DSO Benefits Quantification Methodology

April 2025

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Introduction

We are pleased to publish this DSO Benefits Quantification Methodology in parallel with our DSO Performance Panel report for 2024/25. This year we have prioritised understanding and quantifying the real benefits delivered for our stakeholders. Our methodology is based on the <u>Common Appendix and Glossary</u> jointly developed with other DSOs through the Energy Network Association's DSO Collaboration Group.

For transparency, we also provide a separate <u>workbook</u> detailing the underlying calculations and assumptions. We hope that by providing this level of visibility of approach we can encourage further discussion and collaboration on benefits calculations.

Summary of our DSO Benefits Framework

Tracking and course correction

Aligned with the ENA DSO Collaboration Group, we have started tracking our benefits in three categories: Realised, Unlocked for future years (ED2 and beyond) or those representing an Ambition.

We have enhanced our tracking and reporting process, including a yearly review of KPIs to ensure these are fit for purpose and reported clear timeframes for benefits in this submission.

Robust quantification

We provide clarity on the assumptions and methodologies used to quantify our impact, aligned to HM Treasury Green Book and best practice, as detailed in this methodology document.

Where credible proxies and data exist, we measure wider societal benefits.

Benefits results and methodologies have been independently assured by a third party.

We have generally used gross benefits and our approach for each activity is explained.

Clear consumer benefits

Our Performance Panel report demonstrates the benefits delivered to six stakeholder groups with defined needs from the DSO, including consumers.

How we use the Theory of Change model to assess impact

We have utilised the Theory of Change model to categorise all our DSO activities, clearly demonstrating the link to outcomes and benefits.



DSO Benefits presented in our 2024/25 DSO Performance Panel report

There are 14 activities in the DSO Benefits submission for Y2 of ED2. These are listed below in descending order of benefit magnitude, with Realised, Unlocked and Ambition combined. These may not sum due to rounding. Note benefits are recorded gross, in 2023/24 prices, except Asset uprating when doing replacement on asset condition, which is a net present value in 2023/24 prices.

Activity	Y1 Benefit (£m)	Y2 Change (£m)	ED2 to date (£m)
Technical Limits	1688.3	776.0	2464.4
DNOA process: DNOA outcomes recommending strategic reinforcement	409.8	1837.4	2247.2
MW Dispatch	0.0	128.6	128.6
Engagement with Local Authorities	0.4	105.5	105.8
DNOA process: DNOA outcomes recommending Flexibility - Deferral	99.4	1.6	101.0
Curtailable Connections	91.6	6.1	97.7
DNOA process: DNOA outcomes recommending Flexibility – Capacity added	18.0	7.0	25.0
Enhanced queue management process	0.0	14.5	14.5
DNOA process: DNOA outcomes recommending operational mitigations	0.0	12.2	12.2
Enhanced outage planning processes	0.8	3.4	4.2
Flexibility procurement	0.9	0.7	1.5
Market Gateway facilitating low-carbon Flexibility	0.2	0.3	0.5
Uprating on replacement driven by Asset Condition	0.0	0.4	0.4
Demand Turn-Up/ Generation Turn-Down trial	0.0	0.1	0.1
Total	2309.4	2893.7	5203.1

Technical Limits

Overview

The Technical Limits initiative is designed to expedite the connections of Distributed Energy Resources (DER) that necessitate the completion of transmission works before they can be energised through conventional connections.

On distribution networks, DER may be subject to reinforcement before they can be energised. Technical Limits allows the use of Active Network Management (ANM) to accelerate connections that are delayed by works on the transmission network also.

The timescales for transmission reinforcement can exceed ten years, while typical distribution reinforcement may take between one to five years.

Benefits Methodology

Ambition

National Grid DSO identified 10.1 GW of accepted not yet connected schemes eligible for Technical Limits.

We conducted a consultation to gather expressions of interest for acceleration, resulting in approximately 5.2 GW being offered connection variations. This figure has been used to represent ambition.

