Public

Ref: FOI/25/013

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15 May 2025

Dear requester

Request for Information

Thank you for your request for information which we received on 14 April 2025. Your request has been considered under the Environmental Information Regulations 2004 (EIR).

Request

You asked us:

As an EIR request, please share documents related to the ASTI project delays work referenced in the penultimate slide of 'ESO Analysis for DESNZ' pptx, 21 April 2023'.

Our response

We understand you are referring to the wording *'For less extreme cases illustrating the impact of key individual projects being delayed, refer to the ASTI project delays work.'* on page 5 of the PowerPoint presentation linked above.

In 2022 Ofgem reviewed how their regulatory framework could be adjusted to support strategic onshore electricity transmission projects being expedited to deliver the Government's 2030 ambitions. Following consultation Ofgem introduced a new Accelerated Strategic Transmission Investment (ASTI) framework.

Please see information on the Ofgem website relating to the ASTI consultations and decisions:

- Ofgem: Consultation on accelerating onshore electricity transmission investment.
- Ofgem: Decision on accelerating onshore electricity transmission investment

Ofgem asked NESO's predecessor organisation, National Grid Electricity System Operator (NG ESO), to calculate the economic impact of accelerating or delaying projects. Please see the attached document submitted to Ofgem by NG ESO. The "Draft" watermark on the document appears to have been left on the document, but this document was shared with Ofgem.

Some detail, including cost figures, has been redacted as this information is considered commercially sensitive information and we are redacting under the exception at Regulation 12(5)(e) of the EIR which states that a public authority may refuse to disclose information to the extent that its disclosure would adversely affect the confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate economic interest. The information is based on data provided to us by the TOs in confidence and only for the purpose of our licenced activities.

NESO is bound by the confidentiality obligations under the System Operator Transmission Owner Code (STC) when we receive information for the purposes of our system operator business. NESO also falls within the scope of the Utilities Act 2000 and Section 105 of that Act makes it a criminal offence to disclose information: a) obtained under the Utilities Act 2000 and any other key energy legislation such as the Gas Act 1986 and the Electricity Act 1989, subject to specific exceptions; and b) where the information relates to the affairs of any individual or any particular business during the lifetime of the individual or so long as the business continues to be carried on.

In our opinion, the information in question which is held for the purpose of the economic assessment is subject to the restrictions at Section 105 of the Utilities Act and does not fall within any of the limited exceptions to that duty of confidentiality. Beyond this, there is also a common law duty of confidentiality based on the expectations of the Transmission Owners.

All exceptions in the EIR are subject to a public interest test.

NESO is mindful that the EIR requires us to apply a presumption in favour of disclosure when considering the public interest test. There is a public interest in NESO, as a public corporation, being accountable for its advice and recommendations. We also recognize that there is a public interest in local residents having information about changes to infrastructure which may impact on their local communities and the environment and during planning processes.

The Information Commissioner has acknowledged that there is some inherent public interest in maintaining commercial confidences and that third parties would be discouraged from confiding in public authorities if they did not have some assurances that confidences would be respected.

In order to fulfil our statutory and licence obligations as the independent system operator and planner under the Energy Act 2023, we must remain independent, fair, and consumer focused. Disclosure is likely to harm the relationship between NESO and the TOs and would be likely to reduce trust in NESO more widely in the energy sector. If suppliers of information are concerned about the disclosure of the information, and feel that they cannot trust NESO, such that they are unwilling to provide information in the future, this would be likely to have a detrimental effect on

NESO's ability to carry out our role, which would not be in the public interest. Additionally, we are moving to a model with a greater level of competition, where the information provided by TOs may be used by competitors, and there is a public interest in allowing fair competition within the marketplace.

Having weighed up these public interest arguments, our opinion is that the balance of the public interest lies in maintaining the exemption and withholding the confidential information provided by the TOs.

Please note that in reaching our decision regarding the disclosure of this document and the redactions, we have consulted with Ofgem and with SSEN.

This concludes our response to your request.

Advice and assistance

If you require further information about the ASTI decision-making process, we advise that you contact Ofgem: Information requests | Ofgem.

Next steps

You can ask us to review our response. If you want us to carry out a review, please let us know within 40 working days and quote the reference number at the top of this letter.

