ofgem Making a positive difference for energy consumers

Overarching Working Group – Meeting 10

24 September 2020

OFG1161

RIIO-ED2 Overarching Working Group (OAWG)

Achieving Net Zero and Strategic Investment

Update to 24 Sept. 2020 OAWG

Consolidation of DNO assessments

Ofgem request (*email from Tom Wood on 24th August 2020*)

In the Sector Methodology consultation, we highlighted a number of different uncertainty mechanisms and incentives that could be used. These included a Capacity Volume Driver (SSMC Overview Document, Appendix 3, A312-19) through which revenues would be adjusted per unit of capacity added to the network. This would be linked to a utilisation incentive, through which DNOs would indicate current levels of utilisation on their network and the likely level of utilisation they aim to achieve by the end of the period (A3.37-39). We want this session to focus on developing these proposals further. **We would welcome a paper and presentation on how these might operate with specific focus on how unit costs might be established (and scaled to the level of utilisation on the network), and utilisation levels might be monitored and the nature of incentive (penalty and reward) that could apply depending on how successful the network is on adding capacity in an efficient manner.**

Related Sector Specific Methodology Consultation (SSMC) question

OVQ9: Which of the uncertainty mechanisms and incentives in Appendix 3 will be most effective in enabling efficient strategic investment?

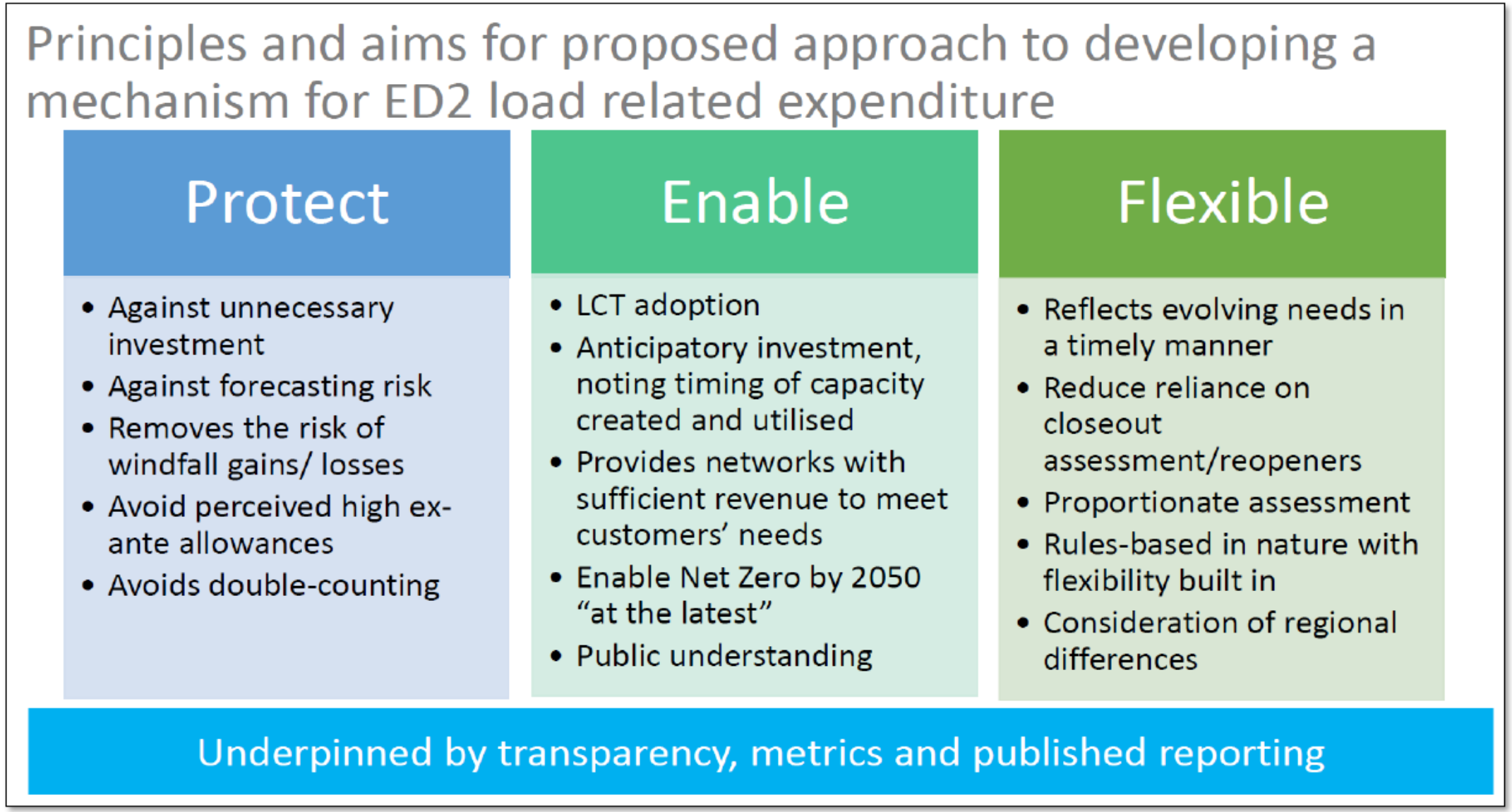
Purpose of presentation

- A consolidation of DNO's prior assessments on how unit costs might be established, and how utilisation levels might be monitored, including the nature of any associated incentive might work; and an outline of the potential criteria to assess options against through the consultation process
- Highlights the extensive review undertaken by the 'Net Zero and Strategic Investment' OAWG sub-group through late 2019- early summer 2020 to consider these questions. This was informed by perspectives from most DNOs and other interested stakeholders
- Facilitation of open discussion today with Ofgem and wider stakeholder on options, including those within the Sector Specific Methodology Consolidation (SSMC)