The remaining 10.1 GW may be utilised in the future but is not included in the current analysis.

Unlocked

Approximately 2.9 GW of DER have accepted their variations but are not yet connected, with an average acceleration of 5.8 years.

Realised

A 20 MW solar scheme has connected via Technical Limits, accelerating by 12.8 years.

Only one year is accrued as Realised in each reporting year, so Unlocked benefit for this site was 11.8 and 10.8 years in Y1 and Y2, respectively.

Calculation

The benefit is calculated using:

- Accelerated DER export capacity.
- Capacity-weighted average acceleration of DER.
- An assumed capacity factor, considering the effects of ANM. This is 10%.
- An assumed value of generator export to the whole system, which is consistent with findings from our Whole-System Headroom Innovation project. This is £100/MWh in 2023/24 prices.

*Benefit = DER Capacity * Average Acceleration * 8760 * Capacity Factor * Gen.Value*

Benefit Values					
	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)	
Y1	1.8	919.4	767.2	1688.3	
Y2	1.8	557.3	217.0	776.0	
ED2 To-Date	3.5	1476.6	984.2	2464.4	

DNOA process: DNOA outcomes recommending strategic reinforcement

Overview

The DSO System Planning teams perform strategic electrical network analysis to identify baseline and predict future distribution network constraints. These constraints may be caused by general load growth and potentially not captured under new connections or asset condition works. These are mostly low-carbon technologies such as EV chargers, Heat Pumps and other incremental demand increases connecting via 'Connect & Notify'.

The benefit of this comes from considering the counterfactual: if we did not plan our network based on the predicted future customer behaviour we model, then loads would grow until Connect & Notify installations were locally stopped on safety and/or asset damage grounds. We would then have to build new capacity very rapidly to allow Connect & Notify to resume, causing significant connection delays. It is avoiding this counterfactual that is the benefit we have quantified.

There are two System Planning teams: Primary and Secondary. Primary relates to the network upstream of transformers at Primary substations, operating at 33kV and above, while Secondary includes voltage levels of 11kV and below.

The Primary team identify constraints up to ten years ahead, and publish these in our Network Development Plan, whereas the Secondary team looks around 18 months ahead. Where reinforcement is the best option, this is directed in the Distribution Network Options Assessment (DNOA) at Primary, and via an internal process at Secondary.

These decisions are then moved into the relevant reinforcement programs, the works are scheduled, and then the works are completed.

Benefits Methodology

Ambition

Reinforcement that has been directed by System Planning but has not yet been programmed is included here.

Unlocked

Reinforcement that has been directed by System Planning and then programmed is included here.

Realised

Reinforcement that has been directed by System Planning, and programmed and built is included here.

Calculation

The benefit is calculated using:

- The net capacity increases.
- The expected utilisation of new capacity. This is 56% at Primary at 40% at Secondary, based on firm capacity utilisation at NGED.
- The assumed connection delays avoided. Three years at Primary and one year at Secondary.
- The value of capacity. This is taken from analysis by NERA giving values of £398k/MVA/year and £304k/MVA/year for demand and generation respectively (2022 prices). Converted to 2023/24 prices.

Benefit = Capacity Added * Capacity Utilisation * Avoided Delay * Value of Capacity

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	8.2	232.9	168.8	409.8
Y2	22.5	656.3	1158.5	1837.4
ED2 To-Date	30.7	889.2	1327.3	2247.2

MW Dispatch

Overview

MW Dispatch is a pre-fault curtailment service benefiting the transmission network, especially during summer outages. It allows NESO to contract DER connected to NGED's network across eight GSPs in the South West to rapidly reduce their output to zero. It went live in 2024/25.

NESO's control over DER enables more connections in the South West, allowing eligible sites to connect before transmission works are complete. Benefits from MW Dispatch can stack with those from Technical Limits, as the latter operates through NGED's ANM system to a seasonal static limit, while MW Dispatch is actively managed by NESO. Some DER may be subject to both Technical Limits and MW Dispatch, so it highly likely our MW Dispatch eligibility is an underestimate.

