

## Consultation on an SF<sub>6</sub> Asset Intervention Medium Sized Investment Project from National Grid Electricity Transmission

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We<sup>1</sup> are consulting on a Sulphur Hexafluoride (SF<sub>6</sub>) Asset Intervention Medium Sized Investment Project submitted by National Grid Electricity Transmission (NGET). We would like views from people with an interest in electricity transmission and distribution networks. We would also welcome responses from other stakeholders and the public.

This document outlines the scope, purpose and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at [Ofgem.gov.uk/consultations](https://www.ofgem.gov.uk/consultations). If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

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<sup>1</sup> The terms 'we', 'us', 'our' refer to the Gas and Electricity Markets Authority (the Authority). Ofgem operates under the direction and governance of the Authority.

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## 1. Executive summary

1.1. We are consulting on our assessment of the needs case, optioneering and efficient costs for a Sulphur Hexafluoride (SF<sub>6</sub>) Asset Intervention Medium Sized Investment Project (MSIP) proposed by National Grid Electricity Transmission (NGET) under its MSIP Re-opener submission made in January 2022.

1.2. The MSIP Re-opener allows the electricity transmission companies to request new funding during the RIIO-T2 (Electricity Transmission) price control period for projects that meet certain conditions in their licence and cost less than £100m.

1.3. It is in consumers' interests that use and leakage of SF<sub>6</sub> is reduced from electricity transmission equipment. SF<sub>6</sub> is an extremely harmful greenhouse gas with a global warming potential 23,500 times that of Carbon Dioxide (CO<sub>2</sub>).<sup>2</sup> NGET committed to be Net Zero by 2050, and to halve SF<sub>6</sub> emissions from transmission network equipment by 2030. NGET's MSIP application is for the delivery of interventions to reduce SF<sub>6</sub> leakage at a number of grid substations and to facilitate progress towards its greenhouse gas reduction targets.

1.4. We recognise the overarching need for NGET to reduce leakage of SF<sub>6</sub>, as well as SF<sub>6</sub> assets, with the potential for future leakage. We consider that NGET provided sufficient evidence to justify its proposed interventions, including its methodology for assessing current and forecasting future leakage from sites. As a result, we are satisfied that NGET's proposed MSIP is aligned to its 2026 SF<sub>6</sub> emissions target of a 33% reduction, a key milestone in NGET's pathway to meet its long-term Net Zero target.

1.5. We consider that NGET used a reasonable approach to narrow down the long list of options to get to their short list of interventions. However, we disagree with the selection of two options which we consider overlaps with existing funding mechanisms under RIIO-T2. We consider that the existing Instrument Transformer Price Control Deliverable (PCD) to be more suitable for a proportion of funding for transformer replacement, with the remaining funding coming through the MSIP. We also consider the NARM to be a more appropriate mechanism for NGET to recover any justified and efficiently incurred expenditure associated with gas circuit breaker repairs. We are minded-to accept the justification for the final proposed interventions of the five key substation sites as we consider these solutions to be in the interests of consumers.

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<sup>2</sup> IPCC AR5, 2014

1.6. We have assessed NGET's proposed intervention costs for the five key substations and consider that these are reasonable and represent efficient costs, providing value to consumers. Overall, we are minded to accept the costs for these proposed interventions. However, we are proposing to remove all the funding requested for gas circuit breaker repair and to reduce the funding for transformer replacement, as we consider NARM and the existing Instrument Transformer PCD are more suitable funding mechanisms for these interventions.

## 2. Introduction

### What are we consulting on?

2.1. We are consulting on the needs case, optioneering and efficient costs for the SF<sub>6</sub> Asset Intervention MSIP proposed by NGET under their MSIP Re-opener application made in January 2022.<sup>3</sup>

2.2. NGET submitted this project under Special Condition (SpC) 3.14.6(k) of the MSIP Re-opener licence condition for SF<sub>6</sub> asset interventions.

2.3. NGET considers that this MSIP submission meets the relevant criteria set out in SpC 9.4 which requires applications to be made in accordance with the RIIO-T2 Re-opener Guidance and Applications Requirements Document.<sup>4</sup> We are satisfied that the project and application meet the MSIP Re-opener requirements and a summary of our assessment is in Appendix 2.

### Background information on the MSIP Re-opener

2.4. The RIIO-T2 price control runs from 1 April 2021 until 31 March 2026. It includes a range of Uncertainty Mechanisms (UMs) that will allow us to assess further funding during RIIO-T2 as the need, cost or timing of works becomes clearer. This ensures that consumers fund projects only when there is clear evidence of benefit, and we have clarity on likely costs. These mechanisms also ensure that the RIIO-T2 price control has flexibility to adapt as the pathways to Net Zero target become clearer.

2.5. The MSIP Re-opener allows electricity transmission owners to make Re-opener applications during the RIIO-T2 price control period for projects that meet certain conditions and cost less than £100m. Projects that meet the criteria will be eligible for consideration and scrutiny by Ofgem to establish the level of efficient costs to be remunerated.

### Consultation approach

2.6. NGET submitted to Ofgem a proposal for additional funding for interventions, including repair, replacement and refurbishment of network assets. Within the application NGET provided their views on the following:

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<sup>3</sup> <https://www.nationalgrid.com/electricity-transmission/document/140901/download>

<sup>4</sup> [Re-opener Guidance and Application Requirements Document \(ofgem.gov.uk\)](#)

- The needs case
- The alternative options and the justification for the proposed solution
- The efficient costs for the proposed project.

