Synthesis report

Phase 2 – Business Plan Development

Delivered by Sia Partners
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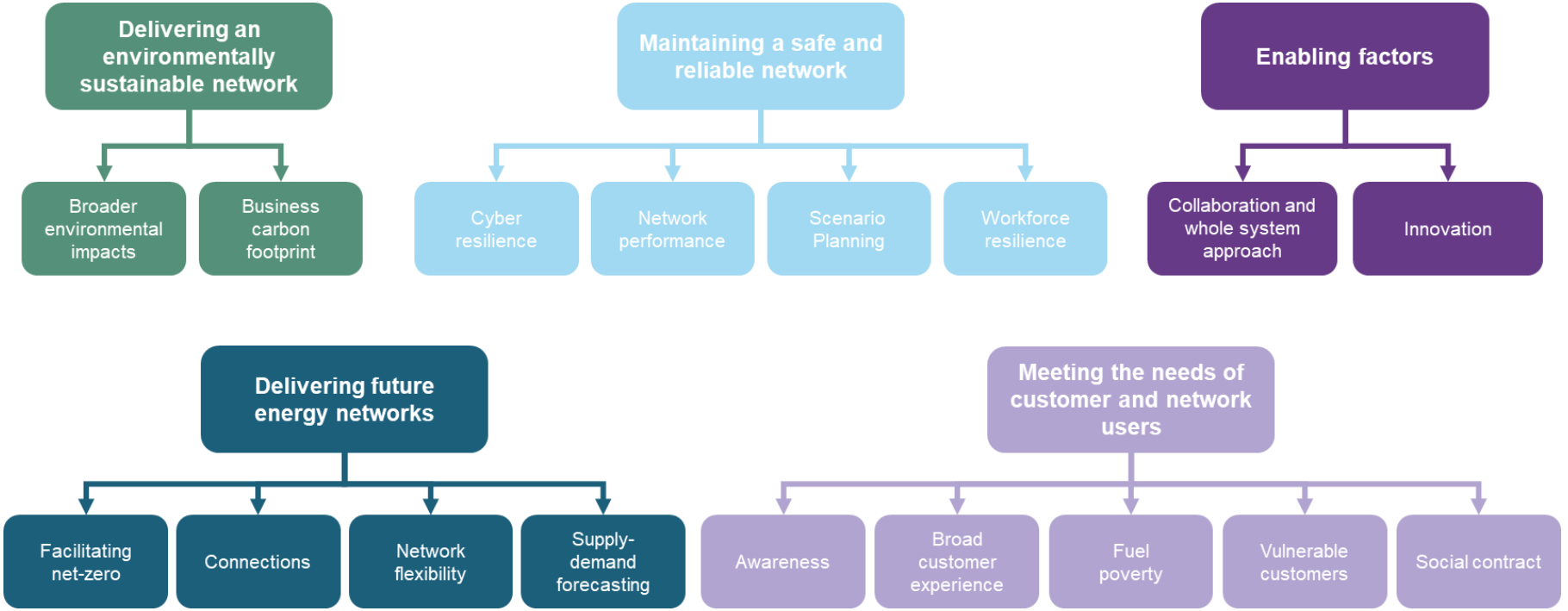
Navigating this report

During the preliminary engagement in 2019, stakeholders were given a blank canvas to discuss the issues which were most important to them. Sia Partners, an independent body, analysed the feedback, grouping it into high-level topics – starting with Ofgem's three output categories, before adding two more for feedback that lay outside of those. Detailed points were then grouped into sub-topics, based on the volume of discussion in each area.

The diagram below visualises the high-level topics, and the sub-topics identified under each one. This report is organised in this structure, with feedback discussed at the sub-topic level. The sub-topics are broadly aligned with the chapters of WPD's business plan, however, there is a large amount of crossover information. It is therefore important that chapter owners review the content in all relevant sub-topics. Identifying the appropriate structure for feedback early on in the process (in 2019), will allow us to understand how feedback has changed over time; with stakeholder views getting more specific as we approach a final business plan.



Summary of Phase 2 Engagement

WPD has recently completed the second stage of the RIIO-2 engagement programme. This stage builds on the previous 'preliminary engagement' work by exploring the detailed stakeholder opinions around each priority, including proposed commitments.

This document collates the feedback collected to during the second phase of engagement, drawn from nineteen sources, covering 1090 stakeholders and a total of 3,362 pieces of feedback, summarised and detailed in the pages below.

A summary of the feedback collected during the previous engagement phase has also been included for each sub-topic. Thus far over Phases 1 & 2, WPD has engaged 3,148 stakeholders, collecting a total of 3,667 pieces of feedback, across 34 total sources.

Topics covered

As mentioned above, the initial synthesis work during preliminary engagement analysed the feedback collected and divided into high-level topics, as well as appropriate sub-topics. From the feedback received, initial priorities were established for each sub-topic area. They were subsequently discussed at the 6 regional workshop event. Within each workshop, stakeholders could suggest further priorities to be considered and prioritised. Additionally, stakeholders had the opportunity to propose commitments for WPD to undertake for each priority.

Stakeholders expressed their views on these topics during the online meetings and webinars, however, these events were less focused on assessing or suggesting priorities and more about exploring the sub-topic as a whole. This was particularly the case during the more regular events such as the Steering Group and Generator Forum.

Each sub-topic is discussed separately and includes a breakdown of the priorities and commitments proposed, as well as the number of pieces of feedback collected. The full detail on each source of feedback can be found in the table in the appendix. The content compiled on each sub-topic has been divided into themes where it is discussed and summarised. These summaries will ultimately form the basis of the triangulation process – informing WPD's decision-makers of key customer and stakeholder concerns.

Stakeholders engaged

The figures below provide a picture of the business plan development stage in terms of the regions covered, the stakeholders engaged and their knowledge levels. Only two methods of engagement were utilised for this engagement phase: face to face workshops (36%) and online meetings (64%). While the questions and presentations at this stage focused on central issues, the events were evenly spread across the four regions of WPDs network.

Customers and customer interest groups made up around 47.8% of the stakeholders engaged during phase 2 of the ED2 engagement, demonstrating WPD's intent to understand customer priorities at this early stage, to feed in at the top of the business plan development process. However, this proportion decreased from ~75% during the preliminary engagement, showing the inclusion of a broader range of stakeholders.

This shift is also evident in the stakeholder knowledge levels, with the proportion of stakeholders with limited knowledge dropped from over two-thirds during the preliminary engagement, to less than 30% during phase 2 of the ED2 engagement. Conversely, the

percentage of interested stakeholders has grown to be the largest, at 43.9% and those of expert knowledge has nearly trebled from the preliminary engagement. This increase in stakeholder knowledge and expertise is reflective of the goals of this engagement phase, to develop the priorities from the preliminary engagement into concrete priorities and proposed commitments for WPD to continue developing their RIIO-2 business plan.

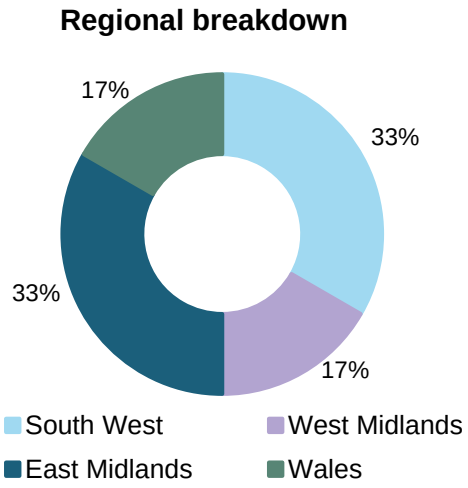


Figure 1: The regional breakdown of the business plan development phase

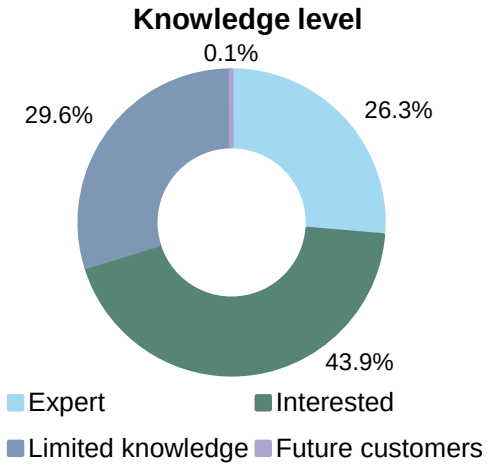


Figure 2: Breakdown of stakeholder knowledge level from the business plan development phase

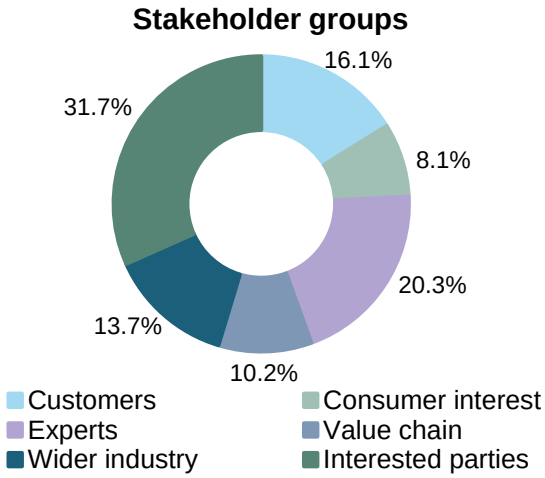


Figure 3: The proportions of stakeholder groups engaged during the business plan development phase

The table below details the number of stakeholders that attended phase 2 of ED2 business development engagement events from each segment.

Stakeholder group	Segment	Number attended
Customers	Major energy users	140
	Domestic customers	17
	Distributed generation customers	8
	Business customers	6
	Fuel poor/vulnerable customers	2
	Major connections customers	2
	Future customers	1
Interested parties	Local authorities	194
	Other	102
	Non-governmental organisations	27
	Local Enterprise Partnerships	7
	Emergency services	5
	Trade associations	4
	Healthcare	4
Consumer interest	Parish councils	54
	Charities	24
	Vulnerable customer representatives	9
	Consumer interest bodies	0
Wider industry	Utilities	106
	Community energy groups	43
Experts	Energy Consultant	91
	Academic institutions	64
	Government	48
	Environmental groups	18
	Electric vehicle manufacturers	2
Value chain	Developers	54
	Storage/renewables providers and installers	34
	Electric vehicle charge point manufacturers and installers	7
	Connections providers	6
	Flexibility service provider	5
	IDNO	4
	Energy aggregators	2
Total		**1,090**

Figure 4: The number of stakeholders from each segment that attended the business plan development events.

Feedback collected

Feedback from these stakeholders was initially recorded by the organisation running the events – either WPD or EQ communications - and has now been documented in WPD's central feedback database. Each specific point of view has been recorded as a separate statement and grouped into high-level topics and sub-topics by Sia Partners who are running the process.

After analysing the feedback, it was evident that some changes were required to both the organisation and titles of some topics and sub-topics. The changes from the preliminary engagement report (Jan 2020) to this report are listed below:

High-level topic changes

‘Building a smarter network’ was renamed ‘Delivering future energy networks’. As such, the sub-topic ‘Net-zero external’ (which has also been renamed, see below) was moved into this high-level topic as the future network be adapting to a net-zero world.

Sub-topic changes

‘Reinforcement’ was renamed ‘Network Performance’ due to the range of feedback subjects contained within this sub-topic.

‘Net-zero internal’ was renamed ‘Business Carbon Footprint’ as the feedback focused on reducing WPD’s internal carbon emissions.

‘Net-zero external’ was renamed ‘Facilitating net-zero’ as this is the promise that WPD is making to facilitate others on its network to reach net-zero.

‘Broader environment’ was renamed ‘Broader environmental impacts’ as this better describes the feedback included in this sub-topic.

The table below breaks down the feedback collected and how it has been categorised. These volumes will form an essential part of how customer priorities will be determined for the next stage of engagement.

High-level topic	Sub-topic	# of feedback
Meeting the needs of customers and network users **(21%)**	Vulnerable customers	382
	Broad customer experience	120
	Fuel poverty	97
	Awareness	94
	Social contract	5
Maintaining a safe and reliable network **(23%)**	Workforce resilience	252
	Network performance	238
	Scenario planning	172
	Cyber resilience	115
Delivering an environmentally sustainable network **(11%)**	Business carbon footprint	189
	Broader environmental impacts	182
Delivering future energy networks **(31%)**	Facilitating net-zero	582
	Connections	223
	Supply-demand forecasting	127
	Network flexibility	103
Enabling factors **(14%)**	Collaboration and whole systems approach	258
	Innovation	223
Total		**3,362**

Figure 5: The breakdown of feedback volume collected for each high-level and sub-topic.

The figures highlight the feedback, organised by high-level and sub-topics, that was collected throughout phase 2 of WPD’s ED2 engagement events. The remainder of this report will cover the detail, laying out the specific comments in each area.

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High-level topic: Meeting the needs of customers and network users

Sub-topic: Awareness

What we heard in 2019:

Stakeholders were broadly unaware of WPD, its role in the electricity sector and its social responsibilities, such as to vulnerable customers. This lack of understanding causes difficulties when stakeholders attempt to assess and engage on WPD's performance. It was noted in multiple events that stakeholders would welcome increased information regarding new connections, services, innovation, as well as the implications of the transition to DSO could affect customers. This information would be required to comment on the future WPD Business Plan effectively.

Furthermore, several of the more informed stakeholders requested increased information provision of project application processes, particularly regarding new renewable applications, Electric Nation project and deploying new EV charging infrastructure in general.

Summary of Phase 2 feedback

1.1. Stakeholders have stressed the need for WPD to improve awareness of their brand and its activities, which will ultimately also help them in their educational programs. It was discussed extensively that WPD has a crucial role to play in educating and communicating vital information to stakeholders and customers on a range of topics, from vulnerability, their business plan priorities and new technologies. Different methods of communication should be utilised, including online educational platforms, direct messages to customers as well as working with third parties to reach those that are hard-to-reach. Collaboration was also noted as a crucial mechanism to reduce future customer demand. Collaboration with other players in the industry can help to inform customers of how they could reduce demand, increase the incentives available for demand reduction as well as identify the best practices to enable demand reduction.

1.2. A total of **94** pieces of feedback were collected for Awareness during phase 2 engagement, which adds to the **36** pieces collected during phase 1. This sub-topic has **8** priorities and **29** proposed commitments.

Priority ranking

Existing priorities

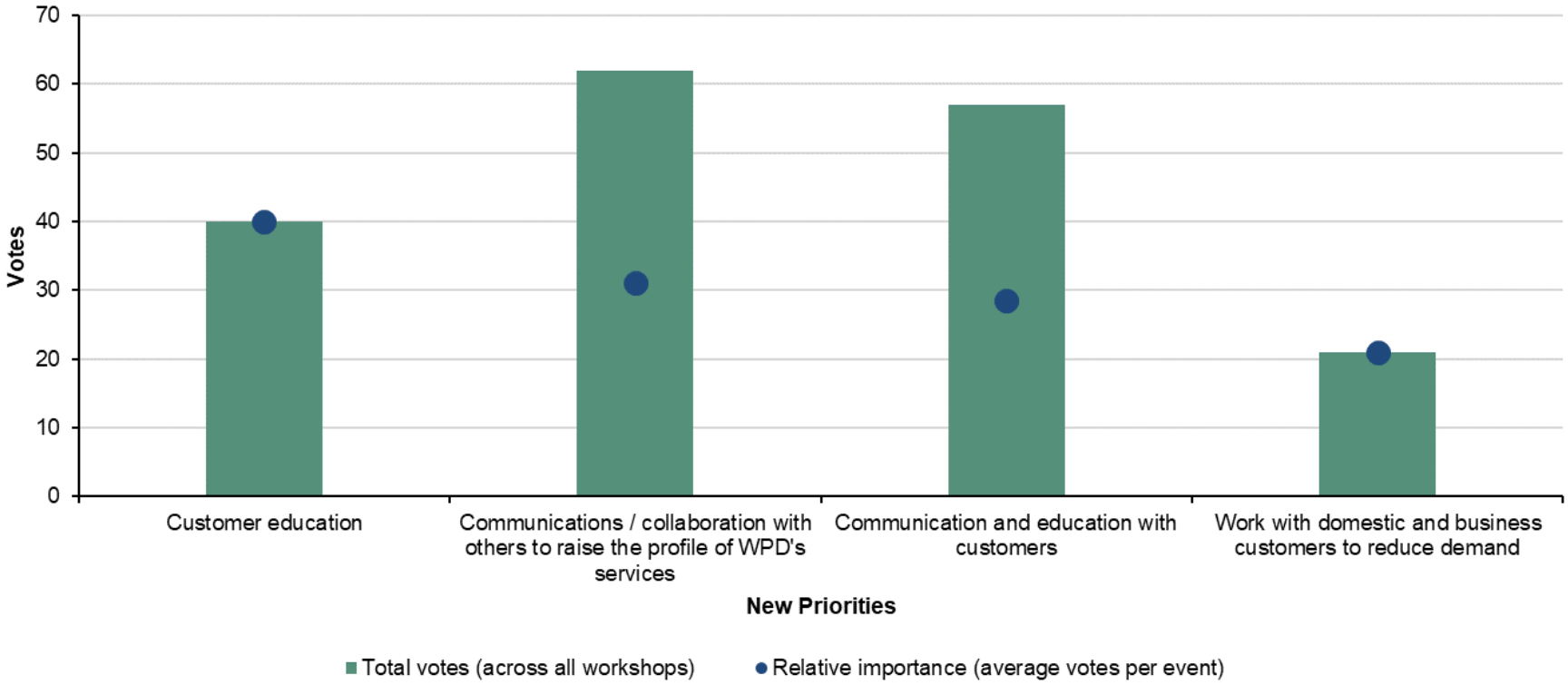
1.3. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

Existing priorities	Total Votes	Relative importance
Communication, education and advice for customers	116	19.33

1.4. There was only one existing priority for Awareness which received a reasonably high number of votes, with 114.

New priorities

1.5. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



1.6. For the newly suggested priorities in awareness, communication/collaboration to raise the profile of WPD's services collected the highest number of votes across all workshops. However, the priority has a lower 'relative importance' (~30 votes per event), compared to others that were discussed at fewer events.

1.7. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on another priority, customer education (~40 events per event).

Detailed feedback

Feedback for Awareness can be divided into two main themes:

- Communication and education
- Collaboration with customers to reduce demand

Communication and education

1.8. A clear theme under this topic was the desire to educate stakeholders, especially domestic customers, about WPD's operations, role and services. Communication, education and advice for customers was voted as the 3rd highest existing priority under awareness across all events (E017), including 2nd in Milton Keynes and Nottingham (E021, E022), 4th in Bristol and Birmingham (E018, E019), 6th in Swansea (E023) and 7th in Cornwall (E020). Raising the profile of WPD was seen as essential to help it deliver change (E019).

1.9. Stakeholders were asked in some events how well engaged they were with WPD and their operations, while all locations noted a reasonably high proportion of well engaged stakeholders – 94% (E035), 77% (E037) and 71% (E038) – simultaneously, nearly a quarter of stakeholders felt they were underengaged – 23% (E037) and 24% (E038).

Education

1.10. Educating customers was the highest priority within awareness in Cornwall, with 26% of the vote (E020). A domestic customer noted that while it is everyone's role to educate, WPD has a very influential role within society (E019).

1.11. Stakeholders noted the success local energy groups had with their energy education programs and that WPD should make information about the network as simple as possible and easily accessible (E020), including specific information on how energy is produced and managed within their communities (E02). A local authority representative called for information on the electricity network to be as accessible as the bus timetable (E020).

Communication

1.12. Communication and collaboration with others to raise the profile of WPD's services was voted as the highest priority within Awareness in Swansea, with 19% of the vote (E023). Stakeholders stated that communication should start at an early age to increase effectiveness (E023), especially linking WPD with net-zero and getting young people interested in energy (E018, E021). It was also mentioned that any dramatic change for end-customers should be discussed through schools (E019), especially as kids are great at talking to their parents (E019, E020).

1.13. Stakeholders felt that WPD should provide information to help customers to make energy-related decisions (E021). A business customer noted that their local decarbonisation strategy was all about educating local councils (E021).

Topics of communication: Vulnerability

1.14. Stakeholders feel that it is essential to communicate and educate people on what WPD do for vulnerable customers (E022). It is seen as crucial that those in fuel poverty and vulnerable customers are better educated about the nuances of the electricity sector and that the lack of knowledge within charities limits how much they can help those people (E019). Ultimately, stakeholders agreed that WPD should ensure that no customer is left behind (E019).

Topics of communication: Priorities

1.15. Stakeholders were clear that WPD needs to make sure that customer and consumer needs are explicit within their priorities (E019). A business customer also noted the importance of clarity about what those priorities and commitments physically involve (E019).

1.16. Stakeholders suggested that priorities should be organised in line with the Welsh Local Government Association (WLGA) to ensure they match with local targets (E023), as well as working more with local authorities in general to share knowledge (E023) and services, such as the PSR (E023). It was felt that a discussion on WPD's achievements in reaching their ED1 priorities should be provided to aid these efforts (E021).

Topics of communication: Technology

1.17. Stakeholders are unclear about new technology, such as heat pumps, and educating people is an essential role for WPD to help people adopt these technologies (E018, E033). A major energy user stated that customers are the ones with additional funds to invest in this type of technology, such as battery storage (E019). It is also important to have forums for open discussions surrounding the integration of technology in new builds, as well as existing properties which will likely be more difficult (E019).

1.18. Smart meters have caused a great deal of concern for customers in the past, and additional information about their importance (E023) as well as research to ensure they are not negatively affecting vulnerable customers was noted as necessary (E023). However, it was indicated by two other stakeholders that education about the bigger picture was key to a successful smart meter rollout to teach people about the effects on the present and future grid (E019, E019). It was noted that the public is widely unaware that demand peaks at certain times, the effect this has on the grid (E020), or the relative benefits of smart meters as we reach a higher penetration (E023). Similarly, education on agile tariffs (E023, E023) and energy-saving technologies are crucial to encourage uptake and help customers make savings (E019), especially as many are suspicious about their usage being monitored (E019).

1.19. Stakeholders mentioned that the current EV charging infrastructure needs to be easily accessible, so that customer worries about on-route charging can be reduced (E022), and that better communication about EVs more broadly should be the main priority for WPD (E022)

1.20. It was noted that there is considerable financial and non-financial support to help with renewable technology deployment, but the lack of information and education on the subject hampers developers (E018). Linked to this subject, a Utility stakeholder mentioned the need for an educational piece on local generation (E018).

How to engage

1.21. Stakeholders noted the use of WPD's website to encourage behavioural change (E019). Still, a large energy user emphasised the importance of writing to people directly to make them aware of any online resources which may otherwise be underutilised (E018).

1.22. Another mechanism would be through their annual newsletter; however, it was noted that this typically includes an overwhelming amount of information (E018). Stakeholders mentioned that information should always be in layman's terms (E018) with simple language without jargon or acronyms (E018).

1.23. In another events, stakeholders noted that the three most effective ways to communicate about a topic – in this case the future energy scenarios – through a 5 minute summary document, a visual aid or map, and thirdly creating technology-specific summaries (E035, E037, E038).

1.24. Utilising third parties to help spread the message was seen as an option to help with spreading information (E018). Partnering with third parties was also highlighted as a priority, as this will also reduce the workload for WPD. Citizen's Advice Bureau can help with customers that cannot afford electricity, for example (E021).

1.25. Stakeholders suggested that WPD should hold more targeted workshops for specific stakeholders, to cater for different levels of knowledge (E019).

1.26. The importance of a national educational program was mentioned, and stakeholders highlighted that WPD should ensure that they are coordinating with the government where appropriate to ensure everyone gets the same message (E022).

Collaboration with customers to reduce demand

1.27. Working with domestic and business customers to reduce demand was voted as the highest priority in Milton Keynes, with 19% of the vote (E021). Multiple types of stakeholders stated that reducing customer demand should be a priority for WPD (E021) and subsequently that it was essential to educate and inform customers and communities on how to improve energy efficiency, as well as opportunities available to them in their areas (E020, E020).

1.28. Stakeholders suggested that WPD should work with manufacturers in innovation and new services to facilitate network flexibility (E023) and educate end-customers of this. It was noted that current incentives for flexibility are too low for an end-user (E020), and therefore, additional support is needed to help households make appropriate decisions about reducing demand (E020).

1.29. It was stated that WPD needs to coordinate with other stakeholders in the sector to identify best practices to reduce energy consumption (E020). This coordination could include an app for on-street EV electricity usage (E021), increased financial incentives (E021) or a platform where end users can calculate how much they could save through changing their energy patterns (E021). WPD must be at the table of discussion for tariffs and costs, and be active in removing the barriers for demand reduction technologies (E023).

Proposed commitments

Priorities	Commitments
Communication, education and advice for customers	1) Create a one stop shop where customers can learn about smart meters, flexibility services, reducing consumption and all things energy related. 2) Work closely with third parties such as schools and LEPs to increase the spread of accessible, digestible information and education 3) Lobby government to provide more incentives to encourage flexibility and energy efficiency 4) Lead on coordination and advice for businesses on how to take up low-carbon technologies and new services 5) Report on and monitor your education and advice services for customers 6) Create a bespoke project that builds trust in smart meters 7) Lead the conversation on battery storage 8) Work with the whole industry, including retailers, to provide advice 9) Provide education on EVs 10) Set a target for customers reached with advice on new services 11) Hold workshops and forums for schools, charities, developers and stakeholders 12) Work with Citizens Advice to promote energy efficiency / tariffs 13) Roll out education programmes in schools 14) Review lessons learnt from ED1 15) Raise awareness among local authorities
Communication and education with customers	1) Take leadership role in organising coordinated customer engagement on changes to the energy system. 2) Encourage behavioural change in the way energy is consumed. 3) Create clear action plans for all customers that detail what to expect from the future energy system and how to participate

Work with domestic and business customers to reduce demand	1) Explore the opportunity for financial incentives to encourage demand reduction 2) Explore the opportunity to reduce voltage through demand reduction
Customer education	N/A
Communications / collaboration with others to raise the profile of WPD's services	N/A
Engage with customers over cost of network resilience	N/A
Raise profile of WPD to help deliver change	N/A

Sub-topic: Broad customer experience

What we heard in 2019:

Stakeholders noted during the preliminary engagement that business plan affordability is the second-highest priority for some stakeholders. While most stakeholders agreed that the current situation reflected good value for money, the priorities regarding future investment or bill reduction differed between events.

Customer service was another key element from the preliminary engagement feedback with the majority of stakeholders reflecting positively on their interaction with WPD. Clarity and good communication were highlighted in multiple events as a critical area of improvement, both in providing speedy and informative updates to customers during power cuts, but also providing a single point of contact for connection customers.

Summary of Phase 2 feedback

2.1. Stakeholders were very interested in improving customer service and communication around power cuts and faults. It was noted that a range of mediums is required to be able to communicate with the range of customers, from interactive online maps, webchats and landline telephone calls. Stakeholders were generally unaware of the many services WPD already offer in this space and thus a promotion campaign was suggested. Furthermore, proactive messaging of customers was preferred.

2.2. Stakeholders were very concerned about the worst-served customers and how WPD planned to decrease their numbers. It was suggested that many of these areas tend to be in rural areas and WPD should both prioritise reinforcement in these areas and also work with local councils and community groups to increase the area's resiliency, potentially with the deployment of storage technology. Better communication with customers was also noted, both for planned and unplanned power cuts, and customers wanted to have an estimated length of time the power would be off. Stakeholders realised that some of these improvements could be expensive, however, it was noted that this shouldn't come at a disproportionate increase in cost to customers.

2.3. A total of **120** pieces of feedback were collected for the broad customer experience during phase 2 engagement, which adds to the **21** pieces collected during phase 1. This sub-topic has **13** priorities and **48** proposed commitments.

Priority ranking

Existing priorities

2.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

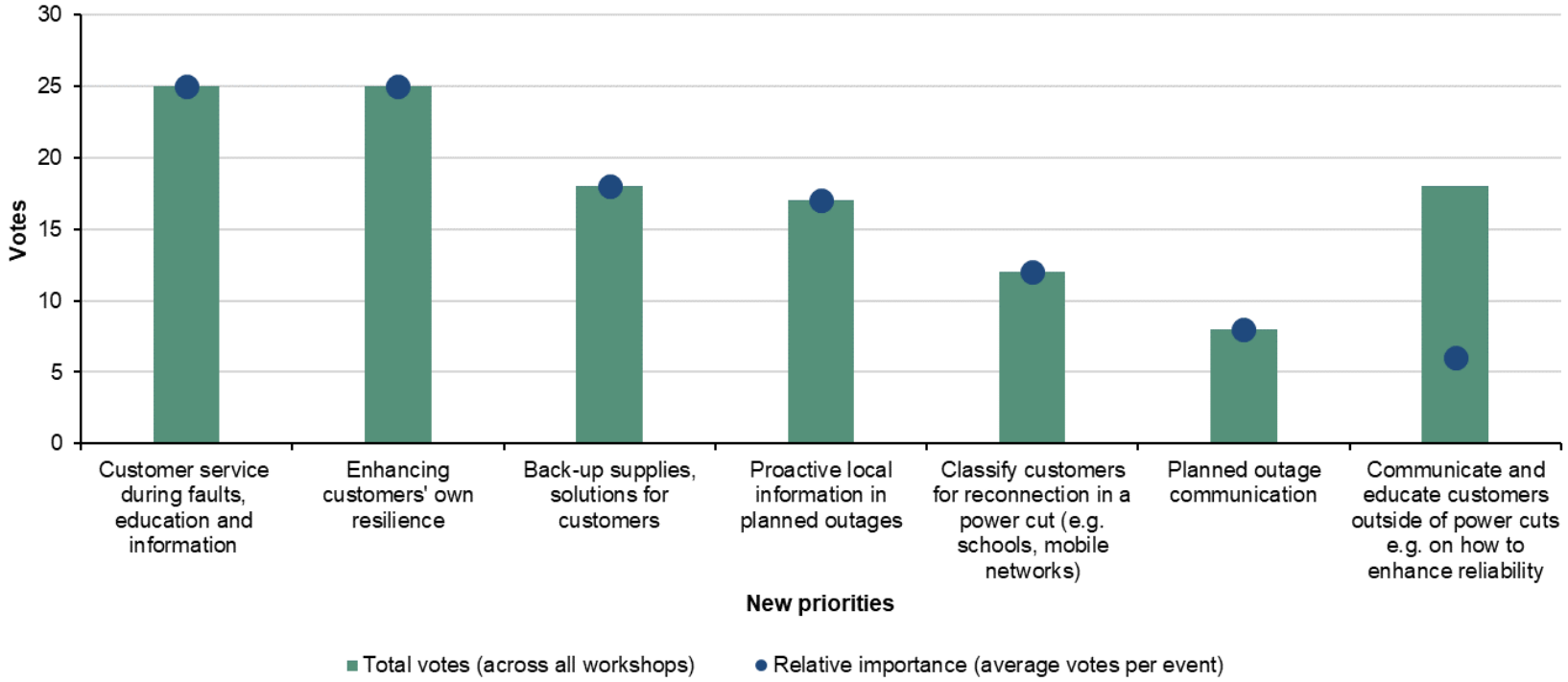
Priorities	Votes	Relative importance
Customer service during power cuts	86	14.5
Worst served customers	65*	11.5

** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

2.5. The priority receiving the highest numbers of votes focused on power cuts, whereas the lowest ranking priority focused on the worst served customers.

New priorities

2.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



2.7. For the newly suggested priorities in broad customer experience, 'Customer service during faults, education and information' and 'enhancing customers' own resilience' collected the joint highest number of votes across all workshops. They also received the joint highest 'relative importance' (25 votes per event).

2.8. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on a number of the new priorities in comparison to the existing ones.

Detailed feedback

Feedback for the Broad customer experience can be divided into three themes:

- Power cuts and faults
- Affordability
- Resilience for customers and communities
- Communication outside power cuts

Power cuts and faults

2.9. Customer service during power cuts was the highest priority for stakeholders (E017) which was particularly emphasised for vulnerable customers (E018).

Worst served customers

2.10. Serving WPD's worst served customers was an existing priority (E017). Rural communities were noted to be affected more often by power cuts, and stakeholders noted that reinforcement of infrastructure was required here (E023, E023). It was stated that WPD should ensure all rural areas are as well connected as urban areas (E019, E022 E023). Specific areas noted here were Wales (E023) and the Forest of Dean (E018). A domestic customer noted that the term "worst-served customers" sounded as if they were the worst customers, and thus recommended that the name should be changed (E018). Some stakeholders suggested that there may be a geographical correlation between worst-served customers, which should be investigated (E019) and potentially publicised (E023).

2.11. Stakeholders thought that customers in this category should be told that they are (E018). Stakeholders also questioned how WPD were going to reduce worst-served customers from the current 6,300 to zero when there is no clear strategy (E018). It was unclear to stakeholders, what was being done on a practical level to decrease and solve issues of customers in worst-served areas (E023, E023). It was noted in multiple workshops that a clear investment strategy was needed to reduce the number of worst-served customers (E029, E020, E022, E022, E023). Stakeholders wanted reinforcement to start with the worst-served areas (E022).

2.12. A vulnerable customer representative stated that the impact on the worst-served customers needs to be the new benchmark for measuring how support is provided (E021). This is especially important when considering the effect on these customers during heat decarbonisation (and potential electrification) and with increased automation (E019, E019)

Communication of power cuts and faults

2.13. Stakeholders wanted communication with customers to be across a number of mediums, such as WPD's website, social media, webchats, apps, texts, but also traditional mediums like home phone lines, despite their decreased popularity recently (E018, E018, E020, E022, E022, E023). Better communication about the different information options was also noted by stakeholders as an area to improve, particularly the power cut app (E018, E018, E018, E019, E020). It was also noted that there

wasn't enough awareness about the 105 number and that proportion should be improved (E019). Automatic text messages was an option suggested in several workshops (E019, E020, E022). Stakeholders liked the idea of proactive messaging so that customers don't have to try and find the information portals (E018, E018, E023). Most stakeholders were unaware of how to find information during a power cut (E020, E023). However, one stakeholder noted that the online map was very useful (E023).

2.14. Information needs to be localised, according to stakeholders, as customers are mostly uninterested in the national picture but want to quickly understand the effect on their area (E018). Stakeholders wanted to understand the predicted length of power cuts (E018, E018, E022, E022). Clear information around planned outages was also requested by stakeholders (E018).

PSR

2.15. A local authority member wanted increased communication between WPD and the local authority during incidents because of the differences between PSR lists of both organisations (E021). Another stakeholder noted that WPD should share its PSR information with other organisations (E019) to make sure customers are better served during outages (E019). A consumer body representative was also interested in how WPD prioritised within the PSR (E022). Furthermore, stakeholders wanted to know how customers were classified during a power cut for reconnections (E021) such as schools, hospitals and mobile networks (E021, E021).

Affordability

2.16. Affordability is a new priority which was only discussed in two workshops (E017). Stakeholders were concerned that network resilience and reinforcement work would be very expensive and these costs would ultimately be transferred to the customer (E020). It was stated that WPD should aim to keep the cost to customers as low as possible (E021).

Resilience for customers and communities

2.17. Stakeholders believed that one strategy to decrease the effect of power cuts on customers would be to increase their resilience (E019). It was suggested that WPD should work with communities and parish councils to help identify customers that need extra support (E019). Installing back-up supplies, such as battery storage technology, could help worst-served communities be more immune to power cuts in future (E023). Promoting energy efficiency was also seen as another way to help reduce the chances of power cuts due to lack of supply (E022).

Communication outside power cuts

2.18. Communication and education of customers outside of power cuts was proposed as a new priority in 3 workshops (E017). Stakeholders were interested in how WPD could help enhance the resiliency of customers through education (E021), particularly around new technology like battery storage (E021). Education for future network changes was noted by stakeholders as a crucial way to get customers to understand the implications of a new system to help fortify the quality of supply (E022). Helping

organisations to plan is vitally important according to stakeholders, with a local council representative noting that they had recently completed an emergency plan but had not considered electricity, so communication on this issue should increase (E020). The differences between communicating with domestic and commercial customers was also noted by stakeholders (E020).

Proposed commitments

Priorities	Commitments
Worst served customers	1) Investigate the use of battery storage to help make worst-served customers more resilient 2) Carry out assessments to better understand and map worst-served customers, ensuring they received tailored support mechanisms 3) Create a clear plan with targets to reduce worst-served customers, including what constitutes minimum standards 4) Focus on rural areas, ensuring they're as well served as urban areas 5) Prioritise worst served customers who are vulnerable and / or fuel poor 6) Improve communications with worst served customers being mindful not everyone is online 7) Prioritise critical infrastructure, essential services and business customers 8) Run emergency planning scenarios in relation to worst-served customers 9) Have a transplant prioritisation strategy when it comes to worst-served customers 10) PRovide compensation for worst-served customers, taking into account both frequency and duration of outage 11) commit to reducing worst-served customers numbers to zero 12) Define the terms 'worst-served' more clearly, perhaps changing to 'most challenged', and set realistic parameters as to what these customers can expect from your service 13) Collaborate with LAs to map and support worst-served 14) Invest in undergrounding for worst-served rural customers 15) Set yourself localised targets 16) Invest ahead of need to improve service to worst-served 17) Adopting innovation to find new ways of supporting worst served customers 18) Do more to promote new options for worst served customers

Customer service during power cuts	1) Adopt smarter options, such as web chats, apps and localised social media feeds 2) Improve the amount of communications before and during a power cut 3) Prioritise customer service for those on the PSR during power cuts 4) Increase awareness of PSR, as well as those vulnerable customers not on the register 5) Collaborate cross-utilities and communities to ensure effective backup power systems 6) Maintain frequent communications in rural and at-risk customers 7) Collaborate with National Grid 8) Improve communications with stakeholders involved in supporting outages 9) Send automated text messages to customers based on their geographic location 10) Focus on mobile support, reaching out to customers 11) Ensure your website is up to date and has accurate information 12) Create dedicated helpline 13) Share good practice within WPD 14) More frequent, multi-channel communications, promote the 105 number 15) Work with local authorities during power cuts to support vulnerable customers
Communicate and educate customers outside of power cuts e.g. on how to enhance reliability	1) Educate customers on network reliability 2) Develop separate communications for domestic and commercial users 3) Communicate with local authorities and parish around emergency plans 4) Educate on EVs and the future needs of the network 5) Put more resources into proactive communication via social media
Customer service during faults, education and information	1) Use text messages to update affected customers 2) Keep customers updated on the duration of the fault 3) Share information with local authorities and community groups
Back-up supplies, solutions for customers	1) Invest ahead of need in battery storage 2) Define which customers most need backup storage 3) Decide whose role is it to provide storage
Planned outage communication	1) Support customer resilience during planned outages
Affordability	1) Ensure the work done in this area is cost-efficient

Communications process and systems	1) Provide customers with information on network issues and recovery timeframes
Resilience planning support for communities	1) Work with parish councils to identify customers who need extra support, e.g. care homes
Enhancing customers' own resilience	N/A
Proactive local information in planned outages	N/A
Classify customers for reconnection in a power cut (e.g. schools, mobile networks)	N/A
Promote energy efficiency	N/A

Sub-topic: Fuel Poverty

What we heard in 2019:

Stakeholders in the preliminary engagement phase placed a low priority on addressing fuel poverty and many stakeholders stating that WPD had limited power to help this group as it only attributed ~20% of the bill. However, stakeholders were pleased to see action in this area and had several suggestions for future work; educating fuel poor customers about the services available to them as well as staff training were noted as potential future improvements.

There were some suggestions regarding improving current services such as the Affordable Warmth Scheme and tender process for charities as well as the allocation of connection costs for customers. Overall, customers were relatively pleased with WPD's work in this area and would like to see it continue.

Summary of Phase 2 feedback

3.1. Stakeholders felt strongly that WPD should do everything in their power to help reduce fuel poverty. This starts with the identification of individuals that are fuel poor, before moving on to the collection of their data and accurate mapping. This data should subsequently be shared with WPD's partners to maximise the effectiveness of all services. The next step discussed was the education of those in fuel poverty of the services and opportunities available to them as well as simple steps of how to access these services. While some stakeholders noted that it was not just WPD's responsibility to reduce fuel poverty (naming the suppliers and the government as having the most responsibility), WPD could do a lot to help in this area. Firstly, improving customer insulation could not only reduce the demand for WPD's assets but also help reduce the costs for fuel poor customers. Secondly, WPD should help customers access cheap electricity through low carbon sources (like community wind and solar projects). Thirdly, stakeholders wanted WPD to plan for future ways that they could help reduce fuel poverty such as the development of peer-to-peer trading and lobbying for better electricity tariffs.

3.2. A total of **97** pieces of feedback were collected for fuel poverty during phase 2 engagement, which adds to the **16** pieces collected during phase 1. This sub-topic has **16** priorities and **30** proposed commitments.

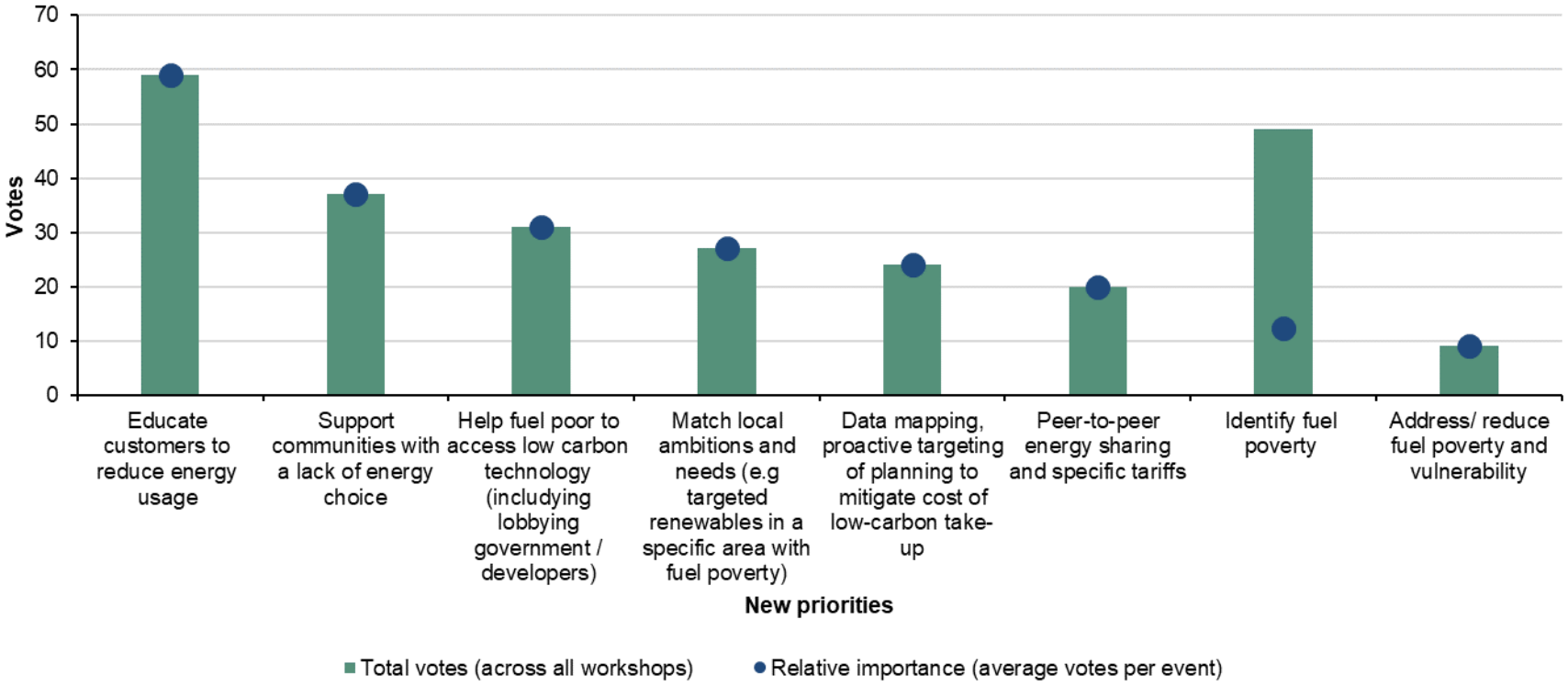
Priority ranking

Existing priorities

3.3. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. There were no existing priorities for fuel poverty.

New priorities

3.4. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



3.5. For the newly suggested priorities in fuel poverty, ‘Educate customers to reduce energy usage’ collected the highest number of votes across all workshops. The second-highest total was for ‘identify fuel poverty’, however, the priority has a low ‘relative importance’ (12.25 votes per event), compared to others that received more votes at just one event.

3.6. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on some of the new priorities, such as ‘support communities with a lack of energy choice’ (relative importance of 37), and ‘Help fuel poor to access low carbon technology’ (relative importance of 31).

Detailed feedback

Feedback for Fuel Poverty can be divided into four themes:

- Identification
- Education and awareness
- Fuel poverty reduction
- Future schemes

Identifcation

3.7. Stakeholders felt that protecting vulnerable groups and fuel-poor households should be part of WPD's obligations (E022). The first recommended step to addressing fuel poverty is its identification, as was noted at 4 of the 6 regional workshops (E017). A parish councillor mentioned the vulnerability of pay-as-you-go meters (E020) and an environmental group noted the difficulty of topping up the pay-as-you-go meter during a power cut if you have to do so online (E020). A charity representative also noted the importance to look at off-gas customers, which may be utilising inefficient means of electric heating (E020). A major energy user recognised the difficulty of separating those that do not pay their bills because they cannot afford to pay, versus those that will not pay (E018).

3.8. Stakeholders stated that fuel poor individuals should be tracked, mapped, and considered in future smart grid planning (E018, E018). A parish council member questioned why WPD did not have a fuel poverty register that was shared between energy suppliers and other utility suppliers (E019). It was suggested that certain locations could then be tracked and evaluated to target problem areas (E019). An energy consultant noted the lack of information depth for each individual made it difficult to assess the spread across ethnic groups, income groups and geographical regions (E019). Stakeholders noted that the use of smart meter data could help with identification (E018) and data should be shared and integrated better across the different industries (E018).

3.9. Stakeholders were keen to see WPD identify and work with partners on fuel poverty (E019) as well as lobby local suppliers and national government to implement changes (E021). Two stakeholders noted that while customer vulnerability was a higher priority for WPD – as fuel poverty was the responsibility for the supplier and the government – it was important for WPD to be involved (E021, E021).

Education and awareness

3.10. Once fuel poor individuals have been identified and mapped, stakeholders suggested that a good education and awareness program was implemented so that these individuals understand what services are available and how to access them (E021). Stakeholders believed that individuals are unaware of what costs that WPD could help with, such as insulation, solar panels (E021) or other household costs (E019). A business customer offered that there could be variable system charges as part of WPD's corporate social responsibility to tackle fuel poverty (E021).

Fuel poverty reduction

3.11. Several stakeholders mentioned that customers may trust WPD more than the government to provide these services and support (E023). Furthermore, it was suggested that WPD should endeavour to help support communities that have a lack of energy choice (E020). Feedback suggested that WPD should increase their consideration of local people's needs, and how WPD can help improve resilience and provide support for those struggling (E020). One suggestion was to help community projects develop wind turbine, solar panel (E020) and insulation provision schemes to counteract fuel poverty (E020, E020, E023, E023). Stakeholders stated that WPD's operating areas are so diverse that the different issues within each region should be dealt with independently (E023), including matching the local level of ambition with local needs (E023).

3.12. Reducing demand through improving insulation was deemed a far cheaper solution, by stakeholders, than largescale infrastructure projects (E018). Universal insulation was suggested at one workshop as this could benefit the whole energy system, not just fuel poor customers (E022). However, another stakeholder mentioned the importance of helping to facilitate electricity supplies for fuel poor homes and not just depend on retrofitting as the only strategy (E020).

3.13. It was discussed in one workshop that WPD should help fuel poor customers access low carbon technology, including lobbying government and developers to make this happen (E019). Stakeholders believed that fuel poor customers are the most likely to benefit from this access (E019). It was noted that making sure no customer is left behind (E019) could mean that WPD has a two-tiered tariff system where those that can pay for electricity help those that cannot (E019).

