

SSEN Transmission Whole System Coordination Register 2023

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Scottish & Southern Electricity Networks

TRANSMISSION





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Whole System Coordination Register for 2022-23. Published May 2023

This register is published to demonstrate compliance by SSEN Transmission with the Whole System Electricity Licence condition. It reports on compliance for the period from 1st April 2022 to 1st April 2023.

Whole electricity system outcomes arise from actions taken between two or more parties, at least one of whom holds an electricity transmission or distribution licence, that result in both:

- An investment in the transmission and distribution electricity networks representing best value for money; and
- Improving or, at a minimum, maintaining the services and benefits received by Customers of the electricity network.

Part A The behaviour requirements (summarised)

The licensee must coordinate and cooperate with other Electricity Distributors and transmission licensees to identify actions and processes that advance the efficient and economical operation of the Total System. Clause 1

The licensee must consider actions proposed by Distribution System Users/Transmission System Users which seek to advance the efficient and economical operation of its network. Clause 2

Clause 3 The licensee must use all reasonable endeavours to implement actions and processes identified and proposed through coordination or user suggestions

that: (a) will not negatively impact its network; and (b) are in the interest of the efficient and economical operation of the Total System. Part B

Demonstrating compliance (summarised)

This register details completed and in progress work which demonstrates compliance with the Whole System Electricity Licence Condition. The licensee must prepare and is required to publish on its website a coordination register demonstrating the steps it has taken to comply with Part A of this condition not later than 27 May 2023. The licensee must keep up to date and is required to publish its coordination register (as updated) on its website at least once every 12 months from the date of initial publication.

Further information on the Whole Electricity System Licence Condition and its purpose can be found on Ofgem's website. Decision to implement the Whole Electricity System Licence Condition D17/7A for Transmission Owners and Electricity Distributors | Ofgem

