



Complete Strategy

**Uncertainty mechanisms
in the UK**

An overview



March 2023



Objectives for this session

- The aim of this session is to provide an overview of how the UK regulatory framework manages within-period uncertainty in order to inform consideration of ways in which the equivalent framework in New Zealand could evolve.
- We provide an overview of how Ofgem applies uncertainty mechanisms (UMs) in the regulation of electricity distribution companies, specifically:
 - the different types of UMs employed;
 - the number and scope of UMs and their evolution and coverage; and
 - the practicalities of applying UMs e.g. the process for reopener applications, the associated reporting and monitoring.
- If helpful, we can then provide details of a few selected UMs of particular interest and relevance to the NZ electricity distribution sector.
- We have allowed time for questions and discussion at the end of the session, but please feel free to ask questions as we go.



Context for RIIO-ED2

- The next 5-year price control period for electricity distribution (RIIO-ED2) starts on 1 April.
- This follows the publication of Ofgem's "Final Determinations" in November 2022.
- In issuing these determinations, Ofgem acknowledged the need for a smarter, more integrated, **low carbon energy system**.
- **Facilitating the Net Zero transition without imposing significant extra costs** on consumers is a key priority for Ofgem.
- **Uncertainty mechanisms are a cornerstone of Ofgem's approach** as they allow the networks to respond to the evolving need for additional network capacity associated with demand for low carbon technologies, without funding significant ex-ante investment before such demand is confirmed.

Ofgem is relying on uncertainty mechanisms more than ever before

Types of UMs

Type of UM	Description
Volume drivers	Adjusts allowances in line with the actual volume of work delivered, where the volume of certain types of work is uncertain (but where the cost of each unit is stable).
Reopeners	Additional allowances, determined during a price control period, to deliver a project or activity once there is more certainty on the needs case, project scope or quantities.
Cost pass-through	Adjusts allowances for costs incurred by the DNO over which they have limited control and that Ofgem determine should be recoverable in full.
Indexation	Provides DNOs and consumers some protection against the risk that outturn prices are different to those that were forecast when setting the price control.

Comments
<ul style="list-style-type: none"> Ofgem set ex-ante total allowances only where they were satisfied of the need for the proposed work and the efficient cost of delivery. UMs applied where uncertainty remains – adjust a network company's allowance in response to changes during the price control period. Applied 37 common UMs across 5 types. Consider each type in turn, with a deep dive into specific UMs of particular relevance / interest.

Use-It-Or-Lose-It (UIOLI)	Adjusts allowances where the need for work has been identified, but the specific nature of work or costs are uncertain.
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Volume drivers in RIIO-ED2

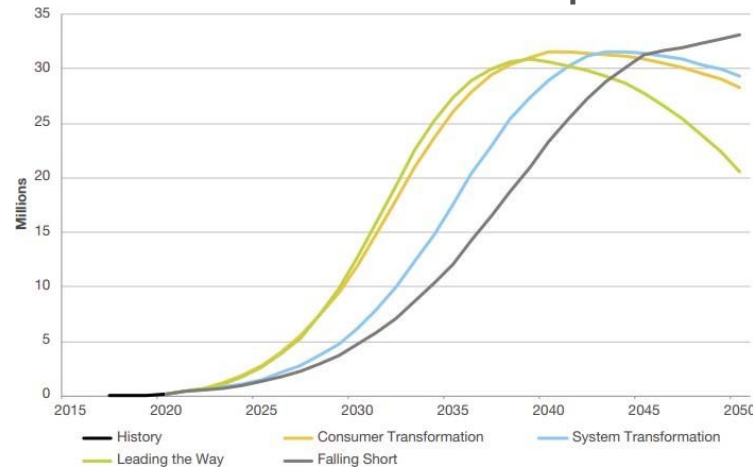
Volume drivers adjust allowances in line with the actual volume of work delivered, where the volume of work is uncertain (but the unit cost is stable).

A key tool used by Ofgem to keep ex ante allowances low in the face of significant uncertainty regarding the pace of the Net Zero transition.

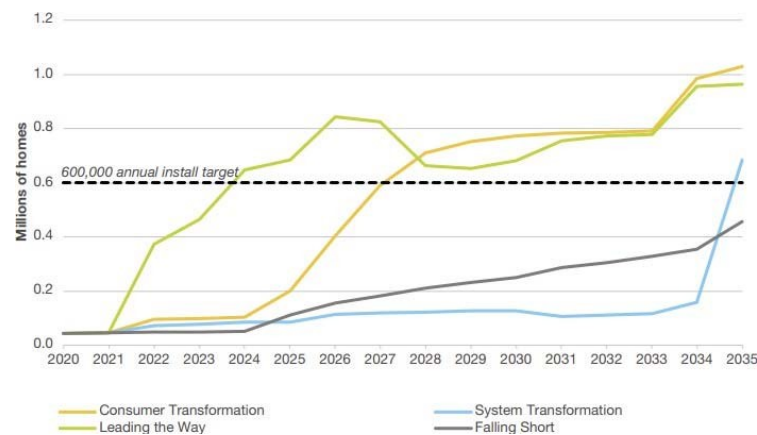
Volume driver	Commentary
Load Related Expenditure (LRE) - Low Voltage (LV) Services	<ul style="list-style-type: none"> To fund work related to the reinforcement of LV services, in particular the 'unlooping' of the LV service cables. Ex ante allowances will adjust (up or down) to the sum of the volume metrics multiplied by the relevant unit rates. An overall cap on how much expenditure can be incurred under the volume driver, set out in each DNO's licence condition.
Load Related Expenditure (LRE) - Secondary Reinforcement	<ul style="list-style-type: none"> To fund work related to capacity constraints affecting substations and circuits on the secondary network (LV and HV) and enable funding of secondary flex. Ex ante allowances will adjust (up or down) to the sum of the volume metrics multiplied by the relevant unit rates. An overall cap on how much expenditure can be incurred under the volume driver, set out in each DNO's licence condition.
Polychlorinated Biphenyls (PCBs)	To provide flexibility to accommodate uncertain volumes of replacements of PMTs, associated poles and pole-mounted switchgear so that DNOs can meet their compliance obligations under the PCB Regulations.
Indirects Scaler	To ensure DNOs are funded through an automatic mechanism for varying Closely Associated Indirect (CAI) costs associated with LRE UMs.

Volume drivers will manage Net Zero load uncertainty

Potential scenarios for UK EVuptake



Potential scenarios for UK heat pumpuptake



Comments

- **Uptake of Low Carbon Technologies (LCTs) will be the dominant driver** of load-related expenditure over RII0-ED2 e.g. uptake of Electric Vehicles (EVs) and Heat Pumps (HPs).
- **Challenging to predict the pace, location and local network impact** of these technologies.
- This creates **uncertainty over the volume of network interventions** which will be needed to ensure that connections of LCTs can be supported without compromising network reliability.
- Ofgem has introduced **volume drivers to help manage this uncertainty** without providing excessive ex ante funding.

Graphs from NG ESO FES 2022

19/12/2023



Overview of load-related volume drivers

- Licensees received an ex ante allowance for the whole of RIIO-ED2. These volume drivers will **adjust these ex ante allowances up or down** depending on the volume of works delivered (in reality, the ex ante allowances were calibrated to ensure little scope for downwards revision).
- Ofgem had a number of **issues to manage** when establishing these volume drivers:
 - **LV services:** Ofgem didn't want to rule out efficient **proactive investment** but was concerned that DNOs could carry out unnecessary / inefficient proactive LV service works that were not required.
 - **Secondary reinforcement:** Ofgem has incorporated flexibility to ensure DNOs adopt a "**flexibility first**" approach so that capacity is provided in the most cost-effectiveway.
- There are a number of **controls in place** to ensure the volume drivers operate asintended:
 - An **overall cap** on how much expenditure can be incurred under the volume driver, setout in each DNO's licence.
 - **Metrics** to ensure they achieve the desired behaviours e.g. to control against sup-optimal proactive reinforcement of LV Services assets (<20% of proactive work unrelated to 'unlooping') or to ensure secondary reinforcement is justified (<10% of secondary capacity additions where projected transformer utilisation <100%).
 - **A review** of all the LRE volume drivers in September 2025 (or earlier) to ensure that the mechanisms and metrics are fit for purpose and being used as intended, and that the cap is at an appropriate level given changes in demand.
 - **Reporting:** DNOs will annually provide cost / volume information as well as information on

the control metrics.

Reopeners have been standardised where possible...

Reopeners provide the scope for additional allowances, determined during a price control period, to deliver a project or activity once there is more certainty on the needs case, project scope or quantities.

There are a wide range of reopeners that allow Ofgem / DNOs to react to changing circumstances.

Reopener feature	Ofgem RIIO-ED2 policy
Reopener application windows	January of relevant year (with a few exceptions for specific reopeners). Application window of 1 week (was 1 month)
Application requirements	Additional detail and guidance provided where necessary in licence conditions and guidance.
Authority triggered reopeners	The decision whether the Authority can trigger a reopener at any time during the price control made on a case-by case basis.
Aggregation	No aggregation process for reopeners to meet the materiality threshold.

Materiality threshold

Only adjust allowances if the changes to allowances resulting from our assessment, multiplied by the TIM incentive rate applicable to that licensee, exceeds a threshold of **0.5% of annual average base revenues**. (No threshold for some reopeners e.g. Cyber, Environment, ESR, Physical Security or Storm Arwen reopeners - driven by legislative or compliance arrangements).

