Attachment 1.01

Engagement

31 January 2023

PowerWater

Contents

Abbreviations

The following table provides a list of abbreviations and acronyms used throughout this document. Defined terms are identified in this document by capitals.

Term	Definition
AER	Australian Energy Regulator
CALD	Culturally and Linguistically Diverse
CCP	Consumer Challenge Panel
CER	Consumer Energy Resources
DITT	Department of Industry, Tourism and Trade
DNSPs	Distribution Network Service Providers
DOEs	Dynamic Operating Envelopes
DTF	Department of Treasury and Finance
EV	Electric Vehicle
IAP2	International Association of Public Participation
JCC	Joint Consultative Committee
NT	Northern Territory
Power and Water	Power and Water Corporation

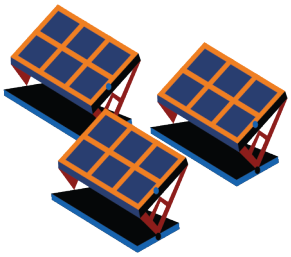
Overview

Engagement with our customers and other stakeholders is a critical and ongoing element of Power and Water's preparation for the 2024-29 determination period. Over the past 18 months, we have met with our customers, energy partners and government representatives to hear what is important to them, to test our forward plans, and ensure our proposal considers what Territorians believe is important to the future of the network and the NT.

Where practicable, we have built their feedback into our expenditure plans, and taken on board actions to improve our customers' experience with us, and the way we engage with them. Table 1.1 summarises our customers' priorities and key themes, as well as key outcomes.

Table 1.1: Summary of customer feedback themes

Theme	What we heard	What we are doing
Support vulnerable customers 	Low income and vulnerable customers should not be left behind. Better information and incentives should be made available to help customers manage their costs and access renewable energy.	• We will continue to partner with energy providers and other stakeholders, particularly retailers, to improve the accessibility and affordability of renewable technologies. • We are developing a customer experience strategy which will look at our customers' journey with us and set out a roadmap for improvement. An important focus of the strategy will be low-income customers and how they interact with us and our services. • We are investigating options to support vulnerable customers through initiatives such as tariff trials and using our website to provide more information about energy affordability and efficiency.
Affordability 	Customers have told us to keep prices affordable and do what we can to avoid price shocks in the future.	• We have changed our investment focus. Instead of focusing purely on high-cost network asset replacement, we will invest in our ICT systems, processes, and our people to improve our asset management capabilities and find alternatives to traditional network solutions. • We are improving the quality of our asset data. By producing better data, we can make better-informed decisions on asset condition, expected life and the optimal time for replacement. We can then extend asset lives – where safe to do so – and defer costly asset replacement programs. • As advised by the RAC, we have our demand forecast based on the latest information, which has brought costs down.

Theme	What we heard	What we are doing
Enabling renewables 	Customers told us they want to be able to connect more renewables, both large and small scale. They expect us to pursue technologies such as battery storage where this can help alleviate network costs.	• We will invest in a 'dynamic operating envelope' system that will allow households to continue to connect rooftop solar without the need for costly network investment. • We will make the necessary network augmentations to connect more large-scale renewables. • We are improving our data, network analysis and planning capabilities so we can best identify how, when and where to connect renewables, energy storage solutions and other future network technology without compromising system security or power quality • We will continue discussions with our energy partners on how we can pursue low-cost solutions that ensure reliability and affordability of renewables for our customers, optimising outcomes across the Northern Territory.

Specific detail on how we are responding to customer feedback, including how we have modified our proposal since our August 2022 Draft Plan, is provided in Attachment 1.03.

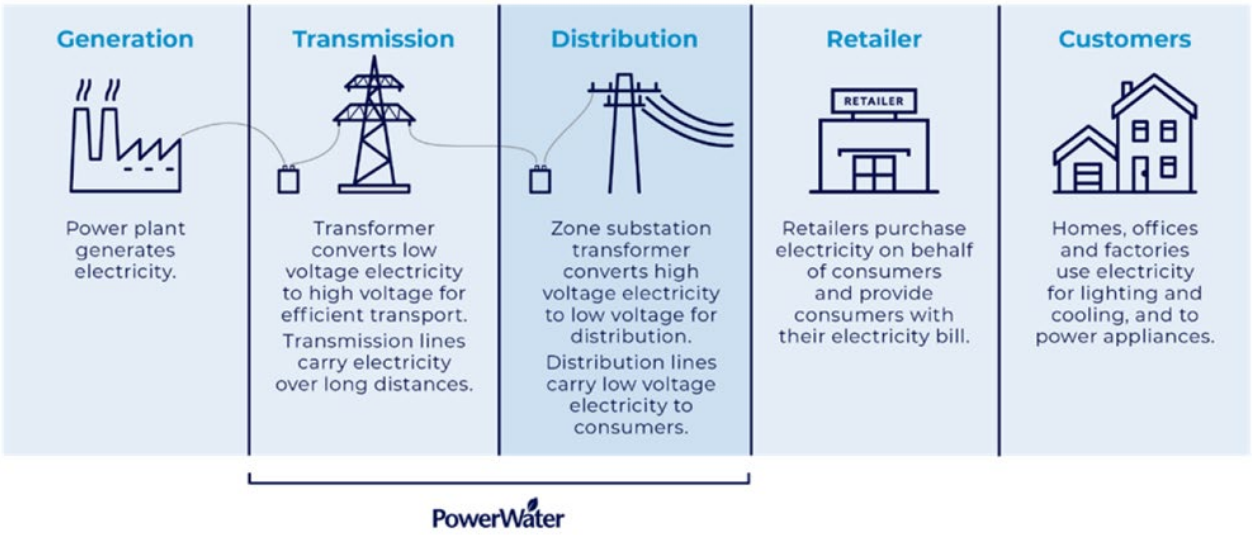
1. Introduction

Power and Water Corporation (**Power and Water**) is the essential service provider in the Northern Territory (**NT**), providing electricity, gas, water and sewerage services to households and businesses. Our purpose is to make a difference to the lives of Territorians. Our business connects our communities to reliable and affordable essential services and provides a foundation for economic growth. We also have strong relationships with our energy partners across the supply chain from government to the generators who produce electricity, and the retailers who purchase electricity on behalf of our consumers and issue electricity bills.

Our electricity services provide power to more than 90 communities in the NT over a landmass of 1.3 million square kilometres. Our three largest networks in Darwin- Katherine, Alice Springs and Tennant Creek are under price regulation. The networks provide electricity to around 72,000 residential customers and 11,000 businesses. Figure 1-1 demonstrates Power and Water's role within the electricity network.

From 1 July 2019, we became regulated by the Australian Energy Regulator (**AER**). Every five years, the AER undertakes a review of our proposed capital and operating expenditure, revenue and tariff structures for our regulated networks. Our next regulatory period is from 1 July 2024 to 30 June 2029 (the 2024-29 regulatory period). The AER review process takes approximately 18 months with our Regulatory Proposal due on 31 January 2023.

Figure 1-1: Power and Water's role in the Northern Territory energy supply chain



1.1 Purpose of engagement

Customers are at the centre of everything we do.

As an essential service provider, our role is to serve the community. It is vital we listen to what our customers and stakeholders expect from our networks both now and into the future. The five-year regulatory proposal process provides an opportunity for customers to provide input into our strategic direction and ensure their values, vision and priorities are reflected in our expenditure plans.

We have captured the opinions of a wide range of participants in the electricity network. Our program of engagement will continue both following submission of our Regulatory Proposal and as part of our business-as-usual activities throughout the regulatory period. We will also seek feedback from the AER on the effectiveness of our engagement.

This document provides an overview of how the engagement activities to date have influenced and impacted the development of our forward expenditure plans for the 2024-29 regulatory period. It outlines:

- Our approach to engaging with customers and other stakeholders in preparing our 2024-29 plans and forecasts.
- The engagement activities we undertook and the outcomes of those activities.
- Lessons learned on the engagement process and how we can improve engagement activities moving forward.
- How we will continue engagement through our business-as-usual activities and programs.

We highlight that, while this document summarises feedback from customers, it does not discuss how that feedback has been built into our Regulatory Proposal for the 2024-29 period. Information on how we have responded to customer feedback and how we have modified our Regulatory Proposal since the August 2022 Draft Plan, is provided in Attachment 1.03.

2. Engagement summary

2.1 How we designed our engagement

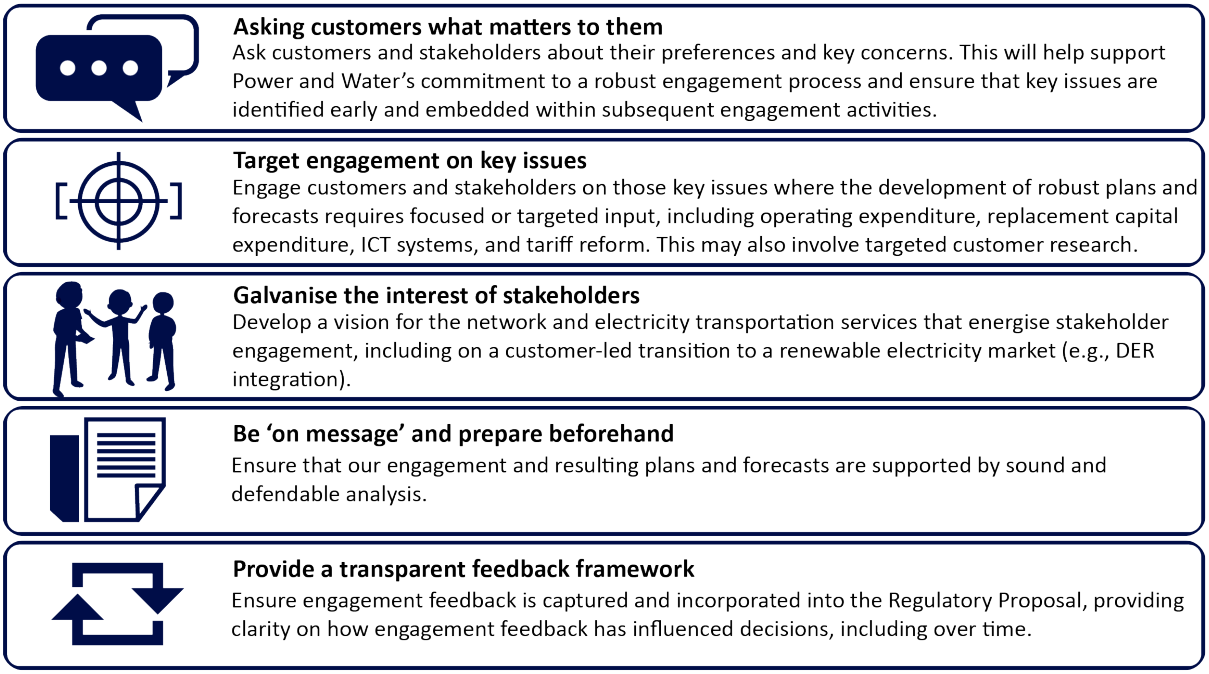
We designed our engagement program by:

- Identifying a suite of objectives, principles and outcomes to guide the engagement program.
- Reviewing stakeholder feedback on the engagement undertaken for our current regulatory period.
- Consulting best practice principles.
- Considering key risk areas and stakeholders to include in the process of engagement.

2.1.1 Objectives and principles

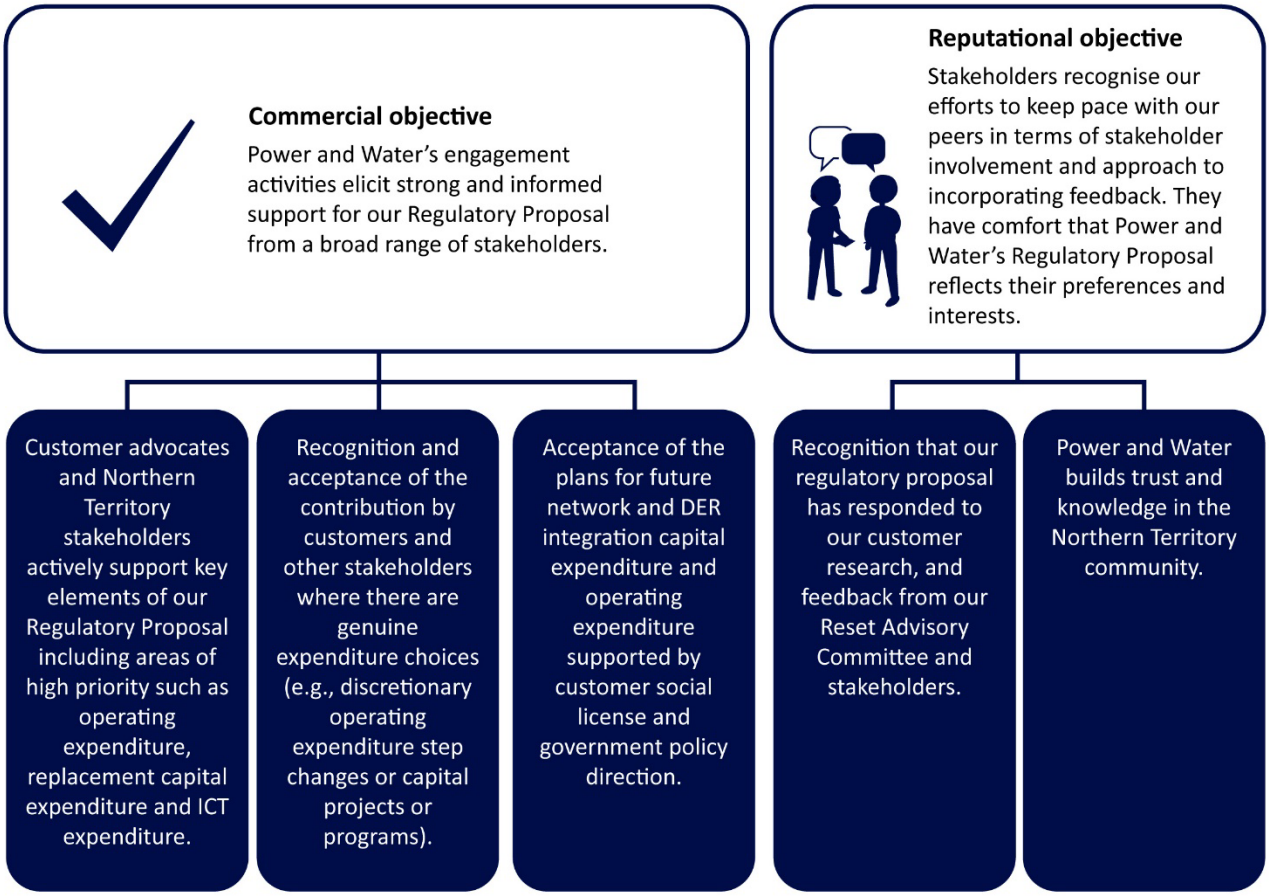
Our customer engagement program was based on a set of objectives and principles designed to optimise customer engagement, deliver outputs that reflect the views of our customers and stakeholders and which would inform the practical development of our plans and forecasts. Our Board approved our engagement strategy during the first stages of our engagement program.

Our stakeholder engagement program was driven by the following principles:



We recognise the importance of designing an engagement program aligned to these principles and the regulatory guidelines, while also establishing a fit-for-purpose, customer centric and flexible process that accommodates for changes in accessibility and capacity across the engagement lifecycle.

This led to the development of two engagement objectives that underpin our program and AER and other stakeholder-specific targeted outcomes for the program:



2.1.2 What we learned from past engagement

During our engagement for the 2019-24 regulatory period, we surveying participants across multiple stakeholder groups to provide their feedback on the efficacy of our engagement activities. The results of the feedback, provided during and after engagement sessions, demonstrated general satisfaction with the engagement process and a desire for Power and Water to conduct more frequent and ongoing engagement with stakeholders as part of future programs.

The AER, in its final decision in 2019, commended the effectiveness of Power and Water's engagement activities as part of our first determination under the National Electricity Laws and Rules and identified opportunities to improve on our engagement approach. When designing and undertaking the engagement program for the 2024-29 period, we have considered the AER's feedback, enhanced our engagement activities and developed a program intended to provide more in-depth and inclusive engagement.

Feedback on our engagement program received in the 2019-24 determination from the AER and the Consumer Channel Panel (**CCP**) and our response is outlined in Table 2.1.

Table 2.1: AER feedback on 2019-24 engagement

AER feedback in 2019-2024	Our response
The Consumer Challenge Panel (CCP) recognised that large users are the only customers who might see an impact in their electricity bill because of Power and Water's revenue proposal. On this basis, it would have been better to engage over a longer period with more of these customers.	• We engaged with our larger users across the three phases of our 2024-2029 engagement program using several different channels to gain perspectives from across the stakeholder groups. • We held an industry forum with larger users in November 2021 to engage on potential scenarios and conducted a survey with our business customers to understand their views on the renewable energy future. • Following release of our Draft Plan, we held a webinar in September 2022 with large users to test their perspectives on our future plans and provide additional information on two key elements of our Draft Plan we considered particularly relevant to large users – preferences for revenue affecting the major customer class and proposed changes to our tariff structures impacting large users. The webinar was accompanied by a Discussion Paper which detailed background information and key questions for discussion.
The CCP recognised the need to continue the engagement beyond lodging the revenue proposal.	• We recognise engagement is a journey and appreciate that we need to continue engagement to ensure we are held accountable for our plans and provide opportunities to collaborate with energy partners and customers during the regulatory period. • We continue to learn from our process of engagement, adjusting our program where appropriate to increase participation, engagement and reach. • Where practical, our process of engagement has sought to, and will continue to, leverage and strengthen our

AER feedback in 2019-2024	Our response
	business-as-usual stakeholder engagement channels. We have also used the current engagement process to test the effectiveness and suitability of engagement forums to be able to transition to a sustainable business as usual environment (e.g., the continuation of the Reset Advisory Committee, with a broader terms of reference). This would support continuity of participation and building understanding of our plans and key issues over time.
Power and Water did not consult stakeholders on its full Regulatory Proposal, including its proposed capital expenditure, operating expenditure, rate of return and other aspects at a sufficiently early stage.	• We have engaged our stakeholders on key elements of our Regulatory Proposal. Issues such as capital expenditure, operating expenditure, future network, tariffs and the rate of return have been discussed with a broad range of stakeholders including our Reset Advisory Committee, our People's Panels, business customers, governments, Joint Consultative Committee (**JCC**) and key industry participants. • Customer priorities on key areas of our expenditure plans were identified and a process of co-design was used to identify solutions to the 'pain points' and customer strategic issues raised. We have also sought to contextualise these issues for each stakeholder group, to build knowledge and engagement quality. • Our plans and forecasts were outlined in detail in our Draft Plan, which sought to establish a clear 'line of sight' to the customer priorities identified through engagement. Changes in our plans and forecasts since release of the Draft Plan (e.g., the impact of financing costs on revenue forecasts) have been discussed with key stakeholders and documented in our Draft Plan – Feedback Summary Report.

2.1.3 Adherence to best practice

Power and Water is committed to pursuing best practice engagement and we based our engagement program on a series of best practice principles and framework. This included alignment with the principles outlined in the *AER's Consumer engagement guideline for network service providers*:

- **Provision of clear, accurate and timely communication to consumers, recognising the different communication needs and wants of consumers** – We recognise the importance of ensuring accessibility for energy users to engage in the development of our plans and forecasts and have endeavoured to allow opportunity for stakeholders to be informed, participate and contribute to the development of our plans and forecasts through early and consistent engagement, across a range of engagement channels, tailored to the stakeholder segment and the specific geographic and demographic considerations of the NT.
- **Accessible and inclusive by recognising, understanding and involving consumers early and throughout the business activity and expenditure process –** Stakeholder knowledge building is embedded in our engagement approach. We recognise engagement is a journey and appreciate we need to continue engagement to ensure we are held accountable for our plans and provide opportunity to collaborate with energy partners and customers during and beyond Regulatory Proposal development.
- **Transparency to consumers of their role in the engagement process and including them in information and feedback processes** – We have tailored our engagement approach to ensure stakeholders are aware of roles and accountabilities across the electricity supply chain. Our process has included stakeholder consideration and feedback on how Power and Water should respond to a range of challenges, including the direction, speed and guardrails for solutions and we have incorporated a feedback loop to provide transparency on changes in approach – whether in response to feedback, internal or external factors. We have been open on those issues where Power and Water is able to directly account for stakeholder feedback through our plans and those issues where we will need to support customer priorities and preferences through influence and partnering with other industry participants or agencies.
- **Measurable success of engagement activities** – We have captured engagement feedback over the course of the Regulatory Proposal development and periodically reviewed the alignment of engagement activities against our engagement objectives and principles. We continue to learn from our process of engagement, adjusting our program where appropriate to increase participation, engagement and reach.

Our engagement approach has also had regard to the International Association of Public Participation (**IAP2**), for guidance on successful engagement. The IAP2 identifies seven core values to perform an effective engagement program. Table 2.2 outlines our approach to incorporating these core values into our engagement process.

Table 2.2: IAP2 core values for public participation

IAP2 Core values	How we have incorporated in engagement
Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process.	Engagement involved multiple stakeholder groups, using multiple engagement channels and seeking input across the lifecycle of the Regulatory Proposal development. Several of the engagement sessions involved a combination of information presentations, question and answer sessions, participant choice on the issues to be responded to in-depth, and a process of co-design to test the solutions presented, raise new ideas and opportunities, and develop a consensus position. This meant those who are affected by decisions were involved in the development of solutions and plans.
Public participation includes the promise that the public's contribution will influence the decision.	Regular briefings of the AER2429 Program Steering Committee, Executive and Board were held to communicate customer preferences and priorities and recommendations for response through plans and forecasts. The outcome of these considerations was communicated to stakeholders to provide transparency on the response to feedback and any associated changes in approach.
Public participation promotes sustainable decisions by recognising and communicating the needs and interests of all participants, including decision makers.	We have tailored our engagement approach to ensure stakeholders are aware of roles and accountabilities across the electricity supply chain and the challenges that exist in resolving identified customer 'pain points'. This has included the need to balance short-term affordability with long-term sustainability and recognition of the 'values' that customers prioritise when considering this balance. We have been open on those issues where Power and Water is able to directly account for stakeholder feedback through our plans and those issues where we will need to support customer priorities and preferences through influence and partnering with other industry participants or agencies.
Public participation seeks out and facilitates the involvement of those potentially affected by or interested in a decision.	Power and Water identified all customers (reflected in our customer wheel) and designed specific engagement activities for all classes of customers appropriate to their level of interest, understanding and influence. Power and Water's stakeholder engagement strategy included a process of identifying relevant customer groups and segments (reflected in our customer wheel). Our initial and ongoing engagement strategy was intended to support engagement activities for these groups and segments, appropriate to their level of interest, understanding and influence.

IAP2 Core values	How we have incorporated in engagement
Public participation seeks input from participants in designing how they participate.	We have sought stakeholder input on the issues for engagement and the means of undertaking engagement (format, channel, timing, etc). Our engagement approach has not been static and we continue to learn from our process of engagement, adjusting our program where appropriate to increase participation, engagement and reach. Customers were engaged early to allow them to participate, test and reflect on the engagement approach Power and Water has developed. In the final session with our Reset Advisory Committee in 2022, we asked them to provide Power and Water feedback on how they want to participate in future to ensure we are delivering an engagement program designed and suited to our stakeholders.
Public participation provides participants with the information they need to participate in a meaningful way.	Our engagement activities were designed to ensure participants were provided a baseline understanding prior to or at the start of an engagement session to ensure they were able to participate meaningfully and fully informed. The People's Panels provided detailed information on a range of challenges and potential response options, to facilitate meaningful engagement and understanding of the potential direction, speed and guardrails for solutions. The People's Panel participants were also provided with the opportunity to request information, presentations and explanations from a range of sources to support their understanding and were provided access to customer advocates, industry experts, Power and Water subject matter experts and the Power and Water Executive.
Public participation communicates to participants how their input affected the decision.	Power and Water reported transparently back to participants as the program unfolded and to the wider public as Power and Water's Regulatory Proposal was developed and finalised. This has included the process of ongoing engagement and the publication of outcome reports from the People's Panel process and in response to consultation on the Draft Plan.

We also developed Power and Water's engagement for the 2024-2029 regulatory period based on successful programs delivered by other Australian distribution network service providers (**DNSPs**). We built aspects of other networks' activities into our engagement process, while ensuring our program is fit-for-purpose and has regard to Power and Water's distinct geographic and demographic considerations and its comparatively recent integration into the national regulatory framework.

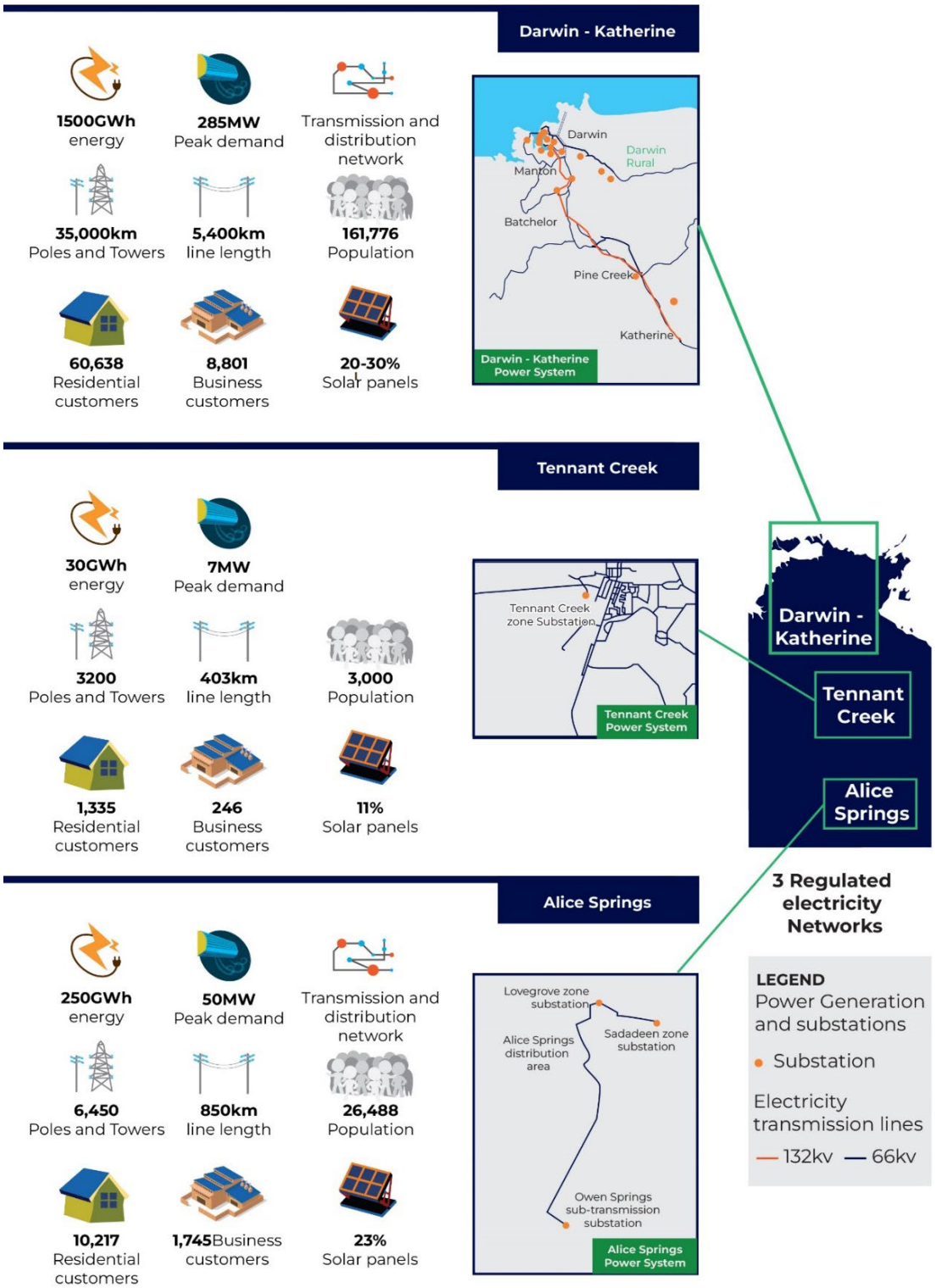
We consulted with the AER regularly throughout our engagement process to support alignment of our principles, objectives and approach with the AER's expectations. Attendance by the CCP at engagement activities was also encouraged, including our People's Panels.

The purpose of the CCP is to challenge distribution network service providers to develop customer-centric plans and report back to the AER on the quality and outcomes of customer engagement. In late 2022, we met with the AER and CCP to discuss engagement activities and feedback on our Draft Plan. Power and Water representatives and the chair of our Reset Advisory Committee, Andrew Nance, explained to the CCP the difficulties experienced with retaining engagement from stakeholders across multiple consultation activities. There was an understanding that due to the lack of sufficient customer advocates in the Northern Territory and relatively smaller population compared to other jurisdictions, the level of engagement undertaken by Power and Water should be considered unique compared to other distributors.

2.2 Who we engaged

The NT is home to a diverse customer and energy user base. Figure 2-1 summarises our three regulated networks, as well as a map of the power systems.

Figure 2-1: Power and Water's regulated networks



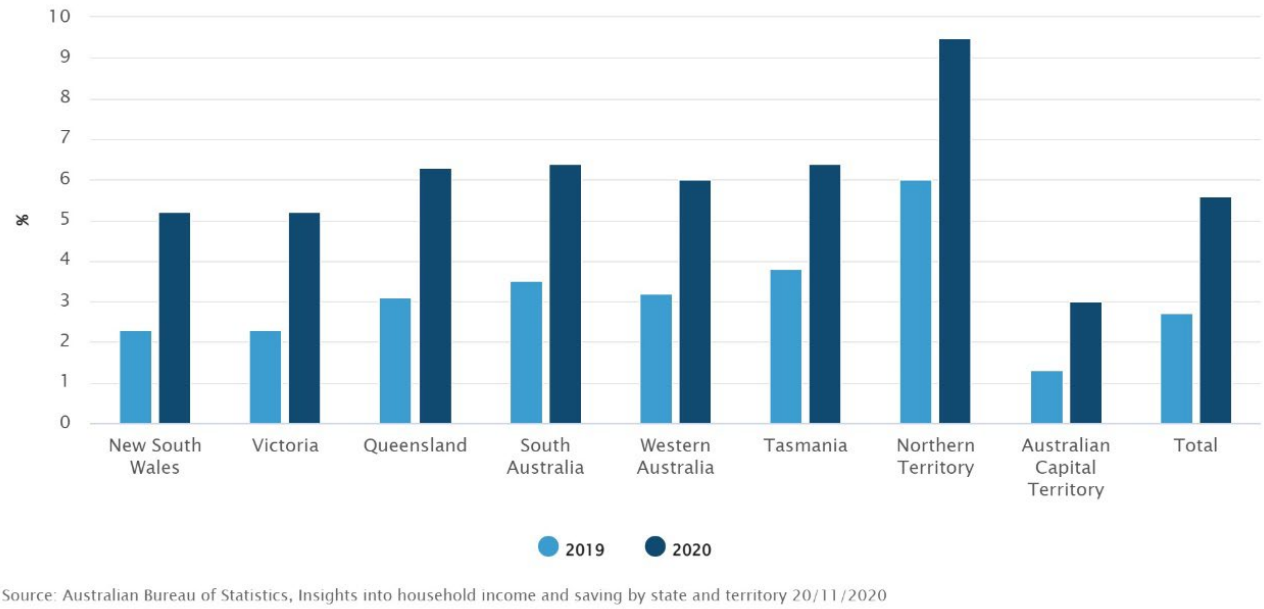
We wanted our engagement activities to reflect the diversity of our customer base. We did this by designing People's Panels that reflected the composition and geographic reach of our networks, establishing panels comprising community representatives from the larger two regulatory networks, Darwin and Alice Springs. At our final People's Panels in August 2022, we also achieved representation from the Tennant Creek network at the Alice Springs Panel. We also included engagement with different customer segments, such as people who identify as Culturally and Linguistically Diverse (**CALD**), vulnerable and Aboriginal and Torres Strait Islander.

We engaged a recruitment organisation to screen participants to ensure a representative group across location, age, gender and income, as well as asking participants to indicate whether they identify as Aboriginal or Torres Strait islander, commonly speak a language other than English at home, have solar panels and/or a solar battery, and currently receive some form of government pension or disability benefit.

The dispersion of energy users across the NT networks and accessibility barriers for disadvantaged and disengaged stakeholders were obstacles to meaningful engagement. Most of our in-person engagement activities were conducted in Darwin and Alice Springs. However, we understand our responsibility to servicing the wider Northern Territory networks and wanted to provide opportunity for those who cannot be in Darwin or Alice Springs. We addressed this by engaging through different platforms, including using digital channels.

The NT also has a higher proportion of the population requiring income support and living in rental properties compared to the national average. Figure 2-2 demonstrates that 9.5 per cent of Territorians were on income support compared to the national average of 6 per cent in 2020.[1]

Figure 2-2: Unemployment benefit recipients relative to population by state and territory – Australian Bureau of Statistics 2020



Source: Australian Bureau of Statistics, Insights into household income and saving by state and territory 20/11/2020

[1] ABS data, "Insights into household income and saving by state and territory", November 2020, available at https://www.abs.gov.au/articles/insights-household-income-and-saving-state-and-territory

As a result, we regularly sought feedback during our engagement forums on how we can provide support to our most vulnerable customers and whether our plans ensure inclusion of customers experiencing hardship. How we plan to address issues faced by this group of customers and the engagement activities designed to capture feedback for vulnerable customers is further outlined in Section 4.4.

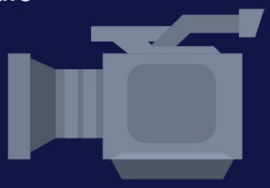
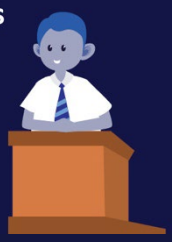
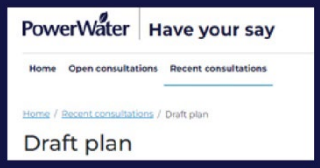
During the design of our engagement program, we also ensured regular consultation with our business customers. This stakeholder group is the largest consumer of energy and is not protected by the NT Government's Electricity Pricing Order, therefore their network tariffs and end costs will be impacted directly by any pricing reforms introduced in our proposal. In addition, we received feedback from the AER during our last engagement program that further engagement with this group was important. As a result, we organised repeated engagement sessions across a range of channels and forums to gather and incorporate the feedback and opinions of this consumer group into our proposal.

We also recognised the importance of repeated engagement across all stakeholder groups to ensure alignment and support is maintained as we developed our Regulatory Proposal. We established the principle of repetitive engagement during the design phase of the program and undertook multiple discussions with our stakeholders throughout each phase of consultation. This was achieved by holding initial forums with our energy partners, residential and business customers and various other stakeholders to understand the baseline of customer preferences and priorities, engaging during the development and feedback stage of our Draft Plan, and hosting meetings and workshops prior to submission of our Regulatory Proposal to provide updates on changes to our Draft Plan and the underlying rationale for change.

A summary of Power and Water's key engagement channels and who we engaged across these channels is provided in Table 2.3.

Table 2.3: Key engagement channels for the 2024-29 program

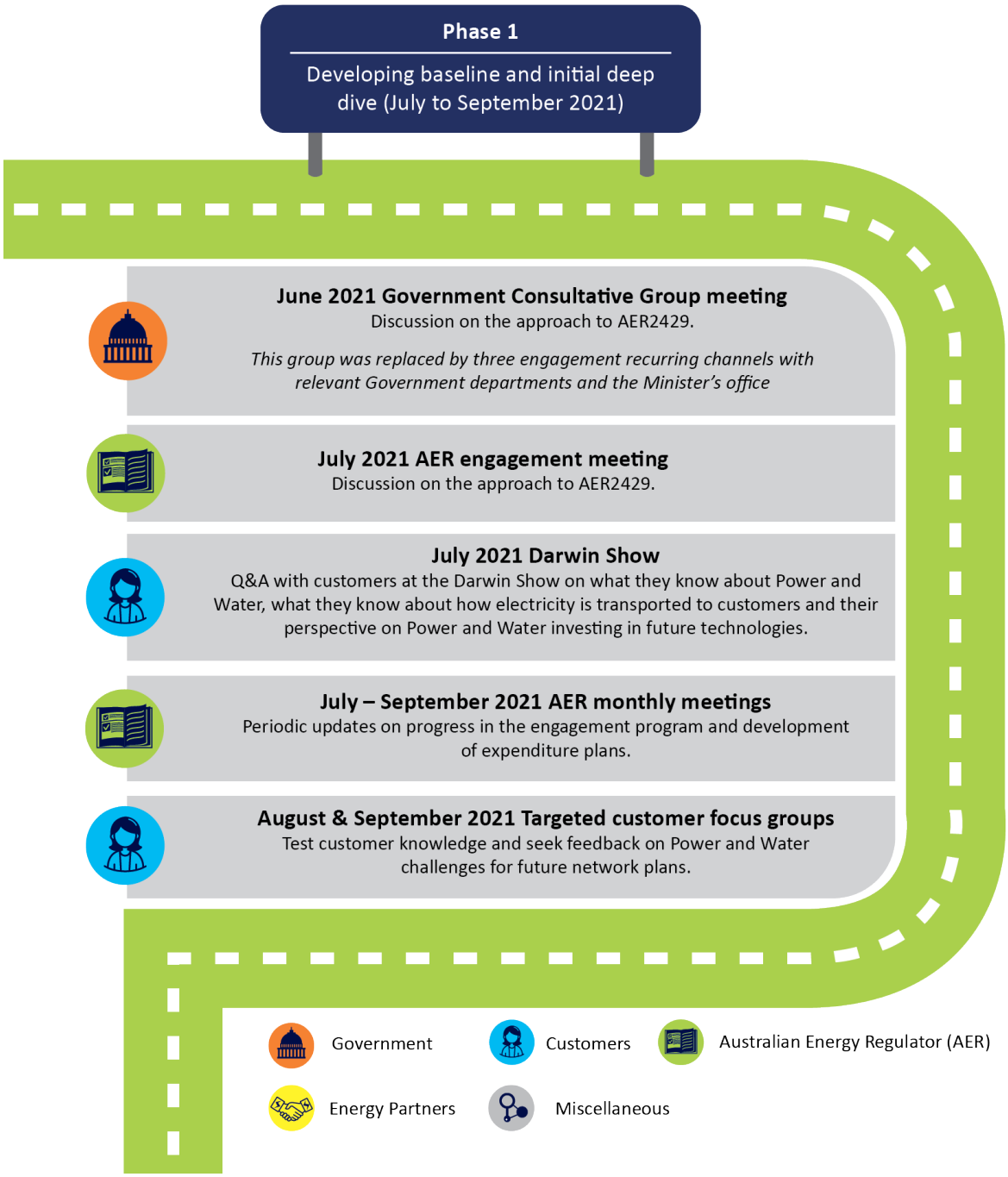
Engagement channel	Summary of stakeholders involved
People's Panels 	• A representative group of residential customers from Darwin and Alice Springs consulted on a periodic basis across the lifecycle of Regulatory Proposal development, who advised on customer preferences and priorities for Power and Water's 2024-29 plans and forecasts.
Government and market institutions 	• Regular consultation with Government departments and market institutions, including the Department of Treasury and Finance (**DTF**), Department of Industry, Tourism and Trade (**DITT**) and the AER, to ensure they are informed about our engagement activities and that there is transparency and a common understanding of key issues and challenges, expenditure plans, forecasts and customer impacts.

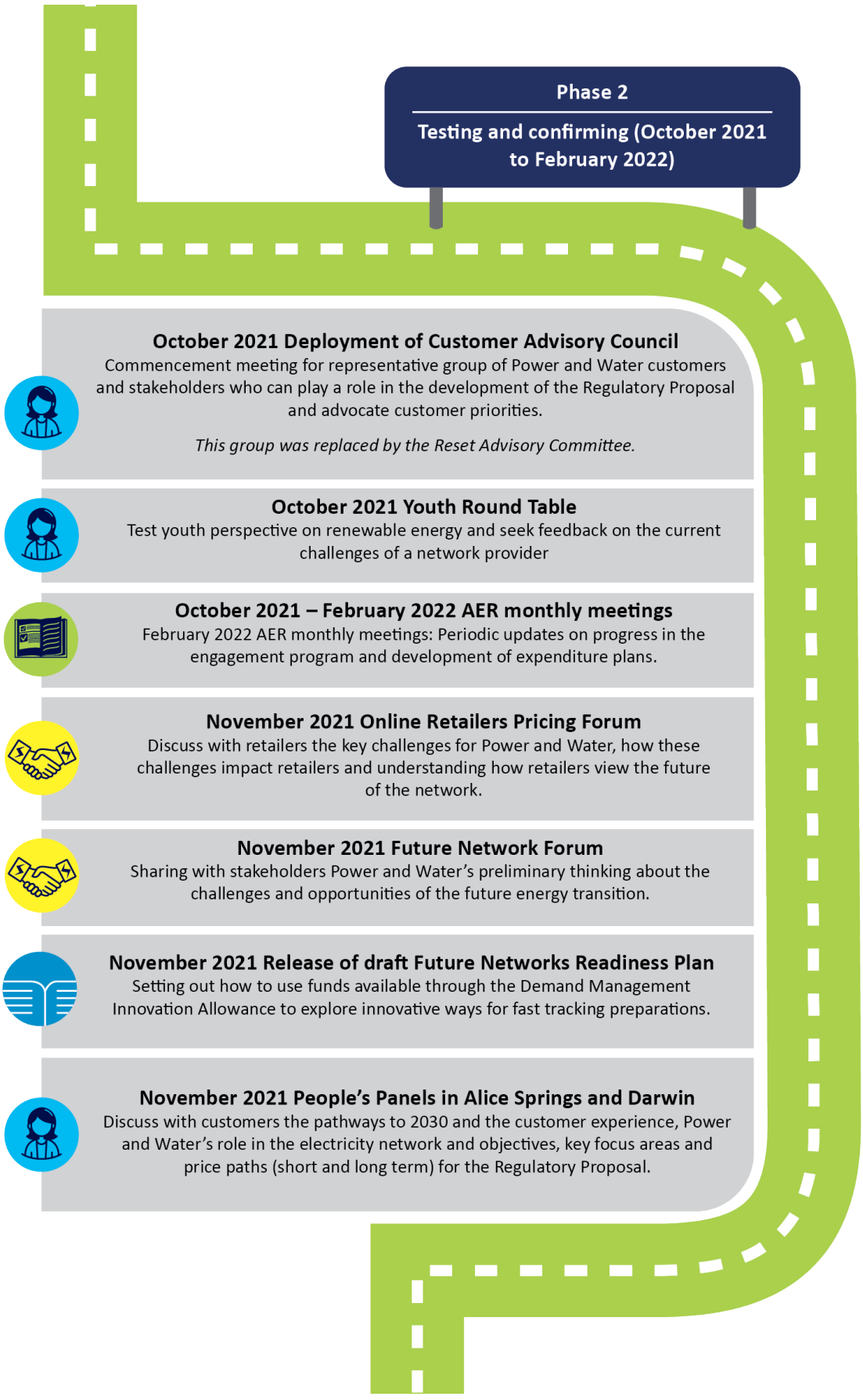
Engagement channel	Summary of stakeholders involved
Reset Advisory Committee 	• Independent group with representation from industry, organisational bodies and customer segments to provide a perspective on behalf of residential and business, urban and rural, low-income and high-income stakeholders, youth and older customers and Aboriginal and Torres Strait Islander people. The primary role of the Reset Advisory Committee is to keep a voice of the customer at the table as Power and Water considers customer feedback in the development of the Regulatory Proposal.
Webinars 	• Engagement with small-medium and large business customers through a webinar to gather feedback on our forecast expenditure and tariffs, as well as test customer preferences drawn from the People's Panels.
Industry partners 	• Our industry partners are pivotal to the achievement of our forward plans and we have maintained regular dialogue with generators, retailers, as well as holding engagement sessions with the JCC to receive feedback and update on changes to our forecasts.
Community events 	• Engagement with the community through forums with schools and the small-medium business breakfast with the Chamber of Commerce to enhance our relationship with future and current energy users.
Online surveys 	• Surveys have been used to capture the perspectives of our small-medium customers including their current experiences as an energy user and future plans for renewable technology adoption.
'Your Say' website 	• Our engagement website accessible to all stakeholders and on which we published all materials relating to 2024-29 engagement and provided further information on the customer lifecycle and future technologies.

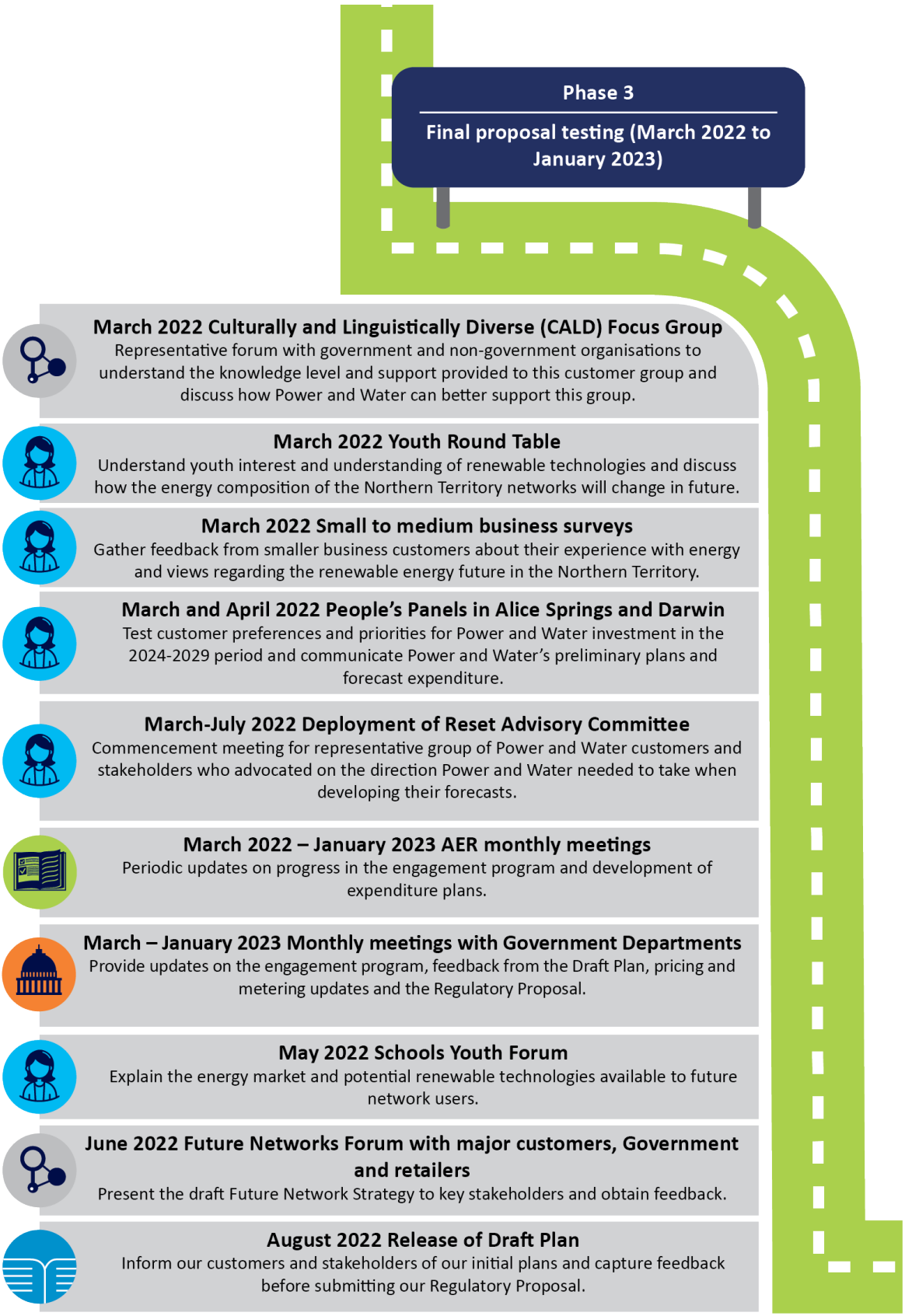
2.3 Our engagement activities

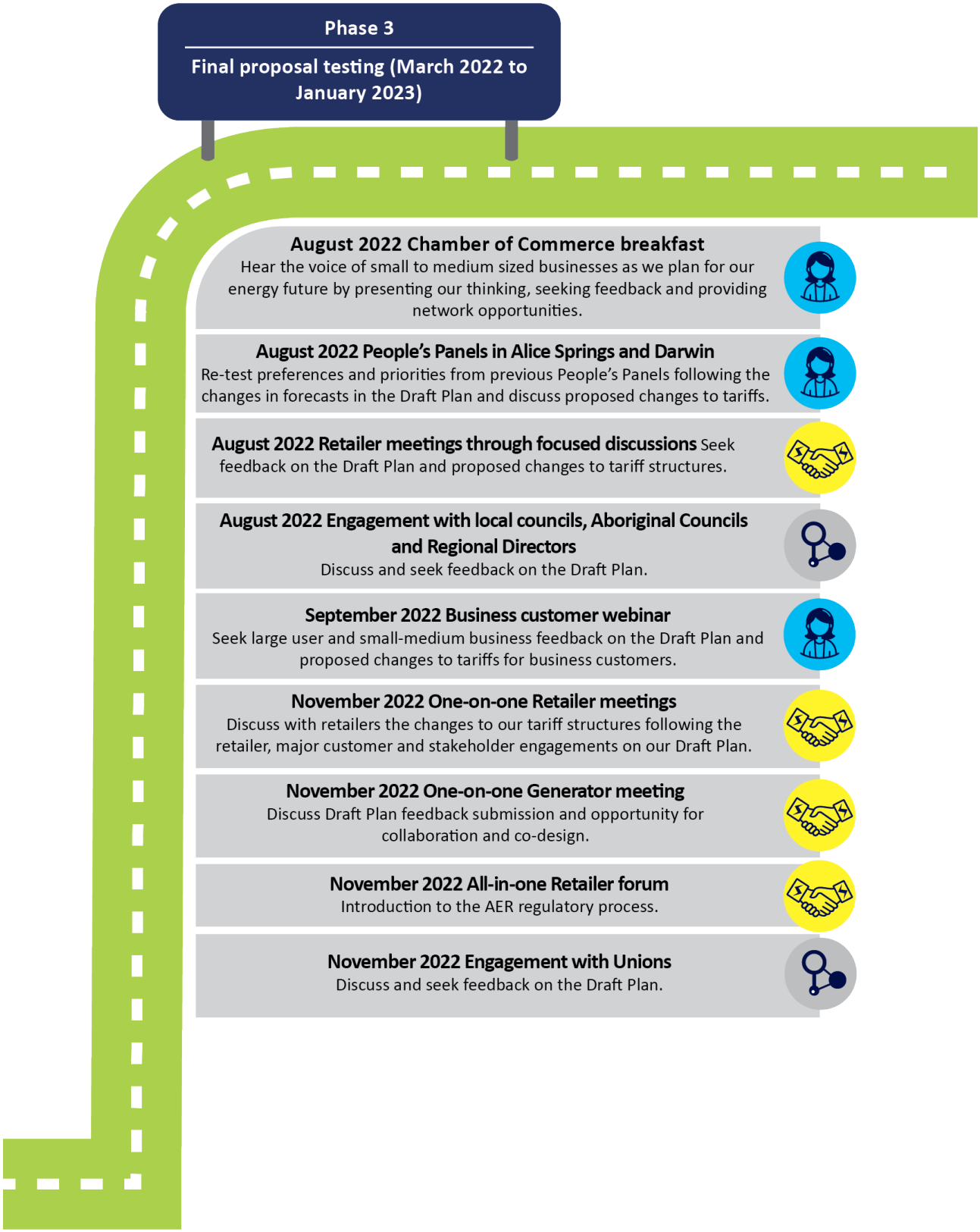
Our customer engagement activities for our Regulatory Proposal were scoped across three phases, formally commencing in 2021 and finalised in early 2023. Ongoing consultation with key stakeholders will form part of phase four, commencing in February 2023. Figure 2-3 shows the engagement activities under each phase.

Figure 2-3: Power and Water 2024-2029 engagement activities




Phase 2
Testing and confirming (October 2021 to February 2022)
October 2021 Deployment of Customer Advisory Council
Commencement meeting for representative group of Power and Water customers and stakeholders who can play a role in the development of the Regulatory Proposal and advocate customer priorities.
This group was replaced by the Reset Advisory Committee.
October 2021 Youth Round Table
Test youth perspective on renewable energy and seek feedback on the current challenges of a network provider
October 2021 – February 2022 AER monthly meetings
February 2022 AER monthly meetings: Periodic updates on progress in the engagement program and development of expenditure plans.
November 2021 Online Retailers Pricing Forum
Discuss with retailers the key challenges for Power and Water, how these challenges impact retailers and understanding how retailers view the future of the network.
November 2021 Future Network Forum
Sharing with stakeholders Power and Water's preliminary thinking about the challenges and opportunities of the future energy transition.
November 2021 Release of draft Future Networks Readiness Plan
Setting out how to use funds available through the Demand Management Innovation Allowance to explore innovative ways for fast tracking preparations.
November 2021 People's Panels in Alice Springs and Darwin
Discuss with customers the pathways to 2030 and the customer experience, Power and Water's role in the electricity network and objectives, key focus areas and price paths (short and long term) for the Regulatory Proposal.


Phase 3
Final proposal testing (March 2022 to January 2023)
March 2022 Culturally and Linguistically Diverse (CALD) Focus Group
Representative forum with government and non-government organisations to understand the knowledge level and support provided to this customer group and discuss how Power and Water can better support this group.
March 2022 Youth Round Table
Understand youth interest and understanding of renewable technologies and discuss how the energy composition of the Northern Territory networks will change in future.
March 2022 Small to medium business surveys
Gather feedback from smaller business customers about their experience with energy and views regarding the renewable energy future in the Northern Territory.
March and April 2022 People's Panels in Alice Springs and Darwin
Test customer preferences and priorities for Power and Water investment in the 2024-2029 period and communicate Power and Water's preliminary plans and forecast expenditure.
March-July 2022 Deployment of Reset Advisory Committee
Commencement meeting for representative group of Power and Water customers and stakeholders who advocated on the direction Power and Water needed to take when developing their forecasts.
March 2022 – January 2023 AER monthly meetings
Periodic updates on progress in the engagement program and development of expenditure plans.
March – January 2023 Monthly meetings with Government Departments
Provide updates on the engagement program, feedback from the Draft Plan, pricing and metering updates and the Regulatory Proposal.
May 2022 Schools Youth Forum
Explain the energy market and potential renewable technologies available to future network users.
June 2022 Future Networks Forum with major customers, Government and retailers
Present the draft Future Network Strategy to key stakeholders and obtain feedback.
August 2022 Release of Draft Plan
Inform our customers and stakeholders of our initial plans and capture feedback before submitting our Regulatory Proposal.


Phase 3
Final proposal testing (March 2022 to January 2023)
August 2022 Chamber of Commerce breakfast
Hear the voice of small to medium sized businesses as we plan for our energy future by presenting our thinking, seeking feedback and providing network opportunities.
August 2022 People's Panels in Alice Springs and Darwin
Re-test preferences and priorities from previous People's Panels following the changes in forecasts in the Draft Plan and discuss proposed changes to tariffs.
August 2022 Retailer meetings through focused discussions Seek feedback on the Draft Plan and proposed changes to tariff structures.
August 2022 Engagement with local councils, Aboriginal Councils and Regional Directors
Discuss and seek feedback on the Draft Plan.
September 2022 Business customer webinar
Seek large user and small-medium business feedback on the Draft Plan and proposed changes to tariffs for business customers.
November 2022 One-on-one Retailer meetings
Discuss with retailers the changes to our tariff structures following the retailer, major customer and stakeholder engagements on our Draft Plan.
November 2022 One-on-one Generator meeting
Discuss Draft Plan feedback submission and opportunity for collaboration and co-design.
November 2022 All-in-one Retailer forum
Introduction to the AER regulatory process.
November 2022 Engagement with Unions
Discuss and seek feedback on the Draft Plan.

3. What we heard

The feedback and findings from our engagement program across the engagement phases are discussed in this section. Figure 3-1 demonstrates the purpose of each phase of engagement and the published outputs from each phase.

Figure 3-1: Power and Water 2024-2029 engagement phases and outputs

3.1 Phase One: developing baseline and initial deep dive

Phase One of engagement was designed to understand and develop the baseline of stakeholder knowledge and identify customer priorities and service expectations through participative engagement of the awareness of Power and Water service delivery and the role we play within the electricity market. The engagement topics focused on the background of the energy market, the role of subsidies within the NT system, pathways to 2030 and beyond, and expectations for service levels.

The key engagement activities included engagement with customers at the Darwin Show and through customer focus groups and periodic meetings with the AER and government departments to discuss the engagement approach and progress.

3.1.1 Darwin Show

At the Royal Darwin Show in July 2021, we interviewed a range of attendees to develop a baseline understanding of Territorians knowledge and perspectives on:

- What they know about Power and Water?
- What electricity is and how it is transported to customers' homes?
- Should the Northern Territory increase their supply of electricity from renewable sources such as solar and use of new technologies such as EVs in future?
- Would it be better for the Northern Territory to move to a clean energy future quickly but it is more costly, or slowly but it is more affordable?
- What is more important – reliability or affordability of electricity?

The Alice Springs Show was cancelled due to COVID-19.

Outcomes

Customers had a general understanding across the range of topics discussed, including Power and Water's role in the electricity networks, how electricity is transported, the energy sources expected to power the future electricity networks and the importance of balancing reliability and affordability of electricity for customers.

Most customers supported an increase in supply of electricity from solar, emphasising that the location and the climate of the Northern Territory make it highly beneficial to increase solar supply. Additionally, many supported moving to a 'clean energy future' at a quicker pace, possibly at a higher price, rather than a slower transition at a more affordable price, to "leave a world that is more sustainable for our children and grandchildren". However, many recognised that in adopting new technologies, like electric vehicles, the Northern Territory need to consider how to ensure accessibility for all Territorians, including taking into consideration the installation of infrastructure and expenses involved.

Many participants also identified that reliability of supply from future technologies needs to be coupled with ensuring affordability for customers and that these are equally significant in the future energy networks.

3.1.2 Customer focus groups

Two focus groups were conducted in August and September 2021 in Darwin and Alice Springs respectively. The two focus groups targeted different demographics in each location and were designed to help us establish an understanding of each customer group's understanding of the electricity sector, energy services, electricity pricing, and how it affects them. The first focus group was targeted at customers either facing some form of disadvantage or hardship – to highlight the importance of not overlooking this important customer segment. For our engagement, this was categorised as the 'Easy to Ignore' group. The second focus group was targeted at residential customers more broadly.

A total of 25 participants attended the Easy to Ignore focus group and 35 participants attended the residential focus group. We sought representation by contacting peak bodies and representative groups for the Easy to Ignore group and through a combination of market research and networks for the residential group.

We ran a series of activities, videos, small and wider group discussions and opportunities for feedback to develop our understanding considering:

- The customer journey and gain and pain points.
- What customers think the future holds for electricity in the NT.
- The information customers need to continue to work with Power and Water.
- How to enrol participants in continuing to engage on the price determination.

Activities included a trivia exercise to develop a baseline understanding of the role of Power and Water in the electricity system, creation of customer journey maps, discussion on how customers picture the future of the electricity networks in the NT and mapping low-income energy users' priorities when managing bills.

Feedback on these sessions from participants included general satisfaction with the content and many attendees believed their feedback was and would continue to be considered in Power and Water's future plans. Many participants were eager to learn more, continue providing feedback, and work side by side with Power and Water to reach the preferred future state. Some of the more targeted feedback related to improving how we summarise the information explored in engagement sessions and how we target stakeholders through the process.

Outcomes

There was a general understanding of how electricity works but further work was required to educate about the role of the different participants in the market. For example, there was some confusion regarding the difference between electricity retailers and Power and Water as the network service provider, and how this is communicated to customers. More in-depth feedback outcomes relating to the two primary topics of discussion, customer journey maps and the future of electricity, is summarised in the table below.

Customer journey maps

When discussing the phases of the connection process for customers, feedback ranged from positive experiences with reliability of power to negative experiences with contractors and retailers during the connection process and when receiving electricity bills. While several of the frustrations expressed related to the delivery of services by other service providers, there was pertinent feedback on the need for increased transparency on Power and Water's website regarding pricing and opportunities associated with renewable technologies. In response to this feedback, we increased transparency on our website for several topics raised and created a dedicated section on our website to improving information for customers on future opportunities for uptake of renewable technologies.

The Easy to Ignore group commented on the importance of protecting vulnerable customers during the disconnection process and in the event of blackouts, particularly those for whom English is a second language and may be unaware of how to receive and provide notification of a blackout. It was suggested that Power and Water review communication channels to address this issue, potentially through the provision of information in other languages. Participants were also interested in ensuring we have a clear understanding of our life support customer base to ensure that the impacts of unexpected blackouts or disconnections are minimised.

The future of electricity

Participants had a strong focus on solar being the main energy source in the future electricity networks with the need for a balance between large solar farms, community solar farms and personal solar panels.

There was interest in receiving further information about future renewable electricity sources including incentives, prices, payback options, reliability and impact on the environment. The input of customers on how they believe the future energy mix will be comprised is a valuable contribution to how we think about the integration of renewable technologies and their mix in our future plans.

3.2 Phase Two: testing and confirming

Phase Two of engagement was focused on testing and confirming the assumptions and responses to key issues raised in Phase One were adequately reflected and answered. Stakeholders were also informed of the constraints and key challenges experienced by Power and Water, as well as encouraged to collaborate on finding solutions to customer pain points and issues. The engagement topics focused on understanding the perspectives of customers and energy partners on the future technologies and energy networks, as well as co-designing solutions to the pain points, constraints and issues faced by Power and Water and its energy stakeholders.

The key engagement activities included engagement with future customers at a Youth Round Table, energy partners at the Retailers and Future Networks Forum and engagement with customers at the first series of People's Panels in Alice Springs and Darwin. Power and Water's YourSay website was also used to act as a central touchpoint for customers and other stakeholders to develop their understanding of the electricity network and to present the outputs of the engagement sessions.

3.2.1 Youth Round Table

A Youth Round Table was held in October 2021 to understand youth perspectives of renewables in the Northern Territory and the future of energy. This was followed by a second Youth Round Table in March 2022 where we engaged on how the youth customer segment would like to access and use energy, through a series of activities and discussions. This engagement provided the opportunity to obtain input over the course of the engagement process, and to build upon the representation of this segment on our People's Panel, where we saw a decline in participation over time.

Outcomes

Feedback was provided on two major topics – renewables in the NT and the future of energy. This feedback has been used to inform our plans for the future network and how we can facilitate the NT Government's commitment to achieve 50 per cent renewable energy target by 2030.

3.2.2 Retailers forum

We met with energy retailers through an online Retailer Pricing Forum on 9 November 2021, with 14 participants and four retailers represented. The purpose of this forum was to engage with retailers about key challenges for Power and Water, the implications for retailers of these challenges, and to gain an understanding of retailers' views on the future networks.

The forum was delivered through a series of presentations by Power and Water on our plans for the Regulatory Proposal, development of our Tariff Structure Statement, and industry challenges and opportunities.

Outcomes

The Forum included a series of discussions and interactions to capture feedback from across the material presented. Table 3.1 provides a summary of key feedback themes.

Table 3.1: Key themes of feedback from Retailers Forum

Theme	Feedback
Export pricing	• Most retailers were comfortable with export pricing conceptually. However, there was some who did not support it. • One retailer observed that in other jurisdictions there has been negative feedback from customers who have already invested in solar and who feel that a change in pricing arrangements therefore erodes expected financial returns. This retailer would favour some form of grandfathering.
Electricity Pricing Order	• All retailers were supportive of pricing strategies that enabled more efficient outcomes for the system, including lower cross-subsidies and increased customer choice. • Reform of the wholesale and network prices embedded within the Electricity Pricing Order needs to be coordinated. • A time-of-use based Electricity Pricing Order tariff for customers with a smart meter was supported.
Tariff reform	• Retailers supported increased flexibility and cost reflectivity in tariffs as this supports differentiation.
EV tariffs	• Retailers reported little interest from consumers in electric vehicle (**EV**) tariffs, however, they were generally supportive of reforms that unlocked demand for EVs including development of new technology specific EV tariffs, similar to controlled load in other states, where a discount is given for control.
New customer classes	• Retailers were generally supportive of looking at smaller customer classes, comparable to the classifications applied in other states, to help improve pricing efficiency, to reduce cross subsidies and to eventually increase customer choice.
Time-of-use period definitions	• Changing time-of-use periods to better reflect future load and export congestion was viewed positively, particularly where it reduced the peak periods, even if it resulted in a more complex structure.
Long-run-marginal-cost	• Potential changes to improve cost reflectivity of the peak period, which would also help reduce cross-subsidies, were supported in principle.
Maximum demand pricing	• Moving away from maximum demand tariffs for small customers to a kWh peak period charge was supported, based on this being more fit-for-purpose in a future solar, EV and battery world.

It was felt that some of the questions posed to participants during the Forum required further deliberation within the retail businesses prior to the provision of a view. Following the session, we compiled a table of issues flagged as requiring further consideration and invited email submissions.

Further information on the topics discussed and outcomes is provided in Appendix A.

3.2.3 Future Networks Forum

The Future Networks Forum was held in November 2021 and attended by 78 participants from different stakeholder groups, including retailers, NT Government representatives, generators, customers, and Power and Water staff and management. It was held to share Power and Water's expectations of the initial challenges and opportunities during the transition to a 'least cost' energy future, changing customer preferences and expectations on how we use and consume electricity.

The forum structure was based on the following key objectives:

- Start the conversation about how Power and Water should support and respond to growth in renewable energy and changing customer behaviour (such as the uptake of EVs).
- Understand the key priorities and challenges of the rapidly changing energy environment for large customers and key stakeholders.
- Discuss how Power and Water might proceed in line with the roadmap outlined in the Darwin-Katherine Electricity System Plan, including challenges and opportunities.

Presentations were led by government and industry organisations to provide a broad industry outlook of the changes expected in the future NT network. One of the activities was a question and answers session involving industry, government and Power and Water representatives to outline how the energy system is expected to evolve and the implications of the Darwin-Katherine Electricity System Plan on the future network. Power and Water also presented Power and Water's Future Networks Readiness Plan: 2021-2024 which outlines the actions and capabilities required to accelerate renewable adoption in a prudent and efficient manner.

Outcomes

Live polling was used to capture feedback to understand stakeholder's perspectives on Power and Water's performance across different areas. The achievement of the NT Government's 50 per cent renewable energy target by 2030 and the realisation of carbon emission reductions were common themes in the responses received. Most respondents believed Power and Water was either doing 'what it should' or could be doing 'far more' to support the achievement of the 50 per cent renewable energy target.

Further information on the topics discussed and outcomes, including results from the panel question and answer session, is provided in Appendix B.

3.2.4 People's Panels in Alice Springs and Darwin in 2021

A highly effective engagement channel was our People's Panels, which brought together a cross-section of our residential customers from Darwin and Alice Springs. These panels were held three times: in November 2021, February and March 2022, and August 2022. At the November 2021 People's Panels, 23 participants in both Darwin and Alice Springs provided representation across age, gender, income and energy usage. The focus of the two-day engagement session was on customer experiences across the customer lifecycle and renewable technologies in the future network, including solar, EVs and the replacement of ageing assets. Figure 3-2 provides an overview of the topics and structure of the sessions across the two days.

Figure 3-2: Summary of the November People's Panel agenda across the two-day session in Darwin and Alice Springs

The first day was focused on the customer journey by:

- Establishing a baseline understanding of the electricity value chain from generation to customers.
- Understanding how we can better engage with customers.
- Discussing the customer experience from connection to disconnection.
- Balancing customer values.
- Envisaging the energy future.
- Exploring the concept of energy equity.

The second day was investigating Power and Water's journey by:

- Simulating a Board meeting by presenting some of Power and Water's strategic issues.
- Exploring the opportunities and challenges with enabling and adopting solar and EVs on the network.
- Discussing benchmarking the Power and Water network against other Australian networks, as well as doing business in different areas of Australia.
- Identifying the issues with replacement of assets in an ageing network.

Outcomes

Feedback on how customers perceive different issues and opportunities were categorised into themes of:

Customer Values: Affordability is an important consideration for customers, as well as sustainability, innovation and reliability.

Asset Management: Power and Water should manage assets in a timely and responsible way, while minimising price impacts.

Benchmarking: The Northern Territory has unique characteristics and it is considered that benchmarks should only be set against comparable networks.

Transition to solar: Customers strongly support a greater uptake of solar and believe Power and Water should do more to facilitate this.

Electric Vehicles: Power and Water should play a role in facilitating the shift to EVs but not necessarily owning the infrastructure in the long term.

Other: Power and Water should embrace innovation, new technology and transition to a new energy future that is customer focused and responsive.

Further information related to the topics discussed and outcomes, including feedback received on the process, is provided in Appendix C.

3.2.5 Your Say online consultation

Power and Water's Your Say website was used to provide information to our stakeholders and collect feedback on our Draft Plan. The Your Say website included a range of reference material and more than 50 videos from Power and Water subject matter experts and industry experts to provide additional information and directly responded to many of the participant queries that had been identified.

Information on customer pain points including understanding solar and other future network options and the customer journey, from connection to disconnection, was published on this website to allow stakeholders to be further educated on the energy system and future network.

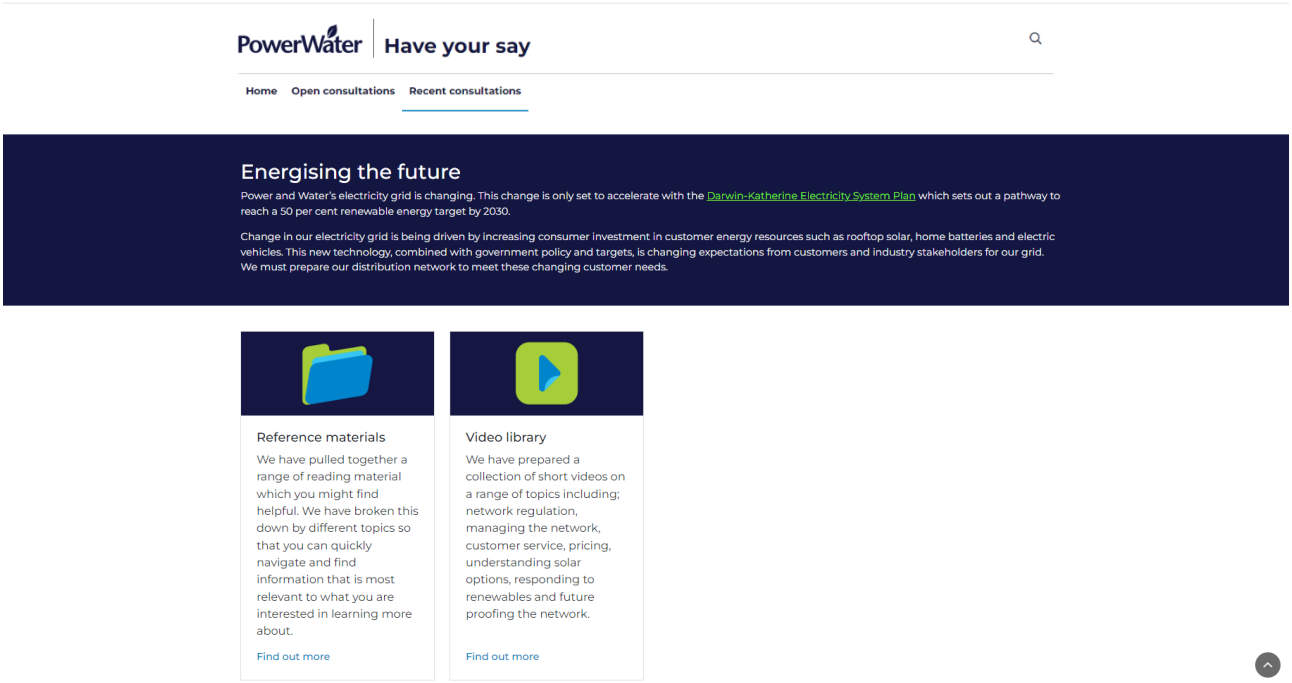
The Your Say website was also used to inform stakeholders of the different engagement activities undertaken across stakeholder groups, including business customer webinars and the release of the Draft Plan. Submissions to the Draft Plan were also collected through this website to centralise the collection and publication of submissions. Figure 3-3 is an extract from the Energising the future section of the website.

Outcomes

During the engagement program, there were over 408 page visits, 3,166 interactions and 712 clicks on the YourSay website. Across several engagement sessions, stakeholders expressed appreciation for the range of information provided on this website, as well as the opportunity to interact with Power and Water through this channel

We will continue to use our website to engage with our customers and industry partners following the submission of our Regulatory Proposal.

Figure 3-3: Power and Water YourSay website



3.3 Phase Three: final proposal testing

Phase Three of engagement focused on finalising engagement and refining stakeholder and Power and Water positions prior to lodging the proposal. During this stage, Power and Water identified the long-term engagement methods, structures and success factors to be used in engagement going forward. Engagement topics focused on presenting Power and Water's initial and final forecasts for the 2024-2029 regulatory period, determining customer priorities and perspectives on engagement, identifying opportunities for collaboration and codesign and ensuring stakeholder inputs were considered in Power and Water's 2024-2029 Regulatory Proposal.

The key engagement activities included engagement with youth, culturally and linguistically diverse (CALD) customers and panellists through our People's Panels, deployment of our Reset Advisory Committee, engagement with our major users through several channels and with retailers and generators on a periodic basis to ensure Power and Water are aligned with our key energy partners.

3.3.1 Culturally and Linguistically Diverse (CALD) Focus Group

Feedback during our engagement was a desire for Power and Water to conduct additional engagement with those voices who are commonly overlooked, such as those who identify as culturally and linguistically diverse, to ensure that the specific needs and challenges of this customer base were captured.

We reached out to numerous multi-cultural organisations in the Northern Territory to seek assistance to engage with this group, culminating in a CALD Focus Group in March 2022. The attendees represented both government and non-government sectors with four participants from different organisations working with people of diverse backgrounds. The objective of this Focus Group was to hold an open discussion on the challenges and opportunities to support this customer segment.

Outcomes

The discussion started with discussing the level of multicultural customers' understanding of the energy system and where they go to find information. While engagement with different multicultural organisations exists, many from this customer group engage with members of their direct community to find answers to their questions rather than with energy companies like Power and Water. It was also understood that while the Power and Water and individual retailers' website are one of the first places this stakeholder group will consult, there is inadequate information in different languages or in providing access support.

Some suggestions from participants included:

- Provide outreach to STEPS – a community-based training organisation providing language skills.
- Provide interpreters to help customers navigate connections, disconnections and faults.
- Provide support for people to understand information about outages and faults on the website.
- Help with information on education about energy efficiency, management and reduction of usage.
- Reinstate 'coolmob' at home energy audits (Power and Water ceased funding 'coolmob' when functional separation between Power and Water and Jacana Energy occurred. Participant expectations were that Jacana Energy would continue this program).
- Engage with community groups on basic energy education.

- Provide clarity about the roles of Power and Water and Jacana Energy and actively promote this through all networks and channels, including faith based, advocacy and community-based organisations.
- Promote all avenues through website and service providers.
- Work with other energy partners and stakeholders to support this customer group and those experiencing hardship.

We have captured this feedback and will consider how we may be able to incorporate some of these suggestions in our future plans.

Several of the issues raised during the Focus Group related to engagement with retailers, who we will seek to work with to ensure a consistent and responsive approach.

3.3.2 Youth Round Table

A Youth Round Table was held in March 2022 to understand the position of youth on renewables in the Northern Territory and the future of energy. This follows our engagement in October 2021 with the youth customer segment on how they want to access and use energy.

Outcomes

This engagement provided an additional opportunity to engage with youth, particularly as we saw a decline in participation from this customer group at our People's Panels in March and April 2022. We sought to gather feedback from representatives on the two major topics of renewables in the Northern Territory and the future of energy to help us inform how our proposal will meet the expectations for the future network and meet the Northern Territory Government 50 per cent renewable commitment. This forum also culminated in the nomination of a Youth Round Table Representative to our customer committee, the Reset Advisory Committee.

3.3.3 Reset Advisory Committee

The AER2429 Reset Advisory Committee (**RAC**) was formed to consult with customers on our expenditure plans for the 2024-29 period and test how customer preferences have been incorporated into our Regulatory Proposal. The Reset Advisory Committee was comprised of representatives across youth, residential, disadvantaged, small/medium business and large business customer segments.

A summary of the agenda for the meetings is outlined in Table 3.2.

Table 3.2: Reset Advisory Committee Meeting Dates and Agenda

Meeting number	Meeting date	Agenda
1	29-Mar	Introduce Power and Water's engagement process, the Reset Advisory Committee Terms of Reference and the outcomes of the Alice Springs People's Panel.
2	8-Apr	Provide project timeline and Reset Advisory Committee Work Plan for engagement.

Meeting number	Meeting date	Agenda
3	22-Apr	Discuss capital expenditure forecasts and drivers, including an initial breakdown of expenditure and how we will incorporate customer feedback.
4	6-May	Discuss replacement, growth and non-network capital expenditure, including the People's Panels preferences.
5	20-May	Discuss the Draft Plan and Regulatory Proposal development and how Power and Water can respond to energy efficiency and equity issues for low-income customers.
6	3-Jun	Provide information on affordability and vulnerability issues in the energy system and discuss Future Network considerations.
7	17-Jun	Discuss initial operating expenditure forecasts and drivers, including a recap of People's Panel outcomes.
8	1-Jul	Provide an overview of the Draft Plan and further information on affordability and operating expenditure.
9	15-Jul	Deep dive into the Draft Plan and an update on Regulatory Proposal development.
10	22-Dec	Provide an overview of the Regulatory Proposal before submission.

A summary of the purpose and feedback from the meetings can be found on our website.

The Reset Advisory Committee was originally scheduled to meet 14 times prior to submission of our Regulatory Proposal to provide consistency of engagement and feedback on issues as they develop. Although fewer formal Reset Advisory Committee meetings were held than originally anticipated, primarily driven by the ability to convene a quorum, engagement was continued with these stakeholder groups through other forums.

The Reset Advisory Committee was an area where we experienced challenges in attracting and sustaining involvement in the engagement process over an extended period. In response to this 'lesson learned', we are looking to restructure and reform the Committee in 2023 and seek advice from an independent consultant on practical mechanisms to support the effectiveness and sustainability of future engagement, specifically in the NT context and with recognition of the needs and challenges faced by Territorians.

3.3.4 Business customers engagement

Between March and April 2022, we distributed a fourteen-question survey, in partnership with the Northern Territory Chamber of Commerce, to small-medium businesses to capture feedback on current experiences in the energy market and understand their plans for adoption of renewable technologies in the future.

A breakfast event was held in August 2022 gathering over 120 members from the Chamber of Commerce small to medium business network. The purpose of this event was to outline our Draft Plan to small to medium sized businesses, encourage feedback through the consultation process and to explain why the business community's perspective matters in the development of our Regulatory Proposal.

We also conducted a three-hour webinar with our major (>750 MWh per annum) and small to medium (<750 MWhs per annum) business customers in September 2022. This engagement was supplemented by the release of two discussion papers for consultation; a Large Customers Discussion Paper and Small to Medium Customers Discussion Paper, targeted to each business customer segment and providing additional detail to support the Draft Plan. This session also sought input on two key elements we consider particularly relevant to business customers: business customers' preferences on Power and Water's draft revenue and expenditure and proposed changes to our tariff structures impacting business customers.

Outcomes

These engagement sessions provided us with insights into the experiences and plans of our business customers, including the importance of maintaining reliability and support for investment in infrastructure to accommodate the shift to renewables. During the webinar in September 2022, some participants expressed interest in being actively involved in meeting some of the strategic priorities and plans expressed by Power and Water in our Draft Plan. We will continue to investigate opportunities to work with large business customers.

3.3.5 People's Panels in Alice Springs and Darwin in 2022

Our People's Panels were reconvened in Darwin and Alice Springs in March/April 2022 and August 2022. In March and April 2022, we had similar numbers of participants across the two panels, while in August 2022 we convened a smaller group of participants to host higher level discussions on key elements of the Draft Plan and Regulatory Proposal. Additionally, one of the participants in the August Alice Springs' Panel was a resident from Tennant Creek and RAC member who was able to provide the views of the smaller network and of the Committee. This meant there was a clear linkage between our People's Panels and RAC, as well as ensuring the voices of Tennant Creek customers were represented within these sessions.

We also invited several industry experts and Power and Water executives to attend these events to provide industry insight into the direction of the national and local energy networks and ensure the voices of customers were heard and considered by all areas of Power and Water.

During the People's Panels in March and April, customers provide their feedback and preferences for Power and Water to pursue in the 2024-29 regulatory period across the areas of:

- Future Networks.
- Addressing the challenges of asset replacement in an ageing network.
- Improving customer service.

Participants were asked to use a suite of customer values considered important to customers in the current and future energy networks to make decisions on the level and nature of investment Power and Water should pursue in these areas. Panellists were also asked to consider the trade-offs between short-term affordability and long-term sustainability when recommending solutions for Power and Water to address current and future issues within the electricity networks.

During the People's Panels in August, customers were invited to provide feedback on key aspects of our Draft Plan and test how customer preferences and priorities have changed since the previous series of People's Panels in March and April in light of our revised forecasts, including as a result of higher financing costs. Another objective of the August sessions was to understand participants' appetite to use various levers to reduce the revenue impact on customers and how to manage the impacts of future technologies in the network. A clear output from the Panels was the need for smarter, more efficient solutions which support the community now and into the future.

We also sought specific feedback on our proposed implementation of a customer preference relating to investing in a network that can facilitate increasing renewables. Many panellists were satisfied with the progress from the previous session. However, there was an emphasis on Power and Water implementing solutions at a more gradual pace to improve learning. This included pilots in unproven technologies.

Outcomes

Key elements of the Peoples' Panel input have been reflected in our Regulatory Proposal. Further information related to the topics discussed and outcomes, including feedback received on the process, is provided in Appendix D and Appendix E.

3.3.6 School Youth Forum

Power and Water sought further engagement with youth through a two-hour school forum in May 2022 to understand the perspective of younger Territorians on energy in the NT and renewable technologies in the future network. Students were encouraged to provide feedback in group discussions and through use of interactive activities like Mentimeter on how they see Power and Water now and into the future, as well as how we support and engage with all stakeholders.

Outcomes

Feedback gathered from participants was that there was confusion related to some of the information presented and more interactive activities are important to ensure the youth are engaged in the future of our networks. We sought to incorporate this feedback into our People's Panels and other customer engagement sessions by providing a baseline knowledge to customers and embedding more activity-based sessions in engagement.

3.3.7 Future Networks Forum

This session followed the first Future Network Forum hosted in November 2021, which led to the publication of the Future Network Readiness Plan. The second Future Networks Forum was held in June 2022 with major customers, Northern Territory Government representatives and retailers to discuss opportunities of transitioning to a renewable energy future. In particular, we sought feedback and insights from stakeholders on:

- The role we should play to support the achievement of Northern Territory Government's renewable energy targets.
- The network capabilities required to support this transition.
- Initiatives to bridge identified gaps in our existing capabilities.

Discussion focused on the key initiatives and objectives within the Plan to inform our Future Network Strategy and the expenditure plans within our Regulatory Proposal. Figure 3-4 provides the summary of the principles, objectives and streams in the Future Network Strategy presented during the Forum, including the topics tested with participants including consumer energy resources (**CER**) and dynamic operating envelopes (**DOE**), community scale batteries and electric vehicle (**EV**) charging.

The Future Network Forum enabled us to obtain feedback on the preferred pathways for implementation of future network initiatives, including DOEs, EV charging and feasibility of community batteries, using the digital tool Miro. We collected both qualitative inputs and quantitative inputs on which strategic objectives stakeholders preferred, additional options Power and Water could pursue in implementing DER integration, EV charging and community batteries and any key concerns with what we are intending to present to the AER.

Figure 3-4 Future Network Strategy principles, objectives and streams

Outcomes

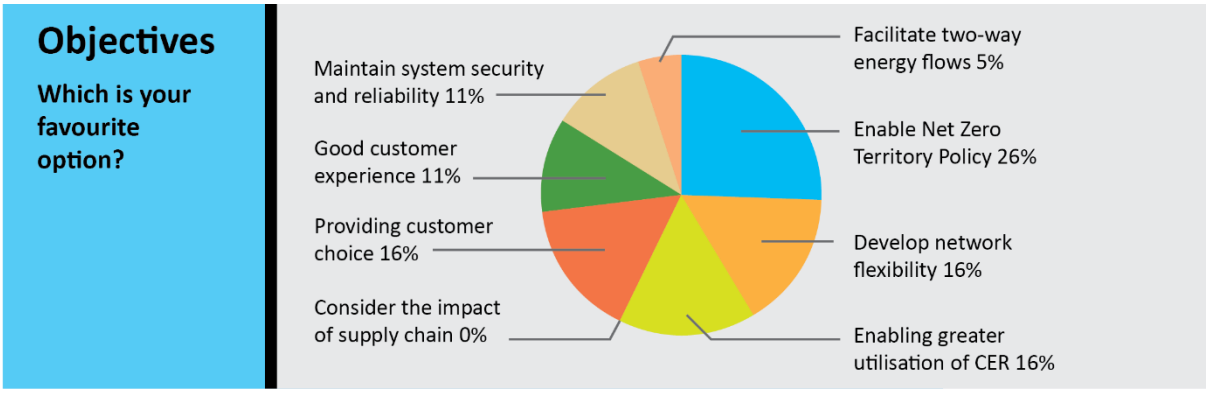
Future Network Strategy

Craig Chambers from Engevity presented the principles, objectives and streams of the Future Network Strategy, including CER/DER integration, community batteries and EV charging. Participants in the session were first invited to comment on the suitability of the objectives of the Future Network Strategy and identify if there are any objectives missing which will enable the principles underpinning the Strategy.

Responses for additional objectives to include were across several key themes of:

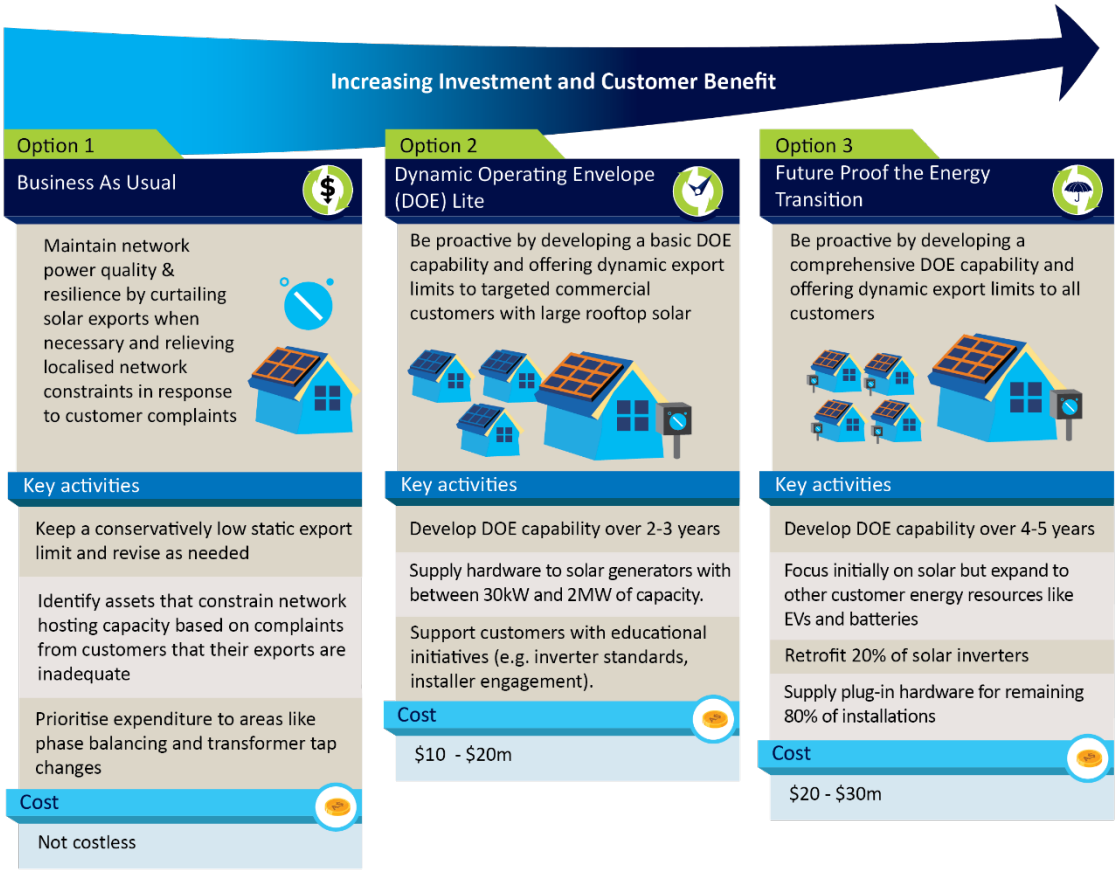
- Facilitating the market and NT Government's Net Zero policies.
- Supporting customers in the management of their energy use and participation in network assets.
- Working with the supply chain, from generators to customers, to achieve objectives.

Participants were also asked to vote on which of the objectives in the Future Network Strategy was their favourite. It was clear most participants wanted a future network which could provide the network flexibility and greater uptake of CER needed to enable the NT Government's Net Zero Policy. The voting indicated the below preferences:

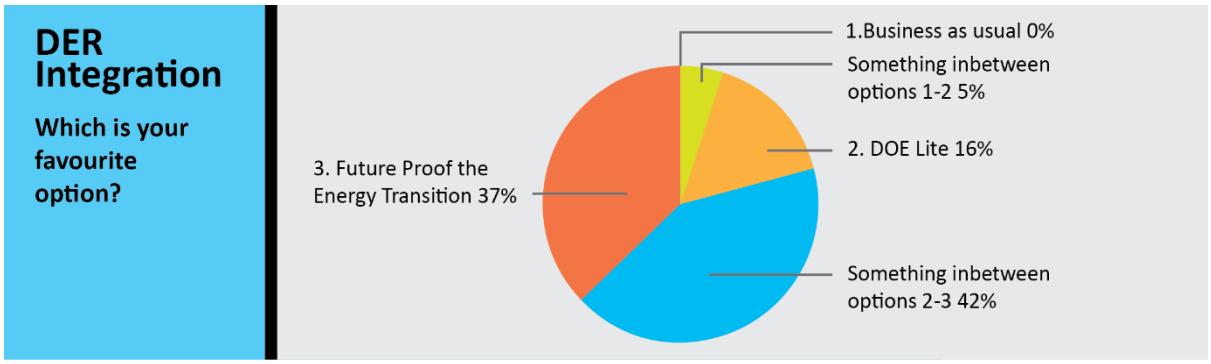


DER Integration

Nina Hitchins from Synergies Economic Consulting discussed the challenges and opportunities associated with CER/DER integration in the NT, Power and Water's objective to accommodate more solar and maintain reliability and potential options for investment. These options included:

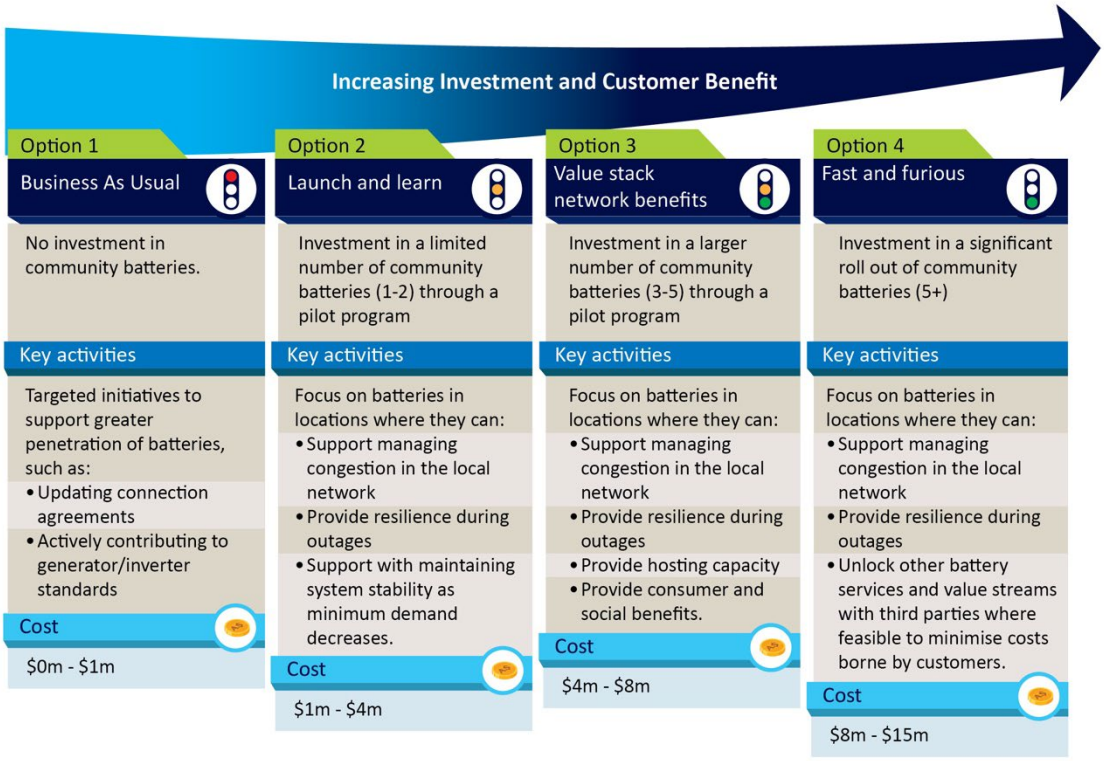


The majority of participants indicated that somewhere between option 2 or 3 was the most efficient solution, or solely Option 3. Issues around cybersecurity and trialling solutions through pilots before implementing across the network was raised during discussions. The clear message was that it is in the best interests of customers and the NT network that Power and Water is proactive in facilitating CER/DER integration and doesn't wait until problems arise with assets. The voting indicated the below preferences:

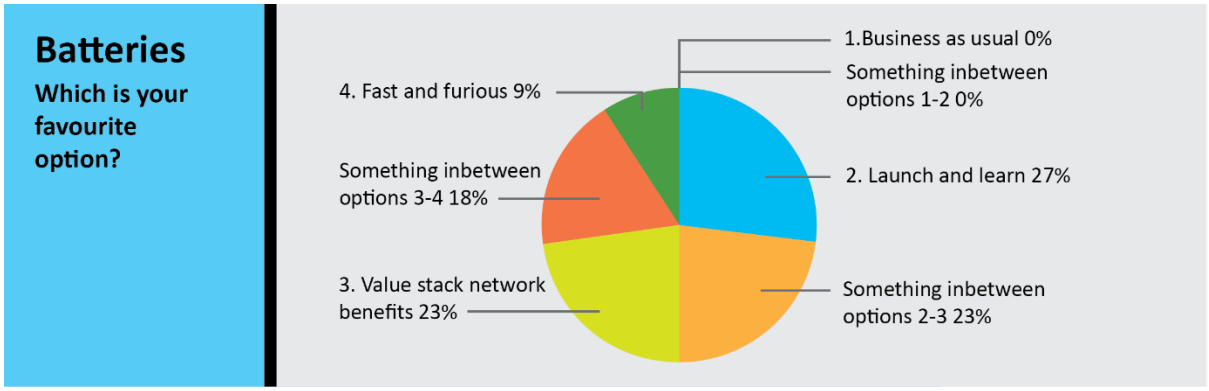


Community battery feasibility

Tim Edwards from CutlerMerz discussed the role of community batteries in the Northern Territory energy transition, the benefits and risks adoption provides and potential options for investment. These options included:

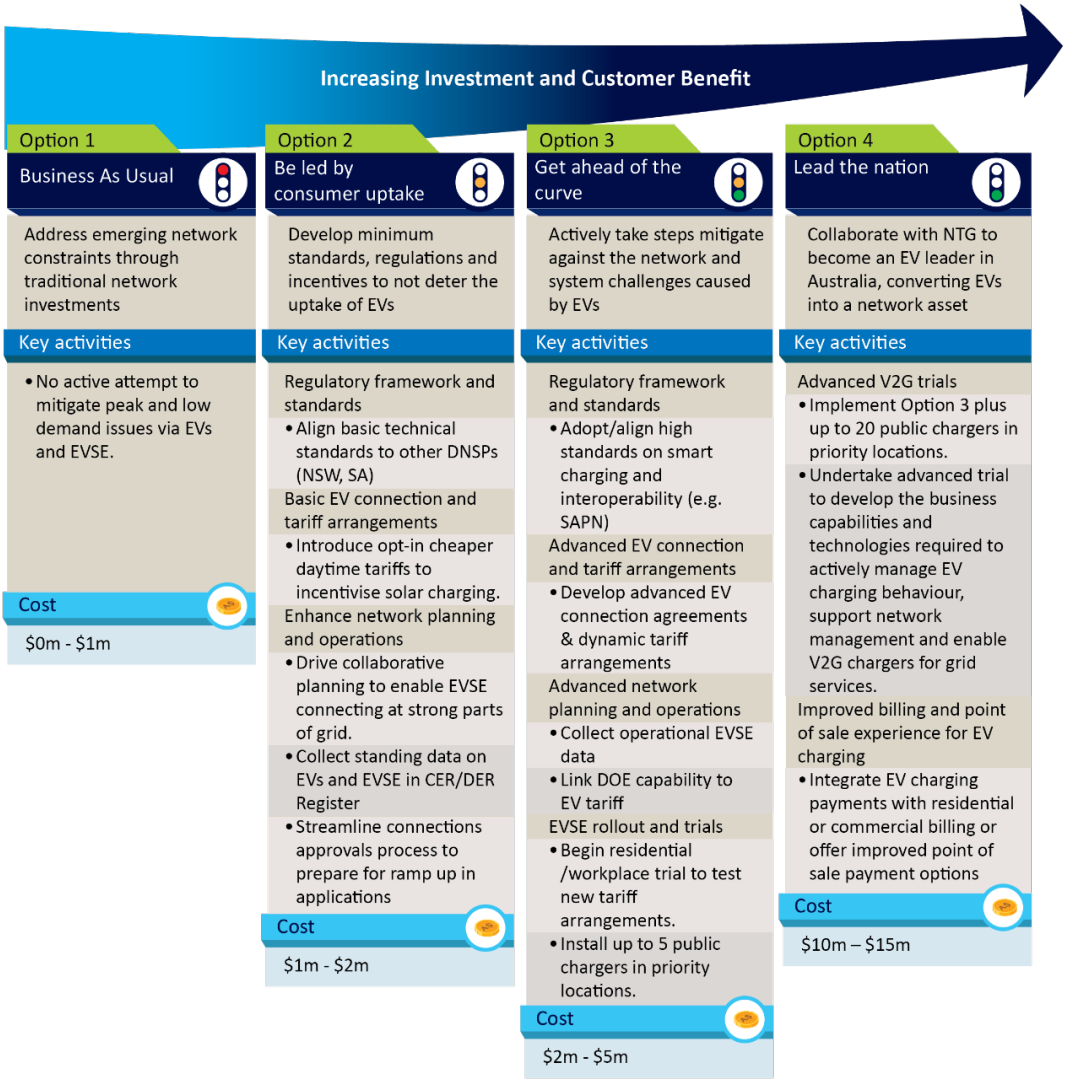


Similar to the session on DER integration, the results indicated that most participants supported an option 2, option 3 or solution somewhere between option 2 and 3. There was concern that the investment in these batteries may be costly to be fully borne by Power and Water or the NT Government, and there should be private investment in facilitating community batteries. General support was given to the pilot approach and ensuring it can provide the reliability needed to support the entire grid, including in blackouts. The voting indicated the below preferences:

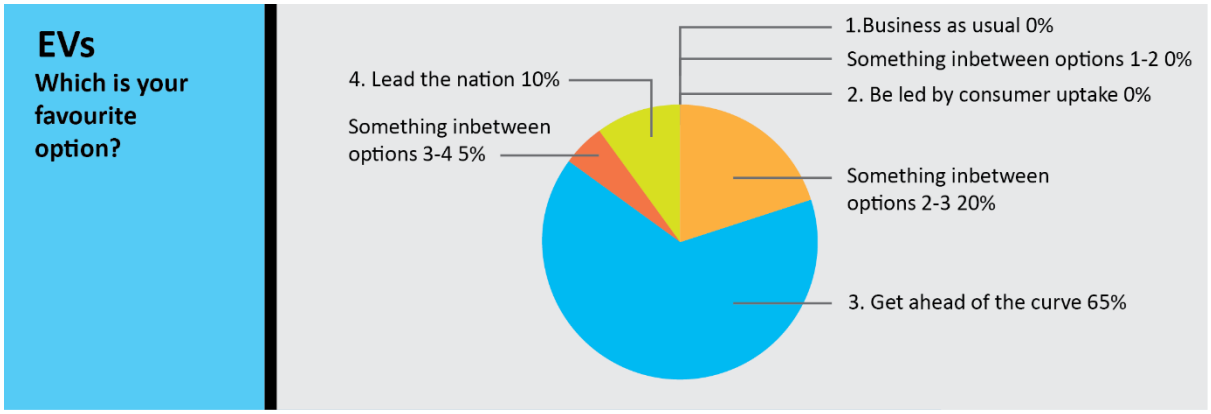


EV charging

Matt Armitage from EY presented a session on the future of EVs in the Northern Territory, including the challenges expected from the additional load on the network and how to manage charging habits to prevent a lack of supply for the higher demand. To meet these challenges and facilitate the expected uptake of EVs by energy users, four options were proposed to participants:



Over 80 per cent of participants supported Option 3 or a solution somewhere between Option 2 and 3. This was largely driven by a desire to be proactive in the EV space, rather than reactive, and consider the greater risks and costs associated with forgoing investment. It was also recommended that Power and Water consider how other networks have addressed these challenges and learn from the experiences of the expansion of rooftop solar in the NT. The voting indicated the below preferences:



3.3.8 Draft Plan consultation with Retailers, Generators and Joint Consultative Committee

We also consulted with retailers, generators and the JCC following release of our Draft Plan. In these sessions, we discussed the tariffs and pricing components of the Draft Plan in addition to the opportunities for collaboration and co-design with energy partners in the upcoming regulatory period.