Important considerations

- Presentation is not a collective DNO view on the merits of any approach or mechanism; its an assessment of options with material presented by different DNOs
- Does not present individual DNO preferences on the mechanism, these will be given through company-specific responses to question OVQ9 in the SSMC
- Does not present DNO proposals on specific values for the design parameters, these will be presented within the July and December 2021 business plan submissions by companies

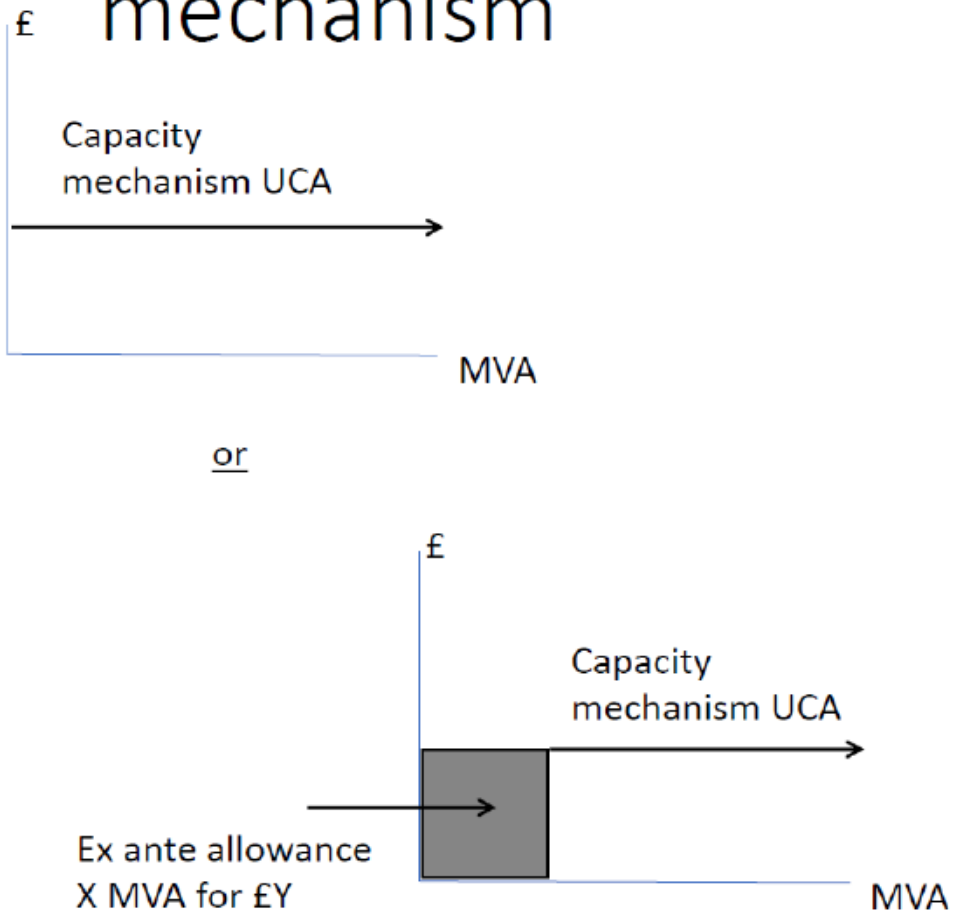
Principle and aims for proposed approach to developing a mechanism for ED2 load related expenditure



Agenda

- **Capacity mechanism**
- *Capacity volume driver with a utilisation metric*
- *LCT volume driver*

Funding arrangements for capacity mechanism



- Allowance for all investment under the capacity mechanism driven by UCA

or

- Fixed ex ante allowance of £Y for X MVA and then capacity mechanism driven by UCA once threshold is reached
- Adjustments to be made automatically via PCFM, so need to consider impact of 2 year lag and whether RIGs used to release allowance on the basis of forecast with true-up at end of period based on actual capacity realised

Options for unit cost allowance

Options for Unit Cost Allowances

Aspect	Pros	Cons
Mechanism based on historic actuals	• Solid basis as based on historic actuals • Based on RIGs data on consistent basis	• Historic costs may not be an accurate forecast of future (up or down)
Mechanism based on forecast	• Forecast costs used therefore should be better indicator	• Costs based on generic 500MW model
Single £/MVA value	• Simple to administer • No issues of attributing capacity to constraint voltage level • Creates consistent incentive for all capacity	• Costs incurred my differ if work mix changes
Disaggregated £/MVA values	• Closer alignment with costs and capacity created	• More complex • More sensitive to categorisation of capacity created

Three options are being explored – using RIGS data, CDCM, disaggregated

RIGS numbers could be used as the basis for unit costs

RIGS numbers could be used as the basis for unit costs

- We think capacity provision is suitable for the use of a volume driver
  - Defined in RIIO Handbook as "*a Provision allowing revenue to vary as a function of a volume*"

- A unit cost allowance per kVA of capacity can be calculated based on reported RIGs values

Grid & primary networks

£/MVA	RIIO-ED1	
	Capacity constraint affecting single substation (N-1)	Capacity constraint affecting substation groups (N-1)
ENWL	£16,000	£44,000

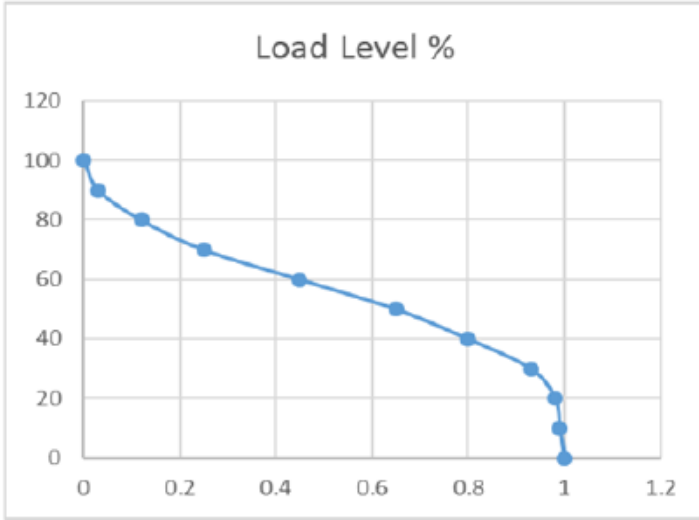
Secondary networks

£/MVA	DPCR5	RIIO-ED1
	Capacity constraint affecting substation	Capacity constraint affecting substation
ENWL	£91,000	£85,000