...but their burden on resources / lack of agility is acknowledged

- Publishing **reopener Guidance** and Application Requirements
- Establishing a reopener **application pipeline log**
- Providing for **pre-application engagement** with licensees
- **Pre-acceptance screening** of applications
- A process for **supplementary questions**
- A proportionate approach using **Assessment Tiers** with differing levels of scrutiny for individual applications
- **A gateway style approach where appropriate**

Ofgem aims to deliver the majority of decisions within six months but not always possible – dependent on tier assigned

Guidance area	Fast track	Standard	Additional scrutiny
Indicative classification: multiple of materiality threshold	< 1.5 x	1.5 – 5 x	> 5 x
Policy consultation	No	Optional	Optional
Estimated time to decision	< 3 months	3-6 months	> 6 months



Stages in the assessment process

Stage 1: Engagement

1a. Reopener application pipeline log

- Reopener application pipeline log to be updated at least annually.
- Discussions expected at least three months before an application window opens.

1b. Pre-application engagement

Reopener / application specific – at least 3 months before application.

Stages 2 – 5: Assessment

2. Application window for opens

The level of scrutiny will be proportionate to the materiality of the application and the complexity of the decision.

3. Screening checks

4. Assessment, including:

4a. Assigning the Assessment Tier

4b. Supplementary question process

Three assessment tiers:

- Fast Track Assessment.
- Standard Assessment – default.
- Additional Scrutiny.

5. Policy consultation

Policy consultation possible if application raises a new issue.

Stages 6 – 7: Direction

6. Proposed Direction

Content of proposed and final direction set out in licence conditions.

7. Direction issued

Direction published at the time it is made

Stage 8: Annual iteration process

8. Publishing allowed revenue

Direction must be issued by 31 October to be reflected in Annual Iteration Process (to update Price Control Financial Model) of that year.

Ofgem guidance for RIIO-ED2 reopeners

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Ofgem provides detailed guidance on reopener applications*.

Guidance area	Guidance provided
Scope	Single application across all networks owned by a company for which an adjustment is sought but with information split by network. But materiality threshold applies to individual distribution network.
Assurance	The application should include confirmation that it: <ul style="list-style-type: none"> • is accurate and robust, financeable and good value for consumers • has been subject to quality assurance processes • has been subject to internal governance arrangements and received sign off at an appropriate level.
Publication	Must be published by the company on its website (with redactions as appropriate) unless risk to national security e.g. cyber.

Content	<ul style="list-style-type: none"> • Application should explain: <ul style="list-style-type: none"> • why an adjustment is justified. • what that adjustment should be. • Specific reopener licence conditions specify information requirements. • All applications must provide a needs case, including: <ul style="list-style-type: none"> • Alignment with overall business strategy and commitments. • Demonstration of needs case / problem statement. • Options considered and methodology for selection of preferred option. • A preferred option (detailed costs, benefits, feasibility, delivery and monitoring plan, stakeholder engagement**).
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* [Decision on the proposed modifications to the RIIO-2 Electricity Distribution licences | Ofgem](#) See "Licence Instruments and associated documents"

** Stakeholder engagement may not be necessary where there is not a material impact on stakeholders, or where the application is driven by statutory

Ofgem guidance for RII0-ED2 reopeners

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Ofgem provides detailed guidance on reopener applications.

Guidance area	Guidance provided
Cost benefit analysis (CBA)	Where included in the application, CBAs and EJPs should be consistent with sector-specific guidance and templates provided.
Engineering Justification Papers (EJPs)	
Level of detail	Evidence presented should be proportionate, and reflect the: <ul style="list-style-type: none">• materiality of the issue with respect to the overall decision.• complexity of the issues being considered.• quality of evidence being considered.• level of certainty about the future.

Reopeners in RIIO-ED2

Ofgem put in place sixteen reopeners for RIIO-ED2. (1/2)

Reopener	Commentary
Coordinated Adjustment Mechanism (CAM)	To ensure that the most efficient solution to a network issue can be implemented, no matter where in the regulated sectors the funding is originally allocated. The reopener allows that funding to be moved from any regulated sector within gas and electricity, to any other regulated gas and electricity sector.
Cyber Resilience Information Technology	To enable continued investment to reduce risk, improve cyber resilience and response outcomes on the networks and comply with relevant regulations.
Cyber Resilience Operational Technology	To enable continued investment to reduce risk, improve cyber resilience and response outcomes on the networks and comply with relevant regulations.
Digitalisation	To enable DNOs to apply for additional funding where a change in their roles and responsibilities requires them to establish new or improved digital services.
DSO	Authority triggered: To capture any changes to costs, outputs and incentives associated with any future decision on further separation of DSO functions from DNOs.
Electricity System Restoration (ESR)	To adjust revenues following any changes to network requirements which relate to Electricity System Restoration (the process that would be implemented in the event of a full or partial shutdown of the national electricity transmission system).
Environment	To accommodate environmental legislative changes within period that require a material change in the approach to DNOs' Environmental Action Plans.

High Value Projects

To help minimise the risks associated with large, high value projects (individual non-load related schemes of £25m or more not included as part of ex ante allowances).

Reopeners in RIIO-ED2

Ofgem put in place sixteen reopeners for RIIO-ED2. (2/2)

Reopener	Commentary
LRE	To enable additional investment in DNOs' primary networks, if required.
Net Zero	Authority triggered only: to introduce an increased level of adaptability into the RIIO-ED2 price control by providing a means to amend the price control in response to changes relating to the meeting of the net zero carbon targets, which affect the costs and outputs of network licensees.
Physical Security	To adjust revenues following changes to government recommendations on network site security.
Rail Electrification	To adjust revenues to reflect Rail Diversions activity i.e. diversions where the installation of rail electrification equipment requires the relocation or re-routing of DNO apparatus.
Storm Arwen	To provide DNOs with the opportunity to apply to adjust their ex ante allowances where they identify a change to the scope of work they expect to deliver, as a result of the Energy Emergencies Executive Committee (E3C's) or Ofgem's recommendations from the Storm Arwen review.
Street Work Costs	To recover additional costs associated with streetworks.
Tax Review	The tax review mechanism enables Ofgem to formally review and, if necessary, adjust the companies' tax allowance within period.
Wayleaves and Diversions	To recover additional costs associated with wayleaves and diversions.

Given strained regulatory resources, Ofgem seems more willing to pass through costs

- Cost pass-through adjusts allowances for DNO costs over which they have limited control and that Ofgem determine should be recoverable in full.
- DNOs have always been able to pass-through costs such as business rates and the Ofgem licence fee, but the inclusion of items such as severe weather 1 in 20 efficient costs shows an **expansion in the scope of the application of the mechanism**.
- At DPCR4, Ofgem introduced a cost allowance for improvements in restoration times following severe weather events to cover an efficient level of compensation payments and fault costs relating to these events. DNOs were able to use this allowance to:
 - reduce the chance of such events occurring;
 - manage the impact of the events through faster customer restoration; or
 - buy storm insurance cover.
- Severe weather events consistently **excluded from Interruptions Incentive mechanism (IIS)** to recognise the significant impact of these events.
- As part of **RIIO-ED2, SW 1 in 20 costs defined as a pass-through** item.

Cost pass-through in RIIO-ED2

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Cost category passed through	Commentary
Bad debt/valid bad debt claims by IDNOs	Recovered Revenue is recorded on a cash basis i.e. net of any Bad Debt.
Business / Prescribed Rates	An adjustment of the up-front allowance to the actual costs incurred, subject to the relevant valuation agency revaluing any of the licensee's assets for the purposes of setting business rates and the DNO demonstrating that it has taken appropriate actions to minimise the valuations.
Ofgem Licence Fee	Pass-through item to allow DNOs to recover the actual cost of Ofgem licence fees.
Pension Deficit Repair mechanism	A pass-through allowance to cover the costs of funding their defined benefit pension scheme deficits following a reasonableness review.
Ring Fence Costs	Costs incurred directly from complying with additional regulatory requirements relating to modifications to the ring fence conditions in network operator licences are passed through.
Severe Weather 1-in-20	Pass-through of efficient costs with zero starting allowance in the event that a DNO experiences a severe weather 1-in-20 event.



Cost pass-through in RIIO-ED2

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Cost category passed through	Commentary
Smart Meter Communication Costs	Pass-through of costs/fees that will be charged to the DNOs for use of the Data Communications Company services.
Smart Meter Information Technology Costs	Pass-through of efficient information technology costs to enable the DNO to use smart meter data on its network.
Supplier of Last Resort	Last Resort Supply Payment (LRSP) claims are a pass-through item in a similar way to business rate costs. Approved LRSP claims received by 31 December are paid monthly in the following financial year. No materiality threshold.
Transmission Connection Point (TCP) Charges	Pass-through of charges from a transmission licensee for the connections between the DNO's network and the transmission system for assets installed prior to the RIIO-ED2 price control, refurbishment or any work not resulting from a DNO requirement.

Indexation is also increasingly favoured

- Indexation provides DNOs and consumers some **protection against the risk that outturn prices are different to those that were forecast** when setting the price control.
- A number of parameters are subject to indexation in RIIO-ED2 (cost of debt, cost of equity, real price effects).
- **For the first time in RIIO-ED2, Ofgem is applying indexation to reflect real price effects** (acknowledging that some of the costs faced by DNOs will change at a different rate to the CPIH more generally applied).
- This protects customers from the forecast risk associated with setting ex-ante allowances (which was the RIIO-ED1 approach).
- Ofgem included adjustments for RPEs for all DNOs as part of their Final Determination allowances based on forecasts for the selected indices and will 'true up' the RPE adjustments annually based on out-turn differences between CPIH and the relevant input price indices.
- **Labour and materials costs (87.9% of DNO's notional costs) indexed to external price indices other than CPIH.**



Indexation in RIIO-ED2

Parameter indexed	Commentary
Cost of debt	iBoxx GBP Utilities 10yr+ index applied for RIIO-ED2: suitable proxy for network debt costs and is a broad representative index.
Cost of equity	RPI index-linked gilts (ILGs), adjusted to CPIH-real terms, as the basis for the RFR assumption.
Inflation indexation of RAV and allowed returns	The RIIO price controls offer inflation protection to investors through inflation adjustments to the RAV. Returns on capital are also provided in real terms.
Real price effects (RPEs)	RPE adjustments included in allowances - based on forecasts for the indices. RPE adjustments trued up annually based on out-turn differences between CPIH and input price indices.



