

### NGET update on an ODI on accelerating low-carbon connections – May 2020 (Sent by NGET to Ofgem on 22 May 2020)

This note provides further information on the output delivery incentive (ODI) on accelerating low-carbon connections we included in our RIIO-2 business plan. It responds to comments we have received from our stakeholders and Ofgem.

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#### 1. Summary

The accelerating low-carbon connections ODI incentivises us to deliver shorter connection lead times to get new generation onto our network more quickly. On 3 February 2020 Ofgem published its [Decarbonisation action plan](#) saying that to “achieve net zero will require a huge increase in renewable and low carbon electricity”. Our proposed ODI is designed to help deliver this. It is an ODI “for delivering an additional contribution to the low carbon transition”, which Ofgem encouraged TOs to propose in its [sector-specific methodology decision \(SSMD\) – ET annex](#) (page 64).

When we engaged on our RIIO-2 business plan stakeholders raised the issues of reducing greenhouse gas emissions more quickly and improving our connection lead times. This ODI responds to both of those stakeholder preferences. When we engaged on this ODI specifically stakeholders were supportive of its aim and had questions on the detail. We set out and respond to these questions in this paper (see section 4).

One main concern of our stakeholders was that the target connection lead times should be set appropriately. In this paper we consider options for providing more reassurance to our stakeholders about setting target connection lead times. Our preferred approach is to agree the lead time with the customer, who is independent and who has the most interest in the connection date. However, there could also be a role for the independent ESO or the independent user group (IUG) to check our target lead time.

Our stakeholders also wanted us to provide a worked example to illustrate how the ODI would work in practice. We provide a worked example in section 5 of this paper, which reflects stakeholders' feedback on the ODI. We explain how the ODI is a “win-win-win” for consumers, the connecting customer and us as the transmission owner.

### 2. A reminder of our business plan proposal

In our December 2019 RIIO-2 business plan we proposed a bespoke ODI on accelerating low-carbon connections<sup>1</sup>. The ODI incentivises us to deliver shorter connection lead times to get new generation onto our network more quickly. This reduces greenhouse gas emissions and introduces more competition into the wholesale electricity market to benefit consumers.

We proposed this ODI as one “for delivering an additional contribution to the low carbon transition”, which Ofgem encouraged TOs to propose in its [sector-specific methodology decision \(SSMD\) – ET annex](#) (page 64). The ODI also responded to feedback from our stakeholders that they would like us to reduce greenhouse gas emissions more quickly and improving our connection lead times, if possible.

The [independent user group report for NGET](#) stated: “The User Group, therefore, welcomes the action now taken by NGET to have the financial ODI [for connection lead times] in place from the start of RIIO-2” (page 21).

We proposed two different ways of setting the target for new and existing customers:

- New customers: Set the target delivery lead time based on the average lead time implicit in the RIIO-2 common energy scenario for the particular type of customer.
- Existing customers: use the connection lead time in the existing contract as the target.

We also said that the ODI should only apply if the customer said it would find an early connection beneficial.

We proposed to base the incentive rate on the benefits to consumers and future consumers from lower greenhouse gas emissions if the connection is to a low-carbon generator. We calculated this using the BEIS traded carbon prices for 2021-25, the average amount of CO<sub>2</sub> emitted per GWh of electricity supplied from fossil fuels and the average capacity factor (percentage of maximum hours it operates for) of low-carbon generators. We proposed that we and society should share the benefits 50:50 to give the ODI sufficient strength to incentivise us to change how we operate our business to incur the costs and changes needed to deliver connections earlier.

We also proposed to protect consumers from any risk that we could earn unexpectedly high rewards from this incentive. We proposed for there to be annual cap of 1.0% of our base revenue, which is just over £16m per year.

We proposed the ODI was reward-only because it is focussed on delivering an improved service. The ODI balances the penalties we face for poor connection service under other parts of the RIIO-2 package.

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<sup>1</sup> Please see page 27 of [NGET RIIO-2 200-page business plan](#) and pages 27 to 29 of [NGET ET.06 Output Delivery Incentives \(ODIs\)](#)

### 3. The other TOs' proposals

Both SP Transmission and SHE transmission have proposed incentives (either consumer value propositions (CVPs) or ODIs) related to the greenhouse gas emissions benefits of connecting or increasing availability for low-carbon generation. This shows that following stakeholder engagement all three TOs identified the benefits of connecting or increasing availability for low-carbon generation in their business plans.