Les écoles et elser de la des espèces entres entres entres entres entres entres entres entres en la des entres en la des entres						Relevant coordination and									Actions or Processes arising					
		Unique identifier for each row of the sheet. xxxx/00n for an activity	Lead licensee for the action or activity (not	Licensees and other stakeholders with whom collaboration was/is being	What year was the activity added to the coordination register	Details of the activity (could be an activity from a project or an activity that is used in multiple projects) along with its objective. Only activities that improve the economy and efficient of the whole electricity system is to be considered.	In progress, Not take forward, Complete	n Latest stage / Update since the last publication / comments	When was a decision made to act upon a challenge/need. This could include the date	Details of why it is relevant to whole system.	Links to reports of the project or activity	Description of any data that was shared. Include the format of the data, if applicable, and highlight any data that cannot be widely shared due to commercial sensitivity.	Links to the data not the project/activity	A brief description of the impact of the activity on the whole system, mainly along the lines of positive, neutral or negative	A brief description of the impact of the activity on the licensee, mainly along the lines of positive, neutral or negative	What is the recommended next stage? Positively, this activity would result in actions/processes that will then move on to the "actions from	Justification for the decision. Even if the decision is not to take things forward, a brief explanation should be added to promote learning.	Details of the action and/or process	Rough date of initiation of the Rection/process	ew, Reference to the activity in the register that resulted nproving, in this action/process (not to be confused with lature, BaU internal order or project numbers)
		xxxx/00n/A0m for action xxxx refers to the publishing organisation or license group; n and m refers to scorebore	licence group)	carried out.		Register is of activities in progress or completed, not planned. Explanation of the activity takes precedence over the project description.			when analysis for options was initiated.							coordination' sheet. If it is not taken forward, add justification.				
Туре	Supporting evider shared with Who System Manager	nce Unique ID le	Licensee	Collaborating licensees and other stakeholders	Year activity added	Description of the coordination/ cooperation activity	Status	Latest stage /Update /comments (if any)	Coordination activity initiation date (mm/yyyy)	Whole system relevance of the activity	External links to reports on the activity (If available)	 Description of data (who shared the data) [widely shared/restricted sharing] 	External links for data (if available)	Impact of the activity on the whole system	Impact of the activity on licensee	Recommended next stage of the activity	Justification for recommendation	Action or Process description	Action or process initiation date S (mm/yyyy)	tatus Reference of the activity or user suggestion which resulted in this action/process
cooperation ac	na yes livity	SSEN/U15	SSEN Transmission	IVGE I	22/23	Project Aquia - Loomhadon activities with Naci On HVDC multi-Heldon Interoperability development and demonstration. Currently HVDC Convertes between different manufactures cannot work with sach other This haa been recognized by ESE as a pathifielder project in My2022. A new control model is being developed by the HVDC centre to work as an "adopter" to allow a control over converters by different manufactures.	in progress	May-22	369-22	Inforgin the englighterist activities trom is interroperability Workgroups with tother network licensees SSRV Transmission, through HVBC Candis, is able to share its innovledge and experience in its approach to whole system and in return it gets feedback that it can use to make relevant changes to its design which will benefit th total system.	e	Models and project warming is continuously shared with Nucl	None	Unce must-vendor interoperadulty is proven, this can be deployed to tVIOC transmission projects in the future.	Inis would potentially reduce the number of HVDC convert stations required by connectin HVDC links to a multi-terminal switching stations.	SSEN I randmission has submitted Project Q Aquila as a pathlinder project to demonstrate multi-vendor interoperability. This would be further tested in Project Aquils funded via Net Zero reopener. The feasibility study of multi- vendor interoperability study is expected to be completed by mid 2024.	Interproject is important as the unit naces interoperationity development and benefit the delivery of the offshore transmission network by potentially reducing the connection to huge volumes of offshore wind required to meet net zero.			
Related action Coordination a cooperation ac	yes nd yes tivity	SSEN/015/AD1 SSEN/016	SSEN Transmission SSEN Transmission	NGET NGESO, SPEN, Venders/manufacturers	22/23	Coordination activities with NGESO and SPEN on system power quality issues following unusually high levels of harmonic distortion observed in the South West region. In particular, understanding the causes of the harmonic distortion and how to reduce them.	In progress	Apr-22	Apr-22	Through the coordination activities with other network licenses as well as the system operator, a holistic approach is being taken to resolve these power quality issues which will benefit the operability of the total	None	Received harmonic data from SPEN [restricted sharing]	None	This has a positive impact as the solution to these power quality issues will ensure the operability of the total electricity system	s The knowledge sharing from these coordinatio activities has helped us to come up with the most efficient and economic solutions to resolu- these emerging system power quality issues.	n SSEN Transmission has submitted a project to Ofgem which will mitigate the impact of these e system power quality issues.	To maintain the operability of the electricity system	Coordinate with the HVDC centre on the design and simulation of a feasible controller.	Apr-23 h	ew, SSEN/015 pproving
Related action	yes nd yes	SSEN/016/A01 SSEN/017	SSEN Transmission SSEN	NGESO, SPEN, Venders/manufacturers University of Strathclyde,	22/23	Preferred Solutions to perform for Lower levels of Fault Current on AC	In progress	Dec-22	Jun-21	electricity system By understanding the protection and control requirement	ts https://smarter.energynetwork	s Data shared with University of Strathclyde and National HVDC	None	Positive impact. Reducing the potential	Positive impact as understanding the future	Real time field data collection to be replicated	Proof that the simulation can replicate the real time scenario is	Initiate project to resolve power quality issues in the south west of Scotland following approval from Ofgem	Jan-23 h	ew SSEN/016
cooperation ac	ivity -		Transmission	National HVDC Centre		networks (PB-RC). To simulate a factore electrical network where the faul corner taples in samples to all polegical and analysis from porces (PA) of the second second second second second second second a A restored and Castrol (PAC) allocations on the further developed in address the platerial time relative tauses. This project assists and polero relations and reliable corners PAC explorement is on the electricity restored, which has seen more meetable generations and poleror decisions' explorations are place electrications and poleror decisions' electricity restored. This has been more to the D-RC explorement in the future transmission system electricity for the PAC explorement in the future transmission system electricity and the future structs' futures where the decision for one bags and accommodate the transmission for the network towards net areas.				needed for the related to operate with the increase in method by paracelosis will include a the internal operational doing/close to the dectrical energy apply-	<u>org/projectu/wa shet 0033/</u> pr	Centre, All results of the project will be disaminated via ENA. Somethin Methods portal and COME MAC contenences and project		for protection and control likewises to affect the electrical energy singly to the LVC. This would impact both Generation, Thanemakina and Witholpson as well as lengt on effect to Gas operators	protection & control needs for the network allows for better planning.	on the simulation network	necessary to provide confidence in the project outputs			