CDCM methodology

- CDCM models utilise estimates of the assets needed to add 500MW of demand to the network to produce £/kW/year costs at each voltage level (see right)
- Value available to be offered for flexibility (£/kWh) is the £/kW/year divided by the number of hours the flexibility service is required
- The top 10% of system loading occurs over around 3% of the year (around 263 hours)
- Maximum demand for WPD (all 4 licence areas) is around 12GW
- Assuming top of LDC is triangular then kWh for this top 10% is easily estimated
- Maximum value of the flexibility is then the kWh x value available to be offered

	From CDCM (ARP - 21-22 - EMEB)		
EMEB	Gross asset costs for 500MW	£/kW/year	cumulative £/kW/year
132kV	£ 55,914,776	5.31	5.31
132kV/EHV	£ 29,214,949	3.01	8.31
EHV	£ 36,091,114	3.74	12.06
EHV/HV	£ 58,060,294	6.06	18.12
132kV/HV	£ 4,889,084	6.29	24.41
HV	£ 133,760,976	13.11	37.52
HV/LV	£ 61,229,373	6.07	43.59
LV circuits	£ 122,042,791	12.45	56.04



Customer Lens

- Removes the volume forecasting risk from both customers and networks
- Incentivises companies to find timely and efficient solutions to capacity requirements, rather than hit spend levels – including options of least regret over the short, medium and long term
- Creates a level playing field for network and flexibility-based solutions, helping deliver efficiency
- Simplifies the submission process and removes the need for a complex and lengthy closeout process or multiple reopeners mid period
- Clear and transparent process
- Facilitates delivery of net zero
- Any outperformance/unit cost trends captured for the future fully to customers in resetting for ED3

Agenda

- *Capacity mechanism*
- **Capacity volume driver with a utilisation metric**
- *LCT volume driver*

Background on utilisation

What do we mean by utilisation

- A measure of how loaded network assets are – typically interested in the maximum
- The concept of tracking assets by utilisation is already well established at Primary level via the Load Index

$$\frac{\text{Peak demand on an asset}}{\text{Capacity rating of the asset}}$$

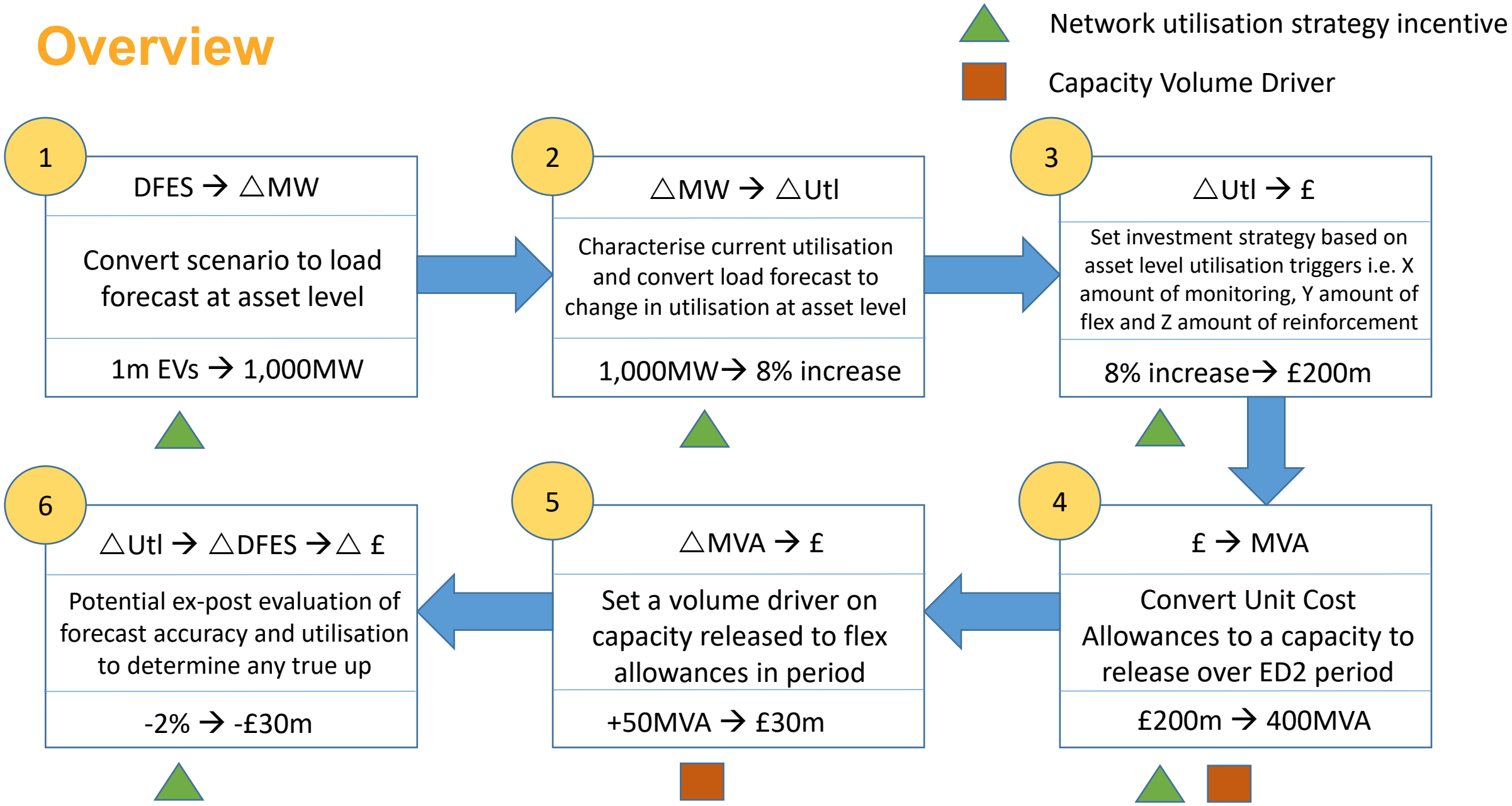
Why an utilisation metric at the secondary level is in both our customers' interests and the DNOs