2.7. Through this consultation we are seeking views on our assessment of NGET's MSIP application and on our minded-to position to approve this proposal for additional funding for interventions at five key substations. We are also seeking views on our proposed decision to reject funding for gas circuit breakers and a proportion of current transformer replacement interventions.

## Context and related publications

2.8. The scope of this consultation is limited to NGET's SF<sub>6</sub> Asset Intervention MSIP project. This document is intended to be read alongside:

- RIIO-T2 Re-opener Guidance and Application Requirements Document<sup>5</sup>
- NGET Special License Conditions.<sup>6</sup>

## Consultation stages

2.9. This consultation will open on 12 July 2022 and close on 10 August 2022. We will review and publish the responses after the consultation closes. We will endeavour to publish our decision in Autumn 2022.

## How to respond

2.10. We want to hear from anyone interested in this consultation. Please send your response to the person or team named on this document's front page.

2.11. We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can.

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<sup>5</sup><https://www.ofgem.gov.uk/publications/re-opener-guidance-and-application-requirements-document-0>

<sup>6</sup> <https://epr.ofgem.gov.uk/>

2.12. We will publish non-confidential responses on our website at [www.ofgem.gov.uk/consultations](http://www.ofgem.gov.uk/consultations).

## **Your response, data and confidentiality**

2.13. You can ask us to keep your response, or parts of your response, confidential. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.

2.14. If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you *do* wish to be kept confidential and those that you *do not* wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we'll get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.

2.15. If the information you give in your response contains personal data under the General Data Protection Regulation (Regulation (EU) 2016/679) as retained in domestic law following the UK's withdrawal from the European Union ("UK GDPR"), the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 4.

2.16. If you wish to respond confidentially, we'll keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We won't link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.



## General feedback

2.17. We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

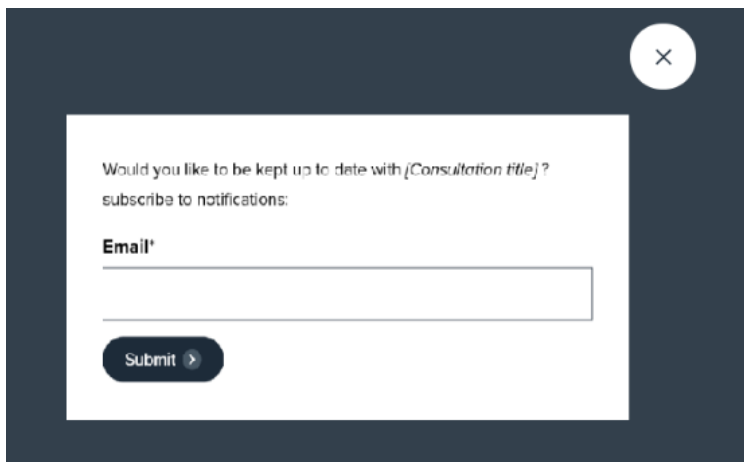
Please send any general feedback comments to [stakeholders@ofgem.gov.uk](mailto:stakeholders@ofgem.gov.uk)

### How to track the progress of the consultation

You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website.

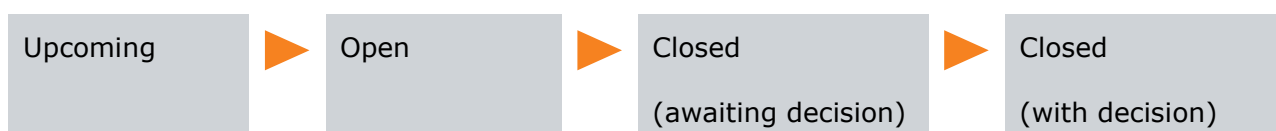
[Ofgem.gov.uk/consultations](https://www.ofgem.gov.uk/consultations).

Notify me +



The image shows a dark-themed notification form. At the top right is a close button (X). The main text asks: "Would you like to be kept up to date with [Consultation title]?" followed by "subscribe to notifications:". Below this is an "Email" label and a text input field. At the bottom is a "Submit" button with a right-pointing arrow.

Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:



### 3. Needs case for the proposed project

#### Section summary

In this section, we detail our assessment of the needs case driving the SF<sub>6</sub> Asset Intervention project.

#### Questions

**Consultation Question 1: Do you agree with our 'minded to' view on the suitability of the needs case proposed by NGET?**

### Summary of NGET's needs case

3.1. The context for NGET's SF<sub>6</sub> MSIP is its long-term Net Zero target in 2050.<sup>7</sup> NGET highlight that this equates to greenhouse gas emissions reduction of a -34% by 2026 from a 2018/19 baseline and a 50% reduction by 2030. In 2018/19, SF<sub>6</sub> gas accounted for 92% of NGET's scope 1 and 2 emissions, therefore, NGET must reduce SF<sub>6</sub> by at least 33% by the end of RIIO-T2 (2026), to be on track with its Net Zero trajectory. NGET's SF<sub>6</sub> MSIP aims to facilitate progress towards these targets by replacing high leaking SF<sub>6</sub> assets.

3.2. NGET assessed historical performance of all of their assets containing SF<sub>6</sub> to forecast the emission behaviour of specific groups of assets and apply this to estimate potential future performance of assets. This was forecasted using a number of factors, including the average asset age, operating environment and leak rate over a three-year period, to identify the highest risk asset groups.