Sessions were held with retailers, Jacana Energy and Rimfire Energy, immediately following the release of the Draft Plan in August 2022. Engagement sessions were also offered to retailers, Next Business Energy and QEnergy. A secondary series of meetings were held in October 2022 with Rimfire Energy and Jacana Energy to discuss changes to tariffs and structures since the Draft Plan to test retailer perception of the changes in pricing and to inform retailers on the engagement sessions conducted with other stakeholders.

An engagement session with Territory Generation took place in November where we discussed the feedback received provided on our contingent projects and how we can work collaboratively to meet the objectives of the future network. In December 2022, we held a forum that was open to all generators to discuss the Draft Plan and opportunities to collaborate and co-design solutions to challenges expected in the future network. Meetings with generation businesses provided feedback for continued collaboration and conversation about the delivery of several key projects in our plan, with a desire for more regular and in-depth engagement across tariffs and changes to charging arrangements for metering, project-specific issues and the connection process.

A non-network solutions forum with our energy supply partners will be scheduled for early 2023 to identify and explore industry thinking on non-network solutions and their suitability for addressing different types of network issues and constraints.

We engaged with the JCC in November 2022 to inform participants on the approach to forecast the expenditure and revenue proposed by Power and Water as well as the engagement process undertaken. We plan to engage with this stakeholder group further as we continue our engagement post-submission of the Regulatory Proposal.

Feedback received from our stakeholders on our Draft Plan is provided in Attachment 1.03.

3.3.9 Vulnerable customers

Throughout the AER2429 engagement process, we were reminded of the difficulties experienced by our vulnerable customers. Vulnerable customers are often not in a position to take advantage of the positive opportunities provided by the energy transition, such as installing rooftop solar, or changing their energy use behaviour to take advantage of lower cost time periods. Many stakeholders believe Power and Water has a role to provide more information and support for vulnerable customers through our communications, activities and plans.

During our People's Panels, we tested how we can develop our plans to enable vulnerable customers to take advantage of new technologies and pricing changes. We further sought representation of this perspective through our Reset Advisory Committee by including a representative from an NT community group.

A clear message across all forums and our engagement program was that no one should be left behind. All electricity users should be given a reasonable opportunity to participate in technology shifts and access opportunities presented by the future network. In response, we investigated how other electricity networks have, or are planning to, support the needs of vulnerable customers, for example, through initiatives, studies and concessions.

We recognise the importance of engaging with our energy partners, the NT Government and community bodies in developing and implementing solutions such as customer energy literacy programs. We are investigating how we can incorporate this into our business-as-usual education programs, including provision of accessible and educational information on our website regarding energy affordability.

We are currently developing a customer experience strategy, which will look at our customers' journey with us and set out a roadmap for improvement. In the development of this document, we will investigate how we may address vulnerable customers in future regulatory periods.

4. Lessons learned from engagement

Given the distinctiveness of our customer base, our networks, how we deliver services and the ongoing process of alignment with the national regulatory framework, we invited feedback throughout the process of engagement on effectiveness and opportunities for improvement.

Our People's Panels provided positive feedback that the process of engagement was effective and informative and felt their opinions were valued and recognised in the development of our Regulatory Proposal. We learned through these engagement sessions the importance of increasing the accessibility of our content and in providing our customers with access to subject matter experts within Power and Water to support their understanding of the practical impacts of challenges and investment options. We were also encouraged to play a larger role in ensuring all customers can access the benefits and manage the challenges of the energy transition and to partner with Government and others in the energy supply chain to investigate initiatives to manage these impacts.

Several energy partners have expressed interest to be engaged on the programs proposed in our Draft Plan and to be involved as appropriate in forward stakeholder engagement forums. This feedback is consistent with that provided by our People's Panel, who encouraged the inclusion of parties such as retailers in discussions where this would support customer understanding or the resolution of customer pain points. This feedback will help guide our approach to future engagement, including through involvement of third parties in certain conversations.

We experienced challenges in attracting and sustaining the involvement of certain stakeholder groups in the engagement process over an extended period. In response to these 'lessons learned', we are seeking advice from an independent consultant on practical mechanisms to support the effectiveness and sustainability of future engagement, specifically in the NT context and with recognition of the needs and challenges faced by Territorians. The results of this work will directly inform future conversations and the focus, structure, and delivery mechanisms of our engagement program.

Further, an independent report produced by energy consumer expert, Dr Andrew Nance, provided clear recommendations on how we can improve our customer engagement program including along the themes of customer service, the difference in the three regulated networks, customer energy resources, affordability, tariffs and engagement with customers. His overarching recommendation to overcome the challenges with attracting and sustaining stakeholder engagement was to "take the messages to them rather than rely on attendance at forums". Andrew Nance also noted that tariffs and the customer lifecycle concept should remain as an enduring framework for engagement and the importance of all three regulated networks being reflected and considered in future expenditure plans and engagement. We have undertaken these recommendations in our future engagement planning and Regulatory Proposal.

We believe we have engaged holistically and consistently across our stakeholder base, evolving our approach in response to feedback received both on the process of engagement applied during our first regulatory determination and over the course of the current engagement process. We will seek to further improve how we engage with our customers and other stakeholders as part of our business-as-usual activities and prepare for the next regulatory period.

5. How we will continue the conversation

Customers are at the centre of everything we do. It is therefore vital they continue to be involved in the development and delivery of our plans.

Engagement with our customers and stakeholders will not stop once we submit our Regulatory Proposal. We will continue the conversation through business-as-usual engagement forums, our website, regular customer advisory committee meetings and discussions with our energy partners. Feedback on our engagement process from across our stakeholder groups and the AER will be reflected in these conversations.

Ongoing communication with our energy partners will enable consistency in how we service Territorians and support the realisation of broader economic and social objectives for the NT. There was interest from several stakeholders to be involved in working collaboratively to facilitate the delivery of programs and activities including several we have proposed in our Regulatory Proposal, such as investment in new technologies and assets and educating customers about network related issues, which we will continue to discuss. Partnerships and initiatives with Government and our energy partners related to vulnerable customers will also continue to be investigated, to support their participation in the adoption of new technologies and initiatives and seek to manage the impacts of the energy transition.

As noted above, we are also seeking advice from an independent consultant on practical mechanisms to support the effectiveness and sustainability of future engagement.

We appreciate the commitment and input of our customers and other stakeholders throughout the process of engagement for our AER2429 Regulatory Proposal. The contributions and feedback received have facilitated in the development of a Regulatory Proposal which we believe will play an important role in meeting the needs of Territorians now and into the future.

Appendix A

Retailer forum community engagement report

PowerWater

Community Engagement Report
Retailer Pricing Forum November 2021

V1

30/11/2021

PowerWater

Contents

Executive Summary

This report provides a summary of the Retailer Pricing Forum (the Forum) which was held online on Tuesday 9 November 2021 as part of early engagement on the 2024-2029 AER Regulatory Proposal. The Forum was attended by 14 people including representatives from four retailers.

The Forum was designed to engage with retailers about key challenges for Power and Water, how these impact on retailers and understand how, as a result, retailers view the future of the network.

A series of presentations were given after which participants had the opportunity to ask questions. At the end of the event, participants were asked for their feedback on key issues and opportunities. Key retailer issues raised included:

- Lack of retailer support for consumer education related to network pricing
- Impact of export pricing on their customers.
- Interest in supportive pricing for community batteries

The table below summarises feedback received in relation to key themes.

Theme	Feedback
Export Pricing	The majority of retailers were comfortable with export pricing conceptually. However, one third did not support it. No specific issues were raised regarding export pricing during the discussion. Feedback provided by one retailer post the discussion was an observation in other jurisdictions of significant negative consumer feedback from customers who have already invested in solar and feel that a change in pricing erodes the expected financial returns. This particular retailer would favour some form of grandfathering.
Retail Pricing Order	All retailers were supportive of pricing strategies that supported more efficient outcomes for the system including lower cross-subsidies and increased customer choice. Reform of the wholesale and network prices under the retail pricing order needs to be coordinated. A time-of-use based Retail Pricing Order tariff for customers with a smart meter was supported.
Tariff Reform	A key message from retailers was that more cost complex, cost reflective tariffs are generally viewed positively because it gives retailers an opportunity to differentiate themselves. It was noted that Ausgrid offers up to six tariff options, enabling retailers to add more value than a single network tariff allows.
New EV/PV Tariffs	Retailers reported little interest from consumers in electric vehicle (EV) tariffs, however, were generally supportive of reforms that unlocked demand for EVs including development of new technology specific EV tariffs, similar to controlled load in other states, where a discount is given for control.
New Customer Classes	Retailers were generally supportive at looking at smaller customer classes, comparable to the 0-100 MWh classification in other states, to help improve pricing efficiency, to reduce cross subsidies and to eventually increase customer choice.
Period Definitions	Changing time-of-use periods to better reflect future load and export congestion was viewed positively by retailers, especially where it reduced the peak periods, even if it was a more complex structure.
Long-Run-Marginal-Cost	Potential changes to improve cost reflectivity of the peak period, which would also help reduce cross-subsidies, were supported in principle.
Maximum Demand Pricing	Finally, moving away from maximum demand tariffs for small customers to a kWh peak period charge was supported on the basis of being more fit-for-purpose in a future solar PV, EV and battery world.

Power and Water will progress with the reform options supported by retailers, as well as opportunities for improving support of retailer education of their customers. Power and Water Corporation has asked retailers to provide responses to questions contained in this report under Chapter 3: Invitation to Make a Submission. Power and Water Corporation will come back to retailers in March 2022 with specific proposals for their consideration and feedback.

1 Introduction

This report provides a summary of the outcomes from Power Water Corporation's (Power and Water) Retailer Pricing Forum which was held online at 9:00am – 12:30pm on Tuesday 9 November 2021.

The meeting was attended by representatives from retailers, the Australian Energy Regulator (AER), and Northern Territory Government (NT Government). The session was facilitated by Lucy Cole-Edelstein, an independent facilitator engaged by Power and Water to support the 2024 - 2029 Regulatory Proposal engagement program.

Organisation	Stakeholder Group
Next Business Energy	Retailer
Jacana Energy	Retailer
QEnergy	Retailer
Rimfire Energy	Retailer
Australian Energy Regulator	Regulator
Department of Treasury and Finance	NT Government
Power and Water Corporation (PWC)	Senior Management and staff

The Retailer Pricing Forum was held as part of early engagement on the 2024-2029 AER Regulatory Proposal. The session was designed to engage with retailers and receive their feedback about key challenges for Power and Water, how they impact on retailers and how they view the future of the network.

There were five presentations given and after each presentation participants were given the opportunity to ask questions. The table below outlines the topics and presenters. The slide deck is included in the Appendix of this report.

Session	Presenter
Overview of Challenges we are Facing as a Network	Jodi Triggs, Executive General Manager Customer, Strategy and Regulation, Power and Water Corporation
Progress Implementing our Tariff Structure Statement	Brendon Crown, Senior Manager, Regulation, Economics and Pricing at Power and Water Corporation
What we have Heard from Customers	Brendon Crown, Senior Manager, Regulation Economics and Pricing at Power and Water Corporation
Challenges for the Industry	Ezra Beeman, Managing Director at Energeia; a specialist consultancy working with Power and Water Corporation on pricing strategies
Key Pricing Opportunities and Options	Ezra Beeman, Managing Director at Energeia
Feedback from Retailers	Facilitated by Lucy Cole-Edelstein

2 Summary of discussion

The tables below provide a summary of the discussions and questions asked throughout the presentations. This is not to provide a verbatim transcript but seeks to capture key comments and questions made throughout the meeting to indicate issues of interest to retailers. For ease of reference, discussion has been themed.

Introduction	
Question/comment/issue	Power and Water response
Falling demand from increases in Distributed Energy Resources is driving up costs/kWh of customer consumption	Distributed Energy Resources (DER) have effectively minimised the need to augment parts of our network in many areas, which has been a good outcome for all customers. However, because a large portion of our charges come from anytime energy (cents per Kwh) reductions in energy consumption (without a corresponding reduction in network charges) will result in higher volumetric rates.
Previous forecasting/visibility challenges have resulted in an over recovery of revenue from customers recently	Our large over-recovery occurred in the first pricing year and was reflective or under-recovery in a previous period as well as a strong over-recovery against demand charges. The latter was largely caused by a lack of available information on customer demand over longer periods. This has largely been resolved in subsequent years with more data becoming available.
What's the change of under-recovering as a result of COVID?	There is always a risk of under and over-recovery, particularly where uncertain variables like weather, COVID and economic activity are present. Based on early analysis of billing data, we are not seeing large discrepancies against our forecast volumes, but we are only part way through the year.

Forecasting Challenges	
Question/comment/issue	Power and Water response
Do you have forecasts that tie economic growth to historical electricity consumption?	We've been focused on peak and minimum demand, we haven't turned to consumption yet, but we do have this data from work with the Commonwealth on COVID impacts by sector. We can provide further information on our demand forecasting at our next session and we are working on ways to integrate this into our energy forecasting.

Key Drivers	
Question/comment/issue	Power and Water response
Influx of solar has a positive impact on short-run marginal costs, but a negative impact on long-run marginal costs	Solar can have a positive influence on long run marginal cost. We have seen deferral of a number of augmentation projects as a result of solar flattening demand on a number of feeders. The increase in solar penetration does require some reconsideration of residual cost recovery as current tariff structures can create distortionary signals which allow customer to bypass the network charge with no corresponding reduction in costs.
What's the impact of population growth on pricing?	Population has contracted recently, this will impact consumption, which could lead to increased prices to generate the same revenue from less volume

Power and Water contextualized this next discussion by reiterating the importance of understanding retailers' perspectives and their understanding of network costs as a result of solar PV, and to explore potential tariff design options. It was stressed that tariff changes would be most impactful on retailers as customers would largely be indifferent as they never see these changes.

Export Pricing	
Question/comment/issue	Power and Water response
Is the intent that this tariff type would be independent of geographic region?	Customers said in the last determination process that they want consistent tariffs across whole network. The Australian Energy Regulator (AER) has often expressed a preference toward locational pricing. Our position at this stage is to work at improving the structures of the general tariff so that it is more efficient and provides better signals to customers through the retail tariff. We don't intend on changing our locational split as part of the next TSS.
What's the uptake split of PV in the three networks?	Power and Water will provide a further update on this once we've undertaken analysis
What's the Australian Energy Regulator's position on export pricing? Do you expect retailer consultation too?	The Australian Energy Regulator expects export pricing to be heavily focused and driven by customer consultation. We also note that export tariffs can't be incorporated without the support of the NT Government Yes, need retailers to know how to include these in customer tariffs (comment by AER)
If you are charging for export, why would customers not see this?	It is up to retailers how they pass on the cost This would be a network charge on export from a customer over the baseline, there may be a separate feed-in tariff which customers are exposed to.

EV Chargers	
Question/comment/issue	Power and Water response
Energy Consumers Australia recommended an EV tariff, is PWC looking at this?	Previously, we have tried not to target specific new technology/loads, however it is an emerging trend to ensure there is a specific tariff for EVs. We will look into the option of a specific EV tariff, but there may be more benefit in improving the efficiency of the existing retail tariff which could be mandated to EV users.
Is anybody else in the National Electricity Market making EV tariffs?	There are currently no EV tariffs in Australia, we have only found global examples. We are aware however of a number of trials being considered. We need to send the right price signals to consumers which ensures that we minimise overall cost to all customers. For example, we may find that lower network costs can be achieved by sending signals which encourage customers to charge their EVs while they are at work, not after coming home from work.

Are you receiving queries from customers about EV chargers?	Have had at least one large scale customer conversion to EVs. We expect a tipping point soon, however. Jacana and Rimfire noted in chat that customers are not enquiring about EVs, focus is still on solar There are currently Distribution Network Service Provider trials in the National Electricity Market, particularly in NSW. We want to partner with retailers in the NT to help us get a better understanding of EVs.
Distance between charging is a barrier for NT but this is reducing quickly with new EV models	EVs expected to be cheaper than internal combustion engines soon, they have 90% new car EV sales in Norway, for example

Retail Pricing Order

Question/comment/issue	Power and Water response
Do you think it's possible for consistent pricing between urban and regional areas while still providing appropriate price signals?	Even if there is an expectation that pricing across the Territory will be the same (as per government policy), tariff structures can still be improved in terms of cost reflectivity. This can be achieved by, for example, changing the way you classify customers, the tariff structure and the pricing levels

Power and Water were keen to reiterate they want to know retailers' perspectives on PV and how tariffs can be changed to better accommodate for PV generation

Key Pricing Opportunities

Question/comment/issue	Power and Water response
We see tariffs as very important, currently little interest in time-of-use tariffs from customers. We want to look at usage and how we can change this	We would agree and are key to work across the sector to understand how we achieve this.
Do you see an incentive structure for community batteries but not behind the meter batteries?	Existing challenges include ring fencing as well as introducing new mechanisms for capturing value; we see these being virtual products There is a strong incentive for customers to participate in trials, for example, you can take your solar with you, no capital outlay, etc.
Want to know what Power and Water Corporation are doing to educate customers here?	We wanted to bring this information to retailers first, we will then inform large customers next. We are currently unsure about how we will undertake small customer engagement, as last time engagement left customers even more confused due to not seeing the end price as a result of the pricing order
Particularly want to know if these changes will be explained after they are implemented as this is usually left up to the retailer Generally, there is never any explanation of the changes by networks, even though customers may not see these changes Customers are not well educated on the value of their energy and why networks would want to charge them	Network charges are not visible on a customer's bill Large customers or residential customers? In some ways, the networks are making the network changes for the retailers and not the customers. We would be happy to work with retailers in passing on information costs

Power and Water were also keen to understand retailers' views on whether a maximum demand tariff could be sending the right pricing signals in the future, and whether they want to see more cost-reflective tariffs, noting that

the ability to implement more cost reflective pricing is dependent on NT Government's decision regarding the Pricing Order.

Long-Run Marginal Costs	
Question/comment/issue	Power and Water response
Passing on more cost reflective tariffs to retailers that may be more complex is helpful to allow for innovation by the retailer	We would welcome more feedback by retailers here. Ultimately, PWC would like to see more cost-reflective retail pricing structures in the retail pricing order. We would be interested in any feedback as to whether network structures that were aligned to retail structures were preferred or instead whether retailers expressed a preference to see greater complexity in the network tariff to enable different products to evolve.
Should you set solar soaker tariffs at current minimum demand times or future expected minimum times?	To meet existing Rule requirements, Power and Water would need to set them at future expected times of minimum demand.

Further Discussion	
Question/comment/issue	Power and Water response
Is there a time-of-use type tariff in the retail pricing order?	There is but it is not widely adopted by customers or retailers
The alignment of the wholesale market, pricing order and CSO and tariffs to customers is key to efficiency. Currently, wholesale energy is a flat price to all retailers, demand charges are provided by network but are shielded from the customer. Reform is required at the wholesale and retail levels and not just the network level for NTG to update the electricity pricing order	If a customer has a smart meter, do retailers want those customers to have a time-of-use tariff?
Think that changes to the pricing order need to be made at the same time as changes to the network pricing, understand that we can't change everything else as well	The wholesale price is largely settled through contracts for difference which are at a flat price. We have little influence over this. How do we work together on a pricing order tariff structure which is more cost reflective and efficient?
Customers under 750 MWh would be reflective of other networks in the National Electricity Market	What are retailer's views on our proposal to create a new tariff for 100-750MWh customers?
Network time-of-use tariffs would provide retailers with a greater opportunity to manage their own book as well as provide new options to their customers. When an energy only charge is provided, it is challenging to offer customers anything other than flat rates. We would see these changes as a positive reform	If there was an option for customers under a pricing order to be on a time-of-use tariff, these customers could be put onto a network time-of-use tariff
We can't pass this on, the complexity of dealing with this charge and the treasury with the community service obligation is unnecessarily complicated and provides no value to the customer	Is the problem that the time-of-use demand it too challenging to pass onto customers?
Suggestion for new time-of-use periods to better match forecast minimum and maximum demand forecasts	Would all retailers agree with looking at options to improve peak and off-peak periods?

Next Steps

Power and Water Corporation will be asking for feedback, particularly for export demand tariffs

Power and Water Corporation will engage in next round of consultation in March next year

3 Invitation to make a submission

A number of questions were posed to participants during the Forum and while specific feedback was obtained, participants expressed the desire to received questions in writing for their thorough consideration and response.

Consequently, we have compiled the table below which outlines Power and Water's current position on a number of issues raised in the forum as asks questions for retailer's consideration. We ask retailers to submit their responses to these questions in writing by emailing PNRegulationGroup.PWC@powerwater.com.au by 11 January.

Topic	Issue	Questions for Retailers
1. Revenue Volatility and Forecasting Challenges	Falling energy consumption from increases in rooftop PV places pressure on network energy prices under current structures. A movement toward cost reflective charges would result in less volatility from increase solar penetration.	• What are retailer's views on whether and how we should move to more cost reflective prices to reduce revenue volatility due to uneconomic solar PV bypass?
2. Electric Vehicles	Current pricing structures may also pose a barrier to EV adoption. Pricing periods, Long-Run Marginal Costs and residual and peak charging mechanisms need to be set correctly to ensure prices can be cost reflective and minimise behaviour that would increase network costs inefficiently across all customers. Future work is focussed on network pricing reforms that will unlock efficient demand for EVs, including potential new tariffs	• Do you agree with supporting EV adoption and user pays principles by increasing the cost reflectiveness of existing tariffs, e.g., changing time periods, peak pricing mechanism etc? • Would you support network pricing reforms that unlocked demand for EVs including development of new technology specific EV tariffs, similar to controlled load in other states, where a discount is given for control?
3. Solar PV	Improving cost reflectivity via updated time-of-use periods, long-run marginal costs and charging components will significantly reduce cross-subsidies and uneconomic bypass	• Do retailers believe Power and Water Corporation should improve fairness and user pays principles by increasing the cost reflectiveness of existing tariffs, e.g., changing time periods, peak pricing mechanism, etc.? • Do retailers support Power and Water Corporation investigating whether solar PV customers use the network differently and should therefore be charged differently (i.e., a new tariff)? • Do retailers believe that Power and Water Corporation should investigate whether and how much solar PV customers should be charged more for their additional impact on the grid?

Topic	Issue	Questions for Retailers
4. Export Pricing	Power and Water Corporation is required to consider implementing an export tariff Power and Water Corporation plans to review solar PV impact costs, hosting capacity for setting baseline values and impacts of implementing a tariff Power and Water Corporation is considering the relative merits on implementing an export tariff in the next regulatory period	• Do retailers think that an export tariff is a good idea if it helps pay to ensure that everyone is able to connect their solar PV to the grid? • Do retailers believe we should implement an export tariff in the next (not this upcoming one) regulatory cycle if PWC finds there is a case for it • How should PWC structure any future potential export tariffs?
5. Retail Pricing Order	Options may exist to maintain government policy while making changes to the Pricing Order tariff arrangements to improve price signals and increase customer choice and competition.	• Do retailers believe PWC should investigate ways that pricing could support the government's reform of the order? • How do retailers think we should do this? For example, by creating new customer classes, creating pricing order consistent structures?
6. Time-of-Use Periods	By charging peak prices when not actually congested, or charging off-peak prices when the grid is congested can incentivise the wrong behaviour from customers. Periods should be set to ensure that customers are incentivised to reduce their use on the network only where it has the potential to reduce future network costs.	• Do retailers support changing our periods to better reflect demand and export congestion periods, especially where it will mean a shorter peak period, and a new 'solar soaker' period of extra low prices?
7. Long-Run Marginal Costs	Current Long-Run Marginal Costs are increasing grid costs unnecessarily due to inaccuracies, e.g., by over-charging for off-peak kWhs, reducing consumption and increasing per unit costs accordingly. They are also under-charging for peak kWhs, increasing uneconomic consumption and investment costs accordingly.	• Do retailers support changing our LRMC based prices to improve overall cost reflectivity of tariffs? • Do retailers believe we should phase in these changes if they represent a significant change?
8. Peak Period Pricing Mechanism	The current mechanism is increasing grid costs unnecessarily due to inaccuracies and by being difficult for customers to understand and respond to. Customers do not know when they are setting their peak, and the prices do not reflect Power and Water Corporation's costs as well as other mechanisms. Also, Distribution Network Service Providers are generally moving away from maximum demand charges except in certain cases.	• Do retailers think Power and Water Corporation should review the peak and residual cost recovery components to correct all these issues in order to reduce costs, cross-subsidies and volatility?
9. Existing Tariffs	Current tariffs are increasing grid costs, cross-subsidies and volatility unnecessarily due to the current Long-Run Marginal Costs, time-of-use, peak pricing mechanism and cost allocation settings Reform of the current tariff designs, with adequate customer impact safeguards, could significantly reduce cross-subsidies, uneconomic bypass via rooftop solar PV, and	• Do retailers think Power and Water Corporation should correct all these issues to reduce costs, cross-subsidies and volatility?

Topic	Issue	Questions for Retailers
	unnecessary investment costs due to uneconomic consumption patterns	

4 Conclusion

The Retailers Pricing Forum provided an opportunity for Power and Water Corporation and retailers to come together and discuss key issues affecting planning for future of energy in the Northern Territory. Power and Water Corporation received useful feedback on issues such as export pricing, retail pricing order, tariff reform, new EV/PV tariffs, new customer classes, period definitions, long-run marginal costs and maximum demand pricing. Responses to the questions asked of retailers in this report will further assist Power and Water Corporation in their planning.

Appendix B

Future networks forum community engagement report

PowerWater

Community Engagement Report
Future Networks Forum November 2021

V5

29/11/2021

PowerWater

Contents

Executive summary

The Future Network Forum (the **Forum**) was held on Thursday 11 November 2021 at the Darwin Convention Centre and was attended by 78 representatives from key stakeholder cohorts and Power Water Corporation (**Power and Water**) staff and management.

Table 1 - Future Network Forum Attendees

Northern Territory Government	Retailers	Customers and Generators	Industry Specialists	Power Water Corporation staff	Power Water Corporation Board
9	8	21	3	11 (including 5 senior leadership staff)	2

The session was held as part of early engagement on the 2024-2029 AER Regulatory Proposal and was aimed at sharing with stakeholders Power and Water's preliminary thinking around the challenges and opportunities of transitioning to a 'least cost' energy future that supports the greater uptake of renewable energy, changes in customer preferences and expectations around how they use and consume electricity.

In particular, Power and Water sought feedback and insights from stakeholders on:

- The role Power and Water plays in supporting the achievement of NT Government's 50% renewable energy target by 2030.
- Network capabilities required to support this transition.
- Initiatives to help Power and Water bridge identified gaps in its existing capabilities.

Photo of participants listening to one of the presentations

Presentations at the Forum included:

- Overview of Power and Water and the Changing Energy Landscape (Power and Water Corporation)
- The Darwin Katherine Electricity System Plan (The Department of Industry Tourism and Trade)
- The Future Network Pathways (CSIRO and CutlerMerz)
- The Electric Vehicle Strategy and Implementation Plan (The Department of Infrastructure, Planning and Logistics)
- The Future Energy Readiness Plan (Power and Water Corporation).

The Forum also included a questions and answers (**Q&A**) session with panel experts from a range of organisations including CSIRO, CutlerMerz, Department of Industry and Trade (**DITT**), Power and Water, Ekistica, Department of Infrastructure Planning and Logistics (**DIPL)**.

Throughout the Forum, live polling was used to engage participants and capture feedback. Results from the live polling indicate that the vast majority of respondents thought it was important for their organisation to invest in renewable energy, although only about half of respondents indicated their organisations had renewable targets.

The vast majority of respondents also thought that the Darwin-Katherine Electricity System Plan (**DKESP**) [1] was important for building the necessary momentum for change in the energy system. Less than a third of respondents indicated that they thought that Power and Water was doing 'what they should' to support the achievement of the NT Government's 50% renewable energy target by 2030. Most respondents indicated that Power and Water should be doing more, with a large number of respondents indicating that Power and Water should be doing 'far more'.

Many respondents indicated it was very important for them personally to move towards zero emissions. Approximately one third of respondents indicated they were not prepared to pay to reduce their carbon emissions via their electricity bill, while a third indicated they would be prepared to pay between 5% and 10%. The remaining third were prepared to pay over 10% more.

More than half of respondents suggested we should do 'whatever it takes' to enable carbon emission reductions. Interestingly, respondents indicated that cost was the number one barrier to the uptake of electric vehicles followed by anxiety about range. The vast majority of respondents enjoyed the event or thought it was worthwhile.

[1] Refer to Northern Territory Government, 'Darwin Katherine Electricity System Plan: Cleaner, more affordable and secure electricity system by 2030,' October 2021.

1 Introduction

This report provides a summary of materials and key insights from Power and Water's Future Network Forum which was held between 2pm and 5pm on Thursday 11 November 2021 at the Darwin Convention Centre. The session was independently facilitated by Lucy Cole-Edelstein and was attended by 78 representatives from key stakeholder cohorts and Power and Water staff and management.

Future Network Forum Attendees

Northern Territory Government	Retailers	Customers and Generators	Industry Specialists	Power Water Corporation staff	Power Water Corporation Board
9	8	21	3	11 (including 5 senior leadership staff)	2

Stakeholders had a keen interest in understanding how our network will adapt to fundamental changes in our energy system, including increasing uptake of renewable energy and adoption of electric vehicles. The development of a Future Network Strategy outlining our strategic approach for transitioning our network to support the achievement of NT Government's 50% renewable energy target (as well as changing customer expectations) will form a key aspect of our stakeholder engagement for the 2024-29 regulatory proposal.

NT Government has published a series of reports in early October 2021 which are relevant to the Future Networks Forum. Most importantly, the Darwin-Katherine Electricity System Plan (**DKESP**) provides a pathway to reach 50% renewables in the energy system by 2030 including investment targets for large and small scale solar, battery storage, grid security batteries, and new thermal plants. The DKESP identifies the need to build a new renewable energy hub by 2025 to accommodate 200MW of large scale solar, and which will connect to the existing transmission network between Channel Island and Hudson Creek. The DKESP also contemplates a doubling of small scale solar and increasing home batteries.

Key objectives for the Forum were as follows:

- Start the conversation about how Power and Water should support and respond to growth in renewable energy and changing customer behaviour (such as the uptake of electric vehicles)
- Understand the key priorities and challenges of the rapidly changing energy environment for large customers and key stakeholders
- Discuss how Power and Water might proceed in line with the roadmap outlined in the DKESP, including challenges and opportunities.

The live polling tool, Mentimeter, was used throughout the session to enable participants to ask questions and vote on other people's questions. This allowed discussion to be focussed on topics which were of the most interest to participants. It is important to note that the graphics contained in this report have been compiled for clarity and do not represent the visuals automatically generated by Mentimeter which were displayed at the event.

2 Overview of Power and Water and the Changing Energy Landscape

Summary of presentation by Brendon Crown, Manager Regulation, Economics and Pricing for Power and Water

"The task for Power and Water and also on a number of people in this room is - how do we address the significant challenges to meet the expectations of customers without imposing considerable costs?"

Photo of Brendon Crown speaking to participants about the acceleration to the new energy system

In the last decade we have seen a fundamental paradigm shift in how the energy system operates. Before 2010, the energy system was relatively simple and was characterized by one-way flows of electricity from large gas generators connected to the transmission network, which were in turn transferred through the series of poles and wires to customers' houses or businesses.

Technical advancement and innovation have driven fundamental change in the energy market, with the move away from highly centralised to decentralised generation, changes in the generation mix, and the introduction of two-way energy flows on electricity networks at all voltage levels.

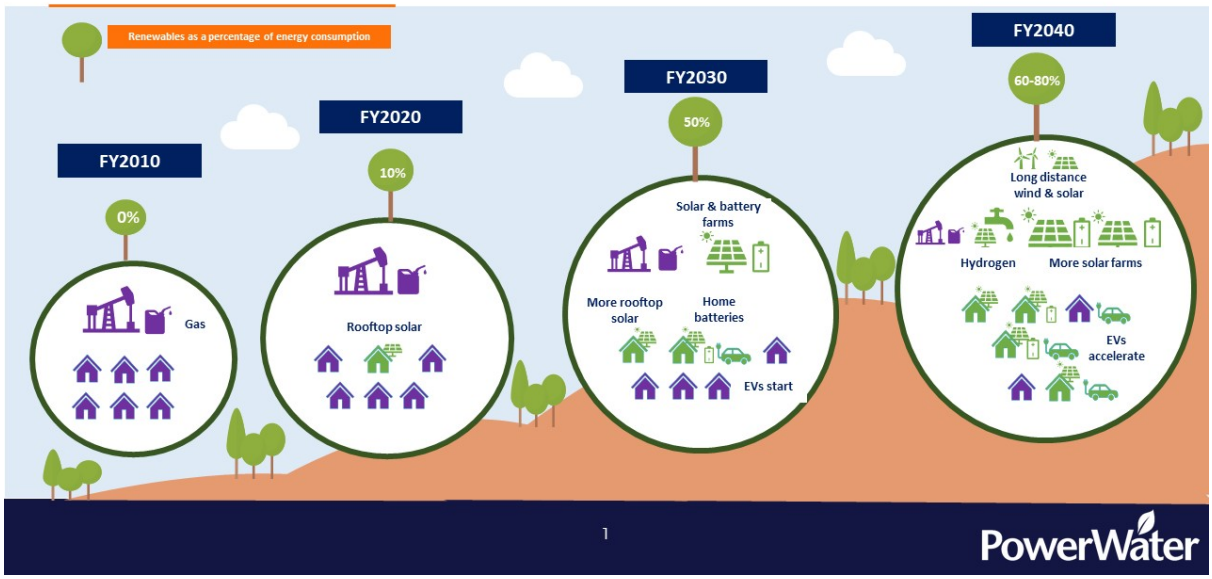


Figure 1 Slide 1 from Brendon Crown's Overview

Decisions around future generation now lies equally with private sector investors and Territory land holders, as well as tens of thousands of mums and dads and small businesses wanting to place solar panels on their rooftop.

> ***"One in six of Power and Water customers have a solar panel on their roof at their home or business and our system is already delivering around 10% of its energy from renewable sources (2020 data)"***

While this substantial change presents challenges, it also presents an opportunity for Power and Water to future proof its network through targeted investment to ensure that it continues to meet customer needs and deliver value to Territorians now and into the future.

The DKESP sets out the vision for a different energy system to start to emerge in 2030:

- Ageing gas generators will be replaced with large scale solar farms
- There will be increasing uptake of residential solar and battery storage that will enable spare solar to be distributed at night
- More customers will switch to electric vehicles.

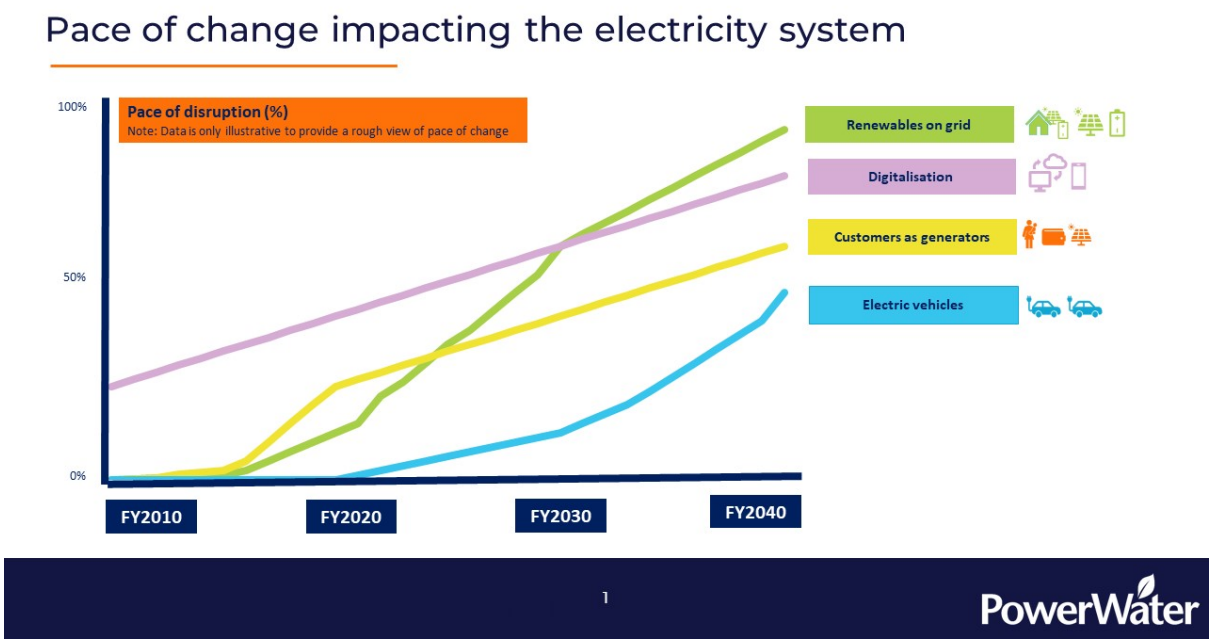


Figure 2 Slide 2 from Brendon Crown's Overview

The rapid pace of change and evolving customer preferences around how they seek to use and consume electricity is driving the need for Power and Water to adapt its network. During the Forum Power and Water outlined its views on the 'no regrets' actions to be taken immediately to enable this energy revolution and pursue the 'goldilocks' investment pathway. These are the things Power and Water is seeking to discuss with stakeholders now so that we can develop options for the 2024-29 Regulatory Proposal to present back to key stakeholders.

> ***"Customer expectations are evolving; connection is not simply about getting access to the grid – today it's also about solar, and tomorrow it will be batteries and micro-grids. Powering appliances used to be whitegoods; now it is the digital world of mobiles and Wi-Fi, tomorrow it is likely to be electric vehicles. Getting information on power outages used to be a case of call centres, but now our customers want access through the internet. Tomorrow it will be automatic notifications and updates. Our customers also have more options to disconnect by going off-grid. "***

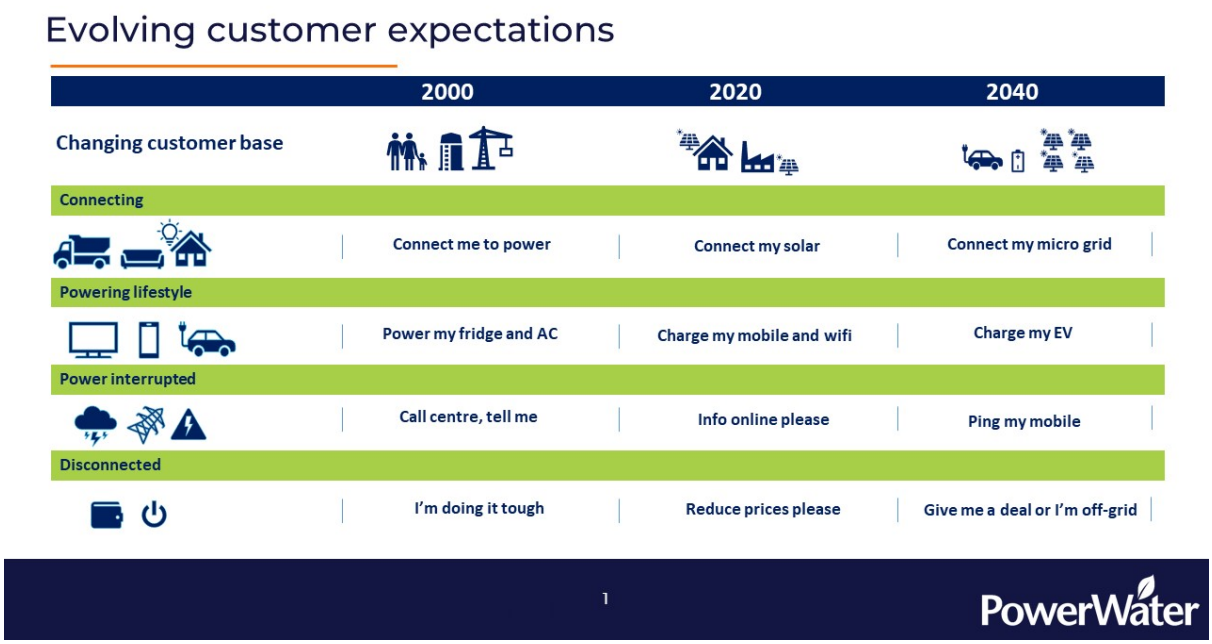


Figure 3 Slide 3 from Brendon Crown's Overview

A video taken of a customer who attended the Darwin Show and visited the Power and Water exhibit was then played. She responds to the question 'Do you think the NT as a whole should increase the supply of electricity it gets from solar over the next 20 years?'

Power and Water's Future Networks Readiness Plan sets out our 'no regrets' investments between 2024 and 2029, with a focus on unlocking the small-scale renewables required to meet the expectations under the DKESP. The investment to unlock small scale renewables will be combined with any transmission level investment and network support required to enable grid scale renewables connections and export.

While meeting the timeframes outlined in the DKESP are challenging we are committed to working closely with NT Government and key stakeholders to overcome logistical and regulatory hurdles, so that we can set the network up to adapt and respond to changes in the future.

Figure 4 Slide 4 from Brendon Crown's Overview

Live polling results – Overview of Power and Water and the Changing Energy Landscape

The following questions were asked of participants and results shown live on the screen.

Participants were asked what topics they wanted to hear about during the session and were able to provide multiple responses. The topic participants were most interested in hearing about were opportunities for renewables in the Northern Territory followed by how other networks are unlocking renewables, future grid opportunities, The Darwin Katherine System Plan and finally electric vehicles.

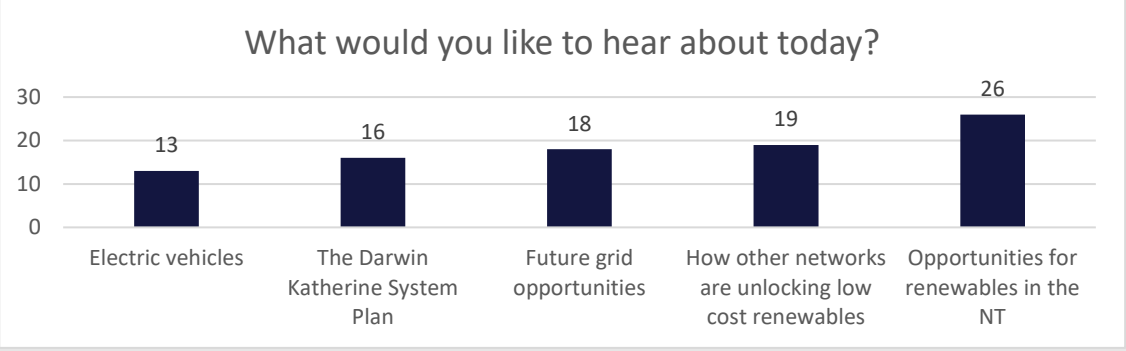


Figure 5 Question 1 Live Polling Future Networks Forum

Photo of facilitator Lucy Cole-Edelstein giving instructions for submitting responses to the live polls

Participants were then asked 'where are you from?'; 13 participants identified they were from the energy sector, 10 from the Northern Territory Government, 8 were energy stakeholders and 5 from industry.

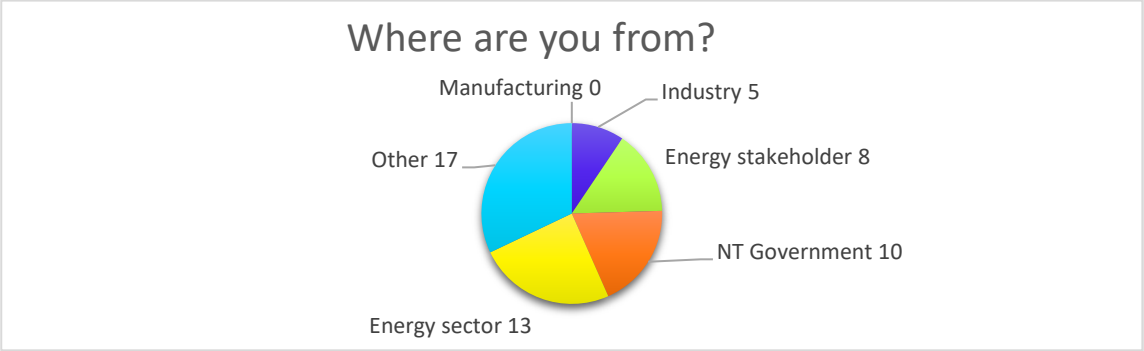


Figure 6 Question 2 Live Polling Future Networks Forum

53 participants responded to the question 'how important is it for your organisation to invest in renewable energy?' Two-thirds of respondents stated it was 'extremely important and most respondents stated it was either 'extremely important' or 'very important' to their organisation.

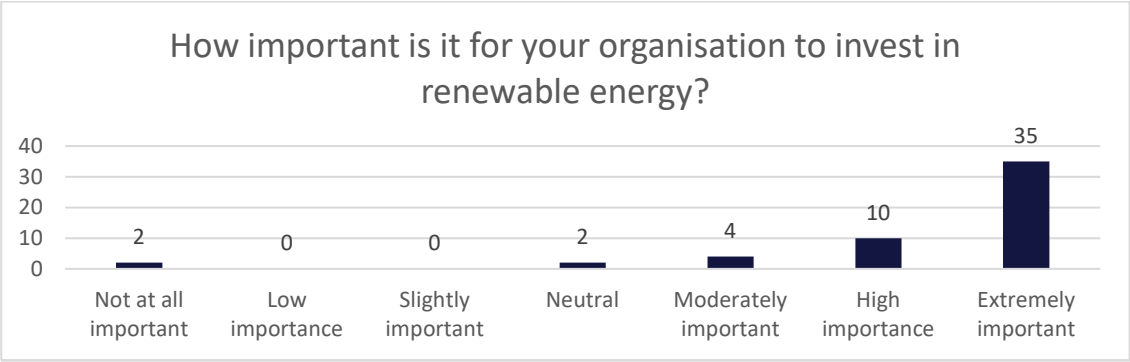


Figure 7 Question 3 Live Polling at Future Network Forum

Participants were then asked how important it was for them personally that we move to zero emissions. 39 of the 51 respondents indicated it was 'extremely important' or of 'high importance', 9 said moderately important, one was 'neutral', one said it was of 'low importance' and one said it was 'not important at all'.

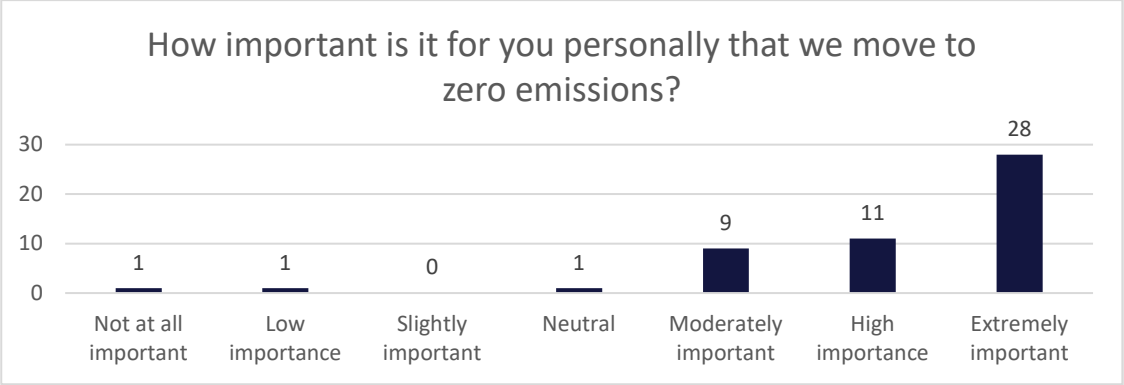


Figure 8 Question 4 Live Polling Future Networks Forum

56 participants responded to the question regarding whether their organisation had emissions/renewable targets. Approximately half of the respondents responded with 'yes', their organisation had targets, while over a third responded with 'no' and a small proportion said they 'didn't know'.

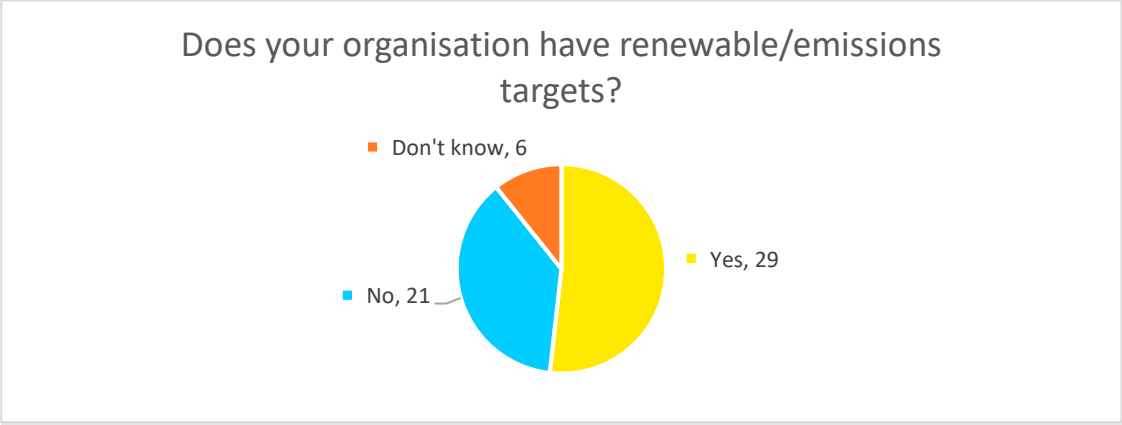


Figure 9 Question 5 Live Polling Future Networks Forum

A video from the Darwin Show in which a customer responds to the question 'what do you think about using new technology such as electric vehicles?' was then played.

Followed by a video in which a Lynne Gallagher, the CEO of Energy Consumers Australia responds to the question 'what will the energy future look like?'

3 Presentations by the Panel

The Panel included six speakers, two of whom participated remotely. Each panelist made a short presentation followed by a question-and-answer session. The panelists were as follows:

- **Jim McKay**, Executive Director for the Office of Sustainable Energy, Northern Territory Department of Industry Tourism and Trade (the agency who produced the DKESP). Jim has more than 20 years' experience in the utility and electricity supply industry gained across Australia. Jim was previously the Chief Engineer for the Power and Water Corporation's Power Services business, where he was responsible for the delivery of the major projects program, power system planning and network engineering.
- **Paul Graham**, Chief Economist of CSIRO's Energy Business unit. Paul led the Electricity Network Transformation Roadmap on behalf Energy Networks Australia and has provided advice to the Australian Energy Regulator on how to value Distributed Energy Resources. *Paul participated remotely.
- **Tim Edwards**, Managing Director, CutlerMerz, a consultancy firm to the power and energy sector who has provided advice to the Australian electricity networks, governments, and regulators. The firm is at the forefront of the energy revolution, advising clients on the transition to clean energy technologies. *Tim participated remotely.
- **Jo Cruickshank**, Director of Transport Strategy and Support with the Department of Infrastructure, Planning and Logistics. The Department recently released an EV implementation and strategy. Jo has over 20 years' experience working in transport and in 2019, Jo undertook a Churchill Fellowship to study cycling policies and programs in the UK and Europe.
- **Lyndon Frearson,** Founder, Ekistica. Lyndon been working on the Alice Springs Future Grid project. Ekistica specialises in infrastructure in regional and remote areas, and as its founder, Lyndon has 20 years' experience in heavy industry, manufacturing and construction of major projects from Kenya to the Cook Islands. Lyndon has directly overseen the delivery of over $1 billion of greenfield renewable projects and supported the delivery of a further $5 billion of projects, including wind, solar and hydro plants. Lyndon has been active in the Northern Territory energy sector for over 15 years having previously been Deputy Chair of the Roadmap to Renewables Taskforce, a member of the Board of the Energy Resources Institute and is currently Project Director of the Alice Springs Future Grid consortium.
- **Stephen Vlahovic**, Executive General Manager of Power Services at Power and Water.

The following pages contain the slides from each panelists' presentation along with the questions and answers from the live polling. Appendix 1 sets out the questions and responses from the Panel Q&A.

Photo of the panel discussion including three panelists in the room and two participating remotely

Presentation 1 – The Darwin Katherine System Plan

A Presentation by Jim McKay from the Office of Sustainable Energy, Northern Territory Department of Industry Tourism and Trade

Jim McKay presented on the Darwin Katherine Electricity System Plan – a key focus of the Future Networks Forum. The DKESP, provides strategic guidance on the lowest cost pathway for the Northern Territory to achieve its 50% renewable energy target by 2030.

Figure 10 Slide 1 from Presentation on The Darwin Katherine System Plan

The plan firmly sets the Northern Territory on a path towards significantly decarbonising the power system to provide cleaner and more affordable energy to Territorians and has direct implications for Power and Water in terms of how the distribution network will support the achievement of this goal.

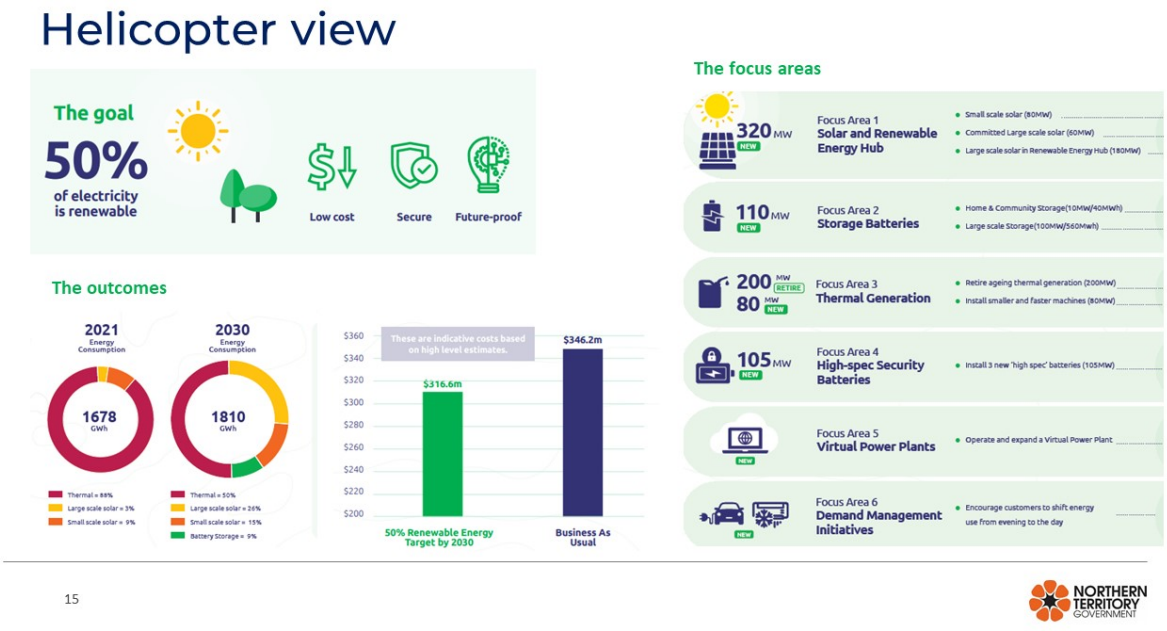


Figure 11 Slide 2 from Presentation on The Darwin Katherine System Plan

Jim presented on the key highlights of the plan, noting the need for the grid to be responsive to a renewables future and the additional need for cross industry co-operation to achieve the outcomes the plan is driving towards.

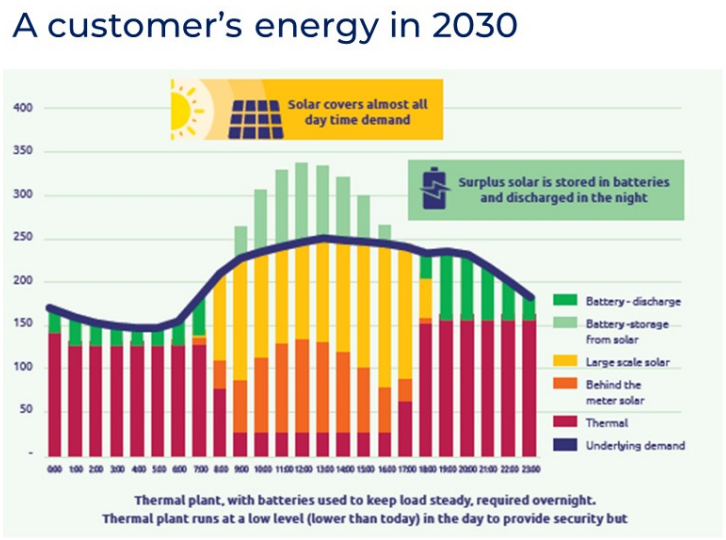


Figure 12 Slide 3 from Presentation on The Darwin Katherine System Plan

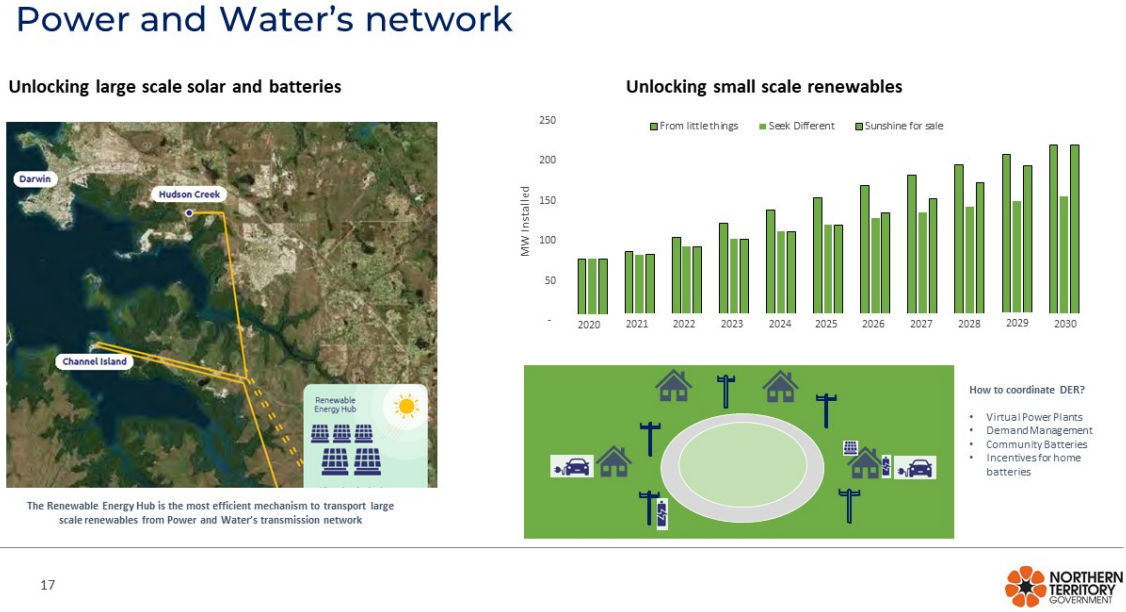


Figure 13 Slide 4 from Presentation on The Darwin Katherine System Plan

Live polling results - The Darwin Katherine System Plan

Following Jim McKay's presentation on DKESP, participants were asked about the importance of the DKESP for building the necessary momentum for change in the energy system. 44 of 53 respondents said it was 'extremely important' or of 'high importance', 5 said it was moderately important, 2 were 'neutral' and 2 said it was 'slightly important'.

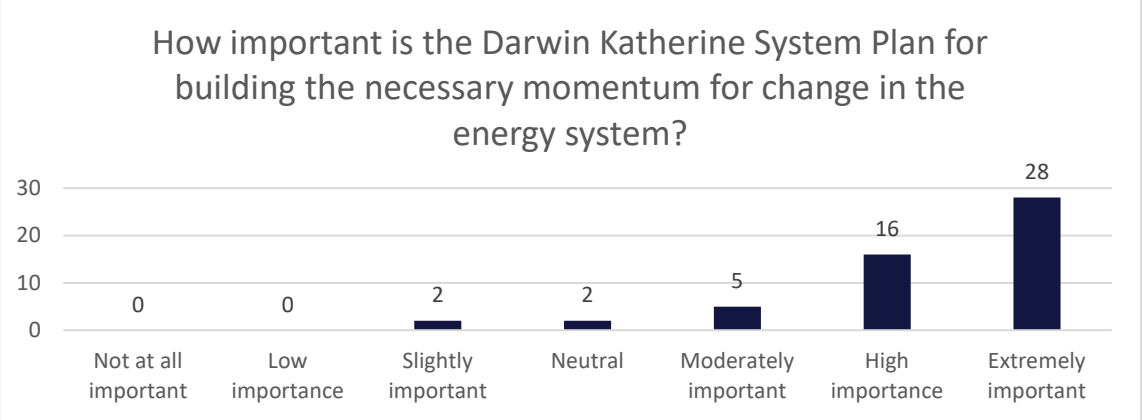


Figure 14 Question 6 Live Polling Future Network Forum

Presentation 2 – Future Network Pathways

A presentation by Paul Graham from the CSIRO and Tim Edwards from CutlerMerz

Figure 15 Slide 1 from Presentation on Future Network Pathways

Paul Graham from CSIRO and Tim Edward from CutlerMerz reflected on their experience and early advice to Power and Water in respect of the network response to the Northern Territory's pathway to renewables. They noted that the network of tomorrow will be markedly different from today. They identified the key drivers of change are:

- Significantly more small-scale renewables delivering energy deep in the network
- Large scale solar located in different places to current generation
- More opportunities to store excess solar in batteries
- Increase in energy and demand from electric vehicles.

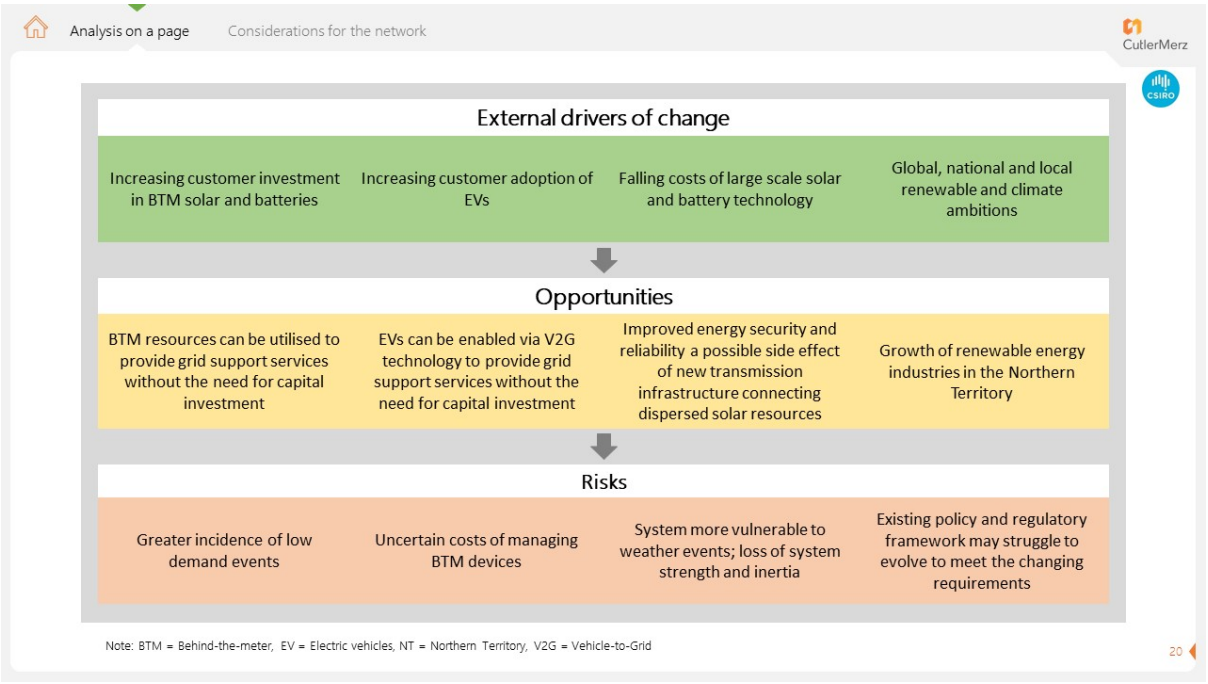


Figure 16 Slide 2 from Presentation on Future Network Pathways

Paul and Tim's view was that Power and Water needs to focus on:

1. Designing the lowest cost transmission network to connect large scale renewable
2. Orchestrating small scale renewables securely and efficiently
3. Ensuring that electric vehicle charging occurs when there is spare capacity unlocking utilisation.

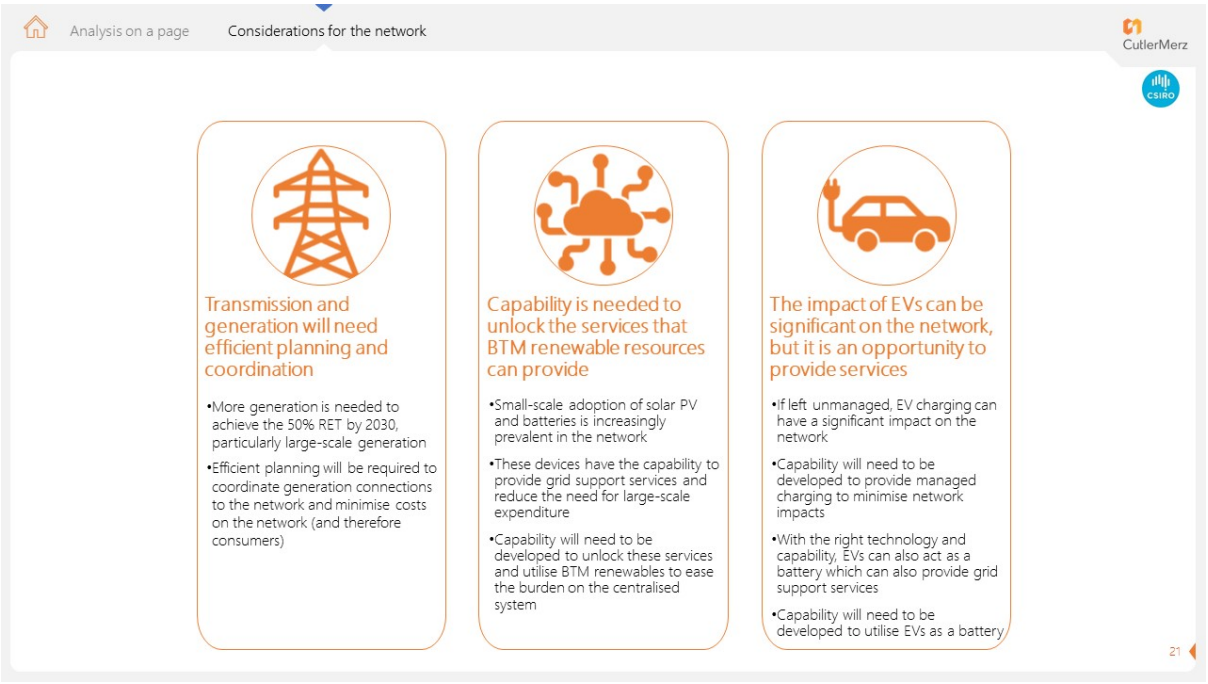


Figure 17 Slide 3 from Presentation on Future Network Pathways

Live polling results – Understanding participants' current use and views on vehicles

Participants were then asked a series of questions via live polling, prior to the upcoming session on electric vehicles. Participants were asked about the number of vehicles in their household. Approximately half (27 of the 52 respondents) had two vehicles in their household, 11 respondents had either one or two vehicles while 3 respondents had four vehicles in their household.

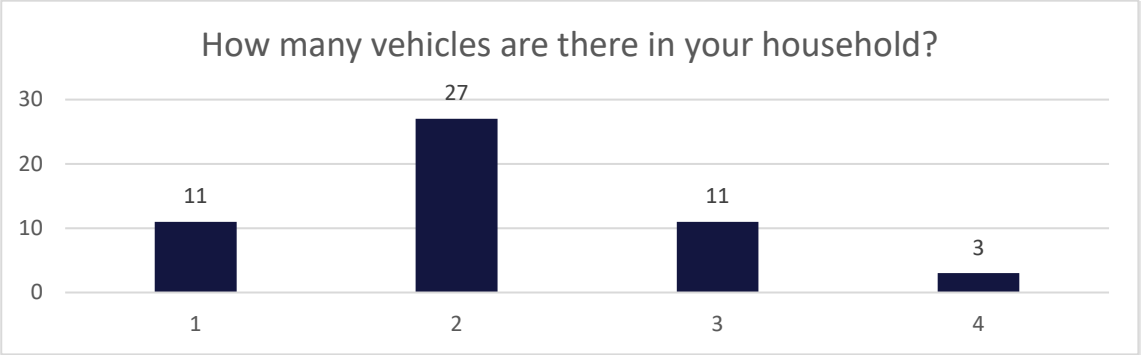


Figure 18 Question 7 Live Polling Future Network Forum

Approximately half (24 of the 51 respondents) indicated they have a daily commute under 10km while 16 have a commute between 10km and 30km, 6 respondents have a commute between 30km and 50km and give respondents have a commute of more than 50km.

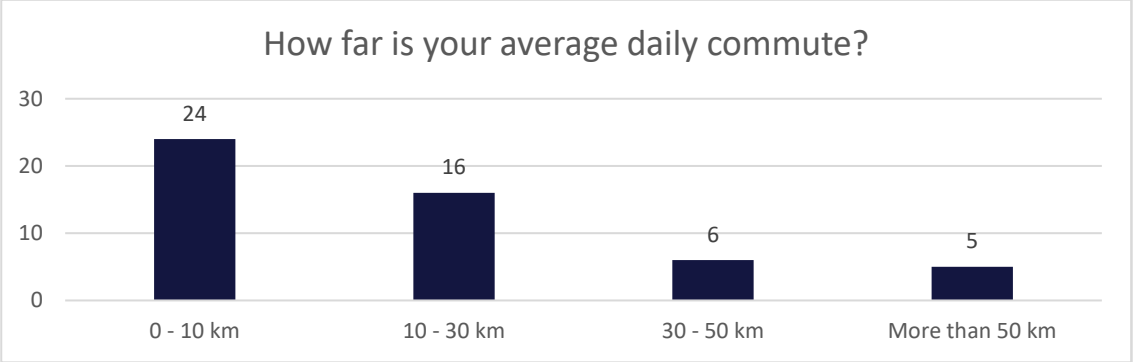


Figure 19 Question 8 Live Polling Future Network Forum

Participants were asked to rank the main barriers to the uptake of electric vehicles. Cost ranked the number one barrier of concern (29), followed by anxiety about range (14), lack of chargers (7) and availability (3).

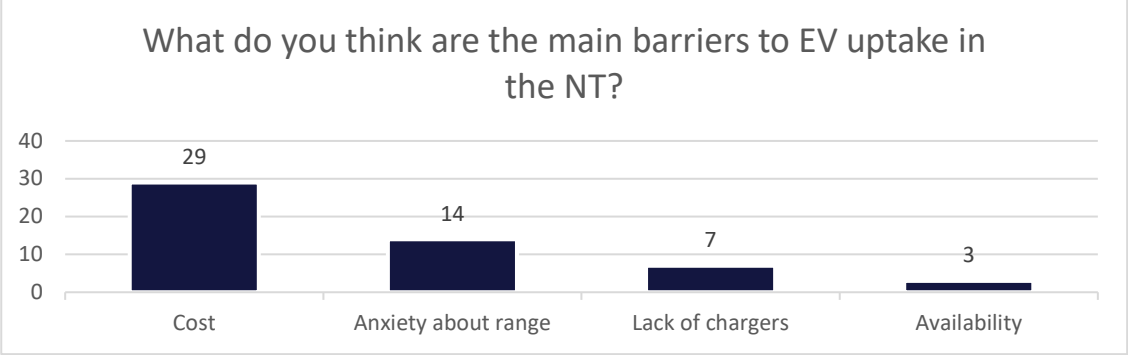


Figure 20 Question 9 Live Polling Future Network Forum

Presentation 3 - Northern Territory Electric Vehicle Strategy and Implementation Plan

A presentation by Jo Cruickshank from Transport and Civil Services, Department of Infrastructure, Planning and Logistics

Figure 21 Slide 1 from Presentation on Northern Territory Electric Vehicle Strategy and Implementation Plan

Jo Cruickshank provided a summary of the NT Electric Vehicle Strategy and Implementation Plan. Her presentation aimed to demystify a number of negative perceptions regarding future uptake of electric vehicles in the NT. Jo suggested that electric vehicles could unlock significant benefits for Territorians and that the uptake of electric vehicles will be inevitable as price parity gets nearer. Jo challenged the industry to ensure there is sufficient forward thinking in respect of electric vehicles. Barriers such as range anxiety require thinking on public charging infrastructure.

Figure 22 Slide 2 from Presentation on Northern Territory Electric Vehicle Strategy and Implementation Plan

NT EV Implementation Plan

- reduced registration and stamp duty fees from-mid 2022
- increasing the number of EVs in the NT Government fleet
- Installing chargers in NTG buildings
- Grants for home, workplace and public EV chargers
- Planning scheme amendments
- Planning for power supply implications
- Providing consumer information

25

NORTHERN TERRITORY GOVERNMENT

Figure 23 Slide 3 Presentation on Northern Territory Electric Vehicle Strategy and Implementation Plan

Implications for electricity systems

- Increased demand
- Encouraging daytime charging
- V2G
- Dynamic charging
- Charger installation

26

NORTHERN TERRITORY GOVERNMENT

Figure 24 Slide 4 from Presentation on Northern Territory Electric Vehicle Strategy and Implementation Plan

Live polling results – Participants' views on electric vehicles

When asked about the percentage of cars that will be electric in the Northern Territory in 2040, 14 respondents indicated they think 10%-29% of cars will be electric by 2040, 14 respondents thought 30% - 59% and 17 respondents thought 60%-89%. Only 3 of the 49 respondents thought 90-100% of cars will be electric by 2040.

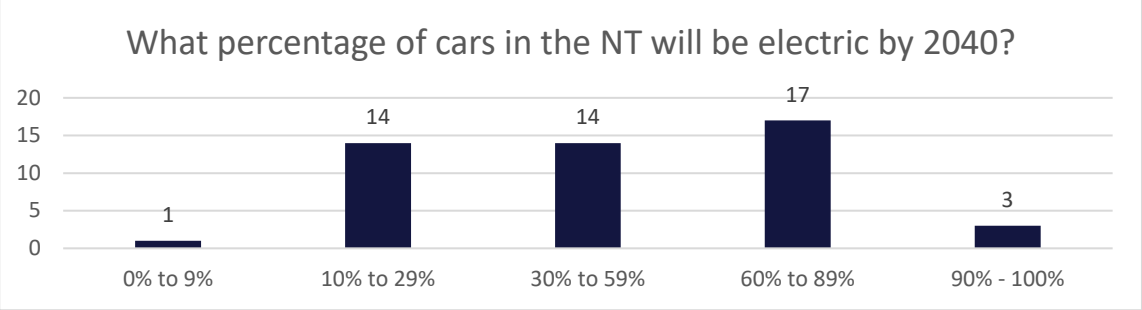


Figure 25 Question 10 Live Polling Future Networks Forum

Participants ask and respond to questions via the Mentimeter platform on their smart phone

4 Power and Water Corporation's Future Energy Readiness Plan

Summary of presentation by Brendon Crown, Manager Regulation, Economics and Pricing for Power and Water

In January 2023, Power and Water is required to submit its investment and expenditure plans to the Australian Energy Regulator (AER) covering the electricity network services it provides in Darwin/Katherine, Tennant Creek and Alice Springs. These expenditure plans will need to include economic justification supporting all network investment, including any investment in future system enhancements out to June 2029.

The AER will assess Power and Water's expenditure proposals against criteria set out in statutory rules. This will include whether the expenditure itself satisfies planning and investment criteria set out in those same rules. A series of guidelines provided by the regulator will assist in preparing expenditure proposals.

The AER's Better Resets Handbook makes it clear that there is a clear expectation for Power and Water to enter into sincere engagement with customers prior to presenting proposed plans in January 2023.

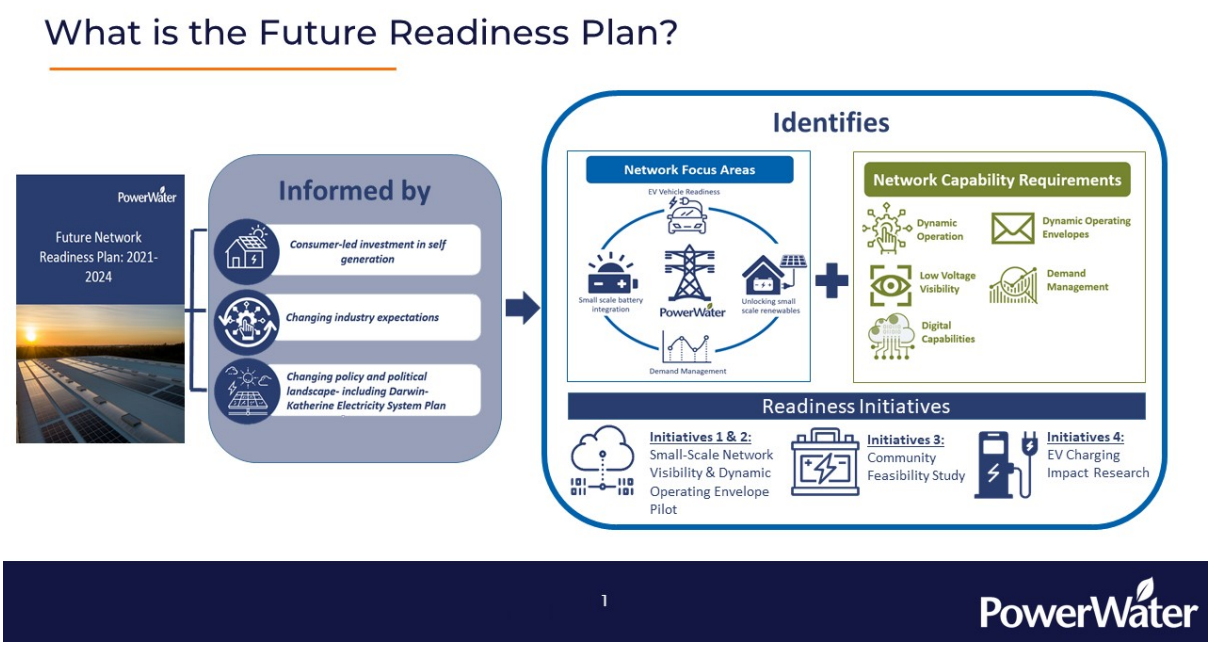


Figure 26 Slide 1 from Presentation on Power and Water Corporation's Readiness Plan

It is vitally important that over the next 13 months Power and Water establish a clear and defensible investment and expenditure program that meets customer expectations.

At the system and transmission level, it will be important to ensure market participants, government and the AER are on the same page regarding the timetable for network investment. In terms of the other network focus areas relating to small scale renewables acceleration and demand management, Power and Water believe there is a network capability requirement that is still untapped and some questions that still need to be answered before it can properly put forward expenditure plans for the next period.

The Future Networks Readiness plan is directly aimed toward developing key capability requirements to accelerate small scale renewables in the quickest and cheapest way. To do this Power and Water will need to invest in understanding:

- How Power and Water might operate the existing network for two-way flows without the need to invest
- How Power and Water could create opportunities for retailers and their customers to store excess solar during the day to be fed back to them at night through community-based storage
- How the network might stay in front of the likely electrification of the vehicle fleet in the Northern Territory over the next decade in a way that minimises overall network charges

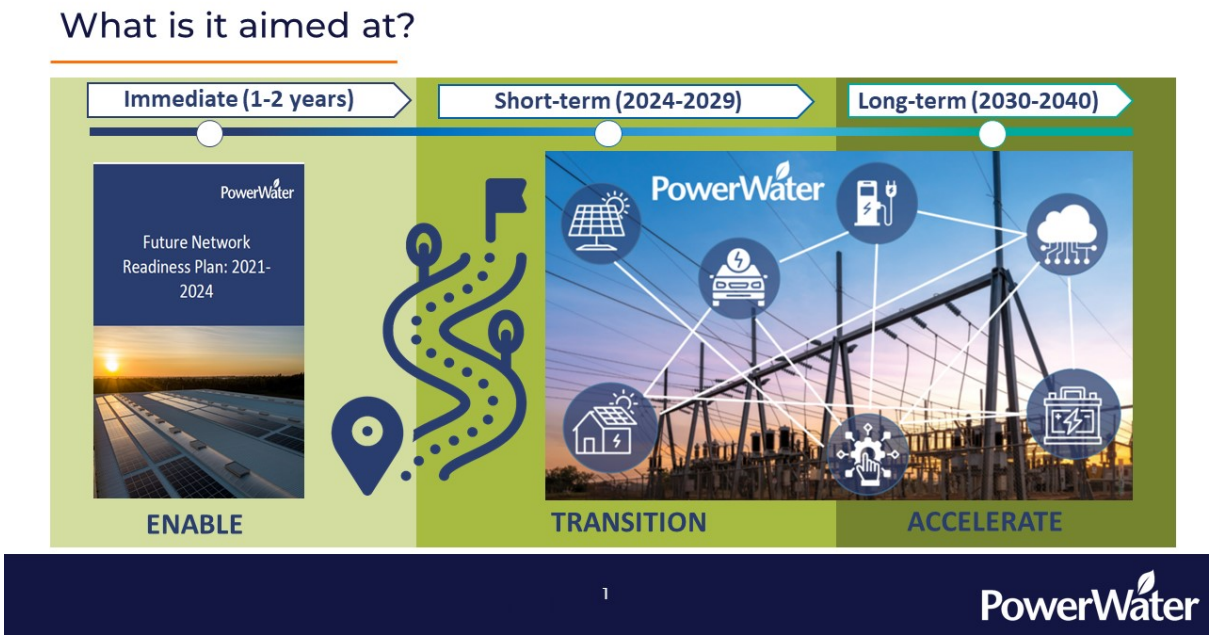


Figure 27 Slide 2 from Presentation on Power and Water Corporation's Readiness Plan

Outlined below is a high-level overview of the key initiatives Power and Water is putting in place to address knowledge and capability gaps. Power and Water are hoping these 'no regrets' actions today will support the Goldilocks investment plans in 2023.

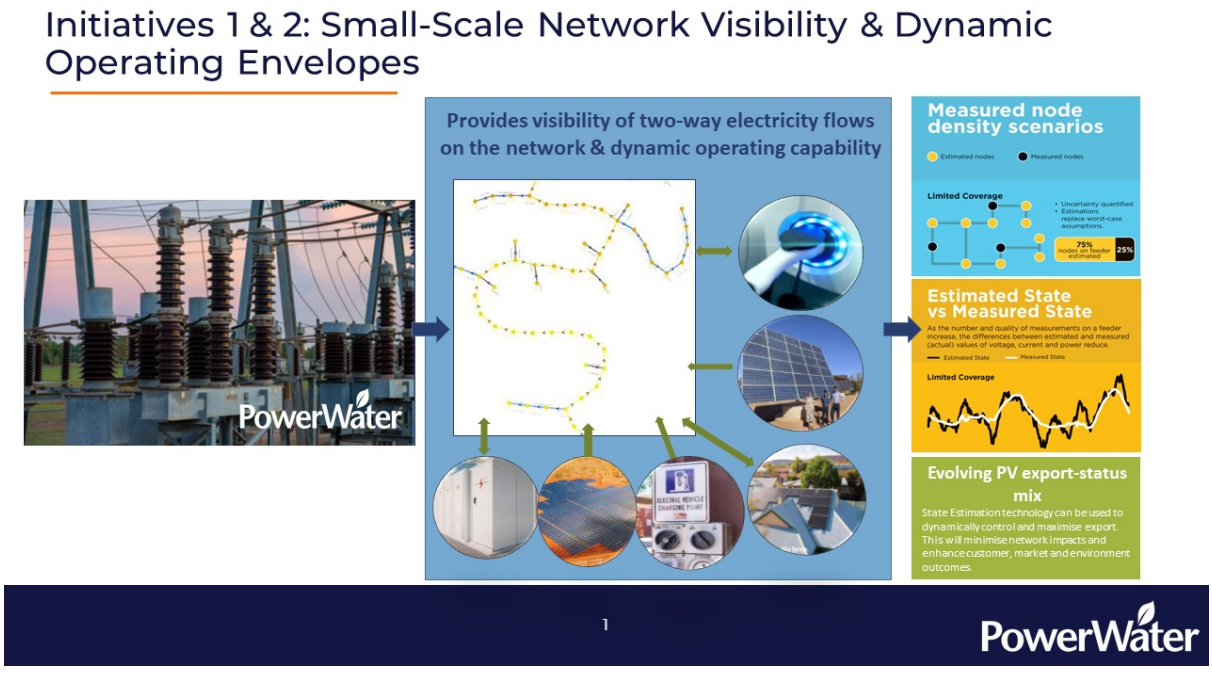


Figure 28 Slide 3 from Presentation on Power and Water Corporation's Readiness Plan

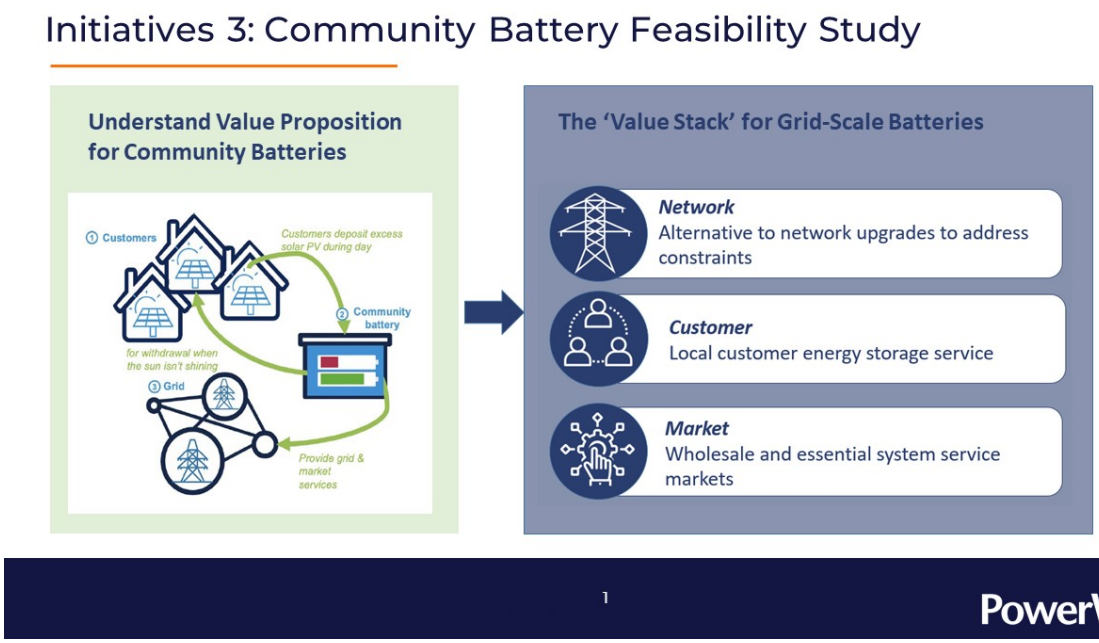


Figure 29 Slide 4 from Presentation on Power and Water Corporation's Readiness Plan

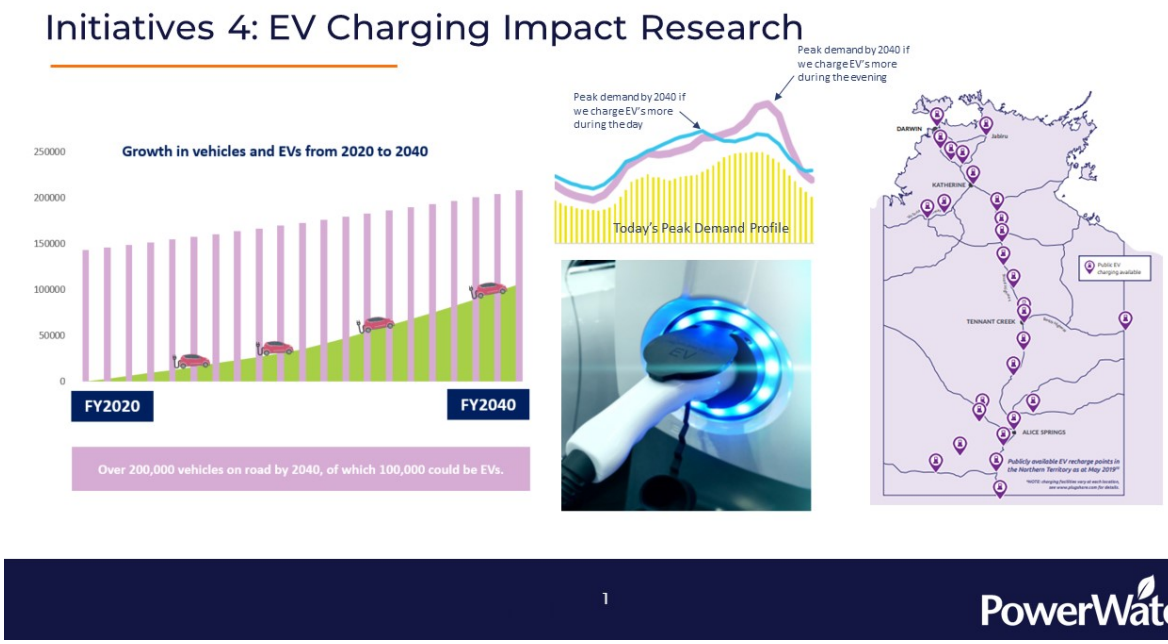


Figure 30 Slide 5 from Presentation on Power and Water Corporation's Readiness Plan

Live polling results – Appetite for paying for reduction in carbon emissions

Participants were asked how much they would be prepared to pay via their electricity bill to reduce their carbon emissions. 13 of the 40 respondents said they would not be prepared to pay anything, 14 said they would pay between 5% and 10%, 5 said they would pay between 10% and 25% and 8 said 'whatever it takes – we must do it'.

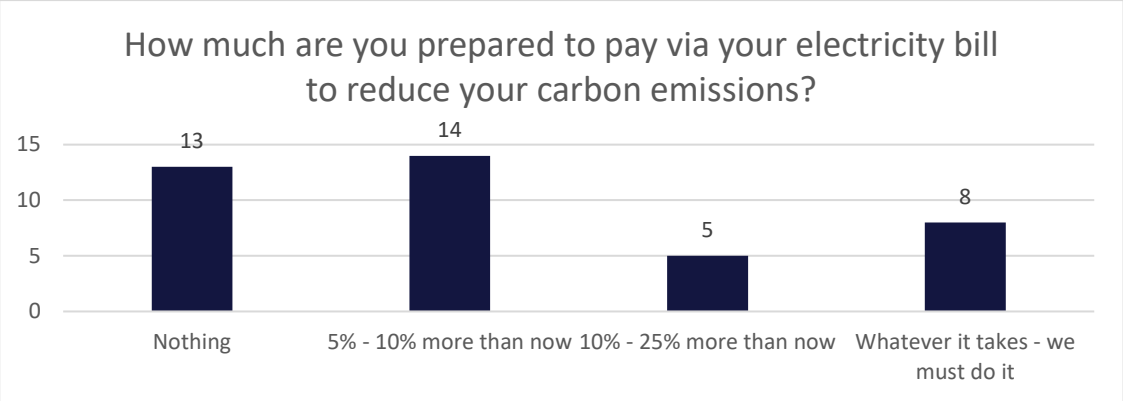


Figure 31 Question 11 Live Polling Future Networks Forum

Participants were asked 'how important is changing the grid to achieving the Darwin Katherine System Plan?' Most respondents (32 out of 38) respondents said it was 'extremely important' or of 'high importance'.

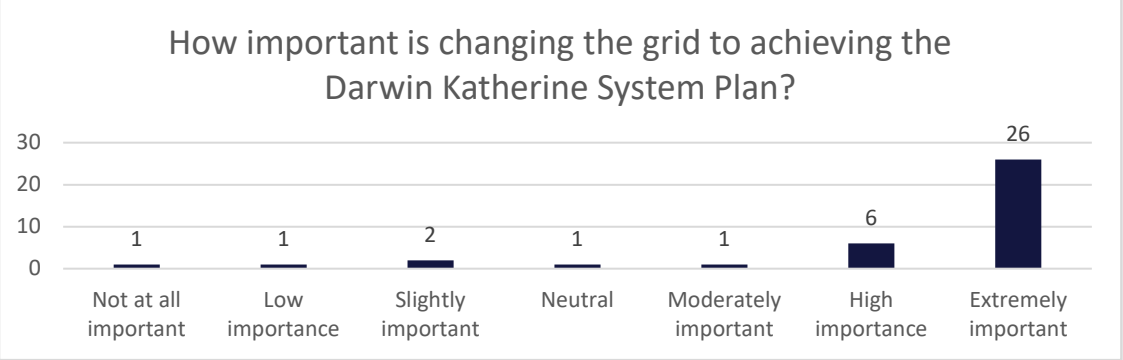


Figure 32 Question 12 Live Polling Future Networks Forum

Participants were asked 'What do you think about what Power and Water is doing to support the 2030 50% renewable emissions target set by the NT Government?', 12 out of 40 respondents said Power and Water is 'doing exactly what they should', 5 said they 'should do slightly more', 6 said they 'should do moderately more' and 16 said they 'should do far more'.

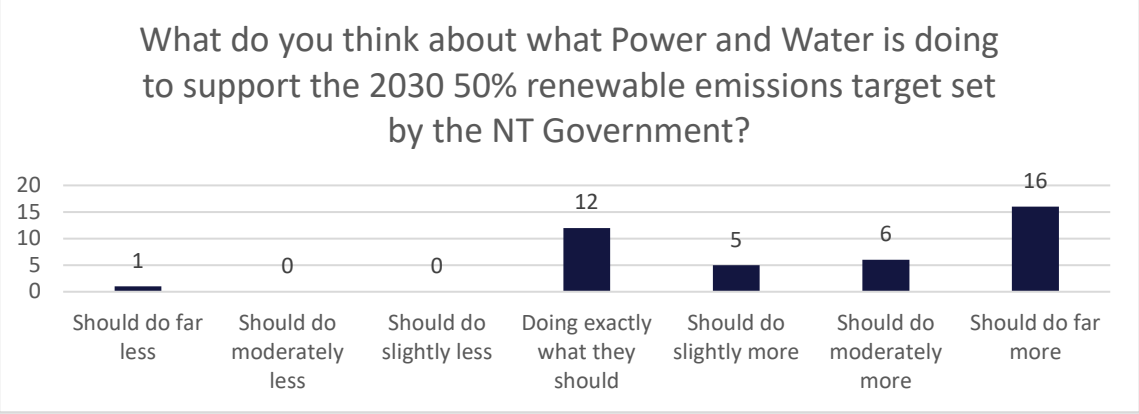


Figure 33 Question 13 Live Polling Future Networks Forum

5 Consultation and next steps

Power and Water will continue to engage with a number of different customer groups over the next 14 months. This will be guided by the Power and Water Customer Advisory Committee. Power and Water will be testing assumptions and options during this time with the aim of releasing a draft plan for public consultation in June next year. It is expected that an update of progress against the Future Networks Readiness Plan will be made in March/April of 2022.

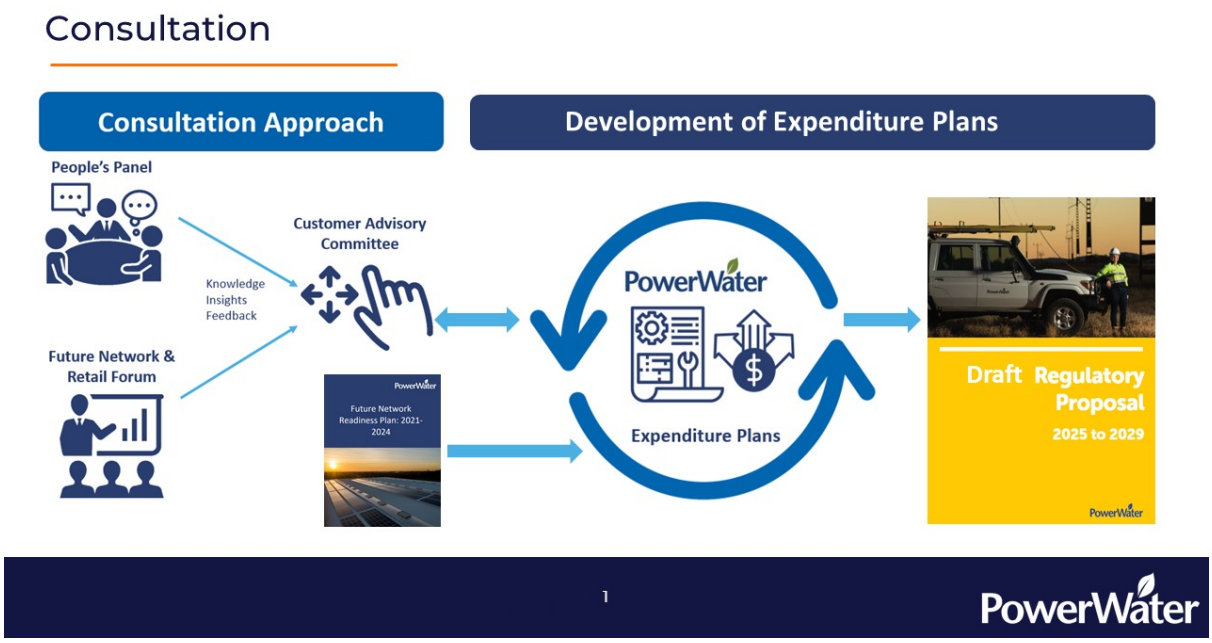


Figure 34 Slide 1 on Consultation and Next Steps

Figure 35 Slide 2 on Consultation and Next Steps

6 Forum Event Feedback

When asked about how they found the Future Networks Forum, most respondents (32 out of 39) selected the multiple-choice option 'awesome - really enjoyed it' or 'great - it was worthwhile attending', 6 respondents said it was 'a bit interesting' and one said it was 'nothing new'.

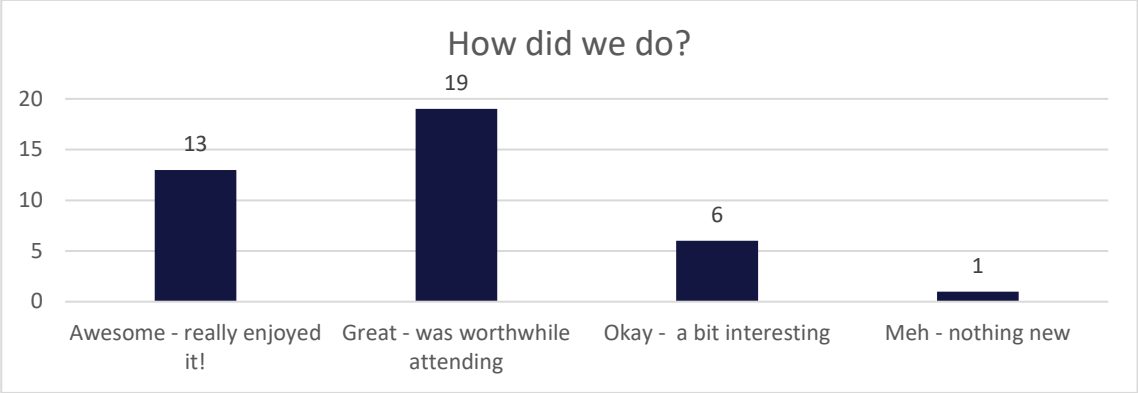


Figure 36 Live polling results on Forum Event Feedback

When asked about topics for a future forum, 17 respondents said they would like 'deeper dive into fewer topics' while 9 said 'more interactive – working at tables', 6 said they would like 'more Q&A and a broader mix of panelists' and 6 said 'more of the same – this was great'.

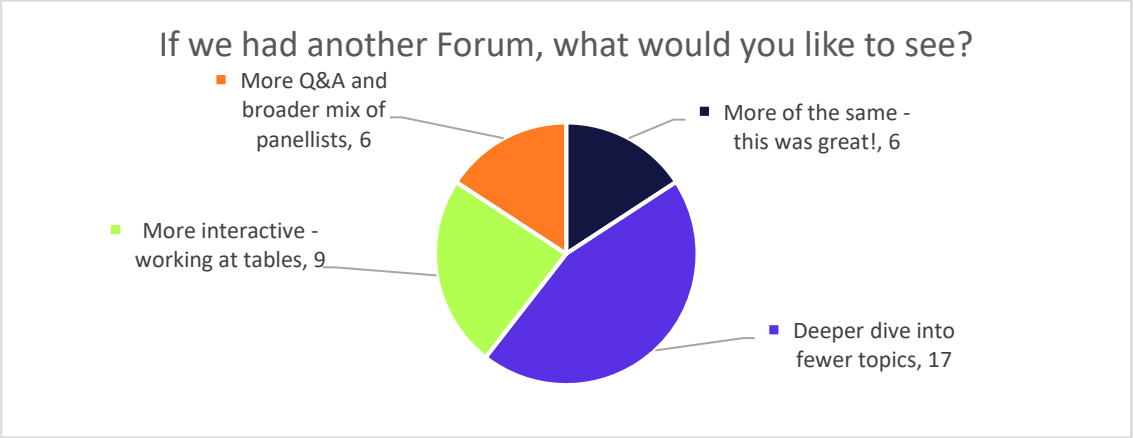


Figure 37 Live polling results on Forum Event Feedback

Participants talking to one another in a break

Appendix – Results from Panel Q&A Session

Participants asked their questions via Mentimeter live polling access via their smart phones. Participants were able to vote on each other's questions to indicate popularity of a particular questions.

The following table summarises key questions asked of the panel and the answers provided. Please note this is a not a verbatim transcript and questions and answers have been edited for brevity and clarity. Not all questions were raised and answered at the Forum, however responses have been provided post-event and are included in this report for information-sharing rather than documentation purposes.

The most popular question which received 12 'likes' was 'what pricing incentives will be required in order to encourage daytime use of energy but at the same time encourage network demand to occur at times of low demand?' The second most popular question was 'why are large-scale solar farms waiting +24 months to connect?' which received 11 'likes'.