The dispatch of these DER uses NGED's SCADA system. Joint Operating Procedures between National Grid DSO and NESO were developed by the DSO Operations team in collaboration with NESO.

Benefits Methodology

Ambition

<u>Appendix G of NGED's Bilateral Connection Agreements</u> with NESO indicate the eligibility of sites for MW Dispatch and/or Technical Limits, but not necessarily both. Sites that meet this criterion and are not eligible for Technical Limits have been considered eligible for MW Dispatch. This excludes sites that are eligible for MW Dispatch and Technical Limits, so our Ambition will be an underestimate.

Unlocked

Since NESO, not National Grid DSO, decides to engage in MW Dispatch with DER, no Unlocked benefit is claimed.

Realised

Schemes connected and signed up for MW Dispatch fall into this category, totalling 49.7 MW, indicating that this headroom has been created.

Calculation

The benefit is calculated using:

- DER export capacity subject to MW Dispatch
- An assumed capacity factor considering the effects of MW Dispatch. This is 10%, in line with the Technical Limits value.
- Generator value of £100/MWh in 2023/24 prices, in line with the Technical Limits approach.

Benefit = DER Capacity * 8760 * Capacity Factor * Gen. Value

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)	
Y1	0.0	0.0	0.0	0.0	
Y2	4.4	0.0	124.2	128.6	
ED2 To-Date	4.4	0.0	124.2	128.6	

Benefit Values

Engagement with Local Authorities

Overview

National Grid DSO measures three benefits from supporting Local Authorities (LAs), outlined below.

Reduced effort from Local Authorities to develop Local Area Energy Plans (LAEPs)

Our Stakeholder Engagement Team provide support and data which makes the LAEPs process more efficient, reducing costs for Local Authorities. A counterfactual based on <u>2018 Energy System Catapult pilot</u> <u>studies</u> considered data collection costs and consultancy fees.

Societal benefits from contribution to LAEP development

Energy Systems Catapult and the Energy Technologies Institute view LAEPs as vital for achieving national decarbonisation strategies. Our support ensures LAEPs have the necessary data for development and integration into capacity planning, crucial for realising decarbonisation benefits.

<u>Innovate UK</u> compared this locally tailored approach to a place-agnostic strategy for six UK city-regions, giving an annualised per capita net value of societal benefits from a place-specific approach.

Reduced effort for LAs to develop other decarbonisation initiatives

We also help implement other decarbonisation initiatives, reducing LAs' costs via benefits-in-kind.

Benefits Methodology

Ambition

We adapt as per the needs of LAs, so this category is zero.

Unlocked

- For LAEPs, this is once we start supporting a LA with the process.
- Other decarbonisation initiatives are excluded, due to the wide array of projects and timelines.

Realised

- Reduced LAEP effort is claimed once a LAEP is completed.
- Societal benefits are not claimed as we do not know if any LAEPs have been implemented yet.
- Other decarbonisation initiatives are accrued for all projects supported in a given year.

Calculation

These benefits are calculated with the below equation using the assumptions in this table.

	LAEPs: Reduced Effort	LAEPs: Societal Benefits	Other decarbonisation initiatives: Reduced Effort
LAs supported in 2024/25	14 completed & 52 in-progress	66	18
Benefit proxy	Energy System Catapult study	Innovate UK study	Claimed benefits in-kind
Success rate	100%	90%	100%
Deadweight	0%	20%	0%
Attribution to National Grid DSO	100%	1%	100%
Optimism bias	15%	40%	0%
Years considered	LAEP development time	5 years	Assumed as 1 year

Benefit = LAs supported * Benefit Proxy * Success Rate * (1 - Deadweight) * Attribution * (1 - Optimism Bias)

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.4	0.0	0.0	0.4
Y2	5.2	100.2	0.0	105.5
ED2 To-Date	5.6	100.2	0.0	105.8

DNOA process: DNOA outcomes recommending Flexibility - Deferral

Overview

The majority use case for Flexibility within ED2 is to defer reinforcement works on NGED's distribution network, particularly the Primary network, out of the price control. This approach reduces bills for NGED's customers through the Totex Incentive Mechanism (TIM) via reduced Distribution Use of System charges (DUoS).