3.3. The highest risk asset groups were used by NGET to establish the foundations of the needs case and optioneering for individual site interventions in the MSIP submission. The outcome of this assessment is a number of sites and asset groups which have been identified as high-risk and suitable for intervention:

- Monk Fryston 275kV substation

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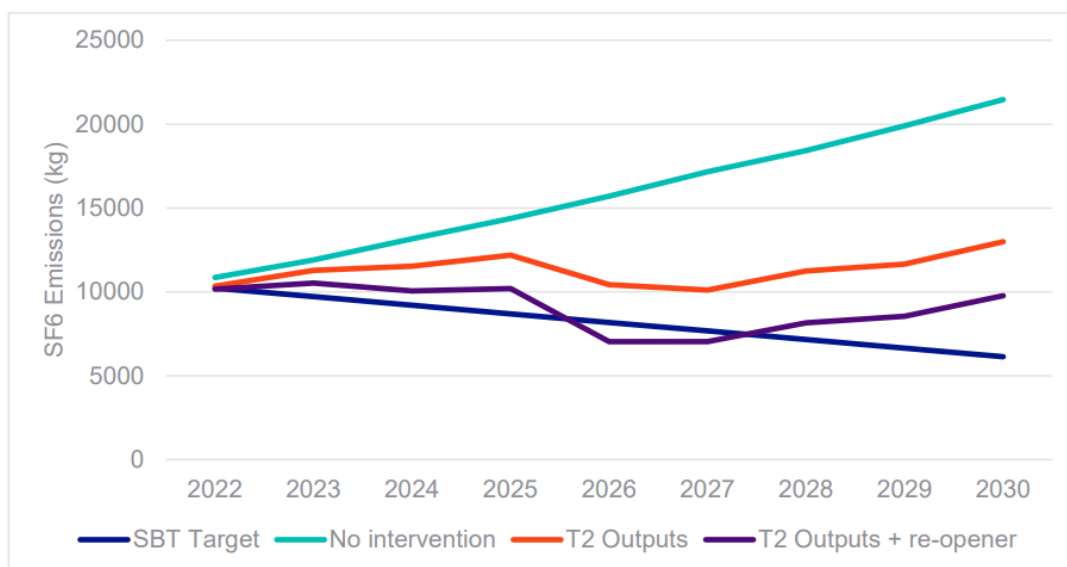
<sup>7</sup> NGET's Net Zero target is to reduce its controllable scope 1 (SF<sub>6</sub> and vehicle fleet emissions) and scope 2 (building energy use) to Net Zero from a 1990 baseline. Net Zero allows for the removal of any unavoidable greenhouse gas emissions, through nature, such as trees taking carbon dioxide from the atmosphere, or through new technology or changing industrial processes.

- Barking 400kV substation
- Seabank 400kV substation
- Sellindge 400kV substation
- West Ham 400kV substation
- 427 SF<sub>6</sub> filled current transformers
- 167 275kV & 400kV Air Insulated substation gas circuit breakers.

3.4. NGET estimate their total emissions leakage of SF<sub>6</sub> from all assets to be approximately 11,400kg in 2026, inclusive of outputs already agreed within their RIIO-T2 Price Control. Through the addition of the interventions outlined within the MSIP submission, NGET estimate this emission leakage to be reduced to 7,034 kg in 2026, roughly in line with their carbon reduction milestones during RIIO-T2. NGET estimate these interventions will result in carbon emission reduction of 21,848kg of SF<sub>6</sub> (or 513,429 tonnes of CO<sub>2</sub> equivalent) by 2030. NGET note that further intervention will be required in order to reduce emissions and inventory in the medium-long term.

3.5. Figure 1 shows the estimated emission under different scenarios, including a baseline, NGET’s Science Based Target (SBT), the difference between the outputs already approved under RIIO-T2<sup>8</sup> and with the additional MSIP Re-opener submission.

**Figure 1: Emissions reduction targets and milestones**



<sup>8</sup> <https://www.ofgem.gov.uk/publications/riio-2-final-determinations-transmission-and-gas-distribution-network-companies-and-electricity-system-operator>

## **Our initial view of needs case**

3.6. We consider there is sufficient evidence and justification provided by NGET for interventions at the sites within the project submission, and that these represent value to consumers. We are also satisfied that the submission fulfils the requirement for a submission under the MSIP Re-opener.

3.7. We consider there is sufficient evidence submitted by NGET to demonstrate that the project submission aligns with NGET's business strategy and emissions reduction commitments, including its key milestones to achieving net zero by 2050. We are also satisfied from the supporting evidence, including the site selection and leakage forecast methodology, that the five key substations selected represent interventions that propose to materially reduce leakage of SF<sub>6</sub> in the over the remainder of RIIO-T2 and beyond. We also consider there to be sufficient evidence of higher leakage rates for transformers and gas circuit breakers, and the interventions required to mitigate this.

3.8. Overall, our minded-to view of the needs case is that NGET provided sufficient justification for reduction of SF<sub>6</sub> leakage and volume at the sites and asset groups listed in paragraph 3.3 above, as identified within the MSIP submission.

3.9. We set out in the following chapter our view on the optioneering carried out by NGET.

## 4. Assessment of options and justification for the proposed project

### Section summary

We detail our assessment of all the options considered by NGET from a technical viewpoint and its justification for the chosen option(s). We set out our minded-to view of their proposed solution.