QUESTIONS AND ANSWERS

Likes	Question	Response from Panelists
12	What pricing incentives will be required to encourage daytime use of energy but at the same time encourage network demand to occur at times of low demand?	[Contribution from CSIRO/Cutler Merz] There will be a mixture of possible approaches. Tariff structures can be modified in a way that will encourage some people to change their energy use behaviour at different times of the day. Setting pricing structures and tariffs are not easy as they may lead to 'coincident behaviour' (i.e. The bulk of customers attempting to charge at times of low demand/cost) which could in turn will strain the network. Ideally, we want to see 'smooth and slow' charging and discharging rather than reacting to price signals and using sharp behaviours as that can mess up the load curve. We probably need to innovate more and think beyond tariffs. Other possible approaches see the emergence of 'aggregators' who will provide demand management services. Another issue is that consumers are overwhelmingly focused on usability – they have no interest in the power network, they just want to get on with their lives. This can be a problem when the solutions that are being developed are increasingly complex.
11	Why are large-scale solar farms waiting +24 months to connect?	[Contribution from Power and Water, DiTT] The paradigm shift/revolution that we are seeing regarding solar - particularly large scale solar - has occurred faster than all our planning timeframes suggested. The power network has traditionally not been setup to respond as fast as companies would have liked to make new connections. The connection of large-scale solar farms created new and greater challenges. In a physical sense, COVID has certainly impacted PWC ability to get men and resources on the ground to make new connections. However, resourcing extends to capability and capacity to develop system modelling to support

Likes	Question	Response from Panelists
		connections – under the old paradigm (generator at one end of the network, load at the other) it was fairly straightforward for the network business to determine the impact of a connection. Under the new paradigm (energy flows going both ways) it's not as simple anymore. Modelling of the new power network has been something having to be learnt, not just in the NT or AUS but globally. To that end, network modellers are in demand globally which makes it quite difficult to get proper modelling resources to ensure that connections are not putting the network at risk. Rapid changes to generator performance standards in the years since solar has been being planned and implemented have caused issues. Generators connecting solar farms themselves have had their own challenges meeting new requirements. The idea of the renewable energy hubs is to help with this. The studies being done on single duplicate connection points show lower risks of failure within connection process – this will benefit the entire industry. In the NT, there is an issue of scale regarding the hubs – important to work at ways to make connections better, faster and lower risk.
8	The DKESP provides a good plan for what is needed but doesn't explain how it will be achieved. What are the plans make changes to the regulatory frameworks to make it happen?	[not raised in forum – Power and Water response] Part of the reason for the Future Networks Forum is to ensure that the regulatory hurdles and timeframes become clear to all participants and there is a common understanding of how to overcome them. Future forums and activities will work through the best way to approach and overcome these hurdles.
7	What infrastructure is needed to unlock EV demand management?	[response by Power and Water and DIPL] Providing EV infrastructure not too difficult within current infrastructure – issues arise when moving outside of urban areas where there is less secure infrastructure. There is a question of who will provide the EV infrastructure (public or private) and then the implementation and interaction between consumer and provider. Too early to start thinking about EV and connection to grid, the world is still solving the EV issues, so we'll have to wait and see how others respond and go from there. Power and Water see their role around EV as being able to provide energy to charging stations when they are eventually implemented on a larger scale.

Likes	Question	Response from Panelists
7	The system plan will require significant investment. How do you see this being financed, as the existing government subsidies significantly reduce price signals?	[response by DiTT and Power and Water] Government subsidies for pricing signals are around the Community Service Obligations – basically, the government will regulate retail pricing however there aren't subsidies throughout the supply chain. We don't believe the subsidies will change the price signal in a way that will stop generation – there is still a need and requirement to continue with the services PWC provide. Where it may have an effect is things like: demand management, VPP's (virtual power plants), time of use tariffs and tariff reform. That brings the wider question of tariff reform into scope. Although price signals will play a part, there are opportunities for retailers to innovate in ways that will make life easier for customers.
	Will Power and Water seek approval for additional expenditure, before its next regulatory submission, to implement its Readiness Plan?	[not raised in forum – Power and Water response] Power and Water is accessing its Demand Management Innovation Allowance to fund the projects under the future networks readiness plan.
	Who is going to pay for the new infrastructure?	[not raised in forum – Power and Water response] Power and Water will need to incorporate any new investment in its regulatory proposal which will also estimate the expected revenues required to recover costs and the expected prices that it needs to charge retailers to collect these revenues.
	Are you tracking the solar projects that Industry / Other Government agencies are proposing and how that will add to the grid?	[not raised in forum – Power and Water response] A number of possible projects are planned for the NT and Power and Water is regularly engaging with potential proponents.
	Are there similar natural environments abroad that are ahead on their renewables journey that will allow us to learn from and accelerate our NT plan as a result?	[not raised in forum – Power and Water response] In many ways, Power and Water is unique in that it operates relatively small isolated grids (but which are bigger than usual microgrids) and there are not too many comparator networks moving to a 50% renewables target with similar scale and size. Power and Water is looking at best practice domestically and globally to determine innovations to be tested in the NT framework.
	Do you see affordability a key constraint given the small customer base vs service areas?	[not raised in forum – Power and Water response] In our discussions with customers, there is an acknowledgement that energy prices are high in the Territory and therefore affordability will

Likes	Question	Response from Panelists
		always be an issue. The Darwin Katherine System Plan projects an overall reduced system cost if the plan compared to a status quo approach.
	Who will pay for the new HV infrastructure to the renewable plant zones? Given only 60MW is connecting in 2025, then the rest in 2027-30, how will these costs be shared equally?	[not raised in forum – Power and Water response] Depending on the regulatory arrangements, the network investment would be recovered through the existing pricing framework.
	How do we manage customer education and awareness around electricity prices, considering the anticipated lower annual cost may not translate to customer savings in the short term?	[not raised in forum – Power and Water response] Our engagement with customers has already identified this as a key issue. The expected increases in network prices will need to be managed against a transition to solar which is projected to provide lower generation prices in the long run.
	Why do you think 105MW of BESS plus distributed BESS will not be enough to turn the gas machines off in the middle of the day?	[not raised in forum – DITT response] The modelling undertaken as part of the Darwin Katherine System Plan made the assumptions underpinning the scenarios. Other scenarios are possible, including this one, depending on the actual demonstrated performance of the batteries in a number of key areas. At this stage, turning the gas units off completely is not required to meet the 50% renewable energy target, however the DKESP is a dynamic plan being revised every 2 years. To the extent that battery performance shows such outcomes are possible, we could adapt to do so.
	How do we encourage people to charge their EVs at the 'right' time of the day?	[not raised in forum – Power and Water response] Power and Water needs to understand what the right time of day is from a network perspective. Incentives range from ensuring charging infrastructure is in areas where the impact on future network investment is less likely to pricing signals to ensure customers can enjoy cheaper prices at some times of the day
	Is consideration being given to the end of life challenges of solar, i.e. sustainable disposal or recycling of panels and batteries?	[not raised in forum – DITT response] The system plan and the work PWC is doing is primarily on bringing Solar to bear. There have been studies done around disposing of panels and the issue once again is one of scale. Right now the amount of panels is relatively small. Once we begin to implement the massive hyperscale Solar farms, issues may arise. At this moment in time the short answer is: not enough consideration is being given to this issue however there is a growing concern for these issues.

Likes	Question	Response from Panelists
		Regarding batteries for EV, the current estimated timeframe looks around 8-12 years. However at the end of that, those batteries can then be used for domestic purposes, so there is the possibility for the extension of lifecycle and reuse in that sense. On a national level, there is work being done on battery recycling as well. It's important as well not to factor in false equivalency, in the sense that issues like this can sometimes appear to be a reason not to do something. On top of that, it is apparent that even though a solar module may reach the end of its lifecycle in the utility sector, there is no reason to believe it has then lost all value due to SOME degradation. E.g. Solar panels installed in the 80's are still operating at 60% output.
	How do you deal with range anxiety with electric vehicles in the NT	[not raised in forum – Power and Water response] Range anxiety is a clear issue raised by Territorians in our customer engagement. Education is one key element of this – noting that many people in the NT commute via car and would travel less than 10km per day on average. Obviously improved charging infrastructure would assist.
	Will the 210MW of BESS outlined in the DKIS Plan remove the GPS requirements for forming?	[not raised in forum – DITT Response] The Plan assumes that firming services are provided as a part of the total generation plant, not as additional system security services. It may be possible to value stack batteries to provide such services concurrently which would further improve the efficiency of delivering renewable energy.
	In the first report of the Territory Economic Reconstruction Commission there was a recommendation of a feasibility study for a HVDC cable to connect Alice Springs with Darwin - is this being consider	[not raised in forum – DITT response] The DKESP does not include connection to Alice Springs. However, the plan does consider an alternative scenario which assumes a 1GW system, to guide current development, and that system considers the potential for connection of large scale renewables from southern and/or central regions.
	Not a great emphasis on the hydrogen economy. Surely hydrogen will become a game changer arm-in -arm with solar/wind.	[not raised in forum – Power and Water response] The Plan does contemplate hydrogen sourced generation over the longer term. The Government's renewable hydrogen master plan also provides details of the proposed pathway to developing the hydrogen industry in the Northern Territory.
	Is taking customers who are on fringe of grid transmission networks and replacing them	[not raised in forum – DITT response]

Likes	Question	Response from Panelists
	with off grid micro grids being considered in the system plan?	The Plan does contemplate Demand Management approaches which does include the potential for fringe of grid communities. Work is also being developed as part of NT Government's Remote power system strategy.
	What does a inverter based generation only grid look like? Is this a potential endgame?	[not raised in forum – Power and Water response] The Plan recognises and plans for the challenges in transitioning to a system that increases inverter based generation over time.
	How do we know we will get private sector investment to meet the renewable target	[not raised in forum – Power and Water response] The plan is aimed toward ensuring there is the appropriate access and incentive for private sector investment over time.
	How can the system be secure with solar if you get monsoon storms. Will we be out of power?	[response by DITT] This issue has been acknowledged and addressed through the system plan as it is a very valid concern. In the system plan, we're not abandoning thermal generation. Instead, we're shifting to having thermal, battery and solar. This will allow a backstop of sorts, if there are environmental issues such as monsoons or even maintaining power through the night. Studies have shown that even with extremely low solar generation, under the new system we will still be able to provide energy, even at peak demand. Short answer – The additional capacity we're bringing and the new mix of technologies will allow us to deal with environmental obstacles.
	Aren't the renewable energy hubs too close to the coast for cycle risk wiping out solar capacity?	[not raised in forum – Power and Water response] Note response above. Renewable Energy Hubs are located in a similar area to most other power stations, and most of the power network. This is not expected to increase the risk from current levels.
	How susceptible are large scale solar farms to extreme weather events compared to the current poles & wire infrastructure?	[not raised in forum – DITT response] Solar farms are built to standards to suit their location and conditions - in the same manner than other infrastructure is built. This is not expected to increase the risk from current levels
	Does the NT have enough skilled engineers to deliver all of the required projects to meet the 2030 target?	[not raised in forum – Power and Water response] Resourcing capacity and capability are creating challenges for network businesses across Australia and Power and Water is no exception. Logistic issues, including available staff and

Likes	Question	Response from Panelists
		resources will need to be considered as part of the planning process.
	Are the smart meters being installed capable of real time usage monitoring and how do you anticipate making this data available to consumers to encourage behaviour change to daytime consumption?	[not raised in forum – Power and Water response] Smart meters are capable of providing near real time response, but most do not at this time as the main use is billing. Power and Water is exploring ways to leverage available data to signal the operating state of low voltage feeders in real time. Power and Water is also looking at ways to ensure customers are given the right signals to make decisions in relation to daytime consumption.
	Given a connection application for generation scale solar currently takes longer than 3 years, what specific investment in capacity is PWC contemplating to remove impediments to renewables	[not raised in forum – Power and Water response] The key area that has impacted on project timelines for generators that commenced their connection process prior to 1 April 2019 is the introduction of new generator access standards post March 2020. This has required generators to provide accurate models and connections studies and Power and Water to undertake due diligence in addition to compliance testing and commissioning much later than in a normal connection process. Moving forward these activities will be at the front end and should improve timelines. In addition we are increasing resources to co-ordinate the end to end process.
	A limiting factor for behind the meter (btm) solid solar systems is ramp rate requiring batteries . It is a restriction as the batteries are costly and high maintenance. Is Power and Water open to alternate methods of achieving ramprate?	[not raised in forum – Power and Water response] Yes, we are open to consider innovative methods that achieves the same equivalent outcome of 16%/minute as outlined in AS4777.2 and our Embedded Generation specification.
	2025 is the new 2030. It feels like you are keen to hold back the tide. Is that the strategy?	[not raised in forum – Power and Water response] A key issue we want to discuss with customers is whether our proposed plans are going too fast or too slow. This is part of our goldilocks investment approach
	What is the single biggest change that PWC will make to unlock access to the grid and enabling a future of 50% RE?	[not raised in forum – Power and Water response] Financially, the biggest change will be investment in transmission and related infrastructure to enable large scale renewable investment. From a technology perspective, the biggest change relates to how we unlock more capacity for small scale renewables without duplicating the existing network.
	The renewable focus is solar and EVs and the effects on grid stability. These all require	[not raised in forum – DITT response]

Likes	Question	Response from Panelists
	batteries from rare earth minerals, has the battery technology reached a satisfactory sustainable lifespan	Battery technology is able to achieve economic benefits at current lifespan. Battery technology development is ongoing and the DKESP is a dynamic plan being revised every 2 years and may consider other storage technologies if viable.
	With increasing BTM solar and hence less consumption, will PWC move to a capacity based tariff regime to maintain the capacity in the network for when there is no solar generation?	[not raised in forum – Power and Water response] Power and Water recognises that the current approach to recovering network charges can lead to inequitable outcomes and is looking at ways to ensure that network costs are recovered efficiently and fairly from our customer base. This has an added benefit of improving our efficient costs over time. However, the various options and the transition path need to be thought through carefully in discussion with retailers and customers.
	How's will the NT retailers take into account network cost reflective tariffs to incentivise demand management vs the energy component for residential customers?	[not raised in forum – Power and Water response] Power and Water recognises that the current approach to recovering network charges can lead to inequitable outcomes and is looking at ways to ensure that network costs are recovered efficiently and fairly from our customer base. This has an added benefit of improving our efficient costs over time. However, the various options and the transition path need to be thought through carefully in discussion with retailers and customers.
	What is the difference between a community battery and a VPP	Community batteries are quite often owned by the network and then space in the battery is rented out to customers or utilised by customers for a fee (cloud storage a common analogy). VPP (Virtual Power Plant) doesn't necessarily have to have a battery attached. VPP uses someone else's generation (solar or battery) and have the network buy that energy and use it somewhere else. Quite often a battery would be attached to a customer's VPP, and they would be selling energy out of that battery and the network would be sending it to another customer in a different location.

Appendix C

People's Panel summary report 2021

PowerWater

PowerWater

People's Panel Report

Summary Report 2021

@powerwatercorp

PowerWater

PowerWater

Contents

Summary

The People's Panel concept is based on the premise that everyday people, when provided with the time and the information, will reach sensible decisions on behalf of the greater population they represent.

Power and Water Corporation (Power and Water) held two People's Panels in November 2021 to inform the development of the 2024-2029 Revenue Proposal for the Australian Energy Regulator (AER).

The Panels were held in Darwin and Alice Springs. Participants in the People's Panels were recruited to be broadly representative of the residential customer base in those areas.

The People's Panels were run over two days and participants were given information about how electricity is generated, distributed and the roles of various organisations. Participants were then asked their thoughts about the future of electricity and their views on the key challenges facing Power and Water.

The People's Panel program was informed by the outcomes and learnings from four focus groups held with residential customers in August 2021. These activities enabled refinement of communication materials to provide a baseline of understanding of Power and Water and its role in the energy supply chain, the process for putting forward expenditure and pricing plans to the national regulator to determine future revenue requirements.

The sessions were designed, facilitated and reported on by an external facilitator, working closely with Power and Water and key executives to ensure the process was thoughtful, meaningful and engaging.

Day one of the People's Panel focused on the role and experience of customers, now and in the future. The external facilitator explained the role of the Panel along with tools and exercises to assist participants in engaging in group work, critical thinking, and exploring different views.

On day two, participants were encouraged to take on the role of the Board and were asked to respond to priorities in four key challenge areas

- **Solar uptake**
- **Benchmarking**
- **Maintenance and asset management**
- **Electric Vehicles (EVs)**

Power and Water will reconvene the same participants in early April 2022 to present on how they have responded to the ideas and suggestions made by the People's Panel and feedback on customer preferences. These sessions will be a key contribution to the Proposal in line with the AER's requirements and Better Resets Handbook.

Power and Water's commitment

Power and Water was represented by members of its Executive team and Board, and staff from across the organisation including the regulatory team, customer service, service delivery, project delivery, asset management and delivery, and corporate affairs.

The Executive team presented to the Panels and sat on tables as table facilitators.

In Alice Springs there was interest in understanding the Alice Springs Future Grid project. Lyndon Freeson, Managing Director of Akistica, gave an invigorating presentation on the role Alice Springs has played in the development of innovative approaches to off-the-grid and solar solutions over the last two decades. This information supported a more engaged discussion about the potential for new technologies in Alice Springs.

Power and Water committed to all participants to listen, act on and reflect transparently on how issues and suggestions raised by the Panels had informed and shaped not just the 2024 - 2029 Revenue Proposal but also the wider operations of Power and Water.

This Report provides both feedback for the People's Panel participants as they prepare for the second workshops planned for early April 2022, and a record for all customers, the AER and key stakeholders on what is important to customers in how Power and Water, and the energy system in the Territory in general, respond and plan for the challenges of the future.

Key themes

Summarised below are some of the key themes to emerge from the People Panels.

Customer Values

Affordability remains an important consideration for customers. Other key customer values noted included sustainability, innovation, and reliability.

Transition to solar

Customers strongly supported greater uptake of solar and considered that Power and Water should be doing more to facilitate this. Customers also wanted to understand the impact of this on network pricing and reliability.

Asset Management

Customers want Power and Water to manage assets in a timely and responsible way, while minimising price impacts.

Electric Vehicles

Range anxiety and lack of charging infrastructure were identified as major hurdles to uptake. Customers considered Power and Water should play a role in facilitating the shift to EVs but not necessarily owning the infrastructure in the long term.

Benchmarking

Customers recognised that the Northern Territory had unique characteristics and considered that benchmarks should only be set against networks that are similar or elements that are comparable.

Other

Customers wanted Power and Water to embrace innovation, new technology, and transition to a new energy future that is more customer focussed and responsive.

Key ideas

Participants came up with a wide range of ideas across a number of different activities. These are summarised below. Further details on how customers' key ideas relate to Power and Water's Revenue Proposal and high level next steps that Power and Water is proposing to take in relation to these ideas is outlined in Section 6 – Next Steps.

Research and Development

Investing in research and development of new technology to address current and future challenges

Pricing

Setting up a 'rainy day fund' that could be used to smooth out future price increases to avoid bill shock

Community Solar Batteries

Initiatives that would allow customers to share their excess solar with people who cannot access solar panels

Education/information

Energy efficiency school programs, financial aid for energy, ways to increase access to energy efficient appliances

Solar Service Providers

Power and Water should recommend/publish a list of reputable solar installers that meet best practice requirements

Customer Service

Out of hours contact number, Power Water Ambassador, audit of meter reads, adopt a 'staying connected policy', Power Passport, greater consistency in communication across platforms

Government Initiatives

Government should facilitate the uptake of solar – 'rent-to-buy solar schemes', solar on public housing and mandating solar in building standards

Electric Vehicles

Strategic charging locations, tariffs to incentivise charging at the right time, provide enabling infrastructure i.e. kerb side charging

Business Improvements

Power and Water should have a clear 'vision statement' regarding its network, provide more information on different roles in the supply chain, cost benefit of renewable energy targets.

Some of these issues are not directly related to Power and Water's role as a distribution network service provider in regulated networks. These ideas are being assessed by Power and Water using the following criteria:

- Where an idea requires response from an external party, appropriate agency or jurisdiction, we will seek to engage these parties and provide feedback to the next People's Panel
- Where ideas are already being tried, tested or considered and not pursued, these will be reported back to the next People's Panel
- Remaining ideas will be assessed and developed in terms of feasibility and broad cost impacts for presentation to and consideration by the next People's Panel.

1 Purpose

'We will work with you to develop solutions and recommendations to ensure that we reflect your views, values, and concerns in the options/ solutions/approaches that we develop and are able to demonstrate how your feedback has influenced our decisions.'

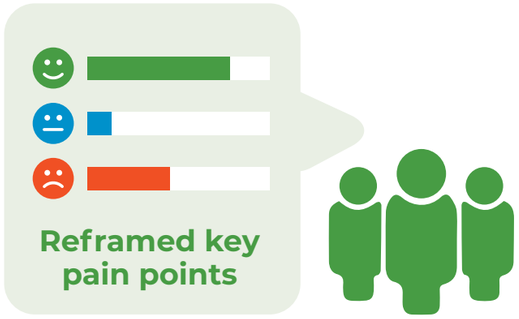
Power and Water s commitment to the People s Panel

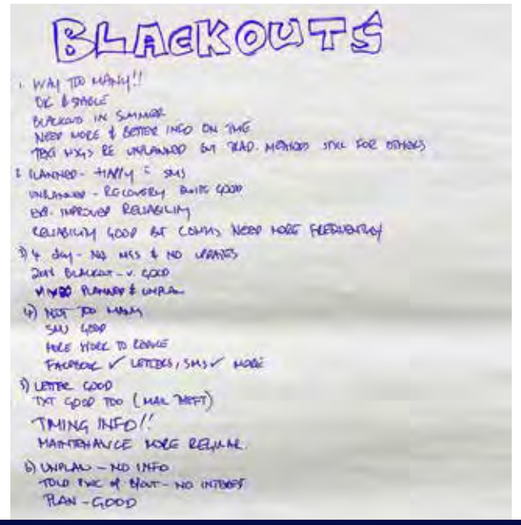
Improving the Customer Journey

Participants documented their customer journey including positive, neutral and negative experiences. We have reframed key pain points in the customer journey as questions for Power and Water (listed below).

- How might we improve choice for customers in the NT?
- How do we currently work with Jacana on issues and how might we work better?
- What is involved in a disconnection and why does it cost so much? How might we lower these costs?
- What is the process for connecting and disconnecting and how might we improve this process?
- Where can people go for information on solar and installations? How might we support better dissemination of quality information?
- How do we improve communication with people who have trouble over the phone, including cultural communication?
- What has been our progress on tree trimming?
- How might we improve public safety around infrastructure?
- What are we doing to improve outages for customers?
- How have we improved our response to cyclones?
- How can we improve bill payments?
- How might we improve meter reads?

Many of these challenges relate to general customer service rather than specifically to the Revenue Proposal. However, as all customer issues are important, Power and Water is working to understand and address these as best we can.





9

Purpose

This is an interim report that summarises outcomes from the two individual People's Panel sessions held in November 2021. These sessions form part of Power and Water's community engagement on its 2024 – 2029 Revenue Proposal, with further sessions planned for April 2022.

The Darwin People's Panel was held at the Darwin Convention Centre on 20 and 21 November and the Alice Springs People's Panel was held at the Double Tree Hilton on 27 and 28 November. There were 23 participants in both Darwin and Alice Springs.

The People's Panel is intended to be representative of our residential customer base. Participants were randomly recruited by Taverner Research to broadly reflect the Northern Territory population and included representation from young people, residential customers, Aboriginal Territorians, quiet voices, pensioners and solar customers.

The objectives of this first session were to:

- give Power and Water guidance on customer priorities and values for planning and the Proposal
- provide information on, and gather responses to, the biggest challenges facing Power and Water
- lay the foundations for a more specific, complex discussion at the next session scheduled for April 2022
- meet the AER's requirements to demonstrate that customer feedback has shaped the 2024 – 2029 Revenue Proposal from the beginning.

A range of Power and Water staff were in attendance and, at the participants' request, a representative from Customer Service attended the second day of the People's Panels at both locations to hear feedback directly from participants.

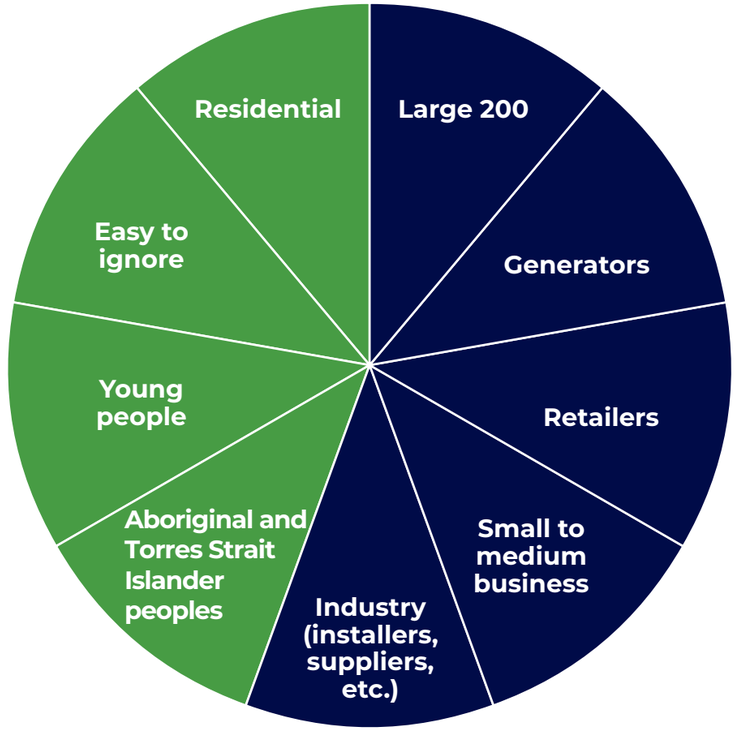
The session was facilitated by Lucy Cole-Edelstein, an external facilitator with specific experience in deliberative engagement.

The People's Panels are only one aspect of our customer and stakeholder engagement. We have a broad range of stakeholders informing our preparation of plans to the regulator.

Some of the customer groups we will be engaging with are outlined in the diagram below.

Power and Water Corporation Customer Voices

Power and Water need to understand customer experiences and values to better meet their needs.



Residential customers

Residential customers need to **understand** the issues to be able to **contribute** to planning for their energy future.

Business customers and key stakeholders

Business customers and key stakeholders need to share their experiences and ideas so that they can **act as partners** in the changing energy landscape.

Power and Water is seeking to engage with residential customers through the People's Panels so that we can better understand customer experiences and values and are able to better meet their needs. This also provides an opportunity for participants to understand the issues and challenges that Power and Water is facing so that they can provide feedback on how we plan for their energy future.

Power and Water will also be seeking to engage with business customers and other key stakeholders including Future Network Forums, Retail Forums, and the Customer Advisory Council so these stakeholders are able to share their experiences and ideas and act as partners in changing the energy landscape.

Traditional deliberative engagement will be complemented by a co-design approach, which focuses on understanding what works well now and why, and what needs to change and how, with an emphasis on an agreed future state we are all working towards.

An outline of our proposed engagement process is below.

4. January 2023 and beyond

Finalise engagement prior to submitting our plans to the Australian Energy Regulator.

3. June 2022 – September 2022

Testing assumptions and responses, confirming issues and ensuring customer needs addressed through the draft plan – further refinement as required.

2. November 2021-March 2022

People's Panel and deep dive forums which replay our understanding of customer baseline, explore our plans in more detail, deep dives into key issues

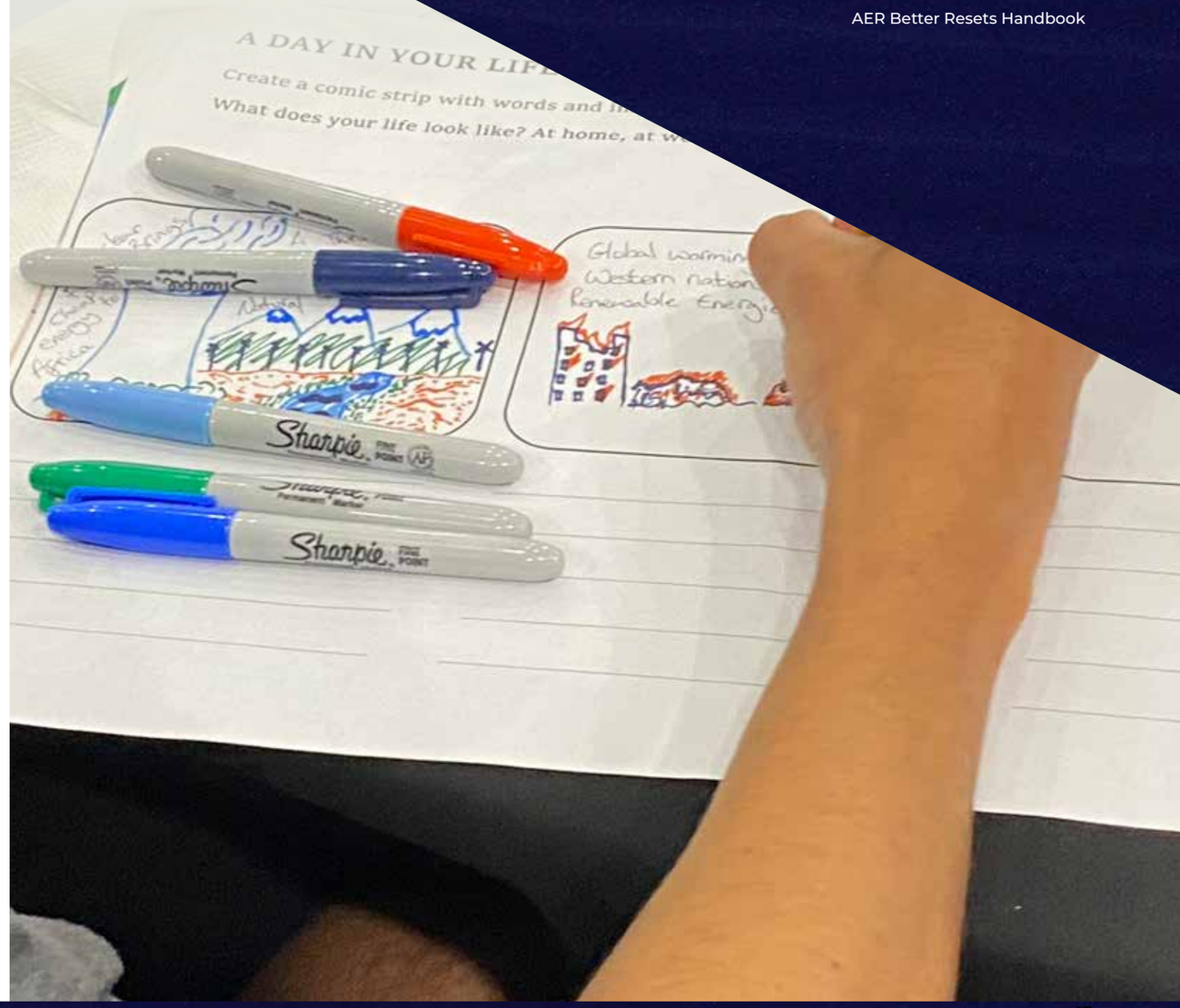
1. August-September 2021

Customer forums - listening to customers, baseline of customer knowledge and understanding, priorities and preferences for engagement activity

2 Method

'[the Jemena] 'People's Panel' approach to engagement with its customers, which won the 2019 ENA /ECA consumer engagement award, exemplifies the principles outlined above, with good buy-in and attendance at engagement activities by senior executives and Board members.'

AER Better Resets Handbook



People's Panel

The People's Panels allow for customers to consider issues in-depth. It is a valuable way of collaborating with the community in the development of the Revenue Proposal and also provides direct, actionable insights into the priorities of customers for Power and Water to incorporate into their forward planning.

Participants from the People's Panels were randomly selected residential customers to simulate a 'mini-public' that was representative of a larger customer cohort.

Panellists are supported by skilled facilitation and information on critical thinking, group consensus decision making, interrogation and generation of new information and competing views. With these skills, panel members are asked to explore their own experiences and reach consensus on how our proposed plans should be developed and refined.

- Participants are broadly representative of the wider customer base.
- Participants are tasked with answering one big question; 'How can Power and Water plan for a future that best serves customer needs?'
- Participants have access to in-depth information and diverse perspectives.
- Participants are given time to discuss issues, ideas and weigh up options.

Representation

The People's Panels aim to give a broad representation of Territorians and provide Power and Water and panel members the opportunity to explore key issues in-depth.

People's Panels are often used in community engagement processes in which choices have to be made and there is no clear 'right' technical answer, but rather decisions are about values and priorities. Most members of the community have not deeply considered Power and Water's potential courses of action and their long-term consequences.

However, the expenditure and pricing plans submitted as part of the Revenue Proposal will have a significant effect on the way Territorians consume and use electricity into the future and they have the right to be involved in this process. It is Power and Water's responsibility to ensure they have access to the information and support they need so they can participate fully.

It is important that Power and Water, as a service provider, is guided by the views and values of the public, alongside that of subject matter experts, if it is to develop a robust Revenue Proposal that best serves the people of the Northern Territory.

Prior engagement

Customer engagement on the Revenue Proposal began in August 2021 with four focus groups across Darwin and Alice Springs.

We used these focus groups to test how quickly and easily we could establish a baseline of customer knowledge and understanding, priorities and preferences for engagement activities.

One of the key challenges with engagement on the AER regulatory proposal is the relative unfamiliarity of customers to the regulatory framework. During engagement on the last regulatory proposal (2019 – 2024) it was often difficult for customers to isolate the work Power and Water undertakes on the regulated electricity network.

This is largely because Power and Water is the provider of a range of essential services and the delineation of AER related services from other essential services and other parts of the supply chain is not widely understood.

Over four separate sessions, we tested and refined presentation techniques and approaches. By the end of the focus groups we were confident we could bring the majority of a group of people unfamiliar with our role to a baseline understanding of the energy system, our role in it, and how this links to our expenditure plans within about an hour.

15

Recruitment

Participants were screened to ensure a broadly representative group based on location (Alice Springs or Darwin or within a 20km radius of each location), age, gender and income. Potential participants were also asked if they identify as Aboriginal or Torres Strait Islander, commonly speak a language other than English at home, have solar panels and/or a solar battery, or currently receive some form of government pension or disability benefit.

There were more males in the Darwin People's Panel (15 of 23) and more females in the Alice Springs panel (17 of 23)

The Darwin People's Panel had more participants in the 40 – 59 age bracket (11 of 23) than the 18 –39 or 60+ age bracket (five and seven respectively), whereas the Alice Springs panel was more evenly spread.

There were four participants in Darwin and six in Alice Springs that were in the lower-income bracket and six participants in Darwin and seven in Alice Springs that were in the middle-income bracket.

The sessions were postponed by a week on short notice due to a COVID-19 outbreak that resulted in a tightening of restrictions in Darwin on Friday 5 November that would have impacted attendance and the representation of the Panel.

In line with industry practice, participants were given a $500 gift card in recognition of their time.

3 Structure

'Electricity is complex and networks can be looked at as a collection of assets. It's not the customers' job to decide if how those assets are being used is efficient. That's what the regulator does....the role of customers in engagement is actually to talk about their lived experience of the network, what's working for them, what isn't working for them... So the purpose of the engagement is not for consumers to become proxy regulators, its actually for them to talk about the things that matter to them.'

Lynne Gallagher, Energy Consumers Australia

Day 1 – Customer Journey

Day one focussed on the customer experience, explaining the electricity system, distribution network and the relative roles of generator, network and retailer. Broad level context on the energy supply chain was further broken down into the context for expenditure and pricing plans that Power and Water as a regulated distribution network service provider (DNSP) needs to provide to the Australian Energy Regulator (and why).

Participants were also provided with relevant material to provide them context for the engagement process and help them understand their role in this process.

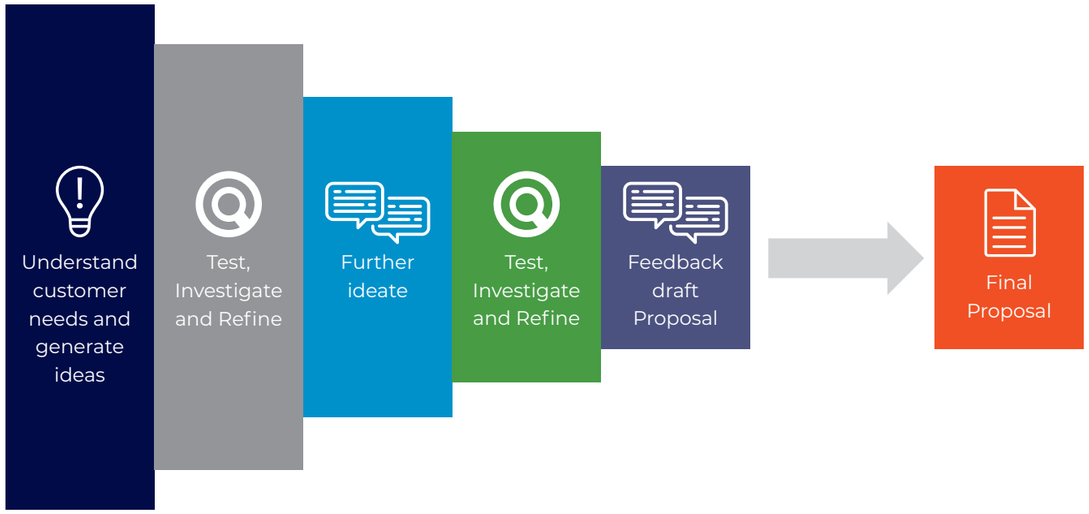
An entire session on day one was devoted to participants mapping their customer journey experience, contemplating their values and exploring the impacts of the rapidly changing energy environment for customers.

The external facilitator walked participants through tools to assist them through the deliberative engagement process, including exploring issues of group work and cognitive bias.

In their Better Resets Handbook, the AER recommends engagement cover issues where customer engagement is most relevant. These areas include capital expenditure (Capex), operating expenditure (Opex), tariffs and depreciation.

Our customer-centric engagement approach meant that we did not structure our sessions with these categories. Rather, Power and Water decided to structure the content in a way that would make most sense to customers.

Firstly, we linked the customer journey maps to relevant expenditure plans we must prepare as part of our Regulatory Proposal. We also investigated customer experience in the context of current expectations and tested whether these expectations will change over time. We noted several megatrends globally which will change the way customers use energy and how these future drivers may impact our current plans. Finally, we explored key issues driven by customer expectations that have an impact on our future plans. These “deep dive” sessions were the focus of day two.



Day 2 – Power and Water Journey

Day two focussed on how Power and Water should respond to the challenges through a role-play exercise where the participants became the Board. Participants were given a snapshot of Power and Water’s past performance and future drivers. There were then a series of sessions on key areas requiring strategic input for the development of expenditure forecasts.

- **Unlocking renewables:** exploring the opportunities and challenges with the network needing to accommodate the predicted doubling of small-scale solar by 2030.
- **How do we compare:** exploring the challenges with benchmarking and identifying the most important comparisons that would enable Power and Water to deliver customer focussed outcomes.
- **Keeping up with our age:** introducing the challenge of replacing an ageing network, noting that today’s replacement rates reflect a relatively young asset age across the network but are well below long-term sustainable levels.
- **Electric vehicles:** exploring opportunities and challenges of electric vehicle uptake for the network, including the issue of managing network capacity, affordability.

19

Activities

Sessions were designed to be engaging for participants and to elicit valuable data. A range of tools were used including individual reflection, working in pairs, table discussions and whole-of-room share backs. Participants were asked to write, draw, verbalise and even move around the room to convey their thoughts and ideas. The sessions included short quizzes and role play exercises, including a scenario-based activity on replacement costs.

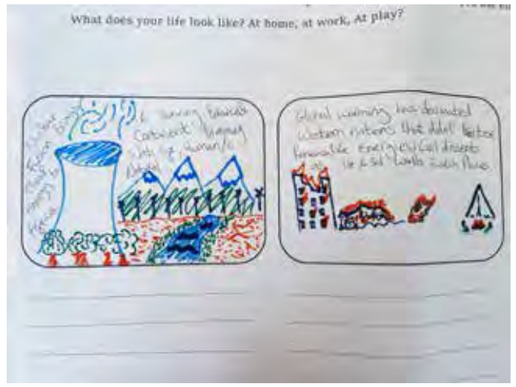
Each table comprised four to six participants and a Power and Water team member tasked with note-taking and ensuring participants had equal opportunity to contribute. The live polling tool Mentimeter was used to elicit responses and share results in real-time.

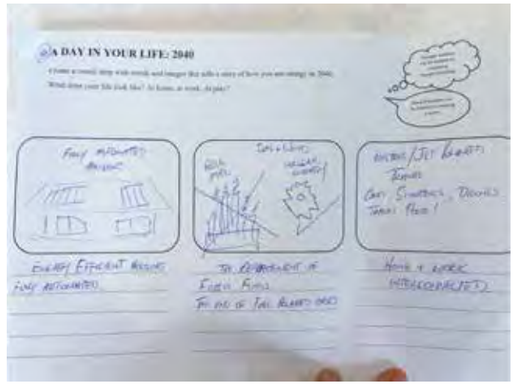
As it was the first session, and much of the People's Panel process involves working together as a group to come to a conclusion, several activities on day one were designed to encourage effective communication and dialogue through personal reflection or skill-building exercises or videos.

These included:

- The DOPE (Dove, Owl, Peacock, Eagle) personality test to understand how different people prefer to communicate and handle conflict
- Short video and activity on confirmation bias and the need to be aware of personal biases
- Short video and reflection on group decision-making.

Regular breaks and comprehension testing and opportunities for clarification were provided to help ensure participants progressed at a similar pace. Panel members were regularly asked to change tables to remove group think and achieve broader consensus. Feedback on the process was also sought at the conclusion of each day.





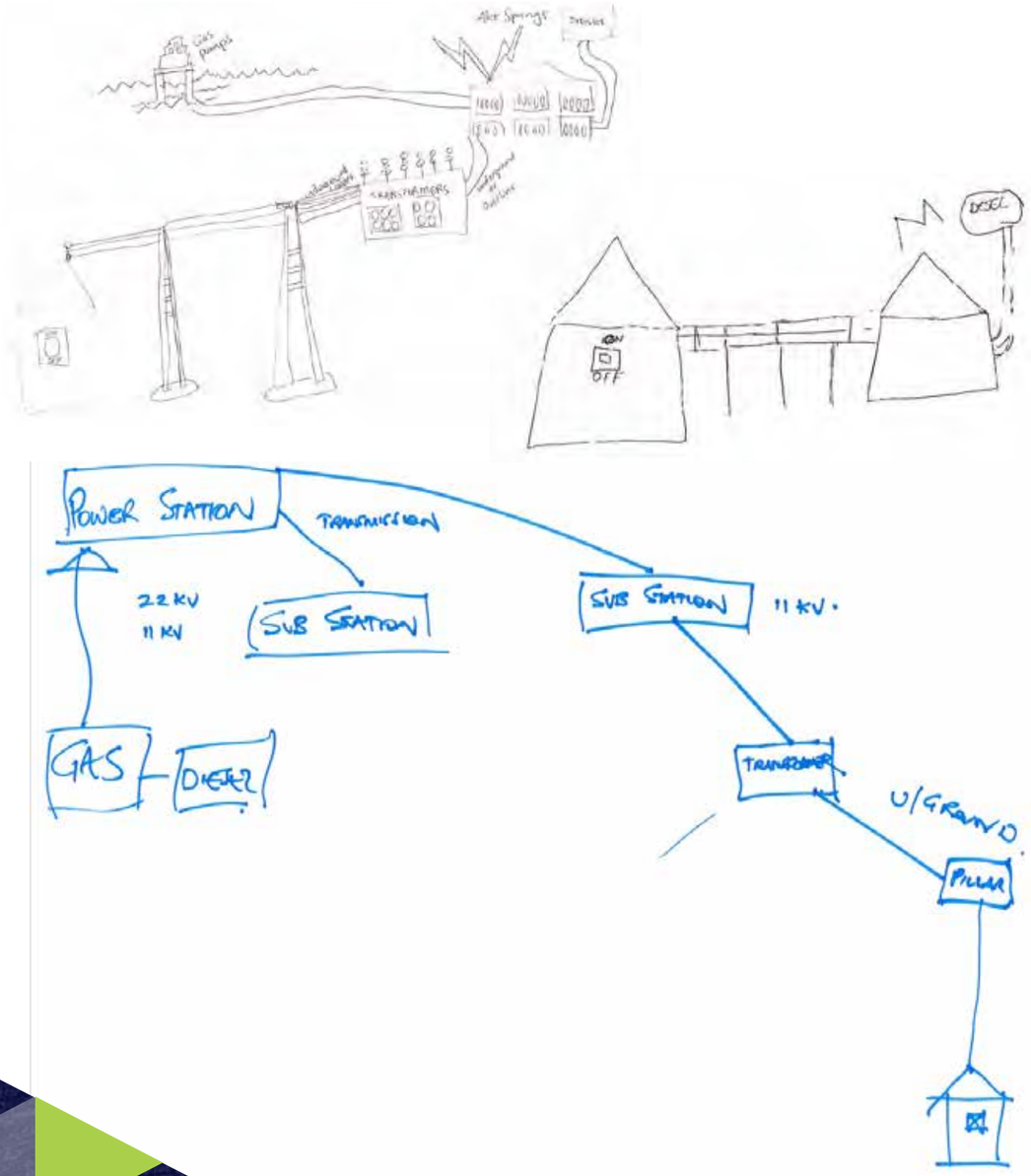
4 Content presented

Day 1 – Customer Journey

Establishing baseline understanding – where does electricity come from?

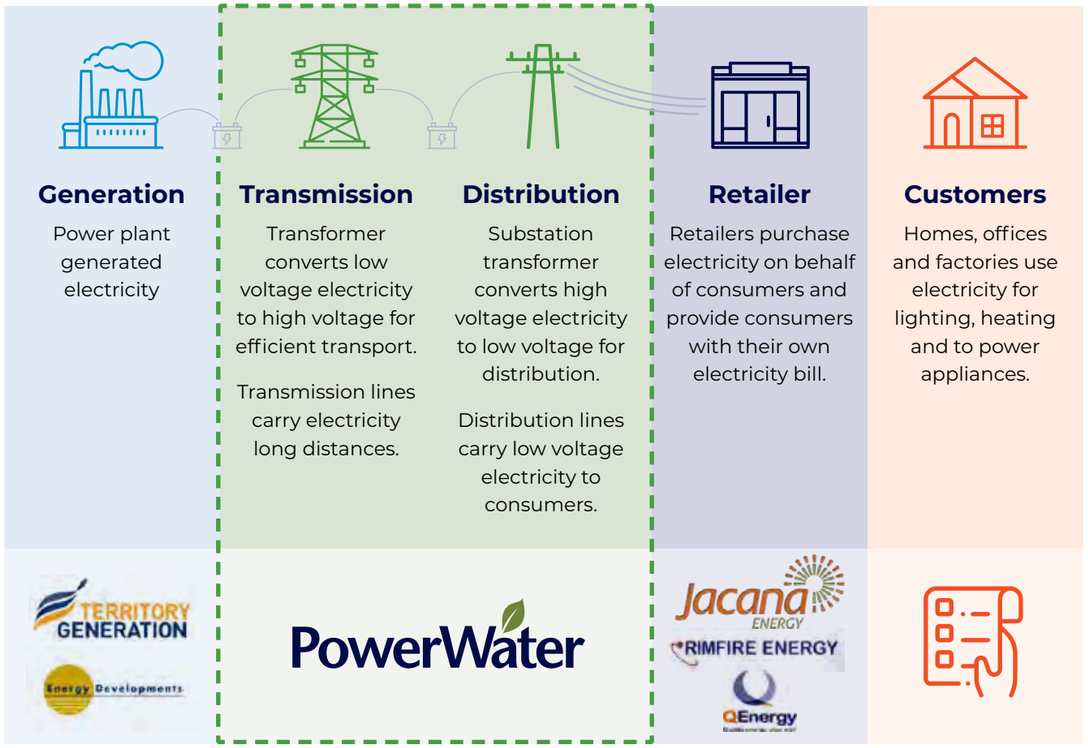
An introduction to Power and Water was provided by Jodi Triggs, Executive General Manager, Customer, Strategy and Regulation.

Participants worked in pairs and were asked to draw how they understand electricity – where it comes from and how it gets to their homes. This was followed by several short videos to explain electricity and the role of Power and Water.



The range of responses indicated that there was a wide range in the levels of understanding, however most participants understood that:

- most electricity in the Northern Territory is generated from gas (unlike in other Australian states and territories)
- gas is extracted and sent via pipeline to electricity generators where it is converted to electricity and transmitted at high voltages over long distances before being converted into lower voltages by transformers
- electricity is then carried in wires over poles at lower voltages to businesses and homes.



We had early discussions on the changing mix of energy, including an increasing number of residential customers using rooftop solar photovoltaic units (PV units) to generate their own electricity.

It was clear that many panel members found the 'split' of functions of the supply chain not to their taste. They did not feel there was real 'choice' and the result was they were paying more than they needed to.

Finally, there was a lot of interest in other forms of energy and what opportunities there were in the Northern Territory to expand the generation mix.

Day 1 – Customer Journey

What would be a good way to talk to customers?

Participants were asked how they think Power and Water should engage with customers. Many responses included common communication methods familiar to participants and currently used by Power and Water such as:

- **Flyers/ letters in letterbox**
- **TV and Radio**
- **SMS and Email**
- **Social Media (Facebook)**
- **Surveys (paid and unpaid)**
- **Newspaper and Website**

Participants expressed a strong desire for greater face-to-face engagement, suggesting:

- Power and Water shop front
- Power and Water ambassador
- Power and Water staff coming door to door with meter reads

- Attendance at land congress
- Alice Springs show booth

- Educational programs in schools (opportunity to reach parents and students)

- Forums
- Expos
- Road shows

Several participants highlighted that while online communication methods were effective, they were concerned about those who are not online. Participants also made suggestions regarding online and phone engagement:

- Raise awareness of the Power and Water app
- Different communication channels (e.g., website, Facebook, recorded message) should be simultaneously updated with information
- Use Facebook Messenger chat function but with a staff member not an AI bot
- Call centre auto directs to region-specific customer service representatives
- Consider that pay walls may limit access to online news sites
- Remove surveys from the end of telephone calls.

- Greater use of pictures (rather than written text)
- Culturally appropriate communication
- Improvements to call centre automated menu options
- Information on feed-in tariffs
- Brief, clear, plain English language
- Detailed information packs
- Clearer information on the roles of:
  - generator
  - distributor
  - retailer
- Regular updated information on current outages, planned work & improve outage times
- Translation into other languages
- Ability to give feedback on website material
- Information comparing the consumption of different appliances
- Information on where to go for issues with meter reads

Day 1 – Customer Journey

Understanding the customer experience

Participants were asked to map their experience of energy from connecting, connected, blackouts and disconnection. Participants discussed their experiences in small groups at their tables and shared back. The key positive, negative and neutral feedback received is provided below.

The Customer Journey

Our customers	80,000 households	6000 small and medium businesses	180 Major users
Connecting			
	▸ Who do I ring? ▸ How long to connect? ▸ How much to connect?	▸ Can I connect online? ▸ How do I connect my solar? ▸ Who connects me?	▸ Can I use an app? ▸ Can I connect my battery?
Power on			
	▸ How much power am I using? ▸ Do I get a discount for solar? ▸ Why are they cutting trees?	▸ When do I get my bill? ▸ How can I charge my EV? ▸ Can you get rid of the ugly service line?	▸ What am I paying for? ▸ How to contest my bill?
Power interrupted			
	▸ When will it be back on? ▸ Is it planned or unplanned? ▸ Will I be compensated?	▸ Who do I ring for info? ▸ When did you notify me? ▸ Why do I get worse service than others?	▸ Is info online? ▸ Is my solar impacted?
Disconnected			
	▸ Can I get more time to pay bill? ▸ Can't you lower the bill? ▸ Who do I ring to disconnect?	▸ When did you tell me? ▸ My business is doing it tough? ▸ Can I do it online?	▸ Who can I appeal to? ▸ I pay too much? ▸ Can I get connected again?

Day 1 – Customer Journey

Understanding the customer experience

Connecting	Connected	Blackouts	Disconnected
▸ Time to connect	▸ Amount of bill	▸ Number and duration of blackouts	▸ Time to pay overdue bill
▸ Complexity of interaction with Power and Water	▸ Electronic vehicles	▸ Notification of planned outage	▸ Disconnection notice
▸ Cost of connection	▸ Tree trimming	▸ Information on time to fix outage/ blackout	▸ Reconnection
▸ Solar and battery connection to grid	▸ Aesthetics of poles and wires	▸ Back up supply	▸ Consideration of special needs
	▸ Metering		▸ Going off grid
	▸ Tariff design		

This was largely consistent with what was heard in the customer focus groups held in August.

Feedback from Customer Focus Groups August/September 2021

Connecting

- Time to connect
- Complexity of interaction with Power and Water
- Cost of connection
- Solar and battery connection to grid

Generally, customers found connection time quick and the process easy.

"Quick to connect."

Customers found Power and Water helpful and easy to communicate with.

"Found it was best to ring Power and Water rather than Jacana..."

Many customers were unhappy with the costs involved in connecting, some understood and were just happy to be connected.

"Cost sucks."

"Generally OK with costs as I understand the constraints."

Customers found connection to solar to be time consuming and confusing, although one customer reported it was easy and seamless.

"Solar is much harder in terms of paperwork delays..."

Connected

- Charges
- Metering services
- Electronic vehicles
- Poles and wires
- Tree trimming and other Power and Water activities

Customers were generally unhappy with the size of their bills although some were not surprised.

"I do feel my bills are too high... I don't think I should use that much?"

"Amount of bill is high but I don't feel annoyed, it is expected."

Only one participant mentioned electric vehicles.

"Disappointed with lack of EV push."

Customers strongly disagreed with the practice of tree trimming in their communities.

"I hate the way the trees are destroyed."

Customers recommended underground powerlines as an alternative.

"Underground power lines essential."

Customers complained about the lack of a meter read on their electricity bill.

"No meter read on electricity bill, difficult to track."

Blackouts

- Blackouts
- Brown outs
- Emergency outages
- Communication of outages
- Notification of planned outages

Most customers have rarely experienced blackouts except for during cyclone season, which they understand is a part of life.

"Only got blackouts during cyclone season."

Customers report almost no planned outages.

"Never had an outage or blackout."

Customers are happy to find out they can find information regarding blackouts on Facebook.

"I am pleased to hear there is a Facebook page to find info on blackouts."

Only a few customers use solar/generator power as backups during blackouts, those that do seem pleased with the results.

"Have my own solar panels and standby generator due to blackouts."

Disconnected

- Time to pay overdue bill
- Disconnection notice
- Reconnection
- Consideration of special needs
- Going off grid
- Overdue bill

Customers state that there are plenty of reminders to pay overdue bills.

"Plenty of reminder notice given."

"Text message reminder is good."

None of the customers present had dealt with a reconnection and that was for a business account.

"Although it was all sorted with the wonderful lady at PAWA our disconnect/ reconnect did not happen as planned."

No customers mentioned any experience with consideration of special needs.

Only one customer had contacted us to enquire about going off grid whilst still having power.

"Going off grid but still be able to have power there etc. More tariff for different regions required."

We explored our customer data to understand what customers had contacted us about at different points in their life cycle.

Day 1 – Customer Journey

More detail on what participants said follows.

Connecting

Positives

- Many participants found their connection process was relatively simple, done over the phone.
- There were also positive experiences regarding their solar connection noting it was quick and smooth.
- Participants cited good connecting experiences with solar; “Solar connection is quick”; “Solar connection smooth”.

Negatives

- There was some confusion between what functions were performed by Power and Water and the retailer (Jacana Energy).
- Participants said they did not understand connection or disconnection charges.
- Participants found the need to disconnect and reconnect when moving homes unnecessarily difficult and to be a ‘painful process’.
- Participants felt frustrated with a lack of information about connecting solar.

Ideas

Connected

Positives

- Participants praised the pre-payment meter.
- While feedback was mixed on vegetation management, a couple of participants commented it was good or that it had improved.

Negatives

- The majority of comments about tree trimming were negative noting that vegetation management was slow and potentially not consistent.
- Several participants complained about meter readers placing cards without reading meters.
- A participant complained that the location of lines is unsafe.

Ideas

- Covering the cost of generators in case of black outs.
- Suicide prevention signage on Power and Water infrastructure.
- Closer oversight and monitoring of meter readers.
- Improve cultural communication and include face-to-face options for non-technology literate people.

Blackouts

Positives

- Participants noted their preference for SMS, letterbox drops, Facebook and Twitter as means for communicating blackouts.
- Some participants in Alice Springs commented they were reasonably happy with the reliability of the system while others felt it could be improved.
- Participants emphasised the importance of knowing the duration of an outage and when power was likely to be restored.

Negatives

- Participants complained about a lack of good communication during disruption (black outs and brown outs).
- In Darwin, participants complained about the long outages, lack of communication surrounding Cyclone Marcus in 2018, and why restoring power was taking so long.
- Participants noted the need for life support arrangements to be improved.

Ideas

- The need for and importance of ensuring different methods of communication are simultaneously updated to ensure consistency in messaging.

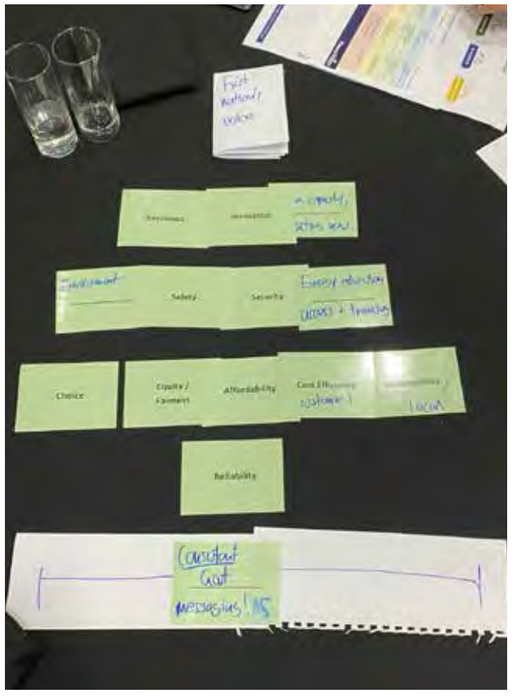
Disconnecting

Positives

Negatives

- Participants complained that the cost of disconnection was too high and there was a lack of explanation surrounding disconnection costs.
- Participants complained about insufficient notice of disconnection and time taken to reconnect.

Ideas



Day 1 – Customer Journey

Understanding customer values

Understanding customer values is helpful when considering the inevitable trade-offs inherent in decision-making.

Considering and discussing values in the abstract cannot be directly translated to priorities when considering a particular issue. Introducing an exercise which looked generally at ranking values and priorities provided useful insight into the general values and priorities of different participants and is a useful precursor to group deliberation required in the next People's Panel session. It also served to test deliberative engagement and consensus in a controlled setting.

Participants were given ten laminated cards each with a value written on it and several blank cards for participants to write any additional values they felt were missing. They were then asked to work in small groups to order the cards from most important to least important. One group ordered the cards in a straight line, but many groups had different shaped arrangements highlighting that they held multiple values in similar regard.

Many groups put sustainability, innovation, reliability and safety as their top one or two values (many groups gave multiple values equal weighting). It is interesting to note that in this exercise affordability consistently ranked as a mid-range value, neither very important nor very unimportant.

Groups also added their own values which included 'First Nation's voice', consistent government messaging, 'ethical provision of power', 'vision targets timelines', 'capacity - acting now', 'environment', 'energy education, access and training' and 'EV charging stations'.

As these additional values were not mentioned by other groups they did not rank highly in the average scores but should nonetheless be taken into consideration.

Below is the list of top values, from most important to least important, based on the average of all the groups.

Day 1 – Customer Journey

Imagining the future

Envisaging the future, and how people's expectations will change with the way they use and consume energy, is an important part of the planning process.

During this session participants were asked to consider:

- What is the most exciting possibility that you see for energy?
- What will be biggest change for you in how you use or think about your energy?
- How would it affect your life in your household/with your family? At work and play?
- What does a day in their life in 2040 look like?

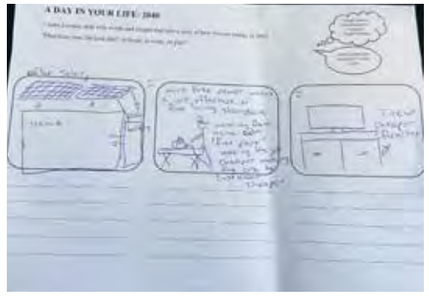
Participant responses to these questions are summarised below.

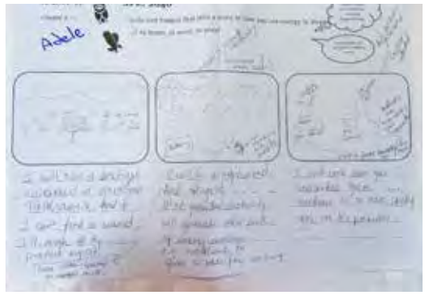
What is exciting?

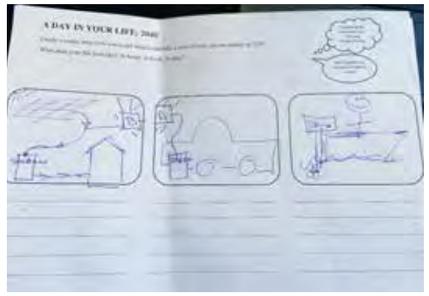
Participants commonly described an energy future they were excited about as 'cheap', 'clean' and 'sustainable'.

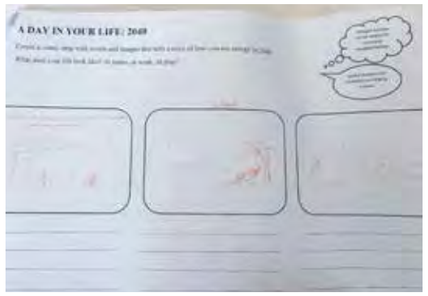
Many participants mentioned solar in the context of free energy production, improved battery storage capacity and life span.

A few participants mentioned equity and two mentioned nuclear fusion. Other suggestions included microgrids and personal and community battery banks. One participant mentioned cars with a fossil fuel alternative, but few participants explicitly mentioned electric vehicles.









What's changed?

When asked about the biggest change in use or thinking about energy, many participants cited greater affordability as a key change along with not needing to think about their consumption.

Some participants suggested there would be more energy-efficient appliances leading to a decrease in consumption. This view was tempered by predictions that further technological advancement in renewable energy such as electric vehicles will significantly increase consumption. A few participants also referred to the need to consider climate change.

What's different about your life?

When asked how this future would it affect their life, participants frequently cited greater affordability and convenience due to automation. Two participants mentioned portable power, with one describing a rechargeable micro-battery that could be used for multiple devices (like a USB).

What does your life look like in 2040?

While some participants imagined lying on a beach or jet-powered travel, other participants projected a bleak future describing environmental destruction, reflecting their concern about the environment.

A number of responses included solar panels on homes, automated energy-efficient homes, working from home and the end of fuel powered cars (most did not refer to electric vehicles specifically and three referred to hydrogen-powered vehicles).

Day 1 – Customer Journey

Exploring Equity

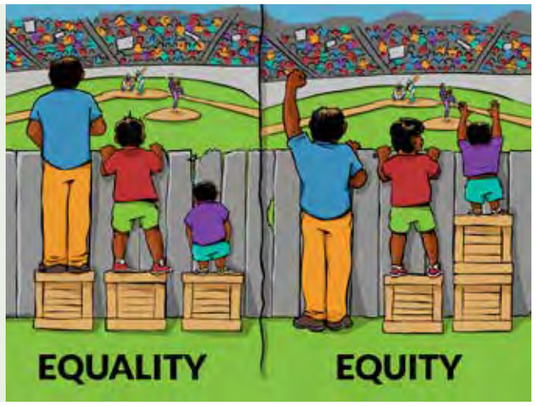
When delivering an essential service, equity is a key issue.

The issue of equity is frequently raised in engagement processes around energy. Participants were asked to contemplate the energy future they want not only through the lens of their personal experience but the impact on the wider community.

Participants were shown the graphic and asked to discuss:

- What is energy equality?
- What is energy equity?
- What kind of energy future do we want?

This discussion generated quite challenging and sometimes heated debate. As this was a general discussion in small groups that would inform subsequent activities, the outcome or conclusion of the discussions was not documented. It is clear some groups had interesting discussions about the current and desired future state of energy equity and equality.



Statement 1: Lower income families spend a higher proportion of their income on energy than higher income families. Is this an issue? Why or why not? If so, how might we address this?

Most, but not all, groups agreed this was an issue. Many participants thought there should be subsidies in place for those who need financial assistance but there was mixed awareness of whether this exists.

Those who did not think it was an issue explained that a pay-for-what-you-use model is fair as the costs to provide the service are the same, there are ways to reduce energy consumption to make it more affordable and subsidies are available to those in need.

Those who thought it was an issue explained that energy is an essential commodity. Those who do not use energy because of the unaffordable expense may suffer health impacts as a result and those that do prioritise spending on energy may go without other essentials such as food. A couple of participants also mentioned a growing divide between the rich and poor and this leading to social unrest.

Some participants also mentioned that low-income households may have less energy efficient appliances.

Ideas to address these issues included:

Rate structure reform:

- A minimum amount of electricity that is available to all, free of charge
- Charges, or a base tariff, based on income
- A fixed fee service fee that covers network cost plus a fixed usage fee.

Enabling greater access to solar:

- A solar power scheme to share power to those without access – ‘pay it forward’ scheme
- A reputable and trusted rent-to-buy solar scheme
- Solar panels on public housing.

Efforts to support energy consumption reduction:

- Energy efficiency education programs
- Financial aid or better access to energy efficient appliances.

Statement 2: Gradually, as more households can afford solar energy, Power and Water will have to build more electricity network for the solar energy so it can be used by others. This means households who can afford solar energy will get paid for the energy they export (this is cheaper than other forms), but everyone will pay a higher price for the higher network costs. Is this an issue? Why or why not? If so, how might we address this?

Some participants thought that those with solar should not avoid paying for the upgrade to the network and one participant thought that only solar customers should pay for the network upgrades on the basis that those customers are likely to be able to better afford the additional costs.

A greater number of participants were concerned that charging an export tariff to solar customers (a method of passing on the network upgrade cost) would not incentivise solar and battery uptake, stating this was important for transitioning away from fossil fuels.

One participant highlighted that if everyone had access to solar, this problem may be alleviated. Another participant suggested a solar PV rental scheme whereby cost was covered by the electricity generated.

During the discussion, one group expressed opposition to project Sun Cable, an undersea cable from a planned major solar farm in the Northern Territory that could supply Singapore, stating that it would not benefit locals. Two participants (one in each location) questioned whether there had been research and development into nuclear energy as an alternative.

Statement 3: The costs for a network are fixed, but energy prices are mostly variable (based on usage). Customers who own solar save on their energy charges and their network charges, but networks can’t reduce their own costs by the same amount. Is this an issue? Why or why not? If so, how might we address this?’

There were mixed responses to this question. The statement raised a number of interesting areas for discussion as we went into day two. Naturally, some of those who owned their own solar assumed their ability to use their own energy saved on their bills and helped the greater community. Their view was that the benefits of exporting their solar into the grid more than offset the cost of the network to ‘host‘ their solar and the use of the grid when they need to import. There was some confusion and frustration in unpacking the statement.

Consensus was difficult to obtain from discussion on this statement. The exercise helped participants understand issues in planning for future networks which need to accommodate solar, even though solar customers can bypass some of the charges by using solar. Many thought that network charges comprised the fixed daily charge. Suggestions for solar customers to pay a bit more, or for solar customers network charges being used only for network upgrades as a result of solar were discussed by participants. Other suggestions included rethinking the network with community batteries and/or microgrids.

Day 2 – Power and Water's journey

The big picture

Participants were welcomed to day two of the Panel, where we sought to apply some of the baseline understanding and knowledge to real world strategic issues that Power and Water's Board is now facing.

Participants were told that day two's activities would involve presenting to the People's Panel as if they were the Power and Water board and asking them to consider strategic issues.

The Acting Chair of the Board, Charles Burkitt, presented to the Panels on what the Board did and how participants views were both relevant and of interest to him and the Board. It was noted that the presentation being used was largely the same as that presented to the Board a few weeks earlier, at their annual strategy session.

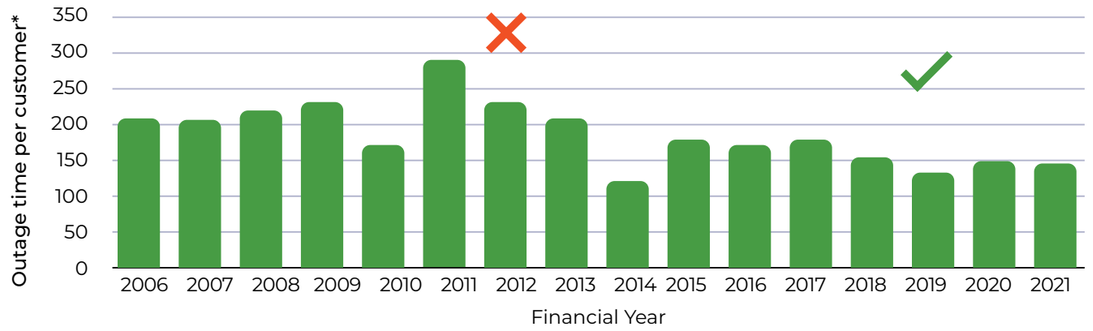
The first session was a presentation from Jodi Triggs, Executive General Manager Customer, Strategy and Regulation, and Stephen Vlahovic, Executive General Manager Power Services, that provided an overview of Power and Water, including a report card for past performance.

Stephen talked through the performance of Power and Water over the last 15 years from two perspectives – reliability and cost. Reliability is a key metric for the quality of service for customers. Costs represent the capital and operating expenditure to run the network.

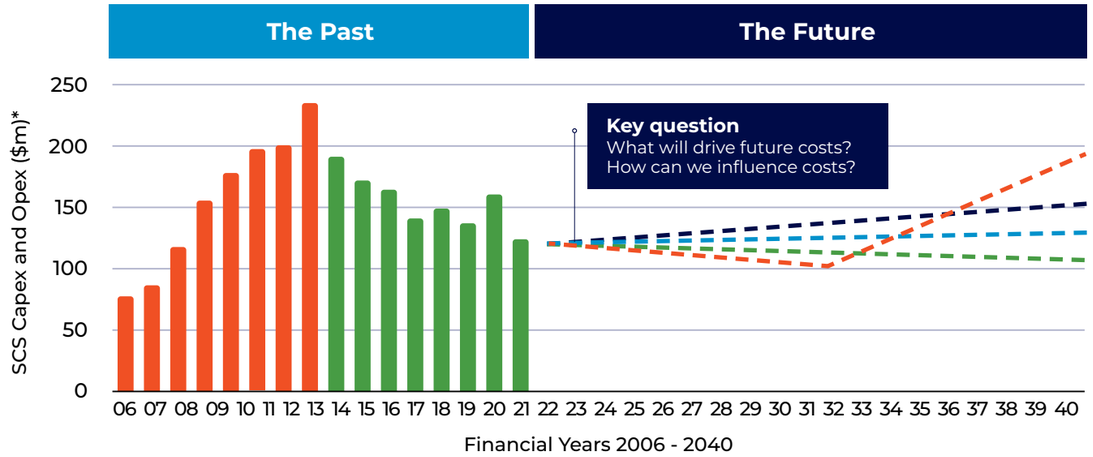
Key points are outlined below:

- While costs were quite low (and reflected in lower prices) in 2006 and 2007, reliability deteriorated across the network, and resulted in multiple failures, blackouts and disruption. To ensure safe and reliable supply, Power and Water had to spend significantly more in a much narrower period of time, resulting in rapid price spikes followed by a focus on cost reduction.
- Power and Water does not want to repeat a 'boom bust' cycle of investment.
- In recent years, prices have been kept relatively low and reliability reasonably high, due to upgrades over the last decade and higher levels of solar in the middle of the day which have reduced the need to invest. Some regular asset replacement has been deferred due to increases in solar.
- Current replacement levels are not sustainable into perpetuity, but this needs to be managed against bringing forward investment that may not be necessary.
- Global trends are increasing the need for a robust, well interconnected grid. The pressures of digital change, increasing use of renewables and EVs, will all place increasing pressure on our forward expenditure. While the timing of some of these technology changes is unclear, significant change sometime in the next decade is inevitable.
- Customer expectations continue to grow over time, making it important for Power and Water to stay in front of customer expectations and experience.

Outages experienced by customer

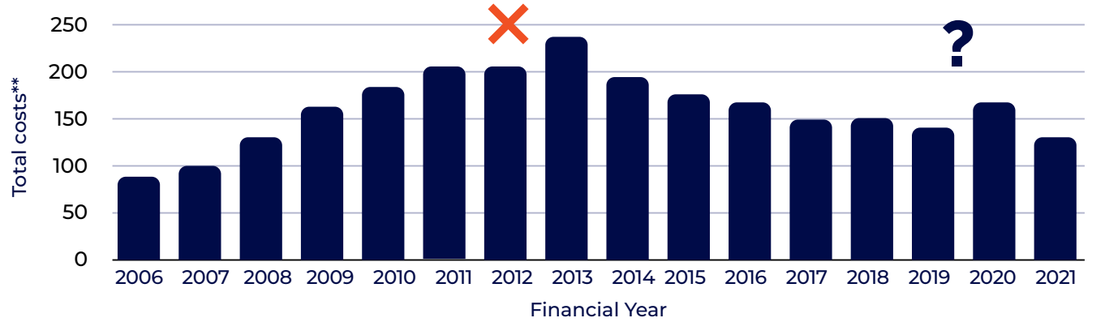


*Whole of network unplanned SAIDI excluding MEDs, excluded outages



* Standard control capex and opex ($real, 2021).

Power and Water's costs



** Standard control capex and opex ($real, 2021)

Day 2 – Power and Water's journey

Untapping rooftop solar

In this session the conversation turned to how Power and Water should support and respond to growth in renewable energy and changing customer behaviour.

This session explored the opportunities and challenges with the network needing to accommodate the predicted doubling of small scale solar by 2030, and what strategic options are available from constraining solar or enabling more solar. The challenges of building more network were also covered. This session was facilitated by Brendon Crown, Senior Manager Regulation Economics and Pricing.

The changing energy landscape

The Panel was presented with information around the fundamental paradigm shift in how the energy system operates. Pre-2010, the energy system was relatively simple and was characterized by flows of electricity in one direction from large gas generators connected to the transmission network, which were in turn transferred through the series of poles and wires to customers' houses or businesses.

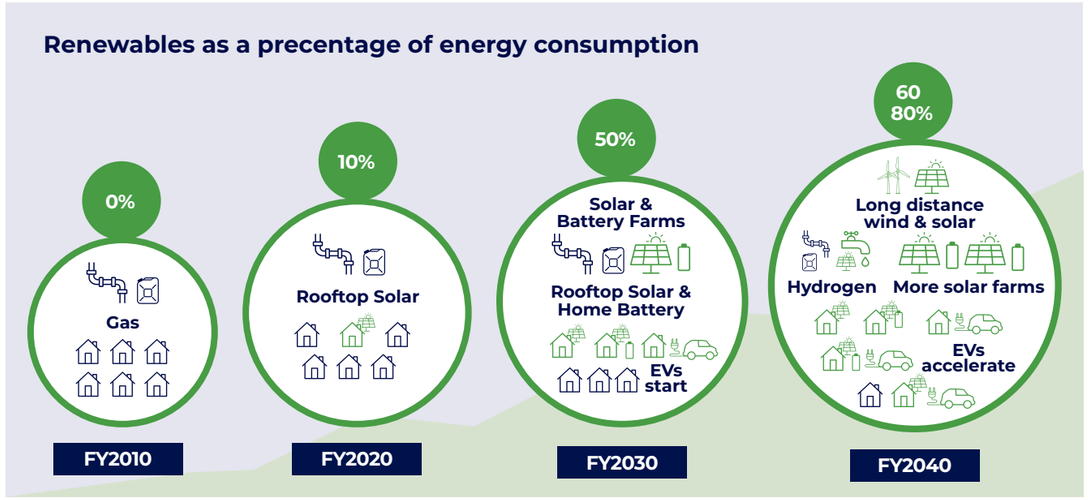
Over the last decade, technical advancement and innovation have driven fundamental change, with increases in large- and small-scale solar, and the introduction of two-way energy flows on electricity networks which have been traditionally designed and configured on the premise of one-way electricity flows.

Power and Water explained what the future might have in store for the Territory.

By 2030, ageing gas generators will be replaced with large scale solar farms and more generation will come from customers' solar. Battery storage will also start to play a role capturing solar energy in the day and distributing it at night. Many customers will switch to electric vehicles.

By 2040, large-scale solar will expand with the potential of connection of wind-powered energy many kilometres away. By then, green hydrogen (where solar splits water atoms) could be slowly replacing gas. At the household level, there will be more small-scale solar, batteries and electric vehicles.

We explained the opportunities for customers in this change and the challenges for networks to deliver this change with minimal cost.



We asked a number of questions:

- What will this mean for Power and Water and what is that optimal or 'Goldilocks' investment pathway to facilitate the transition affordably and securely?
- Given the current network is designed for one-way flows of electricity, do we limit solar exports or increase the capacity of the network to accommodate solar exports?
- How do we get the best balance of costs and benefits?

Managing two-way flows

Power and Water explained that a key to unlocking greater levels of small scale renewable generation lies in improving the accuracy of locating where and when local generation causes potential problems for the safe and secure operation of the network.

Right now, Power and Water cannot see the two-way flows of energy at the street level. Even if it could see the two-way flows of energy, it cannot respond in real time if the two-way flows started disturbing reliable and safe energy supply up and down the street.

To avoid supply problems across the network, we constrain the amount of energy that can be exported from a solar system when it firsts connects – what is called a static limit. We apply this everywhere, but in some areas the static limits are becoming smaller.

We recognise that this is not sustainable long term, because as more solar is connected the risk of congestion increases, decreasing limits.

Because we don't know exactly where and when the real problems are, we set these limits across the network, meaning that currently there are lost opportunities for more solar to be exported.

If Power and Water improves its visibility of the network capabilities and capacities in real time, it can limit its constraints to the locations and times that it knows problems will occur.

How can community batteries help?

Community batteries are a shared battery solution located in a local neighbourhood which allow customers and the wider community to share in the multiple benefits that batteries can provide. They can encourage greater solar uptake by making access to battery storage more equitable and accessible for all customers, particularly those who are not currently able to install their own battery, while also enabling customers without solar energy systems to benefit.

Community batteries can also offer a flexible alternative to traditional poles and wires investment, potentially reduce peak demand and provide power security and reliability, helping to place downward pressure on electricity prices.

Day 2 – Power and Water's journey

Untapping rooftop solar

Panel feedback

There was general support for the idea of a community battery although participants wanted to know more about cost implications. There was general support for mandating that all new builds in the Territory have solar panels. There was some acceptance of gradual price increases to offset larger price hikes in the future, although questions around exact figures and concern about affordability, especially for low-income residents, remain.

Participants discussed the challenges with unlocking renewables, asking questions such as:

- Can Power and Water provide clear cost-benefit analysis of renewable targets?
- How much is the government contributing and then who pays for the shortfall? Private equity?
- Can money that consumers generate be put back into the cost of renewables?
- Can there be a sustainable energy tax instead of increased targets?
- What are the costs, legislation, efficiencies of retroactive solar installing versus a new build requirement?
- Who is responsible for investing in research and development of new technology? What will the overall cost of renewables be?
- Is it better for the network to have solar farms or domestic connections within the community?
- Will Sun Cable drive down prices?
- What other renewables are you looking at and will they have the same stresses on the network as solar (geothermal, wind, wave)?
- Has Power and Water considered looking at the technology and strategies used overseas?
- Is it better to push "Mum and Dad" solar to charge their own batteries rather than feed back into the network?
- Can you have both rooftop solar and wind turbines at the same time?
- How long do solar panels last?

Ideas floated included:

- Mandatory solar panels for new builds
- Community programs for community solar
- Central departments - microgrids
- Dynamic operating capabilities
- Standalone grid for Alice Springs (suggestion from the Alice Springs Panel)
- Government subsidies for solar and storage
- Trial community batteries in Alice Springs (suggestion from the Alice Springs Panel)
- Power and Water to consider its carbon footprint with their investments
- Community input to Board decisions.

How do we compare?

This session explored the challenges with benchmarking for the Proposal and sought guidance on the most important comparisons that would enable Power and Water to deliver customer focussed outcomes. It also provided insight into the way the AER will assess the Revenue Proposal, which will be useful context for future discussions with the People's Panel.

This session was facilitated by Jodi Triggs, Executive General Manager Customer, Strategy and Regulation.

Participants were shown graphs and data that demonstrated the difference in both size and scale of Power and Water's network, highlighting the small customer base, large geographical area and the three distinct networks.

A summary of key points is provided below:

- There are five networks in Victoria, one in the Australian Capital Territory and South Australia, and two in Queensland. Western Australia is not part of the National Electricity Market.
- The most important thing to compare is spending, bearing in mind the NT has a fraction of the population of New South Wales and Victoria.
- One way is to examine spending per customer, which is similar to Ergon in Queensland. Both networks spend higher than the other networks.
- Another way is to examine spending per unit of energy delivered. Power and Water appears less expensive on this measure but still fairly expensive.

Participants were asked five 'fact or fiction' quiz questions about the Northern Territory and asked to move to a side of the room to communicate their answer. This was designed to start contemplating some of the variables which impact comparisons such as size of customer base. Participants were then asked, what is different about living and doing business in the Northern Territory? A summary of these small group discussions is provided below.

Living in the Northern Territory

Participants were asked about key differences in living in the Northern Territory compared to other places in Australia.

Participants in Darwin cited the following key differences:

- Geographical remoteness and the impact on cost of living, such as food, petrol and access to the rest of the country
- Weather, specifically heat, humidity and extreme weather events, and consequently the reliance on air conditioning, the reduced lifespan of goods such as electronics and car batteries and different kinds of cyclones to far north Queensland
- Size of population and costs associated with lack of competition, limited access to goods and services (in particular medical), educational opportunities and rental housing
- Lifestyle factors such as outdoor living, slower pace of life, more multicultural, higher vehicle speed limits, less traffic and easier parking and relative proximity to Asia.

Participants in Alice Springs cited these additional differences:

- Aboriginal culture, language and law including sacred sites
- Community that is friendly, inclusive, and creative but also racist
- Dust and a lack of water in the desert
- Limited public transport
- Poor quality internet.

Day 2 – Power and Water's journey

How do we compare?

Doing business in the Northern Territory

Participants were asked about key differences in doing business in the Northern Territory compared to other places in Australia.

Participants in Darwin cited the high costs of energy due to the need for air conditioning, and higher costs for freight and travel (due to distances). Panel members noted that consumables - in particular, food, petrol and other materials (due to lack of competition) - were higher cost. Comparatively, rent was quite high in Darwin.

The cost of labour is also quite high due to the difficulty and cost of attracting and retaining productive, skilled workers. Labour is usually much more transient and there is a general need to rely on backpackers for routine jobs.

Specialist resources require contracts involving fly-in/fly-out arrangements.

There are longer wait times for freight and travel (due to needing to cover large distances and access to sites which can be difficult because of road conditions such as flooding) and longer completion times when working outside due to lower productivity when working in extreme heat.

There are differences in the make-up and culture of the workforce such as a larger government workforce.

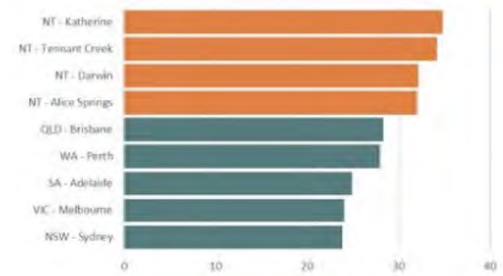
There is a smaller customer base. Being multicultural, communication in other languages is required.

On a positive side, the business community is quite close and there is usually only one degree of separation between people, less formal communication and word-of-mouth referrals. Business networking is Territory-wide rather than being city-based and many workforces and businesses are seasonal (wet/dry season).

Participants in Alice Springs noted in particular a greater sense of networking and community within businesses and suggested higher insurance costs due to break-ins.

More storms

Hotter temperature



(a) For the months from November through to May.
(b) Source: Bureau of Meteorology (BOM).

Higher rainfall

(a) Source: BOM.

How should we be approaching benchmarking?

This session explored the challenges with benchmarking and sought guidance on the most important comparisons that would enable Power and Water to deliver customer focussed outcomes. It also provided insight into the way the AER will assess the Revenue Proposal.

It was explained that some comparisons are not appropriate for Power and Water's network (e.g. total costs over customers). Other comparisons work well (e.g. cost of electrical equipment) and some comparisons can be adjusted for unique circumstances (e.g. asset age).

Participants were asked what kinds of things Power and Water should be considering when benchmarking and what participants think is the appropriate approach to benchmarking, along a continuum:

- Give up benchmarking as nothing can be compared (not an option as the AER requires benchmarking)
- Use only what is perfectly comparable
- Use what you can and adjust
- Mindlessly benchmark.

Most groups suggested the best approach would either be to 'use what you can and adjust' or 'use only what is perfectly comparable' (or suitably similar).

All participants agreed that benchmarking was helpful, not only for the AER but also for Power and Water.

Efficiency and effectiveness are important to customers. There were concerns about the cost of benchmarking for the sake of benchmarking and a strong feeling that Power and Water identify what works and use that, and find other ways to demonstrate to the AER that they are being prudent in their choices.

Day 2 – Power and Water's journey

Keeping fit as you age

This session introduced the future challenge of replacing an ageing network, noting that replacement rates today are well below long-term sustainable levels. The challenge is that continuing our current approach minimises prices today but could lead to significant costs by 2035 when the assets age significantly.

The session explored the role of new technology and transformation in helping us extend the life of assets and provide opportunities to decommission rather than replace assets.

Participants were shown graphs which demonstrated the historic spend on maintenance and heard the story of the failure of Casuarina substation in 2008 and consequent blackouts, which most participants in Darwin remembered. This session was facilitated by Zubin Meher-Homji, Founder and Director of Dynamic Analysis, an expert regulatory and commercial analysis firm working with Power and Water on the Regulatory Proposal.

The session began with a budgeting exercise that involved giving each table some play money, some 'buckets' and a 'persona' or a type of household that the group will play. Groups were tasked with allocating their funds in the buckets.

The idea of this activity was to give participants an insight into different approaches for planning for the future and managing unexpected costs. Details of the personas can be found in Appendix D and broadly were:

- Nervous Nelly
- Prudent Prue
- Daredevil Dave
- Scott Pape (the Barefoot Investor).

All groups were given $40,000 for living expenses and $40,000 for everything else and were budgeting for four years. (In Alice Springs this was reduced to just $20,000 as the original amount seemed too much).

Groups were told they could move the money in any way they liked, but there was no more money and borrowing and stealing from other groups was not allowed.

A scenario was then presented where unexpected maintenance costs arose each year including flooring, electrical, roofing and tree damage and groups needed to decide whether or not to spend the money that year or delay.

Currently not replacing much

45,000 Poles	**100** Annual replacement*	**900** Sustainable replacement	**56,000** service lines	**155** Annual replacement*	**1100** Sustainable replacement
5,300km conductor	**5km** Annual replacement*	**100km** Sustainable replacement	**4,900** transformers	**93** Annual replacement*	**97** Sustainable replacement
1,600km cable	**5km** Annual replacement*	**32km** Sustainable replacement	**7,093** switchgear	**92** Annual replacement*	**142km** Sustainable replacement

* Average over last 7 years

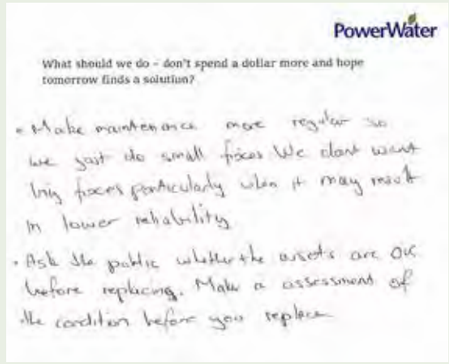
What should we do?

Groups were asked if it would be better for Power and Water to adopt the approach of 'don't spend a dollar more today and hope tomorrow finds a solution' or 'start spending more now to stop a spike in costs in the future'.

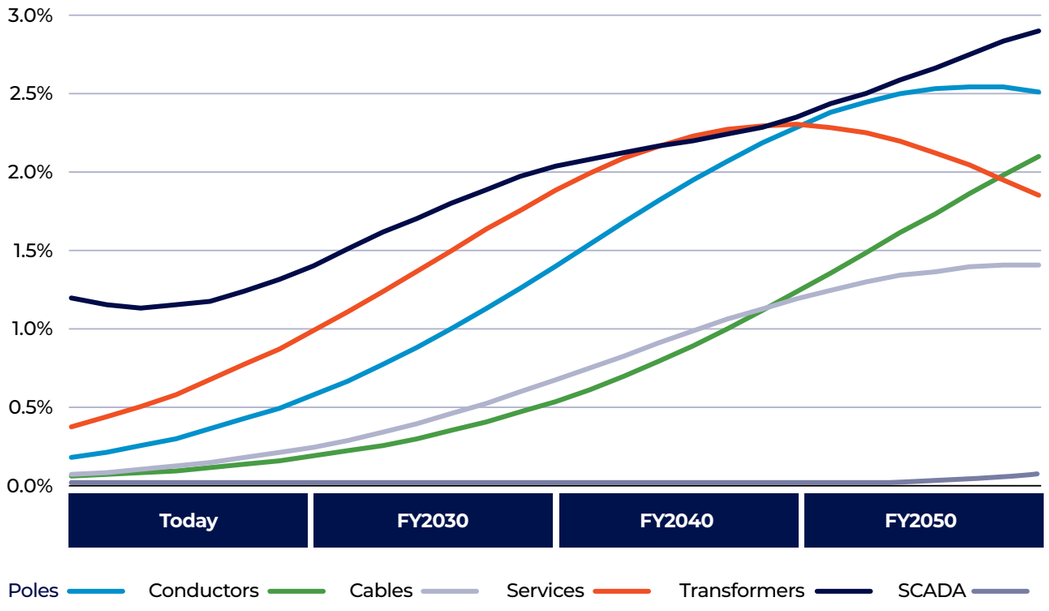
Some groups preferred the option to wait for further technological advancement as they expressed concern about spending on assets that would become obsolete and worried that some energy users may not be able to afford an increase in cost today. However, the majority of groups were concerned about preventing price spikes in future. Many groups suggested Power and Water have a future-proofing fund or a rebated levy to help avoid price spikes.

"Gradual increases are ok - big spikes become a shock and unfair to people on lower income - need to keep it in medium"

"[Are] there other options to … build up a reserve …allow for revenue to factor in a 'saving factor'? Customers don't like price spikes"



However assets will continue to get older, and by 2035 we will need to be replacing at a far greater rates than today.



Day 2 – Power and Water's journey

Electric Vehicles

This session presented the opportunities and challenges of electric vehicle (EV) uptake for the network. This includes the issues of managing network capacity, affordability and utilisation depending on the time of day customers charge their vehicles. This session was facilitated by Stephen Vlahovic, Executive General Manager Power Services.

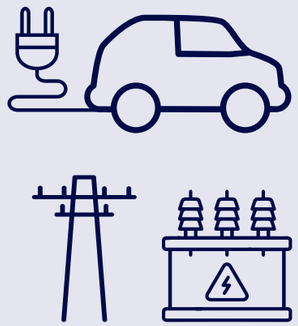
The NT Government recently produced a report which showed that range anxiety was a big barrier for taking up an EV in the NT.

There is considerable support from the public for Government and private investors to roll out public charging stations. In a survey by the NT Government, about 80 per cent of respondents said they wanted to see more charging stations.

Like any business, we want our customers to be using more of our product. EVs will mean a shift from customers using petrol to electricity, and using renewable electricity to do so.

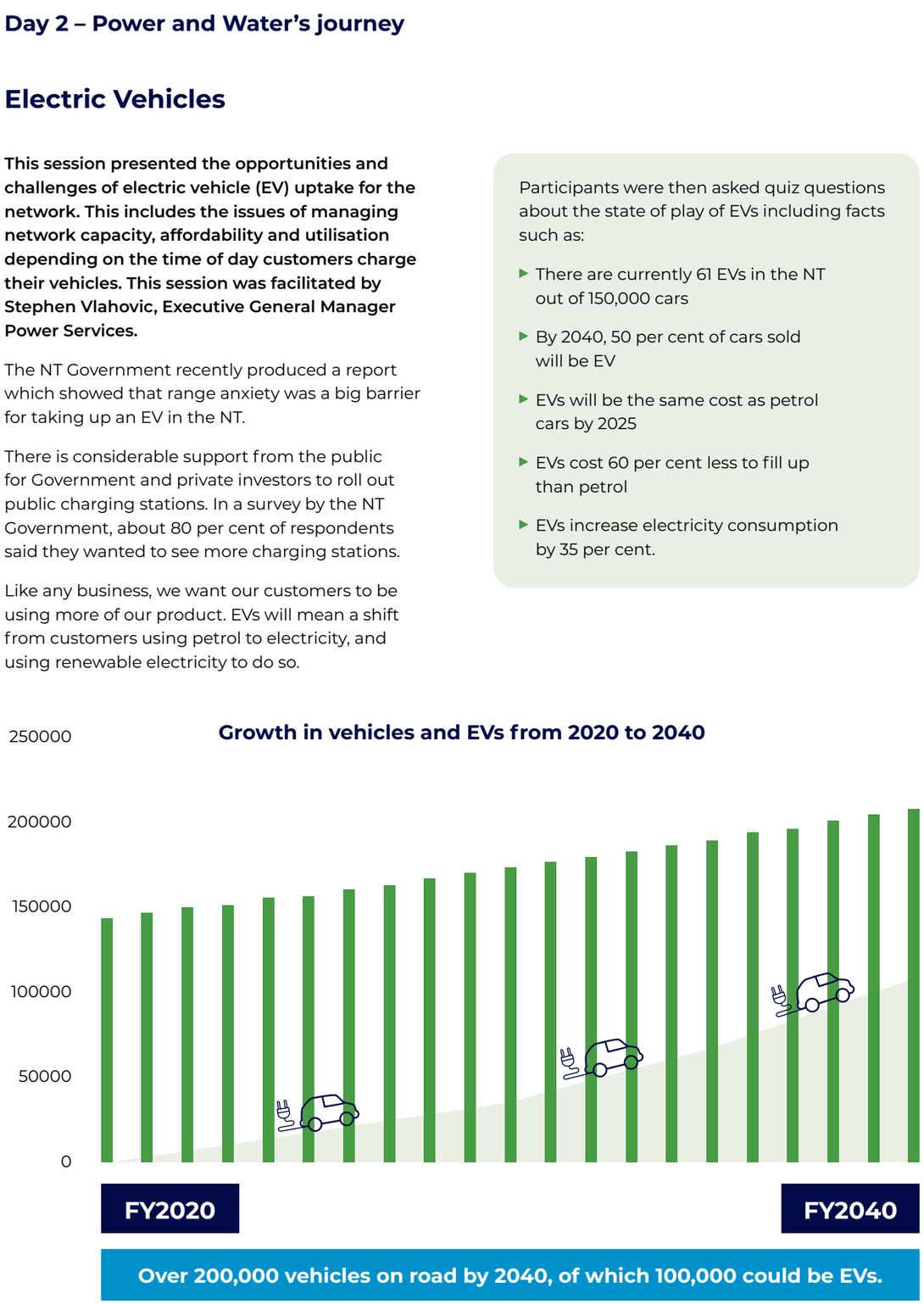
Participants were then asked quiz questions about the state of play of EVs including facts such as:

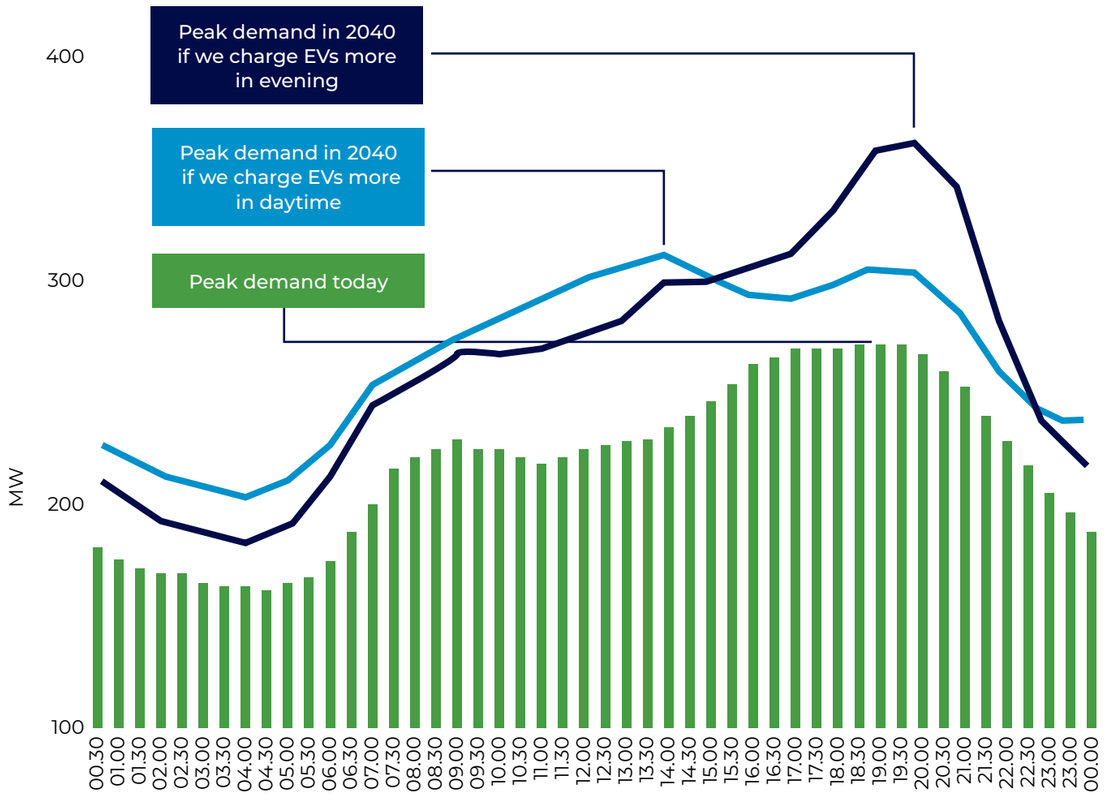
- There are currently 61 EVs in the NT out of 150,000 cars
- By 2040, 50 per cent of cars sold will be EV
- EVs will be the same cost as petrol cars by 2025
- EVs cost 60 per cent less to fill up than petrol
- EVs increase electricity consumption by 35 per cent.



Key issues were explored such as:

- Should Power and Water be facilitating public charging?
- How should Power and Water manage the impact of EVs on the network?
- How should Power and Water manage network costs, specifically managing peak demand based on charging during the day versus at night?





Day 2 – Power and Water's journey

Electric Vehicles

What should we do?

Participants were asked 'what approach Power and Water should take in terms of EVs, essentially if we should be ahead of the curve or wait and spend more in the long run?' Most participants thought that investment in EV infrastructure should be made sooner rather than later.

"START NOW!!"

"We should not wait and see what happens we need to get ahead of the curve and not be caught unprepared."

"PWC should be ahead of the curve, the Council should pay for the stations."

Some participants questioned the role of Power and Water in facilitating the transition, with some participants in Darwin suggesting that partnership with the City of Darwin was important and that council should own the charging stations.

One participant suggested that upgrading solar capacity in the network to allow for two-way flows should be done prior to focussing on EV issues. Some participants suggested that building EV infrastructure was good for the local economy and given the time needed to build the infrastructure it should not be delayed.

Many participants wanted more research on this subject and emphasised that the location of charging stations was a relevant consideration impacting uptake.

Participants suggested Darwin, Palmerston, Casuarina and the Stuart Highway would be good locations for charging stations. A participant in Alice Springs mentioned the importance of having infrastructure available for tourists with EVs.

"Charging sites are important and will determine when I buy an EV."

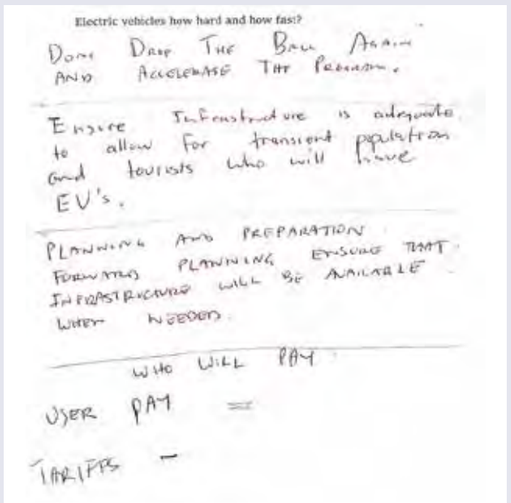
"PWC need to identify areas where charging stations are needed and there is capacity in the network to run it."

A few participants asked questions about the funding of the infrastructure and if it would simply be a user-pays model, with some participants concerned that it may not be equitable for all customers to pay for network costs when they may not be using the infrastructure in the predicted time frame. One participant asked if Power and Water would be switching its fleet of cars to EVs.

Generally, participants seemed to support the use of tariffs to manage peak demand on the network.

Ideas to facilitate the transition to EVS included:

- Understanding EV uptake and intention to buy
- Using existing service stations as charging stations
- Building slowly to keep costs down
- Partnering with car manufacturers to build infrastructure
- Building now and privatising the infrastructure at a later date
- Using the luxury car tax to fund infrastructure
- Applying for Federal Government funding.



5 Feedback on the event

Feedback on the event

Throughout the session, participants were asked if they had any questions about the way we are working with them. Many participants did not have any questions or responded that they were happy. Two comments related to the genuineness of the process and one about the group size.

Feedback from People Panel participants

Some participants raised the need to engage with residents who are not proficient in English, have a disability or have low literacy and numeracy. One participant also suggested that more training and information should be given to Aboriginal Territorians to enable them to participate and have representation at these forums. There was also one comment about not using acronyms that may not be familiar.

