DSO – Benefit Methodology

2025-2026

Scottish & Southern Electricity Networks

CONTENT

1.1 PURPOSE OF THIS DOCUMENT

Quantifying the Value of Our DSO Activities

This document outlines the methodology used by SSEN to quantify the benefits delivered through our DSO activities, as presented in our Year 3 DSO Performance Panel submission.

The DSO Incentive, introduced by Ofgem under RIIO-ED2, encourages Distribution Network Operators to demonstrate the value of more efficient, flexible, and transparent system operation. In response, SSEN's methodology sets out how we measure and evidence the benefits created by our DSO strategy — across customer outcomes, system efficiency, decarbonisation, and wider societal value.

Our approach builds on the methodology we presented in the first two years of the incentive, incorporates new standarised approaches and reflects feedback from the independent Performance Panel. It incorporates enhancements to data, assumptions, and evaluation methods to ensure our analysis is robust, transparent, and aligned with good industry practice.

Transparent, Evolving Approach

As per cross-industry best practice, our benefits framework introduced last year aligns with the shared "Theory of Change" methodology as agreed through the DSO collaboration forum. This approach provides a clear line of sight between DSO activities, the outcomes they deliver, and the resulting benefits for stakeholders.

We apply established economic evaluation tools — including HM Treasury's Green Book guidance — to support credible and comparable analysis. Our methodology also ensures benefits are considered across a wide range of stakeholders, including customers, market participants, and local authorities.

Additionally, building upon last year's collaborative efforts, we worked together with other DSOs through the ENA Collaboration Forum to further standardise benefits' measurement for common outcomes. All our figures reported are consistent with this approach and all previous years have been re-baselined for consistent year-on-year tracking. These include:

- All benefits are reported in 2020/21 prices and on an undiscounted basis within RIIO-ED2.
- We've applied consistent values across DSOs to quantify carbon impacts, applying HMT Green Book data and methods.
- Our total benefits figures are presented in net terms, meaning we've included appropriate costs of our DSO activity
- We've aligned with the standardisation guidance for three common outcomes: Accelerating DER connections, Deferring reinforcement and Outage management and optimisation.
- As agreed across DSOs, we've continued to report certain non-standardised benefits where we are delivering value to our stakeholders that might be network or region specific, or outside of the scope of benefits standarised. All of these reported benefits are quantified using HMT Green Book compliant methods and have been independently assured against ENA Collaboration Forum principles and best practice methods.
- We have added these non-standarised benefits to our totals reported, except for indirect societal benefits such as those from accelerating affordable housing and local environmental and economic benefits through our LAEP support. These are still reported individually as unlocked benefits but not added to our realised benefit totals.

Standardised benefits and practices are identified throughout this document by the following icon: ena

This methodology supports our commitment to openness and continuous improvement. It helps stakeholders understand how we deliver value today, track progress through RIIO-ED2, and enable the fair and efficient transition to a smart, flexible, and decarbonised energy system.

1.2 SUMMARY OF OUR APPROACH

Our approach to measure and track benefits

We have an embedded approach to measuring and reporting DSO benefits that we have refined over RIIO-ED2. We identify and plan benefits delivery using our bespoke Theory of Change methodology and measure, track and report benefits using a 3-step iterative process. This year, we've refined our framework based on stakeholder feedback, enhancing several components and adding new elements:

1. Engage & Define	2. Measure & Review	3. Communicate & Refine
Agree priority outcomes and how activities deliver stakeholder value • Identify benefits we are targeting • Map activities to benefits • Define success measures	Quantify delivery and assess realised impact • Track outputs and benefits • Identify data requirements • Review performance & evidence	Use learning to maximise value and demonstrate accountability • Adjust plans based on impact • Embed learnings in decisions • Report outcomes transparently
DSO Advisory Board: Reviewed approach and identified targeted benefits ahead of Year 3 delivery **Theory of Change:** Updated with new activities delivering benefits **KPIs:** Improved KPI definition & tracking system with 5 new KPIs	**Standardisation:** Aligned our approach for common benefits across DSOs **Quantification:** Applied robust, best practice methods for economic appraisal including Ofgem CBA, CEM, SROI, HMT Greenbook **Assurance:** All reported benefits independently assured by Sia.	**Methodology:** Published our refined DSO benefits methodology and assumptions **Governance & KPI reporting:** Tracked KPIs monthly at DSO Sub Committee and reviewed yearly with input from our DSO Advisory Board. KPIs published externally every quarter on our website.

We've changed how we present our benefits to better align with other networks

We've made a few changes to the way we show our benefits this year to align with new standardised methods in the sector and with how other networks present their benefits. Previously, we have focused on showing benefits realised in the year when we've delivered the associated outputs. This supports our commitment to transparency – in years where we deliver less our benefits will be lower, as shown in our realised benefits reported in our Year 2 report compared with Year 1.

This year, we're adjusting how we report benefits to spread them as they accrue, which has an impact on our benefits from accelerated connections since we're now spreading them across the period of acceleration. This gives a different trajectory than what was reported previously - we now have a steady increase year-on-year of benefits we have delivered, with a reduction in scale versus previous years to account for the year-per-year accrual. We'll continue to report transparently on performance from our activities each year, however we believe this new approach to benefits accrual will allow for better comparison and consistency across networks and therefore consider it a positive change.

How we track benefits from our activities

As per the common DSO Collaboration Appendix, we track benefits across three categories (Realised, Unlocked and Ambition) – definitions on the right. For each activity explained in this document, we provide explanations of what we track under each category.

Realised benefits are those **delivered to stakeholders within a specific year.** This includes benefits arising in the reporting year **from activities realised in the same year**, as well as benefits accrued in the reporting year **from activities realised in prior years.**

Unlocked benefits have not yet been Realised, but there is **high confidence** they will be, based on activities already delivered. For example, If a customer has accepted an accelerated connection offer but has not yet connected, the benefits is recorded as **Unlocked.** It also includes **indirect societal benefits** allowed by the connections accelerated for affordable housing in West London.

Ambition benefits lack the certainty of Unlocked but represent **additional value we could achieve**. For example, if accelerated connection offers have been made available in the market but these have not been accepted yet, the potential associated benefits from these connections are recorded as **Ambition**.

1.3 THEORY OF CHANGE

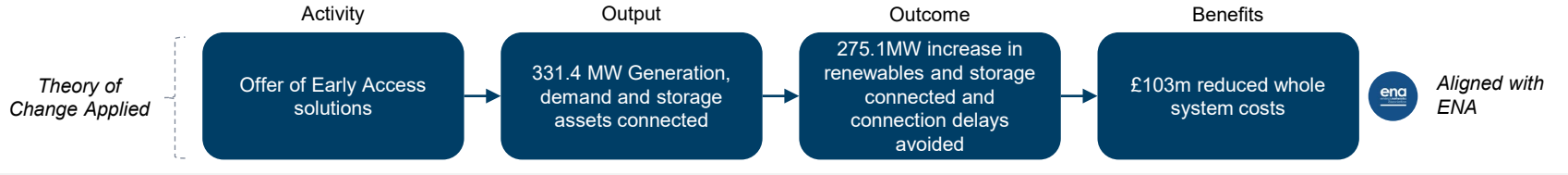
What is the Theory of Change

Theory of Change is a standard methodology for theory-based evaluations which clearly links activities to outputs, outcomes and benefits. It is often implemented during the planning stage of a new project, activity or initiative, providing a conceptual framework to plan, monitor and evaluate a project. In the context of DSO benefits it allows us to:

- Provide clarity about how benefits are delivered and the evidence for them
- Ensure each activity is worked through to identify all possible impacts and the stakeholders impacted

Activities & Enablers	Outputs	Outcomes	Benefits
Activities are what needs to be delivered to achieve the **outputs**. These are the easiest to identify alongside outputs since they are commonly tracked. **Enablers** are activities which do not deliver benefits directly but **contribute to the successful delivery of outcomes and benefits** from other activities.	Outputs are the **final product(s)** the initiative aims to deliver and are **necessary** to achieve its intended outcomes. They can take **many different forms**, from a signed agreement between companies, to the amount of flexibility procured.	Outcomes are the **change** networks are seeking to cause as a direct result of their activities. There are multiple outcomes that can arise from an initiative, and clearly defining these can enable networks to establish a **causal relationship** between these and other key components of the initiative.	Benefits are the **impact** that outcomes have on the **network, customers, other networks, society or the environment**. They can be direct or indirect depending on whether they are a direct result from the outcomes achieved by the network or whether they contribute to benefits elsewhere.

We have applied the Theory of Change to all our DSO activities, aligning with the ENA Collaboration Forum to further standardise benefits' measurement for common outcomes as per the image shown on the right.



Adapting our plans and course-correcting to increase benefits

We've evolved our KPIs and adapted our plans based on stakeholder feedback, creating 5 new KPIs this year to drive measurable performance improvements. One of our new KPI's is a 20-day Service Level Agreement (SLA) for data requests: Our stakeholders challenged us to improve response times for data requests, ensuring consistent accessibility regardless of complexity. In response, we introduced a 20-day SLA in October 2025 and streamlined our data request process to enhance efficiency and stakeholder engagement. This included onboarding Data SMEs into our tracking tool and establishing regular forums to monitor requests, escalate issues, and remove barriers to data sharing.

1.4 SUMMARY OF BENEFITS DELIVERED IN 2025/2026

Forecasting and planning future needs

- Our **short-term forecasting tool** has improved the accuracy of dispatch orders by enhancing demand forecasts, and reduced consumer bills through dispatch expenditure savings.
- The integration of **local plans into our own strategic planning** ensures our network is fit for future local needs and therefore contributes to the decarbonisation of local communities and the societal benefits this eventually leads to, such as better air quality, warmer homes and reduced congestion.

Developing and inclusive market

- Through our **flexibility services,** we are reducing customer bills by efficiently meeting capacity needs whilst also providing revenue for both Flexibility Service Providers and customers.

Developing network flexibility at scale

- Through our **early access solutions,** we have avoided the costs of connection delays, delivered wholesale cost savings, and reduced carbon emissions by enabling faster connections for renewables and storage.
- We have also provided wider societal and economic benefits through the **acceleration of affordable housing in West London**.

Data and insights

- The use of **smart meter data and LV monitors** leads to lower system costs through demand shifting and reduced consumer bills through reduced network spend (avoided site visits).