3.14. Another potential avenue to reduce fuel poverty suggested by stakeholders would be reducing connections costs, including the location of EV charging points and their subsequent access by fuel poor customers (E022, E022). It was noted that fuel poor customers should have easy access to a good tariff rather having to shop around and research to get the right one (E022). Stakeholders believed that this should also apply to their internet connection (E022). It was noted that fuel poor people tend to be poor in knowledge and their understanding of the system, and will, therefore, be under a considerable disadvantage if not protected by WPD (E022).

3.15. Ultimately, stakeholders wanted WPD to reduce the cost to the customer (E019). It was noted, though, that WPD would have to work with the suppliers to ensure this as they would ultimately be the ones setting the price (E019). In one workshop, there was a suggestion that the whole electricity system should be nationalised and free to everyone, funded through taxes (E021) as the system and market is inherently unfair and is designed to benefit the most fortunate (E021).

Educate customers on how to reduce energy usage

3.16. This is a new priority for fuel poor customers as many stakeholders suggested that this would be a good way of reducing their exposure to high bills (E019). It was suggested that more affluent people can pay a little more on their bills to go towards reducing fuel poverty (E019). One recommended action would be to round-up electricity bills and use the excess money to finance fuel poverty reduction (E019).

Future Schemes

3.17. Alongside deploying current renewable technologies or insulation, stakeholders also wanted WPD to consider the future schemes that could be utilised to best serve fuel poor customers. Two key potential schemes mentioned by stakeholders were peer-to-peer energy sharing and new energy tariffs (E020). Peer-to-peer energy sharing was discussed in the Cornwall workshop and was noted to be in line with WPD's transition to a DSO. It was stated that it should be a priority to help community energy schemes as they could help counter fuel poverty (E020, E020).

3.18. The design of energy tariffs was discussed alongside peer-to-peer energy sharing in Cornwall (E020) and Birmingham (E019). Stakeholders stated that there should be a scalable design to energy tariffs for Distribution Use of System charges (E019) or rising block tariffs so that the more you use, the more it increases (E019). Furthermore, it was believed that WPD should lobby suppliers and the government to increase the availability of these favourable tariffs to fuel poor customers (E019).

Proposed commitments

Priorities	Commitments
Identify fuel poverty	1) Use 'social indicator mapping' to identify areas of fuel poverty 2) Target those on pay-as-you-go meters to receive support 3) Target those with other key indicators of fuel poverty, such as those off gas, using solid fuels for heating, or those with single glazing 4) Work with suppliers 5) Create a clear definition of fuel poverty - be aware that there is a difference between 'can't pay' and 'won't pay' 6) Create a PSR for fuel poor customers 7) Set targets for funding fuel poor initiatives 8) Work with partner organisations on identifying fuel poverty
Match local ambitions and needs (e.g targeted renewables in a specific area with fuel poverty)	1) Facilitate retrofitting in areas with poorly insulated housing stock 2) Facilitate renewables and efficiency savings in areas of fuel poverty
Educate customers to reduce energy usage	1) Signposting to support services
Support communities with a lack of energy choice	1) Invest in insulation
Data mapping, proactive targeting of planning to mitigate cost of low-carbon take-up	1) Challenge the regulatory boundaries around data sharing and mapping
Address/ reduce fuel poverty and vulnerability	1) Enable vulnerable and fuel poor customers to become more energy efficient, increasing resilience and cutting bills
Help fuel poor to access low carbon technology (including lobbying government / developers)	1) Set up a two-tier electricity tax: those that can afford to pay subsidise those who cannot
Peer-to-peer energy sharing and specific tariffs	N/A
Affordable connections	1) Work to establish a clear policy framework

	2) Look at the broader poverty picture 3) Improve the modelling you use 4) Use small networks and smart appliances to improve affordability
Raise awareness of fuel poverty	1) Raise awareness of ways to reduce energy consumption 2) Support energy saving initiatives, such as home insulation and solar panels 3) offer variable system changes
Facilitate renewables and insulation for fuel-poor customers	1) instead of retrofitting insulation, finance renewables / microgeneration for domestic 2) Set targets to reduce energy consumption
Look at design of energy tariffs	1) lobby government to make changes to system; affluent and commercial customers to offset costs for fuel poor customers 2) Focus on rising block tariffs
Reduce cost to customers	1) work with suppliers to bring down energy costs 2) Set up a 'customer insurance' fund to support the fuel poor
Socially minded aggregation	1) Help the fuel poor to benefit
Universal insulation	1) Promote energy efficiency especially to the vulnerable and fuel-poor
Make everything free and fund energy through taxation	N/A

Sub-topic: Social contract

What we heard in 2019:

While over 75% of stakeholders in one preliminary engagement event agreed that a social contract was an important requirement of the business plan, stakeholders in different events disagreed whether it should take the form of a separate section in the business plan or integrated throughout. Workforce efforts, diversity and pay were all seen as initiatives that should be included as part of the contract.

Stakeholders also stated that increasing the transparency of WPD's finances and social partners would improve customer trust in the company, which currently sits at 7.7/10. Feedback suggests that annual audits of progress on each commitment could be completed as a means of tracking delivery.

Summary of Phase 2 feedback

4.1. While discussions with stakeholders in phase 1 focused on the location of the social contract and its overarching content, stakeholders in phase 2 focused on specific issues. First, stakeholders wanted WPD to consider the wider societal impact of their choice of pension fund, specifically that they should not be funding any unsustainable companies such as fossil fuel producers. Stakeholders in Swansea also discussed the importance of aligning WPD's social contract and targets to the welsh government's well-being act and noted that several lessons could be learned from this when constructing WPD's social contract.

4.2. A total of **5** pieces of feedback were collected for social contract during phase 2 engagement, which adds to the **11** pieces collected during phase 1. This sub-topic has **2** priorities and **1** proposed commitment.

Priority ranking

4.3. Social contract did not have any existing priorities. Two new priorities were suggested by stakeholders during the workshops, but these were not voted on.

Detailed feedback

Feedback for social contract can be divided into two themes:

- Diversity pension investment
- Align priorities with Welsh Government Well-being Act

Diversity pension investment

4.5. This was a new priority discussed at one workshop where stakeholders were keen to see WPD ensuring that the pension was not invested into unsustainable companies, such as fossil fuels (E018).

Align to Welsh Government's Well-being Act

4.6. The Welsh Government's Well-being of Future Generations Act covers a range of topics from improving equality, public health, and resiliency of the welsh population, amplifying welsh culture and the welsh language, as well as acting in a globally responsible manner. Stakeholders in Swansea believed it was crucial that WPD should align its future targets with the act, as well as learn lessons to build into the social contract (E023).

Proposed commitments

Priorities	Commitments
Facilitate electric vehicles on a mass scale	1) Invest of pension investments in fossil fuels
Align to Welsh Government's Well-being of Future Generations Act	N/A

Sub-topic: Vulnerable Customers

What we heard in 2019:

This was one of the highest priorities noted by stakeholders during the preliminary engagement phase, especially concerning the protection of vulnerable customers during power cuts and the transition to a smarter network. There were a number of strategies and initiatives mentioned during the engagement events such as education of vulnerable customers (of services, the transition to a DSO and PSR), training staff to communicate effectively with vulnerable customers, and appropriate deployment of new technology to help vulnerable customers.

Summary of Phase 2 feedback

5.1. Vulnerable customers were once again extensively discussed during phase 2 engagement events. The discussions covered a variety of topics, from the role WPD plays in establishing customer resilience, the identification of vulnerable customers, WPD's partnerships with organisations working in this sector as well as the services WPD provide. Stakeholders feel strongly that WPD should be more involved in this space and that its current efforts should be continued and built upon. Two key takeaways that were discussed extensively were the collaboration between WPD and other partner organisations, charities, and utilities on reducing vulnerability, and how WPD would protect vulnerable customers in the smart network transition.

5.2. The collaboration that WPD was currently involved in was praised, but there were multiple calls for WPD to expand its network and work closely with its partners to ensure the customers would receive the best possible service. The transition to a smart network does provide several opportunities, as well as potential challenges as vulnerable customers may have access to new technology and revenue streams (such as peer-to-peer trading or battery storage), but will also have to get to grips with the complex technology deployed in their homes, which could be challenging without substantial support from WPD.

5.3. A total of **382** pieces of feedback were collected for vulnerable customers during phase 2 engagement, which adds to the **26** pieces collected during phase 1. This sub-topic has **23** priorities and **137** proposed commitments.

Priority ranking

Existing priorities

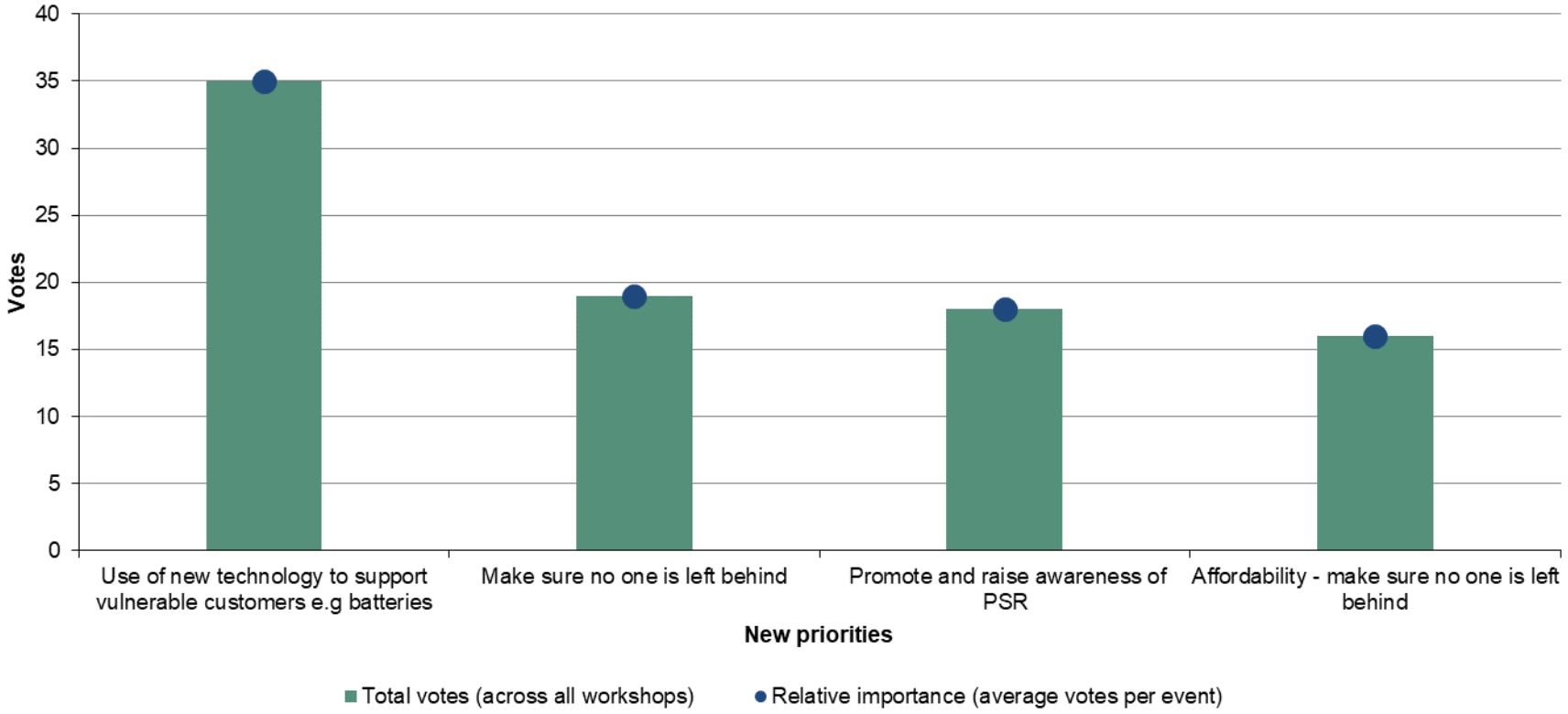
5.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

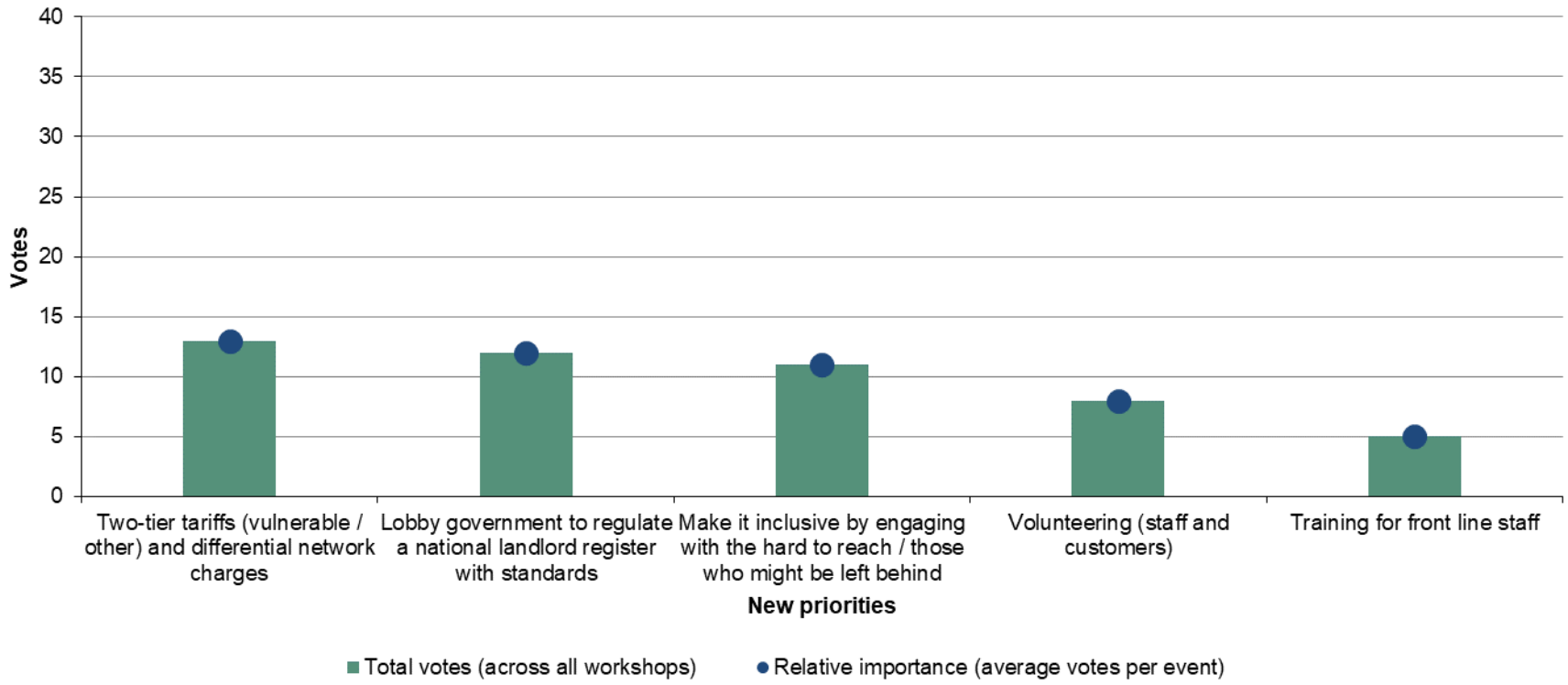
Priorities	Votes	Relative importance
Protect the interests of vulnerable customers in the switch to a smarter network	174	29
Partnerships and outreach services	105	17.5
Maintain a Priority Services Register	103	17.17
Referral networks, data sharing and data quality	86	14.33
Identifying vulnerability	85	14.17
Customer resilience	36	6
Accessibility of our services	34	5.67

5.5. The priorities receiving the highest numbers of votes focused on protecting vulnerable customers through partnerships, particularly with the switch to a smarter network, whereas the lowest ranking priority concerned the accessibility of current services.

New priorities

5.7. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.





5.8. For the newly suggested priorities in vulnerable customers, 'Use of new technology to support vulnerable customers e.g. batteries' collected the highest number of votes across all workshops.

5.9. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on this priority over the existing priorities.

Detailed feedback

Feedback for vulnerable customers can be divided into five themes:

- General
- Identification
- Affordability
- Partnerships
- Services and education

General

5.10. Stakeholders are conscious that WPD have a crucial role to play with vulnerable customers and it was mentioned that it was imperative that their voices were heard during the engagement process (E017, E020, E021). A vulnerable customer representative noted that individuals are often left behind due to their circumstances, whether because of the house they live in or the fact that they cannot afford it, and WPD should prioritise inclusivity in their business plan development (E019, E018, E020). Despite WPD being active in this area in the past, stakeholders are keen to see further commitments in the future (E019). Energy UK is talking about producting a vulnaerbility commitment for suppliers to sign up to and this stakeholder wanted to partner with WPD to both have their input in this process (E031).

Customer resilience

5.11. WPD should help build customer resilience to ensure that those in vulnerable situations will have alternative supplies of electricity if there were an outage. This could include through the deployment of batteries (E019, E020, E022), localised low carbon generation or backup generators with automatic processes (E018, E021, E020, E022) with smart technologies becoming more and more vital in our electricity supply (E023). This must be researched further (E022) and Ofgem should be able to assist WPD in providing support here (E020). There should be some consideration that with the roll-out of flexibility services there are sectors of the population that cannot be flexible (E018). Financial incentives may be counteractive, as those who could use the money most, cannot change their usage (E018).

5.12. Community resilience must be part of this strategy with a multi-agency approach (E018). It may be an idea for WPD to invest in community facilities or centres or community groups to use this to improve customer resilience (E021, E019). WPD could act as a trusted intermediary in this process (E018) to integrate housing providers into this process (E021, E022) and find ways to reduce vulnerability rather than having to react to it (E021). Utilising innovation to build network resilience would show that they can cater for vulnerable customers (E021). EVs could be a key technology with vehicle to grid charging during long power cuts (E022). It may be an idea for the local authority and local stakeholders to create a local resilience forum to plan specifically for certain areas and to reach the vulnerable in these areas (E022).

5.13. It would be good for WPD to publicise and provide information on how power cuts affect people (E021), especially if vulnerable customers do not have access to mobile phones and must dial-in (E019). Vulnerable customers may be unaware of their rights around prepaid meters during an emergency (E019) as well as their financial rights in terms of their emergency medical equipment (E019). Liaising with neighbourhood policing might be a good solution here (E019). Vulnerable customers need to be

educated on energy efficiency (E020), such as potential savings with LED lightbulbs (E021). However, the lack of understanding of WPD's role, operations and services limits the strength of your message to vulnerable customers (E021)

5.14. Customer resilience will be increasingly difficult with the frequency and severity of extreme events because of climate change (E019). Heatwaves could create vulnerability in summer, and one stakeholder suggested that there could be a summer fuel allowance, similar to the one seen in winter (E020). Stairlifts in homes should be covered by batteries or generators in the event of outages (E022).

5.15. WPD need to consider vulnerable properties, such as care homes, that have a high density of vulnerable customers (E023). Also, vulnerability must be considered when building new properties as there will be increased use of three-phase connections (E020). While some stakeholders thought that retrofitting is a great way of developing customer resilience, a local authority representative did not like the idea of WPD helping to facilitate it due to its cost (E020, E020). Insulation was seen as a great way to reduce people's use of electricity (E022), which could also help WPD's operations too. It, therefore, makes sense for WPD to be involved in this process (E022).

Identifcation

PSR

5.16. Maintaining a Priority Services Register (PSR) was the 3rd highest priority under vulnerable customers (E017). Stakeholders noted it is important that WPD liaise with people on the PSR often to keep data up to date and cleansed (E019, E019, E020, E023).

5.17. Some stakeholders were curious to understand the criteria of identifying vulnerability and whether this could include businesses or would that then make the list too long and a pointless tool (E022). A local councillor also noted that some local councils can't afford their energy and this should be researched further (E022).

5.18. Ofgem discusses vulnerability as transient so PSR data needs to be reviewed frequently (E018), developing a close relationship with those on the register (E022) and tracking those on the register (E020, E020). It may be easier to maintain a local register accurately to deploy local resources in the event of a power cut, where centralised information may add a step to this process (E019).

5.19. Collaboration with WPD's partners to share PSR data was an area where several stakeholders were keen to see developed further (E018, E023), in particular, that a national PSR should be developed rather than different groups and organisations all having their individual lists (E018). It was noted in several events that there should be a central PSR list or authority and that WPD could champion and lobby this idea (E021, E019, E019, E019, E021, E023, E021). There are networks currently sharing information about vulnerable people locally, and WPD could link these networks together (E022). A parish councillor questioned how they should add someone to a register if they were to identify a vulnerable customer, and that this process should be clear on the WPD website (E019). This collaboration would also help WPD share best practices with others (E018) and it would be good to have industry standards so that WPD could compare itself against others here (E019). At the very least, there should be a standardisation of the PSR nationally, both with what services are offered and what information is stored (E021).

5.20. The PSR will need to be adaptable over time as it will need to align with future energy policy and vice versa (E019) including providing flexibility from demand-side response and the opportunities for vulnerable customers in a smarter network (E019).

Promoting the PSR

5.21. It was discussed at several events that the PSR was working well, but there was a substantial lack of understanding of it and limited awareness of it (E021, E021, E021, E020). Everyone on the PSR register, and all potential candidates, should have a better understanding of what the PSR is and what services are provided (E020, E022, E022, E022, E022, E022, E022). Some suggested that the PSR should be advertised through councils and councillors (E021, E023, E023), others mentioned the role of community groups to spread this information (E019), and health providers (E020, E021). A local council member mentioned they phoned vulnerable customers with medical issues on an annual basis (E022). Another stakeholder mentioned the potential role of colleges to educate the population about the PSR and its services (E019). The common denominator with the above avenues is the use of word-of-mouth information, as many vulnerable people may not have access to computers or the internet (E021, E023). Alongside a more nationalised approach to the PSR, there should be a national campaign to promote the register (E021).

The referral network and data sharing

5.22. This priority was the 4th highest overall for vulnerable customers and looks at how data is shared between partners on vulnerable customers (E017). Protecting the interests of vulnerable people is hugely important, and it was suggested that WPD needs to act as a gateway for stopping people from falling further down by utilising referral networks and partnering with other organisations to provide outreach (E018, E020). Stakeholders mentioned that referral networks should include the whole spectrum, from national NHS to local levels (E018). Data sharing should be rolled-out across the board and WPD can collaborate with other partners to operate a referral network (E023). Working with other utilities and partners would help to share information and resources, but one stakeholder did note that there may be some data protection issues in doing this (E018). People need to give consent for their information to be shared (E023).

5.23. Mapping vulnerability may highlight certain areas to focus on, aiming to reach others in the same area that have yet to be identified as vulnerable (E019, E019). Stakeholders questioned whether data from meters could be used for insight about vulnerable customers (E020) and how smart meters could be used to help this process (E019, E020, E021, E021, E021). Information and clarity about how smart data is used would be paramount to build trust (E019, E023). Data anonymisation would be key when sharing information (E022) Sharing data of vulnerable customers should have a particularly tight data protection policy (E022). A charity representative stated that they would like WPD to include the WPC data in the social indicator map (E020).

5.24. Sharing data on vulnerable customer's demographics (age, gender, ethnicity) may also help WPD to plan and focus engagement better in the future (E019). There are some already established data-sharing projects, such as JIGSO in Wales, and WPD should get involved in this (E023). An environmental group also stated that they wanted to set up a referral system so that they could link those in need with the correct services, but they would require WPD's assistance for this (E020).

5.25. WPD should also lobby the government to have a national landlord register to regulate and enforce standards (E019, E019).

Recognising vulnerability

5.26. Though the PSR is a great tool to track vulnerability, recognising vulnerability is constantly changing as the benefits change (E018) and the interactions between different groups evolve, such as fuel poverty and vulnerable customers (E018). It was noted by a charity representative that WPD need to improve their recognition of vulnerability (E020). Continuous training for front line staff will be important to recognise vulnerability (E021).

5.27. One stakeholder questioned how the register operated as they wanted to know whether all members of a sheltered housing scheme were registered individually or as a collective (E021). Stakeholders recognised that there needs to be more engagement with charities to find out what people want and how they classify themselves (E021). Similarly, one stakeholder noted that WPD could target special education schools for early PSR registration (E021). Vulnerability may also be fluid as someone may not be vulnerable but have an accident and have brain injuries and are vulnerable (E021). Vulnerability must be presented in its full range of ways for people to identify themselves as vulnerable (E019). However, another mentioned that it was important only to have the most vulnerable on the list, or otherwise it may become too all-encompassing and too big to manage effectively (E021).

5.28. Some stakeholders questioned whether WPD would set up a contingency fund to protect vulnerable customers (E019). It was discussed elsewhere that dialogue with customers was required to understand what type of support they required (E023).

5.29. The collaboration between WPD and other local area services is important, such as the disability grant scheme (E022). Other contact points could be a local council, community project groups, health professionals (E022, E022).

5.30. One stakeholder also mentioned that vulnerability is not limited to domestic customers and that micro businesses may also be classed as vulnerable, particularly in situations like during the COVID-19 pandemic (E031).

Affordability with net-zero

5.31. This theme has been implied throughout a number of other topics. However, it was discussed as an individual priority in two workshops (E017). The key discussion point in this area is that no customer should be left behind, especially in the context of vulnerable customers and achieving net-zero (E018). Stakeholders and customers want to buy-in to net-zero, but this will ultimately result in higher costs to customers, and it is important that vulnerable customers are not over-burdened with this cost (E022). One connections provider suggested that WPD should work with government and suppliers on offering lower standing charges for vulnerable customers as they are, in some cases, less likely to use as much energy (E023).

Partnerships

5.32. Partnerships were discussed extensively with regards to vulnerable customers as stakeholders felt it was one of the central pillars for WPD to target when working in this space, scored the 2nd highest priority in vulnerable customers (E017). WPD have a

limited amount of manpower, and therefore working with other partners in this space is the best way to enact change on a large-scale (E019, E019, E022, E022, E023, E023). Stakeholders believed that WPD should take a leadership role in bringing all these partners together (E021). Unfortunately, growth and profit are considered first by businesses, and vulnerability and social responsibilities are the last things considered (E021). However, working with partners can help WPD best reach those that need their help (E021). WPD should develop a person-centred approach with vulnerable customers (E019). There is currently such a range of organisations working on a range of vulnerability issues, that WPD needs to coordinate action between all the services (E021) as working together will maximise the benefit to society (E021). It is important to make every interaction count (E020). One stakeholder noted that while WPD had community engagement teams, it may be an idea to have individuals that manage WPD's partnerships and try and create more (E019).

Suppliers

5.33. The difficultly of working with suppliers was mentioned at multiple events, particularly as they are the only ones that can directly measure energy usage information and are therefore the ones that need to sound the alarm (E018). However, it is not in their interest to do this as it will limit profit (E018) and it can be difficult when suppliers change frequently for them to be highly involved with PSR maintenance and vulnerability aversion work (E022). However, it was noted that suppliers should be involved in the process in some capacity (E022).

5.34. The suppliers, gas and electricity distributors all have a pool of money to deal with vulnerability and fuel poverty, and therefore it is crucial that these can either be combined or coordinated in order to reach the best overall outcome (E018). It is crucial that WPD can work with the suppliers to ensure all customers that should be on the PSR have access to those services (E022, E023).

5.35. One stakeholder wanted more clarity on the amount of liaising between WPD and the supplier in terms of aligning disconnection policies (E019). Cost of electricity is pushed by suppliers, and while a major connections customer understood the challenges of vulnerable customers, they noted that they would rather pay WPD more to make the supply reliable than cut costs (E019).

DNOs and other utilities

5.36. As well as working with suppliers, it may be advantageous for WPD to work with other DNOs to share common 'backroom' services (E019). This could also be the case for all other utilities as they collaborate here to have 'joined-up thinking' (E020).

Charities

5.37. There are a range of charities of which WPD could partner with, but it was noted that there needs to be a wide enough spread across all types of vulnerabilities, such as covering mental health with a dedicated charity (E018). Outreach services will be key as you need to engage such a large number of people (E018). It is often that people don't realise that the help is there for them, such as financial education (E020) and free debt advice (E021). Information needs to be marketed to reach the vulnerable so that they know what they are entitled to (E021). Working with charities and organisations like the Citizen's Advice Bureau that are trusted by vulnerable people

and therefore have a stronger relationship with those engaged, allows the work to better inform those people (E021, E021, E021). However, one business customer also noted that WPD have a trusted brand and that they are not fully exploiting this at the moment (E021). Additionally, customer care lines should be integrated to help with this process (E023).

Local community groups

5.38. A vulnerable customer representative praised WPD for their year-round funding and support, and asked WPD to continue the good work and continuing to fund local community groups (E019). Community energy champions who can advise their next-door neighbours are effective as neighbours trust each other and there is already an existing relationship (E020, E022). This may also be a great way to help locate isolated individuals (E020) and engage those that may be too afraid to contact a large company like WPD (E020).

5.39. Helping community energy groups with innovation can go hand-in-hand with ensuring vulnerable customers have access to network services (E020).

Healthcare providers

5.40. Many vulnerable individuals will not seek help through the designated charities, and it is, therefore, important to work with GPs and healthcare providers too (E019, E020, E023). Ideally, healthcare workers could identify vulnerable people and pass on that information (E022). It would also be useful to work with the NHS to understand if people are temporarily vulnerable after being discharged from the hospital (E019).

Public service boards

5.41. The public services board are a fantastic body for WPD to work with as they can provide access to a large number of institutions and bodies that may traditionally be inaccessible (E023).

Food banks

5.42. While a member of the emergency services noted that food banks could be a good place for WPD to target (E020), a local authority member disagreed, noting that this was outside its remit and not its responsibility (E020).

Resilience direct

5.43. Resilience direct has a mapping function for all the resilience forums nationally, which can spread messages very quickly from the central government, which WPD could utilise in the future (E022).

Clerks

5.44. Stakeholders recommended that WPD work with clerks, as they are a great way into the local community, especially for planning around incident response (E022).

Housing developers

5.45. Stakeholders suggested that WPD should work with housing developers to increase awareness of vulnerable customers and how best to design buildings to service them (E022). It was also discussed that WPD should work with private landlords and social housing developers to deploy solar panels and get enhanced insulation which will help reduce the exposure of vulnerable customers as well as help towards net-zero ambitions (E021).

Services and education

Raising awareness

5.46. Stakeholders mentioned the need to raise awareness among customers of how to save energy and protect customers from the cost of the transition (E018). It was noted that communication needs to improve to help the vulnerable understand how the smart network can benefit them (E018) and how they can participate (E018). Prices are going to go up with costs of transitioning to net-zero, with stakeholders highlighting that this needs to be communicated well with customers (E018).

5.47. Raising awareness can be linked to partnerships as this is was seen by stakeholders as something that may be best completed by a multitude of sources, not just through WPD (E019). It was suggested there should be a social obligation for everybody to be involved here to serve the most vulnerable customers (E019), and that WPD should focus efforts on the disengaged customers that are hard-to-reach (E023). This will mean utilising a range of educational methods, including suggestions such as publishing educational leaflets on how to use their electricity (E023).

5.48. A competitive supplier's market is great for people who can do the research to find the best deal for them, however, it was highlighted that this may expose vulnerable people to be overpaying (E020).

5.49. One stakeholder suggested that WPD should use its fleet to publicise its services (E022). Another suggested that the 105 speed-dial number needs more publicity – it does work but people do not know about it (E022).

5.50. A suggestion at one event was to give customers that can afford it an option to donate (E022).

Services

5.51. All customers are paying for services through their bills, and an energy consultant notes that this must be utilised to provide support services for the most vulnerable because otherwise, we would be guilty of leaving people behind (E019). While it is WPD's role to be proactive with vulnerable customers, it was pointed out that it's not WPDs role to become social services (E022). Vulnerable customers may benefit from new technologies in the smart low carbon transition, but stakeholders highlighted that they must be protected from any adverse effects and given the correct access to these technological improvements (E018, E019, E018, E020, E021).

5.52. While some stakeholders argued that WPD should be focusing on a whole system approach and working with other players nationally to try and get the best result for all

customers during the net-zero transition (E021), others disagreed and would rather see resources focused on vulnerability locally (E021).

Accessibility of WPD services

5.53. The communication around services offered should be improved with customers and partners (E019), according to stakeholders. It was mentioned that accessibility also means consistency and that the message about WPD's services are consistently spread to customers (E019).

5.54. It is crucial that older people are not left behind during the digitalisation transition to a smarter network (E019) and stakeholders highlighted that face-to-face engagement should always be prioritised over the telephone or online communication (E021). Also, stakeholders said WPD should keep phone and paper communication, especially for older customers (E019, E022, E023, E023). One stakeholder noted how not knowing that a service is open to you can lead to vulnerability, and this could include people that may not have English as their first language (E019) or people that do not have access to the web (E023). The fact that some areas are digitally excluded should also be considered when trying to reach your customers (E023).

5.55. Another idea was to have an opt-out rather than an opt-in system for WPD services, so the application process or awareness of a service is no longer required (E021). Alongside this, it was mentioned that it would be good for WPD to understand the customer needs, as they will differ significantly, and it will, therefore, need to communicate and deliver access to services in a range of different ways (E023). Stakeholders pointed out that the government also echoed this, by saying that it would want DNOs to promote accessibility of their services and registers to individuals (E023).

5.56. It was noted that some of the limitations revolve around the complexity of the technologies in our homes (E019).

Roll out of smart meters

5.57. It was mentioned several times that pre-paid and pay-as-you-go meters are problematic and can leave people who cannot afford to pay to be digitally disconnected and will be left behind (E021, E021). Stakeholders were keen to see WPD encourage further smart meter roll-out (E021, E021) that could help with vulnerability monitoring (E021). One major connections customer stated that smart meters should be enforced rather than be optional (E020).

5.58. However, some vulnerable customers are scared of smart meters, and there are concerns about using too much electricity leading to constantly monitoring it (E020). WPD should possibly support an educational process to help people understand smart meters to help uptake (E020). It was seen as important for WPD to ensure that smart meters operate properly (E022).

Roll out of low carbon technology

5.59. The common view is that affluent people can afford the newer, more efficient technology, such as EVs or heat pumps, that can thus reduce their overall energy bill, while vulnerable people may not be able to do this for a multitude of reasons such as limited money or that medical concerns (E019). WPD is seen as being in a position to

help vulnerable people access these new technologies to gain the same benefits, such as a community car share scheme (E019), discounted charging points (E023), deploying local renewable energy generation (E020, E020), insulation (E020, E020).

5.60. Education was seen as critical to enable vulnerable people to understand the new technologies and how they can be utilised to maximise their benefit (E023), or potentially some support for the first few months after installation (E023). However, these technologies should also be used to facilitate a better life for vulnerable and fuel poor people and their core issues which may be heating and eating, not EVs (E022). Also, stakeholders mentioned vulnerable customers may be sceptical of new technology in their homes (E022) even though they may be the ones that could gain the most benefit from the integration of innovative new technologies in their homes (E021).

5.61. Deploying batteries were seen as a good way of reducing vulnerability during an outage event (E018, E018) and may also be used to run motorised beds or domestic lifts for customers (E019).

5.62. Some stakeholders wanted to understand the process of converting someone from an old gas boiler to a new heat pump, and what steps could be taken, and how quickly, for vulnerable people (E019).

5.63. Another potential technology highlighted was peer-to-peer trading which could ease fuel poverty and provide emergency backup for vulnerable customers dependent on electricity (E020). Stakeholders also mentioned that it is likely that using AI will become ubiquitous in our homes (E018) with the increase of smart sensors and automation of systems on the network, which may also help here (E019).

Countering loneliness

5.64. Stakeholders pointed out that many older people experience loneliness as they are unable to go out to do things, and from a social conscience perspective, it would be great for WPD to do something in this area (E023).

Lobbying government

5.65. At numerous events, there were discussions that WPD should lobby the government on new incentives such as having government financial assistance to help deploy heat-pumps in the future (E022), the potential return of clean energy grants to households (E022), a two-tier pricing system to help protect vulnerable customers (E022). Furthermore, it was seen as beneficial for WPD to help reduce the complexity of the tariffs and standing charges as these only complicate and confuse customers (E022, E022, E022). Stakeholders were aware that there was only a limited scope of influence WPD could have here, but it should try and work towards these goals (E022).

Proposed commitments

Priorities	Commitments
Protect the interests of vulnerable customers in the switch to a smarter network	1) Make sure no one is left behind in the transition to a smart network, especially customers in vulnerable circumstances and in fuel poverty 2) Understand the barriers to participation, such as the complexity of the services and initiatives: address these through engagement with clear, advice and messaging 3) Influence suppliers to help promote cheaper tariffs, incentivising vulnerable customers to participate in new services 4) Work with landlords and social housing providers and tenants to identify opportunities for community energy schemes 5) Lobby Government for a policy that mandates protecting the interests of vulnerable customers in the transition to a low carbon, smarter network 6) Work with trusted partners to improve awareness of Evs, prepayment meters and smart meters 7) Roll out smart networks 8) Education on energy usage / efficiency 9) Work with local authorities 10) Investigate the opportunities for peer-to-peer support to reduce system charges for fuel poor households 11) Consider alternative cheap fuels for those who rely on coal in Cornwall 12) Fund design, innovation and automation programmes that specifically target vulnerability 13) Take a long-term view to assess both cost and accessibility of new technology 14) Promote community EV schemes 15) Learn from net-zero projects and models and monitor usage and behaviour 16) Push for socially minded aggregation 17) Give customers that can afford it an option to donate

	18) Lobby for grants for those in fuel poverty 19) Drive innovation 20) Push for the roll-out of smart meters 21) Retrofit old appliances 22) Don't divert too much focus onto the roll-out of the EV network 23) Maintain a focus on the fuel poor when considering the extra costs associated with reaching net-zero, such as retrofitting for heat pumps 24) Use smart metering and tariffs to help demonstrate benefits to customers, linking to initiatives like warm houses discount 25) Use innovations in monitoring to support vulnerable customers 26) Focus on supporting customers on pre-payment meters 27) Incentivise suppliers via variable system charges
Partnerships and outreach services	1) Develop and continue to expand partnerships with carers and charities such as Citizens Advice 2) Identify partnership leaders and community champions to support vulnerable customers and protect them from scams 3) Work closely with key stakeholders and partners to provide education and support for customers in fuel poverty 4) Include community energy groups in your partnership and outreach services 5) Engage with all tiers of Government as well as housing associations to raise awareness of initiatives, including those aimed at alleviating fuel poverty 6) Promote the PSR and work to make every contact count 7) Coordinate your channels of communication with your partners and share resources, data and expertise. 8) Help scale-up retrofitting projects 9) Use your partners to educate fuel-poor customers on financial management and support them to switch tariffs 10) Consider whether it is appropriate to work with food banks 11) Focus on providing outreach services in mental health 12) Work closely with suppliers to reduce fuel poverty 13) Work with the private rented sector to tackle fuel poverty 14) Join the Public Services Boards

	15) Engage with resilience forums and use mapping tools 16) Work with local authorities and parish councils 17) Review the way you budget and fund initiatives 18) Maintain the services you offer 19) Focus on cross-referencing: build services in tandem with building network operation 20) Work on signposting to identify vulnerable and fuel poor customers 21) Collaborate with other DNOs and suppliers on disconnections 22) Distinguish between crisis and day-to-day support 23) Tie this work into your social contract 24) Use WPD brand as a trusted partner
Customer resilience	1) Work with housing providers, as GP's and libraries 2) Invest in community centres 3) Ensure vulnerability is factored in when considering resilience - for example, those customers with medical needs. 4) Consider off-grid, low carbon solutions including battery storage and CHP. 5) Promote the 105 number, provide information on what to do in the event of a power cut share customer resilience packs. 6) Trail innovative projects, including those associated with smart meter data and battery storage. 7) Run drills to ensure that you have a proactive, rather than reactive strategy to deal with power cuts. 8) Work closely with partners including emergency services to increase customer resilience . 9) Continue retrofitting insulation for communities (particularly the most vulnerable) 10) Install three-phase connections in all new homes 11) Consider those customers with a high reliance on coal 12) Focus on vulnerable properties, such as care homes 13) Change the PSR to take smart networks into consideration 14) Produce a definition of vulnerability for domestic customers 15) Use smart technology to increase resilience

	16) Promote understanding of the PSR 17) Improve resilience at a local level 18) Create an auto-dial for relaying emergency messages 19) Improve awareness of customer rights 20) Liaise with neighbourhood policing
Identifying vulnerability	1) Continue to identify vulnerability by working with partners including local authorities, disability forums and health and social care providers 2) Broaden the description of vulnerability and clearly define what this means ensuring the terminology you use does not put customers off 3) Map customers according to demographics to identify vulnerable customers and consider carrying out a vulnerability census 4) Include vulnerable premises such as are homes and sheltered accommodation on the PSR 5) Use smart meter data to identify vulnerable customers 6) Raise awareness of the PSR and the services you provide 7) Consider rural vulnerabilities and vulnerable areas such as those prone to flooding 8) Work with suppliers to identify vulnerability 9) Share vulnerability data with emergency services 10) Identify the right source of help for vulnerable customers 11) Show leadership in this area and foster a joined-up approach with relevant partners 12) Understand that the risk of vulnerability increases with electrification 13) Continue to train WPD workforce to identify vulnerability 14) Develop automated registration for customers reliant on medical equipment 15) Continue to develop one PSR across utilities 16) Work with the postal service
Referral networks, data sharing and data quality	1) Lobby Ofgem to allow for data to enable data to be safely shared with other utilities 2) Provide funding and increase the support you give to referral networks 3) Encourage more data sharing with referral networks including local authorities and healthcare providers

	4) Build trust with customers to gain more access to smart meter data 5) Connect customers to the support they need 6) Make it easier for customers to sign up to the PSR 7) Work with suppliers 8) Use EPC data in social indictor mapping 9) Sign up to the JIGSO project 10) Go to grassroots level and work with parish councils 11) Use team managers dedicated to this 12) Work with Auriga 13) Collaborate with the Department of Work and Pensions 14) Monitor who is accessing vulnerability services to improve data quality 15) Use existing data in a smarter way
Accessibility of our services	1) Use a range of methods to promote your services, including broadcast media, the telephone and face to face engagement, being mindful of the fact that online engagement isn't appropriate for all. 2) Ensure that your communications are accessible, clear and easy to understand . 3) Collaborate and work with trusted partners including Citizens Advice 4) Educate all customers on energy efficiency and flexibility: outline the differences between tariffs and costs 5) make it as easy as possible to register for the PSR 6) Publicise your services with relevant numbers and links on your vehicles 7) work with providers of shared accommodation 8) Find ways to engage customers who are off the (gas) grid 9) Work in collaboration with other utilities 10) Link in suppliers 11) Simplify tariffs and work to make suppliers more transparent 12) Develop a local authority resilience version of the power cut app 13) Provide community information
Maintain a Priority Services Register	1) Facilitate better data sharing and work towards creating a centralised PSR 2) Educate customers and raise awareness of the PSR, using a range of methods, to increase the number of people signed up

	3) Continue to update and cleanse the data on the PSR to ensure it is up to date 4) Keep a tiered system of vulnerability and ensure that the most in need are included: work with suppliers to do this 5) Work cross-utility and with trusted partners 6) Keep developing the definition and identification of vulnerability 7) Continue to share best practice with other partners, utilities and DNOs 8) Offer advice for vulnerable customers outside of power cuts 9) Maintain current levels of service and improve where possible: measure against industry standards 10) When cleansing the data, inform customers of other relevant services 11) Set up a contingency fund to help the most vulnerable 12) Consider changing the name of the PSR to build trust
Make it inclusive by engaging with the hard to reach / those who might be left behind	1) Communicate with vulnerable customers on changes to the energy picture 2) Collaborate with suppliers on improving affordability 3) Work with private landlords / social housing providers
Affordability - make sure no one is left behind	1) Work with government and Ofgem to develop a fair approach, which might include incentivising low-carbon technology to make it affordable for all
Use of new technology to support vulnerable customers e.g batteries	1) Roll out renewables such as PV cells on the foofs of vulnerable customers. Also use battery storage as backup
Two-tier tariffs (vulnerable / other) and differential network charges	1) Lobby government / other partners
Make sure no one is left behind	1) Help and support vulnerable customers to participate in new services, such as flexibility
Promote and raise awareness of PSR	N/A
Lobby government to regulate a national landlord register with standards	N/A
Volunteering (staff and customers)	N/A
Training for front line staff	N/A
Consider the role of community energy groups	1) Encourage vulnerable customer support as part of community energy schemes
Flexibility levy: align future energy policy with PSR	1) Lobby government for ability to use cost savings from flexibility demand side response

Guarantee standards	1) Set a target to improve response
Lobby for incentives to help the most vulnerable	N/A
Work with government and suppliers on standing charges issue	N/A
Person centred approach (across energy vectors)	N/A
Standardisation of PSR service across industry	N/A

High-level topic: Maintaining a safe and reliable network

Sub-topic: Cyber resilience

What we heard in 2019:

Stakeholders were conscious of the potential implications of a cyber-attack on the network and therefore viewed building resiliency towards this threat a priority, ranking at an average of 4th across all sub-topics. Considering that the threat in this area may grow in the future, stakeholders expect WPD to collaborate with government bodies and identify best practice from other industries to improve in this area.

Summary of Phase 2 feedback

6.1. Stakeholders discussed a range of issues linked to cyber resilience. The effect that a cyber attack may have on the system and society was discussed, particularly in the context of WPD's internal operations and the system's vulnerability during an attack. Also, the physical security of WPD assets from threats such as terrorism was addressed in multiple events, and stakeholders were fearful of the damage possible from harming physical digital infrastructure.

6.2. Personal data security was a major topic of discussion within Cyber resilience, especially as stakeholders were sceptical of how new technologies – such as smart meters – and the involvement of third parties would increase customer vulnerability from cyber threats. Stakeholders were keen to access more information about WPD's incident recovery plans as well as questioning WPD's strategy in recognising and protecting its critical infrastructure. Finally, the communication with stakeholders about WPD's activities in this space and improving the awareness of stakeholders on this subject was something that was mentioned multiple times.

6.3. A total of **115** pieces of feedback were collected for cyber resilience during phase 2 engagement, which adds to the **3** pieces collected during phase 1. This sub-topic has **13** priorities and **48** proposed commitments.

Priority ranking

Existing priorities

6.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

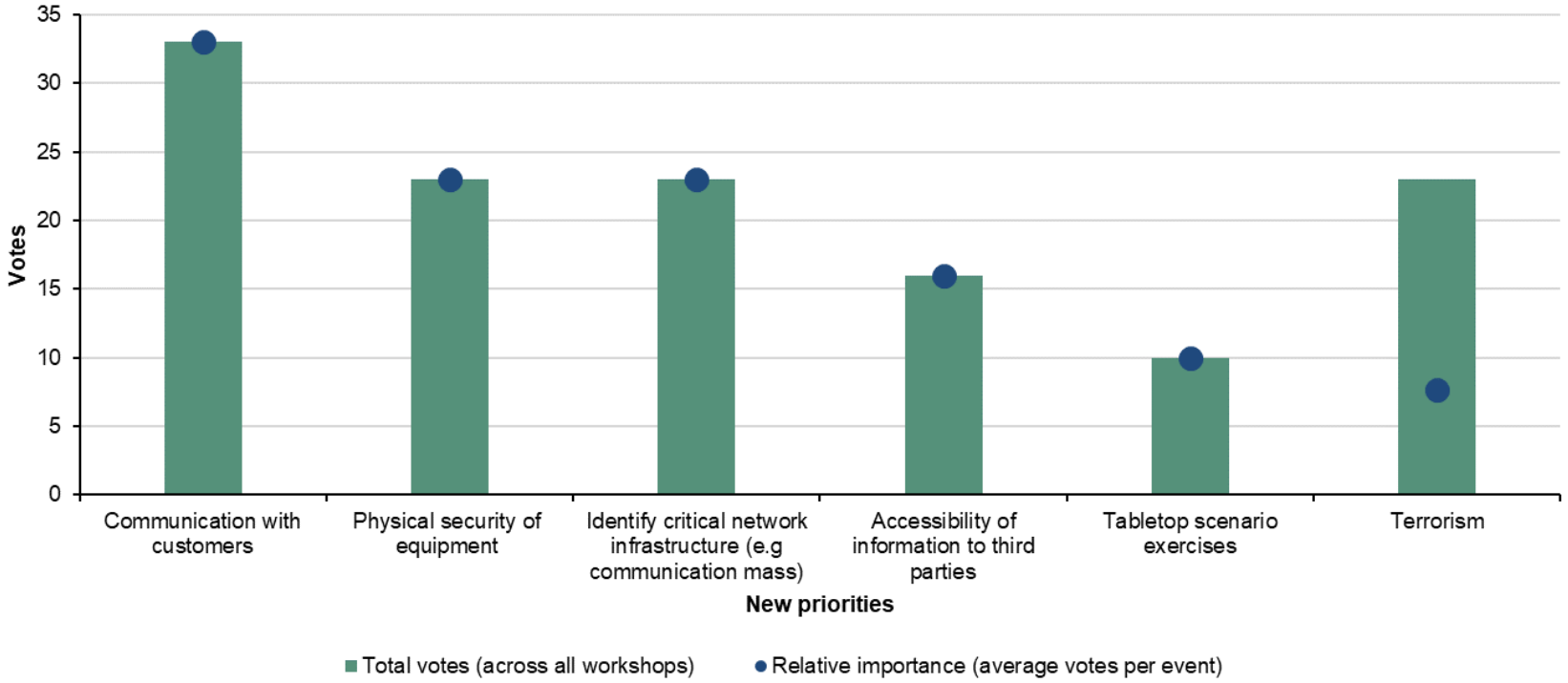
Priorities	Votes	Relative importance
Network security – risk of power cuts due to a cyber attack	344	57.33
Systems security – risk of data loss / access	207	34.5
Incident recovery plans (cyber)	206*	34.33

** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

6.5. The priority receiving the highest numbers of votes focused on reducing the risk of power cuts from cyber attacks, whereas the lowest ranking priority concerned the recovery plan post-cyber attack.