### Questions

**Consultation Question 2: Do you agree with our assessment of the range of options to meet the needs case?**

**Consultation Question 3: Do you agree with our minded-to view of the solution proposed by NGET?**

## NGET's Option Selection

4.1. To address the needs case for the SF<sub>6</sub> Asset Intervention works, NGET provided an overview of the long list of options<sup>9</sup> considered with their variations as follows (with options 3 to 11 using the RIIO-T2 outputs as baseline option):

1. Do Nothing
2. RIIO-T2 Existing Outputs (including NARM, IT PCD, SF<sub>6</sub> Asset Intervention & LOTI Re-opener)
3. Remaining RIIO-1 high leaking sites from RIIO-T2 AGS submission
4. Remaining RIIO-1 high leaking sites from RIIO-T2 AGS submission + continued next RIIO-1 top 5 high leaking sites
5. Remaining RIIO-1 high leaking sites from RIIO-T2 AGS submission + next top 5 forecasted high leaking sites
6. Current Transformer replacements only
7. Circuit breaker repairs only
8. GIB replacements
9. SF<sub>6</sub> alternative options only

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<sup>9</sup> Chapter 7 and 8: <https://www.nationalgrid.com/electricity-transmission/document/140901/download>

10. GIS Site replacements
11. GIB Retro-fill

***OPTION 1: Do nothing***

4.2. NGET claim this was not a credible long-term option to achieve its SBT of emissions reduction or align with the UK's Net-Zero target of 2050. This option was therefore discounted at an early stage from the short-list of options.

***OPTION 2: RIIO-T2 Outputs (including NARM, IT PCD, SF<sub>6</sub> Asset Intervention & LOTI Re-opener)***

4.3. Similar to Option 1 above, NGET considers this option not feasible to achieve NGET's SBT of carbon reduction, nor its business charter commitments by the end of RIIO-T2. This option uses the baseline of existing funding mechanisms under RIIO-T2. This option was discounted at an early stage from the short-list of options.

***OPTION 3: Remaining RIIO-1 high leaking sites from RIIO-T2 Asset Group Strategy (AGS) submission***

4.4. This option includes emission abatement at four key high-leaking sites from RIIO-1, which do not have allowances for intervention in RIIO-T2. The option presents a significant SF<sub>6</sub> reduction of 12,360kg by 2030, however it does not allow for NGET to achieve its required emissions reduction target. This option was selected for the short-list of options.

***OPTION 4: Remaining RIIO-1 high leaking sites from RIIO-T2 AGS submission + continued next RIIO-1 top five high leaking sites***

4.5. This option is similar to Option 3, with the addition of a further five sites selected from the next highest leaking sites from the RIIO-T1 period. The option presents a significant SF<sub>6</sub> reduction of 17,493kg by 2030, however it does not allow NGET to achieve its required emissions reduction target. This option was selected for the short-list of options.

***OPTION 5: Remaining RIIO-1 high leaking sites from RIIO-T2 AGS submission + next top five forecasted high leaking sites***

4.6. This option is similar to Option 4, however the additional five sites are based on forecasted leakage only, with the highest forecasted sites selected. The option presents a

significant SF<sub>6</sub> reduction, however this option was discounted from the short-list as this is less reliable than using existing leakage as per Options 3 or 4.

***OPTION 6: Current Transformer replacements only***

4.7. This option considers the replacement of 427 current transformers that are near the end of their life by the end of RIIO-T2. This option would both reduce SF<sub>6</sub> leakage (4,808kg by 2030) and total inventory (27,276kg), however it does not meet the required emission reduction target alone. This option was selected for the short-list of options.

***OPTION 7: Circuit breaker repairs only***

4.8. This option considers the repair of 167 275kV or 400kV Air Insulated Switchgear (AIS) that have leaked within RIIO-1. NGET note this option would present the most favourable investment spend to reduce SF<sub>6</sub> emissions (4,249kg by 2030), however this would require retaining existing SF<sub>6</sub> inventory levels within the circuit breakers. NGET also note this option alone will not meet the required emission reduction target. This option was selected for the short-list of options.

***OPTION 8: GIB replacements***

4.9. This option considers the replacement of four Gas-Insulated Busbars (GIB) with alternatives. For this option NGET chose the replacement of GIB with a High Voltage cable, as this allows for moderate SF<sub>6</sub> emission reduction (431kg by 2030) and inventory reduction (2,180kg), however this option alone will not meet the required emission reduction target. This option was selected for the short-list of options.

***OPTION 9: SF<sub>6</sub> alternative options only***

4.10. This option includes the replacement of existing assets with assets containing SF<sub>6</sub>-alternative gasses with lower Global Warming Potential. This option was discounted from the short-list of options as alternative technology were not considered to be commercially available at the voltages and assets required for the intervention period.

***OPTION 10: GIS Site replacements***

4.11. This option includes the replacement of existing Gas-Insulated Switchgear (GIS) sites with new assets containing SF<sub>6</sub>-alternative gasses with lower Global Warming Potential. This

option was discounted from the short-list of options as alternatives were not considered to be commercially available at the voltages and assets required for the intervention period.

### ***OPTION 11: GIB Retro-fill***

4.12. This option includes the retro-fill of GIB with SF<sub>6</sub> -alternative gasses with lower Global Warming Potential. This option was discounted from the short-list of options as retro-filling is still in its infancy.

