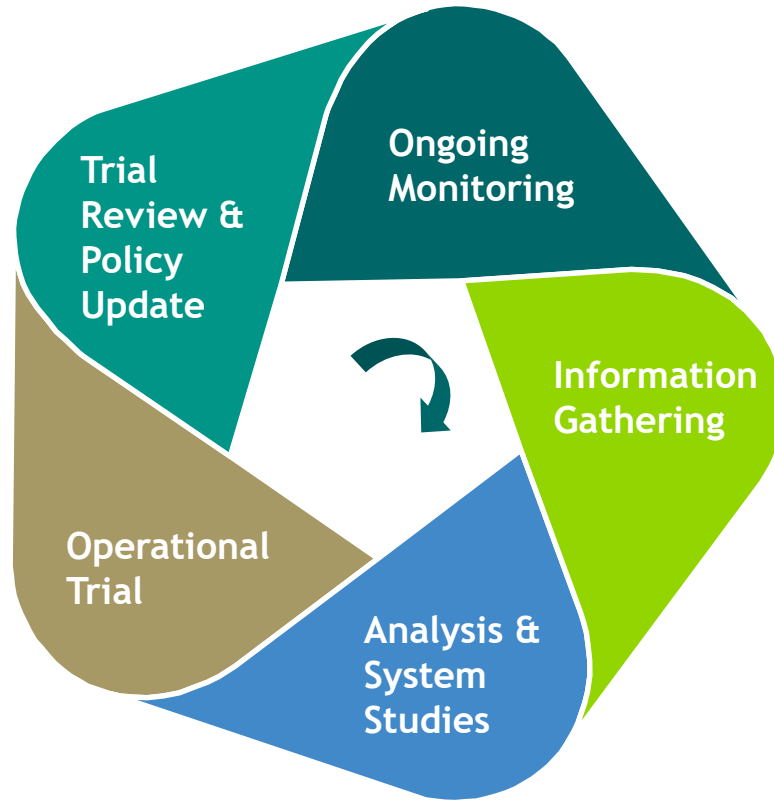
05 Trial Review & Policy Update

If the trial period of operation passes without adverse impacts, subject matter experts will study the results of the trial parameters and criteria. An in-depth examination of the trial period is carried out and reported on to the OPRC. The conditions and events during the trial are examined to determine if any trial related issues arose. The OPRC reviews the outcome and report and decides whether to either:

1. Cease the trial noting adverse impacts.
2. Continue the trial if there is insufficient evidence. Gather more relevant data points and information to support decisions.
3. Approve the proposed operational policy change as the enduring operational policy.

04 Operational Trial

If the OPRC grant approval, an operational policy trial is commenced with strict operational criteria and parameters to be monitored, including hours of operation. The trial may be suspended at any time by operations staff if adverse impacts arise during the trial.



01 Ongoing Monitoring

In the Ongoing Monitoring phase, EirGrid and SONI monitor the system parameters and analyse events and disturbances to assess system performance and generator compliance relative to operational policy parameters and metrics.

02 Information Gathering

During the Information Gathering stage the current status of the policy and parameters are assessed, and consultation is held with operations specialists on the drivers, requirements and need for changes.

03 Analysis & System Studies

At the Analysis & System Studies stage subject matter experts and operations policy specialists study the system under an extensive and detailed range of conditions. They study the impact of the proposed policy change and make recommendations on the conditions of the operational trial. The OPRC approve or reject the proposed trial, based on the studies and in-depth discussions.

System Level Overarching Dependencies and Risks

The Operational Policy Roadmap is an **ambitious vision for how policy should evolve through the decade to support the decarbonisation targets**. The All-Island power system currently requires a balanced portfolio of new capacity to address the heightened risk of Loss of Load Expectation (LOLE) in Ireland and ensure continued security of supply. The medium- and long-term milestones and targets are tentative and will be dependent on an extensive series of studies, reviews, monitoring processes and rollout of innovative technologies that determine the future operational policy and constraints. Successful implementation of actions and enablers outlined in this roadmap is reliant on regulatory decisions and funding.



Performance of System Users

The ability to run operational trials and to change policy will be dependent **on the evolving performance of system users** (in particular, Demand Facilities and Distributed Energy Resources). The development and application of new user performance requirements will be key to the TSOs being able to deliver the operational policy changes outlined in this document.



Network and System Services Development

Timely delivery and commissioning of system services providers, new flexible generation, major infrastructure projects (e.g., second North-South Interconnector) and other transmission reinforcements are required to assist with future challenges and meet the decarbonisation targets.