- An utilisation metric encourages DNOs to intervene where most needed and in a consistent manner
- Secondary network more complex and uncertain, it makes sense to use utilisation to justify and evidence interventions and funding

How could a new utilisation metric work

- Drive towards improved asset data, which can help drive decision making and greater transparency
- Can reflect different unit costs of interventions at different utilisation levels

Overview


Network utilisation strategy incentive
Capacity Volume Driver
1
DFES → △MW
Convert scenario to load forecast at asset level
1m EVs → 1,000MW
2
△MW → △Utl
Characterise current utilisation and convert load forecast to change in utilisation at asset level
1,000MW→ 8% increase
3
△Utl → £
Set investment strategy based on asset level utilisation triggers i.e. X amount of monitoring, Y amount of flex and Z amount of reinforcement
8% increase→ £200m
4
£ → MVA
Convert Unit Cost Allowances to a capacity to release over ED2 period
£200m → 400MVA
5
△MVA → £
Set a volume driver on capacity released to flex allowances in period
+50MVA → £30m
6
△Utl → △DFES →△ £
Potential ex-post evaluation of forecast accuracy and utilisation to determine any true up
-2% → -£30m

Using utilisation to evidence the investment strategy

Table shows dummy data

1. Start with DFES to understand impact of load growth on individual sites and the impact on overall utilisation of the network
2. Identify types of interventions required and how these may vary by the utilisation of asset – e.g. mix of interventions per utilisation band
3. Develop a £/MVa released per utilisation band or single composite unit cost based on blend of interventions
4. Forecast capacity to be released per utilisation band to manage load growth
5. Propose allowances based on forecast capacity released in each utilisation band x unit cost for each utilisation band and set out forecast utilisation following that capacity released

Utilisation bands	Step 1 →		Step 2 →	Step 3 →	Step 4 →	Step 5	
	Sites per banding Start ED2 (2023-24)	DNO best view of sites per banding at End ED2 (2027-28) without intervention (%)	Intervention types – applied per banding	Average Unit Cost per intervention mix (£/MVa)	DNO best view ED2 capacity released (MVa)	ED2 Ex Ante allowance (£m)	DNO best view of sites per banding at End ED2 (2027-28) with intervention (%)
0-60%	75%	60%	No intervention	£0	n/a	0	70%
60-80%	10%	20%	Intervention mix 1	£15,000	42	0.6	15%
80-100%	10%	10%	Intervention mix 2	£90,000	46	4.1	15%
>100%	5%	10%	Intervention mix 3	£600,000	338	203	0%
Average	**40%**	**50%**					**45%**
Total	**100%**	**100%**			**425**	**207**	**100%**

Using utilisation as a basis of a volume driver

1. Track utilisation of assets in each year of ED2 and assess the difference between actual and forecast number of assets in each utilisation band in each year of ED2
2. Report actual capacity released per utilisation band in each year of ED2
3. Apply unit costs per utilisation band (or composite unit cost) to the difference between actual and forecast capacity released to identify where the volume driver kicks in (this could be subject to a deadband)

Utilisation bands	Step 1 →		Step 2 →		Step 3	
	Difference between forecast and actual percentage of sites in each utilisation banding		Actual capacity released (MVa) per utilisation banding per year		Apply unit cost to each utilisation banding to calculate volume driver allowances (£m)	
	2024	2027	2024	2027	2024	2027
0-60%	-2%	-2%	0	0	0	0
60-80%	4%	4%	7	10	0.1	0.2
80-100%	17%	17%	7	11	1	1
>100%	5%	25%	50	109	30	65
Total Actual	42.8%	46.9%	65	130	31	67
Total Forecast	41.8%	46.1%	62	107	30	53
Difference	1.0%	0.8%	**3**	**23**	**1**	**13**

The volume driver encourages DNOs to release more capacity where they can evidence more assets have moved into higher utilisation bands

