

RIIO-ED2 Overarching Working Group

Meeting 4



17 April 2020

As we are now holding these meetings via teleconference, we think it best to move towards shorter but more frequent meetings – thoughts?

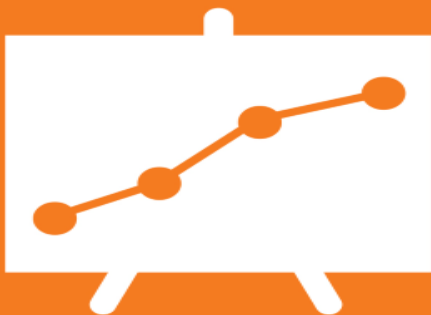
We are proposing to hold another OAWG meeting on 6 May

Proposed topics to include

- Net zero
 - Business plan incentive / business plan guidance
 - Updated from the sub groups not covered at today's session (Scenarios/local planning and DSO)
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- Later in May, we would propose to revisit the options for dealing with LCT-related expenditure discussed at the March meeting. A summary of responses to the actions from that meeting will be circulated shortly.

Competition policy overview

ED-2 OAWG



OFG1161

Graeme Barton
17 April 2020

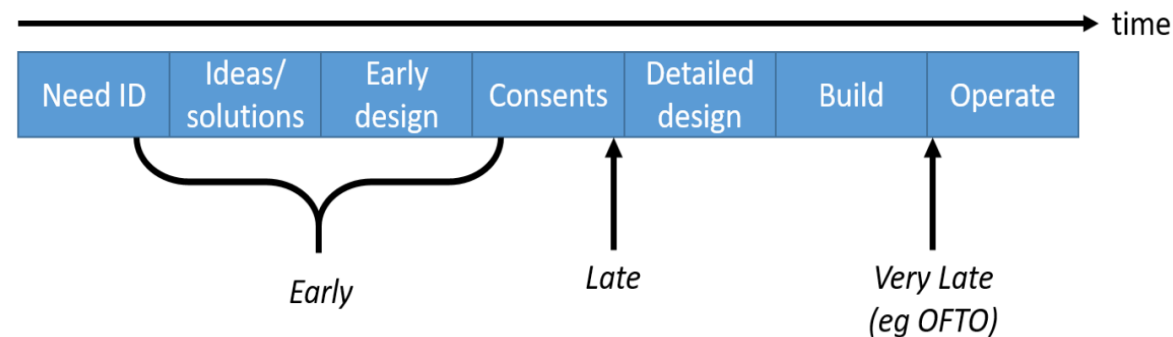
These slides aim to provide an overview of the position we have taken on competition in other sectors (ESO, ET, GT and GD), and pull out key issues we are considering ahead of ED-2 Sector Specific Methodology Consultation.

Within ED-2 Framework Decision, we decided to continue to work towards introducing early and late competition models. We will also develop arrangements to ensure native competition is undertaken in an efficient manner.

The slides as follows, will focus on the **three main streams of competition**:

- **Native Competition**
- **Early Competition**
- **Late Competition**

Typical project process



What is Native Competition?

- Competitions/tenders run by network companies within the price control framework.
- These are incentivised as result of the TOTEX incentive mechanism (for instance, the use of flexibility tenders in electricity distribution).

What we've said in other sectors:

Within the [RIIO2 SSMD decision](#), we confirmed:

- Network companies will be expected to develop and present a competition plan (within their Business plans), which aligns with our native competition best practice principles.
- Top quality 'Competition Plans' i.e. plans which are particularly ambitious and go above and beyond the existing minimum obligations, may be eligible for awards under the Business Plan Incentive scheme.
- These principles are not sector specific and are to encourage networks to be ambitious in their obligations for consumers. Therefore, it is very unlikely they will differ for ED2.

What do we need to consider for Electricity Distribution?

- How to incentivise native competition within business plans?
- Links to flexibility services – importance of technology agnostic tenders and application of Clean Energy Package.

What is Early Competition?

- Competition run prior to the project design process, to reveal the best idea to meet a system need.
- Provides an opportunity to reveal innovative, non-network (and flexible) solutions, which are not always exclusively physical infrastructure projects.

What we've said in other sectors:

Within the [RIIO2 SSMD decision](#), we confirmed:

- In RIIO-2, certain projects may be subject to early competition.
- Network companies will be required to identify projects which have a value over £50m and are contestable as being suitable for early competition – this should be done within their Business Plans.
- We will continue to develop the ESO's ability and capacity to facilitate early competition.

Following on from the SSMD, we also issued an [open letter](#) to the ESO to clarify what we would expect to see in its early competition plan (i.e. clear description of proposed models and the roles and responsibilities for all parties, within these models). ESO published [this update](#) on their work in February.

What do we need to consider for Electricity Distribution?

- Do we seek to introduce early competition in ED?
- How does this fit alongside DSO and flexibility work?
- How are projects identified? What models, criteria etc are applicable? Are there material differences between ED and ET that require material changes to design of the competition?
- Who would run any early competition?

What is Late Competition?

- Tendering out construction, financing and operation (for a long period, eg. 25 years) of infrastructure projects – 'late' refers to completed final designs with consents in place.

What are the three models of late competition?

- **Competitively Appointed Transmission Owner (CATO) regime**

CATOs are granted a licence to own and operate onshore transmission assets on the basis of competitive tendering. In order to be considered for the CATO Regime, Onshore transmission assets are required to meet a need on the transmission system and meet the criteria of being 'new, separable and high value'.

- **Special Purpose Vehicle (SPV)**

An incumbent TO runs a competition for the construction, financing, and operation of the project through a project-specific SPV. The SPV competition determines an annual revenue stream for the project, reflecting the underlying capital and operational costs and weighted average cost of capital (WACC), which would be paid to the SPV by the TO. The TO recovers these costs from users of the system (and ultimately from consumers) through its transmission licence.

- **Competition Proxy Model (CPM)**

Under the CPM we would set the TO's allowed revenue for a project in line with the outcome we consider would have resulted from an efficient competition for construction, financing and operation of the project. We fix this revenue for a defined period. The revenue is based on our determination of a project-specific cost of capital for the construction and operational periods of the revenue term and our determination of efficient costs for the project.

What we've said in other sectors:

In our [RIIO2 SSMD decision](#), we confirmed:

- The criteria to determine suitability of a project for late competition (i.e. new, separable, and high-value £100m+).
- The availability of the existing late models (CATO, SPV, CPM) in those sectors for projects meeting the criteria.
- Our expectations on network companies to identify projects that they consider are likely to meet the new, separable and high value criteria for late model competition, within their Business Plans.
- We will decide whether to apply late competition to a project during business plan assessment, or during a 'needs case' assessment for any project put forward under an uncertainty mechanism.

What we meant by 'new, separable and high-value'?

- **'New'** A completely new transmission asset or a complete replacement of an existing transmission asset.
- **'Separable'** The boundaries of ownership between these assets and other (existing) assets can be clearly delineated.
- **'High Value'** The expected project capital expenditure is £100m or greater at the point of our initial assessment.

What do we need to consider for Electricity Distribution?

- Do we seek to introduce late competition in ED?
- What models of late competition could be used in ED-2?
- Who would run different models of late competition?
- How would we identify projects for late competition? Do the same 'new, separable and high-value' criteria apply? Are there benefits to clustering similar projects together?

Energy Networks Association

ED2 Competition Sub-Group - Competition in Distribution

17 April 2020

Scope of the Competition sub-group

- ❖ Sub-group has considered the impacts of introducing new competition delivery models across distribution networks.
- ❖ The sub-group has focused on early and late competition models.
- ❖ As procurement practices are individual to each DNO, native competition has not been considered in detail. However, an initial view was that Ofgem's Best Practice principles reflect existing procurement practices, given the UK Utilities Contracts regulations which DNOs follow.
- ❖ Sub-group consists of DNOs, the ESO and 3rd parties (Transmission Investment).