Action Plan Category	KPIs	Y3 Activities Identified	Y3 Outputs	Y3 Outcomes	Y3 Realised Benefit	Future Benefit to Date		Beneficiary	Type*
						Unlocked	Ambition		
Forecasting and planning future needs	• Number of active accounts in our Local Energy Net Zero Accelerator (LENZA) platform • Number of Strategic Development Plans consulted • Number of Distribution Network Option Assessments (DNOA) outcomes independently assured	Engagement with LAs through LENZA and Net Zero Engagement Specialists	Supported LAs in developing an LAEP	Better and faster development of LAEPs to deliver net zero, with reduced efforts from LA	Avoided costs for LAs on LAEP planning and decarbonisation initiatives	£0	£0	Local Authorities	D
					Societal benefits from reaching net zero through LAEPs **£0 [indirect societal benefits are unlocked and don't count towards total realised]**	£0	£0	Wider Society	I
		Short-term load forecasting tool	**27 pc point** reduction in mean forecasting error	**112 MWh** reduction in utilisation dispatch required to meet requirements	Utilisation dispatch expenditure saving **£0.11m**	N/A	N/A	Domestic & Commercial Customers	D
Developing an inclusive market	• Flexibility services capacity contracted in ED2 (in MW) • Value reinforcement deferred, counted at the point flexibility is first contracted across ED2 (£M)	Offer of flexibility products	**1,335 MWh** of flexibility dispatched	**£354m** deferred reinforcement in the network across ED2	Reduced consumer bills **£0.56m**	£2.05m	£12.16m	Domestic & Commercial Customers	D
					Revenue from participating in flex markets – FSPs **£0.07m**	N/A	N/A	Flexibility Service Providers	D
					Revenue from participating in flex markets – Domestic Customers **£0.44m**	N/A	N/A	Domestic & Commercial Customers	D
Developing Network Flexibility at Scale	• MW of connections accelerated using Access Products • Number of Near-real time and half-hourly data points routinely published or shared • % DSO- National Energy System Operator (NESO) risk-of conflict messages delivered to standard	Access Products and Technical Limits programme	**331.4 MW** of distribution and transmission constrained generation, demand and storage connected	**275.1MW** increase in renewables and storage connected	Reduced carbon emissions **130,483** tons CO2e, equal to **£34.19m** in societal benefit	£0.1m	N/A	Wider Society	I
					Wholesale cost saving **£103.05m**	£0.5m	N/A	Whole system	D
					Avoided cost of delaying renewable and storage connection **£25.2m**	£228m	£6.72m	DER	D
				49.9MW of generation connections accelerated	Avoided cost of delaying generation connection **£10.4m**	£0	£0	DER	D
				6.4 MW of demand connections accelerated	Avoided cost of delaying demand connection **£2m**	£295m	£335m	DER	D
				174 affordable houses accelerated through the West London Initiatives	Societal benefits from affordable housing accelerated **£7m [indirect societal benefits are unlocked and don't count towards total realised]**	£151m	N/A	Wider Society	I

*D= Direct Benefit, I= Indirect Benefit
All values are gross benefits in 2020/21 prices.

Action Plan Category	KPIs	Y3 Activities Identified	Y3 Outputs	Y3 Outcomes	Y3 Realised Benefit	Future Benefit to Date		Beneficiary	Type*
						Unlocked	Ambition		
Developing Network Flexibility at Scale	• MW of connections accelerated using Access Products • Number of Near-real time and half-hourly data points routinely published or shared • % DSO- National Energy System Operator (NESO) risk-of conflict messages delivered to standard	Refined field based ANM hardware	**2** additional ANM controllers installed	Avoided additional installations for capacity changes	Savings for connecting customers **£0.01m**	N/A	£0	DER	D
		ANM Improvements	**3** standardized ANM modules installed	**212 MW** of connections with faster ANM deployment	Reduced consumer bills due to reduced network spend **£0.03m**	N/A	£0	Domestic & commercial customers	D
		PCNZ Fund	**£0.21m** awarded to vulnerable customers	Increase in renewable generation connected	Reduced carbon emissions **£0.008m**	£0.06m	N/A	Wider society	I
				Increase in LCT demand connected	Societal benefits from providing LCTs (energy savings) **£0.013m**	£0.09m	N/A	Wider society	D
					Societal benefits from providing LCTs (LCT Value) **£0.20m**	N/A	N/A	Wider society	D
Data and Insights	• Increase in network visibility during ED2 • Number of data discovery workshops, events and engagement • % data sets published with additional insights	LV Monitoring Data and Access to half-hourly consumption data from smart meters	Communicated with **2.45m** smart meters and **1,516** increase in LV monitoring data points	Increased demand shifting leading to lower peak demand	Lower whole system costs **£0.51m**	N/A	N/A	Whole system	I
				3,994 avoided site visits through the use of smart meter data	Reduced consumer bills due to reduced network spend **£0.07m**	N/A	N/A	Domestic & commercial customers	D

*D= Direct Benefit, I= Indirect Benefit
All values are gross benefits in 2020/21 prices.

02 – ACTIVITIES AND BENEFITS METHODOLOGY

Scottish & Southern Electricity Networks

2.1 LENZA

Description

LENZA is a geospatial planning platform powered by Advanced Infrastructure Technology Limited's (AITL) LAEP+ software. It has been developed through SSE Distribution's Project RESOP. LENZA is designed to support users in their strategic energy planning endeavours, including the creation of Local Area Energy Plans (LAEPs) and, where relevant, Local Heat and Energy Efficiency Strategies (LHEES). The platform provides local authorities and their delivery partners with data and modelling tools that support informed decision making, including information on network capacity, building stock, and energy consumption. The tool empowers users to plan decarbonisation pathways, which in turn drive SSE Distribution's longer-term strategic network planning that will power local net zero ambition.

Benefits

2.1.1 Avoided Costs for LAs on LAEP Planning

2.1.2 Societal Benefit from Reaching Net Zero through LAEPs

2.1.1 Avoided Costs for LAs on LAEP Planning

Theory of Change

Activity	Output	Outcome	Benefit
Support provided to LAs through LENZA and Net Zero Engagement Specialists	Number of LAs supported with their LAEPs	Better and faster development of LAEPs to deliver net zero, with reduced efforts from LAs	Avoided costs for LAs on LAEP planning and decarbonisation initiatives

Gross Benefits (2021 prices)

Recalculated benefits from previous years

£0
Realised benefits in Y1

£0
Realised benefits in Y2

Year 3 performance

£0
Realised benefits in Y3

£0
Unlocked benefits in Y3

£0
Benefits Ambition in Y3
(all ambition claimed in Y2)

Definitions

- **Realised**
  LA completes an LAEP using LENZA.
- **Unlocked**
  LA starts developing an LAEP using LENZA.
- **Ambition**
  LENZA is made available to LAs for their LAEPs.

Methodology

The engagement we provide to local authorities through our Net Zero Specialists and access to LENZA makes the LAEP process more cost-effective, leading to a direct benefit to LAs. In the absence of this support, LAs typically:

- Hire external consultancies
- Invest heavily in data processing

Incurring high costs to develop LAEPs.

To quantify the benefit, we follow a Social Return on Investment approach, based on the Energy Systems Catapult (2018)[2] study in which pilot studies were conducted in three local authorities (LAs) to assess the costs and impact of structured Local Area Energy Planning. The study reported planning-related expenses at £570k, including one-off costs and opportunities for efficiencies. Scaling Local Area Energy Planning efficiently across UK LAs was estimated to cost £100k–£250k per area. The efficiency savings of a structured approach are approximately £320k per area (calculated as £570k – £250k). Assumptions for impact estimations included in table below.

Assumptions and Adjustments

- Savings mainly from reduced consultancy and data costs
- Estimates reflect short-term impacts only (excludes long-term staffing)
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

	Avoided cost (£/LA)	Number of LAs in SSE's license areas	Number of LAs who started developing an LAEP using LENZA	Number of LAs who completed an LAEP using LENZA	SROI assumptions
Y1	£320,000	58	0	0	Attribution - 100% Drop Off - 100%. Deadweight - 0%. Optimism Bias - 15%
Y2	£320,000	58	2	0	
Y3	£320,000	58	0	0	
Sources	Catapult - 'Local Area Energy Planning: The Method (July 2020)[2]	SSE	SSE - Amelia Kisanga	SSE - Amelia Kisanga	

2.1.2 Societal Benefit from Reaching Net Zero through LAEPs

Theory of Change

Activity	Output	Outcome	Benefit
Support provided to LAs through LENZA and Net Zero Engagement Specialists	Supported LAs with their LAEPs	Better and faster development of LAEPs to deliver net zero, with reduced efforts from LAs	Societal benefits from reaching net zero through LAEPs

Gross Benefits (2021 prices)

Recalculated benefits from previous years

£0
Realised benefits in Y1

£0
Realised benefits in Y2

Year 3 performance

£0
Realised benefits in Y3

£0
Unlocked benefits in Y3

£0
Benefits Ambition in Y3

Definitions

- **Realised**
  Not applicable (given difficulty of tracking realised benefits).
- **Unlocked (Indirect Societal Benefits)**
  LA completes a LAEP.
- **Ambition**
  LA starts to develop LAEP with our support.

Methodology

Electricity is central to the UK's net zero ambitions. Through our LENZA tool, SSE supports local authorities by providing the data and tools needed to develop effective LAEPs and integrate them into network planning. Without this support, local authorities might:

- Lack access to granular network data
- Face challenges aligning LAEPs with infrastructure planning

We used a Social Return on Investment approach, drawing on an Innovate UK study[3] that compares place-specific net zero strategies—similar to LAEPs—with generic, national-level approaches. Using data from six UK city-regions, the study estimates the societal benefit of place-specific planning. These benefits were then scaled to the population of SSE's licence areas, resulting in an estimated £46 million in gross societal benefits per local authority per year over a 28-year period.

Assumptions and Adjustments

- Estimates reflect 5 years of benefits, aligned with what is reasonably achievable in the next 10 years
- Attribution of 1% of total benefits to SSE's support via LENZA – this is a starting assumption that we hope to validate as new research becomes available
- Benefits assumed constant annually (no data available on phased allocation of benefits)
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

	1% of Societal Benefit (£/LA/year) attributed to SSE	Number of LAs in SSE's license areas	Number of LAs who started developing an LAEP using LENZA	Number of LAs who completed an LAEP using LENZA	SROI assumptions
Y1	£463,729	58	0	0	Attribution - 1% Drop Off - 100%. Deadweight - 20%. Optimism Bias - 40%
Y2	£463,729	58	2	0	
Y3	£463,729	58	0	0	
Assumption	Societal Benefit (£/LA/year) is £46, 372,909				
Sources	Innovate UK - 'Accelerating Net Zero Delivery (2022)[3]	SSE	SSE - Amelia Kisanga	SSE - Amelia Kisanga	

2.2 SHORT TERM FORECASTING TOOL

Description

In electricity flexibility markets, assets are registered as available when they are ready and able to deliver power if they receive a dispatch order. They are registered as utilised when they are instructed to generate and do so.