UIOLI mechanisms are not widely applied and have had mixed success

- UIOLI mechanisms adjust allowances where the need for work has been identified, but the specific nature of work or costs are uncertain – often associated with specific programmes prioritised by Ofgem.
- If DNOs do not spend the UIOLI allowance on achieving specific outcomes, the remaining allowances are returned at the end of the price control, without a sharing factor applied.
- The UIOLI mechanism for Worst Served customers is entering its 3rd price control but has suffered from low take-up due to prescriptive qualification criteria and ex post assessments.

Performance of UIOLI WSC mechanism in RIIO-ED1:

DNO group	RIIO-ED1 Allowance (£m 12-13 prices)	Total spent to date (£m 12-13 prices)	Proportion of allowances spent
ENWL	£3.40	£1.30	38%
NPG	£6.90	£0.00	0%
WPD	£27.30	£2.42	9%
UKPN	£18.30	£0.99	5%
SPEN	£7.20	£0.04	1%
SSEN	£7.50	£1.07	14%
GB	£70.60	£5.81	8%



UIOLI mechanisms in RIIO-ED2

UIOLI allowance	Commentary
Cyber Resilience OT	Specified PCDs to enhance cyber resilience in relation to OT, including measured risk reduction or improved Cyber Assessment Framework (CAF) Outcomes on the licensee's network and information systems.
Visual amenity	To fund projects that mitigate the impact of existing infrastructure on visual amenity in National Parks, Areas of Outstanding Natural Beauty and National Scenic Areas.
Worst served customers (WSC)	To reduce the number of interruptions experienced by those customers who experience an unusually poor service from their DNO.



Complete Strategy

Appendix





High-level overview of RIIO-ED2 uncertainty mechanisms



Uncertainty mechanisms in RIIO-ED2

Types of UMs

Type of UM	Description	Comments
Volume drivers	Adjusts allowances in line with the actual volume of work delivered, where the volume of certain types of work is uncertain (but where the cost of each unit is stable).	<ul style="list-style-type: none"> Ofgem set ex-ante total allowances only where they were satisfied of the need for the proposed work and the efficient cost of delivery. UMs applied where uncertainty remains – adjust a network company's allowance in response to changes during the price control period. Applied 37 common UMs across 5 types. Consider each type in turn, with a deep dive into specific UMs of particular relevance / interest.
Reopeners	Additional allowances, determined during a price control period, to deliver a project or activity once there is more certainty on the needs case, project scope or quantities.	
Cost pass-through	Adjusts allowances for costs incurred by the DNO over which they have limited control and that Ofgem determine should be recoverable in full.	
Indexation	Provides DNOs and consumers some protection against the risk that outturn prices are different to those that were forecast when setting the price control.	
Use-It-Or-Lose-It (UIOLI)	Adjusts allowances where the need for work has been identified, but the specific nature of work or costs are uncertain.	



Volume drivers





Volume drivers in RIIO-ED2

Volume drivers adjust allowances in line with the actual volume of work delivered, where the volume of work is uncertain (but the unit cost is stable).

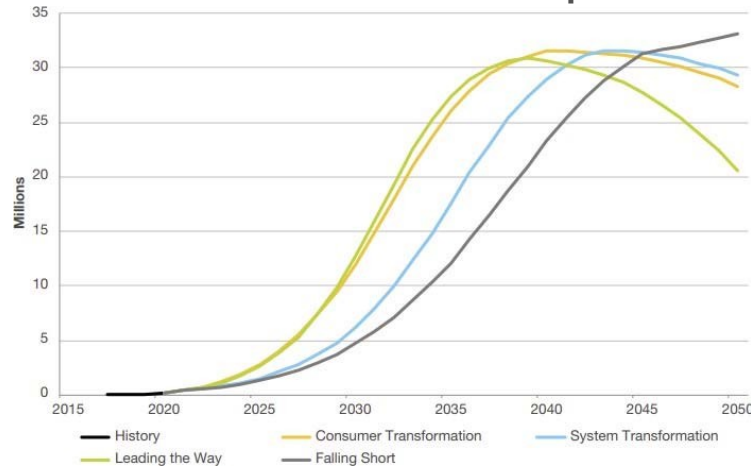
A key tool used by Ofgem to keep ex ante allowances low in the face of significant uncertainty regarding the pace of the Net Zero transition.

Volume driver	Commentary	
Load Related Expenditure (LRE) - Low Voltage (LV) Services	<ul style="list-style-type: none"> To fund work related to the reinforcement of LV services, in particular the 'unlooping' of the LV service cables. Ex ante allowances will adjust (up or down) to the sum of the volume metrics multiplied by the relevant unit rates. An overall cap on how much expenditure can be incurred under the volume driver, set out in each DNO's licence condition. 	Page 17-19
Load Related Expenditure (LRE) - Secondary Reinforcement	<ul style="list-style-type: none"> To fund work related to capacity constraints affecting substations and circuits on the secondary network (LV and HV) and enable funding of secondary flex. Ex ante allowances will adjust (up or down) to the sum of the volume metrics multiplied by the relevant unit rates. An overall cap on how much expenditure can be incurred under the volume driver, set out in each DNO's licence condition. 	Page 20-23
Polychlorinated Biphenyls (PCBs)	To provide flexibility to accommodate uncertain volumes of replacements of PMTs, associated poles and pole-mounted switchgear so that DNOs can meet their compliance obligations under the PCB Regulations.	

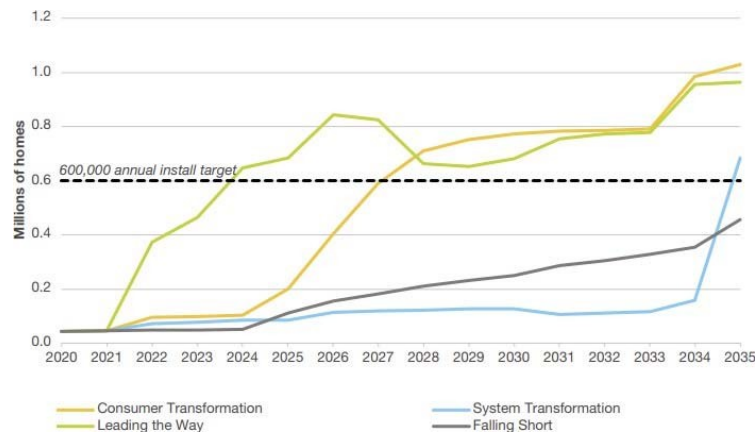
Indirects Scaler	To ensure DNOs are funded through an automatic mechanism for varying Closely Associated Indirect (CAI) costs associated with LRE UMs.	Page 24-25
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Load related volume drivers in RIIO-ED2

Potential scenarios for UK EV uptake



Potential scenarios for UK heat pump uptake



Graphs from NG ESO FES 2022

19/12/2023

Comments

- **Uptake of Low Carbon Technologies (LCTs) will be the dominant driver** of load-related expenditure over RIIO-ED2 e.g. uptake of Electric Vehicles (EVs) and Heat Pumps (HPs).
- **Challenging to predict the pace, location and local network impact** of these technologies.
- This creates **uncertainty over the volumes of network interventions** which will be needed to ensure that connections of LCTs can be supported without compromising network reliability.
- Ofgem has introduced **volume drivers to help manage this uncertainty** without providing excessive ex ante funding.



LRE LV Services

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- **Introduced at RIIO-ED2** to fund work related to the reinforcement of LV services, in particular the **'unlooping' of the LV service cables**.
- Licensees received an ex ante LV Services allowance for the whole of RIIO-ED2. This volume driver will **adjust these ex ante allowances up or down** depending on the volume of works delivered.
- Ofgem has sought to achieve an **appropriate level of proactive investment** by striking a balance between:
 - allowing cost-effective proactive investment alongside required unloopings; and
 - preventing DNOs from carrying out unnecessary / inefficient proactive LV service works that were not required.



LRE LV Services

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Question	Commentary
Purpose?	<ul style="list-style-type: none"> To enable additional investment in the LV services that DNOs provide to properties, in particular the 'unlooping' of the LV service cables, if required.
Benefits?	<ul style="list-style-type: none"> Ensure networks have sufficient funding to enable net zero and protect consumers from paying higher costs than necessary.
Volume measure?	<ul style="list-style-type: none"> £ per asset reinforced. Ex ante allowances will adjust (up or down) to the sum of the volume metrics multiplied by the relevant unit rates.
Unit rates?	<p>Industry median unit rates:</p> <ul style="list-style-type: none"> LV Service (OHL): £0.35k LV Service (UG): £1.60k Cut out (metered): £0.30k Fuse upgrades: £0.13k <p>The unit rates of certain DNOs have been adjusted to account for the reversal of regional labour and company-specific factor adjustments. DNO-specific rates are set out in each DNO's licence.</p>



LRE LV Services

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Question	Commentary
Controls?	<ul style="list-style-type: none"> An overall cap on how much expenditure can be incurred under the volume driver, set out in each DNO's licence. A metric to control against sup-optimal proactive reinforcement of LV Services assets by ensuring that no more than 20% of proactive work undertaken under this volume driver does not relate to 'unlooping' i.e. that, in general, LV Service cables (overhead pole lines and cables), fuse upgrades and cut outs (metered) are only being proactively reinforced when a property is unlooped. Ofgem can withhold inefficiently incurred allowances above ex ante allowances that are outside the metric tolerance. A review of all the LRE volume drivers will be undertaken in September 2025, or earlier if determined by the Authority to ensure that the mechanisms and metrics are fit for purpose and being used as intended, and that the cap is at an appropriate level given changes in demand.
TIM application?	<ul style="list-style-type: none"> Totex Incentive Mechanism will apply to over or underperformance against unit costs.
Reporting?	<ul style="list-style-type: none"> DNOs will annually provide information to allow performance against above metric to be understood. Annual reporting of costs and volumes by activity.