#### SP transmission (SPT)

SPT has two ODIs and one CVP related to our proposed ODI as follows:

1. SPT has a reputational ODI called **Timely connection project delivery** that is very similar to our proposed ODI. SPT recognised that the early delivery of renewable generation can have a broader benefit to consumers by reducing greenhouse gas emissions. Under the reputational ODI SPT makes a commitment to reporting its performance in achieving an agreed connection date and the greenhouse gas emission reductions it achieves through its performance. SPT considered a financial ODI, but its stakeholders were concerned about later connection dates being offered and higher connection costs (we address both issues in section 4 of this note). Please see page 152 of [SPT's main RIIO-2 business plan](#) and pages 19 of [SPT RIIO-2 business plan annex 12 Output Delivery Incentives](#) for more details.
2. SPT also has an ODI on **Optimising network availability for connected generators**. This ODI is designed to deliver the benefits of increased low-carbon electricity flows onto its transmission network by improving the network availability for low-carbon generators. Please see page 154 of [SPT's main RIIO-2 business plan](#) and pages 26-27 of [SPT RIIO-2 business plan annex 12 Output Delivery Incentives](#) for more details.
3. SPT's plan has CVP5.1 that is related to **the carbon savings its plan provides by connecting low-carbon generation**. Although it does not relate to accelerating low-carbon connections, the CVP illustrates the value to consumers of connecting low-carbon generation to the transmission network. SPT's CVP5.1 is that its baseline plan will directly connect 889MW of renewable generation, create capacity for 800MW of embedded generation and increase the capacity for additional renewable generation to be transferred across Scotland and Great Britain by 800MW. This will reduce CO<sub>2</sub> emissions by 1.6m tonnes per year with a value of £81m per year. (Please see page 64 of [SPT's main RIIO-2 business plan](#) and page 5 of [SPT RIIO-2 business plan annex 30: Consumer value propositions](#) for more details.)

#### SHE transmission (SHE-T)

SHE-T has a CVP 2a that includes the carbon savings from accelerating low-carbon connections in the RIIO-2 period. SHE-T's CVP 2a is about its bespoke Commercial and Connections Service and includes three elements. One of the elements is the potential greenhouse gas emissions that can be avoided in the RIIO-2 period based on SHE-T's savings in RIIO-1 through its interventions to accelerate connections.

SHE-T's estimate of the value for its CVP 2a relates to accelerating connections for generation customers because it is the area that it can most easily quantify. Based on the

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evidence of the greenhouse gas emissions savings SHE-T has achieved in the RIIO-1 period, SHE-T conservatively estimates it could achieve savings in the RIIO-2 period from accelerating low-carbon connections with an NPV of £59.5m.

In our engagement with SHE-Transmission, they explained to us that they have not pursued an ODI in this area. Rather they have pursued a three-part CVP, to reflect their stakeholders' feedback, as a 'package' of services/benefits. An accelerated low-carbon connections ODI would reflect only one of these services.

Please see pages 45-48 of [SHE-T RIIO-2 business plan annex "Regulatory Framework - Outputs, Incentives, CVP & Innovation"](#) and page 17 of [SHE-T main RIIO-2 business plan](#).

#### 4. Stakeholder feedback on our ODI and how we propose to address it

The RIIO-2 challenge group has questioned whether we have carried out stakeholder engagement on the detail of this ODI. In January 2020 the [RIIO-2 challenge group report](#) stated: “[NGET] claims to have ‘strong stakeholder support’ in general for providing a better connection service and for reducing greenhouse gas emissions. However, we were not clear what level of stakeholder support there is for this specific initiative, rewarded in the way and at the level proposed.” (page 104)

Following the RIIO-2 challenge group’s report we have engaged with our stakeholders specifically on the detail of this ODI.

##### **Stakeholder engagement before the RIIO-2 challenge group report**

When we engaged on our RIIO-2 business plan stakeholders raised the issues of reducing greenhouse gas emissions more quickly and improving our connection lead times. Our accelerating low-carbon connections ODI responds to both of those stakeholder preferences.

At our [ODIs webinar on 9 October 2019](#) we engaged with stakeholders on our bespoke ODIs for our RIIO-2 business plan. On connections we wanted to understand stakeholders’ priorities for connections to help us design our ODI. 9 of the 16 stakeholders at the webinar who responded preferred quicker connection dates and dates closer to customers’ preferences. 7 of the 16 respondents preferred lower or more certain connection costs. This did not give us a strong steer on where to focus our ODI, but respondents did lean slightly more towards connection lead times. Following the webinar, we developed the accelerating low-carbon connections ODI.

Our IUG challenged us to propose in our final business plan an ODI on accelerated connections that started at the beginning of the RIIO-2 period. This is reflected in the [IUG report](#) which states: “The User Group, therefore, welcomes the action now taken by NGET to have the financial ODI [for connection lead times] in place from the start of RIIO-2” (page 21).

##### **Stakeholder engagement since the RIIO-2 challenge group report**

Based on the feedback from the RIIO-2 challenge group we engaged with the following stakeholders from March to May 2020:

Citizens Advice	Ørsted
Centrica	SP transmission
Energy UK	SHE transmission
REA – the association for renewable energy and clean technology	NG ESO

**In general, stakeholders were supportive of the aim of the ODI to bring forward the benefits of reduced greenhouse gas emissions by connecting low-carbon generators to the network more quickly.** Stakeholders had comments on the detail of our proposed ODI. We summarise the main challenges raised by our stakeholders and our responses to them in the table on the following pages.