SSE has introduced a new short-term forecasting tool to improve the accuracy of dispatch orders across the network by enhancing demand forecasts.

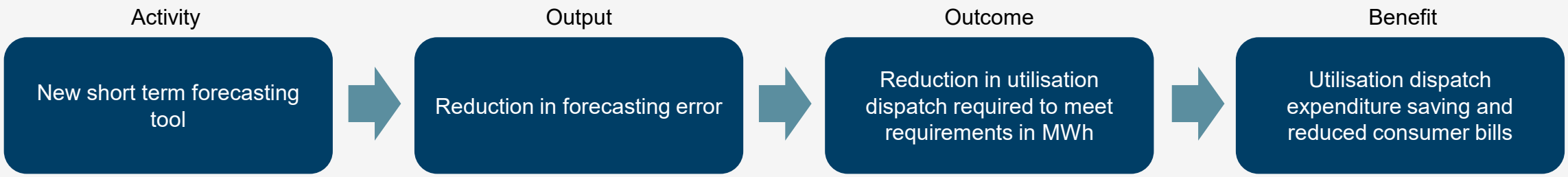
By providing clearer insight into when flexibility is truly needed, the tool reduces errors in dispatch decisions and supports better management of asset utilisation. It limits the risk of available generation assets being unnecessarily activated, which can lead to unnecessary dispatch expenditures.

Benefits

2.2.1 Utilisation dispatch expenditure saving

2.2.1 Utilisation dispatch expenditure saving

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

N/A
Realised benefits in Y2

Year 3 performance

£11,737
Realised benefits in Y3

N/A
Unlocked benefits in Y3

N/A
Benefits Ambition in Y3

Definitions

- **Realised**
  £ saved on utilisation dispatch expenditure
- **Unlocked**
  Not applicable.
- **Ambition**
  Not applicable.

Methodology

To obtain old forecast mean absolute percentage error, an annual figure is used for all active CMZs which is then compared with actual values observed during reporting period. The same process is applied for the new short-term forecast solution replacing SSEN's previous forecast results.
The saving in utilisation dispatch is calculated as:

Utilisation dispatch expenditure saving (£) = Utilisation expenditure under old forecast results (£) - Utilisation expenditure under new forecast results (£)

- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]
- Based on a TIM sharing factor, 50% of savings are passed on to customers

Aligned with ENA

Data

	Utilisation dispatch expenditure saving (£) before TIM sharing factor in 2026 prices
Y3	32,262.30
Sources	SSE - Jiabin Fan

2.3 FLEXIBILITY PRODUCTS

Description

SSE offers a range of flexibility products designed to manage distribution network constraints and make more efficient use of existing and planned infrastructure. These products enable the network to respond dynamically to local changes in electricity demand and generation, reducing the need for immediate reinforcement. First introduced in 2018 to support urgent operational needs, including maintaining customer supply and reducing reliance on diesel generation, SSE's flexibility products have since evolved to support proactive network management and project delivery. Products are procured through open market processes and are designed to suit a variety of use cases and provider capabilities.

Benefits

2.3.1 Reduced Consumer Bills from Deferred Reinforcement

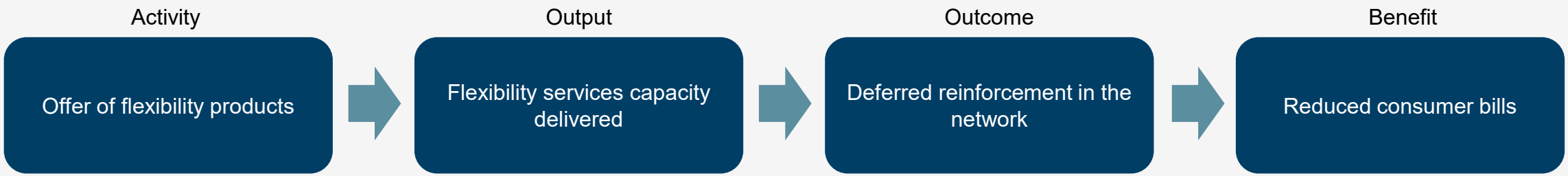
Aligned with ENA

2.3.2 Revenue from Participating in Flexibility Markets

2.3.1 Reduced Consumer Bills from Deferred Reinforcement

Aligned with ENA

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£29,539
Realised benefits in Y1

£72,709
Realised benefits in Y2

Year 3 performance

£566,535
Realised benefits in Y3

£2,059,974
Unlocked benefits (within ED2)

£12,162,773
Unlocked benefits (Until 2037/38)

Definitions

- **Realised**
  Estimated annual costs savings from deferred network reinforcements per year
- **Unlocked**
  Forecasted annual costs savings from deferred network reinforcements
- **Ambition**
  Not applicable.

Methodology

Aligned with the methodology agreed through the ENA Collaboration Forum, we have adapted the method we published for this benefit last year and are now using the outputs from the ENA Common Evaluation Methodology (CEM) tool for each scheme for which we have decided to defer reinforcement since the beginning of ED2. The CEM tool has been used by networks since 2021 to decide which intervention to procure to mitigate a reinforcement need, whether that be a flexibility service, an asset reinforcement or an alternative innovative solution. The methodology embedded in the tool is aligned with Ofgem's CBA and sets out to analyse the discounted cash flow of each solution over the lifetime of an asset, or 45 years. It then provides NPV savings of choosing a deferral option using flexibility, allocated per year.
We have assessed the CEM outputs for each scheme we have deferred since the beginning of ED2 and have collated these to estimate the NPV savings of deferring reinforcement per year. These are net of flexibility costs, though other related DSO costs have not been included at this stage. We have considered the risk that CEM outputs do not represent the reality of what has been deferred, but we are confident that any changes from our original CEM assessments would result in a longer reinforcement period and therefore larger benefits than what we have claimed through using this method.

- Cost savings from deferred network reinforcements are quantified on an annual basis, reflecting the yearly benefits accrued from deferring reinforcement until implementation.
- Based on a TIM sharing factor, 50% of savings are passed on to customers
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

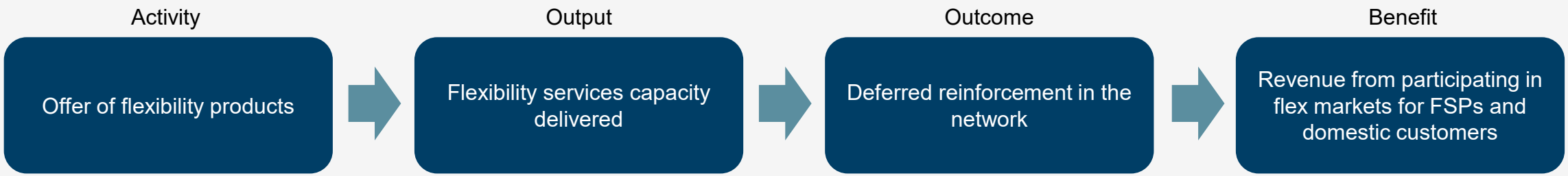
Aligned with ENA

Data

	Value reinforcement deferred realised to-date (£ 2020/21)
Y1	59,078
Y2	145,418
Y3	1,133,071
Assumptions	Based on a TIM sharing factor, 50% of savings are passed on to customers
Sources	SSE – Oliver Mattar, Elizabeth Porter

2.3.2 Revenue from Participating in Flexibility Markets

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£209,206
Realised benefits in Y1

£148,522
Realised benefits in Y2

Year 3 performance

£516,836
Realised benefits in Y3

N/A
Unlocked benefits

N/A
Benefits Ambition

Definitions

- **Realised**
  We assume this benefit is realised when flexibility is paid to providers.
- **Unlocked**
  Not applicable.
- **Ambition**
  Not applicable.

Methodology

Spending on flexibility services not only benefits consumers but also creates economic value for providers. Without this procurement, FSPs and domestic consumers would miss out on an additional revenue stream.

The revenue to FSPs is obtained through paid invoices, with an estimation of how much is expected to go to domestic customers.

All figures provided below were updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1] *Aligned with ENA*

Data

	Revenue to FSPs (£ nominal)	Revenue estimated for domestic customers (£ nominal)
Y1	215,123	61,404
Y2	114,064	82,251
Y3	104,033	606,297
Sources	SSE – Jiabi Fan	SSE – Jiabi Fan

2.4 EARLY ACCESS SOLUTIONS

Description

SSE's early access solutions are designed to accelerate customer connections in constrained areas of the network, helping to unlock renewable generation and support the rapid decarbonisation of communities across our licence areas. By offering earlier connection options where full capacity isn't yet available, these products provide a practical alternative to waiting for traditional reinforcement. They are a key part of SSE's strategy to make the most of existing network capacity while longer-term upgrades are delivered, ensuring access is provided efficiently and equitably. Our array of solutions include: Access products, DSR, Technical Limits, Intertrip, Scheduled connections and Ramped connections.

This approach is particularly relevant in areas like West London, which has seen a surge in large-scale electricity connection applications—especially from data centres—placing unprecedented pressure on the network. With National Grid Transmission now offering connection timelines that stretch into the 2030s, even for smaller projects, SSE is using Access Products and targeted flexibility procurement to ease capacity constraints and enable faster, more efficient customer connections.

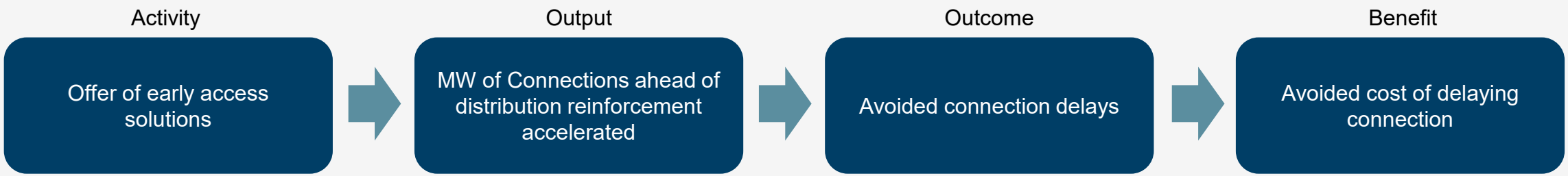
Benefits

- **2.4.1 Avoided Cost of Delaying Generation from Accelerated Connections (ahead of distribution reinforcement)**
- **2.4.2 Carbon Savings from Accelerated Renewable Connections (ahead of distribution reinforcement)**
- **2.4.3 Wholesale cost savings from Accelerated Renewable Connections (ahead of distribution reinforcement)**
- **2.4.4 Avoided Cost of Delaying Generation from Accelerated Connections (ahead of transmission reinforcement)**
- **2.4.5 Carbon Savings from Accelerated Renewable and Storage (ahead of transmission reinforcement)**
- **2.4.6 Wholesale cost savings from Accelerated Renewable and Storage Connections (ahead of transmission reinforcement)**
- **2.4.7 Avoided Cost of Delaying Demand Connections (ahead of distribution reinforcement)**
- **2.4.8 Societal Benefits from Affordable Housing Accelerated**

Aligned with ENA

2.4.1 Avoided Cost of Delaying Generation from Accelerated Connections (ahead of distribution reinforcement)

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£772,714
Realised benefits in Y1

£772,714
Realised benefits in Y2

Year 3 performance

£1,229,015
Realised benefits in Y3

£8,272,689
Unlocked benefits in Y3

£6,724,731
Benefits Ambition in Y3

Definitions

- **Realised**
  Customers connect to the network through early access solution.
- **Unlocked**
  Connections are accepted.
- **Ambition**
  Early grid access is offered.