LRE secondary reinforcement

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- **Introduced at RIIO-ED2** to fund work (or flexibility services) related to capacity **constraints affecting substations and circuits on the secondary network** (LV and HV) for assets that are highly utilised.
- **“Flexibility first” principle:** Unit rate for the procurement of flexibility services on the secondary network introduced between Draft Determinations and Final Determinations to ensure that procurement of secondary flexibility is incentivised and funded.
- Ofgem had some concerns that this could lead to the over-procurement of secondary flex, however, they note **licence obligations** that require that **flexibility is only used where economically advantageous** and procurement is transparent and competitive.
- Licensees received an ex ante secondary reinforcement allowance for the whole of RIIO-ED2. This volume driver will **adjust these ex ante allowances up or down** depending on the volume of works delivered.



LRE secondary reinforcement

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Question	Commentary
Purpose?	To enable additional investment in DNOs' secondary networks, if required.
Benefits?	Ensure networks have sufficient funding to enable net zero and protect consumers from paying higher costs than necessary.
Volume measure?	<p>Capacity-based mechanism to set volumes, and associated unit costs, to vary allowances:</p> <ul style="list-style-type: none"> • Substations: MVA gross additions for pole and ground mounted transformers (PMTs and GMTs). • Circuits: Km additions with separate unit costs by voltage level. • Flexibility services: Deferred secondary reinforcement in substations (MVA) and/or circuits (km). <p>Ex ante allowances will adjust (up or down) to the sum of the volume metrics multiplied by the relevant unit rates</p>

Unit rates?	<p>Industry median unit rates (DNO-specific rates in each DNOs' licence):</p> <ul style="list-style-type: none"> • PMT: £89.5k / MVA • GMT: £63.3k / MVA • LV cable: £141.3k / km • LV OHL: £49.8k / km • HV cable: £127.3k / km • HV OHL: £39.6k / km • Flexibility: unit rate reflects value of deferring investments in other secondary reinforcement assets. Determined by formula which accounts for deferral length (no greater than 5 years) and NPV, adding confidence that flex is only procured when optimal over reinforcement: <i>Reinforcement deferred (MVA) * £/MVA unit cost for GMT * WACC^{contract length}</i>
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LRE secondary reinforcement

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Question	Commentary
Controls?	<ul style="list-style-type: none"> • Five metrics to flag potential sub-optimal investment (see next slide). Ofgem can withhold inefficiently incurred allowances above ex ante allowances that are outside the metric tolerance. • An overall cap on how much expenditure can be incurred under the volume driver, set out in each DNOs licence condition. • A review of all the LRE volume drivers will be undertaken in September 2025, or earlier if determined by the Authority to ensure that the mechanisms and metrics are fit for purpose and being used as intended, and that the cap is at an appropriate level given changes in demand.
Funding flexibility?	<ul style="list-style-type: none"> • Volume driver intended to fund secondary flex over and above the ex ante allowances set for RIIO-ED2. • RIIO-ED2 closeout will reconcile secondary flex & ex ante allowances. If ex ante secondary flex allowances haven't been used, volume driver flex allowances will be adjusted down accordingly.
TIM?	Totex Incentive Mechanism will apply to over or underperformance against unit costs.
Reporting?	<ul style="list-style-type: none"> • Annual reporting of costs and volumes by activity. • Five metrics reported on annually to enable Ofgem to check that investment is not outside an appropriate range. • Flexibility reporting requirements: quantitative analysis to demonstrate economic case reported through the annual Distribution Flexibility Services Procurement Statement and the Distribution Flexibility Services Procurement Report.



LRE secondary reinforcement

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Five metrics to flag potential sub-optimal investment

Transformer Utilisation	Checks that works are occurring within areas of projected 'high' utilisation (i.e. 100% year-ahead forecast utilisation). A tolerance of 10% of capacity additions in 'low' utilisation bands is permitted to account for situations where it is justified, or necessary for safety reasons, to invest in transformers with a utilisation below 100%.
Transformer Capacity Released Ratio	Checks that transformer capacity additions (broken down by PMTs and GMTs) are proportional to changes in LCT demand, by measuring the ratio of net transformer capacity additions to the increase in peak load capacity for transformers caused by new LCT demand. Each DNO is compared to an industry benchmark, which is fixed at the beginning of RIIO-ED2. A tolerance of 10% above the industry benchmark is permitted.
Circuits Length Added Ratio	Checks that the addition of circuit length (broken down by OHL and cables) is proportionate to changes in LCT demand, by measuring the ratio of additions to the increase in peak load capacity caused by new LCT demand. Each DNO is compared to an industry benchmark. A tolerance of 10% above the industry benchmark is permitted , with any deviation above that meaning that the check will not be passed.
Peak Demand Growth and Energy Growth Indices	Measure the change over time in the peak load and energy volume measured at the discrete points where LV monitoring equipment has been installed on the network. The metric monitors whether year on year growth is positive, with an error being produced if it is negative. It is for information purposes only - visibility of the change in demand on the LV network.
Flexibility Procured	Checks that flexibility is being procured for PMTs and GMTs with 'high' projected utilisation (i.e. 100% year-ahead forecast utilisation). No tolerance for flexibility procured in 'low' utilisation bands will

Transformer
Utilisation metric

be permitted, because DNOs should only report flexibility procured to defer transformer reinforcement.



Indirects scaler

Page 1 of 2

- **Introduced in response to comments on RIIO-ED2 Draft Determinations**
- **Prompted by the materiality of Ofgem's reductions to load related expenditure** in Draft and Final Determinations relative to DNOs' Business Plans.
- Proposed to **automatically scale up allowances for indirect costs**, as and when capex allowances flex upwards through other UMs.
- UKPN submitted **regression analysis** which sought to estimate the historical **relationship between expenditure on indirect costs and capex** – agreed by DNOs through industry working groups.
- **Ofgem accepted UKPN's analysis** and applied the resulting regression coefficient to give an additional allowance equivalent to 10.8% of each unit of capex allowance provided under load-related UMs.



Indirects scaler

Page 2 of 2

Question	Commentary
Purpose?	To provide an additional allowance for closely associated indirect costs incurred in operating expenditure where provision has been made for load related expenditure through certain uncertainty mechanisms.
Benefits?	Given the high levels of uncertainty around the scale and pace of LCT rollout, load-related UMs could lead to material upward adjustments to load allowances in-period which could otherwise give rise to a funding gap for the associated indirect expenditure.
Specified cost categories?	<ul style="list-style-type: none"> Fixed parameter to represent “closely associated indirect cost” allowances associated with load-related expenditure. Ofgem decided that there was not a sufficiently close relationship between business support costs such as finance, HR, CEO costs and capex for such costs to also be taken into account.
Trigger?	The Indirects Scaler applies to capex associated with the following load-related UMs: <ul style="list-style-type: none"> Secondary Reinforcement VolumeDriver LV Services VolumeDriver LRE Reopener
Funding mechanism?	An uplift of 10.8% of each unit of capex allowance provided under load-related UMs.



Common features of RIIO-ED2 reopeners

Reopeners provide the scope for additional allowances, determined during a price control period, to deliver a project or activity once there is more certainty on the needs case, project scope or quantities.

There are a wide range of reopeners that allow Ofgem / DNOs to react to changing circumstances. However, the process for administering them can be long and resource intensive, so they lack agility and can be burdensome.

Reopener feature	Ofgem RIIO-ED2 policy
Reopener application windows	January of relevant year (with a few exceptions for specific reopeners). Application window of 1 week (was 1 month)
Application requirements	Additional detail and guidance provided where necessary in licence conditions and guidance.
Authority triggered reopeners	The decision whether the Authority can trigger a reopener at any time during the price control made on a case-by case basis.
Aggregation	No aggregation process for reopeners to meet the materiality threshold.
Materiality threshold	Only adjust allowances if the changes to allowances resulting from our assessment, multiplied by the TIM incentive rate applicable to that licensee, exceeds a threshold of 0.5% of annual average base revenues . (No threshold for some reopeners e.g. Cyber, Environment, ESR, Physical Security or Storm Arwen reopeners - driven by legislative or compliance arrangements).

Ofgem guidance for RIIO-ED2 reopeners

Page 1 of 2

Ofgem provides detailed guidance on reopener applications*.

Guidance area	Guidance provided
Scope	Single application across all networks owned by a company for which an adjustment is sought but with information split by network. But materiality threshold applies to individual distribution network.
Assurance	The application should include confirmation that it: <ul style="list-style-type: none"> • is accurate and robust, financeable and good value for consumers • has been subject to quality assurance processes • has been subject to internal governance arrangements and received sign off at an appropriate level.
Publication	Must be published by the company on its website (with redactions as appropriate) unless risk to national security e.g. cyber.
Content	<ul style="list-style-type: none"> • Application should explain: <ul style="list-style-type: none"> • why an adjustment is justified. • what that adjustment should be. • Specific reopener licence conditions specify information requirements. • All applications must provide a needs case, including: <ul style="list-style-type: none"> • Alignment with overall business strategy and commitments. • Demonstration of needs case / problem statement. • Options considered and methodology for selection of preferred option. • A preferred option (detailed costs, benefits, feasibility, delivery and monitoring plan, stakeholder engagement**).