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**Table 4.1 – Stakeholder comments on the accelerating low-carbon connections ODI and our responses**

Issue	Stakeholder comments	Our response
1	Who would NGET recover its ODI rewards from? Should low-carbon connection customers contribute to the cost of the ODI?	<ul style="list-style-type: none"> <li>• Our business plan proposal is that we will recover any reward for accelerating low-carbon connections through the Transmission Network Use of System (TNUoS) tariff model (paid for by Great British suppliers and generators). We propose the incentive will allow us to recover 50% of the carbon savings.</li> <li>• We do not think low-carbon generators should contribute to the cost of this ODI (beyond the payments they make through TNUoS) because:               <ul style="list-style-type: none"> <li>○ they pay for any additional expenditure we incur should the low-carbon generator delay its project (see answer to question 2), so they are taking on risk by agreeing to the ODI; and</li> <li>○ the ODI is likely to generate spill-over benefits for all connecting customers and consumers of quicker connections, which it does not seem appropriate for the low-carbon generator covered by the ODI to pay for (see answer to question 6).</li> </ul> </li> </ul>
2	Why should a low-carbon connection customer pay for the additional costs of an accelerated connection when it delays its connection?	<ul style="list-style-type: none"> <li>• Under the ODI, if we incur additional costs to accelerate the connection and then the customer delays, we charge those costs to the customer, as is the system currently.</li> <li>• We consider this approach is appropriate because:               <ul style="list-style-type: none"> <li>○ the customer chooses whether to agree to the acceleration of the connection or not and can weigh up whether it thinks there is a significant risk of having to delay its project before agreeing;</li> <li>○ if the customer does agree to the acceleration it has an incentive to complete its project on time to achieve the benefits of lower greenhouse gas emissions for consumers; and</li> <li>○ consumers are paying for the ODI payments, so it seems more balanced for the connection customer to bear the risk, which it has most control over, of delaying its project and incurring additional costs.</li> </ul> </li> </ul>
3	How will the ODI work if the connection completes after the RIIO-2 period ends?	<ul style="list-style-type: none"> <li>• As we explain in our answer to question 13, large offshore wind generation connections take about 10 years, interconnectors 7 years and battery and solar connections 9 to 36 months, depending on their size.</li> </ul>

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		<ul style="list-style-type: none"> <li>To enable the ODI to apply to all types of low-carbon generation connections underway or starting in the RIIO-2 period, we would need the reconciliation of the ODI to be able to happen in the RIIO-3 or RIIO-4 period. This would require a specific assurance from Ofgem that the ODI would continue to apply for the incentive to work.</li> <li>An option would be to restrict the ODI to connection projects completing within the RIIO-2 period or the first few years of the RIIO-3 period. However, this would reduce the potential greenhouse gas emissions savings from the ODI during a period when the UK is trying to achieve net zero greenhouse gas emissions.</li> </ul>
4	Can you present a worked example?	<ul style="list-style-type: none"> <li>In section 4 we provide a worked example of how the ODI could work.</li> </ul>
5	How will you make sure the ODI produces a cost-beneficial outcome?	<ul style="list-style-type: none"> <li>The incentive rate is based on 50% of the carbon savings from accelerating a low-carbon connection. We will only carry out the investment to accelerate the connection lead time if the cost is lower than the value of the incentive. In this way, the design of the ODI makes sure that the project is cost-beneficial.</li> </ul>
6	Does the ODI discriminate against conventional generators?	<ul style="list-style-type: none"> <li>Our obligation is not to unduly discriminate between any persons or any class or classes of person or persons.</li> <li>We consider the ODI does not “unduly” discriminate between our connection customers. Any connection customer can agree to the ODI applying to us for their connection. We will be incentivised to accelerate our connection lead times in proportion to the greenhouse gas emission savings the acceleration would create for each specific project.</li> <li>To the extent that the different strength of the incentive on us to accelerate a connection between low-carbon and conventional connection customers could be seen as discrimination, we consider any such discrimination would be “due” because it reflects the environmental benefits of getting low-carbon generators onto the network more quickly. This will help achieve the UK’s target of net zero greenhouse gas emissions by 2050.</li> <li>We expect that as we put additional investment into our connection processes to accelerate low-carbon connections there might be spill-over benefits that allow us to accelerate conventional generator connections as well.</li> </ul>
7	Could the ODI slow down connections for other generators or embedded generators if	<ul style="list-style-type: none"> <li>Our intention is absolutely not to slow down the connections for our customers not covered by this ODI.</li> </ul>