Related action Coordination a cooperation ac	ves nd ves	SSEN/017/A01 SSEN/018	SSEN Transmission SSEN Transmission	University of Stratholyde, National HVDC Centre NGESO	22/23	TOTM Literation (Transmission Owner Tools for IMT (Discharusgenic) Transmitt Modelling). Continuation of Nau, Sert 7, 1032 TOTM project to of the GI Transmission System in TMT FXCD (Power System Computer Added Design) instrumon of thema: TOTM is focued on the development of Innovative tools and resources for power system modelling and adaptis. It will produce a model that ca mick: targer of thema exclusions of themas.	In progress	Dec-22	May-20	Delver tools for PSCAD model mangulation for the who dia network and analysis that will support the TOs in the use of the GB model;	 https://www.ter.energynetwork. copparaiectolina_shat_00352 	artwork models	None	Positive impact. To be able to actively model the current and future GB network, All TO's will be able to use the tools and Dirichlation Network. Owner (DNO) will be able to see the results of the project and gain learning.	Positive impact. To be able to actively model th current and future SSEN Transmission network	e The end product will be a valuable modelling tool, however it will need to be validated and improved through dudying actual system disturbances.	Enable future proofing of the network.	Ensure the results of the project are moved into Ball operation	Apr-25 h	ew 5551/017
						energy transition. The end product will be a valuable modelling tool which will require validation and improvement through studying actual system disturbances.														
Related action	yes nd yes	SSEN/018/A01 SSEN/019	SSEN Transmission SSEN	NGESO SPEN, NGET	22/23	A working group has been set up between the three GB TOs to develop a	In progress	Nov-22	Jan-19	As a result of this work the three transmission network	None	Shared database between the three TOs	None	This ensures a consistent methodology is	This database has provided us with the	The key next step is to determine the	These activities are necessary to allow a co-ordinated approach to	Ensure the recommended next stage activity (model validation and improvement through study of actual system disturbances) is performed and the results distributed	Mar-23 h	ew SSEN/018
cooperation ac	swity		Transmission			natar Crabon Autri (CAT) Databar wich contains greenhous ga: Intenniy factor treaction autor to allow for more accuste reporting o embodied carbon emissions.	a			Tennese will have a consider the methodology for calculate; methodic acheo missioni transmission project. The CAT database will be regularly updated will any new emission factors neovided by the supply chain a these updates will be shared between all TOs.	h dd			applied across all TOs and the regular updates will allew opportunities to share learnings. This group helps improve carbon reporting across the transmission system: It allo provides a consistent database for the supply than to use when providing transmission related embodied carbon data.	necessary data to start reporting on project two embodied carbon. The continued shared learning will ensure we stay aligned with other TO's whilst improving the accuracy of our carbo reporting.	el governance of the Cat Database i.e. where it will be stored, who will be respondible for updating etc. and consider how each TO will on utilise the database.	embodied carbon emissions reporting.			
Related action Coordination a cooperation ac	yes nd yes livity	SSEN/019/A01 SSEN/020	SSEN Transmission SSEN Transmission	SPEN, NGET SPEN, NGET	22/23	A working group has been set up between the three GB TOs to collaborat and share knowledge on substation energy consumption. The all of the proof is to improve the accuracy of substation energy comuniption data which is required to calculate part of our operational emission.	e In progress	Nov-22	Jun-22	Through this working group; the GB TO's are applying a join: apprach to methodology development by sharing transledge on existing methods as well as discussing potential new methods which could be explored further.	None	ktowiedge sharing has occurred over MS Teams meetings, no data has been shared yet.	None	This will allow for more accurate reporting on operational emissions across the transmission system and will ensure a coordinated approach is applied amongo the three TO's.	toowindge sharing from the working groups ha given us a sense of the accuracy of our current methodology and has provided as with potent a iternative methods which can be further explored.	s The next step is for SPEN to provide as with a detailed description of the new methodology at they are current sploning in the format of a presentation.	These activities are necessary to allow a coordinated approach to substation energy consumption emissions reporting.	Share add ins to the master database	Dec-22. h	nproving SSEN/019
Related action	yes nd yes	SSEN/020/A01 SSEN/021	SSEN Transmission SSEN	SPEN, NGET	22/23	A working group has been set up between the three GB TO's to	In progress	Nov-22	Oct-22	Through this working group, the GB TO's are sharing	None	Knowledge sharing has occurred over MS Teams meetings.	None	This will ensure a coordinated approach	Positive impact - improved coordination and	The next step is for all TO's to collaborate on a	These activities are necessary to allow a co-ordinated approach to	Exchange data and idea on methodologies with other stakeholders	Feb-23	nproving SSEN/020
cooperation ac	tivity		Transmission			collaborate and standardise project waste reporting (where possible). Th aim of the group is to promote data collection consistency and to reduce administrative efforts for our supply chain partners.	e			knowledge on existing reporting requirements as well as discussing potential new requirements which could be explored further.		Waste reporting templates for each TO have also been shared under restrictive access.		is applied amongst the three TO's.	standardisation.	shared file in which we can review our reporting requirements.	waste reporting.			
Related action Coordination a cooperation ac	yes nd yes tivity	SSEN/021/A01 SSEN/022	SSEN Transmission SSEN Transmission	SPEN, NGET NGET, SPT, ENA, Users	22/23 22/23	Co-ordination activities to further code modifications in CUSC, STC, SQSS Grid Code that meet the code objectives of safe and reliable system and	. In progress	Dec-22	Apr-22	Enables co-ordinated whole system approach to code modifications, aligned positions, to fulfil the relevant coc	https://www.energynetworks.o	ENA Open Networks monthly publication of Steering Group Report - Annex of code modifications	None	Positive impact to enable fulfilment of the relevant code objectives and efficient	Positive enables alignment and learning from t TO's and users, and assessment of code	Maintain activities and utilise learnings to inform SEN/023 - Energy Code Reform	Ensure learnings from current code governance and the opportunities and limitations inform advocacy position for Energy Code Reform	Review reporting requirements	Dec-22	nproving SSEN/021
Related action	VES	SSEN/022/AD1	SSEN	NGET. SPT. EN A. Users	22/23	consumer benefit etc., and overarching goal of net zero				objectives and efficient code governance procedures	networks/open-networks/			code governance procedures	modifications against the code objectives and objectives of ENA Open Network project			Maintain activities and utilise learnings to inform SSEN/023 - Energy	Mar-23	ew SSEN/022
Coordination a cooperation ac Related action	nd yes ivity ves	SSEN/023/AD1	Transmission SSEN Transmission SSEN	NGET, SPT, Users, Code Administrators, SSEND, SSE Renewables, SSE Business Services NGET. SPT. Users. Code	22/23	Co-ordination activities and insight sharing on BEIS and Ofgem Energy Code Reform proposals in Energy Security Bill	In progress	Dec-22	Apr-22	Enables cross vector and cross fuel learning to ensure BE benefits case realized (impact Assessment states benefit £1.6m p/a efficiency saving for industry through reforms)	5 None	None	None	Positive impact - seeks to take learnings from current code governance and to apply to reforms and maximise whole system opportunity of reforms	Positive impact - seeks to take learnings from current code governance and to apply to reforms and maximise whole system opportuni of reforms	Continue SSENT's Stakeholder Engagement Plan for ECR ty	Plan to date has brought value and insight through bi-lateral meetings	Code Reform Waintain activities and utilize learnings to inform SSEV/022 - Energy	Mar-23	ew 55EN/023
Coordination a	nd ves	SSEN/024	Transmission	Administrators, SSEND, SSE Renewables, SSE Business Services SPEN, NGET, SSEN	22/23	Representing SSEN Transmission in market design arrangements prevaled	t In progress	Dec-22	Nov-21	Our evidence based work on this area monitors and track	s https://www.sen-	Collaboration with industry bodies and wider stakeholders.	https://www.ssm-	Our work in this area has led us to be	Positive impact on SSEN Transmission in	Continue to contribute to key consultations	Grid charging, access and markets play a vital part of ensuring that we	Code Modification management		_