Focus of the sub-group's work

- ❖ As Ofgem has yet to set out detailed proposals for early and late competition models in distribution, the sub-group is unable to offer a detailed critique of Ofgem's intentions for ED2.
- ❖ The sub-group has instead considered proposed early and late competition models for ET2, although the sub-group view is that existing models for transmission will not be suitable for distribution networks without revision.
- ❖ Instead, sub-group has proposed key priorities which should be reflected in any early and/or late competition models to be introduced in ED2

Key priorities to be reflected in any new Competition Framework (1)

- ❖ **Demonstrating additional consumer value** – Shouldn't be '*competition for competition's sake*'. Additional consumers benefits, compared to the status quo, must be delivered and clearly evidenced. Further Impact Assessment work is needed to determine whether early and/or late competition models should be introduced into the ED2 framework. Consideration should also be given to introducing a stage gated CBA process in ED2 to assess whether a project proposed for delivery under a particular competition model will deliver additional consumer value.
- ❖ **In pursuit of Net Zero** - any proposals to introduce competition models in ED2 should be designed in a way that avoids unnecessary complexity and ensures the timely delivery of distribution projects - key to supporting the transition to a net-zero economy.
- ❖ **Importance of a legislative framework** - appropriate powers and legislative frameworks must be in place prior to developing competition to protect consumers. Ofgem must have powers to take action against 3rd parties where obligations are not met and services are not delivered.

Key priorities to be reflected in any new Competition Framework (2)

- ❖ **Transparent competition criteria** – must be defined in advance of ED2 so DNOs (and 3rd parties) have a clear understanding of future projects, which could potentially be subject to an early and/or late competition model.
- ❖ **Maintaining a level playing field** - any competition models adopted must be designed in a way which promotes a level playing field for all service providers to ensure the same standard and level of protection is provided for network security and customer service, as currently provided by licensees.
- ❖ **Transition to DSO** –many of Ofgem’s early competition objectives could be delivered through DSO functions by considering flexibility solutions as an alternative to build reinforcement solutions. Any early competition framework should therefore flow from the DSO function agreed for ED2.
- ❖ **One size models won’t fit all** - given the differing nature of the distribution network and in recognition of its existing competitive markets, the early and late competition models developed for ET2 will not necessarily be fit for purpose and will need careful review.

Existing competitive practices in Distribution

- ❖ Mature competitive markets are operational in distribution, whereby 3rd parties have the opportunity to connect customers, design/own/operate distribution assets and provide flexibility services:
 - **Competition in Connections** - a mature, well-developed market which includes elements of Ofgem's native, early and late competition principles with framework suppliers being utilised as part of Business as Usual practices.
 - **ICPs/iDNOs** – strong similarities to early and/or late competition models with 3rd parties potentially undertaking design work as well as the consenting, building, owning and operating of distribution network assets.
 - **Flexibility Markets** - all DNOs now operate flexibility markets to address needs as per the ENA's Open Networks project. Includes a commitment from DNOs to market test all constraint related work at a primary substation level (11kV and above), ahead of making decisions on the intervention.

Early Competition models in Distribution

- ❖ Flexibility will undoubtedly play a key role in ED2, identifying non-network solutions for network needs.
 - ❖ Evolution of whole systems alongside Distribution System Operation (DSO) in ED2 will play a leading role in designing and delivering such flexibility services.
- “DSO is a set of functions and capabilities that in combination allow the flexing of demand and generation to be used to optimise the operation of networks. This provides:*
- *Optionality in network investment decisions*
 - *Greater utilisation of existing and new network assets*
 - *Market facilitation*
 - *Security, sustainability and affordability”*
- ❖ Many of Ofgem’s early competition objectives could be delivered through DSO functions by considering flexibility solutions as an alternative to build reinforcement solutions.
 - ❖ Any early competition models for ED2 must flow from decisions on the DSO function for ED2.

Late competition models in Distribution

- ❖ iDNO market displays many of the characteristics of Ofgem's early and late competition models, in allowing 3rd parties to compete for the design and/or operation of new connections/assets. Important that lessons are learned from iDNO experiences to date before looking to introduce new models.
- ❖ Project thresholds are a key driver in late competition. Whilst the High Value Projects (HVP) regime, with its £25m threshold, is already operational under ED1, such a threshold should not automatically be considered for use as the threshold for late competition in ED2.
- ❖ Instead further work is required on project thresholds to identify at what point consumers will benefit from projects delivered from competition models i.e. where the additional costs for tendering etc are outweighed by additional consumer benefits.
- ❖ 'Deliverability Risk' – this must be recognised and taken into account; deliverability both in terms of recognising market maturity and ability to deliver within the timeframes, at efficient cost and with the same level of reliability given impact on security of supply.

Next Steps

- ❖ The sub-group will actively engage with the ESO as it looks to develop its paper on the potential roles the ESO could perform in future models of early competition in distribution, as part of the Early Competition Plan's work programme;
- ❖ DNOs will explore in greater detail the applicability of proposed early and late competition models for ET2.
- ❖ Given the integrated nature of the DSO and Ofgem's early competition objectives, the Competition sub-group will look to engage with the DSO sub-group as both workstreams develop.
- ❖ Sub-group keen to work with Ofgem in the further development of a competition framework for ED2.
- ❖ Our understanding is Ofgem will consider what opportunity there is for early and late models when they see the nature and value of investment / projects in Business Plans.

Energy Networks Association

Ofgem RIIO-ED2 OAWG Data sub group

Evaluating price control mechanisms for a big data environment
Supplementary Material
April 2020

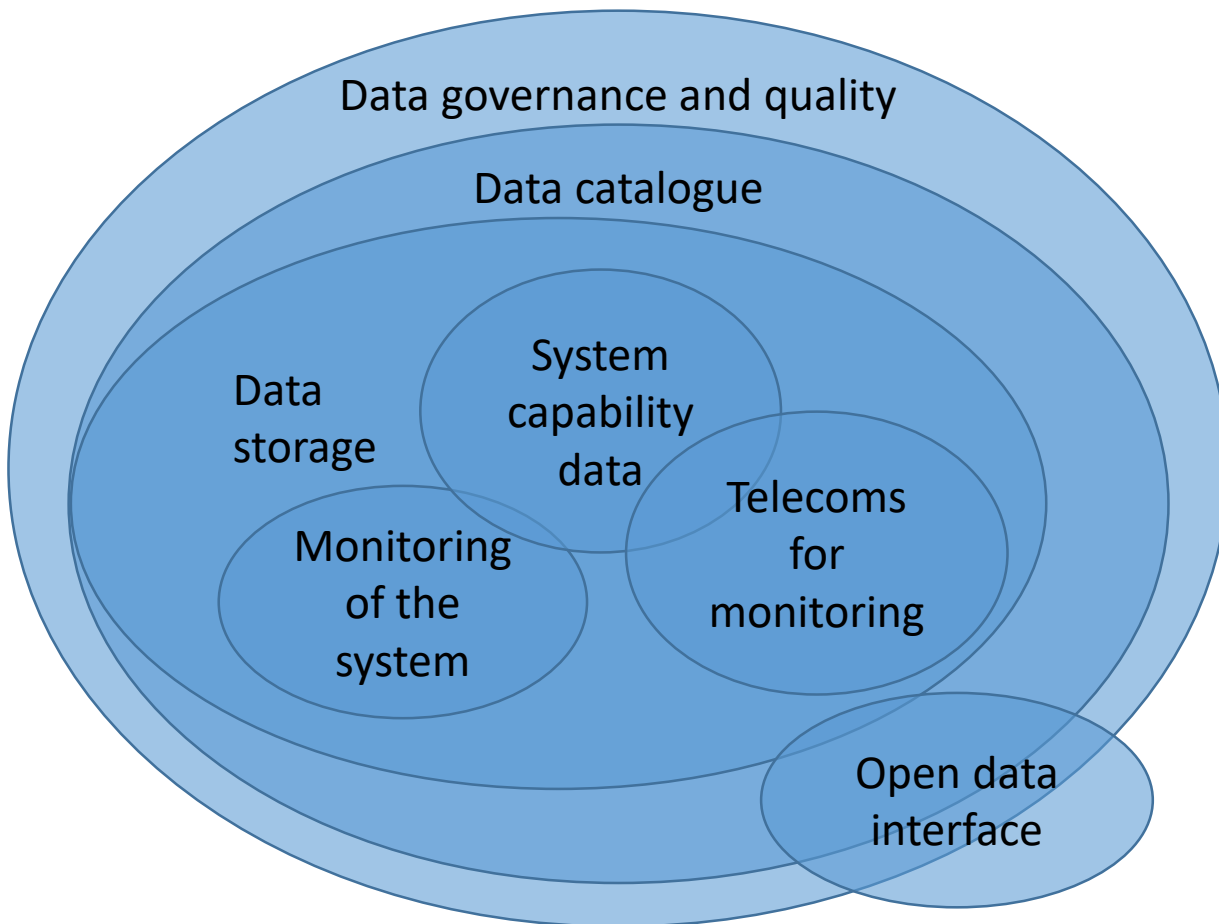
Increasing our data capabilities will be a key enabler for the energy transition to low carbon and will deliver benefits in network management efficiencies