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	we divert resources from other connection projects to focus on those covered by the ODI?	<ul style="list-style-type: none"> <li>• Our business plan provides information on our proposals to improve the connection experience for all our customers (see our answer to question 10).</li> <li>• We expect that as we put additional investment into our connection processes to accelerate low-carbon connections there might be spill-over benefits that allow us to accelerate other connections as well.</li> </ul>
8	Will the ODI slow down the connection offer process?	<ul style="list-style-type: none"> <li>• We recognise that the offer stage forms part of the overall connection process for connection customers.</li> <li>• Ofgem is applying a penalty-only incentive to us in the RIIO-2 period to make sure we complete all our connection offers on time, which we have always done in the past.</li> <li>• Our intention is for the ODI to accelerate the whole connection process. We would expect the possibility of earning a return from the ODI in the post-offer stage to encourage us to complete the offer process more quickly.</li> <li>• If the customer considered discussions on the ODI were slowing down its connection offer it could choose for the ODI not to apply to us for its connection project.</li> </ul>
9	Why can't the activities to deliver accelerated connections be funded through baseline allowances?	<ul style="list-style-type: none"> <li>• We are already proposing improvements to our connection service in the RIIO-2 period through baseline funding, such as setting up a customer relationship management (CRM) system to benefit all connecting customers.</li> <li>• The purpose of the ODI is to fund us for any specific additional actions we can take to reduce greenhouse gas emissions by accelerating connections for low-carbon generators who would benefit from them.</li> </ul>
10	Shouldn't a TO's approach to connections look more widely than just accelerating low-carbon connections?	<ul style="list-style-type: none"> <li>• We agree. Our proposed bespoke ODI on accelerating low-carbon connections is only one part of our business plan proposals to improve our approach to connections in the RIIO-2 period.</li> <li>• Chapter 8 of <a href="#">NGET's RIIO-2 200-page business plan</a> provides information on our proposals to improve the connection experience for all our customers, for example: <ul style="list-style-type: none"> <li>○ investing in our IT to enable customers to use a self-service portal as well as their dedicated account management team;</li> <li>○ providing additional support to small and new customers to help them through the connection process; and</li> </ul> </li> </ul>



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		<ul style="list-style-type: none"> <li>○ investing in a Customer Relationship Management (CRM) system that will enable us to improve customer journeys and tailor our services through the customer insights and analysis the CRM provides.</li> </ul>
11	How can stakeholders trust the target lead times we propose for connections?	<ul style="list-style-type: none"> <li>● We suggest the following approaches could reassure stakeholders about the trustworthiness of our connection lead time targets: <ul style="list-style-type: none"> <li>○ We have an existing process for determining connection dates as described in our answer to question 12. This involves the customer and the ESO, both of whom are independent from us. The ESO is an expert on connection lead times and many of our customers are experienced with the connection process and can challenge our lead times effectively.</li> <li>○ We can provide evidence for our target lead times from similar historical projects, taking account of any material differences.</li> <li>○ An independent organisation could challenge our target lead times such as the IUG, the ESO, Ofgem or independent consultants for those cases where the customer is less experienced with the connection process.</li> <li>○ We could restrict the ODI to existing contracts where the connection lead time is already set, although this would limit the benefits of the ODI in reducing greenhouse gas emissions.</li> </ul> </li> </ul>
12	What process do you follow in determining a connection date for a connection application?	<p>The process we follow in determining a connection date for a connection application is as follows:</p> <ul style="list-style-type: none"> <li>● When determining a connection date we typically have already had some form of pre-application engagement process with the customer and the ESO to understand the customer's requirements. This is a key input to determining the connection date.</li> <li>● Following the application, we analyse the customer's application data and determine the impacts and loads on the transmission system. <ul style="list-style-type: none"> <li>○ At this stage, an input we consider is the ESO's CPA (Construction Planning Assumptions), which provide a view of a 'reasonable' dispatch or pattern of generation across the network at the point in the future relevant to the application.</li> <li>○ We also take account of the technology-type and size in MW of the connection because these will affect the connection work required and the connection date. (This</li> </ul> </li> </ul>

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		<p>is why the accelerating low-carbon connections ODI needs to use technology-specific connection dates for connections.)</p> <ul style="list-style-type: none"> <li>• We propose investment solutions to any issues that need to be resolved with the connection to make sure we meet the Security and Quality of Supply Standards (SQSS). These could be “build” or “no build” solutions.</li> <li>• We then determine the duration of all the investment solutions that are needed. <ul style="list-style-type: none"> <li>○ Key inputs at this stage are: (1) the timeframes to achieve a consent; (2) the timeframes for construction; and (3) the timeframes for access to the transmission network.</li> </ul> </li> <li>• We offer the connection date to the customer as the later of: (1) the customer’s requested date; and (2) the duration to deliver our investment solutions to the ESO. The ESO provides our connection date to the customer.</li> </ul>
13	<p>What is your view of likely target lead times for different types of connections under this ODI?</p>	<ul style="list-style-type: none"> <li>• We estimate the following average target connection lead times for these types of connections: <ul style="list-style-type: none"> <li>○ Under 50MW battery and solar projects: 9 to 12 months.</li> <li>○ Over 50MW battery and solar projects: 30 to 36 months.</li> <li>○ Interconnectors: around 7 years.</li> <li>○ Large-scale offshore wind connections: around 10 years.</li> </ul> </li> <li>• As explained in our answer to question 11 we would use evidence on our lead times from similar historical projects, taking account of any material differences, to inform our proposed target lead time.</li> <li>• We provide more detail on how we calculated these average target lead times in annex 2 to this note.</li> </ul>
14	<p>How can you accurately measure when connections are made?</p>	<ul style="list-style-type: none"> <li>• We recognise that an independent verification of completion might be needed to reassure our stakeholders that the ODI is being applied fairly. The verification could be provided by one or more of the customer, the IUG, the ESO, Ofgem or independent consultants.</li> </ul>

