# Next Steps for Smart Electricity Networks in the UK
# Developing Local Flexibility Markets


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THE SUNDAY TIMES 25 BEST BIG COMPANIES TO WORK FOR 2019

INVESTORS IN PEOPLE | Gold

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# Purpose

1. Describe the emergence of local flexibility in the UK electricity distribution system

2. Dive into case studies to look at the breadth of activity underway

3. Offer thoughts on RIIO-ED2 and what the next regulatory period must tackle

# Flexibility Commitment

- **In summer 2018, Distribution companies made the commitment to openly test the market to compare relevant grid reinforcement and market flexibility solutions for all new projects of significant value**

- So what, what happened since?

1. Significant activity on the ground on flexibility procurement,
   - *304MW contracted to date (2018 and 2019) by DNOs*
   - *947MW being tendered out in 2019 by DNOs*
2. *Accelerated efforts to coordinate and standardise through the Open Networks project*
3. *Significant innovation in new products and market designs*
4. *Ecosystem developing, new business models and digital infrastructure*

http://www.energynetworks.org/electricity/futures/flexibility-in-great-britain.html

# Flexibility Commitment – Next Steps

*Our Six Steps for Delivering Flexibility Services* outlines how Electricity Networks are committing to making these emerging flexibility markets work in practice

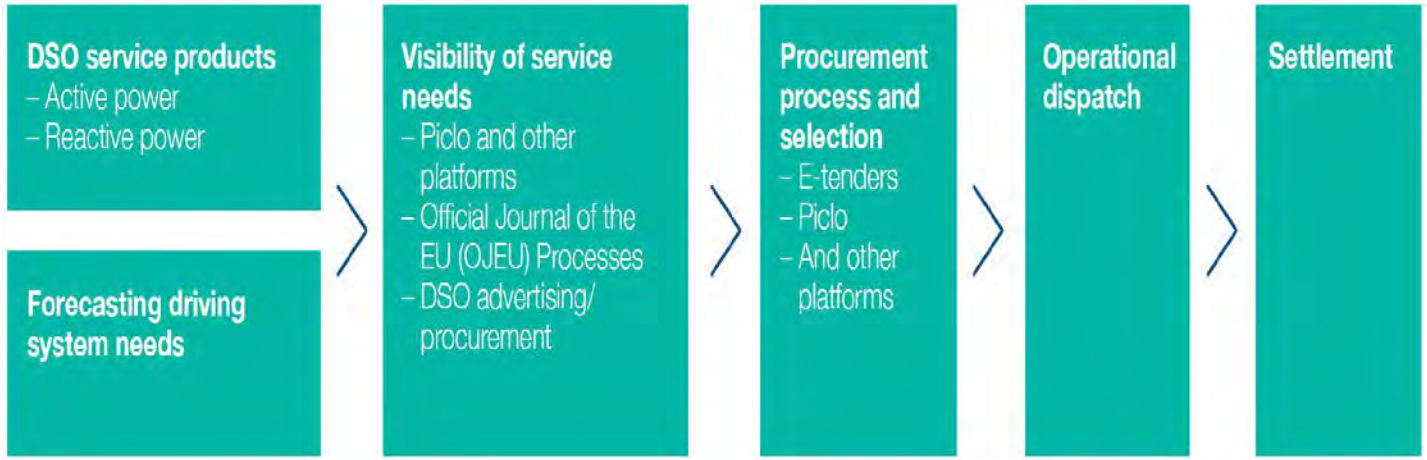
1. Champion a level playing field
2. Visibility and accessibility
3. Conduct procurement in an open and transparent manner
4. Provide clarity on the dispatch of services
5. Provide regular, consistent and transparent reporting
6. Work together towards whole systems outcomes