Customers and stakeholders will need DNOs to be more data driven and capable. Testing is required to determine willingness to pay (WTP). The **transition to DSO** will generate a **requirement for more data**, technology and skills which could include, but not be limited, to:

- An **interoperable data structure** – data catalogue, data dictionary, meta data, data triage
- Investment in the capture, recording, analysis and sharing of new data – **monitors, sensors, telecommunications**, etc.
- **Data quality controls** and framework for data collection and storage, ongoing governance with **increasing data literacy**
- Scalable data portals and interfaces to **enable open data** - to provide data and information to the market as part of a **neutral facilitation service** that enables competitive market providers to deliver services to customers
- Appointment of **data scientists, stewards** and **business data owners** with deployment of supporting data tools
- A **shift in culture** to be more data-driven, **leaders** have time to consider data, updating **business decision making** processes
- Incrementally **addressing legacy data** to ensure it is up to this new standard appropriate for external commercial use
- A shift to more **agile working** to ensure skills to be better tailored to tasks
- An **industry wide data model**, e.g. migration to more cloud services, active multi-sector external stakeholder engagement

Guidance on any national standardisation approach to data across DNO's needs consideration and may require reflecting in business plan guidance. This subgroup's expectation is that each DNO business plan will largely approach data in the way most appropriate to their circumstances and own stakeholder input. There may be a need for a new industry body to decide in a flexible way what data should be open and provided by DNOs. The purpose of a central body might be to coordinate activity across network organisations, not just from an independence perspective but also with the wider remit (like the ENA's Data Working Group) of taking ownership of delivering a comprehensive digitalisation agenda and ensure each DNO is actively pursuing opportunities to develop efficiencies.

Challenges in using an output incentive mechanism



The relationship between the individual competencies and capabilities is complex. There are **dependencies and overlaps**. Determining the hierarchy and the order of activities will vary by DNO, as will the prioritisation, degree of work and the tasks required.

Technology advancements are likely to be a **fast moving** area. DNOs will need to be **more responsive** on data needs and **retain flexibility to deliver benefits**. Defining measures **too tightly or early** could be **counter-productive**.

Investment will be **iterative in nature** and is not comparable with typical asset acquisition. Incentivising on volume alone is not sufficient as **measures of quality and relevance** are also required.

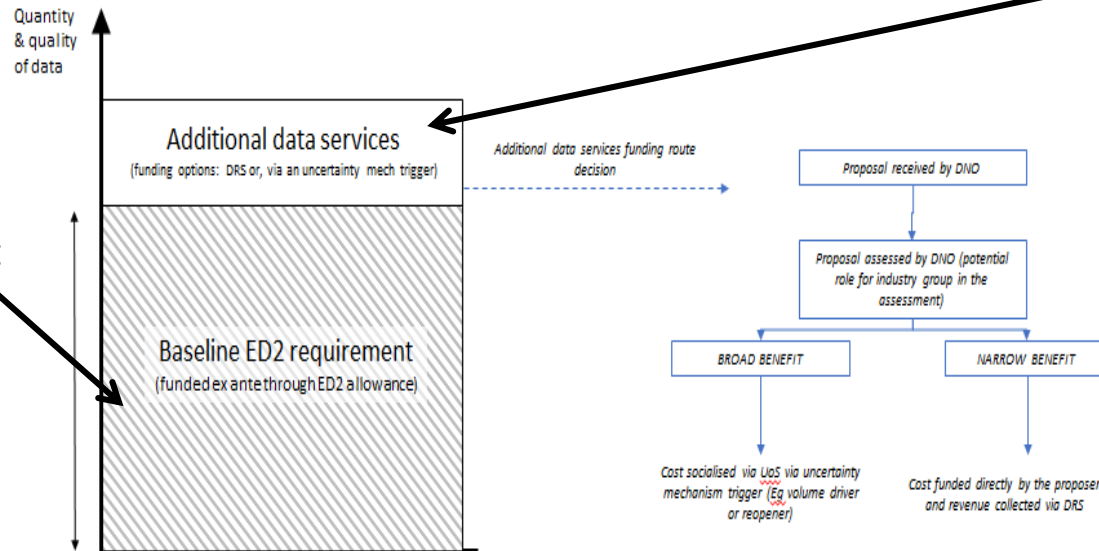
DNOs have a history of demonstrating **successful IT collaboration** and any mechanism would need to **motivate appropriate behaviours**, **reflect regional variation** and disparity of user requests.

Retaining flexibility during ED2 to deliver DSO/DNO data role

Baseline:

Data is needed for DNO operations (asset management, new connections) and DSO operations (DSM aggregation, local trading, regional carbon plans).

Monitoring could be undertaken in a similar way to Finance in that best practice guidance and standards ensure robust and reliant management. Costs would be covered by the base revenue price control and business case process.



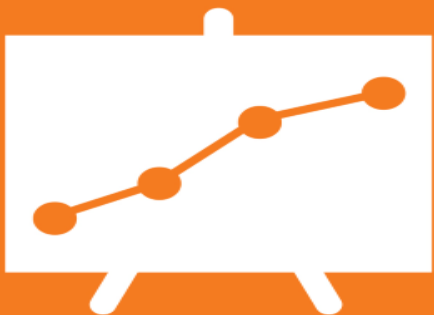
Additional:

Data requirements for users outside of the organisation, e.g. data portal. This element would be subject to a separate consideration. For example, a reopener might be appropriate, based on assumptions made on original business plan for an addition licence obligation that would require DNOs to provide specific data items.

Alternatively a use it or lose it allowance could work along with transparency on the case for each customer funded data set being provided. Non public interest data could be DRS funded by the party wanting it.

Consideration of the free market environment will be reflected in the DNOs business plans. For example, data provision services related to regulated activities would be uniquely within the DNO/DSO whereas analytical service could be provided by a range of third parties.