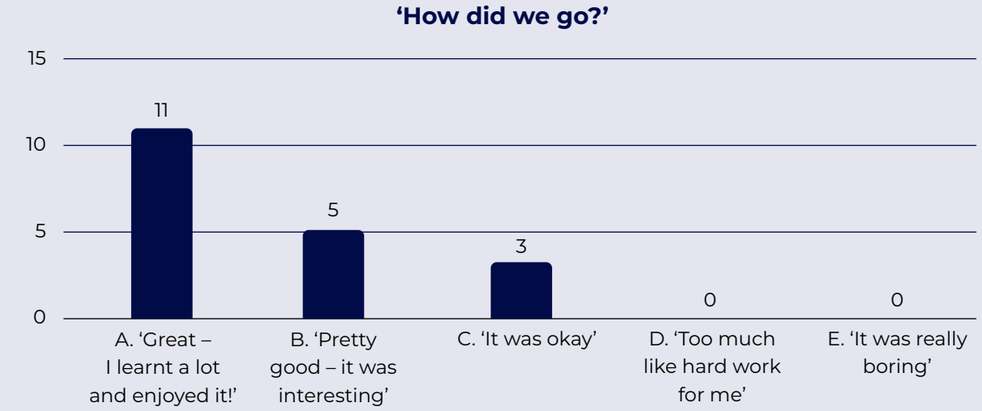
Areas that participants indicated that they need a further understanding of included:

- What is the vision of Power and Water?
- Why don't we put more underground infrastructure as it's more reliable?
- What limits additional power generators joining the network?.
- Why don't Power and Water install more underground infrastructure instead of poles and wires as it is more reliable?

At the conclusion of each day, participants were asked for their feedback. Responses to the question 'how did we go today?' were extremely positive with participants stating they found the sessions interesting and informative. A summary of participant feedback from the People's Panel is provided below.

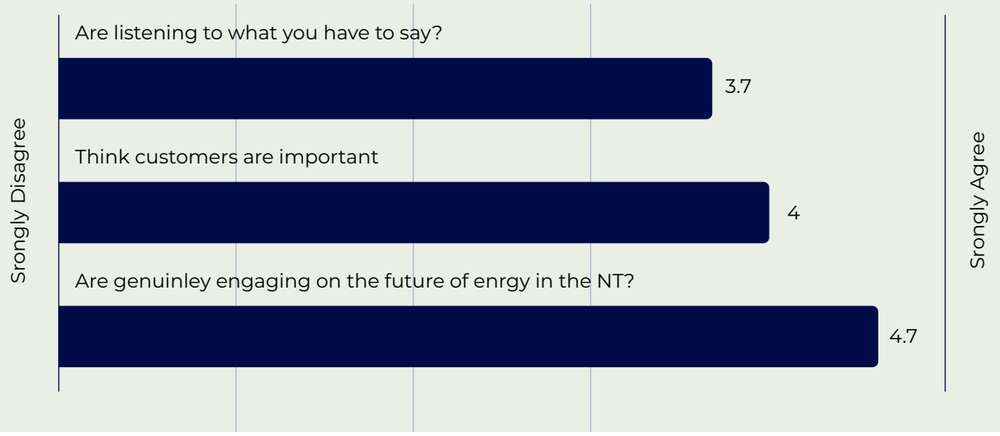
Feedback from Darwin People's Panel

Participants in Darwin were asked the question in multiple choice format. Feedback was very positive with 11 participants responding to 'how did we go?' with the option 'great – I learnt a lot and enjoyed it', five participants selected 'pretty good – it was interesting' and three 'it was okay'. No participants selected the negative options.



Feedback from Alice Spring's People's Panel

Particpants in Alice Springs were asked to rank statements about Power and Water's engagement at the forums on a scale from '1 -strongly disagree' to '5- strongly agree'. Participants on average responded with '4- agreed' with all the statements, as indicated by the results below.



Suggested improvements

As part of feedback on the event, we asked participants for their suggestions on how future sessions could be further improved. A summary of suggestions on how participants experience could be further improved is provided below.

- Alice Springs to be more specific to Alice Springs
- Better sound quality on videos
- Better use of microphones by presenters
- Table proposals for feedback based on known strategic plan
- Subtitles on videos
- Individual surveys
- More readable slides with larger font size
- More young people & a separate session for baby boomers
- Circulate a briefing pack prior to next session
- Provide four weeks' notice for next session
- Reduce number of table swaps
- Present an Asset Management Plan to better understand costs

6 Next Steps

Next Steps

The feedback obtained during the People's Panel sessions has been reviewed by the Revenue Proposal project team and will be a key input into development of the proposal over the coming months.

Key ideas captured from the Panels the project team is seeking to investigate to determine how these might be incorporated into Power and Water's regulatory proposal are outlined below.

Idea	Relevancy to the proposal
▸ Community solar bank	▸ Capex – future network expenditure pricing
▸ Redirecting solar network contributions to network enhancements for solar	▸ Capex – future network expenditure pricing
▸ Microgrids – how and how much it costs	▸ Capex - demand management
▸ Internal benchmarking	▸ Capex and Opex
▸ Rainy day account to avoid price spikes	▸ Replacement
▸ Invest in innovation to avoid replacement costs	▸ Capex and Opex
▸ Further research on customer intents and triggers for EVs	▸ Capex - augmentation
▸ Building the backbone of public infrastructure for EVs now	▸ Capex - augmentation
▸ Power and Water fleet of EVs	▸ Power and Water Property

Feedback relating to other aspects of Power and Water's business, and that of retailers' operations, has been communicated to relevant individuals for consideration and action.

Response to issues identified with customer journey

The following page summarises key ideas and issues raised during the People's Panel relating to their experience across the electricity customer lifecycle from connecting, being connected, power disruptions, and disconnections.

A representative from the Customer Services Division has been identified to work with, and 'champion' ideas and issues raised by customers during the engagement. A review of comments and complaints made by customers over the last 12 months has been undertaken and issues of a systemic nature have been identified and included in the list of issues and ideas being tested with the next Peoples Panel.

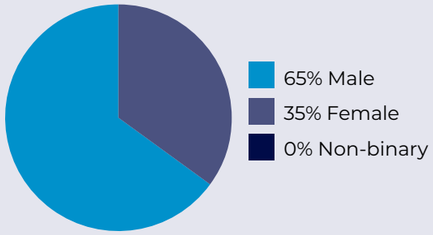
Issues/Ideas	Power and Water Response
Power and Water could improve engagement with its customers by more closely overseeing contractors who conduct meter reading.	Power and Water will raise customer experiences with the metering team and ask the contractor for response. We will look at options which are available to improve outcomes and provide feedback on our smart meter rollout (smart meters reduce the need for manual reads).
Closure of shopfronts make it harder to connect-face to face. Participants noted that phone wait times can be too long, with face-to-face considered better for people with impairment and those with cultural communication needs.	Power and Water will investigate the reasons why shopfronts were considered no longer viable, current statistics on call times and possible alternatives to address customer concerns with audio only interaction.
Importance of ensuring different methods of communication are simultaneously updated to ensure consistency.	Power and Water will report back on its current approach to using social media and other forms of communication for outages, what is in the pipeline for more work and other alternatives.
A 'Power Passport' would make connecting and disconnecting a seamless process when moving homes.	Power and Water is investigating if this is done elsewhere, how and if it would work, and the likely costs involved. We will present the outcomes for consideration at the next People's Panel.
A 'staying connected' policy, similar to arrangements in South Australia, was also suggested.	Power and Water will review policies in other jurisdictions and report back on options available.

Appendix A – Breakdown of participants

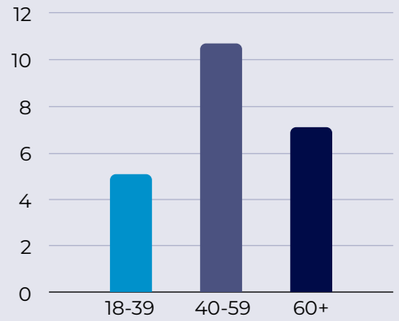
Darwin

Number of participants: 23

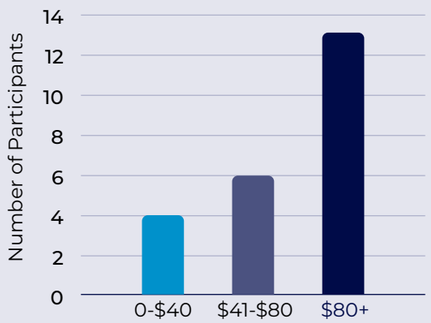
Gender



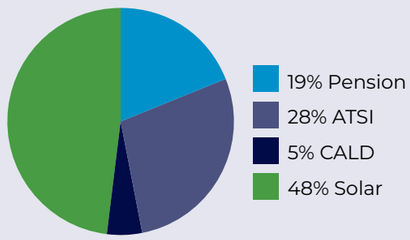
Age



Income



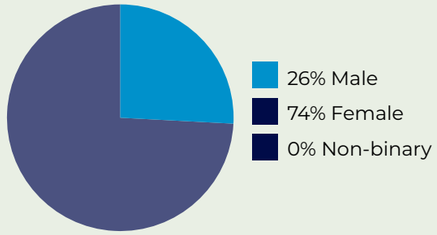
Segment



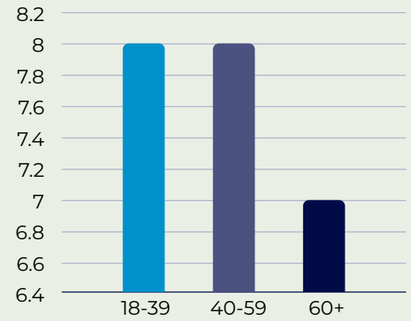
Alice Springs

Number of participants: 23

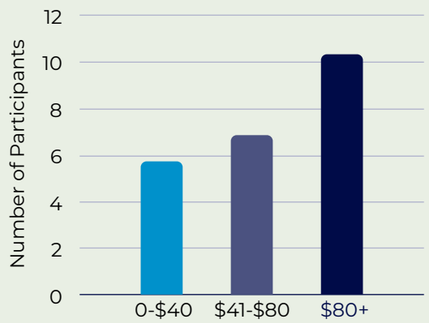
Gender



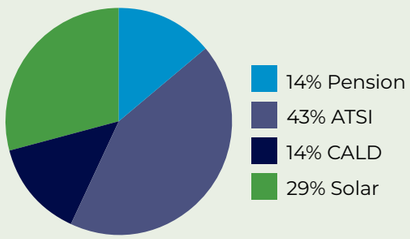
Age



Income



Segment



PowerWater

Power and Water Corporation

Level 2, Mitchell Centre
55 Mitchell Street, Darwin
Phone 1800 245 092

powerwater.com.au

@PowerWaterCorp

Appendix D

People's Panel summary report 2022

PowerWater

PowerWater

People's Panel Report

Summary Report 2022

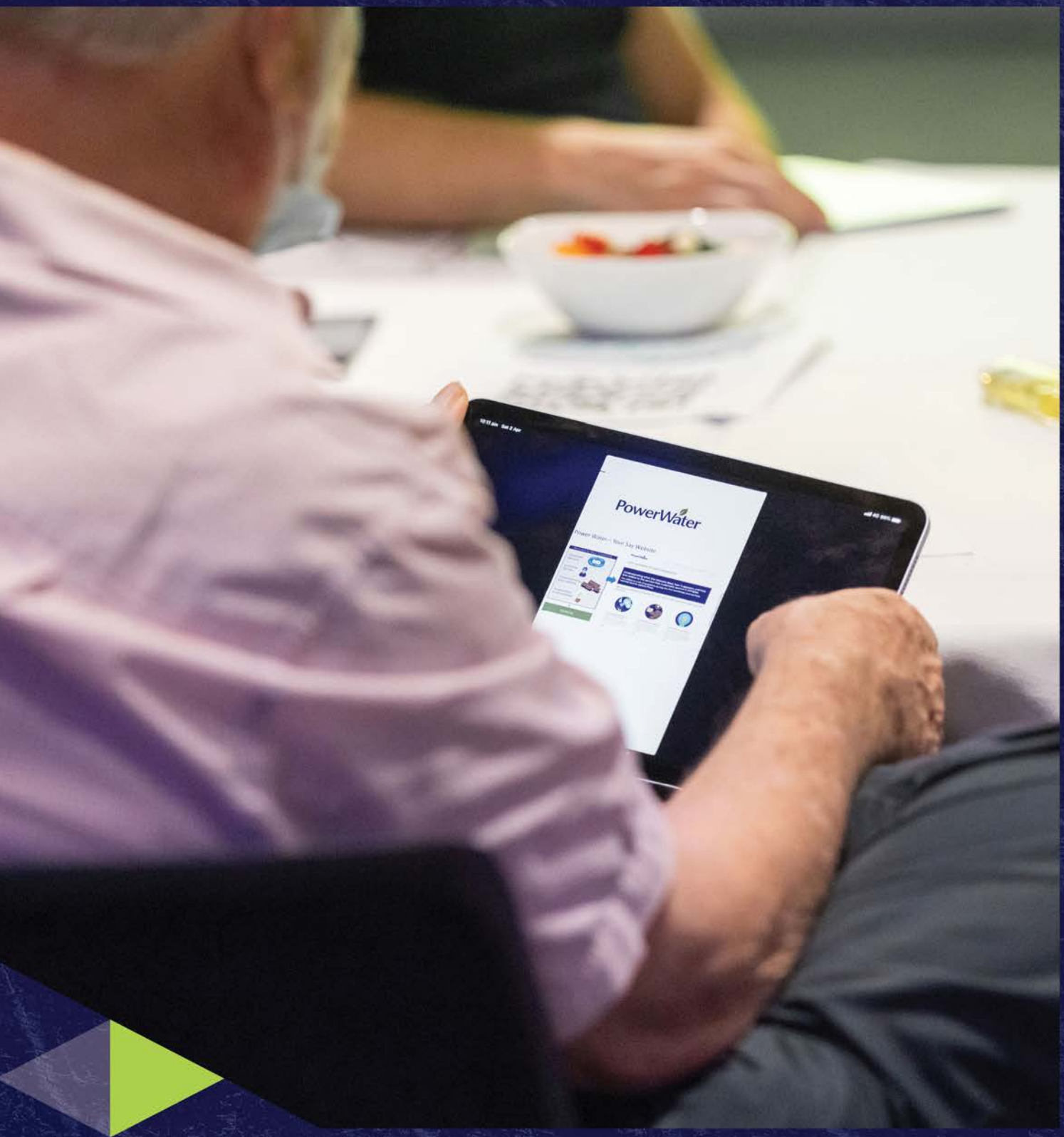
@powerwatercorp

PowerWater

Contents

Summary

Power and Water's People's Panels are a group of everyday Territorians who have been assisting us in making decisions that will affect all Territorians on our spending plans for the next five years and beyond.



Background

At Power and Water, we have developed an extensive engagement program to support our future plans for the electricity network. This has started with an understanding of what matters to our customers and understanding their values, vision and priorities.

Power and Water is the essential service provider in the Northern Territory, providing electricity, gas, water and sewerage services to households and businesses.

Our purpose is to make a difference to the lives of Territorians. For the 185,000 people connected to our regulated electricity networks in Darwin, Katherine, Alice Springs and Tennant Creek, we do this by ensuring electricity is transported safely, reliably and affordably through our comprehensive network of poles and wires.

Every five years, we submit our plans for the electricity networks, and related services we provide customers, to the Australian Energy Regulator.
Our plans for expenditure and pricing for the 2024-2029 period need to be submitted in January 2023. The period leading up to the submission of our plans is an opportune time to engage with customers on our strategic direction to the end of the decade.

A centrepiece of our engagement is establishing a representative panel of residential customers in both Darwin and Alice Springs – what we have termed our People's Panels.

This document summarises the outcomes of the two People's Panels in March and April 2022.
A summary of the outcomes of our first round of People's Panels held in November 2021 can be found on our website.

People's Panels provide an opportunity for deliberative engagement from a broad cross section of our community. Participants in the People's Panels were recruited as a broad representation of residential customers in those areas.

Customers are given resources and freedom to provide feedback on their values, vision and priorities. We aim to take these priorities and demonstrate a clear line of sight between customer preferences and our plans to the regulator.

The People's Panels were run over two days. Participants validated the values and priorities from the feedback in November, provided a view on Power and Water's 2030 Vision and considered how Power and Water should respond to a range of challenges, including the direction, speed, and guardrails for options in response.

These outcomes were achieved through a process of co-design. Participants were given the opportunity to test the solutions presented, raise new ideas and opportunities, and develop a consensus position. Minority and dissenting views were captured. The process of co-design sought to meet the principles of inclusive, participative, respectful and outcome focused.

An important part of the March and April People's Panels was to share our responses to outcomes, learnings and recommendations from the People's Panels held in November 2021. Panellists were provided with the first round People's Panel report. Over the two days, we talked through what we heard in November, attempted to respond to the many questions that were raised, explained how we were responding to customer "pain points" and co-designed solutions for the strategic issues they raised.

The Panel was facilitated and reported on by an external facilitator, who worked with Power and Water to ensure the process was engaging, forward-thinking and inclusive.

Key messages

Key messages from the March and April People's Panels included:

Affordability

Panel members recognise that some of their recommendations would increase overall costs and prices but want Power and Water to work out how to mitigate this impact on vulnerable members of the community.

Replacement

Power and Water should not keep replacement as low as possible and instead should look to smooth expenditure and price impacts over time and integrate new technology where it makes sense to do so.

Customer service and engagement

Power and Water should do more to support face-to-face engagement and handling of complaints, and expenditure plans should reflect this.

Innovation and cost efficiency

Power and Water should be more cost efficient and facilitate and support the transition to renewables. It should adopt new technologies proven to work elsewhere and pilot new technologies.

Community batteries

Power and Water should not leave investment in community batteries for the market to solve and should build capability and understanding of the technology through feasibility assessments and pilots.

Pricing

Status quo pricing arrangements should not be retained and Power and Water should develop prices that make it easier for retailers (and the Government's Pricing Order) to pass on improved price signals to customers (Darwin only view).

Next steps

Power and Water will reconvene the People's Panels in August 2022 to further develop the outcomes from the March and April Panels and provide an update on expenditure and revenue forecasts and related pricing impacts.

1 Purpose

We will work with you to develop solutions and recommendations to ensure we reflect your views, values, and concerns in the options, solutions and approaches we develop and are able to demonstrate how your feedback has influenced our decisions.

Power and Water's commitment to the People's Panels

This report summarises outcomes from the People's Panels sessions held in March and April 2022. These sessions form part of Power and Water's community engagement on its 2024-2029 Regulatory Proposal. Future sessions are planned for August 2022.

Each Panel was held over two full days with the Alice Springs People's Panel held at the Alice Springs Convention Centre on 26 and 27 March and the Darwin People's Panel held at the Darwin Convention Centre on 2 and 3 April.

There were 21 participants in Darwin and 17 in Alice Springs. All participants had attended the November People's Panels. A detailed breakdown of the demographics of participants is included in the Appendix.

The People's Panel is intended to be representative of our residential customer base. All participants were randomly recruited by Taverner Research to broadly reflect the Northern Territory population. The Panels include representation from youth, Aboriginal and Torres Strait Islander peoples, Culturally and Linguistically Diverse (CALD) residents, different voices, pensioners and solar customers.

The first session (day one) built upon the foundations of the November Panels and focused on further developing the tools needed to critically assess and challenge expenditure plans and options.

Sessions involved a combination of information presentation, question and answer sessions, participant choice on the issues to be responded to in-depth, and a process of co-design to test the solutions presented, raise new ideas and opportunities, and develop a consensus position.

Across the two Panels, Power and Water staff from various areas of the business, executives and subject matter experts were in attendance in person and online to facilitate discussion and provide their understanding of the changing electricity market. In response to feedback from the November Panels, a customer service representative presented the options for customer service improvements and answered questions about Power and Water's response to customer queries and complaints. External subject matter experts on future network opportunities and challenges were also available to provide views and answer questions.

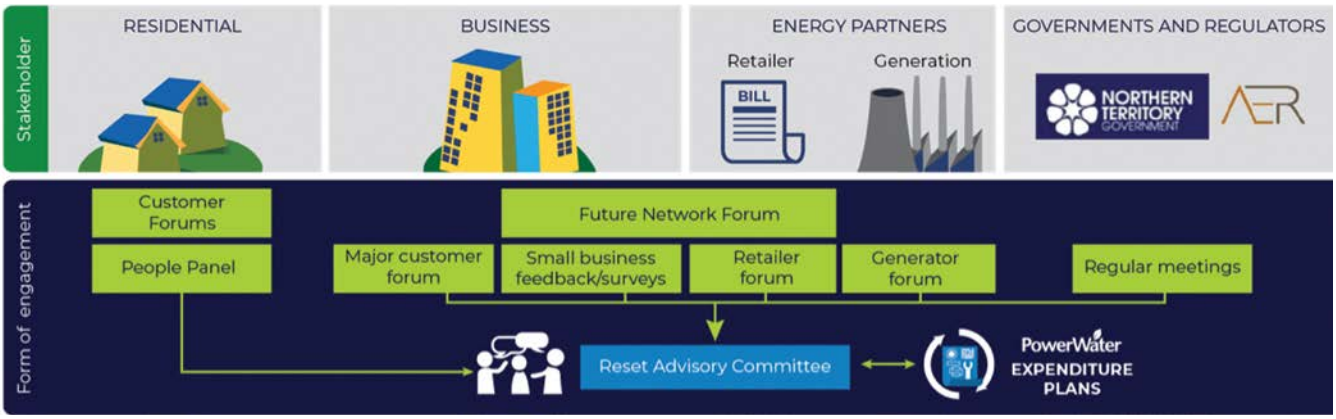
The first session centred on Power and Water customers and:

- validating the values important to customers and their trade-offs
- testing customer views on Power and Water's 2030 Vision
- communicating our plans, factors, expenditure drivers and the levers available to reduce costs
- repeating back what we heard from customers at the November Panels and how we have progressed.

The second session (afternoon of day one and day two) focused on the big challenges facing the network and how Power and Water should:

- address customer service concerns.
- plan for the replacement of older assets in the network
- address the opportunities and challenges of increased renewables and new technologies entering the network.
- design options for tariffs to reduce future costs.

The People's Panels represent one component of our engagement process with stakeholders. In preparation for our Regulatory Proposal to the Australian Energy Regulator, Power and Water will engage with several key groups through meetings and forums to inform our plans. This process is illustrated below, including the stakeholder groups and form of engagement.



Our Reset Advisory Committee is also an important part of our engagement process. The goal of the Committee is to discuss feedback received in detail with representatives from each of the stakeholder groups – including representatives from our Darwin and Alice Springs People's Panel. The Reset Advisory Committee also analyses and advises on the relationship between customer preferences for options and expenditure plans and associated revenue and pricing outcomes. A Draft Expenditure Plan based on these discussions will be submitted on 31 January 2023.

A roadmap of our engagement process demonstrates the various stakeholder activities completed by Power and Water. This process is illustrated below.

The first steps in this roadmap were:

- Customer Focus Groups held between August 2021 and October 2021.
- Retailers, Future Network Forums and the People's Panel in November 2021.

This report covers the ideas and feedback received from the November People's Panels, the responses and options we provided in March and April 2022, and the conclusions reached.

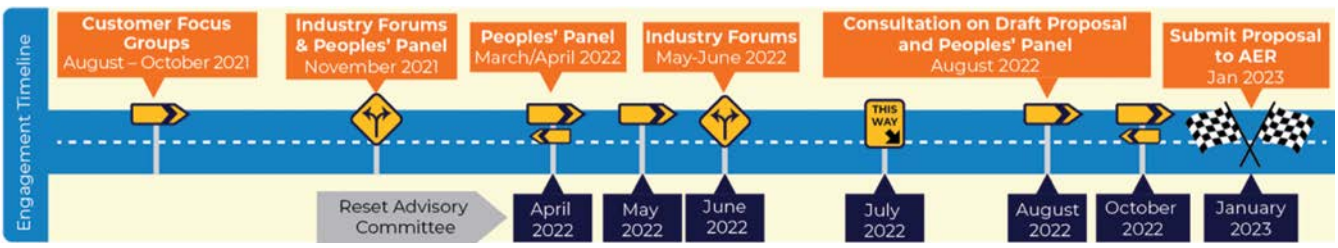
Power and Water will hold other engagement forums for customers not represented in the Panels.

This includes:

- a Retailer Forum.
- a Large Users Forum.
- a Generators Forum; and
- the Future Network Forums.

In early August 2022, Power and Water is aiming to release a draft initial regulatory proposal for consultation. The draft initial regulatory proposal will be out for public consultation for a six-week period.

In mid and late August 2022, Power and Water will hold the third and final People's Panel to take the draft initial draft regulatory proposal to ensure we have listened and heard what our stakeholders have said and take away any final feedback for the draft initial regulatory proposal that will be submitted on 31 January 2023.



2 Method

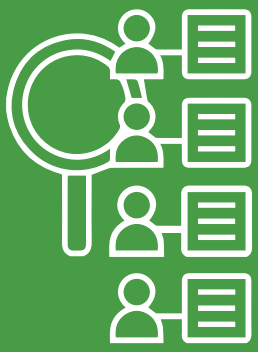
It is important Power and Water is guided by the views and values of the community, alongside that of subject matter experts, if it is to develop a robust Regulatory Proposal that best serves the people of the Northern Territory.

People's Panels

The People's Panels allow for customers to consider current and future electricity issues. They are an essential part of our collaboration with the community to shape expenditure plans and revenue and pricing outcomes that we will include in our Regulatory Proposal.

Participants from the People's Panels were randomly selected residential customers to simulate a 'mini-public' representative of a larger customer cohort.

In November 2021, participants were provided information on critical thinking, group consensus decision making, interrogations and generation of new information and competing views. With these skills, participants were asked at the March and April 2022 Panels to explore a range of challenges and options in response and reach consensus on how our proposed plans should be developed and refined.



The People's Panels have been designed on the principles that:

- Participants are broadly representative of the wider customer base
- Participants are tasked with answering one big question: 'How can Power and Water plan for a future that best serves customer needs?'
- Participants have access to in-depth information and diverse perspectives
- Participants are given time to discuss issues, ideas and weigh up options.

Representation

The People's Panels give a broad representation of Territorians and provide Power and Water and Panel members the opportunity to explore in-depth Power and Water's performance, current and future challenges and options in response.

People's Panels are often used in community engagement processes where choices must be made and there is no clear 'right' technical answer, but rather decisions are about values and priorities.

Most community members have little understanding of Power and Water's potential courses of action and the long-term consequences. The Australian Energy Regulator's assessment of Power and Water's expenditure and pricing plans, informed by our engagement with customers, will have a significant impact on how Territorians consume and use electricity into the future. The outcomes of the considered and well-developed process, which reflects the views of a broad representation of the community in the Northern Territory, should be included in our expenditure and pricing plans and the regulator's deliberations on those plans.

Prior engagement

Customer engagement on our Regulatory Proposal began in August 2021 with four focus groups across Darwin and Alice Springs. This was followed by People's Panels conducted in November 2021.

The focus groups tested how quickly and easily we could establish a baseline of customer knowledge and understanding, priorities and preferences for engagement activity. The November Panels focused on the customer lifecycle and our activities within this lifecycle.

This is important in the Northern Territory where the level of experienced customer advocacy in energy is limited. A large part of our early sessions was therefore on explaining different parts of the electricity supply chain and addressing preconceived ideas around Power and Water's role in providing services to customers.

Our early focus groups helped us refine our approach to explaining our services to customers.

At the conclusion of the March and April Panels, several participants expressed that they felt more informed, engaged, and better understood the role of Power and Water in the network because of the information provided over the course of the engagement process.

Recruitment

Recruitment and screening of participants was conducted to ensure representation across several demographics including location (Alice Springs or Darwin or within a 20 kilometre radius of each location), age, gender and income. Participants were asked if they identify as Aboriginal or Torres Strait islander, commonly speak a language other than English at home, have solar panels and/or a solar battery, and currently receive some form of government pension or disability benefit.

There were 21 participants in Darwin and 17 in Alice Springs. All participants had attended the November People's Panels.

Males represent most participants in the Darwin People's Panel (12 out of 21), compared to Alice Springs where most participants are female (14 out of 17).

Several younger participants from the November Panel chose not to participate in the March and April process, with only three participants in the 18-39 age bracket in Darwin and four in Alice Springs.

The Darwin Panel comprises more solar owners than the Alice Springs Panel, and in Alice Springs there are more participants in the lower-income bracket.

The spread of participants is considered to support consideration of a broad range of issues at both sessions. A detailed breakdown of the demographics of the participants is included in Appendix A.

Participants were notified of a COVID-19 case identified in the days following the Alice Springs Panel. As a result, there were changes to the structure of the day and format of the presentation at the Darwin Panel. This included additional precautions such as increased use of face masks by all Power and Water staff, removing the requirement for table rotations and practical guidance on maintaining social distancing of 1.5 metres.

In line with industry practice, participants were given a gift card in recognition of their time.

3 Structure

Electricity is complex and networks can be looked at as a collection of assets. It's not the customers' job to decide if how those assets are being used is efficient. That's what the regulator does.... the role of customers in engagement is actually to talk about their lived experience of the network, what's working for them, what isn't working for them...So the purpose of the engagement is not for consumers to become proxy regulators, it's actually for them to talk about the things that matter to them.

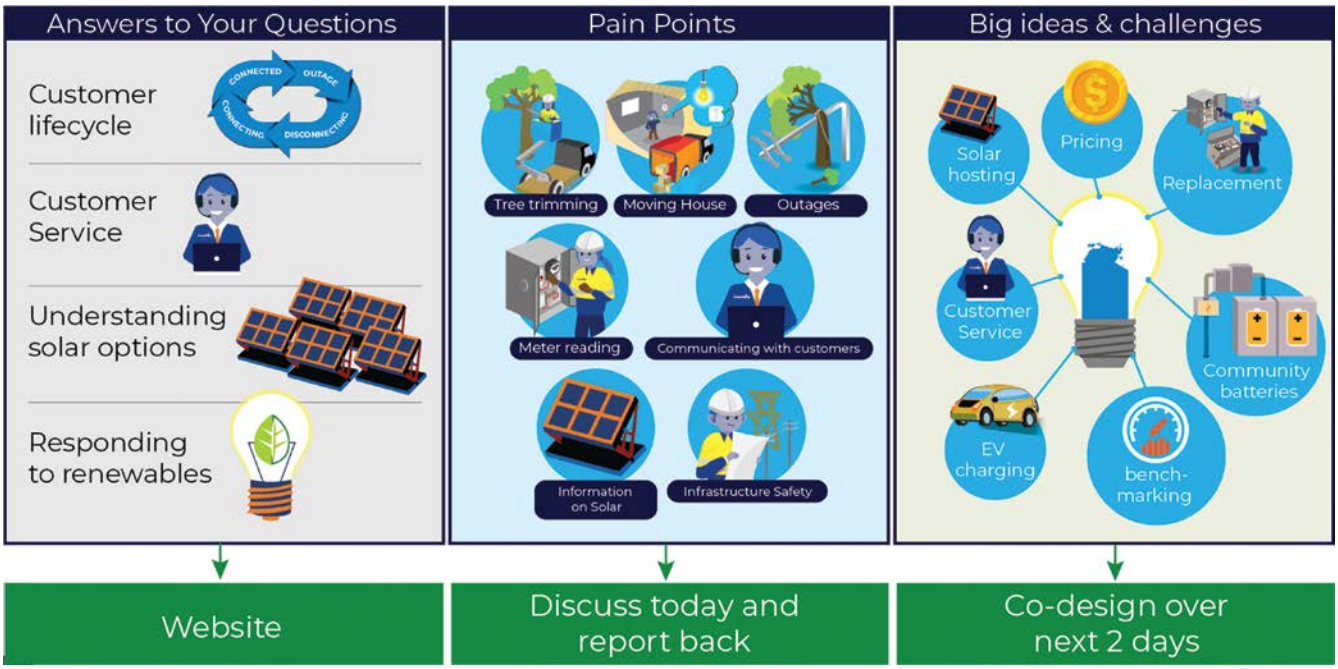
Lynne Gallagher, Energy Consumers Australia

How we sought to address the Panels' feedback

We captured the insights and feedback from the November People's Panels and grouped these into three response themes:

- Answers to your questions – The November People's Panels raised many good questions about how the energy market works, Power and Water's role, and issues regarding performance and service delivery. In response, Power and Water produced the 'Your Say' website with a range of reference material and more than 50 videos from industry experts which provide additional information and directly responds to many of the participant queries.
- Pain points – The November People's Panels focused on the customer experience and how Power and Water should respond to the challenges customers face on their customer experience journey. A series of customer 'pain points' were identified. For each pain point, we developed a response or a proposal for improvement. We presented many of these to the participants at the March and April Panels.
- Big ideas and challenges – Several significant challenges and opportunities were identified at the November People's Panels. These represent the big ideas and issues that will materially influence how Power and Water and customers collectively answer the question, 'How can Power and Water plan for a future that best serves customer needs?'. Big ideas were the subject of in-depth discussion and a process of co-design at the March and April People's Panels, with the objective of achieving a consensus position on how Power and Water should respond.

These response themes also provided the framing for how information was presented, the topics to be covered over the two days, the structure of the sessions and the method of engagement.



Day One – Setting the scene

Day one focused on demonstrating how we have responded to and addressed feedback from the November People's Panels. The first of the big ideas and challenges for co-design were also presented.

Participants were provided with a recap of the outcomes from November, including the 'Customer Lifecycle' and 'Power and Water's Activities'. This was followed by an overview of the engagement process.

Participants were presented with our approach to responding to feedback from the November Panels. A process of individual and group voting was applied throughout the sessions to guide discussion and capture priorities and views.

A key outcome from the November Panels was the identification of a suite of customer values. Understanding customer values is essential when considering the inevitable trade-offs considered in decision making.

Participants were provided with cards representing the top ten values identified from November and asked to consider the tensions and trade-offs existing between these values. This consideration of value and value trade-offs was a recurring theme through the process of decision-making over the following sessions.

Feedback from the November Panels included a desire for increased transparency of Power and Water's 2030 Vision and its intended direction in adopting or facilitating existing and new technologies. Using the customer values, participants discussed and shaped Power and Water's 2030 Vision statement, achieving a consensus view at each Panel.

Participants also voted on which of the customer experience pain points identified from November they would like to discuss in detail. A series of subject matter experts then discussed how Power and Water is proposing to respond to these issues, with participants voting on whether they believed enough has been done to address the pain point. Throughout the voting process, participants were encouraged to voice dissenting views and suggestions on how Power and Water can better resolve the issue.

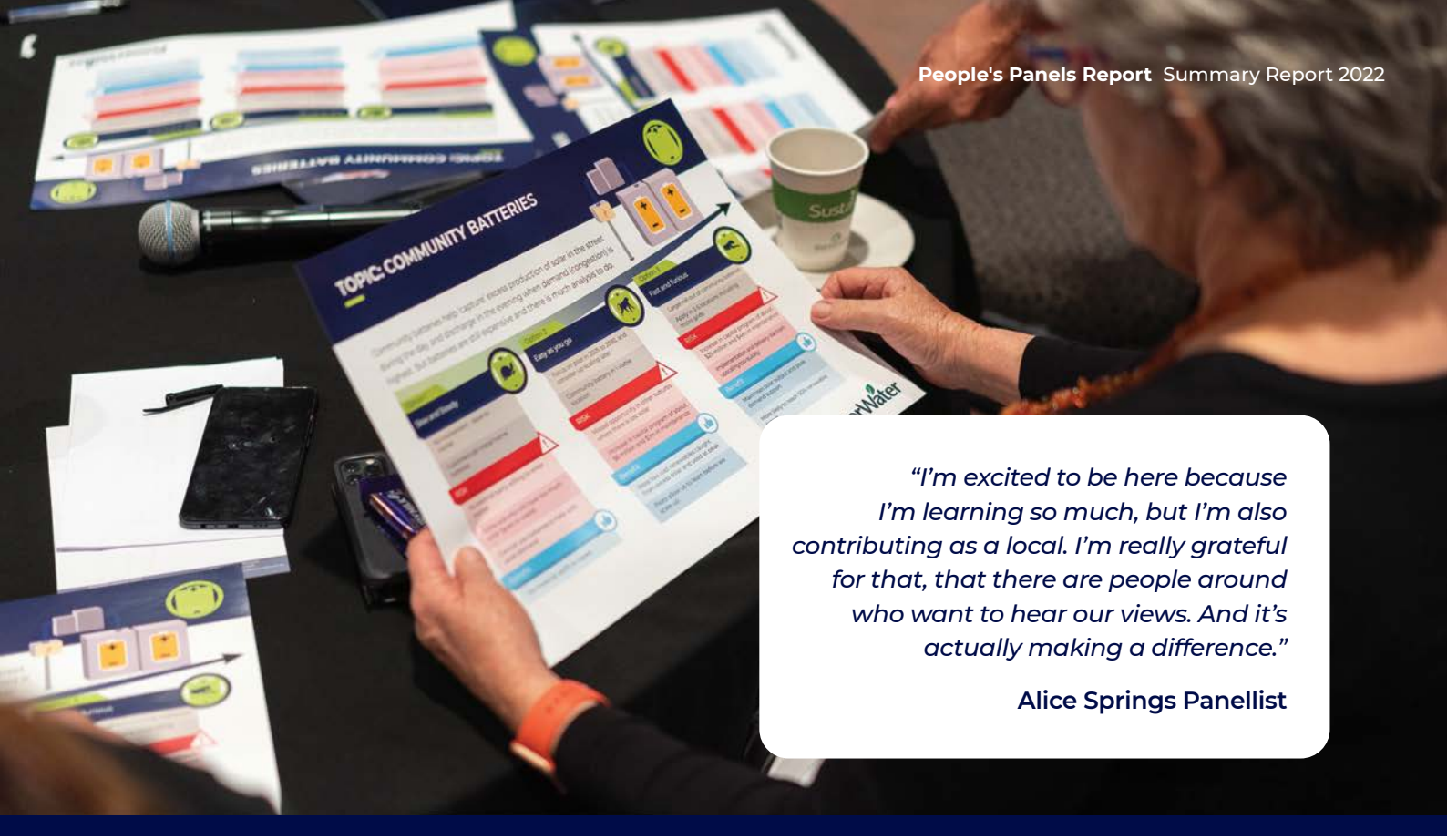
In the afternoon, Power and Water presented the first big ideas and challenges for co-design – 'Customer service' in Alice Springs, and 'Customer service' and 'Replacement of ageing assets' (refer below) in Darwin.

Customer service – face to face communication

Ensuring customers are getting the support they need for account queries noting the November People's Panels (particularly in Alice Springs) were disappointed shopfronts had closed.

Customer service – customer complaints

Providing customers with options for complaint management, including escalation to a single point of contact.



"I'm excited to be here because I'm learning so much, but I'm also contributing as a local. I'm really grateful for that, that there are people around who want to hear our views. And it's actually making a difference."

Alice Springs Panellist

Day Two – Giving us direction

Day two is defined by the big issues and challenges for Power and Water's network.

The session commenced with a role-play to allow participants to consider the changing energy landscape.

Banners showing the 'Energy Landscape in 2010' characterised by few renewables and a one-way energy system and a '2030 Vision' representing a high penetration of renewables and the challenges of two-way flows of energy were the focus of the role play. Participants were encouraged to express how they felt about these scenarios and what the banners were seeking to represent to the audience.

Participants were then asked to consider elements of the 2030 Vision in detail through sessions focusing on:

- The replacement of ageing assets: The volume of replacement work Power and Water must undertake over time as assets age and the benefits and costs associated with progressing replacement at different speeds. (This session was held on Day one in Darwin).
- Unlocking solar: Understanding the challenges of solar creating congestion for the network and generating energy at periods of low demand.
- Community batteries: Understanding the relationship between solar and community batteries, including opportunities to use community batteries to manage excess solar in the middle of the day and discharge when the sun goes down.
- Electric Vehicle (EV) charging: Expanding on the discussions at the November Panels regarding Power and Water's role in the roll out of EV charging and understanding the integration of EVs and solar.
- Pricing options: Exploring the opportunity of using tariffs to shift demand to periods of high generation of energy and low demand to reduce network stress. (This session was only held in Darwin).

These issues were explored through a process of co-design, providing participants with the opportunity to test the solutions presented, raise new ideas and opportunities, and work towards the development of a consensus position. Minority and dissenting views were also captured.

Materials used and activities

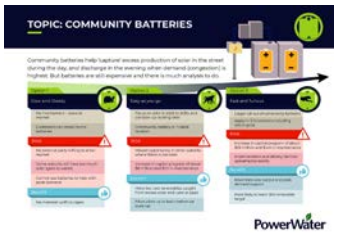
Feedback from the November Panels informed design of the March and April Panels. This included:

- increased participation of subject matter experts
- subtitles on videos
- more readable slides with larger font
- tailoring information and discussion where appropriate to Darwin and Alice Springs
- less movements between tables for participants
- improved sound quality and better use of microphones.

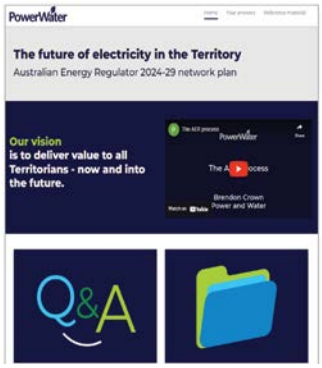
We heard loud and clear that accessibility of information is important. We sought to increase accessibility and engagement through a range of tools to ensure the sessions were informative, thought-provoking and produced meaningful outputs.

These tools were used to encourage individual investigation and idea development, table discussions and Panel consensus, and movement around the room on a broad range of topics. The DOPE (Dove, Owl, Peacock, Eagle) personality types used in November were again used to remind participants of how different people prefer to communicate and handle conflict.

Participants were each provided with an iPad to access information on the issues being discussed. The live polling tool Mentimeter was also actively used throughout the two days to capture both individual and table responses, allowing results to be shared in real-time and for discussion to be tailored to feedback.



Free standing banners were used to check-in on concepts and information placemats outlining the benefits, risks and solutions for the topics discussed were provided to each table for easy reference and to support readability.



Participants were directed to the 'Your Say' website which includes a range of reference material and more than 50 videos from industry subject matter experts, internal and external to Power and Water. A number of these videos were played across the two days to provide deeper insights and independent perspectives on issues discussed.

Sessions involved scenario and role play based exercises, including on the future energy landscape and options for the replacement of ageing assets to encourage participation and the exchange of ideas on the concepts presented.

Each table comprised three to four participants and a Power and Water facilitator who guided the conversations and ensured all participants had the opportunity to contribute and recorded participant input. In Alice Springs, there was also movement of participants between tables once each day to encourage a diversity of views.

To accommodate the different engagement styles of participants and ensure a broad range of input was captured, the Mentimeter live polling tool was used which allowed participants to express their individual views. Mentimeter was also used to record feedback from table discussions and to support the development of a consensus position on issues, where practical, including the identification of dissenting views.

Following feedback from the November Panels, more regular breaks were provided, intermittent clarification checks on activities occurred, and interaction with subject matter experts was included to ensure participants progressed at a similar pace and their questions were considered. One of the panellists expressed appreciation at "being able to talk to genuine experts on the field" and it was "information I can trust". Further feedback on the process was also sought at the conclusion of each day.

4 Day One – Setting the scene

Day one focused on demonstrating how Power and Water responded to and addressed feedback from the November People's Panels, including identified "pain points" and how the suite of core values developed by participants and their trade-offs would be used to guide decisions over the two days. Power and Water also presented the first big ideas and challenges for co-design.

Feedback from November People's Panels

The objectives of day one were introduced in Alice Springs by David Tovey, the Acting Executive General Manager for Customer, Strategy and Regulation. In Darwin, Rosemarie Dentesano, the Acting Executive General Manager for People, Culture and Safety, introduced the Panel session.

The facilitator commenced discussion by reflecting on the feedback provided from the November People's Panels and captured what participants wanted to get out of the sessions and understand better.

Participants were also asked how well they remembered the November Panel outcomes and the level of preparation they completed prior to the March and April Panels. It is clear there was some preparation done and participants were motivated to work on developing options to the issues identified in November.

The Reset Advisory Committee and its function was introduced to participants to emphasise the importance of the customer consultation process and the outputs of their feedback into Power and Water's Regulatory Proposal.

What's one thing you want to get out of this weekend?

- What is Power and Water doing for the future?
- How is Power and Water future proofing the network against climate change to leave a legacy for future generations?
- Learn about the power industry.
- Understand solar rebates when applying for solar and the connection between installers, Power and Water and customers.
- What is the relationship between Jacana, Power and Water and customers?

What would you like to understand better?

- Electric Vehicle infrastructure and charging station ownership.
- How will our input transfer into an operational plan?
- The replacement cycle and future proof solutions.
- The health plan when power goes out.
- Outcomes of feedback to the pathway forward.
- The replacement cycle and future proof solutions.

What do you remember from last session?

- Solar and solar farms.
- Power and Water is not Jacana Energy.

Customer values

The Panels reflected on the activities and discussions from the November Panels on customers, the lifecycle and the identification of customer values. Understanding customer values is helpful when considering the trade-offs inherent in decision making.

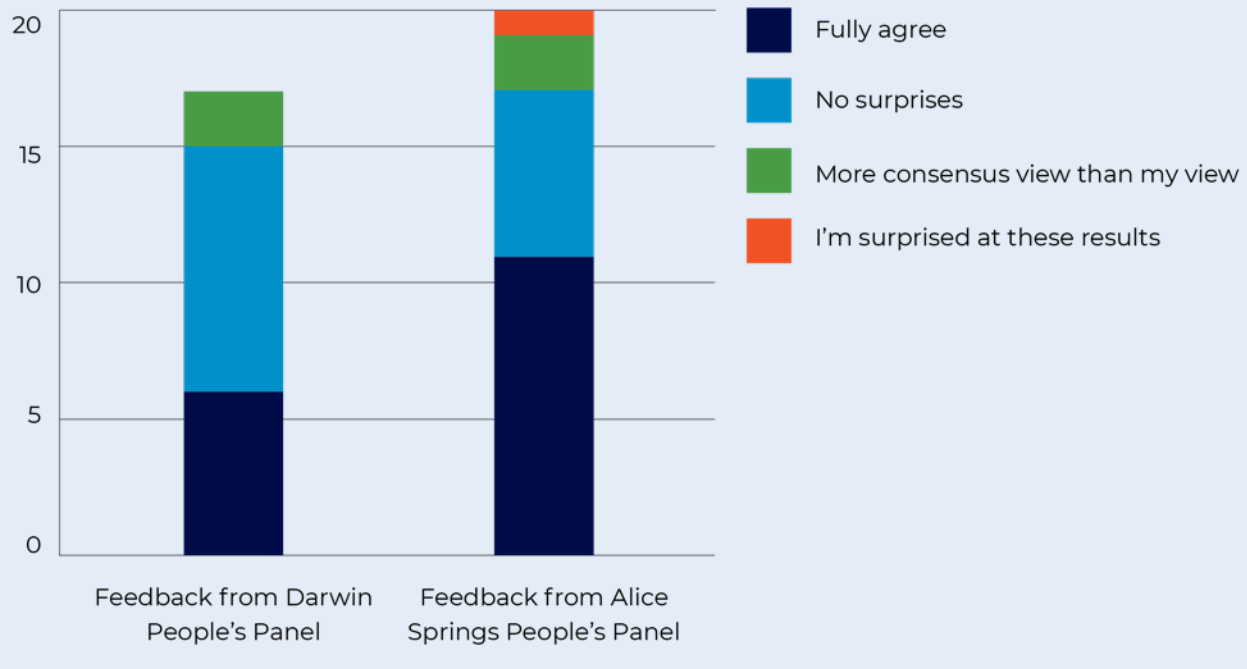
A key outcome from the November Panels was the identification of a suite of customer values.

Participants were provided with the top ten values identified at the November People's Panels and asked to provide their reaction to this list.

Sustainability **Affordability** **Innovation** **Resilience** **Reliability**

Cost efficiency **Safety** **Equity/Fairness** **Security** **Choice**

Most participants either stated they 'Fully agree' or there were 'No surprises' with this list, with a small number of participants believing it represents more of a consensus view than their own view or is not the list they expected.

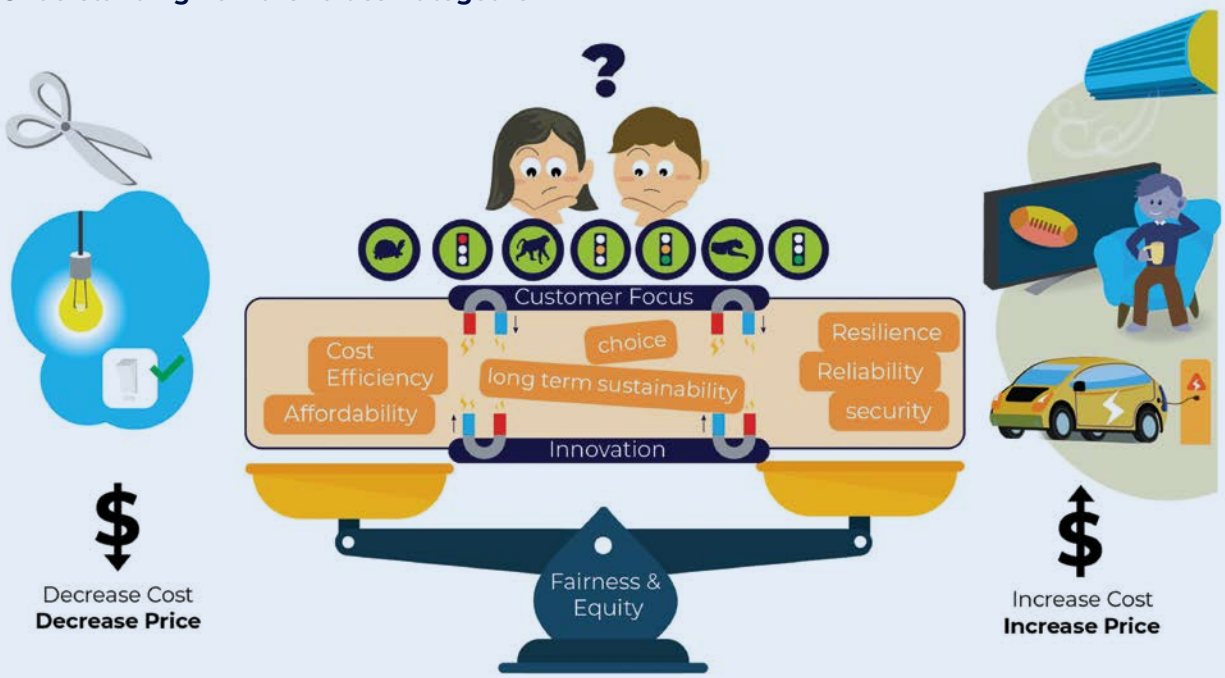


A table activity involving hypothetical scenarios was used to allow participants to engage on the trade-offs that may need to occur between values when pursuing different options and making decisions. One example was balancing the values of reliability and affordability. Participants were shown the graphic below to assist them with understanding how values are balanced between using electricity and cutting costs.

The table activity identified that the values of equity, fairness and affordability remain key concerns, including how these should be balanced through the process of solution design. Other values of importance to participants were choice, sustainability and reliability.

Consideration of these values and their value trade-offs were an important element of the process of decision-making over the following sessions.

Understanding how the values fit together



The People's Panel 2030 vision for Power and Water

The People's Panel 2030 Vision for Power and Water is intended to reflect the voice of the customer when answering the key question of, 'How can Power and Water plan for a future that best serves customer needs?'.

The following draft 2030 Vision statement was presented and tested with the People's Panel through a process of collaborative design.

[Draft] Power and Water's 2030 Vision is to:

- Be more active and responsive
- Enable, facilitate and support the shift to renewables
- Be more innovative and cost efficient
- Support more customer choice.

Participants were asked to provide additional elements or considerations to improve on the proposed Vision statement and its ability to capture the themes and needs of Power and Water's customers into the future. Feedback for each element of the Vision statement includes:

These suggestions have been merged to produce a People's Panel version of the 2030 Vision, encompassing the consensus view of each Panel:

[People's Panel version] People's Panel 2030 vision for Power and Water is to:

- Be effective, proactive and responsive through its communications and across platforms
- Enable, facilitate and actively support the shift to renewables
- Be innovative and cost efficient
- Support fair and equitable customer choice
- Educate Territorians to make wiser power choices now and into the future.

We will refer the People's Panel version of the 2030 Vision to the Reset Advisory Committee to inform its understanding and consideration of customer preferences for investment options and programs.

Be more active and responsive

- Provide a mechanism or platform to be more active and responsive, e.g. via an IT process.
- Communicate effectively, proactively and responsively.

Enable, facilitate and support the shift to renewables

- Actively support the shift to renewables and distinguish between supporting and promoting renewable energy connection.
- Lead the shift to renewables, rather than enable.

Support more customer choice

- Clarity sought on the breadth of this statement – this could cover choice of retailer, technology, solar provider.
- Power and Water should educate the broader public on current and future choices .

Our future plans

Posters of the regulatory process were used to demonstrate how engagement will inform the next five-year expenditure and pricing plans.

The role of the Australian Energy Regulator is to set the total revenue we can collect. Power and Water's Regulatory Proposal for the 2024 – 2029 period sets out the planned network expenditure to be recovered from customers through network tariffs.

There are two types of costs – operating and capital expenditure. The components of Power and Water's costs are:

Operating costs

- Maintenance of assets
- Vegetation management

Capital costs

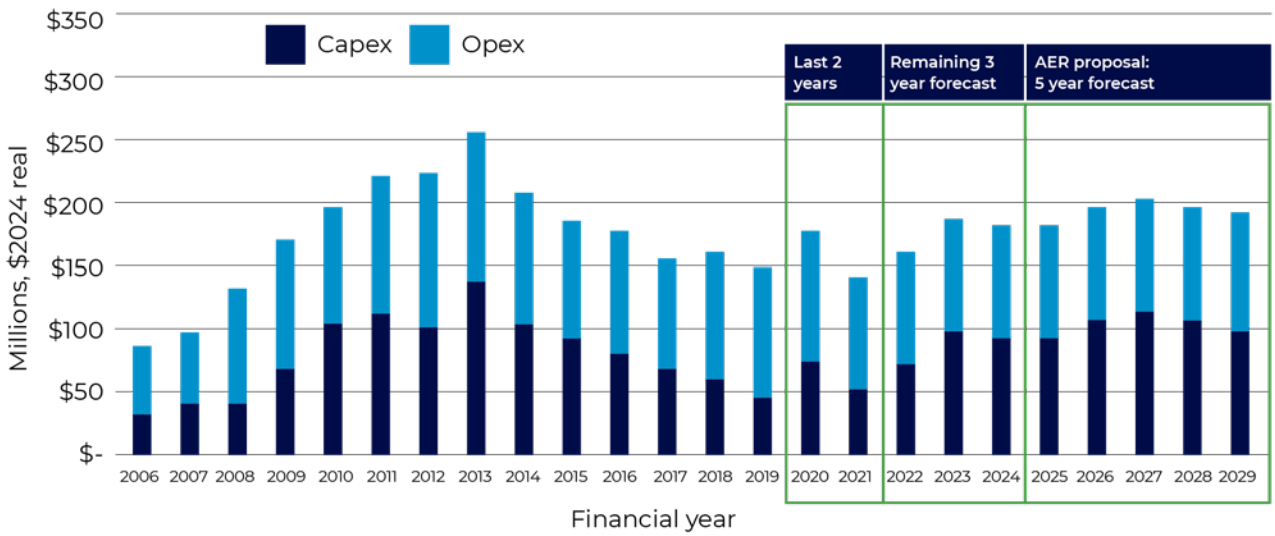
- Building and replacement of assets
- Connecting to the grid

Mix of Capital and Operating costs

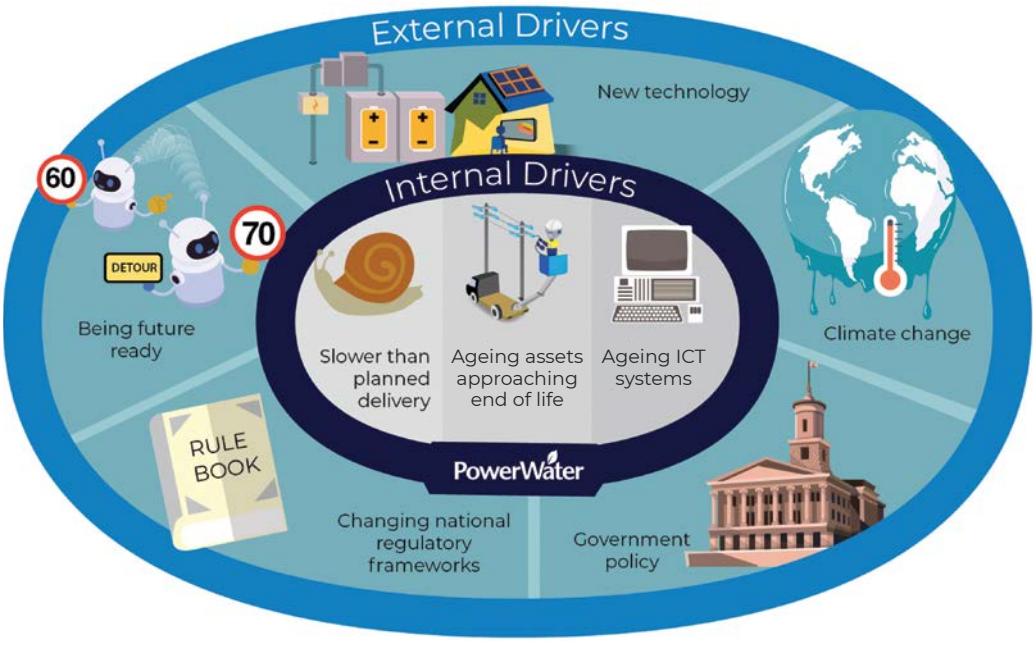
- Network planning
- Customer service
- Corporate and network support
- Emergency response

Operating costs are recovered through electricity bills by setting prices which assumes the cost of operating expenditure (Opex) is recovered each year based on expected costs. Comparatively, the total cost of capital expenditure (Capex) cannot be recovered yearly as it will result in high prices for higher value assets and the life of these assets can last up to 80 years. This means the values of these assets are recovered over the period of use.

Early analysis of expenditure forecasts to 2030 demonstrates Power and Water's network expenditure is expected to increase, which will require revenue to increase comparatively.



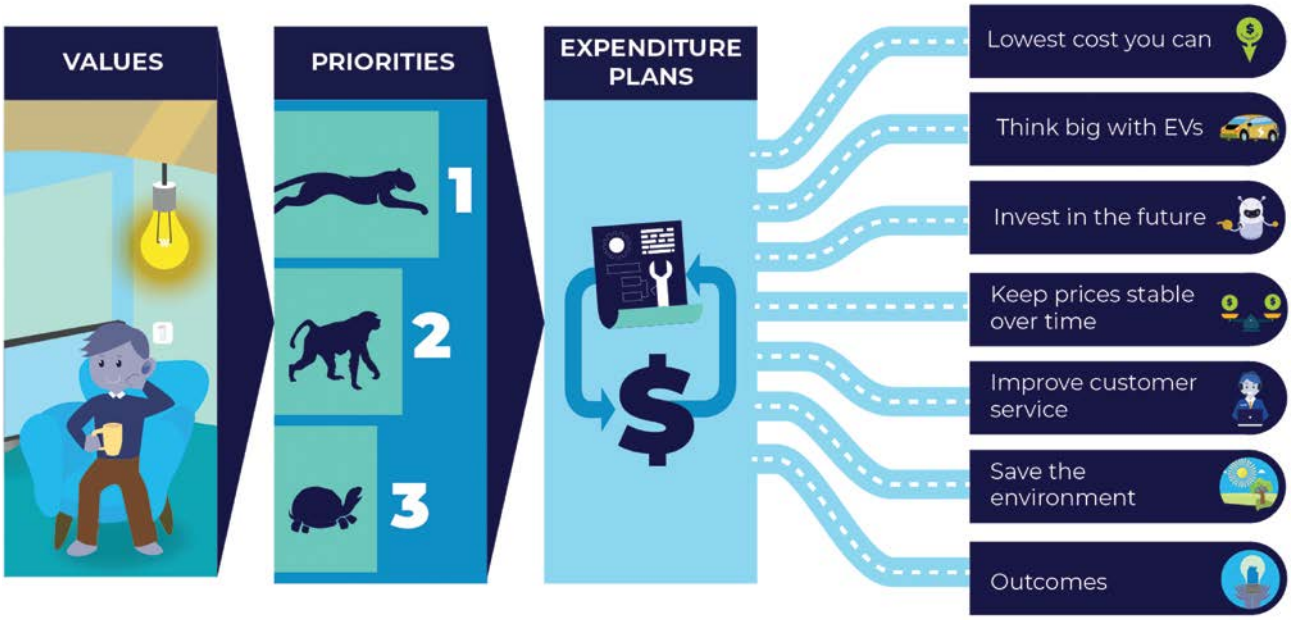
Some of the macro and internal drivers influencing the higher expenditure include:



Participants were provided with the levers Power and Water may consider to reduce costs and therefore lower revenue requirements from customers.

These levers link to how the feedback from these Panels is expected to influence the future expenditure plans for Power and Water, including:

- The customer values underpinning Power and Water's future growth
- The levels of priority for pursuing future network options considered by participants.



What we heard and how we progressed

The November People's Panels focused on how we should respond to the challenges customers face on their customer experience journey. For each of the customer 'pain points' identified, Power and Water developed a response or proposed improvement.

Participants voted on which of the customer experience pain points identified from November they would like to discuss in detail.

In Alice Springs, the pain points addressed were Solar and Installation and Undergrounding. In Darwin, the pain points were Connections and Disconnections and Undergrounding.

This is the results of the voting from the Darwin and Alice Springs Panel:

Solar and installation

In the Alice Springs session, we reported back on two questions raised in the November Panel:

- Where can people go for information on solar and installations?
- How might Power and Water support better dissemination of quality information about solar products and options?

Participants were advised that our website provides comprehensive information and links to assist customers in understanding solar. This includes directing customers to where to find further information, such as from the Clean Energy Council and Renew. We explained that while Power and Water supports solar connections to the network, there are reasons why it makes sense for customers to conduct their own research due to varying circumstances in instalment needs and location options.

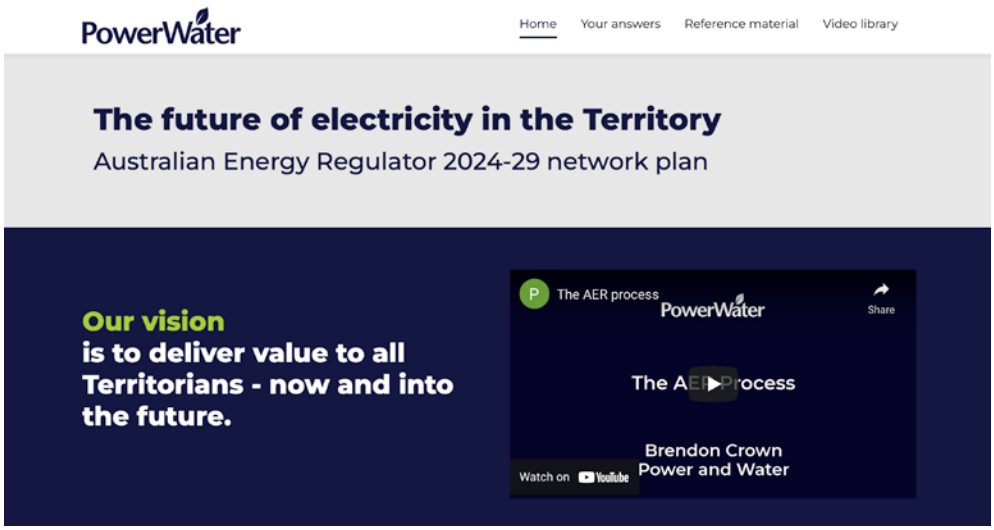
There were two videos played during the session from the Clean Energy Council and Renew answering the question: Where can people go for information on solar and installations?

Darren Gladman discussed the Clean Energy Council's role in providing customers information about solar and informed participants that the Clean Energy Council has a program which accredits installers to provide prospective solar customers with a list of accredited installers to choose from.

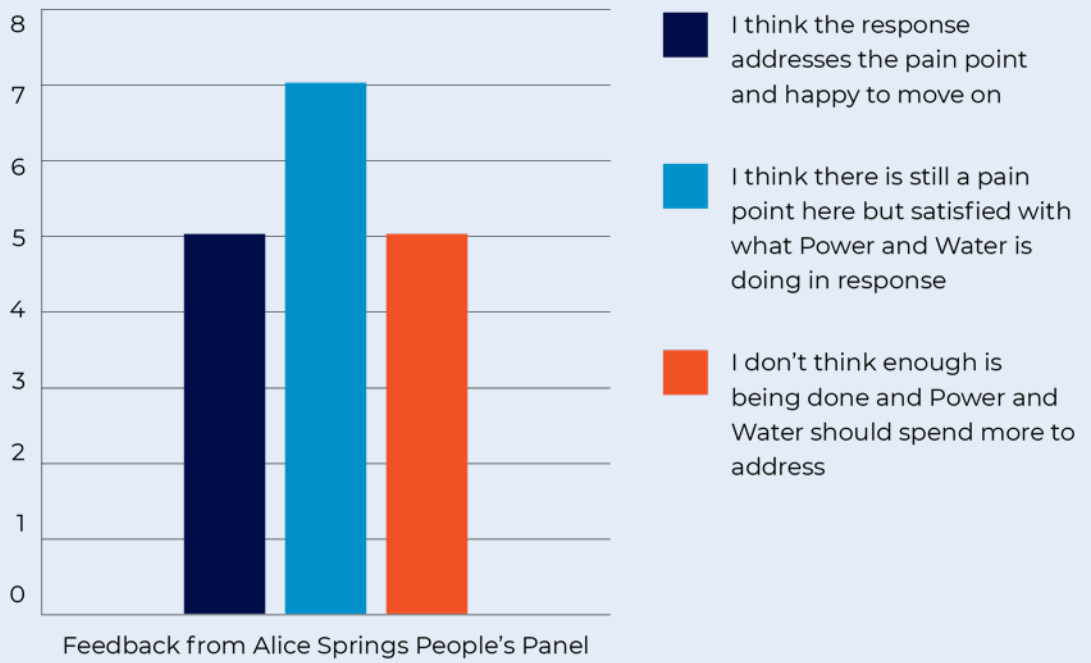
Dean Lombard from Renew suggested referring to Solar Choice and Solar Quotes who review installers and products, as well as potential community energy organisations who work with the installers directly. Renew also provides advice about system size and partners customers with installers based on their system needs. Dean also discussed the Clean Energy Council approved solar retailer scheme which requires installers to pay a fee and adhere to standards of conduct, thereby accrediting solar installers.

More information about these companies and the information they provide are included in the Power and Water 'Your Say' website.

Your Say website



The Panel was asked to consider our response to the pain point and whether they believed enough has been done to address their concerns. The results of these votes are:



To understand how we could further improve the response in future, table discussions were conducted and feedback was reported back to the broader group. Suggestions include:

Oversee their own accreditation program of solar installers.

Provide more extensive information about the implications of solar installation.

Partner with a community education program and provide community solar sponsorship, including linking skilled and unskilled people through work schemes.

Install solar for low-income households.

Run advertisements on TV or through social media directing customers to the right places for advice.

Connections and disconnections

Discussion focused on the connection and disconnection process, including challenges faced by Power and Water such as the compliance and technical requirements and the need to coordinate different parties involved in the process.

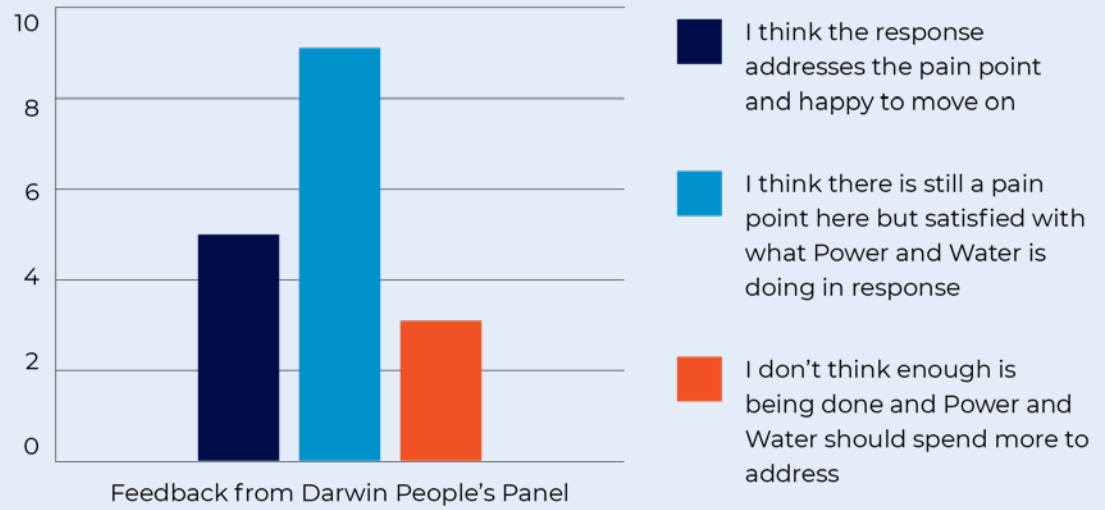
Stuart Essie, Senior Manager of Asset Management, spoke about the impacts of the Casuarina outage and Cyclone Marcus on the reliability of assets and effective response management. These weather events transitioned Power and Water to adopting a more proactive approach when responding to outages.

Other improvements undertaken by Power and Water to streamline the connection and disconnection process include:

- improving information dissemination by contacting vulnerable customers in the event of an outage using mobile notifications.
- providing accessible and comprehensive information on the website about connection and disconnection.
- investigating how to simplify connections through development of an online process to make it as simple and easy to connect as possible.

The Panel was provided with insights via video from retailers, Rimfire Energy and Jacana Energy, about customer choice. Michael Allen from Rimfire explained current barriers to changing retailers including the requirement to have a communications-enabled, remotely readable inverter meter. Trude Blizzard from Jacana Energy discussed the distinction between the roles of Jacana Energy and Power and Water in the electricity market. These videos are available on the 'Your Say' website.

The Panel was asked to consider our response to the pain point and whether they believed enough has been done to address their concerns. The results of these votes are:



Feedback from Darwin People's Panel

To understand how we could further improve the response, table discussions were conducted and feedback was reported back to the broader group. Suggestions include:

Notifying customers of the cause of an outage after connection has been restored.

Improving communication regarding planned and unplanned outages, with consideration for customers not using social media.

Undergrounding and responding to cyclones

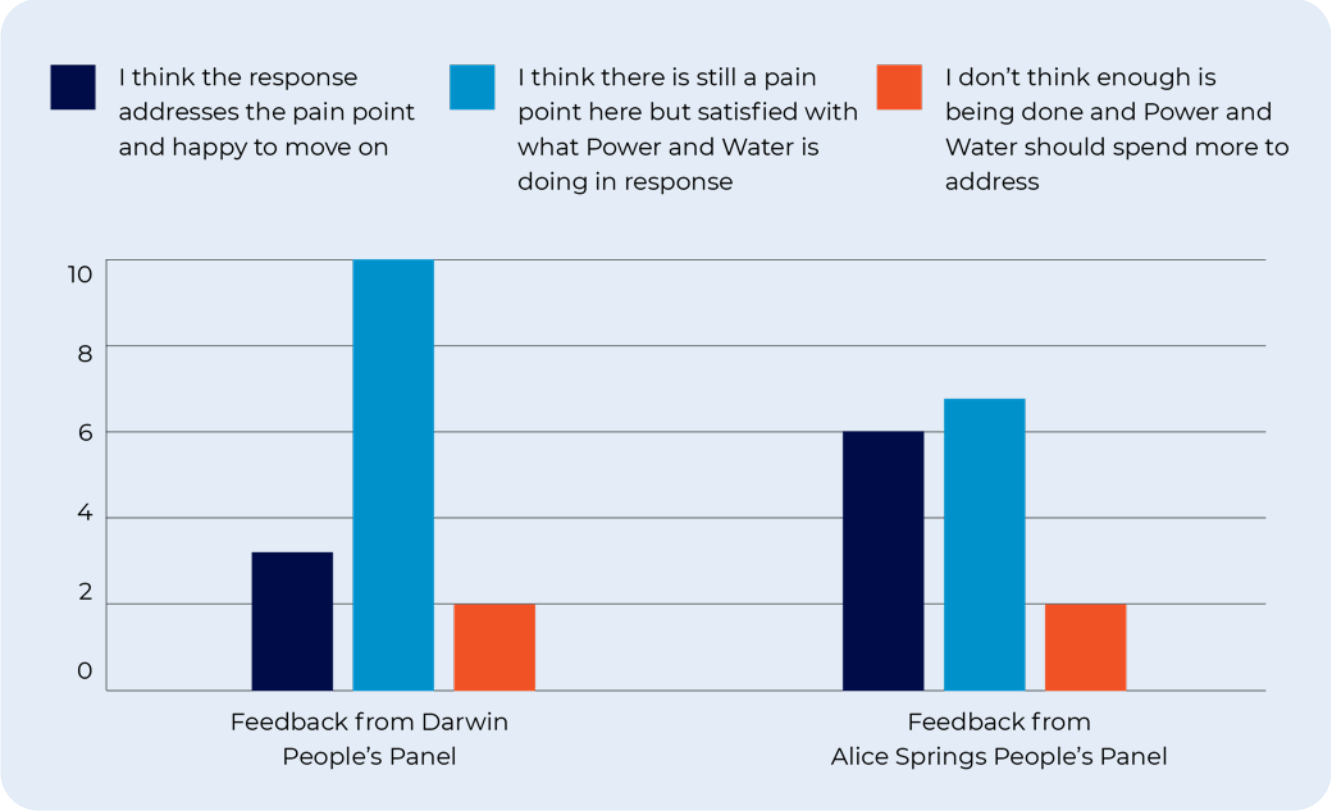
Challenges discussed in this session included the higher cost of moving power lines underground and the lower life expectancy of underground lines compared to overhead lines. There was also discussion about how locating electricity power lines underground could protect against the impacts of climate change and extreme weather.

A participant asked if Power and Water can mandate developers to locate power lines underground or overhead in new areas. We explained there are guidelines and requirements for developing new areas, and while underground is preferred in rural areas where there are long distances between customers, cost is still a key consideration.

As part of the discussions, we noted the following:

- Most electricity assets in new urban suburbs are commonly constructed underground.
- The Northern Territory Government has already committed to funding the undergrounding of some high priority assets.
- Power and Water considers undergrounding a viable option when it can be demonstrated the cost of undergrounding can deliver the benefits for all customers.
- The cost of undergrounding all infrastructure is significant.

The Panel was asked to consider our response to the pain point and whether they believed enough has been done to address their concerns. The results of these votes are:



To understand how we could further improve the response in future, table discussions were conducted and feedback was reported back to the broader group. Suggestions include:

Exploring solar power to offset undergrounding costs.

Considering undergrounding at the end of the life of an asset.

Providing a clearer communication plan for progressing undergrounding.

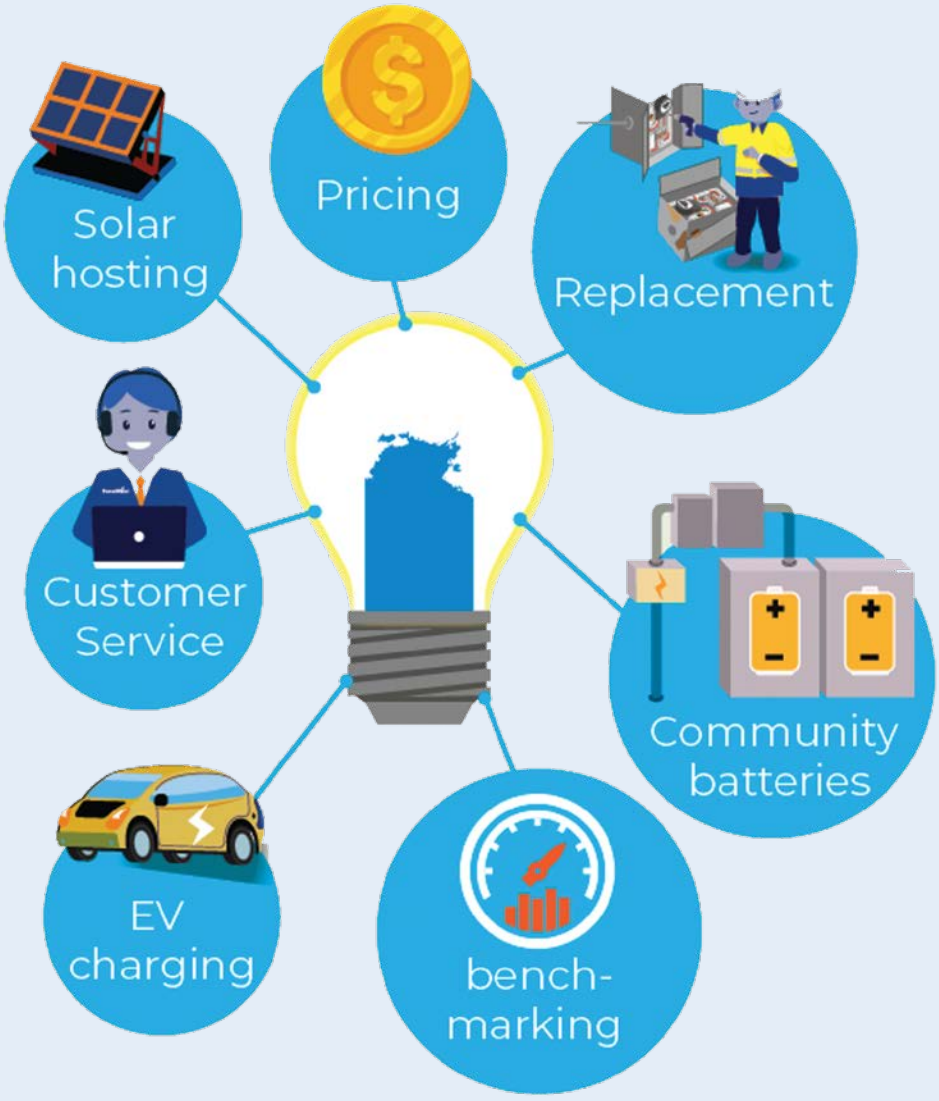
Big ideas and challenges

Several significant challenges and opportunities were identified at the November People's Panels. These represent the big ideas and issues that will materially influence how Power and Water and customers collectively answer the question 'How can Power and Water plan for a future that best serves customer needs?'

These issues were the subject of in-depth discussion and a process of co-design, including consideration of different speeds of response, with the objective of achieving a consensus position on how Power and Water should respond.

Options were discussed in the context of the customer values and their trade-offs and a consensus position by the Panel on how Power and Water should respond to the issue was developed.

The outcomes and the positions reached by the Panel (including dissenting views) will be referred to the Reset Advisory Committee for consideration. Our response on these issues will continue to be developed, with consideration of the Panel's views, and will be further discussed at the August People's Panels.



Options to improve customer service

The November People's Panel had expressed disappointment that shopfronts had closed.

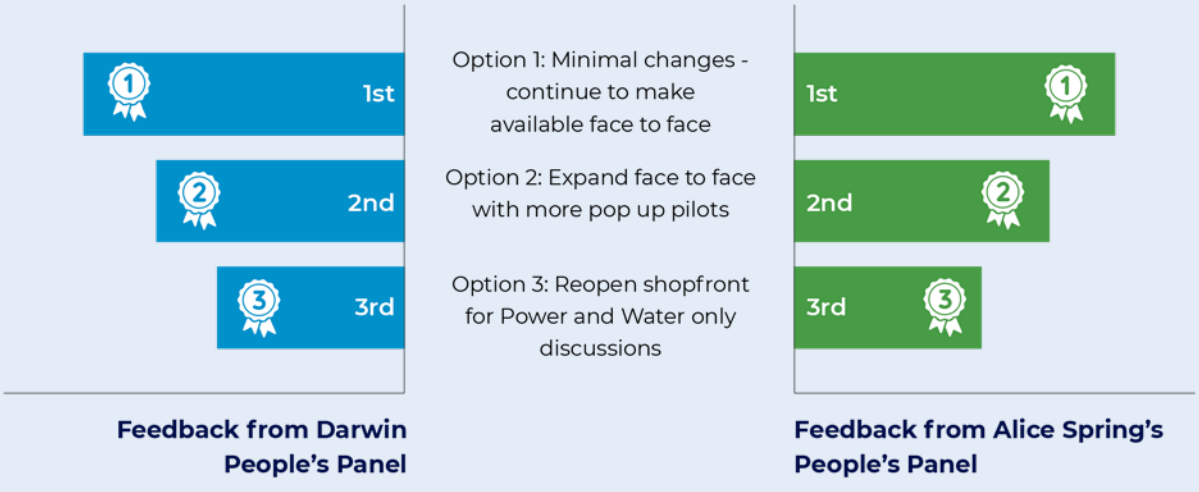
Face-to-face communications

During this session, customer service representatives from Power and Water addressed concerns regarding the availability of face-to-face interactions with customers following the decision to close shop fronts due to low foot traffic and the focus of many customer enquiries being on retail, rather than network, issues.

It was clarified that customers can request face-to-face contact in Alice Springs, Katherine and Darwin, in addition to contacting Power and Water via the website, Power and Water phone app and our Customer Service Line.

Options were presented and participants voted on which option to pursue.

Participants strongly support an increase in face-to-face communication options with consideration given to joint initiatives with other participants. For example, participants are supportive of pop-ups in shopping centres across the regions and running promotional campaigns to advertise where to access support. While there is some interest in re-opening shopfronts, most participants do not support this option in either Alice Springs or Darwin.



Value trade-offs identified by panellists when selecting these options include choice, accessibility, equity and fairness versus cost efficiency.

After discussions during the Panel, the consensus statement from both Panels is:

In relation to face to face communications:

- Change is needed, but should be minimal and cost-effective
- Face to face options should increase with consideration given to joint initiatives with other participants
- Active promotion of customer options should be included in forecast costs.
- Responses may contrast for different generations with different preferences for face-to-face contact with Power and Water.

The Darwin Panel agree with this statement and emphasise a need to focus on information and education, rather than just a specific communication channel.

To understand how we could further improve the response, table discussions were conducted and the following feedback was reported back to the broader group:

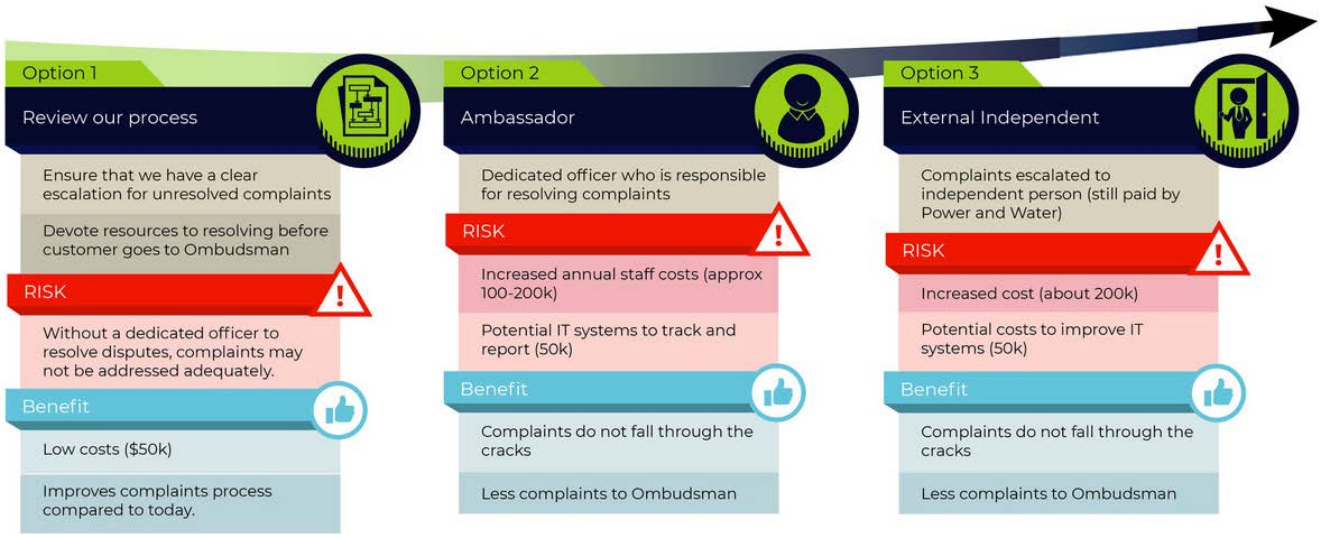
- The website needs to be clear that face-to-face contact at home is available.
- Consideration must be made to those without access to the internet.
- Deployment of an education bus or a desk in existing office space in the central areas of Alice Springs, Darwin and Katherine to provide a face-to-face channel on weekdays should be considered.

Customer complaints

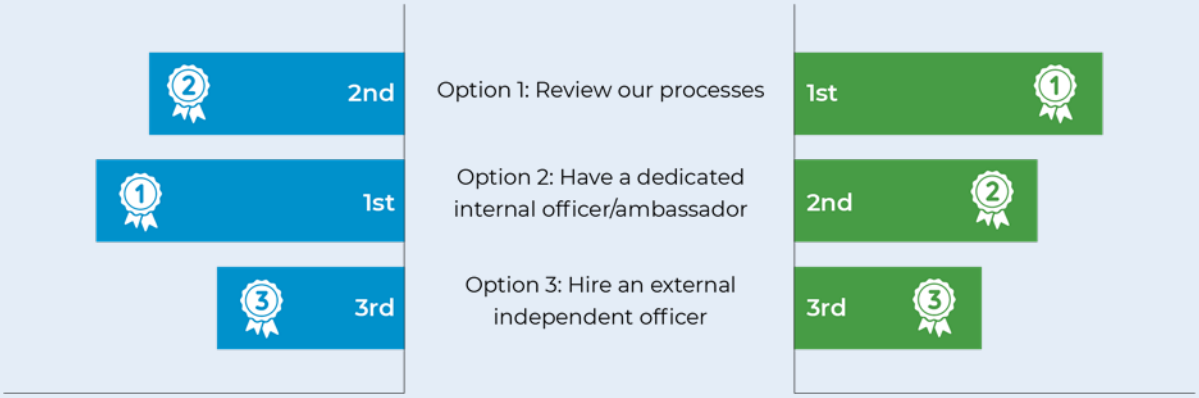
During this session, we focused on how customer complaints are currently addressed and how the process can be improved. The current escalation of customer complaints is to a customer resolutions officer, then through to a manager who reviews the response made by the resolutions officer. If the desired response to the customer complaint or query is not given by either party, the next step available to customers is to refer to the Northern Territory Ombudsman.

We currently track the number and nature of complaints, including those escalated to the Ombudsman. In the last nine months, there have been 13 complaints escalated to the Ombudsman.

Options were presented and participants voted on which option to pursue:



The Darwin Panel has greater preference for installing a dedicated internal officer who is responsible for resolving complaints. In Alice Springs, there is a similar number of people who support devoting resources to resolving the issue before customer goes to the Ombudsman and installing a dedicated ambassador.



Value trade-offs identified by panellists when selecting these options include fairness, equity and affordability versus cost efficiency.

After discussions during the Panel, the consensus statement from both Panels is:

In relation to better responsiveness to customer complaints:

- Power and Water does need to do something more
- This should include systems that provide more feedback to the complainant
- Options that integrate with face-to-face engagement should be recognised
- Existing refinements in telephony could be explored with this option.

To understand how we could further improve the response, table discussions were conducted and the following feedback was reported back to the broader group:

- Review the process through a Quality Assurance lens.
- Implement an accountability measure which ensures Power and Water reports back to the public through the website on its effectiveness in managing customer complaints.
- Install a local social media ambassador who educates proactively on the complaint process.

Replacement of Ageing Assets

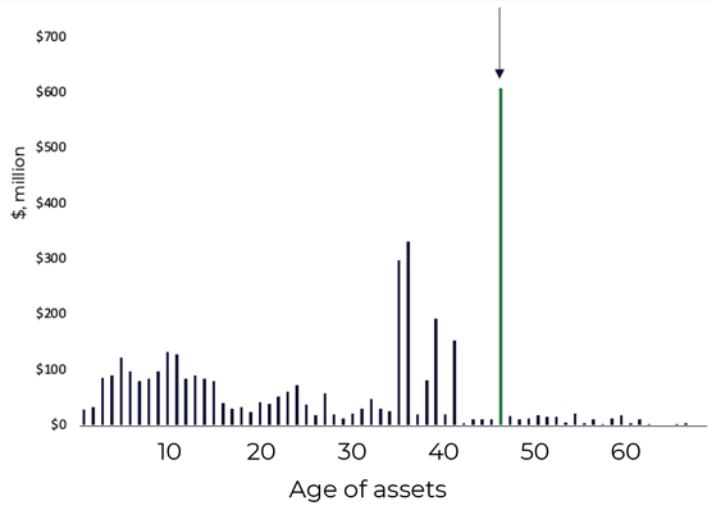
This session was held on Day One in Darwin and Day Two in Alice Springs and addresses the challenge of an ageing network. It was discussed that replacement has been low in the past decade, but analysis suggests networks will need to spend considerably more in the next 20 years. Many Power and Water assets, with an average age of 50 – 60 years, are expected to reach their end of life at a similar time.

Power and Water currently has a relatively young asset base, with only 3.26% of assets more than 50 years old.

However, the assets rebuilt immediately following Cyclone Tracy will be more than 60 years old in 2040 and the proportion of assets more than 50 years old will be more than a third of the asset base.

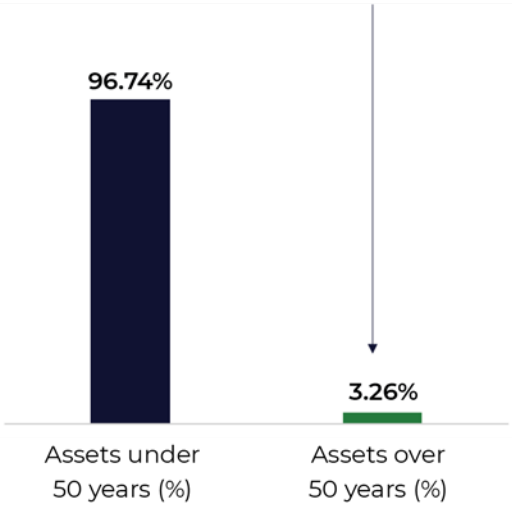
Value of assets by age

About 20 per cent of the network was built after Cyclone Tracy. They are younger than 50 years.



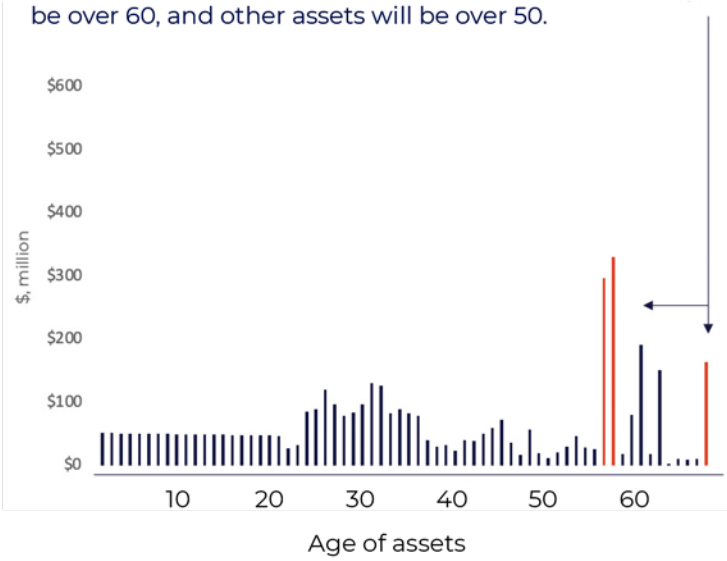
% of assets under and over 50

About 3 percent of assets are older than 50 years.



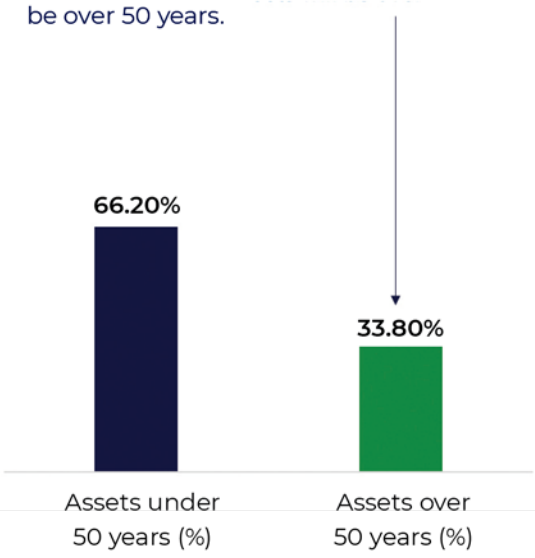
Value of assets by age

By 2040, the remaining Cyclone Tracy assets will be over 60, and other assets will be over 50.



% of assets under and over 50

About a third of assets will be over 50 years.



The Panel was shown how prices are predicted to rise by 30 - 35% across the 2030 - 2040 period to meet the replacement needs of the network, even if Power and Water gradually increases the replacement of assets. It was noted that the oldest network in Australia, South Australia Power Network (SAPN), currently has 12% of its assets more than 60 years old and the introduction of new technologies could be employed to support the retirement of older assets.

The Panel was provided with three potential asset replacement options:

The Panel broke into three teams, with each assigned a 'persona' reflecting one of the three replacement options:

- Don't worry about it – Optimistic Olivia
- Replace early – Prudent Paulo
- Save for a rainy day – Saving Sam

Each team developed arguments in support of their persona to report back to the broader group.

Don't worry about it – Optimistic Olivia

Technology may evolve and make current technology obsolete.

Money required for technology in future might have already been spent on replacement.

We can handle unexpected circumstances in the future.

Do not need to spend extra money when not needed.

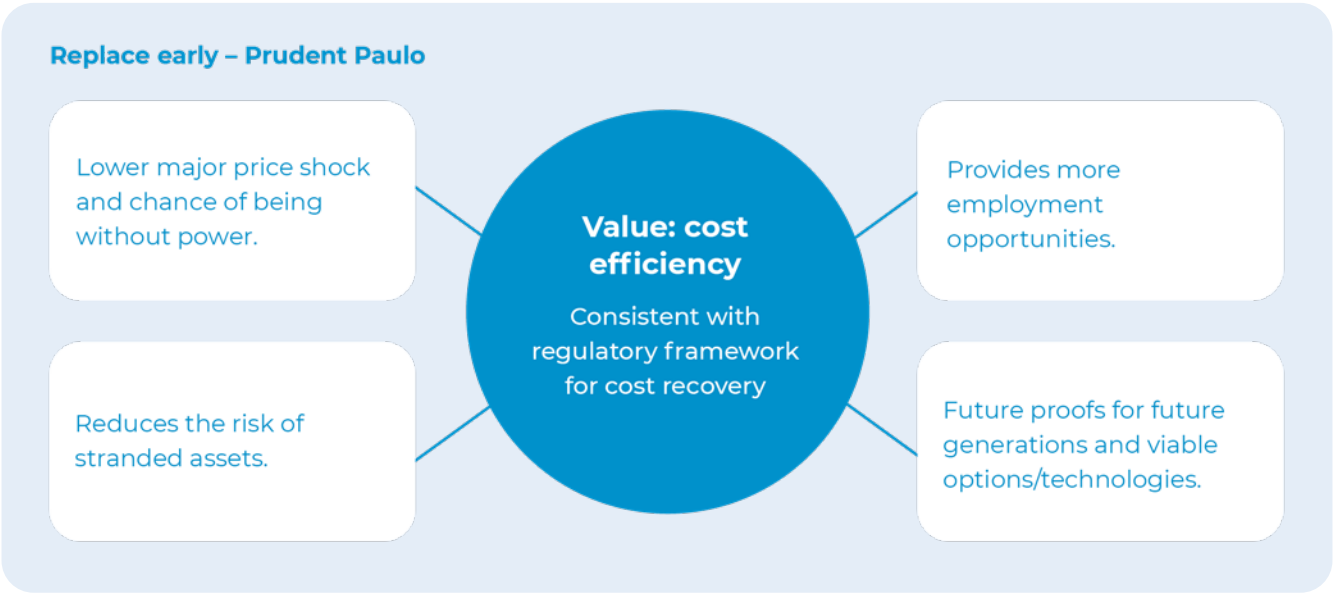
Value: short term affordability

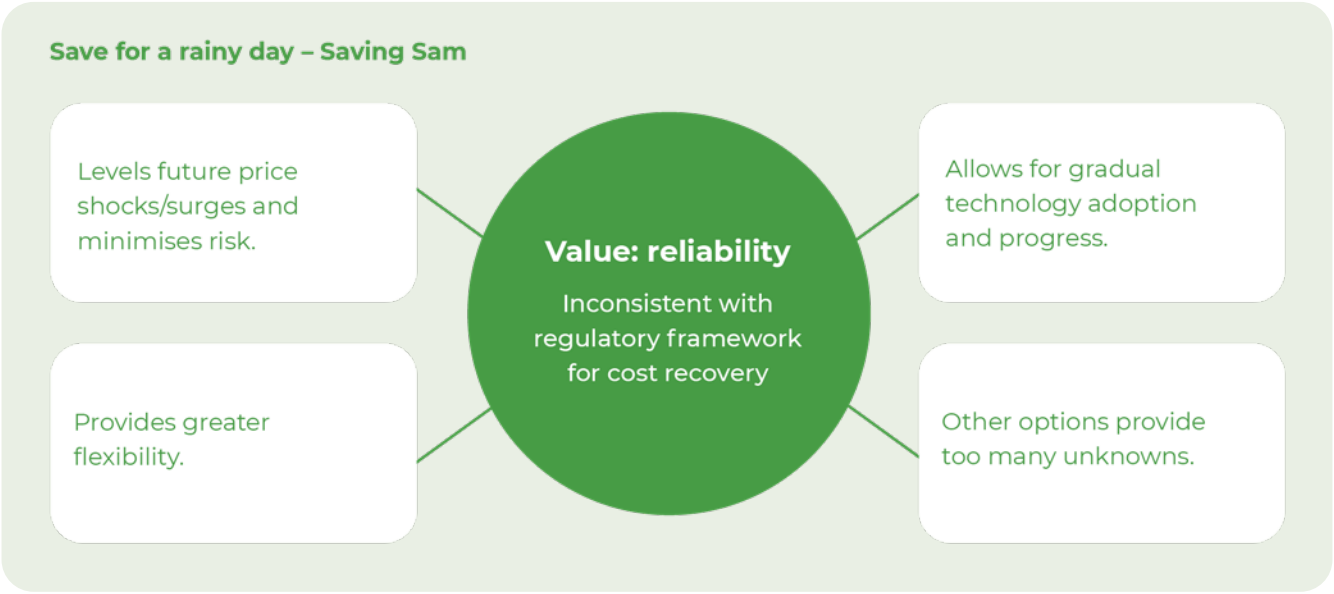
Consistent with regulatory framework for cost recovery

The customers today might not benefit from the fund in the future.

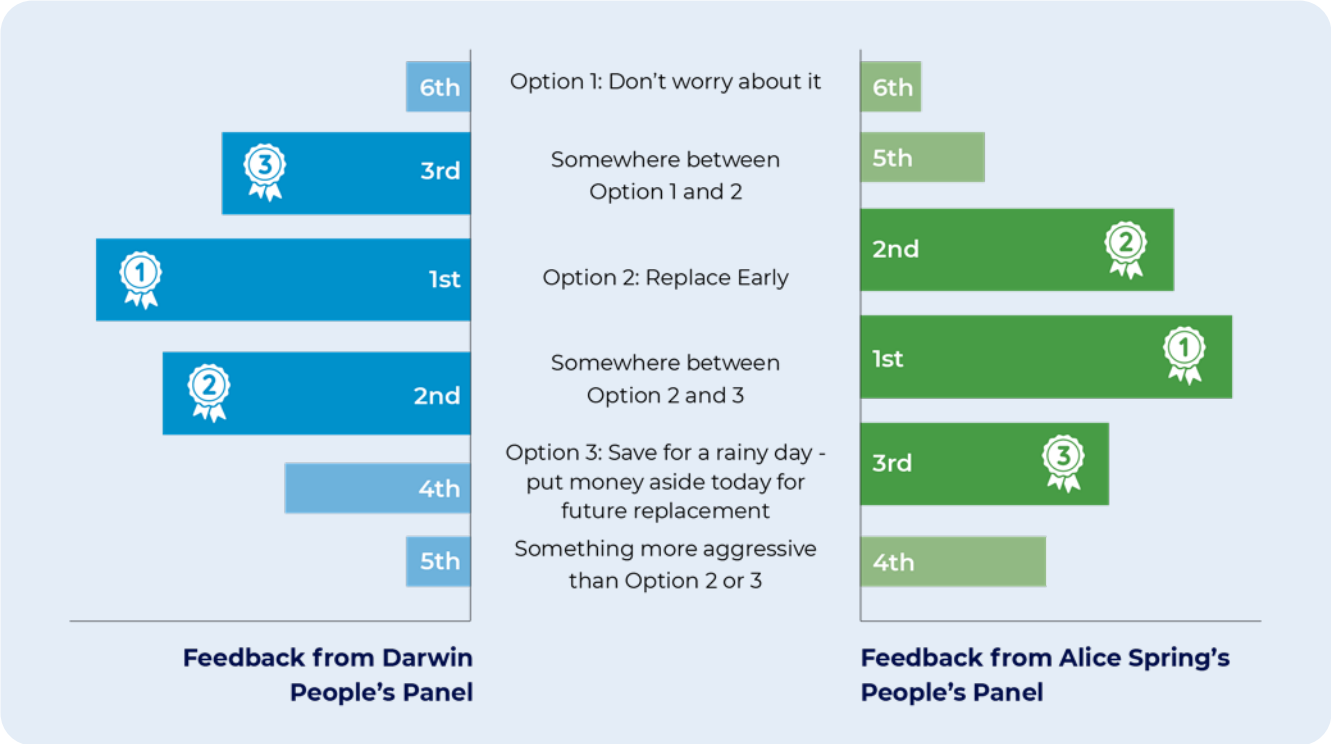
There cannot be absolute trust in the other options.

