SA Power Networks Regulatory Proposal Engagement 2025-30

Focussed conversation – Energy Transition

Workshop 2 – 18 October 2022

SA Power Networks



Acknowledgement of Country

‘I would like to begin by acknowledging the multiple Traditional Owners of the lands on which we are joining from today, and those that host the South Australian electricity grid.

I would also like to pay my respects to Elders past and present and acknowledge that these are living cultures by paying respect to emerging leaders.’



Housekeeping

Diverse group of stakeholders, keen to hear all voices

Hybrid session

- Online: raise hand (✋) or turn your camera on if want to speak
- Questions/ comments in chat function
- Mute if not talking
- Cameras on preferable (particularly when asking a question)
- Session will be recorded

Parking Bay

- Capture questions or ideas that we aren't able to cover during the session

Follow up

- Workshop 3 scheduled for 10 November

Stakeholder invitees

Workshop invitees

- Electricity & Water Ombudsman SA
- Department Energy & Mining
- Essential Services Commission South Australia
- Business SA
- Electric Vehicles Association
- SA Council of Social Services
- Uniting Communities
- Australian Electric Vehicle Association
- Australian Energy Regulator
- Consumers SA
- Service to Youth Council
- NRG Solar
- Central Irrigation Trust
- RAA
- Shine Hub
- 369 Labs
- Chargefox
- AGL
- Simply Energy
- SwitchDin
- Tesla
- Suntrix
- Intellihub
- The Energy Project
- Smart Energy
- Flow Power
- Yates Electrical
- SA Power Networks Community Advisory Board members
- Members of AER and AER’s Consumer Challenge Panel (CCP30)

SA Power Networks attendees

SA Power Networks staff presenting and listening:

In the room

- Brendon Hampton – Head of Network Strategy
- Dan Popping – Head of Stakeholder Engagement
- Matthew Napolitano – Head of Network Planning
- Steve Jolly – Head of Customer Solutions
- Bryn Williams – Network Strategy Manager
- Helen White – Pricing Manager
- Liam Mallamo – Future Networks Engineer
- Bruno Coelho – Manager Regulatory Strategy
- Amanda Hudson – Customer Consultation Lead

Online

- Tim Adams – Large Embedded Generation Manager
- Jonathan Leake – New Energy Projects Director
- Hiroe Terao – Program Stakeholder Engagement Lead
- Peter Chapman – Digital Technologies Manager
- Luke Cowen – Regulatory Economist
- Kylie Lush – Reset Project Officer
- Manera Karunaratne – Telecommunications Engineer

Overview of the day

12.00pm	**Arrival, lunch (optional)**
12.30pm	**Welcome, introductions and background** • Recap – the reset process
12.45pm	**Refresh: Energy Transition topic**
1.00pm	**Enabling Clean Energy** • Recap – what we heard in Workshop 1 • Deep dive on DER integration expenditure
2.30pm	**Break**
2.45pm	**Empowering Our Customers** • Recap – what we heard in Workshop 1 • Summary of discussions and outcomes from other focused conversations (*Equity & Vulnerable Customers* and *Customer Experience*)
3.00pm	**Enabling Electric Vehicles** • Recap – what we heard in Workshop 1 • Deep dive on EVs
4.25pm	**Wrap up & next steps**

Recap - Reset



The Price Reset process

As a monopoly service provider, our prices are approved by an independent regulator on a five-year cycle

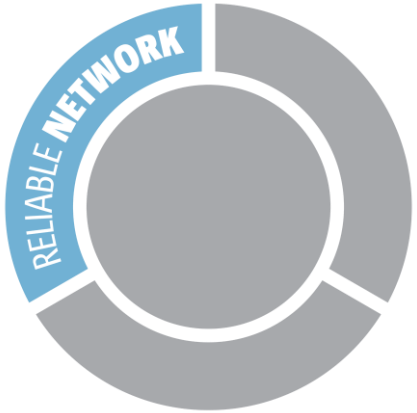
We are developing our **Regulatory Proposal** for the 2025-2030 period

In building our Regulatory Proposal we engage deeply with customers and the community



Our reset engagement is structured around four key themes

Today's session is the second of three workshops focused on:



A reliable, resilient and safe network



Customer experience, choice and empowerment

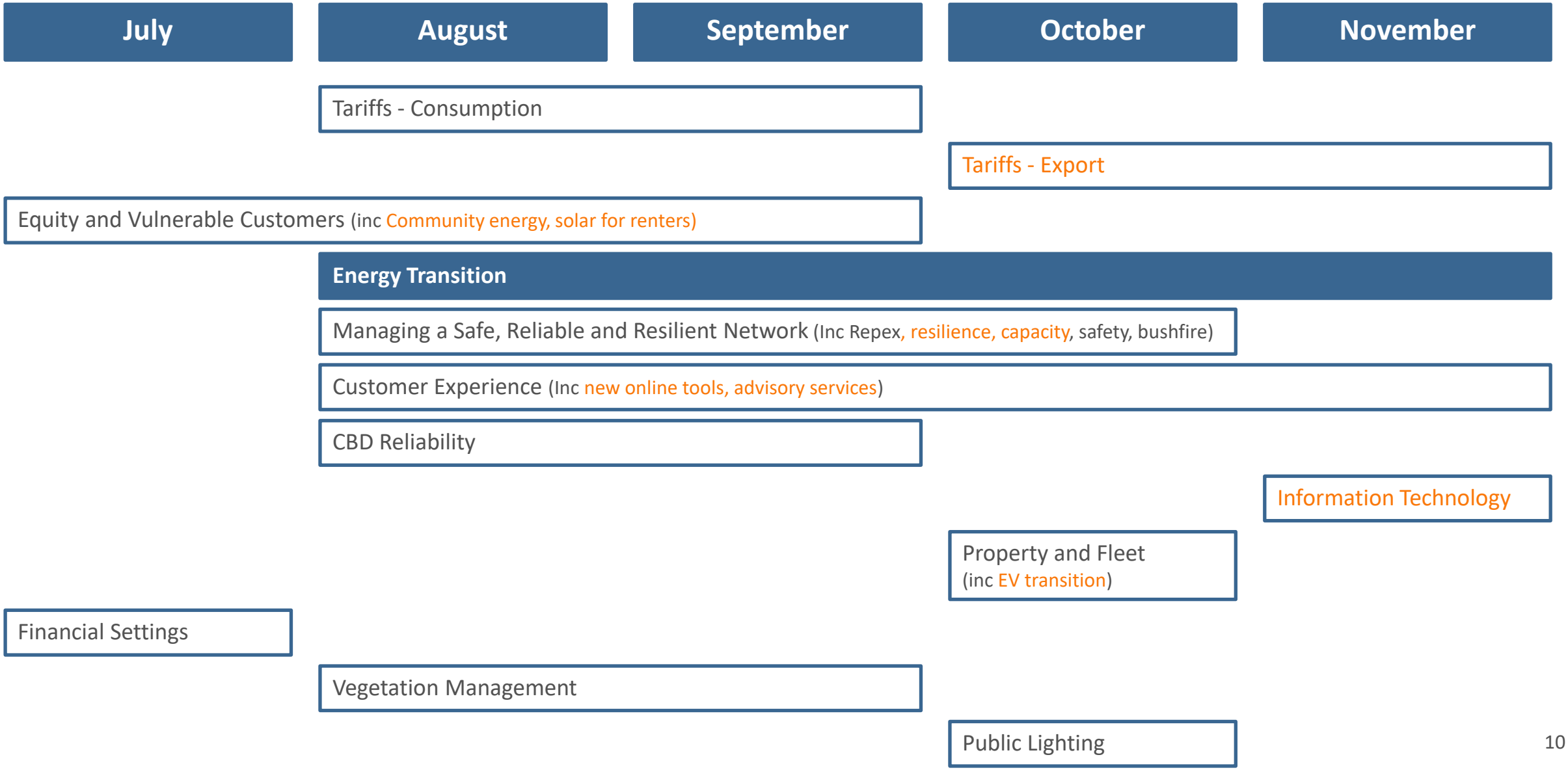


Affordable and equitable energy supply



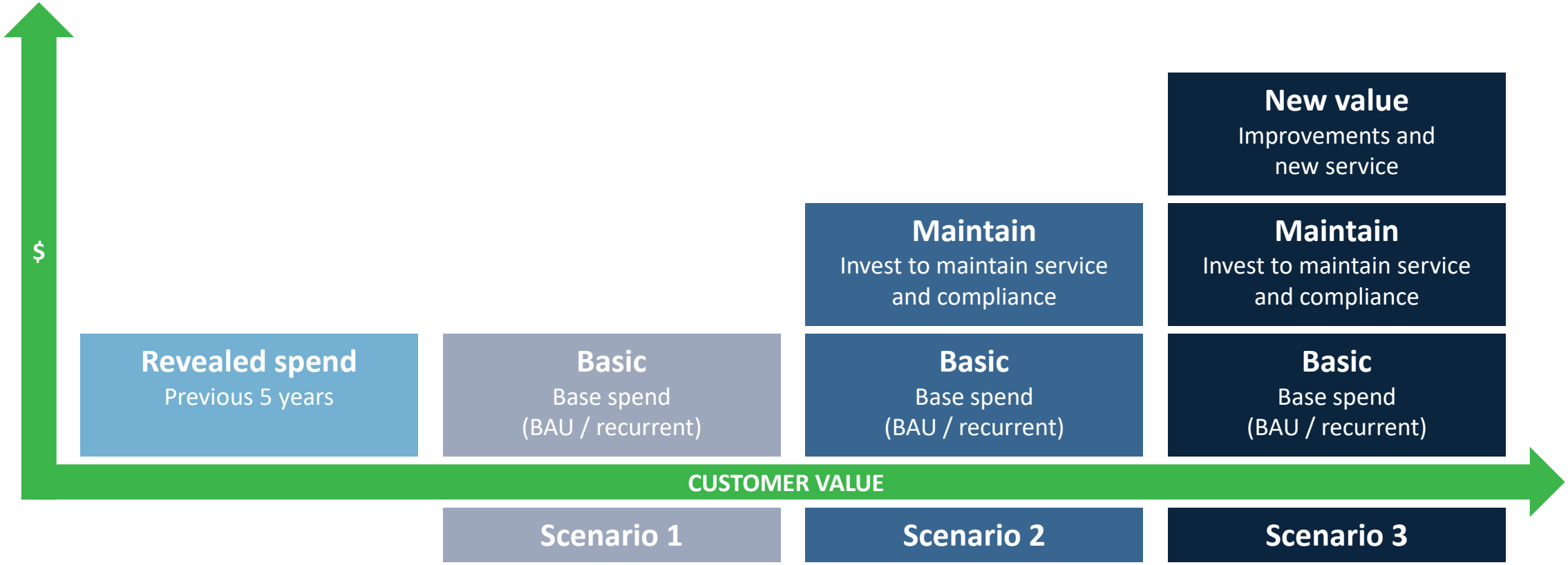
Enabling clean energy and unlocking future value for our state

Focussed conversations timeframe & interdependencies



Forecasting service outcomes and expenditure for 2025-30

- **Evidence to customers** on likely service outcomes gained / lost under different spend paths
- Show what's needed to **maintain vs improve** customer outcomes
- Provide **transparency** on how we align expenditure to customer expectations
- **Note**: the 3 scenarios are not binding – we will explore if customers' preferences lay between the three scenarios



Forecasting service outcomes and expenditure for 2025-30

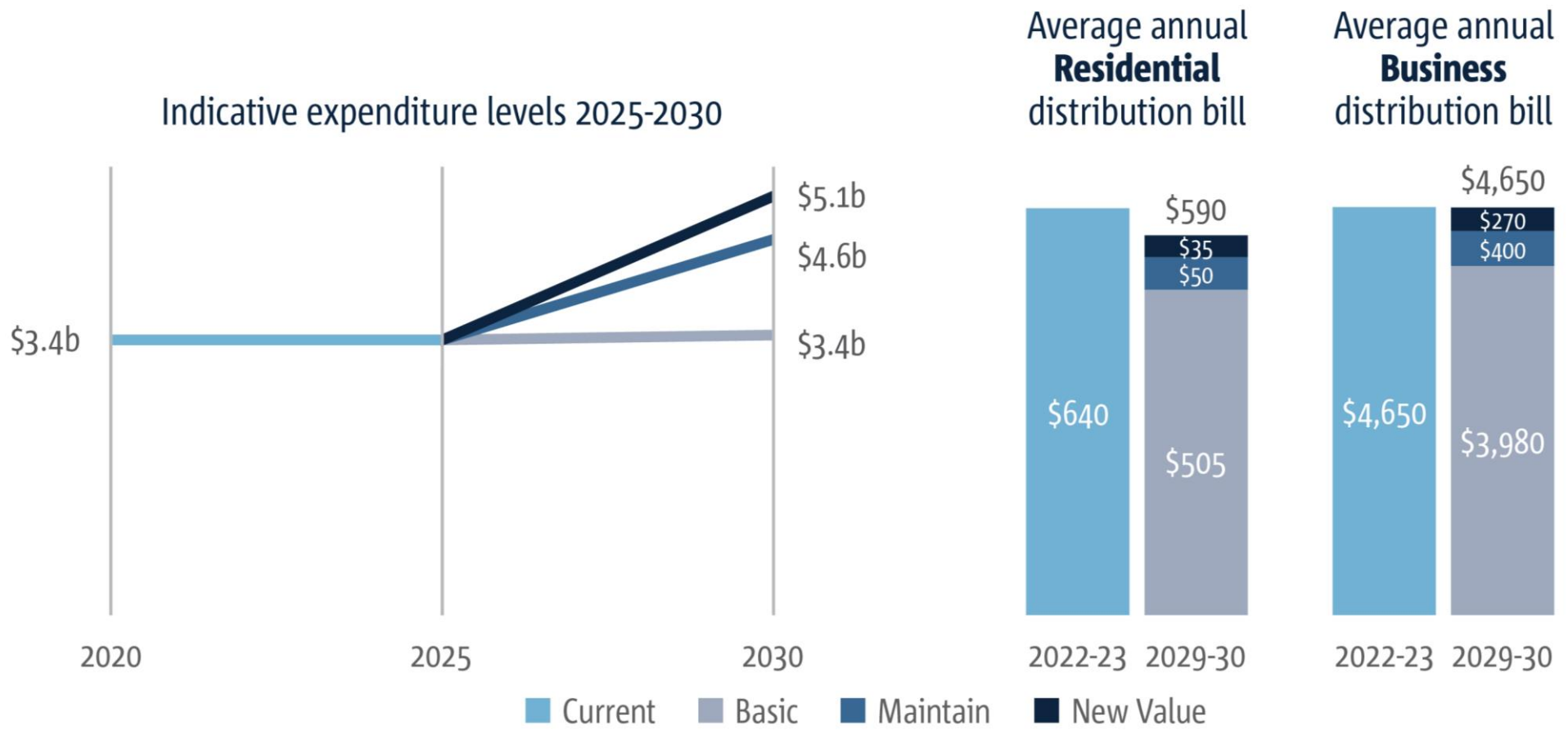
Iteration 1	Iteration 2	Iteration 3	Iteration 4	Iteration 5
End 2021	**August 2022**	**February 2023**	**June 2023**	**December 2023**
Preliminary ranges • Understand broad book-end ranges • Range of possibilities informed by business knowledge and high level consumer engagement to date	Input to focused conversations • More refined book-end ranges • Range of possibilities informed by business knowledge and feedback from 'broad and diverse' engagement	Outcomes from focused conversation and input to People's Panel • Narrowing of ranges by customers - ideally toward a preferred scenario	Outcomes from People's Panel and input to Draft Proposal • Identify preferred scenario for proposal	Outcomes from Draft Proposal and input to Regulatory Proposal • Identify preferred scenario for proposal