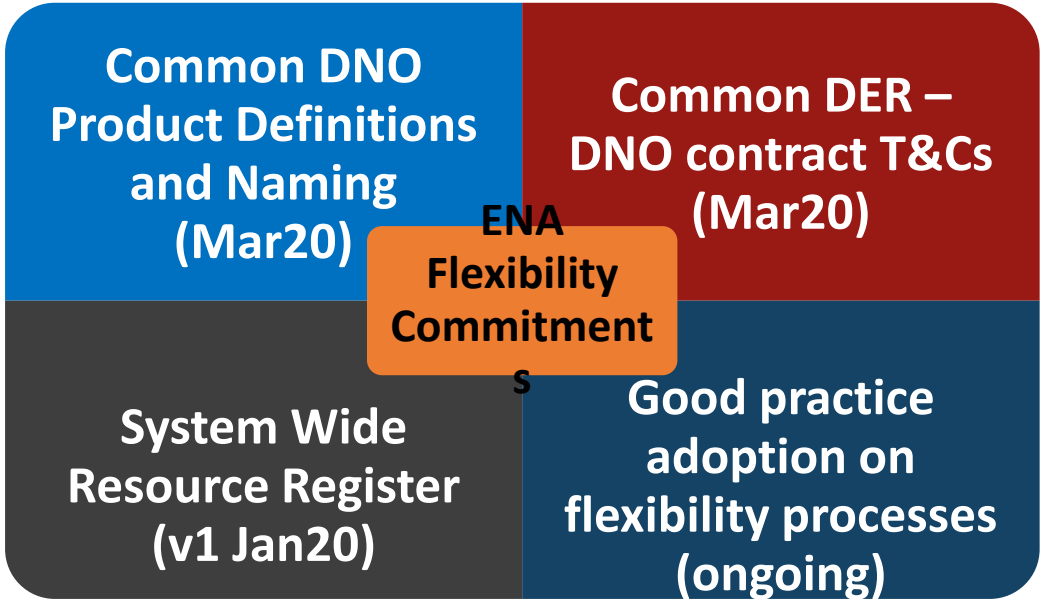
http://www.energynetworks.org/assets/files/ENA%20Flexibility%20Commitment%20Our%20Six%20Steps%20for%20Delivering%20Flexibility%20Services.pdf

# Convergence & Standardisation

Aiming to present a common interface to customers and market participants

Cost savings through common standards across geographies




Developing how we can facilitate other markets in addition to directly procured DSO services

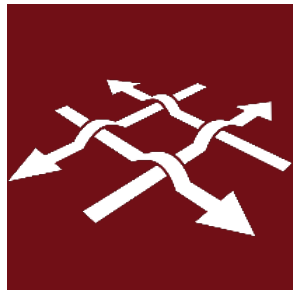
# Case Study 1: UKPN's **Flexibility Roadmap**

**Improve accessibility**

- Co-design new arrangements
- Adoption of digital platforms
- Contribute to standardisation


**Market testing**

- Open all LR capex at high voltage
- Trials for EV-driven constraints



**Neutrality**

- Publish info on size & location ahead of tenders
- Publish tender framework, assessment criteria, tender results

# Flexibility: Winter 2018/19 Tender


amp CLEAN ENERGY

moixa

POWERVAULT

limejump

- **28** Zones Tendered
  - **19** Prequalified
  - **15** Bid
- **4** Met Operational Needs
- **3** with Smaller Volumes
- **43MW** cumulative
- **Full bid info** published