cooperation ac	Evity .	2004 (00 4 / A 04	Transmission	Distribution, Users, Ofgem,NGESD, ENA, Trade bodies	22(2)	across industry currently, ensuring whole system decarbonication is considered when changing market arrangements.				the effect that changing market signals, for those connecting to our network can have on the operation of both distribution and transmission networks. A key part this work is also considering the impact on consumers an ensure society reaches net zero efficiently at least cost.	transmission co uk Information centre/energy-markets-hub/ d	2	transmission co. uk/informatio centre/ionergy-markets-hub/	trusted source of information that stateholders rely on. We have responded to key government consultations such as BEIS REMA consultation and Ofgem's Call for Input.	particular around enhancing our stakeholder engagement. Dur engagement om market refor has ensured tatta our future network sjanning considered by key organisation stakeholders such as BEIS and Ofgem	that consider market arrangements and m ensuring their impact on transmission is s accounted for.	can deliver our business plane efficiently. It is important for us to continue to monitor change in this area and advocate where appropriate the requirements for our business, stakeholders and wider society.		100.2	
Coordination a	nd yes	SSEN/024/AD1	Transmission SSEN	Distribution, Users, Ofgem, NGESO, ENA, Trade bodies SPEN, NGET, SSEN	22/23	Developing the markets and fundings arrangements for the Electricity	In progress	Dec-22	Jan-22	As part of the new standard, it is identifying new	Electricity System Restoration	Mainly collaboration through work groups and delivery group	Electricity System Restoration	Wil allow more efficient, coordinated	Positive impact as this ensures that the safety,	Work moved into Grid code modifications,	Important to monitor and feed into any changes that may affect the	contribute to constrainations and monitor their impact on the transmission system.	Marizo II	ew 335//024
cooperation ac	livity		Transmission	Distribution, Users, Odgem, NGESO ENA, Trade bodies, NGET, SPEN, Generators		Restoration Standard directed by BEIS in 2021. Representing SSEN Transmission on industry wide well group forums and code modification to introduce the new standard effectively.	s			Innovative ways to restoration, this includes utilising distributed restart and DG of restoration services. It is important that this is coordinated across the whole syste to ensure effective data sharing and operational practice in place and the market and funding mechanism for suc services to avoid any unintended consequences	Standard National Grid ESO m s h	The ESO shared their views and industry including SSEN Transmission provided input	Standard National Grid ESO	restoration of the system. Introducing new requirements that GB should be restored to 100% within 5 days and 60% within 24 hours	reliability and economic operation of the transmission network is at the forefront of this work.	continuing to monitor its progress. SMEs also providing input and support where appropriate	safe, reliable and economic operation of the transmission network.			
Related action	yes	SSEN/025/A01	SSEN Transmission	SPEN, NGET, SSEN Distribution, Users, Ofgem, NGESO ENA, Trade bodies, NGET SPEN Generators	22/23													Monitor the modifications made to the Grid Code.	Apr-23	nproving SSEN/025
Coordination ac	nd yes	SSEN/026	SSEN Transmission	All DACS and TO's, NGESO, ENA	22/23	00 implementation glan and interactive road map	Complete	Dec-22		Is part of the TNN Open Network Project there was to objective to cross an implementation plan and interactive readmap for stakeholders have a provide the DNN. Is and the the the NN open state and provide the DNN. Is and to with the NN open state, this is been at interaction of the DNN. Of including spread to the the the NN open state and the the NN open state is an interaction of the space the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implementation of DS and fell in the NN open the implemen	Doen Networks, developing the ansart and - Deerge Networks d d d	Construction with the EDD and EDD, years again stand include restoration, network planning	bitto://www.energenetworks rg/creating-tomorrows ratworks/open-networks/	Our work in this area allowed coordination across the whole electricity system to ensure that the implementation of DSD functions were coordinated effectively and that any concerns or unitenteded consequences were avoided	Insolve ingat on stakeholder collaboration and ensuing the she shake and economic operation of the transmission network as the use and operation of the whole system change	Nov-k within the DA-ba res been complete Tris work is moving internally through collaborating regularly with SEX Distribution on their progress of implementing DSD functions and services	Important to monitor and fued into any changes that may affect the and , reliable and economic operation of the transmission network.			
Related action	yes nd yes tivity	SSEN/026/A01 SSEN/027	SSEN Transmission SSEN Transmission	All DNOs and TO's, NGESO, ENA SSEN Distribution, local council, communities and	22/23	Orkney Whole System Study - coordinating with SSEN Distribution and developers to determine the optimal option of connecting programble	Complete	Jan-23	Oct-22	Establishing working relationships with SSEN Distribution local council and communities to immerse infradmenters	i, None	Knowledge sharing through emails, Microsoft Teams and face- face meetings.	o <u>None</u>	Minimises social and environmental impact by building less armos	Positive impact - Cost savings for network licensees and developers	Recommend ongoing co-ordination with SSEN Distribution and customers to remarker with the	Potential to provide costs savings to all parties involved.	Organise regular engagements with SSEN Distribution	Jun-23	ew, SSEN/026 nproving
				developers		energy generation on Dikey.				and connections on the listed surrounding toothand. Tooloning for improved accurity of toppy and additional infrastructure in the future to help towards net arro		Technical reports and presentations with cost data and alternative solutions, shared DSN Transmission (HSTNC) to estimate the solution shared of the solution (HSTNC) and estimate the solution solution (Hesticaed Sharing).		transmission and distribution, Enhances security of apply for consumers, Reduction in overall connection costs, Enables connection of renewable energy require to meet net zero in an efficient and economic manner Allows for future coordination with local cound, communities and developers to navue efficient and effective solutions are put forward to benefit the islands		recommended whole system solution				
Related action	yes	SSEN/027/A01	SSEN Transmission	SSEN Distribution, local councils, communities and developers	22/23													Progress with the recommended whole system option. This will involve SSEN Distribution applying for a new GSP at Eday.	May-23 h	ew SSEN/027
Coordination ac	na yes ivity ves	SSEN/028	SSEN Transmission SSEN	155EN Distribution, local councils	22/23	tunnee and Aberteen CP, Network Development Stratige: Worked with internal System Sharing, Abert Management, etc) and external SSRN Distributionity abaholders to identify the loga and non-loga drives to network in weller sharing and the Statistic Stratige and Aberteen We have able understatem distribution for profiling and mapping exercise, as well and autochristian distribution of stratistic stratiges of engagement and how the feedback will inform the project degre	in progress	feb-22	Apr 23	A more holds: and cost effective approach to insteady investment saw active by simultaneously considering laad and non-load drivers as well as the local plans for th cities, and by actively engaging the stakeholders.	rione e	recmicin reports with identified load and non-load drivers, along with a stakeholder engagement strategy (Restricted sharing).		Increased consideration of a higher number of factors influencing network investment, potentially increasing the ability to make investment decisions that will result in a reduced cost to customers and consumers	rostive impact - Cost savings for network licensees.	recommend engoing co-ordination with 3500 Distribution anounce that a source that all drivers have been successfully identified.	resentat to provide costs savings to all parties involved.	Gaze with stated days and namedia to differences for the se-	Dec.23	ew 1951/028
Coordination a	nd yes tivity	SSEN/029	Transmission SSEN Transmission	councils SSEN Distribution, local councils, communities and	22/23	Shetland Whole System Study - Working with SSEN Distribution, developers and local authorities to develop a whole system network	In progress	May-23	Dec-22	Potential cost savings on infrastructure costs, minimises environmental and social impact	None	Terms of references and work plans shared with SSEN Distribution (Restricted Sharing)	None	Minimises social and environmental impact by building less across	Positive, cost savings across transmission and distribution	Recommend continuing whole system development plans for Shetland, identifying	Potential to provide costs savings to all parties involved.			
				aevelopers		oeveropment plan on Shetland.								transmission and distribution, Enhances security of supply for consumers, Reduction in overall connection costs, Enables connection of renewable energy require to meet net zero in an efficient and economic manner		runding mechanisms for the project/c arising from this work, and engaging with Ofgem and stakeholders				