Provide transparency on the iterative process of how expenditure forecasts have been shaped by customers' expectations



Forecast total and annual average distribution bills ($2025) – iteration 2

The average residential bill will be lower in 2029-30 than 2022-23 under all scenarios.



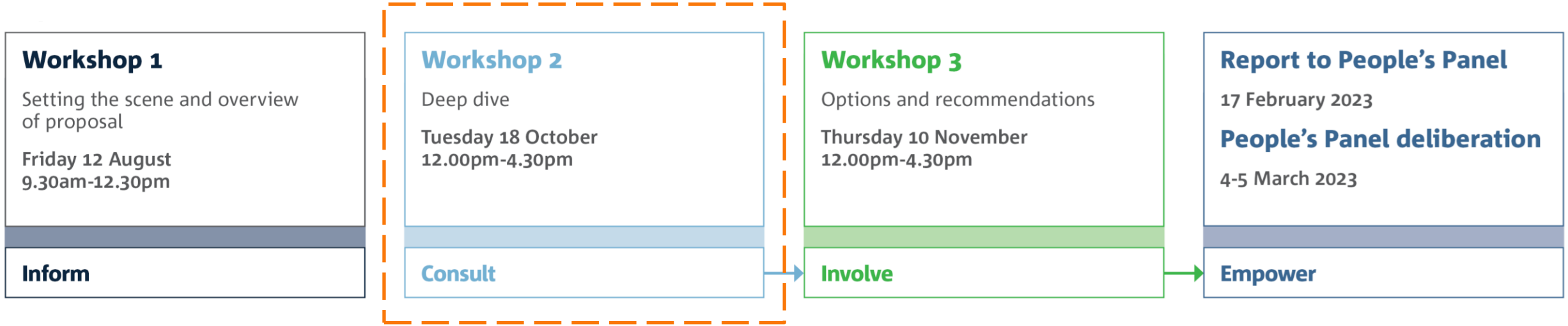
The numbers supplied are forecasts and will be updated due to stakeholder input and external market influences over time. Our final numbers will be provided in our 2025-30 Regulatory Proposal to be lodged with the AER in January 2024.

Today’s Focussed Conversation



Purpose: Today's Focussed Conversation

- Today's Focussed Conversation is the second in a series of three workshops on our role in the Energy Transition:



Purpose: Today's Focussed Conversation

Outcomes of today's workshop:

- Deep dive on key topics identified in Focussed Conversation #1
  - Share details of our modelling and proposed approach.
  - Address questions captured in Focussed Conversation #1
  - Workshop key options under consideration in group discussions

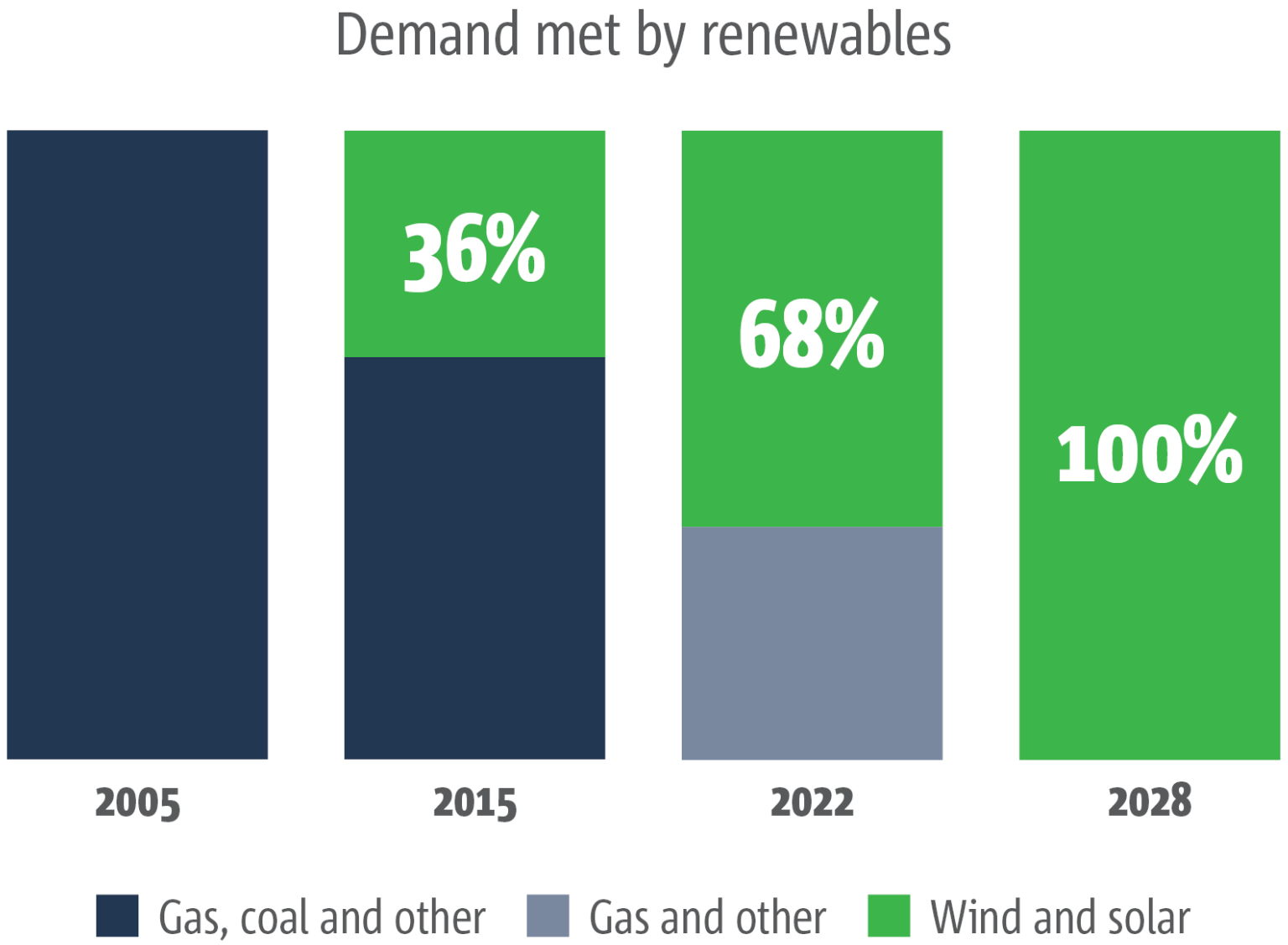
- Share update on some specific programs that have been canvassed in other focussed conversation workshops

- Identify further issues and evidence to bring to our final Focussed Conversation workshop in order to make recommendations

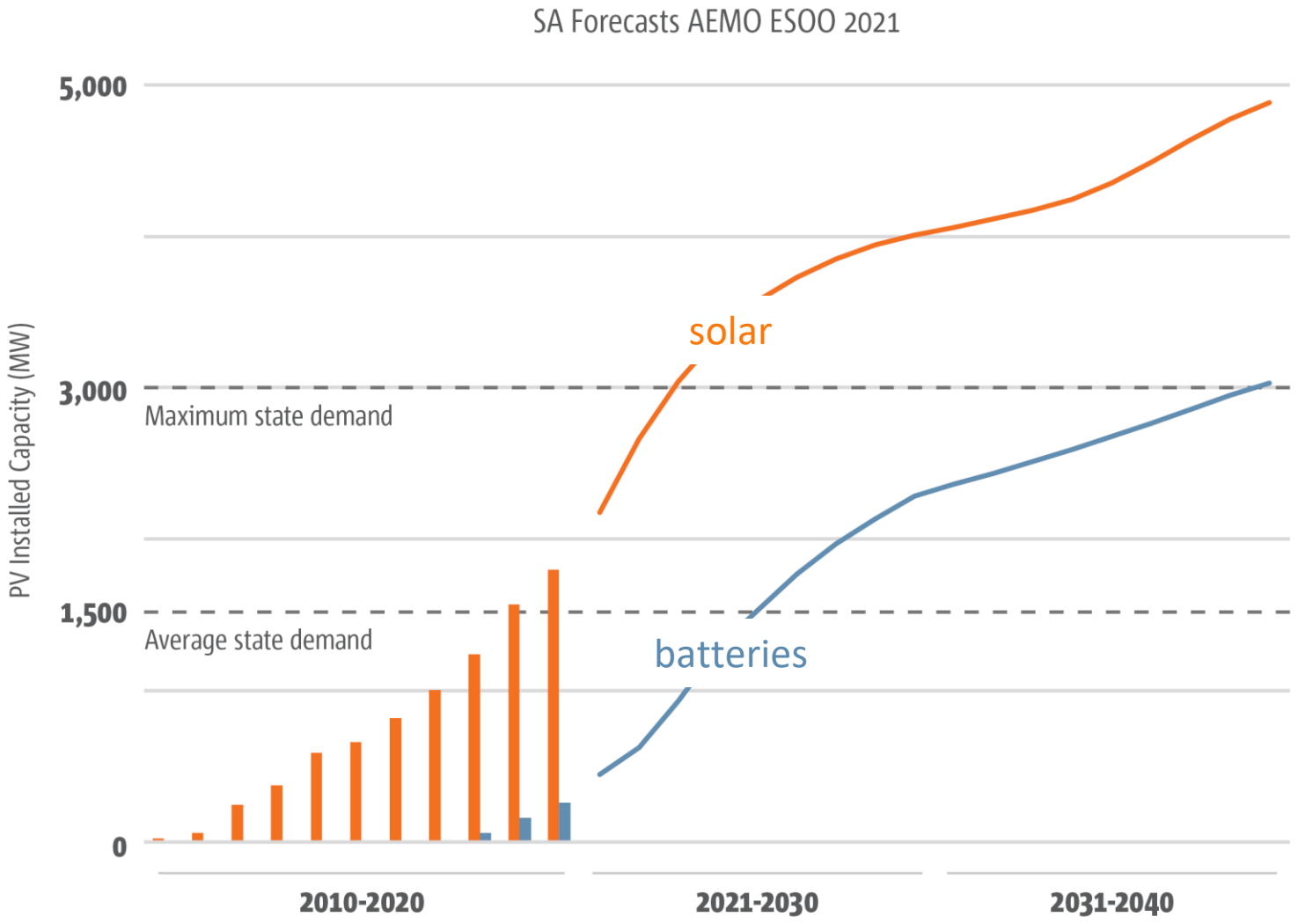
Recap: our role in South Australia's energy transition