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		<ul style="list-style-type: none"> <li>We suggest the ODI payment should be linked to the completion of NGET's part of the connection. This would be when the connection is ready to be energised by NGET, even if the generator has had to delay starting its operation.</li> </ul>
15	What has your current performance on accelerating low-carbon connections in the RIIO-1 period been?	<ul style="list-style-type: none"> <li>We have not accelerated low-carbon connections in the RIIO-1 period. This is because for the generation projects we have commissioned in the RIIO-1 period, developers have delayed rather than wanting to accelerate their generation projects.</li> <li>We think this will change in the RIIO-2 period with smaller, low-carbon developers, whose supply chains are speeding up, wanting to connect more quickly to our network. This is one of the main reasons for developing the accelerating low-carbon connections ODI to anticipate new demands from our customers and ways we can reduce carbon emissions further.</li> </ul>
16	What type of actions will you take to accelerate connections in the RIIO-2 period?	<ul style="list-style-type: none"> <li>We provide some information on the actions we might take to accelerate low-carbon connections in the RIIO-2 period in our annex <a href="#">NGET ET.06 Output Delivery Incentives (ODIs)</a> on page 29: "The activities we can carry out to improve our connection lead times include: innovating in the design of connections; further standardising our processes; and using our experience to reduce the lead time to achieve consents."</li> <li>Shortening our connection lead times in the RIIO-2 period will involve costs to re-baseline and re-plan our operational activities and to work with the supply chain to reduce their lead times.</li> </ul>
17	What type of customers do you expect to want an accelerated connection in the RIIO-2 period?	<ul style="list-style-type: none"> <li>The development time for some of our renewable customers, particularly onshore wind, solar and batteries, is becoming shorter as their supply chains improve and become more agile. As such, the gap between our customers making their financial Investment decision (FID) and their plant being operational is likely to be shorter than our standard lead times, which reflect our current supply chain and processes.</li> <li>The customers most likely to want a shorter lead time are circa 50MW generators. However, new electric vehicle (EV) charging customers are also likely to want shorter connection times.</li> <li>The recent <a href="#">BEIS "Follow up consultation on proposals regarding the planning system for electricity storage"</a> (December 2019) proposed carving out electricity storage, except pumped hydro, from the Nationally Significant Infrastructure Project (NSIP) regime in England and Wales. If this carve out does happen, we would expect battery customers to be able to develop their projects more quickly and be likely to want shorter lead times in the future.</li> </ul>

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18	Is the case for this ODI declining because there is less coal generation on the network?	<ul style="list-style-type: none"> <li>According to the ONS the average amount of carbon dioxide emitted per unit of electricity supplied from fossil fuels (tonnes per GWh of electricity supplied) has been on a downward trend for the last 4 years:</li> </ul> <table border="1" data-bbox="884 375 2029 555"> <thead> <tr> <th>Year</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>CO<sub>2</sub> emitted per unit of electricity supplied from fossil fuels</td> <td>440</td> <td>450</td> <td>430</td> <td>400</td> </tr> <tr> <td>CO<sub>2</sub> emitted per unit of electricity supplied from coal</td> <td>880</td> <td>870</td> <td>870</td> <td>990</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>The data shows there is still a considerable amount of fossil fuel emissions to be displaced by low-carbon generation.</li> <li>The CO<sub>2</sub> emissions from coal are much higher and so the potential benefits of low-carbon generation are much higher if they are displacing coal.</li> </ul>	Year	2016	2017	2018	2019	CO <sub>2</sub> emitted per unit of electricity supplied from fossil fuels	440	450	430	400	CO <sub>2</sub> emitted per unit of electricity supplied from coal	880	870	870	990
Year	2016	2017	2018	2019													
CO <sub>2</sub> emitted per unit of electricity supplied from fossil fuels	440	450	430	400													
CO <sub>2</sub> emitted per unit of electricity supplied from coal	880	870	870	990													
19	Given the UK government's target of connecting a further 30GW of offshore wind capacity to the network by 2030 is the £16m annual cap on the ODI too tight?	<ul style="list-style-type: none"> <li>The UK government's target of 40GW of offshore wind capacity by 2030 implies the UK will be connecting 30GW of additional offshore wind capacity by 2030. If this wind capacity could start generating one year earlier, it would save CO<sub>2</sub> emissions with a value of around £1.5bn. This shows the potential scale of benefits for consumers from accelerating low-carbon connections.</li> <li>We do not consider that our ODI payments would approach anywhere near this value because: not all of these offshore wind projects will start in the T2 period; not all will connect to our network; we will not be able to accelerate all offshore windfarms by a year; not all windfarms will ask us to accelerate their projects; and the ODI only allows us to retain a proportion of any CO<sub>2</sub> emission savings we achieve.</li> <li>We proposed the annual cap to protect consumers from any risk that we could earn unexpectedly high rewards from this incentive. We consider there is a case for Ofgem to keep open raising the cap should it find the ODI is delivering strong benefits for consumers in terms of reducing greenhouse gas emissions.</li> </ul>															

### 5. A modified proposal to address stakeholders' concerns

In the previous section we describe how we engaged with our stakeholders on the accelerating low-carbon connections ODI, the main questions they raised and our responses to them.