LCT Incentive ED2

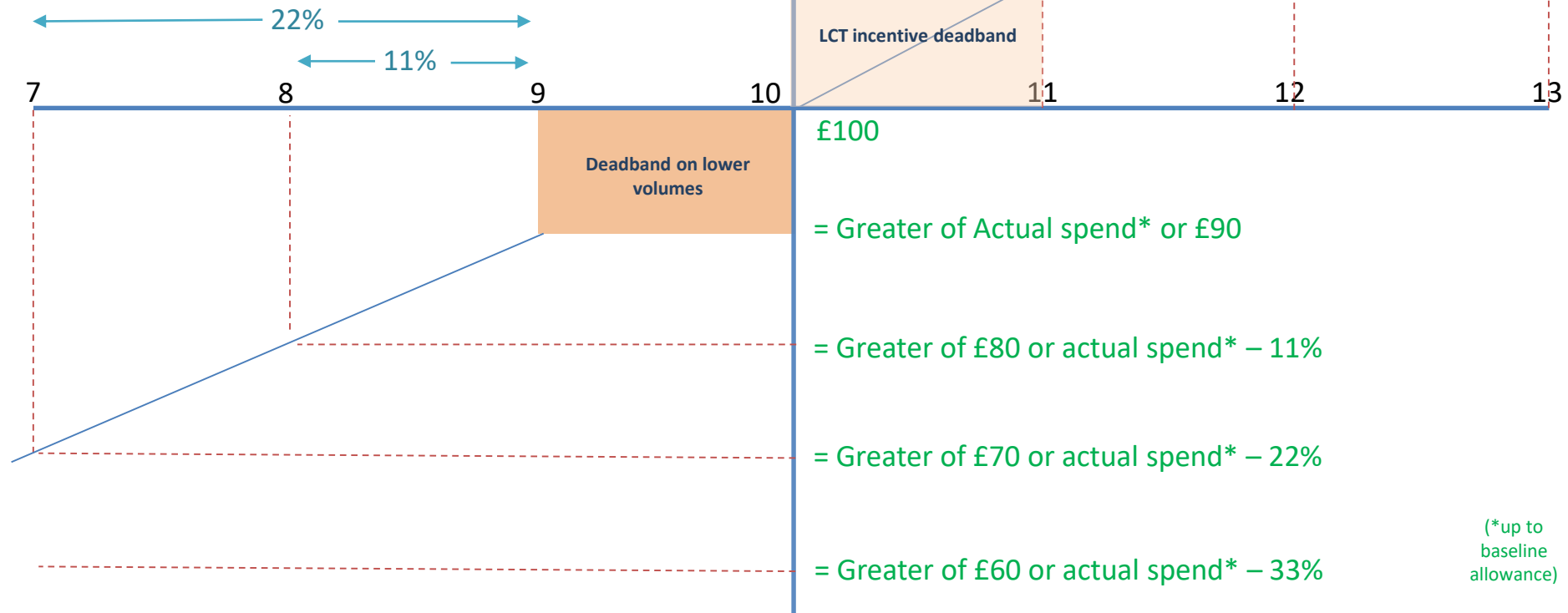


April 2020

- Effectively it's a volume driver.
 - DNOs initial allowance is based on their **forecast** of LCT volumes X unit cost allowance
 - At end of period, DNO allowance is adjusted to **actual** LCTs connected X unit cost allowance
 - Under/over spends are subject to the totex sharing factor (**the cost incentive**)
 - Higher volumes of LCTs (than originally forecasted) earn the DNO an additional return (**the volume incentive**)
 - A deadband offers the DNO some protection if they make anticipatory investment in line with their forecast but a lower volume of LCTs connect
 - DNO gets to choose deadband, based on their level of confidence in their forecast
 - Symmetrical deadband on volume incentive.

DNO forecasts 10 LCTs @ £10 per unit.
Receives £100 in baseline
DNO chooses a 10% deadband

Actual volume of LCTs connected
Allowed revenue post adjustment for volumes
LCT incentive = £1 per LCT



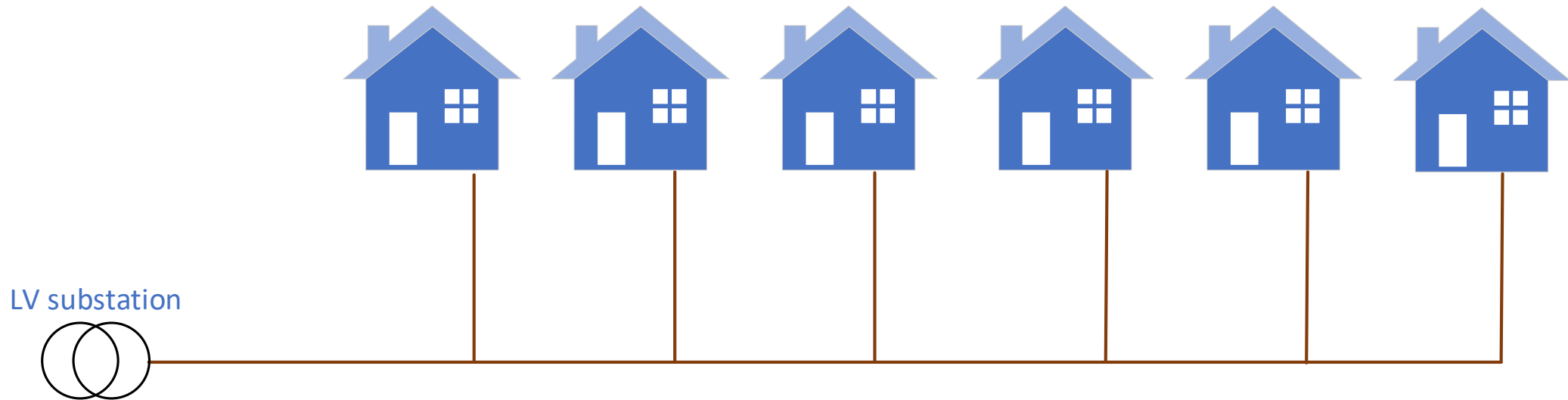
Examples of actions to provide network capacity

Prepared for OAWG decarbonisation and strategic investment subgroup

17/04/20

Reinforcement of LV networks

Typical underground LV network



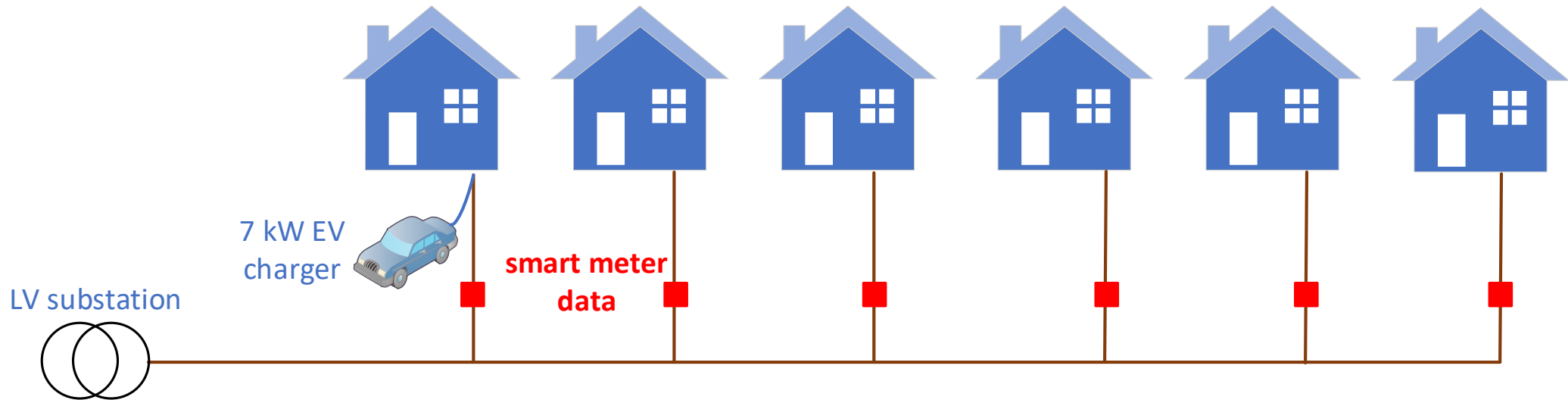
underlying domestic demand not expected to increase significantly



LV reinforcement mainly based on LCT uptakes

Reinforcement of LV networks

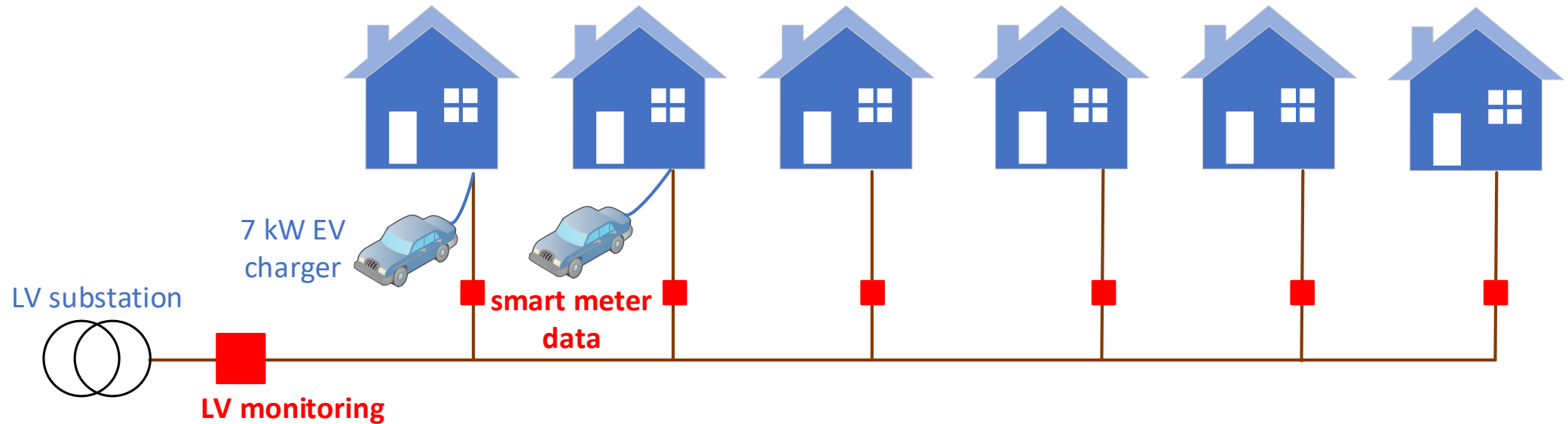
Underground LV network



10% customers with EVs → retrieve smart meter data to monitor for thermal & voltage issues