South Australia is rapidly transitioning to renewable electricity



…which means the distribution network needs to work in reverse



~300,000 Rooftop solar systems

>1 in 3 customers, world's highest

State's largest generator

Net load on the entire distribution network fell below zero in 2021

Record growth continues

~30,000 Home batteries

9 Virtual Power Plants

operating in SA

Electric Vehicles (EVs) will be the next big thing



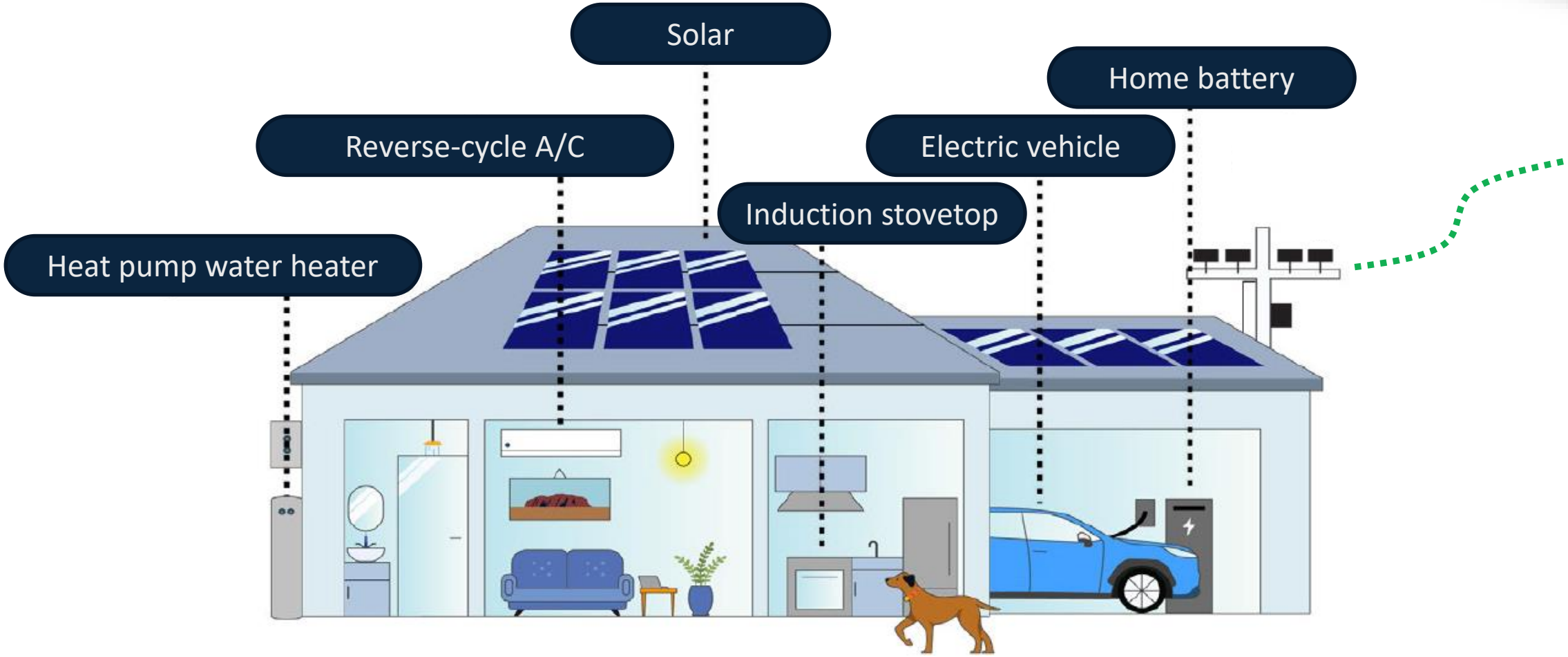
More than 20 countries and **many major automakers** have announced plans to **phase-out new internal combustion engine (ICE) cars** between 2025 and 2035

…and broader electrification is coming

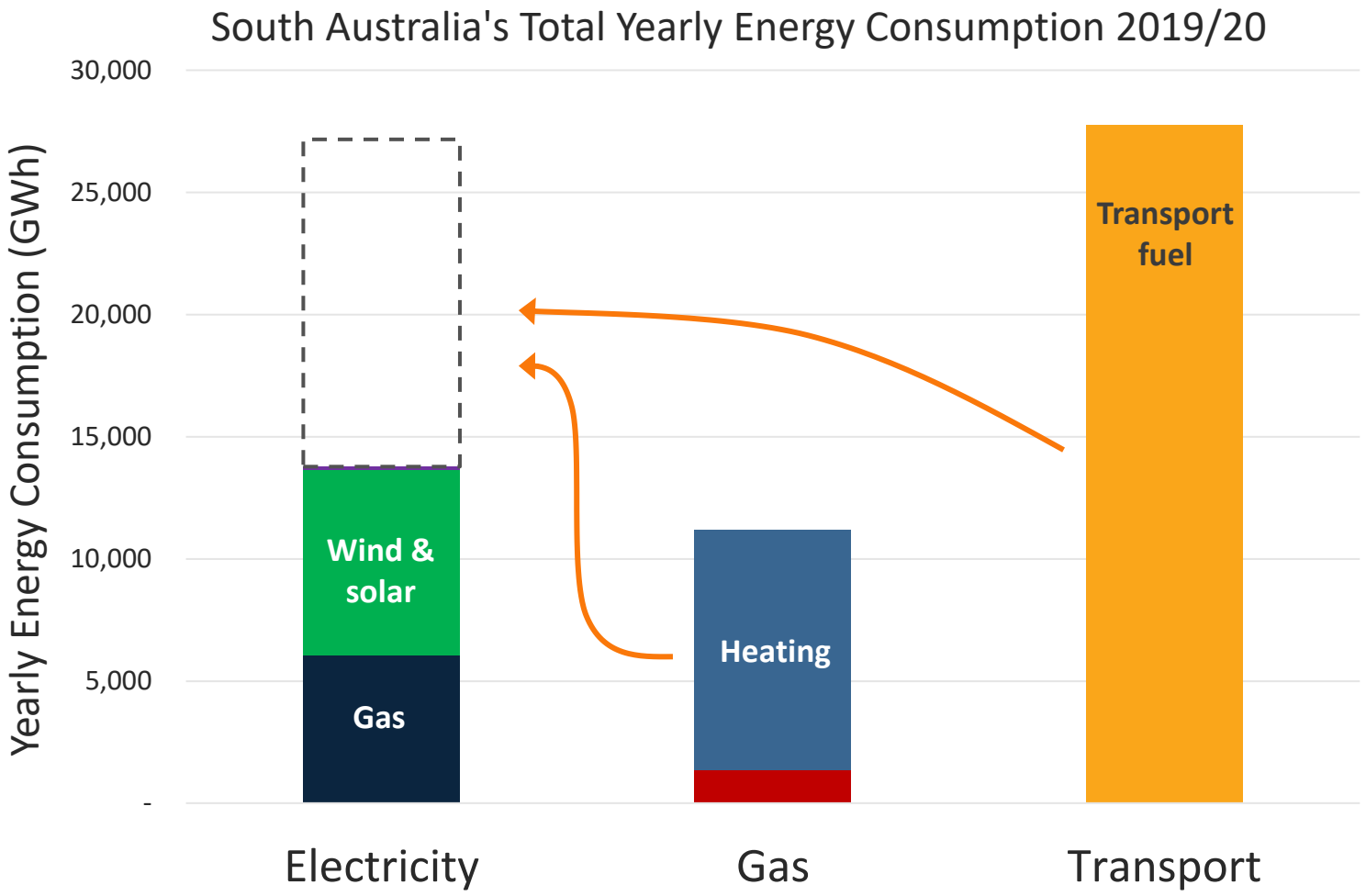
Electrification will be key to decarbonising the economy

For most applications, electricity also has significant advantages in **efficiency** and **cost**





… which means the network will have to carry much more energy in future



The electricity network currently delivers around **22%** of state end-use energy

As we decarbonise, the distribution network could ultimately supply more than 80% of the state's energy needs

Source: Australian Energy Statistics + SAPN

Energy Transition focussed conversation #2



Discussion topics for today



Enabling clean energy

- What are we planning to do to continue to support the uptake of rooftop solar and other customer energy resources?
- What level of service should we be aiming for?
- What might that cost, and what does it mean for tariffs?

Empowering our customers

- How can we help customers make the most of their flexible loads and other resources?
- What new customer services might we offer?

Enabling the EV transition

- How can we best support and enable cost-effective EV charging at home and in public?
- Transitioning our own vehicle fleet to EVs



Topic 1

Enabling clean energy





Recap: planning for DER integration in 2025-30

We want to make sure the network has enough **export capacity** to meet customer expectations

So, as we prepare our regulatory proposal, we need to

- Forecast how many solar PV systems, batteries, electric vehicles, etc, we will have on the system in 2025-30
- Work out how much we need to invest in upgrading the network (and supporting systems) to ensure we can continue to provide the level of service customers want and expect



Goals for today for this topic

In this part of today's session we will:

- Recap feedback on this topic from Workshop 1
- Share more details of our approach to forecasting the need for future DER investment and the impact on future service levels
- Answer questions and seek feedback, as input to the options we will consider in workshop 3

We'll be asking:

- Have we adequately explained our approach?
- Do you agree with the way we propose to express the level of service we provide?
- How should we set the appropriate level of expenditure?
- How should we take equity considerations into account?
- How do we balance customer choice vs. complexity?

Feedback captured in workshop #1



- Expand on economic value of enabling more exports
- How much will customer grade of service decline for flexible export customers if we don't invest? Will the (low) duration of curtailment seen so far in our trial increase over time?
- Options beyond the economic - how does this align with allowing for increased emissions reduction – i.e. our global goals? Will what is done here affect the ability to reduce our emissions further in SA?
- For asset investment, how do we separate component of investment that relates to exports from the component for load capacity?
- How to treat export tariffs for customers with legacy meters? (type 6)
- Does AER CECV look at overall impact of solar on wholesale price (i.e. benefit of driving down wholesale price over time)? Will this cost saving for all customers outweigh any additional network costs?
- What about V2G? Have we considered that EV customers may be exporters too?
- With the increased investment in EVM, will that allow for increased loads as well as increase supply from solar (ie will it have a positive affect for future EV charging etc)?
- Need more info on solar sponge tariffs and what these look like in future
- Which of the initiatives proposed on the final slide are most sensitive to considerable variation when considering "basic" versus "AER economic" versus different levels of "value added" investment levels described earlier in the presentation?
- What's the effect of customers coming off premium FIT?
- What about EV charging hotspots, e.g. holiday parks?
- What about shifting demand and creating more daytime loads? Have we thought enough about the opportunities here?
- Can we show a map of network congestion?
- What about renters ?
- Could we increase the capacity of controlled load?
- Are we just solving for network cost without considering the impact of our choices on the whole costs for consumers?
- Be clear on how we are using both technical and price levers
- Need to be able to explain the CECV and what we are and aren't including in our economic assessment
- Is there a future for utility solar in SA given the rise of rooftop solar?
- Have we considered how to purchase network services to offset any capex spend, such as voltage management and min. demand from retailers and/or aggregators with solar, solar & battery and EV customers?
- For customers in areas that will have reduced ability to export would it be more economically feasible to subsidise home batteries for them to maintain equity for solar savings?
- As renters are typically locked out of many of these benefits, is there thought to allow them access to an altered service compared to homeowners who can access PV, batteries etc.?

DER integration expenditure

We consider ‘DER’ to include flexible loads such as smart EV chargers or smart hot water systems as well as rooftop solar and batteries.

However, the AER generally takes ‘DER integration expenditure’ to mean expenditure related to the provision of **export capacity (‘hosting capacity’)** and the **export service**. That is what we will focus on in the first part of today’s workshop.

This expenditure specifically excludes:

- Expenditure that is primarily for another purpose, even though it may increase hosting capacity
- Capacity augmentation associated with increased peak demand due to EVs or other DER – we consider that to be ‘capacity AUGEX’



Managing export capacity requires a combination of approaches

1 **Promoting EV uptake**
and smart daytime charging





New tariffs and price signals 1
'Solar sponge' ToU tariff launched in 2020

1 **Shifting controlled load into the solar trough**
ToU tariffs and smart hot water trial





2 **Improving network voltage**
$10 million program upgrading 140 zone substations in 2020-21

2 **Targeted asset upgrades**
Infill transformers, transformer upgrades

1. Soak up daytime solar to reduce upstream load on the network

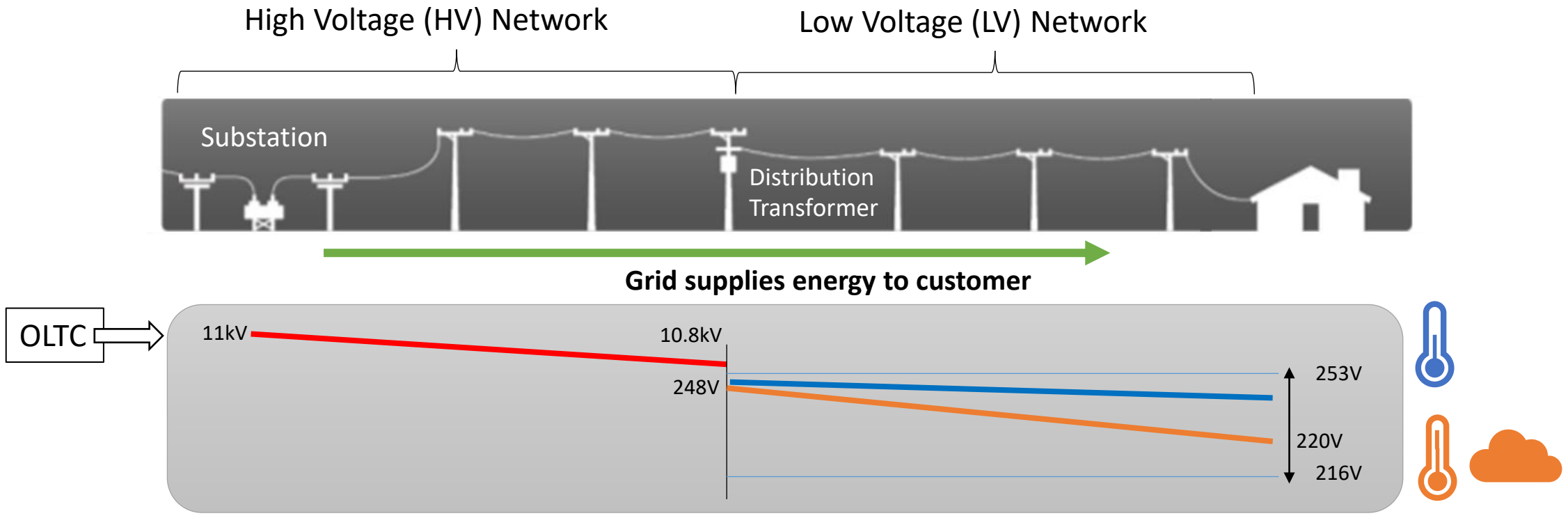
2. Increase total upstream capacity



3 **Flexible export limits**
$30 million program 2020-25 to activate smart inverters to operate dynamically within available capacity