We have reflected on the 19 comments above and make some suggestions below for how we could modify our ODI to meet our stakeholders' concerns. We describe our proposed revised approach in this section using a worked example and then cover other aspects of the ODI not covered by the worked example.

#### 5a – A worked example

##### Scenario for the worked example

In October 2021 a 100MW solar project applies to connect to our network in October 2023 (24 months later).

We offer a connection date of July 2024 (33 months later) as explained in step 1 below.

We tell the connection customer about the ODI and how it might benefit the customer by incentivising us to accelerate our connection by using new and innovative approaches. We explain to the connection customer that it would take the risk of paying for any additional costs associated with accelerating the connection if it delays its connection date.

The connection customer says it would like us to try to accelerate the connection date and understands the risk it is taking on.

As we show in step 2 a three-month acceleration of this project would save society 9,391 tonnes of CO<sub>2</sub> equivalent emissions and £0.319m of value.

##### Step 1 – Calculating and verifying the target lead time

We offer July 2024 (33 months later), which is the earliest date we can offer based on our pre-application discussions with the customer and the ESO, our assessment of the customer's data, the impacts on the transmission system and the investment needed to meet the SQSS. We explain this process in more detail in our response to question 12.

We consider that the existing process for agreeing a connection lead time is robust enough because it involves two independent parties, the customer and the ESO. However, to give additional reassurance the ESO or the IUG could approve the proposed connection date or suggest an alternative one. In this worked example we assume the ESO checks the proposed connection lead time of 33 months and approves it.

We propose to the generator that we could try to accelerate the low-carbon connection to achieve a 30-month lead time, completing the project in April 2023. This is three months quicker than the target (and would save society 9,391 tonnes of CO<sub>2</sub> equivalent emissions and £0.319m of value).

### Step 2 – Calculating the incentive rate

We propose to calculate the incentive rate in the same way as we suggested in our RII0-2 business plan.

**Table 5.1 – Inputs to the ODI incentive rate calculation**

Part of the calculation	Value
Size of the low-carbon generator	100MW
Average capacity factor for a UK solar farm (i.e. percentage of maximum hours it operates for).	10% <sup>2</sup>
Amount by which the connection is early	3 months = 2,184 hours
The average amount of carbon dioxide emitted per unit of electricity supplied from fossil fuels (tonnes per GWh of electricity supplied, average for 2016-19)	430
Volume of carbon saved (in tonnes of CO <sub>2</sub> equivalent)	9,391
BEIS traded carbon value for 2023	£33.94
Value of the carbon saving	£0.319m

Using the values in table 5.1 we can calculate the incentive rate as follows:

- The three-month acceleration of the connections saves society 9,391 tonnes of CO<sub>2</sub> equivalent emissions and £0.319m of value.
- We propose that we should receive 50% of the carbon saving as the ODI reward, which in this case is £0.159m for 3 months.

If Ofgem wanted to modify the incentive they could change this percentage, perhaps using the TIM sharing factor. Reducing the sharing factor for the NGET would reduce the funds available to accelerate the connection and achieve any CO<sub>2</sub> emissions savings for consumers.

### Step 3 – Measuring and verifying when connection happens

For this worked example, we assume we are successful in completing the connection in April 2023 i.e. we are successful in accelerating the connection by 3 months. We assume we spend £0.1m in accelerating the connection.

The ODI payment is linked to the completion of NGET's part of the connection. This is when the connection is ready to be energised by NGET, which is in April 2023.

We propose that the customer and/or independent consultants will confirm that the connection has been made (which will involve a fee for consultants).

### Step 4 – Paying the incentive

Because we were successful in delivering the connection to the solar farm by the accelerated date of April 2023, we are allowed to recover the £0.159m through the annual

<sup>2</sup> This should be varied to reflect the actual capacity of the specific solar farm connecting and perhaps the months the accelerated lead time is affecting (e.g. the capacity factor will be higher in the summer and the associated CO<sub>2</sub> emission savings will be higher)

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iteration process (AIP). This means we will be able to recover the incentive payment through TNUoS in 2024-25.

We propose that the customer should not make a contribution to the incentive (beyond the payment it makes through TNUoS) because:

- (1) the customer bears the risk of picking up the cost of any additional costs we incur due to the acceleration of the connection if it delays its connection; and
- (2) the changes we make to our processes to accelerate the connection could benefit other customers and end-consumers.