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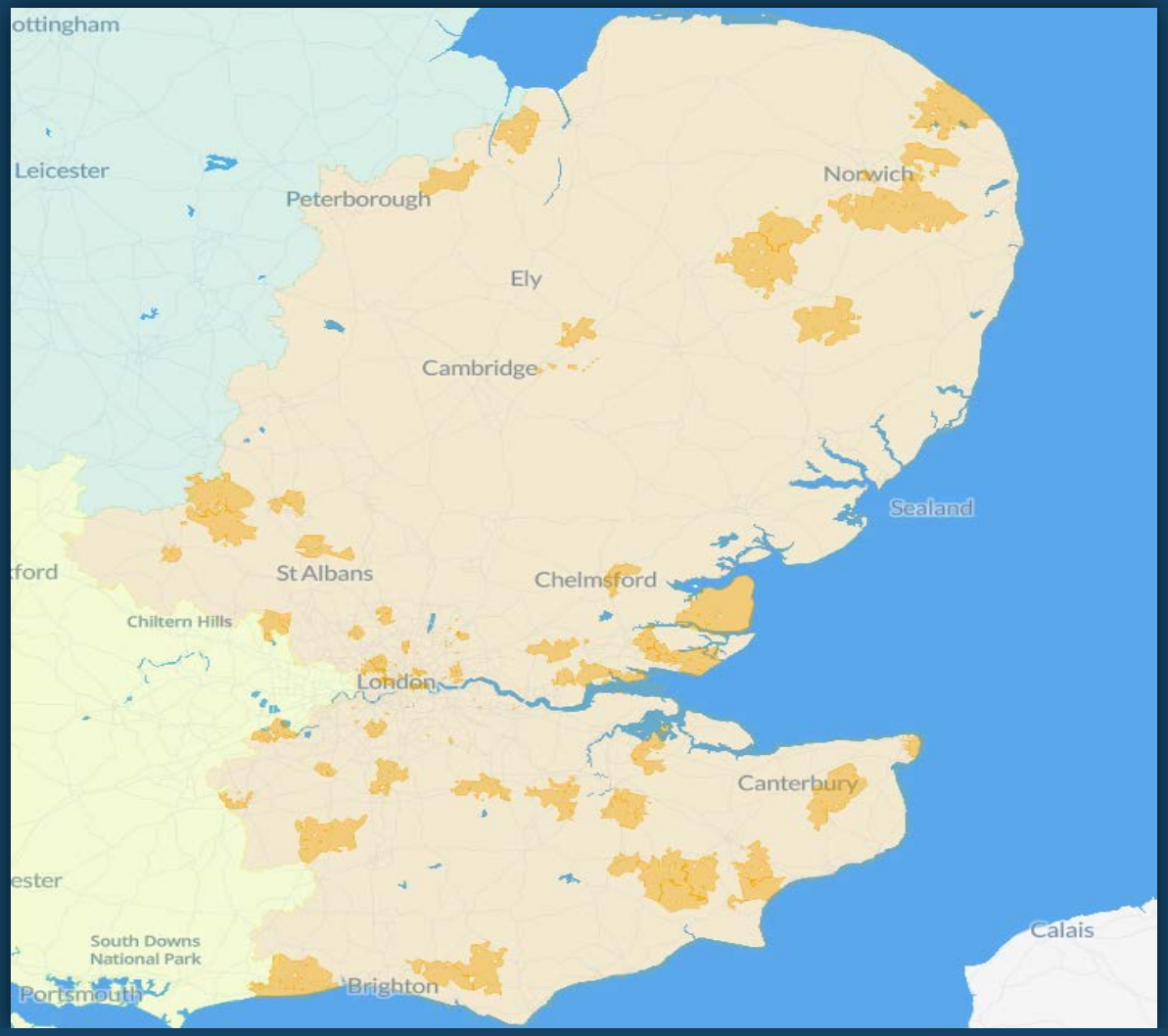
# **March 2020 Tender -** Extending the Reach




piclo®

Across areas & voltage

# **£24m** In Total

## Up to 7 year contracts

We're Testing longer duration contracts

## 170MW

Capacity Requirement

## 55 high voltage network zones

Serving c.10% of our customers

## 60 low voltage zones

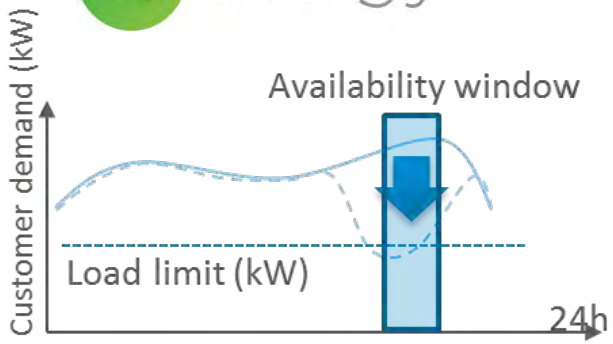
(DNO first)