New priorities

6.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



6.7. For the newly suggested priorities in cyber resilience, 'Communication with customers' collected the highest number of votes across all workshops. This priority was only discussed at one event which resulted in a high 'relative importance' (33 votes per event), compared to other priorities like 'Terrorism' which collected 23 votes over 3 events - resulting in a 'relative importance' of 7.67 votes per event. However, this relative importance is still low compared to some of the existing priorities voted on (Network Security for example).

Detailed feedback

Feedback for cyber resilience can be divided into four themes:

- Network security
- Systems security and loss of data
- Critical infrastructure and incident recovery planning
- Communication and awareness

Network Security

6.8. Stakeholders stated that cyber security is a national threat, not just felt by WPD (E018), and collaboration between companies should be encouraged to share best practice (E018, E023) and stay ahead of the hacking technology (E018). It was noted that there seems to be an increasing frequency and severity of attacks, and therefore sufficient resources have to be allocated (E018). One stakeholder mentioned the higher risk and impact of cyber-attacks compared to the risk of tree cutting, therefore more money should be allocated here (E021).

6.9. Stakeholders indicated that the more dependent society is on the electricity network, the greater the threat (E020). Stakeholders predict that the importance of network security and resilience will only become more complex with the internet of things and 5G networks, which reinforces the need to ensure the security of an ever-increasingly important part of society's infrastructure (E020).

6.10. It was noted by a member of a local authority and a major connections user that it was expected that WPD would be 100% resistant to cyber-attacks (E023, E023). One local authority member even noted that cyber-attacks should be kept at zero (E022).

6.11. It is clear that stakeholders want WPD to be transparent with customers about failures in cyber security (E023) and that comprehensive checks on data access are important (E020).

Operations

6.12. There were several suggestions from stakeholders on how WPD should operate in this space. In one event, stakeholders were keen for WPD to separate the network communications and business enterprise communications (E021). In another event the importance of being able to isolate sections of the network so problems don't spread was mentioned (E018) and that it was mentioned that WPD should have central control rooms which are isolated from external networks to reduce operational risk during a cyber attack, similar to those seen in Nuclear control rooms (E018). This was also noted at another event, highlighting the robustness, isolation and system design needed to reduce the risk of catastrophic attack (E022). Another suggestion was an app-based system to increase automation and improve supply and resilience (E018).

6.13. Stakeholders predicted that the largest failures will likely occur with the outdated areas of the network (E020) and noted that WPD need to maintain its focus on protecting computer-based systems in light of the potential threats (E022).

Physical security

6.14. Theft or harm to physical assets is also a risk (E022) and was subsequently voted the 5th highest priority within cyber security, in Nottingham (E022). Stakeholders discussed the potential effect of terrorism on the grid, both with virtual attacks or physical attacks on assets (E019). Terrorism was noted as an important factor for WPD to consider in the context of cyber resiliency (E020) and stakeholders suggested that WPD should consider additional physical protection for both the computer systems and the power systems (E020).

6.15. Stakeholders also noted that it's about reducing physical access, as the system ventures towards the internet of things (E020). Another suggestion was to have telecoms and power being sent down the same lines which would mean electricity would benefit from the extensive protection used by telecom companies (E019). Stakeholders were interested to find out how much of an issue site security was currently, as this may be an indicator of how much access hackers may be able to attain to customer data (E021).

6.16. A connections provider mentioned the procurement of high-voltage switchgear that some of their customers kept in storage ready for such a catastrophic event and recommended that WPD should do the same (E022).

System security and data loss

6.17. The safety of customer data is critical (E018), and there should be a clear assurance that their data is protected in the event of a cyber attach (E018). While stakeholders believed that customer data should be protected, it was noted that there is a great risk to WPD's reputation if there was a cyber leak, which should incentivise investment in the area (E019).

6.18. Customers expect WPD to be open and transparent with customers if their data is lost (E018). One suggested action to reassure customers is making public that they self-report to the Information Commissioner (E018) as well as disclosing WPD's detailed spending and efforts on cyber resilience to the customer (E018). In terms of the data itself, stakeholders want WPD to keep the minimum amount of personal data (E020), and that there should be assurances that this data will be used responsibly (E020), and finally that personal data and bank data should be separated (E023).

6.19. Additionally, stakeholders were intrigued whether there was an Ofgem baseline for under or overspending on cyber resilience to benchmark WPD's activities(E019).

Testing

6.20. Stakeholders were keen to understand how much external testing is carried out on WPD's system and called for this information to be available (E018).

New Technology

6.21. A major connections customer asked about the potential increase in exposure of information with EV connections and GDPR, as this information could potentially be used in a sinister manner (E021).

6.22. Smart meters were also discussed at multiple events where stakeholders were concerned that having smart meters may expose customers to additional cyber threats (E020) and others questioned what protection mechanisms were in place to protect

customer information on smart meters from attack (E018), such as closed circuits (E019). Furthermore, if information were to be taken from smart meters, a local authority member wanted clarity on the effect this may have on the consumer as well as the ability for WPD to re-gather that information (E023). There needs to be a lot of work in this area to improve customer confidence around smart metering (E020).

How

6.23. Sharing best practices within and outside the sector was suggested by stakeholders as a good way to ensure that stakeholder concerns are met (E020). Additionally, a charity representative stated that WPD should interrogate all suppliers involved in the smart network to analyse the risk of cyber-attack that could affect WPD's network (E020).

6.24. While it is important to reconcile critical system information, stakeholders noted that this may lead to the potential risk of sensitive information being made available (E021). It was mentioned in one event that while encryption is important, current methods are being made obsolete due to the speed that hacking software can operate (E020).

Third Parties

6.25. Two new priorities were created at two events discussing the use of data by third parties (E019, E020). As the network is opened up for increased flexibility, this increases the vulnerability of the system (E020). While historically hackers were unable to control electrical appliances to bring down a network through overloading, stakeholders were concerned that this could be a new type of threat with smart appliances in the home, smart charging and demand-side response (E019).

Critical infrastructure and incident recovery planning

6.26. While protecting the system in the first place was important to stakeholders, and they believed that WPD should be proactive in this space (E021), it was also mentioned that fail-safes and contingency planning are also important (E022) when a cyber security breach occurs (E023, E019). Incident recovery plans were voted as a high priority in all 6 event locations and was the highest overall priority in cyber resilience in one event (E017). Stakeholders believed that these plans should cover a whole range of scenarios and make sure that stakeholders are aware that WPD have these in place (E023, E023).

6.27. Stakeholders were keen to see that WPD had a timeframe and targets for recovery that could help inform people (E018) which will subsequently help reassure people of WPD's capabilities (E018, E021). It was also noted that WPD should learn from other sectors about their approach and collaborate with experts to obtain industry best-practice (E019). A local authority member highlighted that it was often easier to install hardware to counter cyber-attacks, while the human vulnerability element is often the focus of cyber attacks and therefore internal staff training needs to be a high priority (E019).

6.28. Stakeholders wanted contingency plans to cover the event of mass illness (E022) and to ensure that the main substation can still operate without connection to the cyber network (E020).

6.29. Furthermore, the identification of critical infrastructure was something that stakeholders wanted WPD to consider, and was voted the 3rd highest priority in Milton

Keynes (E021). Stakeholders suggested that this should be completed due to the increasing array of automated systems that may potentially be vulnerable (E022) as well as the future potential of 5G and autonomous vehicles (E021). WPD are part of the local resilience forum which was suggested as a great way to help the community adapt quickly to an incident. Stakeholders mentioned that they had completed a tabletop scenario with a gas company, and this should be replicated in the electricity sector (E018). Stakeholders at one event also noted the importance of customer mapping systems in Wales and Cornwall to help protect the most vulnerable people during a cyber attack (E021).

6.30. Furthermore, stakeholders noted that there are also potential supply chain issues that should be considered, such as the dependency on China for smart meter technology, which may cause problematic political disagreements (E022).

Communication and awareness

6.31. Communication with customers concerning cyber resilience and their awareness of WPD's cyber resilience strategy was discussed at two events (E021, E023). Ensuring communication with customers was voted the 4th highest priority in Swansea (E023) and stakeholders suggested that WPD should be prepared to communicate in different ways if the electrical power goes down, such as traditional analogue forms (E023). Social media was suggested as another key outlet of communication that customers can access through their phones to keep channels open when electricity is affected (E023). Raising awareness for network security as well as ensuring a direct contact for resilience forums was mentioned by stakeholders at one event (E021, E021).

Proposed commitments

Priorities	Commitments
Systems security – risk of data loss / access	1) Commit to external security testing and seek accreditations from third parties 2) Reassure customers by telling them what you are doing to protect their data. 3) Increase your focus on this area (including minimising data storage / anonymising data) 4) Consider all of the different types of data sets you hold, e.g EVs 5) Consider the risks to your network from suppliers who can access data 6) Commit to maintaining the utmost security of customers' data 7) Be open and transparent with customers in the event of a data breach 8) Focus on maintaining the security of customers' data from smart meters 9) Split data into levels, such as separating personal information from bank details 10) Design your systems to limit impact 11) Continue to focus, invest and protect 12) Continue to build resilience and set clear targets 13) Ensure localised / closed circuits 14) It starts with site security. Make sure assets and infrastructure are secure 15) Ensure baseline data from Ofgem and level of data security is achieved 16) Ensure the security of WPD's sites to prevent theft 17) Consider GDPR in terms of customer data from EV charge points 18) Consider data access to ensure critical information is secure
Network security – risk of power cuts due to a cyber attack	1) Understand where your network may be vulnerable and work to put up barriers that will prevent access 2) Work to the highest possible standard s to ensure that there are no attacks 3) Ensure all systems, procedures and processes are up to date 4) Keep up to date on emerging threats and hacking techniques 5) Increase your focus on network security to increase your resilience

	6) Separate and compartmentalise different areas of your business 7) Invest in resources and technology to prevent cyberattacks and share best practice 8) Provide greater protection when connecting domestic household 9) Decentralise the information that you're holding 10) Focus on the security of the local grid 11) Do more work on a governmental, national level to address the risk of power cuts due to cyberattacks 12) Have robust recovery plans in place 13) Maintain an open channel of communication with customers in the event of a cyberattack 14) Consider the increased risks associated with smart meters and networks 15) Compensate customers for loss of service
Incident recovery plans (cyber)	1) create, maintain and test your incident recovery plans 2) Collaborate more on incident recovery plans and share resources with your partners 3) Ensure that the main substation can function in the event of loss of internet access 4) Set clearly defined goals and parameters for recovery times 5) Stay at 'the top of your games' in cyber security but don't flood customers with too much information on averted hacks 6) Carry out extensive resilience planning and ensure that processes support home working 7) Ensure that your plans and procedures are consistent 8) Take guidance and best practice from other organisations 9) Ensure staff are highly trained to deal with incidents 10) Implement excellent discovery and response plans 11) Adopt preventative measures for high risk areas of the network 12) Improve information provided to resilience forums
Terrorism	1) Provide physical protection in addition to protecting your computer systems 2) Carry out a major audit of your assets and ensure that you have an emergency stock in place

Communication with customers	1) Use all forms of communication to keep customers and communities informed about cyberattacks
Physical security of equipment	N/A
Identify critical network infrastructure (e.g communication mass)	N/A
Accessibility of information to third parties	N/A
Tabletop scenario exercises	N/A
Policies and the supply chain	N/A
Third party tech services	N/A
Raise awareness (of network security)	N/A
Ensure direct contact for resilience forums	N/A

Sub-topic: Network performance

What we heard in 2019:

Network performance (formerly labelled as reinforcement) was widely noted as the most important priority for a wide range of preliminary engagement stakeholder segments across several events. This was viewed as the fundamental role of WPD which was reflected in the very high priority scoring. Infrastructure upgrades, implementation of new technologies, as well as the ability to respond quickly to unforeseen events were the focal points that stakeholders pointed out to WPD to ensure the reliability of their network. The safety of WPD staff and the general public was also highlighted as of critical importance.

Summary of Phase 2 feedback

7.1. It was deemed very important to stakeholders that electricity flow was continuous and reliable, and that WPD should endeavour to reduce the frequency of power cuts, power cut duration and the quality of supply. It was noted that any power cut or variation in power quality can have a substantial effect on businesses and vulnerable customers, which is why WPD should continue to improve from their current strong performance. An ageing network was one of the primary concerns of stakeholders and how these assets may deal with the increasing strain when electricity demand increases and is more variable. Finally, stakeholders wanted WPD to focus on asset monitoring and improving WPD's use of data, both internally and externally sharing this data with others.

7.2. A total of **238** pieces of feedback were collected for the network performance during phase 2 engagement, which adds to the **13** pieces collected during phase 1. This sub-topic has **22** priorities and **97** proposed commitments.

Priority ranking

Existing priorities

7.3. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

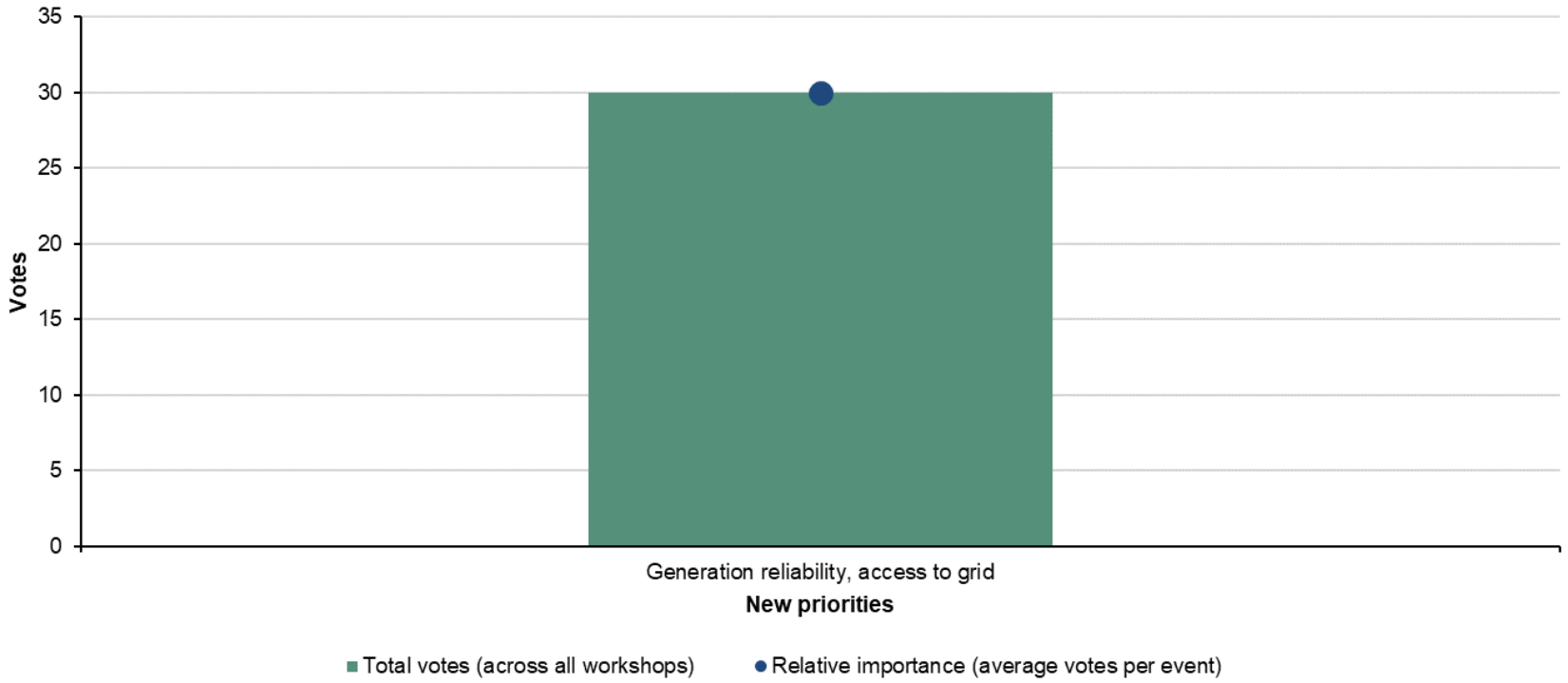
Priorities	Votes	Relative importance
Overall health of network assets	128	21.33
Power cut frequency	103*	18
Power cut duration	85	14.17
Interconnectivity of the network	75	12.5
Quality of supply	73	12.17
Ensuring we continue to plan, install and maintain our existing assets so that the safety or health of anyone who could be impacted by them is not compromised	2	0.33

** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

7.4. The priorities receiving the highest numbers of votes focused on improving the health of assets to reduce the number of power cuts, whereas the lowest ranking priority concerned health and safety.

New priorities

7.5. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



7.6. For the newly suggested priorities in network performance, 'Generation reliability, access to grid' was the only new priority to be part of the voting process. However, it is worth noting that this new priority has a higher 'relative importance' (30 votes per event) than any of the existing priorities.

7.7. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on this new priority compared to existing priorities.

Detailed feedback

Feedback for the Network performance can be divided into three themes:

- Power cuts and interruptions
- Asset health
- Data access and sharing

Power cuts and interruptions

Power cut frequency

7.8. This was an existing priority and received the second-highest votes under network performance (E017). It was noted that clear, well-communicated targets for improvements were important (E023), but they will get harder to reach, with diminishing returns over time (E019). Stakeholders understand that power cuts are unwanted and not deliberate. A commitment would be to sustain good network maintenance which will reduce the frequency of power cuts (E018, E019) It was noted that power cut frequency is much less than it used to be, but customers would still like to see a further reduction (E022, E023, E023). This should not come at an additional cost to customers though (E022). Others also mentioned that targets could be more localised (E022).

7.9. Stakeholders raised concerns about the impact of COVID-19 on the timeline of planned outages (E030, E030) but they were generally pleased with the continuation of some of this work and the communication from WPD during this period (E030). Managing customer expectation was crucial during the COVID-19 period around outage length, but also any other similar periods in future which may be unforeseen (E030). Retrospective reporting was also noted by stakeholders as something that could be useful here (E030).

7.10. A major energy user stated their confusion to this being a priority as this is WPD's core business (E019). Another questioned about financial penalties for power cuts (E022).

7.11. Proactive communication about maintenance with customers was discussed as an area for improvement (E018, E019, E028). Dips or cuts in power can cause panic and fear among customers (E021). It was noted that automatic communication had improved, but that specific responses to consumers during an incident had got slower (E019). Customers expressed concerns on the lack of detail in the 4-week generator report but were reassured by WPD that all the detail is provided (E028).

7.12. Understanding the systemic implication of reliability failures and the substantial knock-on effects it can have could be a way to ensure sufficient contingency plans (E018). Case study and scenario testing should be completed to understand these implications (E021, E023). This is especially important given the electrification of heat and transport (E020).

7.13. An energy consultant noted that WPD should establish how much diesel and other energy sources customers use during power cuts to understand the additional burden they are placing on customers, and spend that additional money on reducing power cuts (E019).

7.14. It was noted that electricity sometimes struggles to get to the end of the lines, which is something stakeholders wanted WPD to research and resolve (E018, E018). The impact of cable theft on power cuts should also be investigated (E019).

Power cut duration

7.15. Reducing the power cut duration was only the 4th highest priority under network performance (E017). It was noted that 25 minutes was the average power downtime which was felt to be too long and should be reduced (E018, E019, E022).

7.16. Stakeholders felt it may be useful to conduct a survey after power outages to measure the impact on those affected (E018). Informing the general public about power cut durations and frequency, as well as how to deal with one, could be a way of reducing the impact (E020, E023).

7.17. An emergency services representative noted their frustration at the length of time before generators or welfare are provided after an incident, which was especially problematic for vulnerable customers (E018). The information about these vulnerable customers should be shared with emergency services for them to do their jobs effectively (E018).

7.18. It was noted that the duration of power cuts is often much less important than if one happens or not as systems will go down and have to be restarted, whether than be after 10 seconds or 10 minutes (E020). However, a parish councillor countered this saying that while for some it may not affect them too much, for vulnerable customers it may be a monumental difference, hence power cuts should be as short as possible (E020).

Protecting vulnerable customers during power cuts

7.19. The deployment of batteries and other similar technologies could be used to help key customers and vulnerable customers (E018, E019, E021). It was also noted that the worst served customers are often in rural areas which needs continued funding (E022, E023). Stakeholders highlighted the value in helping vulnerable customers (E019, E023). Communication with these customers is especially important as they need to know how long a power cut may last in order to prepare and adapt as they are less able to do so than the average customer (E023, E023).

Quality of supply

7.20. Maintaining the quality of supply was voted the 5th highest priority (E017). It was noted that power surges and troughs can be detrimental to equipment and people's homes (E019). It was noted that people are willing to pay more for a better service for broadband, which would likely also be the case here (E018). Brownouts should be avoided as a priority (E018), especially as larger energy-consuming businesses have very small tolerances in which their equipment can operate (E019, E022). An example given here was healthcare systems (E020, E023). Stakeholders were conscious of the fact that this priority would be more important for some consumers than others (E023). Working with commercial customers was seen as the best way to overcome this (E023) because they currently have to find solutions at their own cost (E022).

7.21. An ageing network may be a reason for decreasing quality of supply and stakeholders were keen for WPD to replace old assets before they fail (E018, E023). It was questioned whether WPD monitor and record the number of quality of supply incidents and their effects, both physically and financially, on businesses (E023).

7.22. Additional levels of resilience were suggested, such as incentivising more storage, especially domestically (E018). WPD should be buying more reactive power services (E020) and installing batteries next to transformers (E022).

7.23. Stakeholders were increasingly worried about the quality of supply with increasing demand from EVs (E021), especially as new technology may be more sensitive to an imperfect power supply (E019). The increase in demand in the coming years was a big concern for stakeholders and ensuring quality of supply will be crucial to deliver the social and economic goals that the technology is meant to provide (E023). Furthemore, the rapid move away from traditional generation worried stakeholders into questioning whether there would be sufficient spinning inertia I the system to avoid affecting the quality of supply (E035).

7.24. Unplanned outages also affect generation operators as they may not be able to generate for a time after a power cut or brownout (E018) and thus ensuring reliable access to the grid is essential (E018).

Asset health

7.25. The overall health of network assets was voted the highest priority under network performance (E017). A network improvement plan is seen as required, as updating all assets simultaneously is unrealistic (E018), but long-term futureproofing of the network health needs to be considered when installing new assets (E018, E019, E020, E021). Furthermore, the likely increase in electricity demand, even if considering the most pessimistic EV projections, will put a lot of strain on assets so incremental replacement was suggested as a target (E018, E023). Additionally, stakeholders highlighted that more extreme weather conditions will also lead to increasing network stress (E019).

7.26. Asset management and risk management regarding their life cycles and replacement should be looked into (E020, E021). Stakeholders were interested in WPD's forecast and assessment on the replacing or refurbishing requirements for the future (E018). New technology (like AI) was suggested as an option to monitor asset health and predict failures (E021). A map showing ageing assets should be created (E019), with stakeholders suggesting this could also be shared with potential connection customers that can then assess where there is capacity on the grid (E019).

7.27. Stakeholders questioned whether assets were only replaced after failure or are they monitored closely and replaced proactively (E018). A continual infrastructure upgrading scheme should be established (E023) with stakeholders highlighting that if too many ageing assets are not replaced systematically then they may all fail simultaneously (E022). This will also spread the cost of asset replacing over time (E022), but this program should be communicated with stakeholders, especially for major connection customers (E022).

7.28. Stakeholders ask WPD to collaborate with other DNOs and utility suppliers to see how they are changing and improving their networks (E019), particularly how they are dealing with an ageing network (E020, E020). Remote monitoring could be one strategy to drive down the costs of inspection (E022).

7.29. The health and safety of stakeholders was also seen as an important role of maintaining WPD assets (E017). WPD must ensure equipment is safe and that all assets do not produce a hazard to those that may be affected (E022).

Data access and sharing

7.30. Improving WPD's data visibility and how it shares this with its stakeholders were two new priorities (E020, E022). Data sharing with partners was deemed to facilitate better investment in ensuring network reliability (E022). Furthermore, stakeholders stated

that WPD needs to ensure this data is of the highest quality (E020) as it can underpin innovation and allow people on the network to work out their best options (E020).

Lobbying

7.31. A linked priority was a suggestion to work more closely with Ofgem and BEIS to streamline the access of data, particularly smart meter data, which will allow all DNOs to operate more effectively (E019).

Proposed commitments

Priorities	Commitments
Power cut duration	1) Consider and address worst-affected customer 2) Reduce the duration of power cuts with a goal of zero faults 3) Use innovative technologies to minimise power cut durations 4) Set targets for improvements, measured against cost 5) Reconfigure the network to minimise the amount of shutdowns 6) Provide more support for businesses during power cuts 7) Create impact assessments for different sectors, such as businesses and homes 8) Focus on preparing the most vulnerable for the effects of a power cut 9) Maintain a proactive information service 10) Feedback to customers post-power cut 11) Ensure you have a large enough stock of assets to minimise the time it takes to address faults 12) Makes forecasts so you can plan effectively 13) Make sure you address the challenges facing rural customers 14) Focus on home backups which are less disruptive 15) Maintain core levels of service and BAU 16) Focus on worst affected: rural areas and vulnerable customers 17) Focus on better, quicker communications with customers 18) Implement robust service-level agreements 19) Review what duration of power cuts customers consider acceptable 20) Invest in storage
Power cut frequency	1) Maintain your focus on maintenance programme 2) Make better use of data to improve the way you measure frequency and analyse the findings

	3) Adopt a minimum target, set standards for improvement but don't lose sight of cost 4) Address worst affected: rural areas and vulnerable customers 5) Maintain a focus on the frequency of power cuts (keep at same level) 6) Focus on understanding systemic implications such as generation, distribution and use change in the shift to DSO 7) Prioritise weak points in the network, such as end of the lines 8) Regularly monitor systems and weather events 9) Share statistics on power cut frequency with stakeholders 10) Set yourself localised targets 11) Proactively inform customers about power cuts 12) There should be penalties associated with power cuts 13) Look at impact of cable theft 14) Work in partnerships with manufacturers to install backup battery systems 15) Monitor communications risk associated with power cuts 16) Create dedicated power cut teams 17) Review what frequency of power cuts customers consider acceptable 18) Reduce the frequency of power cuts in the Milton Keynes area
Quality of supply	1) Maintain quality of supply in light of asset health and the growth in demand 2) Address brownouts for both homes and businesses, providing more information and use-appropriate performance measurements 3) Focus on improving / prioritising the quality of supply for VIPs / major energy users / vulnerable customers 4) Improve quality of supply 5) Invest in more reactive power services 6) Consider the impact of new connections, including housing developments 7) Improve the level of information exchange with developers and local authorities 8) Maintain a focus on safety, including power surges 9) Address the impact of supply quality on new technologies, such as EVs 10) Engage with commercial customers to develop solutions 11) Limit short interruptions

	12) Provide the right product and appropriate solution for each case 13) Locate batteries next to transformers 14) Provide innovation funds and incentives to explore new technological solutions 15) Upgrade cables as standard as they come to the end of their life 16) Create scenario plans for 100% renewable energy and increased local generation on the network
Overall health of network assets	1) Continue maintenance and replacement programme for ageing assets (ensure sufficient resources to do so) 2) Create accurate forecasting models and ensure that assets can respond to future (higher) demand 3) Be transparent about the health of assets, providing better and clearer information 4) Use AI, innovative technology and smart data to effectively monitor the condition of assets 5) Create more localised, resilient plans 6) Focus on smaller / micro-grid networks 7) Prioritise low-carbon objectives when replacing assets 8) Create a register of assets and their health 9) Carry out more routine inspections for ageing assets 10) Consider the health of assets and don't base this solely on their age 11) Review assets in light of climate change and extreme weather events 12) Create a map of ageing assets 13) Share and communicate capacity constraints 14) Continue to train, up-skill and future proof WPD workforce
Interconnectivity of the network	1) Maintain a focus on flexibility / battery storage / vehicle to grid 2) Invest ahead of need to future proof the network 3) Utilise new technology and increase automation 4) Improve the visibility of data 5) Set a target for fewer planned outages and ensure that planned outages that do occur are both notified in advance and at optimal times 6) Lobby for incentives for local energy producers

	7) Maintain your current performance levels but future-proof for extreme weather events 8) Focus on how the network will work in the future 9) Improve interconnectivity of the network to improve reliability 10) Promote local generation and flexibility services to big business 11) Consider DC transmission from renewables 12) Raise awareness of energy consumption
Ensuring we continue to plan, install and maintain our existing assets so that the safety or health of anyone who could be impacted by them is not compromised	1) Ensure no one is compromised when managing assets that use Suphur Hexaflouride (SF6) 2) Safeguard existing assets from the implications of an increased grid capacity 3) Consider operational impacts on the elderly and associated age-related diseases 4) Be considerate towards the business-critical infrastructure of landowners i.e farms 5) Ensure all assets are maintained on a regular basis
Generation reliability, access to grid	1) Focus on mitigating the effects of outages for distributed generation customers 2) Commit to improving grid resilience for distributed generation customers
Capacity constraints inhibit new developments	1) New - not voted
Asset health / network infrastructure	1) Prioritise a review of at-risk assets 2) Replace, or defend, at-risk assets
Facilitate retrofitting	1) Ensure retrofitting flexible enough for changes to technology. 2) Collaborate with government and relevant agencies to review building standards
Better data	1) Use data to identify faults to protect customers from power cuts. 2) Use data to promote the devolution of energy
Planned interruptions	1) Ensure generation customers are informed of planned interruptions
Security of assets and supply	N/A
Retrofitting	1) Set a quality standard for retrofitting
Grid	N/A
Effect other supplies have on the network	N/A
Make data more available	N/A

Ageing networks	N/A
Lobby BEIS/Ofgem for access to data from smart meters	N/A
Balance development of network and capacity against all demographic groups	N/A
Upgrade the grid	N/A
Look at product life cycles with industry	N/A

Sub-topic: Scenario planning

What we heard in 2019:

The ability to predict the network's demands during extreme weather and flooding was viewed as an increasingly important future concern for preliminary engagement stakeholders. The consensus was that being proactive was better, and potentially cheaper than being reactive, especially considering the increasing demands in certain areas of the network with local development plans. Contingency plans and enhanced network monitoring were mentioned alongside scenario planning around flooding and heatwaves as potential actions for WPD in this area.

Summary of Phase 2 feedback

8.1. Stakeholders discussed the range of scenarios and potential risks to the network that WPD should plan for, including the increased frequency and magnitude of weather events due to climate change as well as terrorism. Developing and sharing a range of future scenarios was seen as a critical first step to helping WPD and the wider community to prepare for potential risks in the future. It was also noted that WPD should consider the different vulnerability of each of its assets, due to location and age.

8.2. Flooding was one of the most frequently discussed topics with stakeholder very keen to see WPD move assets from floodplains and improve network resilience in high flood risk areas. Tree cutting was another area of high stakeholder interest as feedback suggests that stakeholders wanted WPD to reduce their rate of tree cutting and endeavour to replace the same number or more trees that then cut. This was seen as important to help with facilitating net-zero, but also to use natural barriers to protect assets from extreme climate change-related weather events.

8.3. The physical security of assets and their vulnerability to terrorism was also discussed, with stakeholders encouraging WPD to consider increasing security and protection against these types of threats. Stakeholders also discussed the importance of coordinating and collaborating with others that work in the area to ensure that everybody is clear about any mitigation measures put in place, as well as the emergency response and recovery plans in place.

8.4. A total of **173** pieces of feedback were collected for scenario planning during phase 2 engagement, which adds to the **9** pieces collected during phase 1. This sub-topic has **14** priorities and **71** proposed commitments.

Priority ranking

Existing priorities

8.5. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

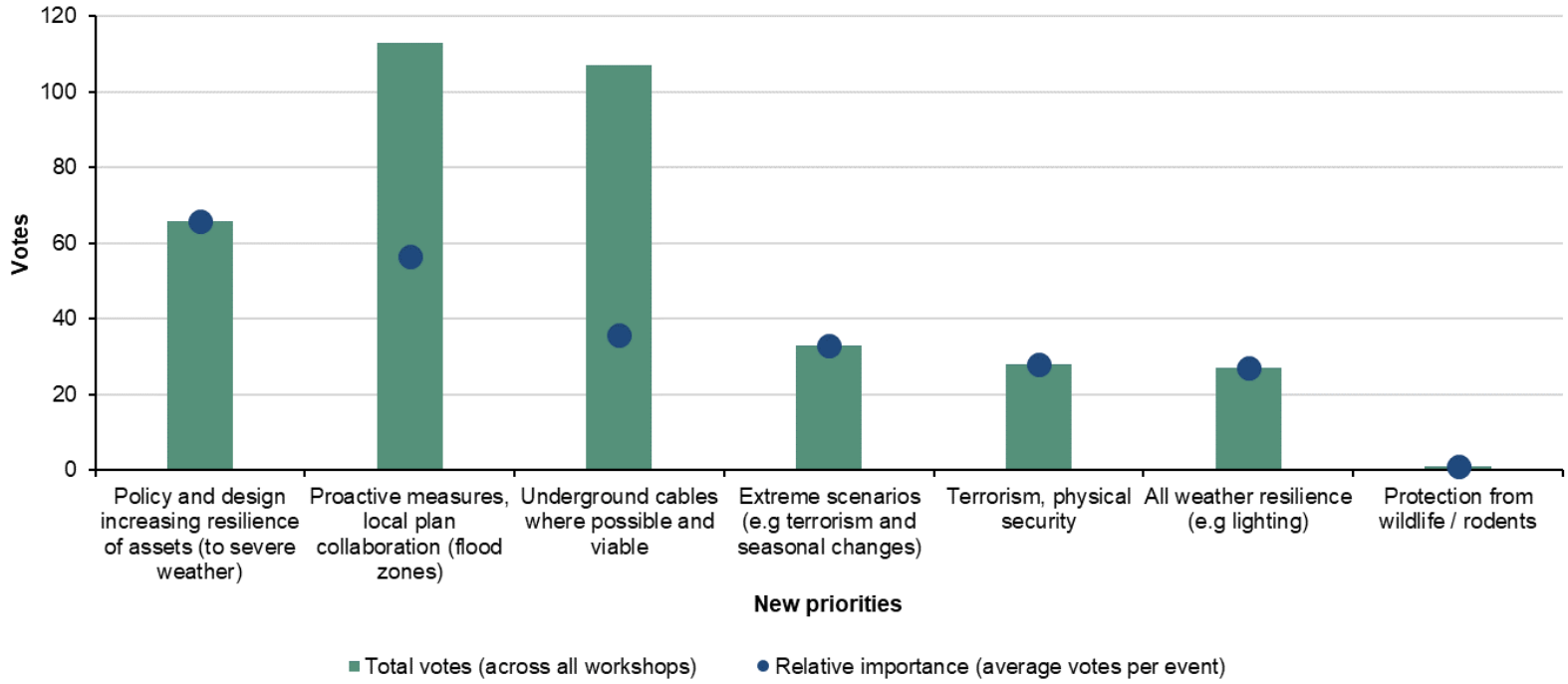
Priorities	Votes	Relative importance
Scenario planning / data analysis	292*	49.33
Flood protection	184	31.33
Tree cutting	96	16.67

** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

8.6. The priority receiving the highest numbers of votes focused on scenario planning and analysing historical data to predict likely future risks, whereas the lowest ranking priority concerned the implications of tree cutting.

New priorities

8.7. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



8.8. For the newly suggested priorities in scenario planning, 'Proactive measures, local plan collaboration (flood zones)' collected the highest number of votes across all workshops. However, the priority has a lower 'relative importance' compared to another priority that received more votes at just one event.

8.9. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on 'Policy and design increasing resilience of assets (to severe weather)' (relative importance of 66) compared to both the 'Proactive measures' and 'underground cables where possible and visible' which had relative importance scores of 56.5 and 35.67, respectively.

Detailed feedback

Feedback for Scenario planning can be divided into two themes:

- Data analysis and scenario creation
- Plan to improve resilience

Data analysis and scenario creation

8.10. Stakeholders need WPD to be preparing for future scenarios by analysing past event data and predicting the likelihood and magnitude of potential effects on the network (E017).

Scenarios

8.11. Stakeholders were keen for WPD to prepare and plan for a whole range of scenarios including; increasing frequency and magnitude of extreme weather events as a result of climate change (E018, E018), the changing demands of flood defences as a result of climate change (E018), and several others.

8.12. It was also mentioned that a wider range of weather-based priorities should be considered such as heat, hail and wind, which could all change in their likely effect in the future (E018). Furthermore, the change in timeframe should be considered as a one in 100-year planning is seen as more in tune with the present than a one in 1000 years planning (E018).

8.13. The further WPD extend their planning, the better it helps the community to adapt (E021). Stakeholders were also keen for WPD to share their resilience plan (E019) as well as share the data utilised for prediction so that other stakeholders can benefit and plan accordingly (E022, E023). Better information on the strategies in place helps reassure people (E022). It was also noted that stakeholders need to be open about the upcoming impacts, not just what needs to be done (E020).

8.14. As well as planning for a range of effects on the grid, it was seen as important for WPD to plan its resilience for the changes in future network demand and structure, such as the potential increase reliance on electricity in heat and transport (E023). The age of WPD infrastructure should also be taken into account in these scenarios as they increase their risk of failure with age (E020, E020), and an environmental group representative noted that the areas of failure in the next few years will be focused around outdated networks (E020).

Flood

8.15. Emergency services representatives mentioned the need for direct links with local authority planning teams so that they can ensure access to flood areas as well as for WPD to ensure business continuation (E018). A parish councillor noted the importance of flood protection in their local area as the generator was within 2cm of being flooded in 2007, emphasising the importance of continuous investment in this area (E018).

8.16. There needs to be more clarity on the definition of flood protection as some stakeholders queried whether this was referring to sandbags, moving assets or upgrading assets in floodplains (E021).

8.17. The environmental agency produces flood plans regularly and therefore its important to stay up to date (E023). Coordination and collaboration with the Environment Agency was seen as important so that you can share knowledge and get involved in scenario planning and strategy development at source (E020).

Heat

8.18. Especially during hot dry weather, one stakeholder questioned the potential fire hazard of sparks from transformers in rural areas (E021). Undergrounding should be looked into through a cost-benefit analysis in this context (E021). However, hotter warmer summers can also have an impact on assets underground as the ground expands and contracts and could cause power-cuts (E020).

Terrorism and physical security

8.19. This was a priority discussed in three workshops as stakeholders were concerned about the physical vulnerability of WPD assets (E020), particularly from terrorism (E018, E020). Substations could certainly be a vulnerable asset if attacked with explosives (E019). A member of an environmental group suggested that more localised grids with localised controls and strategies would be better equipped to react to such an event (E020).

8.20. Additionally, a consumer body representative noted the importance of considering third-party failures that could affect the grid, such as an EV charger not upgrading their software causing a surge in demand with mass-charging or third-party physical security vulnerabilities (E019).

8.21. A local authority member in Milton Keynes also mentioned the potential physical assets that may be vulnerable to be targeted by environmental campaign groups (E021).

Data analytics

8.22. Stakeholders stated that WPD should identify at-risk areas using historical data (E019) and use AI to both plan and adapt to more scenarios, and thus increase resilience (E021). Also, the use of drones and other new technology should be utilised to help WPD gather more information faster, for example, to check the condition of overhead lines during an event (E022). It was highlighted that WPD need to follow best-industry practices and search for new solutions if it wants to be considered as an innovative company (E022).

Plan to improve resilience

Collaboration and coordination

8.23. Stakeholders believed there should be a requirement from Ofgem to do a joint emergency planning exercise. If the local resilience forum had a request and WPD responded to it, this could help with network resilience (E021). This would be especially useful at the local authority level as an officer could do some workshops with the local community (E023). A local authority member also noted the lack of WPD

involvement in local resilience forum events, while most other emergency services providers attend (E022).

8.24. While local authorities have emergency plans for various situations, it was seen as important to have communication across the organisation to be able to react quickly to the situation that arises, such has been seen with the coronavirus (E023). However, it is also important that WPD can provide local area specific communication and information because most stakeholders don't care about WPD's area as a whole, but only a specific region (E023).

8.25. Additionally, WPD should be a statutory consultee on planning to ensure all new developments do not increase network exposure to extreme events (E019). Proactive engagement with councils should be undertaken to ensure a two-way conversation rather than wait for them to react to your plan (E018).

Ageing infrastructure

8.26. One stakeholder stated that it was important that WPD plan holistically, for example, if they have to move a trainline in Dawlish to protect from flooding, this line should be electrified to improve future value and resilience (E020).

8.27. Regarding the strategy during an event, there should be a clear separation between domestic and commercial customers in order to be able to prioritise the limited resources to the most needy during this time (E020). A charity representative also mentioned the importance of prioritising vulnerable customers during events (E018).

Flooding

8.28. Planning and protection against floods was the 2nd highest existing priority for stakeholders in this topic (E017), particularly in light of climate change (E017, E019). Rising sea levels and extreme weather will become increasingly frequent in the future, and WPD must prepare for that (E023). Stakeholders were concerned that the rapid rate of climate change effects means that protocols are no longer able to keep up with worst-case projections of asset vulnerability (E023). In light of these changes, more areas will become vulnerable to flooding in the future and WPD needs to work with communities to counteract this (E020).

8.29. A primary consideration must be evaluating the assets that are on floodplains (E018) and this also needs to be factored into the planning of new assets on floodplains in terms of the cost of exposure (E018). No new substation should be placed on a floodplain (E023). A major connections representative stated that they had not received any recommendation on substation location in the context of flooding risk, which was concerning (E023). Another stakeholder mentioned that WPD don't object to planning applications on flood plains which is increasing the risk of exposure to WPDs assets and thus will cost more which will likely be passed onto the end customer, which is very concerning (E018). Assets in vulnerable areas should have increased flood protection (E019, E019). In this case, stakeholders suggested it may be more cost-effective to invest more in underground assets and cables which may be more resilient to flooding and high wind (E018).

8.30. Stakeholders emphasised the importance of good maintenance as some events are unexpected and unprecedented so having an extremely well-maintained network is

then best placed to handle the unexpected (E021). Investing consistently in replacing ageing assets was seen as important to maximise flooding tolerance (E022).

8.31. WPD's flood protection plan should be available for everyone to review, especially with the implementation of the new 1 in 100-year rule (E019). Critical infrastructure plans should be mapped and shared with the council and other emergency planning organisations (E020). Another stakeholder mentioned that it would add value for these organisations to also be involved in WPDs planning process (E020), sharing best practices to ensure all stakeholder concerns are met (E020). Mapping extreme weather onto network asset maps can enable the correct placement of emergency generators to mitigate disruption (E022). Furthermore, one stakeholder mentioned the importance that WPD is involved in local area development plans as this will ultimately affect WPD and the cost of their operations on customers (E022).

8.32. It was also suggested that WPD could explore non-heavy engineering strategies such as establishing a wildlife barrier to reduce flooding effects, with one stakeholder noting the positive benefits of beavers in this role (E018). Furthermore, WPD should also have some strategy for land that we may lose to flooding on communities (E023).

8.33. One stakeholder questioned the speed at which substation staff can erect temporary flood protection during an event, as they had experienced a pond overflowing but there was no clear guidance about the barriers in place to protect the substation (E018). Also, the responsibility of flood protection funding was questioned in terms of what WPD could get in aid from the government rather than having to build it all themselves (E020). Completing regular testing was highlighted to ensure the system and staff are prepared for any incident (E019, E019).

8.34. Investments in new technology such as ViDAR systems, could help WPD predict flooding events and the use of technology should keep developing in the future (E019). WPD could also look at the design of substations to make them more tolerant of flooding rather than trying to stop it from being flooded in the first place (E022). Stakeholders were interested in the potential for redesigning the network to manage resilience in light of changing risks (E023) including investing in new technology utilised in other countries (E023).

Tree cutting

8.35. Tree cutting was the 3rd highest existing priority in network resilience and was discussed at length at the six regional workshops (E017, E017). According to stakeholders, WPD should endeavour not to cut down trees unless absolutely necessary (E019).

8.36. Stakeholders were keen to see WPD utilise tree planting as a strategy to counteract climate change and its effects (E018), including water retention to dampen extreme flood events (E020). WPD have to cut down trees for their operations, but it was noted that stakeholders though it was very important that WPD offset this cutting by planting trees (E018, E021, E019, E019, E020, E022), and that this should be part of your resilience strategy (E018). Tree planting was also seen as a key part of your environmental programs (E021) and planting two trees for every one you cut could help get WPD towards net-zero (E019, E023). This could also be a good PR opportunity for WPD (E019).

8.37. WPD can work with local authorities on tree cutting and planting (E018, E019) to ensure coordination of planting locations to limit the risk of future cutting or effect on the network (E019, E021). There are some schemes, like 'Forest for Cornwall' where WPD could also get involved (E020). Another avenue to explore is working with local

woodland charities because replacing a tree one-for-one is not always the best approach, but it is the simplest to communicate to stakeholders (E023). Consequently, communication with stakeholders is seen as key to show the benefits of WPD's strategy to the environment, as well as network operations (E020).

8.38. Stakeholders mentioned that the types of trees planted is also relevant to try and maximise the oxygen releasing trees (E018), be a native tree that will support local wildlife (E023, E023) as well as potentially working with landowners to establish rewilding (E019). Working with tree and wildlife experts will be important here (E022). Similarly, it was seen as important for WPD to work with landowners to provide compensation if trees are cut on private land (E020, E023).

8.39. Customers are primarily concerned with the cost of these strategies, and therefore it is important that WPD prevents power outages, but in the most cost-effective way possible (E022). One stakeholder suggested a consultation process with the community on the concept and cost of this strategy (E022).

Underground cables

8.40. Stakeholders discussed whether WPD should use underground cables where possible and viable (E023) with most commenting that undergrounding would be a good idea (E019, E019, E023) to reduce effects of weather on assets, particularly as extreme weather events get more common (E023). Stakeholders were concerned whether undergrounding would increase damage during flooding (E023). Despite being very expensive, some argued that other costs, such as tree cutting, would be reduced as a result, thus making it more financially acceptable (E019, E019, E023). This may be more important in towns and cities due to the lack of space for cable infrastructure, and the improved athletics of undergrounding (E022). However, others disagreed, mentioning that undergrounding does not provide value for money to customers (E019, E023).

Extreme scenarios

8.41. Stakeholders were keen for WPD to consider and prepare for extreme scenarios, to ensure they are prepared (E020). These scenarios could include attacks from terrorism and seasonal changes (E017). Stakeholders were concerned about physical attacks on the ageing network and stated that WPD should consider more protection (E018, E019, E020). Furthermore, it was mentioned that the hotter and warmer summers alongside wetter winters will create new challenges for all assets, but particularly those underground (E020).