## **Ofgem’s view of the potential solutions**

4.13. We have undertaken a review of the potential options considered by NGET, including the evidence submitted in the form of engineering justification papers, networks system studies and Cost Benefit Analysis (CBA). Based on our assessment of NGET’s evaluation of the long-list of options, we are generally satisfied that they have considered an appropriate range of potential solutions, although we partially disagree with the inclusion of two options where we consider there to be existing alternative RIIO-2 mechanisms for funding.

4.14. We agree with NGET’s decision to discount six of the 11 long-listed options, with the remaining five options considered within its short-list. We agree with the view to discount the option of Option 1 (Do Nothing) or the baseline existing (Option 2) RIIO-T2 Outputs as these are not credible long-term solutions and would not have resulted in lower leakage or volume of SF<sub>6</sub> held within assets. Additionally, we agree with the exclusion of Option 5, (Remaining RIIO-1 high leaking sites from RIIO-T2 AGS submission + next top five forecasted high leaking sites), as leakage should be based on both actual and forecasted methodology.

4.15. Based on the information provided, we also agree with NGET’s decision to discount Options 9 (SF<sub>6</sub> Alternatives), 10 (GIS Site Replacements) and 11 (GIB Retro-fill), as the alternatives to SF<sub>6</sub> within a number of assets are not yet commercially available, while retro-filling is likely not to represent efficient cost. This is in line with our previous stated position<sup>10</sup> whereby any funding for new SF<sub>6</sub> assets will need to be fully justified. However, in the event that the commercial or economical viability changes for these sites during the detailed design and delivery phase, we would expect NGET to re-assess the viability of these discounted options.

4.16. We agree with NGET’s inclusion of Options 3 and 4, which include a number of existing high-leaking sites, in addition to Option 8 (Replacement of GIBs). We recognise that these

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<sup>10</sup> See 3.171-3.172 of [RIIO-T2 Sector Specific Methodology Decision – Electricity Transmission](#)



options include a variety of efficient measures for both reducing SF<sub>6</sub> leakage and reducing existing SF<sub>6</sub> inventory. We also agree with NGET that these options stand-alone will not achieve the expected level of SF<sub>6</sub> abatement required for NGET to achieve its SBT in 2030.

4.17. We partially disagree with the inclusion and selection of Option 6 (Current Transformer replacements). We do not consider there to be sufficient rationale provided for why a proportion of the funding for the 427 current transformers cannot be funded through the existing Instrument Transformer PCD<sup>11</sup>. This PCD provides a target volume and unit cost<sup>12</sup> for current transformer replacement and decommissioning specifically for SF<sub>6</sub> and other categories. Where the volume of current transformers exceeds this target however, we agree with the inclusion of this option under MSIP for any additional assets.

4.18. We disagree with the inclusion and selection of Option 7 (Circuit Breaker repair). On the basis of the information provided to date, we are not convinced that there is sufficient justification provided for why this intervention is best met through the MSIP mechanism, and not the existing NARM. The NARM Funding Adjustment and Penalty Mechanism<sup>13</sup> provides for additional funding in the event of justified over-delivery of monetised risk outputs. As the proposed repair of gas circuit breakers will deliver monetised risk outputs, we consider that NARM provides a more appropriate mechanism for NGET to recover any justified and efficiently incurred expenditure associated with these interventions, and to remove any potential risk of overlapping allowances. We will therefore consider the delivery of these interventions and their justification as part of NGET's wider SF<sub>6</sub> strategy when we assess any justification cases that NGET may make at closeout of the RIIO-2 NARM Funding Adjustment and Penalty Mechanism.

## Methodology for option selection

4.19. We consider that NGET appropriately applied its methodology for the selection of options and the identification of its preferred option. NGET's long and short-list of options covered a number of asset types and potential solutions.

4.20. For the main selected sites, NGET carried out a cost benefit assessment of its option shortlist, detailing the difference between its previous business plan submission for RIIO-T2 and its updated submission for this MSIP. NGET also completed cost benefit analysis of circuit

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<sup>11</sup> Special Condition 3.22.4(b)

<sup>12</sup> Note the specific target volumes and unit costs are confidential

<sup>13</sup> Please see NARM Handbook v3.1 published on Ofgem's website on 3<sup>rd</sup> February 2022 for further information on the operation of the NARM Funding Adjustment and Penalty Mechanism:

<https://www.ofgem.gov.uk/sites/default/files/2022-02/NARM%20Documents%20-%20Zip%20File.zip>

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breakers and current transformers, with the different replacement and refurbishment options presented. These CBAs were supported by Engineering Justification reports, showcasing the preferred option for each site/asset type.

4.21. NGET's preferred option is for a combination of its short-listed Options 3, 6 and 7, with an additional trial intervention of cable replacement at Monk Fryston. This will see interventions at five substation sites, 427 current transformer replacements and 167 leak repairs of SF<sub>6</sub> gas circuit breakers, to be delivered from 2023-26.

## **Our view on the preferred solution**

4.22. Overall we are generally satisfied that the methodology for option selection and cost benefit analysis assessment has identified a suitable level of options, with the exception of the inclusion of Options 6 (for a proportion of assets) and Option 7. We agree with the view that in order to achieve NGET's target for emission reduction, a combination of selected options and specific asset interventions will be required.

4.23. As noted within Chapter 3, we agree with the broader needs case justification for gas circuit breaker and current transformer interventions, however we do not consider there to be sufficient evidence provided for why funding these interventions through the MSIP mechanisms in full would be in the best interest of consumers. Therefore we do not agree with the proposed intervention solution for current transformers replacement, except where the additional volume exceeds the target set out within the Instrument Transformer PCD. We also not agree with the selection of the proposed intervention solution for gas circuit breakers, as we consider that NARM provides a more appropriate mechanism.