Methodology

Accelerating generation connections using early access solutions delivers financial benefits by avoiding the costs associated with delayed grid access. Connecting customers are able to begin generating and selling electricity sooner than would be possible under standard reinforcement timelines. Without these access arrangements, generators would face delays due to distribution network constraints, resulting in lost revenue.

To quantify the benefit, we apply a Social Return on Investment method.

Assumptions and Adjustments

- Based on the NERA SSE Report (2023)[7], foregone generator profits are valued at £87/MWh, reflecting missed revenue due to delayed generation.
- All generation assumed to be solar PV based on data provided by SSEN, hence a capacity factor of 10% sourced from Scottish Renewable Electricity Output Calculator[6] is used. Output calculated over 8,760 hours/year.
- Early connection brings forward solar PV investment, meaning capex is incurred sooner than in the counterfactual. To account for the time value of money, the counterfactual capex is discounted over five years. Using an assumed solar PV capex of £944,000/MW (DESNZ[22]), this gives a discounted value of £822,641/MW, implying a time-value cost of earlier investment of £121,359/MW, equal to the difference between the undiscounted and discounted values.
- According to SSE, a 96% curtailment factor should be applied, assuming curtailment occurred 4% of the time.
- A 5-year average acceleration period is assumed based on SSE data.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

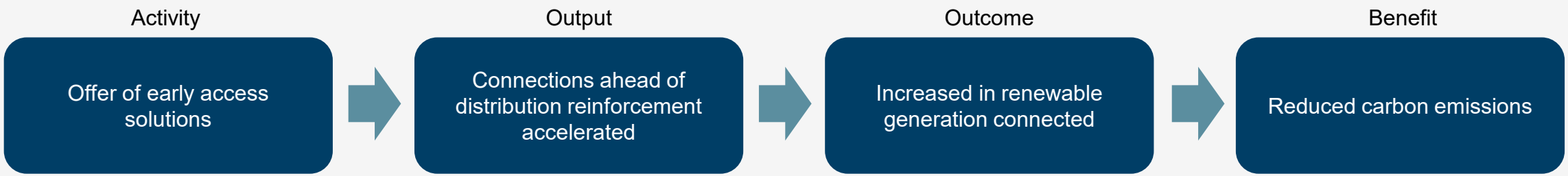
	Generation connection accelerated through access products (MW)	Connection offers accepted but not connected through access products(MW)	Curtailable generation connection offers made but not yet accepted through access products	Curtailment factor	Average acceleration in connection time (years)	SROI assumptions
Y1	23.2	0	0	96%	5	Attribution - 100% Drop Off - 0%. Deadweight - 0%. Optimism Bias - 10%
Y2	0	455.88	419.228	96%	5	
Y3	13.7	30	24.3865	96%	5	
Assumptions				Assuming curtailment occurred 4% of the time.	Average of 4.5 years rounded-up to 5	
Sources	SSE – Gavin Stewart	SSE – Clare Wagstaffe	SSE – Clare Wagstaffe	SSE – Gavin Stewart	SSE – Gavin Stewart	

Ambition *Unlocked* *Realised*

2.4.2 Carbon Savings from Accelerated Renewable Connections (ahead of distribution reinforcement)

Aligned with ENA

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£1,041,683
Realised benefits in Y1

£970,528
Realised benefits in Y2

Year 3 performance

£1,416,182
Realised benefits in Y3

N/A
Unlocked benefits

N/A
Benefits Ambition

Definitions

- **Realised**
  Renewable and storage customers connected to the network through Access Products.
- **Unlocked**
  Not applicable. We only considered carbon savings when renewables connect to the network.
- **Ambition**
  Not applicable. We only considered carbon savings when renewables connect to the network.

Methodology

Accelerating low-carbon generation through early access solutions enables earlier displacement of fossil-fuel-based electricity, resulting in carbon savings. Without acceleration, projects would be delayed, and grid reliance on higher-carbon sources would persist longer. Note that we are calculating these emissions avoided to show the impact on the environment that our DSO activities have, however carbon costs are also embedded in the wholesale cost savings benefit calculated separately, therefore this benefit is not added to the total figures to avoid double counting.

Assumptions and Adjustments

To estimate avoided emissions, we applied:

- Green book Electricity emissions factors[25]
  - 0.210 tCO_2e/MWh in Year 1
  - 0.193 tCO_2e/MWh in Year 2
  - 0.174 tCO_2e/MWh in Year 3
- Green book carbon values[25] converted to 2021 prices
  - £254/tCO_2e in Year 1
  - £258/tCO_2e in Year 2
  - £262/tCO_2e in Year 3

Aligned with ENA

- All generation assumed to be solar PV as per SSEN data, hence a capacity factor of 10% sourced from Scottish Renewable Electricity Output Calculator[6] is used. Output calculated over 8,760 hours/year.
- According to SSE, a 96% curtailment factor should be applied, assuming curtailment occurred 4% of the time.
- A 5-year average acceleration period is assumed based on SSE data.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

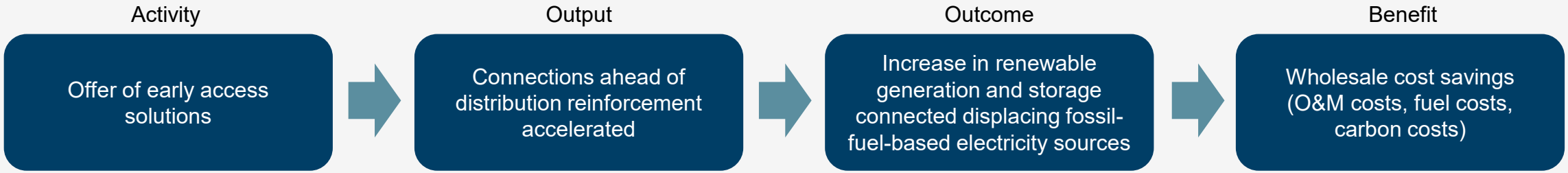
Data

	Accelerated Renewable connections (MW)	Curtailment factor	Average acceleration in connection time (years)
Y1	23.2	96%	5
Y2	0	96%	5
Y3	13.7	96%	5
Assumptions		Assuming curtailment occurred 4% of the time.	Average of 4.5 years rounded-up to 5
Sources	SSE – Gavin Stewart	SSE – Gavin Stewart	SSE – Gavin Stewart

2.4.3 Wholesale cost savings from Accelerated Renewable Connections (ahead of distribution reinforcement)

Aligned with ENA

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£2,774,361
Realised benefits in Y1

£ 2,774,361
Realised benefits in Y2

Year 3 performance

£4,412,668
Realised benefits in Y3

N/A
Unlocked benefits

N/A
Benefits Ambition

Definitions

- **Realised**
  Renewable and Storage customers connected to the network through Access Products.
- **Unlocked**
  Not applicable. We only considered wholesale cost savings when renewables connect to the network.
- **Ambition**
  Not applicable. We only considered wholesale cost savings when renewables connect to the network.

Methodology

Accelerating low-carbon generation and storage through Access Products enables earlier displacement of fossil-fuel-based electricity, delivering carbon reductions, lower operating costs, and wholesale cost savings. Without such acceleration, projects would be delayed, prolonging reliance on higher-cost, higher-carbon generation.

To estimate wholesale costs savings, we apply an SROI approach comparing the wholesale operating costs of Solar PV generation versus CCGT generation per MWh generated.

Assumptions and Adjustments

- All generation assumed to be solar PV, hence a capacity factor of 10% sourced from Scottish Renewable Electricity Output Calculator[6] is used. Output calculated over 8,760 hours/year.
- Based on DESNZ Electricity Generation Costs (2023) [22], the operating cost of CCGT generation is assumed to be £158/MWh, comprising £2/MWh variable O&M, £65/MWh fuel, and £91/MWh carbon costs. Using same source, Solar PV costs are zero; therefore, each MWh generated displaces CCGT and yields a saving of £158/MWh.
- Using SSEN data, a 96% curtailment factor is applied, assuming curtailment occurred 4% of the time.
- A 5-year average acceleration period is assumed based on SSE data.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

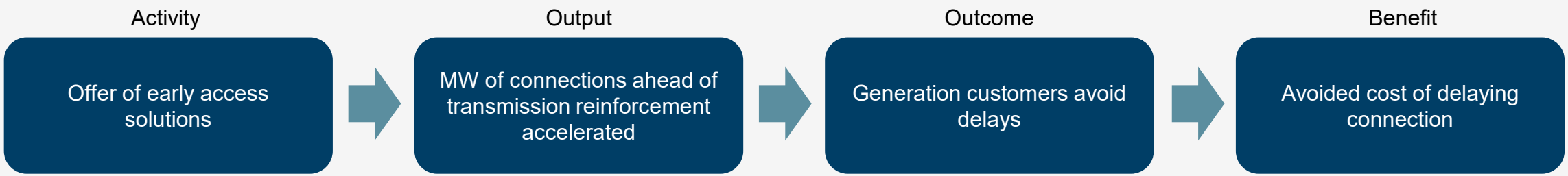
Aligned with ENA

Data

	Accelerated Renewable connections (MW)	Curtailment factor	Average acceleration in connection time (years)	SROI assumptions
Y1	23.2	96%	5	Attribution - 100% Drop Off - 0%. Deadweight - 0%. Optimism Bias - 10%
Y2	0	96%	5	
Y3	13.7	96%	5	
Assumptions		Assuming curtailment occurred 4% of the time.	Average of 4.5 years rounded-up to 5	
Sources	SSE – Gavin Stewart	SSE – Gavin Stewart	SSE – Gavin Stewart	

2.4.4 Avoided Cost of Delaying Generation from Accelerated Connections (ahead of transmission reinforcement)

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£17,560,460
Realised benefits in Y1

£18,978,077
Realised benefits in Y2

Year 3 performance

£34,492,540
Realised benefits in Y3

£220,595,943
Unlocked benefits in Y3

£0
Benefits Ambition in Y3

Definitions

- **Realised**
  Customers connect to the network.
- **Unlocked**
  Connections are accepted.
- **Ambition**
  Early grid access is offered.