Related action yes	SSEN/029/A01	SSEN Transmission	SSEN Distribution, local councils, communities and developers	22/23													Develop a whole system network for Shetland, identify funding mechanisms for the project/s arising from this work, engage with Ofgem and stakeholders	Dec-23	New, SS Improving	EN/029
Coordination and yes cooperation activity	SSEN/030	SSEN Transmission	SSEN Distribution, local councils, communities and developers	22/23	Western Idles Whole System Study - working with SSEN Distribution to produce whole system report on infrastructure recommendations for the isles of Harris and Lewis. This involves discussing with SSEN Distribution the best method to induce the method that the local network to provide demand accurity and secure connection of networking the theory of the demand accurity and secure connection of networks to provide the secure connection of n	In progress	May-23	ian-23	Enhanced demand security for local communities, environmental benefits due to reduction in use of backup diesel generation.	None	Data shared with SSEN Distribution on potential options, current and projected demand and generation on Western Isle	<u>None</u>	Reduce dependance on diesel generation. Enhanced security of supply to communities and connection of renewable generation to the grid required to meet net zero.	Positive. SSEN Transmission develops network solutions that contribute to emissions reduction	Continued stakeholder engagement, energy scenario planning, and the assessment of options to determine the most efficient and economic whole system solution.	To provide security of supply to local communities and reduction in carbon emissions from using diesel generation in an optimal manner				
Related action yes	SSEN/030/AD1	SSEN Transmission	SSEN Distribution, local councils, communities and	22/23	generation to the gnd.												Align all related projects on the Western Isles to determine the optimal whole system option(s).	Sep-23	New, SS Improving	EN/030
Coordination and yes	55EN/033	SSEN Transmission	Developers NGESO, NGET, SPT	22/23	The billock futures for place profiles inconditionated by the EUG and involve tilteres TWI in deal famils. The twich processoridal at and recommendations to facilitate the connection of 500W of otherwe wind by 2003, keing accurate of two Network Deal policyteries: economic and efficient, deliverable and operable, environmental impact and communi- inguat. Wards has one commenced on the Holdick Elevand Deals profiles up factorial pROUTLIM this to provide a and follow-op recommendations for the connection of further offbane wind.	s In progress	5ep-23	Sep-23	This with OVE will further support the Guerement's previously stated guerement targets for obtions wild and net story, facilitating an economic efficient, operatink, and conditional distancial Bencintly Transmission Systems (HTS) (including offshore and accouncil of notive such: required to connect in scope projects).	None	Mahiy callaboration through work groups and delivery groups	http://www.astonalgrideo.co m/document/270851/downloa d	The HKD FUE will identify the most efficient, account: and effective approach to content of the SORV of offshore wind across Great thata- minimized across Great community impact.	This all results that SISN's and the other YO's within Grazi Britalin can accommodate offbare wind conclosins in an efficient, economic and effective way.	Nablezione by 650 of the octor from the working group expected in December 2023	The server will help without connection of otherway wind critical to delivering Net Zero.				
Related action yes	SSEN/033/A01	SSEN Transmission	NGESO, NGET, SPT	22/23													Incorporate published outputs into BaU	Dec-23	New, SS Improving	EN/031
Coordination and yes cooperation activity	SSEN/001	SSEN Transmission	SSEN Distribution	21/22	Joint discussions with SSEN Distribution to capture their need to uprate transformer capability on sites with planned transmission network reinforcements to enable a coordinate network development as demonstrated in East Coast 132kV Upgrade (LT225)	In progress	Dec-21	Mar-21	Ensures better coordination and better utilisation of resources resulting in overall whole electricity system benefits.	None	Business care with technical information (SSEN Transmission) [restricted sharing]:	None	The impact on the whole system is positive as a coordinated approach results in efficient capacity sizing of asset and also better overall resource efficiency.	The impact on the licensee is positive as a coordinated approach results in resource s efficiency.	Recommend ongoing co-ordination with SSEN Distribution for planned transmission reinforcements at GSP sites which impact SSEN Distribution.	This decision would enable better utilisation of resources and achiev more efficient outcomes.	e New Business Case template incorporation the need to evolve whole	Mar 21	New SS	N/m
Coordination and June	SSEN/002	Transmission	SSEN Distribution/NGEED	21/22	Discussions with SSEM Distribution and SSD on percedure to move	Complete	Dec.21	Apr 21	Cost effectiveners to outcomer and distribution estimate		Technical Report with cost data and alternative colutions	None	Brithe relation on Customer works	Bacilian pupided parts in Transmission	Consider patential GSB relocation for future	Retential to provide costs raviers for all parties involved	system options. This will inform future working with other network licensees as a BaU activity.	1101-22		
cooperation activity	J.L. III OLL	Transmission	SEN BILIDERBIJ NOLIO	***	customers from Durvegan to Edinbane to resolve conflict on distribution and transmission route corridors. This was to achieve cost efficiency in the connection arrangement.	compress	becar		operator		Distribution provided indicative costs data on distributions options (SSEN Distribution) [RESTRUCED SHARING]. SSEN		which in turn translates to lower cost of connection.	infrastructure.	embedded generators that trigger significant works at existing GSP sites.	Potencian co province coasa aminga non an pantona minoriteto.				
Related action yes Coordination and yes	SSEN/002/A01 SSEN/003	SSEN Transmission SSEN	SSEN Distribution/NGESO SPT, NGESO, SPD, SSEN	21/22	Under the Regional Development Program approach, completed a	In progress	Jan-22	Jul-19	Review of options across transmission and distribution	No	Power system analysis results for 132kV transmission OHL	None	Positive - broad assessment of all	Positive as it supports timely investment	Develop Regional Development Plan (RDP) to	It is expected that a pro-active approach through the RDP will	The action is to offer SSEN Distribution a new GSP at Edinbane so that they can connect customers to the new site.	Apr-21	New SS	EN/002
cooperation activity		Transmission	Distribution		coordinated review of proposed transmission investment works to accommodate new battery customer connections at Abemethy and Burghmuir: This required a rick based/probabilistic approach to better understand the risk of constraints ecognising the unique operating philosophy of battery system storage technology.				networks to resolve potential transmission constraints.		loading (SSEN Transmission) [restricted sharing) Future Generation and Demand scenarios for relevant GSPs (SSEN Distribution) [restricted sharing]		Transmission and Distribution related options, resulting in the most cost effective outcome.	decision making and customer connected in line with contracted dates.	accommodate local growth and coordinate with asset replacement plans.	identify efficient solutions for customer connections in the region ahead of transmission infrastructure investment.				
Related action yes	SSEN/003/A01	SSEN Transmission	SPT, NGESO, SPD, SSEN Distribution	21/22													Further development of probabilistic planning methodology and exploring how this approach can be applied to other parts of the network where there is value to whole system in doing so.	Dec-20	New SS	EN/003