* [Decision on the proposed modifications to the RIIO-2 Electricity Distribution licences | Ofgem](#) See "Licence Instruments and associated documents"

** Stakeholder engagement may not be necessary where there is not a material impact on stakeholders, or where the application is driven by

Ofgem guidance for RII0-ED2 reopeners

Page 2 of 2

Ofgem provides detailed guidance on reopener applications.

Guidance area	Guidance provided
Cost benefit analysis (CBA)	Where included in the application, CBAs and EJPs should be consistent with sector-specific guidance and templates provided.
Engineering Justification Papers (EJPs)	
Level of detail	Evidence presented should be proportionate, and reflect the: <ul style="list-style-type: none">• materiality of the issue with respect to the overall decision.• complexity of the issues being considered.• quality of evidence being considered.• level of certainty about the future.



Overview of the assessment process

- Publishing **reopener Guidance** and Application Requirements
- Establishing a reopener **application pipeline log**
- Providing for **pre-application engagement** with licensees
- **Pre-acceptance screening** of applications
- A process for **supplementary questions**
- A proportionate approach using **Assessment Tiers** with differing levels of scrutiny for individual applications
- **A gateway style approach where appropriate**

Ofgem aims to deliver the majority of decisions within six months but not always possible – dependent on tier assigned

Guidance area	Fast track	Standard	Additional scrutiny
Indicative classification: multiple of materiality threshold	< 1.5 x	1.5 – 5 x	> 5 x
Policy consultation	No	Optional	Optional
Estimated time to decision	< 3 months	3-6 months	> 6 months

Stages in the assessment process

Stage 1: Engagement

1a. Reopener application pipeline log	<ul style="list-style-type: none"> Reopener application pipeline log to be updated at least annually. Discussions expected at least three months before an application window opens.
1b. Pre-application engagement	Reopener / application specific – at least 3 months before application.

Stages 2 – 5: Assessment

2. Application window for opens	The level of scrutiny will be proportionate to the materiality of the application and the complexity of the decision.
3. Screening checks	
4. Assessment, including: 4a. Assigning the Assessment Tier 4b. Supplementary question process	Three assessment tiers: <ul style="list-style-type: none"> Fast Track Assessment. Standard Assessment – default. Additional Scrutiny.
5. Policy consultation	Policy consultation possible if application raises a new issue.

Stages 6 – 7: Direction

6. Proposed Direction	Content of proposed and final direction set out in licence conditions.
7. Direction issued	Direction published at the time it is made

Stage 8: Annual iteration process

8. Publishing allowed revenue

Direction must be issued by 31 October to be reflected in Annual Iteration Process (to update Price Control Financial Model) of that year.

Reopeners in RIIO-ED2

Ofgem put in place sixteen reopeners for RIIO-ED2. (1/2)

Reopener	Commentary	
Coordinated Adjustment Mechanism (CAM)	To ensure that the most efficient solution to a network issue can be implemented, no matter where in the regulated sectors the funding is originally allocated. The reopener allows that funding to be moved from any regulated sector within gas and electricity, to any other regulated gas and electricity sector.	Page 35-36
Cyber Resilience Information Technology	To enable continued investment to reduce risk, improve cyber resilience and response outcomes on the networks and comply with relevant regulations.	Page 37-38
Cyber Resilience Operational Technology	To enable continued investment to reduce risk, improve cyber resilience and response outcomes on the networks and comply with relevant regulations.	
Digitalisation	To enable DNOs to apply for additional funding where a change in their roles and responsibilities requires them to establish new or improved digital services.	Page 39-40
DSO	Authority triggered: To capture any changes to costs, outputs and incentives associated with any future decision on further separation of DSO functions from DNOs.	Page 41
Electricity System Restoration (ESR)	To adjust revenues following any changes to network requirements which relate to Electricity System Restoration (the process that would be implemented in the event of a full or partial shutdown of the national electricity transmission system).	
Environment	To accommodate environmental legislative changes within period that require a material change in the approach to DNOs' Environmental Action Plans.	Page 42-43

High Value Projects	To help minimise the risks associated with large, high value projects (individual non-load related schemes of £25m or more not included as part of ex ante allowances).	Page 44-45
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Reopeners in RIIO-ED2

Ofgem put in place sixteen reopeners for RIIO-ED2. (2/2)

Reopener	Commentary	
LRE	To enable additional investment in DNOs primary networks, if required.	
Net Zero	Authority triggered only: to introduce an increased level of adaptability into the RIIO-ED2 price control by providing a means to amend the price control in response to changes relating to the meeting of the net zero carbon targets, which affect the costs and outputs of network licensees.	Page 46
Physical Security	To adjust revenues following changes to government recommendations on network site security.	
Rail Electrification	To adjust revenues to reflect Rail Diversions activity i.e. diversions where the installation of rail electrification equipment requires the relocation or re-routing of DNO apparatus.	Page 47-48
Storm Arwen	To provide DNOs with the opportunity to apply to adjust their ex ante allowances where they identify a change to the scope of work they expect to deliver, as a result of the Energy Emergencies Executive Committee (E3C's) or Ofgem's recommendations from the Storm Arwen review.	Page 49
Street Work Costs	To recover additional costs associated with streetworks.	Page 50-51
Tax Review	The tax review mechanism enables Ofgem to formally review and, if necessary, adjust the companies' tax allowance within period.	
Wayleaves and Diversions	To recover additional costs associated with wayleaves and diversions.	

Note: Highlighted rows indicate the UMs selected for further investigation

Reopener applications during RII0-ED1

Reopener window	Details of reopeners and applicants
May 2019	<ul style="list-style-type: none">• High Value Project costs – 3 requests from ScottishPower and one from SSE – all rejected.• Rail electrification costs – SSEN requested £17m for GWR electrification – allowed £16m. SPEN requested £12m for HS2 electrification – rejected.• Enhanced Physical Site Security Costs – NorthernPowergrid requested £3.01m – allowances amended by £2.95m.• Specified Street works costs – applications from WPD, UKPN, SPEN, NPg, ENWL – a total of £112m funding requested and £45m granted.

Coordinated Adjustment Mechanism

Page 1 of 2

Reopener feature	Ofgem RIIO-ED2 policy
Purpose	To facilitate whole systems solutions i.e. to ensure that the most efficient solution to a network issue could be implemented, no matter where in the regulated sectors the funding was originally allocated.
New for RIIO-ED2?	Introduced at the same time for all network companies in 2021 (during RIIO-ED1).
Common across network companies?	Yes
Reopener application windows	<ul style="list-style-type: none"> Between 23 May and 29 May each year, or during such other periods as the Authority may direct
Who can trigger?	Licensees only.
Materiality threshold	No
Scope of costs?	May not be used to claim exploratory costs.
Associated incentives?	Considered additional financial incentive to make an application, but not implemented.
Reopener specific guidance?	Yes (see overleaf).

Coordinated Adjustment Mechanism

Page 2 of 2

Applications must come from a single licensee, either:

- The licensee who was originally assigned the responsibility and associated revenues ('Network A'), or
- The licensee proposing to carry out a new activity in order to solve the original issue with greater overall value to consumers ('Network B').

Applications must include:

- A **statement of agreement** between Network A and Network B which proposes to transfer responsibility for, and associated revenue with, the CAM activity.
- A copy of the original needs case.
- **Justification for proposed alternative activity**, including CBA (using the Whole System Cost-Benefit Analysis' framework) and overall value of the reallocation to customers of Network A and Network B.
- **Details of amendments requested to any outputs, delivery dates or allowances**, and the basis for their calculation.
- **Details of any compensatory payments agreed between licensees.**
- **Demonstration of net benefit to consumers** overall (can include environmental benefits).

Cyber resilience IT / OT

Page 1 of 2

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	<p>To reduce risk, improve cyber resilience and response outcomes on the networks and comply with relevant regulations. To be used when thereare:</p> <ul style="list-style-type: none"> • new activities, including new technology, capable of improving cyber resilience in relation to IT / OT, including risk reduction in respect to the licensee's IT / OT network and information systems with respect to CAF Outcomes; • changes to levels of risks or threats relating to cyber resilience in relation to IT / OT, that take the licensee outside of its organisational riskappetite; • changes to statutory or regulatory requirements relating to cyber resilience in relation to IT / OT; or • modifications required to be made to outputs, delivery dates or allowances or to correct errors or to make refinements.
New for RIIO-ED2?	Yes
Common across network companies?	Yes
Reopener application windows	<ul style="list-style-type: none"> • Between 3 April 2023 and 10 April 2023; • Between 1 April 2025 and 7 April 2025; and • during such other periods as the Authority may direct.

Cyber resilience IT / OT

Page 2 of 2

Reopener feature	Ofgem RIIO-ED2 policy
Who can trigger?	Licensees and the Authority.
Materiality threshold	No
Reopener specific guidance?	Yes (but confidential)
Licence requires application to:	<ul style="list-style-type: none"> • Detail the circumstances triggering the application. • Set out any modifications to the Cyber Resilience IT/OT revenue allowances. • Explain how any modifications requested would improve cyber resilience in relation to IT, including risk reduction on the licensee's IT/OT network and information systems. • Explain the basis for calculating any modifications requested to allowances and the profiling of those allowances. • Provide such detailed supporting evidence as is reasonable in the circumstances.