Methodology

Accelerating generation connections using early access solutions delivers financial benefits by avoiding the costs associated with delayed grid access. Connecting customers are able to begin generating and selling electricity sooner than would be possible under standard reinforcement timelines. Without these access arrangements, generators would face delays due to transmission network constraints, resulting in lost revenue.

To quantify the benefit, we apply a Social Return on Investment method, based on the NERA SSE Report (2023)[7], which estimates the financial impact of delayed connections.

Assumptions and Adjustments

- All renewable generation assumed to be solar PV, hence a capacity factor of 10% sourced from Scottish Renewable Electricity Output Calculator[6] is used. Output calculated over 8,760 hours/year.
- Based on DESNZ Electricity Generation Cost Study (2025)[24] , for non-renewable generation a capacity factor of 33.2% is assumed. Output calculated over 8,760 hours/year.
- Based on the NERA SSE Report (2023)[7] ,foregone generator profits are valued at £87/MWh, reflecting missed revenue due to delayed generation.
- Early connection brings forward investment, meaning capex is incurred sooner than in the counterfactual. To account for the time value of money, counterfactual investments for connections accelerated in years 1 and 2 are discounted over nine years, and for those accelerated in year 3 over ten years. Solar PV capex is assumed at £944,000/MW (DESNZ[22]). This yields discounted values of £716,885/MW for years 1 and 2 investments and £692,642/MW for year 3, implying time-value costs of earlier investment of £227,115/MW and £251,358/MW respectively, equal to the difference between undiscounted and discounted values.
- Applying the same approach to CCGT (non-renewable generation), capex is assumed at £558,000/MW (DESNZ[22]). This results in discounted values of £423,752/MW for year 1 investment and £409,422/MW for year 3, implying time-value costs of earlier investment of £134,248/MW and £148,578/MW respectively.
- According to SSE, a 96% curtailment factor should be applied, assuming curtailment occurred 4% of the time.
- Based on SSE data, a 9-year average acceleration period is assumed for Y1 and Y2 for accelerated connection through access products and technical limits. A 10-year average acceleration is assumed for Y3.
- Based on SSE data, a 7-year average acceleration period is assumed for contracted renewable generation through Intertrip.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data (renewable generation)

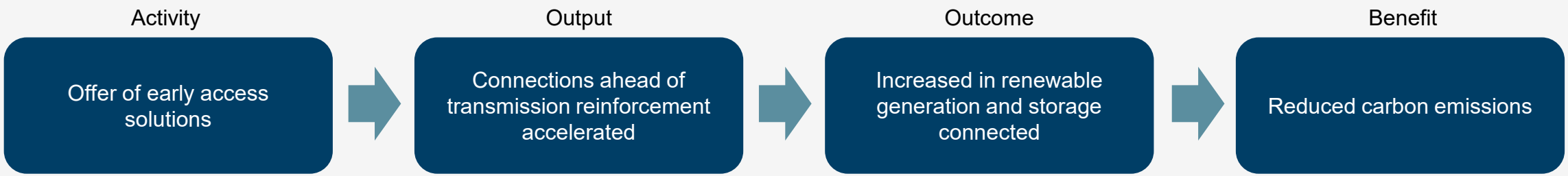
	Renewable generation connection accelerated Access products (MW)	Generation connection accelerated Access products (non-renewables) (MW)	Connections that have accepted early grid access offers through T-D Limits but have not connected yet	Contracted renewable generation through Intertrip (MW)	Curtailment factor	SROI assumptions
Y1	535	1	0	0	96%	Attribution - 100% Drop Off - 0%. Deadweight - 0%. Optimism Bias - 10%
Y2	43.7	0	615	0	96%	
Y3	162.1	49.9	0	571.405	96%	
Assumptions					Assuming curtailment occurred 4% of the time.	
Sources	SSE – Gavin Stewart Oliver Cooper	SSE – Gavin Stewart	SSE – Oliver Cooper	SSE – Dimitris Konstantinidis	SSE – Gavin Stewart	

Unlocked *Realised*

2.4.5 Carbon Savings from Accelerated Renewable Generation and Storage Connections (ahead of transmission reinforcement)

Aligned with ENA

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£24,021,568
Realised benefits in Y1

£24,208,819
Realised benefits in Y2

Year 3 performance

£32,781,574
Realised benefits in Y3

£107,659,535
Unlocked benefits

N/A
Benefits Ambition

Definitions

- **Realised**
  Renewable and storage customers connected to the network.
- **Unlocked**
  Connections accepted
- **Ambition**
  Not applicable. We only considered carbon savings when renewables and storage connect to the network.

Methodology

Accelerating low-carbon generation and storage through early access solutions enables earlier displacement of fossil-fuel-based electricity, resulting in carbon savings. Without acceleration, projects would be delayed, and grid reliance on higher-carbon sources would persist longer. Note that we are calculating these emissions avoided to show the impact on the environment that our DSO activities have, however carbon costs are also embedded in the wholesale cost savings benefit calculated separately, therefore this benefit is not added to the total figures to avoid double counting.

Assumptions and Adjustments
To estimate avoided emissions, we applied:
- Green book Electricity emissions factors[25]
- Green book carbon values[25] converted to 2021 prices

Aligned with ENA

- All renewable generation assumed to be solar PV, hence a capacity factor of 10% sourced from Scottish Renewable Electricity Output Calculator[6] is used. Output calculated over 8,760 hours/year.
- All storage connection assumed to be 1 MW lithium-ion battery system displacing approximately 1,000 MWh of CCGT generation annually, assuming standard operating conditions: a 4-hour discharge duration, 80% usable capacity, 15% round-trip energy losses, and an average of one full charge–discharge cycle per day. Sourced from DESNZ Electricity Generation Costs (2023) [22]
- According to SSE, a 96% curtailment factor should be applied, assuming curtailment occurred 4% of the time.
- Based on SSE data, a 9-year average acceleration period is assumed for Y1 and Y2 for accelerated connection through access products and technical limits. A 10-year average acceleration is assumed for Y3.
- Based on SSE data, a 7-year average acceleration period is assumed for contracted storage and renewable generation through Intertrip. For connected storage, a 5-year average acceleration is assumed.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

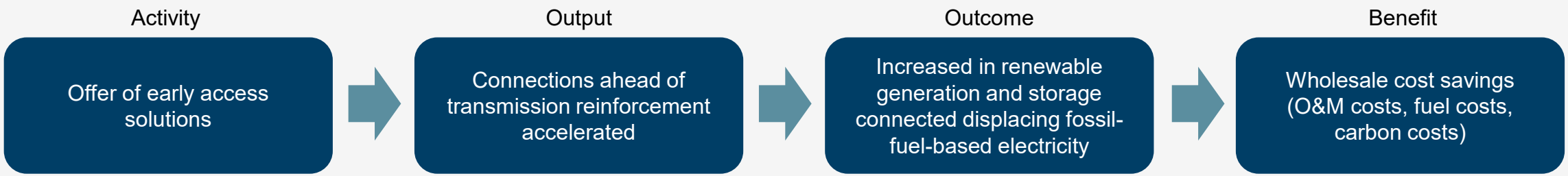
	Accelerated renewable generation connection through access products and technical limits (MW)	Contracted renewable generation connections through Intertrip (MW)	Storage connections accelerated through access products (MW)	Contracted storage connections accelerated through Intertrip (MW)	Connected storage connections accelerated through Intertrip (MW)	Curtailment factor
Y1	535	0	0	0	0	96%
Y2	43.7	0	0	0	0	96%
Y3	162.1	571.405	49.9	35.8	49.4	96%
Assumptions						Assuming curtailment occurred 4% of the time.
Sources	SSE – Gavin Stewart Oliver Cooper	SSE – Dimitris Konstantinidis	SSE – Gavin Stewart	SSE – Dimitris Konstantinidis	SSE – Dimitris Konstantinidis	SSE – Gavin Stewart

Unlocked *Realised*

2.4.6 Wholesale cost savings from Accelerated Renewable Generation and Storage Connections (ahead of transmission reinforcement)

Aligned with ENA

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£63,977,714
Realised benefits in Y1

£69,203,557
Realised benefits in Y2

Year 3 performance

£98,647,044
Realised benefits in Y3

£509,973,251
Unlocked benefits

N/A
Benefits Ambition

Definitions

Realised
Renewable customers and storage connected to the network.

Unlocked
Connections for renewables and storage are accepted.

Ambition
Not applicable. We only considered wholesale cost savings when renewables and storage connect to the network.

Methodology

Accelerating low-carbon generation through early access solutions enables earlier displacement of fossil-fuel-based electricity, delivering carbon reductions, lower operating costs, and wholesale cost savings. Without such acceleration, projects would be delayed, prolonging reliance on higher-cost, higher-carbon generation.

To estimate avoided emissions, we apply an SROI approach.