If you are still dissatisfied after our internal review, you can complain to the Information Commissioner's Office (ICO). You should make complaints to the ICO within six weeks of receiving the outcome of an internal review. The easiest way to lodge a complaint is through their website: www.ico.org.uk/foicomplaints. Alternatively, they can be contacted at: Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

Thank you for your interest in the work of the National Energy System Operator (NESO).

Regards,

The Information Rights Team, National Energy System Operator (NESO)

Data submission

Ofgem ASTI Data Request

Executive summary

Context

Ofgem have been consulting on what actions should be taken to aid in accelerating 26 options, listed in Table 1. These options were identified as "Required for 2030" in the ESO's HND and NOA7 Refresh publication and have been included in Ofgem's Accelerating Strategic Transmission Investment (ASTI) scheme. Actions to aid in acceleration could cause consumer detriment, by removing things such as competition and changing the regulatory approval process. Ofgem have asked the ESO to provide economic data that provides evidence of the economic benefits to accelerating these projects, so that they can assess that against the potential consumer detriment. This paper explains the ESO's analysis to support this process in response to Ofgem's two main questions shown below.

Table 1: Full list of 26 ASTI options

Code	EISD (based on current processes)	Optimal delivery date	"Accelerate to 2030" group?
AENC	2030	2030	No
ATNC	2030	2030	No
BBNC	2030	2030	No
BLN4	2031	**2030**	Yes
BPNC	2031	**2030**	Yes
BTNO	2028	2028	No
CGNC	2031	**2030**	Yes
DWNO	2028	2028	No
E2DC	2027	2027	No
E4D3	2029	2029	No
E4L5	2031	**2030**	Yes
EDEU	2027	2028	No
EDN2	2032	**2030**	Yes
GWNC	2031	**2030**	Yes
HWUP	2027	2027	No
LRN4	2033	**2030**	Yes
OPN2	2027	2027	No
PSDC	2030	2030	No
PSNC	2037	**2030**	Yes
PTC1	2027	2028	No
PTNO	2028	2029	No
SCD1	2030	2030	No
SLU4	2030	2030	No
TGDC	2031	**2030**	Yes
TKRE	2028	2028	No
TKUP	2032	2030	Yes

Author: [redacted] - ESO
Date: Sep-22

Questions

The economic data that Ofgem have requested consists of two main questions:

1. What are the economic benefits of accelerating the 10 ASTI options to 2030, ahead of their current EISDs?
2. What are the economic benefits and costs of accelerating or delaying the 26 ASTI projects from their current optimal years?

Conclusion

What are the economic benefits of accelerating the 10 ASTI options to 2030, ahead of their current EISDs?

Without accelerating the ten ASTI options to 2030, the offshore network and its associated offshore wind generation will not be able to connect to the onshore system. Ensuring compliance with the design standards of the transmission system is the fundamental reason for the acceleration of these ten options. This was outlined in detail in the Holistic Network Design (HND) Pathway to 2030 report. The consequence of non-compliance cannot be quantified economically and has the potential to significantly outweigh any savings from constraint costs, this also excludes any impact on the reputation of the ESO. Therefore, the ESO insists that the benefits outlined in this document are noted as theoretical and cannot reflect the full benefit of ensuring a compliant transmission system.

With this in mind, the economic analysis has still highlighted a significant consumer benefit of reduced constraint costs by the delivering transmission network early. The economic benefit of accelerating the options as a group from 2033 to 2030 is £1.9bn. This number is larger than the original value submitted to Ofgem for their consultation as it accounts for the benefit across multiple years. The original value was a single year of 2030.

[redacted]

What are the economic benefits and costs of accelerating or delaying the 26 ASTI projects from their current optimal years?

Broadly speaking, there is a larger regret to delay reinforcements than the benefit to accelerate them. This is due to the interconnected nature of the system. Adding one without others does not allow its full benefit to be realised, whilst taking one away makes the whole system weaker. In addition to this, the continued growth of renewable generation throughout the 2030s adds more pressures to the network. The delay costs of the 26 ASTI options can be found in their relevant section of the report below.

The economic benefits of accelerating the 26 ASTI options by one year ahead of their optimal year requires further discussion and analysis. No data is provided in this submission.