Coordination and no cooperation activity	SSEN/004	SSEN Transmission	SPEN	21/22	Preliminary meeting to agree future meetings to ensure we align our cros boundary asset intervention plans for the T3 period	s- Complete	None	Oct-21	If we coordinate our planned activities at cross-boundary circuits, we can ensure the most efficient delivery process that will achieve the outputs at the lowest cost to the cnosumer.	None	No data shared at this preliminary meeting	None	The impact is neutral at this time, but we expect the eventual outcome to be positive, once cross-boundary projects have been identified and coordinated	 The impact is neutral at this time, but we expect the eventual outcome to be positive, once cross- boundary projects have been identified and coordinated 	Establish quarterly coordination meetings, once development of the T3 business plans commence	Having coordination meetings with other network licensees like SPE! will ensure efficient project planning delivery across our network boundaries.	ú			
Related action no	SSEN/004/A01	SSEN Transmission	SPEN	21/22					Congerner.								Establish a quarterly coordination meeting between SSEN Transmission & SPEN to discuss the development of our T3 non-load business plans to establish any correct busided on stitulities	Oct-21	New SS	EN/004
Coordination and yes cooperation activity	SSEN/005	SSEN Transmission	SPEN, NGET, SSEN Distribution, Users, Ofgern, ENA, Trade bodies	21/22	Advaccange for informs to Transmission Network SL and System (TRUGS) charges to remove hardners to moneable generation development in the north of Socialard while ensuing charges do not hinder the progression on bulkness adjustment and the standard charges and the social representing SSBN Transmission on industry forums including Ofgem's Access and Forward looking Significant Code Review.	In progress	Dec-21	Jul-20	Our evidence based work on this area, monitors and tracks the effect that TNUGS has on users and how TNUGS impacts system investment and operation at both Distribution and transmission. This includes advecting for efform on conjuge to transmission concerd ageneration also at distribution (Ogen'h Access SCR minded to position). A key part of this work is also considering the impact on consumers and ensure society reaches net zero efficiently at lact cod.	http://www.sum transmission.co.uk/information- centre/muoc/	Shared data analysis (developers and SSEN Distribution) (wide) shared, Collaboration with industry bodies and wider stakeholders.	y https://www.sten- transmission.co.uk/information centre/Inuos/	Our work in this area has led us to be builted source of information that stakeholders (v) on. We have seen a positive change in direction by Ofgem publishing a call for evidence on TNUGS reform and it is expected that a wide ranging review will take place.	Positive impact on SSEN Transmission in particular around enhancing our stakeholder engegement and our corporate image. Working to stabilise the cost of using the network will also provide thren investment cortainty for both developers and the required network construction.	Recognition from Ofgem on Issues with TNUOS Indicates that reform will take place, we will continue our work and advoccory on this area. Through our work on this we have also identified that there are other facts of the electricity markets that directly effect TNUOS, we plan to further explore and analyze the electricity market in further detail.	Did d braging, access and manket play a vital part of ensuing that a control every our business plan efficienty. It is important for us to continue to monitor change in this area and advocate where appropriate the requirements for our business, stakeholders and wider society.				
Related action yes	SSEN/005/A01	SSEN Transmission	SPEN, NGET, SSEN Distribution, Users, Ofgem,	21/22																
Coordination and yes cooperation activity	SSEN/006	NGESO	SPEN, NGET	21/22	SSEN Transmission has provided its views on the NGESO's consultation o simplification, digitalization and consolidation of technical codes (Grid Code and Distribution code)	In progress	Nov-21	Sep-21	This project is important as it supports the Energy Code Review and addresses some of the challenges of the existing codes to enable whole system thinking.	No	Responded to the questionnaire on a number of issues and things that should be done to enable the simplification and consolidation of technical codes to benefit the total system. (NGESO) (restricted sharing)	None	We expect a positive impact on whole system	Positive impact on SSEN Transmission particularly around enhancing stakeholder engagement on issues that impact us and our stakeholders	We have nominated representatives from different parts of the business to participate in working groups to help in defining the scope and implementing the changes	Technical codes will play a critical role in how we develop and operate the network for net zero. We are keen to be actively involve in the simplification and consolidation of technical codes to ensure that its done in a manner that benefits whole system.				
Related action yes Coordination and yes cooperation activity	SSEN/006/A01 SSEN/007	NGESD NGESD	SPEN, NGET SPEN, NGET, BEIS	21/22 21/22	SSEN Transmission has been actively involved in the Offshore Transmission Network Review initiated by the LW Government. Our aim i to drive policy position and ensure an efficient holistic network design.	In progress			A holistic whole system approach to offshore network design is critical to address the barriers that the current regime presents to connection of high volumes of wind required to meet net zero	https://www.nationalgrideso.co m/document/239466/download	Interface location points and cost data shared (NGESO) [restricted sharing]	None	This project will have a positive impact on the whole system as it will ensure an efficient coordinated development and delivery of the offshore transmission network across Great Bittain	The project has a positive impact on SSEN Transmission, in that it will enable us to connect huge volumes of offshore wind to the network in an efficient and economic manner.	The ESO to publish the outcomes from the working group.	This project is important as it will ensure efficient development and delivery of the offshore transmission network which is essential to enable the connection of huge volumes of offshore wind required to meet net zero.				
Related action yes Coordination and yes cooperation activity	SSEN/007/A01 SSEN/008	NGESO NGESO	SPEN, NGET, BEIS SPEN, NGET, BEIS	21/22 21/22	SSEN Transmission has taken an active role in different workstreams facilitated by the Energy Network Association. The work has included the development of bools like whole system cost benefit analysis required to enable a consistent approach to whole system.	In progress	angoing meetings		The workstreams are essential to enable a consistent approach to whole system across network licensees.	https://www.energynetworks.or g/creating.tomorrows- networks/open-networks/	The workstreams are working on what is required to enable efficient data sharing between network licensees.	None	This has a positive impact in that it will ensure consistency in the whole system approach to the development and operation of the network.	SSEN Transmission will benefit from knowledge, data and information sharing with other network licensees around whole system.	SSEN Transmission will continue to be actively involved in the workstreams and facilitate implementation of processes and tools required to enable whole system working.	ENA workstreams are important as they provide a platform to develop processes and tools which will ensure a consistency in taking whole system approach and coordination activities across network licensees.	5			