Utilisation strategy incentive

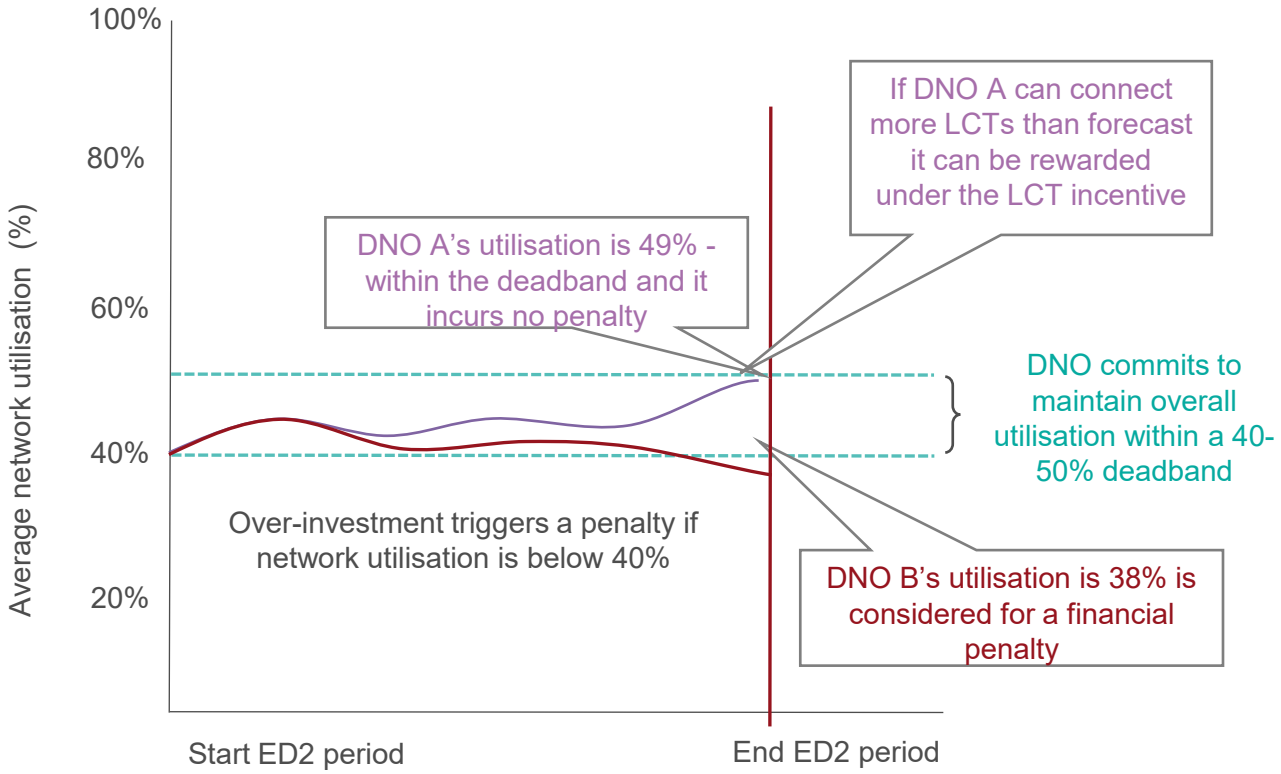
1. Compare DNO's actual to expected capacity released per utilisation band
2. Ofgem identifies where actual capacity released is higher or lower than expected. Take into account in a close-out mechanism and it can also be linked to the starting point for ED3

Utilisation bands	Step 1 and Step 2					
	Difference between DNO ED2 best view and actual					
	Forecast sites per utilisation banding (end of ED2)	Expected Capacity released (MVa)	Forecast spend (£m)	Actual Capacity released (MVa)	Actual spend (£m)	Actual sites per utilisation banding (end of ED2)
0-60%	66%	n/a	0	0	0	69%
60-80%	25%	42	0.6	50	0.8	27%
80-100%	8%	46	4.1	50	4.5	5%
>100%	0%	338	203	500	300	0%
Average	**46.1%**					**43.2%**
Total	**100%**	425	**207.7**	**600**	**305.3**	**100%**

Utilisation can be used to assess if the capacity has been released in line with the business plan strategy

Network utilisation strategy incentive

- A downside only incentive holds DNOs to their utilisation commitments, protecting consumers from over and under investment
- Scope for end of ED2 assessment to close out incentive and true up allowances
- The network utilisation strategy incentive can operate in conjunction with an LCT incentive



Basis of considering penalising DNO B

- Determining the level of over or under investment in network capacity which results from 38% utilisation compared to the target 40% (e.g. 15MVa)
- Assess the cost of this over-investment by applying an average unit cost (e.g. £90k / MVa) * 15MVa = £1.35m
- Apply the TIM incentive rate (e.g 50%) to assess the penalty for the DNO - £675k.
- Where DNOs trigger a penalty we think they should be permitted to submit mitigating evidence to Ofgem of factors outside their control which caused utilisation to fall
- Recent Covid-19 pandemic a case in point of an externality that could impact this mechanism

Key:

DNO A

DNO B

Should the utilisation incentive be evaluated on year 5 data or as an average over the period?

Reporting against the capacity volume driver

The mechanism is designed to improve the quality of data at secondary level to justify investment decisions

Potential Price Control Deliverable on proposed roll out of monitoring

	Data quality target for end of ED2	
Utilisation band	# of subs with monitoring	% of subs in band with monitoring
0-60%	500	5%
60-80%	5,000	20%
80-100%	12,000	60%
100-120%	2,000	100%
>120%	3	100%

- Unit costs for monitoring installations may need to differ depending on:
  - Whether the installation is bundled with other work at the site maintenance or reinforcement work, or is standalone
  - The type of asset
- Targets should be set to provide sufficient data quality to be used for DNOs to report overall network utilisation by end of ED2

Setting unit costs and baseline allowances

We consider that a combination of a disaggregated approach checked against historical £/MVa could be used to set unit costs

Utilisation bands	Illustrative figures		
	Step 1: Likely blend of interventions	Step 2: £/MVa set based on a weighted average of interventions	Step 3: Sense check against historical RIGs data
Utilisation unknown	See table opposite		
0-60%	100% no action	£0k/MVa	Look at average or upper quartile £/MVa released from ED1
60-80%	5% flexibility 95% no action	£15k/MVa	
80-100%	10% flexibility 10% load transfer 20% reinforce 50% no action	£90k/MVa	
100-120%	90% reinforce 10% no action	£600k/MVa	
>120%	100% reinforce	£90k/MVa	Propose a lower rate to avoid over-utilisation