8.42. Another scenario to consider would be the infestation of rodents or wildlife in WPD assets (E021).

Recovery plans

8.43. Stakeholders believe it to be crucial that WPD have a high resilience against storms (E021) and have plans in place to deal with all scenarios (E022). A recovery strategy needs clear targets and that these targets can be communicated and shared more widely, including with the public (E022). Collaboration with local groups and organisations, particularly the local councils, was seen as key to ensure that everyone is pulling the same way on these issues (E021, E021).

Proposed commitments

Priorities	Commitments
Scenario planning / data analysis	1) Work with key stakeholders such as the Met Office and Environment Agency 2) Maintain the health of your at risk assets link your scenario planning with this 3) Communicate more focused, location specific scenario planning and make this information accessible 4) Consider the impact of new housing developments in data analysis 5) Undertake holistic planning with other infrastructure providers 6) Prioritise geographic areas with high poverty 7) Plan proactively for the impacts of climate change 8) Take a lead on multi-agency emergency planning 9) Create 1/100 year worst-case emergency-planning scenarios 10) Share smart meter data with relevant parties 11) Increase individual property resilience through workshops and collaboration with emergency services and local authorities 12) Commit to longer-term resilience planning for grid transformation 13) Inform and educate customers about plans 14) Raise awareness of plans in areas with high planned development 15) Engage with local resilience forums 16) Share planning scenarios with local authorities 17) Use drone technology rather than helicopters 18) Identify and act upon examples of best practice 19) Publish and share disaster recovery plans with key partners and stakeholders 20) Identify key target groups, communities, assets and buildings that are vulnerable 21) Lobby to be statutory consultee on planning development 22) Work with emergency planning partners 23) Undertake longer-term scenario planning (10 year)

	24) Increase undergrounding 25) More use of AI to help increase network resilience 26) Review plans to prevent sparks from network causing fires
Flood protection	1) Use long-term climate scenarios (1:100 years is no longer fit for purpose) and work with housing developers and utilities to mitigate risk 2) Explore innovative ideas for flood defence and invest in these 3) Avoid building sub stations on flood plains and relocate those that are 4) Have an ongoing focus on flood protection 5) Consider the role of trees in flood prevention and plant more trees in appropriate locations 6) Be a consultee and have an influence on the planning process 7) Carry out a review of vulnerable assets. Ensure substations have adequate defences and underground cables where necessary 8) Share scenario planning and GIS data with stakeholders 9) Prioritise those substations in flood plains for replacement 10) Share best practice and work with others 11) Support communities to understand critical infrastructure, including location of substations 12) Forecast the future case for vulnerable customers in high risk flooding areas 13) Install flood protection as standard in new substations 14) Liaise and collaborate with relevant parties including government, local authorities, and the EA 15) Redesign substations to be flood proof and ensure transformers are high enough from the ground 16) Increase planning and carry out cost benefit analyses to inform your strategy for replacing assets 17) Formalise engagement with LAs on housing developments: advise against building on floodplains
Tree cutting	1) Adopt an environmentally sustainable approach to tree cutting, replacing all tress you fell 2) Underground cables where appropriate 3) Engage with communities and make it simpler for customers to report issues

	4) Engage with stakeholders including landowners, Woodland Trusts, charities to enhance biodiversity and to minimise your impact on wildlife 5) Take a strategic approach to your tree cutting programme and base your approach on cost benefit analyses and environmental impact 6) Work with local stakeholders to identify locations for tree planting and encourage the involvement of local groups 7) Assistance with maintenance costs for landowners 8) Continue tree cutting for high risk circuits 9) Better reporting on tree cutting programme 10) Focus on species of tree for cutting and replacement 11) Work strategically with local authorities' environmental teams on initiatives relating to clearing of debris to prevent flooding and the recycling of cut wood 12) Maintain tree trimming programme but ensure trimming done only when necessary 13) Make tree cutting part of a thorough planning process: work pre-emptively to prevent issues 14) Engage, educate and inform customers as to their role, e.g. don't plant trees close to overhead wires
Underground cables where possible and viable	1) Invest in undergrounding options to increase resilience. 2) Conduct a cost benefit analysis of undergrounding. 3) Review the rules and thresholds for determining the need for undergrounding in light of extreme weather events. 4) Partner with other utilities to minimise disruption. 5) Liaise with AONB to determine which areas best for undergrounding
Proactive measures, local plan collaboration (flood zones)	1) Influence planning policy - make developers pay for flood defences around new builds 2) Engage proactively rather than reactively
Extreme scenarios (e.g terrorism and seasonal changes)	1) Enhance the ability to control the network at a local level. 2) Focus on effect of hotter and colder weather on underground infrastructure
Policy and design increasing resilience of assets (to severe weather)	1) Research and invest in new technologies that increase asset resilience
Terrorism, physical security	1) Monitor and strengthen the potential vulnerabilities of the network, including third-party risk assessments

All weather resilience (e.g lighting)	1) Consider protection against lighting strikes
Protection from wildlife / rodents	N/A
Emergency planning	1) Improve the emergency planning on storms and flooding
Incident recovery plans (weather)	1) Improve how you share incident recovery plans, including with the public, and set clear targets
Identify parts of the network vulnerable to being targeted by environmental campaign groups	N/A
Work with councils on flood protection issues (e.g car park infrastructure)	N/A

Sub-topic: Workforce resilience

What we heard in 2019:

Despite the limited preliminary engagement on workforce planning, domestic customers answering a social media poll ranked it as the second-highest priority with a score of 8.87 out of 10.

Summary of Phase 2 feedback

9.1. Stakeholders note the importance of good workforce planning for a number of reasons including; ensuring WPD have adequate skills and staff members internally to continue operating effectively; to be able to recruit and replace an ageing workforce; to upskill the workforce in an ever-increasingly technological environment where it has to deal with the DSO transition, the integration of AI; to expand the workforce to deal with the increasing electricity demand from the electrification of heat and transport; as well as ensuring current staff are happy and have equal opportunity. Diversity and appreciation were two subjects that were discussed extensively with regards to current staff, alongside the career path development as employees gain experience and upskill.

9.2. A total of **252** pieces of feedback were collected for workforce resilience during phase 2 engagement, which adds to the **1** piece collected during phase 1. This sub-topic has **17** priorities and **72** proposed commitments.

Priority ranking

Existing priorities

9.3. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

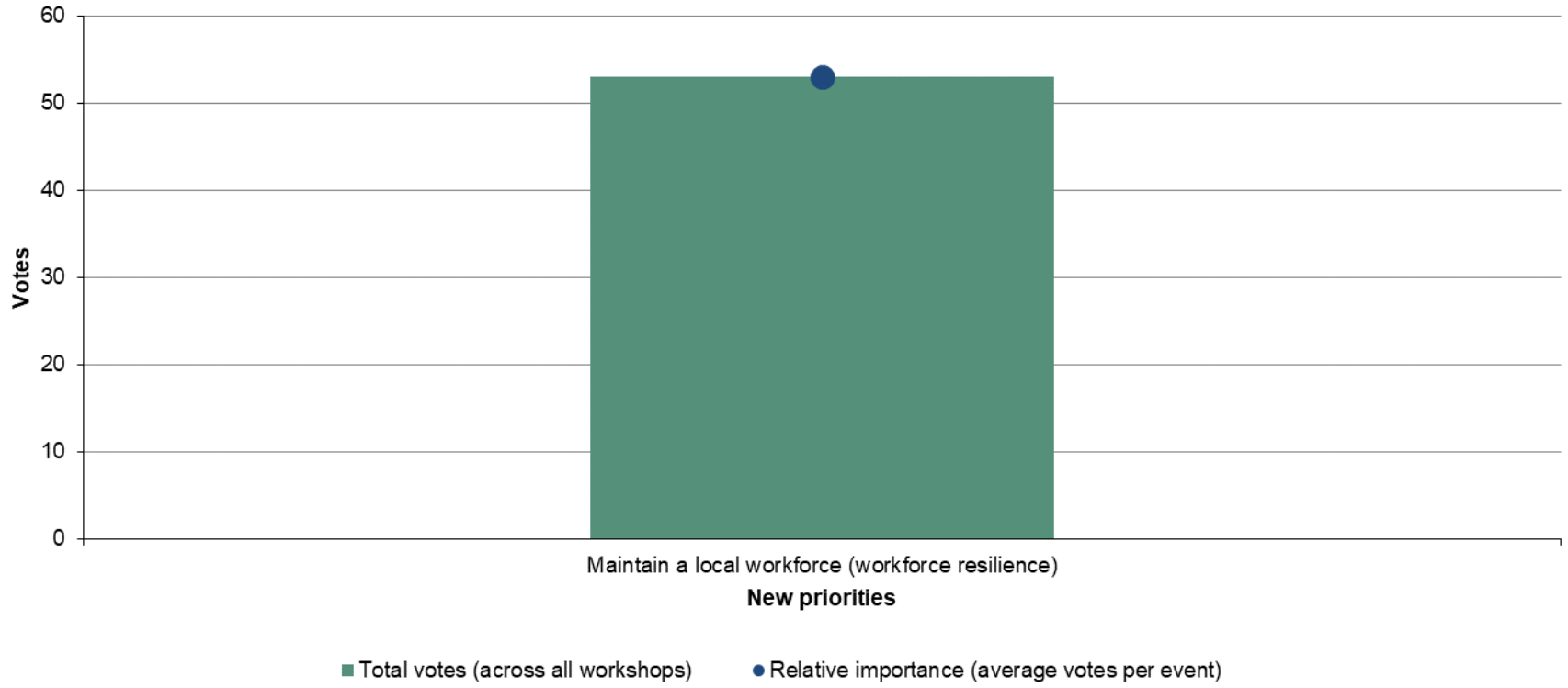
Priorities	Votes	Relative importance
A happy, healthy and motivated workforce where WPD is the employer of choice	11*	1.83
Retention and upskilling of a specialised, highly skilled workforce	7	1.17
Attracting new talent	6	1
Improving the diversity of our workforce	6	1
Increasing the STEM pipeline	5	0.83
Maintaining a safe, healthy and motivated workforce	5	0.83
Ensuring that we continue to meet our legal obligations to our staff regarding their health	3	0.5
Putting something back into the community	1	0.17
Focusing on our health monitoring programmes and putting in place plans to minimise those areas highlighted that impact on our staff	1	0.17
Continuing to provide suitable H&S training for our staff	0	0

** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

9.4. The priorities receiving the highest numbers of votes focused on keeping current employees happy and retention strategies, whereas the lowest ranking priorities concerned health monitoring of staff and Health & safety training.

New priorities

9.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



9.7. There was only one newly suggested priority which was voted on in workforce resilience. Despite being a new priority and only collecting votes in one workshop, 'Maintain a local workforce (workforce resilience)' received more votes than all the existing priorities combined, and received a substantially higher relative importance score (53 votes per event).

9.8. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on the new priority over all the existing priorities.

Detailed feedback

Feedback on workforce resilience can be divided into three themes:

- Current staff
- Recruitment
- Future Planning

Current staff

9.9. Stakeholders believe that maintaining current staff should be one of WPD's highest priorities in workforce resilience. 'A happy, healthy and motivated workforce where WPD is the employer of choice' was the highest existing priority in workforce resilience (E017) and stakeholders believed that workforce resilience, in general, has become a lot better in the last 20 years (E019). A local authority member stressed the importance of good planning as it is crucial that WPD remains well resourced as an organisation and stays ahead of the game (E019).

The spectrum of skills in the workforce

9.10. The range of skills required for different roles was discussed extensively, with stakeholders keen for WPD to plan training for the whole spectrum of skills required as well as calling for more respect between managers and the managed (E018) as people are likely to leave their job if they don't feel respected (E018). Furthermore, it was suggested that personality profiling could help determine the best pathway or role for promotion for individuals based on their skills (E018). It was suggested in one workshop that a skills map for new staff would best help WPD plan for the future supply of staff and skills (E018. E018). The expected skills required by the future workforce should be considered during recruitment, such as more technological and IT-based skills (E018, E021, E031) to deal with the DSO transition and EV charging infrastructure projects (E022).

9.11. While promoting from within is encouraged, bringing in managers from the outside can provide a new perspective and skills from other experiences and organisations (E023).

9.12. One stakeholder noted that "as an employer, WPD delivers on so many areas and is a great company to work for but it seems to fail to grasp the diversity of the workload across its 4 areas which result in an imbalance of staff to workload ratio" (E033).

Workforce retention and upskilling

9.13. This was voted the 2nd highest existing priority overall within workforce resilience (E017). It can be rewarding and better for WPD to recruit and promote from within as this creates a sense of pride within the company and a solid groundwork and understanding of company values (E021). Having clear staff development plans will help provide a progression path for employees within the company which is valued and will aid staff retention (E018, E021, E023, E020, E020, E022). This should be completed for all parts of the business, not just engineering-based roles (E020).

9.14. Soft skills are very important for staff members to obtain, especially as they progress through to managing a team, therefore WPD should provide additional support for middle managers to help the whole team flourish (E023). This is especially true for

technical staff members as a wealth of hands-on engineering skills does not necessarily translate into a successful manager (E018, E021). WPD must also be aware of the resentment some employees may feel if a non-expert manager is recruited externally rather than promoting an internal technical candidate without the management experience needed – training may help internal candidates be more likely to succeed in managerial roles (E023). Also, the employee review process is down to the manager and thus a monitoring structure should be in place to provide guidance to managers how best to support their team in this space (E019).

9.15. There was a suggestion in one workshop that staff should have the opportunity to seek higher education part-time while employed, and WPD could drop their working hours to assist (E018, E023). Maybe a scholarship or bursary for a sandwich course should be considered (E022).

9.16. It was noted in one workshop that the obsession with qualifications means that core skills are undervalued. WPD should replicate improvements in the nursing sector and focus on upskilling trainees to improve staff retention (E018), and potentially establish a fast stream for strong internal candidates (E019). Exit interviews with staff may also help WPD better support current staff (E019). If employees are relocated due to office transfers, then WPD should endeavour to support these individuals throughout the process (E019).

9.17. Additionally, while it is not always possible to continually promote people within your flat structure, it is important that you can add responsibilities onto their roles to continue their progression and personal development within the company, or they will look to find it elsewhere (E018). You can give employees exposure to help them learn new skills with shadowing senior workers (E019) and reward them for the skills and responsibilities that they have (E018). Employees may value the chance to explore different sides of the business to better understand the whole organisation's operations and show their flexibility within the workforce (E020). Empowering people can be a powerful tool to motivate staff (E021), especially embracing the desire to move around within the business (E020).

9.18. Furthermore, innovation should be encouraged to establish best practice new approaches to working (E021).

Flexible working

9.19. Flexible work packages should be available as these tend to be attractive to all workers (E018, E021) with the option of working from home (E019, E023), extended maternity leave (E018), the ability to buy back holiday (E019) and sabbaticals (E021, E020). This may also become increasingly important as society moves towards seven-day weeks and changing attitudes towards working patterns (E019). It was also suggested that increased flexibility around retirement plans would allow WPD to benefit from older employee's skills for longer (E019). On the other end of the spectrum, one stakeholder also mentioned that their organisation had the ability to allow staff to take a 'gap year' to travel while securing their job upon their return. This meant that the employee would return more mature and wiser and better able to add value to the workforce (E020).

Ageing workforce

9.20. One suggestion was to utilise reverse mentoring which helps to increase cultural understanding within an organisation, as utilised by some arms of the NHS (E018).

The difficulty of balancing a range of staff ages was discussed at length at multiple events (E018), especially as WPD has to balance the two vastly different ways of working (E020). One stakeholder suggested that WPD should learn from Microsoft and other companies that have successfully attracted young, ambitious workers (E018), as well as thinking carefully about how WPD transitions to a younger workforce, enabling employees of all ages to work effectively together (E021). Some workers may require additional training to help adapt to modern working methods (E021). Certain areas have particular demographics meaning that they are more prone to an ageing workforce, potentially requiring more focus when workforce planning in the future (E019).

Employee appreciation

9.21. At one event, stakeholders discussed the importance of feeling appreciated in your job and ensuring that the staff feel they 'belong' in the workforce (E021, E021, E022). Gratitude can be shown in a range of ways but could be as simple as an email (E021, E021), which felt especially poignant during a time of crisis, such as COVID-19, where employees want to feel that the company has their back (E021). It was also mentioned that regional staff must be recognised for their hands-on contribution, not only focussing on staff in the head office (E022).

9.22. Managers are enablers and WPD should develop a culture of patting people on the back for a job well done and find a way to praise and reinforce strengths (E018). One stakeholder mentioned the benefits of one-to-one meetings with a manager or senior person to discuss personal and professional issues, which meant staff could discuss what was important to them and thus more likely to find the most effective way of working and feel valued in the organisation (E021, E021). One stakeholder suggested a bonus scheme for all employees, not just the top management, to encourage higher performance (E019).

9.23. Offering free gym membership for employees would be another way of showing appreciation, while also maintaining a fit and healthy workforce (E019) alongside a bike to work scheme (E019). It was also mentioned that subsidised travel or car-pooling schemes would be good for WPD to introduce (E019). A key element to consider is the staff education about the benefits schemes that WPD provide, for example, why young people should sign-up to the pension scheme (E020).

9.24. Providing the opportunity for staff to get involved in workshops could also be a good way of gaining insight into how the business operates for staff and show them appreciation in front of stakeholders (E022). Alternatively, having a mechanism where staff could interact or feedback with WPD is important, such as through the website (E022).

Health and Safety

9.25. The health and safety of staff was voted as the highest priority within workforce resilience (E017, E017) and considers both the physical and mental wellbeing of staff. An increased focus on staff mental wellbeing was highly encouraged in the workshops (E021, E018) with many concerned about the work-life balance of employees (E018, E018), their workload and workload management (E018) as well as educating staff about key time and stress management (E018). Strong management was mentioned as a key enabler in this space (E018) alongside a well-established rota system for staff working beyond business as usual hours (E018). Public health advice should be provided to employees (E018) as this helps to remove the taboo surrounding mental

health (E018). Other ideas would be to undertake organisation-wide health monitoring programs (E017) and have mental health champions (E021).

9.26. Incident management was also a particular concern in this space (E018) including the debrief procedure (E021, E019), the PPE provided to staff in dangerous environments (E021, E019) as well as ensuring up-to-date health and safety training is provided (E021, E021, E021). Problems in this space may occur if WPD only discuss problems through the unions and not directly with staff (E022).

Recruitment

Attracting young people

9.27. Attracting new talent was the third highest priority in workforce resilience (E017). WPD's reputation and brand in this sphere can be very influential when recruiting staff (E020). One stakeholder suggested that WPD should overhaul its branding to appeal to a younger audience (E019) as the first step to recruiting the best young-people is to get them in the door, and then the next step is providing sufficient support and stimulus to keep them at WPD long-term (E019). Planning to reach young people is key (E023, E022) and WPD needs to go into schools and seminars (E022) and offer work experience opportunities to help entice workers to the organisation early (E023). This outreach program could attempt to change the outlook on manual work (E023, E023), especially with those that are not as strong academically (E020).

9.28. When interacting with young people, it is important to mention the other key elements below, such as the apprenticeship scheme, the diversity and inclusion of the workforce and the opportunities to upskill (E020).

Apprenticeships

9.29. Stakeholders were mostly positive of the apprenticeship scheme noting the invaluable contribution to the company (E019). The fact was pointed out that WPD could train young staff members in the best working practices, as they haven't been corrupted by bad habits (E019). It was suggested that this scheme should be pushed more to help recruit people to WPD (E019) and the high salary offered at the end of the scheme should also be highlighted better (E019).

9.30. Utilising staff to help with recruitment would help promote WPD (E019) and quotes from staff surveys could be used for the apprenticeship paraphernalia (E019). Another suggestion was having a pole at careers fairs as a challenge for younger ages to get them interested in WPD with a fun experience (E019).

9.31. It was mentioned in one workshop that the apprenticeship should not only focus on young people as some older candidates may want a change in career and may also be more stable in their situation, ready to pursue a long-term career with WPD (E022).

Promoting STEM subjects

9.32. There was some discussion that WPD should help encourage STEM subjects in school (E017), whether this may be through sponsoring academic training (E018), increase the awareness of the electricity network in schools (E018) or to provide some work experience to the teacher that could relate their experience to a number of classes back in the school (E022). While on this subject, the apprenticeship scheme

was felt to interact closely with this priority (E020) as members of the scheme could be shown as positive role models to current students, enticing them to apply (E019, E019, E019). This would also help to show that the focus isn't always about A-levels or degrees, but about the core subjects in school and how they can translate into a job in the real world (E019, E023).

Training

9.33. Promoting the internal training opportunities that WPD offer can help attract new talent, such as a four-wheel-drive training (E019), as well as potentially highlighting how much money WPD will invest in them (E020).

Social Media

9.34. Using regionally specific social media campaigns may be a way to counteract the lower number of applications in the East Midlands (E021).

Recruiting from other organisations

9.35. One stakeholder noted that when some companies close down, there is an opportunity for WPD to partner with this company to recruit specific skills from this workforce (E018). This is especially important to maximise skills transfer and reduce the need to train staff as much when they arrive (E018).

9.36. Another avenue would be to approach the military to recruit former soldiers who may be suitable for roles with WPD (E022). Ex-military people tend to work well in the workplace hierarchy and have a good work ethic and transferable skills (E022).

LGBTQ/diversity

9.37. Improving the diversity of the workforce was the fourth-highest existing priority under workforce resilience (E017). There needs to be a conscious effort to reach a demographic outside the traditional white British male population, to diversify and increase the talent pool (E020, E020), and this stems from the traditional branding within the engineering industry, which should be challenged (E021). Improving workforce diversity will take time (E023, E020) but the proper structures can help, as one stakeholder mentioned that an accreditation to a national diversity and inclusion standard would be a good goal for WPD in this area (E018). WPD could also get involved in forums around workforce diversity and inclusion to promote its values and work with charities like Stonewall to help improve their operations and image on this topic (E021, E021).

9.38. WPD should champion more senior figures in the company representing minority groups (LGBT community, BAME community etc) as a demonstration of an inclusive work environment and provides motivation for the entire workforce (E021, E018, E021). The lack of senior females needs to be corrected (E023). Diversity should be sought throughout the recruitment, from the apprenticeship scheme to senior management (E023). Another potential avenue would be that current WPD staff look to recruit friends and family from a diverse background to open WPD roles (E022).

9.39. Barriers to education may be limiting candidate opportunities during the application process, which is something that must be considered (E018).

9.40. Collecting data on the current workforce's gender and sexual orientation will allow external parties to understand that WPD are keen to address this issue, and provides quantitative value for analysis of WPD future success in diversifying the workforce (E021). It is also important that WPD include all groups beyond LGBT – with LGBTQ+ - in order to ensure absolute inclusivity (E021).

9.41. Alongside the internal analysis and education, it is important that WPD have an LGBTQ+ and diversity ambition across its organisation (E019) which could be acted through an umbrella policy across all regions (E021).

9.42. Equal pay for equal skill and an equal amount of work, irrespective of gender, diversity of inclusion should be ensured (E033).

Community outreach

9.43. Stakeholders were mostly pleased to hear about WPD's involvement in the community (E020, E022) with projects like sponsoring local sports teams and community schemes (E019) as it improves the local perception of the organisation (E023, E022).

Future Planning

9.44. WPD needs to consider the future demands on its workforce to plan adequately. Some stakeholders recommended that WPD should increase their workforce numbers to accommodate potential future energy scenarios, particularly the increase in electricity demand (E029, E019). WPD also needs to change the operational approach by integrating more AI and telephony, which will ultimately affect your workforce requirements (E021).

Post-Brexit

9.45. Stakeholders were concerned about the future workforce planning surrounding the uncertainty of Brexit and its impact (E022), including changes to staff numbers and health and safety (E021).

Coronavirus

9.46. Stakeholders wanted WPD to increase its resilience against future pandemics, particularly around business continuation (E018) and preventative mechanisms, such as flu jabs (E018).

Proposed commitments

Priorities	Commitments
Retention and upskilling of a specialised, highly skilled workforce	1) Provide clear, whole-career, and personalised development pathways for staff that enable progression through WPD 2) Equip managers with skills to empower other staff and implement personal development programmes 3) Develop a flexible, resilient workforce prepared for new roles and ways of working in the future 4) Support staff in diversifying their own skills 5) Ensure staff development strategies also apply to non-skilled members of WPD 6) Build understanding at management level of a more transient working culture 7) Demonstrate the benefits that longer-term experience can provide staff and the business 8) Use internal communications to promote the range of roles within the business to break down silos 9) Develop people's roles so they don't constantly move about within the business 10) Resource external managerial expertise 11) Ensure managers brought from outside the business do not alienate the workforce 12) Create shadowing opportunities to upskill less senior staff 13) Consider wider rollout of a bonus scheme 14) Provide support for staff relocated to new offices 15) Train all staff on soft skills to increase worker resilience
Attracting new talent	1) Improve outreach to schools, and children considered to be non-academic 2) Evaluate how WPD reaches out to younger people ready for employment 3) Provide opportunities to people who have not attended university and embrace mature apprentices

	4) Work with Higher Education Institutions to deliver more enriching and tailored degrees, and provide bursaries 5) Improve perceptions of DNOs as an industry 6) Consider diversifying available talent pools 7) Take a holistic view of attracting talent 8) Offer significant and long-term development incentives for new talent 9) Identify relevant transferable skills among staff made redundant by other company closures and offer them employment 10) Consider reaching out to military and service personnel 11) Offer a more 'hands on' experience at career fairs 12) Use existing workforce to better promote WPD and drive recruitment 13) Offer 4-wheel drive training 14) Consider localised social media campaigns to attract applicants
Improving the diversity of our workforce	1) Develop a diversity strategy that is long-term and reflects wider demographic changes 2) Improve gender diversity in senior management, and more widely through WPD 3) Engage with schools to recruit a diverse workforce in future 4) Aim to achieve an accreditation for a national diversity and inclusion standard 5) Consider whether educational qualification requirements are creating a barrier to having a more diverse workforce 6) Build in geographical diversity across England and Wales through the apprenticeship programme 7) Create meaningful schemes to improve racial diversity 8) Promote minority representative groups within WPD internally and externally 9) Work closer with minority advocacy groups such as Stonewall 10) Re-position WPD towards non-traditional audiences (i.e non-male) 11) Ensuring the transsexual community is represented as part of LGBT+ strategy 12) Review and develop LGBT+ policy that can be implemented locally
A happy, healthy and motivated workforce where WPD is the employer of choice	1) Provide flexible working packages and other incentives that suit the whole working demographic including sabbaticals, TOIL, and flexible retirement plans

	2) Create an age-inclusive environment that accommodates different working practices between generations 3) Provide emotional support to build trust amongst staff 4) Foster a culture of respect between the different skill sets within the business 5) Deliver workshop-style events for internal staff members 6) Communicate via company website / intranet 7) Embrace the emergence of working from home 8) Educate workforce on the adoption of new working methods, to ensure continuity from process-driven to data-driven working 9) Champion senior management from minority backgrounds
Increasing the STEM pipeline	1) Support recruits through and sponsorship and academic training during apprenticeships 2) Build stronger links with schools to shape curriculum. attract younger talent and generate interest in industry 3) Broaden the apprenticeship programme to include non-engineering roles 4) Use apprentices to help engage with young people and inform their curriculum choices 5) Review recruitment collateral to change perceptions that WPD requires high attainment
Maintaining a safe, healthy and motivated workforce	1) Ensure the mental health needs of the workforce are being met, and supported by promoting a healthy work-life balance 2) Ensure that your managers commit to leading by example 3) Develop appropriate rotas and policies for operational teams that work out of hours and respond to emergencies 4) Deliver public health advice to employees
Ensuring that we continue to meet our legal obligations to our staff regarding their health	1) Ensure liaison and governance between WPD, workers and unions on health and safety matters is clear and effective 2) Review debriefing procedures when an accident occurs 3) Resource staff with the correct equipment when working around hazards such as water
Continuing to provide suitable H&S training for our staff	1) Maintain regular staff training for staff on driving new vehicles, and when logging key information on site visits

	2) Ensure staff preparedness for extreme weather events 3) Educate staff members on the potential health and safety aspects of Sulphur Hexafluoride (SF6)
Putting something back into the community	1) Explore community outreach opportunities 2) Build flexibility within staff to react and support communities during crises
Focusing on our health monitoring programmes and putting in place plans to minimise those areas highlighted that impact on our staff	1) Undertake wellbeing at work assessment. 2) Create and support the development of champions in mental health and LGBT+
Maintain a local workforce (workforce resilience)	N/A
Response to threats such as Coronavirus	N/A
Local workforce / workforce resilience	N/A
Managing the size of the workforce to accommodate potential energy grid scenarios in future	N/A
Ensuring staff are properly equipped for their role	1) Ensure teams have the right tools to perform their jobs properly
Considering the potential post-Brexit legislative changes to health and safety law	N/A
Changes to operational practices by greater use of telephony / AI	1) Upskill staff to be able to adopt new practices

High-level topic: Delivering an environmentally sustainable network

Sub-topic: Business carbon footprint

What we heard in 2019:

Stakeholders in the preliminary engagement phase wanted WPD to be more responsive on environmental issues, particularly focusing on reducing emissions nationwide. It was evident that stakeholders were keen to see WPD set out a strategy to meet the government's net-zero target, especially around reducing WPD's carbon footprint. Suggestions for internal emission reductions were converting company vehicles to electric vehicles, increasing low-carbon electricity in buildings as well as making all company buildings carbon neutral before the governmental targets.

Summary of Phase 2 feedback

10.1. Stakeholders were passionate about WPD reducing their carbon emissions, showing leadership in the industry and society and setting ambitious targets for improvement. There was a substantial proportion of feedback discussing the correct net-zero target for WPD, with several workshops suggesting 2030, as well as suggesting aligning with local authority targets. Despite the demand for WPD to announce a climate emergency, it was noted that making a statement was insufficient without a concrete plan for action to reduce emissions.

10.2. A major focus for stakeholders was WPD's fleet and the need to electrify, especially as so many other organisations have already managed this and WPD should be leading the way. Also, the point was raised that employee emissions should be reduced through promoting public transport, car-sharing and cycling, as well as offering more flexibility to work from home to remove the commute altogether. WPD's buildings were another topic of discussion with stakeholders keen to see energy efficiency improvements of current buildings, retrofitting solar panels and insulation as well as having a high environmental specification for new buildings. Carbon offsetting was mentioned repeatedly, but stakeholders did not want WPD to use this as an excuse not to reduce emissions where possible and wanted WPD to only offset where unavoidable. This was linked to the upgrading of network equipment needed in order to improve its energy efficiency, which should be considered in WPD's overall carbon footprint.

10.3. A total of **189** pieces of feedback were collected for business carbon footprint during phase 2 engagement, which adds to the **4** pieces collected during phase 1. This sub-topic has **23** priorities and **54** proposed commitments.

Priority ranking

Existing priorities

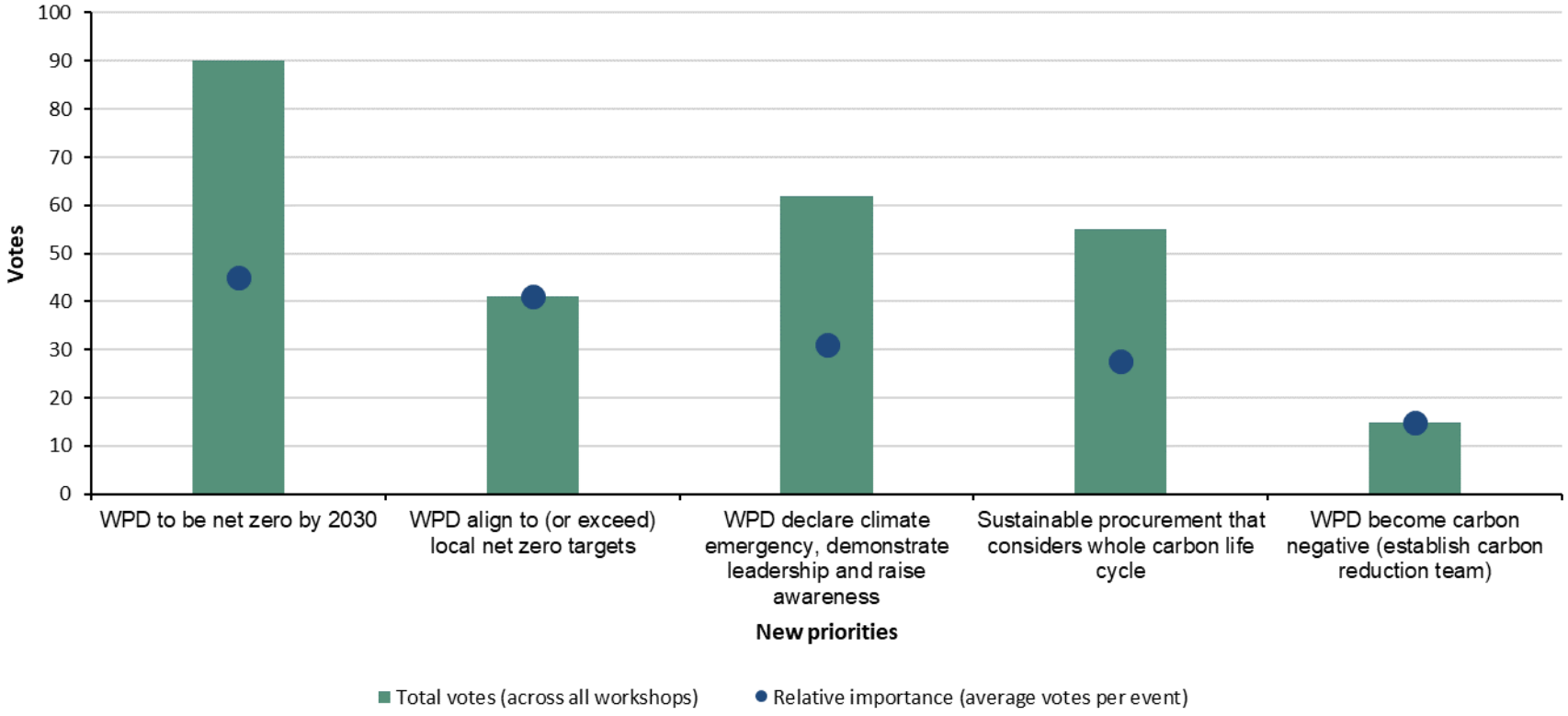
10.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

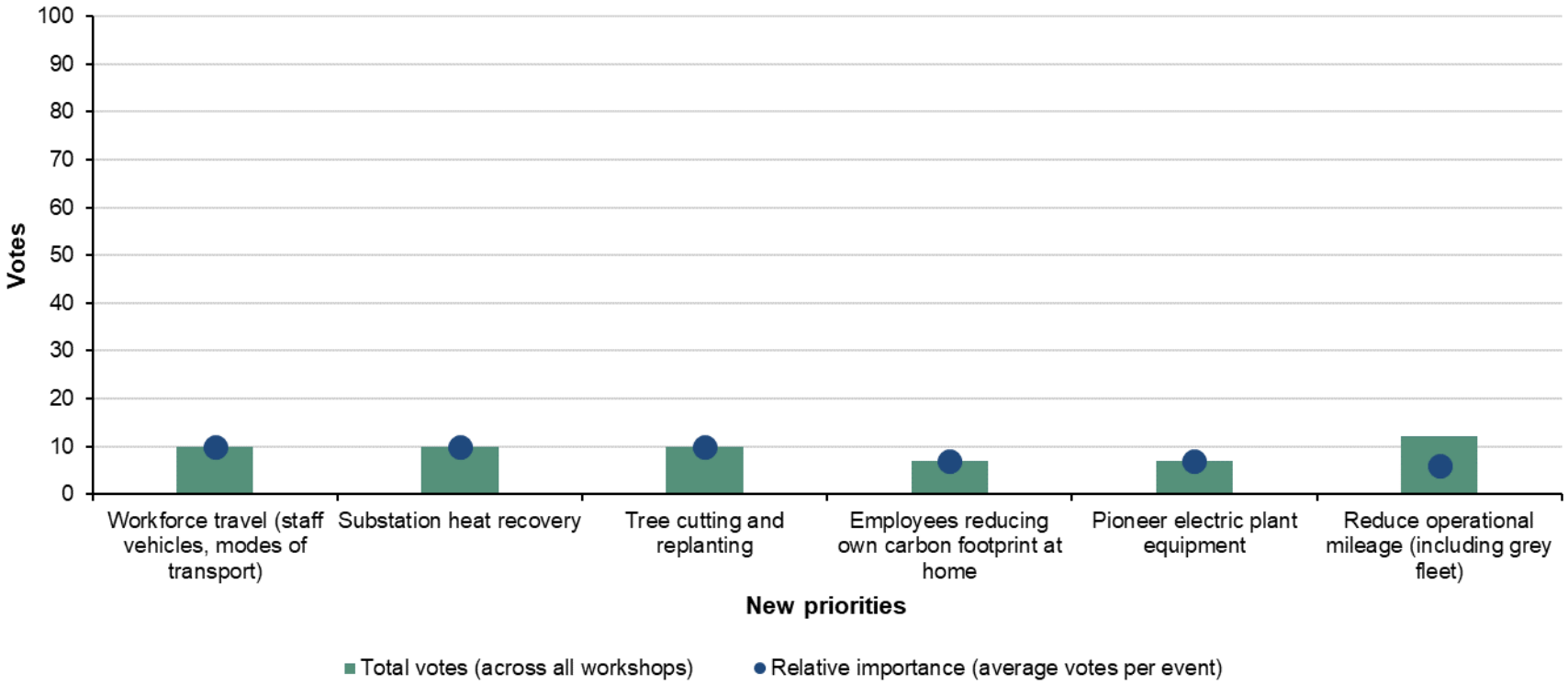
Priorities	Votes	Relative importance
Carbon emissions from WPD vehicle fleet	118	19.67
Carbon footprint of WPD's buildings and depots	93	15.5

10.5. The priority receiving the highest numbers of votes focused on how WPD's fleet emissions, whereas the lowest ranking priority concerned WPD's buildings and depots.

New priorities

10.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.





10.7. For the newly suggested priorities in business carbon footprint, 'WPD to be net-zero by 2030' collected the highest number of votes across all workshops. It also received the highest 'relative importance' (27.5 votes per event).

10.8. The priority with the second highest number of votes was 'WPD to declare climate emergency, demonstrate leadership and raise awareness', however, it had a lower 'relative importance' (31 votes per event), compared to others that received more votes at just one event. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on 'WPD align to local net-zero targets' (41 votes per event), despite only collecting votes in one event.

Detailed feedback

Feedback for Business Carbon Footprint can be divided into five themes:

- WPD's targets
- Transport
- Buildings and depots
- Carbon offsetting
- Grid efficiency

WPD's targets

10.9. Stakeholders had a range of targets and actions they wanted WPD to announce, which are outlined below. It was stated unequivocally that WPD should announce their targets for net-zero publicly (E021).

Net-zero by 2030

10.10. Stakeholders in Bristol and Nottingham voted that WPD should be net-zero by 2030 as their highest priority (E017, E018, E022). Stakeholders in Birmingham suggested that WPD should form an ambitious net-zero target, with the suggestion of 2030, but stakeholders were sceptical whether this was possible with current policies (E019). It was noted that while WPD has committed to reaching the UK government's target of net-zero by 2050, it is an organisation that should show leadership as it can decarbonise a lot of its activities, and should subsequently have a much more ambitious target (E018, E018, E019, E019, E022). It was stated that most local authorities are already targeting 2030 and WPD should be following suit (E022). Offsetting emissions was seen by stakeholders as an adequate short term solution for unavoidable emissions, but this was described as like kicking the can further down the road and not a solution stakeholders would accept long term (E022). Despite its difficultly as a priority, stakeholders believed WPD is the perfect organisation to lead the way as it coordinates with other utilities and partners within the energy industry (E019, E022).

WPD should declare a climate emergency

10.11. This was a priority set forward in both the Cornwall and Milton Keynes workshops (E017, E020, E021), and was voted as the highest priority in Cornwall (E020). It was stated that WPD should be showing leadership in the decarbonisation process (E021) and the best example they could show is to declare an emergency (E021).

10.12. Stakeholders stated that the situation requires a rapid response and the only way that other partners and businesses will act with the same urgency is through treating it like the emergency it is (E020, E020). It was suggested that WPD could announce it through a short TV or social media ad (E021) alongside an interactive event where WPD can describe network stability changes as we decarbonise (E020). Businesses and partners look to WPD for guidance, and it was believed that announcing a climate emergency would also help them understand the situation and aid collaboration in this space with future projects and initiatives (E020).

10.13. When asked to estimate the effect of declaring a climate emergency, stakeholders in 4 locations voted that more electric vehicle chargers would be established as they're

first or second options (E034, E035, E037, E038). Other options that also received a high number of votes were, in order, higher standards for new homes, the refusal of fossil fuel generators in planning, electrifying public transport and establishing renewable energy designated zones (E034, E035, E037, E038). In particular, both west and east midlands noted a strong expectation that fossil fuel generators would be refused planning permission, with west midlands being the strongest of the two on this matter (E034).

WPD to become carbon negative

10.14. Stakeholders in Milton Keynes believed that WPD should strive to be carbon negative rather than carbon neutral (E021, E021). It was also noted that declaring a climate emergency without actioning changes is worthless (E021), which is why it was recommended that a carbon reduction team should be established internally to monitor and work towards WPD's targets (E021). A suggested action to reach this would be to follow a model established by the Carbon Trust which has increasingly stringent levels of demand (E022, E022).

Align with local net-zero targets

10.15. As well as setting an internal target, stakeholders felt it was important that WPD's targets align with those set by local authorities (E023) and was subsequently voted the highest priority in Swansea (E023). Stakeholders were conscious of the technical and practical challenges to reach net-zero in each area and therefore noted that it was important that Local Authorities and WPD work together to reach the same target, especially if local targets are more ambitious than WPD's (E023, E023) – an example being Cornwall Council's 2030 target (E020).

Transport

10.16. Stakeholders wanted targets on WPD's transport emissions to be formalised within the business plan so that progress can be tracked and the organisation can be held accountable (E021). Furthermore, it was noted that these targets should be challenging and industry-leading (E018, E021). It was recommended that WPD should measure their current emission levels to use as a benchmark to compare future improvements (E021).

WPD's fleet

10.17. Reducing the emissions from WPD's fleet was a key priority and had the highest number of votes across all workshops (E017, E017). Stakeholders felt it was hypocritical for WPD to be encouraging others to switch to electric when their fleet continues to be diesel (E019, E020, E023). It was also noted that other utilities, such as BT, have a completely electric fleet, and the fact that WPD does not is disappointing (E019, E021). Furthermore, it was noted that the more people see an all-electric fleet, the more they are encouraged to make the switch and thus WPD can show leadership as an early adopter (E020, E023).

10.18. The two main stakeholder concerns were limiting the cost to consumers (E019) and ensuring that all business requirements can be met (E019). It was also noted that WPD may only have limited control over the vehicles used by subcontractors (E019).

Stakeholders expected that it will be easier to electrify the smaller vehicles first before moving to larger vehicles (E023). Stakeholders suggested that the transition to electric can happen as vehicles reach the end of their lives (E018, E020), and that vehicle recycling schemes are in place to help reduce waste from scrapping the current fleet (E021). A suggested target was to have 80% EV fleet, focussing on smaller vehicles, by 2025 (E018).

10.19. Other innovative solutions were suggested, such as the integration of solar charging in WPDs car parks (E019) or the use of drones instead of vehicles for certain tasks (E019), particularly for maintenance checks (E020). Furthermore, it was suggested that this would be an opportunity for WPD to improve their working efficiency so that only one visit is required to a site rather than 5 or 6 (E020) which would reduce the miles per job (E020). Another suggestion is for WPD to be part of the innovation of EVs to help make them better equipped for certain roles within the organisation (E023). It was suggested that there may also be an opportunity for WPD to test two-way charging on company vehicles (E020).

10.20. One stakeholder also mentioned the need to consider hydrogen vehicles (E019, E023). Another noted the potential benefit of hydrogen vehicles for longer journeys or larger vehicles, while shorter trips would be more suited to electric vehicles (E023). Another suggested alternative for heavier vehicles could be biogas, particularly due to its prevalence in the south-west (E018).

10.21. It was also noted that WPD should consider offsetting other forms of transport that employees use, such as flights, trains or ferries (E022).

Reducing staff emissions

10.22. Encourage staff to use public transport (E019) and establish a car share for employees that live locally (E022) were two suggested actions from stakeholders. Another suggestion was to provide showers at the office to encourage cycling to work (E022). If they need to drive, stakeholders recommended that WPD should try and install charging points in their car parks to encourage office staff to buy electric cars as they can then charge them at work (E020).

10.23. Another suggestion was for WPD to promote good driving practices to incentivise safe driving, using the shortest routes, and limiting speed to reduce emissions (E023) as well as driving less (E020). Enabling employees to work from home was another suggested action by stakeholders to reduce employee emissions (E019, E020, E021, E023), which could also extend to the WPD recruitment policy to ensure that you endeavour to employ locally rather than have employees travel great distances to work (E021). Stakeholders suggested that a campaign to educate and promote sustainable living and carbon footprint reduction at home could also help in this regards(E018).

Buildings and depots

Existing buildings

10.24. Reducing the emissions of WPD's buildings and depots was the 4th highest priority under the environment (E017). Stakeholders wanted WPD to advance and set their own KPIs, including specific measurable commitments to achieve (E023).

10.25. A good energy management team was the suggested action to improve depot emissions (E019). It was also recommended that all buildings should be hitting the

BREEAM standards (E018) and WPD should target at least a C+ EPC (E021). Another stakeholder was more ambitious and suggested a target of EPC-A and DEC-A for all facilities (E019). A 20% reduction in building carbon footprint would be a reasonable starting point according to stakeholders, but this target should increase over time (E019). An audit of all buildings was the recommended action to highlight areas to prioritise (E021).

10.26. Retrofitting all existing buildings with solar panels on the roofs as well as improved insulation and heating technology was expected to lower emissions according to stakeholders (E018, E020, E021, E022, E022). Stakeholders conceded that retrofitting can be a difficult task, and WPD should thus seek best practice from other organisations (E021). A stakeholder recommended that any large vehicle parking areas could be converted to covered parking but installing a solar array which would make better use of this existing land (E019).

10.27. It was also suggested that WPD should try to remove the use of gas by 2025 from their buildings (E020, E021) and switch to electric (E020). Similarly, another stakeholder wanted to see WPD running their buildings from overnight stored energy which therefore reduces load and adds flexibility to the grid (E019).

10.28. It was also suggested that WPD could look to downsize their offices and encourage more working from home (E019, E020, E021, E023) and that WPD should look into sharing infrastructure with other organisations (E022).

New Buildings

10.29. When looking to build new depots and buildings, stakeholders wanted WPD to have competitions for architects to build low-carbon substations (E018) and have specifications on all new buildings to be environmentally friendly – over and above baseline specifications (E018, E020). Passive heating is a technology that stakeholders believed should be considered (E018, E021). Additionally, stakeholders recommended that recyclable materials and recycled materials should be used (E022) which will also help focus on end-to-end carbon footprint (E022).

10.30. A major connections customer noted that concrete bases for substations tend to be larger than required, thus digging up too much land and using too much concrete – a carbon-intense resource (E019). Substations could also look to have heat recovery mechanisms (E018).

Energy efficiency

10.31. Stakeholders wanted WPD to look to improve the energy efficiency of its buildings (E020). However, stakeholders were concerned that energy efficiency is a term that is often overused and should not be the sole focus. It should also be about making sure they are designed and used properly (E018). An example stakeholders presented was that better use of natural light with windows may be less efficient at containing heat, but would require substantially less electricity use to light the rooms hence lower overall emissions (E018). Stakeholders also wanted LED lighting to be completed as an energy efficiency upgrade (E023).

Carbon offsetting

10.32. Stakeholders were keen to point out that this should not be used as a replacement for emission reduction (E022) but WPD could establish a hierarchy of emission reduction steps, and anything that couldn't currently be avoided should be offset (E023). It was suggested that sustainable procurement should consider the whole carbon life cycle (E017).