Ensures consistency in the budget for replacement.


Replace early – Prudent Paulo
Lower major price shock and chance of being without power.
Reduces the risk of stranded assets.
Value: cost efficiency
Consistent with regulatory framework for cost recovery
Provides more employment opportunities.
Future proofs for future generations and viable options/technologies.


Save for a rainy day – Saving Sam
Levels future price shocks/surges and minimises risk.
Provides greater flexibility.
Value: reliability
Inconsistent with regulatory framework for cost recovery
Allows for gradual technology adoption and progress.
Other options provide too many unknowns.

Following this exercise, options were presented and participants were asked to vote on which option to pursue.



There is a general consensus across the Panels that Option two, or a combination between either Option one and two or Option two and three, should be considered.

Value trade-offs identified by panellists when selecting these options include reliability, safety, resilience and security versus affordability

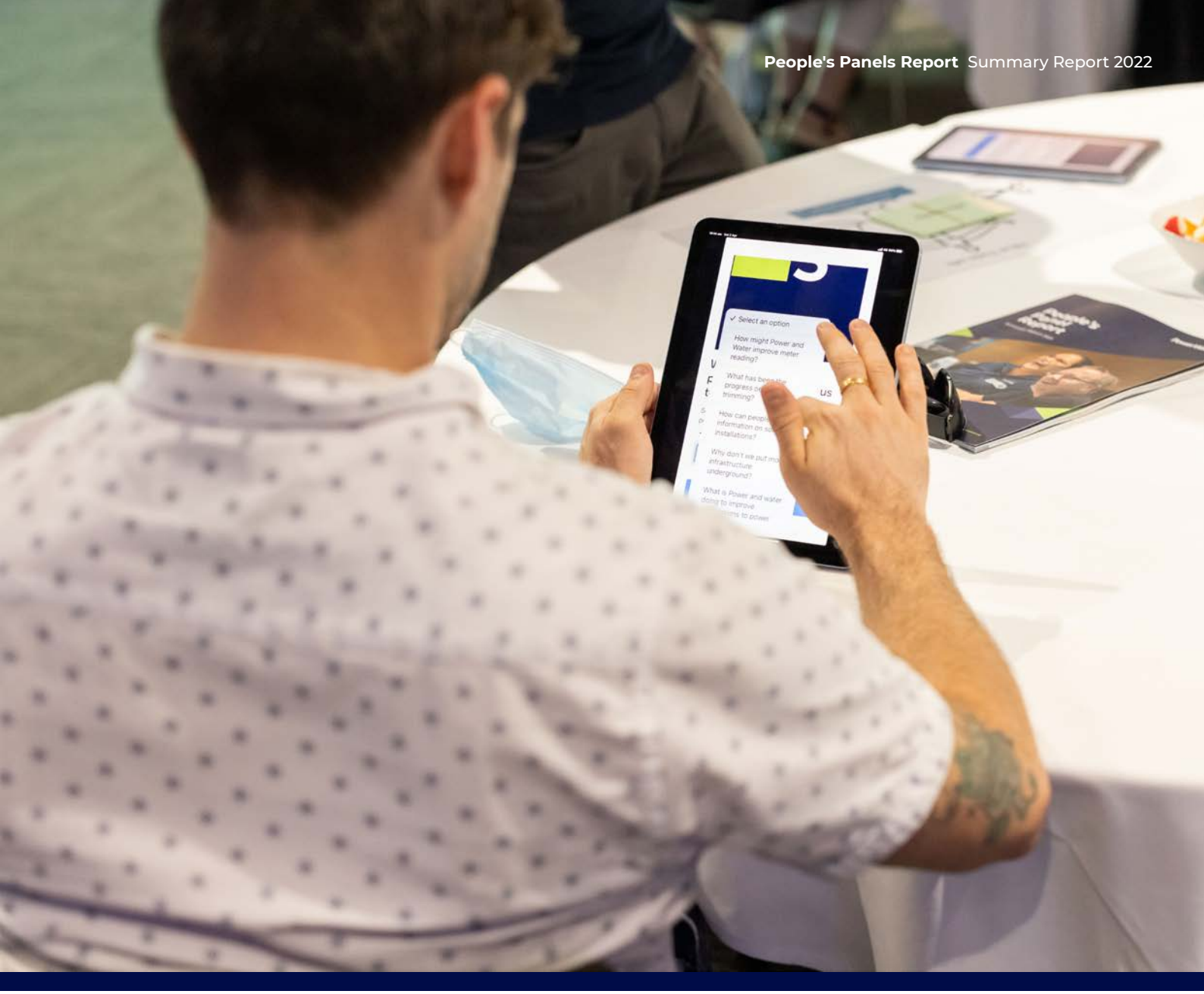
After discussions during the Panel, the consensus statement from both Panels is:

> The Panel generally do not believe Power and Water should keep replacement as low as possible
>
> **AND**
>
> We should pursue options that smooth capex and prices over the long term but use advances of technology wherever possible.
>
> However, there is a mixed opinion on whether Option two or three should be applied, or a combination.

Caveats on this statement include protecting low-income households (concession holders) and for Power and Water to deliver on its promises through transparent criteria.

5 Day Two – Giving us direction

Day two was defined by the big issues and challenges for the future network, including investigating ways to manage the impact of solar, community batteries, EV charging and tariffs on residential customers, through a continued process of co-design.



The changing energy world

The Darwin Panel was given the option of being provided with the consensus and dissenting statements developed at the Alice Springs Panel as a reference point for deliberations, and to tailor this to develop a Darwin-specific position. The use of the Alice Springs outcomes as an initial reference point for the process of co-design was preferred and led to more topics – such as the use of tariffs to influence demand – being discussed.

The session commenced with a role-play to allow participants to consider the changing energy landscape.

Banners around the room illustrated scenarios showing the 'Energy Landscape in 2010' characterised by few renewables and a one-way energy system and a '2030 Vision' representing a high penetration of renewables and the challenges of two-way flows of energy.

Participants were encouraged to express how they felt about these scenarios and what the banners were seeking to represent to the audience.

Energy landscape in 2010

Describe what you feel

- Simpler
- Fossil fuel based
- Limited diversification
- Dark, barren and artificial
- Structured and neat
- Dark, gloomy and lots of pollution
- Dull, boring and depressing
- Not every active
- Industrial
- Doom and gloom

What do you think the energy landscape in 2010 is about?

- Network size and speed
- Lower levels of new energy being used
- Shows a lot of pollution from low use of renewables
- Old forms of technology and technology use
- Largely a supply only scenario
- Illustrates the distribution network, with the size of the roads indicating volume.

Energy landscape in 2030

Describe what you feel

- Busy and more complex
- Bright and engaging
- Cleaner and greener
- Lack of passive solar design
- Happier, more active and brighter days
- Complex distribution network
- Automation
- Active
- Bright, light and modern
- Bright, optimistic and futuristic

What do you think the energy landscape in 2030 is about?

- Multiple generation sources, including renewables
- More localised energy – increased solar, battery storage, EVs and charging stations
- Increased control and regulation of distribution
- Integrated networks allowing flexibility in supply and demand points
- Storage of energy to smooth demand

Craig Chambers from Engevity and Lyndon Frearson from Ekistica provided an independent view on how the Northern Territory network is anticipated to evolve.

Lyndon discussed the shift in relationship between players in the power system – retailers, generators, consumers – as money, power flow and roles change. Craig discussed the challenge the Northern Territory faces in being a smaller grid, as well as the need to maintain supply and reliability while meeting the changing needs of consumers.

Both subject matter experts recognised the importance of the shift to renewables while still analysing the benefits to Territorians.

At the end of this session, Lyndon and Craig answered questions from participants about the future grid. The questions posed to Lyndon and Craig and the responses provided were:

"Why don't we consider other options of renewable energy and why is there a large focus on solar?"

- Solar is an issue now which must be responded to within the next 5-10 years. Additionally, while there may be more viable technologies in future, they are not happening now.
- There is an abundance of sun and solar resources in Australia, particularly in the Northern Territory. This makes it the least cost renewable.
- Other technologies do not have the scale of solar and do not offer the same levels of cost reductions.

"Can we look at other places in the world for what works well?"

- Countries are responding to the challenges differently depending on the historical performance and the specifications of the grid. The difference in Australia is the size of the grid and the uptake of solar.
- Australia is at a different stage of EV rollout to places like the UK. However, we can look to other countries for how they respond to increased demand from EV charging and solar output.

"What are the differences/issues the Northern Territory has in managing transition from centralised to decentralised generation compared to other states?"

- The Northern Territory doesn't have the scale of diversity of weather patterns, loads or increase in industry demand as in the East Coast.
- The Northern Territory cannot lean on other systems/networks to manage changing energy demands throughout the day and year.

"How are other networks responding to the energy transition?"

- SAPN is looking at ways to communicate with solar inverters to constrain when demand is low but solar systems are operating at peak strength.

"Why bother with roads – why not encourage people to go off-grid?"

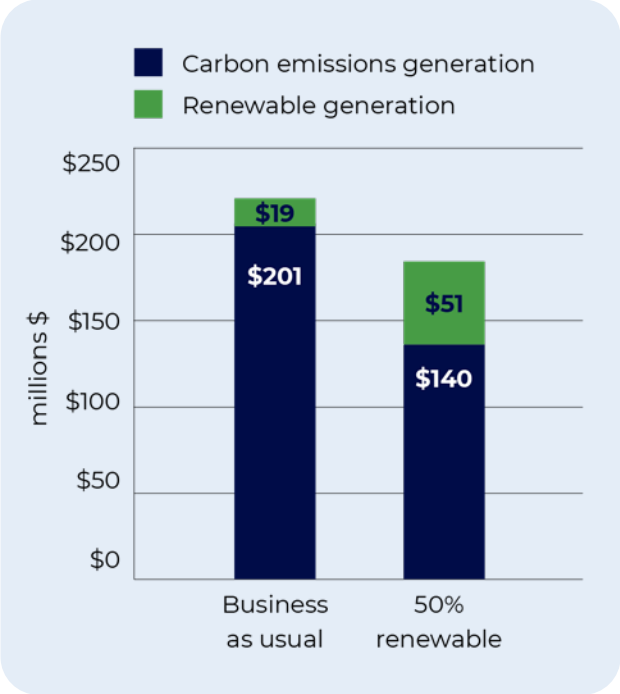
- The challenge is linked to diversity of energy sources. The grid provides diversity so when the battery runs out of capacity and the sun doesn't shine, the grid will support energy demand.

Participants were then asked to consider elements of the 2030 Vision in detail through a series of sessions focusing on providing the Panel with the benefits and challenges from adoption of existing and new technologies, and the solutions that Power and Water could explore to meet the predicted growing demand for renewable energy sources. While each of these technologies has specific challenges and considerations, the relationships and interdependencies between each were also discussed.

Future network: unlocking solar

This session discussed both the benefits of solar for households and communities as well as the challenges of solar creating congestion for the network and generating energy at periods of low demand.

The Northern Territory has a significant advantage from having high levels of solar capacity which can be employed to fulfil renewable energy needs of residents and the Northern Territory renewable targets. The Panel also discussed the Darwin-Katherine System Plan which highlights that it is significantly cheaper to aim for 50 per cent renewables compared to using today's high emissions technologies.



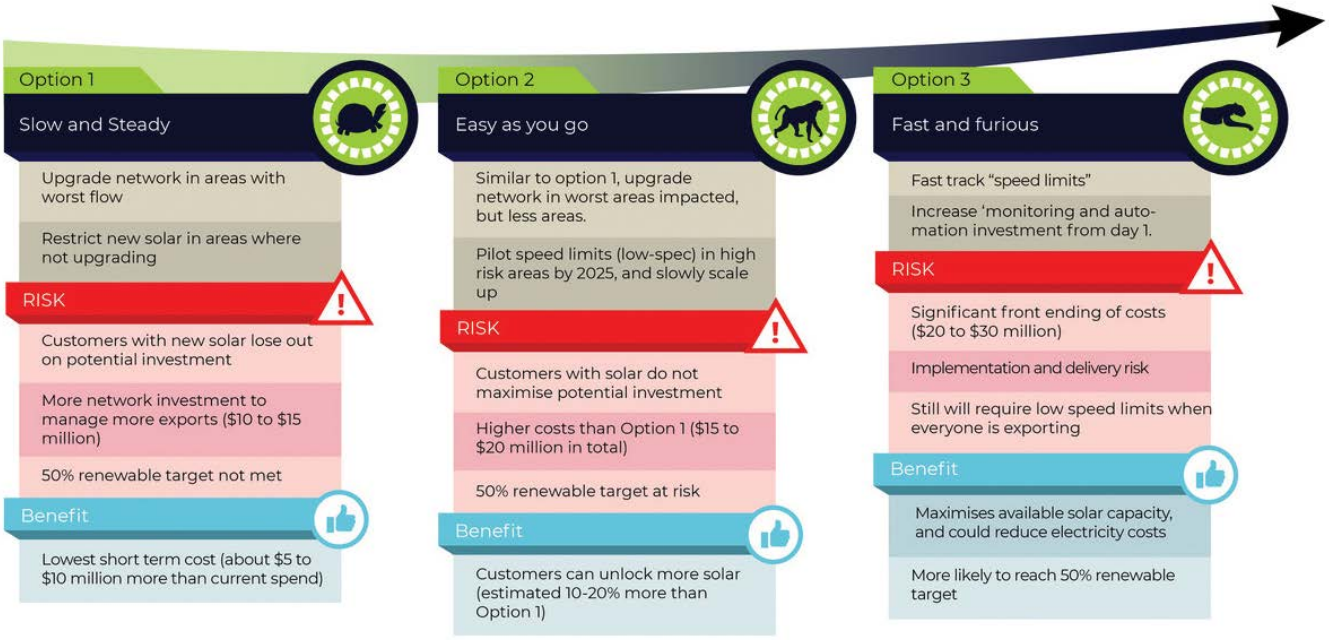
Participants were reminded of the concept of the two-way flows of energy on the network, which had been discussed earlier in the day, and the congestion and voltage issues which can result from increasing levels of solar penetration.

A video of Andrew Deme, CEO of GridQube was shown who explained that the current process of limiting solar is through the size of the connection or amount of solar in the local network. He explained that transformers are sized to a maximum capacity and once solar use increases, there is so much generation that an 'eight-lane freeway' would be required to transport solar from rooftop to another suburb, which is too costly and inefficient. Other options are needed to ensure more solar can exist on the system without investing in more network.

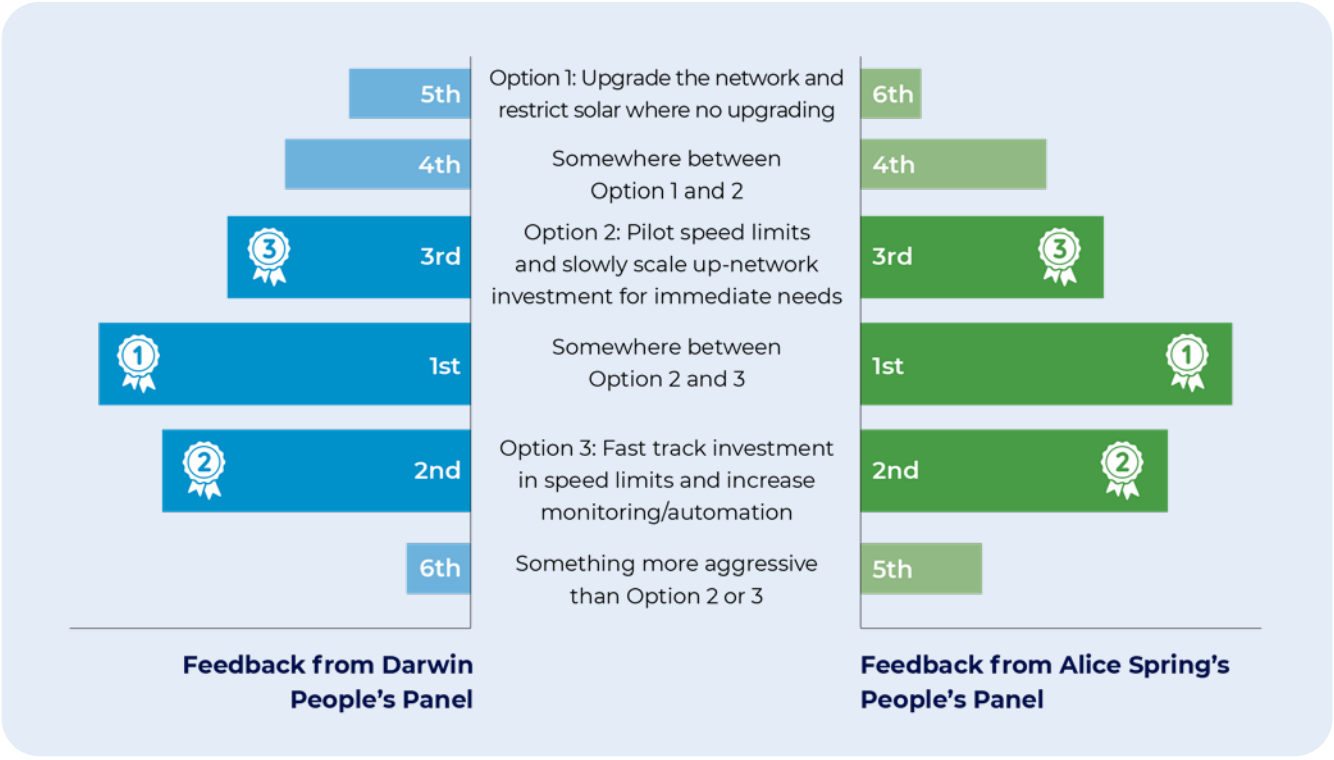
Participants discussed in groups how these challenges will impact the Northern Territory grid and customers and posed a range of questions to the subject matter experts who were present:

- Why should people without solar pay more money to allow people with solar to export?
- When will the whole country have smart meters and how will this help manage the network?
- Will energy be cheaper for consumers or relatively similar due to increased investment in technology and systems to service energy networks?
- Will urban areas subsidise rural areas?
- Will all households be self-sufficient or off-grid once we improve battery technology and affordability?
- Could there be incentives for jobs which require lots of travelling to have solar on top of their vehicles?
- Is there consideration for the impacts of climate change on these assets?

Following discussion, options were presented and participants were asked to vote on which option to pursue:



The result of this process is similar across the Panels, with most participants preferring Option two or three, or something which serves as a combination were presented and participants were asked to vote on which option to pursue:



Value trade-offs identified by panellists when selecting these options include sustainability versus cost efficiency and affordability; affordability and reliability versus equity and fairness; and innovation versus cost efficiency.

After discussions during the Panel, the consensus statement from both Panels is:

The Panel generally believes we should invest more to facilitate and support solar:

- Where technologies are proven, they should be adopted to help achieve renewable targets
- We also need to move forward by piloting new technologies
- Community outcomes should be considered to reduce or optimise and to minimise disadvantage, so no one should be left behind

  > learning/understanding about;

  > regarding the price impact of; and

  > embracing the technology.

However, there is mixed opinion on whether Option two or three should be applied or in combination – it is clear the front runner is going north of Option two but not necessarily Option three.

There are some caveats addressed at both Panels about the affordability and equity risks of pursuing Option two or three, or a combination of these options. This is supported by the common view that:

More needs to be done for remote and disadvantaged communities, which could be facilitated through government support.

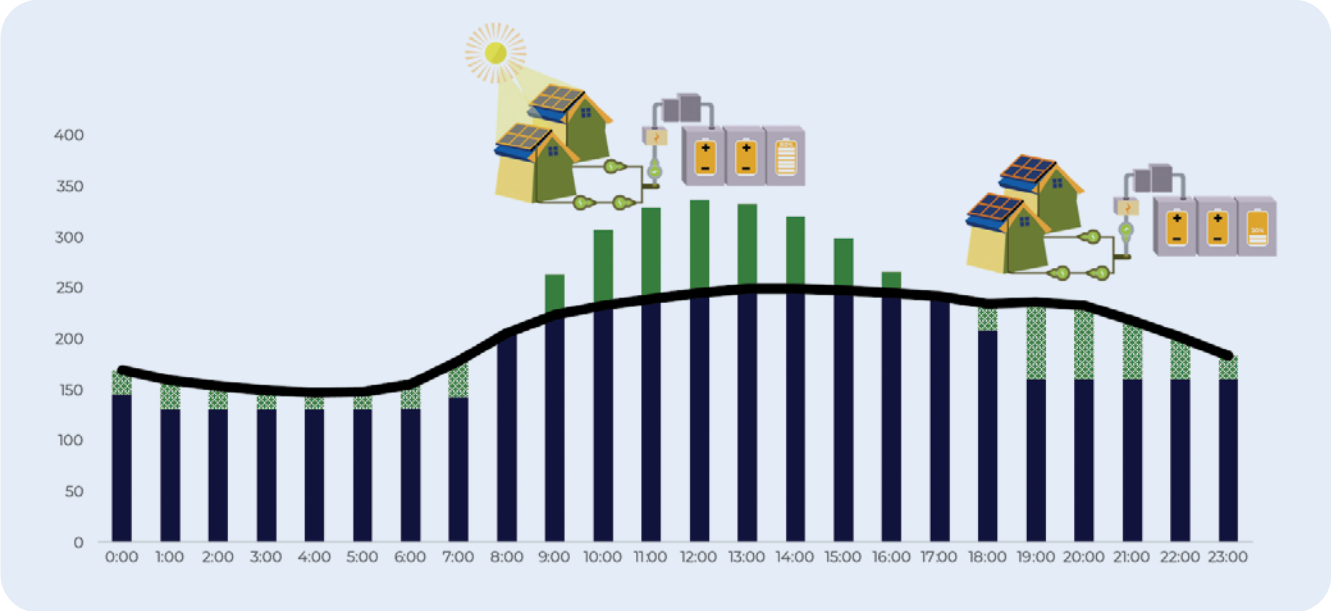
There needs to be overall benefits across the community through optimising investment and innovation.

Additionally, many participants believe technological changes must be considered when executing options to avoid an obsolescence of Power and Water's investment in solar.

Future network: Community batteries

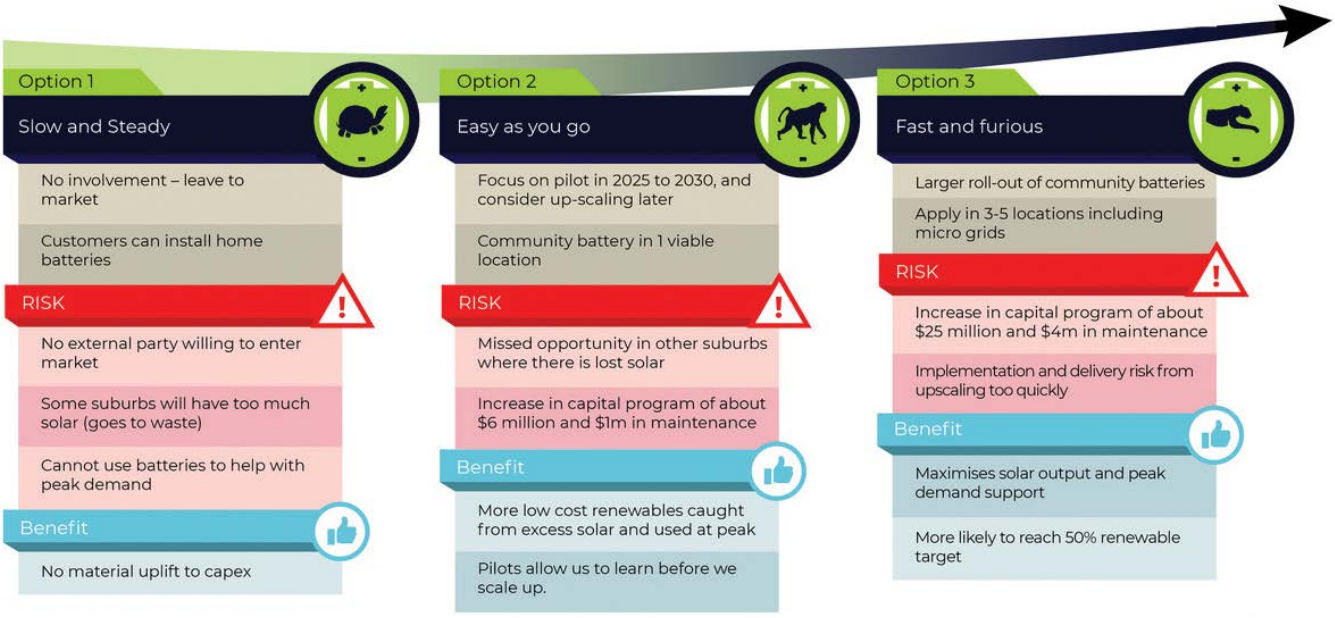
This session focused on understanding the relationship between solar and community batteries, including opportunities to use community batteries to manage excess solar in the middle of the day and discharge when the sun goes down.

Participants were shown the graph below which demonstrates how the excess solar generated in the middle of the day can charge a battery and discharge in the times of peak demand.

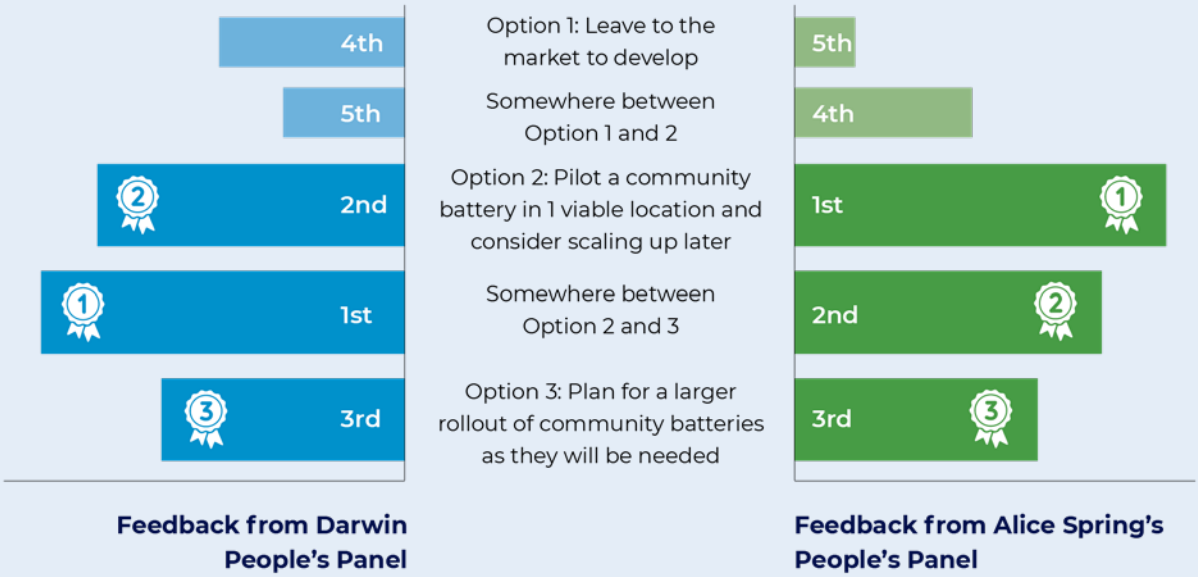


Community batteries are made of multiple panels/ batteries which can store solar generated from multiple households. This could help support the transition of Northern Territory's grid into a solar-rich network. It was noted that a community battery that would support approximately 200 homes costs around $6 million and $1 million to maintain.

Options were presented and participants were asked to vote on which option to pursue:



Like the solar options voting, many participants want Power and Water to purse Option two or three, or something which serves as a combination. It is clear both Panels believe Power and Water should be taking a part in facilitating the roll-out of batteries.



Value trade-offs identified by panellists when selecting these options include sustainability, reliability, resilience and security versus affordability; security and resilience versus choice; and innovations and reliability versus cost efficiency.

After discussions during the Panel, the consensus statement from both Panels is:

The Panel do not want Power and Water to leave the issue of community batteries for market participants to consider as that could mean community battery technology is not considered early enough.

- A pilot community battery in the most viable location should be progressed to assess the technology (e.g., new housing developments)
- Participants differ on how fast or slowly we included batteries in our forward forecasting
- This will be heavily dependent on the success, market feasibility, technical and physical aspects of the pilot.

Participants suggest we could go further by:

Co ordinating with the Northern Territory Government to make installation of community batteries mandatory in new residential developments, which could be a selling point for homes, noting the cost burden would fall on homebuyers who would also realise the benefit.

Setting up public investment bonds into the technology to receive returns from the batteries over time.

Starting investment in locations with an abundance of solar such as new developments.

Considering the price impact through efficiency and reduced fuel costs versus capital costs of the battery.

Investing in the development of mobile charging units so customers can charge themselves.

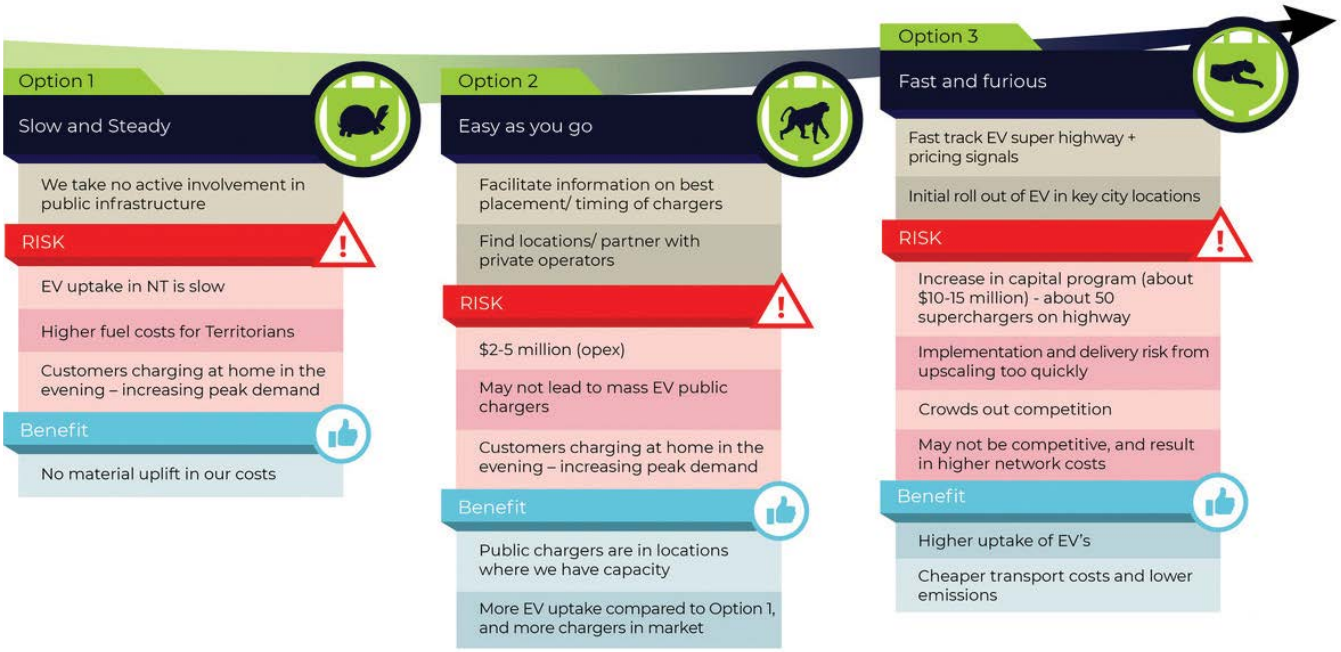
Future network: Electric Vehicle (EV) charging

This session expanded on the discussions in November regarding the approach Power and Water should take on EVs and the need to install more public chargers as demand for EVs increase.

Power and Water explained there are publicly available EV recharge points across the Northern Territory, but they are mostly overnight charging and the 'highway' for chargers is not as advanced as states such as Queensland which has one of the world's longest EV superhighways.

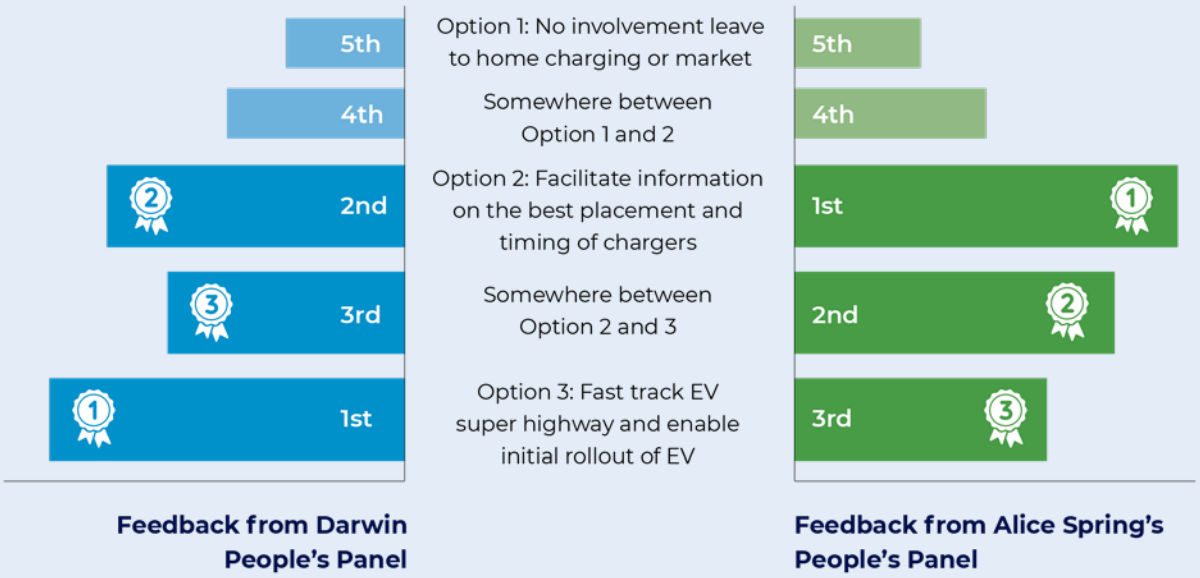
Some participants believe Power and Water should have some influence or control over the installation of EV charging infrastructure, while others want to ensure the potential market for the installation of EV charging infrastructure is retained. Many participants share the view there should be incentives for public charging during off-peak times to reduce solar waste.

Options were presented and participants were asked to vote on which option to pursue:



The voting on options between Alice Springs and Darwin differed on this issue. In Alice Springs, there is a stronger preference for either Option two or a combination of Option two and one of the other options. In Darwin, there is a stronger preference for Option two or three, or a combination.

It is clear however neither Panel want to leave this issue to the market alone to address.



After discussions during the Panel, the consensus statement from both Panels is:

There is a strong preference for facilitation and partnering with an emphasis on using technology to maximise where the best locations may be for charging and using technology to integrate the timing of vehicle charging in a way that doesn't affect the network.

- Less preference for Power and Water to take a lead role to fast tracking investment in super charging on highways
- Less preference for its own investment in EVs and EV chargers
- However, proactive facilitation of information and partnering should be pursued. e.g. sponsoring a day where we had councils, shopping centres and members of the community and create a gathering to connect councils with EV charging manufacturers and then become a conduit for investment.
- Capacity building with other innovations and technologies should be considered

The consensus position is comparable at both Panel discussions:

- The Alice Springs Panel is interested in Power and Water providing information to customers and the market on the best locations to put different types of charging technology.
- The Darwin Panel has mixed views regarding government funding versus Power and Water investment, with some interest in Power and Water pursuing EVs for their own fleet. It is clear the Darwin Panel want Power and Water to take a more progressive stance on investment in EV charging infrastructure beyond facilitation and innovation in charging.

Participants suggest Power and Water could go further by:

Leveraging existing technology.

Considering the benefits for residents and tourists.

Being a facilitator and partnering to attract investment with government funding.

Recovering funding through those who use EVs.

Future network: pricing (Darwin only)

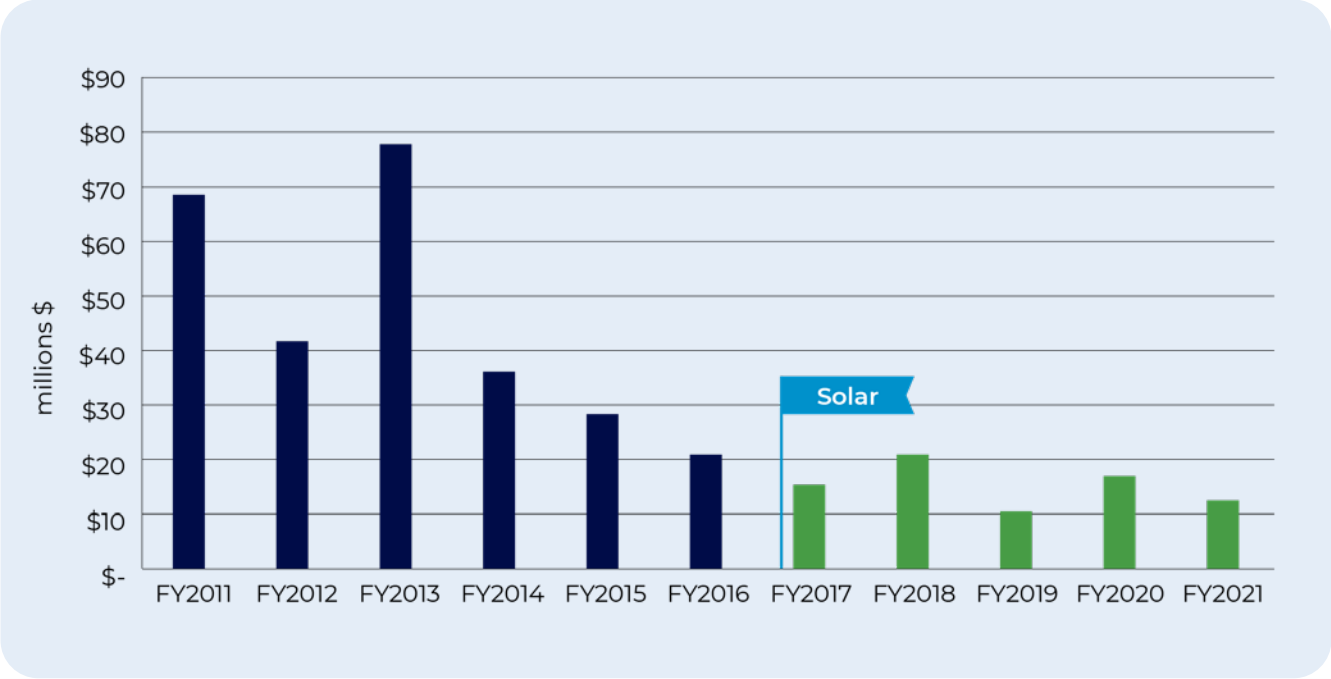
This session explored the opportunity of using tariffs to shift demand to periods of high generation of energy and low demand to reduce network stress.

After the Darwin Panel made the decision to leverage Alice Springs consensus statements for the big issues, this allowed sufficient time for a session discussing the use of tariffs to shift electricity demand.

A table exercise using the 'personas' from the session on ageing asset replacement (Optimistic Olivia, Prudent Paulo and Saving Sam) was undertaken to engage participants on how pricing can be used in consumption decisions to manage demand. Groups identified a range of strategies to reflect different consumptions patterns, including when to discount and when to price on a per unit basis. One of the statements which came from this session is:

"We shouldn't provide a discount for buying more if it puts stress on the system."

The session then shifted to how our expenditure on new assets has changed over time. The graph below demonstrates how the air conditioning boom in 2011 drove up expenditure to match the network stress in the middle of the day, and then experienced a significant decline after 2017 which was largely due to solar.

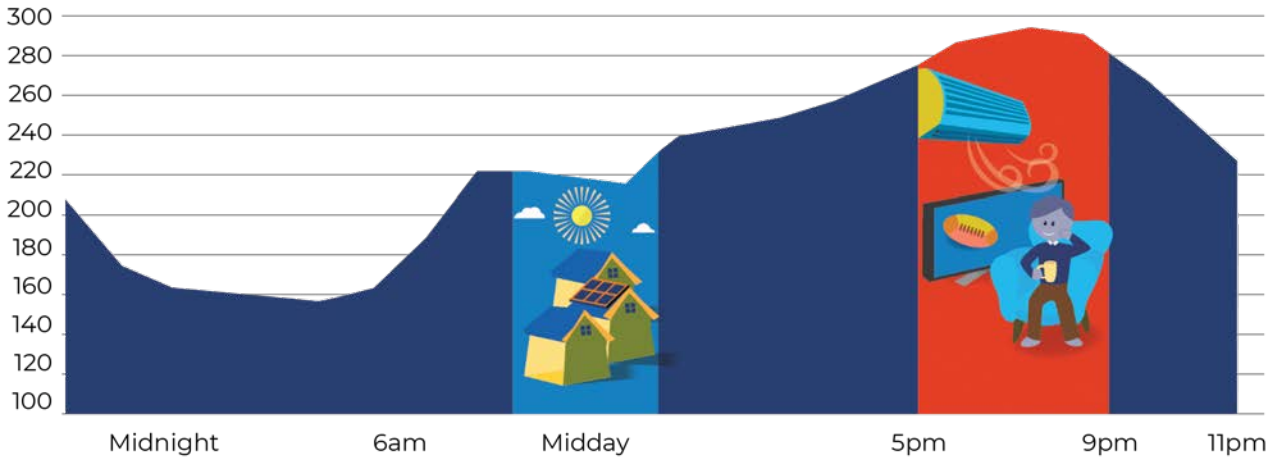


While other states in Australia experience high demand at the end of the day, the Northern Territory has historically experienced its highest levels of demand in the middle of the day. While solar has now helped curtail the peak in the middle of the day (reducing the need to augment the network for several years), the peak has now shifted to summer and wet season evenings when air conditioners are being used but solar cannot offset the increase in demand. This results in a need to invest in new assets when peak demand growth is high.

Like air conditioning, the increased penetration of EVs on the network is expected to further contribute to peak demand. It is expected that if one out of two cars are EVs by 2040, energy consumption will increase by 20 per cent.

This is primarily due to charging of EVs after work which would see peak demand in the evening and minimum change in the use of 'spare' energy during the day. It is anticipated that 25 - 30% more assets (poles and wires) would be required to meet this demand.

Maximum demand day in Darwin-Katherine in 2020-21 (MW)



The Panel discussed the use of tariffs to support behaviours that would flatten demand and soak up excess solar from the grid. It was noted that the delivery of price signals through network tariffs is complicated by the fact that residential customers' electricity bills reflect the Pricing Order Charges, rather than the full cost of supply. The constraints of a lack of smart meters which can record how much a customer uses and when was also discussed.

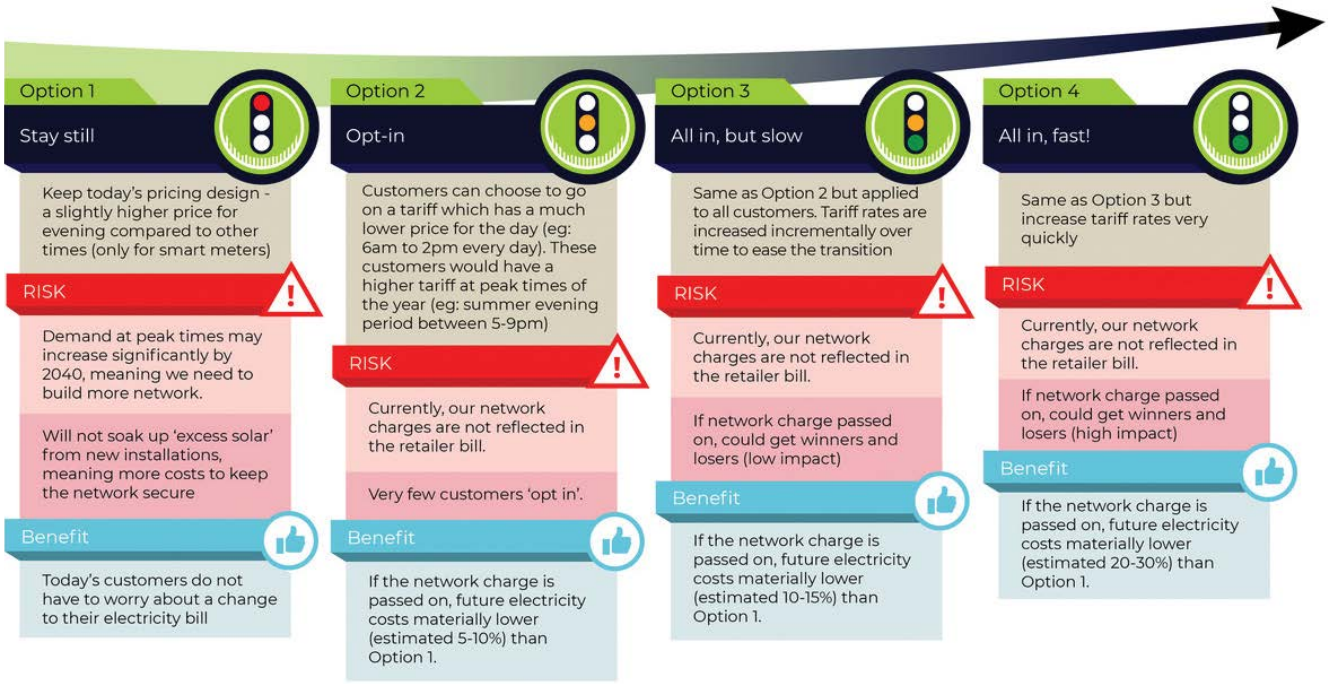
Solar sponge

Offer lower rates during the day all year round when solar is available and in excess.

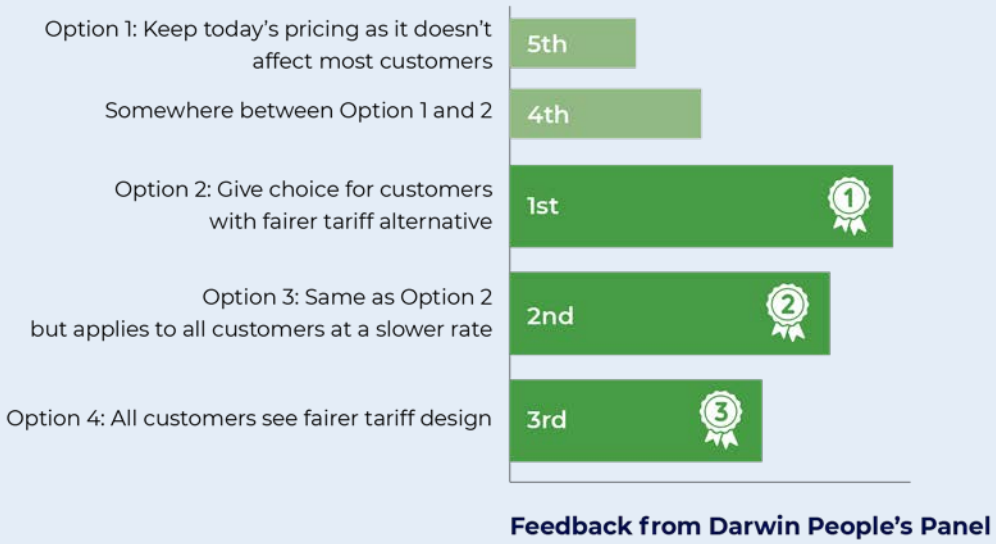
Seasonal demand

Charge higher rates in summer months between 5 - 9pm.

Following this exercise, options were presented and participants voted on which option to pursue:



The Panel is supportive of Power and Water exploring new tariffs, with a clear preference to provide the option for customers to choose different pricing arrangements.



After discussions during the Panel, the consensus statement from Darwin is:

- The Panel does not want the status quo. At the very least, they want Power and Water to develop network prices that make it easier for retailers (and government) to pass on better price signals.
- Most participants prefer options for customers to choose from. However, other views suggest a more progressive and informed path.

Caveats on this statement include providing information and education about the options for choice and making it clear there is a difference in usage and network impacts between commercial and residential customers.

6 Feedback on the event

"In the People's Panel, I've had to... look at my own values and have a look at the values of Power and Water and try and come to a realisation that these are critical in the decision making for the future."

Alice Springs Panellist

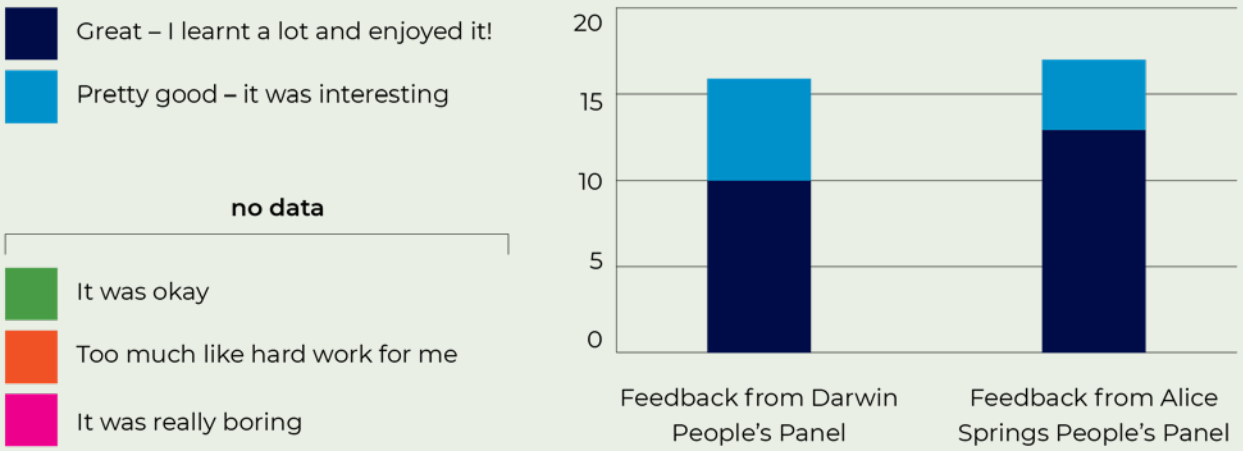
Throughout the sessions, participants were encouraged to reflect and provide feedback on the process and the way we were working with them. The majority of participants responded that they felt engaged in the process, we were listening to what they had to say and we were genuinely engaged in the future of the Northern Territory. Many participants noted the information presented in November meant they were more informed and able to more meaningfully consider the information presented and engage.

At the conclusion of each day, participants were asked how they were feeling and for their feedback.

Responses to the question, 'How did we do?' were extremely positive with participants stating they found the sessions interesting and informative. A summary of participant feedback from the People's Panels is provided below.

Ten participants in Darwin and 13 in Alice Springs responding to 'How did we do?' with the feedback 'Great – I learnt a lot and enjoyed it' and six participants in Darwin and four in Alice Springs responded Pretty good – it was interesting'. No participants selected the neutral or negative options.

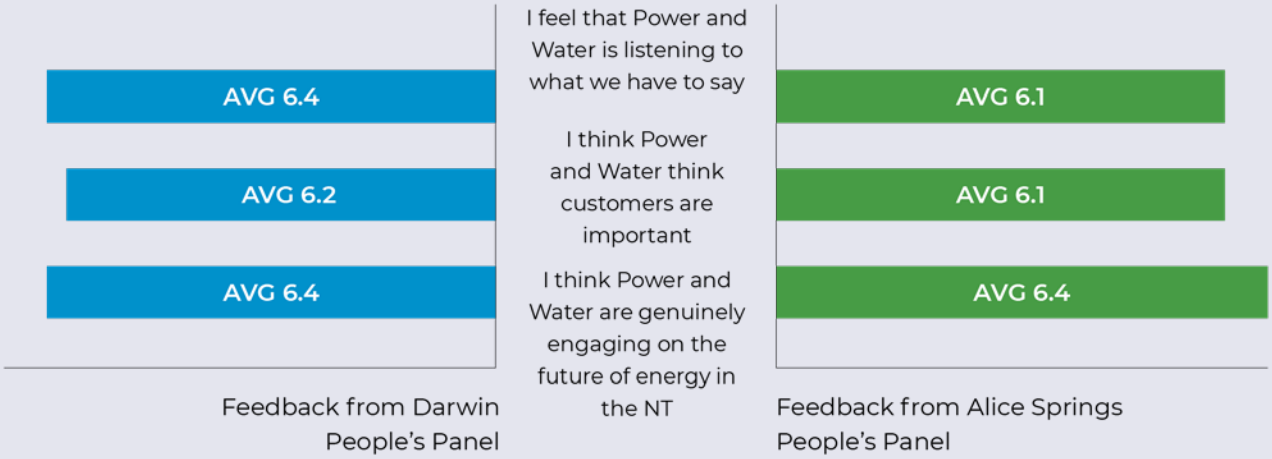
How did we do?



Participants were also asked to provide feedback on our engagement with customers on a scale from '1 – Strongly disagree' to '7 – Strongly agree'.

Most participants 'Strongly agreed', with an average above six in both Alice Springs and Darwin.

Customer opinion on Power and Water Performance (on a scale of 1 to 7)



When participants were asked whether they would be willing to return in August, all participants responded 'Yes, definitely!' with the exception of one participant in Alice Springs who responded 'Maybe'.

Participants were also asked for suggestions on how we could improve future sessions. This feedback will inform development and delivery of the August People's Panels. Some of the suggestions include:

- Increased visuals to support concepts, for example, show what a community battery would look like.
- Better chairs.
- Don't get sidetracked by irrelevant issues.
- More activities to keep us more alert.
- Stop for 1-2 minutes of stretching exercises every hour.
- A little longer breaks, less rushed.
- Take us on a field trip to see the installations.
- Visual aids to help those technologically challenged.

After the Panels, several Panellists were interviewed to provide their perspective on what Power and Water should do about future engagement activities. A clear theme in the responses was that the Panels should be held more often with a wide breadth, but similar number, of people and they felt their opinions were listened to and will be beneficial to the future of the Northern Territory.

"I think Power and Water should offer these forums for the public more often ... [it] was really worthwhile ... and it makes Power and Water more transparent so we know what we're dealing with."

"I think the numbers that we have in here right now is a really good number ... it's not overpowering ... having the small numbers, you understand a lot more."

7 Next steps

Feedback from the People's Panel will be provided to Power and Water's Regulatory Advisory Committee to inform decisions on solutions and investment options and form a key input into the development of our Regulatory Proposal over the coming months.

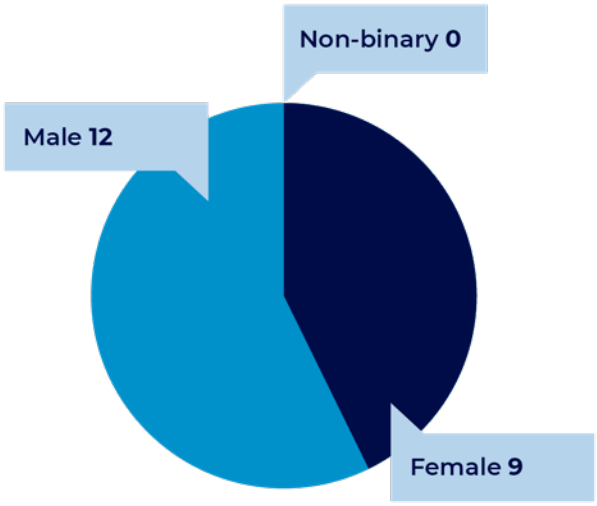
We will reconvene the People's Panels in August 2022 to further develop the outcomes from the March and April Panels and provide an update on our anticipated expenditure and revenue forecasts and related pricing impacts.

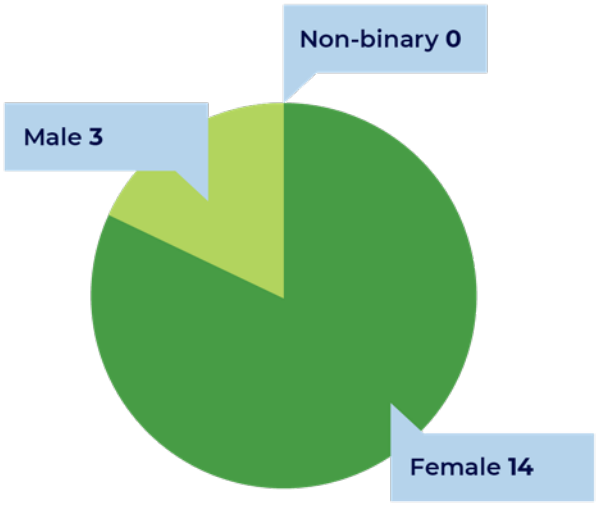
Feedback relating to other aspects of Power and Water's business, and that of retailers' operations has been communicated to relevant individuals for consideration and action.

Appendix A- Breakdown of participants

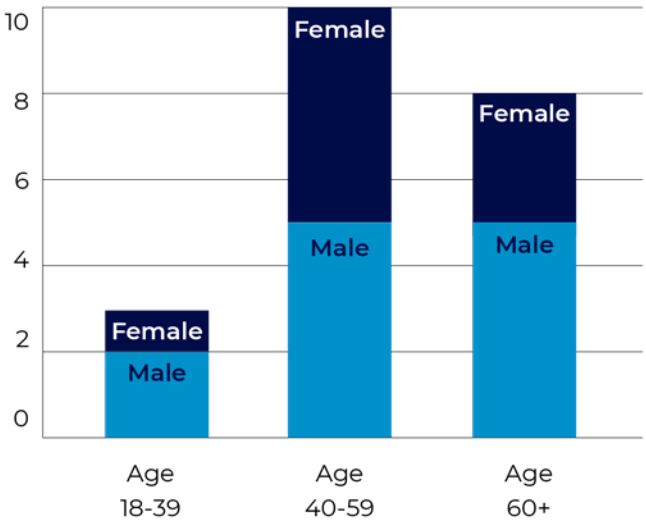
Darwin	Alice Springs
21	17
Number of participants	

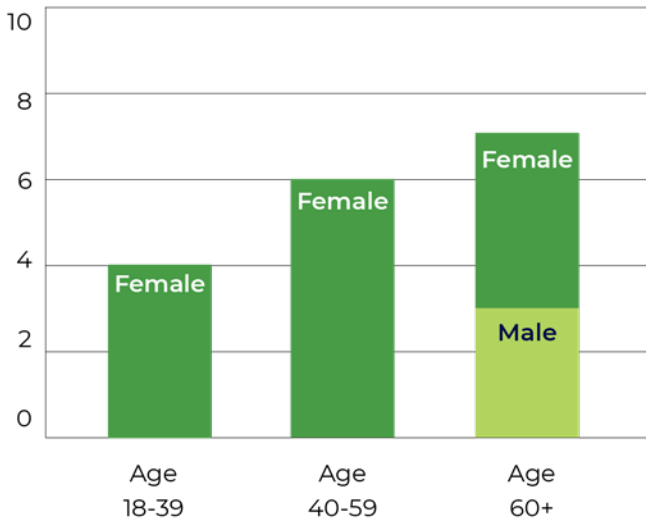
Gender





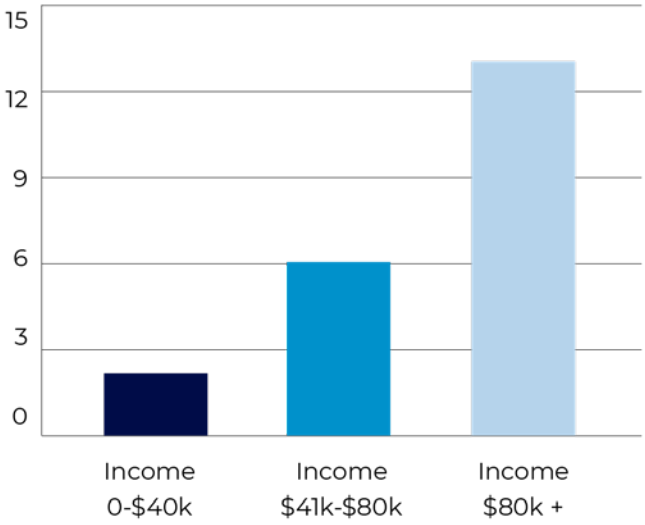
Age

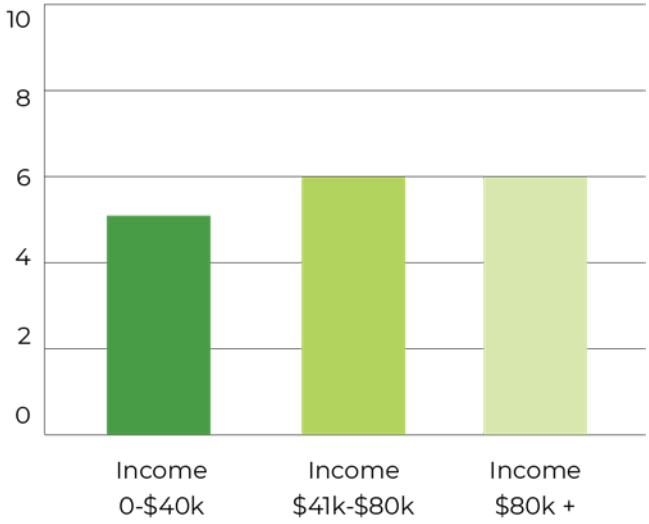




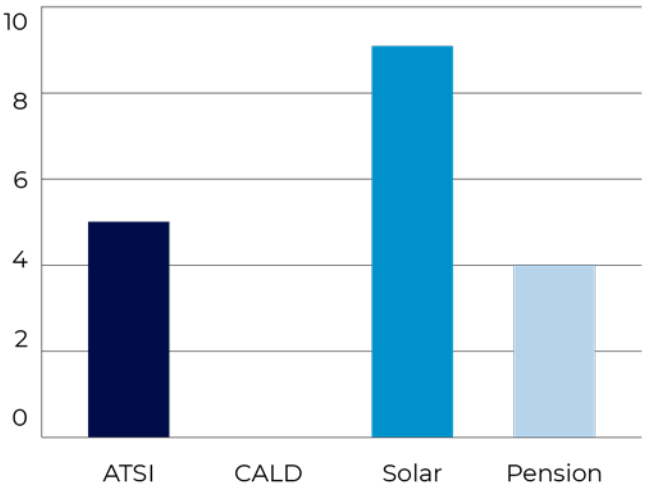
Darwin	Alice Springs

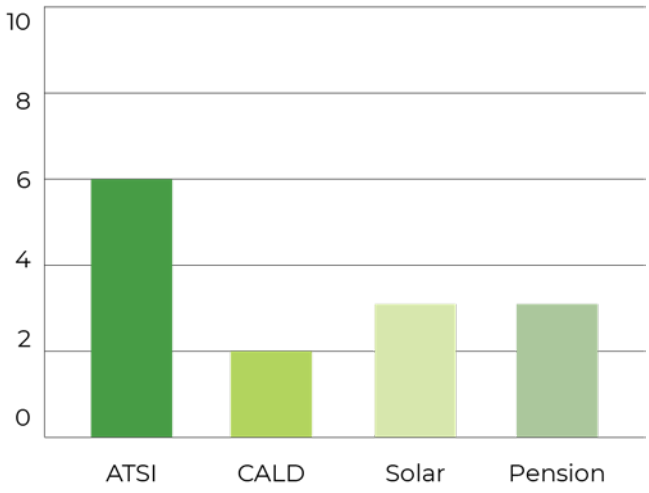
Income





Segment





PowerWater

Power and Water Corporation

Level 2, Mitchell Centre
55 Mitchell Street, Darwin
Phone 1800 245 092

powerwater.com.au

@PowerWaterCorp

Appendix E

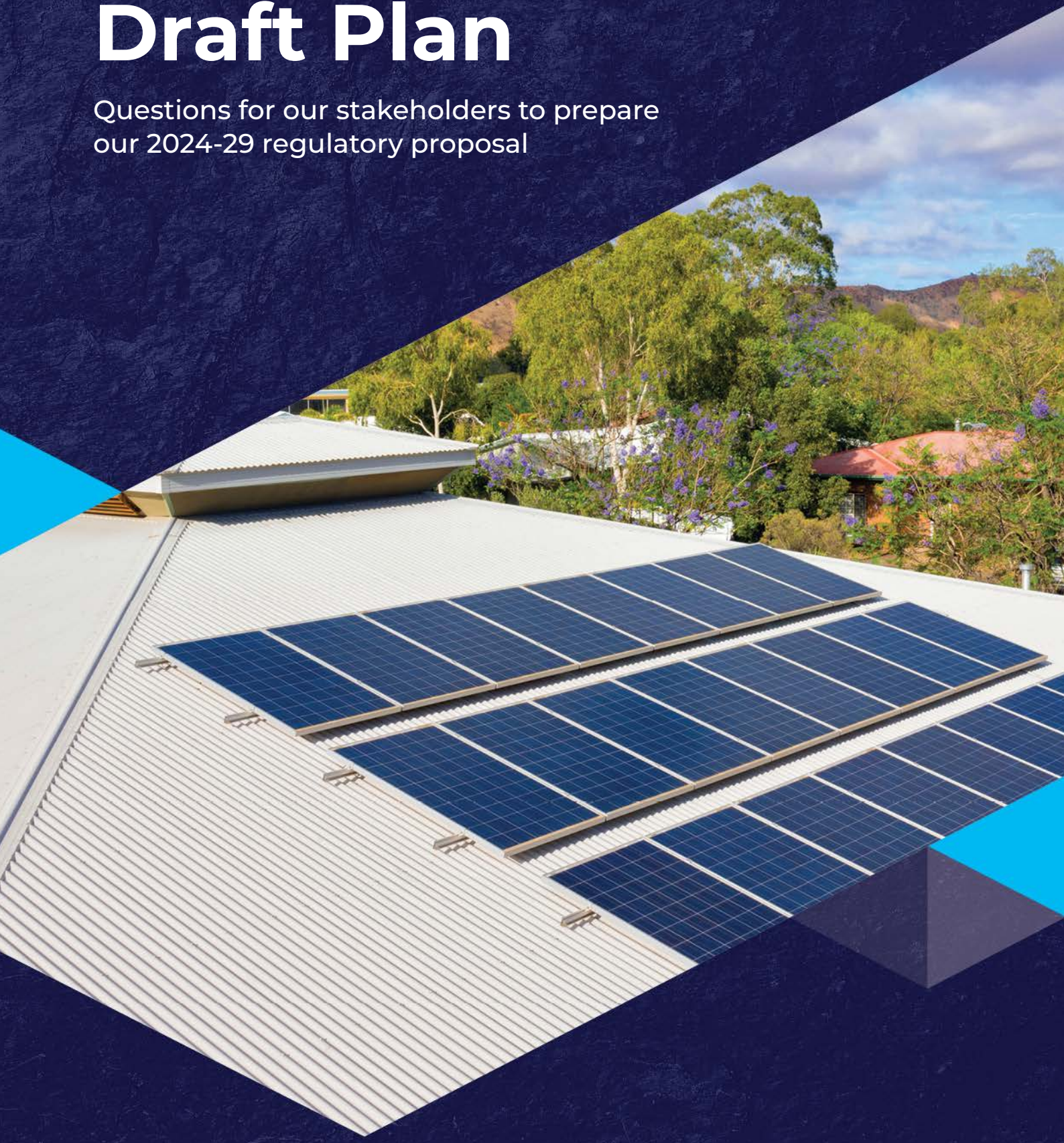
Draft Plan – Questions for our stakeholders to prepare our 2024-29 Regulatory Proposal

PowerWater

PowerWater

Draft Plan

Questions for our stakeholders to prepare our 2024-29 regulatory proposal



@PowerWaterCorp

About this report

Who is Power and Water?

We are the essential service provider in the Northern Territory (NT) providing electricity, gas, water and sewerage services as seen in **Figure 1**. Our purpose is to make a difference to the lives of Territorians. Our business connects our communities to reliable and affordable essential services and provides a foundation for economic growth.

What is this Draft Plan about?

Our electricity services provide power to 90 townships and communities across a vast landmass. Our three largest networks in Darwin-Katherine, Alice Springs and Tennant Creek are under price regulation. The networks provide electricity to 72,000 residential customers and 11,000 businesses.

Every five years, the Australian Energy Regulator (AER) undertakes a review of our proposed expenditure, revenue and tariff structures for our regulated networks. Our next regulatory period is from 1 July 2024 to 30 June 2029 (the 2024-29 regulatory period). The AER review process takes about 18 months with our initial regulatory proposal due on 31 January 2023.

This Draft Plan sets out our proposed plans for our upcoming 2024-29 regulatory period. Its purpose is to capture feedback from our customers and broader stakeholders on our plans before submitting our initial regulatory proposal to the AER.

As an essential service provider our role is to serve the community. It is vital that we listen to what our customers expect from our network both now and into the future. The five year regulatory proposal provides an important opportunity for customers to provide input into our strategic direction, and ensure their values, vision and priorities are reflected in our five-year expenditure plans.

Over the last year, we have met with our customers, energy partners and government representatives to hear what is important to them. This included an innovative new way to engage with everyday residential customers in Darwin-Katherine and Alice Springs – our People's Panels. Our Draft Plan seeks to show a 'line of sight' between the priorities of our People's Panels and our five-year plans.

This is only the start of our engagement journey. There are areas of our plans where we have not engaged with stakeholders. The Draft Plan sets out questions for customer feedback. We will be engaging further with our customers before finalising our proposal on 31 January 2023.

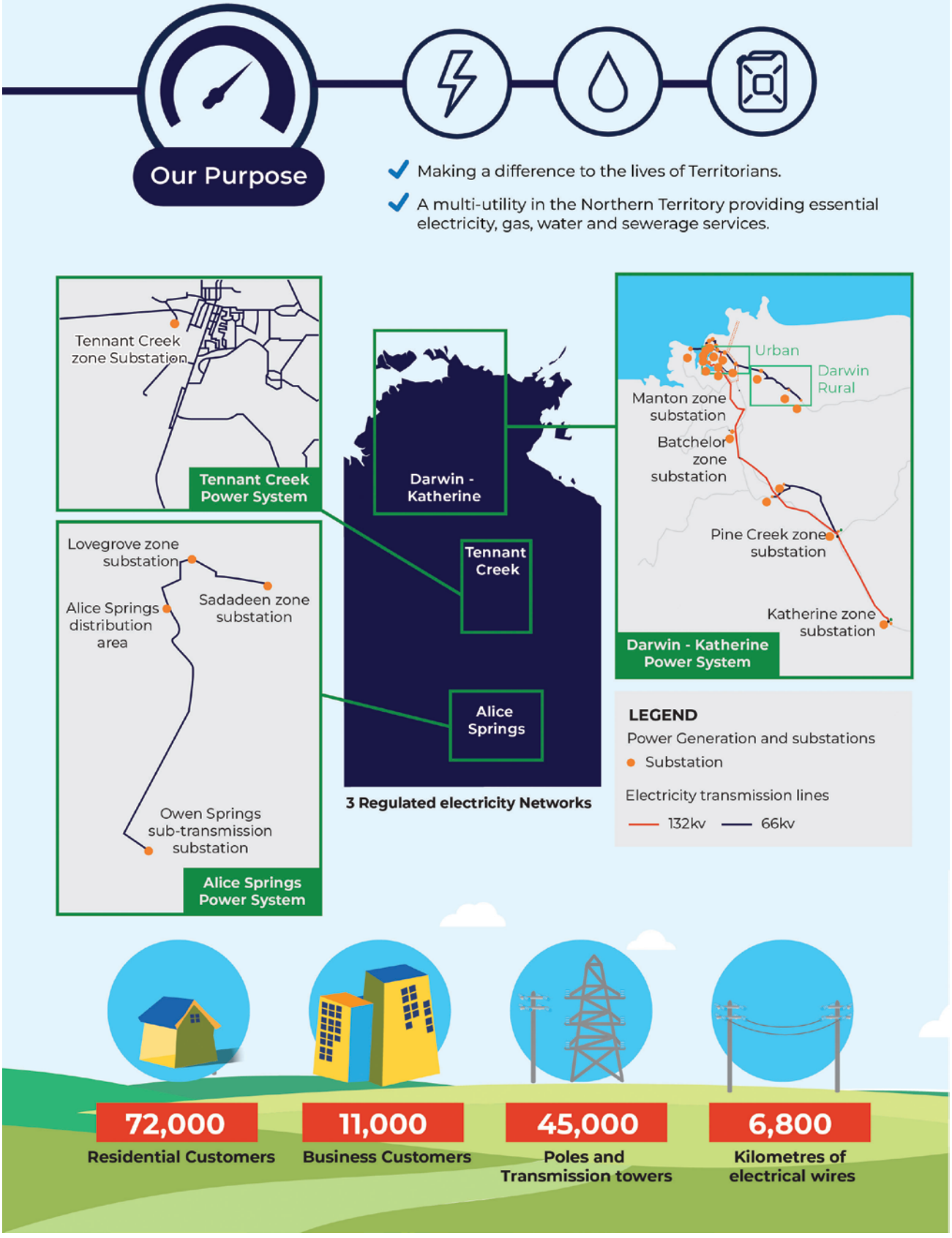
The AER will undertake an exhaustive review of our proposal and provide a final determination by April 2024. During this time, we will continue to engage with our customers and stakeholders on key issues.

How can you provide feedback?

We have developed a new web page called 'Your Say' that is focused on the upcoming 2024-29 regulatory proposal. This means you can directly provide your input to the questions we have posed in this Draft Plan, and provide any other comments. The web page can be accessed directly through this link (**https://www.powerwater.com.au/your-say/draft-plan**).

Consultations on the Draft Plan will close on 13 September 2022.

Figure 1 – Snapshot of our network



PowerWater

Residential customer at People s Panel

Contents

Power and Water Staff with
our People s Panel

A message from our Chief Executive Officer

Customers are at the centre of everything we do. It is therefore vital they are involved in developing our upcoming 2024-29 regulatory proposal for our regulated electricity networks in Darwin-Katherine, Alice Springs and Tennant Creek.

Our purpose as a business is to make **a difference to the lives of Territorians** and we have been consulting with our customers over the last year on their expectations of our business. We understand that our services are essential to everyday lives and our business community. It is important that we listen to our customers and embed their values, preferences and vision into our future strategies and plans.

These are exciting times to be in the energy industry. The shift to renewable energy started a decade ago with many customers installing solar on their roofs. Renewables are expected to supply 50 per cent of electricity consumed in Darwin-Katherine and Alice Springs by 2030.

The transition to renewables will be an **engineering challenge but there are clear benefits** to the NT from cleaner and more affordable energy.

The shift to renewables has been front of mind for our customers in our engagement sessions. We have laid out our vision of a being a **key enabler in the NT's transition** to a 50 per cent renewable energy future by 2030. As the operator of the transportation network of electricity, we lie at the centre of the shift to renewables. We agree with our customers that now is the time to redesign and re-engineer our network.

In this Draft Plan, we have identified new initiatives to increase the network's capacity to deliver two-way flows of energy using our customers' household solar. We are also exploring our **customers' preference** for an initiative to install community batteries that capture excess solar and would feed our energy system when the sun is not shining.

Our customers have also been telling us that we need to think **long term** to ensure the network remains reliable and secure. We have discussed challenges that lie ahead with replacing a significant proportion of assets installed after Cyclone Tracy. Our customers also want us to facilitate and fuel new technologies, including electric vehicles.

Our Draft Plan is being prepared at a time when **financial markets are volatile.** Financing costs are rapidly accelerating due to higher interest rates and global events in Ukraine. This has resulted in a forecast of revenue that is significantly above what we anticipated at the time of consulting with our customers in March and April.

The Draft Plan provides a good framework for **further conversation** on our plans going forward, particularly considering changing market conditions. We welcome your feedback.

Djuna Pollard

A message from our Reset Advisory Council

Electricity is complicated. Transport is a useful analogy for Territorians to help break down some of this complexity.

Power and Water does not make electricity, rather they deliver it. They are in the electricity transport business.

They are responsible for the electrical 'roads' that transport electricity from generators to customers. This includes the electrical 'highways' from the large generators to the substations where the transport routes divide into the electrical 'streets' that connect directly to customers. Since not that many of us store electricity at home we tend to rely on a continuous delivery service. Power and Water respond as fast as they can when there is an interruption to electricity delivery.

How do we want our electricity delivered to us for the rest of this decade? That is what is up for grabs as Power and Water develop their revenue proposal for the 2024-29 regulatory period. This represents a five year window where Territorians will rely on electricity as much, or more, than they do now.

To put a sense of scale to what is up for grabs, in the current five-year window, Power and Water has been approved to collect over $800 million dollars from customers via their electricity retailers. This was considered enough to pay for the operation, maintenance, refurbishment and expansion of the shared network.

But is this the right amount for 2024-29? Are there opportunities to be more efficient? Is there a case for spending more on certain things? By consulting with its customers, Power and Water will refine its proposal for 2024-29.

The role of the RAC is to keep a voice of the customer at the table as Power and Water consider the feedback from you – their customers.

The People's Panels and other sources of feedback have emphasised the following:

- Customer Service is really important – customers want to be able to talk to the business about important issues (new connections, move-ins, move-outs, metering and more) and clearly want to know more information when electricity deliveries are interrupted.
- The three regulated networks have some really unique attributes that mean that customers have quite different electricity delivery experiences and therefore have different priorities for the future.
- Customers have embraced the idea of 'home brew' electricity and want to share it more. They want Power and Water to ensure the electricity 'streets' are wide enough and in good enough condition for them to share with their neighbours. They are interested in sharing some local electricity storage as well.
- Customers also expect Power and Water to think about the long-term and invest in maintaining the electricity roads, streets, substations and so on to keep electricity deliveries as reliable as they are now – or even better for some customers – until 2030 and beyond. Customers understand that most of the infrastructure was built over a short period of time and it won't last forever – but they don't want to have to pay to replace it all over a similarly short time frame.

Customers have been consistent and clear that affordability for households and businesses are a top priority. So, it is important to also consider that investments in the future capability and capacity of the electricity delivery network will mean borrowing more money.

The existing 'regulatory asset base' (the amount still 'under finance') is over a billion dollars. It is becoming clear that the current period of low interest rates is over. This means it will cost more to finance the electricity network in the next five years compared to the previous five years. However, it is not yet clear just how much interest rates will go up. In an era of higher interest rates, some important trade-offs will be needed to keep revenues at the same levels as now.

Feedback on this document is a very important way of finding the right balance between the risk of underinvesting in the electricity delivery network and the risk of 'gold plating' and spending more than we really need. We look forward to hearing your feedback and we will do our best to represent that to Power and Water as we work towards a Draft proposal to the Australian Energy Regulator in January 2023.

Andrew Nance

The 2429 Reset Advisory Committee is made up of our broader customer base, with representation from everyday residential customers, advocacy bodies for socially and economically disadvantaged customers, youth and young people and small, medium and large-scale business. The committee has been working hard over the last few months, providing input to our regulatory proposals, assessing and reviewing customer engagement activities and ensuring our materials reflect what matters to them and the broader customer base.

Dr Andrew Nance is an independent consultant appointed by us to support the RAC. His role is to work with our Chair, Gavin Dufty and Committee members to gather input and feedback on our regulatory proposal from a customer perspective.

Residential customer examining options at People s Panel

Summary

The expenditure plans presented in the Draft Plan would lead to a revenue increase of 10 per cent (excluding inflation) compared to the 2019-24 current period. This is higher than anticipated at the time of our customer consultations in April 2022 due to a rapid increase in financing costs. In light of rising cost of living pressures, we consider this is an opportune time to re-visit our customers' preferences. The key issue is what expenditure can be deferred to improve short term affordability and what are the short and long-term risks.

This Draft Plan provides our initial view on the expenditure, revenue and tariffs for the 2024-29 regulatory period for our regulated electricity networks in Darwin-Katherine, Alice Springs and Tennant Creek. Chapter One of our proposal provides relevant background on our customers and our role in providing network services.

The purpose of the Draft Plan is to open a conversation with our customers on our strategic direction and the details of our plans. Our customers have been central to the development of our initial plans. Our engagement activities commenced in September 2021 and have focused on speaking directly to our customers.

A key innovative approach was to convene People's Panels in Darwin and Alice Springs – a group of representative customers that devote weekends to help shape our plans for the future. The vision, values and priorities have deeply influenced the plans set out in this document. Chapter 2 provides further information on our customer engagement activities and outcomes.

Adapting to unprecedented change

Our three separate regulated networks supply the smallest number of customers of any network in Australia. This places us under an immense scale disadvantage relative to other networks in Australia. We operate in difficult environments subject to extreme heat and weather events that place further pressure on delivering our services. Our small scale is further exacerbated by resourcing constraints in the NT.

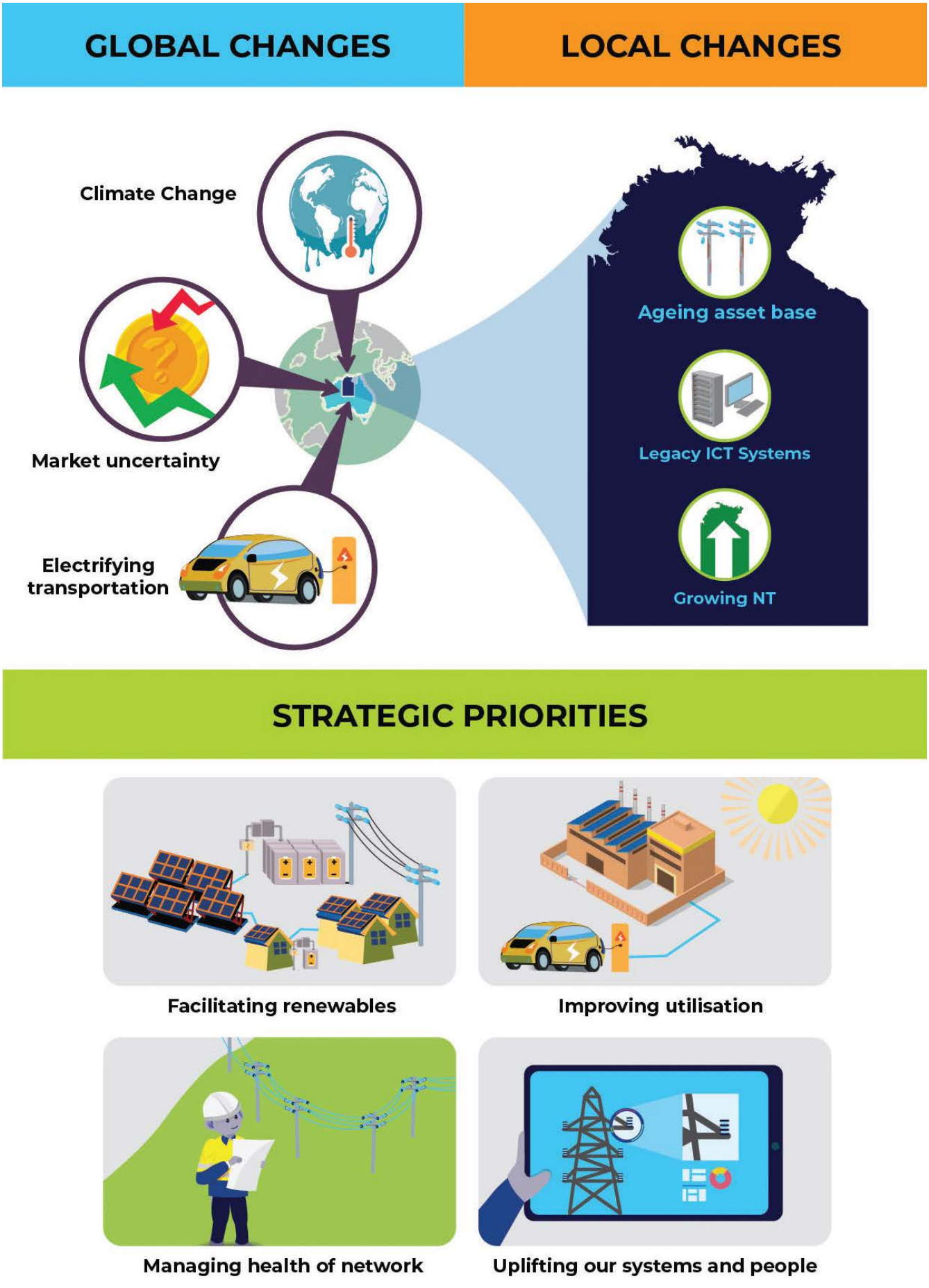
Our small network is facing disruptive and fast paced change driven by global and local factors including climate change, electrification of transport, ageing network assets and a growing economy. Our functions and cost structures will change dramatically over the next 20 years. The strategic priorities we discuss in Chapter Three of this Plan are about adapting to change in a way that can maintain affordability and quality of services. This is discussed below, and is depicted in **Figure 2**. Our regulatory proposal has sought to embed our strategic priorities in our five-year expenditure, revenue and tariff plans.

Transition to low-cost renewable energy

Our most pressing challenge is facilitating the NT's transition to renewable energy. Renewable energy offers the Territory the benefits of clean and low-cost power that can unlock capacity to grow our economy.

Our network lies at the centre of fulfilling the Northern Territory Government's (NTG) goal of 50 per cent renewable energy by 2030. Our transmission network will need to relocate and expand to meet a rapid increase in large solar farms including connecting new 'renewable hubs' announced by the NTG. We will also need to adapt our network to provide increasing exports at the street level.

Figure 2 – Drivers of change impacting our business



Our strategic planning is looking beyond 2030 as we plan for a NT electricity system that is more reliant on renewables. This will be a significant engineering challenge for our network which was built for one way traffic from large fossil fuel generators. We will need to draw on modern technology to re-shape our network to deliver exported energy at the street level.

Our five-year plans for 2024-29 include a new export hosting system to cost-effectively unlock higher levels of household solar. We will also be investing in community batteries to store excess solar in the day and discharge in the evening when the sun is not shining.

Meet the growing demand of Territorians

We expect demand to significantly increase over the next 20 years. The NTG predicts our population will increase by more than 30 per cent by 2040. In addition, we will need to provide electricity to major industrial customers locating to the Territory.

Electric vehicles will also heavily impact demand for energy with each car adding approximately 30 per cent more consumption for a typical household.

This provides our network with an opportunity to increase our scale and pass on lower costs to our customers through better utilisation of the network. Our strategic priority is to provide customers with the right information and incentives to shift energy consumption to off-peak periods.

Our five-year plan includes initiatives to improve our network tariff structures so they provide customers with price signals that reflect our future costs. This includes lower prices in off-peak periods during the day when low cost solar is available and when there is significant load capacity on our network.

Managing the health of our network

We have emerging challenges ahead with managing our network assets. A large proportion of our assets were constructed shortly after Cyclone Tracy in 1974. By the end of 2030, these assets will be approaching 55 years of age. This may trigger a significant uplift in replacement capital expenditure in the following decade. We need to plan for these changes to preserve the reliability and security of the network into the future.

Our strategy will be to employ best practice asset management practices and risk tools to extend the life of these assets. At the same time, we will look to new technology to retire rather than replace ageing assets. Even with these measures in place, we still expect our replacement expenditure will need to increase significantly beyond 2030. We are looking at measures to smooth the expected price increase in the 2030 to 2040 period including through a novel approach suggested by our People's Panel – a 'saving for a rainy day' fund. Under this approach, a small amount of revenue would be put aside in the 2024-29 period to use when replacement capital expenditure increases in future periods.

Uplifting our people and systems

To deliver our increased functions, we will need to uplift our capability through smart systems and getting the best out of our staff. At present we use ageing Information Communication and Technology (ICT) systems that are losing functionality. We have made some investments in the 2019-24 period and will progressively implement new systems over the next 10 to 15 years. We already have in place a new operating model which will help capture synergies in the way our staff deliver services as our workload continues to rise.

Chapter Three of this Draft Plan seeks to capture feedback from our customers on our 20 year strategic outlook, including the four key priority areas that have influenced the development of our 2024-29 expenditure, revenue and tariff plans.

The right balance – affordability and investing for the future

A consistent theme in our engagement with customers has been the right balance between maintaining affordability of our network service and long term sustainability.

The change in network revenue between regulatory periods is a good metric for assessing impacts on affordability. **Figure 3** shows that our revenue is forecast to increase by 10 per cent in 2024-29 compared to 2019-24, excluding the impacts of inflation. Despite this, our forecast revenue is below the allowance set by the Utilities Commission in 2014-19 and the subsequent Ministerial direction that had been put in place to reduce revenue over that period.

The revenue forecast is higher than our expectations at the time of our People's Panels sessions in April 2022, largely due to a significant change in financial markets. **Figure 4** shows the change in our forecast revenue as a result of the People's Panels sessions and subsequent changes in financial markets.

Commitment to target reductions in forecast revenue

In our April People's Panels sessions we noted that our initial estimates of expenditure plans indicated a revenue forecast of $892 million, about 7 per cent higher than the 2019-24 period. We discussed levers that could reduce revenue to 2019-24 levels. This included prioritising capital expenditure, changing our accounting treatment of overhead allocation to capitalise more overheads (which defers cost recovery), and implementing efficiency stretch targets for operating expenditure. This reduced revenue to $835 million, close to actual revenue in the 2019-24 period.

Testing customer preferences for additional programs

Our customers wanted us to invest for the long-term including facilitating renewables, proactively managing the ageing of our network and improving customer service. We provided customers with options for additional programs not included in our initial expenditure estimates at the time. Customers were comfortable with the inclusion of these future looking programs even if they resulted in a small increase in revenues for the 2024-29 period compared to 2019-24. The implementation of customer preferences added $29 million to the forecast resulting in revenue forecast for 2024-29 of $864 million.

Global headwinds – financing costs impacting our forecast revenue

Since our customer consultations, our expected financing costs for the 2024-29 period has increased markedly due to higher interest rates, and global events. These uncontrollable factors have caused a further uplift in our forecasted revenues to $921 million, 10 per cent higher than the last regulatory period (excluding inflation). At the same time, inflation has risen significantly since April 2022, and this will add further cost of living pressures to our customers.

The key question posed in the Draft Plan is whether priorities for customers have shifted in light of higher than expected revenue. Improving affordability in the short-term will mean projects are deferred, and that reliability and safety risks will rise. Deferring expenditure also places price pressures for future generations, compounding the expected increase in replacement capital expenditure to manage the ageing assets built after Cyclone Tracy.

Figure 3 – Forecast revenue for 2024-29 compared to current and previous periods ($, 2024 real)

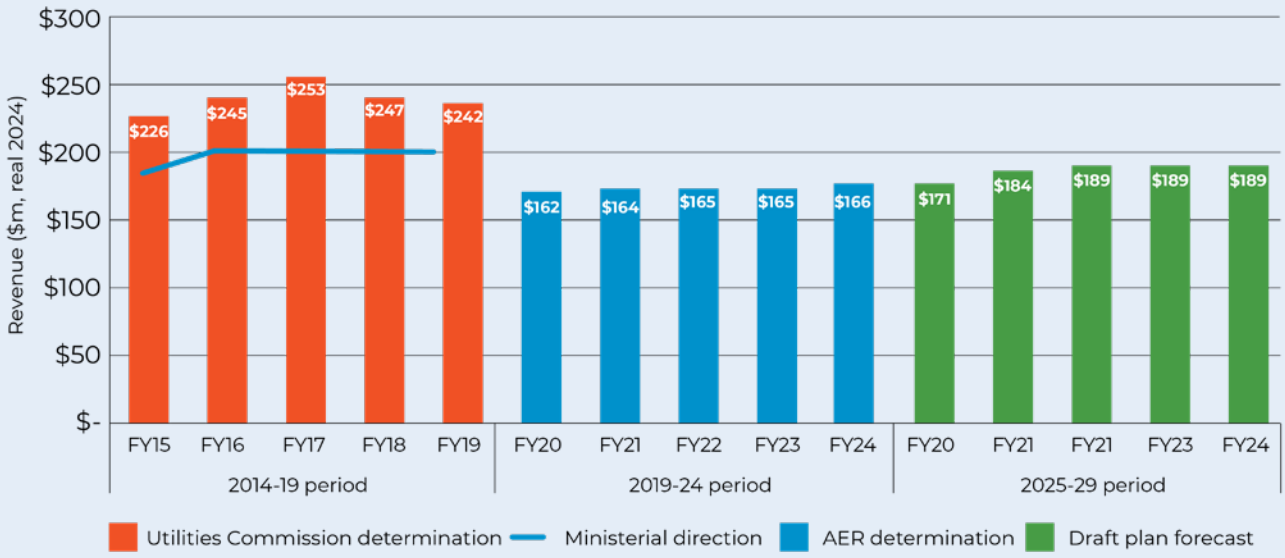
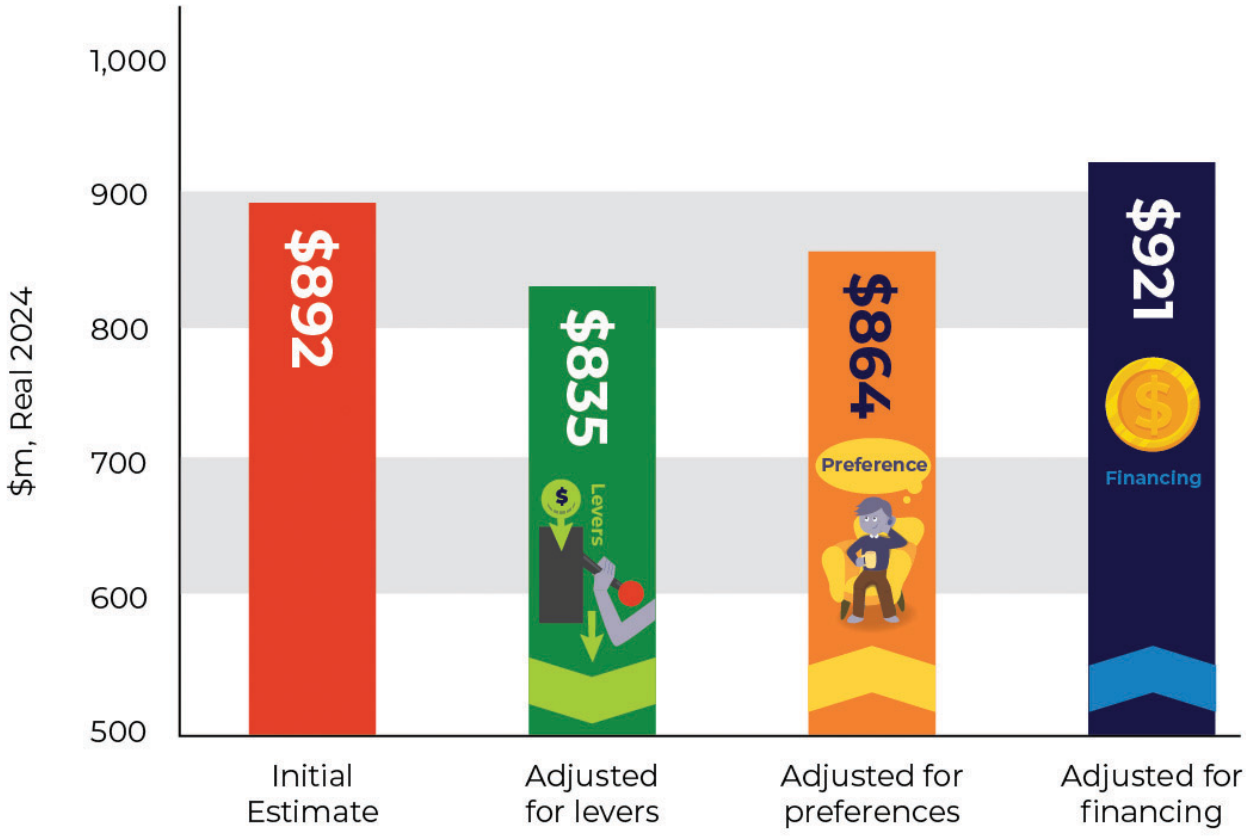


Figure 4 – Changes to our revenue forecasts since our People's Panel sessions in April 2022 ($, 2024 real)



Numbers at a glance

Figure 5 identifies the key expenditure and revenue inputs in our Draft Plan. Our investment costs have risen significantly due to an increase in our forecast capital expenditure combined with an increase in the rate of return. However, the reduction in operating expenditure in the 2024-29 period is placing downward pressure on revenue. Below we provide a summary of our expenditure plans, revenue plans and tariff structure changes. All numbers are expressed in real $2024 except for bill impacts which are in nominal dollars.

Capital expenditure

We forecast a significant increase in capital expenditure in the 2024-29 period. Higher capital expenditure is driven by an expected increase in replacement and growth capital expenditure.

Replacement of network assets accounts for 40 per cent of forecast capital expenditure. The key driver of higher expenditure is an expected decline in the condition of our assets due to age and environment. The higher expenditure also reflects a replacement fund that seeks to bring forward future replacement based on customer preferences. Growth capital expenditure accounts for about 28 per cent of forecast capex in the 2024-29 period. We expect significant growth in some parts of our network to meet new residential and commercial connections. We are also investing in hosting capacity and community batteries as part of our future network strategy consistent with customer priorities.

Non-network capital expenditure accounts for about 13 per cent of forecast capex in 2024-29. We are planning to make scale-efficient and prioritised investments in the 2024-29 period to gradually refresh our ageing ICT systems. We will continue with our current lease arrangements for fleet and property, while remediating properties in poor condition. Capitalised overheads are forecast to account for 20 per cent of forecast capex in the 2024-29 period. More overhead expenditure has been allocated to capital expenditure after recent changes to align our methods with peer networks. Chapter Four provides more detail on our forecast capital expenditure.

Operating expenditure

We are forecasting a thirteen per cent decrease in operating expenditure resulting in forecasts of a similar level to what was approved by the AER in the 2019-24 determination. This is driven by improvements in how we measure underlying labour costs and efficiency targets we have embedded into our forecast.

The change in overhead allocations results in a realistic comparison of our operating expenditure performance compared to peers and is more consistent with the efficient level of expenditure substituted by the AER in the last regulatory determination. We propose to include a staggered 10 per cent efficiency stretch target reflecting our ongoing commitment to delivering real and sustained reductions in our costs over time. Chapter Five of this Draft Plan provides more detail.

Revenue and bill impacts

The 10 per cent increase in revenue is largely a result of changing finance conditions. Current market conditions are leading to an eight per cent increase in our rate of return compared to the AER's 2019-24 determination. A further driver of higher revenue is the increase in our regulatory asset base (RAB) as our forecast capital expenditure increases in the 2024-29 period.

We have used revenue as a proxy for the expected bill increase of our customers. **Figure 6** sets out the bill impacts for small customers on an accumulation meter based on forecast inflation. Chapter Six provides more detail on revenue and customer impacts.