# Case Study 2: **Smart Charging Market Trials**

To investigate how DNO can support the **market** to manage smart charging

## Flexibility Procurement

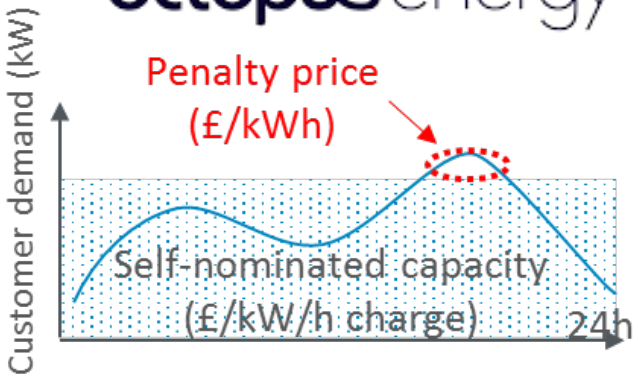
ev.energy




✓Participants commit to **restrict portfolio demand**, by shifting EV charging from LV peak time
✓Contribution measured against a **default load level**
✓**Administered** £/kW/h fee if comply

## Capacity based pricing

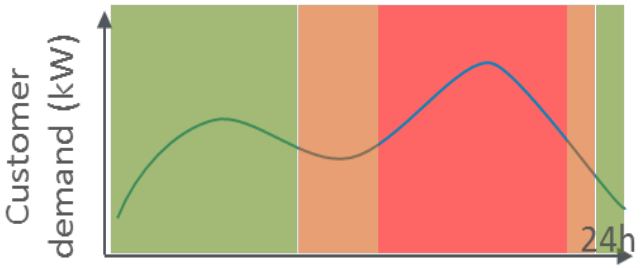
octopus energy




- ✓ **Access-based product**
- ✓ **Financial penalties** rather than direct control for exceeding access allowance
- ✓ Supplier **nominates** required **capacity**

## Time of Use DUoS

KALUZA AN OVO COMPANY




- ✓ Mimic changing DUoS to better reflect LV constraints
- ✓ Demand profile **driven by LV DUoS**, HV DUoS and other cost elements (e.g. wholesale)

Market trials: **2019-20 >** Interim solution: **2021-23 >** Industry wide solutions: **2023+**