Whilst reinforcement that contributed to our Allowed Totex may be subject to a 50% sharing factor through the TIM, when developing our business plan, we chose to not ask for money to do certain schemes. Deferring these out of ED2 provides a 100% benefit to our customers.

We have only considered reinforcement on the Primary network this time, reducing the benefit we are claiming. We plan to consider reinforcement on the Secondary network in future also.

Consideration of potential double-counting with Capacity added by Flexibility

With the counterfactual to Flexibility being taken as reinforcement, we considered whether it was possible to claim the capacity added by Flexibility (covered later in this document), that is used to defer reinforcement, as well as the cost saving from deferral of the reinforcement itself.

We believe claiming both is fair, as we are still adding capacity in the right places to allow Connect & Notify to continue, whilst doing this at lower cost than via reinforcement.

Benefits Methodology

Ambition

A reinforcement scheme subject to deferral via Flexibility is considered Ambition until we are confident it can be deferred out of ED2.

Unlocked

This category is not used due to uncertainty in future loads; works not yet deferred are considered Ambition instead.

Realised

This applies to schemes that we have deferred out of ED2.

Calculation and Benefit Values

This benefit is calculated as per the table below. All costs have been converted to 2023/24 prices.

	Reinforcement we excluded from our ED2 Business Plan	Reinforcement later deferred out of ED2	Total
Total deferral out of ED2	£65.0m	£72.1m	£137.1m
TIM Factor for DUoS benefit	100%	50%	
Y1 Benefit	Realised: £65.0m	Ambition: £34.4m	Realised: £65.0m Ambition: £34.4m
Y2 Benefit	No change	Realised: £1.6m	Realised: £1.6m

No equation is needed.

Curtailable Connections

Overview

Curtailable Connections are set out in <u>DCUSA Schedule 2D</u>. They are applicable to DER wishing to connect to our network that have triggered distribution network reinforcement, allowing these schemes to connect with ANM before reinforcement is completed.

An Ofgem-approved ENA methodology requires us to set Curtailment Limits for each scheme, with curtailment above this subject to significant compensation by NGED.

The calculation of these limits and ensuring curtailment is below them is the responsibility of the DSO System Models & Data and DSO Operation teams, respectively.

Consideration of potential double-counting with Technical Limits

Schemes that are subject to Technical Limits have been included because Curtailable Connections are focused on accelerating relative to distribution reinforcement being completed, which is typically the new limiting factor on connection dates once a scheme has accepted a connection variation through Technical Limits.

Benefits Methodology

Ambition

Curtailable Connections that are offered not yet accepted are excluded from this analysis due to uncertainty in the likelihood of these schemes being built.

Unlocked

Accepted not yet connected schemes are counted here.

Realised

Connected schemes are counted here.

Calculation

The benefit is calculated using:

- Accelerated DER export capacity.
- Capacity-weighted average acceleration of DER. This is assumed to be 1 year for all schemes.
- An assumed capacity factor, considering the effects of ANM. This is 10%, in line with the Technical Limits value.
- Generator value of £100/MWh in 2023/24 prices, in line with the Technical Limits approach.

Benefit = DER Capacity * 8760 * Capacity Factor * Average Acceleration * Gen. Value

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)	
Y1	0.0	91.6	0.0	91.6	
Y2	0.0	6.1	0.0	6.1	
ED2 To-Date	0.0	97.7	0.0	97.7	

Benefit Values

DNOA process: DNOA outcomes recommending Flexibility – Capacity added

Overview

When National Grid DSO predicts that load on assets may exceed their firm capacity, we may procure Flexibility to mitigate this, effectively increasing the firm capacity. The amount of capacity added is taken as being the peak power of Flexibility that we have dispatched per network constraint each year.