4.24. Overall, we are minded-to accept the justification for the remaining five site specific interventions and we consider these solutions to be in the interests of consumers. We are satisfied that these interventions provide the most cost-effective solution for NGET to meet its carbon reduction targets and to reduce a significant level of harmful SF<sub>6</sub> emissions and total SF<sub>6</sub> inventory from its network.

4.25. Looking towards potential future MSIP submissions for SF<sub>6</sub> intervention, we would expect to see a more holistic strategy with longer-term options and solutions for proactively removing SF<sub>6</sub> inventory from NGET's network and replacing these assets with non-SF<sub>6</sub> alternatives.

## 5. Cost assessment of the proposed project

### Section summary

This section sets out our assessment of the submitted costs of the SF<sub>6</sub> Asset Intervention project. The results represent our current view of an economic and efficient solution.

### Questions

**Consultation Question 4: Do you agree with our cost assessment of NGET's proposed SF<sub>6</sub> Asset Intervention project?**

## Overview of NGET's project costs

5.1. NGET requested a total allowance adjustment of £53.949m<sup>14</sup> to deliver the SF<sub>6</sub> interventions at five substation sites, 427 current transformer replacements and 167 leak repairs of SF<sub>6</sub> gas circuit breakers under the MSIP Re-opener.

5.2. NGET proposed that the delivery works for the interventions will begin in Q2 2023 and will be finalised by the end of RIIO-T2 period. This means that the majority of the costs for this investment will be funded through the RIIO-T2 mechanisms.

5.3. The funding request from NGET consists entirely of direct main works (Non-Load) spend. NGET provided detailed submissions on associated risks and mitigations applied for its preferred option, however no specific funding request has been applied for indirect costs. However, NGET noted that it intends to claim closely associated indirect (CAI) funding separately through the Opex Escalator Mechanism<sup>15</sup>, in the form of an automatic uplift based on the total proposed allowances. CAI includes costs such as Project Management, Health and Safety and Network Design & Engineering and others.

5.4. NGET estimated main works costs using its cost-book and aligned with the cost detailed submitted in its RIIO-T2 Asset Group Strategy submission. Where the solutions proposed are relatively new solutions with less established benchmarks, such as targeted

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<sup>14</sup> NGET re-submitted its cost breakdown workbook during the course of our assessment. As a result, there is a difference between the total funding request cited in this consultation and the value of the funding request in NGET's SF<sub>6</sub> Asset Intervention MSIP available on its website.

<sup>15</sup> Special Condition 3.36 of the Opex Escalator licence condition

refurbishment of outdoor GIB, partial replacement of outdoor GIB and encapsulation-based repairs, NGET provided evidence of costs based on third-party supplier quotations and early applications.

5.5. The following table summarises NGET’s funding request for the SF<sub>6</sub> Intervention MSIP project.

**Table 1: NGET’s funding request\***

Classification	Site/Asset	Activity	Total Cost (£m) 2018/19 prices
Direct	Barking 400kV	Refurbishment	4.468
Direct	Monk Fryston 275kV GIB	Replacement with HV Cable	4.807
Direct	Seabank 400kV	Refurbishment	6.102
Direct	Sellindge 400kV I	Refurbishment	2.545
Direct	West Ham 400kV	Refurbishment	7.067
Direct	SF <sub>6</sub> filled current transformer replacements	Replacement	23.842
Direct	275kV & 400kV AIS Gas Circuit Breakers	Repair	5.119
	<b>Total Costs</b>		<b>53.949</b>

\* Based on resubmitted costs on March 2022.

## Our view of efficient project costs

5.6. NGET estimated its direct costs using data submitted during its RIIO-T2 Business Plan submission in addition to estimates based on third-party quotes for work with limited benchmarking. As the majority of main work costs are derived from previous tender costs that were well-specified and contested in the wider market, we accept that most of the estimated costs for this cost component are representative of the economic and efficient level obtainable. However as per Chapter 4, we do not agree with the inclusion of the proposed solutions for gas circuit breakers or current transformers and are therefore we are proposing for an adjustment to the allowances.

5.7. For a project of this size and cost, we would typically expect to see a specific proportion of costs allocated to indirect costs, either CAI or Business Support (BS). However, we are content for closely associated indirect (CAI) funding to be claimed separately through the Opex Escalator Mechanism, in the form of an automatic uplift based on the total proposed allowances. The Opex Escalator will automatically increase NGET’s opex allowance if its capital

expenditure is increased through specified re-openers, including the MSIP Re-opener.<sup>16</sup> Details of the Opex Escalator approach, the applicable uncertainty mechanisms (UM) and the calculation methodology is set out in full under the Chapter 4 of Electricity Transmission Final Determinations.<sup>17</sup>

5.8. On the basis of the information provided to date, we are not convinced that there is sufficient justification for the funding of 167 gas circuit breakers through the MSIP mechanism. Our initial view is that the NARM would be a more suitable mechanism as this already allows for additional funding if the licensee can justify delivery of an additional monetised risk. Submission of these assets through NARM would also remove any potential risk of double-counting allowances between the NARM and MSIP. We are therefore proposing for an adjustment to the allowance for the removal of funding for gas circuit breaker repair.