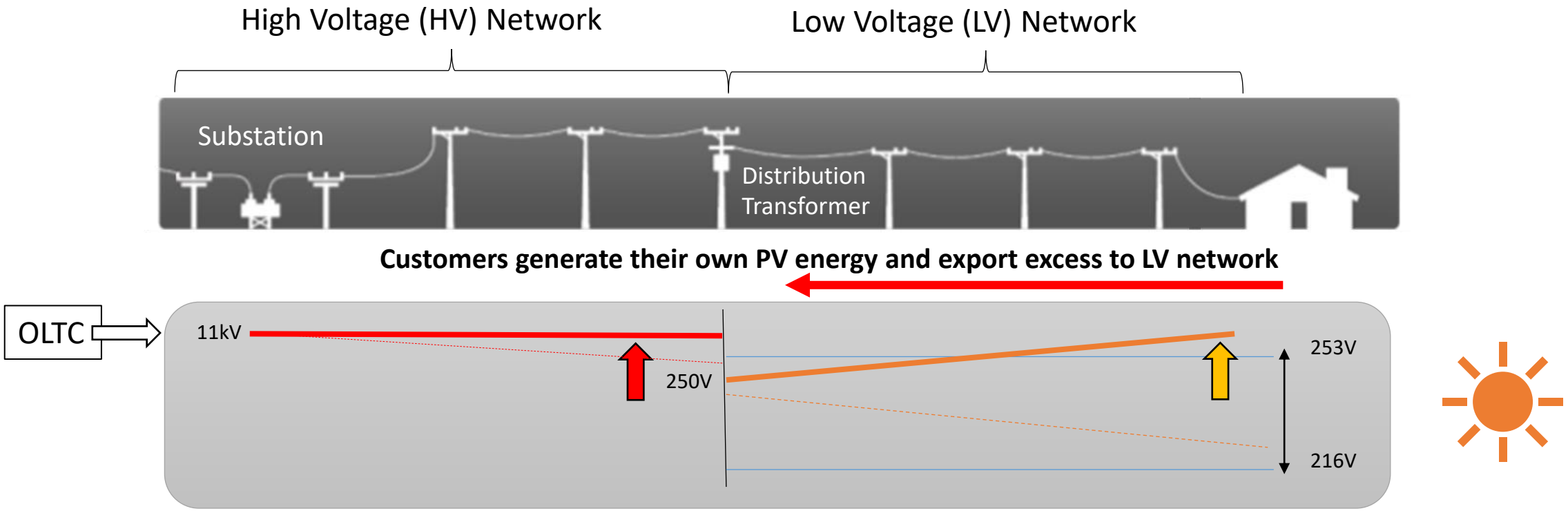
3. Increase access to available upstream capacity

Voltage control 101



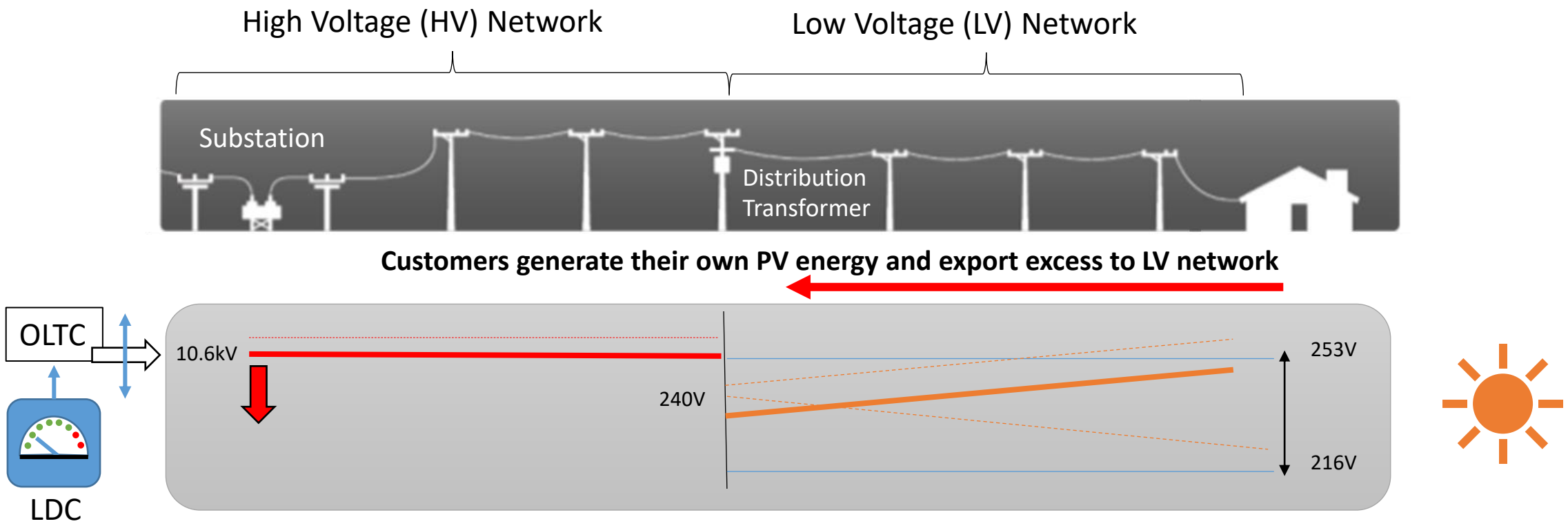
- Voltage control happens at the substation
- Voltage drops along the line under load
- Network designed to operate at the top of the supply range at times of minimum load
- Substation tap changer (OLTC) tries to maintain 11kV at the substation

Voltage control with solar PV



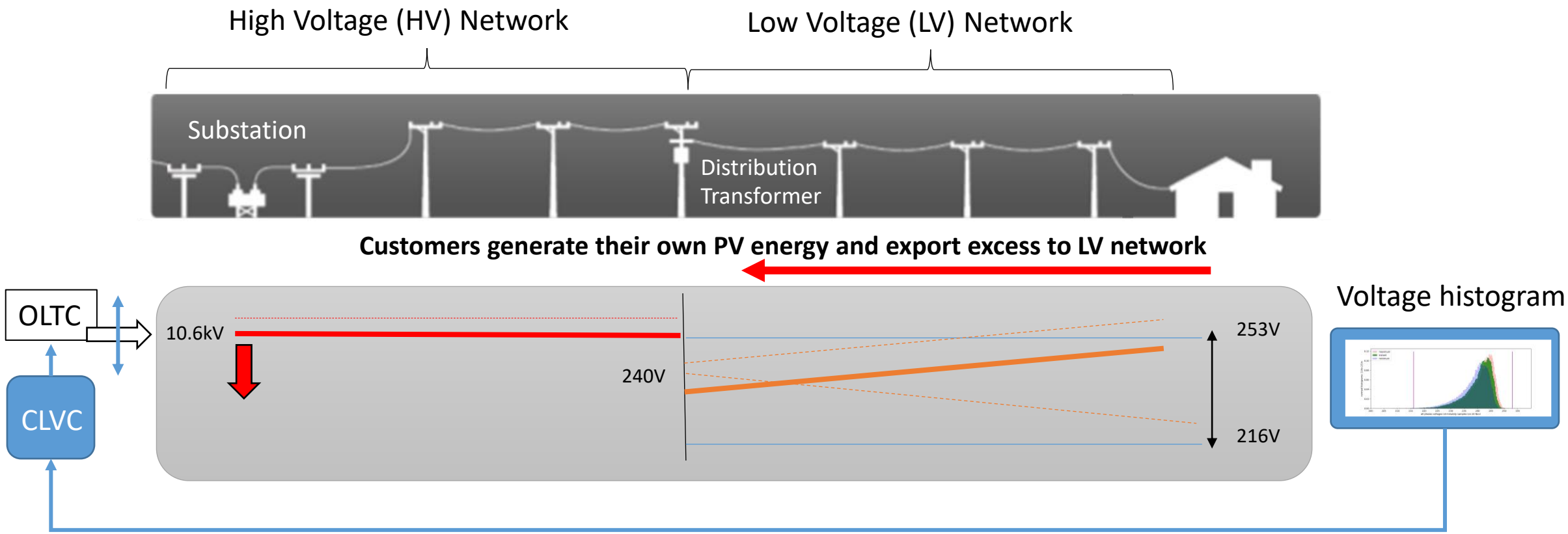
- Solar causes voltage to rise at the end of the line during the day
- But because voltage still drops under load (e.g. hot, cloudy days) we can't just statically lower the voltage

Enhanced Voltage Management - LDC



- Our Enhanced Voltage Management (EVM) program deployed Line Drop Compensation (LDC) to 140 substations in 2021-2022
- LDC dynamically adjusts substation voltage setpoint based on load measured at the substation
  - Reduce substation voltage at times of low or negative load, raise it during times of high demand
- Significant increase in export capacity

Enhanced Voltage Management phase 2 – closed-loop voltage control (CLVC)



- Our proposed EVM Phase 2 program will implement closed-loop voltage control (CLCV) in 2025-30
- CLVC dynamically adjusts substation voltage setpoint based on actual voltage measured at the premises using smart meter data
- Up to 2x as effective as LDC

Flexible exports

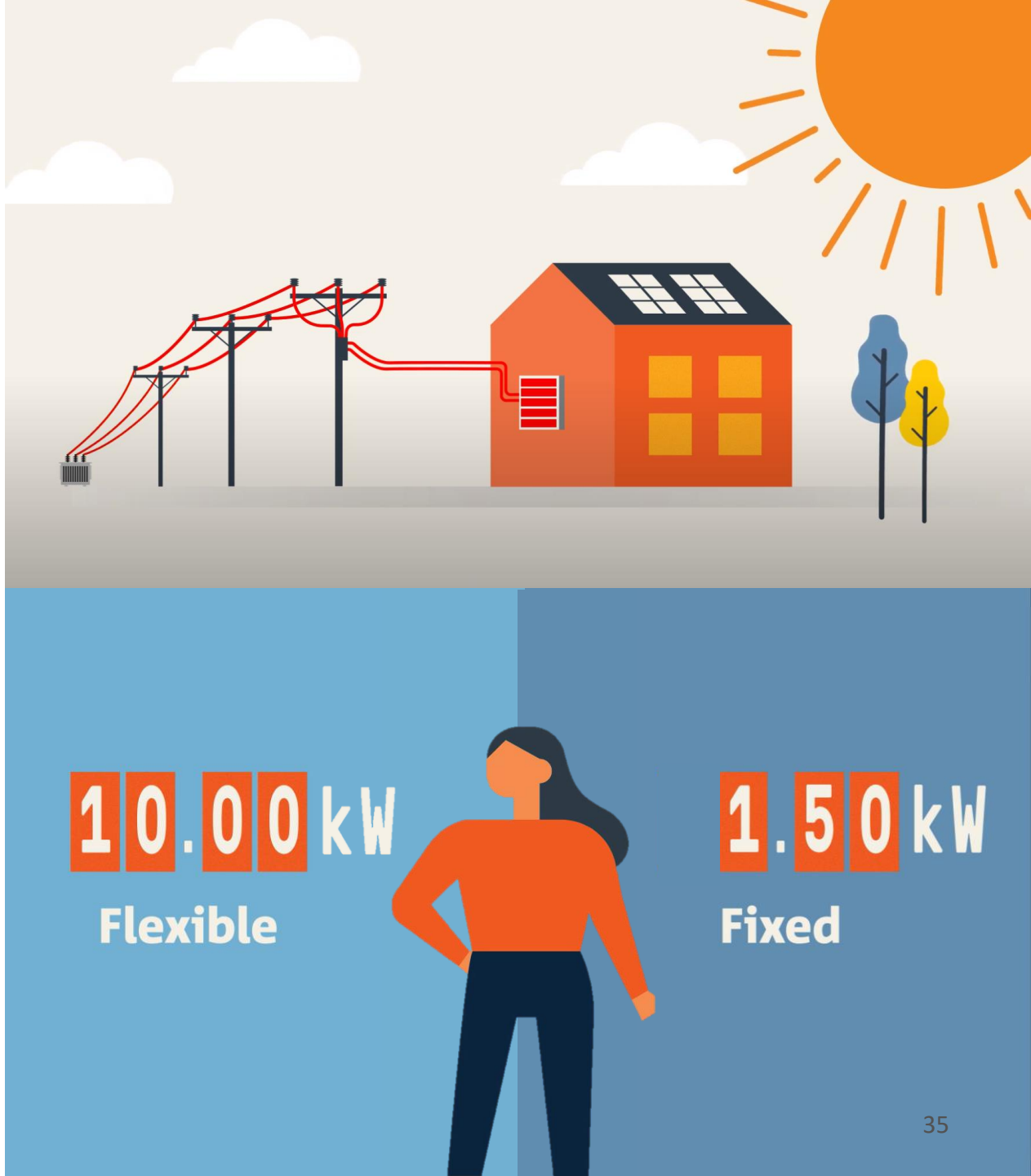
- Flexible exports went live in SA in September 2021 in selected areas

- Customers in congested areas now have a choice between:
  - **Flexible export** (1.5-10kW/phase)
  - **Fixed export** (1.5kW/phase)

- Our aim is that flexible exports will only be limited below the maximum for a **few hours** on **a few days** per annum

- Under SA Government rules, all new rooftop solar systems installed in SA from December 2022 must support the national standard for flexible exports ('CSIP-AUS' based on IEEE2030.5)

- We will roll out flexible exports across the network over the next 24 months



Export service levels post-2025

- With flexible exports we could continue to connect solar across the network through to 2030 and beyond without adding significant new upstream capacity

- If we do this, solar customers in congested areas will experience a progressive decline in the **level of service** they receive as more customers compete for access to the available network capacity

- This means in practice that their export limit will be reduce more often, and by more, as time goes on

- We need to decide how much we need to invest to continue to deliver a service level that will meet our customers' needs and expectations



Questions?