Security of Supply

Operational trials will be **dependent on system operational conditions and the need to ensure continued security of supply to customers in Ireland and Northern Ireland**. Conditions on the grid may influence the ability to effectively conduct trials as planned.



Operational Capability

Operational capability must be continuously uplifted to align with the **new challenges and requirements** introduced by the increased complexity of system operations. For example, enhanced operational forecasting, observability, monitoring and control capabilities will be required.

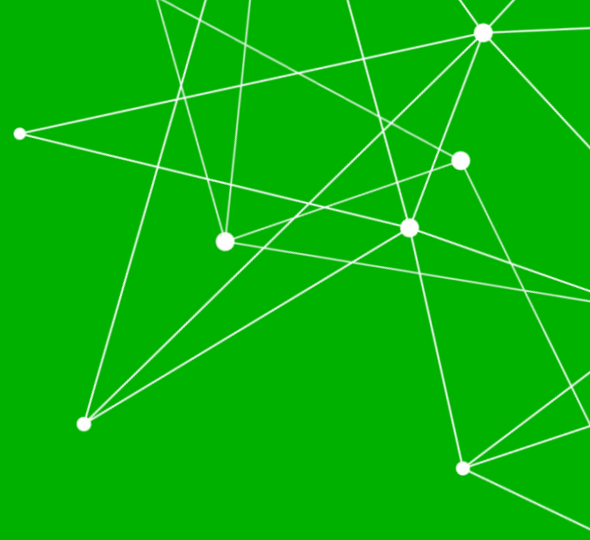


Operational Studies

Analysis will be the key factor to determining the precise constraint values and policy direction. The capability to perform advanced analysis (e.g. EMT simulations for IBR dominated networks) must be further developed and increased automation will be necessary to carry out relevant analyses more frequently to inform the system constraints. The **availability of these capabilities remains critical to the delivery of the roadmap**. To ensure high accuracy of the simulation studies, an important aspect is the capability to adequately model the performance of new and emergent technologies. Codes and standards must be updated to reflect the requirement for provision of representative models.