10.33. Tree planting was the recommended carbon offsetting method by stakeholders (E022) but WPD could also collaborate with the local authority and create a carbon offset woodland sponsored by WPD (E019). It was noted that the growth rate of the trees needs to be considered to measure the real carbon impact (E022).

10.34. Tree replanting after cutting was also noted as a priority discussed at one workshop (E022) as WPD should look to not only sustain but increase tree coverage (E022).

Grid efficiency

10.35. Stakeholders wanted WPD to reduce the leaks and network losses (including transformers) on their network (E017) and this is included in their internal carbon footprint. A major connection customer wanted clarity on transmission losses (E021) and several stakeholders wanted WPD to invest in newer and more efficient equipment to reduce losses (E019, E020, E021, E022, E022). Regular maintenance and checks were also recommended (E020). It was also suggested that WPD could pioneer electric plant equipment that may develop over the next few years to see further improvements (E019, E019, E019).

Proposed commitments

Priorities	Commitments
Carbon footprint of WPD's buildings and depots	1) Carry out an assessment of your buildings and aim to meet the high standards of operations and for example EPC C+ or BREEAM Excellent. 2) Ensure your buildings are powered by renewable energy. 3) Implement home working to reduce emissions from your buildings. 4) Achieve the target of net-zero emissions from your buildings by 2030. 5) Identify measures and set clear targets to monitor your progress in this area. 6) Reduce the use of gas in your buildings and aim to stop altogether. 7) Roll out a retrofitting programme to improve your buildings' energy efficiency. 8) Investigate having multi-purpose vehicles that are shared with other organisations working with other companies. 9) Use recyclable materials. 10) Address the amount of waste generated that is sent to landfill. 11) Consider the end to end carbon footprint of assets and materials used in your operations. 12) Make use of the heat given off by assets. 13) Share infrastructure such EV charging with other parties. 14) Set a target for % minimum reduction in emissions. 1 15) Offset future emissions by planting trees. 16) Share best practice in this area.

Carbon emissions from WPD vehicle fleet	1) Set a target for zero carbon emissions from your fleet. For example, by 2030. 2) Replace smaller vehicles with EVs and larger vehicles with biogas or hydrogen 3) Monitor all transport associated with your business, using telematics, to reduce the number of miles travelled 4) Encourage and incentivise your staff to use more sustainable methods of transport, such as public transport, bikes and car sharing. 5) Improve remote monitoring, using drones rather than helicopters. 6) Replace all vehicles at end of lifespan with EVs. 7) Demonstrate leadership, adopting innovations and trialling new initiatives. 8) Install showers in your offices to encourage cycling and running. 9) Install and expand EV charge points at depots and office car parks. 10) Set an example to your supply chain with conversion to EV and share best practice. 11) Make a cost benefit analysis of switching to EV. 12) Review relationship between digital strategy and call out times. 13) Establish a prioritisation process for fleet replacement.
WPD to be net-zero by 2030	1) Reflect local authorities by having a more ambitious net-zero target (2030) than the government's target of 2050. 2) Set cumulative targets on emissions reductions to reach net-zero. 3) Reduce emissions rather than offset carbon, if commercially viable. 4) Use pilots and trials.
WPD declare climate emergency, demonstrate leadership and raise awareness	1) Provide information and support on carbon reduction, including running information events. 2) Demonstrate leadership around carbon reduction. 3) Publicise energy saving and efficiency measures
WPD align to (or exceed) local net-zero targets	1) Increase the amount of joint working with local authorities.

	2) Address practical and technical challenges of meeting 2030 net-zero target. 3) Use political and market influence to reach net-zero target
Reduce operational mileage (including grey fleet)	1) Incentivise staff to buy EVs. 2) Encourage car-sharing schemes
Employees reducing own carbon footprint at home	1) Work with employees to encourage and incentivise a sustainable lifestyle outside of work. 2) Commit to an overarching net-zero target to incentivise staff.
Workforce travel (staff vehicles, modes of transport)	1) Developed a working from home policy
Pioneer electric plant equipment	1) The technology is not there yet, but invest and research for the future
Sustainable procurement that considers whole carbon life cycle	N/A
WPD become carbon negative (establish carbon reduction team)	N/A
Substation heat recovery	N/A
Tree cutting and replanting	N/A
Reduce leaks and network losses (including transformers)	1) Reduce leaks and losses on the network 2) Replace pre-1958 transformers and switchgear by 2025 3) Commit to low-loss transformers 4) Future proof equipment to reduce losses
Plan for a more ambitious net-zero target, e.g. 2030	1) Align with local authorities' targets for better implementation 2) Do a feasibility study: network net-zero target versus customer target
WPD follow Carbon Trust model	1) Monitor standards such as the corporate Value Chain (scope 3) standard and endeavour to achieve
WPD to announce net-zero target	N/A
Electrify WPD's fleet where feasible	1) Electrify WPD's own vehicle fleet
Consider electric and hydrogen vehicles	N/A
DNO behaviour change to achieve net-zero	N/A
Carbon offsetting (e.g tree planting)	N/A
Reduce losses in the electricity network	N/A
Energy efficiency	N/A

Sub-topic: Broader environmental impacts

What we heard in 2019:

During the preliminary engagement phase, stakeholders discussing the 'Delivering an environmentally sustainable network' topic-focused mostly on the reduction of carbon emissions. However, there was some discussion of the broader environmental impacts including biodiversity and waste, with the desire to see broader environmental impacts and sustainability as focal parts of the RIIO-2 business plan. This was seen as a higher priority overall than workforce resilience, industry collaboration and connecting new customers.

Summary of Phase 2 feedback

11.1. The natural environment was important to many stakeholders during the six regional workshops and many wanted WPD to analyse and evaluate their impact, throughout their supply chain. The first subject of discussion was reducing leaks, particularly in terms of SF6 which was noted repeatedly. The key points noted here were the need for extensive and transparent asset monitoring work as well as investing in innovative technologies to try and find an alternative to SF6.

11.2. Stakeholders were also concerned about the effect of operations on biodiversity and wildlife with discussions around the planting of trees, rewilding and sustainable land-use practices. Improving WPD's natural capital and the biodiversity on their land could also help reach carbon neutrality and the net-zero target. It was also briefly discussed that WPD should aim to connect new buildings in an environmentally sustainable way and try to limit visual pollution. Waste was another theme discussed, in particular the reduction of waste to landfill and the reduction of plastic use and waste. This led to conversations on WPD's entire supply chain – the responsibility to ensure that all its suppliers align with WPD's high environmental goals – and establishing a policy for a circular economy.

11.3. A total of **182** pieces of feedback were collected for the broader environmental impacts during phase 2 engagement, which adds to the **4** pieces collected during phase 1. This sub-topic has **13** priorities and **62** proposed commitments.

Priority ranking

Existing priorities

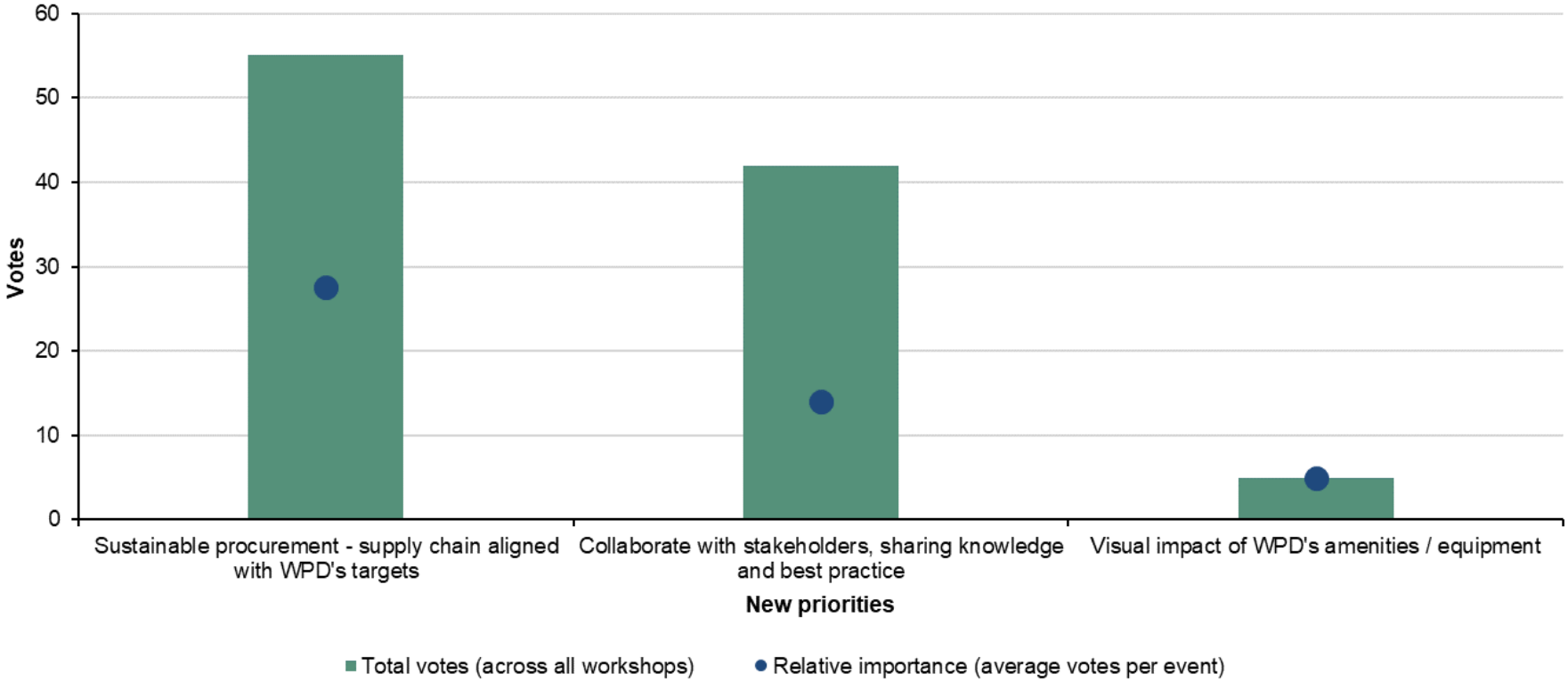
11.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

Priorities	Votes	Relative importance
Harmful leaks from WPD's equipment	114	19
Impact on local environment and impact on biodiversity	111	18.5
Waste sent to landfill	52	8.67
Plastic usage	43	7.17

11.5. The priorities receiving the highest numbers of votes focused on how WPD's actions directly effect the environment through leaks and habitat harm, whereas the lowest ranking priorities concerned waste.

New priorities

11.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



11.7. For the newly suggested priorities in business carbon footprint, 'Sustainable procurement' collected the highest number of votes across all workshops. It also received the highest 'relative importance' (27.5 votes per event).

Detailed feedback

Feedback for the Broader environmental impacts can be divided into three themes:

- Effect on the natural environment
- Waste
- Sustainable procurement and supply chain

Effect on the natural environment

Harmful leaks

11.8. Reducing harmful leaks from WPD's equipment was voted the second-highest priority under broader environmental impacts (E017) and stakeholders wanted to see substantially more commitment in this area, surpassing RIIO-ED1 levels (E019). Leaks were mentioned as an important area of focus for WPD due to localised damage with immediate effects on local wildlife, while the effect of carbon emissions will are more widely dispersed (E023).

11.9. The control of gas leaks is also important as the potential impact is 'awful' (E018). The removal of SF6 was the topic discussed most often in regards to leaks (E018, E018, E018, E020, E021, E022, E022). The gas is very potent, staying in the atmosphere for 3,000 years, so it was expressed that WPD should try and find an alternative (E023). WPD's current removal rate commitment of SF6 was noted as 'embarrassingly insufficient' and finding an alternative was stated as a big priority (E018, E021). Innovation and investment in new technology were suggested as ways to work toward reducing or removing SF6 (E019, E020, E021, E021, E021, E023). It was suggested that WPD should share its progress and findings with others to maximise innovation and problem-solving efficiency across sectors (E022, E022, E022).

11.10. Stakeholders mentioned the potential for WPD to predict leaks (E018) through tracking its ageing infrastructure and replacing, including transformers or battery systems (E018) or oil-filled cables (E023). Mapping environmental damage could also be a good way to monitor the spread of leaks on the environment and their effect (E021). Something that could be utilised to help track this would be heat capturing technologies (E019).

11.11. WPD should improve clarity and transparency about its infrastructure inspection procedures and monitoring of leaks (E020).

Effect on wildlife

11.12. Reducing the impact on the local environment and biodiversity was the third highest priority under the broader environmental impacts (E017). It was stated that the impact of assets on wildlife should be minimised (E021) and WPD should work with the community to protect the local environment (E020). Stakeholders want WPD to commit to the continual improvement of the biodiversity of their estates over the next 5 years, which could be measured with mechanisms such as natural capital assets (E018, E021). Ideally, stakeholders wanted WPD to strive to have zero impact on biodiversity (E023) which could start with making sure its workforce is educated about environmental issues (E019). Furthermore, it was noted that WPD should ensure that all contractors also follow the best environmental practices (E019).

11.13. Stakeholders wanted WPD to endeavour to replant trees locally when cutting them down (E018, E020, E022), and trim trees rather than cutting them down if possible (E021, E023). Another suggestion was that WPD should try and plant two trees for every one they remove, or at least however many they can afford (E019, E020, E020) – an area many other environmentally friendly companies have been active in recently (E023). Stakeholders noted that this could be especially impactful given WPD's ownership of significant land, helping to create carbon sinks that would encourage biodiversity as well as help toward making the organisation carbon neutral (E023). A local authority member also mentioned that it didn't have to be planting trees, but could also take the form of rewilding (E019, E020) or further environmental funding for third parties (E019, E020). Another suggestion was creating peat and bogland on WPD-owned land (E023), utilising sustainable land use programs (E022) and limit its activities on floodplains (E019).

11.14. The frequency of grass cutting was also discussed as it was noted that a reduced frequency of cutting grass and hedgerows could be massively beneficial for rewilding areas and increase biodiversity, alongside also saving WPD money (E020).

11.15. Stakeholders noted that WPD could partner with local councils to support targeted spending on the local environment (E019) while offsetting environmental impacts (E021). Furthermore, it was suggested that consultation with experts and local environmental intelligence could be completed for WPD to understand the negative impact of their activities, such as inserting pipes (E018). Coordinating with local partners was also recommended to maximise WPDs positive environmental impact (E019) and maximise the use of cross-sector best practice (E022).

11.16. A community energy group member noted the change in the planning system to require a 10% net biodiversity gain on new property development and recommended that WPD follow the same requirements (E020). A local authority member noted that their organisation had a carbon-negative as an ambition rather than carbon neutrality, and despite its cost, should be emulated by WPD (E022). Stakeholders also wanted science-based targets to be included as part of these priorities, linked to emissions (E022).

11.17. Utilising new technology, such as drones to carry out inspections, was suggested as ways of improving both the operations of WPD's maintenance but also the monitoring of environmental impacts (E021). This could also help WPD publish their environmental progression to stakeholders (E023).

11.18. Stakeholders suggested that further research should also be conducted to analyse whether undergrounding is better for biodiversity (E022) and what the cost implication would be, both financial and environmental (E022).

Connecting new builds

11.19. Stakeholders discussed the priority of connecting new builds in an environmentally sustainable manner (E023), with renewable electricity generation technology and electric vehicle chargers automatically placed (E023). Furthermore, it was noted that connecting new builds can be a chance to maximise energy performance and future-proof houses (E023). A major energy user raised the question about solar power governmental grants and mentioned the importance of solar power integration in new builds (E023).

Visual impacts

11.20. Despite the extensive discussion above on protecting wildlife and allowing nature to flourish, there was some discussion among stakeholders about also keeping WPD assets tidy and not to let them get too ‘unsightly with weeds’ (E019, E019).

Waste

Landfill

11.21. Stakeholders expect WPD to go beyond the current standard (E023) and consider their production of all waste, as all waste affects the environment (E022). Some stakeholders stated that WPD should aim to have zero waste by 2030 (E018, E019, E020, E023). However, it was noted that putting waste into incineration as opposed to landfill is not a good solution and should not be called zero waste (E018). Stakeholders wanted the waste hierarchy to be analysed across the entire supply chain (E019, E019, E021, E022, E022).

11.22. A suggested step towards this goal would be to replace old, non-recyclable technology with recyclable ones (E018) or at least have a higher recycling content (E023) such as recyclable steel (E022). However, stakeholders also noted that some materials can be recycled from old infrastructure, such as copper from old transformers (E020, E021) or old cables and metals (E023).

11.23. Another strategy would be to chip any wood from felled trees and utilise it on the land (E022), or in a biomass plant (E022). Furthermore, it was suggested that computers can be upgraded and repaired rather than replaced (E020).

11.24. A stakeholder suggested that WPD should incentivise staff to reduce the use of the skips, by inserting money saved on skips into employee pay packages (E020). It was also discussed that WPD should consider going paperless to reduce its waste (E018).

Plastic

11.25. Stakeholders want WPD to move away from utilising single-use plastic and the use of plastic when it is not necessary (E018, E019). Tackling single-use plastic was recommended as the first step (E019, E019, E019, E022) and WPD should set itself an aggressively competitive target to reduce plastic usage as this is a serious issue (E022). Ideally, stakeholders wanted WPD to minimise their use of any non-recyclable plastic, like black plastic (E018), which also applies within the office as well as on the engineering-side (E019). It was also suggested that this should be ensured throughout the supply-chain and WPD should get suppliers to commit to this too (E018).

11.26. It was mentioned that WPD should calculate the amount of plastic it uses, which will subsequently help show its reduction and highlight the areas it needs to focus on (E021). Also, stakeholders noted that this would help WPD create specific measurable targets for plastic usage (E020) and reduce usage across all WPD sites and depots (E022).

11.27. Another topic where stakeholders requested research is innovation around plastic made from non-fossil-fuel products (E023), as well as the toxic content of plastic, so WPD could endeavour to use more environmentally friendly plastic (E020).

11.28. Stakeholders criticised WPD for using glass-reinforced plastic (GRP) as this didn’t align with reducing their use of plastic, with suggestions to use alternatives like brick, even if they have higher cost (E018). Additionally, stakeholders noted that WPD needs

to find an alternative to PVC ducting (E019) and use recyclable plastic for the outer covers of cables (E020).

Sustainable procurement and supply chain

Suppliers

11.29. It was suggested that many of the issues discussed around waste reduction can be addressed through improving WPD's procurement (E023) and was a priority discussed at length in Birmingham (E019). Stakeholders stressed the importance that WPD can lead by example with their suppliers (E019) and make sure that they all adhere to the high standards that WPD is setting (E019). Furthermore, it was noted that sharing knowledge and best practice can help everyone throughout the supply chain (E019, E020) and that adopting partner organisations that align with WPDs values is important (E022), including subcontractors and tree surgeons (E022). A study of the overall supply chain was recommended to evaluate areas to improve (E019).

Circular economy

11.30. It was recommended that the priority on reducing waste to landfill should also be renamed to 'designing a circular economy' as it is, therefore, less about reducing waste and more about not creating waste in the first place (E018, E020, E020). It should not only be about recycling but also producing less (E021). Stakeholders in Milton Keynes thought there should be a priority on 'sustainable procurement and the circular economy' and voted it as the highest priority under broader environmental impacts (E021). It was suggested that this policy would then encapsulate vast quantities of things from copper to paper, and ensure these resources are sustainably sourced (E021). Copper is a key material highlighted for recycling by stakeholders, particularly from old transformers. Stakeholders emphasised that WPD are in a unique position regarding metal that they are one of the biggest consumers, yet also have a lot of resources in old infrastructure and assets (E021).

Proposed commitments

Priorities	Commitments
Impact on local environment and impact on biodiversity	1) Use science-based targets to improve biodiversity, aiming for a net gain. 2) Put in an ambitious tree replacement programme (E.g. planting two trees for every one removed) and promote this good work. 3) Work in partnership with environmental groups such as Wildlife Trusts. 4) Create an environmental fund which can be accessed by local groups. 5) Coordinate upgrades and maintenance with other utilities to minimise disruption to the environment. 6) Review land management policies to reduce impact. 7) Enact tree planting and bogland schemes on WPD land. 8) Publish the results of environmental investments and initiatives. 9) Aim to achieve a carbon net gain through the use of innovative practices. 10) Understand if undergrounding cables is better and consider the cost implications. 11) Partner with parish councils, local authorities and nature reserves on biodiversity and environmental initiatives. 12) Educate the workforce on WPD's impact on the local environment and how they can mitigate adverse effects. 13) Draw up guidelines for infrastructure and construction workers in environmentally sensitive areas. 14) Avoid placing infrastructure on flood plains. 15) Adopt alternative transport e.g. drones
Waste sent to landfill	1) Focus on supporting a circular economy and ensure that your supply chain partners do the same. 2) Reduce the amount of waste you generate and set a 'zero waste to landfill' target date (e.g. 2025). 3) Reduce, reuse, and recycle all materials and assets, including cables.

	4) Produce and implement a waste hierarchy model with clearly defined targets. 5) Incentivise staff to reduce their use of skips. 6) Use recyclable materials where possible, e.g. PPE and copper. 7) Get involved in local initiatives. 8) Where possible, repair IT equipment rather than buying new. 9) Exceed all current recycling standards. 10) Link with community groups, including when disposing of wood from felling / lopping as this can be put to use. 11) Donate old materials to groups and organisations who may be able to put them to use. 12) Consider all waste, not just plastic. 13) Ensure that the land you own is used sustainably. 1 14) Research / invest in waste to energy plants. 15) Focus on recycling initiatives for EV batteries
Harmful leaks from WPD's equipment	1) Eliminate the use of SF6 and carry out research to find alternatives. 2) Create a risk assessment of assets containing SF6 and replace assets susceptible to leaks. 3) Set a target for reducing harmful leaks and monitor the environmental impacts. 4) Reduce the use of oils. 5) Set clear targets and adopt best practice in terms of regularly inspecting and replacing equipment. 6) Look at examples of best practice from other sectors. 7) Increase the efficiency of transmission. 8) Encourage innovation around heat capturing technologies. 9) Focus on innovation to replace harmful materials. 10) Increased replacement of assets.
Plastic usage	1) Set targets to move away from single-use plastics and endeavour to reduce this to zero. 2) Focus on the plastic that is used on your supply chain use this to inform your procurement strategy. 3) Recycle and reuse plastics and use recycled plastics where possible.

	4) Reduce the amount of plastics you use and aim to set an industry-standard in this area. 5) Achieve no plastic waste by 2025. 6) Maintain a focus on the work you are already doing in this area. 7) Consider all waste, not just plastic. 8) Investigate alternatives to PVC ducting. 9) Not all plastics are bad: understand the life cycle of plastic and use appropriately.
Sustainable procurement - supply chain aligned with WPD's targets	1) Use influence to ensure suppliers use sustainable practices. 2) Create a cost-benefit analysis that measures wider social value. 3) Lead by example. 4) Share best practice down the supply chain, e.g hydrogen fuel for larger vehicles.
Collaborate with stakeholders, sharing knowledge and best practice	1) Share best practice and knowledge in this area. 2) Commit to publicising and sharing your innovations and use of low-carbon technologies. 3) All relevant parties should set goals to plan and benchmark their standards
Visual impact of WPD's amenities / equipment	1) Consider the visual impact of substations: keep them tidy. 2) Maintain wildflowers and ecology around WPD infrastructure
Protecting landscapes	2) Improve links with the community to help protect landscapes. 3) Ensure landscapes are protected as part of local energy plans
Connecting new builds in an environmentally sensitive manner	1) Work with government to create a national policy framework for house building, mandating, for example, heat pumps and EV charge points in new builds
Sustainability	N/A
Suppliers to meet ISO 14001	N/A
WPD to go paperless	N/A
Minimising the impact of assets on wildlife	N/A

High-level topic: Delivering future energy networks

Sub-topic: Connections

What we heard in 2019:

While stakeholders during the preliminary engagement felt that WPD's proposed actions under connections were appropriate, there were several concerns and proposed changes to the application process and charging methodologies. The main issues with the application process were the lack of clarity of the process and its cost, the lack of consistency in the process between geographical areas as well as the lack of communication between WPD and the prospective connections customer. Suggestions such as digitalisation, providing a single point of contact and simplification of the process were suggested as improvements. The lack of clarity with changes in the charging methodology and the embedded benefits review process were the key areas of issue in this sub-topic.

Summary of Phase 2 feedback

12.1. Connections was an important topic for stakeholders, gathering a significant volume of feedback. First, changes to the speed, simplicity and availability of the application process were discussed with most people asking for more information throughout. This was also true once WPD had provided an offer to customers, especially for those that may not have the complete engineering understanding. The future options for connections were also discussed, particularly around smart connections and the importance of three-phase connections, with the cost and lack of understanding being the main barriers to uptake. There was substantial discussion around the allocation of capacity, the cost, competition for connection and the prioritisation of projects. Finally, low carbon technology connections received a lot of feedback, especially around the cost of these connections, the need to incentivise developers to have these connections, as well as the potentially massive demand for EV charging point connections in the future.

12.2. A total of **223** pieces of feedback were collected for connections during phase 2 engagement, which adds to the **23** pieces collected during phase 1. This sub-topic has **18** priorities and **57** proposed commitments.

Priority ranking

Existing priorities

12.3. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

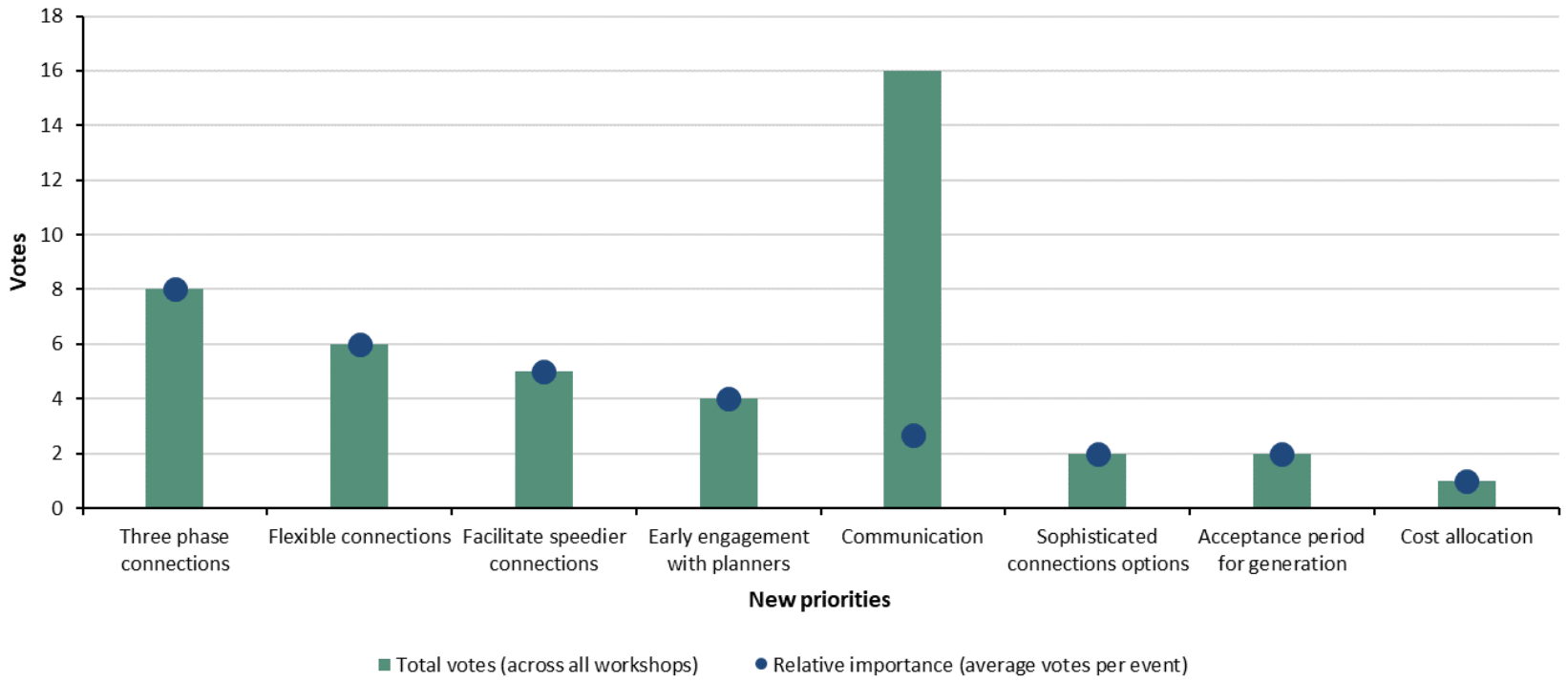
Priorities	Total votes	Relative importance
Low carbon technology (including EV)	33	5.5
Speed and timeliness of the connections process	31*	5.17
Connection application process	27	4.5
Connection offers and agreements	27	4.5
Allocation and reservation of capacity	22	3.67
Availability of information	10	1.67
Competition in connections	10	1.67
Legal and consents	5	0.83

** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

12.4. The priorities receiving the highest numbers of votes focused on low carbon technology and the connections process, whereas the lowest ranking priorities concerned consents and competition.

New priorities

12.5. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



12.6. For the newly suggested priorities in connections, 'Communication' collected the highest number of votes across all workshops. However, the priority has a low 'relative importance' (2.66 votes per event), compared to others that received more votes at just one event.

12.7. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on some of the new priorities, such as three-phase connections (relative importance of 8), and flexible connections (relative importance of 6).

Detailed feedback

Feedback for Connections can be divided into three themes:

- Application process
- Connection options
- Allocation of capacity

Application process

Speed of process

12.8. The speed and timeliness of the connection process was voted the second-highest priority for stakeholders (E017) as it seemed that current applications took a very long time to process before the applicant had any communication or direct meeting with WPD (E019, E019). While stakeholders accepted that the process had to be thorough as projects can be costly (E019), however, if WPD state that they will process applications within 60 days then it should at the very least be completed within this timeframe (E019). Furthermore, there has to be a difference in speed between domestic PVs and a major multi-million-pound scheme (E019), and thus basic connections should be fast-tracked (E019). It was also noted that larger sites are better able to stand more expensive grid connections process and thus this process inequality should be considered by WPD (E036).

The application process

12.9. Improving the application process itself was voted the 3rd highest priority (E017). Despite this, it was stated that the current application for demand customers was relatively straight forward (E019), and stakeholders were happy that WPD were currently relatively quick to provide a quote (E021). However, generation connection stakeholders noted the difficulty of providing the specific detail of large projects as the project was far in advance of discussions with the supplier (E019), and that application complexity should be improved (E019). The high number of votes for this priority reflects the national demand for renewable generators (E019).

Availability of information

12.10. It was noted that the availability of information, particularly at low voltages, needed improvement (E017), with one stakeholder noting that there was virtually no visibility of network capacity below 11kV (E018). Mapping of capacity below 11kV was suggested (E018, E037). Also having a library of resources to share was seen as useful by some stakeholders (E023). As well as providing all the information, WPD needs to help with the interpretation of all the information for those that may not have the required understanding of the energy industry, as noted by a community energy scheme representative (E019).

12.11. An EV charge point installer noted the lack of transparency form WPD on what is viable, meaning that they often have to go through an extensive tendering and preparation process just for WPD to turn around and say projects aren't possible (E018). Another stakeholder noted the complexity of the connections process for heat pumps and that the process shouldn't require you to get a consultant (E022).

12.12. One stakeholder noted that the different voltage of connections triggers different processes for WPD, but that it would be good for this to be communicated more clearly as part of the formal process (E018).

Offers and agreements

12.13. It was recommended that a meeting is completed on-site where the offer is issued as then an engineer will be looking at the issues and able to give further visibility to ensure accuracy of quotes (E021). However, a stakeholder mentioned that WPD would likely need to charge for those meetings and few applicants would be prepared to pay for this (E021). On the other hand, a 'walkabout' meeting after issuing the offer was suggested as an idea as connections customers have three months before they have to accept (E021). Clarity about meeting costs upfront was desired by stakeholders (E029) as well as a better understanding of the potential variations in cost between the initial design phase and detailed design (E029).

12.14. Customers were happy for WPD to take longer to issue a Connection Offer (within the bounds of Guaranteed Standards of Performance) if this meant that fewer assumptions were made (E029).

12.15. The design was an issue with this process, as a stakeholder noted that the elements that are beyond WPD's control are also beyond the applicant's control (E021). It was also questioned how long individuals could hold onto the connection before that capacity is returned (E018).

12.16. Stakeholders want WPD to provide installation dates for enabling new connections (E019) and improve its current scheduling process (E019). It was noted that WPD has a relatively long gestation period after agreeing to complete the connection (E022). Facilitating speedier connections was a priority put forward by stakeholders who wanted to see lead times reduced (E018, E018).

12.17. WPD has a role of promoting the legal tracking tool and how to access it (E022). Stakeholders highlighted that early engagement with planners will give WPD more time to adapt to any large developments and their required capacity (E019).

12.18. Stakeholders were concerned about the pragmatic approach that WPD used in order to prioritise applications processed – while some wanted this process to be formalised, others noted that this would cause unintended negative consequences (E032).

Connection options

12.19. 'Sophisticated connections' was presented as a new priority by stakeholders in Milton Keynes (E021) as energy sources need to be dispatchable in the future and thus connections need to be able to facilitate this change (E021). The 'smartness' of the connection was also discussed elsewhere due to the increasing demand for grid flexibility, with stakeholders wanting to see more offered at 11kV (E022). However, stakeholders were unsure if it was better to pay more for the flexibility at a low voltage, so it suggested that WPD should have a dialogue with customers during the offer process (E018). The demand for flexible connections is likely going to increase in the future, so one stakeholder recommended it would be worth WPD starting to engage with customers already (E022).

Three-phase

12.20. Stakeholders wanted to see a reduction in cost or an incentive to help make new connections three-phase (E020, E020). It was noted that three-phase connections were a key factor for delivering the most sustainable technologies (E020) and thus there should be some grant funding (E02) to help with the higher overheads currently making it unviable for many (E020). However, another stakeholder questioned how much future domestic demand for three-phase there is presently (E020), while another did not see the added cost as being a massive barrier for three-phase (E020). Finally, one stakeholder stated that all connections for new homes should be three-phase (E020).

ICE plan

12.21. Stakeholders felt that WPD were generally strong in the ICE plans area but should consider more innovative ways of raising awareness of the plans (E029). Stakeholders were keen to have a 'beginners guide to ICE plans' for new entrants into the market (E029) and that increased use of social media (E029) and webinars were popular choices to promote the WPD ICE Workplans (E029). Further areas of potential improvement were around Queue management, targets and the availability of Active Network Management information on the website (E029).

Allocation of capacity

12.22. Allocation of capacity was voted the 4th highest priority within connections (E017). Stakeholders wanted some application prioritisation for low carbon connections (E021).

12.23. Stakeholders in Birmingham wanted a more precise outline of the cost allocation for each part of the process and who pays the connection charging boundary (E019). It was also questioned whether the cost of infrastructure connection could be spread across a set period after the connection was completed, rather than a one-off payment. Otherwise, connectees require a substantial amount of money upfront before they start generating, which was identified as particularly unattractive for smaller customers (E020).

12.24. This leads to a discussion about competition in the capacity allocation process where stakeholders wanted to see improvements, especially removing barriers around what becomes contestable and what is not (E019). Furthermore, it was noted that certain businesses feel that they are at a disadvantage, with farmers building a new shed having to pay as if he was a new business rather than an extension of his existing business (E023). There was also a lot of discussion around the role of IDNOs and the lack of smooth operations between WPD and the IDNOs within contestable work (E019, E021). However, another stakeholder stated they were happy with the process (E022). Stakeholders noted their discontent with the overcomplex competition process, especially where fragmented, and said that they'd rather reliable quality than energy at the lowest price (E022, E022).

12.25. Capacity reallocation was also discussed, with stakeholders questioning whether there was a limited amount of time that capacity can be held without use before reallocated (E020). If this is not the case, stakeholders thought it should be; otherwise, people may buy more capacity than they require, blocking others from connecting (E023). Customers raised interest in investing shared capacity arrangements (E028), and WPD noted that while they could make introductions between generators if both parties agree, they cannot be involved in negotiations (E028).

12.26. It was also noted that larger housebuilder led sites often have more ‘take’ or booking capacity and stakeholders questioned how WPD ensures that all sites are able to provide an environmental and reasonable solution (E033).

Low carbon technology

12.27. Stakeholders were very keen to see WPD give priority to and focus more on renewable generation connections as these will help facilitate a zero-carbon future (E018). Stakeholders felt the cost of establishing a renewable energy connection is often more expensive, and therefore developers choose the cheaper option (E019). It may be an idea to offset costs for developers to encourage more renewable generation connections (E019). Similarly, establishing EV charging points will have a high initial cost for a new development, e.g. an apartment block, but averages will reduce overtime when installing each time someone moves in (E020).

12.28. Community energy groups are often interested in renewable connections but tend to be slow to react to opportunities around flexibility, which stakeholders felt WPD should try and influence (E023). It was noted that the high connection costs that community energy schemes face often limits projects (E020).

12.29. Stakeholders felt there is limited information, complex information (E020) and conflicting information around domestic connections for renewable technologies, especially concerning the size of PV and battery storage (E023). Furthermore, customers suggested that a wider information email about the Accelerated Loss of Mains Charge Programme (ALoMCP) would be beneficial (E029). Stakeholders questioned why there seemed to be a lower uptake with ALoMCPs at the moment (E029) and questioned whether the procedure was robust enough is customers don’t comply (E029). A customer also raised concerns over the lack of easy access to evidence around receiving payments from WPD on ALoMCP (E030).

12.30. It was noted that deployment of low carbon generation and low carbon technology is hampered by the lack of grid capacity (E034), and mid-wales onshore wind was noted as an example (E036, E039). Other stakeholders agreed and noted that the current spatial distribution of onshore wind does not reflect the distribution of developable sites (E034). However, stakeholder believed that this could be helped by positive adoption of export meters that are then not limiting the install size (E036). Local authorities were also keen to engage to help avoid the issue of a constrained grid, both on a local and national level, but they were unsure of how they could assist (E037). Rural areas, in particular, were deemed by stakeholders to suffer the most from this, especially in the context of decarbonising heat as many of these homes may not be connected to the gas network and will thus rely on electrification of heat for decarbonisation (E039).

12.31. Electric vehicle charging is likely to be an incredibly important issue over the next 5 to 10 years. Therefore, it was seen as important that WPD provide enough connections for charging points now, but also prepare the network for these charging points in the future (E023). Stakeholders understood it is a difficult situation to identify whether the charging infrastructure or the increased EV ownership needs to happen first (E020). It was highlighted that this issue is especially complex in rural areas where car dependency is increased (E022).

12.32. Vehicle to grid technology has significant potential implications for the grid, but stakeholders recognise the challenge of getting all European car manufacturers on board with building cars capable of operating like this (E020). It was noted that lessons could be learnt from Japan and California (E020) and that the consumer interface of EV charging needs to improve too (E020).

Proposed commitments

Priorities	Commitments
Low carbon technology (including EV)	*Business Plan commitments* 1) Invest ahead of need and undertake forecasting for EV connections to ensure sufficient capacity, e.g. new apartment blocks 2) Lobby the government for financial assistance to help connect community energy schemes 3) Work with EV charge point manufacturers to consider the customer interface for charge points 4) Review best practice on EV charging from other countries, such as Japan and the US 5) Provide more information to customers to support domestic microgeneration 6) Establish a communities team at WPD to promote opportunities for flexibility with community groups 7) Increase the number of EV charge points powered by renewables 8) Facilitate low-carbon power generation 9) Consider batteries as a generation asset 10) Explore the potential to offset costs for developers to facilitate low carbon connections *ICE Commitments* 11) Provide more information on future forecasts to support solar sites to co-locate with battery storage
Availability of information	*Business Plan commitments* 16) Publish information on anticipation of use 17) Produce a map showing capacity below 11kV 18) Facilitate multi-party collaboration and exchange of information 19) Consider approaching customers with capacity information

	ICE Commitments 1) Ensure that information about the connections process is clear and simple for customers without technical backgrounds, especially for heat pumps 2) Produce an 11kV capacity map 3) Provide more information at the preliminary stage on what is viable at an EV charge point location 4) Provide greater transparency on what type of generator is holding capacity to help promote the sustainability 5) Promote the legal tracking tool and how to access it
Allocation and reservation of capacity	*Business Plan commitments* 1) Reserve capacity in rural areas suitable for generation 2) Provide more certainty about the cost of capacity 3) Establish a methodology to prioritise certain connections applications, for example for new housing or renewables 4) Lobby Ofgem to become a statutory consultee on planning applications *ICE Commitments* 1) Continue to allocate capacity for a limited period of time 2) Continue to offer connections agreements with staged payment 3) Encourage the development of consortiums 4) Develop a consistent approach between DNOs and IDNOs
Connection application process	*Business plan commitment* 1) Facilitate an ongoing negotiation with connections applicants rather than a binary yes / no decision on application. 2) Consider the application process for protected sites and national infrastructure 3) Work with the industry and Ofgem to simplify the connections process for generation 4) Provide a single point of contact for the whole connections process
Competition in connections	*Business plan commitment* 1) Look to improve the process between WPD and IDNOs *ICE commitment* 2) Keep the cost of connections low 3) Increase the amount of contestable connections available

	4) Engage with ICPs to share best practice even on non-contestable works
Connection offers and agreements	*Business plan commitment* 1) Offer more flexible connections (particularly at 11kV) and consider offering reduced connections 2) Commit to being more accurate in initial connections offer 3) Maintain a focus on the design of the connection 4) Consider on-site visits to ensure the accuracy of connection offers
Speed and timeliness of the connections process	*Business plan commitment* 1) Increase the speed of the connections process 2) Assess whether basic connections can be fast-tracked if they do not require reinforcement
Legal and consents	N/A
Communication	*ICE commitments* 1) Hold a series of connections workshops at a local level for customers, using local case studies 2) Develop clear information / guides for small developers, planning consultants and customers to support them through the application process 3) Provide a named contact during the connections process 4) Educate the 11kV planners 5) Ensure that messaging is consistent across different regions 6) Deliver more video conferences 7) Collaborate with other professional bodies to help communicate with customers 8) Consider collaborating to set up an online forum or community 9) Provide local authorities with the contact details of planners to engage with on planning applications
Sophisticated connections options	*Business plan commitment* 1) Facilitate data sharing between the DNO and asset owners to enable sophisticated connections options
Three phase connections	*Business plan commitment* 1) Make all connections for new housing three phase
Acceptance period for generation	*Business plan commitment* 1) Consider a longer acceptance period for generation schemes

Flexible connections	N/A
Early engagement with planners	N/A
Cost allocation	N/A
Facilitate speedier connections	N/A
Connections scheduling	*Business plan commitment* 1) Connections scheduling has one proposed commitment: Provide installation dates for enabling new connections
Incentivising / reducing cost of three-phase connections	*Business plan commitment* 1) Drive the uptake of three-phase connections through grant funding

Sub-topic: Network flexibility

What we heard in 2019:

This sub-topic had the most pieces of feedback under 'Delivering future energy networks' during the preliminary engagement phase. There was a range of appetite for participating in flexibility services between events and stakeholders, with domestic customers more likely to participate than businesses. The proportion of the average bill saving required to increase participation varied from 10% to 40% between events. The key barrier to participation was the trust of WPD and the loss of control of their devices (e.g. EVs and heating). There was also a mix of responses between stakeholders regarding the uptake of new flexible technologies with EVs being much more popular than renewable heating devices. Once again, domestic customers were more likely to buy these technologies compared to businesses.

Summary of Phase 2 feedback

13.1. Increasing the amount of variable renewable electricity generation and the transition to a DSO requires WPD to substantially increase the amount of flexibility on their network. Stakeholders generally understood the benefits of flexibility, but the amount of information and educational resources available for domestic and commercial customers were limited, which would ultimately limit the uptake of flexible technologies and services. Tariffs were discussed as a key mechanism to encourage a change in behaviour, as people tend to react better to financial benefits rather than intangible environmental benefits.

13.2. There was extensive discussion about the roll-out of flexibility services for both domestic and commercial customers. Domestic customers tended to be limited in terms of their smaller demand and lack of understanding, but automation and the deployment of new technologies (such as smart meters and batteries) could be a great facilitator for these customers to participate. There was significant debate about whether commercial customers would be more or less favourable to target for flexibility as they tended to have much larger energy demands but maybe less flexibility in their demand profiles. It was clear that both commercial and domestic customers required clear, simple steps to allow them to become more flexible, and it was also mentioned that commercial customers would likely require a well-established proposition to entice uptake.

13.3. A total of **103** pieces of feedback were collected for the network flexibility during phase 2 engagement, which adds to the **19** pieces collected during phase 1. This sub-topic has **9** priorities and **35** proposed commitments.

Priority ranking

Existing priorities

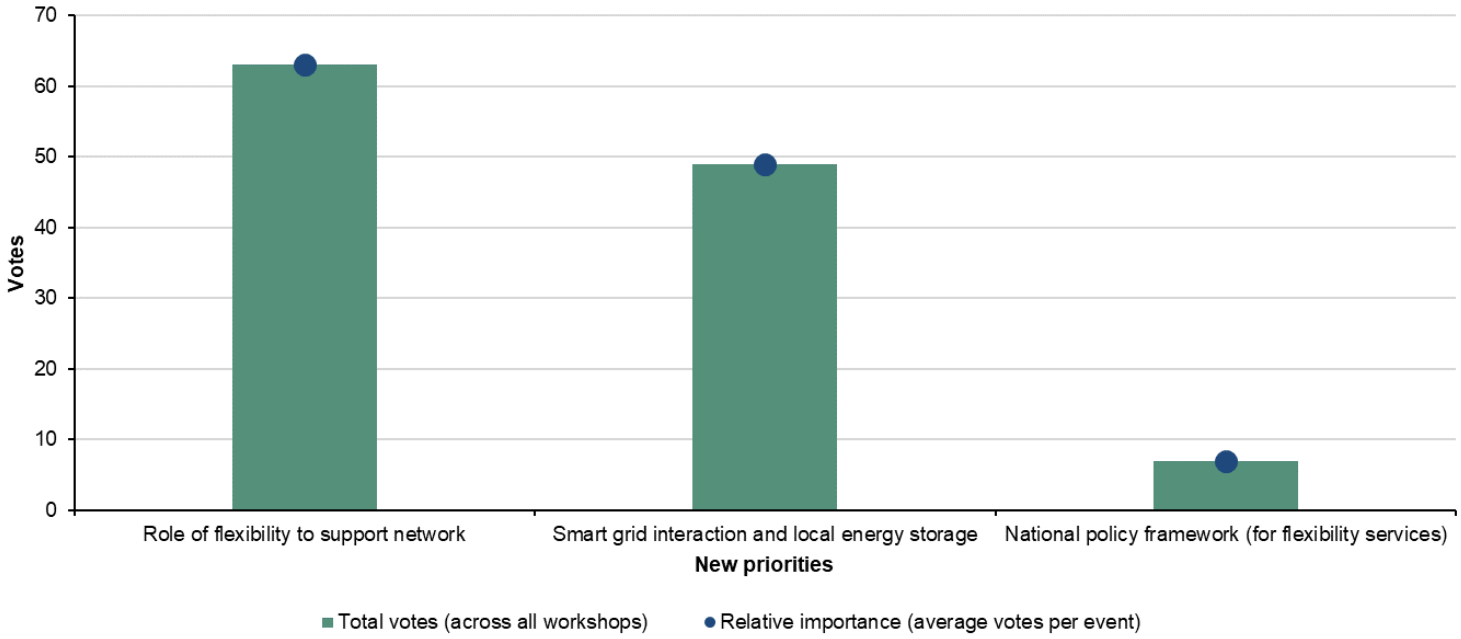
13.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

Priorities	Votes	Relative importance
Roll-out flexibility services for domestic customers	106	17.67
Roll-out network flexibility to all areas for commercial customers	102	17
Transition to DSO	21	3.5

13.5. The priority receiving the highest numbers of votes focused on rolling out the network flexibility abilities for domestic, whereas the lowest ranking priority concerned WPD's transition from a DNO to DSO.

New priorities

13.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



13.7. For the newly suggested priorities in network flexibility, 'Role of flexibility to support network' collected the highest number of votes across all workshops. All new priorities under network flexibility were only discussed in one workshop which has resulted in the 'relative importance' of each priority being identical to the total votes collected.