Assumptions and Adjustments

- All renewable generation assumed to be solar PV, hence a capacity factor of 10% sourced from Scottish Renewable Electricity Output Calculator[6] is used. Output calculated over 8,760 hours/year. Solar PV is assumed to have negligible variable
- All storage connection assumed to be 1 MW lithium-ion battery system displacing approximately 1,000 MWh of CCGT generation annually, assuming standard operating conditions: a 4-hour discharge duration, 80% usable capacity, 15% round-trip energy losses, and an average of one full charge–discharge cycle per day. Sourced from DESNZ Electricity Generation Costs (2023) [22] .Based on BEIS Storage Costs (2018) [23] , the average operating costs of storage (from lithium-ion technologies across 2020/30) is £13.8/kW/year. Assuming standard operating conditions: a 4-hour discharge duration, 80% usable capacity and one cycle per day (equivalent to 1.168 MWh discharged per kW-year), this converts to £11.8/MWh by dividing annual operating costs by annual discharged energy.
- Early connection brings forward battery investment*, meaning capex is incurred sooner than in the counterfactual. To account for the time value of money, counterfactual storage investments accelerated through access products are discounted over 10 years, and through Intertrip over 5 years. Using an assumed battery capex of £992,650/MW (DESNZ[22]), this gives discounted values of £925,636/MW at year 5 and £779,361/MW at year 10, implying time-value costs of earlier investment of £136,553/MW for Intertrip and £282,828/MW for access products, equal to the difference between undiscounted and discounted values.
- Based on DESNZ Electricity Generation Costs (2023)[22], the operating cost of CCGT generation is assumed to be £158/MWh, comprising £2/MWh variable O&M, £65/MWh fuel, and £91/MWh carbon costs. Therefore, each MWh generated by batteries displaces CCGT generation, delivering a net saving of £146.2/MWh. Each MWh generated by Solar PV displaces CCGT generation, delivering a net saving of £158/MWh.
- According to SSE, a 96% curtailment factor should be applied, assuming curtailment occurred 4% of the time.
- Based on SSE data, a 9-year average acceleration period is assumed for Y1 and Y2 for accelerated connection through access products and technical limits. A 10-year average acceleration is assumed for Y3.
- Based on SSE data, a 7-year average acceleration period is assumed for contracted storage and renewable generation through Intertrip. For connected storage, a 5-year average acceleration is assumed.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

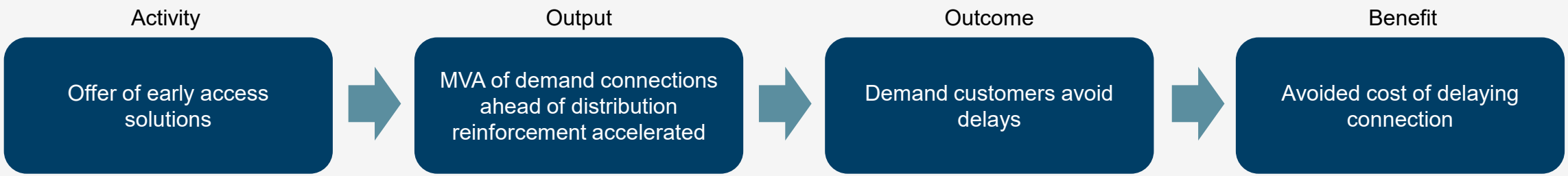
	Accelerated renewable generation connection through access products and technical limits (MW)	Contracted renewable generation connections through Intertrip (MW)	Storage connections accelerated through access products (MW)	Contracted storage connections accelerated through Intertrip (MW)	Connected storage connections accelerated through Intertrip (MW)	Curtailment factor
Y1	535	0	0	0	0	96%
Y2	43.7	0	0	0	0	96%
Y3	162.1	571.405	49.9	35.8	49.4	96%
Assumptions						Assuming curtailment occurred 4% of the time.
Sources	SSE – Gavin Stewart Oliver Cooper	SSE – Dimitris Konstantinidis	SSE – Gavin Stewart	SSE – Dimitris Konstantinidis	SSE – Dimitris Konstantinidis	SSE – Gavin Stewart

**Renewable generation time-value costs of earlier investment is captured under Benefit 2.4.4 Avoided Cost of Delaying Generation from Accelerated Connections (ahead of transmission reinforcement)*

Unlocked *Realised*

2.4.7 Avoided Cost of Delaying Demand Connections (ahead of distribution and transmission reinforcement)

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£0
Realised benefits in Y1

£0
Realised benefits in Y2

Year 3 performance

£2,042,428
Realised benefits in Y3

£295,743,704
Unlocked benefits

£335,968,692
Benefits Ambition

Definitions

- **Realised**
  Customers connect to the network.
- **Unlocked**
  Connections accepted.
- **Ambition**
  Early grid access is offered.

Methodology

Accelerating demand connections using early access solutions delivers financial benefits by avoiding the costs associated with delayed grid access. Without these access arrangements, customers would face delays due to distribution network constraints.
To quantify the benefit, we apply a Social Return on Investment method, based on the NERA SSE Report (2023)[7], which estimates the financial impact of delayed connections.

Assumptions and Adjustments

- Saving through the Time to Connect Incentive are estimated to be £397,999/MVA/year sourced from NERA Review of the Regulatory Framework for Strategic Network Investment (2023)[7].
- A 95% power factor is used to convert MVA to MW.
- According to SSE, a 96% curtailment factor should be applied, assuming curtailment occurred 4% of the time.
- A 5-year average acceleration period is assumed for access products and 2 years for ramped products based on SSE data.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

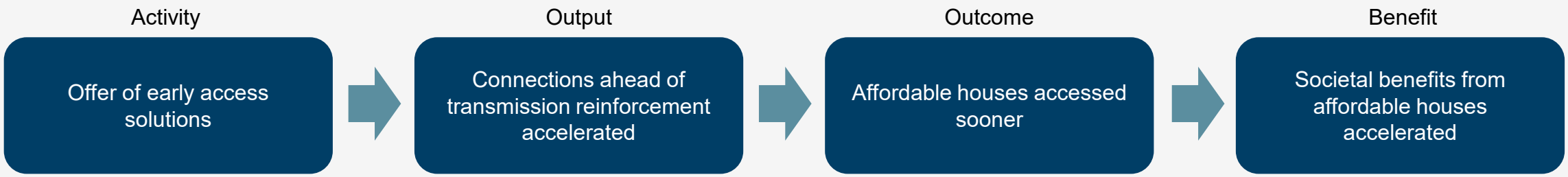
Data

	Curtailable demand connection offers accepted but not connected (MW)	Curtailable demand connection offers made but not yet accepted (MW)	Ramped connection offers accepted but not connected	DSR contracted #1 (MVA)	DSR contracted #2 (MVA)	Demand connections accelerated access products (MW)	Curtailment factor	Average acceleration in connection time (years)	SROI assumptions
Y3	59.37	221.635	312.96	4.5	6	6.4	96%	5 for access products, 3 for DSR#1, 7 for DSR #2, 2 for ramped connections	Attribution - 100% Drop Off - 0%. Deadweight - 0%. Optimism Bias - 10%
Assumptions							Assuming curtailment occurred 4% of the time.	Average of 4.5 years rounded-up to 5	
Sources	SSE – Clare Wagstaff	SSE – Clare Wagstaff	SSE – Paul Fitzgerald	SSE - Dimitris Konstantinidis	SSE - Dimitris Konstantinidis	SSE – Gavin Stewart	SSE – Gavin Stewart	SSE – Gavin Stewart, Dimitris Konstantinidis for Intertrip and Deirdre Macduff for ramped	

Realised *Ambition* *Unlocked*

2.4.8 Societal Benefits from Affordable Housing Accelerated

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

N/A
Realised benefits in Y2

Year 3 performance

£ 6,973,975
Unlocked benefits in Y3

£151,877,325
Unlocked benefits ED2 to date

N/A
Benefits Ambition

Definitions

Realised
Not applicable, benefits won't be realised in this category.

Unlocked
New houses connection offers are accepted through the West London Initiatives.

Ambition
Not applicable.

Methodology

The Ramping Solution allows customers to connect earlier and increase capacity by 1MW annually, up to 10MW, without triggering costly transmission upgrades. In its first three years, it enabled early connection for 12,099 homes and unlocked 16.28 MVA of capacity. Without this solution, these connections would have been delayed by an estimated four years, requiring traditional reinforcement and incurring higher costs.

We use an SROI to quantify social benefits:

1. *Benefits from Accelerated Connections*

Reducing connection delays yields substantial financial benefits. Ofgem's Time to Connect Incentive rewards DNOs for shortening connection times, which reduces costs and alleviates network congestion. According to the NERA SSE Report (2023)[7], each MVA reduction in delay saves £451,919 per year, applying to all homes unlocked in Years 1, 2 and 3.

2. *Affordable Housing Benefits*

Of the homes accelerated, 2,900 in Y1, 1,562 in Y2 and 174 in Y3 qualify as affordable housing, which we categorised as 53% Affordable or Intermediate Rent, 33% Affordable Home Ownership, 13% Social Rent, and 2% Discounted Homes for First-Time Buyers as per UK Government Fact Sheet 9: What is Affordable Housing?[9].

Affordable rental housing is priced 20% below market rent as per UK Government Fact Sheet 9: What is Affordable Housing?[9]. With average rents in Hounslow, Hillingdon, and Ealing at £1,826, £1,838, and £2,541 (home.co.uk (2024) [10,11,12]) respectively, the annual savings per home is £4,964.

Affordable homes are sold at 20% below market value as per UK Government Fact Sheet 9: What is Affordable Housing?[9], generating a one-time saving of £117,080 per home, while discounted first-time buyer homes, sold 40% below market value, yield £234,159 in one-time savings (Zoopla (2024)[13,14,15]).

3. *Social Benefits*

Beyond financial savings, social housing offers stability, reduces homelessness, and improves employment and education outcomes. Research on 90,000 social homes highlights benefits such as lower welfare spending, reduced NHS costs, higher employment, lower crime, and better educational attainment. Over 30 years, net economic and social benefits are estimated at £51.2 billion, equating to £18,963 per home per year (shelter.org (2024)[16]).

Assumptions and Adjustments

- A 4-year average acceleration period is assumed.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

	Houses unlocked	Affordable homes unlocked	Affordable homes built	Average acceleration in connection time (years)	Time to connect incentive (£/MVA/year)	Reduction in Rent (£/house/year)	Reduction in home ownership (£/house)	Discounted homes for first time buyers (£/house)	Social Benefits (£/house/year)
Y1	7,800	2,900	0	4	451,919	4,964	117,080	243,159	18,963
Y2	3,315	1,562	300	4	451,919	4,964	117,080	243,159	18,963
Y3	984	174	No data available	4	451,919	4,964	117,080	243,159	18,963
Assumptions	We assume this is the equivalent of 10.5 MVA in Y1 ,4.46 in Y2 and 1.32 in Y3.			Some would have connected in 2027, others in 2030. As we don't have a breakdown, an average of 4 years is assumed	This applies to all houses unlocked.	Calculated using an average monthly rent and assuming 20% discount over 12 months. This is applied to 53% of the affordable houses.	Calculated using an average home cost and assuming 20% discount. This is applied to 33% of the affordable houses.	Calculated using an average home cost and assuming 40% discount. This is applied to 2% of the affordable houses.	This is applied to 13% of the affordable houses.
SROI Assumptions					Attribution – 100% Drop Off - 0% Deadweight - 0%. Optimism Bias - 10%	Attribution – 100% Drop Off - 0% Deadweight - 0%. Optimism Bias - 15%	Attribution – 50% Drop Off - 100% Deadweight - 0%. Optimism Bias - 15%	Attribution – 50% Drop Off - 100% Deadweight - 0%. Optimism Bias - 15%	Attribution – 100% Drop Off - 0% Deadweight - 0%. Optimism Bias - 15%
Sources	SSE	SSE	SSE	SSE	NERA SSE Report (2023)[7]	UK GOV (2023)[9] and home.co.uk (2024) [10,11,12]	UK GOV (2023)[9] and Zoopla (2024)[13,14,15]	UK GOV (2023)[9] and Zoopla (2024)[13,14,15]	UK GOV (2023)[9] and shelter.org (2024)[16]