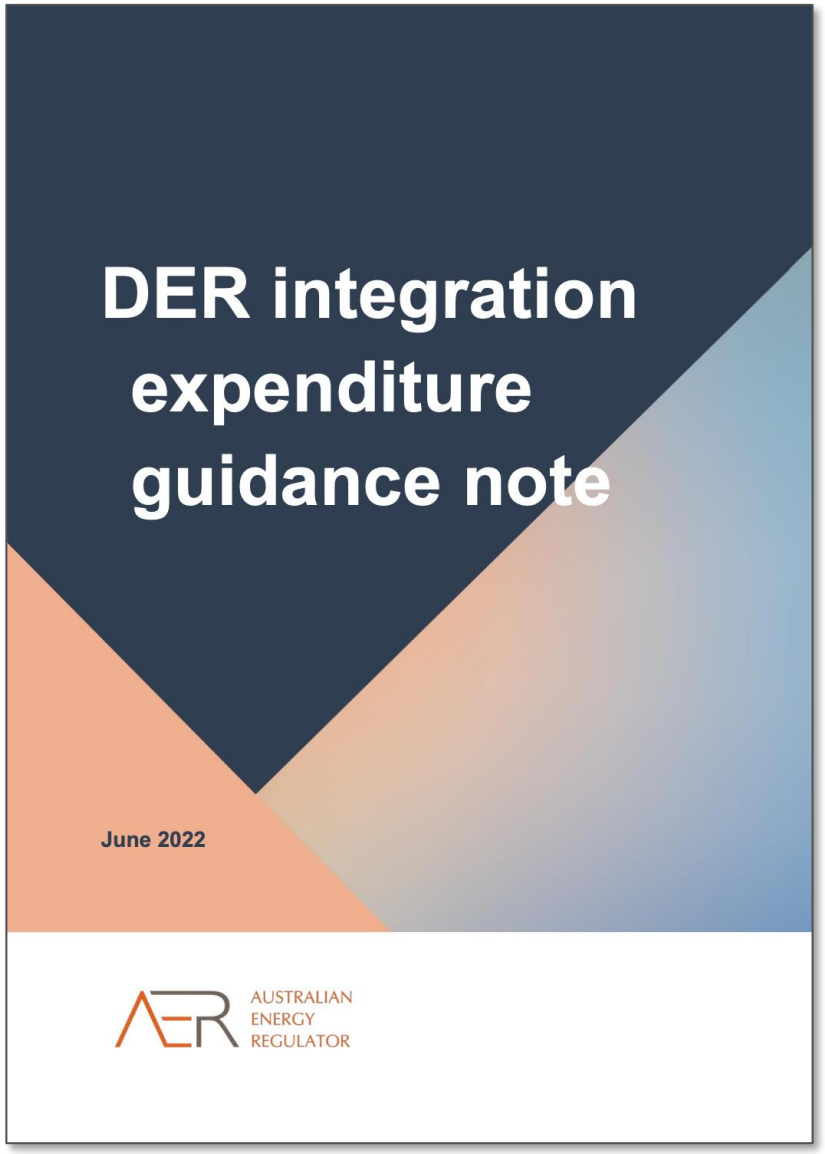




Summary of terms

Export	Feed energy into the network
Export service	The service we provide to DER customers that allows them to connect equipment and export energy to the grid
Export capacity or **hosting capacity**	The network's capacity to transport energy in the reverse direction
Flexible Exports or **Dynamic Operating Envelopes (DOEs)**	Dynamic export limits signalled by the DNSP to the customer's equipment, that reflect the available export capacity in a local area as it varies over time
Curtailment	When a customer's ability to export energy is reduced because there isn't enough capacity in the network
Curtailment profile	How much curtailment occurs over time in a particular part of the network
Alleviation profile	How much future curtailment is reduced when we upgrade the local network to add more capacity

AER's DER Integration Expenditure Guidance Note



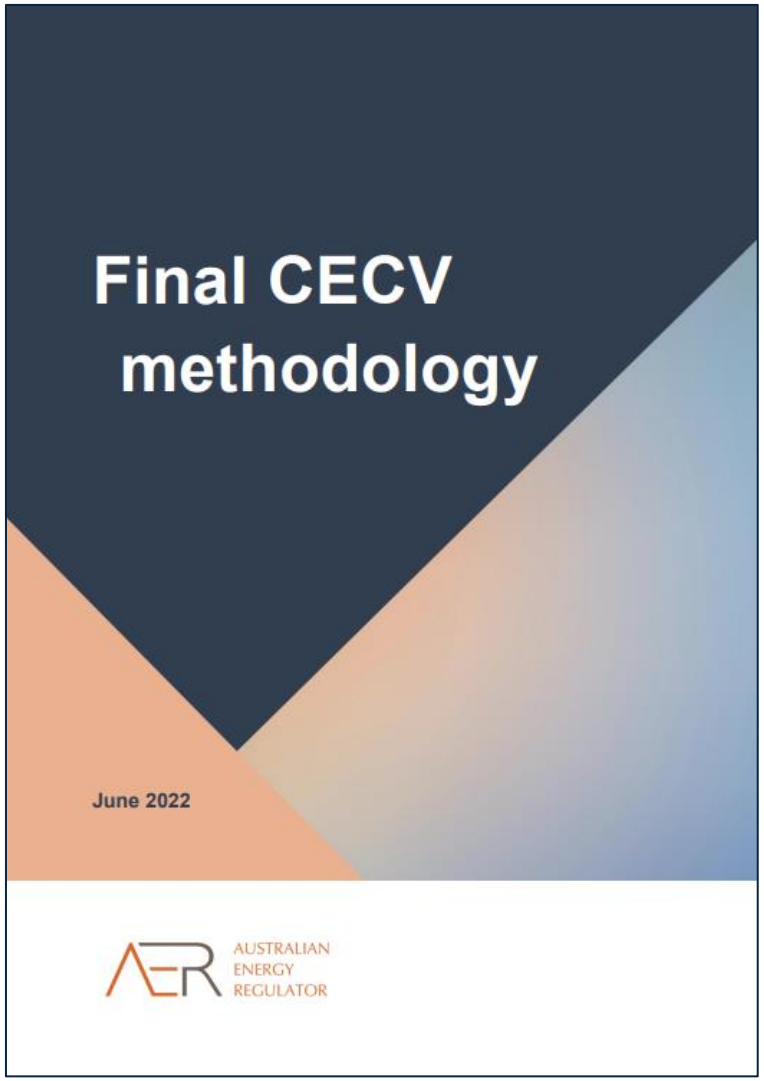
"This guidance note outlines our expectations for how DNSPs should develop business cases and quantify values associated with network investments for DER integration (specifically, to increase hosting capacity).

Problem

Solution – demand + supply side

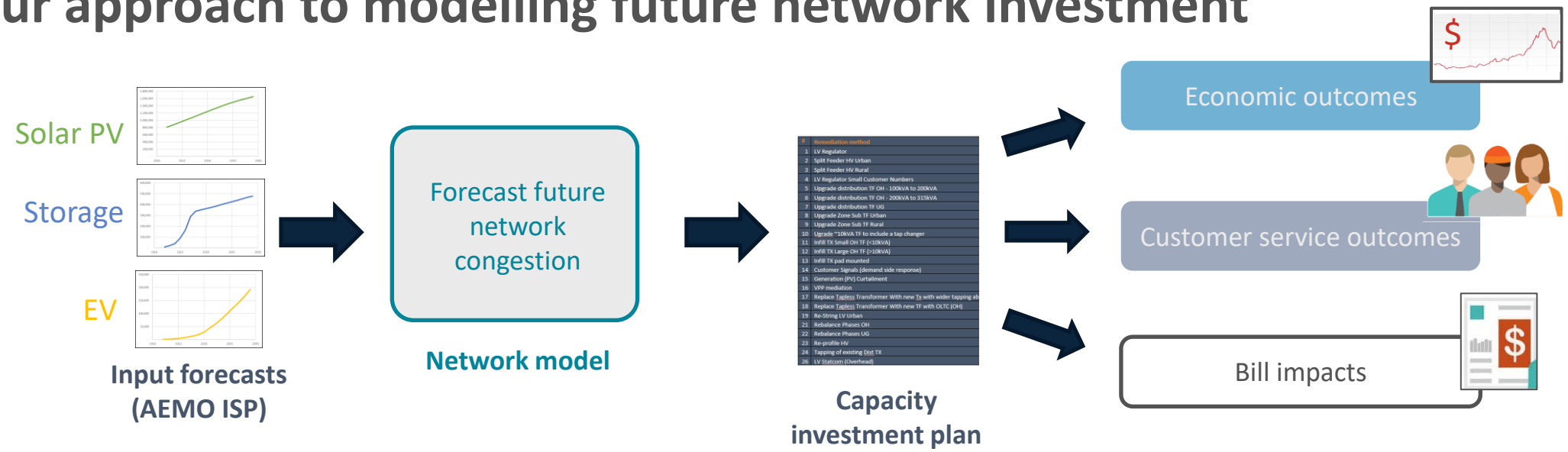
Costs + Benefits

The AER's Customer Export Curtailment Value (CECV)



- The CECV seeks to quantify the wholesale market benefit for all customers arising from enabling an extra kWh of solar to be exported through the network (i.e. avoiding 1kWh of solar curtailment)
- It aims to estimate one specific benefit from solar exports: the avoided cost of dispatching other forms of generation, e.g. a gas generator
- The CECV is a series of 30-minute $/kWh values stretching out 20 years into the future, based on forecasts of what is likely to be the 'marginal' generator in the market in each future 30 minute interval
- The AER expects us to use the CECV in regulatory business cases to quantify this benefit, noting that we may also quantify other benefits

Our approach to modelling future network investment



Modelling 3 investment scenarios:

1. **Minimal investment ('basic')**
   - Continue with current levels of investment, don't add new upstream capacity, manage congestion using flexible exports
2. **Target an economic outcome ('compliant')**
   - We choose how much to invest to achieve an economic outcome e.g. based on the CECV
3. **Target level of service ('new value')**

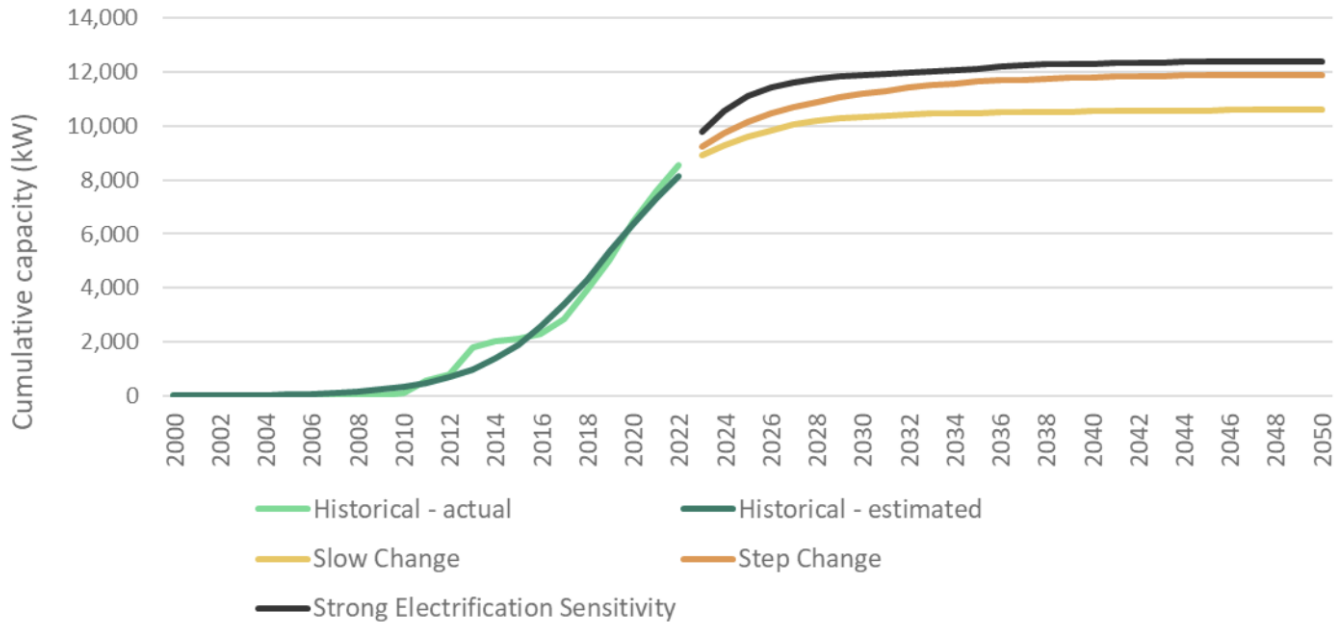
   We engage with our customers to determine how much we should invest to maintain a level of service that customers want and are willing to pay for*

**We are undertaking a separate process in coming months to survey customers to try to quantify customer value and willingness to pay*

Example of postcode-level DER forecasting

We use AEMO's state-wide forecasts for key input measures like solar and battery uptake, and break these down to postcode level using actual historical trends and demographic data

