



**Draft Determination  
Supporting Document  
NGET - NGETAnnex Q4  
Estimate of SO:TO optimisation benefits  
in NGET's business plan**

As a part of the NGET Draft Determination Response

**nationalgrid**

## NGET RIIO-2 note for Ofgem 2 – 24 February 2020

### Estimate of SO:TO optimisation benefits in NGET’s business plan

We have included an estimate of the potential benefits for consumers of our SO:TO optimisation proposal in our RIIO-2 business plan of up to £188m per year (see page 57 of our [200-page business plan](#) and page 27 of [annex ET.07 Consumer Value Proposition](#)). This note explains how we calculated the £188m number.

The £188m estimate reflects the benefits our market-based mechanism proposal could unlock for consumers through more flexible system access. Our proposal could also unlock savings for consumers through getting more out of the existing network, but we have not included any estimate of those savings in our £188m number<sup>1</sup>. For this reason, our £188m number is likely to be an underestimate of the potential benefits that SO:TO optimisation can unlock for consumers.

To explain how we calculated the benefits of more flexible system access we’ve presented the main steps in the calculation below.

**Table 1 – the steps in NGET’s calculation of the benefits of more flexible system access resulting from SO:TO optimisation**

Step	Description	Value
Step 1	We looked at the constraint costs of the top ten Main Interconnected Transmission System (MITS) outages in 2018/19 and how many days they occurred on.	£156.59m 143 days
Step 2	We assumed that only 75% of the outage constraint costs could have been avoided, assuming that 25% of the constraint costs might have happened anyway and that it would not be possible or efficient to reduce constraint costs to zero.	£156.59m * 0.75 = £117.44m
Step 3	We assumed TO flexibility would allow the ESO to remove the constraints at an average TO cost of £250k/day.	143 days * 0.25m/day = £35.75m
Step 4	We used the results of Step 2 and Step 3 to calculate the <u>net</u> consumer benefit that TO flexibility could provide on the top ten MITS outages in 2018/19.	£117.44m - £35.75m = £81.69m
Step 5	To calculate the consumer benefit from our proposed mechanism for all MITS outages we scaled up the saving from Step 4 by multiplying it by the ratio of annual total constraint costs for MITS outages divided by the total constraint costs for the top 10 MITS outages. Note: the original calculation was £188m per year, please see the Step 5 explanation below.	£81.69m * 2.33 = £190.09m

This note now describes each of the five steps in more detail.

<sup>1</sup> In [Annex A7-8.03 – Whole Systems](#) (page 27) we include an estimate of the benefits for consumers of getting more out of the existing network through SO:TO optimisation of around £50m for a quarter. We did not add this estimate to the £188m because it is based on analysis we carried out some years ago, but it does indicate the potential for further savings from getting more out of the existing network.

## **Step 1 - constraint costs of the top ten Main Interconnected Transmission System (MITS) outages in 2018/19**

We looked at the top ten MITS outages causing constraint costs during 2018/19, looking at both the constraint costs and outage duration. The table below gives you the breakdown.

We found that the total constraint costs were £156.59m and the total duration was 143 days.

**Table 2 – the top ten MITS outages by constraint costs in 2018/19**

<b>Quarter of start date (2018-19)</b>	<b>Outage</b>	<b>Duration (days)</b>	<b>Constraint cost (£m)</b>
<b>Total</b>		<b>143</b>	<b>156.59</b>

Note: the data we received from the ESO only covered part of the financial year 2018-19 up to November 2018. Therefore, the total constraint cost for the top ten outages will be an underestimate if there were any outages in the last four months of the year causing constraint costs higher than those in the table above.

## **Step 2 – downward adjustment of benefits for achievable reduction in constraint costs**

We assumed that only 75% of the outage constraint costs could have been avoided, assuming that 25% of the constraint costs might have happened anyway and that it would not be possible or efficient to reduce constraint costs to zero. We consider this is a conservative assumption to avoid over-estimating the benefits of SO:TO optimisation.

We calculated the achievable benefits as:  $£156.59m * 0.75 = £117.44m$ .

### **Step 3 – the costs of TO flexibility**

We assumed the cost of a TO providing flexibility to help the ESO remove the constraint costs (or 75% of them as we assumed in Step 2) would be £250k/day based on conversations with our network optimisation team. This cost estimate is on the high side, which we have used to make sure we are not over-estimating the benefits of our proposal.

We multiplied £250k by the 143 days the top ten MITS outages lasted to give a cost of TO flexibility of  $143 \text{ days} * 0.25\text{m/day} = £35.75\text{m}$ .

### **Step 4 – the net consumer benefit of TO flexibility for the top ten MITS outages in 2017/18**

Step 4 involves working out the net benefit for consumers of TO flexibility to reduce the impact of the top ten MITS outages.

We calculated this by  $£117.44\text{m}$  (gross benefits) -  $£35.75\text{m}$  (costs) =  $£81.69\text{m}$  (net benefits).

### **Step 5 – scaling up the net consumer benefit of TO flexibility to all MITS outages**

To calculate the consumer benefit from our proposed mechanism for all MITS outages we scaled up the savings from Step 4 by multiplying it by the ratio of annual total constraint costs for all MITS outages to the total constraint costs for the top 10 MITS outages.

We used ESO data to calculate the proportion of all constraint costs caused by MITS outages, which is 72%. To calculate the constraint costs due to MITS outages we multiplied 72% by total constraint costs of  $£506.07\text{m}$  in 2018/19 to give  $£364.37\text{m}$ .

We used the result of step 1 for the total constraint costs for the top 10 MITS outages:  $£156.59\text{m}$ .

This gave us a ratio of  $£364.37\text{m} / £156.59\text{m}$  or 2.33.

We scaled up the consumer benefits by multiplying the result of Step 4 by this ratio:  $£81.69\text{m} * 2.33 = \mathbf{£190.09\text{m}}$ .

Our final estimate was  $£190.09\text{m}$  at the time of our final business plan, based on the latest ESO information we had at the time. Our original calculation was  $£188\text{m}$ , which we had used when engaging stakeholders during 2019, so we decided to keep to this figure because it was familiar to our stakeholders.