Recent Practical History



Context: *Storm Darragh*

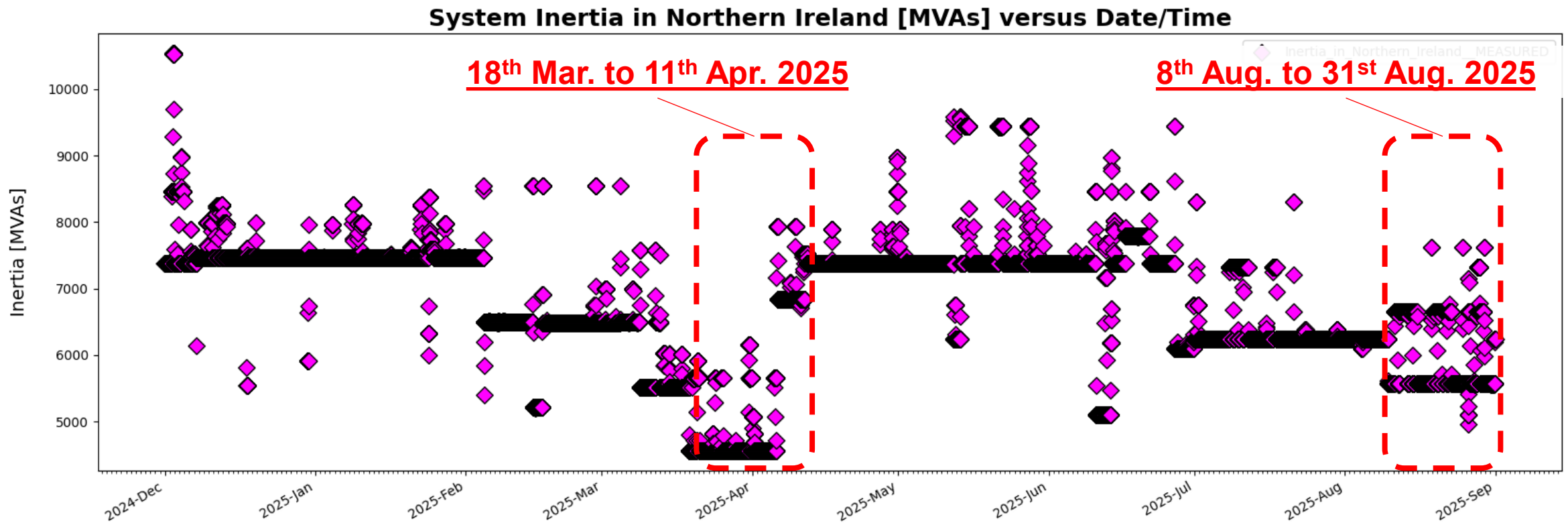
Chronology

- Storm Darragh strikes, early Dec. 2024.
- **Ballylumford Power Station (BPS)**
on outage until Feb. 2025
- B22 available Open-Cycle only until late Apr. 2025 [ARHL applies].
 - Available as CCGT (B32) thereafter
- B21 sporadic availability (Open-Cycle only) until late Aug. 2025 [ARHL applies].
 - Available as CCGT (B31) thereafter
- **GTs at Kilroot Power Station (KPS)**
 - Open-Cycle plant: *KGT6, KGT7*
 - Restricted to 1,500 hrs p.a. (over a 5-year average) due to application of **ARHLs (Annual Run Hour Limits)**



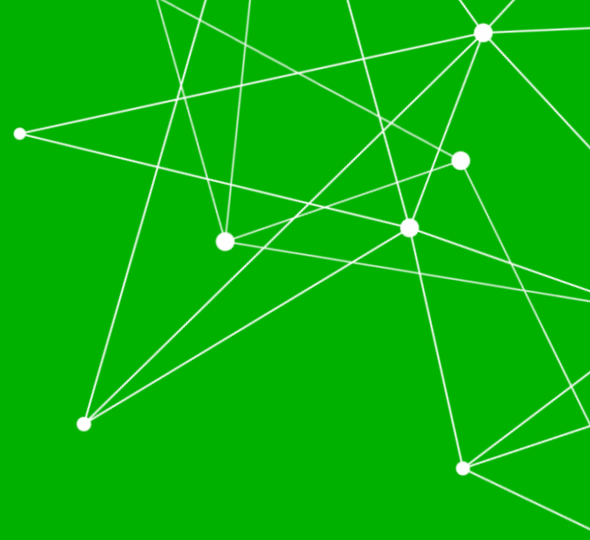
Sustained Forced periods of Two Set Operation

- Chart of System Inertia (NI only) between 1st Dec. 2024 and 31st Aug. 2025
- Data available from *Historical Information System (HIS)*