ESO's view

Based on this analysis, the ESO is strongly in favour of accelerating the ten "Required for 2030" ASTI projects and that measures are put in place to reduce the risk of delays to delivery schedules. The ESO wants to emphasise that we expect larger benefits than those that can be quantified by pure economic analysis. Government targets for offshore wind in 2030 cannot be met without these projects and there will be an increase in electricity carbon intensity due to constrained wind. This is not accounted for in our analysis but are important factors to consider.

The report

Further context and assumptions

To understand the data below, it is important to note two points. The first is the difference between the acceleration benefits submitted here and the acceleration benefit provided and published in the consultation letter. The second is the difference in values between the acceleration benefits and the delay costs.

All economical values in this document are in 2021/22 price base and in present value discounted from 2021 (to align with NOA7).

Differences to numbers provided for the consultation letter

The total acceleration benefit provided to Ofgem for their consultation letter was a single year value in 2030 that assumed all ten ASTI projects had been accelerated to 2030. The number did not account for the benefits that the offshore network provides.

There are three main differences with the numbers provided in this submission:

1. Some of the projects will be accelerated several years. For example, [redacted]. We have provided the individual yearly benefit and the total benefit across the 2030-2033 acceleration period.
2. [redacted]
3. We have provided a value for the yearly benefit of using a coordinated design against a radial design[1]. This value assumes the ASTI projects have been accelerated in both the coordinated design and in the radial design. The acceleration of the ASTI projects alone dramatically reduces constraint costs, which is why the bulk of constraint cost benefits come from the ASTI project acceleration instead of the coordinated design. Without the ASTI projects acceleration, neither the coordinated or radial designs would be compliant due to the quantity of wind required to connect to the system.

Differences between acceleration benefits and delay costs

The second important context for this information is the difference between the acceleration benefits and the delay costs. Both the acceleration and delay analyses assume an electrically compliant system with all generation allowed to connect. There is a difference because in the acceleration benefit analysis, we have assumed that none of the other ASTI projects have been accelerated. In the delay costs, we have assumed that the nine ASTI projects other than PSNC have been accelerated. Some reinforcements do not see their benefit realised without related reinforcements being built. For example, some reinforcements remove bottlenecks of flows in the network thereby allowing other reinforcements to add value. Without the necessary removal of certain bottlenecks, beneficial reinforcements do not have their value highlighted. For the same reason, removing a reinforcement can reduce the efficacy of related reinforcements and so there is a larger economic cost for removing that reinforcement. An example of this is shown in Table 2 below.

Table 2: Highlighting acceleration and delay study differences

Accelerate/delay	Option considered	Options in background	Delay cost/acceleration benefit
Accelerate	BLN4	No “accelerate to 2030” ASTI options	[redacted] benefit
Delay	BLN4	All ASTI projects except for PSNC	[redacted] cost

[1] A radial design is one where everything connects directly to the onshore network

Analysis

What is the benefit to accelerating projects to 2030?

Acceleration to 2030

Without accelerating the "Required for 2030" ASTI options, the offshore network and its associated offshore wind generation will not be able to connect to the onshore system. Ensuring compliance with the design standards of the transmission system is the fundamental reason for the acceleration of these options. The consequence of non-compliance cannot be quantified economically. Government targets for offshore wind cannot be met without the offshore network or the essential onshore reinforcements.

The HND is a holistic design, and the Network Options Assessment (NOA) is a combined analysis. Investigating options in isolation (like the requirement of this analysis) can provide misleading benefits to the system as a whole. The ESO has assessed the benefits of accelerating the individual projects as individual projects compared to accelerating them as a group. Furthermore, some of the projects are impossible to commission (as the option build on previous reinforcement option) or do not provide any benefit to the transmission system unless they are commissioned with other reinforcement recommendations from the HND.

Table 3 below provides the key summary of accelerating them as a group, and Table 4 provides the benefits of accelerating them individually.

Table 3 shows the total benefit of accelerating the ASTI options and the benefit of a coordinated offshore network. This benefit is calculated by first accelerating the ASTI options, which reduces the constraint costs dramatically, and then comparing the coordinated and radial designs. The benefit of accelerating the ASTI options is greater than the benefit of the coordinated design as the constraints have already been reduced when assessing the coordinated design. In reality, these are interlinked but this is an attempt to quantify the individual benefits.