Reinforcement of LV networks

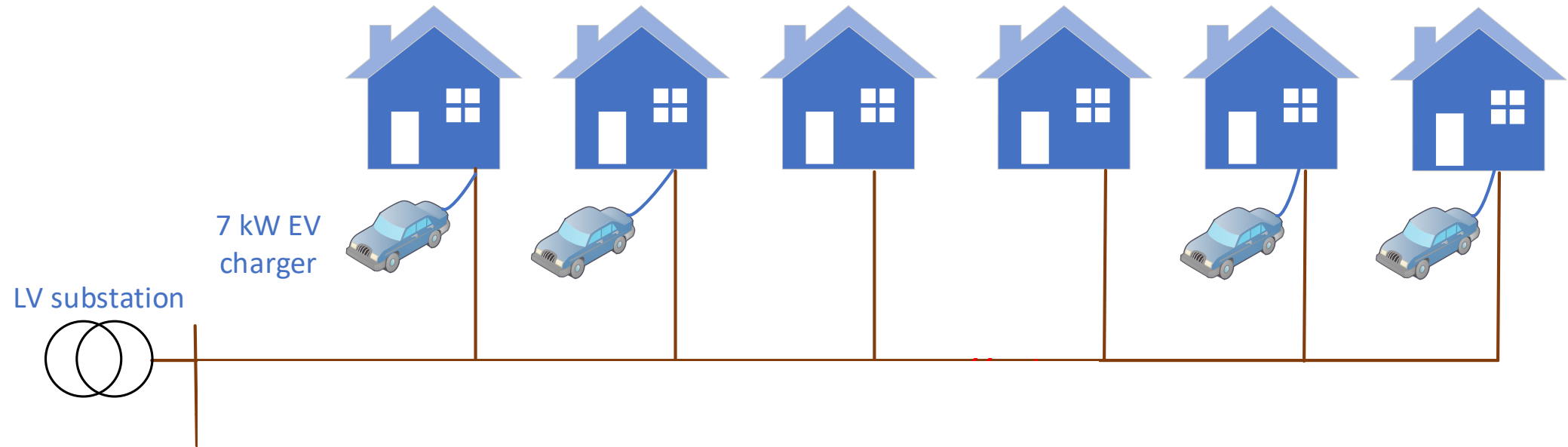
Underground LV network



further rise of LCTs → install additional LV monitoring for harmonics

Reinforcement of LV networks

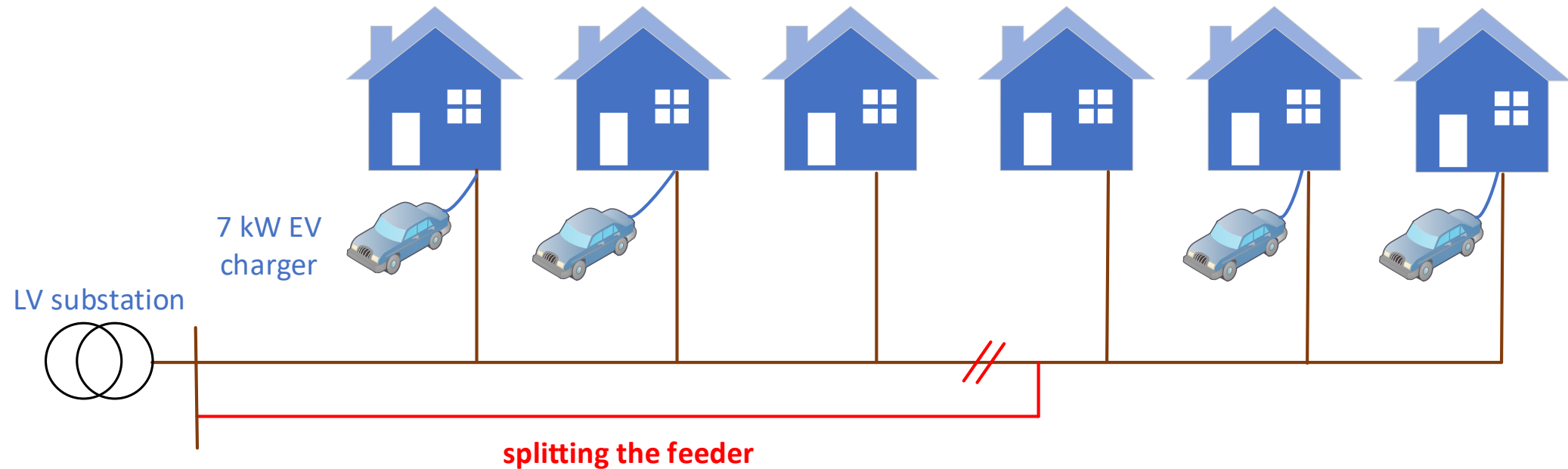
Underground LV network



voltage & thermal issues → employ fit for purpose efficient customer focussed solutions
Potential to contract for flex services from the EV's electricity suppliers or an aggregator?
Could Energy Efficiency (EE) address the need?