Dispatch is carried out on a week-ahead basis at present, meaning we have high confidence that it is adding capacity where it is needed.

Consideration of potential double-counting with Capacity added by Flexibility

See Flexibility Deferral of Reinforcement section.

Benefits Methodology

Ambition

This is not relevant as this benefit only considers Flexibility which has already been dispatched.

Unlocked

This is not relevant as this benefit only considers Flexibility which has already been dispatched.

Realised

This is based on historic dispatch for the entire year.

Calculation

The benefit is calculated using:

- Capacity added.
- Utilisation of capacity added. Assumed to be 90% to allow for week-ahead forecasting safety margin.
- The assumed connection delays avoided, similar to the Capacity Added by All Reinforcement approach. Taken as one year.
- The value of capacity. This is taken from analysis by <u>NERA</u> giving values of £398k/MVA/year (2022 prices), in line with the Capacity Added by All Reinforcement approach. Converted to 2023/24 prices.

Benefit = Capacity Added * Capacity Utilisation * Average Acceleration * Value of Capacity

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	18.0	0.0	0.0	18.0
Y2	7.0	0.0	0.0	7.0
ED2 To-Date	25.0	0.0	0.0	25.0

Enhanced queue management process

Overview

A DER scheme applied for a 132 kV connection to NGED's network. This triggered a new supergrid transformer (SGT) in the Modification Offer (Mod Offer) from NESO, as a response to the Modification Application (Mod App) that included the connection of the scheme. The cost of the SGT would have been borne by the connecting customer.

A subsequent Mod App with more DER then led to NGET proposing wider transmission upgrades. This left the scheme in a difficult position, as they would have had to pay for a new SGT without any long-term certainty of the network they would be connected to.

National Grid DSO worked with NGET to identify attrition ahead of the scheme and provided updated historic loading data in the Week 24 submission to NESO. Together these were sufficient for NGET to issue an Approval to Vary (ATV), allowing the scheme to connect to the site and thus avoiding the cost of the new SGT.

This was the first time National Grid DSO has tried such an approach. This could form the basis for more work along these lines in future.

Benefits Methodology

Ambition

See Unlocked section.

Unlocked

The scheme is accepted not yet connected, so is in this category.

Realised

See Unlocked section.

Calculation

The benefit is simply the cost of the SGT, which is £13.51m in 2022/23 prices, converted to £14.49 million in 2023/24 prices.

No equation is needed.

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.0	0.0	0.0	0.0
Y2	0.0	14.5	0.0	14.5
ED2 To-Date	0.0	14.5	0.0	14.5

DNOA process: DNOA outcomes recommending operational mitigations

Overview

System Planning considers three main solutions for network constraints: reinforcement, Flexibility services, and operational mitigations.

This case study relates to the South Devon 132kV network, specifically Plymouth and the surrounding urban areas which are currently fed by both Landulph and Abham GSPs as a parallel-running network with a group demand of around 300 MW.

300 MW is the threshold for moving from Class D to Class E in EREC P2/8, which would increase the amount of demand that must be kept on supply after two outages by at least 100 MW. This could breach Network Capability, and thus the Distribution Network Operator (DNO) had proposed £51.7m of reinforcement to fix this. This would not have been deliverable before the constraints became material.

Primary System Planning within DSO proposed a different approach, which is a hybrid of an operational mitigation and a smaller reinforcement scheme. The former involves splitting the existing demand group at Plymouth BSP, leaving two smaller demand groups. This new more radial network topology can have the Security of Supply requirements for each demand group met through a smaller reinforcement program for a new cost of £27.4m which can be built faster than the original £51.7m plan. Flexibility services will be used to manage network risk until this smaller reinforcement is complete.