Table 3: Summary of accelerating ASTI options as a group (2021/22 price base, discounted from 2021)

	Single year benefit, £m			
Category	**2030/2031**	**2031/2032**	**2032/2033**	**Total 2030-2033, £m**
Total benefit of accelerating ASTI options and coordinated offshore network design	£1,228	£918	£700	£2,846
Benefit of accelerating ASTI options as a group	£931	£618	£359	£1,907
Additional benefit of coordinated offshore network design against optimised radial design	£297	£300	£341	£938

Table 4 below shows the individual benefits of each reinforcement. The value of "-" is to highlight that this reinforcement does not need acceleration in that year as it is has an EISD of that year or earlier. It is important to note that this is looking at the individual benefits of each reinforcement. Certain reinforcements are interrelated and so need to be delivered in parallel to see their benefit realised. For example, E4L5 provides significant benefits to multiple boundaries, but cannot connect to the system without the additional substations that will be built as part of the GWNC option. Figure 1 shows that the GWNC option provides connection points for E4L5, TGDC and LRN4, but this benefit cannot be quantified by assessing GWNC in isolation.

Table 4: Summary of benefits to accelerating individual options (2021/22 price base, discounted from 2021)

		Single year benefit, £m		
Option	**EISD**	**2030**	**2031**	**2032**
BLN4	2031	[redacted]	[redacted]	[redacted]
BPNC	2031	No benefit without E4L5		
TKUP	2032	[redacted]		
CGNC	2031	[redacted]	[redacted]	[redacted]
E4L5	2031	Not possible without GWNC		
EDN2	2032	[redacted]		
GWNC	2031	No economic benefit in isolation		
LRN4	2033	Not possible without GWNC		
TGDC	2031	Not possible without GWNC		
PSNC	2037	See section "Benefit of acceleration of PSNC" on page 7		