Postcode: 5007



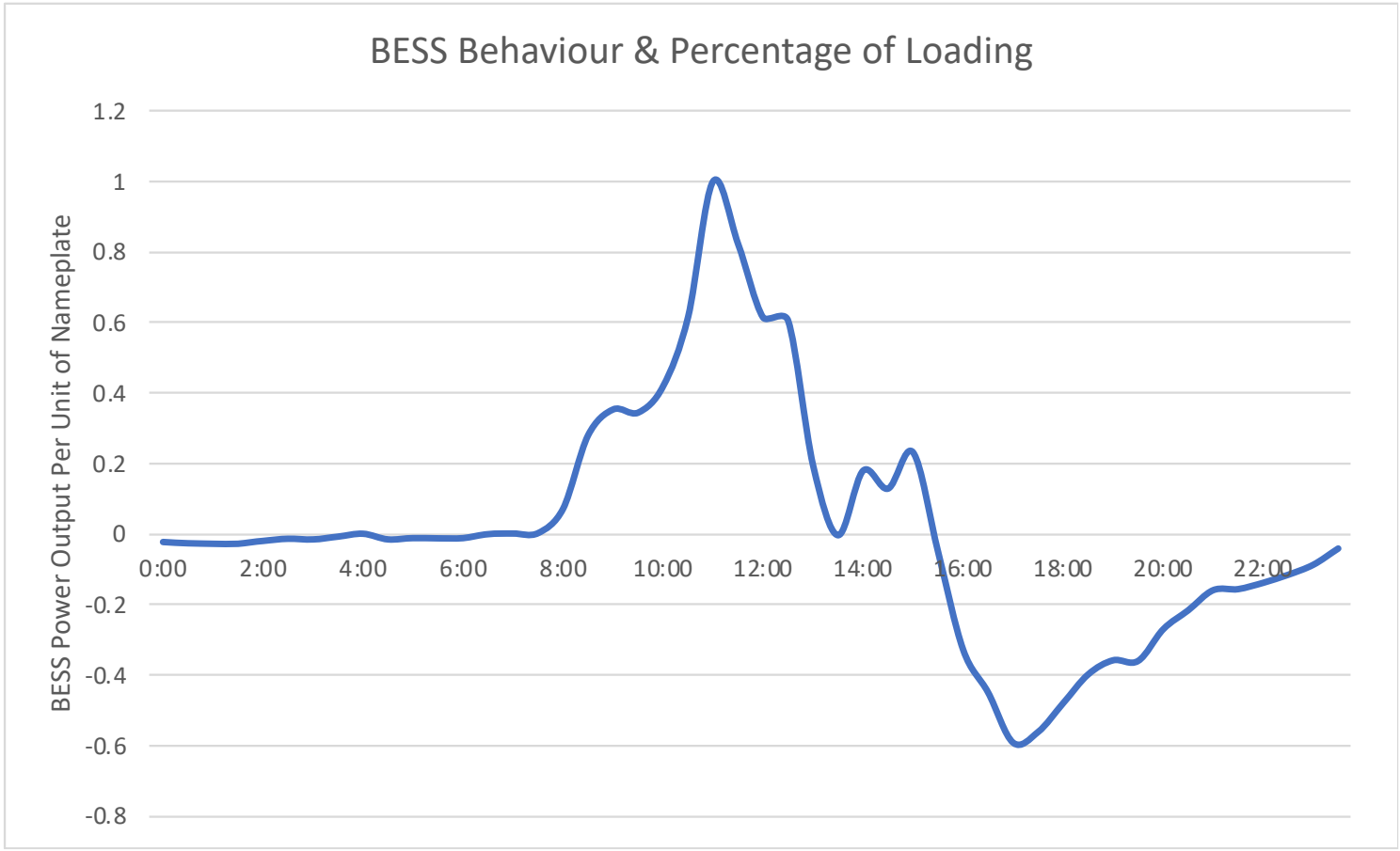
Key points

- 47% houses are owner occupied
- 52% of houses are separate dwellings
- Located in Brompton, Adelaide
- It has an average weekly household income of $2442, higher than the SA average of $1510 in 2016[1]

This postcode is close to saturation due to the low number of owned houses and separate dwellings relative to currently installed rooftop PV

Load / generation profiles

- We use standard profiles for the 24-hour load/reverse flow impact of each kind of DER, then scale these by the forecast number in each postcode, weather etc
- Example below shows our reference ‘battery enrolled in VPP’ profile, based on real data from 3,000 customers in Tesla’s SA VPP

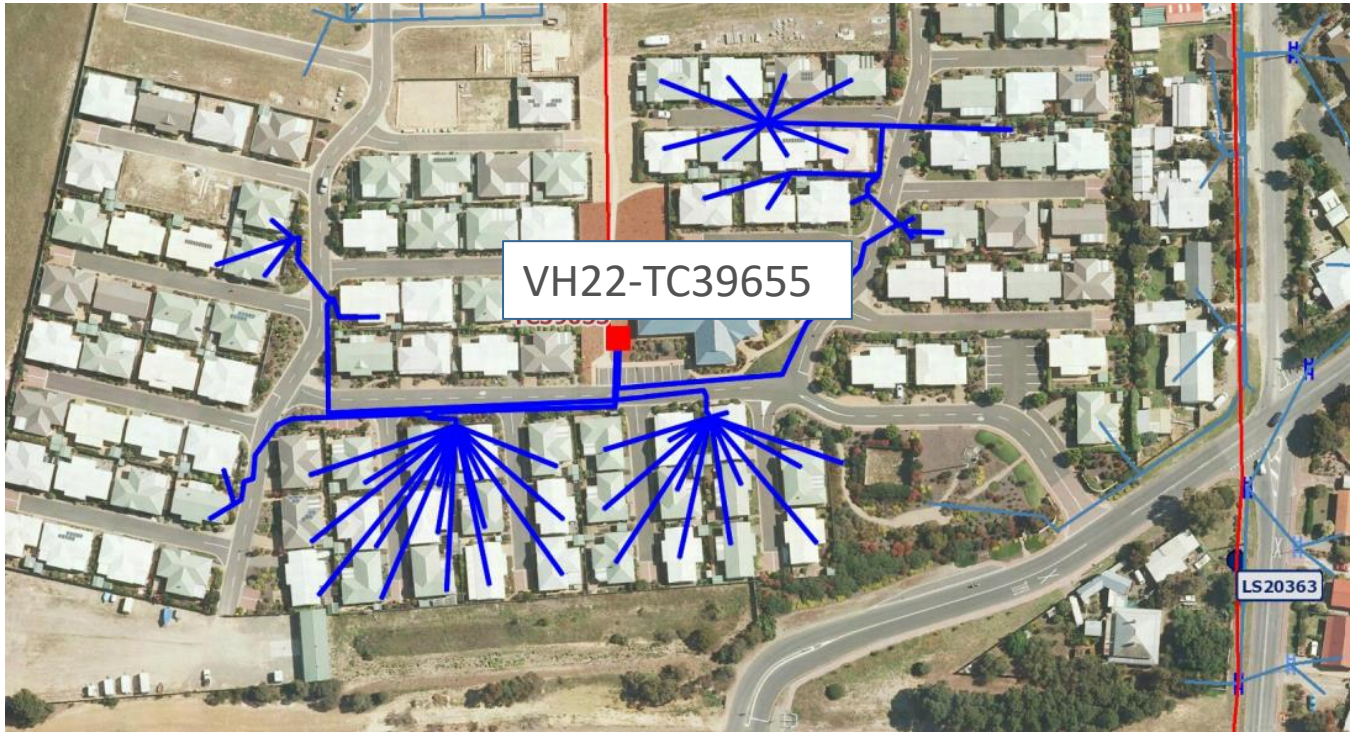


Example – an LV transformer in Victor Harbor

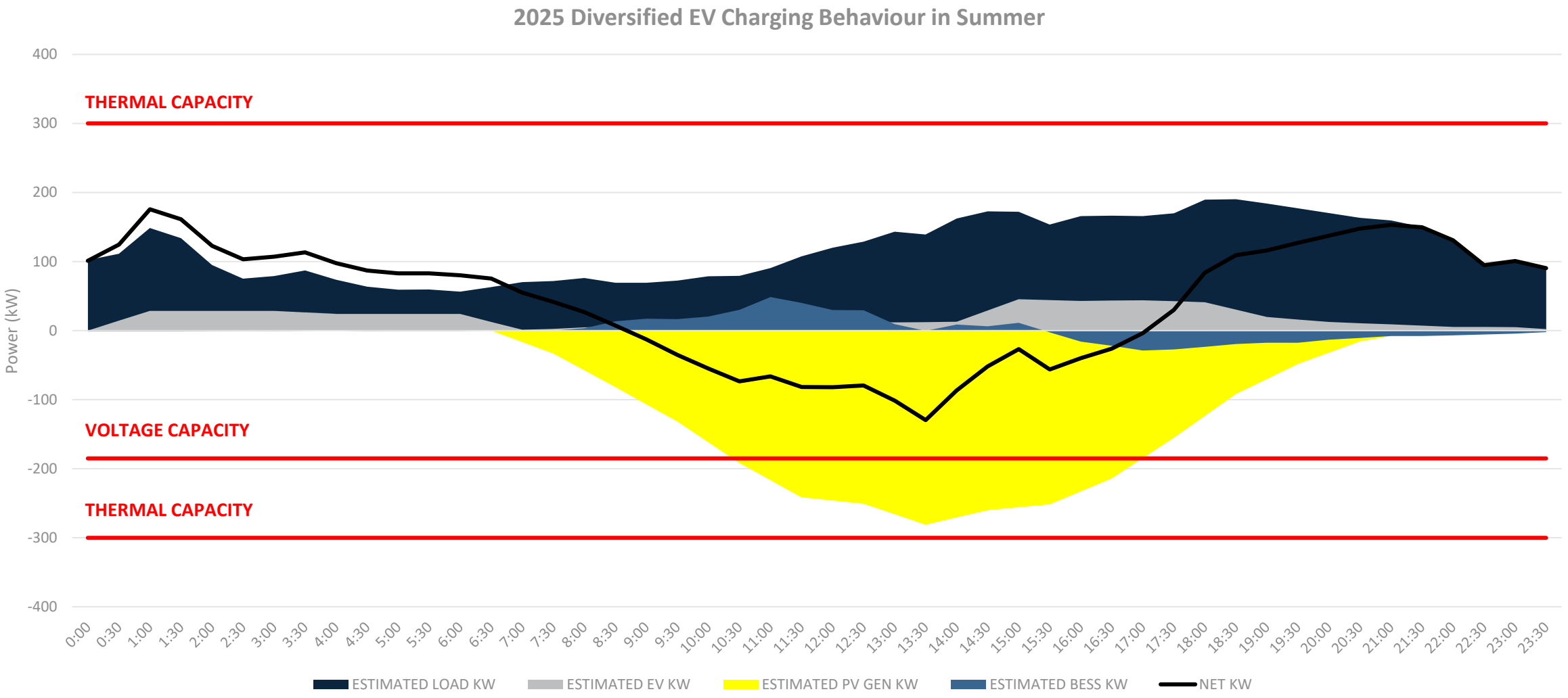
- 147 residential customers
  - 109 with controlled load (hot water)
- 7 Commercial Customers

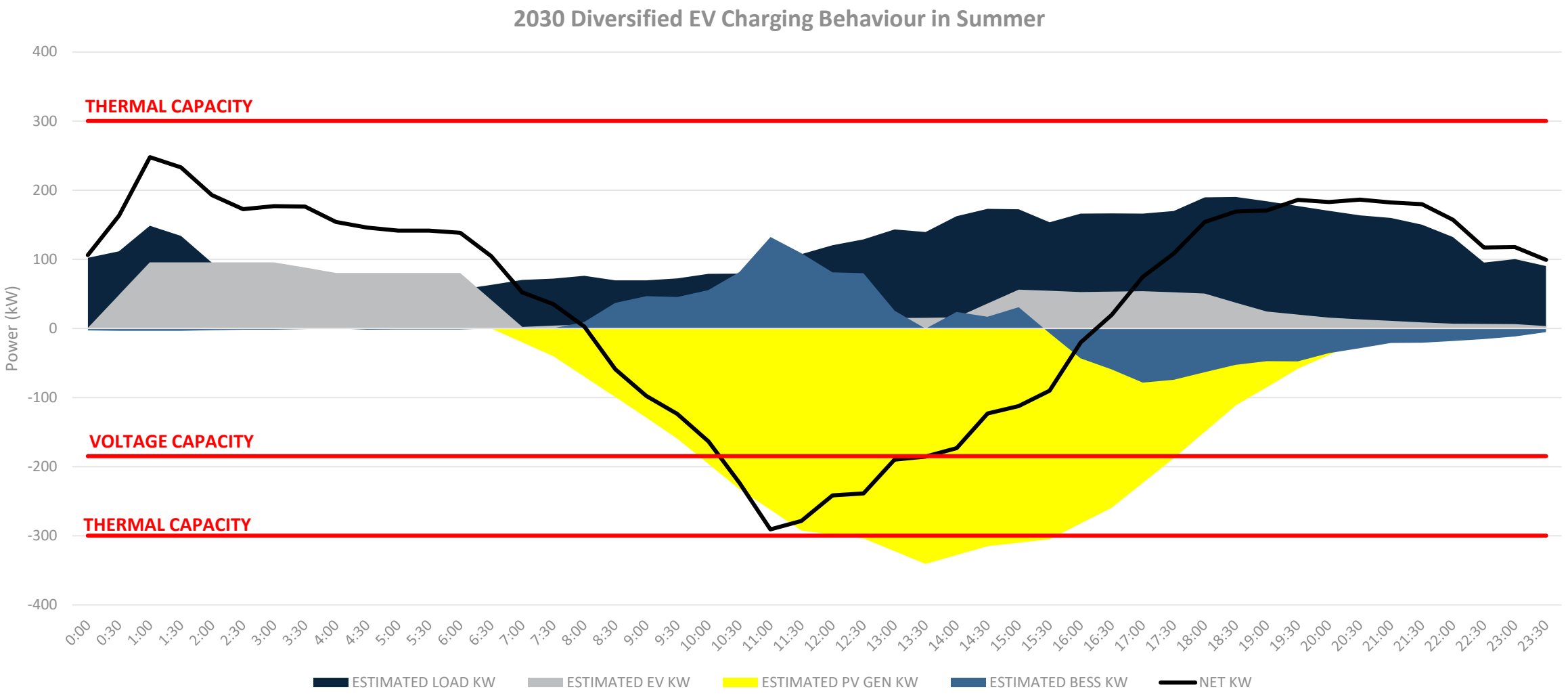
- In 2025 we forecast:
  - 121 customers with PV
  - 10 customers with a battery
  - 11 customers with an EV

- In 2030 we forecast:
  - All customers have PV
  - 20 customers have a battery
  - 22 customers have an EV



- In this example a ‘high load’ sensitivity for electric vehicle charging has been applied, whereby
  - Each EV owner has a 32A (7.2kW charger).
  - 60% of EV owners are charging their EV from empty;
  - 40% of EV owners are topping up their EV after having driven 35km for the day. (SA Average commute distances)