Unlocked

2.5 REFINED FIELD-BASED ANM HARDWARE

Description

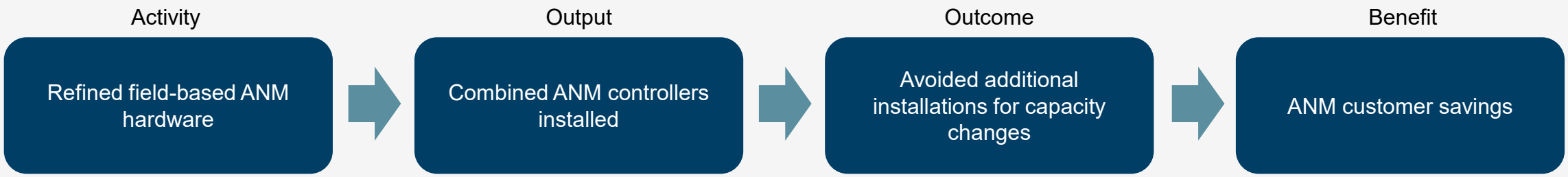
SSE is now deploying combined ANM controllers as part of its connection strategy, removing the need for further installations when customers increase their generation capacity post-connection. By integrating functionality into a single unit from the outset, every generator connected is ANM-ready—enabling consistent, real-time communication with SSE's control room. This approach ensures all customers benefit from a future-proofed solution that supports flexible growth, minimises installation disruption, and aligns with our commitment to efficient, scalable network access.

Benefits

2.5.1 ANM Customer Savings from Installing Combined ANM Controllers

2.5.1 ANM Customer Savings from Installing Combined ANM Controllers

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

N/A
Realised benefits in Y2

Year 3 performance

£15,131
Realised benefits in Y3

N/A
Unlocked benefits

£0
Benefits Ambition
(all ambition claimed in Y2)

Definitions

Realised
Customers with combined ANM controllers are connected.

Unlocked
N/A

Ambition
A target is set for the number of combined ANM controllers to be installed.

Methodology

The deployment of combined ANM controllers delivers direct cost savings to customers by eliminating the need for additional installations when expanding generation capacity. In the absence of this approach, generators would require separate ANM installations at the point of expansion, resulting in higher overall costs.

In Year 3, two generators benefited from this.

To quantify this benefit, we apply a straightforward cost-saving model based on the number of generators adopting the combined ANM approach, multiplied by an estimated saving per unit.

Assumptions and Adjustments

- Saving of £10,000 per connection updated to 2020/21 prices.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1] *Aligned with ENA*

Data

	Number of Combined ANM Controllers	Customer Savings (£/unit) in 2020/21 prices
Y3	2	£7,565
Sources	SSE – Gavin Stewart	SSE – Gavin Stewart

2.6 ANM IMPROVEMENTS

Description

SSE has implemented a series of enhancements to ANM systems to improve the speed, efficiency, and cost-effectiveness of network access, in response to increasing demand for capacity and flexibility.

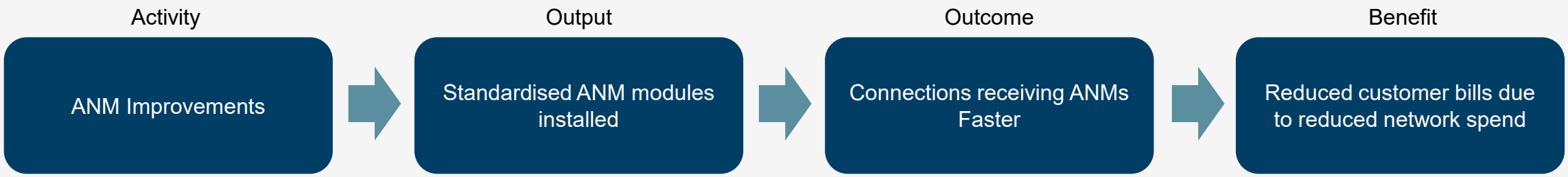
Standardisation of ANM modules has been introduced to streamline delivery and reduce deployment times. This shift away from bespoke design has resulted in lower costs and more consistent implementation across projects.

Benefits

2.6.1 Reduced Customer Bills from Network Savings due to ANM Modules Standardisation

2.6.1 Reduced Customer Bills from Network Savings due to ANM Modules Standardisation

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

£20,852
Realised benefits in Y2

Year 3 performance

£31,279
Realised benefits in Y3

N/A
Unlocked benefits

£0
Benefits Ambition
(all ambition claimed in Y2)

Definitions

Realised
Standardised ANM modules are installed.

Unlocked
Standardised ANM modules have been approved to be installed.

Ambition
A target is set for the number of standardised ANM modules to be installed.

Methodology

Standardising ANM modules reduces design and implementation time, enabling faster and more cost-effective deployment that benefits both customers and network operations. Without standardisation, longer delivery times increase costs.

To quantify the savings, a cost model is applied based on reduced project management time per module.

Assumptions and Adjustments

- Delivery time reduced by 65 working days per module (equivalent to three months).
- Project manager salary averaged at £63,000, with total employment costs estimated at £110,250 per year (£424 per day).
- Based on a TIM sharing factor, 50% of savings are passed on to customers
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

Data

	Number of Standardised Modules	Reduction in Delivery Time (days per standardised module)	Project Manager Salary (£ /year)
Y2	2	65	£110,250
Y3	3	65	£110,250
Assumptions		Estimated 3 months which is 65 working days effort for an FTE.	The salary band of a project manager FTE is £58,000 - £68,000 in 2025. For modelling purposes, an average of £63,000 is assumed. On average in the UK, an employee cost around 1.75 their salary, so £110,250
Sources	SSE – Gavin Stewart	SSE – Gavin Stewart	SSE – Gavin Stewart and Occupop (2025)[17]

2.7 PCNZ FUND

Description

SSE's 'Powering Communities to Net Zero' fund supports customers through LCT accessibility initiatives for those in vulnerable situations, and community-led environmental and resilience schemes. The scope of the fund has deliberately been widened to recognise emerging challenges around the adoption of LCTs. In Year 2, the fun distributed £401,616 to support 6 heat pump projects, 19 battery storage projects, and 21 solar PV projects. In Year 3, the fund distributed £298,391 to support the installation of 13 solar PV systems, 18 battery storage systems and 4 heat pumps.

Benefits

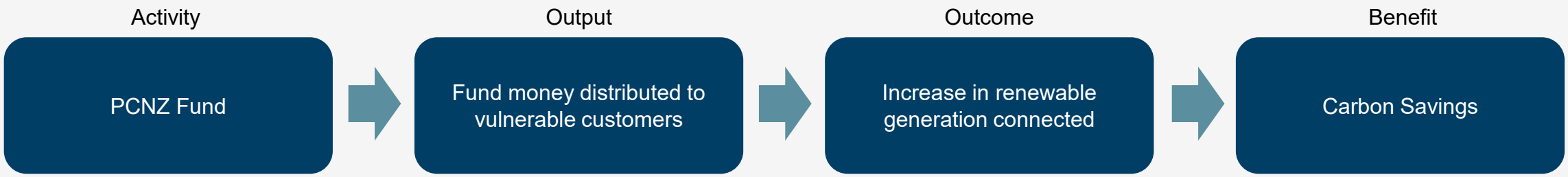
2.7.1 Reduced Carbon Emissions from Increased Renewable Generation Connected

2.7.2 Societal Benefits from Providing LCTs to Vulnerable Customers (Financial Savings)

2.7.3 Societal Benefits from Providing LCTs to Vulnerable Customers (LCT Value)

2.7.1 Reduced Carbon Emissions from Increased Renewable Generation Connected

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

N/A
Realised benefits in Y2

Year 3 performance

£8,172
Realised benefits in Y3

£60,885
Unlocked benefits

N/A
Benefits Ambition

Definitions

Realised
LCTs provided through the PCNZ Fund are connected.

Unlocked
Funding is allocated to projects.

Ambition
Not applicable.

Methodology

The PCNZ Fund improves access to low-carbon technologies for vulnerable customers, helping to reduce emissions and enhance energy resilience. In Year 2, the fund distributed £401,616 to support the installation of 6 heat pumps, 19 battery storage systems, and 21 solar PV systems. In Year 3, the fund distributed £298,391 to support the installation of 13 solar PV systems, 18 battery storage systems and 4 heat pumps.

Without this targeted support, vulnerable communities would lack the resources to adopt LCTs, delaying associated decarbonisation.

A Social Return on Investment approach is used to quantify avoided carbon emissions from the funded technologies.

Green book carbon values[25] converted to 2021 prices applied:

- £254/tCO_2e in Year 1
- £258/tCO_2e in Year 2
- £262/tCO_2e in Year 3

Aligned with ENA

Assumptions and Adjustments

- A 10-year period is assumed
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

Aligned with ENA

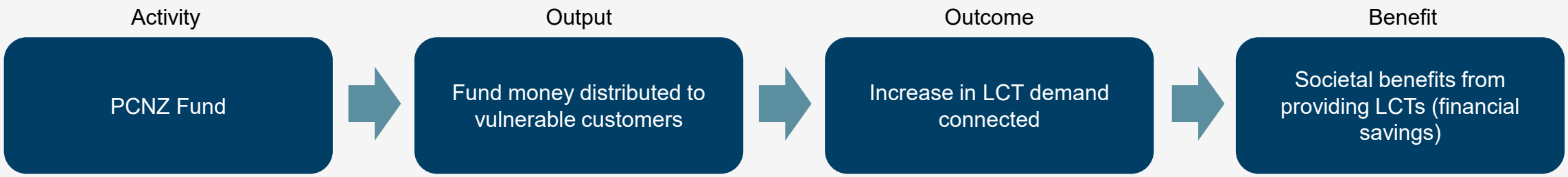
Data

	Number of LCT connected in Y3	Number of LCT awarded in Y3	Carbon Benefits per Technology (Tco2/customer/year)	Carbon Price (£/Tco2)	SROI assumptions
Heat Pumps	6	4	3.2	• £258/tCO_2e in Year 2 • £262/tCO_2e in Year 3	Attribution - 100% Drop Off - 0%. Deadweight - 10%. Optimism Bias - 5%
Battery Storage	19	18	0.3		
Solar PV	21	13	0.5508		
Sources	SSE - Emma Meritt	SSE - Emma Meritt/ Colin McMillan	DNO CVI Rulebook (2025)[18]	Green Book supplementary data tables (table 3)[25]	

Unlocked *Realised*

2.7.2 Societal Benefits from Providing LCTs to Vulnerable Customers (Financial Savings)

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

N/A
Realised benefits in Y2

Year 3 performance

£13,649
Realised benefits in Y3

£99,210
Unlocked benefits

N/A
Benefits Ambition

Definitions

Realised
LCTs provided through the PCNZ Fund are connected.