5.9. We do not consider there to be sufficient justification provided for why the existing Instrument Transformer PCD cannot be used to fund most of the 427 proposed current transformer interventions, nor why this would not be in the interest of consumers. We acknowledge that the Instrument Transformer PCD target cap means that the full current transformer asset interventions cannot be achieved and we are therefore proposing for funding for these additional assets to be achieved through MSIP. In order to determine the correct proportion and funding between the Instrument Transformer PCD and MSIP, we would expect NGET to provide clarity on its intentions for the use (with a full breakdown by asset) of the volume driver under the Instrument Transformer PCD, along with the remaining assets to be funded under MSIP. We are proposing to finalise the proportion of costs under both PCD's as part of our response to the consultation, pending additional information and evidence provided by NGET above.

5.10. Overall, we are minded-to accept the cost submission for the five site specific interventions, in addition to the transformer replacements. We consider these solutions to be in the interests of consumers. We are satisfied that the costs submitted represent efficient costs.

5.11. Whilst we are minded-to accept the cost submission, the funding for these interventions must be robustly ring-fenced from existing funding mechanisms already in place for the relevant NGET assets/sites as listed in paragraph 3.3 above. This includes existing

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<sup>16</sup> This OPEX escalator allowance calculation is predicated on the view of efficient CAI baseline allowances established at Final Determination (FD) which utilised the relationship between direct capex and CAI and subsequently applies this relationship to any direct capex allowances agreed under a defined list of uncertainty mechanisms.

<sup>17</sup>

[https://www.ofgem.gov.uk/sites/default/files/docs/2021/02/final\\_determinations\\_et\\_annex\\_revised.pdf](https://www.ofgem.gov.uk/sites/default/files/docs/2021/02/final_determinations_et_annex_revised.pdf)

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RIO-T2 funding for palliative works under the SF<sub>6</sub> Asset Intervention Plan Price Control Deliverable (PCD)<sup>18</sup>, current transformers under the Instrument Transformer PCD<sup>19</sup> and other baseline funding mechanisms. To mitigate against the risk of overlapping costs, we will expect NGET to set out their view of the delivery and spend status as part of their relevant Basic PCD Report, submitted as part of the MSIP Evaluative PCD assessment process. Likewise, we expect NGET to inform Ofgem through any other mechanisms affected by changes in spend as part of the Regulatory Reporting Pack (RRP) process.

5.12. The table below summarises NGET’s funding request, our proposed adjustments, and our proposed allowances against each of the MSIP submission.

**Table 2: Proposed adjustments and allowances**

Site/Asset	Activity	NGET Request (£m) 2018/19 prices	Ofgem proposed allowances (£m) 2018/19 prices
Barking 400kV	Refurbishment	4.468	4.468
Monk Fryston 275kV GIB	Replacement with HV Cable	4.807	4.807
Seabank 400kV	Refurbishment	6.102	6.102
Sellindge 400kV I	Refurbishment	2.545	2.545
West Ham 400kV	Refurbishment	7.067	7.067
SF <sub>6</sub> filled current transformer replacements	Replacement	23.842	0-23.842*
275kV & 400kV AIS Gas Circuit Breakers	Repair	5.119	0.00**
<b>Total Costs</b>		<b>53.949</b>	<b>24.989-48.831</b>

\* The values are based on a range of potential allowances and will be determined by the number of current transformer assets selected for funding under MSIP, with the remainder funded separately through the Instrument Transformer PCD.

\*\* The value of zero reflects funding under MSIP only.

<sup>18</sup> Special Condition 3.27 SF<sub>6</sub> asset intervention Re-opener and Price Control Deliverable

<sup>19</sup> Special Condition 3.22 Instrument Transformer Price Control Deliverable

## 6. Next Steps

6.1. We welcome your responses to this consultation, both generally, and in particular on the specific questions in Chapters 2, 3, 4 and 5. Please send your response to: [Graeme.Barton@ofgem.gov.uk](mailto:Graeme.Barton@ofgem.gov.uk). The deadline for response is 10 August 2022.

6.2. We will conclude our assessment of NGET's SF<sub>6</sub> Asset Intervention MSIP project with a decision in Autumn 2022. If our minded-to view does not change through the consultation and MSIP assessment processes, our decision will confirm our provisional view that NGET should be funded for the efficient delivery of SF<sub>6</sub> Asset Intervention MSIP project.

6.3. We are minded to categorise this project as an evaluative PCD as we believe there is some flexibility in the manner by which this project can be delivered. Given the potential level of difference in materiality between the delivery modes, we consider it appropriate to protect consumer interests by reviewing the delivery. As such, if we confirm our decision that NGET should be funded for the project, we expect to initiate a statutory consultation to make the relevant changes to the licence required to set explicit deliverables, timescale(s) for delivery and the profile of the project allowances for the PCD.

## Appendices

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## Appendix 1 – Consultation questions

**Consultation Question 1:** Do you agree with our 'minded to' view on the suitability of the needs case proposed by NGET?

**Consultation Question 2:** Do you agree with our assessment of the range of options to meet the needs case?

**Consultation Question 3:** Do you agree with our minded-to view of the solution proposed by NGET?

**Consultation Question 4:** Do you agree with our cost assessment of NGET's proposed SF<sub>6</sub> Asset Intervention project?

## Appendix 2 - Assessment of Re-opener application requirements

The table below summarises our assessment of NGET’s MSIP application for the SF<sub>6</sub> Asset Intervention project against Special Condition 3.14 and the Re-opener Guidance and Application Requirements Document (v1), as required under Special Condition 9.4.