### Step 5 – The distribution of benefits

All parties win as a result of this incentive when both NGET and the customer achieve the accelerated connection lead time:

- Consumers benefit by a net £0.160m (£0.319m in CO<sub>2</sub> equivalent emissions savings minus the £0.159m incentive payment, which we assume will be passed onto consumers).
- The solar farm benefits from a 3-month quicker connection to the transmission network.
- NGET benefits by a net £0.059m (the incentive payment of £0.159m minus £0.1m of costs incurred to accelerate the connection).

### 5b - Other elements of the incentive not captured by the worked example

The worked example illustrates how the incentive could work in practice for a fairly large solar farm connection under some plausible assumptions. However, the worked example does not capture all aspects of the incentive.

#### Scope of the incentive

The worked example relates to a solar farm where the projects completes within the RIIO-2 period. In our RIIO-2 business plan (on page 28 of [NGET ET.06 Output Delivery Incentives \(ODIs\)](#)) we used an example of a 1GW windfarm. We changed to a 100MW solar farm for this note because it is more typical of the type of project that is likely to be accelerated by this ODI.

In the 1GW windfarm example the potential greenhouse gas emissions savings were much larger because:

1. A 1GW windfarm has ten times the power output of a 100MW solar farm.
2. A one-year lead time reduction is four times the three-month lead time reduction for the solar farm.
3. A UK offshore windfarm has an average capacity factor of 39.2% compared with 10% for a UK solar farm.

As a result, the potential greenhouse gas emission savings for the windfarm example were approximately £50m rather than £0.319m for the solar example above.

We consider this ODI should apply to all low-carbon connection customers, including large offshore windfarms and interconnectors because they can create the largest benefits in



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terms of reducing greenhouse gas emissions. Although large offshore windfarms typically have a 10-year lead time to connect and interconnectors around 7 years, the ODI could be restricted to those windfarms and interconnector customers who agree during the RIIO-2 period that the ODI can be applied to us for their projects. We would need a regulatory commitment for the ODI to be payable even if the project completes in the RIIO-3 or RIIO-4 period for the ODI to incentivise us to accelerate the connection.

### Cap

To protect consumers from any risk that we could earn unexpectedly high rewards from this incentive, we proposed in our business plan that there is an annual cap of 1.0% of our base revenue on this ODI, which is just over £16m per year.

### Connection customer not ready to connect

In the worked example, the solar farm was ready to generate electricity as expected in April 2023. This meant that all parties benefitted, including consumers, because the solar farm was ready to generate electricity by the time of the accelerated connection.

There could be a case where we successfully accelerate the connection (as agreed by the connection customer), but the connection customer delays its project and is not ready to connect when we are. In this case we have incurred the costs of accelerating the connection, but the CO<sub>2</sub> emissions savings have not happened.

We consider that in such a case we should be paid:

- the ODI reward minus our costs of accelerating the connection (with a lower limit of zero for this amount) through TNUoS; and
- our costs for accelerating the connection from the connection customer, as is the system now.

Together these payments add up to the ODI payment we would have received if the connection customer had been ready to connect on time as agreed.

We consider we should still be paid the full ODI value in the way described just above because:

1. if there is a risk the incentive could be fully or partly switched off the incentive will not be effective, and we will not seek to accelerate connection lead times; and
2. we expect that the additional investment we put into our connection processes to accelerate this specific low-carbon connection will still allow us to accelerate other connections.

### Any further comments

We are grateful for the time our stakeholders have taken to provide comments on our ODI proposal. We welcome any further comments on our revised proposal.

### Annexes follow

**Annex 1 - Assessment against Ofgem’s criteria for bespoke outputs**

In the table below we show how our accelerating low-carbon connection dates ODI meets the assessment criteria in [Ofgem’s 31 October 2019 RIIO-2 Business Plan Guidance](#) (page 14).

This is an updated version of the table that appears on page 29 of [NGET ET.06 Output Delivery Incentives \(ODIs\)](#)

**Assessment of the connection dates ODI against Ofgem’s criteria for bespoke outputs**

Criteria	Our assessment of how we meet Ofgem’s criteria
<p><b>1 – best dealt with through the price control</b></p>	<p>A bespoke ODI is an effective way to encourage us to accelerate connection lead times for customers that want earlier connections and to help reduce the energy system’s greenhouse gas emissions to support the UK’s net zero by 2050 target.</p> <p>Ofgem encouraged TOs to propose ODIs “for delivering an additional contribution to the low carbon transition” for the RIIO-2 price control in its <a href="#">sector-specific methodology decision (SSMD) – ET annex</a> (page 64).</p>
<p><b>2 – backed by robust evidence</b></p>	<p>We have used a worked example of a solar farm in this note and of an offshore windfarm in our RIIO-2 business plan. They both show how the ODI can incentivise us to accelerate low-carbon connections and reduce greenhouse gas emissions for end consumers, where it is economic to do so.</p> <p>All the stakeholders we engaged with recognised the potential benefit of this ODI for reducing greenhouse gas emissions, even if they had comments on the detail of it.</p>
<p><b>3 – the value consumers will receive</b></p>	<p>Consumers receive value from the reduction in greenhouse gas emissions that the accelerating low-carbon connections ODI can incentivise. The BEIS traded carbon values provide a robust measure of the value to consumers and future consumers of the reduction in greenhouse gas emissions.</p> <p>Our worked examples show the potential value to consumers of the greenhouse gas emission reductions as follows:</p> <ul style="list-style-type: none"> <li>• £0.319m from accelerating a 100MW solar farm by 3 months.</li> <li>• £50m from accelerating a 1GW windfarm by 1 year.</li> </ul> <p>[Note: the difference between the two values is due to the different time periods, different generation size and different capacity factors.]</p> <p>There is also a benefit to consumers from more competition in the wholesale electricity market, but this is difficult to value.</p>