Related action yes Coordination and yes cooperation activity	SSEN/008/A01 SSEN/009	NGESO SSEN Transmission	SPEN, NGET, BEIS SSEN Distribution	21/22 21/22	Discussions with SSEN Distribution on a whole system solution between transmission and distribution to support connection of renewable generation in Argyli	In progress	angoing meetings	Jun-21	A combined Transmission and Distribution solution will result in an efficient and economical solution that minimises costs to consumers	https://www.sse.com/news-and- views/2022/03/argyli- transmission-network-upgrade- to-support-transition-to-net- zero/	Options and costs used for cost benefit analysis (restricted sharing)	None	Positive impact on whole system as the combined transmission and distribution solution provides an efficient and economical solution	Discussions about cost recovery options for the distribution works are underway since SSEN Distribution does not have allowance for the project.	The activity will be implemented as part of the wider Argyll project. The outcome of cost recovery of distribution works will inform future working on projects of this nature.	The activity has been adopted as part of the wider Argyll project because it's the right thing to do as it results in efficient and econom whole system solution.	c			
Related action yes	SSEN/009/A01	SSEN Transmission	SSEN Distribution	21/22	Downstown with CCDB Datable from an base the initial collection of an initial	la annua	(a) 31	Ter M		han line					Fasting to second state		A clear process of dealing with projects that support a combined transmission and distribution whole system solution addressing issues of who should deliver the distribution works, how should they be funded and ownership	Jan-21	New SS	EN/009
cooperation activity	SSEN/010/401	Distribution	SSEN Distribution	21/22	Discussion were called binners on non-one many many many and a served project would benefit the transmission network in system restart and relieving network constraints.	mprogram	1071		n accounting implementation and account up that account (can help to induce network constraints as well as support system restart.	Innovation.co.uk/rass/	conceptual designs (widely shared)	(New)	impacts as it will help to relieve constraints on the network, provide support to system restart and potentially allow for connection of more renewable energy sources	realized by the network	Construction on this activity in terms of data sharing to ensure that cross operational impacts are properly addressed.	The method of the second of th				
Coordination and yes	SSEN/011	Distribution SSEN	SSEN Distribution	21/22	Discussions with SSEN Distribution on options to minimise network	In progress	Mar-21	Mar-21	SSEN Distribution involvement could drastically reduce	None	SSEN Transmission has shared with SSEN Distribution the	None	Positive impact on whole system as a	Positive impact on SSEN Transmission as a	Discussions with the customer on the potential	The next stage will depend on the customer's decision as to which				
Related action yes	SSEN/011/A01	SSEN	SSEN Distribution	21/22	reinforcement costs for connecting Glaswaar wind farm to the network				network reinforcement costs		location, transmission entry capacity and costs (Hestricted sharing)		commend transmission and distribution solution will result in cost savings	compined transmission and distribution solution will result in reduced network reinforcement costs thereby supporting connection of renewable generation to the network and contributing to net zero	options and associated benefits.	oprion to progress with.				
Coordination and yes cooperation activity	SSEN/012	Transmission SSEN Transmission	SSEN Distribution, NGSESO	21/22	Coordination activities with SSEN Distribution and ESO on the Shetland, Orkney and Western Ides transmission projects	In progress	Mar-21	Sep-12	This is relevant to whole system because apart from connecting renewable generation from the Islands to the maintaid, SSEN Transmission is working with SSEN Ustribution to ensure that there projects contribute to security of supply, decarbonisation of the Islands and resolvine load electricity asset condition issues.	https://www.szen- transmission.co.uk/projects/she tland/	SSEN Transmission has shared with SSEN Distribution and ESO technical reports and costs [Restricted sharing]	None	Positive impact for both transmission and distribution networks to fulfil their licence obligations and connection of renewable generation to the grid is critical to meeting net zero	Positive impact on SSEN Transmission as the coordinated approach results in an efficient and economic investment on the network.	Continue with the coordination activities between SSEN Transmission and SSEN Distribution in supporting economic development in the Scottish Islands through connection of renewable generation to the gri and improving demand security	These activities are necessary to ensure coordinated efficient and economic whole system investment decision making.				
Related action yes	SSEN/012/A01	SSEN Transmission	SSEN Distribution, NGSESO	21/22													The action is to continue with the coordination activities in prioritising, scheduling and sequencing of activities as the projects progress into delivery.	Jul-20	Improving SS	EN/012
Coordination and yes cooperation activity	SSEN/013	SSEN Transmission	SSEN Distribution, NGET, SPEN, SGN, NGESO, BEIS, Ofgem, Local Authorities	21/22	Coordination activities with SSBN Distribution, NGET, SPEN and other statishtidens in the development of our whole system strategy and annual report.	In progress	Dec-21	Apr-21	This is relevant to whole system because by working with other network licenses and stakeholders, SSE Transmission is able to share its knowledge and experience in its approach to whole system and in return it gets feedback that it can use to make netwark changes to its approach to whole system which will benefit the total system.	The link to reports will be added when the whole system page is active	SSEN Transmission has shared presentation slides of its whole system strategy and annual report [Widely sharing]	None	Positive impact on whole system as other network licensees and stakeholders learn from SSEN Transmission on how we are embedding whole system thinking within our business with the aim of making it a BaU activity.	By interacting with stakeholders and other network licenses on our whole system strategy and annual report, we show leadership in the industry but walso get the feedback we need to improve our whole system approach to investment decision making.	The next stage is to publish the revised whole system strategy and our first whole system annual report this year.	These activities are necessary to ensure coordinated, efficient and economic whole system investment decision making.				
Related action yes	SSEN/013/A01	SSEN Transmission	SSEN Distribution, NGET, SPEN, SGN, NGESO, BEIS, Ofgem, Local Authorities	21/22																
Coordination and yes cooperation activity	SSEN/014	SSEN Transmission	NGESO, SPEN, Venders/manufacturers	21/22	Coordination activities with NGESO and SPEN on system operability issue following a number of system disturbances in Scotland. In particular, understanding the causes of sub synchronous oscillations and how to resolve them	s In progress	Jan-22	0:8-21	Through the coordination activities with other network licensees as well as the system operator, a holistic approach is being taken to resolve these operability issues which will benefit the security of the total electricity system		Shared models and technical reports with ESO [restricted sharing]		This has positive impact as the solutions to these operability issues will ensure the security of the total electricity system	The knowledge sharing from these coordination activities has helped us to come up with the most efficient and economic solutions to resolve these emerging system operability issues.	SSEN Transmission has submitted a number of projects to Ofgem which will mitigate the impact of these system operability issues.	To maintain the security of the electricity system	niliste enviertste resolue neerskilltu joues in the north of Gratuad	lup.22	New cc	EN/014
yes		Transmission		1													following approval from Ofgem	-		