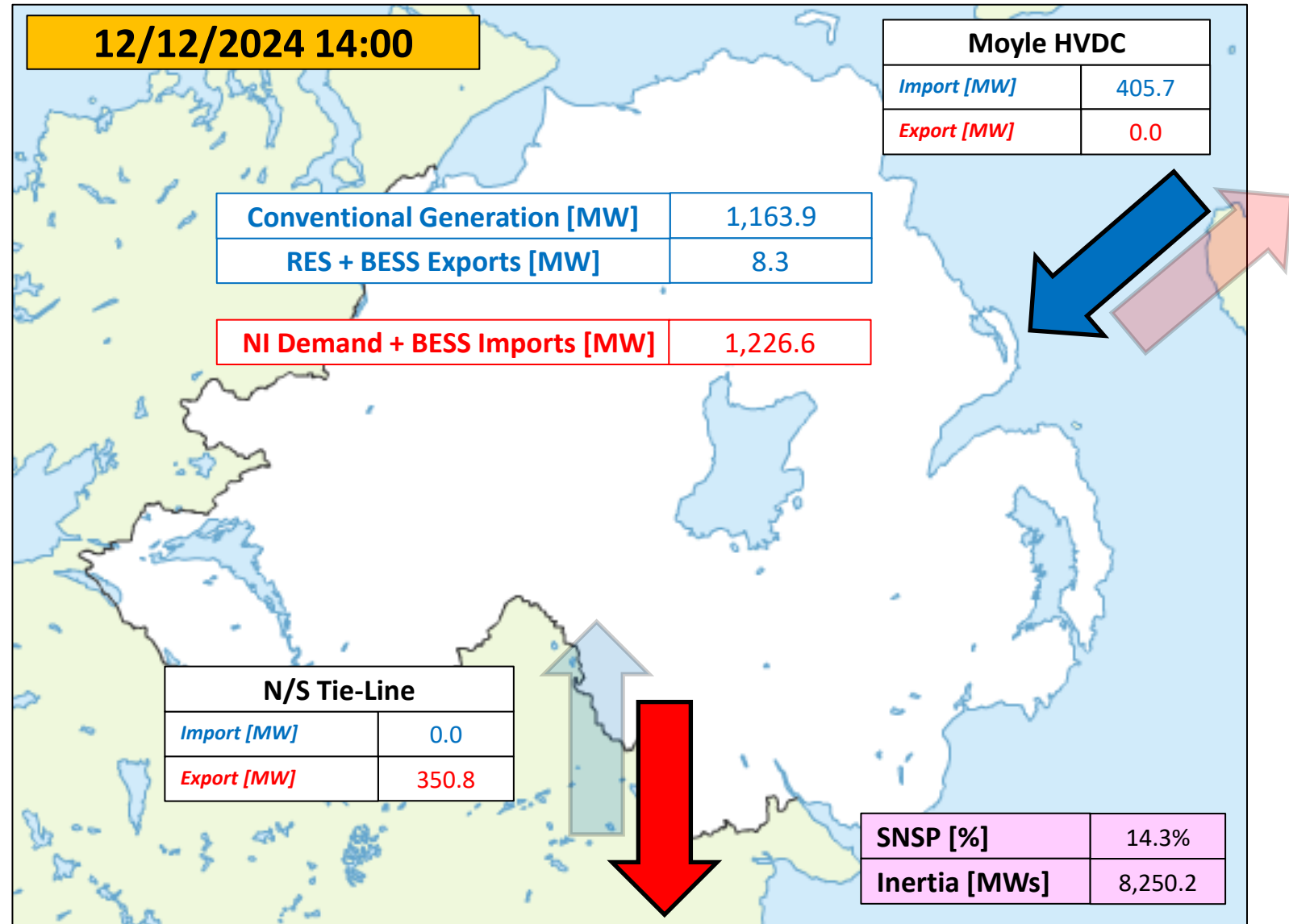
Study Method



Typical Power Flows in NI

- Pre-dominantly North to South flows
 - Moyle importing
 - N/S tie-line exporting
- Moyle Run-Back Capability
 - Compensates for loss of Export (via NSTL) to IE

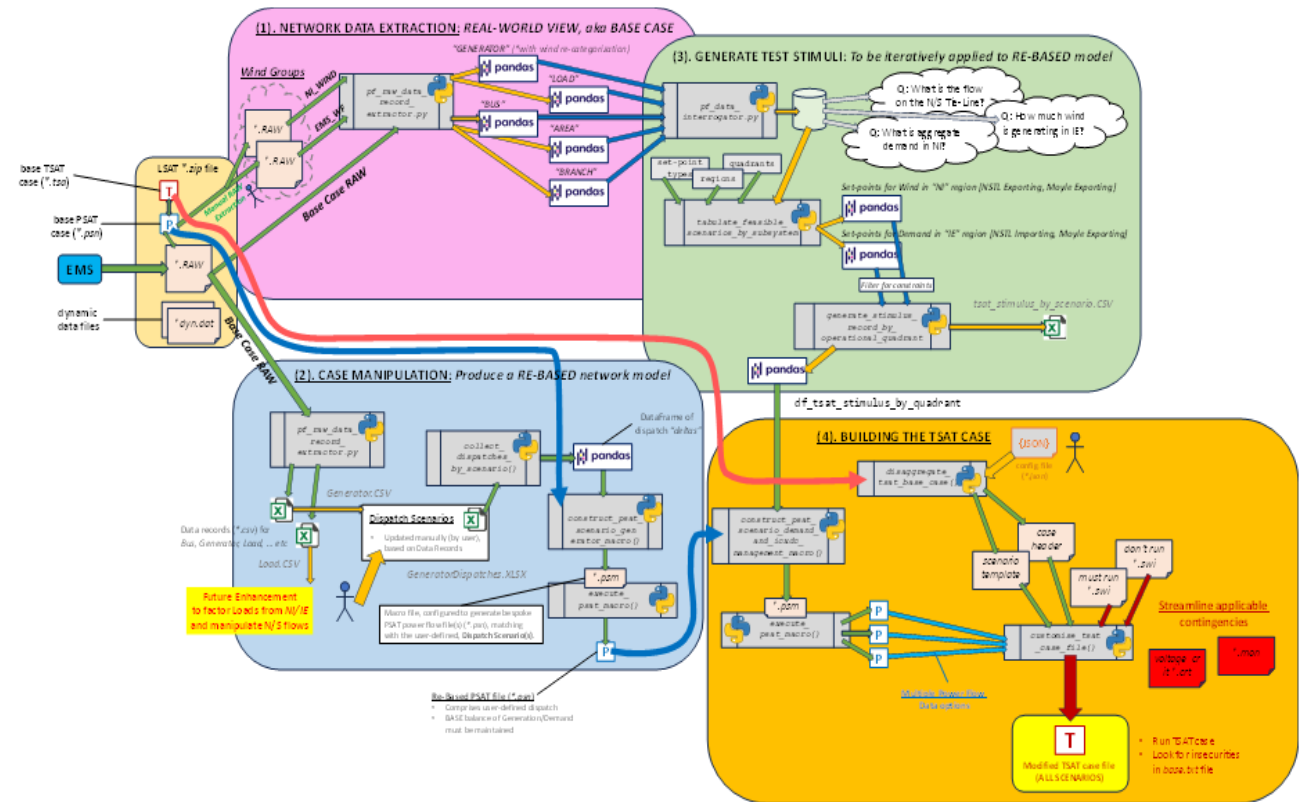
Trip of N/S Tie-Line?
→ System Separation