Unlocked
Funding is allocated to projects.

Ambition
Not applicable.

Methodology

The PCNZ Fund improves access to low-carbon technologies for vulnerable customers, helping to reduce emissions and enhance energy resilience. In Year 2, the fund distributed £401,616 to support the installation of 6 heat pumps, 19 battery storage systems, and 21 solar PV systems. In Year 3, the fund distributed £298,391 to support the installation of 13 solar PV systems, 18 battery storage systems and 4 heat pumps. Without this targeted support, vulnerable communities would lack the resources to adopt LCTs, delaying associated energy savings.

A Social Return on Investment methodology is applied to quantify financial benefits from reduced energy costs. Annual bill savings per technology are based on values from the 2025 DNO Common Evaluation Methodology (Rulebook)[18].

Assumptions and Adjustments

- A 10-year period is assumed
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1] *Aligned with ENA*

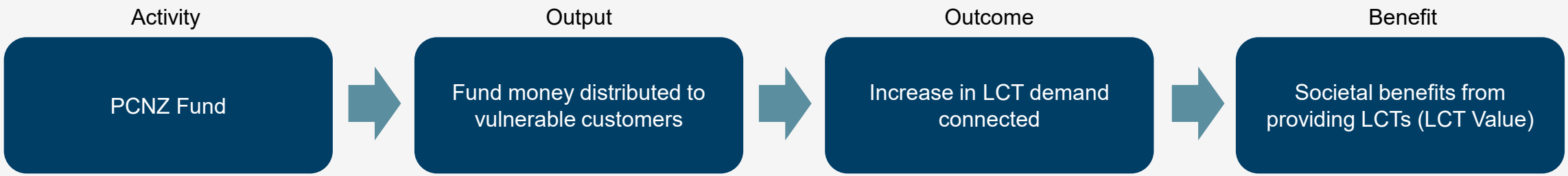
Data

	Number of LCT connected in Y3	Number of LCT awarded in Y3	LCT Uptake Financial Saving per Technology (£/customer/year)	SROI assumptions
Heat Pumps	6	4	630	Attribution - 100% Drop Off - 0%. Deadweight - 10%. Optimism Bias - 5%
Battery Storage	19	18	335.8	
Solar PV	21	13	521	
Sources	SSE - Emma Meritt	SSE - Emma Meritt/ Colin McMillan	DNO CVI Rulebook (2025)[18]	

Unlocked *Realised*

2.7.3 Societal Benefits from Providing LCTs to Vulnerable Customers (LCT Value)

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

N/A
Realised benefits in Y1

£273,458
Realised benefits in Y2

Year 3 performance

£203,172
Realised benefits in Y3

N/A
Unlocked benefits

N/A
Benefits Ambition

Definitions

- **Realised**
  Funding is allocated to projects.
- **Unlocked**
  Not applicable.
- **Ambition**
  Not applicable.

Methodology

In 2024/2025, the PCNZ fund allocated £401,616 to the purchase of LCTs .
In 2025/2026, the PCNZ fund allocated £298,391 to the purchase of LCTs .
All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1] *Aligned with ENA*

Data

	PCNZ fund allocated to LCTs (£ nominal)	SROI assumptions
Y2	£401,616	Attribution - 100% Drop Off - 100%. Deadweight - 10%. Optimism Bias - 5%
Y3	£298,391	
Sources	SSE – Emma Merritt	

2.8 SMART METER DATA

Description

As the only DNO publishing daily HH smart meter consumption data, we're setting a benchmark for transparency and innovation in the energy sector. Combining smart meter and LV monitoring data enhances network visibility, reducing reliance on costly modelling and equipment. We've used this position to improve our operations, guide the industry and provide granular insights to our customers. Our daily upload of HH smart meter consumption data to our open data portal, provides upwards of 1.6 billion data points – the most historical records available across all DSOs for our stakeholders. We've harnessed the benefit of third-party data for our own operational needs and making it available to all customers in the common standard now adopted across GB DNOs.

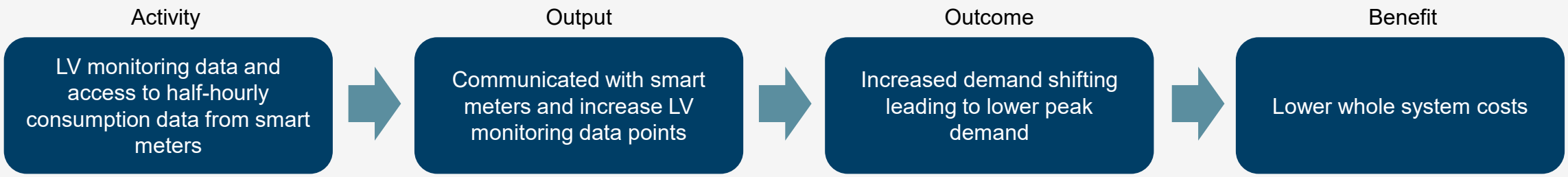
Benefits

2.8.1 Lower Whole System Costs due to Increased Demand Shifting

2.8.2 Reduced Consumer Bills from Network Savings due to Avoided Site Visits by using Smart Meter data

2.8.1 Lower Whole System Costs due to Increased Demand Shifting

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£404,715
Realised benefits in Y1

£456,936
Realised benefits in Y2

Year 3 performance

£513,386
Realised benefits in Y3

N/A
Unlocked benefits

N/A
Benefits Ambition

Definitions

- **Realised**
  Smart meters with which SSE has communicated with on a given year.
- **Unlocked**
  Not applicable.
- **Ambition**
  Not applicable.

Methodology

Smart meters support behavioural change by encouraging consumers to shift electricity use from peak to off-peak periods, particularly when low-carbon, lower-cost energy is available. This reduces peak demand, cuts network losses, and supports a more efficient electricity system.
Without smart meter-enabled behaviour change, peak demand would remain higher, placing additional strain on the grid and increasing losses.

A Social Return on Investment approach is used to quantify system-wide benefits from demand shifting. The analysis drows on the DBEIS Cost-Benefit Analysis of the Smart Meter Rollout[19], which estimates £1,363 million in benefits over 15 years across Great Britain—equivalent to £91 million per year. Based on a rollout of 43 million smart meters, the average benefit equates to £2.11 per meter per year.

Assumptions and Adjustments

- Demand-shifting benefits are categorised as enhanced (but not wholly dependent) on access to high-resolution data (Imperial College London, Balancing Privacy and Access to Smart Meter Data, 2022[21]). Demand shifting is primarily enhanced, rather than fundamentally dependent, on high-resolution data, and as a result, a 10% success rate is applied to this benefit estimate.
- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]

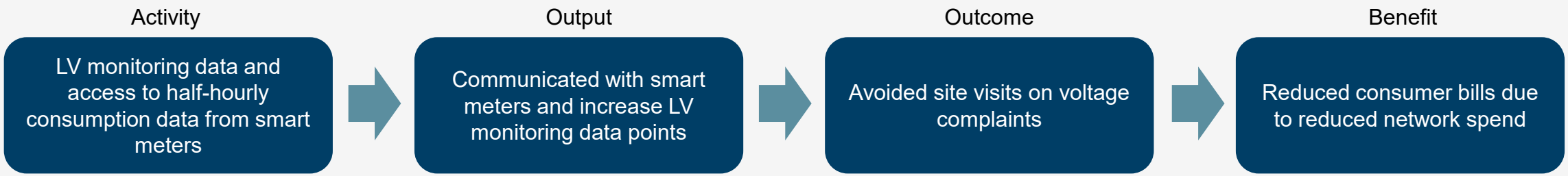
Aligned with ENA

Data

	Smart Meters Communicated with	Demand Shifting Benefit (£/smart meter/year)	SROI assumptions
Y1	2.17m	2.11	Attribution -100% Drop Off - 0%. Deadweight - 0%. Optimism Bias - 15%
Y2	2.45m	2.11	
Y3	2.75m	2.11	
Assumptions		DBEIS estimates £91m of benefits per year which divided by the UK smart meter target (43m) gives us 2.11	
Sources	SSE - Matthew Alexander	DBEIS - Smart Meter Roll-out CBA (2019)[19] and UK GOV – Smart Meter Statistic (2024)[20]	

2.8.2 Reduced Consumer Bills from Network Savings due to Avoided Site Visits by using Smart Meter data

Theory of Change



Gross Benefits (2021 prices)

Recalculated benefits from previous years

£48,078
Realised benefits in Y1

£40,058
Realised benefits in Y2

Year 3 performance

£76,210
Realised benefits in Y3

N/A
Unlocked benefits in Y3

N/A
Benefits Ambition in Y3

Definitions

- **Realised**
  Smart meter data is used and a site visit is avoided.
- **Unlocked**
  Not applicable.
- **Ambition**
  Not applicable.

Methodology

- All figures updated to 2020/21 prices Ofgem's RIIO-ED2 Price Control Financial Model[1]
- Based on a TIM sharing factor, 50% of savings are passed on to customers

Aligned with ENA

Data

	Avoided site visits on internal faults and avoided rapid response	Reduced network spend (£ nominal)	Reduced consumer bills (£ 2020/21)
Y1	2,762	127,098	48,078
Y2	2,180	105,896	40,058
Y3	3,994	209,484	76,210
Sources	SSE – Matthew Alexander	SSE – Matthew Alexander	

03 – REFERENCES AND ABBREVIATIONS

Scottish & Southern Electricity Networks

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3.2 ABBREVIATIONS

Abbreviation	Meaning
ANM	Active Network Management
CBA	Cost Benefit Analysis
CEM	Common Evaluation Methodology
DER	Distributed Energy Resources
DNO	Distribution Network Operator
DNOA	Distribution Network Options Assessment
DSO	Distribution System Operator
FSP	Flexibility Service Provider
FTE	Full-Time Equivalent
HH	Half-Hourly
LA	Local Authority
LAEP	Local Area Energy Plan
LCT	Low Carbon Technology
LHEES	Local Heat and Energy Efficiency Strategies
LV	Low Voltage
Solar PV	Solar Photovoltaic
SROI	Social Return on Investment
TIM	Totex Incentive Mechanism