Details of all proposals received during a relevant period from system users to advance the efficient and economical operation of Electricity Distributors' and/or transmission owners' networks. Details of any system user proposals that have been implemented (or are being implemented) as well as a concise and clear summary of proposals not deemed to be apt for implementation, including the reason(s) for that decision.

			domestic customer; customer commercial: Group of domestic					
Unique identifier for			customers; Group of		Details of the suggestion. Only those			
each row of the sheet		Licensees and other	commercial customers; local		suggestions that improve the economy and			
(starting with		stakeholders with whom	authority; combined authority;		efficiency of the whole system is to be			
xxxx/U/001 where xxxx	Licensee who is	collaboration was/is being	other infrastructure networks;	Date on which the user	considered, suggestions benefitting just one		Action taken based on the suggestion. Could	Justification of the action resulting from the user
refers to the licensee)	publishing register	carried out.	generators; aggregators etc.	suggestion was received	user is not to be included.	Details of the relevance to whole system	even be decision to not take forward.	suggestion.
				Suggestion				
				submission date			Description of the action taken on the	
Unique id	Licensee	Collaborating licensees	User category	(mm/yyyy)	Description of the suggestion	Whole system relevance	suggestion	Justification of the action
							Work is underway to explore different	
							options of the ANM scheme. A decision	
					SHEPD has provided a proposal that		on the scheme design will be made	
					embedded generators in Shetland		considering safety of assets, security of	
					should be allowed to generate as long	Reasons given by SHEPD are that their	supply to Shetland communities,	
		SSEN Distribution and			as the export threshold at the	proposed solution will be easier to implement	network access priority, and costs to	
SSEN/029US	SSEN T	ESO	Networks	Nov-22	Gremister GSP is maintained .	and provide cost savings to customers	consumers.	

We encourage stakeholders to provide their proposals on the following link which is also available on our Whole System Hub.

https://www.ssen-transmission.co.uk/information-centre/whole-system-hub/

Alternatively, you can contact us using the following email address

wholesystemtransmission@sse.com