Options for unit rate where utilisation is unknown		
	Pros	**Cons**
1. No funding for MVa released where no data exists	• Drives investment in better data	• DNOs may not have sufficient data coverage • Could encourage delays to investment
2. Decreasing unit rate through the price control	• Enables time to gather better data • Facilitates investment	• May encourage over-investment in first few years of ED2
3. Criteria to be met in order to obtain unit rate	• Enables time to gather better data • Facilitates investment • Acts a check on investment	• May be overly complex to report scheme by scheme at secondary level
4. DNOs propose a cap on MVa released where utilisation is unknown	• Drives investment in better data • Facilitates investment • Allows Ofgem to compare DNOs	• Could encourage delays to investment

Baseline allowances will be set based on evidence presented by DNOs on the number of assets forecast to move into different utilisation bands and proposed capacity released. Proposed capacity released can be benchmarked across DNOs

Merits of a capacity volume driver and an utilisation strategy incentive

The proposal can help meet key objectives:

Provides robust justification for allowances	• Utilisation reveals where planned load growth will require intervention
Encourages the right type of investment at the right time	• Encourages both reinforcement and non-reinforcement options and timely intervention
Promotes a transparent network intervention strategy	• Promotes transparency on how DNOs plan to manage the secondary network and a way of tracking this
Enables DNOs to respond to changing circumstances	• Can provide a way for DNOs to proactively manage what is in their control
Drives better data on which to make and justify decisions	• Encourages DNOs to enhance their network monitoring and forecasting capabilities
Works alongside other mechanisms to support low carbon transition	• Can work with other mechanisms including the LCT incentive to drive cost efficiencies

Further considerations

Further considerations

- Grid (132kV) and Primary (33kV) substations have an established process with Lis measured and reported to Ofgem in RIIO-ED1. These have monitoring in place and forecasts down, in general to that level of granularity
- There is less monitoring at HV, and little monitoring at LV levels at present
- Smart Meters might ultimately provide insights into LV network use, however there are outstanding questions over timescales and data accuracy
- Therefore direct metrics for HV/LV may not be possible right now and are contingent on other aspects of the price control (e.g. what HV/LV monitoring is put in place)
- DNOs are likely to have future plans for enhanced monitoring for HV and LV for ED2 and future periods and therefore this limitation may be reduced in coming years

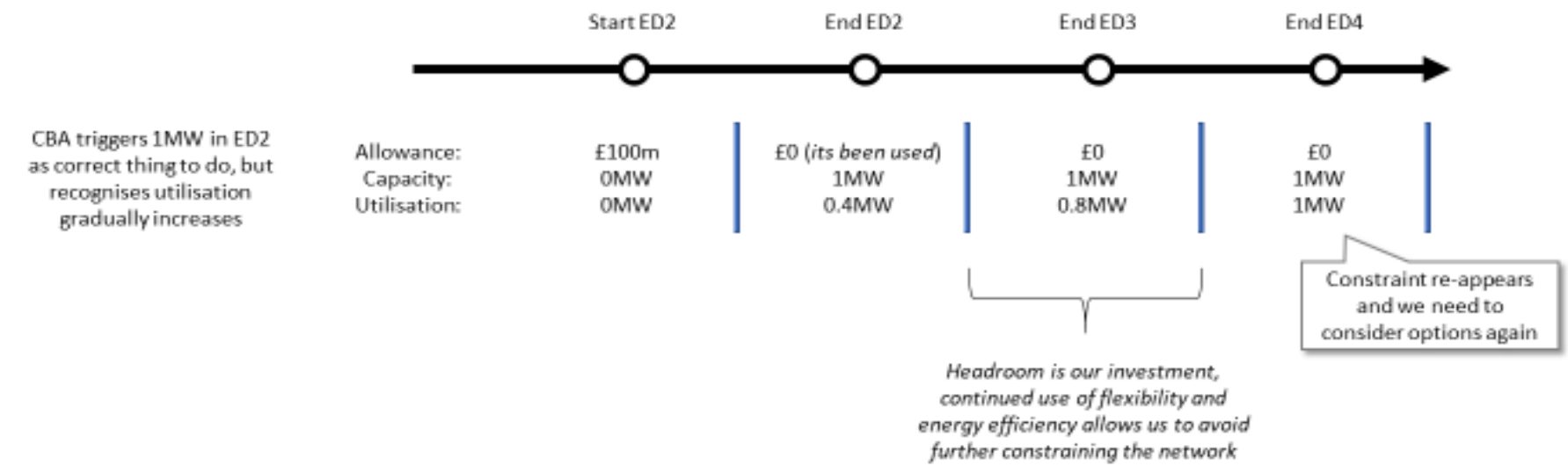
Review of approaches to reduce stranding & profiteering risk

Review of approaches to reduce stranding & profiteering risk

	Description	Pros/ cons
1 Robust need case identification process	▪ Models full range of uncertainty faced, through scenarios etc. ▪ Includes a process for making decisions under uncertainty. Including NPV for each investment option by scenario and the employment of decision making tools, like **Central outlook and Real Options CBA or Least Worst Regret** to enable efficient decisions, which are repeatable through time	✓ Captures the full spectrum of outcomes and approaches to reach net zero at different rates ✓ Uses robust and well recognised tools which already exist such as investment decision pack and CBA ✓ Ensures investment decisions are balanced on a range of scenarios, with whole system and flexibility considerations
2 Clear & robust mechanism to fund investment	▪ An efficient level of ex-ante baseline funding based on our need case identification process justified through our business plan ▪ Accurate and resilient volume driver, supplement with a re-opener uncertainty mechanisms, to adjust revenues as further investment certainty emerges	✓ Ensure we only get funded for the investments we actually deliver, as identified from the need case identification process ✓ Ensures funding through the uncertainty mechanism doesn't **overall** result in over or under-funding for assets delivered
3 Utilisation metrics & incentives	▪ A metric of the capacity utilisation by end ED2, based on deployed strategic investment, either directly or indirectly ▪ A financial incentive linked to the utilisation metric, which rewards/ penalises efficiency in decision making	✓ Practical measure of a strategic choice and acts as a feedback loop to improve future need case identification efficiency ✓ Metric encourages improvements to forecasting and monitoring x Could reward/ penalise things what are out with DNO control x Could encourage a cautious approach – incremental reactive approach to investment – doesn't facilitate net zero, increases risk of wider network issues and delay for customers
4 Back-stop measures	▪ A last resort ability which allows DNOs to "park perceived excess capacity" which fails a 'used an useful' test or was deemed 'too early' following a materiality test	✓ Safety net to protect consumers from catastrophic decisions, with non-trivial bill impacts x Is complex to implement