Figure 5 – 2024-29 forecasts compared to the 2019-24 period ($2024, real)

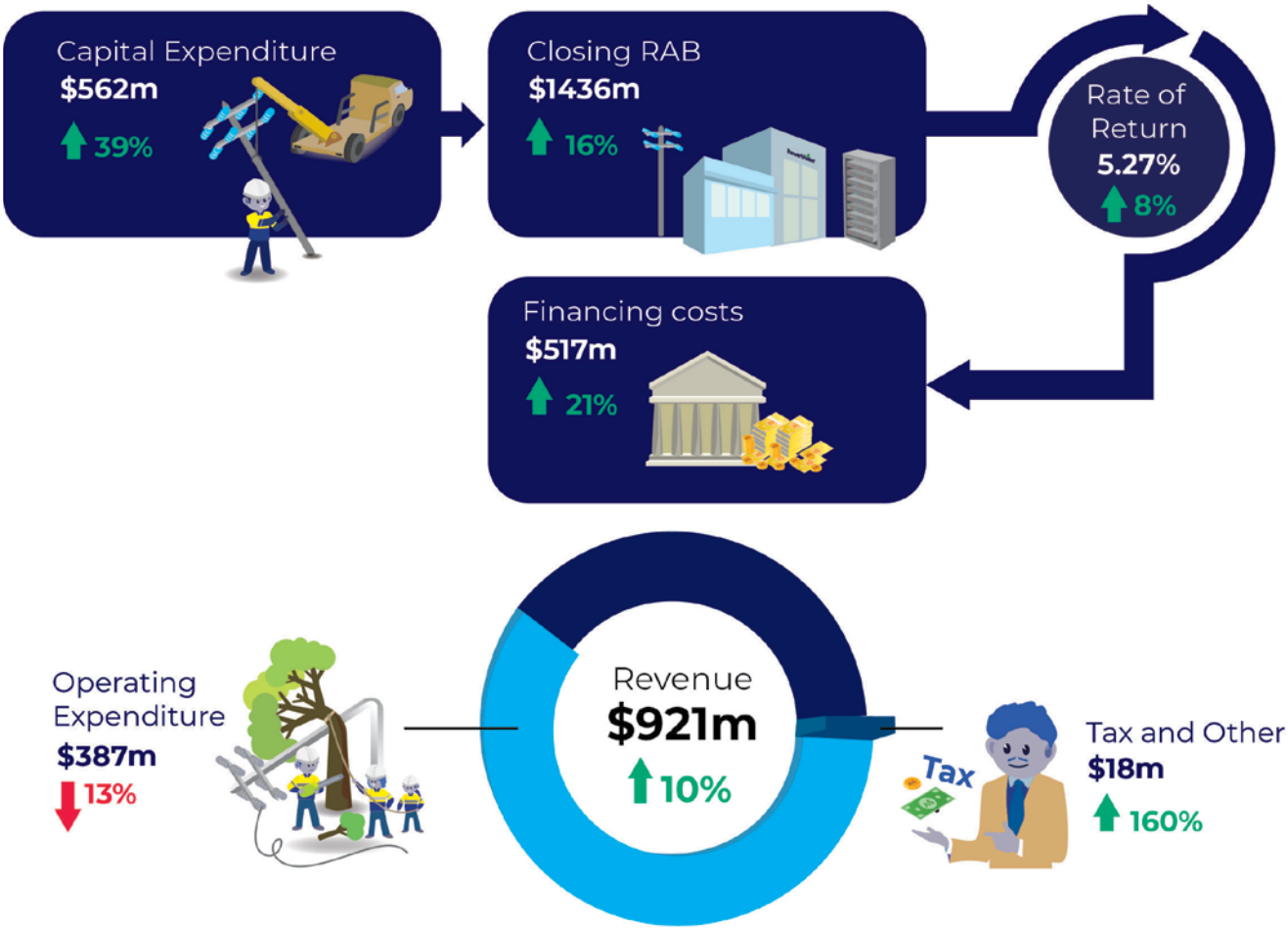


Figure 6 – Bill impacts for a typical small customer with an accumulation meter (nominal $)

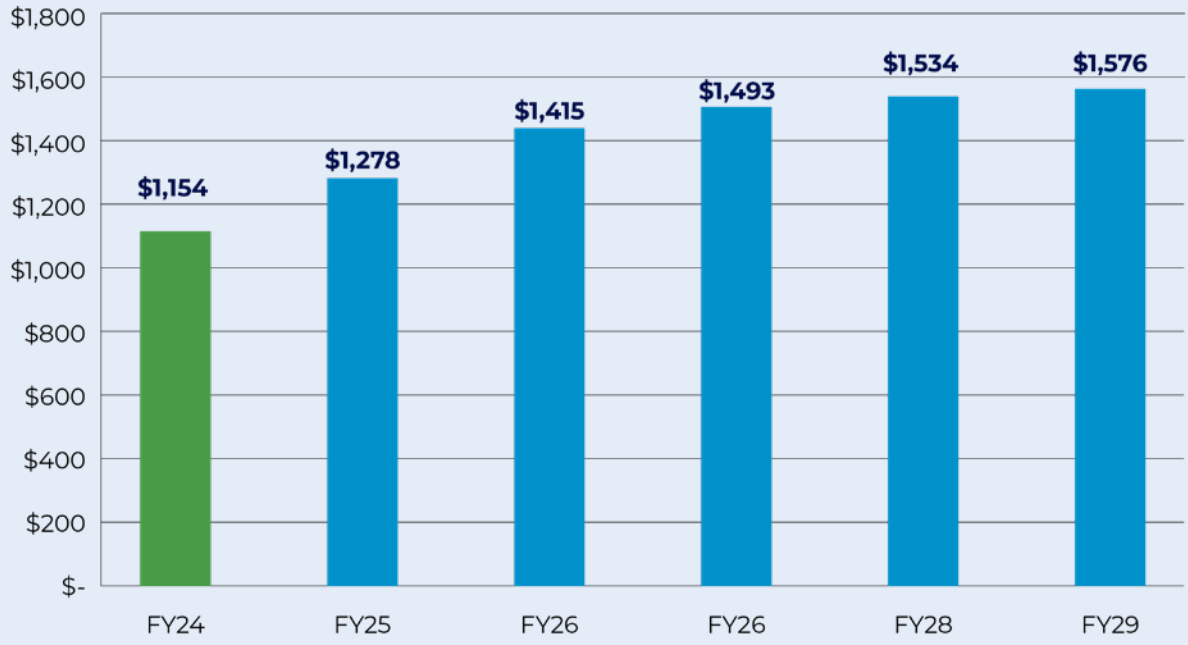
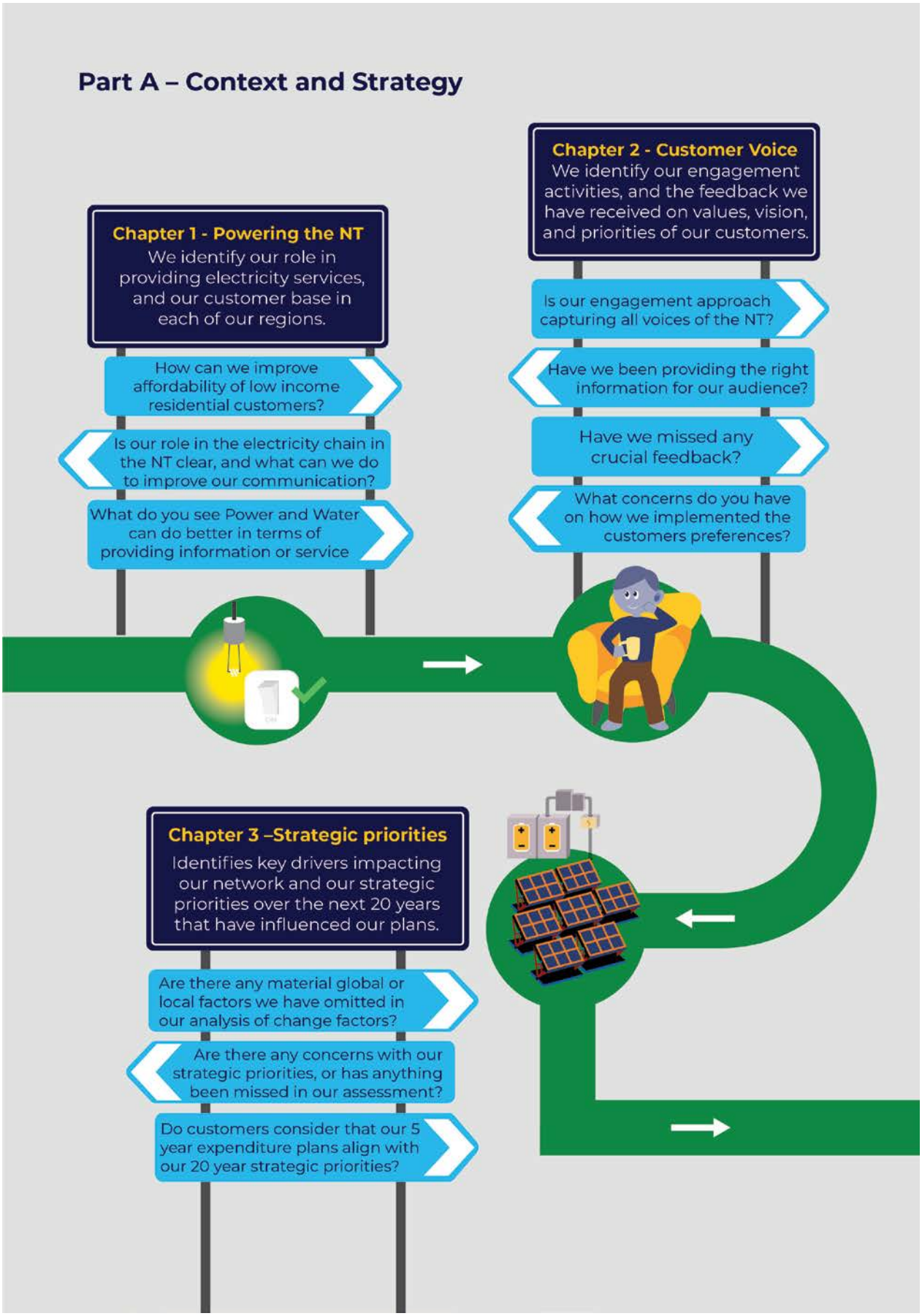


Figure 7 provides a structure map for the Draft Plan including the key questions we are seeking feedback on from customers and broader stakeholders.



Part B – Details of our 5 year plans

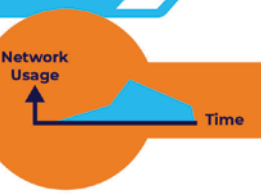
Chapter 8 – Tariffs for a new age
Identifies the case for change in developing fairer network tariffs, and the key areas of change we are considering.

To what extent should tariffs reflect the costs different customers impose on the network?

Are there specific aspects of our proposed tariff structure that you support, oppose or want more information about?

Chapter 7 – Metering services
Identifies our smart meter strategy, and our costs and revenue for the metering service.

Do customers consider we have the right pace of smart meter rollouts?



Chapter 6 – Revenue and customer impacts
Identifies the key components of our revenue forecast for the 2024-29 period and the likely customer impact on electricity bills.

Do you consider the customer preferences should be re-visited in light of the higher than anticipated forecast revenue?

Do customers consider that short term affordability should be prioritised over long term sustainability?

Chapter 5 – Operating expenditure
Identifies our approach and method for establishing a forecast of operating expenditure in the 2024-29 regulatory period.

Do customers support our efficiency adjustments, and consider they are appropriate stretch targets?

Do customers have concerns or questions on the step changes to implement customer priorities on the future network and customer service?

Chapter 4 – Capital expenditure
Identifies the key drivers of new investment on our network and non-network assets in the 2024-29 regulatory period.

Have we adequately implemented customers' priorities on future network and addressing the replacement wall?

Are there specific aspects of our proposed capital expenditure that you support, disagree with, or want more information about?

Have customers had any concerns with our proposed changes to connection policy?

Power and Water staff with customers at our People s Panel

Part A

Context and Strategy

1. Powering the NT

We provide electricity services to more than 90 communities in the NT over a landmass of 1.3 million square kilometres. Our regulated networks in Darwin-Katherine, Alice Springs, and Tennant Creek transport electricity to 72,000 residential customers and 11,000 businesses. Each of our networks are unique, operating under different designs and environment.

The NT community is vibrant and diverse. Power and Water's purpose is to make a difference to the lives of Territorians. This involves providing reliable electricity that promotes economic growth and contributes to our community's aspirations.

We provide electricity, gas, water and sewerage services to townships and small communities across the NT. We have the smallest population among all Australian states and territories, but our population is dispersed over a large landmass. Our multi-utility structure is an advantage in addressing the diseconomies of scale in providing essential services to a relatively small population.

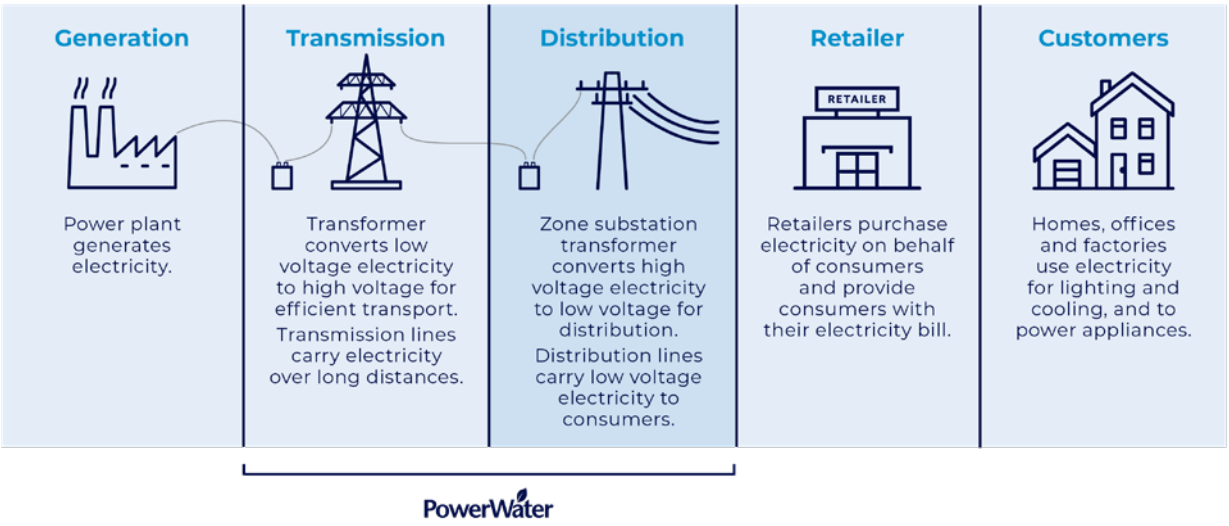
1.1 Our role in the NT regulated electricity systems

The scope of our electricity services varies across our townships and communities. In our regulated areas of Darwin-Katherine, Alice Springs and Tennant Creek, we are responsible for the transmission and distribution networks as seen in **Figure 8** below. Our role is to transport electricity from generators to our residential and business customers using our poles, cables, conductors, and transformer assets. We also undertake a metering service to identify how much energy our customers have used.

Until recently, all electricity was generated at large scale power plants. Over the last decade, we have seen more of our customers produce solar and use our network to export the power to other customers. We have also seen more large scale solar farms connect to our network, a trend that will further accelerate with the NTG's policy to have 50 per cent of electricity supplied by renewables by 2030.

The retailer has the primary relationship with customers, managing the electricity bill and organising connection. However, in many cases we also have a direct relationship with customers. For instance we provide information on network maintenance and outages, ensure energy use and billing data is correct and provide design advice on connecting to the network. We also facilitate the physical connection and have obligations to provide safe and secure electricity services. **Figure 8** provides a visual of our role in the electricity sector in the NT.

Figure 8 – Our role in the electricity system



1.2 Understanding what our customers want

About 72,000 households and 11,000 businesses receive power from our electricity network in the regulated regions. The power is crucial to cooling and heating homes, cooking, lighting, charging computers and mobiles, laundry and all the everyday ways we use electricity. Electricity is also a vital input for all NT businesses and a critical input for some of our larger industries.

A key feature of our engagement to date has been trying to understand how our business impacts the lives of customers. **Figure 9** is the 'Customer Lifecycle' – our attempt to understand what customers expect and want from us across their journey as a customer. This includes when they connect, when the power is on, when power is interrupted and when power is disconnected.

Our customers have been clear on what they want from our network at each point of the lifecycle:

- **Connecting** – When customers are connecting to our network, they want fast and easy connection. This is a period where customers actively interact with us and want us to ensure we partner with retailers on making the process seamless.
- **Connected** – When customers are connected they want reliable energy at fair pricing. Customers felt that the meter reading and the billing process was vital to ensuring that bills were fair. Many of our customers also want fair rewards for contributing their solar energy to the generation mix. More generally, our customers are impacted by our regular maintenance activities including tree trimming, and want to ensure that we are taking adequate action to ensure the greenness of the streetscape.
- **Outage** – Customers want good communication when they experience an outage. They want to be able to contact us in ways that are convenient for them – from telephone to social media to direct notifications. Most of all they want clear information on restoration times. Finally customers want us to take care when we need to enter their property to fix an outage.
- **Disconnected** – Customers who wanted to move out indicated that prompt timing and reconnection were vital to their experiences. There was also a want for accurate metering reads, and prompt billing at the end of disconnection.

In Chapter Two, we discuss the current pain points our customers experienced across the lifecycle, and how we engaged with customers on these issues. This included the impact of our tree trimming on the street landscape, the meter and billing process, and our role in providing objective information to customers about broader electricity issues such as connection of solar panels.

Figure 9 – The Customer Lifecycle

1.3 Energy affordability is an issue in the NT

The extreme heat in the NT means we are far more reliant on cooling than other places in Australia. A typical household consumes about 8500 MWh of energy each year, almost double the consumption of a typical NSW household as seen in **Figure 10.** This means that electricity bills comprise a larger portion of disposable income compared to the national average.

For customers on low incomes, the relatively high costs of cooling become even more pronounced. Turning off the power to reduce the bill has social and health implications in the extreme heat. We also have more customers on low incomes compared to the rest of Australia. ABS data shows that 6 per cent of Territorians were on income support compared to the national average of 3 per cent in 2019.

In our engagement sessions, customers told us we need to be more proactive in improving energy affordability of low income households. A key concern was energy efficiency, with low income households tending to live in old housing that requires significantly more cooling due to insulation issues. Low income households are also generally renters, with the NT having the highest number of renters per capita in Australia. This means that the existing cooling appliances tend to be inefficient, leading to higher costs of energy compared to the average household.

Key measures to improve energy efficiency include better insulation in the ceilings, windows and floors. Replacing older cooling appliances with newer models is also likely to lower the amount of energy consumed. We see a role for positive incentives to encourage these initiatives.

A key issue we seek to explore with our stakeholders is the role we should play in improving the energy efficiency of customers. Should we lead the conversation, provide more information on our website, or should we implement our own initiatives which are then funded by all customers?

Figure 10 – Annual energy consumption for typical residential customer

Residential customer at People's Panel

1.4 Our activities and services

In our engagement sessions, customers wanted to know how our activities fit into their experience with our network. We used a framework that mapped our activities to the customer lifecycle described in section 1.2.

Figure 11 shows our electricity network and support activities align to one or more of the phases of the customer's journey.

- In the **connecting** phase, we build new assets to meet demand from residential and commercial developments, and work with our retailers to connect new customers to the grid. This includes installing new meters when a new customer connects to the network
- We keep customers securely and reliably **connected** to our network by maintaining and replacing our network assets. We also undertake vegetation management to ensure our electrical assets do not contact trees and shrubbery. Finally, we read meters to ensure customers receive an accurate bill for the energy they have consumed.
- Our customers experience an **outage** when there is scheduled maintenance or due to unplanned events such as extreme weather or an asset failure. When there is an unplanned outage, we undertake emergency repairs such as during Cyclone Marcus in 2018. We also use our customer service team and rely on our ICT systems to notify customers of restoration times.
- We **disconnect** customers when requested. Our role is to work with the customer's retailer and to ensure a final and accurate meter read for the last bill.

There are also many core activities we perform across the customer's lifecycle. Our network planning team are monitoring the health of our assets and identifying emerging needs. This activity is important for maintaining the reliability, safety and security of the network. Our non-network activities are directed at ensuring we have the necessary ICT, property and fleet support to perform our network activities. Like any business, we also need to perform corporate activities such as finance, legal, procurement and human resources support.

The AER classifies our activities into services. This is to ensure that the regulatory processes focus on parts of our business where we are a monopoly or dominant provider, and does not unnecessarily regulate a market where there is sufficient competition. In the 2019-24 determination, the AER classified our services into three broad categories.

Services are classified as standard control if there is no prospect of competition. The AER set a revenue cap for these services based on financing and operating costs. The transportation of energy through our network to our customers is a standard service which is recovered through our network tariffs from a customer's retailer. We discuss our plans for standard control services in Chapters Four, Five and Six.

Alternative services relate to one-off services for an individual customer, or services where there is the prospect of competition. Alternative services are paid for directly by the person or entity receiving the service. This includes our metering services which is discussed in Chapter Seven.

Unclassified services relate to areas of the business where there is sufficient competition in the market.

The AER recently published a preliminary position paper on changes to the classification of services for Power and Water, following a submission we provided. In the paper, the AER noted the changing nature of the energy market and the possibility of new emerging services. The AER also recognised the importance of a customer's connection and ability to export their energy to the network.

Figure 11 – Power and Water activities

1.5 Our costs

Figure 12 shows the relative contribution of activities to total network costs over the last decade and the type of costs we incur.

Capital expenditure relates to building or replacing assets that provide services over a longer period. This includes replacing network assets, building new network assets and connecting customers to the network. Capital expenditure is recovered over the expected life of an asset.

Operating expenditure relates to regular annual expenses such as maintaining assets, vegetation management and emergency response to outages. These costs are recovered on a yearly basis.

Some activities have a mix of operating and capital expenditure. Like other businesses, we have Information, Communication and Technology (ICT), property and fleet assets to support our network activities. Some of these costs relate to assets such as hardware, while others relate to regular expenditure such as ICT support. We also invest in new meters and incur operating expenditure to manage our metering functions.

Network and corporate overheads support our network services. Network overheads include asset management activities we undertake to plan, control and manage the network. Corporate overheads including finance, legal, procurement and human resources to support activities across our electricity, water, sewerage and gas lines of business. We allocate overheads to each line of business in accordance with our Cost Allocation Methodology. We also allocate these costs to capital and operating expenditure depending on the nature of the activity.

Our network has many unique characteristics that impact on our relative costs compared to our peers.

Small scale

We have the smallest electricity network compared to other networks in the National Electricity Market on measures such as customers, energy volumes and peak demand. At the same time, our network is relatively spread out meaning we need to build more network to meet the demands of each customer. We also must meet the same regulatory obligations as larger networks but have to spread the costs over less customers.

Transmission network

Together with Tasmania, we are the only business in Australia that has complete carriage of transmission and distribution functions. Our transmission network in Darwin-Katherine and Alice Springs is extensive with about 400 kilometres of transmission line, 3000 towers and four sub-transmission substations. Being a transmission operator also means we need to ensure that large scale generators can connect safely to our network.

Extreme weather

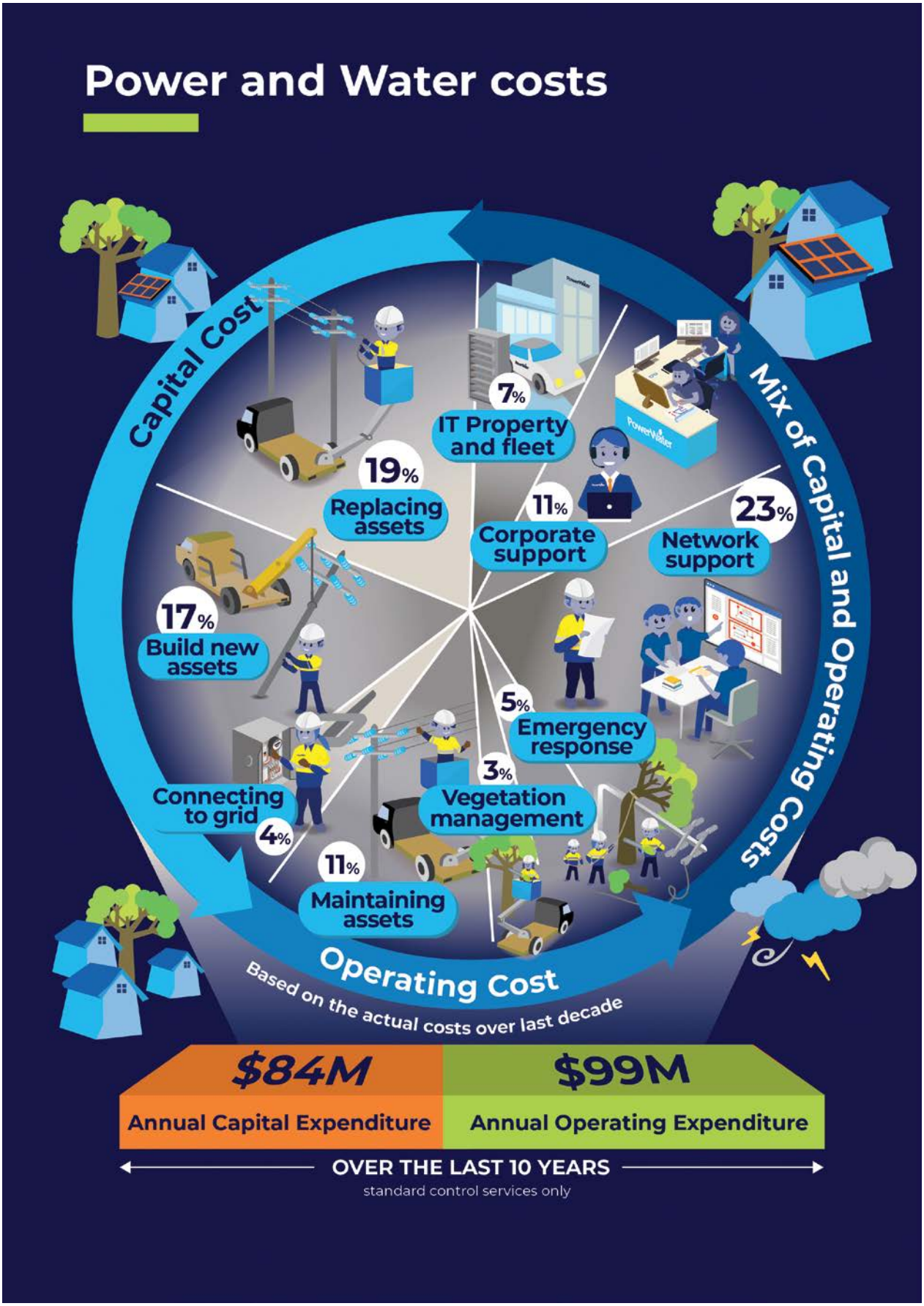
We operate in extreme environments particularly in Darwin which has high humidity in the wet season and is prone to destructive cyclones and tropical storms. We also have extreme heat compared to other places in Australia. These conditions tend to increase our emergency management costs compared to other networks and can lead to more wear and tear of our network assets.

Weather also impacts on labour productivity in humid weather, with our field crews productivity impacted by the extreme conditions.

Unique regulations

Like all other networks, we have licence and reporting obligations and must comply with environmental regulations. We also have unique obligations that impact our costs including traversing sensitive environmental areas. This requires mitigation practices which increases time and cost to undertake network activities. Further, the Northern Territory has many sites of cultural significance and all programs of work need to assess and mitigate against adverse cultural heritage impacts leading to additional costs.

Figure 12 – Types of costs over the last decade



Power lines in Katherine

1.6 Our networks and customers in the three regions

In our consultations with customers, a key message was that each region has its own circumstances and that our decisions should reflect and adapt to meeting the needs of different customers.

We also discussed how each of our regions have a unique network design and environment, and how that impacts our decisions. For example, the assets in Darwin are prone to cyclones and extreme events, while assets in Alice Springs face salinity issues due to the water table. Our customers wanted to understand these differences and how we make decisions in the interests of all customers.

Figure 13 shows the differences between each region in terms of the network and the socio-demographic characteristics. This is discussed further in the sections below.

Darwin-Katherine

The Darwin-Katherine electricity system is a stand-alone power system that provides power to 150,000 people and 8,200 businesses in Greater Darwin and outer suburbs. The system also provides power to 16,000 people and 800 businesses in Katherine. It is our largest electricity network in the NT, accounting for 83 per cent of energy consumption across the three regulated regions.

The Darwin-Katherine electricity system is predominantly powered by gas turbines south of Darwin. In recent times we have seen more large-scale solar enter the energy system and we expect this to accelerate significantly over the next decade in combination with storage to produce 35 per cent of all electricity in the region. In addition to large scale generation, about 10 per cent of electricity production comes from rooftop solar owned by our customers. This is expected to increase to 15 per cent by 2030.

Our transmission network transports electricity north to Darwin and surrounding regions. The Darwin-Katherine transmission line also brings power to customers all the way south to Katherine through Manton, Pine Creek and Batchelor. The transmission network includes 400 kilometres of line and 2,700 towers. Our distribution network is extensive with more than 5,000 kilometres of lines, 32,000 poles, 3,000 transmission towers and 3 zone substations.

Alice Springs

The Alice Springs electricity system is significantly smaller and less complex than the Darwin-Katherine network. It provides power to 26,500 people and 1,750 businesses. It accounts for about 15 per cent of energy consumption across the three regulated regions.

Electricity power is predominantly generated by a large-scale gas turbine south of the main population area. The NTG has a policy to increase renewables to 50 per cent of all energy consumed by 2030. About 20 per cent of our customers have solar panels accounting for about seven per cent of energy production. There is also some large-scale renewables connected to the grid accounting for about four per cent of energy produced.

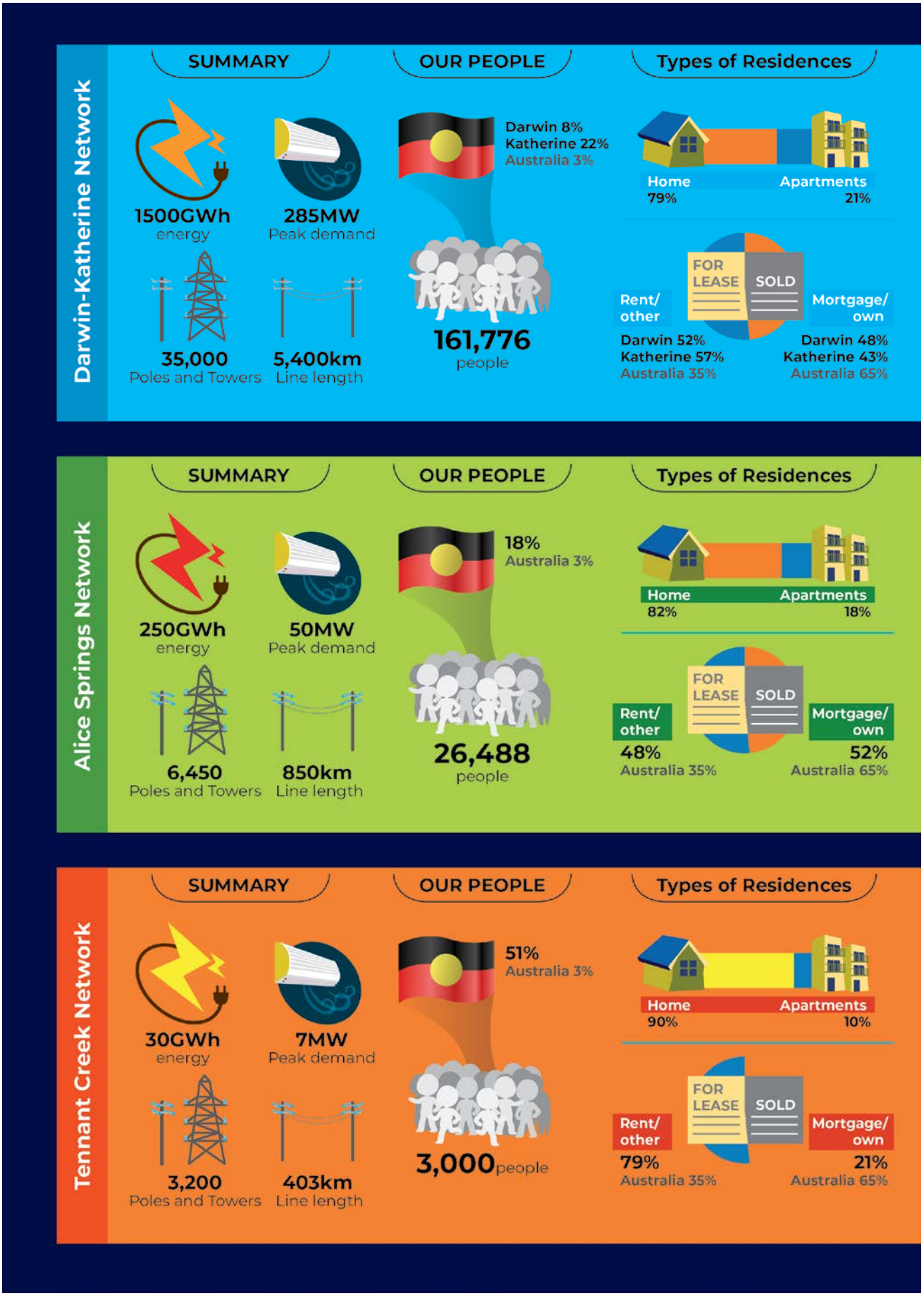
About 30 kilometres of transmission line transports the power to our zone substations. The distribution network comprises about 850 kilometres of electricity lines and 6,500 poles.

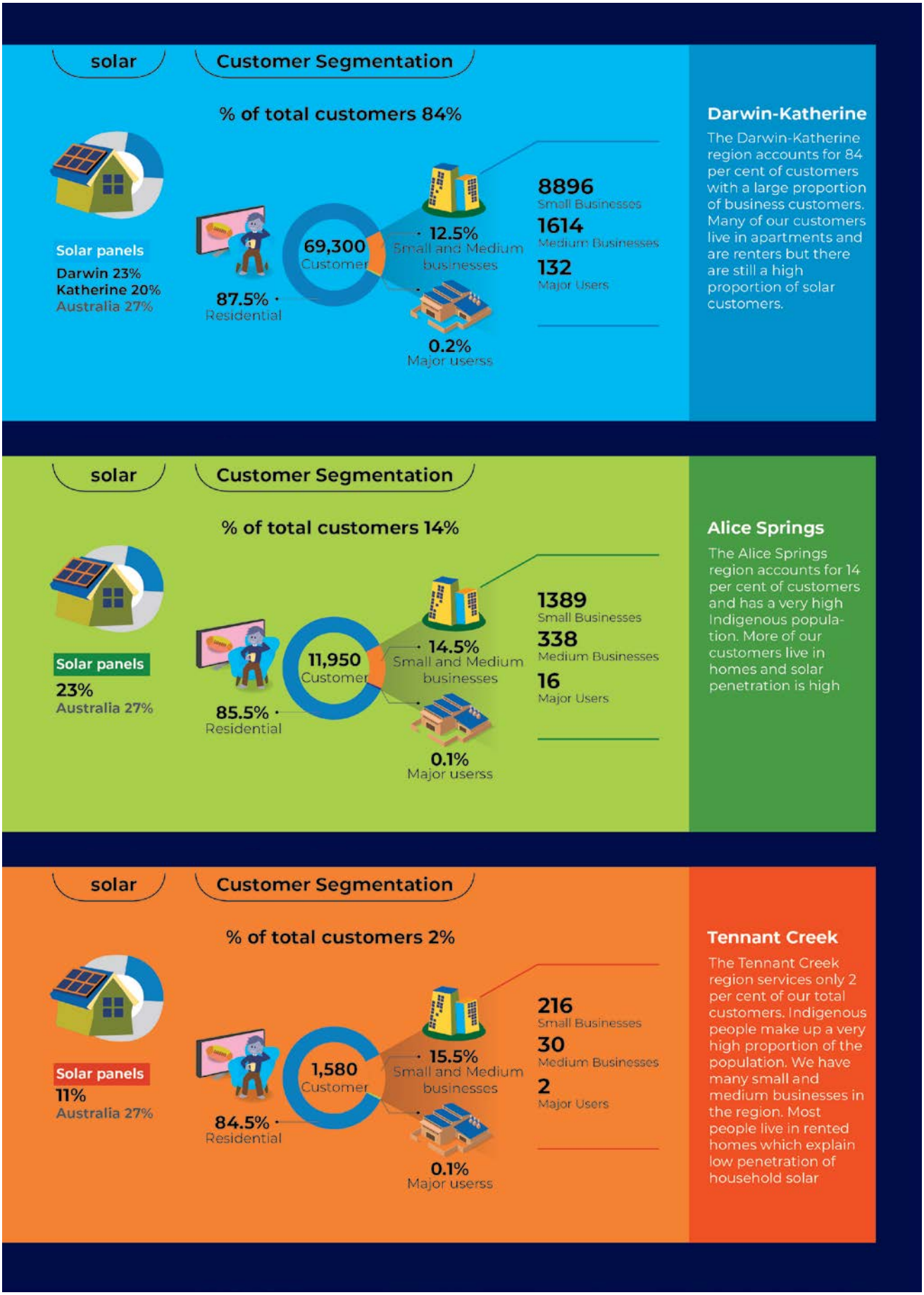
Tennant Creek

The Tennant Creek electricity system is the smallest of our regulated networks. It provides power to 3,000 people and 250 businesses. It accounts for only two per cent of total energy consumption across our three regulated regions.

Electricity is generated by the Tennant Creek Power station and transported to the zone substation. The distance of the network is relatively large for the customer base comprising 400 kilometres of lines and 3,200 poles, reflecting the rural location.

Figure 13 – Comparison of key networks




solar
Customer Segmentation
% of total customers 84%
Solar panels
Darwin 23%
Katherine 20%
Australia 27%
87.5%
Residential
69,300
Customer
12.5%
Small and Medium businesses
0.2%
Major userss
8896
Small Businesses
1614
Medium Businesses
132
Major Users
Darwin-Katherine
The Darwin-Katherine region accounts for 84 per cent of customers with a large proportion of business customers. Many of our customers live in apartments and are renters but there are still a high proportion of solar customers.
solar
Customer Segmentation
% of total customers 14%
Solar panels
23%
Australia 27%
85.5%
Residential
11,950
Customer
14.5%
Small and Medium businesses
0.1%
Major userss
1389
Small Businesses
338
Medium Businesses
16
Major Users
Alice Springs
The Alice Springs region accounts for 14 per cent of customers and has a very high Indigenous popula-tion. More of our customers live in homes and solar penetration is high
solar
Customer Segmentation
% of total customers 2%
Solar panels
11%
Australia 27%
84.5%
Residential
1,580
Customer
15.5%
Small and Medium businesses
0.1%
Major userss
216
Small Businesses
30
Medium Businesses
2
Major Users
Tennant Creek
The Tennant Creek region services only 2 per cent of our total customers. Indigenous people make up a very high proportion of the population. We have many small and medium businesses in the region. Most people live in rented homes which explain low penetration of household solar

Power and Water staff with customers at our People's Panel

Key Questions for stakeholders in Chapter One

How can we improve affordability for low income residential customers?

Is our role in the electricity chain in the NT clear and what can we do to improve our communication?

What can Power and Water do better in terms of providing information or service quality?

What role should we play in improving energy efficiency of households?

2. Customer Voice

Customers are at the centre of everything we do and we pride ourselves on delivering valued services. The regulatory proposal is the perfect time for us to engage with customers on what they value and prioritise, so this can feed into our five year plans for 2024-29. Our engagement program has focused on talking to customers about what is important to them and providing the tools to give informed feedback on our strategies and plans. We have specifically incorporated key customer priorities on the future network, addressing the replacement wall, customer service improvements and tariff reform into our plans.

Our engagement has been significantly more extensive and longer than what we undertook in the 2019-24 determination. This reflects an industry-wide recognition that customer involvement in the decision making process can help steer a business towards outcomes valued by our customers. We also see that our customers are more active and engaged in the energy market, particularly given the high levels of investment in rooftop solar panels. Energy is also a household topic as electricity systems transition from fossil fuels to cleaner sources of energy.

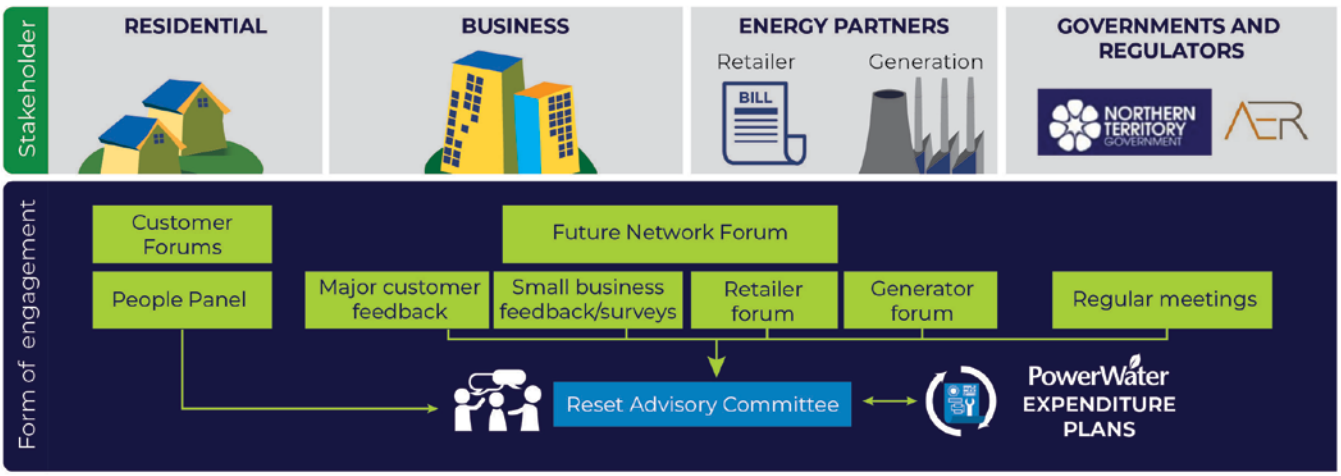
In this chapter, we identify our approach to engagement, the feedback we have received and how we have implemented customer preferences in our five-year plans.

2.1 Engagement to date

Our engagement program has been directed at understanding what our customers value, and what they expect us to prioritise. A key point of difference is that our engagement has moved from seeking the feedback of informed advocates to talking directly to customers about their experiences with our services.

Figure 14 shows that we have involved customers, energy partners, and governments and regulators in our engagement approach through a series of forums and panels. To provide an overarching frame to bring together feedback, we also established a Reset Advisory Committee (RAC) consisting of informed advocates, major users and residential customers.

Figure 14 – Stakeholder engagement segments and forums



Residential Customers

We have made a concerted effort to talk directly with the customers that use our electricity services. This includes establishing People's Panels in both Alice Springs and Darwin. The panels are a representative group of about 20 residential customers in each region. Over two weekends in November 2021 and April 2022, the People's Panels reflected on their experiences as a customer, and what we could do better. The Panels also provided a clear vision of Power and Water in the future and the priorities they thought we should pursue. We have also sought to talk to specific customer groups about their experience including Culturally and Linguistically Diverse (CALD) customers and a Youth Forum.

Business Customers

We have also sought to involve businesses in our engagement activities. Businesses are short on time, and so we sought their views through a survey that aimed to capture the key values and issues they feel are important.

The customer preferences we have identified in this Draft Plan largely reflect the findings of our residential customers through our People's Panels. We recognise that we need to engage more intensely with our business customers in the months ahead to understand if they share the same priorities.

Energy partners

While our customers have been the focus of our engagement, we have been mindful that we are only one element in the 'end to end' electricity system. Our customers expect us to work with generators and retailers to provide a seamless service that puts the customer experience at the forefront. We recognise that this means we need to ensure our plans are compatible with the systems and vision of generators and retailers, and that together we improve the overall customer experience. We have held retailer forums to discuss common issues including improving customer service.

Governments and regulators

Governments and regulators play an important policy and oversight role in our business. The NTG is both our shareholder and legislator. We must ensure our plans align to NTG strategic direction, and this has been a focus of our engagement. We have been also meeting regularly with the AER in pre-engagement on the regulatory proposal and our engagement approach to date. The AER has a dedicated Consumer Challenge Panel that observes our engagement activities and report back to the AER. Finally, we need to discuss our plans with our local technical regulator, the Northern Territory Utilities Commission, who is responsible for setting our local technical and performance standards.

Reset Advisory Committee

Our Reset Advisory Committee (RAC) provides us guidance on bringing together the preferences of different customer segments, ensuring there is a line of sight between our expenditure proposals and customer preferences, and advising on the questions we should be asking stakeholders.

The RAC is comprised of informed consumer advocates with previous experience in regulatory proposals in the National Electricity Market (NEM), local NT customer advocates and representatives from our customer forums. We have not sought to get approval from our RAC for our expenditure plans through a series of deep dives. Such an approach may have excluded the voice and lived experiences of our customers, due to the complexity of material that would need to have been presented. For this reason, we have not sought "fast tracking" of our regulatory proposal by the AER.

The RAC has met at regular intervals since April 2022, and has provided guidance on what questions we should ask in this Draft Plan.

2.2 Topics covered in engagement sessions

Our engagement approach has started from the lens of our stakeholders, focusing on topics and issues of interest to the group, and broadening the topics as information and knowledge expands. We considered alternative approaches such as deep dives into our building block plans but considered this would not provide the foundations for meaningful and informed feedback.

We have sequenced our discussions in four steps:

- **Baseline knowledge** – The first step has been to ensure our stakeholders have a baseline knowledge of Power and Water's business and our role in the regulated electricity network. We also wanted customers to have a baseline understanding of the services we provide and the activities we perform. We also developed materials and sessions that helped explain the AER regulatory process including how our regulatory proposal impacts on electricity costs, bills and services.
- **Exploring themes** – The second step in the process was to identify topics and themes that were important to the stakeholder. We found that all our stakeholders shared a passion and enthusiasm on how renewables will be integrated into the energy system, and our role in facilitating this transition. This led to us hosting two Future Network Sessions in November 2021 and June 2022. A further theme was the strategic challenges that lie ahead for Power and Water and how we can offer an affordable and reliable service in the long run. This theme also explored our journey to date and the role of benchmarking.
- **Identifying pain points with our current services** – Using the customer journey framework discussed in Chapter One, we explored areas of our business where customers felt we could improve. **Figure 15** on the next page shows the key issues and our discussions with customers on avenues for improvement
- **Identifying values, vision and priorities** – The fourth step was to understand our customers values, and the relativity of these values. The key to this conversation was the trade-off between affordability and service quality, particularly long-term outcomes. In this context, we were able to understand that customers were not willing to pay more for services except key priorities such as the future network. This conversation also led to a better understanding of our customers' vision for Power and Water in the NT.

The Draft Plan provides an opportunity to contextualise how customer feedback has influenced our strategic thinking and expenditure plans. For example, our initial plans presented to the People's Panels in March and April 2022 did not include automated solutions to unlock solar and did not seek to plan for an expected uplift in replacement beyond 2030. Based on the People's Panels recommendations, we have now included these specific expenditure items in our 2024-29 expenditure plans. A further example is the reductions in our bottom-up plans compared to our initial estimates to lower the revenue in the 2024-29 period.

The final steps in our engagement approach will be to delve deeper into our expenditure plans and revenue as part of our engagement sessions after this Draft Plan is released. By bringing our customer groups on the journey over the last nine months, we consider they are in a better place to provide informed feedback on our plans. In future engagement sessions, we will focus on topics that are both material and can be influenced by customer feedback.

Figure 15 – Pain points of our customers

Tree trimming

What we heard?

You would like us to take better care when trimming trees so they remain visually attractive and healthy.

How we are responding?

- We continue to employ qualified arborists and trimming crews to manage vegetation to a high standard.
- Started a tree replacement program trial in Alice Springs so that problematic trees are replaced with more appropriate species.
- We have implemented a new 'Hazard Tree' identification process to work with customers and councils to replace trees that pose a direct risk.

Meter reading

What we heard?

You would like to see more reliable meter reading with less reliance on estimates of electricity usage.

How we are responding?

- We engaged a new meter reading contractor in late 2021. Additional meter readers are being employed and we are working with the new contractor to improve performance.
- We are deploying new meters that can be remotely read without the need for a meter reader and the associated challenges.
- We are upgrading our IT systems which will improve our management of customer data.

Communicating with customers

What we heard?

You would like more face-to-face engagement, especially for those customers who are not online.

How we are responding?

- We will increase customer awareness of the option to request a face-to-face meeting if required via the call centre.
- Investigating options to have a 'pop-up' shopfront at major shopping centres once a month.

Information on solar

What we heard?

You would like more information on solar and the installation process, and impartial information on products and options.

How we are responding?

Our website has updated information and links to assist customers in understanding solar. This includes what to consider when purchasing and connecting solar, and where to find further information.

Our website also provides links to The Clean Energy Council which represents companies who work in and around renewables and has guides and advice on buying and installing solar.

Moving house

What we heard?

You would like us to consider improvements to our connection and disconnection processes when moving house.

How we are responding?

We have improved the information published on our website to provide all the information customers need to know about connection and disconnection in an accessible format.

We are investigating development of an online process for applying for connection to further simplify the process for customers.

Outages

What we heard?

You would like better communication from us during disruptions.

How we are responding?

We have implemented new processes and supporting technology to more rapidly assess damage after a cyclone. Similarly, these new processes and systems will also apply to managing the hazards associated with damage to the network such as fallen power lines.

2.3 Our customers' vision for Power and Water

In our stakeholder consultations, we focused on unpacking what our customers thought about the future and the role our network should play in it.

A key theme has been about embracing the renewables future. Our customers wanted us to facilitate and actively support the shift to renewables. Our Darwin People's Panel thought we should even go further by leading change on renewables. This was also central to the views of broader stakeholders in Future Network Forums. There was a view that Power and Water needed to have a Future Network Strategy that sets the network up to facilitate growing renewables well beyond 2030.

A further theme was about helping customers in broader decisions on energy – from how to use power efficiently, to decisions on solar, batteries and electric vehicles. In particular, our customers felt that our active involvement in the energy industry was vital in a changing market where customers had to make decisions without a trusted advisor.

Our Panels also talked about improving our communications, including platforms that are more active and responsive. There was a view that we had to improve the diversity of our communications so that we were accessible in all forms used by customers – from face to face, to telephone to social media. Inherent in these discussions was a view that Power and Water should keep pace with modern technology, but also accommodate traditional modes of communication.

In our discussions with stakeholders, there was much emphasis on not letting the network run down, with the memory of the Casuarina zone substation failure in 2008 front of mind. Our customers wanted us to think ahead on these issues.

Figure 16 provides the vision designed by each Panel in Darwin and Alice Springs. This has informed our strategic priorities for the next 20 years as discussed in Chapter Three .

Figure 16 – Vision of customers in our Alice Springs and Darwin People Panels

2.4 Values and trade-offs

A key focus of our engagement sessions has been trying to unpack the values and vision of our customers and how this has influenced the feedback provided. This has helped us make decisions on complex trade-offs when developing this Draft Plan.

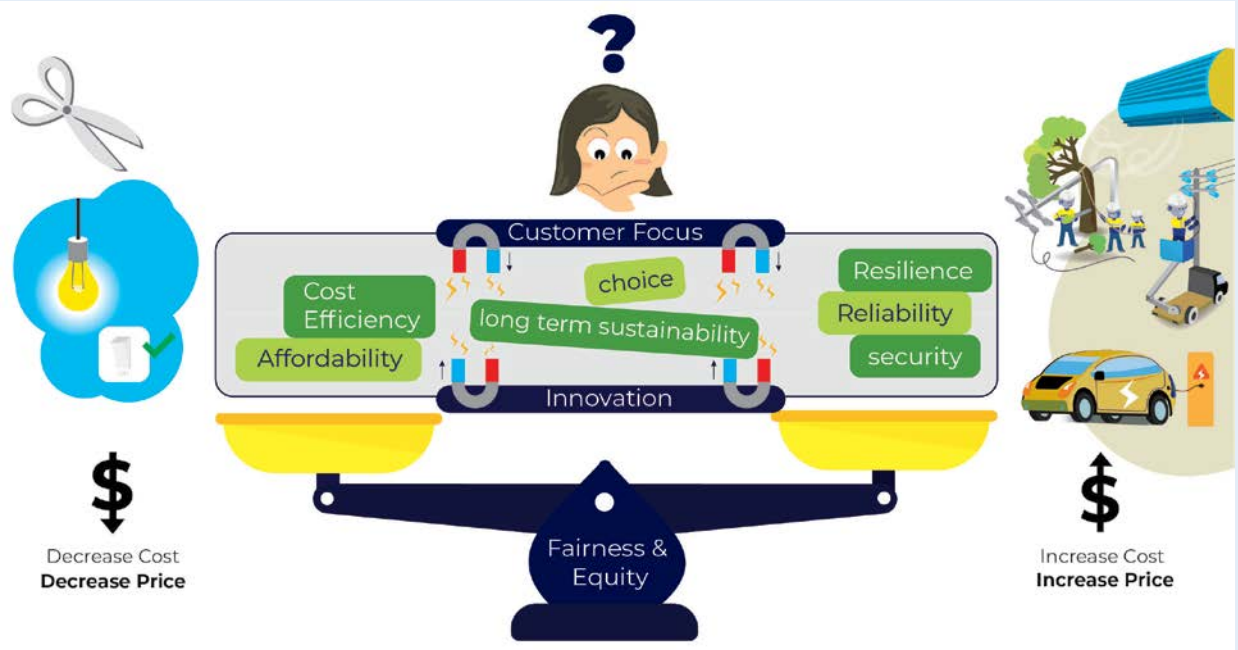
In our initial People's Panels, we explored the key values customers thought were essential for our business to consider. The conversation showed there were multiple values that were important to customers including affordability, sustainability, measures of network performance such as reliability and security, cost efficiency, equity and fairness and choice.

We also discussed the relative trade-off in values that may bear on decisions and feedback as depicted in **Figure 17**. For example, our customers recognised that improving affordability could come at the cost of reliability and long-term sustainability. There was also an understanding that the relative importance of values can change in different contexts – for example affordability is more important when there are other cost of living pressures.

Overall, our customers considered that all values were important. At the centre of decision making was the issue of affordability, particularly for customers with lower incomes. Customers did not want to see an increase in the electricity bill unless there was a clear need. Customers had a clear expectation that Power and Water will safely manage reliability, safety and security noting that they did not want the network to be 'run down'.

Customers recognised that Power and Water needs to look to the future when developing the five-year plans, and that this may entail some trade-offs with short term affordability.

Figure 17 – Customers values and trade offs



2.5 Customer preferences on key issues

In our People's Panels sessions in Darwin and Alice Springs, our customers provided feedback on the direction we should pursue on key strategic areas. **Figure 18** identifies each of the four priorities and how they have been embedded in our expenditure, revenue and tariff plans for the 2024-29 period.

In our discussions on preferences, we sought to understand how our customers were weighing up and trading off values. This was to ensure that customers understood the implications of preferences, but also to provide us with a deeper understanding of what is important to customers in making our business decisions.

Customer Preference One – Future Network

A consistent theme in our customer consultations was the need to facilitate increasing renewables on the energy system in the NT.

We explained to customers the difficulties in managing two-way flows on the network due to voltage issues and minimum demand and noted this would mean more of our new customers may face constraints in how much they can export. We also noted that constraining exports would mean a lost opportunity for all customers due to the relative low cost of solar compared to thermal generation.

We provided options to customers on solutions that could unlock and store more solar. The general view of our People's Panels was that we should invest more to facilitate and support solar where technologies are proven and that we should move forward by piloting new technologies. Community outcomes should be considered to ensure no one is left behind.

The Draft Plan includes additional expenditure to support our Panel's preferences including:

- Hosting capacity program (estimated $28 million capital expenditure) in our growth capital program. We are currently working through a business case where we are developing a scalable hosting solution that will increase the ability of the network to increase exports over the 2024-29 period.
- Community batteries (estimated $13 million capital expenditure) in our growth capital program. We are undertaking a business case assessment on community batteries in Darwin and Alice Springs.
- Step changes in our operating expenditure related to enabling future network initiatives ($4 million) and ICT opex ($3 million).

Customer Preference Two – Addressing replacement wall

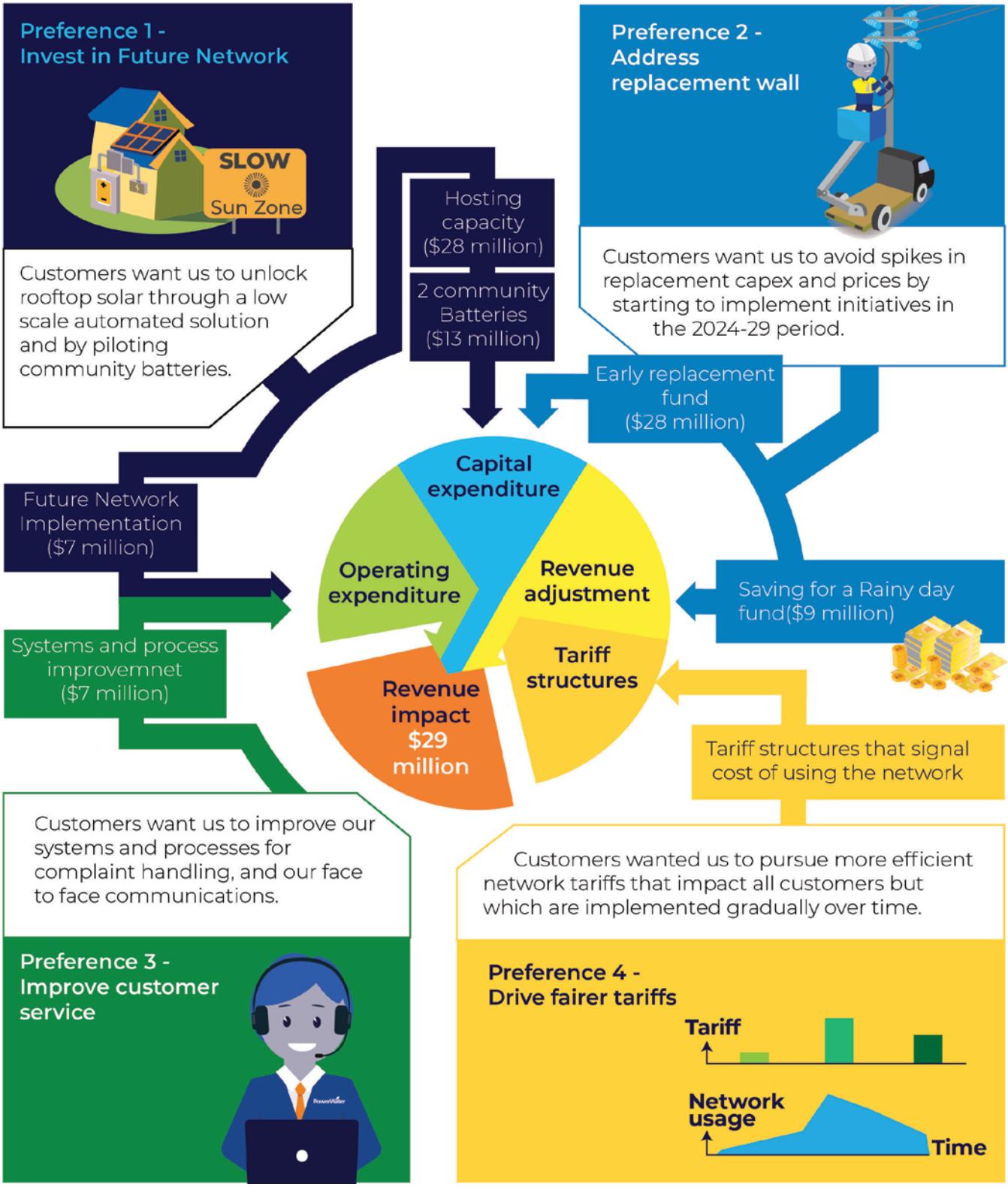
Our People's Panels wanted us to maintain the health of the network for the long term. In our discussions, we noted that significant renewal of the network will be required over the next 20 years to replace the high proportion of assets installed after Cyclone Tracy in 1974. These assets are likely to reach the end of their technical life between 2030 and 2040, with about a third of assets over 50 years of age by 2040. We noted that a sudden uplift in replacement capex would lead to a spike in our electricity revenue in that period and cause affordability issues if passed on to customers.

We noted that our replacement plans for the 2024-29 proposal were focused on replacing assets where the risks exceed the costs. We noted alternative options to address the potential spike in replacement needs and revenue beyond 2030 including bringing forward replacement and a saving fund for future replacement. Our customers considered that a combination of these alternative options should be pursued.

The Draft Plan includes two initiatives to implement the preferences of our People's Panels.

- In our capital plans, we have included a replacement fund of $28 million in the last three years of the 2024-29 period to replace assets that could technically be deferred to beyond 2030 with minimal risk. The replacement fund adds about 10 per cent more to our forecast replacement capex.
- In our revenue adjustments, we have included a "saving for a rainy day fund" equivalent to one per cent of annual revenue in each year of the 2024-29 regulatory period. This adds $9 million of revenue to the 2024-29 period.

Figure 18 – Customer preferences and impact on our five-year plans



Customer Preference Three – Improving customer service

Our People's Panels raised issues with our customer complaint process. Our Alice Springs Panel also considered that the closure of our shopfronts had restricted face to face communications with our staff.

In our discussions on the complaint process, we discussed potential options that may improve the process, including minor improvements to our process and systems, a dedicated officer within Power and Water or appointing an independent person to decide before the matters go to the Ombudsman. The Panels noted we need to do more than currently. They asked that we consider systems which provide more feedback on complaints, better communication on existing options to integrate with face-to-face engagement, and refinements to the existing telephone system to provide feedback on whether enquiries were addressed.

The Panels recognised that shopfronts were costly and noted that we currently provide all customers with an option to meet face-to-face with our staff. They also noted our current arrangements to visit the customer if requested. The Panels considered Power and Water should look at ways to increase face to face options for customers, including better communication, and consider joint initiatives with other energy partners such as Jacana.

The Draft Plan includes a step change in our operating expenditure program ($4 million) for new systems and processes to activate customer preferences on improving customer service.

Customer preference Four – Fairer tariffs for all customers

Our People's Panels recognised that all customers could benefit from price signals that indicate the cost of providing network services. While they understood that small customers do not see the network component of tariffs on their electricity bill, they still saw a need for driving more efficient tariffs.

Our Panels were provided with options on the speed and intensity of tariff reform for the 2024-29 regulatory period. The Panels noted that tariff reform may disadvantage low income households who cannot change their energy consumption patterns. For this reason, they opted for more incremental reform. However, they were of the view that all customers should be impacted by changes in tariff structures.

In total, the customer preferences have added $29 million of revenue to our forecast for the 2024-29 period.

A question from a residential customer at our People's Panel

Key Questions for stakeholders in Chapter Two

Is our engagement approach capturing all voices of the NT?

Have we been providing the right information for our audience?

Have we missed any crucial feedback?

What concerns do you have on how we implemented customers' preferences?

3. Strategic priorities

Our small network will be subject to significant global and local changes that impact the way we deliver electricity to our customers over the next 20 years. We have identified key long-term strategic priorities that have influenced the development of our five-year expenditure, revenue and tariff plans. Our customers' vision and priorities have played a pivotal role in shaping these priorities.

We are living in a period of unprecedented and rapid change. Our small network is being disrupted by global trends from climate change to market uncertainty. At a local level in the NT we are also facing a myriad of change factors in the years ahead from the need for a significant uplift in replacement of network assets to meeting the demand needs of a growing NT. This is reflected in **Figure 19.**

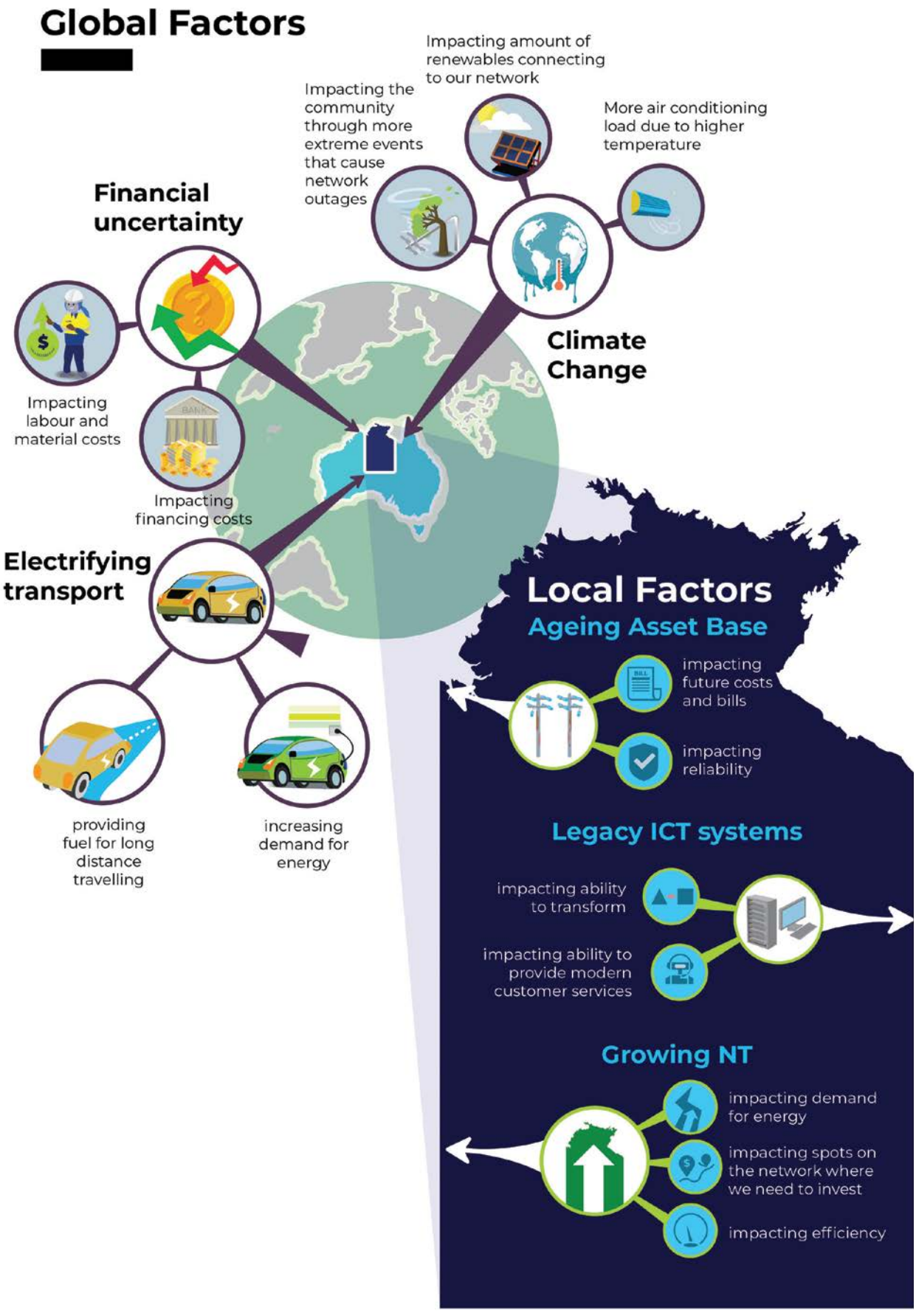
The global factors include:

- **Responding to climate change** – Climate change has accelerated the need to switch to renewable energy, impacting the way our network delivers energy to our customers. The impacts of climate change will also impact reliability of our services, with more extreme weather events such as cyclones requiring a greater need to make the network more resilient. We also see that increasing extreme heat days may lead to more extreme peak days as customers use more air conditioning.
- **Electrification of transport** – The shift to electric vehicles will significantly increase consumption and demand for electricity in the NT. This will also impact the time, seasons and locations where energy is required to be delivered from our network depending on when and where customers charge their vehicles.
- **Financial uncertainty** – During recent times of low interest rates, our customers have benefited from a reduction in our costs to finance our investments. However, financial conditions are currently volatile with high inflation likely to result in higher interest rates. Disruption to supply chains together with higher inflation are also likely to lead to higher input costs for delivering our services.

In respect of local factors we see three drivers of change:

- **Replacement wave** – Unlike other states and territories, a significant proportion of our asset base was built following the aftermath of Cyclone Tracy in 1974. This means that inherent reliability will likely decline as our assets age beyond their standard life. To maintain reliability, we will likely need to increase our replacement well above today's levels which will have a consequent uplift to our costs.
- **Refresh of ageing ICT system** – With the exception of our metering and billing systems, our existing fleet of ICT systems have not been refreshed for a generation. This impedes our ability to transform efficiently as a business and to deliver modern services required by our customers.
- **Growing NT** – The Northern Territory Government has set an ambitious goal of achieving a $40 billion economy by 2030. We note that many major infrastructure projects have already been announced. We also anticipate increasing connections from large users over the coming years will impact on network demand and may trigger the need for targeted investment in particular parts of Power and Water's network to accommodate increased demand for network capacity.

Figure 19 – Changes impacting our network



In response to global and local drivers, we have identified four key strategic priorities for the next 20 years. These strategies have influenced the development of our five-year expenditure plans.

3.1 Strategic Priority One – Facilitating renewables

Under NTG policy, we expect that 50 per cent of energy consumed will come from renewable generation by 2030. Approximately 30 per cent will come from large scale renewables that connect through our transmission network. About 20 per cent is expected to come from roof top solar connected to our smaller customers' houses and exported back into the grid.

This presents engineering challenges for the design of our network. For the transmission network, we will need to build lines to connect generation located in different areas to the current thermal generation stock, and ensure that the network can securely transport the renewables to the load centres. For our distribution network we will need to manage voltage and minimum demand challenges from two-way flow of exports.

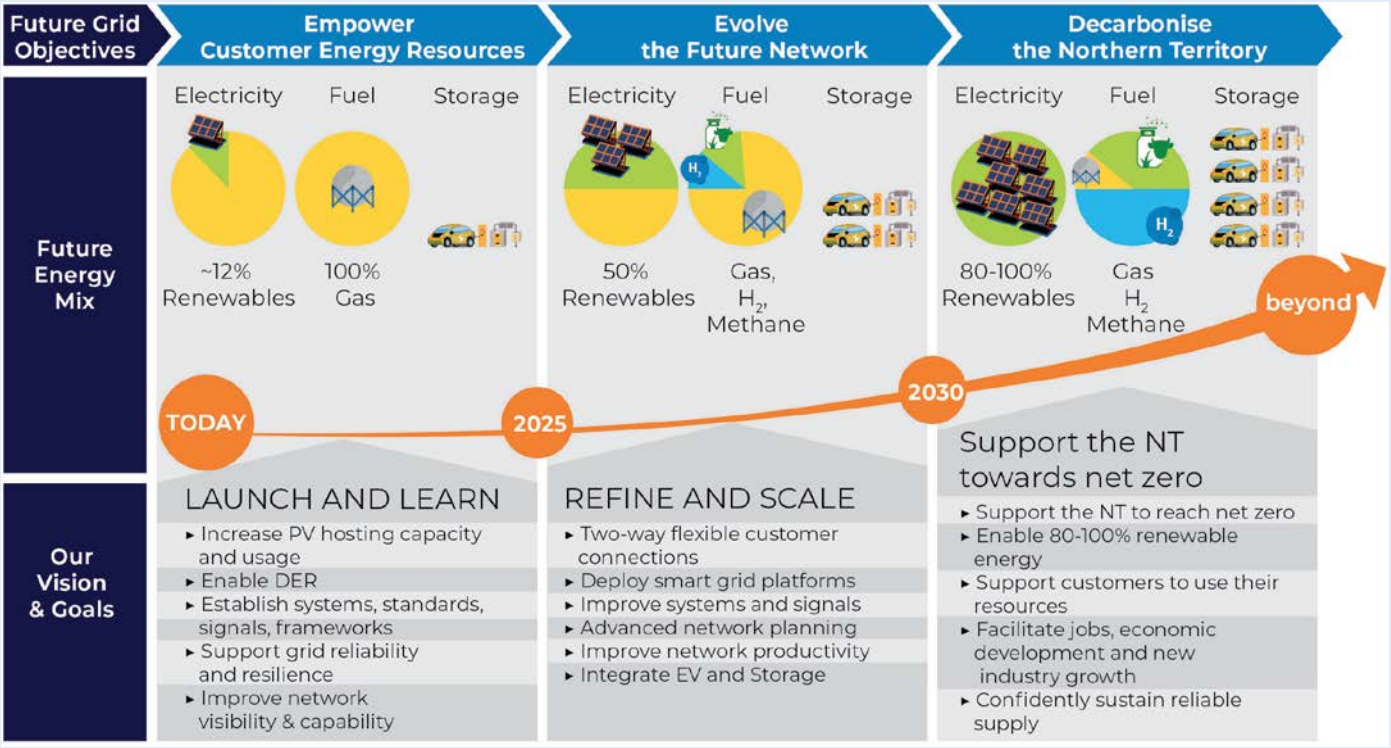
While there are challenges ahead, we also see great potential benefits from unlocking renewables in the NT. Our current electricity system is predominantly powered by gas, which is a relatively costly fuel source. In contrast, solar is abundant in the NT and the technology is significantly less costly than gas. Building a network that can facilitate large scale transmission and household exports can provide lower generation costs for all customers that outweighs new expenditure on the network.

We also see that playing our part in decarbonising the globe will help avoid catastrophic environmental changes that will impact us here in the NT. Abating the impacts of climate change will mean spending less on making our network resilient in the face of cyclones and extreme heat.

A key theme in our engagement with customers has been the need for Power and Water to facilitate a renewable energy system in the NT. We have responded by developing a Future Network Strategy with the purpose of ensuring our network can eventually facilitate net zero.

In June 2022, we held a second Future Network Forum which discussed the development of our strategy to 2040. **Figure 20** provides an overview of the timeline and plan. The plan discusses three key phases to facilitate higher levels of small scale renewables. The Empower stage is about increasing export capacity using existing tools while building the systems and visibility of the network. The Evolve stage is about activating exports through a smaller scale dynamic export solution, where the network can send out signals to ramp up and ramp down exports based on real time constraints. The Decarbonise stage is about scaling up our systems and solutions to unlock exports to meet a 100 per cent renewable target if required.

Figure 20 – Future Network Strategy



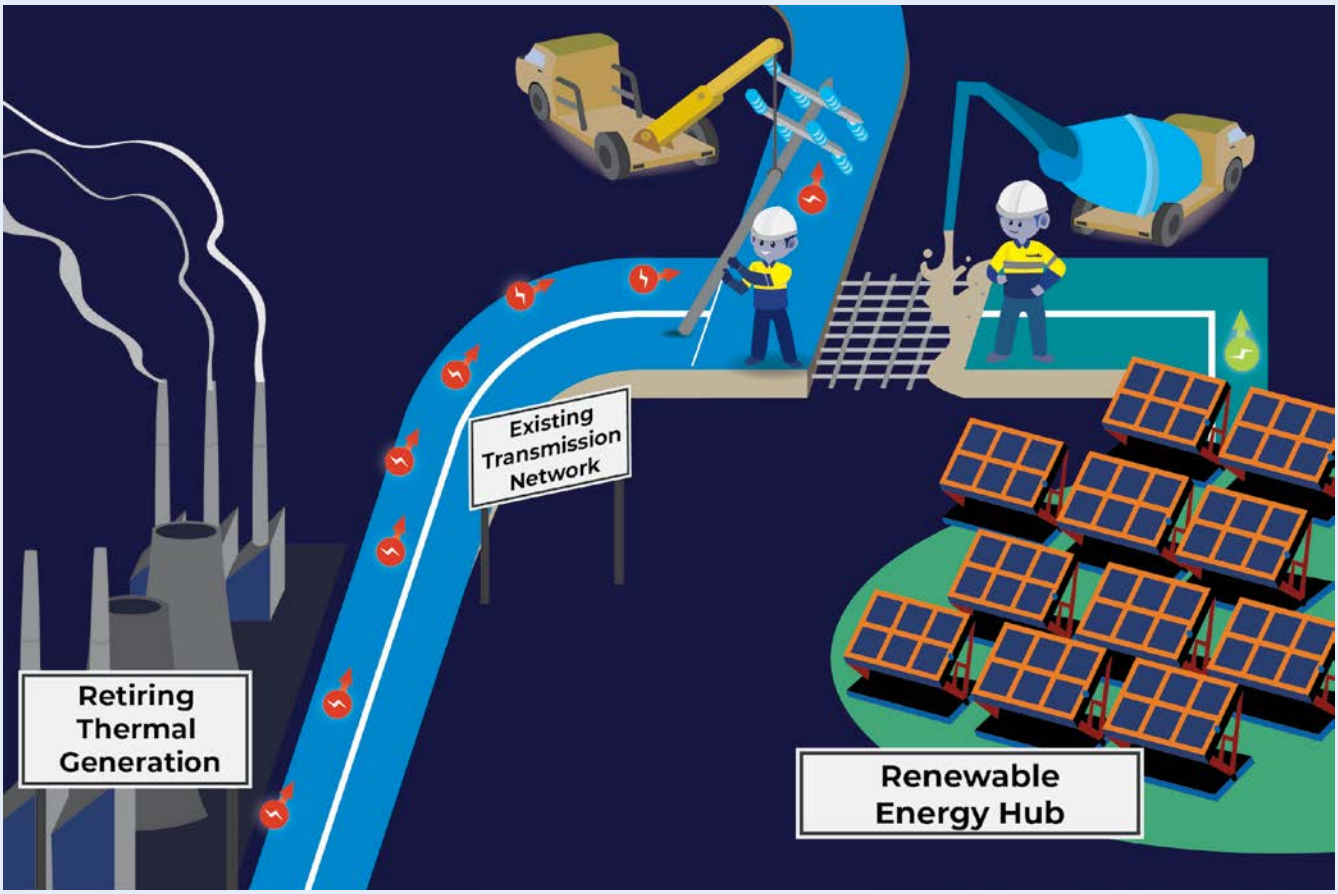
Connecting renewables to our transmission network at least cost

The first element of our strategy is to design the transmission network to connect new large-scale renewables at lowest cost. This has the benefit of reducing our long-term transmission costs and improving affordability for all customers. The key to lower costs is for generators to locate close to existing transmission infrastructure with spare capacity as seen in **Figure 21.** For this reason, we strongly support the concept of a Renewable Energy Hub identified in the Darwin-Katherine Electricity System Plan.

The renewable hub is still in an implementation phase so there is not sufficient clarity on costs, timing or scope to include in our capital expenditure allowance at this stage. Under the regulatory framework such projects are excluded from the allowance, and included as a contingent project. We discuss this further in section 5.6. While we see the Renewable Hub as increasing our network costs in the 2024-29 period, we note the NTG's analysis which shows it unlocks lower generation costs in the electricity system.

Beyond 2030 we expect even more large-scale renewables to connect and deliver higher levels of energy to support growing demand. This means the transmission landscape is likely to become complex in the future and may require expansion. We consider that transmission costs are likely to be minimised through more Renewable Energy Hubs that allow for centralised, rather than piecemeal expansion of the transmission network.

Figure 21 – Renewable hubs for large-scale generation



Cost effectively unlock small scale renewables

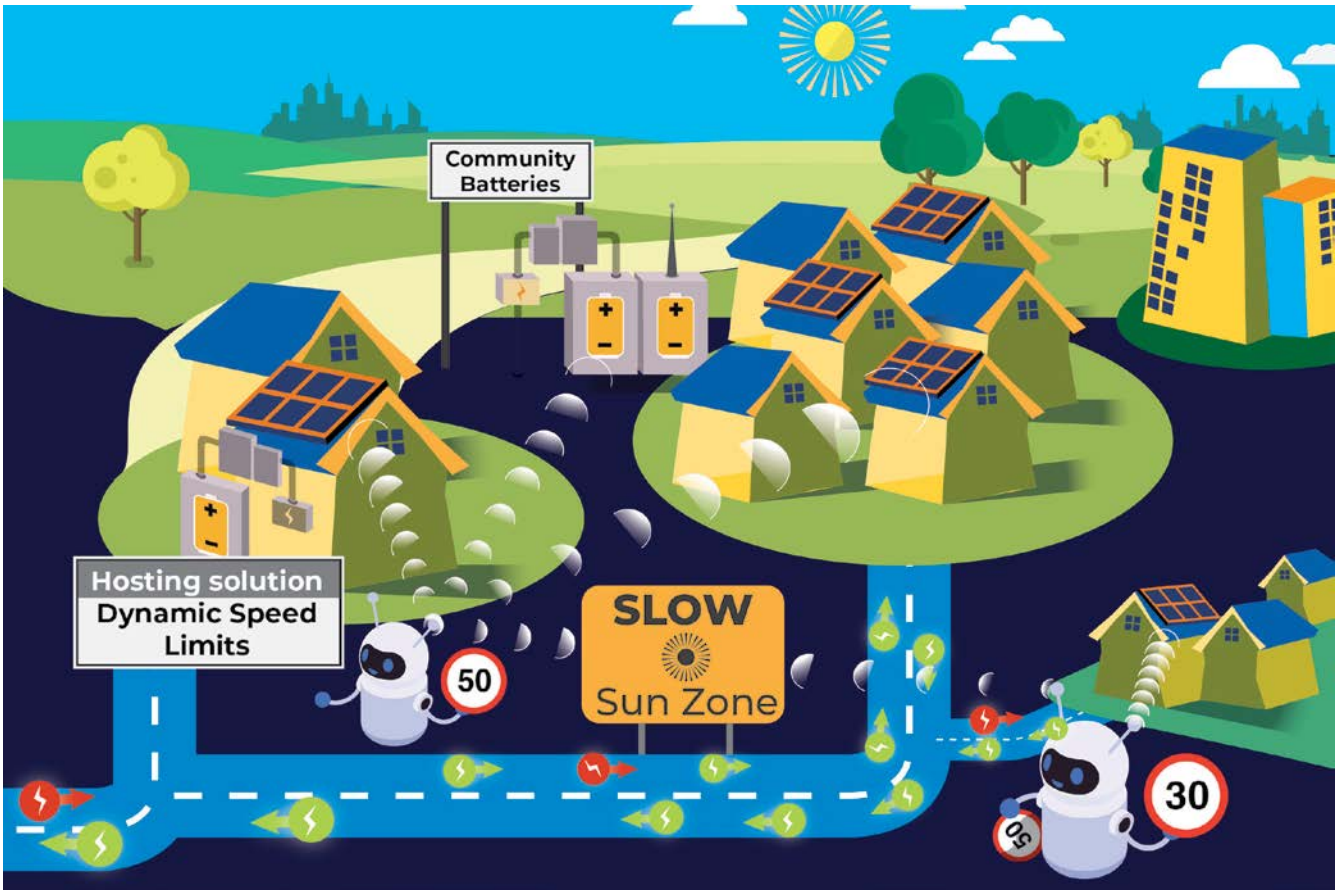
In its current design, the network will not be able to securely export all of the forecast generation from rooftop solar due to voltage and minimum demand challenges.

This adversely impacts on customers installing new solar who cannot maximise their investment. It is also a lost opportunity to reduce generation costs for all customers as solar has significantly lower cost than thermal generation.

The core of our Future Network Strategy has been finding solutions that unlock small scale renewables at low cost, where we can demonstrate a net economic benefit to customers. Key strategies in our Future Network Strategy that draw on our customer preferences include increasing solar exports by getting a better understanding of the voltage and thermal limits on the distribution network, and storing solar energy in home and community batteries for discharge in the peak evening periods.

Figure 22 provides a visual of dynamic operating envelopes working in a similar way to dynamic speed limits. In the figure, the hosting solution is depicted as robots that sense when the network is outside of safe voltage and thermal limits and seeks to reduce the speed of exports. At times of constraint, power can be stored in community batteries and discharged in the evening peak period.

Figure 22 – Unlocking household solar



3.2 Improving utilisation

One of the keys to unlocking affordability is providing more power to customers while minimising new expenditure.

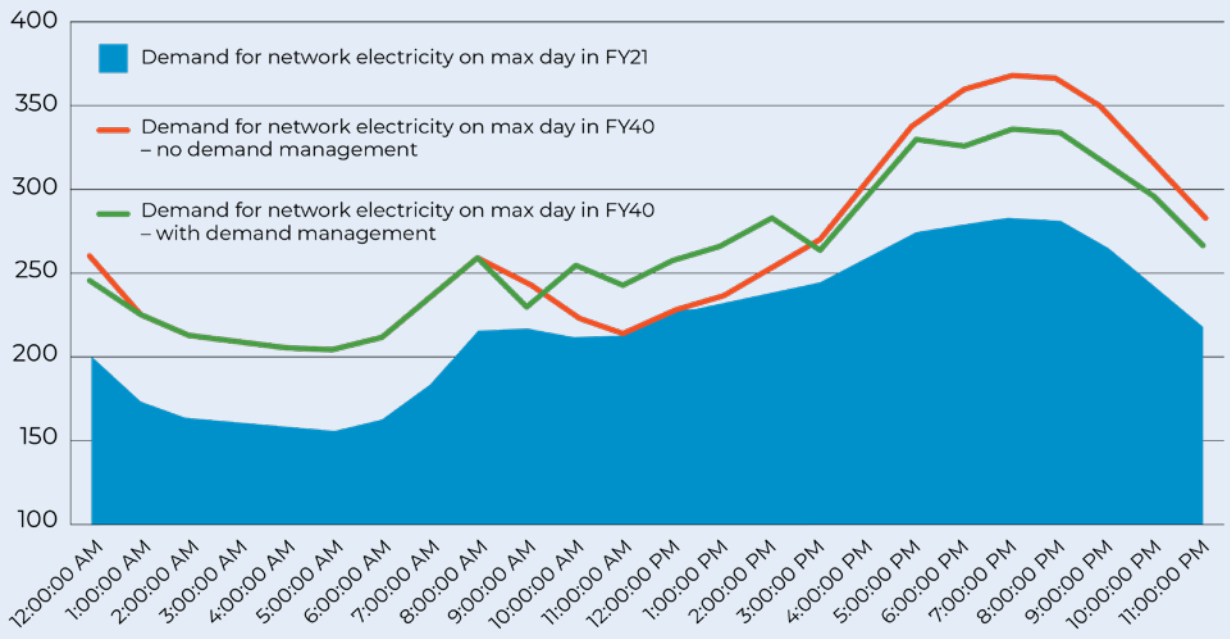
A key strategic priority is to encourage new and existing customers to use electricity in off peak periods that coincide with low cost solar. Early analysis shows that electric vehicle charging times are one of the key levers to improving utilisation beyond 2030. A further strategy is to see if storage batteries can also be used to store excess solar in the day and discharge in the evening peak.

In our discussions with customers, we have noted that tariff design is a key mechanism to encourage customers to use more energy in the day. This is a key element of our 2024-29 Draft Plan as discussed in Chapter Eight.

Figure 23 shows there was a sharp peak in the evening period on the day of highest demand in the Darwin-Katherine network in 2020-21. In contrast, demand for our network service is minimal in the day when many of our customers are using their solar panels to provide their electricity.

We undertook analysis on how peak demand would change by 2040 under a scenario where there was a 30 per cent increase in underlying demand, a doubling of solar capacity and no change in underlying daily demand patterns. The orange line shows that peak demand would significantly increase to 370MW by 2040. This would require significant new investment to meet the demand. At the same time, demand in the middle of the day would not have significantly increased due to customers using their own solar to power homes. Alternatively, if about 10 per cent of energy at peak times is shifted to the middle of the day, we see that peak demand will rise closer to 330MW. This will lead to significant reductions in our new growth capital expenditure in the future.

Figure 23 – Improving utilisation of our grid (MW)



3.3 Managing the health of our assets smoothly over time

A key strategic priority for Power and Water is safely maintaining the reliability of the network as assets age over the next 20 years while minimising cost and price spikes for customers. This has been a key theme in our engagement consultations with customers.

Our current replacement rate is well below a long-term sustainable rate due to most of our assets being younger than their expected manufacturing life. The dark blue line in **Figure 24** shows that nearly all our network assets are under 50 years today but that a significant cohort are close to this age. This is explained by the unique circumstance in the NT where our network was re-built in a short period of time following Cyclone Tracy in 1974. The orange line shows that by 2040 a large proportion of these assets will be over 50 years by 2040 even if replacement is uplifted to $50 million per annum.

At present our strategy to manage the health of our assets has been to only replace when the asset fails in service or if the risks to safety, reliability and environment outweigh the costs. This is a strategy to ensure we maximise the full life of the asset while keeping risks within a reasonable bound.

However the rapid ageing of our cohort of Cyclone Tracy assets will require a significant uplift in our capital expenditure when the assets start to deteriorate and risks emerge. The expected scale of replacement in a short period is unique to our network given a large portion of our assets were built at the same time. A sudden rise in capital expenditure has a consequential impact on the revenue we require to fund our investments.

In our discussions with stakeholders we considered how we should approach the issue to avoid potential price shocks in the 2030 to 2040 period. The key strategies we have developed include:

- **Asset management to extend asset life** – The key to addressing the replacement wall is to lengthen the lives of assets so investment can be spread out over a longer period. Over the last decade, we have vastly improved our monitoring and decision-making on maintaining and replacing assets. This has helped us keep some of our assets in service longer than their technical life despite the inclement conditions on our network. We recognise that continual improvement in our asset management process such as our new risk quantification will help us better prioritise works so that we are replacing assets in order of highest risk.
- **New technology and design to retire assets** – New technology may provide some of the tools to help us retire rather than replace assets, keeping a lid on the replacement wave ahead. For example, we are currently looking at microgrid solutions for some parts of our remote areas rather than re-building existing infrastructure.
- **Smoothing mechanisms to mitigate against price shocks** – A novel mechanism suggested by our People's Panels was a savings fund where some revenue is set aside today to pay for an expected increase in costs in the future. Our customers also considered that some replacement activity could be brought forward to minimise risks when the assets age at the same time and this would smooth out revenue over time. These programs have been included in our expenditure plans to forecast capital expenditure in Chapter Four, and revenue in Chapter Six.

Figure 25 provides some early analysis of why this strategy can help smooth capex over time without exposing our customers to high risks. We developed three scenarios that are based on ensuring network risk levels from older assets can be managed over the next 20 to 30 years.

Scenario One is a situation where we minimise replacement to 2030. Under this scenario, we would expect to increase replacement when systematic conditions emerge in 2030-35 and accelerate replacement significantly in the 2035-40 timeframe. Based on this replacement profile, we would safely manage the reliability of the network by ensuring only 20 per cent of the total population is over the age of 50 by 2040. Under this strategy, there is a spike in capital expenditure in the 2035-40 period of close to $500 million for replacement, which would flow onto a spike in our revenues.

Scenario Two seeks to smooth capex through spending more on replacement in the 2025 to 2035 period. While there is a significant uplift in the 2035 to 2040 period, it is less pronounced than Scenario 1. In this scenario, we would use mechanisms such as 'saving for a rainy day' fund to help keep the revenue impacts as low as possible in the period of uplift. We would also be focusing on improved asset management techniques to allow risks to be maintained at similar levels to Scenario 1 by keeping a greater proportion of older assets on the network.

Scenario Three seeks to further extend the life of assets together with a focus on retiring rather than replacing assets on the network. Under this preferred strategy, we would be able to minimise the extent of capital uplift over the next 20 to 30 years. While this is the optimal strategy it relies on technology solutions that we do not have today.

Figure 24 – Ageing of the asset population

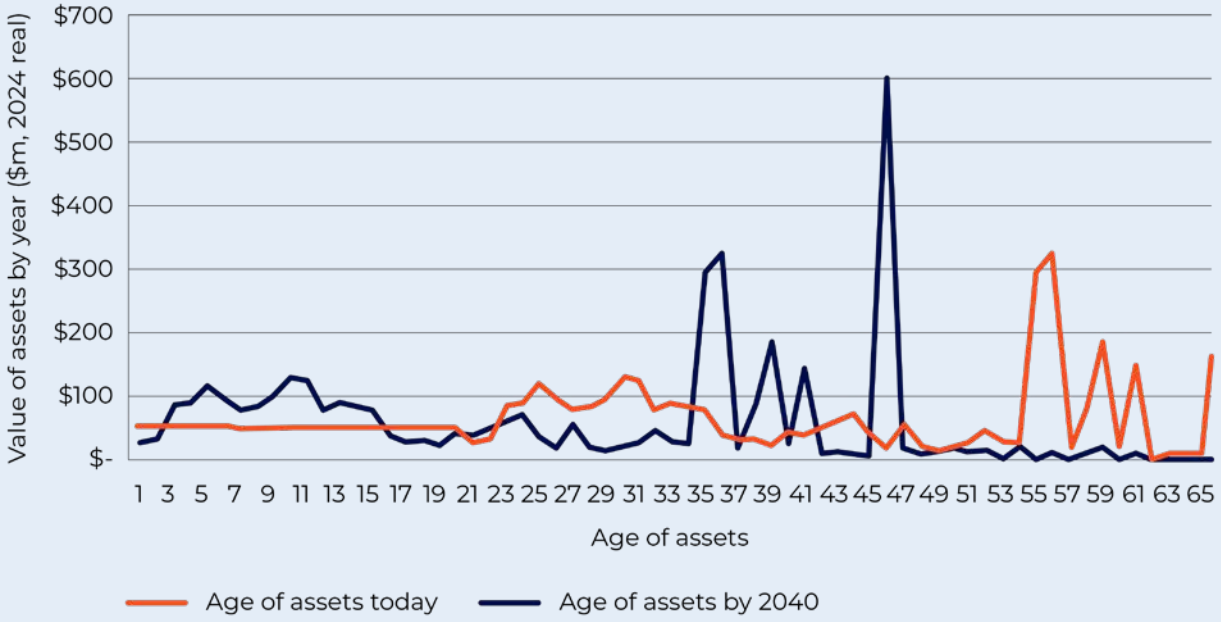
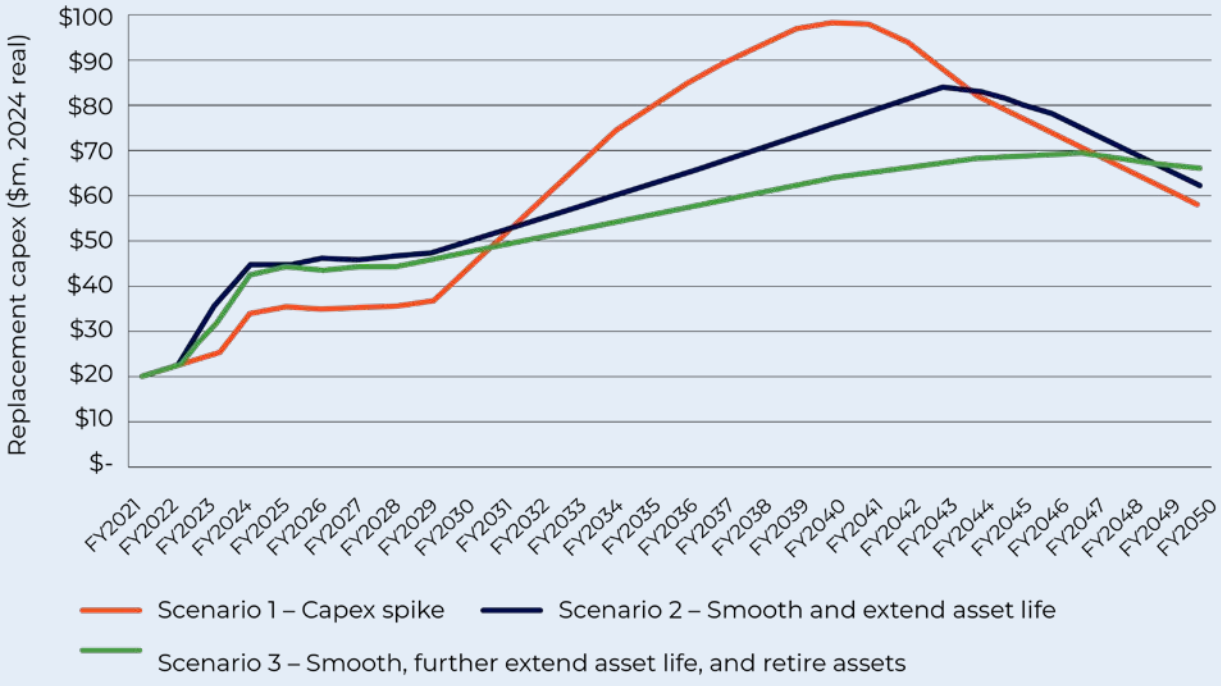


Figure 25 – Long term replacement capex scenarios



3.4 Uplifting our systems and people

Our business will need to deliver more as we transition to a network that delivers two-way renewable energy and which meets higher levels of demand for electricity in a more complex environment. At the same time, our customers are telling us that we need to maintain the affordability of our services. In this context it is vital that we invest in smarter systems and organisational change that allows us to meet new demands for our network services while keeping a lid on our costs.

In the 2019-24 period we embarked on a transformation journey that involved a new operating model and a refresh of our ageing ICT systems. It was an ambitious program and complex to implement at the speed we had intended. This was due to the difficulty of undertaking transformation when other change factors were impacting our business, including our transition to the national energy regulations and the increase in renewables on the network. The inter-related nature of the transformation program placed further challenges on developing the optimal sequence of change.

We have also prioritised our planned ICT system refresh on complying with new regulatory obligations. This includes a new meter and billing system that ensures we comply with the new NT NER rules relating to meter data, testing and validation.

Our transformation strategy going forward has been built on these learnings. The program is now planned to be completed over a longer period, consistent with the experiences of peer networks. The refresh of ICT systems will take place over a longer 10-year horizon to correspond with optimal sequencing and the key change areas of the business, including increasing renewables on the system. Chapter Four of this Draft Plan identifies the key ICT capital programs included in the 2024-29 proposal. Chapter Five of this Draft Plan provides more information on our transformation journey in the 2019-24 period and how this is impacting our operating expenditure costs moving forward.

Power and Water staff explaining a poster on our Future Vision at our People's Panel

Key Questions for stakeholders in Chapter Three

Are there any material global or local factors we have omitted in our analysis of change factors?

Are there any concerns with our strategic priorities, or has anything been missed in our assessment?

Do customers consider that our five-year expenditure plans align with our 20 year strategic priorities?

Transmission towers at Berrimah in Darwin

Part B

Our five year plans

4. Capital expenditure

We forecast a 39 per cent increase in capex in the 2024-29 regulatory period compared to the 2019-24 current period. The key drivers of forecast capital expenditure are higher replacement to address condition issues with an ageing network, increased growth capex to facilitate growing renewables and address rising local peak demand, and a continued refresh of our ageing ICT systems. A further driver of higher expenditure has been a change in our allocation of overheads which results in higher capitalisation of overheads.

This chapter sets out our initial capital expenditure (capex) plans for our standard electricity service. In section 1.4, we noted that capex relates to money we spend on assets. We recover our initial investment from customers over the expected life of the asset .

Figure 26 provides a profile of forecast capex compared to actuals and estimates in the 2019-24 period and compared to the AER's regulatory allowance. In total we forecast capex in the 2024-29 period will be $159 million higher than our estimated capex for the 2019-24 period, an increase of 39 per cent.

Figure 27 identifies our forecast of capital expenditure for the 2024-29 period by category, and the expected change from the current 2019-24 period.

- **Replacement capex** – We replace or remediate assets with condition issues, or which fail in service. In our initial plans, we expect that about 40 per cent of forecast capex will be on replacement in the 2024-29 period, an increase of $87 million compared to 2019-24 period. The key driver is a forecast decline in the condition of our assets due to age and environment, particularly given lower delivery in the current period than expected. The higher expenditure also reflects a replacement fund that seeks to bring forward future replacement consistent with our customers' preferences explained in Chapter Two.
- **Growth capex** – We build new network assets to meet additional demand for services (augmentation) and connect individual customers to the network (connections). This accounts for 28 per cent of forecast capex in 2024-29 period, an increase of $69 million compared to the 2019-24 period. We expect significant growth in some parts of our network to meet new residential and commercial connections. We are also investing in hosting capacity and community batteries as part of our future network strategy consistent with our customers' priorities.
- **Non-network capex** – We invest in support assets including Information, Communication and Technology (ICT), corporate property and fleet. This accounts for 13 per cent of forecast capex in 2024-29, a reduction of $15 million. In the 2019-24 period, we commenced a journey to refresh our ICT systems. We will continue to make scale-efficient and prioritised investments in the 2024-29 period while maintaining our existing systems. We will continue with our current lease arrangements for fleet and property while remediating the properties we own.
- **Capitalised overheads** – This relates to the share of network and corporate overheads that are allocated to capital assets in accordance with accounting standards. This accounts for 20 per cent of forecast capex in 2024-29, an increase of $16 million. This is due to a change in our allocation of overheads, which has resulted in a greater proportion of capitalisation.

We also are likely to include six contingent projects for uncertain but material projects including the construction of a Renewable Energy Hub to connect large scale renewable generation.

Figure 26 – Forecast capital expenditure in 2024-29 compared to actual/estimated in 2019-24 ($m, real 2024)

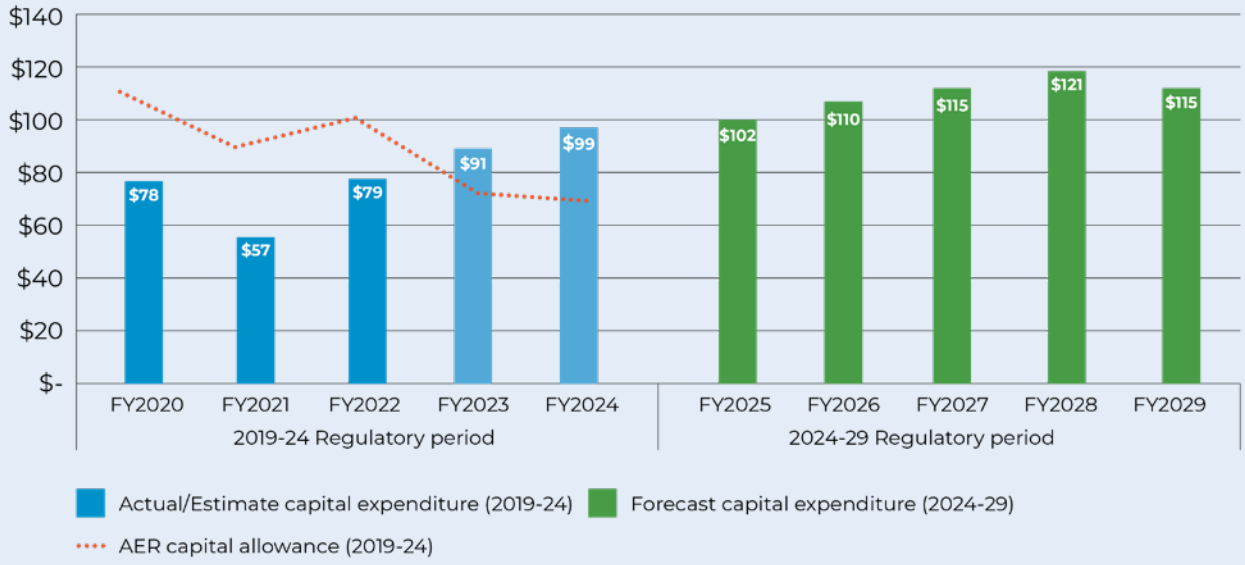
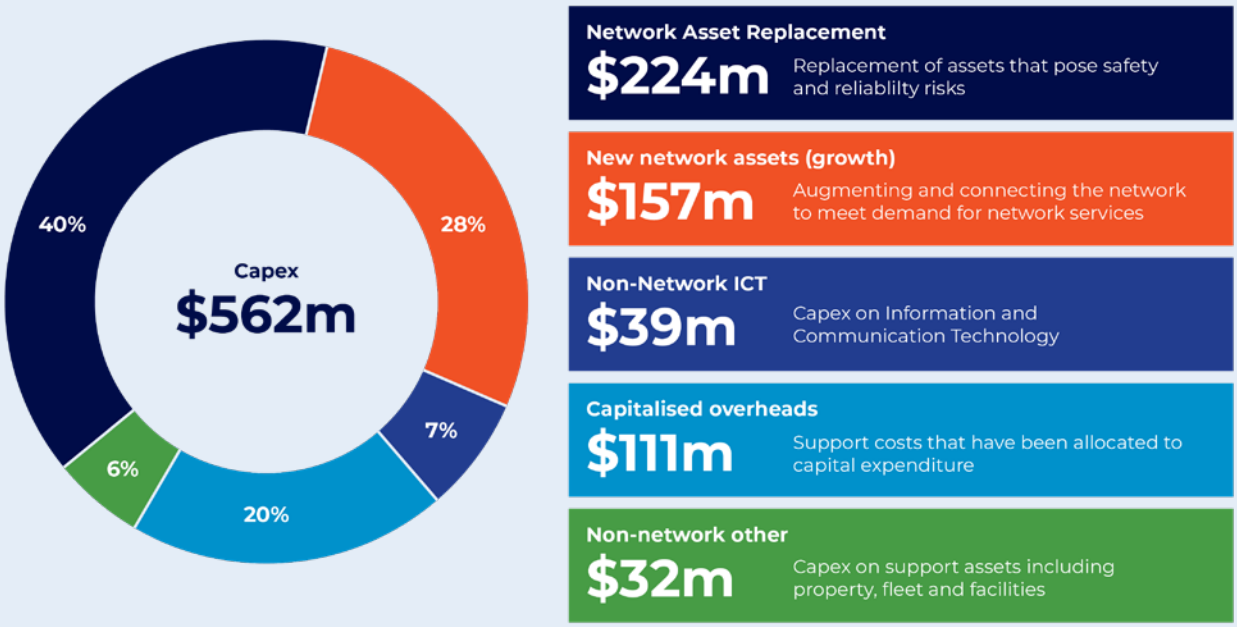


Figure 27 – Forecast capital expenditure in 2024-29 by AER category ($m, real 2024)



4.1 Forecast Method

In June 2022, we submitted our Forecast Expenditure Methods document to the AER. The document identified the approach we were taking to developing our forecast methods for capital expenditure. The capital forecasts put forward in this Draft Plan reflect this process, but we have still not implemented or finalised all elements of the forecast approach.