Development of Multi-Scenario Studies

- **12× base case LSAT archives (low inertia) selected**
- **1,828× bespoke power flow snapshots (PSAT) are synthetically generated (from base cases)**
 - by manipulating Demand & Wind set-points
- **Analysis includes:**
 - Exhaustive study of three distinct 2× set combinations
 - 50 MW steps in NI wind and NI demand levels
 - Exercising 50 MW steps in N/S tie-line and Moyle flows
- **Auto-generates a comprehensive TSAT study**
- **Dynamic studies performed in TSAT**
- **Main focus on “Tie-Line Fault & System Separation” contingency ...**

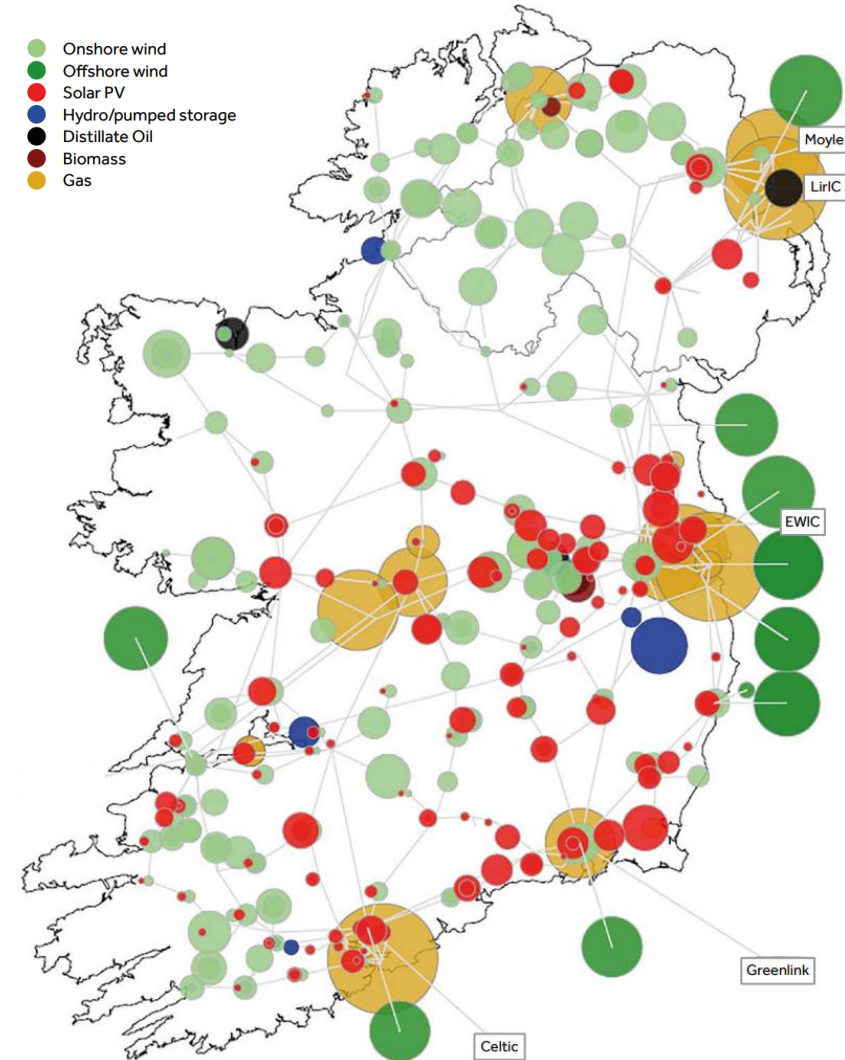
Driven by *Python* 



Transmission Constraint Group

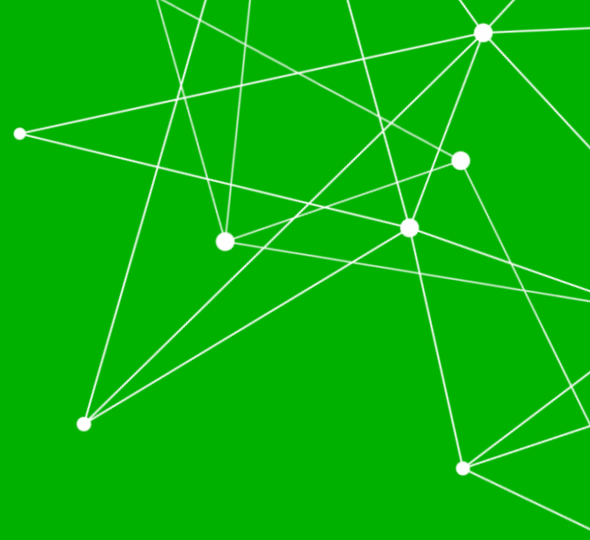
Initial Study Assumptions

- The All-island system operates with 7 units, with 4 units in Ireland and 3 units in Northern Ireland.
- The Operating Security Standards states that SONI, as the TSO, needs to ensure system stability.
- The Transmission Constraint Group's (TCG) Weekly Operational Constraints Update states that we have three minimum units on in NI.
- There is a requirement to maintain a minimum of 23 GWs inertia floor all-island





Dynamic Studies



Dynamic Stability Metrics

The following four key metrics are currently in use to measure and assess dynamic stability across the All-Island power system.

Inertia

The inertia of the power system refers to the ability of the system to oppose changes in system frequency due to the resistance imposed by the large rotating masses of the synchronous machines. The inertial energy has an important role in the frequency control process. The natural resistance of the synchronous machines to a change in speed assists with keeping the power system frequency close to its nominal frequency of 50 Hz.

$$H = \frac{1}{2} \frac{J \omega_o^2}{S_n}$$

J is the total moment of inertia
 ω_o is the angular frequency
 S_n is the total power