Case study: Utilisation mechanism

Case study: Utilisation mechanism



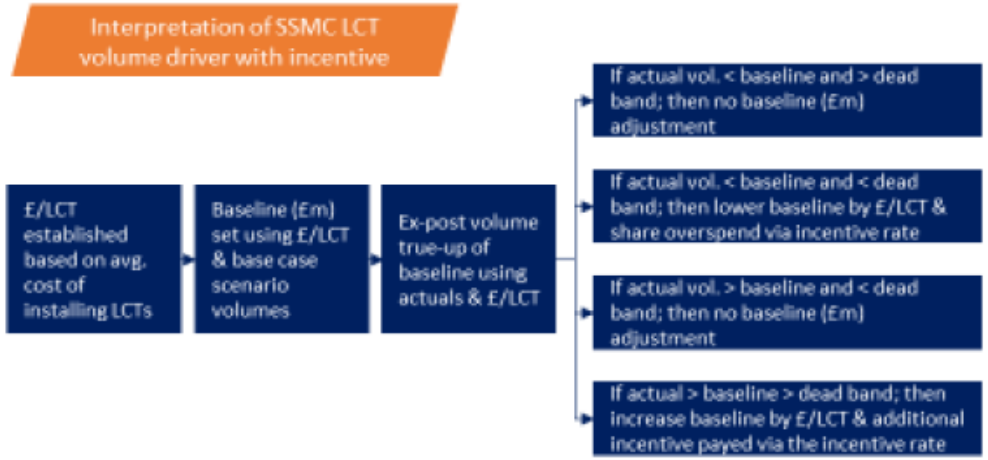
- **When should a utilisation check take place?**
  - In the above example a mechanism at the end of ED2 or ED3 might not account for the long-term nature of the investment decision made in ED2
- **What is the optimal level of utilisation?**
  - Is aiming for 100% utilisation sensible? Does this not account for our continued use of efficient flexibility?
- **How would utilisation incentivisation take account of factors outside the DNO's control and availability of information at the time of decision?**
- **Would a utilisation incentive encourage DNO's to adopt an overly cautions or incremental approach to avoid penalties**

Agenda

- *Capacity mechanism*
- *Capacity volume driver with a utilisation metric*
- **LCT volume driver**

Clarity sought on LCT volume driver & incentive design

Strategic Investment: Clarity sought on LCT volume driver & incentive design



Incentive rate = (vol. difference between actual and base + dead band)£/LCT*TIM*

N.B. Assumed that adjusted baseline following application of UM and incentive subject to TIM in usual way

- LCT incentive encourages good forecasting, and gives some investment ahead of need encouragement; with balance of DNOs risk set through dead band proposals.
- However it's complex design and have identified issues of potentially incentivising wrong behaviours:
  - £/LCT inflexible to accommodate new technologies and innovations not known at the start of the price control; suggest replacing with £/MW (connected)
  - Proposing a narrow dead band would encourage DNOs to 'low ball' the baseline to get higher adjusted allowance, according to our modelling
  - Proposing a wide dead band encourages standing still. Higher volumes vs. baseline mostly unfunded; and limited allowance adjustment for low volumes
  - Adjusted allowance, using LCT incentive is subject to the TIM, which is inconsistent with other ODI treatment
  - Ex-post true up could create cash flow constraints, especially if DNOs relying on incentive to fund significant LCT uptake vs. plan; suggest a mid-period true up
- Proposals are inconsistent with illustrative material presented previously at OAWG; clarity sought on above points. We are happy to support Ofgem here

A simple device based volume driver is one possible option, but is not developed further in this pack

A simple device based volume driver is one possible option, but is not developed further in this pack

Volume driver required	Domestic LV	Non-domestic LV	HV	EHV
Wind				
Biomass				
PV				
Heat Pumps	✓	✓		
Electric Vehicles	✓	✓		

Heat pumps and electric vehicles may take off; costs are likely to flow to the price control

Uptake of domestic solar PV has slowed as subsidies have been cut; but costs are likely to flow into the price control

Costs of other technologies or at higher voltages are more likely to be covered by connection charges[1]

- Companies forecast a "£ per device"
- Ofgem applies benchmarking tools under various scenarios to set a volume driver
- DNOs forecast their baseline uptake from available scenarios and stakeholder engagement
- Ongoing data on uptake used to monitor allowances:
  - Government datasets e.g. OLEV, RHI are most likely to be comprehensive
  - If not available, alternatives may be needed e.g. survey data
- Allowances flex up (or down) based on actual local uptake, reflecting success of both local and national policies
- DNOs make commercial decisions on when and where to invest ahead of need

Notes:
1. Subject to the outcome of Ofgem's access review and any future changes to legislation; the volume driver proposal could be extended if necessary

Overarching Working Group Strategic Investment Uncertainty Mechanisms

Introduction

- The uncertainty mechanisms proposed are a step forward in managing the requirements to meet Net Zero.
- DNOs need to have confidence to be able to invest ahead of LCTs connecting to manage safety/network risk and prevent DNOs being a barrier.
- There is no “one size fits all” approach which could apply across the voltage levels and different requirements for strategic investment.
- Net Zero will most significantly impact LV (& HV) networks. These networks have greatest uncertainty due to:
  - Network impact of LCTs is highly network specific – investment very sensitive to (location, timing, size, clustering ...)
  - Least amount of available measured data.
  - Some assets carry higher safety risk and must be replaced ahead of LCT connections (e.g. looped services).
  - Variation in intervention solutions means that a single unit cost are not easily applied.
- A combination of uncertainty mechanisms is required to facilitate LCT in ED2.