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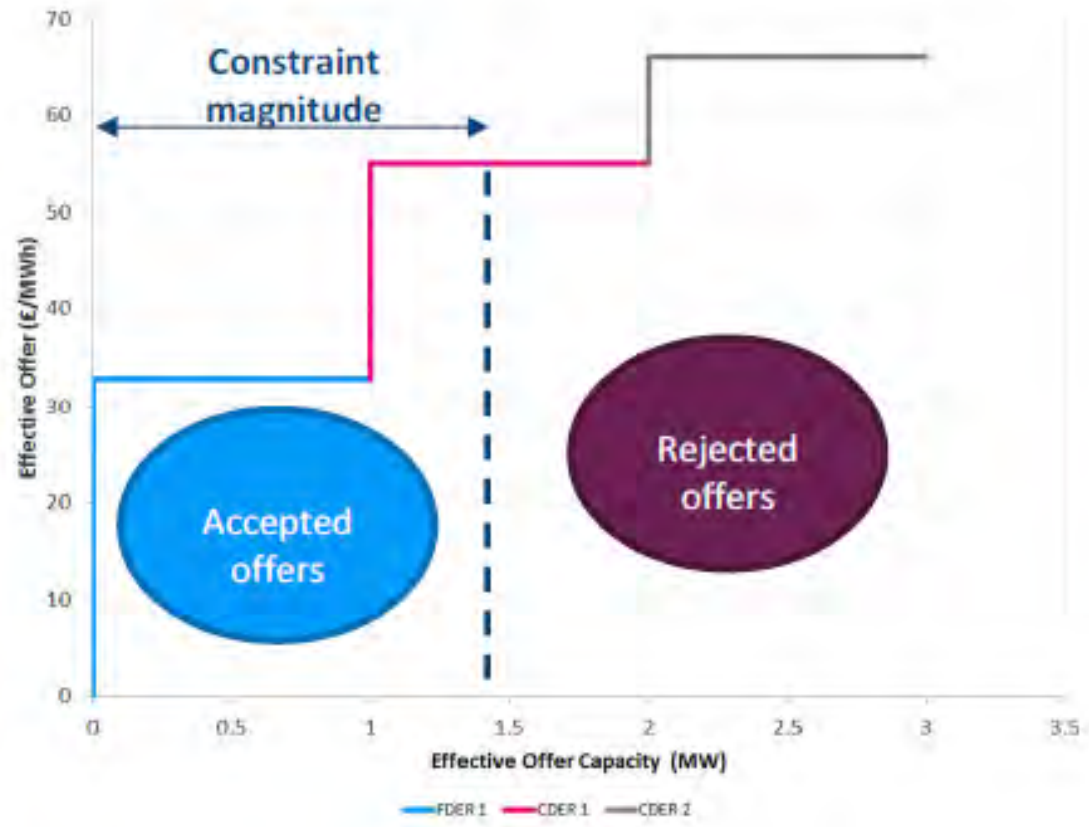
# Case study 3: Flexibility markets for DG Curtailment

Existing FDG approaches facilitate connections – Curtailment trading will facilitate efficient decarbonisation of the UK generation mix

## Objectives

- Allocate curtailment **efficiently** amongst constrained DER