Our forecast methods have evolved considerably since the 2019-24 regulatory determination process. We have implemented feedback provided by the AER and stakeholders on applying risk quantification, modernising our demand forecast models and integrating top-down prioritisation into the development of our capital expenditure forecasts. We have also sought to undertake more analysis of long term needs of the network in a rapidly changing energy landscape. The purpose was to develop a credible forecast for the 2024-29 period that aligned to the broader strategies identified in Chapter Three.

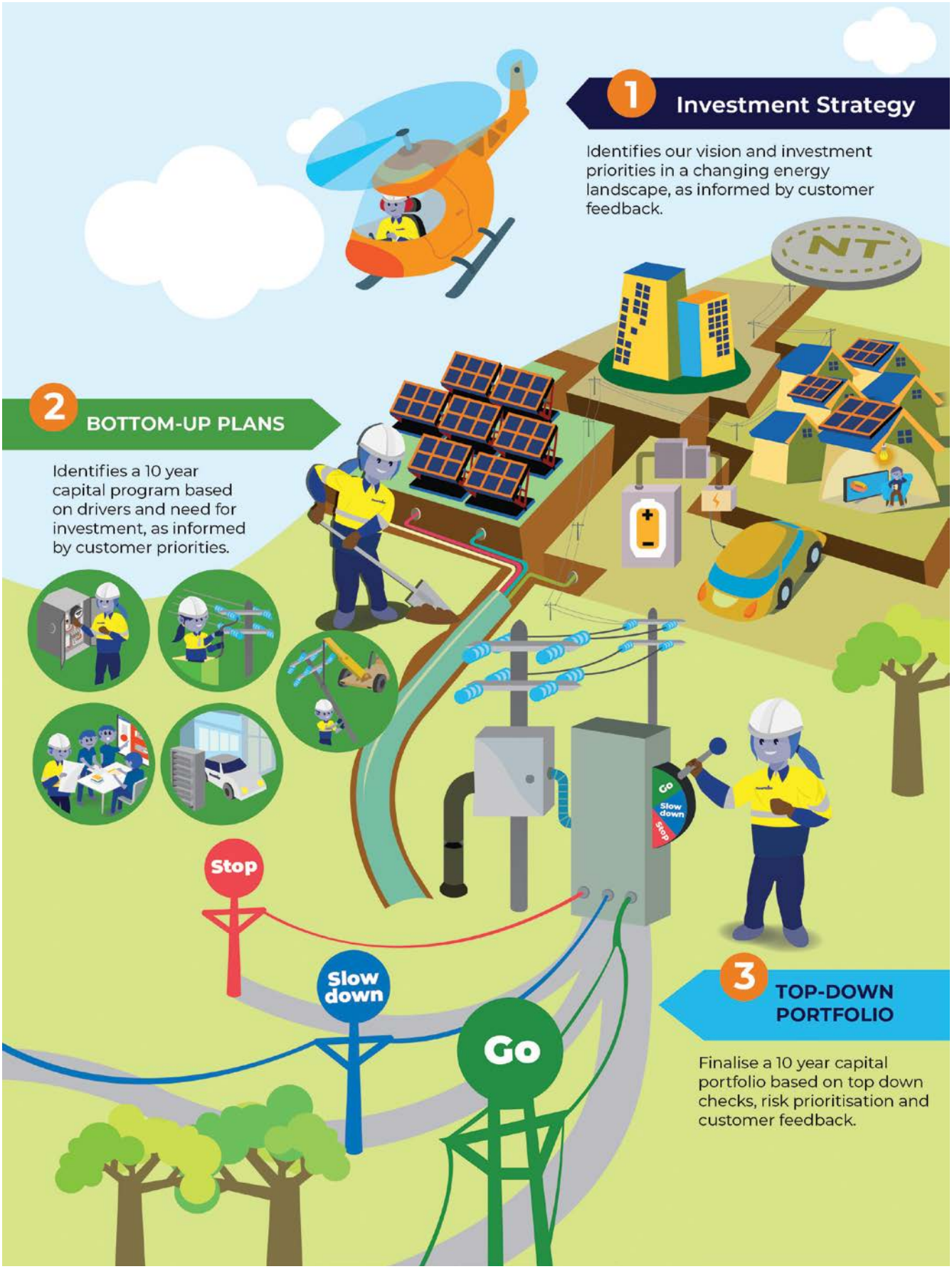
At a high level, there are three steps we will apply to developing the capital forecast expenditure for 2024-29, as seen in **Figure 28.**

1. **Identifying strategy** – The starting point for our expenditure forecasts is to understand our changing environment over a longer-term horizon. Our strategy is informed by the feedback provided by our customers on values, vision and priorities for investment.
2. **Bottom-up plans** – We identify key drivers of investment such as asset condition, growth in network usage, support from non-network assets, and overhead requirements. We then undertake needs and options assessment to develop a bottom-up list of projects and plans over a 10-year horizon.
3. **Top-down portfolio** – A portfolio view helps identify the optimal mix of projects and programs that provide optimal value, align with longer term investment priorities and deliver customer preferences.

In our forecast method document we noted that the business case is the primary evidence we use to assess the veracity of our capital expenditure forecasts. We are currently still developing the full suite of business cases and we expect that this process may lead to differences in the estimates presented in this Draft Plan. We are mindful that checks are useful to ensure the portfolio can be further verified in terms of delivery and as points of comparison with other high-level models. We also consider that a prioritisation process may provide insights into the overall change in total risks. We plan to undertake a series of checks over the next six months including our deliverability.

Our overall approach carefully considered guidelines published by the AER including the Expenditure Forecast Assessment Guidelines and the Capital Expenditure Assessment Outline for Electricity Distribution. Our forecast method seeks to align to the guidelines. We also considered the AER's Industry Practice Note on Asset Replacement Planning by applying its risk-cost assessment methods. We will also be presenting our ICT forecast to align with the approaches identified in the AER's guidelines including presenting our programs in recurrent and non-recurrent categories.

Figure 28 – Capital expenditure Forecast Method



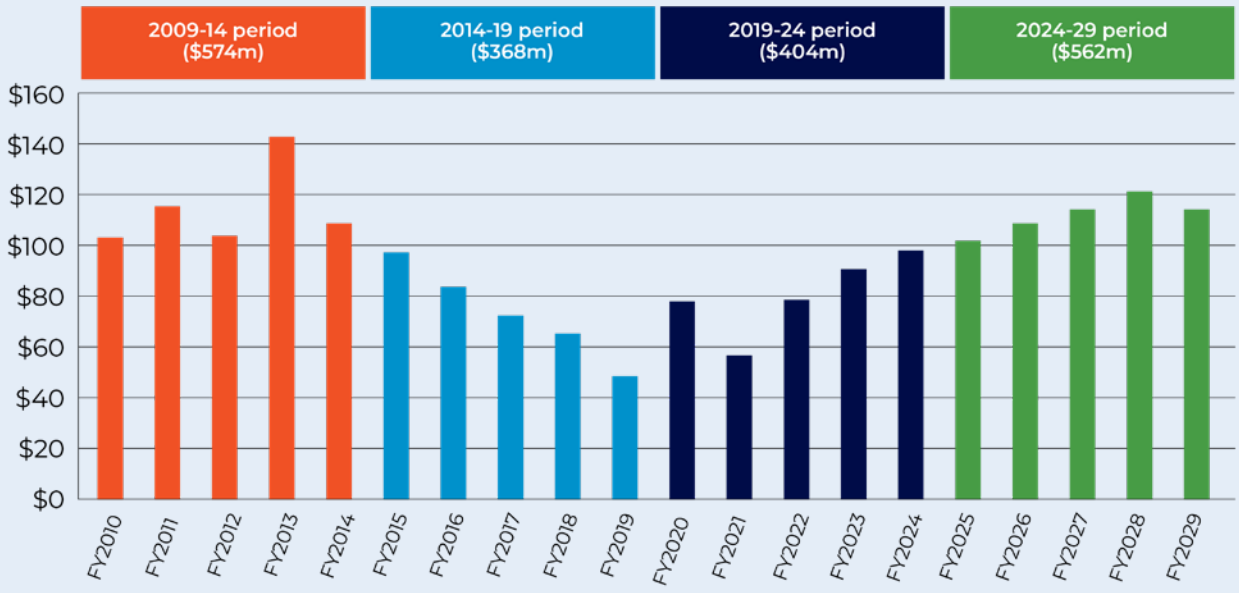
Nomad substation in Darwin

4.2 Drivers of capex

Capital expenditure is generally 'lumpy' responding to key drivers of investment at a point in time. Periods of high capital expenditure impact the affordability of electricity services due to an uplift in costs to finance more investments.

Figure 29 identifies capital expenditure in the 2024-29 period to actuals and estimates in the previous three regulatory periods. There has been significant volatility in capital expenditure over this period reflecting circumstances at the time.

Figure 29 – Capital expenditure between 2010 to 2029 ($m, real 2024)



In 2008, the network suffered a major outage in Casuarina, that led to an external review of our network activities. The review showed that the network was in poor condition after sustained under-investment and maintenance. Reliability deteriorated significantly for customers over this period and as a result, we invested significantly in the 2009-14 period focusing on zone substations. The high capital spend in the 2009-14 regulatory period reflected a 'catch up' for under-investment in the previous years.

Capital investment fell in the 2014-19 period as we sought to reduce our costs. The reduction in capex was possible due to the improvement in the network and the relatively low number of older assets. Further, we did not invest in any new ICT assets. At the same time, peak demand started to flatten relative to historical levels as customers used their solar panels to meet energy needs. The combination of these factors meant our capital expenditure fell significantly during this period.

In 2019-24 we sought a moderate increase in capital expenditure. The key driver of capital expenditure related to an increased need for major replacement projects and programs, where asset data showed significant condition issues and high risks from failure of the assets. We project to be under the AER's regulatory allowance by the end of the regulatory period. The key reasons for the underspend are:

- Deliverability issues in the first three years of our system capital program as we sought to uplift our capability and resources to deliver the capital program while encountering overlapping priorities.
- Re-prioritisation of our planned refresh of major ICT systems which led to the deferral of major projects. This was to ensure the program was targeted at highest priorities, and that the investment was efficient for a network of our small scale.

The implication of under-delivery is that the 2019-24 expenditure level is not a relevant 'baseline' to forecast a 'needs based' expenditure profile.

In the 2024-29 period, we are forecasting significantly higher capital expenditure compared to actuals in the 2019-24 period. This is driven by five key factors discussed in the following sections.

a. Managing renewables on the network

As discussed in Chapter Three, a key pillar of our long-term strategy is to ensure the network can efficiently facilitate the expected acceleration of renewables in the grid. By 2040, there is a likelihood that the network may be required to transport 100 per cent renewable energy to our customers, increasing from the current NTG policy of 50 per cent by 2030. Our transmission network will need to expand to reach new large-scale renewables, while ensuring our network can securely manage exports of small-scale renewables.

As discussed in Chapter Two, investing in the future network was a key priority of our customers. Our 2024-29 forecast includes three key projects that relate to efficiently facilitating renewables – a new hosting capacity solution that can unlock more solar, community batteries to store solar in the day and discharge at night, and an Advanced Distribution Management System (ADMS) that will provide a longer-term solution to facilitating growing renewables post 2030. We also have a contingent project relating to the NTG's plans for our transmission network to connect to a new large scale renewable hub south of Darwin.

b. Ageing assets

A key theme in our customer feedback was that we should maintain our network and minimise the risk of reliability incidents experienced in the 2009-14 period. In our engagement sessions, we noted that replacement levels have been well below long term sustainable levels due to the relative youth of our network assets.

Over the next 20 years, we see that many of our assets will require replacement as they reach the end of their technical life. Unlike other places in Australia, most of our network was rebuilt after Cyclone Tracy in the short period after 1974. By 2030, a high proportion of these assets will be over 50 years old. Our asset management team have identified emerging issues with the condition of assets on the network that is prompting higher levels of replacement in 2024-29. As noted in Chapter Two, we have also listened to our customers' preferences for smoother long term capital expenditure by forecasting a replacement fund to help the expected spike in replacement by 2040.

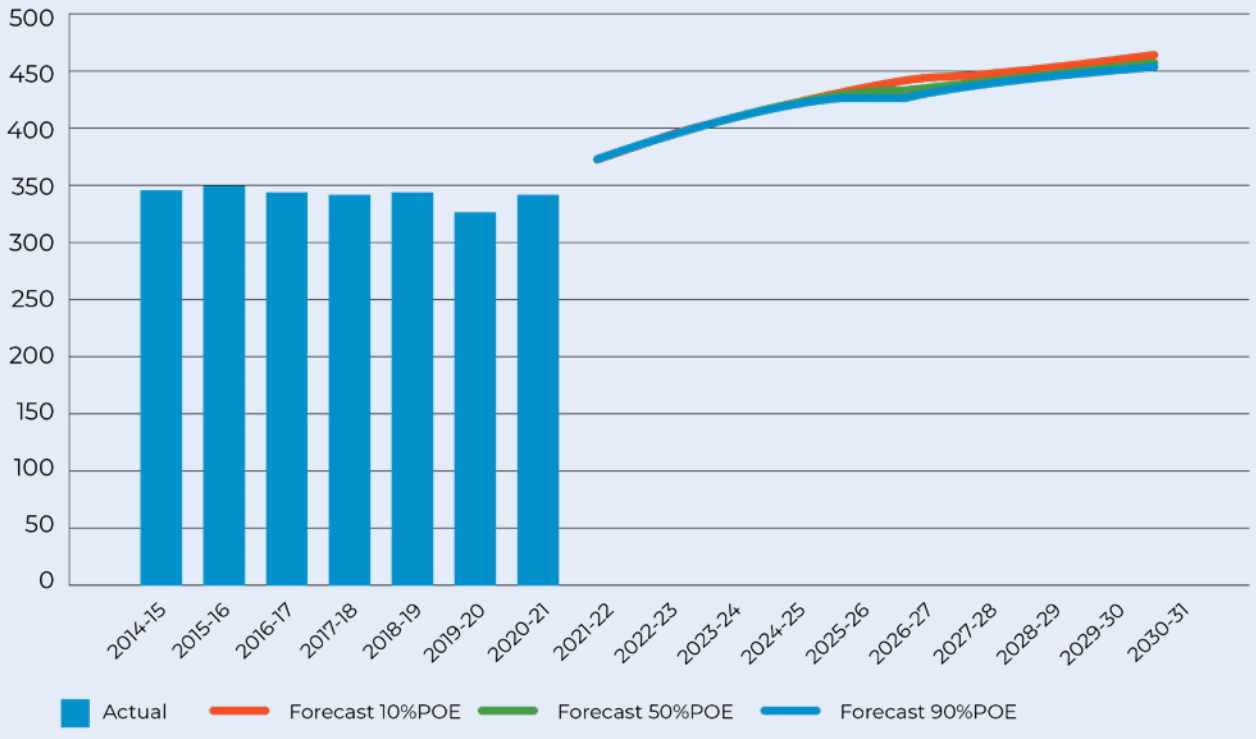
c. Rising peak demand

In recent years, we have seen moderate to falling peak demand growth at a system level, meaning that new network investment has fallen significantly. A key driver has been customers using their own solar to power their homes. A secondary driver has been relatively subdued economic activity which has led to slower growth in residential development and commercial connections.

Over the next decade, we are forecasting a significant increase in peak demand. We are seeing a significant increase in spot loads from residential and commercial developments, particularly in Darwin as seen in **Figure 30**. Our 2024-29 forecasts have assessed the impact of rising peak demand at a local level. In some cases, we are seeing high rates of growth in pockets of our network that exceed the capacity of the network.

As noted in Chapter Three, we see that peak demand could increase significantly after 2030 due to higher penetration of electric vehicles and increasing growth in the NT. Our longer-term strategy is to encourage customers to use energy when there is spare capacity on our network in the daytime through more efficient tariff structures.

Figure 30 – Maximum demand forecasts across our three regulated networks



Substation in Darwin

d. Continued refresh of our ageing ICT systems

Power and Water continues to operate ICT systems that were built a generation ago. In the 2019-24 period, we expect to make some progress in implementing refreshed ICT systems including a new metering and billing system, and upgrading our Energy Management System. For the 2024-29 period, we have undertaken further analysis of the pace and priorities of our ICT refresh. We have prioritised investments in an Advanced Distribution Management System (ADMS) which will assist us to meet the challenges of transitioning to a renewable energy system, while improving our outage management capabilities.

e. Uplift in delivery capability

In our engagement sessions with customers, we discussed the factors that have resulted in lower delivery of capex than allowed by the AER in the first three years of the current period. While many factors have contributed, a clear reason has been overlapping priorities as we engage with a changing energy landscape.

At present, we are implementing an action plan that methodically seeks to increase our delivery capability. We recognise that implementation will take time, and our forecasts have therefore sought to defer some of the works required over the next three years into the 2024-29 period. We have sought to mitigate the additional risks, by prioritising major projects and programs.

4.3 Replacement capex

We forecast replacement capex of $224 million in the 2024-29 period, an increase of $87 million compared to the 2019-24 period as seen in **Figure 31**. The key drivers of higher capex include:

- As noted in the previous section more assets are approaching end of life in the next regulatory period, which has led to more identified condition issues.
- Consistent with our customers' preferences, we have included a replacement fund of $28 million to assist us to smooth the expected steep incline in replacement between 2030 and 2040.

We categorise replacement activities into three types. Firstly, our planned replacement is for assets that we seek to replace or refurbish before they fail in service. These are assets that have a high consequence of failure in terms of safety, customer reliability, security, compliance or environmental impact. Secondly, we have assets which are scheduled for replacement based on a known defect. Scheduled replacements aim to replace or refurbish the asset before it fails due to moderate risk of consequence. Reactive replacements occur after an asset has failed in service. This would likely occur in cases where the risk is minimal or where the event was unlikely based on our regular maintenance data.

As noted in section 4.1, a key improvement to our forecast approach for replacement is a new risk quantification approach to consistently appraise the costs and benefits of investments. This is a relatively new approach for Power and Water and follows extensive feedback from the AER in our last proposal. By providing a quantitative basis for valuing risks, we can more consistently consider needs across the capital portfolio.

We identify the probability of a risk occurring, and the consequence such as safety, reliability, environment and other factors consistent with our Enterprise Risk Management Framework. Such an approach allows us to defer investment and improve affordability where the risks can be managed appropriately. The key values in our new approach include health and safety of workers and the public, compliance, direct financial costs, environmental, service delivery and customer experience. Each of these values have a dollar impact based on whether the consequence is insignificant, minor, moderate, major or severe. The risk is measured as the probability of the event occurring, multiplied by the likelihood of a consequence from the event multiplied by the value of that consequence.

Figure 31 – Forecast replacement capex in 2024-29 compared to actual/estimated in 2019-24 ($m, real 2024)

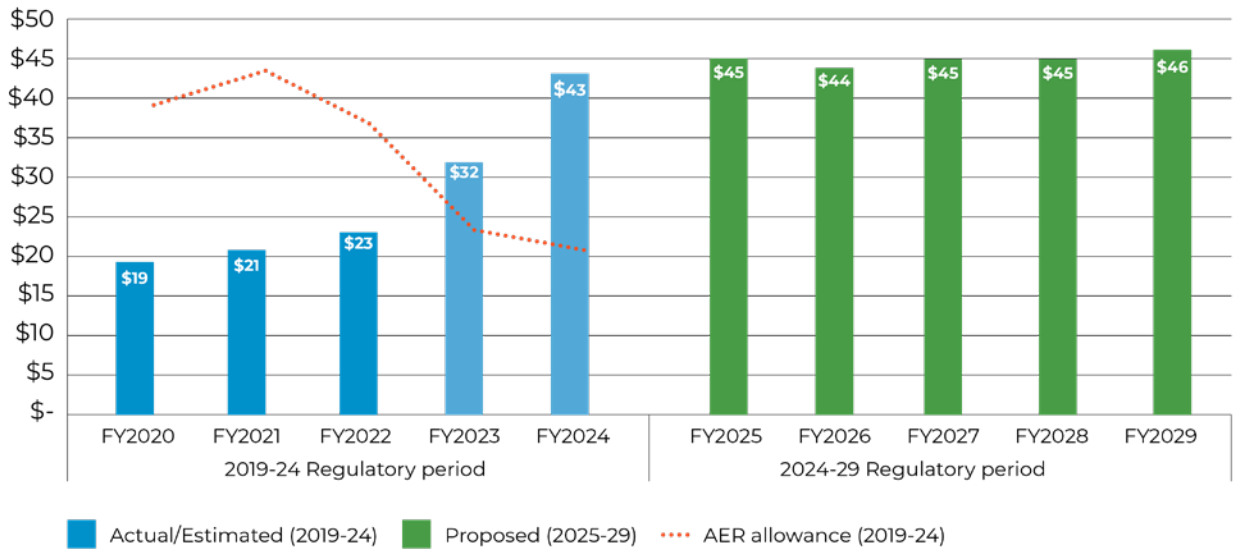
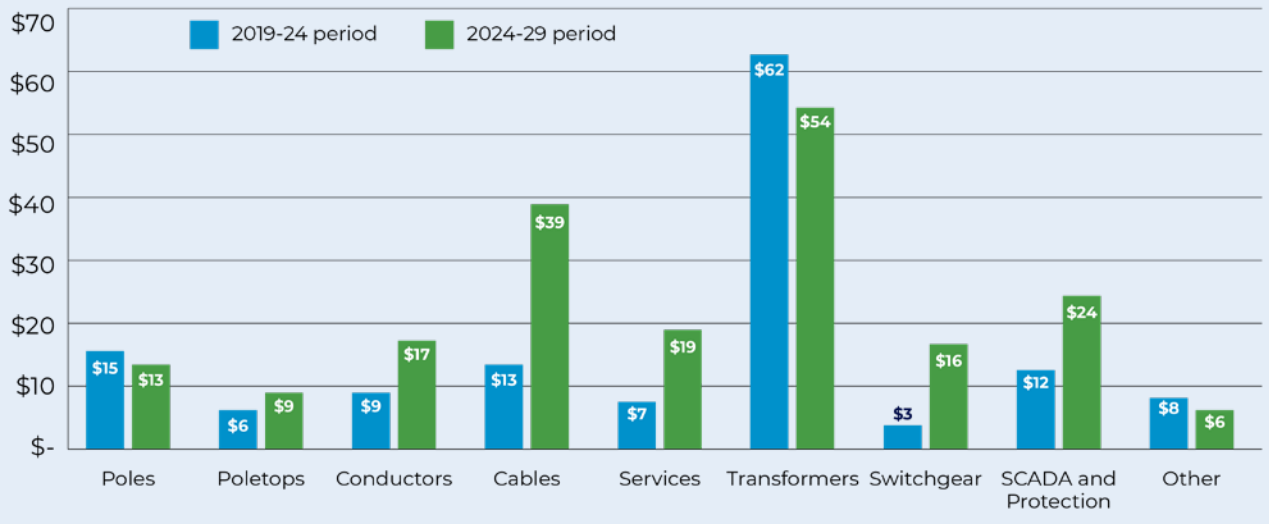


Figure 32 provides a breakdown of the forecast replacement program for 2024-29 compared to the 2019-24 period. The areas of significant increase are cables, services and SCADA and protection. The increase in cables reflects the lower delivery of the Northern Suburbs cable program than in the AER allowance in the 2019-24 period, and the deferral of the Port Feeder project to the 2024-29 period. The increase in services reflects a new planned program to replace assets in poor condition and which are expected to require replacement in the 2024-29 period. SCADA and protection replacement relates to obsolescence issues we are experiencing with these assets as they approach end of life.

The major replacement projects and programs included in the 2024-29 proposal include:

- **Darwin Northern Suburbs high voltage cable program ($27 million)** – The program has already commenced and will uplift from 2022 to 2024 where we will replace about 40 kilometres a year and replace about six kilometres each year from 2025 to 2030. Due to the location of the cable on the coast, the sheath of some segments is damaged, allowing water ingress which has caused deterioration of the cable's internal components. The corroded screens will increase the risk of electric shock and adversely affect our protection systems. This exposes our workers and the public to safety risks.
- **Alice Springs network optimisation ($17 million)** – Four of the transformers at two zone substations are approaching end of life based on testing of residual insulation strength. At this stage we are also assessing the 11 kV switchboard at Lovegrove and 22 kV switchboard at Sadadeen, both of which will be 42 to 44 years old in the planned year of replacement and have known defects. All associated protection and SCADA are also forecast to be replaced.
- **Humpty Doo transformer replacement ($10 million)** – There are condition issues with the assets within the zone substation including the 66kV circuit breaker which has a history of failures associated with the operating arm, and the power transformers which have an excessive level of moisture in the paper insulation largely due to significant continuous oil leaks. There are also condition issues with the 22kV switchgear including gas leaks, and the secondary systems are obsolete and spares are difficult to source.
- **Alice Springs corroded poles ($8 million)** – The major targeted program for pole replacement and refurbishment is in Alice Springs. The poles are corroded from high salinity and moisture levels in the soil. We plan to replace and refurbish about 200 poles each year for the next decade. This causes structural integrity issues leading to safety risks to the public and our field crews if the pole falls. We will be targeting replacement and refurbishment of the poles that are in the worst condition and pose highest risk to the community. The project will be ongoing for the next decade due to the high volume of degraded poles.

Figure 32 – Forecast replacement by AER asset class ($m, real 2024)



4.4 Growth capex

We forecast $115 million on augmenting the network and connecting customers to meet new demand for our network services ("growth capex") in the 2024-29 period, an increase of $69 million compared to the 2019-24 period as seen in **Figure 33.** The primary drivers of the increase in capital expenditure include:

- An increase in demand on local areas of our network from residential and commercial development that requires new network infrastructure.
- A forecast doubling of small-scale solar installation by 2030, which necessitates a hosting solution to safely export our customers solar without imposing strong export constraints.

We have made significant improvements to our methods to forecast demand for energy and solar exports over the last year to give us an improved understanding of when the network needs to be upgraded. Our new method involves a more granular analysis of historical trends and drivers of change. We have also improved our method for estimating the expected load and timing of new large connections.

Similar to our replacement program, we will be assessing investments against our risk quantification methodology. This includes identifying the value of customer reliability when considering upgrades to the capacity of the network.

Figure 33 – Forecast growth capex in 2024-29 compared to actual/estimated in 2019-24 ($m, real 2024)

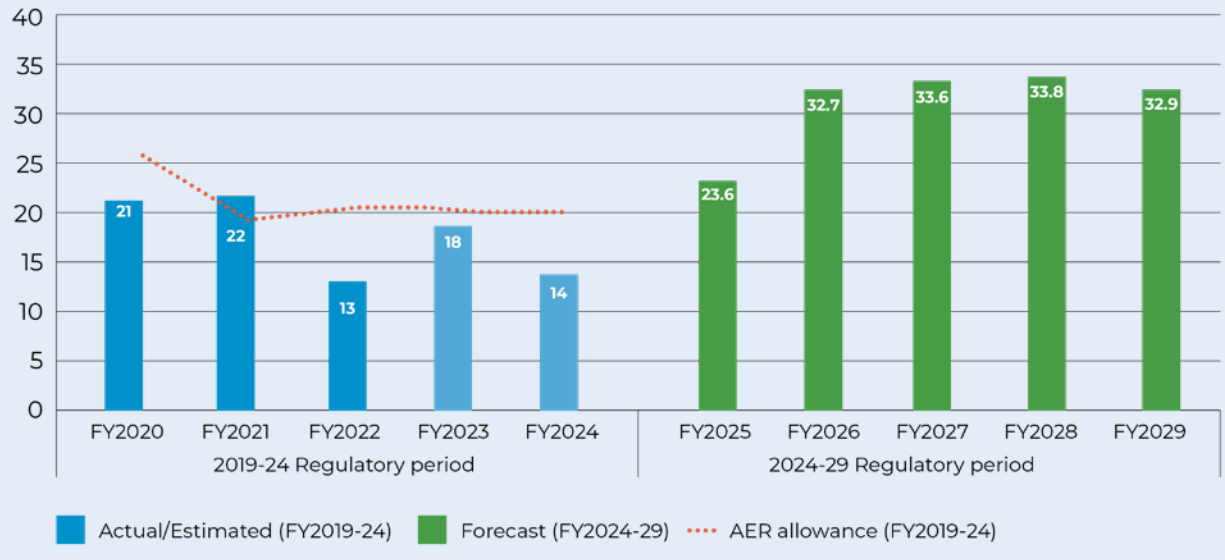


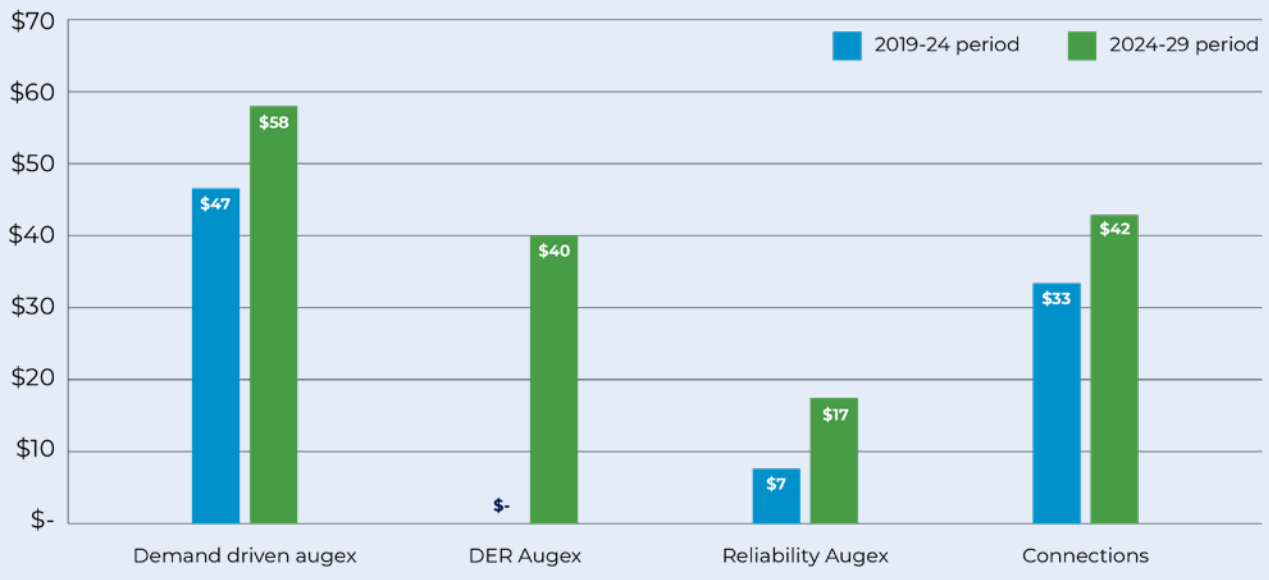
Figure 34 sets out forecast growth capex program by AER categories. Demand driven capex relates to investing in new infrastructure to meet higher peak demand for electricity in sections of the network and accounts for $58 million. This includes a major project to upgrade Katherine zone substation, and a series of minor programs and projects. Investment in our future networks program (termed DER augex) is a new type of investment and accounts for $40 million to address challenges we expect to face with exporting higher amounts of household solar. Reliability augex is increasing to $17 million as we seek to ensure we meet voltage performance targets, while continuing to meet our obligations to improve performance for customers who receive poor service.

Connections capex relates to new infrastructure for an individual customer. Connections capex is forecast to increase to $42 million in the 2024-29 period, largely due to an increase in large connections. We apply a connection policy to determine the capital contribution that a customer makes to the connection costs. We are proposing to make changes to our connection policy including expanding the connection policy to include export and simplifying the capital contributions process by linking it to the threshold for basic connection services.

This means customers seeking a basic connection (this will be set out in our connection policy, but covers most residential and small business connections) will not pay a contribution. Customers seeking a different or enhanced connection will contribute by meeting the full cost of their connection and their connection will be a negotiated connection service.

A key change for our customers in relation to connection services is how negotiated connection services will be classified in the 2024-29 period, which has flow on effects in terms of how these costs are charged and recovered. As part of its decision in its Framework and Approach, the AER classified negotiated connection services as an alternative control service. This means that customer connections that fall within the definition of a negotiated connection in our connection policy will now see a cost reflective price for their connection than under previous arrangements where they only paid a small portion of their true costs upfront.

Figure 34 – Forecast growth capital expenditure by AER category ($m, real 2024)



The major growth projects and programs in the 2024-29 forecast include:

- **Katherine zone substation upgrade ($22 million)** – The zone substation is already overloaded under a single critical contingency (N-1) of a transformer failure. In the short term, we are considering lower cost options to support load if one of the transformers fail, such as batteries or an agreement to supply additional load from a local generator. In the longer term, we see the need to upgrade the capacity of the zone substation as load continues to increase. Large housing developments and commercial loads are forecast to locate to the east of Katherine. This means that the load at risk will become significantly higher and a longer-term solution will be required. At this stage, we consider the least cost feasible option to address the long term need will be to upgrade the existing zone substation.
- **Future Network Hosting and Community Batteries ($40 million)** – As discussed in section 2.4, our People's Panels considered we should implement a technology solution to help the network export more household solar without building new infrastructure. The People's Panels also wanted us to pursue two community batteries that would store excess solar produced in the day and discharge the energy in the night during the peak evening period. We are currently in the process of analysing the need, options and benefits with consideration to recent AER guidelines on the cost of curtailed exports. At this stage, we have provided a rough estimate of $40 million to help inform our stakeholders on the materiality of the initiatives.
- **Install reactors at Katherine zone substation ($8 million)** – Quality of supply relates to voltage disturbances that can impact a customer's energy supply and appliances. Katherine is significantly above the limits for a significant proportion of the time. To address this issue, we will be installing switched inductive compensation to lower voltage at the bus in the zone substation, which will have the impact of absorbing reactive power.
- **Uprating transmission lines in Darwin ($5 million)** – We have undertaken contingency analysis of our transmission lines to identify if any lines would exceed capacity. Under a critical contingency (N-1) on the line from Hudson Creek to Palmerston zone substation, the 66kV line is expected to exceed capacity by the end of the decade. Similarly, under a critical contingency on the line from Hudson Creek to Archer zone substation, the 66kV overhead line from Hudson Creek to Palmerston line is expected to significantly exceed capacity by 2029-30. The two options to address the overloads under N-1 include procuring additional generation at Weddell power station and uplifting the line ratings from 64MVA to 90MVA for each of the lines.

4.5 Non-network and overhead capex

We forecast $182 million in total on non-network ICT, non-network other, and capitalised overheads in the 2024-29 period, an increase of only $1 million compared to the 2019-24 period as seen in **Figure 35.**

Figure 35 – Forecast non-network and overhead capex in 2024-29 compared to actual/estimated in 2019-24 ($m, real 2024)

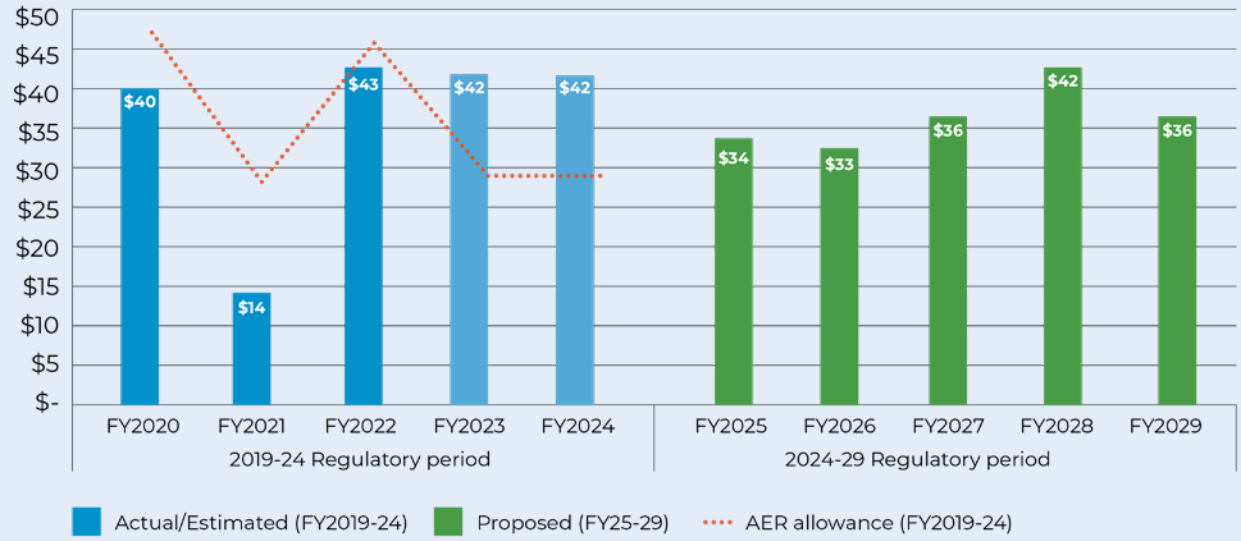
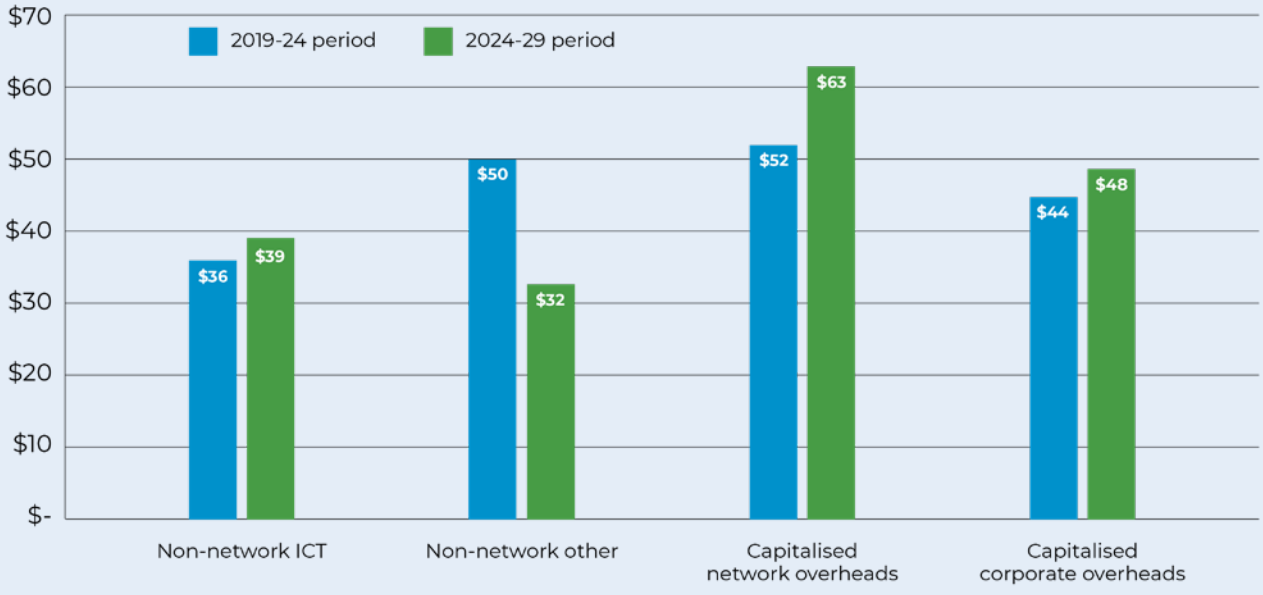


Figure 36 provides a breakdown of the forecast in the 2024-29 period by AER category compared to the 2019-24 period. Non-network ICT is at similar levels to the current period, and non-network other is forecast to be significantly lower. Overheads are increasing compared to the current period.

Figure 36 – Forecast non-network and overheads capex by AER category ($m, real 2024)



About 85 per cent of the forecast ICT capex relates to refreshing our major ICT systems, many of which are losing currency and functionality. About 15 per cent of ICT is for maintaining the currency and cyber security of our existing assets. As a multi-utility, we allocate a portion of the total capex of ICT systems to standard control services in accordance with our Cost Allocation Method.

We commenced our ICT refresh journey in the 2019-24 period, with the expected completion of our meter and billing system and upgrade to our Energy Management System by the end of the period. We have significantly re-prioritised our ICT refresh program compared to our regulatory proposal, taking a more cautious and prudent approach to investing in large ICT systems.

This has meant that some of the systems we had initially intended to commence in 2019-24 will now occur in the 2024-29 period including a new Asset Management , Mobility and Capital Delivery system and the Physicals to Financials ICT systems. These systems will be vital to implement given our expected ramp-up in capital expenditure over the next 20 years as we replace ageing Cyclone Tracy assets.

We are also forecasting capex on the initial stages of an Advanced Distribution Management System (ADMS), focusing expenditure on improving our visibility and control of the distribution network and customers' distributed energy resources. We see that this will be vital in the context of accelerating renewables after 2030, where we will need more data and controls to keep the network safe and secure.

Property leases account for about $9 million of non-network other capex, and largely relate to the expected costs of leasing our existing commercial properties including the Mitchell Centre. We also expect to incur about $7 million on refurbishing our depots to address non-compliance and remediate sites. Fleet leases account for $12 million of non-network capex.

Network overheads include asset management activities we undertake to plan, control and manage the network. Corporate overheads including finance, legal, procurement and human resources support activities across our electricity, water, sewerage and gas lines of business. We allocate overheads to each line of business in accordance with our Cost Allocation Methodology. We also allocate these costs to capital and operating expenditure depending on the nature of the activity. Our method to forecast capital overheads has considered the allocation methods of other networks, and the uplift in capital expenditure programs as we return to improved delivery.

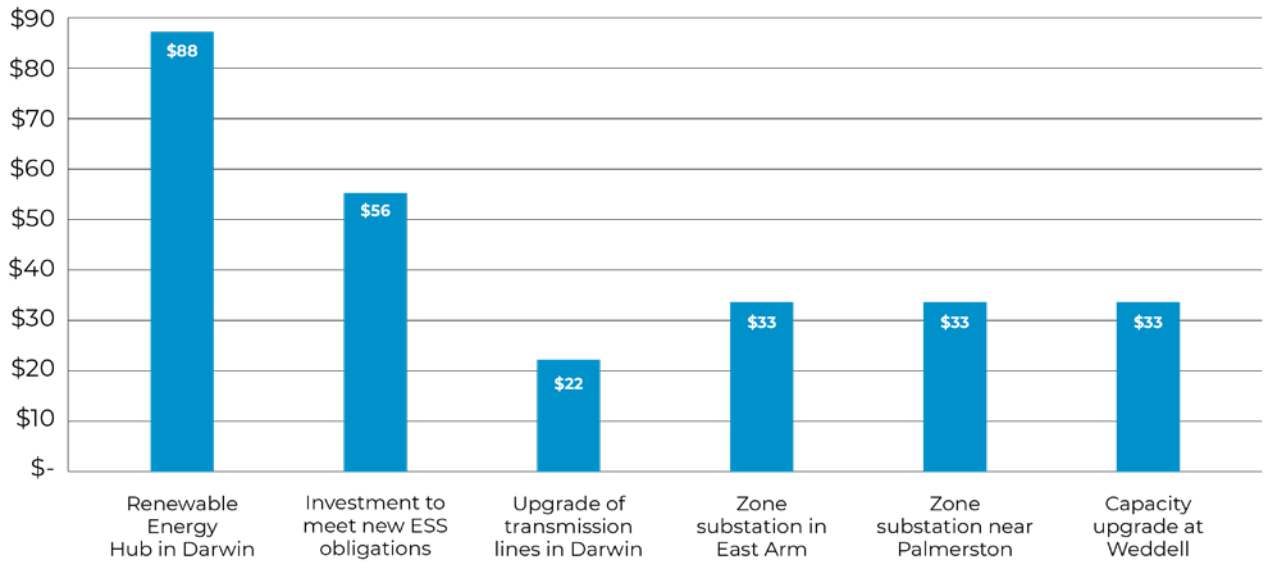
4.6 Contingent projects

In developing our capital expenditure forecasts, we have identified a number of large projects, projected to cost in excess of $15 million each, which may be required during the 2024-2029 period but which are highly uncertain in terms of timing, scope or funding arrangements. The regulatory framework requires that these projects be excluded from the forecast capital allowance, and separately identified as a contingent project. If a contingent project is allowed by the AER, we would need to demonstrate that a 'trigger' has occurred and that our capital expenditure is prudent and efficient.

The relatively high number of contingent projects reflects the uncertainty over the likelihood or timing of large projects in the NT including the development of renewable hubs, land releases and large industrial hubs. If these projects were to arise during the 2024-29 period, our revenue would increase from the estimate presented in the Draft Plan. It is therefore crucial that our stakeholders understand the nature of these projects. The estimated capital expenditure if these projects proceed are set out in **Figure 37** and include:

- **Renewable Energy Hub in Darwin** – The NTG's Darwin-Katherine Electricity System Plan includes a Renewable Energy Hub where large scale solar and battery will connect to available capacity on our transmission network. This will require the construction of new transmission infrastructure and a sub-transmission substation. We are working with the Northern Territory Government to understand our role in the implementation of the initiative.
- **Investment to meet new ESS obligations** – Under the proposed NTG Essential System Strength framework, we have obligations to maintain local system strength. Depending on the scope of the obligation, this may necessitate large investment such as a synchronous condenser.
- **Upgrade of transmission lines in Darwin** – While not committed, we expect a significant increase in demand in east rural and south Darwin. This may require a larger upgrade to the planned replacement of the zone substation and may require additional transmission infrastructure.
- **Zone substation in East Arm** – A new zone substation is likely to be required to meet industrial growth in East Arm. However, there is uncertainty on the timing of connections to the area.
- **Zone substation near Palmerston** – The Government's land plan contemplates a new urban district in Holtze, near Palmerston that would necessitate the construction of a new zone substation in the area. However, no firm commitments are in place at this stage.
- **Capacity upgrade at Weddell** – This would meet the expected demand from industrial developments at the Middle Arm Sustainable Development Precinct.

Figure 37 – Contingent projects – excluding capitalised overheads ($m, 2024 real)



Residential customers at People's Panel

Key Questions for stakeholders in Chapter Four

Have we adequately implemented customers' priorities on future network and addressing the replacement wall?

Are there specific aspects of our proposed capital expenditure that you support, disagree with, or want more information about?

Do customers have any concerns with proposed changes to our connection charges?

5. Operating expenditure

We forecast a 13 per cent decrease in operating expenditure in the 2024-29 regulatory period compared to the 2019-24 current period. The lower expenditure primarily relates to improvements in our measurement of underlying labour costs comprising our operating activities. This has resulted in more overhead costs being allocated to capital expenditure in accordance with our approved cost allocation method and in line with the practices of other networks. Our lower level of operating expenditure incorporates an efficiency stretch target and step changes relating to our customer preferences for future network programs and customer service improvements.

Operating expenditure (opex) relates to regular annual expenses. These costs are recovered from customers by Power and Water on a yearly basis.

As noted in section 1.4, there are three broad categories of opex:

- **Network opex** – includes maintenance of assets, emergency response costs, and vegetation management.
- **Non-network opex** – relates to expenditure on maintaining and operating ICT assets, corporate property assets and fleet assets.
- **Overhead opex** – relates to the share of network and corporate overheads that are allocated to operating expenditure in accordance with accounting standards and the AER approved cost allocation methodology.

Figure 38 compares our forecast operating expenditure for the 2024-29 regulatory period to actuals and estimates for the current 2019-24 period and the AER's allowance. The figure shows that while opex remained higher than the AER's allowance at the start of the 2019-24 regulatory period, actual opex has been declining over the last two years and is expected to further decline by the end of the period. Our forecast opex (including debt raising costs) of $387 million for the 2024-29 regulatory period is 13 per cent lower than the AER's allowance for the 2019-24 period.

This lower amount largely reflects changes in our accounting practices relating to the treatment of overheads to be more in line with standard industry practice. This allows for a more realistic comparison of our operating expenditure performance compared to peers and is more consistent with the efficient level of expenditure substituted by the AER in the last regulatory determination. We propose to include a staggered 10 per cent efficiency stretch target on our opex network and corporate overheads, reflecting our ongoing commitment to delivering real and sustained reductions in our opex over time, as our business continues to mature and develop its understanding and capabilities under the NT NER.

Figure 39 provides a breakdown of our operating expenditure for the 2024-29 regulatory period. It shows that our corporate and network overheads comprise a significant proportion of our forecast opex.

Figure 38 – Forecast opex in 2024-29 compared to actual/estimated in 2019-24 ($m, real 2024)

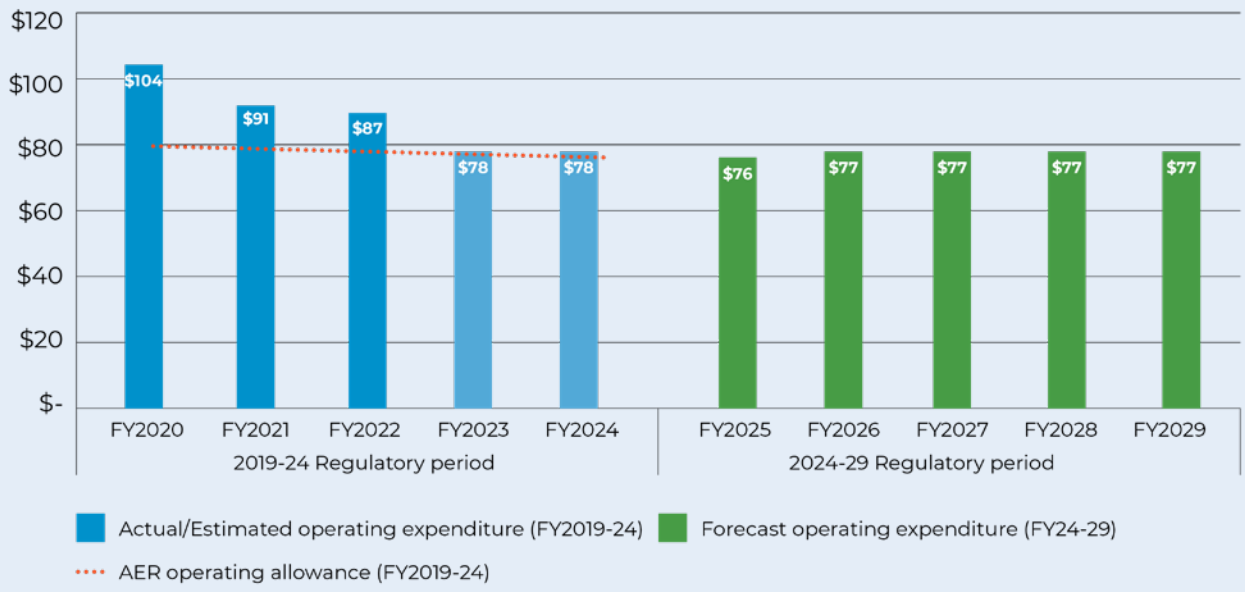
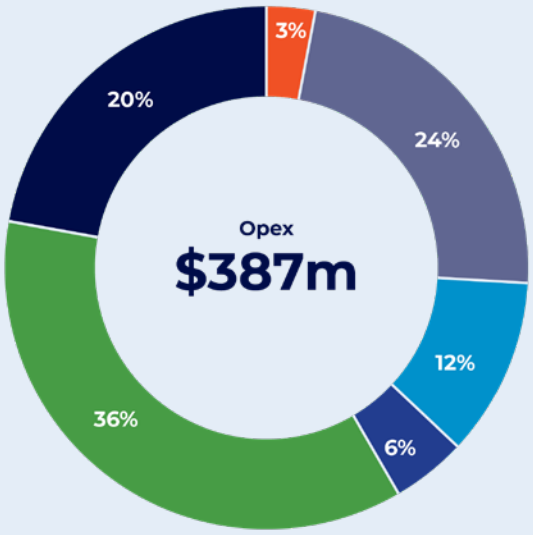


Figure 39 – Breakdown of operating expenditure in the FY24 to FY29 period ($m, real 2024)



Corporate overheads
$77m
Corporate costs that have been allocated to operating expenditure

Vegetation Management
$10m
Cutting back vegetation rom network infrastructure

Maintenance
$91m
Inspection, testing, regular and corrective works on network assets

Emergency Response
$47m
Inspection, testing, regular and corrective works on network assets

Non-network
$24m
Maintaining our ICT assets and maintenance on property and fleet

Network overheads
$138m
Network overheads that have been allocated to operating expenditure

5.1 Forecast method for operating expenditure

We have applied the AER's approach in its Expenditure Forecast Assessment Guidelines to calculate the operating expenditure for the 2024-29 period. This is based on the base- trend- step method depicted in **Figure 40** on the next page which consists of:

- **Base Year –** Operating expenditure tends to be recurrent from year to year. This means that most recent expenditure generally provides a good indication of future levels.
- **Trend –** Consistent with the AER's approach we will apply a rate of change to the base year to account for changes in input prices, work activity from increasing network size, and productivity.
- **Step changes –** We will identify changes impacting our business environment that will change our costs. Consistent with the current period we will also add step changes for annual efficiency adjustments if required.

While we are adopting the AER's preferred approach towards developing our operating expenditure forecasts, our application will differ slightly to other electricity networks. This is largely due to legacy issues associated with our existing systems ability to capture and report data and our unique operating circumstances. These factors make it difficult for Power and Water to be meaningfully compared to other peer networks. Other networks have significantly larger customer numbers to spread their costs across, operate interconnected networks over a much smaller geographical area than the Territory, and generally do not operate as the primary provider of both transmission and distribution services.

We have been working closely with the AER to explore options for how benchmarking could be applied in a meaningful way to Power and Water given the substantial differences that exist with our operating circumstances relative to our peers. Given the significant amount of work required to quantify appropriate operating environment factor adjustments, the AER has indicated that it will likely not apply econometric benchmarking for assessing our base year efficiency, and will instead rely on other top-down checks, such as category benchmarking and examining cost trends over time. This is consistent with the approach applied by the AER in our current regulatory determination.

In applying the AER's mechanistic approach towards developing our operating expenditure forecasts, we have also sought to consider the 'big picture' of how our network will need to adapt to major changes impacting the energy industry, and internal drivers.

The key strategic drivers outlined in Chapter Three, coupled with our discussions with customers and stakeholders has significantly shaped and informed how we have developed our forecast operating needs for the 2024-29 period. Importantly, in preparing our forecasts we have sought to ensure that we have sufficient resources to efficiently realise customers' vision for how our network should operate in the future.

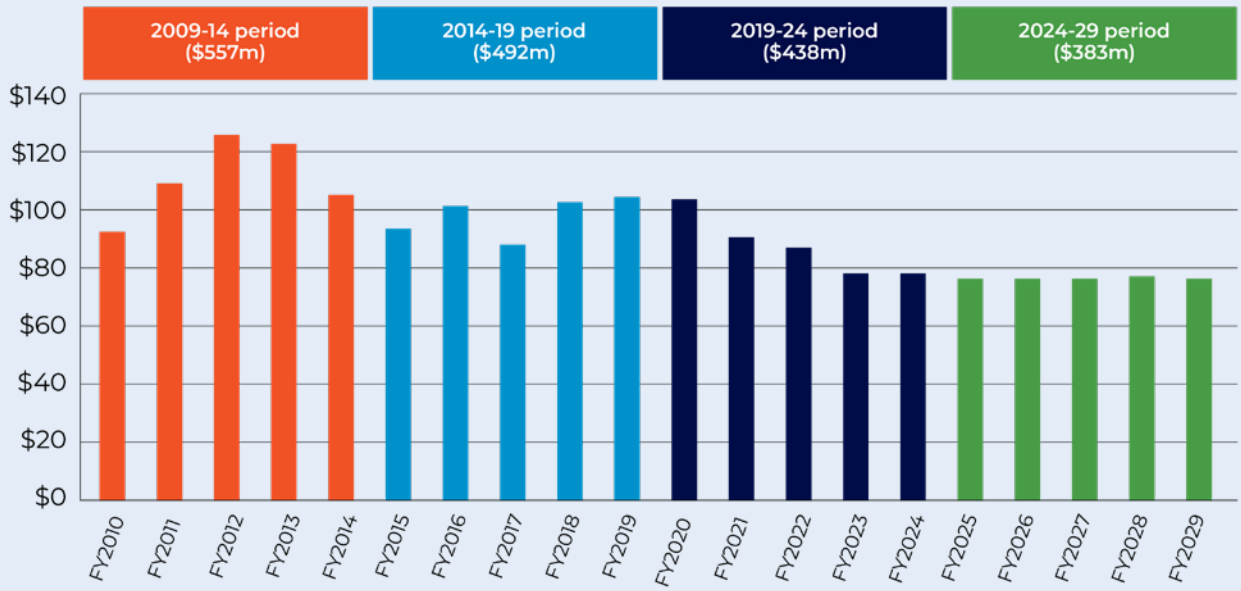
Figure 40 – Operating expenditure Forecast Approach

5.2 Drivers of change in operating expenditure – past to future

In seeking to understand the reasonableness and efficiency of our opex forecasts and our performance to date, it is necessary to take into account the circumstances in which Power and Water transitioned to the national electricity framework, and the significant change events which have since occurred.

Figure 41 provides a long-term view of our operating performance and shows how our operating expenditure has reduced significantly over time from historical levels in 2010-2014. The following sections are intended to provide further context on our performance to date and explain some of the key change events which have impacted our operations resulting in a much longer transition to more efficient and sustainable levels of opex.

Figure 41 - Operating actual and forecast expenditure from 2010 to 2029 ($m, 2024)



Understanding our operating expenditure target and performance to date

Power and Water joined the national electricity framework on 1 July 2015, with the staged adoption of obligations by 1 July 2019. This required a substantial work program to transition our obligations from jurisdictional instruments and codes to compliance under a national framework (the NT NER). This included work to prepare our first regulatory proposal, submitted to the AER on 31 January 2018.

At the time of submitting our regulatory proposal, analysis had not been undertaken to properly assess the differences between jurisdictional and national arrangements. Given our lack of experience with meeting our obligations under the national regime, a number of key assumptions were made in developing our opex forecast for the 2019-24 period, both in our initial and revised proposal. This included the extent to which we could absorb any additional obligations associated with transitioning to a national framework and the extent we could reduce our recurrent costs to be in line with industry peers.

It was assumed by Power and Water and the AER at the time that only minor differences between jurisdictional and national arrangements existed and that compliance with the regime would operate much the same as jurisdictional arrangements.

While accepting the limitations of traditional top-down analytical techniques, the AER concluded at its draft determination that operating expenditure targets should be set lower than our actual recurrent expenditure at that time. This conclusion was reached using category-based analysis and benchmarking and took into account other evidence and qualitative factors.

We largely accepted the AER's position that forecast operating expenditure should be based on more efficient maintenance practices and committed to refreshing existing ICT systems and transformation of our operating structure to reduce our costs over time. On that basis, we proposed, and the AER accepted, ambitious operating expenditure targets for the 2019-24 period amounting to more than 20 per cent reduction in recurrent costs in the first year of the period. In addition, the target included a step change reduction in overheads, staggered over the five-year period.

a. Transforming our operating model

Delivering an ambitious reduction in target operating expenditure involved a transformation process across the organisation. Given the limited availability to capture economies of scale, Power and Water sought to implement a new operating model aimed at capturing economies of scope by centralising and grouping 'like' functions rather than by line of business. While a "lift and shift" of functions has been performed to consolidate like functions the full benefits of transitioning to this new operating model have yet to be captured. This is mainly due to:

- Impact of COVID-19 in both business disruption and the ability to bring new capability into the organisation
- Executive turnover, industrial relations, and difficulty in attracting skilled resources to the Territory.
- Delays in enabling ICT infrastructure development and implementation.
- Impacts associated with transitioning to a more complex national framework, market reform, renewables uptake and other external influences.

Notwithstanding the changes made to the organisation structure, benefits in the form of cost savings have been offset by the need for additional resources to manage large solar connections and government policy changes to increase renewable energy penetration. This has not only changed our resourcing priorities but also our decision making regarding technology investment, which is explained further below.

b. Transitioning to the NT NER

Meeting our obligations under the NT NER has proven to be a more costly and challenging exercise than anticipated, for several reasons including:

- Requirements under the NT NER have proven to be more onerous than anticipated – requiring more detailed analysis, justification, and information than under jurisdictional arrangements. Meeting our reporting requirements has posed a significant challenge for Power and Water as our systems lack the capability to capture and report data at the granular level required by the AER. Given limitations associated with our existing ICT systems, meeting our reporting requirements often requires substantive manual effort to compile the information which diverts resources away from their normal business as usual activities and creates a backlog of tasks.
- Arrangements under the national regime are constantly evolving – unlike jurisdictional arrangements which were largely stable, the National Electricity Rules has evolved significantly since Power and Water has joined. The complexity in how National Electricity Rule changes flow through into the NT NER, and the pace and volume of change occurring at a national level, has proven difficult for Power and Water to keep up with. At the time of submitting our regulatory proposal the NT NER was at version 21. After four years, it is at version 88. This has meant that at the same time Power and Water was seeking to transition to compliance with the NT NER, the rules themselves have been changing. Power and Water is a small network, relative to other networks. We are unused to and ill-equipped (due to ageing ICT systems) to respond to the volume of change (particularly the transformational nature of change) that has been occurring at a national level.

These factors contributed to higher levels of opex during the 2014-19 regulatory period and at the start of the current regulatory period, as further work was required to address compliance gaps associated with meeting our connection framework obligations and our obligations under the AER's ring-fencing guideline.

c. Market reform and rapid uptake of renewables

Territorians have embraced solar and renewable energy at a rapid pace. Market frameworks and Power and Water's network have not been managed to keep pace with this rapid rate of change. This issue quickly came to the forefront of attention in the Territory with the Alice Spring's system 'black' event in October 2019.

The system black event was triggered by the power system not being in a secure operating state and having insufficient spinning reserve to cope with unexpected cloud cover that caused solar generation to drop suddenly. In response to this incident, a review of the state of system security and the adequacy of existing market arrangements to support the 50 per cent uptake of renewables and emerging technologies was undertaken.

This has resulted in a series of urgent priority reforms being progressed by the NTG in June 2020, as part of the Northern Territory Electricity Market (NTEM) priority reforms process. While that significant jurisdictional reform was occurring, reform at a national level aimed at addressing system security issues and integration of distributed energy resources was also occurring. Both of these developments and the sudden influx of solar farms seeking to connect to Power and Water's network triggered the need for Power and Water to reprioritise its focus to ensure that our network is more resilient to impacts from accelerating large scale and small scale solar. This resulted in the need for additional changes to our operating model and necessitated the resequencing of ICT system upgrades that were planned as part of Power and Water's transformation program.

d. Level of business maturity and system limitations

A contributing factor to our high level of operating costs in the past has been the fact that a number of Power and Water's core operating systems are approaching, or are already beyond, their useful life. Our existing systems do not have the capability of capturing or tracking data at a granular level, and are not configured to extract data in the format required by the AER. This creates a significant reliance on manual reporting and data manipulation, which in other networks would ordinarily be automated and centralised through ICT systems.

While Power and Water proposed a significant uplift of its ICT systems during the 2019-24 regulatory control period to address this issue and embed greater efficiencies in our operations this has not come to fruition for the following reasons:

- Projects relating to centralising and upgrading system control functions to provide additional functionality to SCADA, system management and fault response were put on hold early in the period pending greater certainty around market reforms.
- The costs associated with delivering our ICT program have proven significantly higher than anticipated at the time of preparing our forecasts. This is in part attributable to our lack of business maturity in this space and reliance on external consulting advice which underestimated the complexity and cost impact from operating a government owned multi-utility. Further market research and analysis has since revealed that our forecast overstated benefits and our delivery capability, and understated costs. This has triggered the need for reprioritisation and sequencing of ICT programs to determine what can be realistically delivered within the allowance and in light of changing business priorities.

Consequently, the full suite of planned system upgrades to deliver efficiencies and uplift business capability have not been delivered during the current regulatory period. Instead, this will be delivered in the forthcoming regulatory period based on a more accurate understanding of costs, delivery capability, and is reflected in the lower levels of opex projected for the 2024-29 period.

e. Changes in accounting treatment of shared costs

Decisions regarding Power and Water's target operating expenditure in 2019 were made on the observation that our recurrent operating costs were much higher than industry peers. The reasons for these higher costs could not be reconciled between different operating and environmental considerations, the effects of different reporting and accounting approaches, or some level of inherent inefficiency which customers should not pay for.

Inconsistencies in historic financial data and the ability to reliably compare Power and Water's own costs at an aggregate and category level with peer networks further contributed to uncertainty regarding the relative efficiency of Power and Water's operating expenditure.

We have been reviewing our regulatory accounting practices and sought advice as to whether improvements can be made to better compare our costs against industry peers. The advice recommended transitioning accounting treatments for labour cost and support costs so they were more consistent with industry peers and would assist with better comparison of Power and Water operating costs.

In response, we have made changes to how we capture internal labour rates and how we attribute labour related costs to operating activities. We have also tried to align our approach to attributing overhead costs to direct capital and operating activities so it is more consistent with industry peers. While both of these changes have not fully explained reasons why our costs are higher than industry peers, our analysis of backdated data demonstrates that some of the category analysis benchmarking would have presented differently if we had applied the same approach in our previous determination.

Key opex drivers

Moving forward, key drivers of our operating costs for the 2024-29 regulatory period are likely to be:

- **Ongoing market and regulatory reform** – changes in our obligations will impact upon compliance costs and can trigger the need for additional resourcing and system changes.
- **Technology enablement** – our ability to reach a more sustainable and efficient level of opex is dependent upon our ability to modernise our ageing ICT systems.
- **Customer preferences** – initiatives to reduce costs in customer service areas were challenged by customers in our People's Panels engagement. While most were reasonably satisfied that closure of shopfronts was the right decision, they provided reasons why Power and Water may need to do more than networks in other regions in respect of providing education, advice and support. Our proposal includes such preferences as step changes to our recurrent forecasts.

5.3 Adjusted base year

Our forecast method proposes the use of audited 2022 financial year actual operating expenditure as the base year. This will represent the most recent audited financial year at the time we submit our regulatory proposal. Adjustments for non-recurrent expenditure and top-down efficiency checks will be made to ensure it is useful for forecasting future costs.

For this Draft Plan, we have used a year-to-date projection of actual operating expenditure for the 2022 financial year (FY22). This is because our Draft Plan has been prepared ahead of finalising our statutory and regulatory accounts by October 2022. We may choose to adopt audited FY23 expenditure to support a revised forecast at the time of our revised proposal, depending on any material changes between years.

Based on our FY22 cost incurred to March 2022, we are projecting the following adjustments need to be made to the base year to normalise it for forecasting purposes:

- Adjustments to one-off project related costs that will not be incurred in the next period.
- Adjustments to reflect our expectations of labour costs that will be incurred and attributed to operating activities by the completion of the full financial year.
- A further one-off adjustment to reflect the fact that a greater proportion of overhead costs will move to capital expenditure in the next period.

a. Top-down efficiency check

We have noted above the challenges in explaining the variance between our recurrent costs and those of our peers. This has been improved through changes to how we account for costs to improve the metrics we are comparing. However, the reality is that there are a range factors which conceptually explain why the uniqueness of our business will result in higher costs and many of these factors are difficult to quantify.

The AER also acknowledges the challenges and indicated that work would continue during the period to investigate how some of these differences could be quantified. Our concerns relate to the implicit cost of attempting to properly quantify some of these unique differences which may still result in an unclear conclusion.

Some of the important differences of our business compared to others include:

- We are an end-to-end supplier of power across the Territory, with roles and responsibilities much broarder than single role DNSPs.
- We are the main essential services provider in the Territory operating a multi-utility with a back office sized to support all services.
- Power and Water is the only network operator regulated by the AER that has no interconnection with the National Electricity Market.
- While not regulated by the AER, significant costs are incurred by our networks division for remote and regional essential electricity network services. The application of our AER approved Cost Allocation Method drives a higher portion of all overhead costs to our activity on regulated networks. Our regulated network services include corporate overhead costs which would otherwise be attributed to remote and regional services if the allocation percentages were the same.
- We provide essential transmission related services in Darwin-Katherine and have a much closer operational relationship with system control and market operation activities compared to other distribution networks.
- Power and Water's network operation supports critical roles in system control and network operation in the Territory, and is responsible for developing various technical instruments that enable statutory objectives to be met, notably the Network Technical Code and System Control Technical Code. It performs a technical role equivalent to the Chapter 5 NER Schedules.
- As the only NSP regulated under the NT NER, it is relied on as the sole entity that can provide informed insights from the network perspective to policy debates and rule changes subjecting it to greater regulatory burden and associated costs under the NT regulatory arrangements.
- Other environmental factors already recognised by the AER continue to exist.

Power and Water engineers

b. Adjustment to base year for efficiency

The challenges around making the necessary adjustments for meaningful benchmark comparisons were well documented in the last distribution determination.

Despite the uncertainties around the gap, Power and Water still recognises there is a responsibility to set strong targets for improvement in the level of operating expenditure. Our internal examination of our base year to identify efficiencies has involved looking at our performance in the past and assessing if there were any opportunities for efficiencies to reduce the base year amount. Our approach to adjustments in the future period is as follows:

- For direct operating expenditure items, we will use the AER determined operating expenditure target identified in the last determination as a guide to establish our forecasts. We will use the lower of the out-turn actual expenditure in the base year and the AER's previous allowance.
- For overhead related items, we recognise cost reductions in the current period do not align with the AER's expectations implied in the allowance. This was due to necessary changes in our service model to establish the foundation for cost reductions to be delivered over time. We have consequently proposed that stretch targets from the AER's current allowance be extended into the next period so that overhead related costs are reduced by 10 per cent – staggered over the period.

5.4 Trends

We calculate the trend in forecast operating expenditure from the adjusted base year expenditure amount. This reflects changes in workload levels, prices of materials and labour, and productivity compared to our base year. We will calculate a trend adjustment for each year from FY23 to FY29 using the AER's rate of change formula. Three factors we look at include:

- **Input cost escalation** – We use materials, labour and contractors to undertake operating expenditure activities. While we automatically include inflation in our forecasts, the price of the inputs may be higher or lower depending on demand. We are working with network service providers in NSW, ACT and Tasmania to ensure a common methodology and independently verified outputs are used for escalation of labour, materials and land value.
- **Output growth** – As our network and customer base expands, we must perform more activities such as maintenance and customer service. This means that our costs will likely increase from the base year. We will apply the AER's calculation which includes change in customer numbers, energy demand at peak times, and circuit length.
- **Productivity growth** – Our customers would expect us to improve productivity over time through technology advances, and improved processes. We will likely use the AER's preferred approach to use industry estimates to establish the expected productivity growth and will also consider individual circumstances.

These factors are likely to change with market conditions and could change significantly between now and our regulatory proposal in January 2030. Our forecast rate of change is shown below in **Table 1.**

Table 1 – Rate of change forecast

Rate of change	Jun 2025	Jun 2026	Jun 2027	Jun 2028	Jun 2029
Forecast output change	1.68%	1.72%	1.71%	1.68%	1.65%
Forecast price change	0.48%	0.39%	0.36%	0.43%	0.56%
Forecast productivity change	0.50%	0.50%	0.50%	0.50%	0.50%
Forecast rate of change, year-on-year	**1.66%**	**1.61%**	**1.57%**	**1.62%**	**1.71%**
Forecast rate of change, cumulative	**1.66%**	**3.29%**	**4.91%**	**6.60%**	**8.43%**

5.5 Step changes

Step changes relate to increases or decreases in expenditure related to changes in our business environment, and which have not been reflected in the base year adjustments or trends adjustments. We will use the criteria in the AER's Expenditure Forecast Assessment Guidelines to identify potential step changes.

This includes identifying new obligations in NT and national regulations. Our organisation has been adapting to material changes in our regulatory obligations. Significantly, our ongoing transition to national electricity regulation requires an uplift in resources and systems to comply. We will seek to identify new obligations and provide detailed information on the efficient costs to comply. The obligations that we will need to manage in the transitioning Northern Territory Electricity Market are still to be resolved. Recent changes to National Electricity Rules in respect of export services will require a step change in costs, particularly when combined with the increasing need for our network to host greater capacity of solar while ensuring safe and reliable supply of energy. This will require increases in costs.

We discussed with customers the changing service delivery model to enable greater penetration of renewables in our system. Our customers generally believed that we should increase costs to facilitate and support the uptake of solar. They noted:

- Where technologies are proven, they should be adopted to help achieve renewable targets.
- We also need to move forward by piloting new technologies.

- Community outcomes should be considered to reduce or optimise outcomes and to minimise disadvantaged, so no one should be left behind.
- More needs to be done for remote and disadvantaged communities, which could be facilitated through government support.
- There needs to be overall benefits across the community through optimising investment and innovation.

Our forecasts therefore include costs to reflect greater obligations to enable more solar on the grid. This will be backed by our Distribution Energy Resource Integration Strategy and Future Networks Plan.

Other step changes relate to customer feedback in the area of customer service. Power and Water adopted a number of strategies which reduced operating costs. Customers at our People's Panel were concerned that some of these changes – particularly those relating to the closure of shop fronts – did not reflect community expectations around Power and Water's advisory and support role. We were able to explain to customers some of the changes that we have incorporated to still ensure support – including face to face discussion – is available and effective, but at much lower cost.

While our outlined response provided some comfort, customers still wanted more to be done regarding face to face communication and customer centric advocacy. Our step changes include additional expenditure consistent with these recommendations.

Our proposed step changes are outlined in **Table 2.**

Table 2 – Step changes

Step changes ($m, 2024)	Jun 2025	Jun 2026	Jun 2027	Jun 2028	Jun 2029
Customer Service – support/admin officer and customer advocate	0.43	0.43	0.43	0.43	0.43
Customer Service – travel and marketing	0.11	0.11	0.11	0.11	0.11
Customer Service – Enabling ICT	0.21	0.21	0.21	0.21	0.21
Future Networks – Hosting capacity and DER integration	0.8	0.8	0.8	0.8	0.8
Future Networks – ICT enablement	0.54	0.54	0.54	0.54	0.54

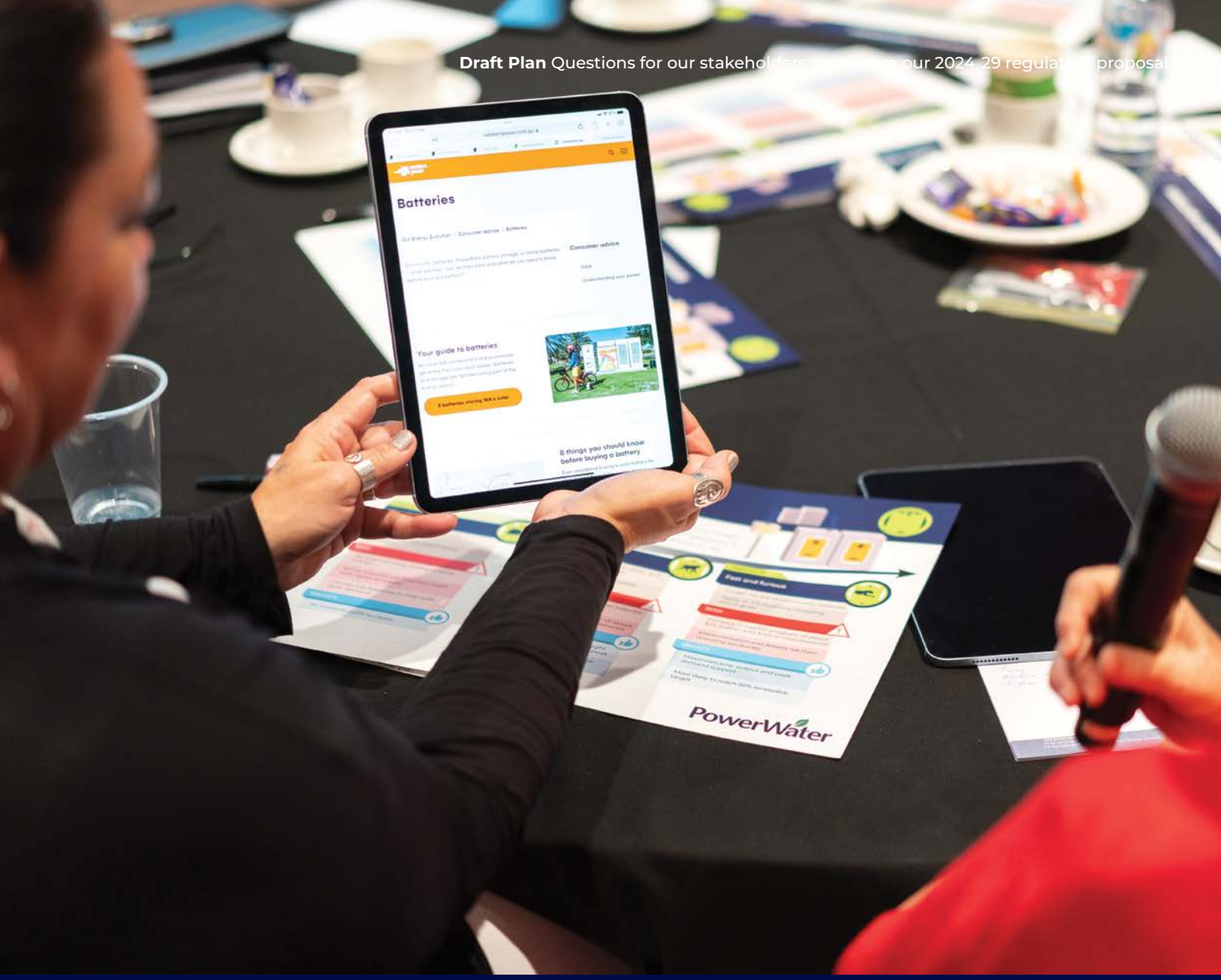
5.6 Category Specific Forecasts

A category specific forecast may be justified if, as a result of including a specific opex category in the base opex, total opex becomes so volatile that it undermines our assumption that total opex is relatively stable and follows a predictable path over time. Our proposal includes the category specific forecast for debt raising costs.

Debt raising costs are the benchmark costs of issuing debt, including the costs of maintaining an investment credit rating needed to issue this debt. **Table 3** presents the debt raising costs included in our proposal.

Table 3 – Debt raising costs

Step changes ($m, 2024)	Jun 2025	Jun 2026	Jun 2027	Jun 2028	Jun 2029
Debt raising costs ($m, 2024)	0.61	0.63	0.65	0.67	0.69



Customers discussing options at our People's Panel

Key Questions for stakeholders in Chapter Five

Do customers support our efficiency adjustments and consider they are appropriate stretch targets?

Do customers have concerns or questions on the step changes to implement customer priorities on the future network and customer service?

6. Revenue

There is considerable uncertainty in financial markets that have resulted in a marked increase in the rate of return since we met with our customers. This has resulted in our revenue forecast being 10 per cent above the 2019-24 period, higher than what we expected to present to customers. We note considerable uncertainty on the rate of return going forward, and this volatility will impact the revenue forecast we submit to the AER on 31 January 2023.

In its determination, the AER sets a cap on the annual revenue we can recover from customers through our network tariffs. The annual revenue is calculated based on the following elements:

- Investment costs associated with our regulatory asset base (RAB) which is the value of the stock of our assets at a point in time. The RAB comprises the depreciated value of our stock of assets, together with the forecast capital expenditure discussed in Chapter Five. The financing costs include a return on the RAB based on the current estimate of the rate of return, and depreciation of the RAB (often termed "return of" investment).
- Forecast operating expenditure for the upcoming regulatory period, as discussed in Chapter Six, together with an estimate of taxation costs.
- Adjustments to the revenue depending on our performance under the AER's incentive schemes and amounts to fund new innovation.

The calculation of forecast revenue relies on the AER's revenue model (Post tax revenue model) which includes the capital and expenditure forecasts discussed in the previous chapter together with inputs regarding the current value of our asset base and current market assumptions.

Revenue trends

Figure 42 identifies our forecast revenue for 2024-29 compared to the 2019-24 and 2014-19 regulatory periods. Our 2024-29 revenue is 10 per cent higher than the 2019-24 period, but still significantly below the allowance set by the jurisdictional regulator in 2014-19.

In the 2014-19 period, the jurisdictional regulator set a total revenue allowance of $1213 million due to high capital and operating expenditure together with high rates of return in the market conditions. A Ministerial Direction later required us to reduce our maximum revenue to closer to $1000 million.

Network revenue fell significantly in the first year of the 2019-24 period. The primary drivers were the AER's decision to reduce our operating expenditure, and a low rate of return due to prevailing market conditions. Further, the opening regulatory asset base was re-visited under the national economic framework, which led to a reduction in the return on assets (depreciation).

The higher revenue in the 2024-29 period is primarily explained by higher rates of return on investment due to a recent change in market conditions. Other drivers include increasing capital expenditure, which has led to higher financing costs including depreciation. However, the reduction in forecast operating expenditure has helped keep revenue from rising further.

Figure 43 identifies the components of our revenue forecast for 2024-29. The return on and return of the RAB comprise our investment costs, and together drive 56 per cent of revenue. Operating expenditure and tax comprise about 43 per cent of revenue. Revenue adjustments account for only 1 per cent of revenue.

Figure 42 – Revenue building blocks ($m, real 2024)

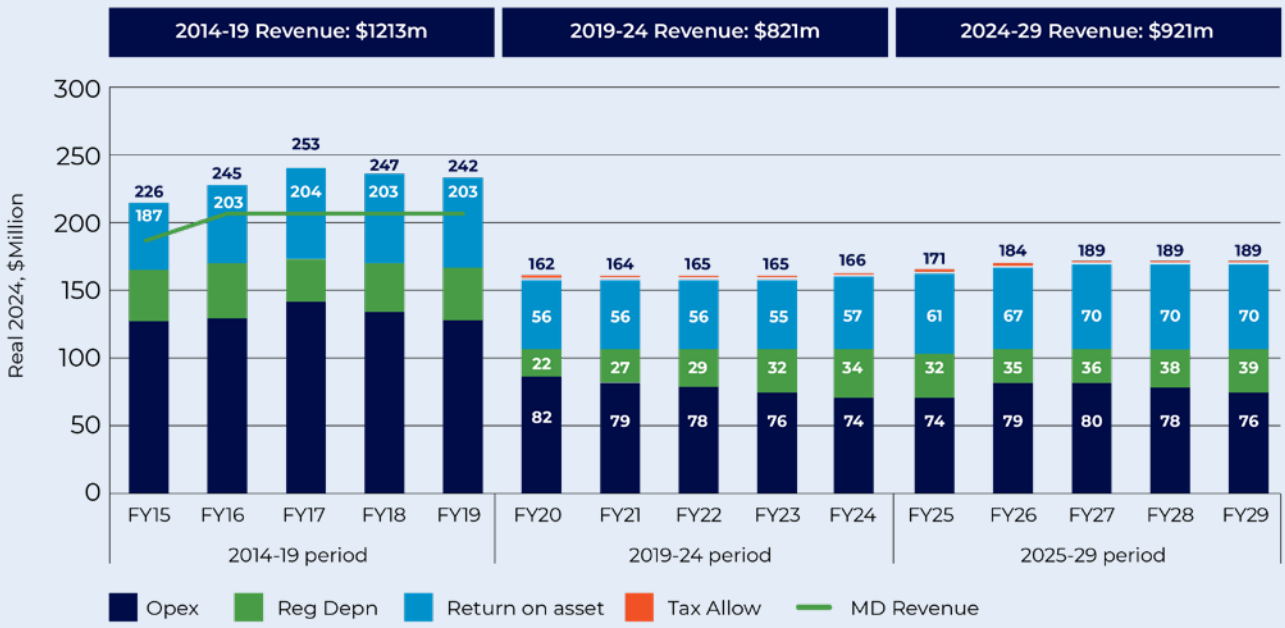
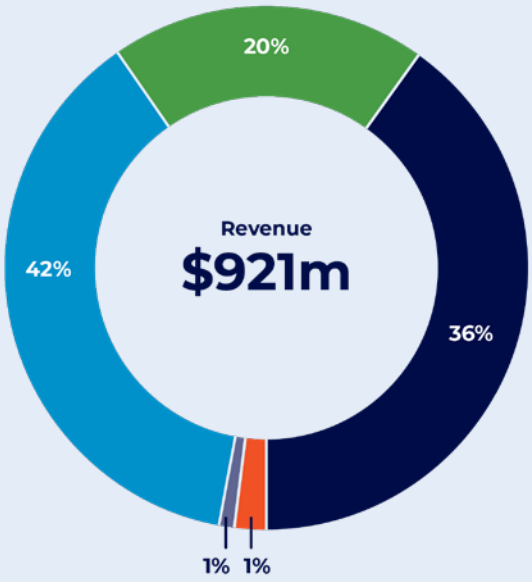


Figure 43 – Revenue breakdown



Return on Capital
$337m
Returns on asset based on market conditions including rate of return

Return of capital (depreciation)
$180m
Regulatory depreciation based on value of RAB and age profiles of asset classes

Operating expenditure
$387m
Inspection, testing, regular and corrective works on network assets

Revenue adjustments
$9m
Includes estimate of incentive paymentas and saving for a rainy day fund

Tax allowance
$9m
Corporate income tax liabilities

6.1 Overall approach to develop revenue forecast

In our April 2022 People's Panels sessions, we noted our expenditure plans at the time were resulting in materially higher revenue forecasts for the 2024-29 period compared to the 2019-24 period. Our customers supported our objective of using available levers to reduce revenue to similar levels to the 2019-24 period. We proceeded to implement levers to keep our revenue forecast for 2024-29 at similar levels to 2019-24 in real terms (excluding the impact of inflation). This included reducing capital expenditure based on risk prioritisation and delivery capabilities, aligning our overhead allocation to other networks resulting in more capitalisation of overheads, and implementing efficiency stretch targets for operating expenditure.

With this target in mind, we consulted customers on their preferences for higher expenditure on future network, replacement and customer service. Our customers signalled that they were comfortable with a small increase in revenue above 2019-24 levels to implement their preferred options.

More recently however, our expected financing costs for the 2024-29 period increased markedly due to higher interest rates and global events. These uncontrollable factors have led to an unexpected 10 per cent increase in our revenue forecast for 2024-29 compared to the 2019-24 period. Inflation has also risen significantly since April 2022, and this will add further cost of living pressures to our customers.

What levers are available to reduce revenue, and what are the risks?

A key question in this Draft Plan is the extent and availability of levers to bring down revenue, and the trade-offs that may arise in respect of short term risks and longer term sustainability.

A key limitation is that a significant proportion of forecast revenue is fixed. For example, about 51 per cent of our forecast revenue for the 2024-29 period relates to the costs of financing previous investments in network and non-network assets, tax liabilities relating to past investment, and incentives for performance in this period. Only 49 per cent of forecast revenue is impacted by our forecast expenditure in the 2024-29 period. This can be seen in **Figure 44.**

Further, the current financial market is highly volatile and in this environment it is difficult to provide customers with certainty that we can achieve revenues at 2019-24 levels. Under the AER's calculations, the risk free rate is set in a period closer to the AER's determination based on market observations. Our financing costs are highly sensitive to this parameter, and it is beyond our control to influence the rate. **Figure 45** shows the recent volatility in the risk free rate with a significant increase since April 2022. This raises the issue of whether achieving a revenue neutral target is desirable or achievable.

Regardless, we understand that our customers require clear information on what elements of our future expenditure could be deferred or avoided, and the trade-offs that entails. We have identified five levers:

1. Re-consideration of customer preferences which have added $29 million to revenue.
2. Increasing our capitalisation of overheads beyond current levels. This would have the effect of reducing the pace of revenue recovery, but further consideration is required in relation to aligning with accounting standards.
3. Deferring regulatory depreciation to future periods, noting that this will accentuate the pressures on rising electricity prices in the future.
4. Further reductions in capital expenditure by taking on more short term risk and deferring ICT systems. This would have limited impact on reducing revenue. It would also mean that we take on more reliability, safety, and security risks in the 2024-29 period, together with building the conditions for a significant capital expenditure increase in future periods.
5. Further reductions in operating expenditure beyond the efficiency stretch targets in our forecasts. This would require a reduction in the level and cost of core services we undertake. Similar to capital expenditure, this would result in higher risks in the 2024-29 period, given we have already sought to apply stretch targets and most of this expenditure is recurrent and required.

Figure 44 – Revenue that is fixed based on past costs compared to future costs ($m, real 2024)

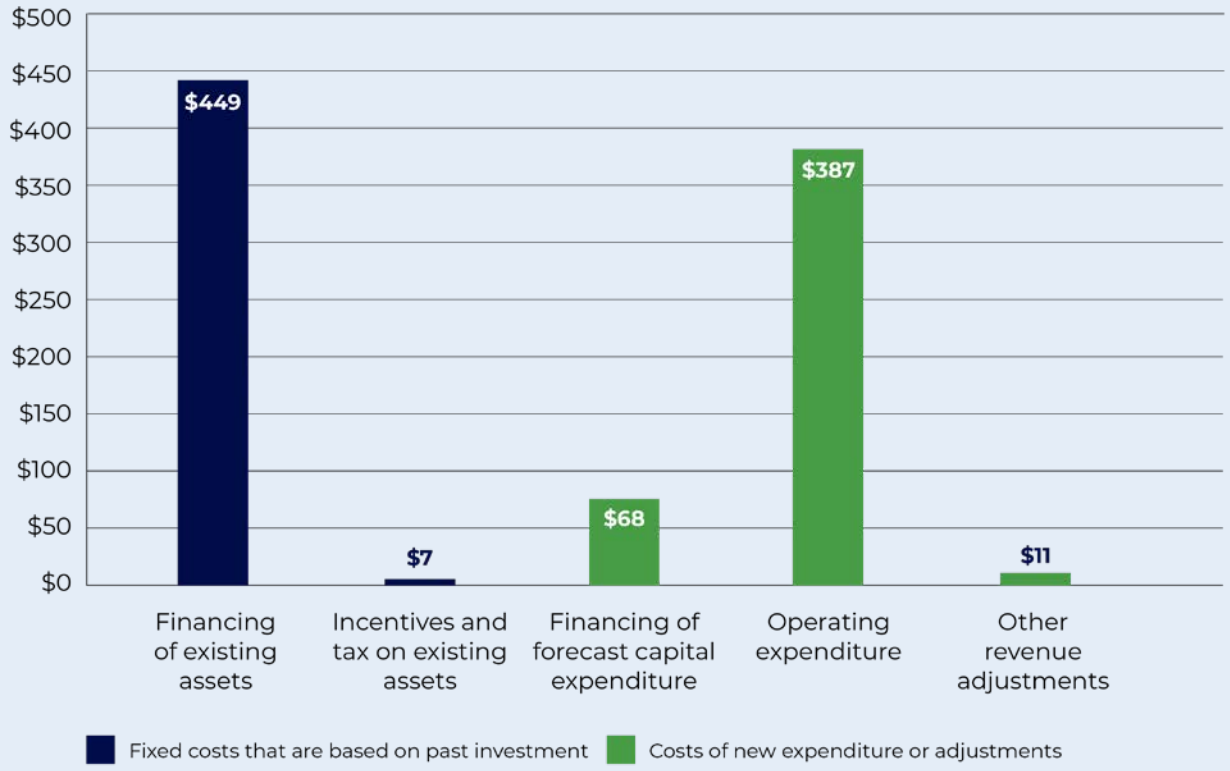


Figure 45 – Risk free rate

6.2 Returns on investment

About 56 per cent of our forecast revenue for the 2024-29 period relates to funding our past and future investments.

The calculation of financing costs is based on the value of the RAB and the remaining life of assets. The RAB is the sum of the depreciated value of past capital expenditure and forecast new capital expenditure. We make adjustments to the RAB to exclude capital contributions and asset disposals. The columns in **Figure 46** shows the movement in our RAB over the previous, current and forecast period for our network and non-network assets. The green line shows that the RAB per customer will stay relatively constant in the forecast period.

We note the RAB is significantly less than our estimate of the replacement cost of assets of about $3 to $4 billion, indicating that the current asset base is highly depreciated. The movement in our RAB per customer largely reflects the increase in capital expenditure over the period being higher than depreciation on past capital expenditure. We expect this trend to continue as we invest in new assets and replace assets that are highly depreciated in the RAB.

Return on assets

The AER determines a return on investment allowance for each year of the regulatory period. The allowance is calculated by multiplying the nominal rate of return by the nominal value of the RAB. The rate of return represents the expected rate of financing required to finance a benchmark efficient business facing similar risk. The nominal vanilla weighted average cost of capital is the proportion of the return on equity and return on debt based on a defined gearing ratio.

Rate of return parameters and values are largely pre-determined through the application of the AER's Rate of Return Instrument, but in some cases are based on market data either at the time of the determination or through updated data in the regulatory period.

A key change to the calculation of the rate of return has been the sudden increase in the risk free rate, which has a consequential impact on the return of equity. The risk free rate has increased significantly since our consultations with customers in April 2022 due to higher interest rates and other global factors. The risk free rate will be calculated closer to the time of our determination over an averaging period, and is then likely to be locked in for the duration of the 2024-29 period. We will continue to advise stakeholders on updates, but note that this is an uncontrollable factor influencing our overarching objective of maintaining revenues in the 2024-29 period at levels similar to 2019-24.

A further change that has impacted our calculation of the rate of return has been the AER's draft decision on the 2022 Rate of Return instrument. Once final, this will be a binding instrument that will be applied in our regulatory determination for the 2024-29 period. The AER's draft decision includes increasing the market risk premium which has the effect of increasing the return on equity. However, the AER will be using a five-year risk free rate period, which will likely lead to lower estimates of the return on equity.

Return of assets (depreciation)

We recover a revenue allowance equal to the depreciation returns calculated in the AER's revenue models. The depreciation included in the revenue allowance is net of assumed indexation. Straight line depreciation of existing assets as at 30 June 2024 is calculated using the AER's depreciation model, which applies the year-on-year tracking method. Straight line depreciation on new assets forecast for the 2024–29 period is calculated within the AER's Post Tax Revenue Model using the same method. In both cases, we have retained the asset classes and standard lives adopted by the AER for the 2019–24 period.

Figure 47 identifies the returns on and of assets.

Figure 46 – Movement in RAB over time ($m, real 2024)

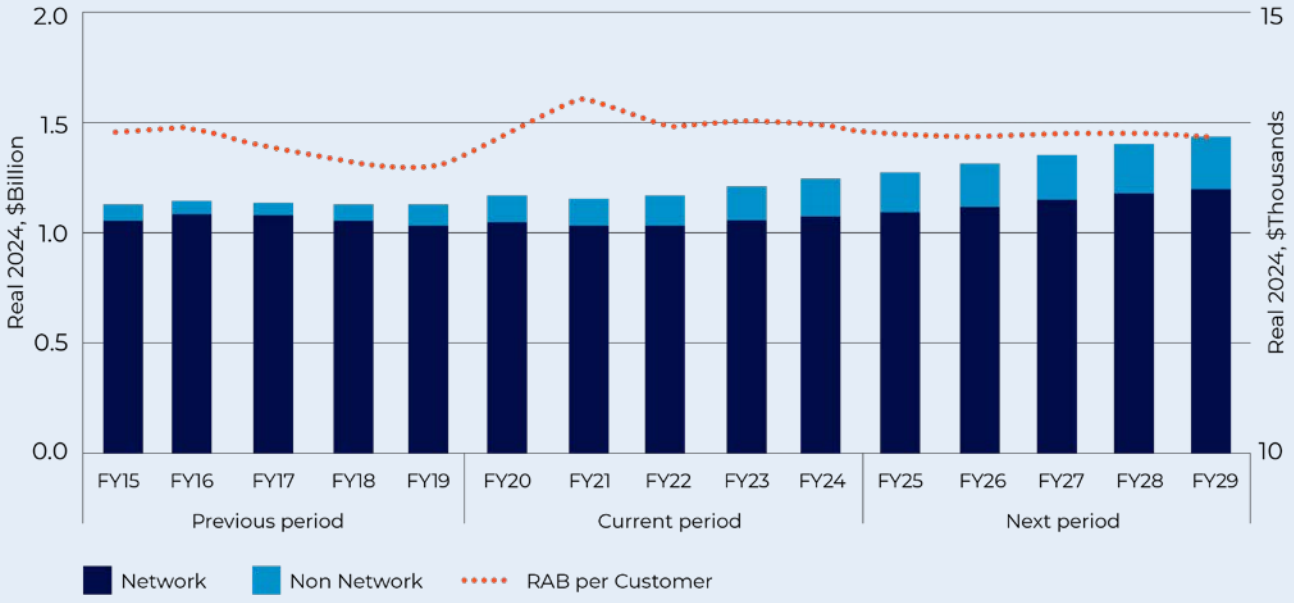
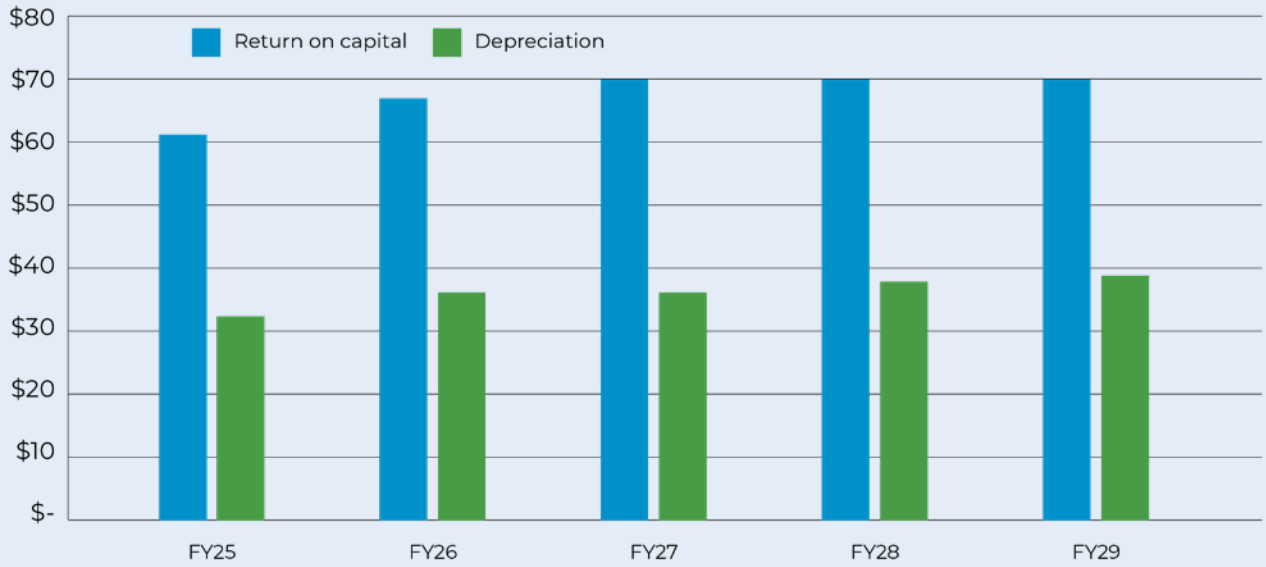


Figure 47 – Returns on investment in the 2024-29 period ($m, real 2024)



6.3 Other revenue items

About 37 per cent of the forecast revenue relates to operating expenditure forecasts. These forecasts were set out in Chapter Five of this Draft Plan and account for $387 million of forecast revenue in the 2024-29 period. As operating expenditure is an annual cost that is unrelated to an asset, the cost is passed through directly as a revenue item.

Like other businesses, we must pay income tax to the government. The allowance for tax costs in our building block proposal reflects our expected tax liabilities over the next regulatory period. We have forecast this allowance using the AER's revenue model as seen in **Table 4.**

Table 4 – Corporate income tax ($m, real 2024)

	FY25	FY26	FY27	FY28	FY28	Total
Estimated cost of corporate income tax	2.9	1.9	1.1	1.1	2.0	9.0

As well as shared asset revenue, our building blocks revenue is also adjusted for any incentive allowances. These can be positive or negative and are intended to give effect to schemes applied by the AER to ensure equal sharing of benefits from efficiency improvements over the period.

For the 2024–29 period, our proposed revenue includes two incentive allowances:

- CESS carryover amounts – these result from applying the AER's capital expenditure sharing scheme to our actual capex incurred over the 2019–24 period
- DMIA – this is an ex ante allowance for demand management innovation.

We have also included an adjustment to implement the customers' preferences for 'saving for a rainy day' fund of $9.1 million.

Adjustments to revenues for these additional allowances appear in **Table 5.**

Table 5 – Other revenue adjustments ($m, real 2024)

	FY25	FY26	FY27	FY28	FY28	Total
CESS carryover amounts	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(2.4)
DMIA	0.38	0.38	0.38	0.38	0.39	1.9
Saving for a Rainy Day Fund	1.76	1.77	1.80	1.85	1.91	9.1
Total adjustments	1.6	1.7	1.7	1.7	1.8	8.6

The AER may adjust revenues for benefits we and our customers receive from shared assets over the current regulatory period. The small number of assets we currently use to provide both regulated services and unregulated services do not generate sufficient revenue at this stage for the AER to make any adjustment. We will revisit this issue prior to submitting our regulatory proposal in January 2023.

6.4 Typical customer impacts

In our conversations with customers, we have been discussing the complexity of translating the impact of a change in network revenue in 2024-29 to a customer's electricity bill.

Similar to other states and territories in Australia, a customer's electricity bill is issued by their retailer. The bill reflects the customer's share of the total cost of supplying energy including generation of electricity, the use of our transmission and distribution network, the retailer margin, and the costs of managing the power system and market operating costs as seen in **Figure 48**.

In the NT, the NTG provides a subsidy for smaller customers through the Pricing Order that reduces their electricity bill. This means that the tariffs in a customer's bill do not relate to the relative costs of each sector, making it complex to specify the relative contribution of our costs. In our conversations with customers we have noted that in Australia, network costs account for 40 to 45 per cent of the electricity bill**.**

An increase in our network revenue in the 2024-29 period would increase the total cost of electricity in the NT. The extent to which this is passed on to customers depends on how the NTG Pricing Order will change in the 2024-29 period. However, for discussions on affordability with customers we have assumed that an increase in our network revenue would be fully reflected in a customer's bill.

For larger customers, it is more probable that an increase in our network revenue would be passed through by the retailer, although this will depend on the specific tariffs of the retailer.