RoCoF

The Rate of Change of Frequency (RoCoF) is a measure of how fast the frequency moves when the system is subjected to an event that results in a mismatch between generation and demand. RoCoF is inversely proportional to the system inertia; the lower the inertia, the higher the RoCoF.

$$RoCoF = \frac{f * Power\ Loss}{2(H_{total} - H_{power\ loss})}$$

f is the frequency
 H_{total} is total system inertia
 $H_{power\ loss}$ is lost inertia due to power loss

Note: This calculation method is instantaneous, not average RoCoF. It does not consider the effect of fast frequency response from IBR or the inherent response from frequency and voltage dependent load.

SNSP

The System Non-Synchronous Penetration (SNSP) and the Minimum Number of Conventional Units On (MUON) are system constraints introduced to ensure enough synchronous machine capacity is maintained to a level that guarantees a secure and safe system operation. SNSP metric was introduced following analysis performed as part of Facilitation of Renewables (FoR) studies in 2011 and has been regularly refined. It refers to the ratio of non-synchronous supply infeed on the grid at any given time.

$$SNSP [\%] = \frac{non-synchronous\ generation + net\ imports}{demand + net\ exports} \times 100$$

MUON

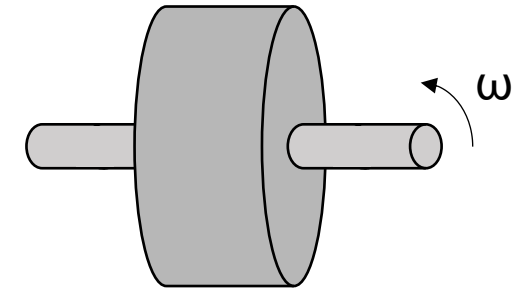
The minimum number of conventional units on (MUON) constraint was introduced to ensure enough large synchronous units are operating to preserve the voltage control capability and maintain a minimum level of system inertia, this is independent of the inertia constraint.

Currently, the constraint is set to a minimum of 4 large conventional units in Ireland and 3 in Northern Ireland to satisfy this constraint (from a selected list of generators considered large), while trials are being considered to reduce this number.

System Inertia

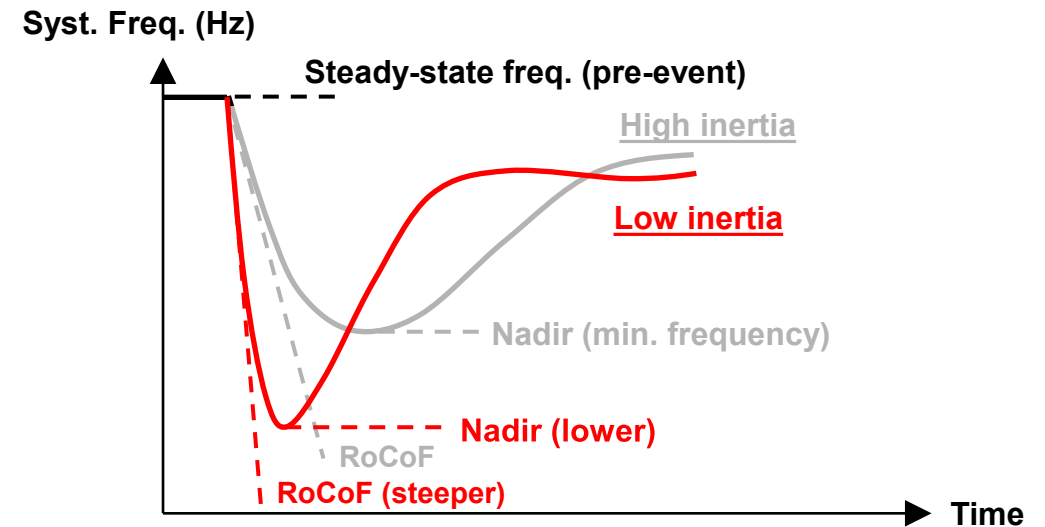
Definition:

“The (rotational) kinetic ENERGY [$I\omega^2$] retained in the spinning masses (e.g. turbines) that maintain direct electrical coupling with the power system.”



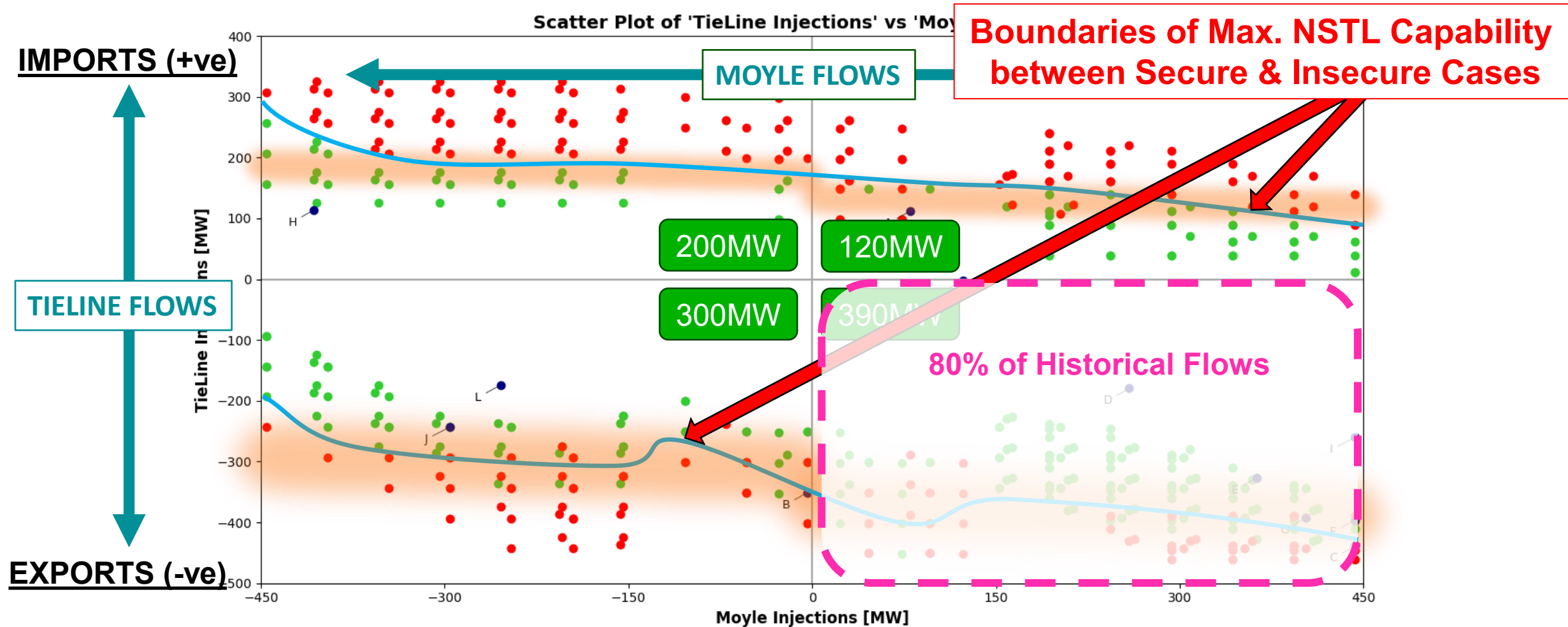
Units:

- **Mega-Watt-Seconds**
[$\equiv$ Inertial Constant (H) $\times$ MVA_{Base}]
- Inertia is an attribute that is *inherently* provided by conventional generators.
- IBRs (mainly full-converter, power electronics), couple indirectly with the grid (AC/DC conversion process etc).
 $\therefore$ providing zero natural inertia.