- Provide an economic signal to DERs that can provide **alternatives to curtailing** generation (e.g. batteries and demand side response)
- Provide a signal to **indicate when network reinforcement is preferable** to continuing curtailment

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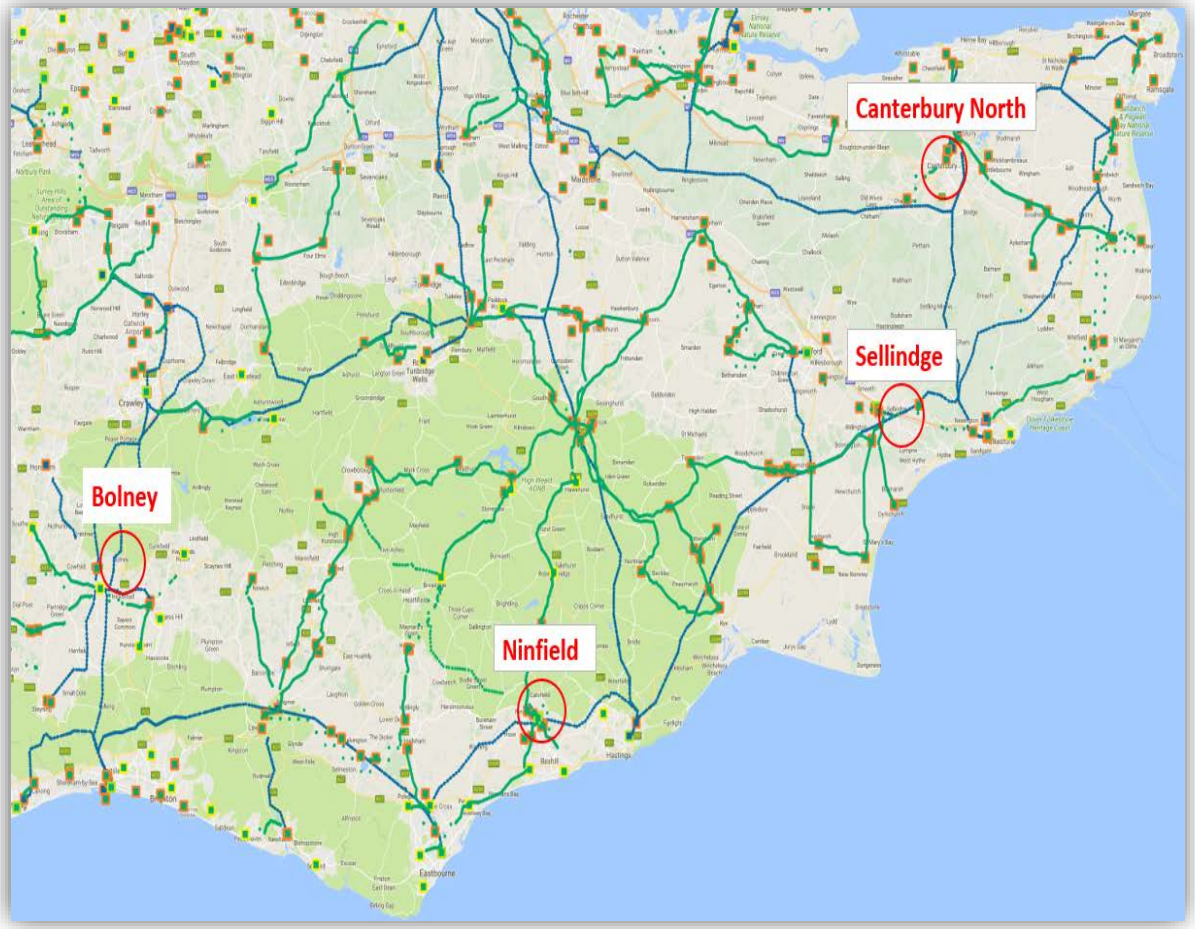
# Case study 4: Power Potential