Digitalisation

Page 1 of 2

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	<p>Enables DNOs to apply for additional funding where a change in their roles and responsibilities requires them to establish new or improved digital services.</p> <p>To be used when there is a:</p> <ul style="list-style-type: none"> • change in legislation, licences, regulatory requirements, or industry codes, where as a result there is a requirement for the licensee to provide new, or significantly altered, digital or data services, including but not limited to: <ul style="list-style-type: none"> • government or the Authority implementing energy sector reforms that require new data or digital services to be delivered by the licensee; • a re-tendering of the smart metering system resulting in additional roles or responsibilities for the licensee with regards to the smart metering system; • the licensee retrofitting monitoring devices to unmonitored Distributed Generators if the Authority decides that there is net customer benefit in doing so; • the licensee implementing the outputs of Mature Innovation Projects related to data and digitalisation to fulfil obligations in the conditions of this licence. <p>Specific uncertainties that Ofgem had in mind included:</p> <ul style="list-style-type: none"> • Energy Digitalisation Taskforce recommendations. • Needs of the new Future System Operator. • The evolving landscape around smart meter infrastructure and third party service providers.

Digitalisation

Page 2 of 2

Reopener feature	Ofgem RIIO-ED2 policy
New for RIIO-ED2?	Yes. Proposed at Draft Determinations.
Common across network companies?	No
Reopener application windows	<ul style="list-style-type: none"> Between 24 January 2026 and 31 January 2026; and during such other periods as the Authority may direct
Who can trigger?	Licensees and the Authority.
Materiality threshold	Yes – common materiality threshold of 0.5% of annual average base revenues.
Reopener specific guidance?	<p>Yes - In addition to the general requirements for a reopener application, the licensee must provide:</p> <ul style="list-style-type: none"> its Digitalisation Strategy and Action Plan (DSAP) evidence within the DSAP of the role it plays in facilitating the business to achieve its business objectives <p>The licensee's problem statement must provide:</p> <ul style="list-style-type: none"> the change in licensee roles and responsibilities requiring the use of this reopener, if applicable. the outputs arising from the investment which should be clearly linked to delivering their Digitalisation Strategy.

DSO

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	To introduce an increased level of adaptability by providing a means to amend the RIIO-ED2 price control in response to changes to the roles, responsibilities and governance arrangements for DSO functions, which could have an effect on the costs and outputs of licensees.
New for RIIO-ED2?	Yes
Common across network companies?	No
Reopener application windows	No applications by licensees , can be triggered by the Authority at anytime.
Who can trigger?	Authority triggered only.
Materiality threshold	Yes – common materiality threshold of 0.5% of annual average base revenues.
Scope?	Ofgem had difficulty defining the scope, so reopener will be subject to statutory licence modification process i.e. not yet enshrined in licence alongside other reopeners.

Environment

Page 1 of 2

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	To accommodate environmental legislative changes within period that require a material change in the approach to DNOs' Environmental Action Plans.
New for RIIO-ED2?	Yes
Common across network companies?	No
Reopener application windows	<ul style="list-style-type: none"> • Between 24 January 2024 and 31 January 2024; • Between 24 January 2025 and 31 January 2025; • Between 24 January 2026 and 31 January 2026; and • Between 24 January 2027 and 31 January 2027.
Who can trigger?	Licensees only.
Materiality threshold	No
Reopener specific guidance?	Yes (see overleaf)

Environment

Page 2 of 2

Applications must include a full needs case including:

- Why the new or amended legislative requirements relate to the licensee's impact on the environment (contained within their Environmental Action Plan);
- Why is it appropriate for this to be funded by network consumers through this reopener;
- Timelines for the activities required for compliance;
- Justification that the activities required relate to the licensee's activities on the environment, including:
 - an engineering justification paper detailing cost information and a cost benefit analysis where relevant; and
 - a policy justification paper explaining why an adjustment to allowances is justified and how the proposal achieves compliance.

High value projects

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Reopener feature	Ofgem RIIO-ED2 policy
What is a high value project?	Discrete non load projects , with specific deliverables valued at > £25m (in 2020-21 prices) in RIIO-ED2.
Purpose?	The HVP Reopener will cover new projects that were not known about when the Authority made its RIIO-ED2 Final Determinations, as well as projects that were known about but that were not included in baseline allowances because Ofgem considered that they did not have: clear outputs, forecast costs or a need case.
New for RIIO-ED2?	No – but refined to focus on non-load projects.
Common across network companies?	No
Reopener application windows	<ul style="list-style-type: none"> Between 24 January 2026 and 31 January 2026; and during such other periods as the Authority may direct.
Who can trigger?	Licensees only.
Materiality threshold	No
Reopener specific guidance?	No

High value projects

Page 2 of 2

RIIO-ED1 applications	Decision and rationale
2019 SPEN: accelerated EV investment (£42m)	Rejected. Main reason: Not eligible – does not relate to a single scheme of works.
2019 SPEN: accommodating increased demand associated with HS2 rail (£35m)	Rejected. Main reason: Not eligible – does not relate to a single scheme of works.
2019 SPEN: 33kV cable systems (£70m)	Rejected. Main reason: Needs case not established.
2019 SSEN: Subsea cable replacement (£30m)	Rejected. Main reason: Has not demonstrated solution proposed is economic and efficient.

Net Zero

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	To introduce an increased level of adaptability into the RIIO-ED2 price control by providing a means to amend the price control in response to changes relating to the meeting of the net zero carbon targets , which affect the costs and outputs of network licensees, and not already captured by other reopeners.
New for RIIO-ED2?	Yes
Common across network companies?	Yes
Reopener application windows	No applications by licensees , can be triggered by the Authority at anytime.
Who can trigger?	Authority triggered only.
Materiality threshold	Yes – common materiality threshold of 0.5% of annual average base revenues.

Rail electrification

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Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	Rail electrification costs can be incurred when required to divert electricity lines as a result of Network Rail's electrification programme. May be used where there has been a change in the rail electrification costs the licensee has incurred or expects to incur, relative to allowances that exceed the materiality threshold.
New for RIIO-ED2?	No, but scope expanded to include rail electrification projects from companies that may not have a connection to Network Rail.
Common across network companies?	No
Reopener application windows	<ul style="list-style-type: none"> Between 24 January 2024 and 31 January 2024; Between 24 January 2026 and 31 January 2026; and during such other periods as the Authority may direct.
Who can trigger?	Licensees only.
Materiality threshold	Yes – common materiality threshold of 0.5% of annual average base revenues.
Reopener specific guidance?	No

Rail electrification

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RIO-ED1 applications	Decision and rationale
2019 SPEN: HS2 electrification (£12m)	Rejected. Main reason: HS2 not a Network Rail project relating to an existing railway line, so not captured by licence drafting.
2019 SSEN: GWR electrification (£17m)	Accepted. £16m allowed.



Storm Arwen

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	Provides DNOs with the opportunity to apply to adjust their ex ante allowances where they identify a change to the scope of work they expect to deliver, as a result of the Energy Emergencies Executive Committee (E3C's) or Ofgem's recommendations from the Storm Arwen review.
New for RIIO-ED2?	Yes
Common across network companies?	No
Reopener application windows	<ul style="list-style-type: none"> • Between 24 January 2024 and 31 January 2024; and • during such other periods as the Authority may direct
Who can trigger?	Licencees and the Authority.
Materiality threshold	No
Reopener specific guidance?	No

Street works costs

Page 1 of 2

Reopener feature	Ofgem RIIO-ED2 policy
Purpose?	To reflect changes in the specified street works costs the licensee has incurred or expects to incur, relative to allowances in excess of the materiality threshold.
New for RIIO-ED2?	No
Common across network companies?	No
Reopener application windows	<ul style="list-style-type: none"> Between 24 January 2026 and 31 January 2026; and during such other periods as the Authority may direct.
Who can trigger?	Licensees only.
Materiality threshold	Yes – common materiality threshold of 0.5% of annual average base revenues.
Reopener specific guidance?	No

Street works costs

Page 2 of 2

RIIO-ED1 applications	Decision and rationale
2019 street works applications by WPD, UKPN, SPEN, NPg, ENWL (£112m)	<ul style="list-style-type: none">• £45m funding granted across applications.• Requests rejected if DNO unable to provide 12 months' cost data.• Adjustments made to:<ul style="list-style-type: none">• Apply Ofgem assessed volumes where concerns with DNO forecasts;• Apply a benchmark based on an average, followed by a qualitative assessment of the justification for deviations from this benchmark• Apply a 3% annual efficiency adjustment to all cost categories.



Cost passthrough



Cost pass-through in RIIO-ED2

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Cost pass-through adjusts allowances for DNO costs over which they have limited control and that Ofgem determine should be recoverable in full.

Cost category passed through	Commentary	
Bad debt/valid bad debt claims by IDNOs	Recovered Revenue is recorded on a cash basis i.e. net of any Bad Debt.	
Business / Prescribed Rates	An adjustment of the up-front allowance to the actual costs incurred, subject to the relevant valuation agency revaluing any of the licensee's assets for the purposes of setting business rates and the DNO demonstrating that it has taken appropriate actions to minimise the valuations.	
Ofgem Licence Fee	Pass-through item to allow DNOs to recover the actual cost of Ofgem licence fees.	
Pension Deficit Repair mechanism	A pass-through allowance to cover the costs of funding their defined benefit pension scheme deficits following a reasonableness review.	
Ring Fence Costs	Costs incurred directly from complying with additional regulatory requirements relating to modifications to the ring fence conditions in network operator licences are passed through.	

Severe Weather 1-in-20	Pass-through of efficient costs with zero starting allowance in the event that a DNO experiences a severe weather 1-in-20 event.	Page 55-56
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Cost pass-through in RIIO-ED2

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Cost category passed through	Commentary	
Smart Meter Communication Costs	Pass-through of costs/fees that will be charged to the DNOs for use of the Data Communications Company services.	
Smart Meter Information Technology Costs	Pass-through of efficient information technology costs to enable the DNO to use smart meter data on its network.	Page 57-58
Supplier of Last Resort	Last Resort Supply Payment (LRSP) claims are a pass-through item in a similar way to business rate costs. Approved LRSP claims received by 31 December are paid monthly in the following financial year. No materiality threshold.	
Transmission Connection Point (TCP) Charges	Pass-through of charges from a transmission licensee for the connections between the DNO's network and the transmission system for assets installed prior to the RIIO-ED2 price control, refurbishment or any work not resulting from a DNO requirement.	