**Table 1: Re-opener application requirements**

Document	Requirement	Has the requirement been met?
Special Condition 3.14, paragraph 6k <sup>20</sup>	Projects qualify for submission via the MSIP re-opener where the SF <sub>6</sub> can demonstrate a well-justified SF <sub>6</sub> Intervention Plan.	Yes
Special Condition 3.14, paragraph 9.	Includes a statement setting out what MSIP the application relates to.	Yes
	To give details of the associated amendments to the outputs, delivery dates or allowances and an explanation of the basis of the calculation for any amendments requested to allowances.	Yes
	To provide such detailed supporting evidence as is reasonable in the circumstances to justify the technical need including cost benefit analysis, impact assessments, risk mitigation, and engineering justification.	Yes
	An explanation of the basis of the calculation for any adjustments requested to allowances.	Yes
Special Condition 9.4, paragraph 3.	To prepare applications for Re-openers in accordance with the Re-opener Guidance and Application Requirements Document.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 2.2 <sup>21</sup>	An application accompanied by written confirmation from a suitable senior person within the company that outlines accuracy and quality assurance internal governance arrangements.	Yes

<sup>20</sup> More detail is available in the RIIO-ET2 “ET Annex” Final Determinations document, paragraphs 4.49 to 4.56. See link: [RIIO-T2 Final Determinations for Transmission and Gas Distribution network companies and the Electricity System Operator | Ofgem](#)

<sup>21</sup> [Re-opener Guidance and Application Requirements document | Ofgem](#)

RIIO-T2 Re-opener Guidance and Applications Requirements 2.4	Publication of the complete application in a prominent place on the company website, within 5 working days of submission to Ofgem.	Yes <sup>22</sup>
RIIO-T2 Re-opener Guidance and Applications Requirements 3.3	To include a table that maps out which sections of the application relate to individual requirements as set out in the relevant Re-opener licence condition and Chapter 3 of RIIO-T2 Re-opener Guidance and Applications Requirements.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.4	To provide a justification for not providing all of the required information (if required).	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.8	To include a needs case whether or not this is a specified requirement of the relevant Re-opener licence condition or Re-opener Guidance.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.9	The needs case must contain the alignment with overall business strategy and commitments.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.10	To include a clear statement of how the proposed expenditure aligns with the licensee’s future business strategy, including consideration of how it relates to the licensee’s RIIO-T2 licence or other statutory obligations and, if relevant, its RIIO-3 business plan.	Yes (however further clarity is needed on overlap with other RIIO-2 mechanisms)
RIIO-T2 Re-opener Guidance and Applications Requirements 3.11	To include a clear statement as to the need for the proposed expenditure or the problem the licensee is trying to address in the context of its significance for consumers and network assets. The affected consumers / assets must be identified and the associated risk being addressed quantified, where possible.	Yes

<sup>22</sup> <https://www.nationalgrid.com/electricity-transmission/about-us/business-plan>

RIIO-T2 Re-opener Guidance and Applications Requirements 3.12	To provide the rationale for the level of expenditure proposed and why this level should be regarded as being efficient.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.13	To include a clear description of the long and short list of options considered and the selection process undertaken to reach the preferred option.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.14	To include a clear description of the preferred option, sufficient to allow us to make an informed decision on if the preferred option is suitable.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.15	To include a clear statement as to any project delivery and monitoring plan for the preferred option.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.16, 3.17	To include an explanation of how stakeholder engagement contributed to the identification and design of the preferred option. A stakeholder engagement may not be necessary where there is not a material impact on stakeholders, or where the application is driven by statutory obligations.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.19, 3.20	To provide sufficient cost information.	Yes
RIIO-T2 Re-opener Guidance and Applications Requirements 3.21, 3.22	Cost Benefit Analysis and Engineering Justifications Papers are important sources of evidence that can be included in an application.	Yes

## Appendix 3 – Privacy notice on consultations

### Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (GDPR).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

#### 1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller, (for ease of reference, “Ofgem”). The Data Protection Officer can be contacted at [dpo@ofgem.gov.uk](mailto:dpo@ofgem.gov.uk)

#### 2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

#### 3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest. i.e. a consultation.

#### 3. With whom we will be sharing your personal data

***(Include here all organisations outside Ofgem who will be given all or some of the data. There is no need to include organisations that will only receive anonymised data. If different organisations see different set of data then make this clear. Be as specific as possible.)***

#### 4. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will be held for ***(be as clear as possible but allow room for changes to programmes or policy. It is acceptable to give a relative time e.g. 'six months after the project is closed')***

#### 5. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data
- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3<sup>rd</sup> parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at <https://ico.org.uk/>, or telephone 0303 123 1113.

**6. Your personal data will not be sent overseas** (Note that this cannot be claimed if using Survey Monkey for the consultation as their servers are in the US. In that case use “the Data you provide directly will be stored by Survey Monkey on their servers in the United States. We have taken all necessary precautions to ensure that your rights in term of data protection will not be compromised by this”.

**7. Your personal data will not be used for any automated decision making.**

**8. Your personal data will be stored in a secure government IT system.** (If using a third party system such as Survey Monkey to gather the data, you will need to state clearly at which point the data will be moved from there to our internal systems.)

**9. More information** For more information on how Ofgem processes your data, click on the link to our “[Ofgem privacy promise](#)”.