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<p><b>4 – an independent measure is available</b></p>	<p>In our answer to question 11 we explain the approaches we would take to reassure stakeholders about the trustworthiness of our connection lead time targets. These include that: both the customer and the ESO are involved the agreeing of a connection date; that we can use past information on connections as evidence for our target lead time; and that an independent organisation could challenge our target lead times such as the IUG or the ESO.</p> <p>In our answer to question 14, we recognise that an independent verification of completion might be needed to reassure our stakeholders that the ODI is being applied fairly. The verification could be provided by one or more of the customer, the IUG, the ESO, Ofgem or independent consultants.</p>
<p><b>5 – level of service provided by others</b></p>	<p>The nature of our network and the mix of customers connecting to it is different to the other two TOs. For this reason, we propose the approach to setting target lead times set out in row 4 above is more appropriate than using evidence from the other TOs.</p>
<p><b>6 – activities associated with achieving the target</b></p>	<p>In our answer to question 16, we explain that the activities we could carry out to accelerate our connection lead times include: innovating in the design of connections; further standardising our processes; and using our experience to reduce the lead time to achieve consents.</p> <p>Shortening our connection lead times in the RIIO-2 period will involve costs to re-baseline and re-plan our operational activities and to work with the supply chain to reduce their lead times. It is hard to estimate in advance what the cost of these activities would be because they are new and innovative.</p>
<p><b>7 – penalties if performance falls below existing service levels</b></p>	<p>This ODI is focussed on delivering an improved service and is therefore reward only.</p> <p>This ODI balances the penalties we face for poor connection service under other parts of the RIIO-2 package:</p> <ul style="list-style-type: none"> <li>• we face penalties for late connection offers of up to 0.5% of revenue through a licence obligation common to all three TOs;</li> <li>• our chance of penalties under the quality of connections survey common ODI will increase if we deliver our connections late; and</li> <li>• Ofgem is proposing that we will face penalties for the late delivery of large projects and consequences for the late delivery of price control deliverables (PCDs), although it is not yet clear precisely how they will apply to connections.</li> </ul>

## Annex 2 – Calculation of technology-specific average lead times for connections

The table below provides the technology-specific average lead times for connections. The table also includes our analysis underlying the suggested lead times. The lead times are affected by the type of technology, but also the size of the connection in MW.

There are customer-specific issues that can affect the lead time for a particular connection. This table refers to average lead times.

Technology	Duration of the connection process (“lead time”)
Battery	<p>The duration of battery and solar connection projects depends on their scale. The main variable in the process is the time taken to obtain a planning consent.</p> <ul style="list-style-type: none"> <li>• <b>Under 50MW battery and solar projects</b>, with land secured, can move from Financial Investment Decision (FID) (order placement) to becoming operational in <b>9 to 12 months</b>.</li> <li>• <b>Over 50MW battery and solar projects</b> take <b>30 to 36 months</b>. This is made up of an 18-month Development Consent Order (DCO) process and 12 to 18 months from FID to becoming operational.</li> </ul> <p>Please note: there is a consultation open about increasing the DCO requirement for storage to 350MW.</p>
Solar	
Large scale offshore wind	<p>Connections using the Crown Estate Offshore Wind Leasing Round 3 (R3) take around <b>10 years</b>.</p> <p>The key steps for developers are:</p> <ul style="list-style-type: none"> <li>• Development and Crown estate leasing – 2 years minimum;</li> <li>• Obtaining a DCO - 2 years;</li> <li>• Obtaining a contract for difference (CfD) - this depends on the customer’s bidding strategy and some R3 customers still haven’t obtained their CfDs yet; and</li> <li>• Construction – 3 years.</li> </ul> <p>There is variation in the time taken for each step in the process, but our experience is that these connections take around 10 years in total to complete.</p>
Interconnectors	<p>For interconnectors, a good example is the VikingLink interconnector between Great Britain and Denmark. This interconnector is expected to take <b>7 years</b>, from when it applied in 2015 to commissioning in 2022.</p> <p>The key steps are:</p> <ul style="list-style-type: none"> <li>• Development – 2 to 3 years;</li> <li>• Obtaining a DCO - 2 years; and</li> <li>• Construction – 2 years.</li> </ul>