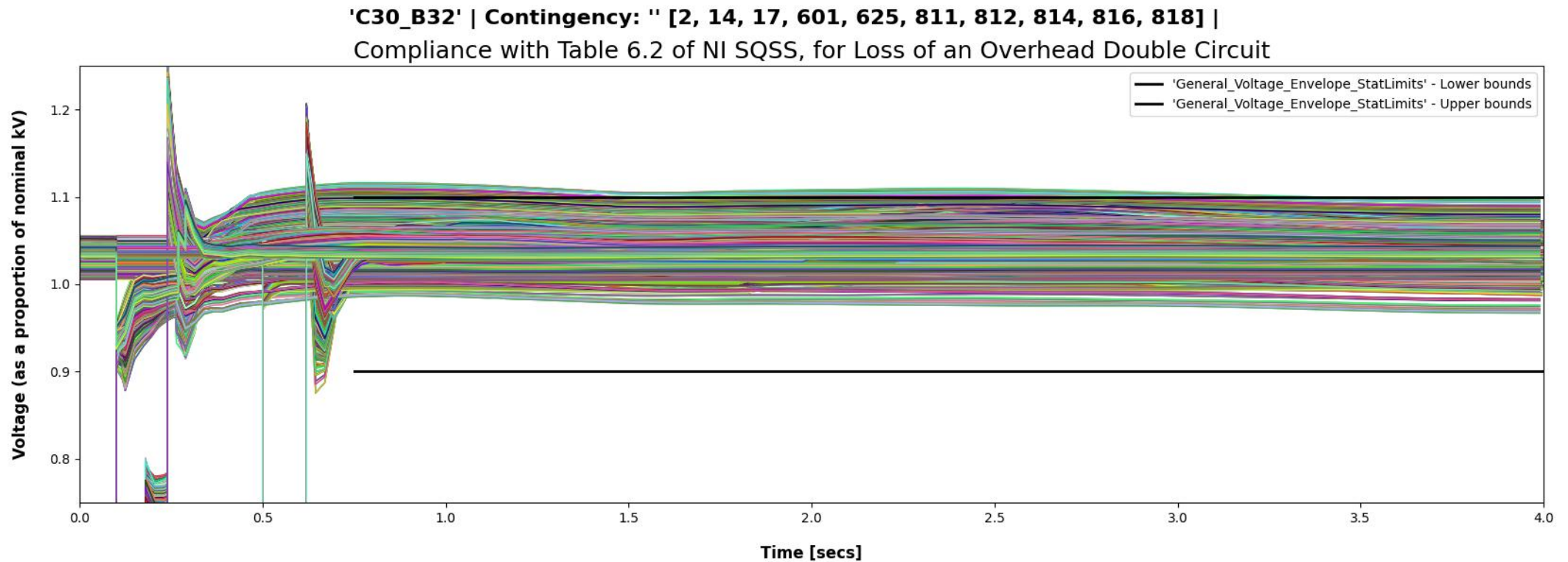
Frequency Stability Studies – Impact of Moyle v N-S Tie-line

Example of a chart used to assess frequency stability for Two Set combinations



Voltage Stability

- Review of voltages on 110kV and 275 kV buses
- All over-voltages subside within 3 secs, and do not breach OV protection (> 1.20 pu)



Conclusions

Northern Ireland Minimum units ON rule – Trial a move from three to two sets minimum units on under certain network conditions

- A comprehensive suite of dynamic frequency and voltage studies are completed
- Close engagement with System Operations through the change process and development of an operational trial document
- Approval to trial two set operational approved through Operational Policy Review Committee process
- Two set Trial commenced in August 2025 (at least 4 months) – **subject to operational security**

Next Steps

- **Implementation of Operational Policy Roadmap** - committed to doing everything possible to mitigate existing dispatch down levels
- **SONI Dispatch Down Action Plan** – Remains active and a focus for SONI; Short-term mitigations – no stone unturned, but operational security is priority, Long-term solutions – LCIS, LDES, Operational Policy Roadmap.
- **LCIS – Low Carbon Inertia Services** – Review Northern Ireland Minimum units ON to account for synchronous condensers
 - Phase 1; 4000 MVAs procurement in Northern Ireland expected 2027
 - Low Carbon Inertia Services (LCIS) Procurement – Phase 2 consultation window complete 5th September 2025
- **Dynamic Voltage Stability** – development of system strength policy and delivery of LCIS
- **Enhance North-South flows** – review options for enhanced battery frequency response like the moyle runback scheme

Thank You - Final Thoughts



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Thank You!



A message from our co-Chairs
Eoin Kennedy & Gerard Carlin