Note: Highlighted rows indicate the UMs selected for further investigation

Severe weather 1 in 20

Page 1 of 2

- **What is a severe weather (SW) 1-in-20 event?**

*An event where a DNO experiences **at least 42 X its mean daily faults across its HV network** within a 24-hour period.*

- **At DPCR4, Ofgem introduced a cost allowance** for improvements in restoration times following severe weather events to cover an efficient level of compensation payments and fault costs relating to these events. DNOs were able to use this allowance to:
 - reduce the chance of such events occurring;
 - manage the impact of the events through faster customer restoration; or
 - buy storm insurance cover.
- Severe weather events consistently **excluded from Interruptions Incentive mechanism (IIS)** to recognise the significant impact of these events.
- As part of **RIIO-ED2, SW 1 in 20 costs defined as a pass-through** item.

Severe weather 1 in 20

Page 2 of 2

Question	Commentary
Purpose?	To allow for the recovery of efficient restoration costs and customer support costs directly incurred as a result of a storm event that meets severe weather 1-in-20 thresholds.
Benefits?	To avoid including uncertain spend in ex ante allowances, and instead address additional costs if they eventuate.
Specified cost categories	<ul style="list-style-type: none"> • Restoring supplies: includes staff-related and contractor-related costs over and above those the DNO incurs in the normal course of its business, the carrying out of any necessary switching activity; the provision of temporary supplies such as mobile generation and undertaking work on faulted assets. • Supporting affected customers: includes the cost of payments for food, drink and/or temporary accommodation, in a hotel or otherwise, during a 1-in-20 SW event. Includes reimbursement to the customer for such costs incurred or payments made directly to the provider of such services.
Trigger	<ul style="list-style-type: none"> • DNO experiences a SW event that meets the network-specific 1-in-20 thresholds in licence (no. of distribution HV weather related incidents in 24 hrs).
Funding mechanism	<ul style="list-style-type: none"> • DNOs are provided with zero ex ante allowance for SW 1-in-20 activity. • Pass-through term defined in licence. If a SW 1-in-20 event occurs, efficient costs in specified categories can be passed through into totex allowances.
Reporting	<ul style="list-style-type: none"> • SW 1-in-20 costs reported through Regulatory Reporting Pack. • True-up in the next charging period, calculated by the Price Control Financial Model (PCFM).

Smart meter IT costs

Page 1 of 2

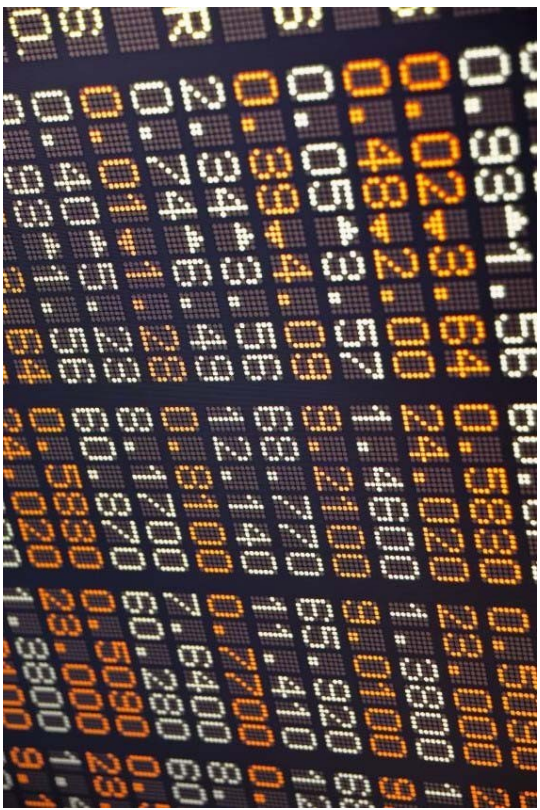
- **The smart meter rollout in the UK has been beset by delays** – originally scheduled to be complete by 2019, the deadline is currently end 2025.
- **The pass-through of smart meter IT and communication costs were pass-through items at RIIO-ED1 and remain pass-through items for RIIO-ED2.**
- **Smart meter IT costs** - Efficient information technology costs to enable the DNO to use smart meter data on its network.
- **Smart meter communication costs** - Data Communications Company (DCC) fixed costs - costs/fees that will be charged to the DNOs for use of the DCC services.
- At RIIO-ED1:
 - Ofgem decided that DNOs can pass through any fixed costs of smart metering data up until the smart meter roll out is complete. This was anticipated to be in 2019 at the time.
 - Ofgem stated intention, once the roll-out is complete, to treat the fixed costs as any other cost which the DNO will be expected to fund from the benefits realised – but not mentioned in RIIO-ED2 documentation.

Smart meter IT costs

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Question	Commentary
Purpose?	To the pass-through of efficient information technology costs associated with using smart meter data on the DNO's network.
Benefits?	Pass-through of fixed costs before benefits fully realised.
Specified cost categories	<p>Expenditure on additional IT assets and services which are specifically associated with the systems required to access, store, process and use smart meter derived data. These include:</p> <ul style="list-style-type: none"> • additional hardware and infrastructure and application software development costs required to communicate with the Data Communications Company (DCC) (including via third parties) and with existing DNO internal systems to enable smart metering derived data to be integrated into those systems to deliver the benefits of smart meters for DNOs. • costs of integration with established IT applications (such as DNO customer relationship management systems, network control systems, and network design tools). • additional costs required to establish and demonstrate compliance with legal & regulatory requirements for the use of smart meter data.
Funding mechanism	<ul style="list-style-type: none"> • Explicit pass-through term (SMIT_†) in Special Condition 6.1 of licence, which feeds into allowed revenue.
Reporting	<ul style="list-style-type: none"> • Annual reporting consistent with Regulatory Instructions and Guidance.





Indexation in RIIO-ED2

Indexation provides DNOs and consumers some protection against the risk that outturn prices are different to those that were forecast when setting the price control.

Parameter indexed	Commentary	
Cost of debt	iBoxx GBP Utilities 10yr+ index applied for RIIO-ED2: suitable proxy for network debt costs and is a broad representative index.	
Cost of equity	RPI index-linked gilts (ILGs), adjusted to CPIH-real terms, as the basis for the RFR assumption.	
Inflation indexation of RAV and allowed returns	The RIIO price controls offer inflation protection to investors through inflation adjustments to the RAV. Returns on capital are also provided in real terms.	
Real price effects (RPEs)	RPE adjustments included in allowances - based on forecasts for the indices. RPE adjustments trued up annually based on out-turn differences between CPIH and input price indices.	Page 61-64

Note: Highlighted rows indicate the UMs selected for further investigation

Real price effects

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- DNOs' allowances are indexed by CPIH as part of the price control framework.
- However, Ofgem acknowledges that some of the costs faced by DNOs will change at a different rate than this measure of economy-wide inflation.
- These differences in cost changes are termed Real Price Effects (RPEs).
- **As part of RIIO-ED1, Ofgem applied an ex-ante allowance for RPEs** based on forecasts, rather than indexation.
- However, **for RIIO-ED2, Ofgem has moved to some indexation of DNOs' uncertain costs** to protect customers from the forecast risk associated with setting ex-ante allowances.
- DNOs were asked to provide evidence justifying the need for RPEs, as well as proposing and justifying input price indices as part of their Business Plans.

Real price effects

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- Ofgem placed a **strong emphasis on the materiality of RPE claims**, and imposed a high evidential bar to reduce:
 - Complexity of the price control; and
 - The resources needed to design and update the index mechanism
- Established a **common format for input categories**:
 - General labour (capex and opex)
 - Specialist labour (capex and opex)
 - Materials (capex and opex)
 - Plant and equipment
 - Transport
 - Other
- Compared a wide range of potential indices, considering whether these indices are under DNOs' management control, and their interactions with other areas of the price control such as regional factors.

Real price effects

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Features of framework	Commentary
Input cost structures	<ul style="list-style-type: none"> Ofgem applied a notional cost structure to set DNOs' RPE adjustment in RIIO-ED2 to avoid rewarding DNOs with potentially inefficient cost structures.
Materiality	<ul style="list-style-type: none"> Input cost category material if passes at least one of two tests: <ul style="list-style-type: none"> Test 1: identifying cost categories that represent a relatively large share of totex (10% or more). Only general labour, specialist labour and materials pass this test. Test 2: identifying cost categories that fall between 5% and 10% of totex where large input price variations could materially impact DNO expenditure. Only the "other" costs category fell in this range – indexation other than CPIH deemed inappropriate.
Funding mechanism	<ul style="list-style-type: none"> Ofgem included adjustments for RPEs for all DNOs as part of their Final Determination allowances based on forecasts for the selected indices. Ofgem will 'true up' the RPE adjustments annually based on out-turn differences between CPIH and the relevant input price indices with a final true-up at the end of RIIO-2 as part of the close-out process.

Real price effects

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Features of framework	Commentary
Index selection	<ul style="list-style-type: none"> • Assessment criteria for indexselection: <ul style="list-style-type: none"> • Accuracy and independence of the indices. • Simplicity, credibility, accuracy, transparency and the timeliness of publication and revisions. • General labour: 2 ONS indices selected – private sector pay and median hourly pay. • Specialist labour: 3 indices selected: BCIS electrical engineering; BCIS civil engineering; and BEAMA electrical engineering. • Materials: 4 BCIS indices selected: pipes and accessories (copper and aluminium); structural steelwork (civil engineering); and resource cost of infrastructure materials.
Index forecasts	<ul style="list-style-type: none"> • Independent forecasts used where available. • If not available, RPEs forecast based on the long term historical average RPE (2000 – 2020). • Ofgem applied an unweighted average to the RPE forecasts for the indices in each category to produce a composite RPE forecast for each cost category. • Category-level RPEs are then weighted by the notional company cost structure.
Outcome	<ul style="list-style-type: none"> • Labour and materials costs indexed to external price indices other than CPIH. • 87.9% of DNO's notional costs.