Reinforcement of LV networks

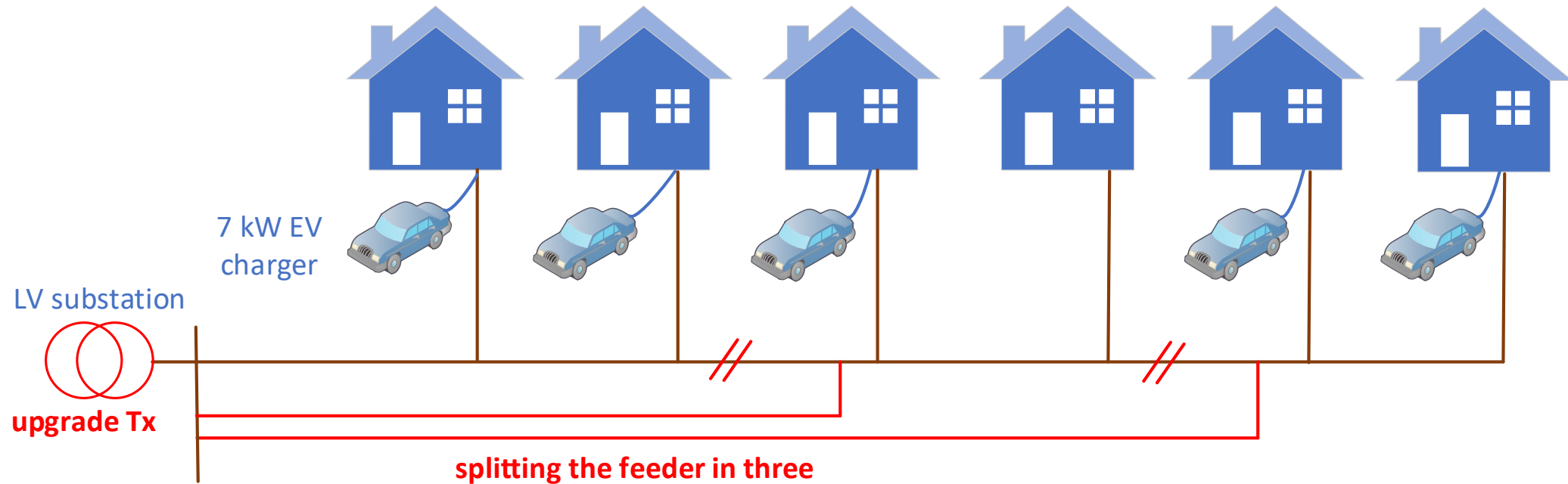
Underground LV network



voltage & thermal issues → employ fit for purpose solutions

Reinforcement of LV networks

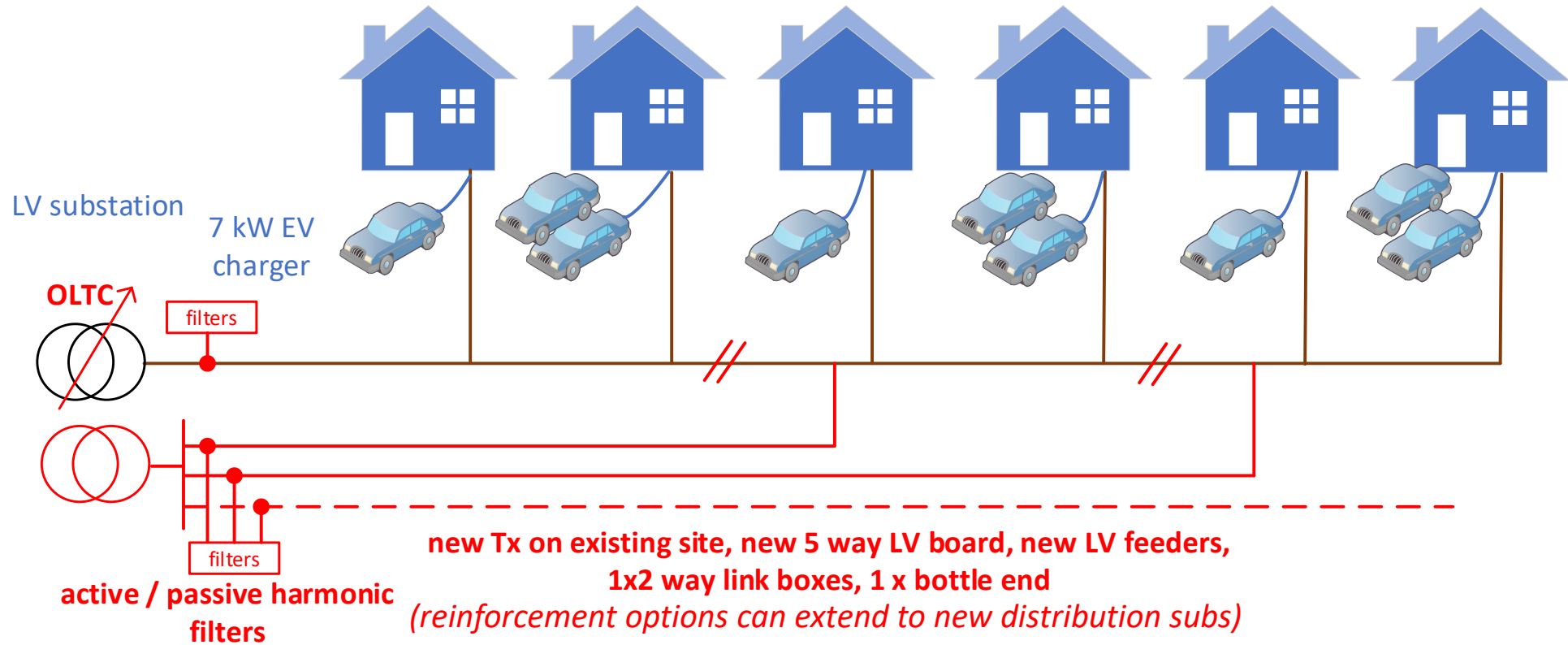
Underground LV network



higher EV penetration → combination of solutions to tackle thermal & voltage

Reinforcement of LV networks

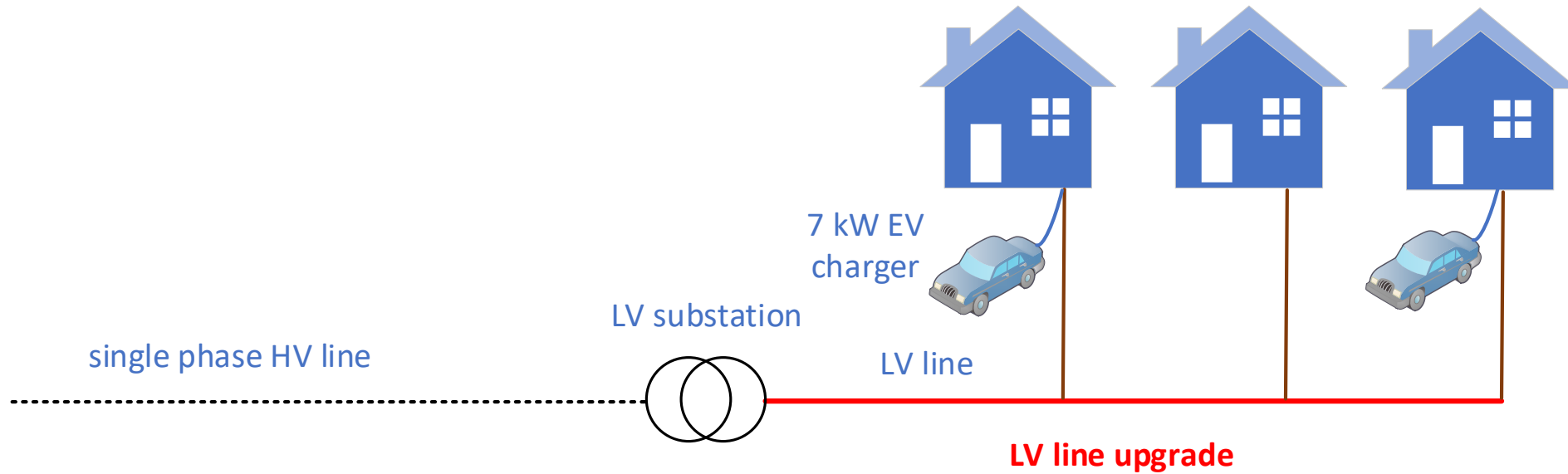
Underground LV network



highest possible EV penetration → combination of solutions based on availability and ability to tackle all issues (thermal, voltage, harmonics)

Reinforcement of LV networks

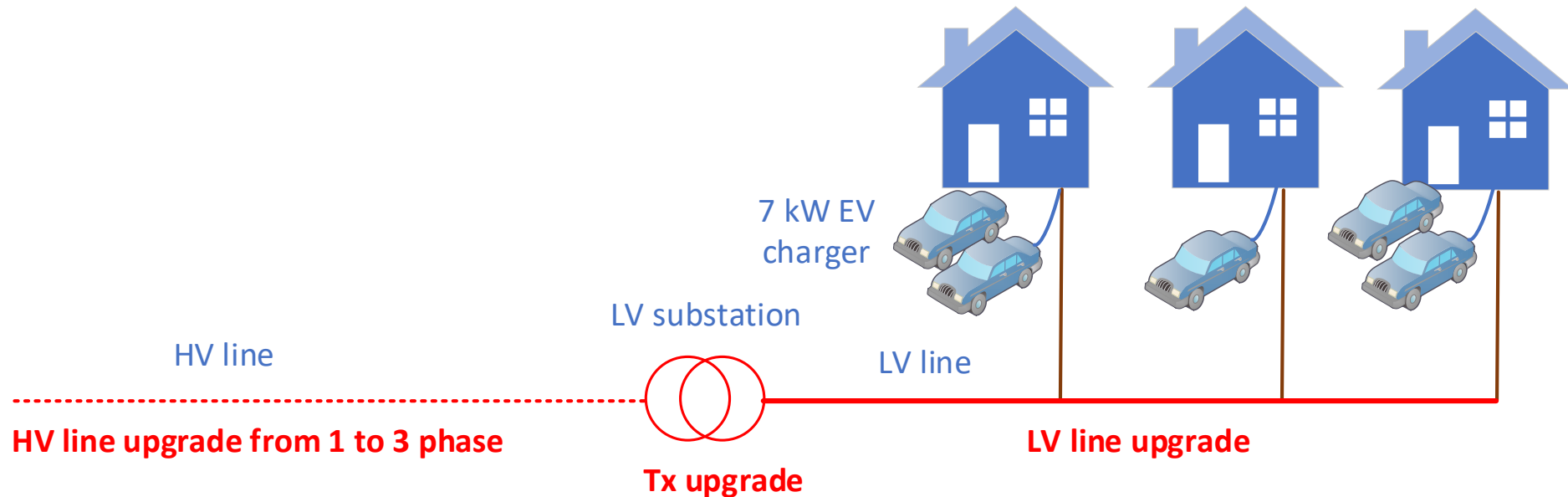
Rural overhead LV network



even limited EV penetration → trigger reinforcement (voltage & thermal)