Benefits Methodology

Ambition

See Unlocked section.

Unlocked

This decision has been taken between the DSO and DNO. The DSO-proposed reinforcement has been programmed for delivery.

Realised

See Unlocked section.

Calculation

This benefit is calculated using:

- The original cost of £51.7m (2023/24 prices).
- The new cost of £27.4m (2023/24 prices).
- TIM factor for DUoS benefit, which is 50%.

Benefit = (Original Cost - New Cost) * TIM Sharing Factor

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.0	0.0	0.0	0.0
Y2	0.0	12.2	0.0	12.2
ED2 To-Date	0.0	12.2	0.0	12.2

Benefit Values

Enhanced outage planning process

Overview

Historically, Outage Planning has been a function closely associated with the DNO-Control Centre (DNO-CC). For arranged outages that could lead to breaches of Network Capability in areas with significant distributed generation, the DNO-CC have been conservative in choosing to significantly curtail generators, often to zero. This has been a safe way of operating the network in lieu of more data.

The DSO Operations team use the Distribution Future Energy Scenarios (DFES) produced by the Primary System Planning team to assess specific outages in greater depth. This allows the maximum export for generators to be increased in some cases, whilst maintaining safe operating parameters.

The differences in generator export setpoints from the original DNO-CC assessments versus the new DSO Operations assessments are integrated for the duration of the outages. This gives the increase in network access, rather than increase in generator output.

Benefits Methodology

Ambition

DSO Operations only conduct these studies on the request of Outage Planning who only study outages that they identify as highly likely will occur. Ambition has thus been assumed to be nil.

Unlocked

All the outages planned for a year are assumed to be taken when they are planned, so this is nil.

Realised

All the benefit is in this category.

Calculation

This benefit is calculated using:

- Increased network access, 242 GWh in 2024/25.
- Assumed capacity factor for increased network access, taken as 15%.
- Extra revenue for generator. This is taken from analysis by NERA giving £87/MWh for generation (2022 prices). Converted to 2023/24 prices.

Ben. = Increased Network Access * Capacity Factor * Gen. Value

Benefit Values				
	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.8	0.0	0.0	0.8
Y2	3.4	0.0	0.0	3.4
ED2 To-Date	4.2	0.0	0.0	4.2

Flexibility procurement

Overview

This is a simple benefit that represents the economic spill over of benefits through Flexibility. Whilst National Grid DSO procures these services to provide benefit for its consumers, the spend on these services forms a revenue stream for Flexibility Service Providers (FSPs).

Benefits Methodology

Ambition

See Realised.

Unlocked

See Realised.

Realised

This is taken as the invoiced spend on Flexibility in the financial year. This is converted to 2023/24 prices.

Calculation

See Realised.

No equation is needed.

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.9	0.0	0.0	0.9
Y2	0.7	0.0	0.0	0.7
ED2 To-Date	1.5	0.0	0.0	1.5

Market Gateway facilitating low-carbon Flexibility

Overview

Flexibility used by National Grid DSO to date has generally either been Generator Turn-Up (GTU) or Demand Turn-Down (DTD). The former typically comes from gas plants and the latter from domestic assets such as EV chargers. The <u>ENA Carbon Reporting Methodology</u> specifies how DSOs should calculate the carbon intensity of their Flexibility, noting that carbon is only emitted from Flexibility that is delivered, i.e., a gas plant needs to actually run to produce carbon.

A counterfactual of a gas peaking plant was used to calculate carbon savings, taking figures from HM Treasury Green Book.

Because our Flexibility portfolio has seen increasing participation by domestic assets relative to gas peaking plants, our carbon intensity has decreased by an order of magnitude from Y1 to Y2, going from ~13.83 kgCO₂e/MWh to ~1.50 kgCO₂e/MWh.

Benefits Methodology

Ambition

Nil as this is only for delivered Flexibility.

Unlocked

Nil as this is only for delivered Flexibility.