Detailed feedback

Feedback for network flexibility can be divided into two themes:

- Flexibility services
- DSO transition

Flexibility services

Why important

13.8. Flexibility on the network will become increasingly important as the penetration of renewable generation and the number of 'prosumers' increases (E018, E018). Stakeholders noted that this should be part of the network resilience due to its key role in the future network (E018). Flexibility is also a key part of the transition to DSO, but transparency and communication are key (E020).

13.9. According to stakeholders, WPD should work with other DNOs nationally to share best practice and help provide the best possible service to customers (E019). Additionally, there should be scope for WPD to scale up flexibility through LEAP partners that can help facilitate mass uptake of flexible services (E020). A proposed priority was a national policy framework for flexibility services (E017). This would help all DNOs, not just WPD, to deal with the increasing need for flexibility on an ageing network (E021) and help them plan for flexibility services in the future – this could also include encouraging heat-pump deployment through incentives (E021).

13.10. Visibility of information is also critical for DNOs to successfully invest and deploy flexible technology (E020, E020).

Tariffs

13.11. Tariffs were mentioned as one mechanism that can be utilised to encourage flexibility (E019), especially when incentivising renewable energy (E019, E019). A major energy user noted that two key drivers to incentivise change are money and fear as people don't usually do things because its the right thing to do (E021), therefore, financial incentives through the form of tariffs can be the best way to enact a change of behaviour (E020, E021). Another stakeholder mentioned that it may not need to be a huge financial saving, just that customers see some benefit of being flexible (E021). Time of day tariffs have been mentioned as a great way to help customers, particularly domestic customers, to link cost with usage within their building (E018).

13.12. A community energy organisation noted that they were very interested in helping domestic customers provide flexibility services, but the key was linking up local supply and flexibility services through time of use tariffs (E020).

13.13. Stakeholders did stress that tariffs must be simple and standardised to ensure users can understand them, as the lack of understanding causes mistrust (E019).

Domestic customers

13.14. Ensuring the roll-out of flexibility services to domestic customers was voted the 4th highest priority under network flexibility (E017). People need a mix of financial and

environmental incentives to encourage uptake and make them feel as if they are gaining value from something (E018).

13.15. Flexibility should not be enforced for everybody, though, as some customers – stakeholder noted brain-injured clients – may struggle to fully understand the complexities of flexibility and their demand and thus place them at a disadvantage (E021). Vulnerable people need a routine, so flexible services will not, therefore, be compatible and WPD should consider an alternative solution for these people (E021). One example is elderly people and their electricity-driven mobility equipment (E022).

13.16. Flexibility was noted to be a potential opportunity for fuel poor people to reduce their electricity bills, however, it must be approached carefully to ensure that these people have the required technology and information to participate in flexibility services without causing harm to themselves (E021).

13.17. Stakeholders mentioned that there is a lack of understanding of the energy network and that people do not understand their options, both in terms of tariffs but also energy reduction (E020). Education is important, not only for flexibility services but also for overall demand reduction, with people becoming more conscious of their usage and its effect (E022).

13.18. Despite the potential of flexibility services in the domestic sector, stakeholders were concerned that there was a lot to work out before it could be implemented including issues around technological barriers, data security and incentives (E019). Stakeholders were also sceptical how effective and realistic it was to see flexibility services at the domestic scale (E023).

13.19. Demystification of the benefits and the process need to be addressed, especially as the media speculation fuels paranoia around new technology, such as smart meters (E019). Furthermore, many people felt that the slow roll-out of smart meters made stakeholders question how effective and efficiently flexibility technology can be rolled out, with one stakeholder insisting that WPD needs to be more involved in smart meter deployment to ensure it gets concluded soon (E019). Additionally, WPD should ensure that they produce accurate prices because that will help encourage people to change their habits (E020). Community engagement on increasing flexibility is seen as critical for successful domestic uptake of flexibility services (E023).

13.20. Smart charging and automation of services could be a great facilitator to enable people to access flexibility services without having to be directly in control (E021). Stakeholders questioned whether EVs were included as a domestic flexibility technology and questioned how soon vehicle to grid charging could be implemented (E019). Others noted that EVs would play a key role in demand flexibility for domestic customers but needs more development for technology implementation (E023).

13.21. Battery storage was seen as a key technology to enable demand flatlining, especially if it can be automated to the most impactful time of the day, for example, evening peak demand (E023).

13.22. Aggregation services don't tend to work well with domestic customers (E021), but another stakeholder disagreed and stated that aggregation services will be key in rolling-out flexibility and should, therefore, be promoted (E021).

13.23. Virtual assistants such as Alexa may be able to help facilitate flexible services (E019). Stakeholders pointed out another physical technology that would help with flexibility would be establishing a three-phase point in every new household (E020). However, it was mentioned that it's important to have processes to help older houses, especially in rural areas, to obtain more flexible technologies and ensure there is no penalty for living rurally (E022).

Commercial customers

13.24. Ensuring the roll-out of flexibility for commercial customers was only the 6th highest priority, compared to the domestic customers being the 4th highest (E017). An energy consultant stated that focusing resources on this priority should not be high on WPD's agenda as it is a bad allocation of resources (E021). However, it is noted that flexibility would be easier to implement with commercial customers (E021). There is certainly a link between the roll-out of flexibility services for domestic and commercial customers though (E020).

13.25. Flexibility for commercial customers can be very positive but may also be prohibitively expensive at a low scale and therefore communication from WPD is required to provide adequate information and guidance (E018, E018, E019). WPD also should have 'oven-ready' propositions to encourage commercial customers to offer flexibility, according to stakeholders (E020).

13.26. The first step will be to help businesses work out their current usage before helping them to manage their usage. After assessing the first two steps, only then can WPD work on implementing flexibility with these companies and gain the benefits from this (E018, E019). The information and education element was seen as key for businesses to understand their options and benefits (E023). Large energy users understand the pricing structure and therefore financial benefits may entice them to reduce demand if required (E019). WPD should also highlight the low-carbon generation and emission improvements through having flexibility, as businesses will be able to promote this positive social value to their stakeholders as part of their CSR (E020). According to stakeholders, many companies try to reduce their emission (E022) or electricity demand – some using an embedded network (E022) – but flexibility services could be a good way of facilitating this (E022).

13.27. A major energy user noted that they understand and can plan when their large demand peaks will be, and thus would be happy to share capacity during times when this is not required (E021). A domestic customer also noted that WPD should target the biggest consumers as they will have the highest potential to be flexible (E019). The difficulty may be if these large energy users change their working patterns and demand, then WPD may require substantial network reinforcement to cope (E023).

13.28. Smarter equipment needs to be utilised by major energy users, such as Tesco or Sainsbury's, so that they are able to turn down/off equipment like fridges when they are not required (E019). Automation of this process would make it much more efficient (E019). Another major connections user, from a university, noted the difficulty of sharing electricity across its own campus between buildings as this needed to be transferred back onto the grid at a cost to the customer which was frustrating (E019). Another stakeholder from an academic institution noted that their recent move to installing a CHP unit saved them a lot of money annually (E023). This may be one way that large energy users may take to self-tackle their energy supply, and WPD could perhaps adopt policies that would take this into account (E020).

13.29. A utility representative noted that the provision of flexibility may require DNOs to rethink the classification of load and generation, which currently have no technical difference, only a difference in the cost of getting a connection. That goes into DNO codes and your licence obligation, which is different for demand and generation. To move the network, we have to treat generation with the same importance that we treat demand (E020). Stakeholders also felt there needs to be industry-wide collaboration on this issue (E022).

DSO transition

13.30. This was the 5th highest priority under network flexibility (E017). Alongside the transition to a DSO, an increasingly flexibly network will make it easier to manage and WPD's flexibility tool could be a good user-friendly way of analysing areas with high flexibility potential (E018). Another stakeholder mentioned the difficulty of managing increasing flexibility technologies as WPD transition from DNO to DSO and whether you would keep these as separate entities or integrate both, for example, to include demand-side management (E018).

Proposed commitments

Priorities	Commitments
Roll-out flexibility services for domestic customers	1) Work with suppliers to provide financial incentives for domestic cutomers 2) Educate and build trust with customers to demonstrate the benefits of flexibility 3) Work on innovations projects to make greater use of automation and make better use of smart data 4) Work closely with aggregators 5) Share all available data and examples of best practice, including from other energy vectors, to 6) Include battery storage as part of flexibility services 7) Install three-phase supply in new properties / retrofit in old properties 8) Make flexibility an opt-out, rather than an opt-in service 9) Ensure customers are not hit by big unexpected charges if they participate in flexibility services 10) Learn from existing projects and data to roll out flexibility most effectively 11) Identify and address the need in rural communities 12) Provide funding to hep facilitate the roll-out of flexibility services 13) Work with partners to speed up smart meter roll out 14) Ensure that the most vulnerable are not left behind 15) Collaborate with charge point manufacturers to deliver a platform that facilities smart charging
Roll-out network flexibility to all areas for commercial customers	1) Proactively reach out to businesses to promote flexibility services 2) Develop a simple commercial proposition for businesses 3) Work with suppliers to develop financial incentives for flexibility and opportunities for capacity sharing between major users 4) Lobby Ofgem to have the same opportunities for generation as demand 5) Prioritise green flex users and large energy users

	6) Standardise the financial incentive for commercial flexibility, and make sure the cost of flexibility is not prohibitive for businesses 7) Focus on incorporating battery storage and CHP units into the commercial flexibility picture 8) Commit to supporting commercial customers to achieve zero carbon 9) Ensure that your plans are not impacted by nimbyism 10) Adopt a more flexible use of system charges 11) Focus on smart technology improve data sharing and move to an automated process for flexibility 12) Financially incentivise flexibility 13) Only roll out network flexibility to those areas that need it
Transition to DSO	1) Ensure better collaboration between DNO and DSO 2) Distinguish between distributed storage and storage on the networks on the flexibility tool
National policy framework (for flexibility services)	1) Support a national energy campaign to build trust and extol the financial benefits. Include a framework to encourage investment ahead of need. 2) Support an incentive for developers to fit low carbon technologies into new build 3) Include a framework to encourage investment ahead of need
Smart grid interaction and local energy storage	1) Focus on integrating smart grids, making it easier to fix issues when they arise 2) Encourage uptake of local energy storage to increase local resilience
Role of flexibility to support network	N/A
Provide information for flexible customers	N/A
Use price/tariffs to encourage flexibility	N/A

Sub-topic: Facilitating net-zero

What we heard in 2019:

During the preliminary engagement phase, stakeholders wanted WPD to be more responsive on the environmental issue, particularly focusing on reducing emissions nationwide. It was evident that stakeholders were keen to see WPD set out a strategy to meet the government's net-zero target, particularly in terms of policies and incentives that WPD could implement to encourage consumers to reduce their emissions. Suggestions varied from increasing incentives for low carbon technology deployment (e.g. EV chargers) to educating consumers about ways to reduce their emissions and lobbying Ofgem to change emission rules and regulations.

Summary of Phase 2 feedback

14.1. Facilitating net-zero was by far the most discussed topic during phase 2 of engagement with the highest volume of feedback as well as the highest number of priorities. This in itself communicates the importance stakeholders place on this topic. Despite the importance of the topic, stakeholders noted the amount of confusion and lack of awareness about what net-zero actually is and how stakeholders can decrease their emissions. Subsequently, educating customers was a key theme discussed during the feedback, in all contexts from net-zero as a whole, new technologies like EVs or heat pumps and how communities can act to improve their carbon footprint.

14.2. Electric vehicles was the largest discussion point in this topic, especially concerning how WPD can help facilitate the deployment of more electric cars on the road, and the facilitation of the charging network to support this new fleet. Collaboration was discussed as a key action for WPD, from working with local planning stakeholders on charging network locations, to car manufacturers on the standardisation of technologies and with the government to implement better incentives for EV uptake and network improvements. There were detailed discussions in several locations on the prioritisation of home charging or charging when away from home, as well as topics including fast charging, charging hubs and inductive charging. There was a general understanding that the network would require substantial reinforcing to be able to deal with the substantial increase in demand from EV charging.

14.3. Despite being important to facilitate the decarbonisation of transport, stakeholders were also conscious of the huge potential cost of reinforcement and charging infrastructure, and affordability of charging, as well as affordability of consumer bills, were mentioned as important considerations, especially not to put vulnerable or fuel poor customers at a disadvantage. Vehicle to grid technology was also discussed as a potentially important technology for WPD to develop and deploy, both to help make EVs more attractive to consumers and to help them provide grid flexibility.

14.4. The facilitation of low carbon technology was also discussed by stakeholders, both in terms of renewable energy generation, storage, carbon capture and heat decarbonisation. A key way of doing this would be preferable terms for renewables or more expensive connections for non-renewables.

14.5. Stakeholders also discussed the importance of facilitating other organisations' net-zero targets, particularly local community groups and local authorities. It was suggested that this could be done with a set plan or for WPD to provide a trial village or case study for others to follow. It was also mentioned that some climate change effects are inevitable and thus WPD should have an adaption plan in place.

14.6. A total of **582** pieces of feedback were collected for the Facilitating Net-Zero during phase 2 engagement, which adds to the **36** pieces collected during phase 1. This sub-topic has **52** priorities and **201** proposed commitments.

Priority ranking

Existing priorities

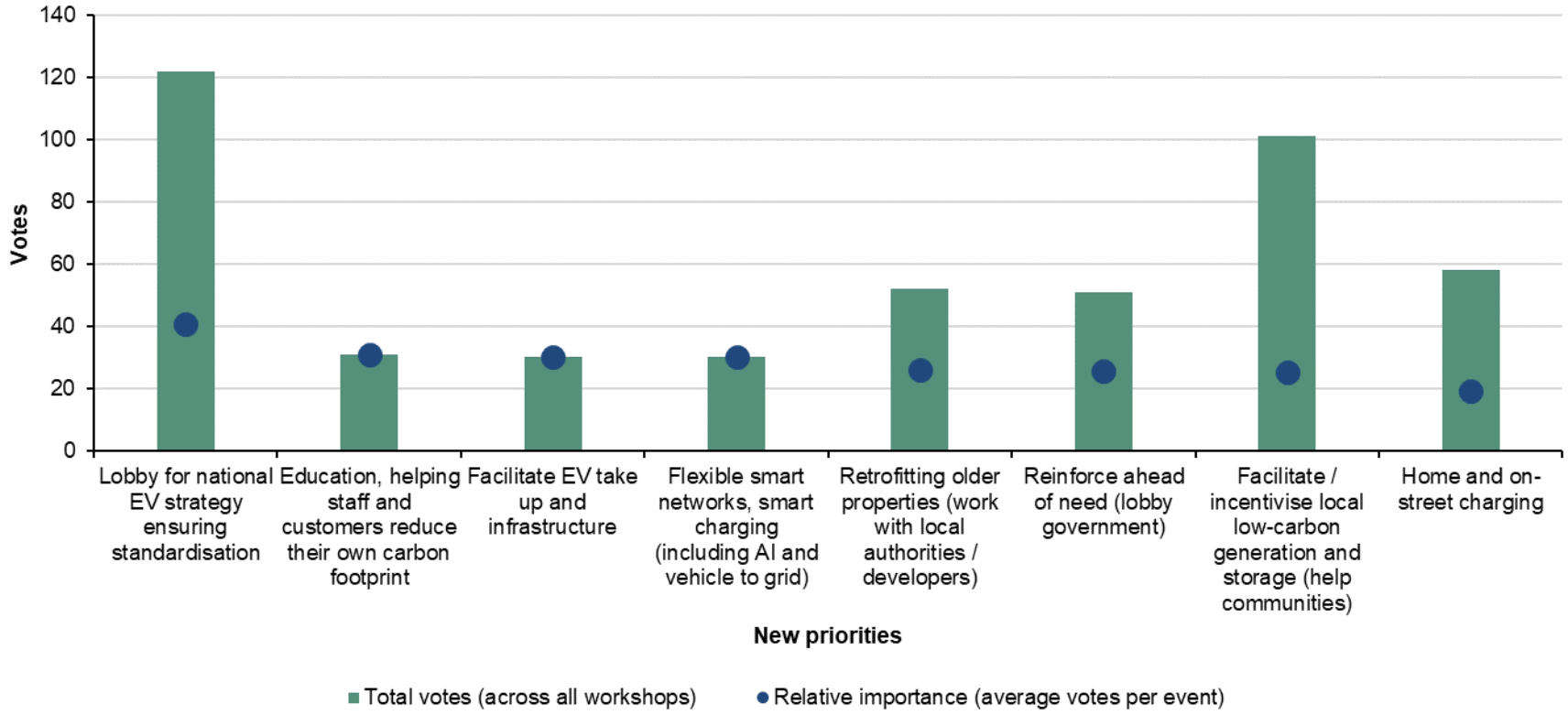
14.7. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

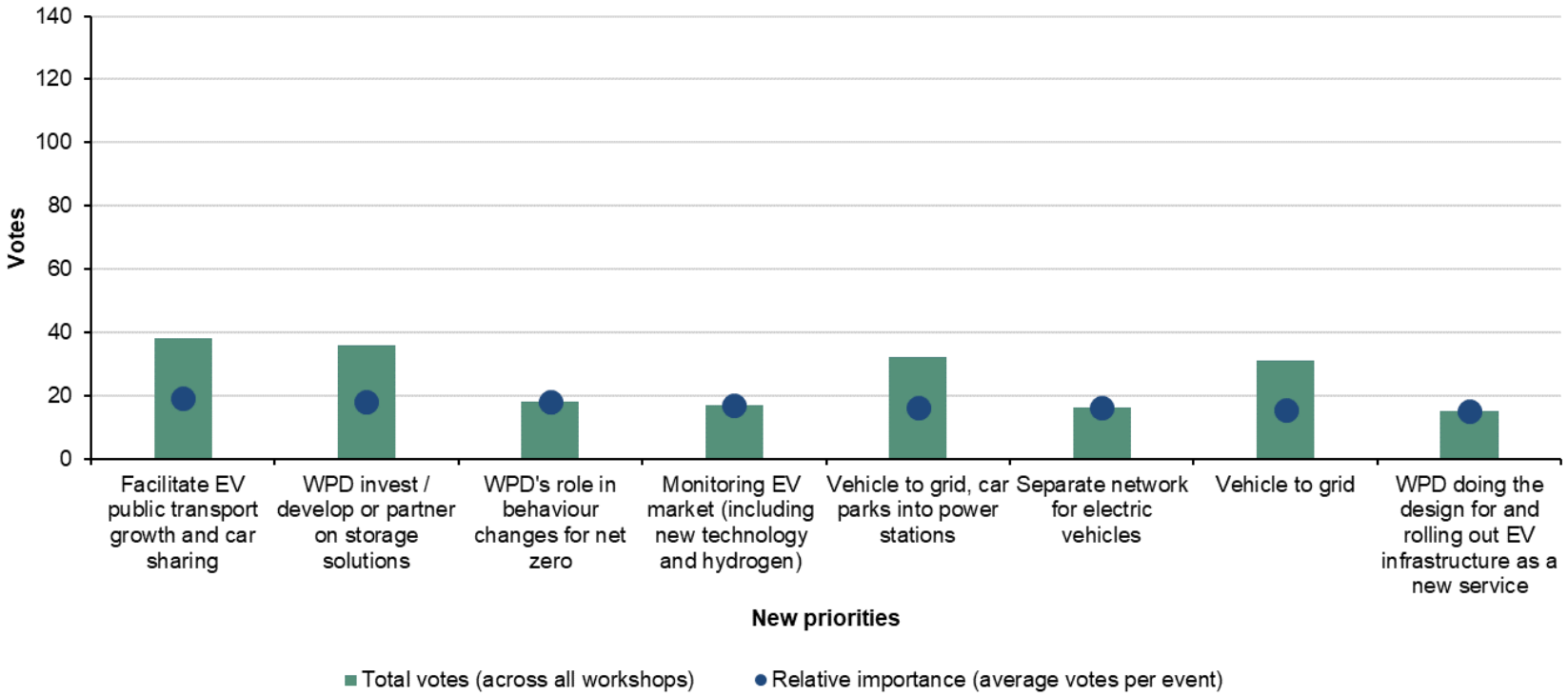
Priorities	Votes	Relative importance
Help local communities to achieve their net-zero carbon emissions targets	167	27.83
Facilitate electric vehicles on a mass scale	120	20
Easy access to charge points when away from home	98	16.33
Easy process to install a charge point at home	94	15.67
Facilitate electric vehicle take up – individual customer level	68	11.33
Speed of charging	64	10.67
Cost of charging when away from home	35	5.83

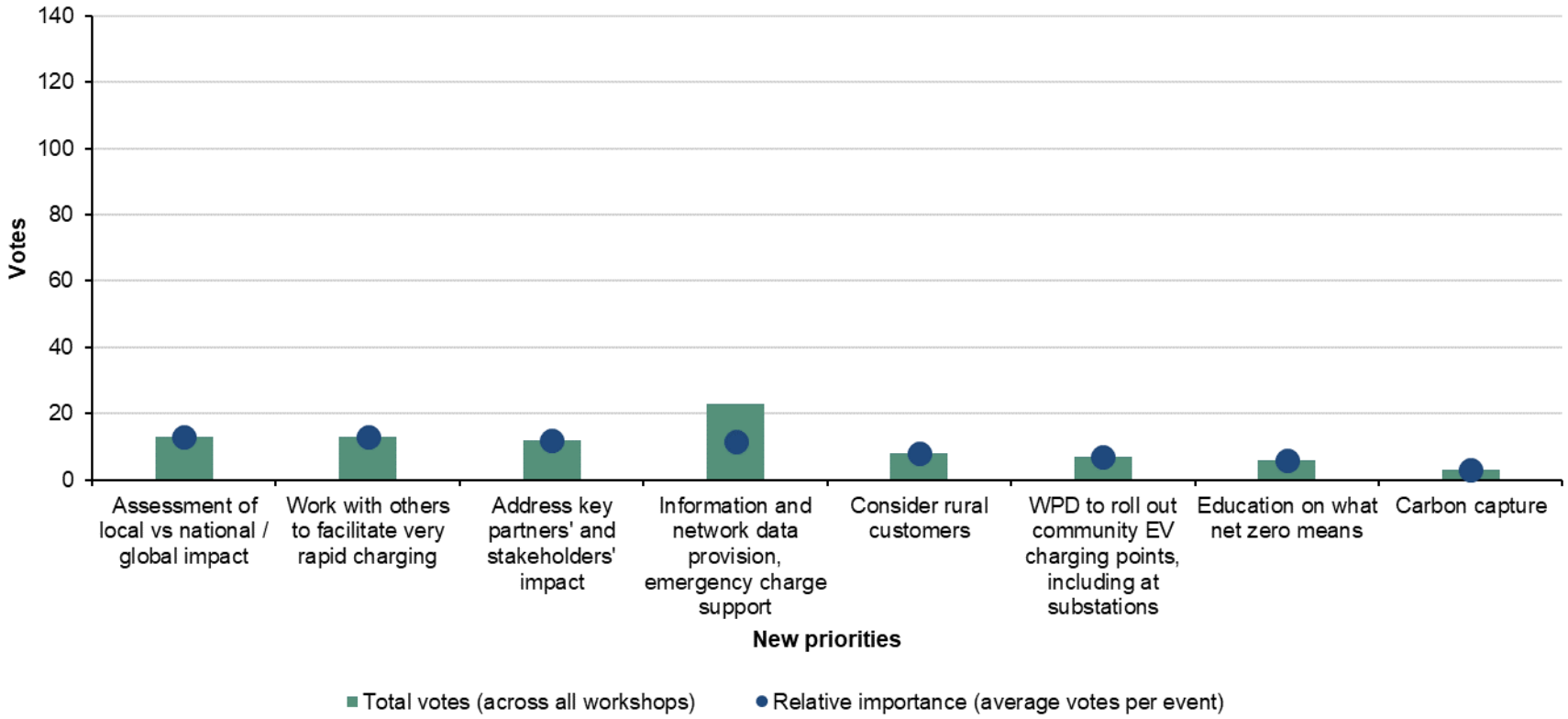
14.8. The priorities receiving the highest numbers of votes focused on facilitating others to reduce their emissions, both through community projects and mass adoption of EVs, whereas the lowest ranking priorities concerned the speed and cost of charging for EVs.

New priorities

14.9. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.




140
120
100
80
60
40
20
0
Votes
Facilitate EV public transport growth and car sharing
WPD invest / develop or partner on storage solutions
WPD's role in behaviour changes for net zero
Monitoring EV market (including new technology and hydrogen)
Vehicle to grid, car parks into power stations
Separate network for electric vehicles
Vehicle to grid
WPD doing the design for and rolling out EV infrastructure as a new service
New priorities
Total votes (across all workshops)
Relative importance (average votes per event)



14.10. For the newly suggested priorities in facilitating net-zero, 'Lobby for national EV strategy ensuring standardisation' collected the highest number of votes across all workshops. The priority with the second highest total votes was 'Facilitate / incentivise local low-carbon generation and storage (help communities)' with a total of 101 votes. However, this priority has a low 'relative importance' (25.25 votes per event), compared to others that received more votes at just one event.

14.11. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on some of the new priorities, lobbying for new EV strategy, education, and flexible smart networks, over the existing.

Detailed feedback

Feedback for Facilitating Net-zero can be divided into eight themes:

- Educating and helping others
- Electric Vehicles - Facilitating EV uptake
- Electric Vehicles - Charging network
- Electric Vehicles - Vehicle to grid
- Facilitating other low-carbon technologies
- Low carbon connections
- Help local communities to achieve their net-zero emissions targets
- Climate adaption planning

Education and helping others

14.12. It was deemed WPD's responsibility to help their staff and customers to reduce their carbon footprint at home (E019). Stakeholders believed that educating the public and wider stakeholders was an important priority to help towards net-zero (E019, E022). This was especially the case when explaining the whole systems approach to net-zero as everyone may interpret this differently (E022). Education was noted as a key channel for WPD to help encourage behaviour changes in society (E022) which is another new priority (E022). Training key influencers within the organisation (E019) as well as promoting initiatives to encourage positive behaviour changes are two suggested actions to reach these priorities (E019).

14.13. Stakeholders lacked understanding of the full life cycle cost of carbon and thus it was noted that an information campaign explaining this, as well as how WPD is considering the end-to-end cost of carbon, should be completed (E022, E022, E022). Another priority is to consider and publicise the carbon cost of any new development (E022, E022).

Electric Vehicles - Facilitating EV uptake

14.14. Stakeholders wanted WPD to play a prominent role in facilitating the uptake of EVs on a mass scale (E017, E019) and this was voted the highest priority under facilitating net-zero (E017). Furthermore, facilitating EV uptake to individual customers was also voted the 4th highest priority under facilitating net-zero (E017).

14.15. WPD should not limit their efforts to cars as decarbonising public transport and larger vehicles are also a key part of the low-carbon transition (E017, E018, E019, E020, E023). This is especially important in cities where car ownership is lower – due to lack of space or maybe they cannot afford a car (E019, E021, E023). The larger capacity of batteries on public transport vehicles may also provide larger flexibility potential for the grid (E023).

14.16. Reducing car usage was seen as a way to reduce emissions and the public should be encouraged to car share and own fewer cars than they do presently (E018, E018, E022, E022, E023). Car sharing, in particular, is something that WPD should encourage, as a stakeholder mentioned that cars are normally utilised a small proportion of the time – around 7% (E020).

14.17. It was also noted that there are currently large disparities nationally with London having electric buses that can travel 160 miles before charging while rural areas have buses that are old and deregulated (E019). While stakeholders in Swansea conceded

that areas with higher population densities will need more infrastructure, they were keen to see a level playing field for anyone to own and charge an EV (E023).

14.18. Another suggestion was that WPD could reduce the price of electricity to encourage EV uptake (E023), or at least provide some financial incentive to encourage those that can go electric to do so (E023). Stakeholders believed that the most likely areas of high EV adaption will be urban areas with clear air zones, homes with off-street parking and commercial fleets (E035). Stakeholders believed that the key barriers to uptake are the lack of charging infrastructure, the high upfront cost of an EV, the low availability of Evs and the lack of awareness of EVs (E035).

Collaboration

14.19. Employer and business engagement was seen as crucial to encourage them to get EVs (E020).

14.20. It was also noted that WPD could work with manufacturers to make sure they have the right price structure in place so that EVs can be accessed by all consumers, not just the rich (E022).

Network reinforcing

14.21. Reinforcing the network was seen as key to ensure sufficient capacity to cope with the increase in demand from EVs (E019, E023). Stakeholders were concerned about the lack of network capacity to deal with the potential huge demand influx from EVs, but mentioned that WPD shouldn't be the only ones paying for this and should have help from local authority budgets (E019). The network for public transport will also be crucial here so the network should have additional reinforcement at public transport hotspots (E018).

Lobbying

14.22. It was noted that many customers would not be able to afford to buy a new car, let alone a more expensive EV, and thus WPD should lobby the government for grants to help the transition and mass roll-out of EVs (E019, E023). It was suggested that WPD could ask the government for some more money to upgrade the infrastructure (E022, E023), particularly as the government is demanding that EV uptake increases (E019). This is also true for large changes such as with electrifying trainlines (E022).

14.23. There needs to be some lobbying to ensure there are tariffs available to encourage people to charge at the correct times for the network (E018).

Battery technology

14.24. It was also discussed that battery technology is not currently very low carbon during production, so an option would be for WPD to be involved in developing a lower-emission battery (E023).

Education

14.25. While deploying infrastructure and EVs is important, it was suggested that WPD should also take a more holistic approach and look to influence the change in culture

with shared driving, park and rides and education about electric cars (E019, E019, E023). A campaign around re-education of EVs was deemed necessary (E019, E020) - people are more inclined to buy an EV if they knew the potential benefits (E019, E021), as well as the costs (E019, E019). It's critical to highlight the fact that WPD is a neutral partner in the roll-out of electric vehicles which increases consumer trust, rather than feel like they're being sold something (E019). Some users are nervous of the implication that the car is not always available for use during an emergency or when you need to leave immediately as its plugged in to charge (E021).

14.26. It was suggested that WPD should also look into car-sharing fleets as well as encouraging the public to reduce their car usage as EVs aren't going to reduce congestion (E020). Another option here would be to look into electric bikes and small electric vehicles, particularly for cities and seaside towns (E020).

Electric Vehicles - Charging network

14.27. It was noted that encouraging EV uptake will be difficult without a sufficient charging network, which should arguably be WPD's highest priority as this is where they have the most influence (E021). WPD needs to be central to the deployment of the EV charging network (E019, E023). Consumers need to build trust that charging points are available and working to reduce range anxiety (E020, E023). It may be the case that chargers have to be built first and not be in use the majority of the time, to give people the option and trust that they can charge their car when they need to to buy an EV in the first place (E020). Stakeholders said consumers that are trying to make the correct social decision of buying an EV needed not to be penalised because the infrastructure isn't there (E022).

14.28. There were also concerns raised around future-proofing the network when building new developments or changing old infrastructure (E022), which also includes future planning to ensure everyone has equal opportunity for charging points, not just the rich or those in the cities (E022, E023). Stakeholders noted the difficulty of providing sufficient network capacity in rural areas to deal with a large increase in demand from EVs but were also deemed a necessary investment (E020). However, it was also noted that the number of cars and the average mileage per vehicle was predicted to reduce in future by stakeholders (E034).

14.29. Stakeholders discussed whether WPD should deploy charging points or only facilitate commercial players. While it was generally agreed that commercial investment and involvement would be positive and allow the market to determine what is required, others believed that WPD should deploy its own network rather than add another layer of complexity with commercial players (E020). One suggestion was to create WPD filling stations in communities (E022). Other stakeholders wanted WPD to consult private companies about developing EV charging stations to boost this task (E035).

14.30. Stakeholders also noted that the most likely places for high EV charger deployment would be in workplaces / commercial spaces, council-owned car parks, petrol stations and on-street chargers (E038).

14.31. Stakeholders noted that the COVID-19 pandemic was likely to impact transport substantially listing the potential effects in order of relative importance:

- More people working from home and thus requiring less transport
- Reduced use of public transport with the fear of increased exposure to the virus
- More cycling to work

- Increased uptake of EVs as awareness of air quality increases (E035)

Communication

14.32. Communication with industry is important, and one of the most often quoted request was for a capacity map so that stakeholders can understand, in layman's terms, where charging points can be placed (E019, E020, E021, E021). Another suggestion was a health indicator of network usage to communities (E019). A major connections customer noted that they wanted to provide charging points for all homes, but they need assurance from WPD that the network will be able to handle the load (E019).

14.33. As well as mapping the network capacity for new chargers, stakeholders were keen to have access to one standardised easy to use map of charging points (E019, E022). One suggestion was to have charging points shown on satnavs and maps (E020).

Charging locations

14.34. Deploying charging points on streets can help give priority spots to electric vehicles (E019). As well as ensuring customers can charge at home, the second-highest priority voted by stakeholders was providing easy access to charge points away from home (E017). A challenge will be determining the distance from homes, but this may be able to improve with smart data of household demand (E018). The range-fear would be reduced if there were fast chargers all along motorways (E021, E023). Furthermore, charging locations need to be spread evenly across the country so that nobody has to travel too far to reach one (E019).

14.35. Stakeholders were keen to see WPD find novel places to install charging points (E019), including taxi ranks (E019). Stakeholders noted that there were already a number of charging points at motorway service stations (E019), but they need to be placed in business parks and big shopping centres (E020, E022). Also, it was highlighted that charging points would be most useful in places where cars park for a relatively short period of time and include fast charging, rather than in areas where cars park for 7 or 8 hours a day (E020).

14.36. Despite some people travelling large distances, the vast majority of trips are short and thus WPD should focus on enabling shorter trips first before looking at long-distance travel (E019). Proactive charging point deployment was seen as key to increase EV uptake (E022).

Charging at home

14.37. An easy process to install a charge point at home was voted the third-highest priority under facilitating net-zero (E017, E017, E023). This is often the most convenient place to charge because cars may be parked overnight and stakeholders have a space to park at home that may be more consistent than at work (E023, E023). This may not be the case for terraced streets though which will require another solution (E018, E022, E023). Stakeholders were unsure whether this was WPD's responsibility (E018) but it was unanimous that this process should be easy with a one-stop-shop for requests (E021). The government and local authorities should make sure new developments are equipped for home charging and assist partners to address capacity constraints (E018, E018).

14.38. Retrofitting homes while installing chargers could be an option (E018) including installing three-phase connections to deal with the increasing volume of smart technology in each house (E018, E019, E019). A domestic customer did comment that targeting to install a charging point in every house may be excessive as more people will be sharing cars in the future (E018). Rather than deploying chargers on every driveway, you could potentially have hubs in new estates (E022).

14.39. It was also suggested that all new developments should have three-phase as standard (E018, E019, E022).

Collaboration

14.40. Engaging and communicating with local authorities was seen as important to see how WPD can collaborate and better support their needs for charging (E019, E019, E019). WPD can help educate local authorities in developing realistic approaches to EV charging (E019). Stakeholders suggested that WPD can facilitate collaboration and knowledge exchange between LAs (E023).

14.41. Close collaboration with planners is crucial so that WPD can assess and predict the change in demand (E019). Early engagement and involvement are also crucial (E019) according to stakeholders. It may also be possible to anticipate the required capacity for car parks and align the network for optimal charging (E018). Single chargers have started being deployed in large supermarket car parks, but stakeholders highlighted that the public is going to need larger hubs and so coordination with large car park owners should be established (E018). A utility representative wanted WPD to approve 95% of EV charging points so as not to stall development (E022).

14.42. Another priority discussed in Birmingham was the market monitoring of EVs sold in the UK, working with suppliers to track current and predict future demand for charging points in different locations across the country (E019, E019, E019). Working with partners in the industry, through projects like Electric Nation, can provide visibility to the required solutions on a local level (E019, E019). Monitoring the growth of hydrogen in different areas was also discussed due to the trial projects currently underway, and it was mentioned that WPD shouldn't assume that electric vehicles will be the only successful low-carbon transport fuel (E019). Some stakeholders mentioned that WPD should consider changing their vehicles to hydrogen (E018).

Standardisation and a national EV strategy

14.43. Lobbying for national EV strategy ensuring standardisation was the highest voted new priority under electric vehicles (E017). According to stakeholders, WPD should be lobbying for a national EV strategy (E018, E019, E022) and the general opinion was that the government was stalling on this issue (E018). A national strategy would provide much-needed clarity for the industry (E018) as well as provide a more holistic whole-systems approach with everybody singing from the same hymn sheet (E018, E023). Net-zero is a long-term goal and WPD will need help from across the political spectrum to make this happen, which is why stakeholders want WPD to be bold in driving for a 5-10 year plan in this space (E018).

14.44. Standardisation of EV charging components was also discussed in multiple locations (E018, E019, E022). Working with manufacturers may be required to have a standardised charging fitting, or at least so that they can provide adapters so consumers can use all chargers (E019, E020, E020, E022, E022, E022). Furthermore, stakeholders stated that WPD needs to collaborate with manufacturers and developers

on the speed of charging points and whether smart technology is adopted, to ensure the network has sufficient capacity to cope (E023). WPD should push for national standardisation to help ease consumer transitions between DNO networks (E019).

14.45. Some stakeholders were not optimistic about the government providing any standardisation or national policy (E019). Also, there is no current link between the energy requirements for a new development and the likely transport demand, but this needs to change with transport electrification so planning policy should be adjusted (E021).

14.46. While a number of stakeholders were keen to see WPD take a leadership role in the decarbonisation of transport, there were some that wanted WPD to only facilitate the infrastructure and didn't feel it was appropriate to be leading the process (E019). Stakeholders recognised the difficulty with deploying infrastructure charging when there are limited current users, but the lack of infrastructure is slowing the uptake of EVs, and Ofgem and the government should provide more support to WPD to help with this (E022).

Technology choices and inductive charging

14.47. WPD should explore and develop inductive charging (E019, E021, E021, E022) or alternative methods of charging (E021, E022). According to stakeholders, WPD should play a role in determining what technology will look like in the present and future, and dictating what should be deployed (E019, E019, E022). DC electric charging was suggested by an energy consultant (E021).

14.48. Smart charging at charging points was also mentioned as a key area to help grid flexibility (E022). Utilising artificial intelligence to learn behaviours of electric vehicle usage and turn on and off charging accordingly to limit the stress on the grid was suggested (E022). Data security will have to be carefully considered when utilising this type of technology though (E022).

Speed of charging

14.49. Stakeholders noted that the speed of charging was one of the key barriers stopping people from taking EVs, when comparing against staying with petrol or diesel-fuelled cars (E018, E018). However, stakeholders also realised the additional stress this would cause on the network (E018, E018, E018) and thus wanted WPD to reinforce ahead of need to enable fast charging (E018, E019, E023). Speed of charging was the 5th highest existing priority in the context of electric vehicles (E017). It was noted that the speed of charging was going to be essential to convert vehicles that have high utilisation, like taxis or emergency response fleet (Police or Ambulance services) (E018, E022).

14.50. Sufficient home charging facilities will reduce the need for fast charging elsewhere, and it was stated that ensuring fast charging at home was essential (E020). However, other stakeholders argued that slower charging at home was adequate as cars tended to sit idle for longer, while it was more useful to have fast chargers away from home as cars will tend to be parked for less time (E019, E022).

14.51. Others did question the commercial viability of fast-speed charging due to the vastly increased expense (E021, E023). Furthermore, it was mentioned that high-speed charging damages batteries (E022) and should only really be used in emergencies –

customers should be informed of this (E019). Fundamentally, customers need clear and accurate estimated of charging times and then they can work around it (E019).

14.52. A utility representative stated that the market will decide the speed of charging as it is a technical aspect, of which WPD will have little impact but may have to ensure the capacity is there to enable the charging points (E019). Another agreed that WPD should focus on having the capacity for smart charging, and the market will decide whether it is required or not (E023).

Innovative building design

14.53. A developer noted the increased use of solar panels as roofs for car parks which can help make them self-sufficient for electricity, particularly if coupled with storage (E021), and suggested that this should be incentivised and encouraged everywhere (E021).

Affordability – network upgrading

14.54. Network upgrades are likely to be costly and while stakeholders were keen to see more EVs it was also noted that this should be balanced with limiting costs to customers (E022), particularly vulnerable customers (E019). It was also noted that those with EVs will be benefiting while all customers will be paying for the costs (E019).

Affordability – the cost of charging when away from home

14.55. The cost of charging when away from home was the 6th highest priority for electric vehicles (E017). Stakeholders were keen to learn more about WPD's role in charging costs away from home and their influence on these issues (E018, E018). One stakeholder suggested that WPD may have more influence on the cost of charging than access to charging (E021), while another disagreed as this will be determined by the charger's supplier (E023) and thus not something for WPD to focus on (E023). It was noted that WPD could directly partner with a commercial company to implement things like cost, access and speed of charging (E019). It was noted that there is a link between the cost of charging and access to charging points (E018). A combined parking and charging package could be offered (E020).

14.56. Even if it is not WPD's responsibility, it was recommended that they lobby the government to regulate the cost of charging (E019) and that the cost should be displayed clearly – maybe as part of the charging points map (E019).

14.57. If WPD do have the ability to influence the cost of charging, it was suggested that customers may respond to price incentives and may then be less likely to charge at work if that was more expensive than charging at home, which could then be tailored to minimise demand on the grid (E020, E020).

Electric Vehicles - Vehicle to grid

14.58. Vehicle to grid is still a developing technology and stakeholders were keen for WPD to show leadership and invest resources in researching vehicle to grid (E017, E018, E020, E020, E020). Charging points, especially at home, should be future-proofed to be able to work with vehicle to grid (E018, E018, E020). Engaging vehicle

manufacturers and stakeholders around the idea of ‘energy as a service’ and the potential of charging the grid with EV’s batteries (E019) was seen as important. Another priority was to turn car parks into power stations through utilising vehicle to grid technology (E017) which was discussed in both Swansea and Nottingham (E022, E023).

Facilitating other low-carbon technologies

14.59. Stakeholders wanted WPD to assess the effect its operations have on both the local and national level to determine the need for investment (E023). Stakeholders stated that there was a need for a national conversation on new grid infrastructure planning to meet net zero (E036, E037).

Facilitating local low-carbon generation

14.60. With the likely increase in demand from heat and transport decarbonisation, it is important that WPD considers encouraging the deployment of new renewable generation so that the system can be kept in balance (E021). Stakeholders wanted WPD to help make small scale generation as easy as possible (E021) and incentivise local communities to generate their own electricity (E021, E021, E021, E021, E023). Many mentioned the need for financial incentives to cause behaviour changes and encourage self-generation to reduce the strain on the network (E021, E021) which can empower people to join the ‘green revolution’ (E021). Understanding of net-zero and the electricity network was mentioned as a key barrier that WPD should address with communities (E019), especially as some stakeholders felt the ‘green agenda’ was being forced on them without understanding why (E019).

14.61. There was also some discussion around the lack of capacity in some areas of the grid (E017, E022, E023, E023) especially in coastal areas which WPD could work on with the national development framework proposal (E023). It was stated that it was not just a case of connecting renewables, but doing so in a responsible, sensible way in areas that may best serve the grid (E023). As an example, the co-location of EV charging points and renewable generation can decrease grid stress for a fully integrated approach (E018, E020, E022).

14.62. Developers will seek to develop projects on a subsidy-free basis in future which WPD needs to consider (E037) with subsidy-free solar projects will dominate post-2030 (E035). Furthermore, stakeholders noted that providing unlimited export limitation on-site without system size being held back is essential to developing renewable generation (E036). Grid constraints were noted as the main constraint for further deployment of solar (E037). This was especially a concern for stakeholders with areas that have been looking to install significant renewables to meet net-zero by 2030 commitments which are already grid constrained (E037). Stakeholders didn’t want WPD’s role to be reactive or passive to evolving technology, policy and demand but rather be proactive in this space (E037). One stakeholder also asked whether there was a way that like-minded renewables developers to enter into consortiums to reinforce existing infrastructure (E038).

14.63. Retrofitting older properties with renewable generating technologies is not always easy but will be required due to the relatively old housing stock in the UK (E018, E023) and this should be done at a sensible cost (E018, E023).

14.64. Stakeholders estimated that 6.3% of new-builds will install rooftop PVs (E037).

Storage

14.65. WPD should look to partner with local authorities and organisations that can help deploy storage at a local level (E017, E018). Stakeholders wanted WPD to lobby the government to help push smart meters and batteries as a bigger disruption of the regulatory framework was deemed to be needed (E019, E019). It was discussed that storage can help reduce the stress on the grid during peak demand, as well as facilitate a higher integration of renewable energy on the grid (E018, E020) which should be encouraged by WPD (E018, E020, E020). Stakeholders were keen to see an increase in innovation and connection of PV and network integration with storage (E039).

14.66. When asked what storage facilities were the least likely to be deployed, stakeholders from one event noted domestic batteries (E034). However, others wanted to note that there is still a huge potential for domestic batteries and that they should not be disregarded (E038). The majority of stakeholders also predicted that co-located energy storage facilities would most likely need to be at least 50% of the power capacity of the adjacent solar farm, while around 25% of respondents believed that the battery should have an equal capacity to the power generator (E034).

14.67. Stakeholders were optimistic that storage technologies other than lithium-ion batteries could be deployed in the near future – such as compressed air, power-to-gas and small scale hydro (E034).

14.68. At one event a major energy user questioned whether the potential 5,00 electric vehicles parked at their distribution yard could be classed as a large grid battery, or is this unrealistic (E038).

Carbon capture

14.69. While some stakeholders wanted WPD to research and potentially help incentivise partners to invest in carbon capture technologies (E020), others didn't believe this was an issue for WPD (E020).

Electrification of heat

14.70. This priority was only discussed in Nottingham (E022) and stakeholders noted that WPD must consider the implications of heat electrification on network demand, especially due to the current government policy for stopping gas connections from new homes in 2025 (E022). Stakeholders disagreed with the assumption that deployment of heat pumps would be limited to just off-gas homes and new builds, and WPD's load modelling should be updated to reflect some uptake in on-gas homes in the near term (E036). Stakeholder noted that the most important factors to the uptake of heat pumps for households would be affluence, home-ownership and the energy efficiency of the home (E036).

14.71. Stakeholders were also interested in WPD's opinion whether heat pump manufacturers and installers should be pushed to include thermal storage in the system to make it easier in the future for heat pumps to be more responsive in domestic demand-side response (E037).

Hydrogen

14.72. Stakeholders noted that Hydrogen was another viable option to decarbonise heat and that WPD should consider this as not all heat will be electrified (E034). The majority of respondents predicted that gas boilers would continue to be installed in new homes up until 2025, however, a small minority thought that the rate of installation would fall gradually towards 2025 (E034). Moreover, 59% of responders believed that hydrogen produced in industrial clusters can be used to generate electricity (E034, E035) while another 27% noted that hydrogen transmission through the pipeline will enable gas-fired power stations to convert to hydrogen (E035). Stakeholders were very interested to hear about any work to assess the viability of a green gas to be deployed for heating and electricity generation both economically and on an engineering level (E036). In particular, stakeholders were interested in the use of renewable electricity to produce hydrogen (E037).

The future of diesel generators

14.73. A substantial amount of diesel generating capacity has been deployed on the grid in the last few years, but stakeholders were conscious that this couldn't remain the case in future if we are to reach net-zero (E035). Most stakeholders believed that the only new form of diesel generation will be to provide mains back-up, if they are deployed at all (E034) with 20% believing that there will be no new diesel connection at all in the 2020s, while 66% believed that new diesel generators would only be used for grid backup (E034).

Low-carbon Connections

14.74. Connection for renewable and low-carbon electricity generation was something stakeholders wanted WPD to prioritise (E018, E018, E019, E021, E021) as well as potentially installing higher-grade equipment on these technologies as they are likely to be on the network longer than non-renewable technologies, such as diesel generators (E018). This was also discussed in Cornwall (E020) where stakeholders agreed that financial incentives were the best way to encourage investors to move to lower-carbon technologies (E020). Stakeholders in Birmingham mentioned the potential to improve the processing speed of renewable connection applications (E019) and potentially make them cheaper (E019, E019). Another idea was to charge more for connecting fossil fuel generation which would help make lower-carbon options more economically feasible (E019, E019, E019).