For the purposes of this Draft Plan, we have assumed that the annual change in smoothed revenue will have a direct impact on each of our "*typical customers*" in each tariff class. As noted in Chapter Nine, we are also seeking feedback on making changes to our tariff structures. This may mean that there are likely to be differences between our customers on how the increase in network revenue is shared among customers. We have yet to fully undertake this analysis and will provide stakeholders with information in our engagement sessions and our regulatory proposal. The analysis also does not take into account the changes in customers, energy and demand that also have an impact on electricity bills.

Figure 49 identifies the indicative bill impact from the 5-year plans presented in this Draft Plan for our typical smaller and medium sized residential and non-residential customers. **Figure 50** identifies the indicative bill impact for our industrial and large industrial major customers.

Figure 48 – Typical electricity bill breakdown

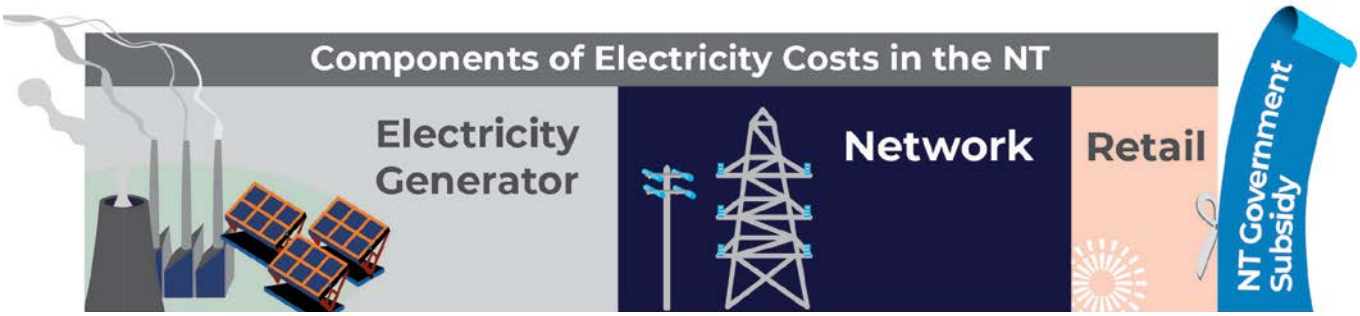


Figure 49 – Indicative impact of 2024-29 network revenue on smaller customer's annual electricity bill ($, nominal)

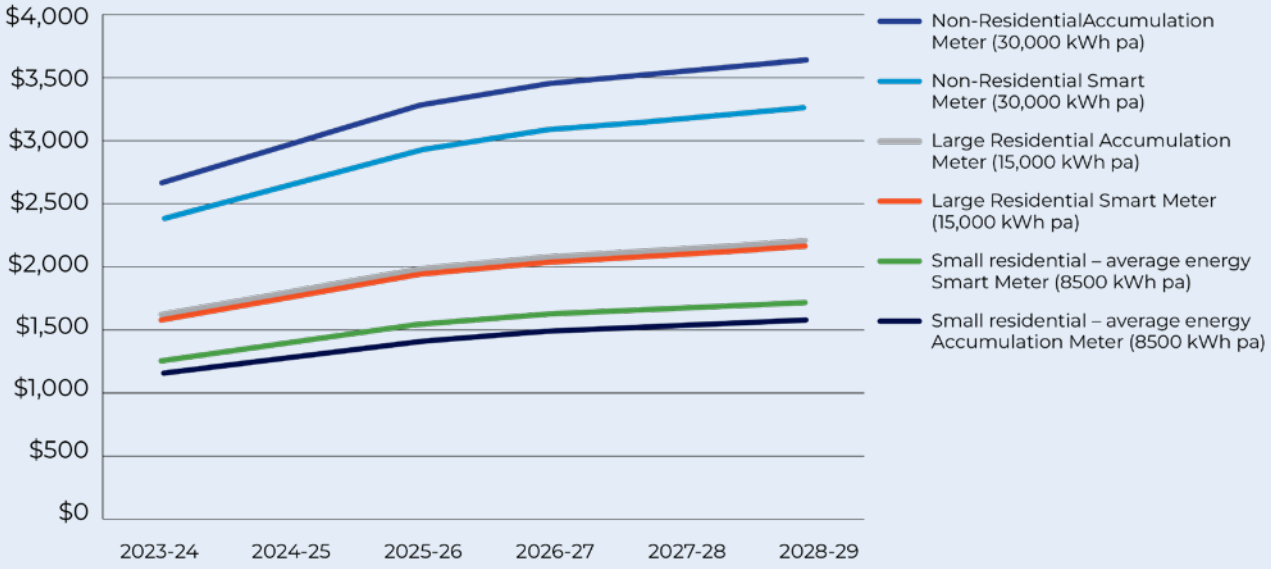
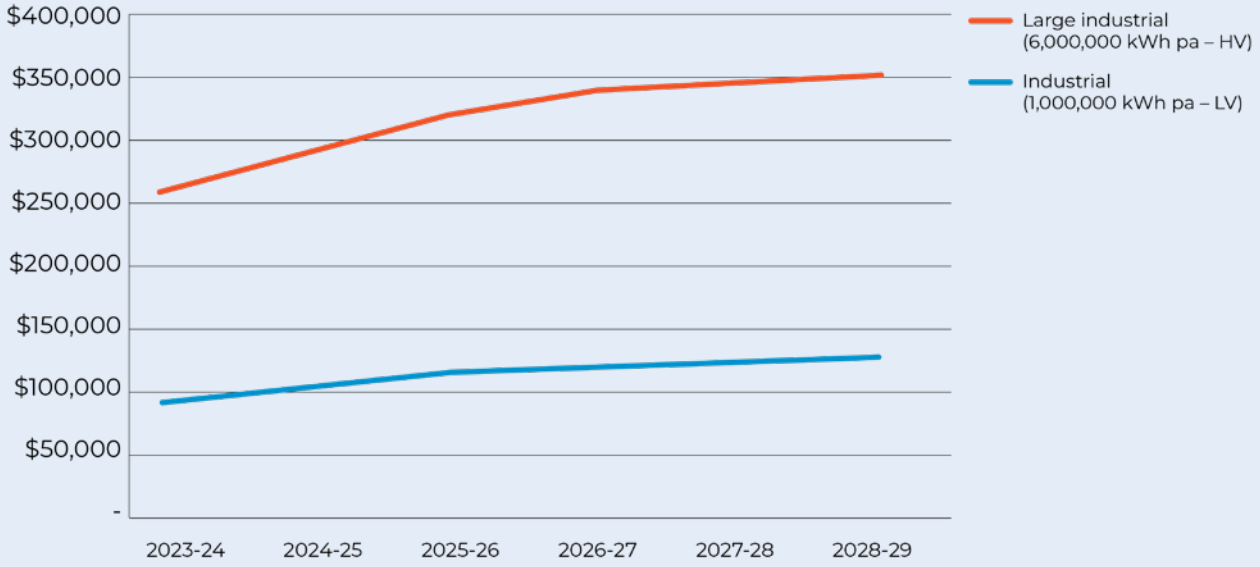


Figure 50 – Indicative impact of 2024-29 network revenue on larger non-residential customer's annual electricity bill ($, nominal)



Customer examining materials at our People's Panel

Key Questions for stakeholders in Chapter Six

Do you consider the customer preferences should be re-visited in light of the higher than anticipated forecast revenue?

Do customers consider that short term affordability should be prioritised over long-term sustainability?

7. Metering services

For the 2024-29 regulatory period, we are proposing to continue installing smart meters for all new and replacement installations, including the ongoing replacement of our mechanical meters that have exceeded their operational life. Our proposed metering expenditure seeks to develop a smart meter fleet that facilitates our customers' choices to install renewable energy installations on the network, while addressing condition, accuracy and reliability issues associated with our current mechanical meters.

Our metering service is an alternative control service where we identify an individual charge for the service separate to the standard service.

Our electricity meter population is about 87,500. Of these, about 24,250 are smart meters. Our current non-smart meter population are mostly very old, mechanical meters which have accuracy issues and are close to or beyond their economic life as illustrated in **Figure 51**. To address this, we are proposing to continue our progressive rollout of smart meters which is underway in the current regulatory period.

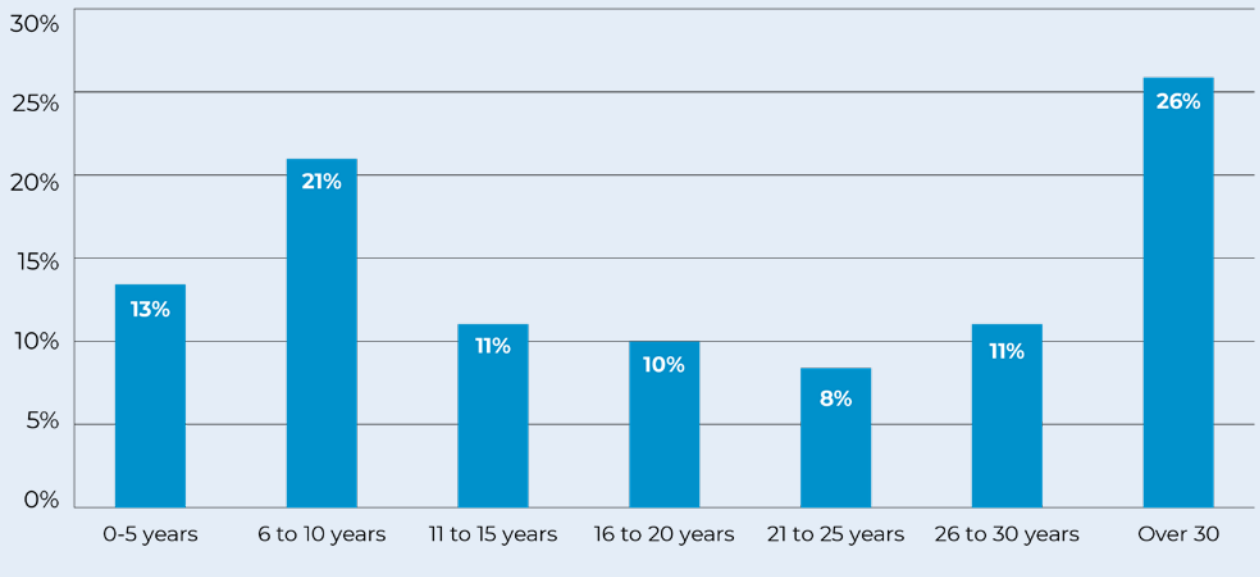
The move to smart meters is consistent with national trends and customer preferences. Our investment in smart metering has generally been supported by our customers, as it removes the need for manual reads. Smart meters also enable us to facilitate growing solar and battery connections on our distribution network as well as prepare for customer uptake of electric vehicles. As noted in the next chapter, smart meters are a prerequisite for implementing more efficient tariffs that incentivise customers to use appliances in off-peak periods.

Other benefits from smart meters include better network fault identification, more accurate meter reads, and the ability to better comply with stringent metering requirements under the national electricity rules.

Our progressive rollout is planned as follows:

- Of our 63,250 non-smart meters, 21,000 will be replaced or upgraded to smart meters in the remainder of the current regulatory period.
- Half of the remaining 42,250 are proposed to be replaced with smart meters over the 2024-29 period.

Figure 51 – Proportion of meters by age



7.1 Metering capital expenditure

Our metering capital expenditure forecast of $36.0 million (2023-24 real dollars) for the 2024-29 regulatory period is consistent with our aim of a progressive rollout of smart meters. This represents a decrease of nine per cent over the forecast expenditure of $39.8 million in the 2019-24 period, and an increase of 19 per cent over the regulatory allowance of $30.3 million. This is shown in **Figure 52.**

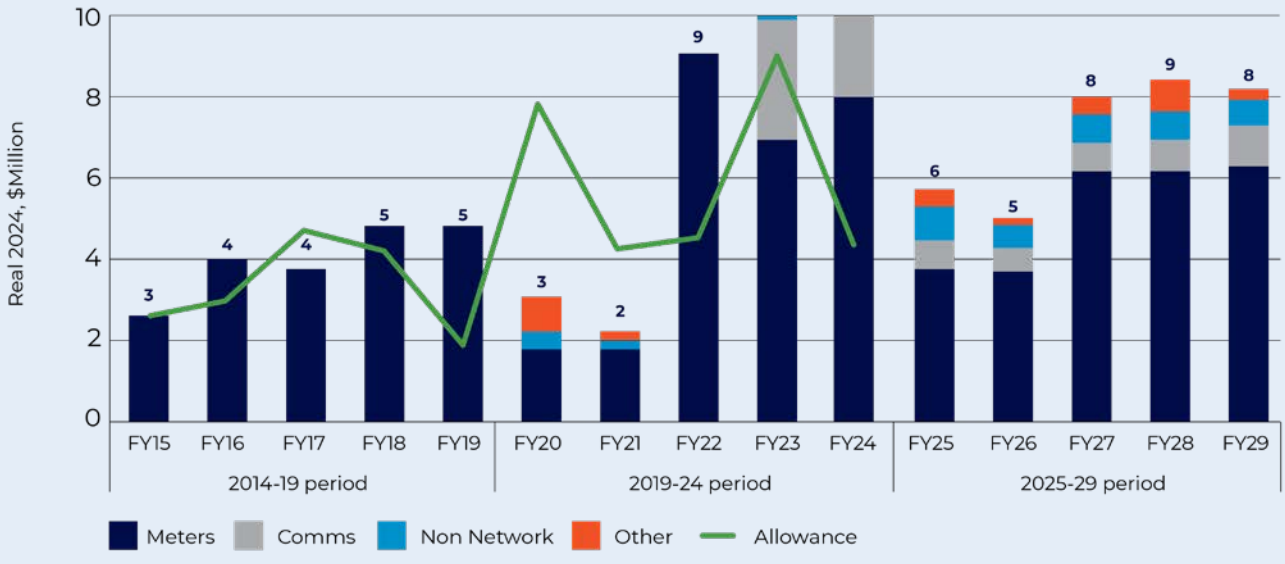
Our capex forecast for 2024-29 is founded on a proposed acceleration of the meter and modem replacement program over the last two years of the current regulatory period. Our planned meter and modem replacement programs for 2019-24 have been delayed because our metering IT systems were unable to manage the increase in data from the planned works. With these constraints now addressed, we expect to ramp up this program from 2022-23.

We considered both a slower and a faster smart meter rollout as part of our preparation for our initial regulatory proposal. We are proposing a middle option of a progressive rollout to balance costs for consumers, resourcing needs and compliance issues. We believe the capital program provides the most appropriate and sustainable transition to a safe, accurate, and reliable meter population going forward.

Other points of note regarding our metering capex program are:

- The overall meter population is less than stated at the last regulatory determination. Several thousand customers have three meters, which are used as a single meter for billing purposes. We have now changed this to be a single meter in our metering register and have undertaken a significant data cleansing exercise in our billing system, resulting in a more accurate (and lower) count of meters. The combination of these issues has caused significant under-recovery of metering costs in the current regulatory period.
- An additional driver of capital expenditure is an allocation of approximately $6 million to replace asbestos meter panels on customer premises where it is unsafe to replace the meter on the existing panel. This is a continuation of a program that was approved in the last determination.
- There is a dip in capital expenditure in the first two years of the regulatory period. The rationale for this is that we have a significant population of unregulated meters (around 15,000) that we are responsible for. These meters form part of various isolated systems in the NT that are not connected to the regulated networks. Similar

Figure 52 – Metering capital expenditure ($m, real 2024)



to the wider, regulated meter population, many of these meters are at the end of their useful life and require upgrading. Funding for these upgrades is separate to the AER process and approval is currently being sought. Pending this approval, it is expected that this work will be undertaken in 2024-25 and 2025-26. This will mean resources will be redirected to this work, necessitating a reduction in the replacement program for regulated meters for this two year period.

7.2 Metering operating expenditure

Our metering operating expenditure relates primarily to costs associated with reading meters and maintaining meter data. Opex is derived via the Base Step Trend method and is forecast to be $31 million over the next regulatory period, an overall decrease of 14 per cent relative to actual forecast expenditure and 1.3 per cent relative to the regulatory allowance for the current regulatory period, primarily driven by:

- The application of overheads to direct expenditure costs.
- Escalation factors applied to the base year operating expenditure.
- Increases in our meter testing and inspection rates to comply with the requirements of Chapter 7A of the NT NER.

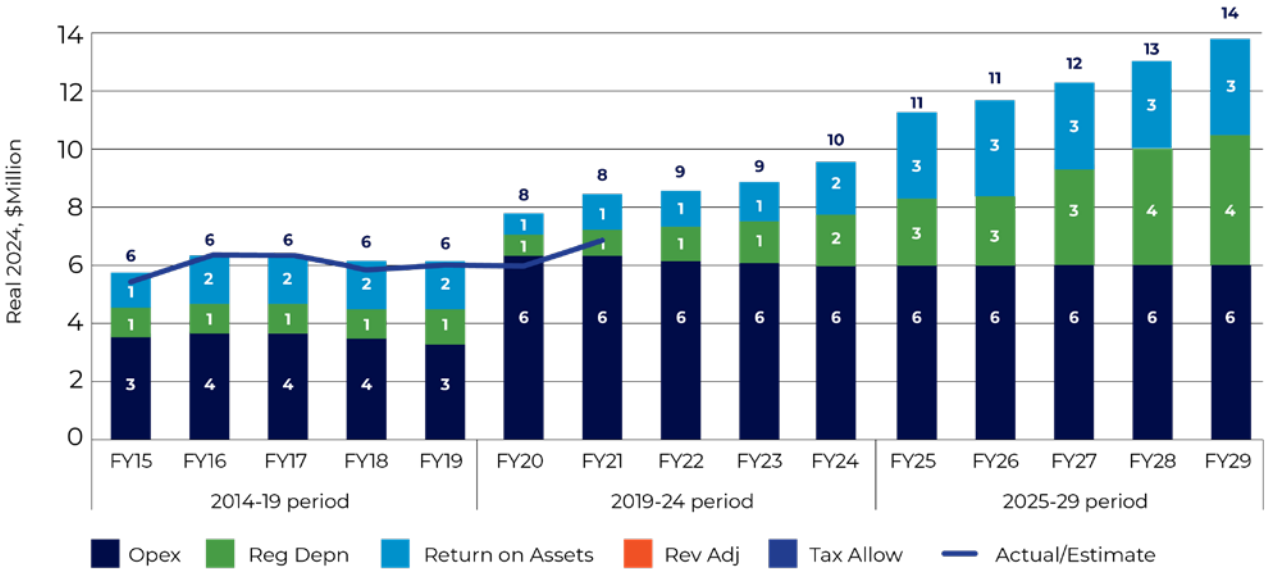
7.3 Revenue impacts from metering expenditure

The expenditure proposals outlined above result in a revenue requirement of around $11.0 million in the first year of the regulatory period, rising to $13.8 million by year five. The correction of current under-recoveries, along with the increased capital program, result in an increase in annual metering charges to customers of 43 per cent as a one-off in 2024-25, followed by smoothed price increases of 1.34 per cent in subsequent years. For a small customer with a single phase meter this is an increase from $67 to $101 in year 1. The revenue outcomes can be seen in **Figure 53.**

The major driver of revenue increases is the increase in capital expenditure relative to the capital expenditure allowed in the current regulatory period. In particular, our meters were almost fully depreciated by the start of the 2019-24 regulatory period, so as our meter replacement program progresses, the metering regulatory asset base will grow, in turn increasing the return on and of capital.

We also propose a change in the way our metering services are currently categorised to more correctly apportion costs between customers, particularly for low voltage CTs and HV customers.

Figure 53 – Metering revenue ($m, real 2024)



Power and Water staff discussing options at our People Panel

Key Questions for stakeholders in Chapter Seven

Do customers consider we have the right pace of smart meter rollouts?

8. Tariffs for a new age

We set network tariffs each year to collect the revenue allowance set by the AER. In the current period, we started a journey to improve the fairness of our tariffs to better reflect each customer's share of network costs. For the 2024-29 period, we want to consult with customers on the need for further tariff changes. Our proposed changes seek to reduce future costs through tariff structures that encourage customers to shift consumption and solar exports to periods when the network has spare capacity.

In Chapter Six, we described the process for how the AER places a ceiling on the revenue we can collect for our network services based on expenditure plans and previous investments. To collect the revenue, we set network tariffs based on a customer's connection, energy and demand for our network services. Importantly, the network tariff is charged to the retailer rather than the customer.

Our network tariffs seek to collect revenue from customers in an equitable way, where customers are allocated their fair share for the costs of network services. The related objective is tariffs that encourage customers to best utilise the capacity of the network for example by shifting demand to off-peak periods. This improves affordability for all customers by improving utilisation, a strategic focus that we outlined in Chapter Three.

The NT NER requires us to develop network tariffs that align with Pricing Principles that relate to economic efficiency. Under the Pricing Principles, we must set tariffs to recover the expected future costs of building new networks. This involves setting a charge that reflects the long run marginal cost (LRMC) of our network services. Any residual costs should be recovered by tariffs that collect revenue from customers in the least distortionary way.

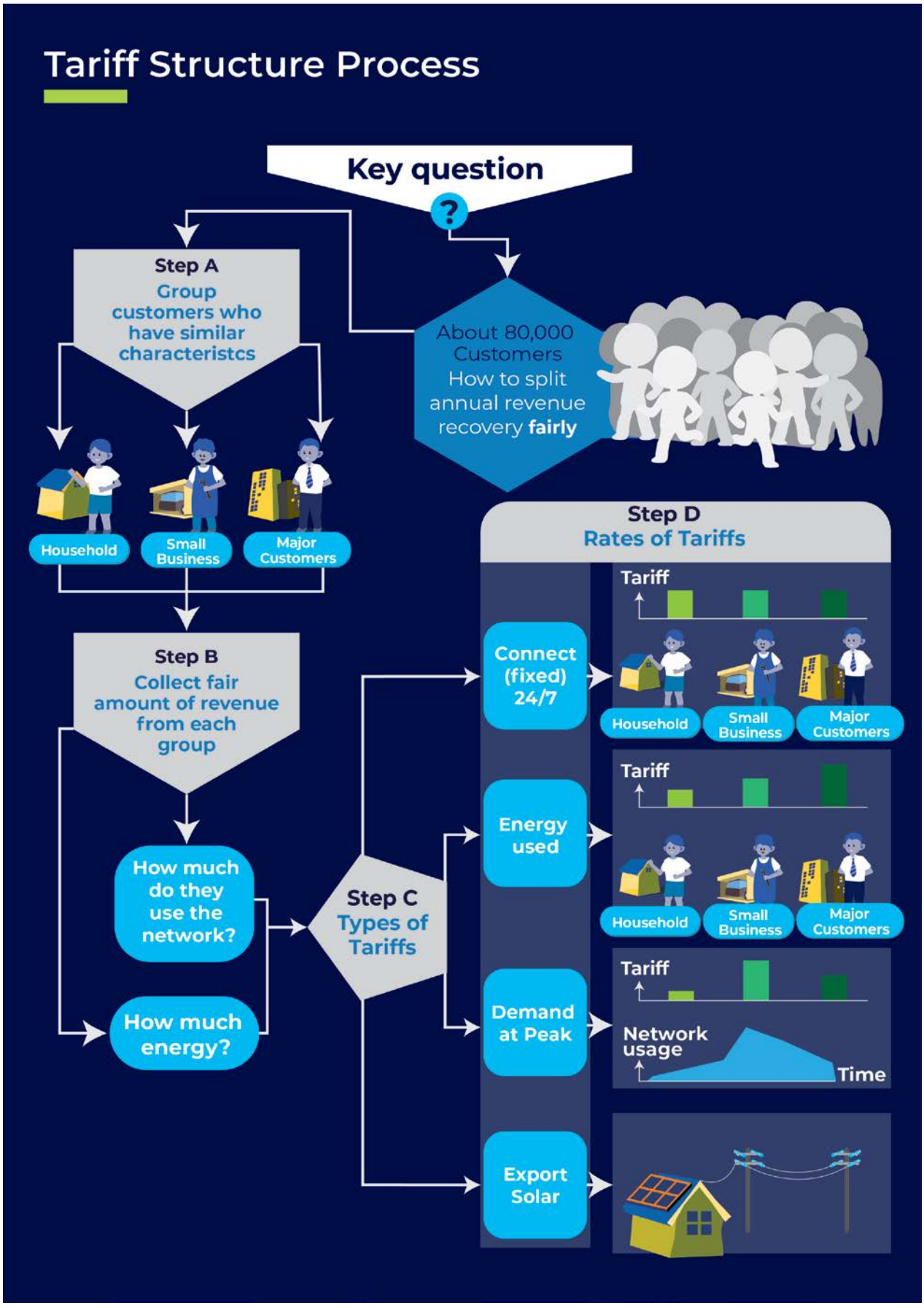
Figure 54 describes the key steps in setting network tariffs.

- Step One is developing tariff classes based on grouping customers into tariff classes and segments. This recognises that it would be administratively difficult to establish a price for each individual customer. The process instead seeks to group customers based on similar characteristics, usage of the network, and meters. For example, we group our customers based on whether they are residential, non-residential or a major energy user. We also develop our groupings based on consumption, and whether the customer connects to our high or low voltage network. Finally, we have separate tariff groupings for smart meter customers.
- Step Two is to collect revenue from these customer groupings in a way that reflects the fair share of their use of the network. This is based on factors such as where customers connect to our network, and how much energy and peak demand is dedicated to the customer group.
- Step Three is to identify the mix of tariff types that should be used to set tariffs. The process is based on developing a mix of efficient price signals that result in customers paying a fair share based on how they use the network. This includes fixed charges, energy consumption, and peak demand charges that may vary based on the time of day or season.
- Step Four is to develop rates for each of these tariff components that result in collecting our annual revenue, based on the optimal allocation of revenue among each of the tariff components.

Limitations of network tariffs in the NT

In our discussions with customers, we have noted that our network tariffs are not passed through to the customer by the retailer, and this limits the ability of our network tariffs to provide a direct price signal to customers. For small customers, the retailer must use the tariffs in the NTG Pricing Order. These tariffs do not have a specific network component, nor are the charging parameters the same. For larger customers, the retailer has the option of directly passing through our network tariff.

Figure 54 – Process for setting network tariffs



8.1 Network tariffs in the current period

In the 2019-24 period, we made significant changes to our network tariffs. The key driver of change was the application of the national framework for regulation. A further driver of change was stakeholder feedback particularly from the AER on driving more efficient tariffs.

In response, we made four key changes in the 2019-24 period. Firstly, we simplified our tariff structures to limit the parameters. Secondly, we shifted to peak demand pricing structures rather than rely predominantly on energy consumption charges. Thirdly, we had sought to re-balance revenue between different tariff classes to better align costs of services with revenue collection. Lastly, we sought to implement a power factor correction trial to reduce energy losses.

At the time, our meter fleet was largely accumulation meters. Customers that had this type of meter could not effectively transition to more efficient tariffs. For this reason, we had proposed a progressive rollout of smart meters to ensure that more customers had more efficient tariffs.

Our proposed changes to network tariffs was largely accepted by the AER in the 2019-24 determination. Our customers are currently grouped into seven tariff classes with assignment based on whether the customer is residential or non-residential, the annual energy consumption, the type of meter, and whether they are connected to the high or low voltage network.

There are only three types of charges. The System Access Charge (SAC) is based on the days a customer is connected to the network. The Anytime Charge is based on total energy consumption. The Peak Demand Charge is based on the maximum demand of the customer within in a month in the peak period. The peak period is 12pm to 9pm on weekdays. For smaller customers with smart meters, the peak period is between 1 October and 31 March each year and for larger customers it is all year round. The tariff classes and charges are set out in **Table 6** below.

Table 6 – Tariff parameters approved by AER

Tariff	System Access Charge (SAC)	Anytime kWh (c/kWh)	Peak Demand ($/kVA)
Tariff 1 Residential customers consuming <750MWh with standard accumulation meters	×	×	-
Tariff 2 Non Residential customers consuming <750MWh with standard accumulation meters	×	×	-
Tariff 3 LV Smart Meter consuming <750MWh with smart meters	×	×	×
Tariff 4 Unmetered Supply (for connections without metering such as traffic lights and streetlights)	×	×	-
Tariff 5 LV>750MWh Customers connected to the LV network consuming >750MWh	×	×	×
Tariff 6 HV<750MWh Customers connected to the HV network consuming <750 MWh	×	×	×
Tariff 7 HV>750MWh Customers connected to the HV network consuming >750MWh	×	×	×

While the AER accepted our network tariff proposal, it requested improvements in our approach. Specifically it noted the need to:

- Establish a more robust approach to energy forecasting, consistent with system demand forecasting approach and needs to consider a number of variables that may impact prices in a 12-month period.
- Investigate and refine our methods for estimating long run marginal cost.
- Further investigate the timing of periods of our peak period window.
- Provide further justification of the need for individually calculated tariffs and the need for a power factor correction tariff.

8.2 Case for more efficient tariffs

In our 2024-29 regulatory proposal, we will publish a Tariff Structure Statement (TSS) that describes any changes we are seeking to make to our current arrangements. The AER will make a determination on whether to approve or seek changes to our TSS.

As noted in Chapter Three, our network is facing rapid global and local changes that will influence our future costs. A key strategic focus for us moving forward is to improve the utilisation of the network by delivering more energy and solar export capacity, while minimising new network investment. We see that network tariffs will play a key role in activating this strategy by providing customers with price incentives to use our network in off-peak periods.

In our consultations with customers, we noted how our future costs could be minimised through tariff reform that better manages when customers use our network.

Managing peak demand in the evening

Peak demand growth across our network has been relatively flat over the last decade. Due to the extreme heat, demand for electricity is highest in the middle of the day in the October to April period.

Over the last five years, we have seen less demand for electricity from our network in these peak periods. This has largely been a result of customers using their own solar panels to energise their homes and businesses. Demand for electricity from our network has shifted to the early evening period when the sun is no longer shining. **Figure 55** shows the underlying energy demand compared to demand delivered by the network on the maximum day in the Darwin-Katherine electricity system in 2020-21. Increasing solar will not help curb peak demand over the next 20 years now that peak demand has shifted to the evening.

We are also seeing a significant uplift in customer numbers in the 2024-29 period including major residential and industrial developments. This will accelerate demand for our network services, adding to demand at peak times. Post 2030, we expect an acceleration in electric vehicles in the Northern Territory. Electric vehicles will lead to significant increases in energy required from our network in all areas and will drive an increase in peak demand if customers charge in the evening peak period.

While the network has some capacity to meet growth in peak demand, we anticipate that significant and systematic growth will necessitate a major need for new infrastructure at high cost. In this context, tariffs play a key role in providing signals for customers to use energy outside of peak times. While our current tariffs include a peak charge, there is an opportunity to provide more targeted signals on the cost of network electricity in peak periods relative to times of spare capacity.

Managing solar in the day

Our future network strategy is directed at a hosting solution that helps us more clearly identify opportunities to unlock solar securely without causing network voltage or system inertia issues. However, with a doubling of rooftop solar forecast by 2030, we expect that some exports will need to be ramped down or curtailed. **Figure 56** shows the minimum demand day on the Darwin-Katherine electricity system. There is a significant decline in demand for our network electricity between 2017 and 2021 in the middle of the day.

Network tariffs could incentivise customers to use more of their own solar, rather than exporting into the grid during these periods of high export demand. Additional demand in the middle of the day would also help increase load on minimum demand days. Both measures would help us lift constraints on solar exports.

Currently, our demand charge in summer is set from midday onwards, which does not provide the right signal to use more power between midday and 2pm, when solar production is highest. We also do not have any signal for customers to export more in the afternoon when the demand on the network is higher.

Figure 55 – Maximum demand day profile (MW)

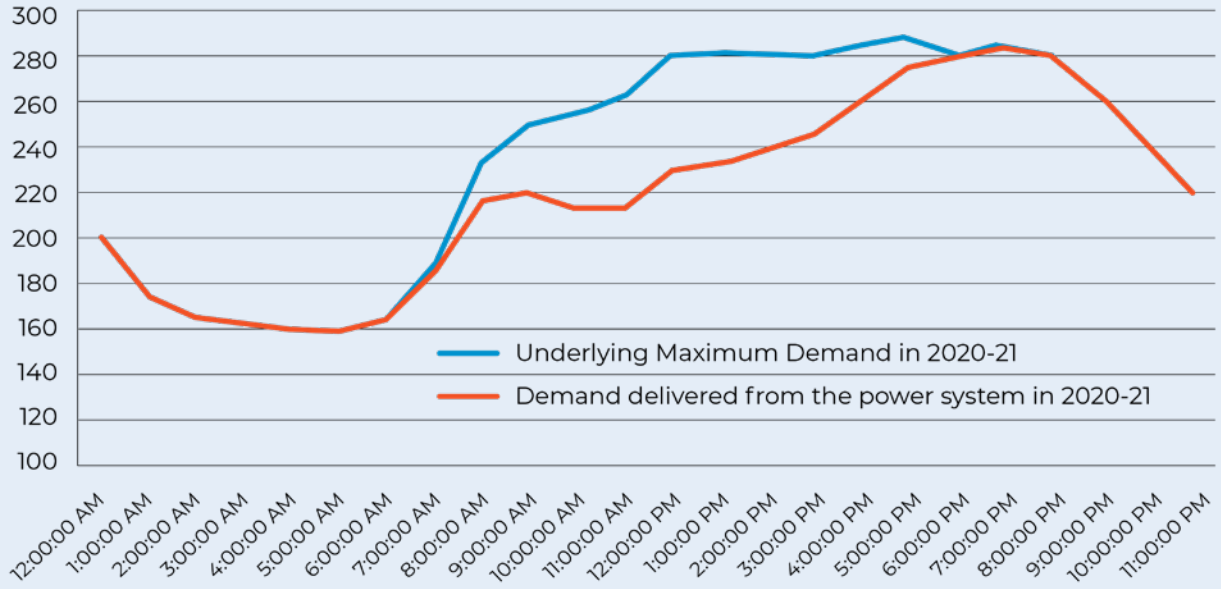
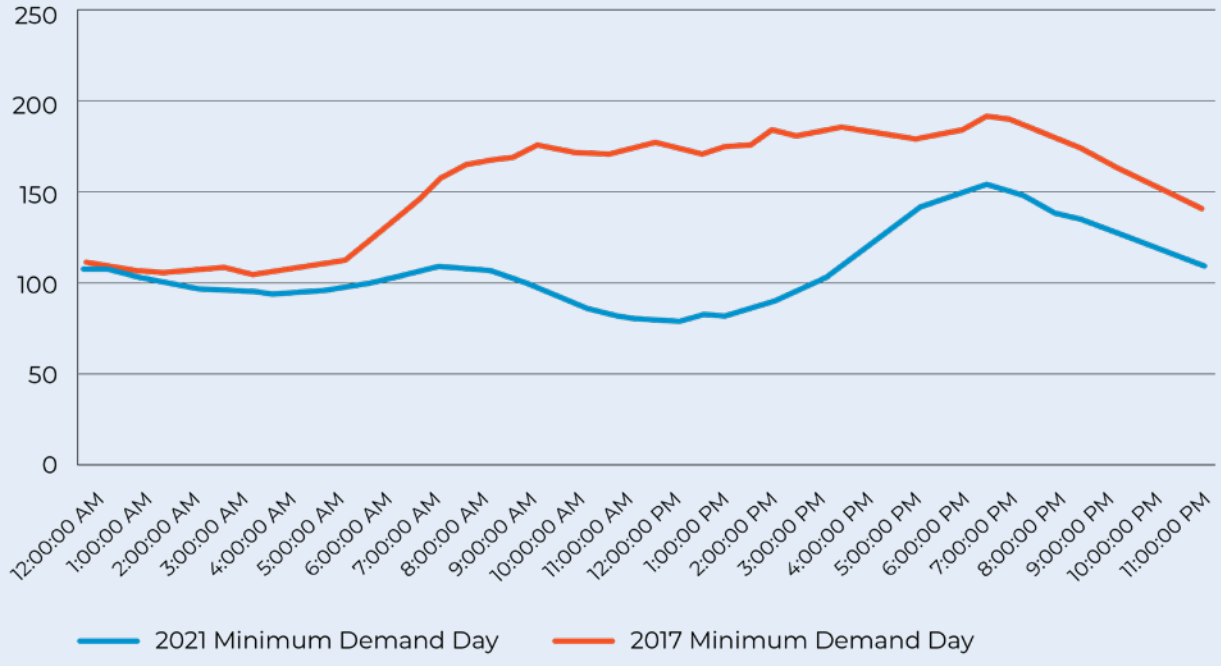


Figure 56 – Change in the profile on the minimum day in the Darwin-Katherine system in FY2021 (MW)



8.3 Strategy and principles for tariff reform

Our strategy has focused on changes in tariff reform that responds to the network impact of rising peak demand in the afternoon/evening periods in summer and solar in the middle of the day. We have been discussing our strategic thinking and options for pace of reform with stakeholders, and this has influenced our position in this Draft Plan.

Principles underlying tariff reform

There are four key principles behind our thinking on efficient tariff reform. Firstly, we see a need to keep our structures simple. This is because we understand that pricing signals need to be clear and understandable. Secondly, we have considered whether changes could lead to unmanageable bill impacts, particularly to our larger customers who are likely to have the network tariff applied directly to them. Thirdly, we have considered equity issues particularly between customers with different meter technology, noting that there should not be a wide gap between customers with similar usage patterns. Fourthly, we considered practical constraints such as billing systems and time to communicate new tariffs to customers and retailers.

Our starting point was to consider changes to our existing network tariffs where there was a clear need to change. This recognises that wholesale change is difficult to communicate to our stakeholders, and may not be compatible with existing billing systems. As a result, we have continued to apply a fixed daily rate charge rather than something more complex such as a daily rate based on maximum demands. Where change is required to meet the challenges of the future, we have thought about the optimal pace of tariff reform based on the proportionality and immediacy of the issue.

Strategic direction

At a high level, we see that the tariff reform applied in the 2019-24 period provides a solid foundation for further tariff reform. We note that tariff reform is enabled by smart meters, and that the continued rollout of smart meters is integral to implementation in the future.

We consider that the current tariff classes and segments are simple and effective at grouping customers with similar characteristics and use of network services. Our strategy identifies minor changes to separate segments of our existing tariff classes could help strengthen the price signal and also assist with retail competition in the future.

Under changes in the NT NER, we require a new type of tariff for customers that export solar through our network. This is consistent with our need to manage solar in the middle of the day and to meet growing peak demand through stored solar.

A key strategic change is the refinement of time of day pricing. This includes tightening the peak period to align with the time and seasons when our network experiences the highest demand. This includes tightening the peak period to align with the time and season when our network experience the highest demand. We also see the need to provide the right incentives for customers to use more energy in the middle of the day to manage

Our proposed strategic direction is to place greater emphasis on demand rather than energy charges, particularly for larger customers. This includes adjusting the rates to more reflect the long run marginal cost.

Feedback from stakeholders

We are mindful that our consultation on tariff reform has been relatively limited to discussions with retailers and with the People's Panel in Darwin. We recognise that this is an issue that requires more consultation with customers, retailers and broader stakeholders.

Our consultation on tariff reform has been predominantly with Retailers operating in the Northern Territory. It is retailers who see our network charges and bundle these charges with other costs to separately bill customers. We have also engaged broadly with residential customers on pricing arrangements in the Territory.

Our People's Panel in Darwin noted the limitations of reform given that the tariffs of small customers are set in the NTG Pricing Order and do not align with network tariff structures. However, the Panel wanted Power and Water to develop network prices that made it easier for retailers (and government) to pass better price signals. Most Panel members preferred options for customers to be able to choose from, but also recognised that there was a need for efficient price signals to impact all customers.

In our options we also discussed the pace of reform. Our customers were mindful that changes in tariffs can have an affordability impact on vulnerable customers who cannot change their energy usage patterns, or were not provided with communications. They asked us to think about introducing reform at a slower, incremental rate.

8.4 Proposed changes to Tariffs

In the following sections, we discuss the key changes we are proposing to make in the 2024-29 period.

Step One – Proposed changes to how we group customers

We currently have seven tariff classes, with no further segmentation. We are not proposing any changes to our tariff classes, but we are considering introducing further segmentation to provide a more targeted price signal based on the characteristics of the customer class.

We are planning to separate the existing tariff class for small customers with smart meters (Tariff Class 3) into two segments. Under this plan, customers consuming less than 100MWh will be assigned to Tariff 3a and customers consuming between 100MWh and 750MWh will be assigned to Tariff 3b. This follows retailer feedback on how to encourage and expand retail competition in the future.

In respect of other potential changes, we are examining whether the benefits of an additional tariff segment for our largest customers who may have different characteristics when setting the peak charge. It is also likely that we will also introduce a new class for generation customers including battery operators.

Step Two – Proposed changes on allocation of revenue between customer groups

We are currently analysing whether any changes are required in how we allocate revenue among customers. This issue is also dependent on any changes to our calculation of long run marginal cost and its application in changes to tariffs.

Step Three – Types of tariffs and charges

Under our AER approved TSS, customers in each tariff segment are subject to a range of different components to which a charge is applied. This includes a fixed charge for daily system access, an energy charge, and a demand charge for customers with smart meters. We are proposing to make the following changes subject to further consultation with customers.

a. Time of day – energy consumption charge

Currently, we have a single 'anytime' charging parameter for the energy consumption component of tariffs, even if the customer has a smart meter.

We are proposing to apply an energy charge based on the period and time of day when energy is consumed. This would only apply to customers with smart meters as accumulation meters do not provide this level of data. We consider that the change is required to signal to customers when the network is experiencing peak demand in the evening, and when there is ample capacity to meet demand in the middle of the day. The high price period for energy replaces the maximum demand charge for most customers. **Figure 57** conceptualises the key change we are proposing to implement.

The periods and rates are described in the next section on charging periods and rates.

b. A new export charge

Under the new NT NER Rules, we have an obligation to consider whether rooftop solar customers should pay a charge for using our network to export energy if this leads to higher costs for all customers. As noted in the previous section, our future network strategy is aimed at unlocking household solar through a hosting solution where we can demonstrate a benefit to all customers through lower electricity costs. This recognises that solar is lower cost than other sources of energy in the NT, and that unlocking more solar can lead to improved affordability for all customers.

There will still be periods in a day when our network cannot securely meet the export demand of customers without jeopardising the security and quality of network services, or high costs of new infrastructure.

To ensure fairness for all customers, we are consulting on potential export charges that provide price signals to efficiently manage solar on our network. This includes a tariff charge in periods where our network has difficulty managing exports, and a rebate when the network requires an injection of energy during peak demand times. We consider this provides household customers with the right incentives to export solar when there is capacity on the network, and to use batteries and other technologies to capture excess solar and discharge in the evening peak periods. This is conceptualised in **Figure 58.**

Figure 57 – Time of use pricing relativity for consumption of energy

Figure 58 – Time of use pricing for export of energy

Given the magnitude of the change, we propose to introduce new export tariffs from FY2026 onwards. The time periods where charges and exports would occur are discussed in the next section on charging periods and rates.

Demand charge parameters

We currently apply a demand charge to all customers with a smart meter. For the new segment of smart meter customers consuming less than 100MWh, we are proposing not applying a demand charge and only applying energy consumption charges.

For customers consuming more than 750MWh, we are considering the introduction of a charge reflecting the average of KVA demand in the peak period applied as a daily rate. Residual costs will be recovered by a fixed charge and an off peak monthly demand.

Step Four – Charging periods and rates

Currently, we have a peak period of 12pm to 9pm on weekdays. For larger customers this is all through the year, and for smaller customers it is between October and April.

For smaller customers with smart meters consuming less than 750MWh, we are proposing to narrow the hours of the peak period. This reflects the analysis presented in the last section that shows that our peak demand is shifting to the evening when the network cannot rely on solar to help meet underlying demand. This provides a sharper signal on the drivers of future costs for the network. We have decided not to overly narrow the time period due to the variability of when the

peak demand occurs at different locations of our network. As part of this change we also plan to include a greater distinction between off-peak periods. The new periods are:

- Peak congestion (busy) period: From October to March, weekdays between 3pm and 9pm. The long run marginal cost will be allocated to these periods.
- Super off-peak (easy) period: Every day of the year between 9am and 3pm. It is proposed that little or no charges will accrue to customers in this period to encourage consumption to soak up excess rooftop PV.
- Off-peak (light) period: All other periods. Residual costs will be allocated to this period (in addition to the standard access daily fixed charge).

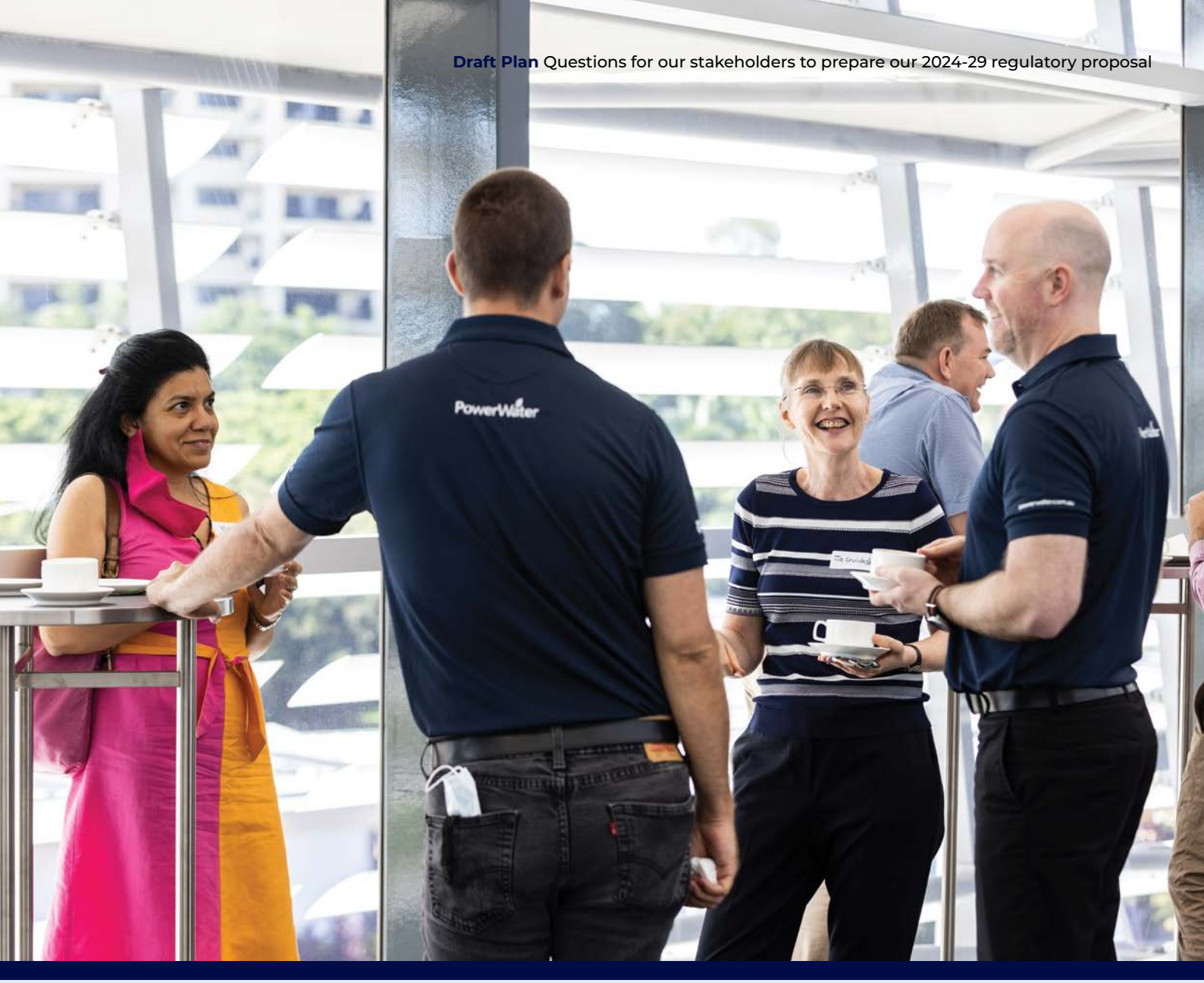
Further analysis of some LV and HV customers is required to determine if all customers will transition to the same peak window, or whether a different segment will be created for some customers reflecting their ability to create a new asset peak due to their size.

We propose to move away from a using a single period maximum (kVA) window to apply LRMC charges. Instead, customers using less than 750 MWh will be charged kWh rates in the peak period. For customers consuming less than 100MWh, residual costs will be recovered via the system availability (daily fixed) charge and kWh rates in the off-peak period. For customers consuming more than 100 MWh and less that 170 MWh there will be the option for a maximum demand (KVA) charge in off-peak periods. However, this is likely to occur during the period.

Table 7 shows the types of charges we intend to apply in the 2024-29 period.

Table 7 – Tariff changes proposed

Network Tariff	Tariff Class	Fixed	Energy Consumption Charge				Energy Demand Charge	Energy demand at peak charge	Export charge	Export Tariff
		Fixed ($/day)	Anytime (c/kWh)	High Period (c/kWh)	Mid Period (c/kWh)	Anytime (c/kWh)	Highest recorded demand in month ($/kVA)	Average of all recorded demand in high period in a month ($/kVA)	Export price period (above threshold)	Export rebate period (c/KWh)
Tariff 1	Residential	Yes	Yes	-	-	-	-	-	-	-
Tariff 2	Non-Residential	Yes	Yes	-	-	-	-	-	-	-
Tariff 3a	Res + Com with a smart meter	Yes	-	Yes	Yes	Yes	-	-	-	Yes
Tariff 3b	Res + Com with a smart meter	Yes	-	Yes	Yes	Yes	Yes	-	-	Yes
Tariff 4	Unmetered Supply	Yes	Yes	-	-	-	-	-	-	-
Tariff 5	LV >750MWh	Yes	-	-	-	-	Yes	Yes	Yes	Yes
Tariff 6	HV <750MWh	Yes	-	-	-	-	Yes	Yes	Yes	Yes
Tariff 7a	HV >750MWh	Yes	-	-	-	-	Yes	Yes	Yes	Yes
Tariff 7b	HV >750MWh	Yes	-	-	-	-	Yes	-	Yes	-



Future Network Forum in Darwin

Key Questions for stakeholders in Chapter Eight

To what extent should tariffs reflect the costs different customers impose on the network?

Are there specific aspects of our proposed tariff structure that you support, oppose or want more information about?

PowerWater

Power and Water Corporation

Level 2, Mitchell Centre
55 Mitchell Street, Darwin
Phone 1800 245 092

powerwater.com.au

@PowerWaterCorp

Appendix F

August People's Panel decisions and outcomes

PowerWater

powerwater.com.au

PowerWater

August People's Panels – Panel Decisions and Outcomes

Purpose of the August People's Panels

Leveraging the outcomes from the March and April People's Panels in Alice Springs and Darwin, Power and Water reconvened panellists to:

- Provide an overview of the Draft Plan and what it means for our customers
- Test customer preferences and priorities from the previous Panels following release of the Draft Plan.
- Discuss and get feedback on proposed changes to tariffs.

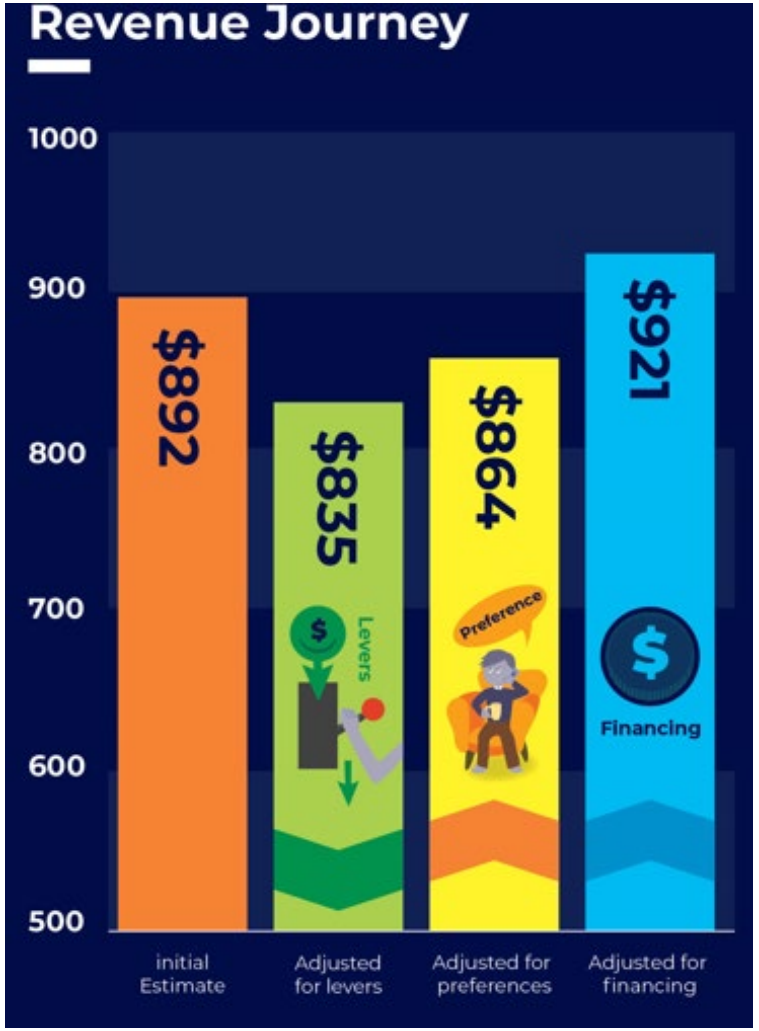
Re-testing customer preferences on revenue direction

Following the People's Panels in March and April 2022, the revenue forecast for the 2024-2029 regulatory period was adjusted for the levers and preferences voted on by panellists.

As a result of the impact of financing costs, panellists were shown that the revenue forecast was significantly higher than anticipated in our previous sessions.

The objective of the August sessions was to understand panellists' appetite to use various levers to reduce the revenue impact on customers and how to manage the impacts of future technologies in the network. The clear output from the Panels was the need for:

Smarter, more efficient solutions which support the community now and into the future.

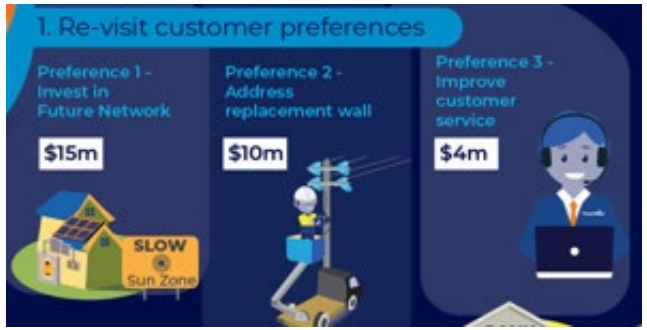


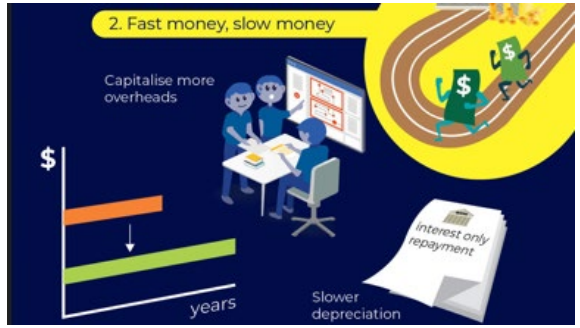
Levers to reduce revenue

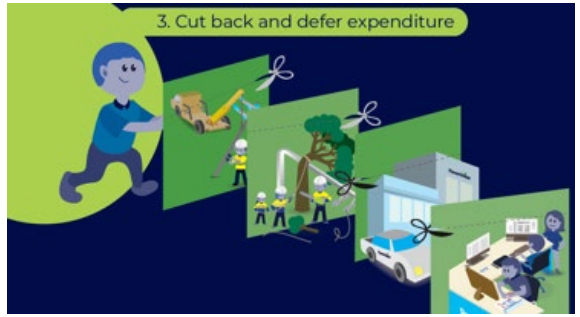
We sought feedback from customers on the right balance between pursuing short-term affordability and long-term sustainability.

We identified levers that could reduce our revenue in the 2024-29 regulatory period such as de-scoping programs that reflected customer priorities, using accounting methods to push revenue to future periods, and cutting back on programs.

The general view of the panellists was that Power and Water needs to think long-term, but have a detailed look at where revenue could be cut back in the 2024-29 period. This included potentially slower paced investment in new technologies, and re-consideration of programs that may bring forward investment.







Options: Levers to reduce revenue

Panellists were directly asked whether Power and Water should pursue more levers and avenues to lower revenue. There was strong preference to consider **some** levers and explore ways to reduce investment in programs to lower revenue for the 2024-29 period, with a need to:

- *"Think and look ahead to the **future**"*
- *"Not consider **one solution for all of the Territory**, instead pilot to make sure it is right for the network area and uses the right technology solution"*
- *"**Adapt** to the global situation, be self-sufficient and **proactive** in investment"*
- *"**Plan** and think about the long-term reliability of the network"*

There was strong interest to pursue either Option 1 or 2 or a combination

Future Network

We sought specific stakeholder feedback on our proposed implementation of a customer preference relating to investing in a network that can facilitate increasing renewables.

Using a role play to show the use of a dynamic speed limits solution, panellists were able to understand the complexities involved in planning for the future low carbon network. Craig Chambers from Engevity also provided further insight into the future direction and network strategy of the NT and answered panellist questions.

Many panellists were satisfied with the progress from the previous session. However, there was an emphasis on Power and Water implementing solutions at a more gradual pace to improve learning. This included pilots in technologies which were not proven.

Protecting low-income households: Energy efficiency

Our panellists have been very clear in previous sessions that they want Power and Water to consider the impact of our decisions on low income households. The Northern Territory has a high proportion of the population receiving income support.

In this session, we identified that a key driver of high energy bills for low income households was limited ability to reduce energy. Generally, households lived in poorly insulated housing and had less capacity to invest in appliances that can reduce energy consumption. Additionally, the NT has one of the highest annual energy consumption per customer rates in Australia.

In this session, panellists were asked to vote on the level of involvement Power and Water should take to support everyday and disadvantaged customers to reduce their energy consumption and electricity bill by undertaking and seeking energy efficiency measures. Both Panels believed:

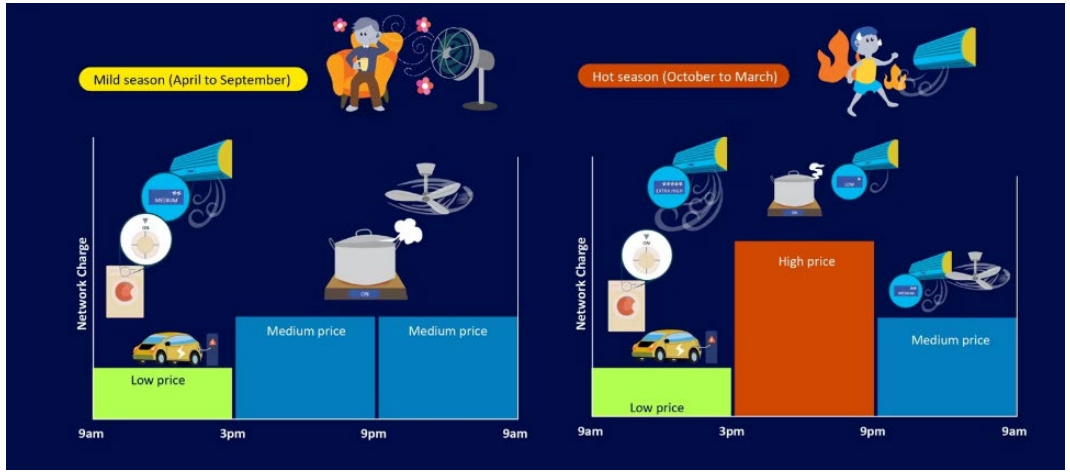
At a minimum, Power and Water needs to provide more information and awareness in terms of energy efficiency of appliances to make more informed decisions.

There was also strong support for Power and Water to partner with other players in the market to enhance energy efficiency standards and undertake initiatives, as well as Power and Water implementing their own initiatives to support demand management.

Time-of-Use pricing

There was a difference in perspectives in Darwin and Alice Springs on the proposed concept of charging **higher rates** during the **evening peak period** to disincentivise network use when demand is higher and **lower rates** during the **day** to incentivise network use when there is greater supply. Panellists suggested Power and Water needed to:

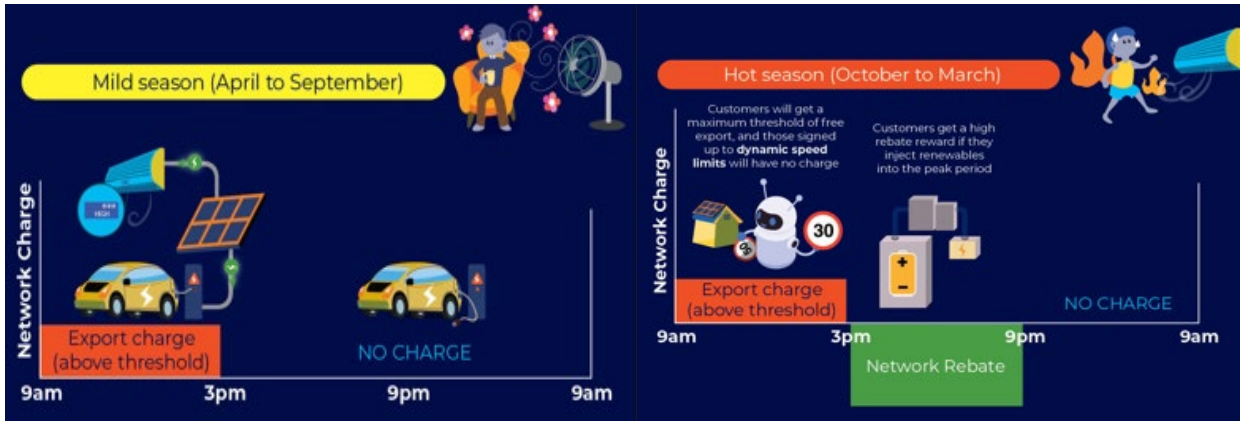
- *Provide sufficient **information** and **education** for consumers to change their behaviours and be able to make **informed decisions***
- *Consider **safety nets** for those who are **disadvantaged** or who cannot fully utilise the lower prices during the day*
- *Undertake a **gradual transition** to implement the pricing changes, as well as only apply a **marginal difference** in price*
- *Assume a role **beyond applying the time-of-use pricing** to assist a change in behaviour e.g., providing fridge magnets to encourage network use during specific periods of the day*
- ***Plan for the future without disadvantaging those using the network today**.*



Export pricing

Panellists generally understood the need for export tariffs and rebates to allow the network to better manage flows of electricity on the low voltage network. Panellists generally supported some changes to our Draft Plan:

- *The export charge should apply when **exports are highest**. According to the Darwin-Katherine Electricity System Plan, this is between **10am – 2pm**.*
- *Applying a export charge could **penalise solar energy production**, which could disincentivise uptake of solar. This means the export charge should be not too punitive (**between 10-50%** of the feed in tariff) to encourage solar uptake while also managing exports.*
- *There is a need to **maintain the solar uptake rate for the overall community benefit** by providing incentives for customers to join up with our dynamic speed limit solution to better control solar (including no longer being subject to an export tariff) and replace older systems.*



Appendix G

Feedback on Power and Water's Draft Proposal

PowerWater

Draft Plan – Feedback Summary Report

2024-2029

PowerWater

Contents

Overview

Stakeholder engagement is a critical and ongoing element of Power and Water's preparation for the Australian Energy Regulator (AER) 2024-29 determination period. We have engaged with stakeholders throughout our 2024-29 engagement program to hear stakeholder voices and gather feedback on our proposed plans for the next five years. In August 2022, we released our Draft Plan which set out these plans and our preliminary forecasts for the 2024-29 regulatory period. The purpose of this document is to capture feedback from our customers and broader stakeholders before submitting our Regulatory Proposal to the AER in January 2023.

Engagement on our Draft Plan is one component of the overall process, which will continue with key stakeholders prior to and following submission of our Regulatory Proposal.

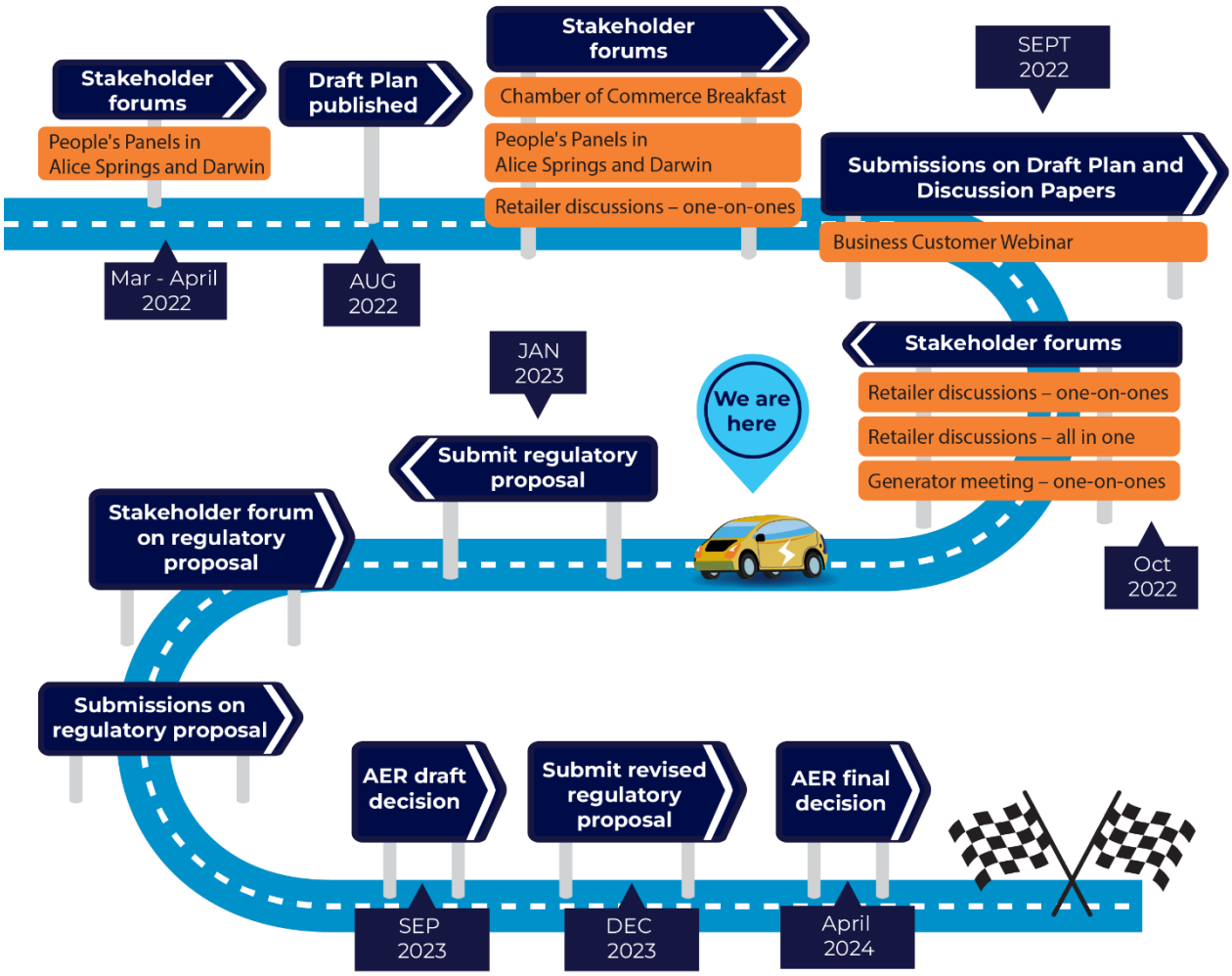


Figure 1: Process of stakeholder engagement for the Draft Plan

This document outlines the stakeholder consultation process undertaken on the Draft Plan, the feedback themes and the forward plan reflecting our business response to this feedback into our Regulatory Proposal.

1 Engagement process

The following section describes the engagement process for our Draft Plan prior to and following its publication in August 2022.

A range of stakeholder groups, including residential and business customers, retailers and generators, government and local councils were engaged through various channels such as People's Panels, retailer one-on-one meetings, major customer and small-to-medium business customer discussion papers and webinars.

Most engagement sessions were supported by an engagement pack and typically focused on:

- Providing an overview of the Draft Plan
- Testing our customer preferences and priorities in the context of our preliminary plans and forecasts
- Key expenditure drivers, future network needs and capabilities
- Potential levers for reducing expenditure and the trade-offs in seeking to balance short-term affordability and long-term sustainability
- Outlining proposed changes to tariff structures and pricing mechanisms, including the introduction of time-of-use tariffs and shifting export tariffs to trials and rebates.

Engagement on the Draft Plan across the different stakeholder groups included:

- **Residential customers:** Full-day People's Panel sessions in Alice Springs and Darwin in August 2022. This built upon the participant knowledge and feedback from the four forums held with residential customers in November 2021 and March and April 2022.

  A summary of the People's Panels outcomes is included in the People's Panel Summary Report 2021, People's Panel Report Summary Report 2022 and August People's Panels – panel decisions and outcomes report.
- **Business customers:** A three-hour webinar with our major (>750MWhs per annum) and small-to-medium (<750MWhs per annum) business customers in September 2022. The webinar followed the Business Customer Forum hosted by the Chamber of Commerce NT in August 2022 which focused on providing an overview of the Draft Plan.

  This engagement was supplemented by the release of two Discussion Papers for consultation - a Large Customers and Small to Medium Customers Discussion Paper - targeted to each business customer segment and providing additional detail to support the Draft Plan. This session also sought input on two key elements we consider particularly relevant to business customers: business customers' preferences on Power and Water's draft revenue and expenditure and proposed changes to our tariff structures impacting business customers.
- **Retailers:** Two-hour one-on-one engagement sessions were held with retailers Jacana Energy and Rimfire Energy immediately following the release of the Draft Plan in August 2022. Engagement sessions were also offered to retailers Next Business Energy and QEnergy. Secondary meetings were held in October 2022 with Rimfire Energy and Jacana Energy to discuss changes to tariffs and structures since the Draft Plan, to test retailer perception of the changes in pricing and to inform retailers on the engagement sessions conducted with other stakeholders.
- **Generators:** Engagement with generators has been limited due to the prioritisation of engagement with our customers. Territory Generation provided a thorough submission seeking further engagement and discussion about the contingent projects and other key concepts included in Power and Water's Draft Plan. A formal engagement session with Territory Generation took place in November to discuss the feedback received on our contingent projects and how we can work collaboratively to meet the objectives of the future network. Further engagement is planned in early

2023 with the opportunity for various energy supply partners to identify and explore industry thinking on non-network solutions and their suitability for addressing different types of network issues and constraints.

- **Northern Territory Government departments:** Discussions with the Department of Industry, Tourism and Trade (DITT) and the Department of Treasury and Finance (DTF) were held in October and November 2022. The purpose of these discussions was to provide an update on the themes discussed in the Draft Plan, including meter replacement, future network investments and changes in tariff structures. Power and Water also discussed what we have heard through the process of engagement, including feedback on our Draft Plan.
- **Youth in the Northern Territory:** A Youth Round Table in March 2022 and a two-hour school forum in May 2022 was held to understand the youth perspective on energy in the Northern Territory and provide a high-level overview of investments in future technologies which would be incorporated in the Draft Plan.
- **Local councils and multi-agency groups:** In August 2022, meetings were held in Alice Springs, Tennant Creek, Darwin and Katherine with town councils, government departments and multi-agency groups to provide an overview of the Draft Plan and how it impacts various communities. Stakeholders were encouraged to submit formal submissions to ensure their feedback was captured.
- **Reset Advisory Committee:** Regular meetings were held with a group of customer and industry representatives before and during development of the Draft Plan to review and provide input to expenditure plans and stakeholder engagement. Due to the inability to achieve a quorum, the Reset Advisory Committee was not convened following release of the Draft Plan. However, members were fully engaged on the contents before the release and will be re-engaged for a final meeting in December 2022.

Engagement sessions with unions, smaller generators and regular meetings with the AER are also being scheduled as part of our ongoing process of engagement.

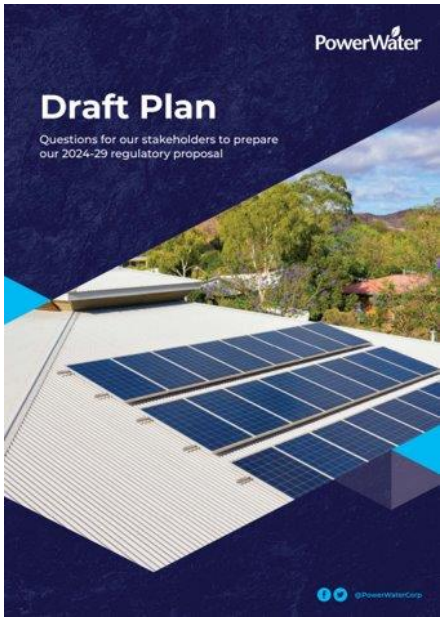


Figure 2: Power and Water Draft Plan for the 2024-2029 Regulatory Proposal

2 Engagement Feedback

Feedback has been captured via written submissions through Power and Water's 'Your Say' website and verbally in forums, meetings and webinars.

2.1 People's Panels

During the March and April People's Panels in 2022, customers provided their feedback and preferences on the projects and plans for Power and Water to pursue in the 2024-29 regulatory period. Feedback was sought across the areas of investment in the future network, addressing the challenges of asset replacement and improving customer service. These issues were discussed in relation to customer views on the trade-offs between short-term affordability and long-term sustainability, with customers emphasising the importance of supporting low-income and remote households through Power and Water's Regulatory Proposal.

A summary of outcomes from the March and April People's Panels can be accessed on our website.

These views were reiterated at the August People's Panels, where customers supported Power and Water pursuing pilots and new solutions to respond to emerging challenges, planning for the future without disadvantaging those using the network today and supporting customers to change their behaviours to meet the needs and realities of the future networks.

The People's Panels:

- thought that Power and Water should largely keep on path with its expenditure plans
- believed more needed to be done by Power and Water and the Northern Territory Government in the energy efficiency space
- supported time-of-use pricing, noting that the Darwin Panel was more supportive of this than the Alice Springs Panel where support was subject to providing appropriate safety nets to protect vulnerable customers
- supported the concept of export tariffs but emphasised that pricing policies should not disadvantage low-income households or household uptake of renewable solutions.

A summary of key outcomes from the August People's Panel's Report is included in the August People's Panels – panel decisions and outcomes report.

Figure 3: Participants at the Darwin (left) and Alice Springs (right) August 2022 People's Panels

2.2 Other stakeholder groups

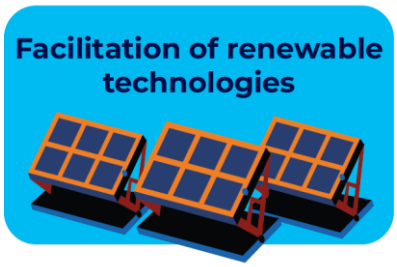
Feedback on the Draft Plan from other stakeholder groups (including business customers, Territory Generation, Rimfire Energy, Jacana Energy, local councils and groups and the Northern Territory Council of Social Services) can largely be categorised into the following themes:

- Engagement with stakeholders
- Facilitation of renewable technologies
- Improving customer outcomes, particularly for low-income households
- Tariffs, including export tariffs, time-of-use tariffs and demand windows
- Metering.

An overview of the specific feedback items received under each chapter of the Draft Plan and how Power and Water plans to respond is provided in the Appendix.

Engagement with stakeholders

A strong message from stakeholder groups was the importance of partnering with other industry participants and the Northern Territory Government to address customer pain points, ensure customer energy literacy and engage on an ongoing basis with stakeholders on the enablement of renewables and tariff incentives. Retailers were interested in being more actively engaged in assisting with the rollout of technologies and network upgrades and business customers expressed interest in partnering on asset and technology investment.

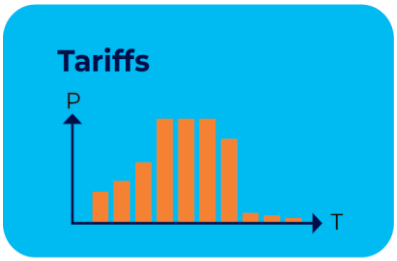


Facilitation of renewable technologies

Support for Power and Water's role in enabling and supporting renewable uptake and large-scale renewable solutions, which could provide greater community benefit, was tempered by feedback that the Northern Territory's energy transition will need to be supported by the attraction of skills, resources and technology. A strong message from business customers was that reliability of supply is paramount and a key consideration when considering support for renewables. One of the local councils also expressed interest in understanding the revenue impact from increasing solar connections.

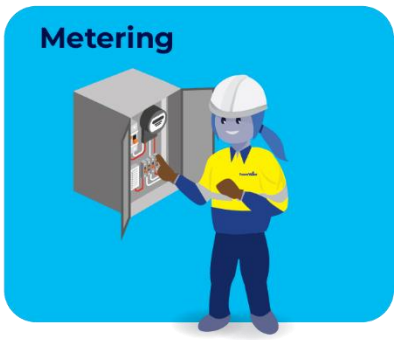
Improving customer outcomes, particularly for low-income households

All stakeholder groups expressed that low-income customers should not be left out of positive change. This was viewed as particularly relevant to plans regarding pricing, uptake of renewable technologies and initiatives to improve customer outcomes. Councils queried partnering with Power and Water to make power cheaper for their customers and were encouraged to submit their suggestions into the website.



Tariffs

The pursuit of export and time-of-use tariff initiatives (tariffs or trials) was supported by some stakeholders, contingent on the Northern Territory Government amending the Electricity Pricing Order to support visibility of signals and incentives. The restructure of tariffs was generally supported by retailers and business customers who would be most impacted by these changes, noting customers consuming <750MWhs per annum are not exposed to network tariff signals by virtue of the Northern Territory Government's Electricity Pricing Order. One retailer also supported flat rate tariffs.



Metering

Retailers and Generators supported an accelerated pace of replacement of meters with smart meters, noting that Jacana Energy's support was qualified by the need for more retailer engagement prior to a decision being made and during the replacement process, and the demonstration of customer benefit. Rimfire Energy also noted the barriers to competition that exist because of meter charges and the impact of these charges for customer acquisition costs. Feedback was received about developing a register or notification process for when customers are upgraded to ensure retailers are involved in the replacement of meters and are aware of upgrades. Another suggestion proposed by retailers was providing a brochure to customers when upgrading to a smart meter, including information on all active retailers and informing customers of their ability to choose.

3 Appendix: Draft Plan – what we heard and our response

Our Draft Plan has two Parts: Part A – Context and Strategy and Part B – Our five-year plans. Part A provides the context behind investment in the 2024 - 29 regulatory period and our strategic priorities enabled by this investment, while Part B outlines five core components of our five-year plans. At the conclusion of each chapter, we included a set of questions to elicit stakeholder feedback on the topic and our proposed plans.

3.1 Powering the NT

The first chapter in Power and Water's Draft Plan, *'Powering the NT',* focuses on our role in the Northern Territory regulated electricity systems, the customer lifecycle and activities, our costs and ensuring affordability of electricity to our customers. We asked stakeholders the following questions:

What we heard

Affordability for low-income residential customers

Affordability was a key theme in stakeholder feedback, both in response to the Draft Plan and throughout the engagement program to date. The clear message across several engagement sessions is low-income customers should not be left out of positive change, particularly where they are unable to change behaviours to take advantage of time-of-use tariffs or where they may face cost prohibitive barriers to the adoption of renewable technologies and solutions.

Exploration of demand management initiatives was called out in a submission by one of the Northern Territory Generators as a potential means of providing low-income customers with support to enable the uptake of renewable technologies and to improve network utilisation. Demand management initiatives targeted at low-income customers could allow this customer group to take advantage of time-of-use network tariffs and manage their resources and constraints.

Feedback from residential customers, retailers and other stakeholders also emphasised Power and Water's potential role in enabling solar connections for low-income customers, with some submissions providing specific initiatives for Power and Water to consider, including:

- Enabling solar for prepaid meter customers
- Higher solar buy back tariffs
- Greater incentives for solar installation, such as adding to the government rebate.

How we responded

We will continue to partner with energy providers and other stakeholders, particularly retailers, to improve the accessibility and affordability of renewable technologies.

We are currently developing a customer experience strategy which will look at our customers' journey and set out a roadmap for improvement. An important focus of the strategy will be low-income customers and how they interact with us and our services. The strategy will cover the digital experience and will include a project to improve the functionality of our website and smartphone app, making it easier for customers to find information on outages and energy efficiency.

We have also included costs in our forward plans to upgrade customer meter panels that contain asbestos. This benefits low-income customers as they are more likely to live in older, unrenovated homes containing asbestos panels.

Trials are underway in the unregulated space on rooftop solar PV on public housing with prepaid meters. We will continue to review the feasibility of this solar initiative for prepaid customers by working with NT Government stakeholders.

Educating, informing and communicating with customers

Residential customers were outspoken on the importance of greater investment in educating customers on the roles and responsibilities of participants across the electricity supply chain in the Northern Territory, including making it easier for customers to understand who to contact about specific issues and how the networks operate. Many residential and business customers are still unclear about the difference in the role of Power and Water compared to retailers in the electricity market, with many still believing Power and Water issues bills directly to customers.

In their submission, retailers recognised that education and communication on role clarity was a shared responsibility between the network operator and retailer. It was suggested that network operators and retailers work more closely on how they can address customer pain points. Territory Generation also showed support for continued education of customers and other stakeholders on roles and responsibilities within the electricity market.

During the People's Panels and in submissions to the Draft Plan, several stakeholder groups indicated they want ongoing engagement with Power and Water on our proposed plans and activities. There was broad support for Power and Water to partner with retailers, where appropriate, to address customer pain points, working together to disseminate clear and consistent information through a co-ordinated or combined approach. In relation to the communication channels that should be used, views were varied on

whether increased information regarding outages or critical events should be communicated through the website or greater use of social media.

A submission through the Your Say website suggested the availability of more granular or higher resolution data, such as time-of-use metering information, would aid customers and market participants to make more informed decisions and support improved customer outcomes.

How we responded

Our customer service team is undertaking a training refresh which will include how we engage with customers over the phone and share information about our role, responsibilities and network operations. We are also investigating upgrades to our website to provide greater accessibility and visibility of content relating to energy affordability and outage notification, in addition to the ongoing use of social media to disseminate information.

During our People's Panels, we saw interest for Power and Water to improve customer service capabilities through new systems and processes. As a part of a renewed customer experience strategy, we will be investigating how we can better capture the 'Voice of Customer' to help inform our ongoing investments in customer facing and back-end services. With greater customer data, coupled with more regular direct input from customers, we can better align our services with customers' expectations, helping make sure they get the solutions they need.

Energy efficiency standards

Customers and other electricity stakeholders understand that the energy efficiency standards of appliances and buildings can have a significant impact on household energy consumption, particularly low-income households and renters. Several stakeholder groups suggested that Power and Water should work with the Northern Territory Government and landlords to develop smarter building practices and/or upgrade the thermal efficiency of homes to reduce electricity consumption. This was echoed in the People's Panels where many participants suggested we pursue opportunities to partner with Government departments and other market players to enhance energy efficiency standards and initiatives. The People's Panels also supported Power and Water implementing its own initiatives, such as subsidies, to support the installation of energy efficient appliances.

How we responded

We are investigating partnership and advocacy opportunities for energy efficiency programs, particularly for vulnerable customers, noting that improved energy efficiency standards for appliances and infrastructure will require collaboration across a wide range of Northern Territory stakeholders. We will also continue to monitor how other electricity network businesses in Australia are seeking to contribute to this issue and associated programs.

3.2 Customer Voice

The second chapter in Power and Water's Draft Plan, *'Customer voice',* outlines the forms of engagement conducted and themes discussed in engagement sessions, our customers' vision for the future of Power and Water and the customer preferences and pain points identified through our People's Panels. We asked stakeholders the following questions:

What we heard

Our engagement approach

Stakeholders expressed general satisfaction with the level of engagement undertaken to capture the different voices and perspectives across the Northern Territory and inform the forecast expenditure plans outlined in our Draft Plan. Territory Generation expressed a desire to contribute to Power and Water's future stakeholder engagement as an 'energy partner' to identify opportunities to improve overall customer outcomes. During engagement sessions with our customers, there was strong interest for representation from retailers at future forums to provide customers with an opportunity to ask retailers questions, understand how network operators and retailers work together to implement change and ensure clear and consistent information is presented when discussing issues and interdependencies.

Territory Generation broadly supported the Draft Plan and the stakeholder engagement undertaken by Power and Water. They requested further engagement to discuss specific issues raised in its submission as well as to how to work collaboratively with Power and Water in implementing initiatives in the next regulatory period. Retailers similarly requested further engagement on specific initiatives.

During engagement with customers at the August 2022 People's Panels and with Tennant Creek stakeholders on the Draft Plan, there was feedback that the views of Alice Springs customers should not be considered the views of Tennant Creek customers. It was recommended that further engagement with Tennant Creek customers should be performed face-to-face, rather than through online or other platforms of engagement. Similarly, Katherine stakeholders also expressed feedback that the views of Darwin customers should be not considered the views of Katherine customers.

How we responded

Power and Water appreciates the time and effort stakeholders have taken to provide feedback on our Draft Plan and engage with us to inform the development of our plans for the 2024-29 regulatory period.

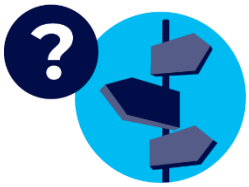
We have undertaken additional engagement with Territory Generation to discuss its submission in more detail and to understand how we can seek to reflect this feedback in our expenditure plans. We are also looking to establish regular forums with retailers and generators to continue the process of engaging on opportunities, risks and issues. We will continue to facilitate these conversations both before and following submission of our Regulatory Proposal and investigate opportunities to embed these forums within our business-as-usual activities.

Our Reset Advisory Committee (RAC) was an engagement channel used to ensure the voices of the Northern Territory were listened to and captured. The engagement process with the RAC has been extremely informative for us and the stakeholders who participated. However, it has not been without its challenges. Customer engagement has required a substantial cultural shift for our business, as well as for customers themselves. Our customer base is dispersed over a large area, including across three separate regulated networks, and the appetite for engaging on energy issues – while growing – is less profuse than in other jurisdictions.

We are extremely grateful to our RAC members and everyone who has participated in our engagement so far. As part of our strategy to uplift our systems and people, we are exploring ways to embed a more sustainable engagement model for our business to keep the conversations ongoing.

We also recognise we service three distinct networks with different needs and are focused on ensuring our ongoing engagement and Regulatory Proposal reflects this, including through direct engagement with Tennant Creek stakeholders.

3.3 Strategic priorities



The third chapter in Power and Water's Draft Plan, *'Strategic priorities',* outlines the local and global factors impacting our five-year plans and the strategic priorities to facilitate these plans. We asked stakeholders the following questions:

Are there any material global or local factors we have omitted in our analysis of change factors?

Are there any concerns with our strategic priorities, or has anything been missed in our assessment?

Do customers consider that our five-year expenditure plans align with our 20-year strategic priorities?

What we heard

Factors impacting Power and Water's forecasts

Our stakeholders recognised that the small power system(s) scale and remote geography of the Northern Territory significantly impact the technical and physical needs of the system, including the ability to be self-sufficient for all system services in multiple regions, which can cause issues for customer reliability and network performance.

Stakeholders also recognised our geographic considerations, and the unique characteristics of our electricity systems, impact the ability to attract, retain and train a workforce with the capability and capacity to meet existing and emerging power system needs efficiently and effectively.

During our People's Panels in August, we explained that external global factors have significantly impacted our forecasts from the prior Panels in April and March. After discussing how we best respond to global and local impacts on our future plans, customers stated that Power and Water should respond by "Adapting to the global situation, being self-sufficient and proactive in investment".

How we responded

We recognise that our forecasts have increased since release of our Draft Plan because of a combination of global factors and changes to the proposed investment in programs and technologies which support the long-term sustainability of the Northern Territory network and customer outcomes. We have:

- Changed our investment focus from an emphasis on network asset replacement, to a greater investment in our ICT systems, processes and our people. This will include improving our asset management capabilities to manage our ageing network and drive standardisation of our processes through a common operating model.
- We are upgrading our asset management system and improving the quality of our asset data. This data will support better-informed decisions on asset condition, expected life, and the optimal time for replacement. As a result, we can extend asset lives based on application of our new risk framework – where safe to do so – and defer costly asset replacement programs, pursue alternative options to traditional network solutions and optimise our investment as our networks develop to connect more renewable energy sources.
- Updated our forecasts to reflect material changes in economic conditions since the Draft Plan was developed, which have driven up financing costs for all businesses and sharpened the focus on keeping costs down during the next regulatory period.

We continue to challenge our forecasts to ensure the optimal timing and efficiency of the selected solutions. For example:

- We have refreshed our demand forecast based on the latest information and project timing assumptions. This work has identified several spot loads, that were expected to connect in the next five years, are likely to be pushed back. This will allow us to defer some of our network augmentation expenditure. We will continue to monitor and revise our demand forecasts during the next regulatory period and will only undertake augmentation works where the timing of the new loads is more certain.
- In Alice Springs, we have included a lower cost solution to alleviate corrosion issues on our steel power poles. Rather than replace the entire pole, we have developed a new method where the base of the pole is replaced (known as rebutting). Changing from replacement to rebutting results in a much lower cost of addressing each corroded pole.

3.4 Capital and Operating expenditure and Revenue

The fourth, fifth and sixth chapter in Power and Water's Draft Plan - '*Capital expenditure'*, *'Operating expenditure'* and *'Revenue'* - present our forecast of capital and operating expenditure and revenue by category, drivers of change in expenditure and revenue, potential trends and step changes. We asked stakeholders the following questions:

- Have we adequately implemented customers' priorities on future network and addressing the replacement wall?
- Are there specific aspects of our proposed capital expenditure that you support, disagree with, or want more information about?
- Do customers have any concerns with proposed changes to our connection charges?
- Do customers support our efficiency adjustments and consider they are appropriate stretch targets?
- Do customers have concerns or questions on the step changes to implement customer priorities on the future network and customer service?
- Do you consider the customer preferences should be re-visited in light of the higher than anticipated forecast revenue?
- Do customers consider that short term affordability should be prioritised over long-term sustainability?

What we heard

Facilitation of renewable technologies

Stakeholders expressed support for Power and Water playing a role in the enabling of renewable technologies in the Northern Territory, noting that investment in technologies that ensured reliability of supply was paramount. This was reinforced by business customers who participated in our business customer webinar on the Draft Plan in September 2022. It was important to this stakeholder group that we consider how to deliver or support renewable technologies cost-effectively, while continuing to meet existing reliability standards. Similarly, the People's Panels adopted a risk averse approach in their feedback and were of the view that renewable technologies should be implemented with consideration of pilots, trials and maturing technologies.

Although many stakeholders expressed strong support for our plans for enabling renewables, feedback was also received that there is opportunity to expand or accelerate strategic priorities to meet customer and stakeholder preferences for renewable technologies. It was asserted that investments in community batteries need to genuinely incentivise retailers and customers, while also delivering network benefits. Feedback from retailers was that previous models of use of community batteries in other jurisdictions

resulted in little benefit to retailers and/or consumers and that most of the benefit was retained by network operators.

We received feedback from one of the Northern Territory generators that discussions with customers on renewable technologies has mostly been focused on small-scale renewables which, while important as customers will likely participate directly in the adoption or support of these technologies, may not be the best plan for future networks. It was suggested that implementation of customer preferences with a significant focus on small-scale renewables may not be the most desirable and efficient path to achieve the strategic and customer priorities within the Draft Plan.

Stakeholders generally believed that the system enablement of renewables will require more than just adding small scale solar systems, but also require support from large scale technologies such as solar farms and battery energy storage. It was suggested that investment in these assets, synchronous condensers and future hydrogen generators should occur now, rather than be considered 'contingent projects'.

Some stakeholders expressed concern about our proposed operating expenditure appearing lower than expectations, explaining that it appears to not consider the potential increase in operating expenditure as technologies and programs mature to a sufficient scale where more benefits may be realised. There was concern that Power and Water may not have planned sufficient investment in skills, resources and technology focused on the renewables transition across the next determination period.

How we responded

In response to stakeholders concerns regarding our focus on small-scale renewable assets, we maintain that there is a place for both large and small scale solar in the energy system and that solar at a local level may assist with future planning of the networks (including meeting load when there are outages upstream).

Business case analysis found that a Dynamic Operating Envelope (DOE) solution would help us manage imminent security issues at times of minimum demand, while maximising low cost solar on the energy system. Minimum demand is where large amounts of excess electricity are exported into the network, primarily in an uncontrolled way, displacing the existing thermal generation. We propose to incrementally rollout the DOE solution in the 2024-29 regulatory period rather than pursuing the wholescale operation of DOEs.

Additionally, we have included a new contingent project related to alleviating transmission constraints for existing large-scale generators. This includes emphasis on procuring services, rather than investing in new assets, and would be subject to a regulatory investment test process.

We will also investigate greater use of trials for new technologies and tariffs. For example, we will investigate the feasibility of battery storage and intend to use the allowances under the Demand Management Innovation Allowance (DMIA) regulatory incentive to research, trial and study community batteries on parts of our networks. Data from the studies will help inform our investment programs in the future.

We will continue discussions with our energy partners on how we can pursue low-cost solutions that ensure reliability and affordability of renewables for our customers, optimising outcomes across the Northern Territory.

Short-term affordability versus long-term sustainability

Trade-offs between short-term affordability and long-term sustainability of electricity supply in the future networks were key considerations in the development of our plans, forecasts and when testing new technologies and solutions with customers.

Stakeholders supported Power and Water seeking lower cost solutions that meet and improve customer outcomes and increases in renewable technology investments to reduce electricity costs. Feedback from our People's Panels was that we should pursue solutions which ensure the long-term reliability of the networks without disadvantaging those using the networks today. For example, ensuring that the pricing impacts of capital expenditure associated with constructing and enabling renewable technologies do not disadvantage low-income customers.

How we responded

We continue to update and publish our Transmission and Distribution Annual Planning Report (TDAPR) each year. The TDAPR provides stakeholders with early visibility on key planning challenges and our thinking on solutions.

All our projects are subject to option assessments, in accordance with our governance and planning processes, to ensure that the option is prudent and efficient. For new major projects that trigger a Regulatory Investment Test in accordance with the NT National Electricity Rules, we are also required to invite feedback on non-network alternatives.

We will continue to work with our energy partners to provide further transparency associated with the inputs in our revenue forecasts.

3.5 Metering services

The seventh chapter in Power and Water's Draft Plan, '*Metering services',* outlines our expected metering capital and operating expenditure, proposed replacement of meters with smart meters and impacts on customers. We asked stakeholders the following question:

Do customers consider we have the right pace of smart meter rollouts?

What we heard

Smart meter replacement

Energy partners want a smart meter replacement program which aims to have residential customers transitioned on the same timeline. Retailers also requested transparency on the prioritisation of smart meters and opportunities for partnerships with Power and Water to install smart meters. One submission suggested that Power and Water should access unutilised capacity of retailers and/or appropriately licenced electrical contractors and issue smart meters for free to licenced electrical contractors to increase the pace of the program.

Submissions by retailers also suggested a faster track replacement program for residential customers could be achieved if retailers are engaged and customers benefit from the change in metering technology. Generators also showed support for the proposed pace of replacement.

We did not explicitly consult with customers through the major customer forum or the People's Panels about the smart meter replacement process.

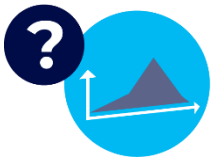
How we responded

We recently commenced installing smart meters at customers' premises and will continue the program over the course of the next two regulatory periods. We will be ramping up the program over the second half of the current regulatory period (2019-24) to reach a sustainable rate of approximately 23,000 smart meters per five-year period.

By the start of the next regulatory period, in July 2024, around half of our customers will already have a smart meter installed. Our plan for the remaining, approximately 46,000, non-smart meters is to replace approximately half of them during the 2024-29 regulatory period, with the remainder completed in the following regulatory period. By 2034, we will have moved our entire customer base to smart meters. This will provide greater opportunity for efficient tariff setting, improving network utilisation and unlocking the benefits of distributed energy resources.

We have considered both faster and slower replacement rates and determined the pace of replacement in our plans provided the best outcome for customers and the Northern Territory. Experience in the NEM shows the most efficient meter replacement programs are managed geographically, house by house, street by street. Therefore, Power and Water is managing our replacement program on this basis. We also note that the free issuing of meters to licenced electrical contractors would place Power and Water at a significant revenue assurance and inventory management risk and is not something we are considering at this time.

3.6 Tariffs for a new age



The final chapter in Power and Water's Draft Plan, *'Tariffs for a new age',* presents information about the process to set network tariffs, our current and proposed network tariff structures and reasons for tariff reform. We asked stakeholders the following questions:

To what extent should tariffs reflect the costs different customers impose on the network?

Are there specific aspects of our proposed tariff structure that you support, oppose or want more information about?

What we heard

Pricing signals

Stakeholders recognise that pricing can play a major role in changing customer demand to reduce network stress during high demand periods of the day and in supporting the curtailment of uncontrollable exports of renewable electricity.

Stakeholders queried the practical impact of changes to network tariffs on incentives and behaviours as residential and small business customers do not have visibility of network tariffs due to the operation of the Electricity Pricing Order in the Northern Territory. The potential for increases in retailer costs and/or the community service obligation paid to retailers by the Northern Territory Government was also raised. The recommendation from many stakeholders was to consult with the Northern Territory Government to gauge support for amending retail tariffs to provide pricing signals.

How we responded

We have proposed an export tariff and rebate trial for customers who export over a threshold amount and have created further classes of tariffs to support retailer competition and encourage larger energy users into the Northern Territory.

While Power and Water sets network tariffs in accordance with the national framework, as reflected in the NT National Electricity Rules, retail tariff reform in the Northern Territory must be done in conjunction with the Northern Territory Government and retailers. We will continue to work with our energy partners and the Northern Territory Government on options to improve the delivery of pricing signals and support increased retailer competition.

Tariff structures

Our Draft Plan proposed changes to tariff structures to encourage customers to shift consumption and control of solar exports.

Business customers were largely supportive of the separation of low voltage smart meter tariff classes into customers consuming thresholds consistent with the thresholds applied by other network businesses. Some business customers expressed concern about the seasonal measure used to determine whether a large energy user is captured in the super user tariff class and identified that larger energy users can often have significant changes in consumption between seasons.

Stakeholders indicated that structural changes to network tariffs should be included in a broader tariff reform conversation and that there should be consideration of how other networks have segmented tariff structures. It was suggested that the introduction of cost-reflective tariffs on different customer segments are first considered by and discussed between the regulator, network operators and Government. Concern about the complexities introduced by time-of-day and seasonally varying energy charges for customers with an accumulation meter were also raised as many will continue with the current flat rate tariff and would benefit from consistency across seasons.

How we responded

Taking customer and retailer feedback into consideration, we propose several incremental changes to our suite of network tariffs. We propose to:

- Increase customer segmentation to distinguish between residential and business customers and better align with retail competition thresholds.
- Introduce a new 'Super User' customer segment for major industrials consuming more than 10,000 MWh per annum.
- Introduce new time-of-use charging periods and rates for smart meter customers.
- Remove peak demand charging (kVA charge) for small use customers (consuming <750 MWh p.a.).
- Narrow the peak demand charging window for those customers with a demand charge.
- Trial two new export tariffs and rebates to help manage solar PV export levels.

Discussion on how we plan to apply these network tariffs will continue with our various energy partners and Government. We will also work with retailers on how these changes should be communicated to customers.

Peak demand levels and charges

During our small-medium and major business webinar, we heard feedback from several larger energy users that there may be interest in partnering with Power and Water to alleviate network stress related to peak demand. It was suggested this could include business customers partnering with Power and Water to buy and build assets such as batteries or solar. It was noted that many businesses are looking to minimise their risk profile as they transition to a renewable energy future and an opportunity to collaborate on the development of assets with Power and Water could reduce the grid load, risk and cost for both business customers and Power and Water.

Some large business customers expressed concern regarding the proposal to adjust the peak period from an annual to a seasonal approach, noting they have an inability to change their behaviour on a seasonal basis. Retailers expressed a similar view that an annual approach may be better for large businesses, given the potential cash flow pressures placed upon larger customers as the demand charge could be a large component of their electricity bill. It was noted that this may also impact the attraction of larger users to the Northern Territory and that the seasonal option may be preferable for those businesses consuming less than 750 MWh.

The Electric Vehicle Council provided support for customers consuming less than 100 MWh to only be charged based on consumption, noting that this would support organisations planning to deploy high power public electric vehicle infrastructure.

How we responded

We will work with large business customers and other stakeholders to develop plans to address network maximum and minimum demand issues. This will involve amending our internal processes and may include business customers as stakeholders notified of curtailment plans.

Export tariffs

When the application of export charges was tested with customers at the People's Panels, many participants expressed support for it to be applied in accordance with the Darwin-Katherine Electricity System's peak demand window, and when exports were highest, between 10am – 2pm. However, there was concern it could disincentivise solar uptake and be interpreted as penalising solar energy production which would be detrimental to our strategic priorities. To ensure it is not too punitive and instead encourages changes of behaviour, it was suggested by panellists that it should be set between 10 - 50 per cent of the feed in tariff. Alternatively, customers recommended considering the pursuit of other initiatives to better manage solar production, such as incentives to join up to Dynamic Operating Envelopes or replace older systems.

There was general support from business customers, however they believed that introduction of tariffs to curtail renewable energy production should be co-designed with retailers who can support and assume some of the responsibilities to apply an export tariff and rebate.

Retailers had a conflicting view and opposed the introduction of export tariffs, noting that small customers do not see their network charges under the Electricity Pricing Order and that this would only increase retailer and Government costs. Proposed suggestions by retailers for alternatives included demand side

management programs, incentivising the uptake of batteries, and tariffs that incentivise the use of rooftop solar at appropriate times.

How we responded

Rather than introducing an export tariff to apply in the next regulatory period, Power and Water will pursue an export tariff trial to be designed and applied in collaboration with stakeholders including retailers.

Contact

Power and Water Corporation
55 Mitchel Street, Darwin
Phone 1800 245 092

powerwater.com.au

PowerWater

Contact

Australia: 1800 245 092
Overseas: +61 8 8923 4681
powerwater.com.au

PowerWater