Reinforcement of LV networks

Rural overhead LV network



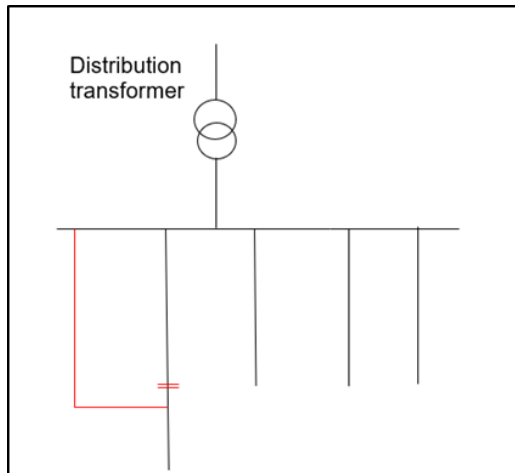
combination of interventions in HV and LV
required to tackle thermal & voltage issues

Reinforcement of capacity LV networks options

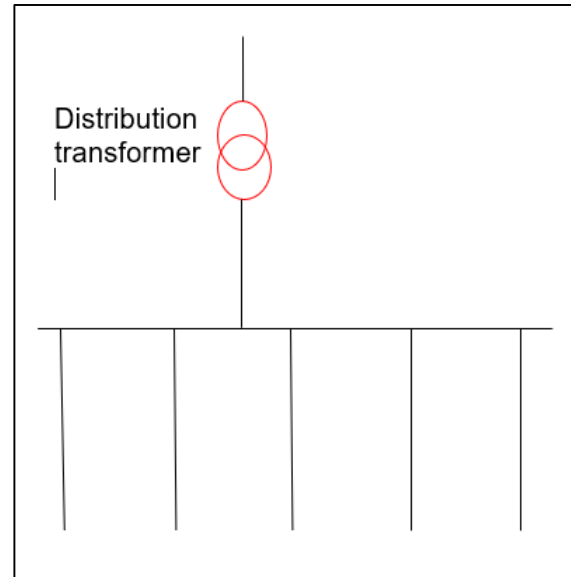
Consider energy efficiency, flex services and innovative options and assess best solution for customers

Urban

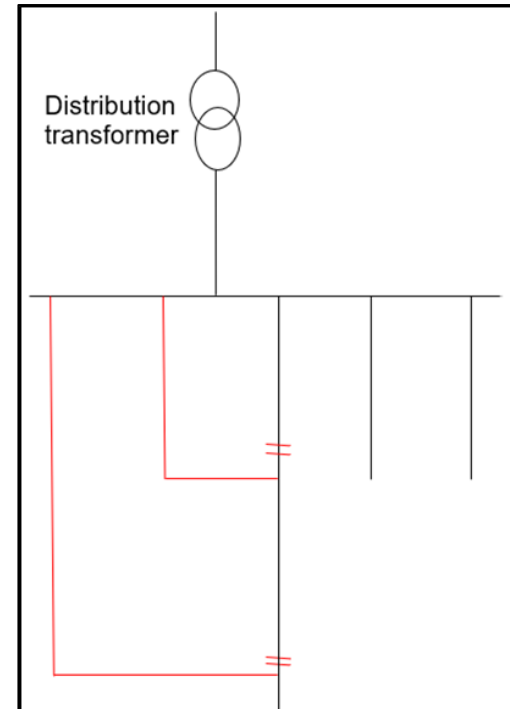
split the feeder



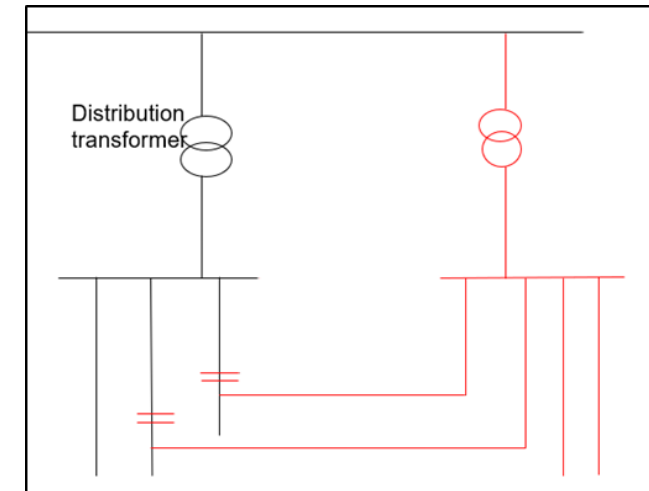
Tx replacement



split feeder in 3



new Tx or new LV sub



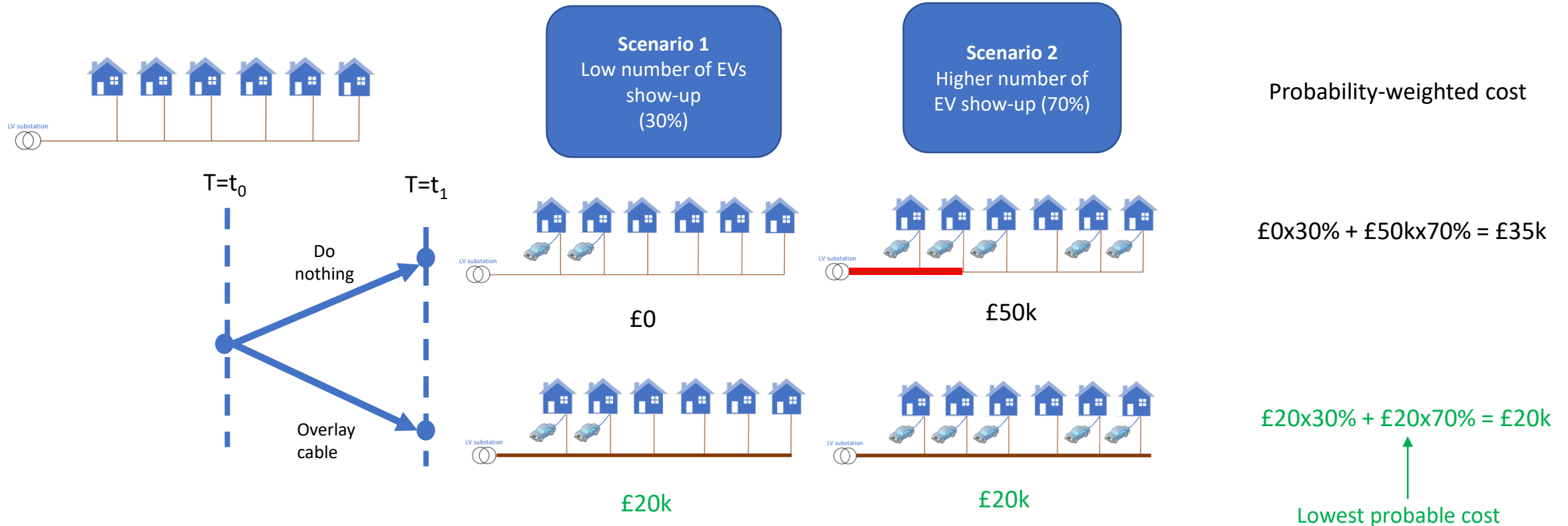
Rural networks likely to have different types of solutions

higher EV penetration → combined solutions based on availability, impact and cost

More decisions and with a greater level of uncertainty

- Uncertainty associated with the take-up of LCT is not only spatial (*where*) and temporal (*when*), but there is also a lack of certainty on the magnitude (*how much*)
 - For any given situation there are a number of possible outturn supply and demand scenarios
 - For each scenario there are potentially different expenditure options:
 - flexibility vs. conventional network reinforcement; options will differ by location, network topology etc.
 - well-defined CBAs will take account of lifetime costs and benefits of alternative options in each scenario
 - Different mathematical techniques can be used to help make decisions across scenarios once the costs and benefits for each have been calculated. They mainly fall into two groups:
 - **Probabilistic techniques**- where probability weighting is assigned to scenarios based on a likelihood assessment, and decision-tree analysis is used to inform choices
 - **Deterministic techniques** - where all scenarios are treated as equally probable, and a Least Worst Regret approach is used to inform choices
 - SEN is working with Imperial College London to develop an optimal approach for RIIO-ED2 and to better understand the relative pros and cons specific to DNO networks and consumer needs
-