14.75. When asked where new wind farms were likely to be located in future, 88% of stakeholders believed they would be widely spread across green and amber areas, while 12% believed they would only be in green areas (E034). Furthermore, when discussing the potential implication of subsidy-free renewable generator business models, nearly half of respondents believed that this would result in the vast majority of developments being of very large scale sites, with a small number of community sites (E034).

14.76. Strategic Search Areas (SSAs) were still deemed to be a place where stakeholder believed there would be future deployment of renewable generators even though they were gradually becoming saturated (E034).

14.77. Stakeholder generally had an unclear vision of the future of solar in the UK with 20% of stakeholders expecting solar deployment to decrease after 2030 while the majority expected an increase (E035).

Effect of COVID-19

14.78. The effect of the COVID-19 pandemic will mean that many of WPD's current future projections may need adjusting, particularly when build rates of renewable generators has dropped across the four licence areas, with between a 30-40% lapse for 2020, which will still be an estimated 10% reduction in 2022 (E034, E035, E037). Stakeholders noted that this may mean that more 'non-allocated' sites are permitted (E035, E037).

14.79. Stakeholders believed that there is a high potential for solar farm deployment, which could deploy at a high rate in the medium to long term (E034) and that deployment would begin to increase again in the early 2020s, from 2022 onwards (E034, E034).

14.80. As well as changing the build rate of renewable generation, stakeholder noted that COVID-19 will likely change the way we work and that it is likely that more people will work from home in the future (E038). Consequently, stakeholders questioned how WPD would encourage thermal storage and heat pumps in order to load shift electricity demand in this scenario (E038).

Help local communities to achieve their Net-zero emissions targets

14.81. Helping local communities with emissions targets was an existing priority, discussed in all workshop locations (E017) which received the highest priority for stakeholders (E017). Net-zero is often such a large, intangible target that many communities struggle to understand what they should be aiming for and why (E022, E022, E022, E023). Communication with residents and local stakeholders is key to inform them of what role they can play (E018), with WPD presenting a structure and guidance to follow and then help the community to implement it (E018, E021, E022, E023). It was noted that WPD needs to frame themselves as a local organisation in order to gain trust (E018). It may be an idea for WPD to create a trial village or community to create a case study of how improvements can be made (E022, E022).

14.82. Incentives should be localised within communities to help create energy hubs that can increase each region's resilience to power outages (E018, E023). Stakeholders also stated that a lot of funding was already available, but that it was too complex to access (E018).

14.83. Collaboration with the supplier is required to help reach the end-user and transfer information (E021, E021). Informing customers about how to calculate and change their carbon footprint was another suggested action (E021), especially targeting schools to embed this understanding in households through children (E021, E022). It was also stated that younger consumers will be much more receptive to education and changes towards the net-zero target, while older consumers will have more trouble changing and will also have less motivation to do so (E022).

14.84. Clarity of targets was also a point of discussion with the need for WPD to have KPIs for reaching net-zero, both at a national and local level and communicate progress clearly – potentially through their website (E021, E021, E022, E022). These commitments should be easily understandable and monitorable for stakeholders (E022) as well as help local councils align and copy these targets (E022). Community group and local council actions towards lowering their carbon emissions should be aided by WPD, particularly outlining actionable targets (E020, E020, E023). An

outreach program was suggested, with a WPD officer able to work with local stakeholders on the ground on their targets (E020). While helping local communities towards net-zero is a priority, some stakeholders also wanted WPD to focus on major energy users as they will potentially make a larger difference overall (E020).

Climate adaption planning

14.85. Climate change effects are already happening, and therefore it is important that WPD considers their adaptation plans to deal with this (E017). Increased extreme weather will likely cause additional stresses on the network – such as high wind, large temperature fluctuations, more flooding – so stakeholders suggested that WPD should adopt future-proofing procedures, like undergrounding cables, to help protect the network and its customers while preparing for net-zero (E019, E019, E023).

Proposed commitments

Priorities	Commitments
Facilitate electric vehicles on a mass scale	1) Work closely with local authorities and developers on local energy plans, develop case studies and produce examples of best practice 2) Work on providing useful data on EV charging and capacity and share this with relevant third parties 3) Carry out research and forecasting on EV take up to inform your strategy 4) Focus on delivering charging points for company fleets and for public transport 5) Work with key stakeholders, particularly developers on EV charging 6) Collaborate with EV and charging infrastructure manufacturers and endeavour to innovate in this area 7) Install three-phase supplies to new developments 8) Undertake 'quick' feasibility studies for charge point connections, including for homeowners 9) Consider different ownership models and to support a move away from private, individual car ownership 10) Consider the wider economic impact of a wholesale move to Evs - what happens to combustion engine-era vehicles? 11) Focus on long-term strategies to reduce charging costs for the consumer 12) Develop battery storage technology 13) Provide clear information on connection, capacity and charging costs 14) Avoid being a blocker for optimal sites 15) Be mindful of future grid capacity 16) Work with community groups 17) Help to facilitate large-scale charging hubs 18) Invest ahead of need in the network to ensure enough capacity 19) Consider cost: who will pay? How can costs be minimised? 20) Support communal, on-street charging projects

	21) Consider all low carbon vehicle / transport options as well as Evs 22) Focus on the quantity of charge points 23) Reconsider the structure of connection charges 24) Lobby for changes to the NPPF to support uptake of Evs 25) Encourage more local generation to power charge points 26) Consider alternative charge point models e.g induction pads
Help local communities to achieve their net-zero carbon emissions targets	1) Engage with local authorities to support them to deliver on their net-zero targets, sharing knowledge and information. 2) Support communities to deliver local energy projects, including the provision of funding and advice. 3) Take a leadership role in terms of education and communication. 4) Support communities to identify key areas suitable for renewable energy generation. 5) Encourage battery storage as part of the solution. 6) Do more to facilitate connections / ease of connections. 7) Support schemes that retrofit insulation. 8) Work through trusted partners in the communities (e.g LEAP groups). 9) Encourage entrepreneurs. 10) Help reduce energy use. 11) Take a holistic, country-wide approach. 12) Provide incentives and financial support for zero-carbon energy products. 13) Drive changes to national planning and investment policy that support net-zero. 14) Create a clear engagement strategy that educates and gives guidance to communities reaching net-zero. 15) Work with government to create a national policy framework that will enable all local communities to reach net-zero. 16) Ensure that there is enough capacity in the network. 17) Engage with commercial customers. 18) Develop case studies: set up a trial village. 19) Have more involvement with local plans at the drafting stage. 20) Take a multi-level approach, working with regional stakeholders down to individuals.

	21) Collaborate with suppliers. 22) Help to publicise a carbon calculator. 23) Educate customers on reducing carbon footprint. 24) Lobby government to decarbonise generation 25) Develop KPIs to measure the impact of your activities
Facilitate electric vehicle take up – individual customer level	1) Educate customers to improve understanding of chare points, including on the costs and the availability of grants 2) Enable a range of charging options and consider the requirements of rural owners and those without driveways 3) Consider the chare point requirements for car share scheme 4) Lobby Government and councils to ensure that chare points are included in new builds 5) Work with suppliers to introduce time of use tariffs and educate customers on their benefits 6) Lobby Government to influence the regulator to allow you to invest ahead of need. 7) Look at encouraging community car sharing programmes and car clubs 8) Lobby Government to incentivise people to buy electric vehicles 9) Consider the charge point requirements for electric bicycles 10) Develop a network that is ready for large-scale EV take-up 11) Liaise with local authorities and private sector: help everyone meet their targets 12) Set a target of 95% of EV applications to go through queue management 13) Socialise costs to increase affordability 14) Carry out analysis and research to inform your investment decisions 15) Investigate smart charging 16) Push for a standardised type of charger 17) Focus on retrofitting in older properties 18) Focus on on-street charging for customers without driveways 19) Consider other power sources such as hydrogen, which may be an appropriate alternative in certain locations 20) Consider affordability and fairness: don't leave people behind

	21) Focus on electrifying public transport 22) Make WPD's role clear: explain to customers they are neutral and not trying to sell them anything 23) Consider interaction between EV, heat pumps and storage 24) Deliver rapid charging
Easy access to charge points when away from home	1) Work with local authorities to facilitate connections in appropriate locations 2) Connect charge points at locations such as shopping centres, supermarkets, public buildings and taxi ranks 3) Support the redesign of motorway service stations and connect charge points at these locations 4) Ensure there is capacity for multiple charge points and consider the cost of reinforcing the network 5) Lobby Government for a cohesive strategy and challenge Ofgem to allow investment ahead of need 6) Work with other public transport suppliers to deliver charge points 7) Support web-based applications that improve visibility of available charge point locations 8) Work on developing demand forecasting for EV using data from the smart network 9) Work in partnership with charge point manufacturers and mandate universal charging 10) Build consumer confidence in viability of charge points away from home 11) Provide 'new' solutions for locations where you cannot connect 12) Be proactive and provide a clear pathway to speed up the roll-out 13) Investigate pricing methodologies such as for companies versus domestic users 14) Produce a map of suitable locations 15) Don't over plan: keep in mind the expanding mileage range of many Evs 16) Provide consistency and reassurance that customers will be able to charge wherever they are 17) Create a standardised, accessible map of charging points

	18) Work with other DNOs to provide a UK-wide, consistent charging network service 19) Address safely concerns at charge points 20) Deliver rapid chargers 21) Look to provide reassurance about range anxiety
Cost of charging when away from home	1) Support different charging methodologies aimed at both domestic customers and at companies to encourage their staff to use EVs 2) Focus on both access and cost to ensure that prices are not prohibitive for certain customers who wish to charge their vehicles away from home 3) Work with suppliers on more dual tariffs 4) Encourage combined park and charge packages where public car park fees include the cost of charging an electric vehicle 5) Use your influence to put pressure on suppliers and charge point operators to offer fixed prices on charging away from home 6) Accept that this is not in WPD's sphere of influence 7) Support the redesign of motorway service stations 8) Provide 'new' solutions for locations where you cannot connect 9) Challenge Ofgem about investment ahead of need 10) Be proactive and provide a clear pathway to speed up the roll-out 11) Look into busy locations including supermarket and sports venue car parks 12) Educate and inform customers: provide charge point maps that explain cost 13) Ensure that fairness and affordability remain a priority - even though you have a monopoly 14) Roll out the necessary infrastructure required to make charging cheaper for customers 15) Improve EV charging at commercial buildings, for exampl by making it free to charge at work
Speed of charging	1) Prioritise rapid charging, including for emergency vehicles 2) Be mindful of the fact that rapid charging isn't appropriate or necessary in all cases. For example, domestic customers may not need fast charging but buses, taxis and emergency vehicles do.

	3) Collaborate with EV manufacturers and technology companies and endeavour to innovate in this area 4) Upgrade the network to enable rapid charging, including using DC charging 5) Ensure correct information is included on charge points and ensure that customer safety is a priority. 6) Facilitate local generation schemes to power charge points 7) Consider investing in DNO-owned charge points 8) Focus on improving the speed of charging for charge points outside of the home 9) Consider alternative ways of charging that don't require being 'plugged in' 10) Be able to reinforce the network ahead of need in line with predicted growth and demand to enable rapid-charging 11) Ensure that new connections are future-proofed 12) Conduct trials and demand modelling based on upward take up and rapid charging away from home 13) Focus on increasing the speed of charging 14) Provide reassurance to customers to address range anxiety
Easy process to install a charge point at home	1) Focus on providing a solution for customers without driveways 2) Lobby Government to influence building regulations to ensure that charge points are provided in new builds 3) Provide a central advice service to educate customers on the processes and cost of installing charge points. Consider including a 'dummies guide' 4) Provide homeowners with subsidies to install battery storage systems to support the grid 5) Lead on upgrading infrastructure and designing smart networks 6) Prioritise EV connections 7) Use three-phase supply 8) Focus on community charging points 9) Collaborate with manufacturers and industry 10) Ensure control and standards of installation and charge point 11) Simplify the process of applying for a subsidy for installing a charge point 12) Work with partners to address capacity constraints

Home and on-street charging	1) Share best practice examples on the development of on-street charging from elsewhere in WPD's network area 2) Develop clear step-by-step information on the installation of on-street charge points to support developers and councils 3) Create a model to explore how people without access to a driveway or off-street parking can charge EV 4) Ensure the capacity and infrastructure is in place for expansion of on-street charging points 5) Hold expert level workshops for relevant partners to work towards implementation of public charge points 6) Focus on providing on-street charging to ensure that customers without driveways are not disadvantaged 7) Work with local authorities to provide on street charging
Facilitate EV take up and infrastructure	1) Improve communication on EVs to build consumer confidence. 2) Lobby government for a national EV policy. 3) Enable the installation of more charge points. 4) Make clear the costs of connections for EV charge point installers and developers. 5) Work towards facilitating the roll-out and best usage of street-side EV charge points. 6) Input into planning requirements to encourage EV take-up
Facilitate / incentivise local low-carbon generation and storage (help communities)	1) Lobby to invest ahead of need to increase capacity for local generation. 2) Work closely with the national framework development proposal. 3) Encourage all forms of local generation, large and small 4) Work with local authorities to identify the most suitable locations 5) Provide support and advice to encourage local generation in areas of network constraint
Monitoring EV market (including new technology and hydrogen)	1) Partner with Ev manufacturers to monitor and anticipate EV hotspots 2) Use data to monitor how EV public transport, including taxis, uses the network 3) Focus on innovation projects that use monitoring for charging solutions 4) Monitor the trialling of hydrogen

	5) Consider using surplus energy to create hydrogen
Lobby for national EV strategy ensuring standardisation	1) Lobby government and work with industry to ensure standardisation of EV charge points and other technology 2) Work with the government and Ofgem to deliver a clear, coordinated EV strategy 3) Work with government on EV safety standards 4) Work collaboratively across license areas and industry
Education, helping staff and customers reduce their own carbon footprint	1) Encourage and incentivise staff to reduce their carbon footprint by subsiding cycle to work schemes, public transport, etc. 2) Invest in carbon reduction training for key influencers in the workplace. 3) Publish and promote advice for customers and staff on reducing fossil fuel use
WPD invest / develop or partner on storage solutions	1) Lobby Government to allow for investment in battery storage to support peak demand 2) Commit to removing diesel generators. 3) Enable more flexibility by developing storage solutions
Facilitate EV public transport growth and car sharing	4) Look to use innovation to facilitate more communal usage of electric vehicles, such as car clubs and fleet sharing 5) Support public transport grid setup and set goals that support grid utilisation 6) Build an evidence base for investment and lobby government for the ability to invest ahead of need
Information and network data provision, emergency charge support	1) Provide clear mapping and signposting on where connections are available for charge points 2) Provide emergency rapid charge point 3) Provide emergency rapid charge points on motorways for EVs which run out of charge 4) Make more data available to support planning, including network capacity, potential locations and future demand forecasts
Flexible smart networks, smart charging (including AI and vehicle to grid)	1) Use artificial intelligence 2) Consider data security

Vehicle to grid, car parks into power stations	1) Collaborate with developers to design car parks that can function as power stations. 2) Collaborate with developers to design car parks that can function as power stations
Assessment of local vs national / global impact	1) Use a local vs national impact metric to determine investment
Carbon capture	1) Support research and development into carbon capture
Retrofitting older properties (work with local authorities / developers)	1) Invest in research projects hat create case studies of retrofitted properties
Reinforce ahead of need (lobby government)	1) Invest ahead of need to upgrade the network for predicted future demand
Vehicle to grid	1) Prioritise the development of a smart network that is capable of bidirectional charging
Work with others to facilitate very rapid charging	1) Collaborate with local authorities and parish council.
WPD to roll out community EV charging points, including at substations	1) Provide charging points for EVs at your own substations
Green energy connections	1) Prioritise renewable connections to power your systems 2) Maintain a focus on how renewable sources of energy could adversely affect resilience
Facilitate electric vehicles	1) Conduct R&D into inductive charging. 2) Develop an EV capacity map (in clear language that customers understand). 3) Encourage car parks to become self-sufficient by generation their own energy
Renewable energy to provide the power for the EV network	1) Create a roadmap for the complete transition to renewable energy sources 2) Collaborate with the gas industry on providing alternative sources of energy, such as hydrogen
Standardised charging connections	1) Create a standardised charging point for EVs
Lobby to install smart meters and battery / charging infrastructure	1) Work with Ofgem on having more of a role in smart meter and battery storage roll out
Facilitate large-scale renewable projects	1) Facilitate collaboration across government and industry
Carbon cost of new developments	1) Share best practice across WPD
Charge more for connecting fossil fuel generation	1) Prioritise and incentivise alternative, green connections
Look at vehicle to grid	1) Take a lead on developing vehicle to grid
Address key partners' and stakeholders' impact	N/A

Education on what net-zero means	N/A
WPD doing the design for and rolling out EV infrastructure as a new service	N/A
Consider rural customers	N/A
WPD's role in behaviour changes for net-zero	N/A
Separate network for electric vehicles	N/A
Net-zero by 2050	N/A
Ensure capacity there for local generation to achieve net-zero	N/A
Incentives for low-carbon connections	N/A
Help businesses work towards net-zero	N/A
Ensure rural communities don't lose out	N/A
Electrification	N/A
Life cycle cost of carbon	N/A
Availability of generation	N/A
Cheaper connections for charge points powered by renewables	N/A
Climate adaption planning and focus	N/A
Decarbonisation	N/A
Source green technology locally	N/A

Sub-topic: Supply-demand forecasting

What we heard in 2019:

The increasing penetration of variable renewable generators leads to a network with more variable demand and generation curves. Stakeholders during the preliminary engagement events highlight the need to accurately predict these fluctuations as WPD transitions into a DSO. Future network capacity was mentioned in multiple events as a concern in light of new renewable generation as well as new housing developments. It was also suggested that pressure should be placed on Ofgem to change the rules to allow DSOs to reinforce the network ahead of need to better integrate more renewable generation and achieve the net-zero target by 2050.

Summary of Phase 2 feedback

15.1. Stakeholders were very conscious of the monumental changes which will occur on the network in the near future, and strongly recommend that WPD adopt a policy of investing ahead of need. This was seen as critical due to the speed of new technology uptake and how this may exceed WPD's ability to reinforce the grid. It was recommended that WPD coordinate and collaborate with planning authorities and developers to ensure new developments are built with net-zero compliance in mind.

15.2. Lobbying the government for changes in technology deployment targets and incentives was seen as an important step for gradual uptake of technology rather than a rapid demand change – such as an increase in electric heating when new houses cannot be connected to the gas network after 2025. Investment was seen as a crucial element to balancing future supply-demand, but it was highlighted that investment should be transformative and not just to reinforce the network. Stakeholders believed that more investment in the present would reduce the cost of net-zero significantly in the future. However, this does have to be balanced with affordability for customers.

15.3. A total of **127** pieces of feedback were collected for supply-demand forecasting during phase 2 engagement, which adds to the **9** pieces collected during phase 1. This sub-topic has **10** priorities and **40** proposed commitments.

Priority ranking

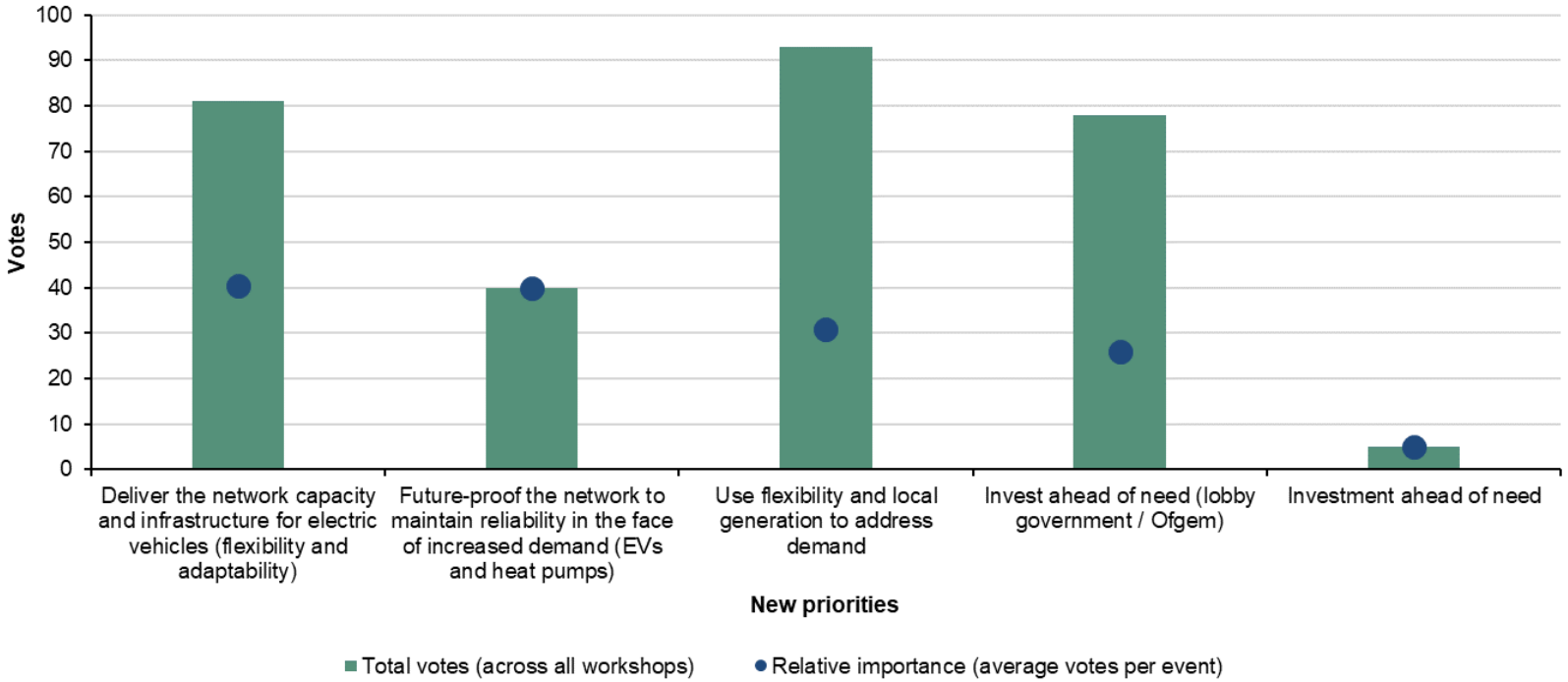
Existing priorities

15.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received. There was only one existing priority for supply-demand forecasting.

Priorities	Votes	Relative importance
Where reinforcement is required ensure it's "future proofed" (duplicated in summary report)	100	16.66667

New priorities

15.5. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.



15.6. For the newly suggested priorities in supply-demand forecasting, 'Use flexibility and local generation to address demand' collected the highest number of votes across all workshops. However, the priority has a lower 'relative importance' (31 votes per event), compared to others that received more votes at just one event.

15.7. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance on some of the new priorities, such as 'Deliver the network capacity and infrastructure for electric vehicles (flexibility and adaptability)' (relative importance of 40.5), and 'Future-proof the network to maintain reliability in the face of increased demand (EVs and heat pumps)' (relative importance of 40).

Detailed feedback

Feedback for Supply-demand forecasting can be divided into three themes:

- Data analysis and scenario creation
- Collaboration
- Demand-supply balancing and network flexibility

Data analysis and scenario creation

15.8. Reinforcement is a key part of preparing for the future demand of the network, and stakeholders were keen to see WPD invest in the network before need (E017, E017, E019, E020, E021, E022, E023). The network is likely to require substantial improvements in order to be future-proofed and stakeholders highlighted that it is likely that paying large amounts in the present will save in the future when on the path towards net-zero (E018, E023). WPD could offer a revolving local fund to facilitate investment in infrastructure that is low-carbon (E019). However, working with local partners was seen as important to limit costs while also maximise the effect (E019).

Future energy scenarios

15.9. WPD's Future Energy Scenarios (FES) are developed to help predict the electricity grid of the future, however, stakeholders questioned why WPD needed a different set of scenarios to the National Grid (E035). Furthermore, many questioned the assumptions around reactive power and system inertia in the future (E035). The lack of clarity around assumptions and methodology was evident in several stakeholder queries around the potential future developments, the effect of different EV scenarios, car sharing, smart charging and the changes in the contract for difference policy (E035, E035, E035, E038).

15.10. Stakeholders were also interested to see the granularity of the scenarios included, especially at a substation level in terms of the estimated load from EVs and heat pumps (E035). Others noted the importance of having detail to the 11kV level (E038). Stakeholders also noted the importance of integrating the FES into local infrastructure delivery plans and local energy plans (E037). Stakeholders in South Wales also noted their interest in seeing a whole system approach to the FES in Wales (E035).

15.11. Stakeholders were also interested in the adjustments WPD would make to their FES in light of the COVID-19 pandemic (E038).

Collaboration

15.12. Stakeholders called for collaboration with industry to be clear about where the network has the capacity for more renewables (E018). Bipartisan planning was seen as the best way to plan for the transition as everyone can contribute centrally (E019). Working with local authorities, in particular, will improve WPD's exposure to development proposals (E019) so that areas of massive growth can be identified (E023). It was recommended that WPD should work with developers with facilitating net-zero in mind (E022). Lobbying the government for changes in building policy should also be a focus here (E022). It was suggested that WPD should commit to being a statutory consultee on planning proposals to understand the developments that are coming and help with joined-up thinking (E018).

15.13. Collaboration with other authorities was mentioned to establish higher minimum engineering requirements, for example, to make it a policy for new cable installed to have a higher capacity than is currently required to prepare for multiple chargers to be installed at a later time (E019).

Lobbying

15.14. Making changes to policy was noted multiple times as the most effective way to enact changes, and WPD are in a very powerful position to lobby the government to help deploy the technologies that will be needed in future (E017). It was also mentioned that national policy should focus on reaching targets for key technology deployments, such as EVs (E023), three-phase charging and heat pumps (E022).

15.15. Three-phase charging for all households was a suggestion (E018, E018) and stakeholders questioned why this wasn't current policy when it is known that this will be needed in future (E022). Car and bus charging integration to the network was noted as another major challenge, and may best be paired with storage (E022).

15.16. Decarbonisation of heat was seen as a key factor in future scenario planning in the eyes of stakeholders, like the fact that no gas will be connected to any new builds from 2025 will result in large electricity demand change from that point (E020, E022, E022). However, stakeholders also wanted WPD to help push electrification of heat before this deadline and lobby the government for incentives to help before the hard deadline (E022).

Local Area Energy Plans (LAPs)

15.17. One of the most crucial elements for WPD to collaborate with other stakeholders was deemed the Local Area Energy Plans (LAPs) and stakeholders were very interested to understand the current procedures around data and resource sharing in this context (E035). Stakeholders also questioned at what point developments were included into the LAPs (E035) as well as the process for collaborating with stakeholders (E035). A local planning authority representative noted that they would welcome more input and collaboration with WPD when undertaking their renewable energy assessment for the Local Development Plan (E036) and that another stakeholder suggested that WPD work closer with developers and Renewable UK Cymru (E036). It was also noted that collaboration is especially key in large cities such as Newport and Cardiff where a review of local development plans would help better inform the LAP (E036).

Demand-supply balancing and network flexibility

15.18. Matching current infrastructure to future demand expectation was discussed in several locations (E018, E020, E021, E033). One option for increasing the grid's flexibility was through using battery storage, increasing demand-side response as well as working with LAs to find and use spare capacity (E018). Stakeholders mentioned that some distribution networks have already started using battery storage during planned outages (E019), but this could also be utilised during power cuts (E020). When coupled with a renewable generator (like wind or solar) stakeholders suggested this could be a very good way to increase network resilience, as well as flexibility, and ultimately be able to react to outages more effectively (E02). Stakeholders suggested that WPD should also be incentivising microgeneration to reduce the overall long-distance transfer of electricity and generate closer to demand (E019, E019).

Transformative investment

15.19. Investing ahead of need was mentioned in a number of workshops (E017) and this was seen as important due to the long term benefits and savings (E019). However, it was noted that the business case was not always made clear enough to highlight these returns (E019) and utilising cost-benefit analyses will be able to better allow WPD to prioritise investment ahead of need (E018). Investment needs to consider the rapid changes which are likely to take place in the near future. These may occur at a pace that WPD's network reinforcement cannot match, risking network reliability (E018, E018, E020, E021). Stakeholders suggested that investment should be focused on transforming the grid into its new future state (E020, E023) not just reinforcing the current infrastructure (E020, E023, E033).

Cost

15.20. Experts have noted that there will be a substantial cost to going net-zero, but WPD needs to convince and assure major energy users that it will be worth it (E022). It was also noted that WPD needs to be aware of the affordability aspect for vulnerable customers (E022, E022). Stakeholders stated that future-proofing would not be as much of an issue if WPD were paying for it out of their profits and hitting shareholders, but the reality is that it will be end customers paying for the changes (E019). Furthermore, despite the higher costs of infrastructure in rural areas per capita, stakeholders pointed out that these should be spread across all customers rather than directly impacting the vulnerable (E023). Whole-life costs should be considered when determining if undergrounding of cables should be done at the point of reinforcement (E033).

Proposed commitments

Priorities	Commitments
Where reinforcement is required ensure it's "future proofed"	1) Lobby for investment ahead of need in areas of the network where certain criteria are met, whilst minimising risk of stranded assets 2) Work with local authorities to clearly identify where to reinforce for growth in housing and EVs in line with local plans 3) Install three phase supplies 4) Strategically reinforce the network to prioritise demand and generation that meet net-zero targets 5) Consider changing the charging mechanisms on reinforcement so that developers cannot hoard capacity 6) Keep pace with the latest innovations and renewable technologies and ensure they are future-proofed 7) Ensure that reinforcement is future-proofed, albeit with early investment 8) Lead the conversation to support new systems, including by working with developers 9) Lobby for additional clarity on government policy and an end to gas in new homes 10) Publish a plan for EV charging 11) Ensure that you have enough capacity in the network 12) Adopt a localised approach 13) Support those communities who are off the gas grid 14) Ensure that your plans are affordable for all customers 15) Work with developers to incentivise smarter reinforcement approaches in line with DSO 16) Consider the impact of climate change (e.g. flooding) when reinforcing 17) Adopt a consistent, long-term approach to reinforcing the network

Future-proof the network to maintain reliability in the face of increased demand (EVs and heat pumps)	1) Lobby government to create a coordinated, national energy strategy 2) More support for councils and rural areas to upgrade infrastructure 3) Focus on the future network and consider the impact that new sources of demand such as EVs will have on reliability 4) Lobby government for ability to invest ahead of need 5) Create a point of contact with community energy groups: be transparent over issues such as capacity 6) Forecasting to accurately predict future power needs 7) Communicate to all customers how you will maintain reliability
Use flexibility and local generation to address demand	1) Use battery storage to help support network reliability 2) Address frequency issues 3) Deliver more new and alternative connections to help network reliability 4) Increase use of demand side response to help network reliability 5) Work with LAs to find and use spare capacity
Invest ahead of need (lobby government / Ofgem)	1) Lobby government for the creation of a national energy policy framework 2) Work with the home builders federation 3) Focus on affordability: who will bear the cost of investment? 4) Socialise costs
Deliver the network capacity and infrastructure for electric vehicles (flexibility and adaptability)	1) Make the case for investing in network capacity to Ofgem by designing an EV scheme on a small scale in a variation on section 16 of the Electricity Act
Investment ahead of need	1) Increase the amount of strategic investment in the network
Extra demand	N/A
Availability and supply	N/A
Transformative Investment	1) Lobby government to be able to invest ahead of need and transform the existing network. 2) Review and respond to the National Planning Policy Framework. 3) Focus on affordability.
Balance demand and generation	1) Encourage and enable development of microgeneration

High-level topic: Enabling factors

Sub-topic: Collaboration & whole system approach

What we heard in 2019:

Stakeholders in several preliminary engagement events mentioned the importance of both intra- and inter-sectoral collaboration in a whole range of services from vulnerable customers to EV charging points. Stakeholders desired WPD to become a facilitator between the multitude of parties involved in a certain sector or service, possibly through establishing local hubs (as they have in Fuel Poverty), to improve the ease and cost of final delivery to the customer.

Summary of Phase 2 feedback

16.1. Collaboration was discussed in all the workshops in a whole range of different contexts. Stakeholders noted the importance of utilising WPD's partners, both inside and outside the electricity industry in order to provide the best service to their customers. Planning, both in the context of new housing developments and in the context of low-carbon energy plans were discussed extensively and were the two most important subjects under this topic area. First, stakeholders believed that WPD should be more involved in crafting planning regulations and planning applications due to the effect they will have on future network demand and the new electricity operated technologies that will be integrated into new buildings. WPD also have a crucial role to play in helping other organisation to develop their low carbon plans for the future. It was noted that most organisation are now constructing net-zero plans, but they do not always align which can be counterproductive and will waste resources. Alternatively, WPD should facilitate the discussion on this subject between all partner organisations and also establish complete transparency about their strategy and future scenarios. This was especially important around heat, transport and connections. Other topics discussed was the need for WPD to be a leader in this collaboration process, for it to lobby the government and Ofgem for policies around decarbonisation, and for WPD to establish partnerships with a whole range of organisations to ensure all voices are heard and everyone can work together.

16.2. A total of **258** pieces of feedback was collected for the collaboration and whole systems approach during phase 2 engagement, which adds to the **25** pieces collected during phase 1. This sub-topic has **30** priorities and **102** proposed commitments.

Priority ranking

Existing priorities

16.3. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

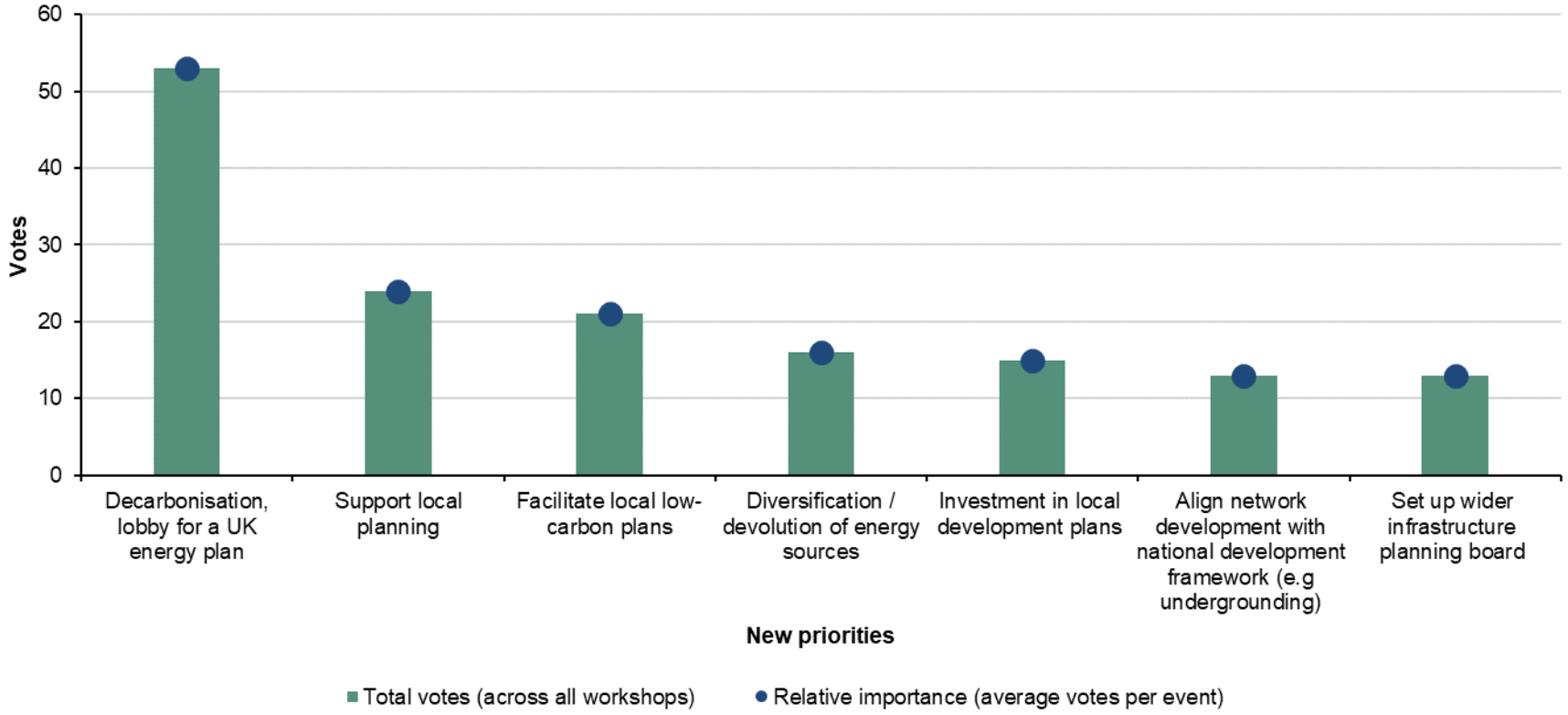
Priorities	Votes	Relative importance
Collaboration to share best practice approaches	169	28.17
Coordinate network planning with other utilities to find best solutions	145	24.83
Predict future changes and uptake of localised WPD future energy scenarios	115*	20
Facilitate collaboration between local groups to deliver local energy plans	98	16.83
Working collaboratively with stakeholders and legislators to share H&S best practice	2	0.33

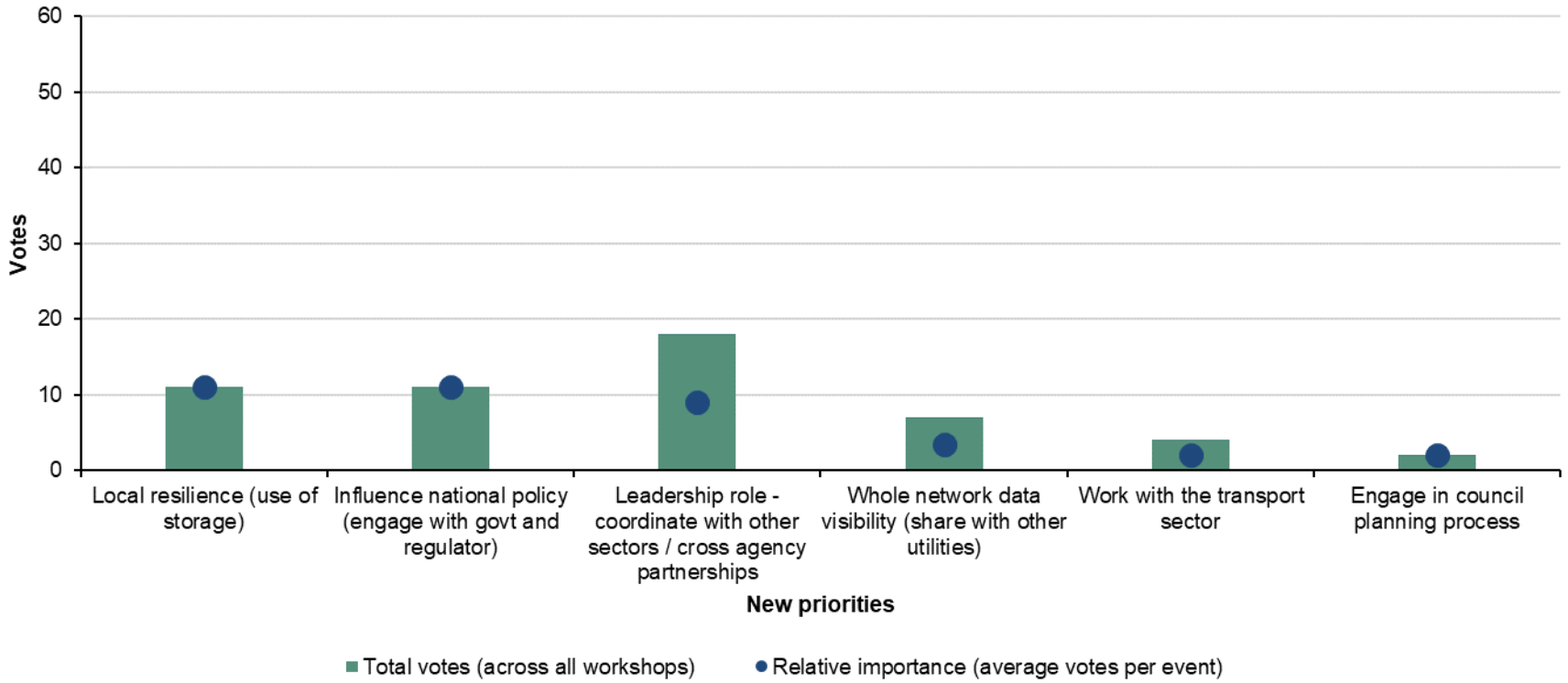
** This priority received the highest number of votes in the online engagement event (E033). These votes have not been included here due to their very small sample size and subsequent statistical insignificance.*

16.4. The priorities receiving the highest numbers of votes focused on collaboration and coordination with other networks, whereas the lowest ranking priorities concerned Health & Safety best practices.

New priorities

16.5. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.





16.6. For the newly suggested priorities in collaboration & whole system approach, 'Decarbonisation, lobby for a UK energy plan' collected the highest number of votes across all workshops. As it was only discussed at one workshop, the priority also had the highest 'relative importance' (53 votes per event).

16.7. From these graphs, we can infer that ***when presented with the option***, stakeholders placed significant importance on some of the new priorities, 'Decarbonisation, lobby for a UK energy plan' and 'Support local planning', over some of the existing priorities.

Detailed feedback

Feedback for Collaboration and whole systems approach can be divided into six themes:

- Planning
- Future energy plans
- Influence a national policy on decarbonisation
- Local resilience and storage
- Partnerships
- WDP showing leadership

General

16.8. Ensuring a whole systems approach was noted as fundamental by stakeholders (E033).

Planning

16.9. Coordinating network planning with other utilities was voted the second-highest priority for stakeholders (E017) as a more holistic, whole-system approach was deemed more likely to find the best solution (E018, E020) and best prepare the network for future demands, such as EV charging (E018). Stakeholders believed that there should be a whole-systems incentive which WPD could try and discuss with Ofgem (E019, E022).

16.10. Reinforcing the network will require extensive digging, so stakeholders wanted to see coordination to ensure disruption is minimised (E018, E018, E021, E021, E023). An energy consultant also mentioned the importance of face-to-face engagement on this topic due to its effectiveness compared to exchanging emails (E021), and that WPD should facilitate these discussions (E020, E021). It was suggested that these meetings should be quarterly (E019). Another stakeholder suggested that those operating critical infrastructure – including WPD – should have a duty to cooperate with police, health and emergency services and should have a statutory forum that operates at least twice a year to establish cross-utility interaction (E021). One stakeholder did mention the challenge with trench sharing responsibilities during faults, but it was suggested that those that opened the trench is responsible for the guarantee period (E023).

New housing developments

16.11. Demand reduction is an option that stakeholders noted as imperative to trial and explore when constructing local energy plans (E018). A move towards more localised generation was noted and thus respondents wanted WPD to look at all energy vectors and local facilities (E019). Batteries were a suggested avenue to explore here as domestic batteries could be interconnected and aggregated to match local demand and reduce stress on WPD's network (E019). A landowner noted the difficulty of interconnecting different community networks and their assets despite all the opportunities in local areas, such as PV for a local hospital and battery storage in a disused mine in Stoke (E019). The 'Route to Zero Task Force' in Birmingham is starting to work on pulling together best practice and new developments, which stakeholders suggested should be replicated elsewhere nationally (E019).

16.12. Stakeholders proposed that WPD needs to aggregate connection requests better and put people in contact to create a joined-up solution which can help things roll out more effectively (E023) and facilitate collaboration between local groups (E023, E023). It was also suggested that WPD should concentrate on existing housing stock and on preparing for the uptake of new technologies that could put a strain on the system (E022).

Planning policy

16.13. Housing design was an area stakeholders noted that could be influenced to include better technology and minimise demand (E018). Some stakeholders thought that new houses should have renewable technology pre-installed, such as solar panels (E020, E022), while another also mentioned batteries (E020, E022). Another stakeholder also noted that technology installed should be smart to allow participation in demand-side response in the future (E020).

16.14. It was also suggested that WPD should become a statutory consultee on the building regulations board (E018, E018, E020, E021). Stakeholders were conscious that this will vary between England and Wales as the local governments dictate planning rules (E018). Stakeholders noted that despite the appetite for things to change locally, it needed national input, and asked WPD to lobby the government to make this happen (E020, E020). Stakeholders also noted that WPD seems to always be absent from the planning process despite being an important stakeholder (E019).

16.15. A community energy group representative noted their frustration that developers were not helping to drive towards net-zero and thus making it harder for domestic customers to adapt and reduce their electricity emissions (E020). Ultimately, stakeholders believed that a paradigm shift is required in the way Ofgem and WPD behave (E020). It was noted that WPD could influence environmental energy practices of building new homes (E020).

16.16. Clarity about the future changes in planning policy was another factor that stakeholders believed would help, as one stakeholder noted the changes in the percentage of energy that needs to come from renewables and how this will keep increasing over time (E019).

Future energy plans

16.17. Stakeholders believed that WPD should have publicly accessible localised future energy scenarios and was voted the 3rd highest priority (E017, E017), especially as the national picture doesn't always reflect district area scenarios (E019). Information on EV charging point locations and future locations should be disclosed according to stakeholders, and WPD should ensure that this information is always kept up to date (E018). Stakeholders were calling for collaboration from all members of the sector, such as charge point developers, manufacturers and legislators, with WPD coordinating it all (E019, E023). Lobbying for major regional regulatory variations was suggested as this would entice the required investment in different areas (E019). Clear communication was also noted as key, as well as working with the government as policies change constantly and WPD needs to keep a long-term vision and strategy (E022, E023). Once again, stakeholders wanted a long-term national policy so that everyone's thinking is aligned (E022).

16.18. Stakeholders in Cornwall were particularly interested in the devolution and diversification of energy sources (E020) and if this was something that WPD should

support as it would reduce long-distance electricity transfer and thus reduces losses (E020). Collaboration with the local authority was cited as crucial by stakeholders, as there may be a lack of knowledge of the local issues nationally (E020) and that it is important to get sufficient renewables in the right place, without ruining the environment (E020). They also noted that WPD's support on this issue was crucial (E020).

16.19. Connections representatives were concerned about preparing the grid for the future, noting that they didn't want people to invest in areas of the grid where there will be outages (E018) and that isolation points should be added to allow energy to get into the grid (E018).

Local and national energy plans

16.20. Stakeholders noted that there is currently a lot of micromanaging of climate action, despite it being a macro problem. A higher level – even national level - approach was seen as required (E019). Stakeholders wanted alignment between network planning and national development framework (E019, E023). It was noted that the current situation is not only inefficient but often counter-productive and causes problems locally (E020, E022).

16.21. Net-zero planning is happening at all organisations, from local authority and councils to networks like WPD or gas networks, and stakeholders, therefore, voiced that it was only logical for engagement and collaboration on this topic to be multilateral (E018, E020, E020, E021). They continued by stating that this could allow for consistency across the industry and facilitate long-term planning (E021), especially in terms of local energy projects as they might be hidden from network distributors while councils may be aware of them (E021).

16.22. Stakeholders believed that WPD needs to take a leadership role in helping inform and connect the central government, policymakers and local stakeholders (E023). HS2 was also noted as a topic of frustration as stakeholders believed that money could be redistributed to provide cheap green energy for lots of people, but that this hasn't been pushed enough with the government (E023).

16.23. WPD's net-zero transition plan should be transparent and available publicly, according to stakeholders, to help other organisations to align their approaches (E019, E021, E021).

16.24. Facilitating local low-carbon plans was a priority discussed in Bristol (E018) and the main issue noted was the lack of transparency about the whole system in the future (E018) which gives planners an even harder job than what they would have otherwise (E018). An environmental group representative suggested that WPD could create a localised document that allows planning authorities to understand the energy needs and limitations in their area (E019, E022), which will be crucial for ensuring network future-proofing (E022). Other stakeholders agreed that a more formalised process was required to facilitate collaboration on this issue (E019, E019).

16.25. Training was suggested as a good way to educate colleges of engineering of the network (E018, E021). Investment in local networks was also noted as key to support local regions to transition to a carbon zero future, and many local councils are planning for a goal much sooner than the 2050 target set by the government (E018).