Uncertainty Mechanisms by Voltage Level

Uncertainty Mechanism		Definition	Applicability to Voltage Levels									
			132kV and 132/EHV		EHV and EHV/HV		HV and HV/LV		LV Circuits		LV Services	
Reopener		Reopener to provide additional allowances for investment that would not be covered by volume driver.	✓	**Revise reopener to resolve dead band** which currently strongly disincentives investment over baseline levels. (supported by Load Index)			✓	**Large projects exceeding a threshold included in reopener**. (E.g. large voltage uprating.) Reopener superseded by Capacity Volume Driver for High Volume Low Cost interventions.	✗	Superseded by Service Volume Driver		
Capacity Volume Driver	Tier 1: Capacity Volume Driver	DNO identifies cost of adding a unit of capacity (e.g. 1MW), to each utilisation band. Unit costs should increase with utilisation levels of networks (due to reinforcement costs).	✗	Not suitable due to large variations in projects at these voltage levels. (High Cost Low Volume) Covered by Baseline allowance and reopener (supported by Load Index)			✓	**MW of capacity added is an appropriate metric to facilitate High Volume Low Cost interventions.** Application of network wide utilisation is challenging and banding would need to be **based on modelled** values presenting challenges for consistency etc. Approach **requires testing** for unintended consequences.	✗	N/A		
	Tier 2: Service Volume Driver	Symmetrical volume driver to facilitate required wide-scale replacement of undersized and looped services.	✗	N/A					✓	Volume driver **linked to number of services replaced** to accommodate LCTs.		
Price Control Deliverables (PCDs)		**Bespoke for defined major projects** which uncertainty in progression/timing within ED2.										

Combination of uncertainty mechanisms to facilitate LCT in ED2

Uncertainty Mechanisms by Voltage Level – Discounted Mechanism

Uncertainty Mechanism	Definition	Applicability to Voltage Levels									
		132kV and 132/EHV		EHV and EHV/HV		HV and HV/LV		LV Circuits		LV Services	
LCT Volume Driver	Definition of output or outcome that would be achieved as a direct results of this strategic Investment.	×	N/A	×	N/A	×	N/A	×	N/A	×	N/A

- DNOs need to have confidence to be able to invest ahead of LCTs connecting to manage safety/network risk and prevent DNOs being a barrier.
- Challenges with notifications of LCTs makes measurement of volume diver problematic.
- Large range in LCT requirements - e.g.
  - slow/fast EV chargers
  - large range in HP capacity
- Large range in network impacts - e.g.
  - large urban LV network with headroom vs small rural network fed from 25kVA pole mounted transformer
- Cannot consider granular network requirements – e.g.
  - LCT clustering
  - Uncertainty for services needs to be based on number replaced rather than linked to wide area LCT volumes

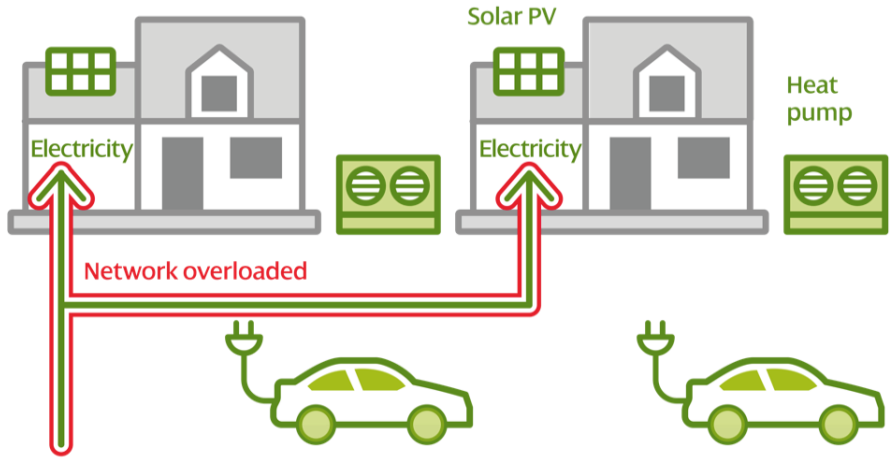
Example of requirement for Service Position Volume Driver

We must upgrade household electricity supplies to ensure that customers continue to receive a safe and reliable supply. Network investment is complimentary to using flexibility.

Network investment

Cut out units: older units will need to be replaced to facilitate LCT demand.

Service cables: up to 0.5 million* homes supplied by 'looped' service cables that cannot accommodate LCT demand.



Electricity use increases **threefold –** the network is not currently designed for this. We must intervene to avoid customers losing supply and damage to critical infrastructure.

Flexibility

Domestic generation, heat pumps and other white goods flexibly respond to price signals.

EV flexibility, such as smart charging and vehicle-to-grid.

Domestic Flexibility services can help manage constraints in the wider network but are **not effective at service level**.

*Values for SPEN's distribution network

ofgem Making a positive difference for energy consumers

Ofgem is the Office of Gas and Electricity Markets. We are a non-ministerial government department and an independent National Regulatory Authority, recognised by EU Directives. Our role is to protect consumers now and in the future by working to deliver a greener, fairer energy system.

We do this by:

- **working with Government, industry and consumer groups to deliver a net zero economy at the lowest cost to consumers.**
- **stamping out sharp and bad practice, ensuring fair treatment for all consumers, especially the vulnerable.**
- **enabling competition and innovation, which drives down prices and results in new products and services for consumers.**

www.ofgem.gov.uk