Example of a probabilistic-based decision approach



- $t_1 - t_0 = 3$ years (example)
- Cost of strategic investment is £20k
- Cost of unplanned remedy due to insufficient capacity is £50k
- Additional £30k is due to:
 - (i) repair damage; (ii) unplanned work and/or capacity purchase (iii) reputational damage; (iv) whole system costs e.g. additional losses – **DNO costs**
 - (v) customer 'cost' of failure of DNO to meet LCT demand (loss of utility – EV, heat pump) – **Customer cost**

OAWG Subgroup
Decarbonisation and Strategic
Investment think piece on
decision making for load related
expenditure

17/04/20

OAWG

Background

- Some DNOs have worked together to develop a Capacity Mechanism as an alternative to the existing ED1 treatment for load related expenditure; the change being driven by the relative uncertainty in pace of change in the ED2 period as the UK drives towards it's Net Zero targets.
- The Capacity Mechanism is a volume driver with the measure being capacity released/created in response to either user actions or change in demand (reactive investment) or to enable future capacity requirements to be met.
- Capacity can be either released by flexibility services, energy efficiency or created by asset based solutions or combinations of these. Other innovative ways of creating capacity might come forward during ED2.
- When presented to the OAWG in March 2020, Ofgem had a number of questions which are being assessed through the creation of an options matrix where the Capacity Mechanism can be considered alongside alternative options to help stakeholders, companies and Ofgem consider which options may be appropriate to be presented within the forthcoming ED2 Sector Specific Methodology Consultation.
- The Capacity Mechanism differs from alternative proposals as it does not distinguish between the driver for capacity, whether this is LCT enablement, economic growth and can be adjusted for any impact of access and charging reform.
- One question which was specifically raised as a characteristic of the Capacity Mechanism was how to mitigate the risk of asset stranding and whether a utilisation measure would be appropriate.

Decision making & ensuring efficient investment

- First and foremost is the need for companies to ensure they have robust decision making, supported by forecasting using a consistent methodology and an agreed CBA.
- All decisions should be assessed as being made with the best information available at the time which is in line with Ofgem's position for ED1 as stated in their December 2019 decision on closeout methodology:

"In undertaking its assessment of the licensee's efficient Load Related Expenditure, the Authority will interpret efficiency to mean investment decision-making by a licensee that:

(a) Took into account all the information that could reasonably have been expected to have been available to the licensee at the time of making the relevant decision(s); and,

(b) Resulted in Load Related Expenditure during the Price Control Period that would reasonably, at the time of making the relevant decision(s), have been expected to be required in order to meet the changing and uncertain needs and requirements of the licensee's Distribution System."

Question: This ED1 approach is already broadly in line with T2 volume drivers for demand and generation driven investment.

Utilisation

In broad terms 'utilisation' is making effective use of something.

For networks this means in general terms the current being carried by a network asset does not exceed the maximum current carrying capacity of the network asset i.e. demand does not exceed capacity.

It is a snapshot of a point in time at a specific point of the network, and can be used:

- To support development of forecasts, to indicate a potential need for future action
- At the time and as part of the decision making process for actually taking action (e.g. flex tender)
- After capacity has been created/released to see how it is being used

Utilisation - metrics

Potential metrics

There are three potential metric groups identified:

Direct representation

- Based on measurement of network utilisation on the network

Indirect representation

- Those based on proxies for demand (counts of households, LCT numbers etc)

Track how forecasts change

- Monitoring of accuracy of forecasts over a prolonged period of time to confirm the extent to which a forecast is “on track” as time progresses by comparing reforecasts to the initial forecast.
 - *Potential to incentivise forecasting approach?*

Considerations

- Anticipatory investment, particularly to enable LCT update and economic growth, by its nature means that the utilisation will follow the investment, sometimes in future price controls. Any assessment should be made “in the round” as there will inevitably be some forecasts that will take longer to manifest in load demand than others.
- To enable incentivisation of anticipatory investment and avoid becoming a disincentive to companies, measurement of utilisation should be undertaken over a relatively long time horizon. Some investments will take multiple price control periods to become fully utilised, and measurement in-period will provide little intelligence.
- Complexity needs to be considered – a relatively simple and straightforward to implement volume driver could become too complex by adding in ex-post assessments, particularly those which span price controls.

Consideration on Direct metrics

- Grid (132kV) and Primary (33kV) substations have an established process with LIs measured and reported to Ofgem in ED1. These have monitoring in place and forecasts down to that level (in ENWL) of granularity.
- There is less monitoring at HV, and little monitoring at LV level generally 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 the coming years

Consideration on Indirect metrics

- Potentially indirect metrics may complement capacity measures and forecasts made to indicate some sense of the pace of change of customers needs from networks?
- There is a risk that indirect measures over-complicate the framework.

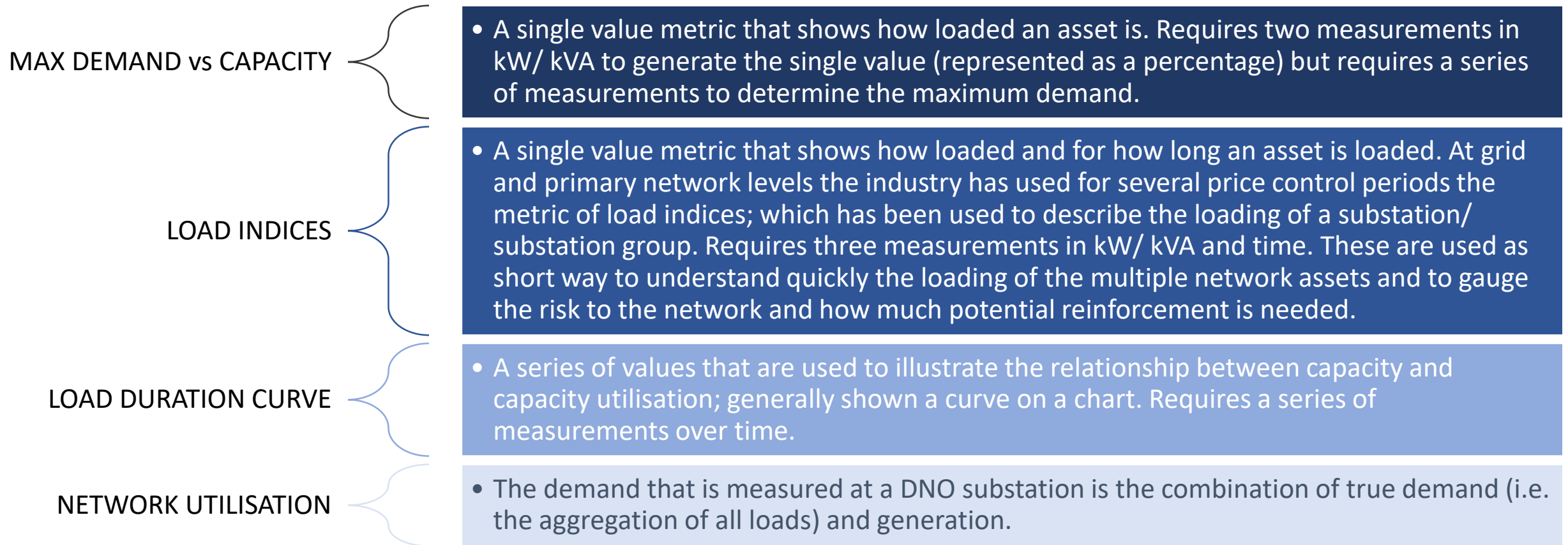
Appendix – deeper dive information

OAWG

17/04/20

Direct Metrics

Draft for discussion



Moving from options 1 to 4 requires generally more measurement data, generally time series measurements in HH time periods

Indirect metrics

Draft for discussion

1.ADMD

- A single value metric that represents the likely average demand of a domestic customers; there can be multiple values depending upon the LCTs connected to a customer's premises. Doesn't represent the capacity of the existing network and how it is being used.

1.Volume of LCTs

- A single value metric that counts the number of LCTs on a network asset ie by LV feeder, by substation etc. Counts can be by LCT type. Doesn't represent the capacity of the existing network and how it is being used.

•Forecast accuracy

- Compare original forecast when decision made to latest forecast based on latest information