Use It Or Lose It Mechanisms





UIOLI mechanisms in RIIO-ED2

UIOLI mechanisms adjust allowances where the need for work has been identified, but the specific nature of work or costs are uncertain – often associated with specific programmes prioritised by Ofgem.

If DNOs do not spend the UIOLI allowance on achieving specific outcomes, the remaining allowances are returned at the end of the price control, without a sharing factor applied.

UIOLI allowance	Commentary	
Cyber ResilienceOT	Specified PCDs to enhance cyber resilience in relation to OT, including measured risk reduction or improved Cyber Assessment Framework (CAF) Outcomes on the licensee's network and information systems.	Page 67-68
Visual amenity	To fund projects that mitigate the impact of existing infrastructure on visual amenity in National Parks, Areas of Outstanding Natural Beauty and National Scenic Areas.	
Worst served customers (WSC)	To reduce the number of interruptions experienced by those customers who experience an unusually poor service from their DNO.	Page 69-72

Note: Highlighted rows indicate the UMs selected for further investigation

Cyber resilience operational technology

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- In the Draft Determinations, Ofgem proposed a **UIOLI mechanism for cyber OT due to cost uncertainty** (noting that cyber IT costs were more mature).
- Ofgem proposed that:
 - **following assessment of the DNOs' delivery against their Price Control Deliverables***, they will assess their spend against their UIOLI allowances; and
 - the cyber resilience OT allowances will **not be subject to the TIM**, reflecting the newness and uncertainty of OT solutions – so DNOs focus on the best solutions rather than efficiencies.
- In considering whether the cyber resilience OT UIOLI allowance has been spent in a proportionate, appropriate and efficient way, they would consider whether the DNO has:
 - engaged and reported progress regularly and considered the guidance provided;
 - used the Year 1 re-opener window to propose improved plans and solutions, including a more mature programme of activities;
 - demonstrated risk reduction, improvements in compliance with NIS regulations incorporating the NCSC CAF outcomes, and programme milestone achievements; and
 - demonstrated organisational, governance, and senior stakeholder support for Cyber Resilience OT plan.

** Price Control Deliverables (PCDs) are outputs that are directly funded through the price control and where the funding provided is not transferable to a different output or project.*



Cyber resilience operational technology

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- Ofgem acknowledges that cyber security and resilience are vital to the provision of energy in GB – need for continued investment to manage the risks on networks and information systems, including the risk and the consequences of potential cyber-related incidents on consumers.
- Due to national security concerns, much of the detail of Ofgem decisions on cyber resilience OT and IT allowances and the associated Price Control Deliverables (PCDs) is provided in **confidential** annexes.
- Despite naming a UIOLI mechanism for cyber resilience OT in the Final Determinations (FDs) documentation, this is **not included as a UIOLI mechanism** in Special Condition 3.4 of the DNO licences modified to implement the FDs.
- Implementation of this policy remains unclear.
- Appears to be managed through PCDs and reopeners.



Worst served customers (WSC)

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- Ofgem's Interruptions Incentive Scheme (IIS) incentivises DNOs to focus on their average performance. This can leave certain customers at the extremes of poor performance ignored.
- Ofgem introduced a UILOI mechanism in **DPCR5** to fund performance improvements for these worst served customers.
- However, it was not terribly effective in practice:
 - Changes made for RIIO-ED1 to relax the spending cap and performance improvement required, but also definition of WSC tightened.
 - Still not effective in RIIO-ED1: majority of the allowances unspent.

DNO group	RIIO-ED1 Allowance (£m 12-13 prices)	Total spent to date (£m 12-13 prices)	Proportion of allowances spent
ENWL	£3.40	£1.30	38%
NPG	£6.90	£0.00	0%
WPD	£27.30	£2.42	9%
UKPN	£18.30	£0.99	5%
SPEN	£7.20	£0.04	1%
SSEN	£7.50	£1.07	14%
GB	£70.60	£5.81	8%

Worst served customers (WSC)

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Issues with the WSC UIOLI mechanism in RIIO-ED 1.

Issue	Commentary
<p>Narrow definition of WSC – many customers receiving poor service did not technically qualify</p>	<ul style="list-style-type: none"> • WSC defined as: Customers experiencing on average at least four higher voltage interruptions per year, over a three year period (i.e. 12 or more over three years, <i>with a minimum of three interruptions per year*</i>). • The three year qualification period and minimum of three interruptions each year inhibited DNO investment as it required the clock to be restarted in assessing a particular customer group in the event of one unusually good year amongst a series of poor performing years.
<p>Performance improvements required – many solutions available did not meet the funding requirements</p>	<ul style="list-style-type: none"> • DNO-proposed percent reduction in the average number of interruptions for WSC measured over three full reporting years post-commissioning. Scope for DNO to provide evidence of the expected long-term benefit of the scheme if this is not achieved. • Many DNOs found these post-event checks were burdensome and complex. • Projects logged up and funded ex post on a net present value neutral basis provided performance and eligibility criteria are met.

* Change to definition introduced for RIIO-ED1

Worst served customers (WSC)

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Mechanism proposed for RIIO-ED2.

Change	Commentary
Looser definition of WSC	Customers experiencing on average at least four higher voltage interruptions per year, over a three year period (ie 12 or more over three years, with a minimum of two (was three) interruptions per year).
Greater certainty of funding	Ofgem sought to reduce uncertainty about whether DNOs will be able to keep their allowances. The WSC Allowance is not conditional on ex-post proof of benefits for a specific number of WSC, in recognition of the fact WSC can change year-on-year: <ul style="list-style-type: none"> • No end-of-period adjustment mechanism for WSC to clawback spend • The ex-ante UIOLI mechanism manages the return of unspent allowances - returned at the end of the price control, without a sharing factor being applied. • Governance framework / ongoing reporting to ensure expenditure is in line with the scope of WSC definitions.
New governance framework	<ul style="list-style-type: none"> • Licence requires compliance with WSC Governance Document issued by Ofgem. • This document may specify: <ul style="list-style-type: none"> • the eligibility criteria that WSC Projects must meet; and • reporting requirements in respect of WSC Projects.
Size of pot	RIIO-ED1: £76.5m, RIIO-ED2: £94m

Worst served customers (WSC)

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Requirements of the WSC Governance Document.

Requirements	Commentary
Eligibility criteria for WSC projects	<ul style="list-style-type: none"> Ofgem does not set a minimum number of WSC per WSC Project or a cap on the cost per WSC, as this would mean that some WSC might never receive service improvements. However, to be eligible, a WSC Project needs to: <ul style="list-style-type: none"> have at least one WSC connected at the time the WSC Project is identified; and be forecast to reduce the number of interruptions WSC experience.
Reporting requirements	<ul style="list-style-type: none"> The licensee must by 1 June 2023, publish its methodology for identifying WSC Projects to reduce the number of interruptions WSC experience, including its approach to optioneering and how they are costed. The licensee must annually review its methodology to ensure it is current, and where appropriate update the published version. Common measures to be reported via Regulatory Reporting Pack: <ul style="list-style-type: none"> Annual WSC numbers: the number of customers that qualify as WSC. Schemes identified during the year and the number of WSC each scheme is expected to benefit at the time the scheme was planned. Progress with scheme underway (where these are multi-year). The number of WSC the scheme is intended to benefit. Final cost upon project delivery.



New Zealand context

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There are already a number of reopeners in place for NZ electricity distribution companies.

Name	Threshold	Cap	RIIO-ED2 equivalent?
Foreseeable Major Capex Project reopener	1% revenue or \$2m capex	\$30m	<ul style="list-style-type: none"> HVP reopener for non-load related expenditure (subject to minimum of £25m). Volume drivers for load related expenditure.
Unforeseeable major capex project reopener	1% revenue or \$2m capex	\$30m	
Catastrophic event reopener	1% revenue	-	<ul style="list-style-type: none"> Severe weather 1 in 20 cost pass-through
Change event reopener	1% revenue	-	A number of reopeners allow for changes in legislative or compliance requirements e.g. Cyber, Environment, ESR, Physical Security or Storm Arwen.
Error event reopener	1% revenue	-	Appeals process via CMA.
False / misleading information reopener	-	-	Licence breach.
Major Transaction reopener	Acquisition / disposal of assets > 10% opening RAB	-	Requires Authority consent under licence.

Source: Electricity Distribution Services Input Methodologies Determination, 2012

New Zealand context

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Questions for the NZ framework going forward.

The CC reopener workshop concluded:

- the current reopeners have a broad coverage and additional reopeners may not be needed;
- however, **potential gaps** for further investigation include: **disaster readiness, digitalisation, cyber-security;**
- furthermore, **non-capex solutions** to the net zero transition such as flexibility, are not addressed by the current unforeseeable and foreseeable major capex reopeners; and
- there is a potential **benefit of standardising reopener processes and using more agile uncertainty mechanisms.**

Questions

- For load-related capex and opex, **are reopeners sufficiently agile / responsive?**
- **Could indexation of real price effects help** to manage the uncontrollable risks of escalating costs?
- Would **explicit reopeners for disaster readiness, digitalisation and cyber-security** plug current gaps?
- Are there any other gaps?
- Could **standardisation of the reopener application process** reduce its burden?



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