Creating a regional reactive power market for DERs to provide constraint management and system balancing services to the System Operator through:

1. Dynamic voltage support
2. Active power support

## Benefits

- 3.7GW of additional generation could connect by 2050
- With savings of £412m for GB consumers by 2050

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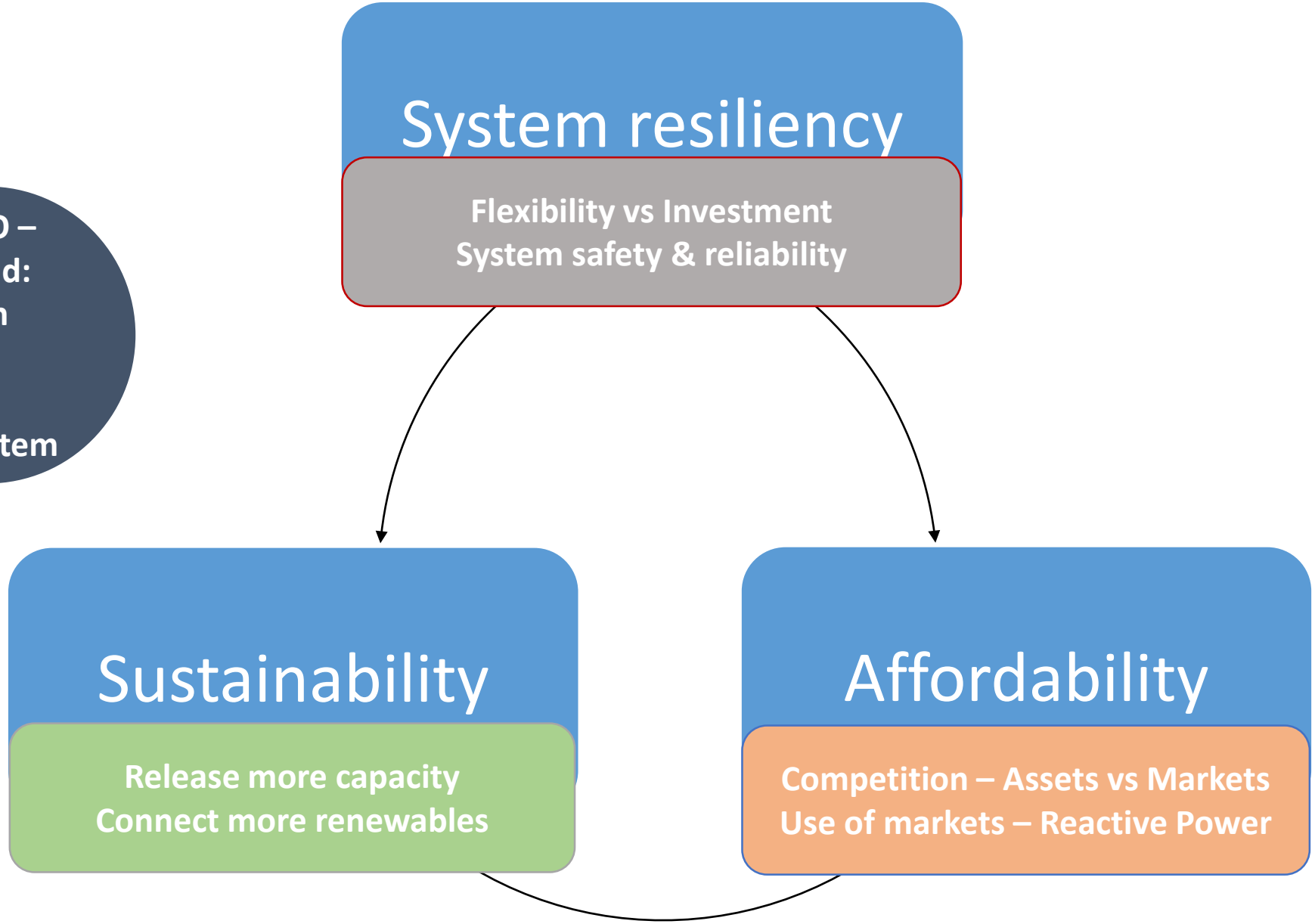
# What does this mean for ED2

**Transition to DSO – incentives around:**

- **Competition**
- **Innovation**
- **Efficiency**

**Local & Whole System**



# UKPN RIIO-ED2 Open Letter – Key Areas

**Create well justified plans that cater for local and national needs**

- Include sufficient flexibility to enable DNOs to facilitate the UK's transition to net zero emissions whilst recognising that different regions will move at different speeds
- Include the use of uncertainty mechanisms as a way of ensuring companies are able to flexibly deal with uncertainty during RIIO-2 for the benefit of their customers
- Networks are best placed to provide the platform for the millions of EVs that could be charging across our networks in the RIIO-ED2 period
- Networks have the expertise to ensure charging infrastructure is delivered cost efficiently and fairly
- Ofgem has the toolkit to protect customers in fuel poverty by ensuring that they are not unduly impacted by required investments