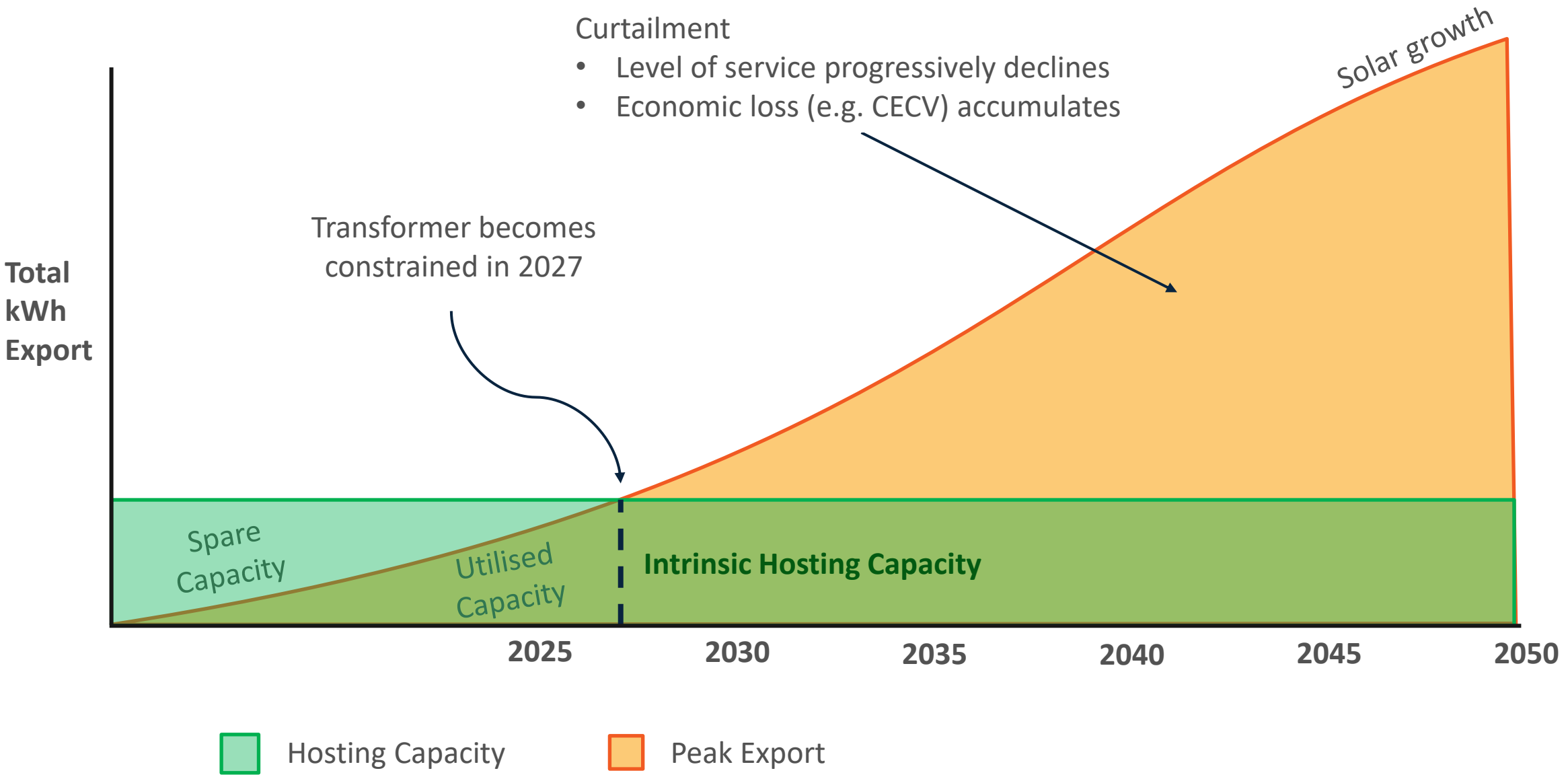

2025 Diversified EV Charging Behaviour in Summer
400
300
200
100
0
-100
-200
-300
-400
Power (kW)
THERMAL CAPACITY
VOLTAGE CAPACITY
THERMAL CAPACITY
0:00
0:30
1:00
1:30
2:00
2:30
3:00
3:30
4:00
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22:00
22:30
23:00
23:30
ESTIMATED LOAD KW
ESTIMATED EV KW
ESTIMATED PV GEN KW
ESTIMATED BESS KW
NET KW


2030 Diversified EV Charging Behaviour in Summer
400
300
200
100
0
-100
-200
-300
-400
Power (kW)
THERMAL CAPACITY
VOLTAGE CAPACITY
THERMAL CAPACITY
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ESTIMATED BESS KW
NET KW

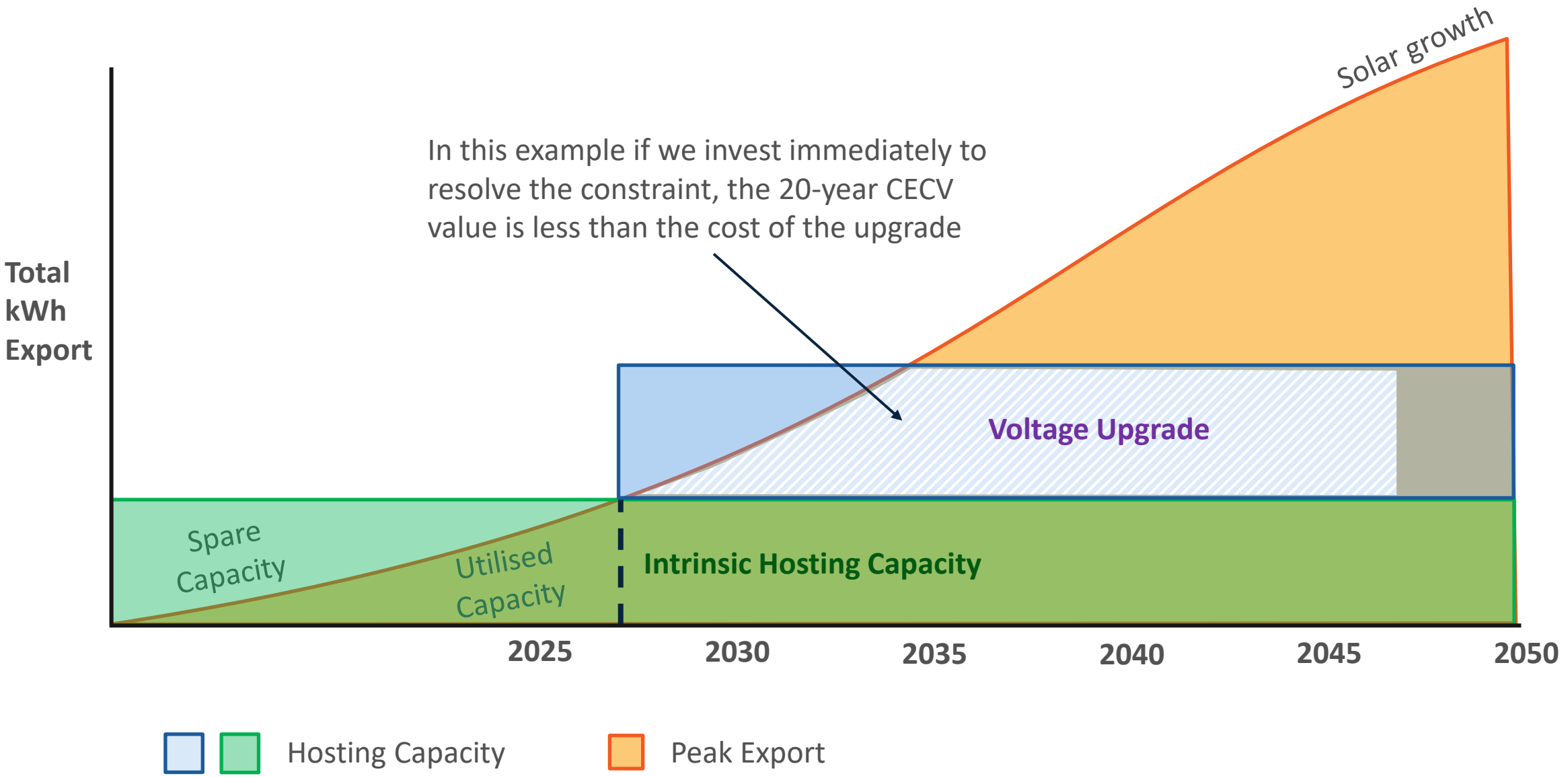
Questions?