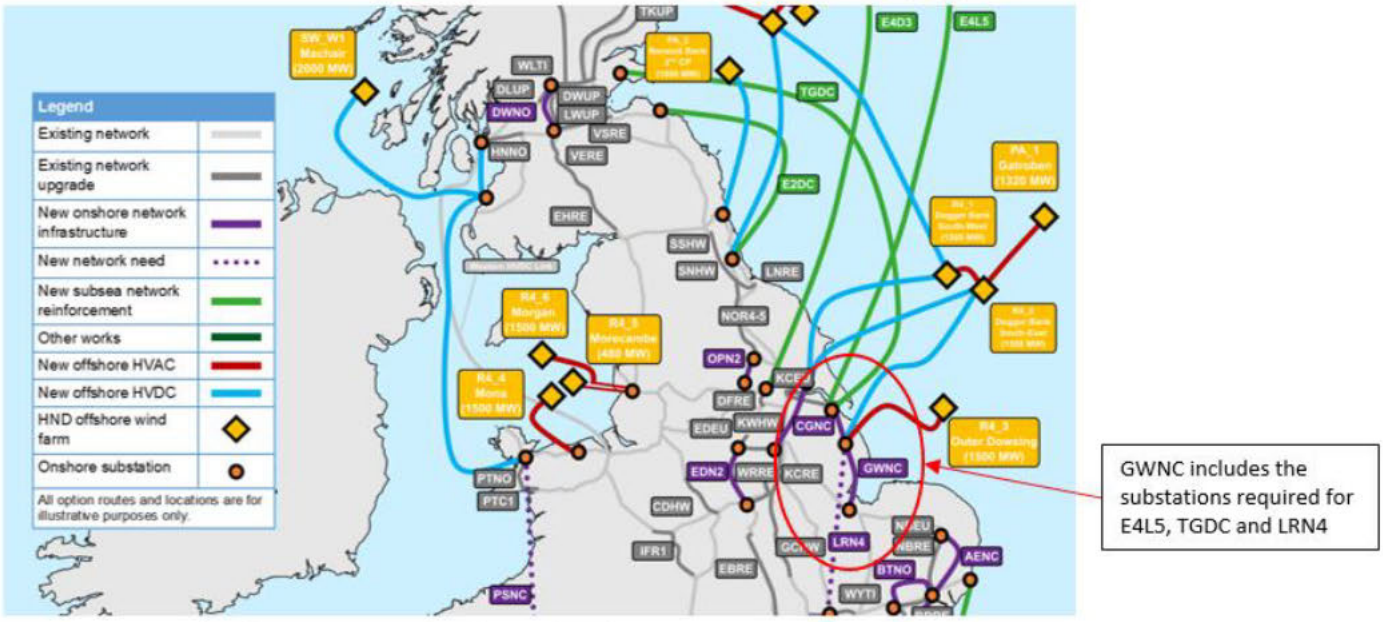

Figure 1: Visualisation of GWNC's importance for other reinforcements

Note: [redacted]

Based on this analysis, the ESO is strongly in favour of accelerating the "Required for 2030" ASTI projects. The ESO wants to emphasise that we expect larger benefits than those that can be quantified by pure economic analysis. Government targets for offshore wind in 2030 cannot be met without these projects and there will be an increase in electricity carbon intensity due to constrained wind. This is not accounted for in our analysis but are important factors to consider.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

What is the cost of delaying each of the 26 ASTI options?

Table 7 below details the delay costs of the 26 ASTI options. All data is taken from the Leading the Way scenario. Note, the data in these tables come from various datasets and use different generation backgrounds. Before any of these values are used, the ESO would like to discuss them in more detail.

Table 7: Individual delay costs of each option (2021/22 price base, discounted from 2021)

Option	Optimal year	Delay cost, £m's	Source of value
AENC	2030	[redacted]	New data
ATNC	2030		New data
BBNC	2030		New data
BLN4	2030		New data
BPNC	2030		New data
BTNO	2028		NOA7 data
CGNC	2030		New data
DWNO	2028		NOA7 data
E2DC	2027		NOA7 data
E4D3	2029		NOA7 data
E4L5	2030		New data
EDEU	2028		NOA7 data
EDN2	2030		New data
GWNC	2030		New data
HWUP	2027		FNC analysis
LRN4	2030		New data
OPN2	2027		FNC analysis
PSDC	2030		New data
PSNC	2030		New data
PTC1	2028		NOA7 data
PTNO	2029		NOA7 data
SCD1	2030		New data
SLU4	2030		New data
TGDC	2030		New data
TKRE	2028		NOA7 data
TKUP	2030		New data

AENC/ATNC/SCD1 and DWNO require further discussion.

As can be seen, cost of delays are broadly higher than the acceleration benefits seen in Table 4 earlier. This is due to the interconnected nature of the system and that the demands on it are growing at a significant rate. Accelerating a reinforcement may not allow the reinforcement's benefit to be fully realised, and delaying a reinforcement can reduce the effect of the reinforcements related to it. This provides greater weight to viewing the reinforcements as a program of works rather than individual reinforcements. An example of this was shown in Table 2 earlier in the section "Further context and assumptions" on page 3.

[2] Higher than FNC submission as this analysis uses a more recent FES with a higher generation background
[3] Higher than FNC submission as this analysis uses a more recent FES with a higher generation background

What is the benefit of accelerating each of the 26 ASTI options by another year?

This analysis has not been completed and it requires further discussion.

Conclusion

Based on the analysis in this report, the ESO strongly recommend that these reinforcements are accelerated. We also recommend actions are taken to ensure there are no delays to delivery schedules. The ESO recommend that they are treated as a program of works, rather than individual reinforcements. As has been mentioned before in this report, the reason for accelerating when required is not the economic data that has been provided here. The reinforcements are critical for ensuring compliance with the SQSS.

The consequence of non compliance cannot be quantified economically and has the potential to significantly outweigh any savings from constraint costs, this also excludes any impact on the reputation of the ESO. Therefore the ESO insists that the benefits outlined in this document are noted as theoretical and cannot reflect the full benefit of ensuring a compliant transmission system.

PSNC was recommended by the HND however it is important to note that the option is in the very early stages of its development and the TO needs to carry out further optioneering to investigate all possible design options, noting that its delivery is required by 2030. Furthermore, PSNC or a similar option is critical to ensuring the compliance of the transmission network and facilitating the compliant connection of offshore wind by 2030.

Further discussion needs to be had regarding the economic data on the acceleration of all the 26 ASTI options.