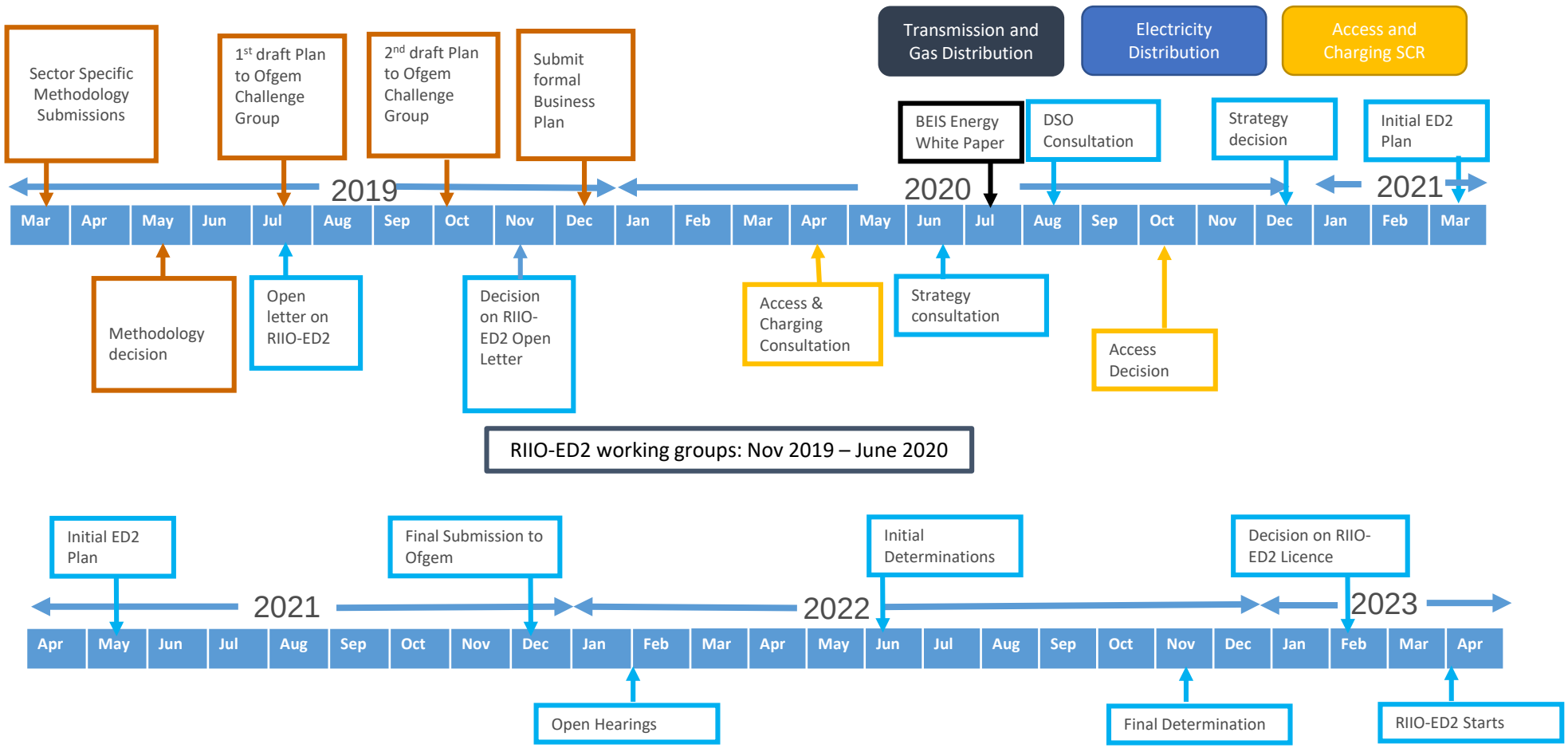
**Ensure fair rewards**

- Include a cost of equity at a level appropriate to the environment and challenges ahead - helping ensure the UK electricity sector remains a global leader of smart and resilient grid development
- Remunerate efficiently incurred debt
- Set incentive targets at sufficiently stretching levels that dynamically adjust to reflect revealed performance
- Allow benchmarked ex-ante allowances where relevant and make use of appropriately designed volume drivers and uncertainty mechanisms as required

**Align RIIO-ED2 framework with wider policy**

- Be delivered alongside and with awareness of wider work streams so that interdependencies are clearly understood and managed appropriately
- Learn lessons from RIIO-T2 and RIIO-GD2 price controls
- Be aligned to forthcoming changes in legislation as well as including enough flexibility to respond to any new policy mechanisms

# RIIO-2 Timeline



# Conclusions

- ENA's Open Networks is driving the development of flexibility markets across the UK
- Must continue to work together to define the future of local flexibility and learn by doing
- RIIO-ED2 should unlock benefits of smarter distribution networks whilst continuing to address what matters most to customers i.e. maintaining high reliability at lowest cost
- Distribution companies must ensure that customers in vulnerable circumstances are protected and can benefit from the energy transition