16.26. Efficient collaboration between all local stakeholders was cited as a way to minimise the costs and thus ensure its affordability for consumers (E021). Sharing existing datasets on these topics would also ensure that different LAs can work harmoniously

with each other. However, stakeholders noted that it was often difficult to locate the correct member of WPD to engage on these topics (E035) and stakeholders also questioned the ability of local distribution managers to engage directly with local stakeholders on LAs (E036).

Heat decarbonisation

16.27. The decarbonisation of heating was a contentious and uncertain topic for stakeholders and it was suggested that WPD needs to ensure sufficient collaboration with others as they work out the best option for each area, whether that may be electrification, green-gas or district heating (E019, E020, E022). It was also noted that there is a policy void here as the government is not allowing gas connections for new builds from 2025 but this does mean more expensive electricity connections (E022). Stakeholders state that there should be a drive towards heat pumps (E021).

16.28. Hydrogen was also discussed as a realistic option and its effect on electricity demand should be estimated as demand is likely to increase (E023). It was noted that heat decarbonisation will likely require increased network capacity and that WPD should be investing ahead of need (E023).

16.29. A major connections customer wanted to see consistency with EPCs, especially as electric heating has previously been rated badly but may become the most prominent source in the future (E020).

Connections

16.30. Collaboration with private investment was a way stakeholders believed that could encourage more capital flow into renewables and help exploit all opportunities in this sector (E022). Also, it was mentioned that WPD could help with community energy initiatives in solar and wind in a more formal manner (E019). Stakeholders stated that new developers need to understand where WPD's grid has additional capacity, and how much additional capacity will cost (E023).

16.31. A major connections customer discussed the fact that despite asking for a three-phase connection, they were told that the grid isn't capable of taking it, which was deemed very short-sighted (E023). Horizon-scanning is something that has been discussed during several workshops and stakeholders were keen to see WPD reinforce the grid to prepare for the predicted increased demand (E023). However, there was a word of warning that over deploying technology without the supply could result in sunk costs and underutilised assets as technology evolves so quickly – example was wireless charging for buses in Milton Keynes (E023). Car and bus charging were noted as the biggest challenges for the grid in future (E022).

Influence a national policy on decarbonisation

16.32. Influencing national policy was a priority discussed at two workshops that specifically stated the importance of collaborating with the government and regulator so that everyone is committing to the same plan (E017, E017). Lobbying for a UK energy decarbonisation plan was discussed extensively in Birmingham (E019). Lobbying the government and Ofgem were seen as the most crucial elements here, as the changes need to be national and not just local (E019, E019).

16.33. Information clarity was another key aspect that stakeholders believed WPD could have more control over, as this could be a powerful way to convince the government to take a positive decision (E019). One stakeholder also mentioned the potential importance of this post-Brexit due to the increased business uncertainty (E019).

16.34. Electric vehicles were noted as a key part of the policy, which should have clear targets to deliver (E018). Stakeholders also stated that renewable generation deployment should be a clear target, but storage should also be a focus – improving power quality and reducing the risk of power cuts (E019). Local ownership of these assets, particularly battery storage, was seen as a very positive approach (E019). Development of hydrogen technology that could then feed local buses was another approach noted by stakeholders (E019).

16.35. An energy consultant mentioned that there should be changes to the regulatory model as that demand has unintended consequences for supply networks as they have no control over demand, leading to significant reinforcement costs (E019).

Local resilience and storage

16.36. Stakeholders were keen for WPD to research and help establish storage, where appropriate, in local areas to improve local resilience (E021) as it was seen that storage and resilience were closely linked (E021). Balancing services at a local level was noted as a good way of increasing resilience (E018) but it would require better forecasting and low-level local data (E018). Resolving local network issues with local balancing services was seen as attractive by stakeholders, but data was a crucial barrier as this would also be needed to explore whether people would make sufficient money for it to be worth it (E018).

Health & Safety

16.37. It was noted that WPD should work collaboratively with stakeholders and legislators to share the best health and safety practices (E017). It was questioned whether contractors were scored on their health and safety record and policies (E021). It was also questioned whether drivers were checked to have all the necessary information before being given a new vehicle (E022). Stakeholders in Swansea were concerned about logbooks in substations as workers were not filling them in (E023) and that the exact comings and goings within the substation were not noted (E023). Communication across the industry was cited as a big issue by stakeholders in terms of health and safety which must certainly be dealt with (E023).

Partnerships

16.38. Collaboration with other utilities, in gas and water as well as other electricity DNOs, was important to stakeholders (E019). It was suggested that WPD should coordinate and collaborate with the full range of organisation, including local and regional councils, schools, universities, health boards (E023). A local authority member noted that WPD's ability to innovate and change quickly is limited due to its size and built-in inflexible structure, so collaboration with other organisations could help bring in changes faster, as well as understand ways to improve innovation culture within the organisation (E020).

16.39. Data sharing with partners was another priority discussed by stakeholders in multiple workshops (E017) as they wanted to improve the visibility of data about vulnerable

customers for all organisations, particularly other utilities (E023). It was noted that utilities could work together to share predictions around times of high demand or potential incidents (E023).

16.40. Working with the transport sector as they decarbonise was another priority discussed by stakeholders (E017) to deal with the challenges of providing the charging network and providing access to electric vehicles (E020, E023). A key issue highlighted was the box-ticking system that stakeholders felt was currently underway, where infrastructure is deployed with only single-phase technology which will likely be obsolete in the near future (E023). Another related priority established by stakeholders was engaging collaboratively with experts (E018) as this is the most effective way to understand best practice deployed in other parts of the world (E018) and help the UK adopt strategies that have already been successfully validated by others (E019). Furthermore, partnerships with EV manufacturers were also noted as crucial (E023).

16.41. A charity representative mentioned the importance of including all areas in planning discussions, as it was felt that it would be more effective for the whole of Wales to work together, rather than leaving North Wales out of the discussion (E023). Similarly, stakeholders mentioned the importance of innovative processes for rural areas due to the more challenging environments (E020).

WPD showing leadership

16.42. Stakeholders across all locations wanted WPD to show leadership both within the electricity industry and beyond (E019), driving best practice and collaboration with partners (E020). As WPD transitions to a DSO, communication and collaboration with third parties were cited as crucial by stakeholders, to ensure alignment of ideas and projects, as well as sharing knowledge and best practice (E023). Stakeholders also noted that strong industry collaboration will ultimately help to future-proof the network (E020).

16.43. Information sharing best practices will need to be developed as working within and outside the energy industry may cause different challenges, according to stakeholders in Milton Keynes (E021, E021). Similarly, open data was an area stakeholders wanted to see explored to help with collaboration, especially if WPD is driving it (E022). Knowledge sharing with communities about renewables will help mainstream these technologies, according to stakeholders (E023) and ultimately help reach the Welsh government's 2030 targets (E023).

16.44. Lobbying government for changes was noted as key. But to be successful, this also required the coordination of local authorities and industry leadership to make the case (E019). Regional collaboration, in particular, was stated as important by stakeholders, as issues and challenges vary between areas (E019).

16.45. Smart meter data was noted as a potential area for collaboration as this data could be utilised by several organisations to help best serve their customers (E019, E019, E020). However, stakeholders were aware that there are cyber terrorism and data protection risks that would also require a two-way communication to help combat (E018, E018), as well as an awareness campaign to counter the suspicion around smart meters (E018). Stakeholders wanted WPD to work with experts to work out who the likely threats are regarding cybersecurity (E019, E022) and ensure that big corporations, like Amazon, have ethical practices over their handling of energy data (E020).

16.46. Establishing multi-agency cooperation and training was a new priority proposed in Bristol (E018) where stakeholders noted the importance that all parties reacting to an

event were in sync with their actions (E018). It was noted that one way was to have joint training with the fire department for major incidents (E018) or that the same information is relayed to a wide number of relevant organisations (E018). It was also suggested that simulations of incidents could be completed to remind participants of the correct numbers to call (E018) as well as potentially dealing with new technologies that are becoming more prevalent in society – such as EVs and batteries (E018). Similarly, it was noted that the emergency services should be consulted for major planning applications on the impact to neighbouring building safety (E018) and that the safety or vulnerable buildings in an area should be noted within community resilience strategies (E018).

Proposed commitments

Priorities	Commitments
Coordinate network planning with other utilities to find best solutions	1) Coordinate network planning with other utilities (including as and water), the regulator, large commercial users, IDNOs and aggregators to respond to speed of change 2) Work with local authorities, LEPs and developers to support the development and review of local plans as part of network planning 3) Drive innovation across network planning with other utilities 4) Consider alternative energy sources, such as hydrogen, polyfuels, heat and steam networks 5) Coordinate network planning with housebuilders and regulators, e.g. changing EPCs 6) Provide more information to support collaboration on network planning 7) Consider energy storage as part of the solution 8) Lobby for investment ahead of need with a coordinated approach in line with other utilities 9) Focus on sharing infrastructure across utilities, including Welsh Water, BT and Scottish Power (North Wales) 10) Work with big energy users, such as schools and hospitals, on network planning 11) Facilitate workshops with all relevant partners 12) Don't ignore existing housing stock 13) Consult with stakeholders and lobby government 14) Ensure that you have enough network capacity 15) Show leadership in this area 16) Lobby for a policy framework that allows an incentive for strategic cross-utility planning

	17) Collaborate better with gas networks: share best practice and hold quarterly meetings 18) Synchronise network planning to reduce overall costs 19) Improve communication and transparency across networks 20) Adopt a consistent, long-term approach to network planning
Facilitate collaboration between local groups to deliver local energy plans	1) Formalise an engagement plan with local authorities and developers on net-zero targets and planning 2) Provide key data: illustrative constraint information, interactive capacity maps, database of local energy groups and networks 3) Facilitate better collaboration between developers on new connections 4) Provide support and leadership to achieve net-zero, offering advice, training and information 5) Coordinate cross-agency initiatives to reduce demand and promote the use of flexibility services 6) Lobby to become a statutory consultee on planning applications 7) Aggregate local connections requests to facilitate, for example, district heating plans 8) Work with local authorities to identify prime locations on the network for delivering local, low-carbon energy plans 9) Make local plans that are based on delivering net-zero 10) Look for examples of best practice, including from other countries 11) Provide capacity on the network to facilitate EVs 12) Consider waste to energy and provide advice to local government 13) Provide consultancy services for local energy groups 14) Incentivise local energy production 15) Lead on creating a joint task force comprised of industry, combined authority, local authority, and government 16) Make a target to engage hard to reach energy groups 17) Consider heat pumps as part of local energy plans, including thermal storage options 18) Create consensual partnerships between local groups

	19) Maintain an emphasis on affordability, including for 'eco-flex' customers (working poor)
Predict future changes and uptake of localised WPD future energy scenarios	1) Invest ahead of need to keep pace with future energy changes on the network, increasing capacity in areas of predicted need and ensuring reasonable cost of connection 2) Take a cross-utility approach, working collaboratively with local authorities, industry, government, developers, energy providers 3) Drive innovation in this area 4) Take a whole system approach to future energy scenarios, including nuclear 5) Strategically focus on outages, localised isolation points and alternative connection paths with regard to renewables 6) Conduct horizon scanning 7) Participate in Welsh government planning to better respond to future energy changes 8) Invest in, and facilitate, battery storage 9) Monitor evidence and plan long-term 10) Make use of vehicle to grid technology 11) Consider the National Planning Policy Framework 12) Make use of embedded generation and create local grids 13) Lobby for regional regulatory variations: map and create district area scenarios 14) Model current distribution vs predicted changes to customer use and demand 15) Participate in a statutory forum to establish cross-utility collaboration 16) Roll out the work you do with Energy Capital (West Midlands Planning Authority Scheme) 17) Invest in the local network
Collaboration to share best practice approaches	1) Collaborate and work with third party experts, including those in Government to identify threats 2) Share best practice with your partners and collaborate with other networks 3) Establish hubs to help share resources and ideas on cyber security 4) Work with suppliers and third-party organisations to ensure that they comply with data standards

	5) Work to future-proof stakeholders' concerns about cyber resilience 6) Ensure that data is shared safely and securely between collaborating agencies 7) Educate and inform your customers (particularly as regards the safety of smart meters) and other relevant partners on your cyber security best practice 8) Look at your supply chain and scrutinise regulations 9) Consider working with professional hackers and those who can identify weaknesses in your systems 10) provide open data in secure way 11) Take a proactive approach to integrating systems and data from other sources, such as smart cities
Working collaboratively with stakeholders and legislators to share H&S best practice	1) Undertake bi-annual or annual meetings with stakeholders to share best practice 2) Ensure contactors comply with similar health and safety standards to WPD
Decarbonisation, lobby for a UK energy plan	1) Lobby for ability to invest ahead of need 2) Collaborate with local authorities on making case for UK energy plan 3) Research and invest in battery storage and hydrogen
Support local planning	1) Support progress with neighbourhood plan developments, particularly in terms of local generation 2) Seek to influence house building standards e.g ensuring new developments have PV, EV and storage. 3) Encourage developers and councils to produce energy master plans
Leadership role - coordinate with other sectors / cross agency partnerships	1) Lobby government for changes in the regulatory framework that would allow you to take a formal leadership role. 2) Commit to a joint learning and investment plan across different agencies
Align network development with national development framework (e.g undergrounding)	1) Take a leadership role in coordinating a national policy framework to enable net-zero. 2) Align network development with national development to better facilitate large-scale renewable projects
Local resilience (use of storage)	1) Lobby government for battery storage. 2) Consider whether storage is an appropriate solution for local resilience
Investment in local development plans	1) Increase the level of collaboration with local authorities on their development plans

	2) Lobby to become a statutory consultee on planning applications
Diversification / devolution of energy sources	1) Support the devolution of energy, focusing on Cornwall-specific needs including rural requirements
Influence national policy (engage with govt and regulator)	1) Ensure regulatory model is fit for purpose
Whole network data visibility (share with other utilities)	1) Whole network data visibility (share with other utilities)
Work with the transport sector	1) Make data on EV charging points easily accessible
Engage in council planning process	1) Become a consultee on council planning applications
Facilitate local low-carbon plans	1) Work closely with local planners to more successfully enact local low-carbon plans
Set up wider infrastructure planning board	N/A
Multi-agency cooperation and training	1) Undertake joint training and debriefing with the fire's service 2) Provide a point of contact for the fire service 3) Run training and exercises to train the fire service on new risks, such as EVs and batteries 4) Provide materials on topics such as power outages for other agencies 5) Lobby planning authorities to consult with emergency services on major planning applications
Leadership from WPD	1) Work more collaboratively on network resilience. 2) Be open and transparent about what needs to be done and what the impact may be.
Engage with experts in the field	1) Look at best practice in other parts of the world, such as Amsterdam
WPD to be a statutory consultee on new developments	1) Work with local planners and provide full capacity information in advance
Embed security process across energy sector	1) Help to establish high standards of good practice and support others in rolling these out.
Balance services at a local level	1) Provide effective forecasting and low-level, local data
Engage in strategic planning process	N/A
Partnerships	N/A
Industry leadership	N/A
Lobby to be a statutory consultee on development plans	N/A
Establishing communication channels across the industry to encourage collaborative work	N/A
Share best practice	N/A

Sub-topic: Innovation

What we heard in 2019:

Stakeholders during the preliminary engagement were keen to see WPD integrate both technical and non-technical innovation into their services to improve their offering. Several good examples were mentioned from other industries and stakeholders were keen for WPD to learn from best practice at other companies, regardless of the sector.

Summary of Phase 2 feedback

17.1. Innovation is a key part of improving WPD's operations in the future and helping DNOs to adapt to drastic changes in demand and supply patterns. Stakeholders discussed the importance of community energy projects as a base for innovation extensively, especially as it was felt that this could benefit a lot of people which would also help to share knowledge and information. Education was noted as a key barrier for community project success; however, it was also discussed as one of the potential major benefits from focusing innovation here. New technology deployment was also a well-covered topic with discussions in numerous workshops on WPD's role in the roll-out of smart meters, heat pumps, battery storage, inductive EV charging, and three-phase connections.

17.2. Stakeholders noted the key role that WPD plays in lobbying the government and working with suppliers to increase the clarity and range of tariffs available to consumers to improve involvement in flexibility services and reduce their costs. Finally, feedback noted that WPD should be proactive and lead the way with innovation in the sector through establishing a national innovation strategy, an innovation fund, as well as helping partner organisations to establish innovation strategies.

17.3. A total of **273** pieces of feedback were collected for innovation during phase 2 engagement, which adds to the **3** pieces collected during phase 1. This sub-topic has **30** priorities and **70** proposed commitments.

Priority ranking

Existing priorities

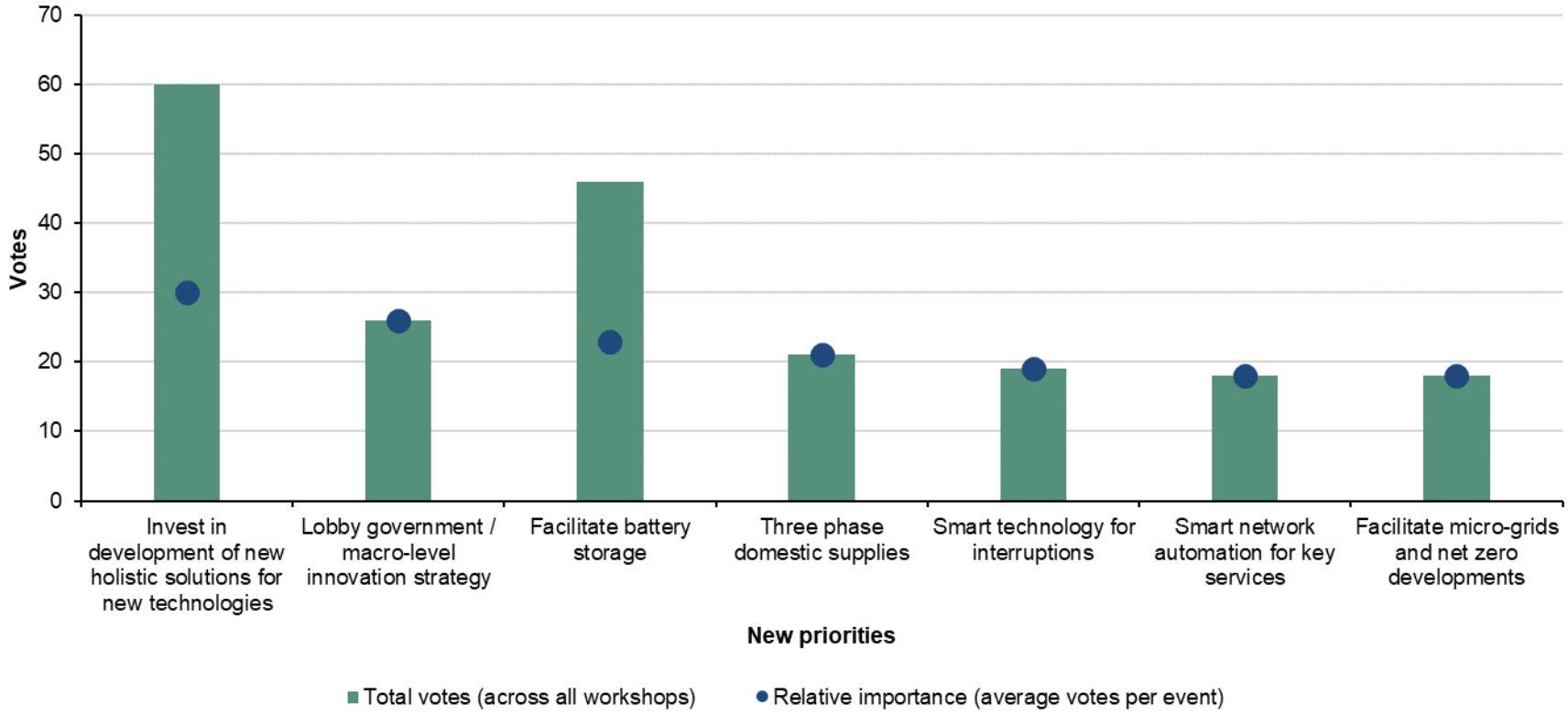
17.4. Existing priorities were established during the preliminary engagement phase and thus were voted on during the 6 regional workshops in phase 2. Therefore, the 'relative importance' (total votes / workshops where voted on) below provides the same ranking as the total votes received.

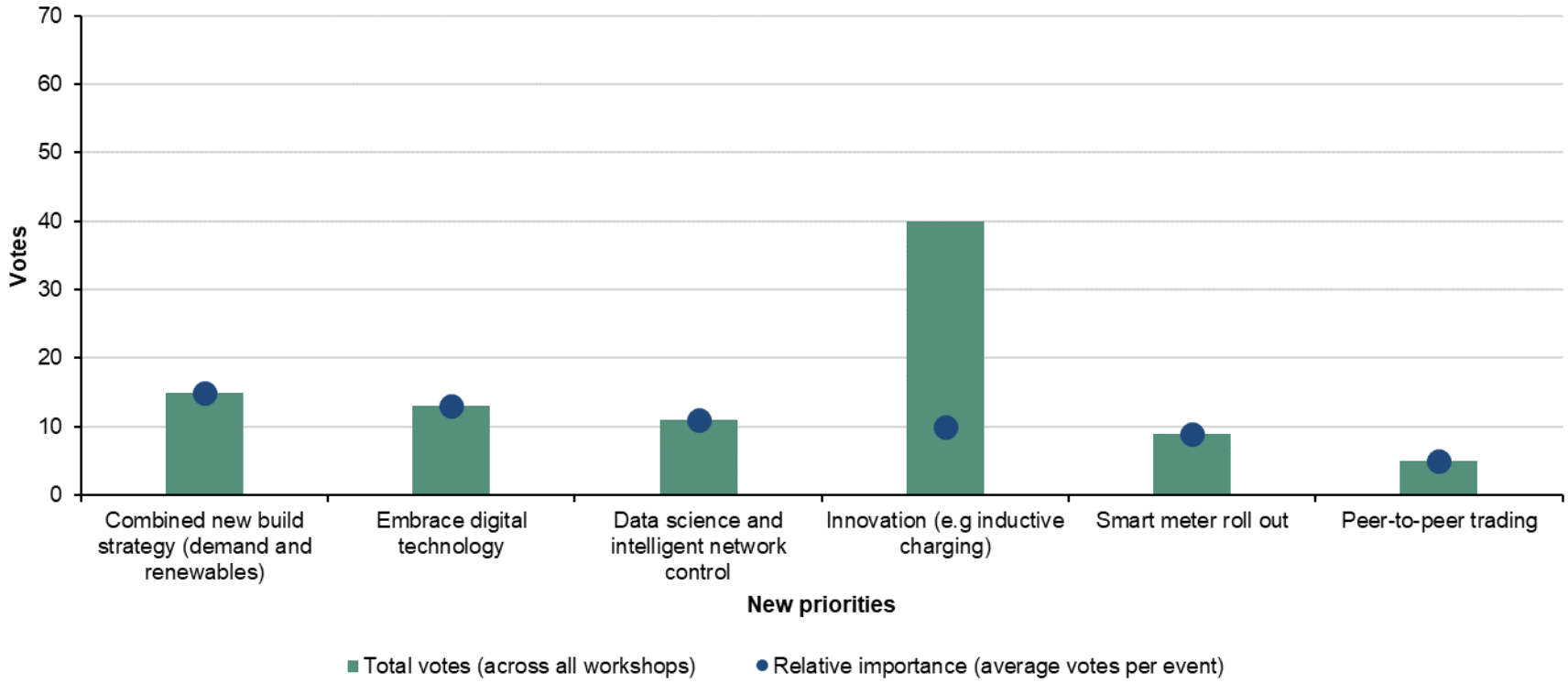
Priorities	Votes	Relative importance
Support community energy projects to connect to the network	153	25.5
Collaborate with industry to offer tariffs to encourage flexibility	120	20
Facilitate heat pump take up	103	17.17
Ensuring safety is considered in the development and roll-out of new technologies	1	0.17

17.5. The priorities receiving the highest numbers of votes focused on community energy projects and tariffs, whereas the lowest ranking priority concerned the safety of new technology.

New priorities

17.6. New priorities were suggested based on feedback collected at each workshop. Therefore, not all new priorities were discussed or voted on at each workshop. The graph below shows the total number of votes for each new priority alongside its 'relative importance', calculated by dividing the total number of votes by the number of events where it was voted on.





17.7. For the newly suggested priorities in innovation, 'Invest in development of new holistic solutions for new technologies' collected the highest number of votes across all workshops. The priority with the second highest total votes was 'Facilitate battery storage', however, it is only the third highest priority for relative importance (23 votes per event).

17.8. From this, we can infer that ***when presented with the option***, stakeholders placed significant importance some of the newly suggested priorities over the pre-existing options, despite receiving lower total votes.

Detailed feedback

Feedback for innovation can be divided into six themes:

- Support community energy projects
- New technology
- Inside buildings
- EVs
- New services
- Showing leadership and lobbying

Support community energy projects

17.9. Stakeholders believed that supporting community energy projects was the highest priority for driving innovation and new services (E017). Their potential was discussed in terms of deploying renewable generation as well as providing grid flexibility with storage (E018). However, WPD must assist with the development of smart grids if community projects are to be viable on a larger scale (E019, E021). Stakeholders thought that community energy projects should be higher on WPD's priorities due to a large number of people it could affect, and the knowledge individuals would gain about the energy network and WPD's operations (E023). It was suggested that WPD could scale up their approach through LEAP partners and adopt a standardised approach nationwide (E020).

17.10. Financially, there were several issues raised by stakeholders surrounding community energy projects. Funding projects is an issue as stakeholders realised that WPD wants to help improve their network, but it also needs to be a balance between WPD and consumers' bills (E018). A local authority member noted that there need to be subsidies for communities and avenues to entice investment (E019). Stakeholders believed that financial incentives should be available to help projects get started (E023). A community energy group representative asked about bursaries so that volunteers can travel to stakeholder engagement events without incurring the costs themselves (E018). Another way stakeholders suggested was for WPD to help projects access Ofgem's innovation strategy fund (E020). It was also questioned whether WPD has a standalone innovation fund (E020).

17.11. Stakeholders wanted WPD to lobby the government and local authorities for another type of feed-in tariff (E019) and include solar panels and heat pumps on planning regulations (E019, E019). The difficulty of changing the regulations was recognised, but the local authority needs to change them to encourage more self-generation, which will ultimately also lead to more domestic storage (E019). It was also questioned whether community energy project connections should be charged the same as commercial ones, and it was suggested that WPD could maybe lobby Ofgem on this (E018).

17.12. A storage and renewables installer noted their frustration over National Grid's constraints on storage deployment but suggested that there could be creative solutions to deploying storage with community energy projects (E018). A local authority member also agreed that crowdfunding projects for solar and wind generation has been successful and the same template should be used to deploy storage in communities (E018, E019). Storage was mentioned by a charity member as an important technology that needed to be deployed to increase capacity (E018).

17.13. Information and education were noted as key barriers to community project success, especially in terms of what the future grid will look like in different local areas (E018). Informing planners and councillors was noted as important by stakeholders (E018). Training was also an avenue where stakeholders wanted to see WPD help these projects succeed (E021). An energy consultant also pointed out that this education should not be

limited to those currently involved in community energy projects, but that WPD could work with other utilities to provide information packages for schools to educate the voters and partners of tomorrow (E021). A YouTube video or case studies were suggested mediums to help spread information effectively (E021).

17.14. Alongside education, energy management plans were suggested by stakeholders as a way for WPD to help community energy projects (E018). It was noted that WPD could be more objective when advising customers as they are not a supplier (E018). A vulnerable customer noted that WPD may need to do some hand-holding, or at least consulting, to help facilitate community energy projects due to the lack of knowledge and expertise (E019, E020) and that the process needs to be simplified (E020). It was also noted that it may be difficult for these projects to keep up with all the policy changes in the sector (E023). Accessibility to WPD was something a community energy group representative wanted to be improved (E020).

New technology

17.15. Embracing digital technology was noted as an important priority in Nottingham (E022), especially during the transition to a DSO where WPD are required to proactive network managers (E022). It was noted that driverless vehicles may need to be considered for future scenarios (E018) and it was mentioned that WPD should promote autonomous vehicles and their potential in future so that people don't feel like they need a car (E018). Stakeholders noted that autonomous vehicles are more likely to also be EVs and thus able to help with grid flexibility (E018, E018), and this would also reduce the total number of cars and charge points required on the network with car-sharing (E018). However, it was also discussed in all six workshops that safety should be ensured in the development and roll-out of new technologies (E017).

Inside buildings

17.16. An energy consultant highlighted that current innovation funding tends to be drawn towards larger-scale projects and that local projects in batteries and domestic flexibility technologies are negated (E019). The consultant continued to say that the level of application of innovation doesn't seem to hit the right scale as the business case is not always as clear for investment in domestic flexibility technology, but this could be a priority for WPD to change (E019). Stakeholders noted that holistic solutions must be utilised for new technologies within buildings (E017), especially as many of these new technologies are necessary to help WPD reach their goals and thus WPD should be involved in investing in development (E023). Additionally, it was highlighted that technology can be utilised to reduce interruptions for consumers which can reduce vulnerability, such as an Uninterruptible Power Supply (UPS) (E022).

17.17. Smart meters were also found to be a contentious issue, and that stakeholders were generally sceptical of their capability and benefits (E019). There was uncertainty around the smart meter data's usefulness if WPD does not have sufficient monitoring of its network's electricity flows (E019). It was also noted that consumers did not need a smart meter to operate on an Economy 7 tariff, and thus it may not be necessary for demand-side response, despite the potential increase in ease (E019). Subsequently, stakeholders noted it may be useful to broaden the definition of innovation schemes to include behavioural changes and community schemes (E021). Some stakeholders noted that changing consumer behavior will require major grant support from the government (E038).

Electric Vehicles

17.18. Innovation around inductive charging was mentioned as a new priority (E017). WPD should monitor developments with induction plate technology (E023) with stakeholders keen to see a move to wireless charging (E023). It was suggested that this could also be developed to be a two-way flow so that EVs could sell money back to the grid (E023). Stakeholders stated that future planning should be a priority as significant planning may be required to dig up all the charging infrastructure in 15 years if it is inadequate (E019). Stakeholders highlighted the delicate balance for WPD between deploying enough infrastructure to meet present demand, without deploying too much technology that may be outdated in a short number of years (E019, E019). Researching and analysing future demand was mentioned as a crucial step, especially to estimate the required amount of charging points (E019). Collaboration within the industry was also mentioned as important to ensure it is a joined-up approach so that everyone is pulling in the same direction, rather than struggling to do the same thing (E019)

New Services and technologies

17.19. Direct coordination with manufacturers involved in innovation and new services to facilitate network flexibility was mentioned as a likely requirement in future (E023).

New tariffs

17.20. Stakeholders want WPD to collaborate with industry to offer tariffs to encourage flexibility and was voted the 2nd highest priority under innovation (E017). Tariffs were the most popular suggestion to enforce flexible demand (E023, E023). Stakeholders understand that WPD have limited direct impact on tariffs (E021) but also noted that WPD have substantial influence within the industry and thus could influence suppliers to offer more agile tariffs (E018, E019, E021, E021, E023).

17.21. Tariff intelligence should also improve with visibility improvements to local grid data, according to stakeholders. One stakeholder noted the lack of logic in his tariff incentivising him to charge at night even though he has a solar and wind farm next door producing during the daytime (E020).

17.22. Education was mentioned as a key part of the problem around tariffs as most of the population do not understand or know anything about it – a utility representative quoted 95% of the population (E019). Stakeholders mentioned that tariffs tend to be complex and with too much choice, making them hard to understand how much is going to the distributor (E022). Stakeholders also believed that there should be protection to make sure people do not get penalised for not having the correct or complete information (E019). Furthermore, it was noted that the benefits to businesses beyond sustainability (i.e. financial) should be explained clearly (E019). Stakeholders believed that there would have to be significant financial benefits to the end consumer or activity will not change (E022).

17.23. Ultimately, it was stated that network flexibility has to be a national discussion with Ofgem – both in the context of affordability and encouraging charging models – thus lobbying will need to be an important part of WPD's strategy to drive innovation in this space (E022).

Peer-to-peer trading

17.24. Stakeholders briefly discussed the potential of peer-to-peer trading to offset fuel poverty and vulnerability (E017). A community energy group representative noted that they had successfully trialled peer-to-peer trading on a small scale, despite not yet allowed by Ofgem (E020). It was suggested that WPD could run a pilot scheme to determine the challenges and potential cost reductions for consumers (E020). A utility representative noted that whatever energy that cannot be stored should be used to offset fuel poverty (E022).

Smart meters

17.25. Technological limitations were noted as a potential barrier as one stakeholder questioned whether ubiquitous smart meter roll-out was required before these tariffs would be implemented (E023). Coordination with other utilities, DNOs and suppliers were suggested as actions with smart meters (E020).

Heat pumps

17.26. Facilitating heat pumps was an existing priority that stakeholders voted relatively highly in each workshop (E017). It was noted that the lack of knowledge and understanding around heat pumps make them less appealing for customers (E019, E021), and communication with consumers is key (E019). An EV charge-point installer noted that WPD should also be aware of encouraging over-deployment of heat pumps as it may result in a significant strain on the grid (E019). However, there is also so much positive potential around the flexibility of heat pumps (E021) and their potential facilitation towards net-zero (E021).

17.27. Stakeholders believed that network reinforcement should be a last resort, while network flexibility is much cheaper and DNOs are not incentivised to reinforce more than the minimum (E022). Case studies were recommended to help end-consumers understand the process and target audience (E018).

17.28. Stakeholders believed that WPD is in the perfect position to bring partners from the industry together to facilitate the changes required to make mass deployment a success (E018, E018). Targeting certain buildings would be the smart first step, according to stakeholders. This could include focusing on new buildings (E019, E021), large buildings like schools (E021), and especially large surface areas such as school fields and car parks for ground-source heat pump deployment (E021).

17.29. Many stakeholders noted that it was primarily a policy issue (E019, E019) with initiatives not helping consumers convert from traditional heating methods to heat pumps (E019). It was noted that the incentives for insulation were visible and tangible (E023) which is not the case with heat pumps (E020). People are much more likely to buy a new gas boiler for a fraction of the price of a heat pump, especially as gas is so cheap now (E023). It was stated that the large upfront costs can be a major barrier for consumers, even if the savings will be returned over 10 years (E019). Furthermore, another stakeholder noted that the lack of clarity on the future of heat nationally means that companies are less likely to commit to one technology in case it commits resources into the non-preferred option (E022).

Battery storage

17.30. Facilitation of battery storage deployment was also a priority discussed at several workshops (E017) as stakeholders viewed it as critical infrastructure to provide network flexibility (E020, E020, E020, E023). It was suggested that helping end customers deploy

batteries – for example, in schools or community energy groups – would be the best way to add flexibility without burdening one end customer with the large costs and increasing the inequality of access (E020, E023, E023).

Three-phase domestic supplies

17.31. Despite the lack of feedback, this subject was discussed at two workshops as something that WPD should prioritise (E019), with research needed to determine the feasibility of retrofitting (E020). Additionally, it was suggested that this could be coupled with an increased focus on renewable generation technology deployment with new builds (E021, E021). Collaboration with developers was mentioned as a key element (E021).

Showing leadership and lobbying

17.32. Stakeholders were very keen to see WPD initiate and lead an innovation strategy on a macro-level (E017) which would publish a coherent national industry strategy (E023) with guidelines of how it would be funded (E023). It was noted that WPD needs to be listening to people and take those ideas back to the government to lobby for changes, to avoid issues as seen with the smart meter roll-out (E020).

17.33. It was suggested that WPD should help facilitate innovation across the industry (E017), but there should be clearer targets for innovation growth and clarity on whether this will be targeted towards regional investment or low-carbon technology investment (E019). Stakeholders also expected WPD to help companies and individuals to develop innovative projects (E020) as well as work with major energy users to develop intelligent solutions to reduce current demand (E020), such as agriculture's dependence on fossil fuels (E020). Innovation research and case studies were suggested as a great vehicle for WPD to communicate opportunities to investors and partners (E018, E018, E018).

Proposed commitments

Priorities	Commitments
Support community energy projects to connect to the network	1) Educate and inform communities about the benefits of community energy, using workshops and forums 2) Help to fund and incentivise community energy projects 3) Provide storage to increase flexibility 4) Provide a dedicated point of contact for community energy groups 5) Provide training for communities and include case studies 6) Proactively identify communities where demand can be balanced by supply 7) Work with community energy schemes to develop your business cases and delivery models 8) Develop local energy bands and prioritise connecting community energy projects 9) Provide demand side response for community energy projects rather than just commercial sources of demand 10) Simplify the process of facilitating community energy projects 11) Use local community aggregators 12) Promote good practice among community energy projects 13) Invest ahead of need 14) Provide leadership in this area 15) Lobby government for community energy subsidies, such as new feed in tariff 16) Lobby to change building regulations, e.g. every home to have PV 17) Promote the benefits and methods of self-generation: community geo-thermal, solar PV, etc 18) Consider community energy projects as part of your social contract 19) Assist with the development of smart grids to facilitate large-scale projects 20) Create ambassador / champions

Facilitate heat pump take up	1) Lobby Government to encourage the take up of heat pumps and mandate them in in new builds 2) Lobby so you can invest ahead of need to ensure that there is enough capacity in the network and reinforce the network where necessary 3) Educate customers to foster understanding of heat pumps and their benefits 4) Engage with developers and local authorities to drive uptake through the planning process 5) Roll out trails and innovations projects (similar to Electric Nation) to promote models to encourage take up, with tariffs to incentivise customers 6) Drive innovation in this area, for example fifth generation district heating 7) Create a heat strategy plan that takes into account implications of a mass take-up of heat pumps 8) Make clear the investment needed on the network and in retrofitting older properties to prepare for heat pumps 9) Socialise the costs 10) Adopt a whole systems approach, looking at the comparative cost of electricity and gas for heating homes 11) Look at local energy generation to accommodate the increased demand 12) Work with industry to ensure that heat pumps are affordable 13) Provide financial incentives 14) Also facilitate take up of PVs, battery storage and district heating"
Collaborate with industry to offer tariffs to encourage flexibility	1) Encourage suppliers to provide incentives for customers to encourage the take up of flexibility services 2) Collaborate with industry to roll out smart meters and make use of the data this derives to encourage flexibility 3) Lobby Government and seek to influence Ofgem 4) Educate customers on the benefits of flexibility services. 5) Lobby government to provide grants, for example, for alternative boilers 6) Work with manufacturers involved with innovation to help customers use energy flexibly 7) Devise a standardised tariff for flexibility that increases accessibility for all"
Ensuring safety is considered in the development and roll-out of new technologies	N/A

Innovation (e.g inductive charging)	1) Consider / encourage the take-up of alternative energy sources, such as hydrogen and other low carbon fuels 2) Invest in research into induction 3) Enable vehicle to grid capability 4) Use innovation to address land rights
Smart network automation for key services	1) Be innovative and look at examples of best practice from other countries 2) Use technology to focus critical assets in domestic homes 3) Incorporate battery storage into your plans 4) Use a range of technology and options including power stabilisers
Facilitate battery storage	1) Work with the industry to ensure that batteries can feed back into the grid. 2) Support the development of technology so EVs can act as batteries to store energy 3) Encourage the take-up of batteries to store solar power. 4) Maintain a focus on encouraging customers to reduce energy usage.
Data science and intelligent network control	1) Invest in upgrading to systems capable of intelligent network control 2) work with data available to improve fault level management
Combined new build strategy (demand and renewables)	2) New
Lobby government / macro-level innovation strategy	1) Publish macro-level innovation strategy
Peer-to-peer trading	1) Make use of this to offset fuel poverty to help communities
Embrace digital technology	N/A
Invest in development of new holistic solutions for new technologies	N/A
Three phase domestic supplies	N/A
Smart technology for interruptions	N/A
Facilitate micro-grids and net-zero developments	N/A
Smart meter roll out	N/A
Analysis / research	1) Forecast where capacity will be needed as demand increases 2) Promote approved charge point installers, based on analysis and research 3) Share information and best practice with key partners
Longevity / future	1) Think long term: how long will an EV last? 2) Forecast long term costs and affordability, particularly with regards to vulnerable people
Encourage research projects and innovation	1) Keep funding innovation projects and share case studies of best examples.

	2) Research new ways of generating power, for example working with farmers to innovate around waste converted into energy
Driverless vehicles	1) Consider future energy scenarios with greater numbers of autonomous vehicles - work with local authorities to plan for this
Roll out innovations across industry	1) set regional investment growth targets
Maximise value from smart meters	1) Work with other relevant parties to facilitate the take-up of smart meters
Innovation	N/A
Help companies and individuals to develop innovative projects	N/A
Intelligent solutions for major energy users	N/A
Innovate to reduce consumption	N/A
Innovation inside buildings	N/A
Broaden definition of innovation schemes to include behaviour change / community schemes	N/A
Be smarter and more agile in your working practices	1) Plan smarter infrastructure upgrades to minimise carbon output

Appendix – All engagement sources

Date	Stage	Event	Event code	Description	Delivery partner	Top 5 segments engaged (% of event total)	Attendees
Mar-20	Phase 2 – Business Plan Development	Summary document of the six stakeholder workshops (E018-E023)	E017	This summary document discusses general trends and insights, and consolidates the priorities and commitments into one single list.	EQ Communications	n/a	n/a
Feb-20	Phase 2 – Business Plan Development	Stakeholder regional workshops Bristol	E018	A qualitative workshop in Bristol discussing WPD's ED2 priorities. 81 stakeholders attended in a roundtable format, all with reasonable levels of knowledge/interest in WPD's operations.	EQ Communications	1) Parish councils (22%) 2) Local authorities (21%) 3) Others (7%) 4) Domestic customers (5%) 5) Utilities (4%)	81
Mar-20	Phase 2 – Business Plan Development	Stakeholder regional workshops Birmingham	E019	A qualitative workshop in Birmingham discussing WPD's ED2 priorities. 82 stakeholders attended in a roundtable format, all with reasonable levels of knowledge/interest in WPD's operations.	EQ Communications	1) Local authorities (17%) 2) Other (17%) 3) Utilities (10%) 4) Energy consultant (6%) 5) Developers (6%)	82
Feb-20	Phase 2 – Business Plan Development	Stakeholder regional workshops Cornwall	E020	A qualitative workshop in Cornwall discussing WPD's ED2 priorities. 58 stakeholders attended in a roundtable format, all with reasonable levels of	EQ Communications	1) Parish councils (17%) 2) Local authorities (16%) 3) Domestic customers (9%) 4) Energy consultant (7%)	58

				knowledge/interest in WPD's operations.		5) Community energy groups (7%)	
Mar-20	Phase 2 – Business Plan Development	Stakeholder regional workshops Milton Keynes	E021	A qualitative workshop in Milton Keynes discussing WPD's ED2 priorities. 42 stakeholders attended in a roundtable format, all with reasonable levels of knowledge/interest in WPD's operations.	EQ Communications	1) Local authorities (19%) 2) Other (14%) 3) Energy consultant (14%) 4) Parish councils (7%0 5) Developers (7%)	42
Mar-20	Phase 2 – Business Plan Development	Stakeholder regional workshops Nottingham	E022	A qualitative workshop in Nottingham discussing WPD's ED2 priorities. 63 stakeholders attended in a roundtable format, all with reasonable levels of knowledge/interest in WPD's operations.	EQ Communications	1) Local authorities (27%) 2) Parish councils (16%) 3) Other (13%) 4) Academic institutions (10%) 5) Utilities (6%)	63
Feb-20	Phase 2 – Business Plan Development	Stakeholder regional workshops Swansea	E023	A qualitative workshop in Swansea discussing WPD's ED2 priorities. 70 stakeholders attended in a roundtable format, all with reasonable levels of knowledge/interest in WPD's operations.	EQ Communications	1) Local authorities (45%) 2) Government (9%) 3) Other (6%) 4) Academic institutions (6%) 5) Utilities (4%)	70
Jan-20	Phase 2 – Business Plan Development	Distributed Generation Owner/Operator Forum	E028	A meeting of the Distributed Generation (DG) owner/operators to discuss issues in relation to outages and constraints under its Incentive on Connections Engagement (ICE) work plans.	WPD	1) Utilities (71.5%) 2) Stoage / Renewables providers and installers (28.5%)	18

Feb-20	Phase 2 – Business Plan Development	Connection Customer Steering Group	E029	This steering group discusses a range of topics around the WPD's connections process and plans, particularly around the ICE plans.	WPD	1) Major Energy Users (54.5%) 2) Utilities (44.5%)	11
April-20	Phase 2 – Business Plan Development	Distributed Generation Owner/Operator Forum (webinar)	E030	A meeting of the Distributed Generation (DG) owner/operators to discuss issues in relation to outages and constraints under its Incentive on Connections Engagement (ICE) work plans.	WPD	1) Developers (52.9%) 2) Utilities (47.1%)	17
Jun-20	Phase 2 – Business Plan Development	WPD Customer collaboration panel (zoom meeting)	E031	The customer collaboration panel meets quarterly to discuss issues affecting our customers.	WPD	1) Charitites (27.8%) 2) Government (16.7%) 3) Major energy user (16.7%) 4) Academic institutions (11.8%) 5) Utilities (5.9%)	18
Jul-20	Phase 2 – Business Plan Development	Connection Customer Steering Group (online)	E032	This steering group discusses a range of topics around the WPD's connections process and plans, particularly around the ICE plans	WPD	1) Major energy users (70%) 2) Utilities (30%)	10
Jul-20	Phase 2 – Business Plan Development	Online Engagement Questionnaire	E033	This online questionnaire asked stakeholders to assess the currently proposed priorities for each topic and propose new ones if they though an area wasn't sufficiently covered.	WPD	1) Parish Councils (30%) 2) Government (23.3%) 3) Other (16.7%) 4) Energy Consultant (13.3%) 5) IDNO (10%)	28

May-20	Phase 2 – Business Plan Development	Summary document of the four DFES Webinars (E035-E038)	E034	This document provided overarching feedback trends and insights not provided in the individual location documents.	Regen	n/a	n/a
May-20	Phase 2 – Business Plan Development	DFES Stakeholder consultation Webinar - East Midlands	E035	This webinar provided stakeholders in the East Midlands with an overview of the DFES process, what the project outcomes would look like and how they may feed into and access the data. 86 attendees from a range of background and knowledge levels provided input.	Regen	1) Local Authorities (36%) 2) Major energy users (34%) 3) Energy consultants (13%) 4) Utilities (9%) 5) Academic institutions (3%)	86
May-20	Phase 2 – Business Plan Development	DFES Stakeholder consultation Webinar - South Wales	E036	This webinar provided stakeholders in the South Wales with an overview of the DFES process, what the project outcomes would look like and how they may feed into and access the data. 60 attendees from a range of background and knowledge levels provided input.	Regen	1) Major energy users (37%) 2) Local authority (25%) 3) Energy consultant (12%) 4) Government (10%) 5) Community energy groups (6%)	60
May-20	Phase 2 – Business Plan Development	DFES Stakeholder consultation Webinar - South west	E037	This webinar provided stakeholders in the South West with an overview of the DFES process, what the project outcomes would look like and how they may feed	Regen	1) Major energy users (30%) 2) Local authority (20%) 3) Community energy groups (19%)	58

				into and access the data. 58 attendees from a range of background and knowledge levels provided input.		4) Energy consultants (15%) 5) Academic institutions (5%)	
May-20	Phase 2 – Business Plan Development	DFES Stakeholder consultation Webinar - West Midlands	E038	This webinar provided stakeholders in the West Midlands with an overview of the DFES process, what the project outcomes would look like and how they may feed into and access the data. 62 attendees from a range of background and knowledge levels provided input.	Regen	1) Major energy users (52%) 2) Local authorities (30%) 3) Energy consultants (17%) 4) Utilities (4%) 5) Academia (3%)	62
Jun-20	Phase 2 – Business Plan Development	Net-zero South Wales webinar - Webinar - QA	E039	For this webinar, members from Regen, WPD and Wales and West Utilities (WWU) answered stakeholder questions around the pathway to net zero. 326 stakeholder attended this webinar from a range of knowledge levels and background.	Regen, WPD and WWU	1) Other (15%) 2) Utilities (12%) 3) Academic institutions (10%) 4) Energy Consultants (10%) 5) Non-governmental organisations (7%)	326