Realised

Considering Flexibility delivered in-year.

Calculation

This benefit is calculated using:

- Gas carbon intensity, from HM Treasury Green Book Table 2a and assuming 32% efficiency.
- Marginal grid intensity, from HM Treasury Green Book Table 1 generation-based figures.
- Delivered Flexibility, from C31E data.
- Total Flexibility emissions, from C31E data.
- Carbon prices, from HM Treasury Green Book Table 3 Central estimates.

Benefit = ((Gas Carbon Intensity – Marginal Grid Intensity) * Delivered Flexibility – Total Flexibility Emissions) * Carbon Price

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.2	0.0	0.0	0.2
Y2	0.3	0.0	0.0	0.3
ED2 To-Date	0.5	0.0	0.0	0.5

Benefit Values

Asset on replacement driven by Asset Condition

Overview

When network assets are being changed due to their condition, NGED is incentivised to replace them as cheaply as possible in order to outperform our ED2 Allowed Totex. This generally means replacing assets with units of the same capacity, however future load growth can lead to these new assets being replaced before the end of their useful life.

This waste can be avoiding by using load projections from the DSO's Primary System Planning teams to predict the maximum load over the expected lifetime of the replaced assets and then size the replacements accordingly.

The costs of investing twice at the relevant trigger years, corresponding to the load predictions from System Planning are converted to a net present value using the Common Evaluation Methodology, which is used for comparing Flexibility against reinforcement works. This is compared to the net present value of the cost of investing with just the larger unit once, and this process repeated for each relevant reinforcement scheme.

Benefits Methodology

Ambition

See Unlocked.

Unlocked

As these decisions have been taken by the DSO but not yet built, they are considered as Unlocked.

Realised

See unlocked.

Calculation

This benefit is calculated in 2023/24 prices using:

- The cost of like-for-like replacement
- The cost of an upgraded unit
- The year wherein the upgraded unit will become necessary, according to DFES projections.
- The Common Evaluation Methodology, used for calculating the net present value of the two options.

Benefit = NPV of investing twice - NPV of investing larger upfront

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.0	0.0	0.0	0.0
Y2	0.0	0.4	0.0	0.4
ED2 To-Date	0.0	0.4	0.0	0.4

Demand Turn-Up/Generation Turn-Down trial

Overview

NGED's network is subject to both demand constraints and generation constraints. The former have been the focus of Flexibility since its inception at National Grid DSO, through our Demand Turn-Down (DTD) and Generation Turn-Up (GTU) products. Generation constraints require opposite products: Demand Turn-Up (DTU) and Generation Turn-Down (GTD).

During 2024/25, we began a DTU/GTD trial, for delivery in 2025/26. This concerned three baseline simple thermal generation constraints, with no good alternatives to reinforcement.

Direct benefits for consumers

DTU represents incentives for consumers to increase their demand for electricity. This is typically achieved through lower, or zero, unit pricing at the meter for their consumption during specified times.

Furthermore, a proportion of consumers who are signed up to provide us with DTU are on the Priority Service Register (PSR), a database of customers who are vulnerable to supply interruptions. This is 27% of the domestic assets offering us Flexibility in these Constraint Management Zones. 9% of PSR customers are offering us Flexibility in these areas.

Benefits Methodology

Ambition

As we have contracted for the availability of Flexibility, the benefits within Y2 are Unlocked rather than Ambition.

Unlocked

The Flexibility budget of £105k (2025/26 prices) falls into this category.

Realised

None of the Flexibility is due to be dispatched until Y3, this is zero for 2024/25.

Calculation

This is the budget of £99k (as converted to 2023/24 prices).

No equation is needed.

Benefit Values

	Realised (£m)	Unlocked (£m)	Ambition (£m)	Total (£m)
Y1	0.0	0.0	0.0	0.0
Y2	0.0	0.1	0.0	0.1
ED2 To-Date	0.0	0.1	0.0	0.1