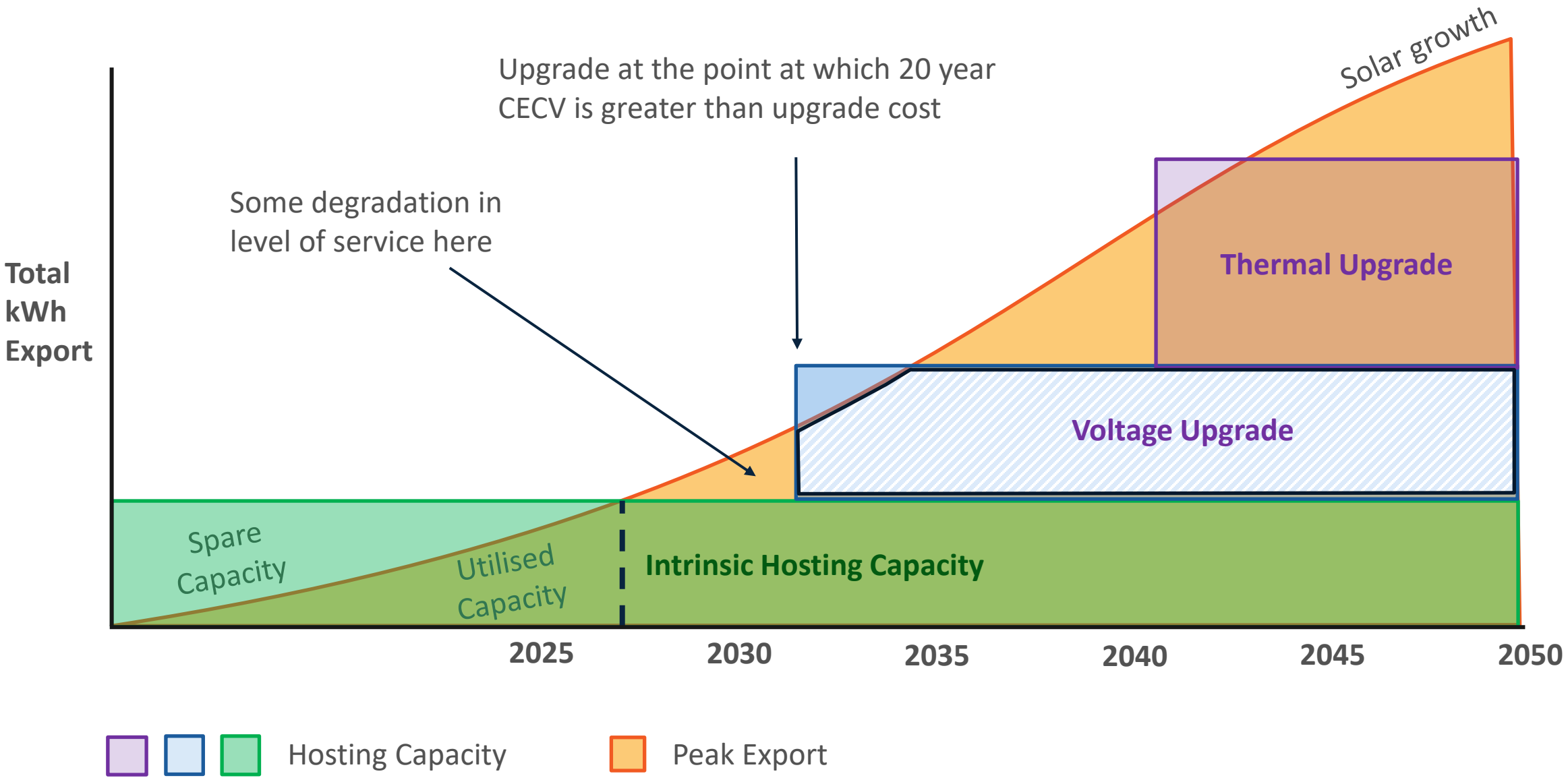
Scenario 1 – No new investment



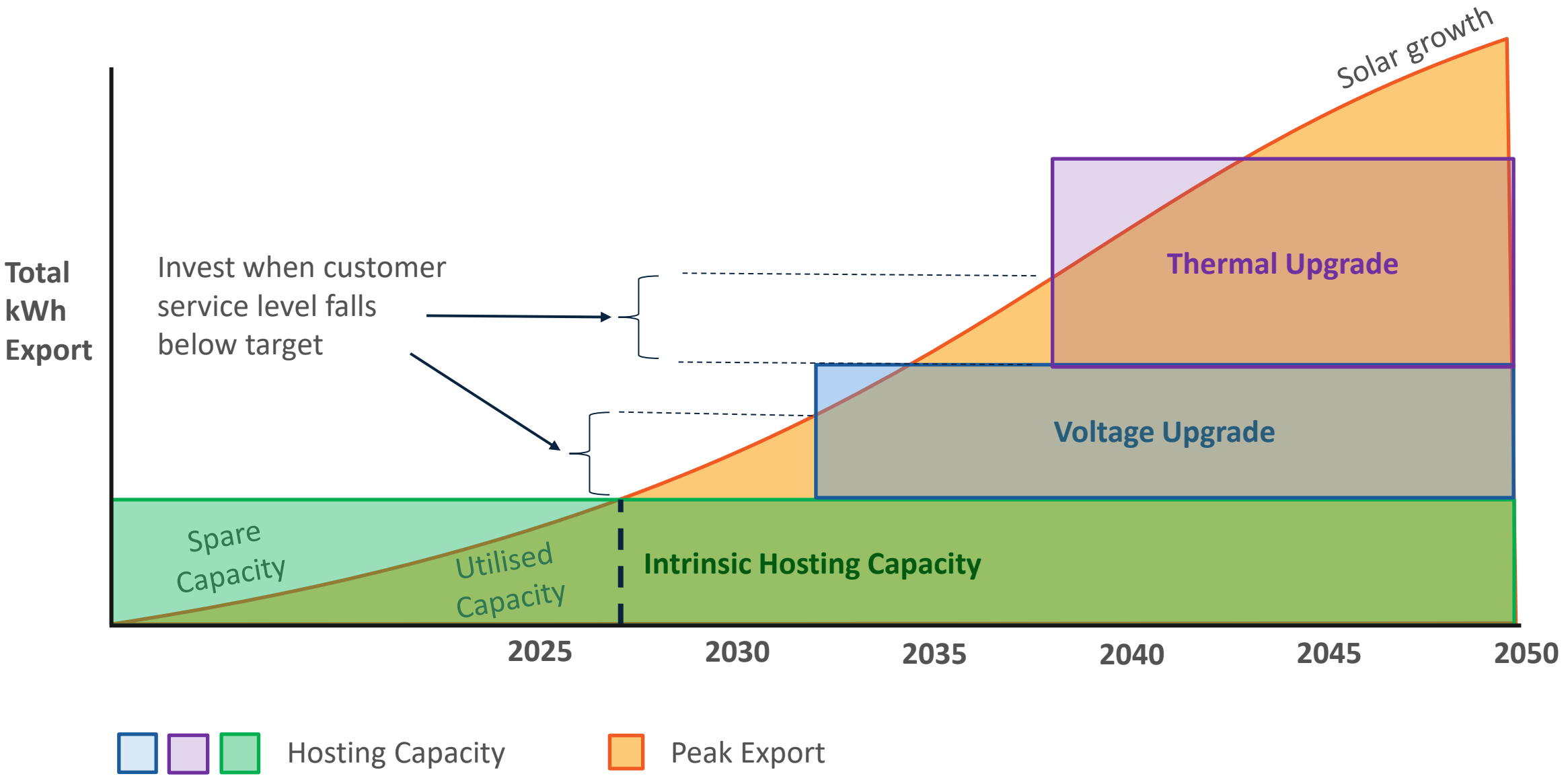
Scenario 2 – Invest according to CECV



Scenario 2 – Invest according to CECV

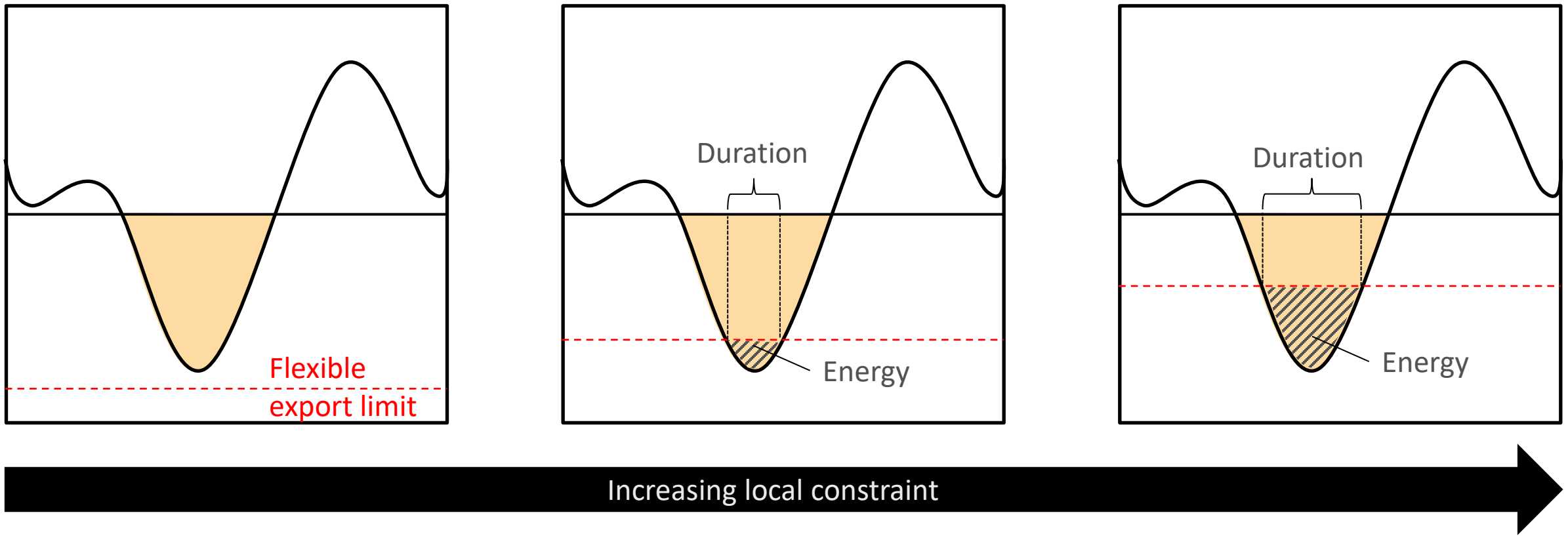


Scenario 3 – Maintain target Level of Service



‘Duration of curtailment’ as an indicator of service performance

With this measure, a service level of “**95%**” would mean that grid exports from solar systems should be reduced by no more than **146** hours per year (**5%** of daylight hours)



Use of CECV when investing to achieve a target level of service

- If we base our expenditure on maintaining or achieving a target level of export service performance across the network, we would not seek to achieve the same level of service for 100% of customers as a small percentage of very high-cost-to-serve customers would drive costs up for all
- The CECV provides one metric we can use to exclude the least-economic investments. As an example (%age figures here are illustrative only), we could say:

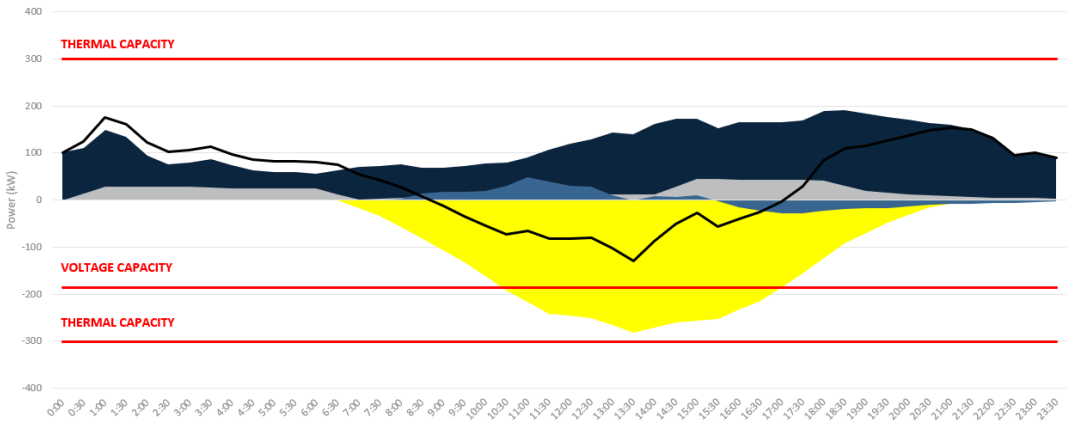
*"We are targeting a service level of 95% for 95% of customers"**

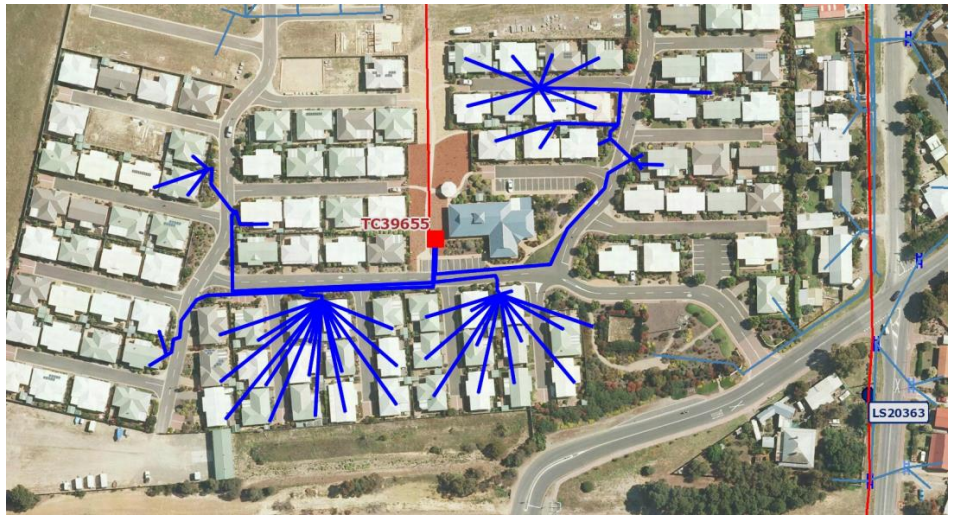
Our proposed export service quality metric – expresses what a typical customer can expect in export service performance based on 'duration of curtailment' during daylight hours

We can use the CECV to exclude the least-economic fifth percentile from our investment plan

*i.e. for 95% of customers, grid exports from solar systems will be reduced by no more than **146** hours per year (**5%** of daylight hours)

Valuing Constraints – Working Example





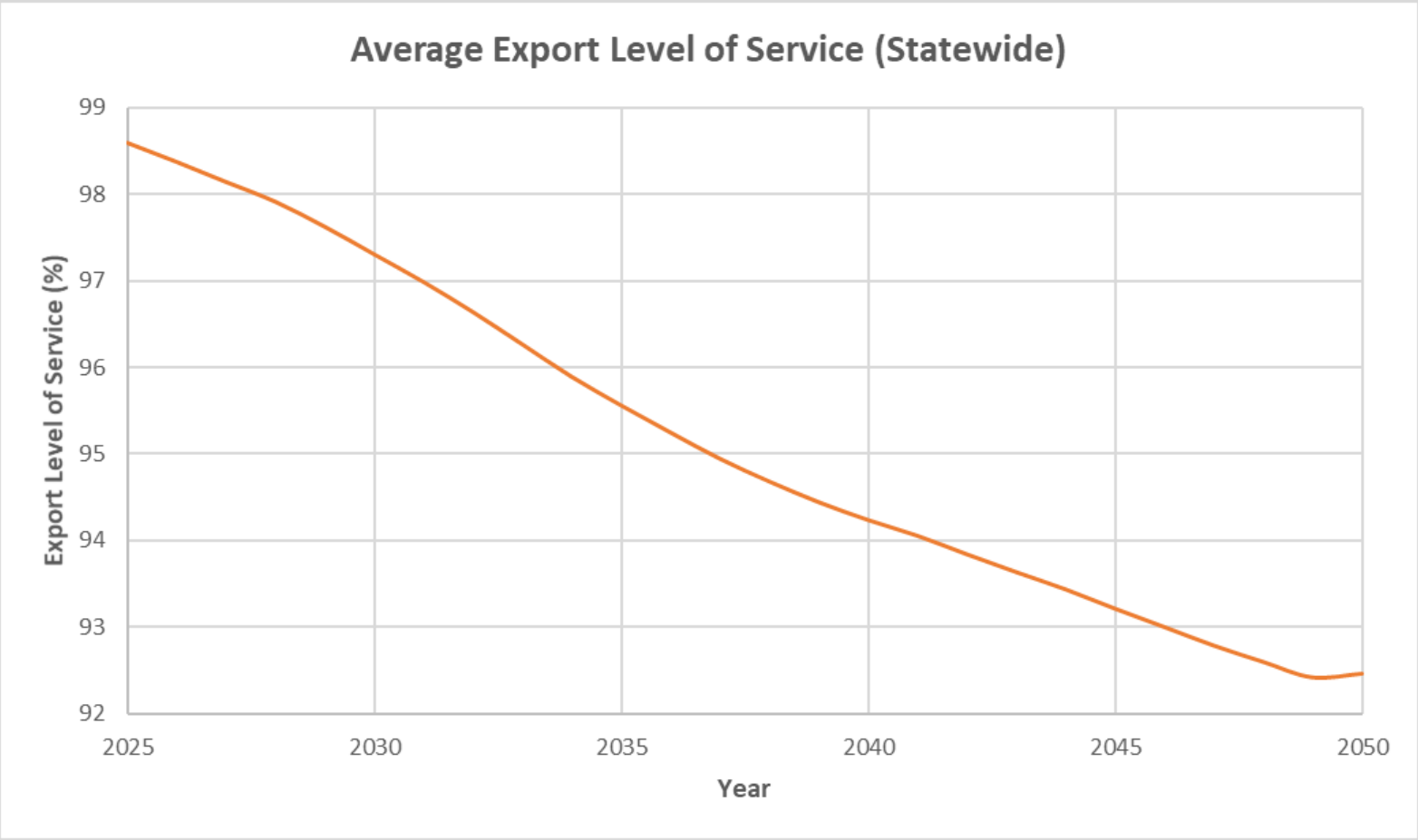
- At 11am – 11.30am on the 10th of April 2033, we predict transformer VH22-TC39655 needing to export 289.4kW into the grid
- Its voltage hosting capacity and thermal capacity are 158kW & 200kW respectively
- 131.4kW must be constrained on this transformer
  - If we have 50 ‘flexible’ PV systems on this transformer in 2033, Each flexible system must be turned down by 2.62kW

- According to the corresponding CECV interval, this curtailed energy has a market value of $5.05
- For the purpose of our service levels, this would be defined as a ‘curtailed interval’ and fed into our network investment model

This calculation is performed on every interval for every transformer from 2025 - 2050

Scenario 1 – No new investment

Under our ‘base’ investment scenario, average service levels may decline over time from today’s level



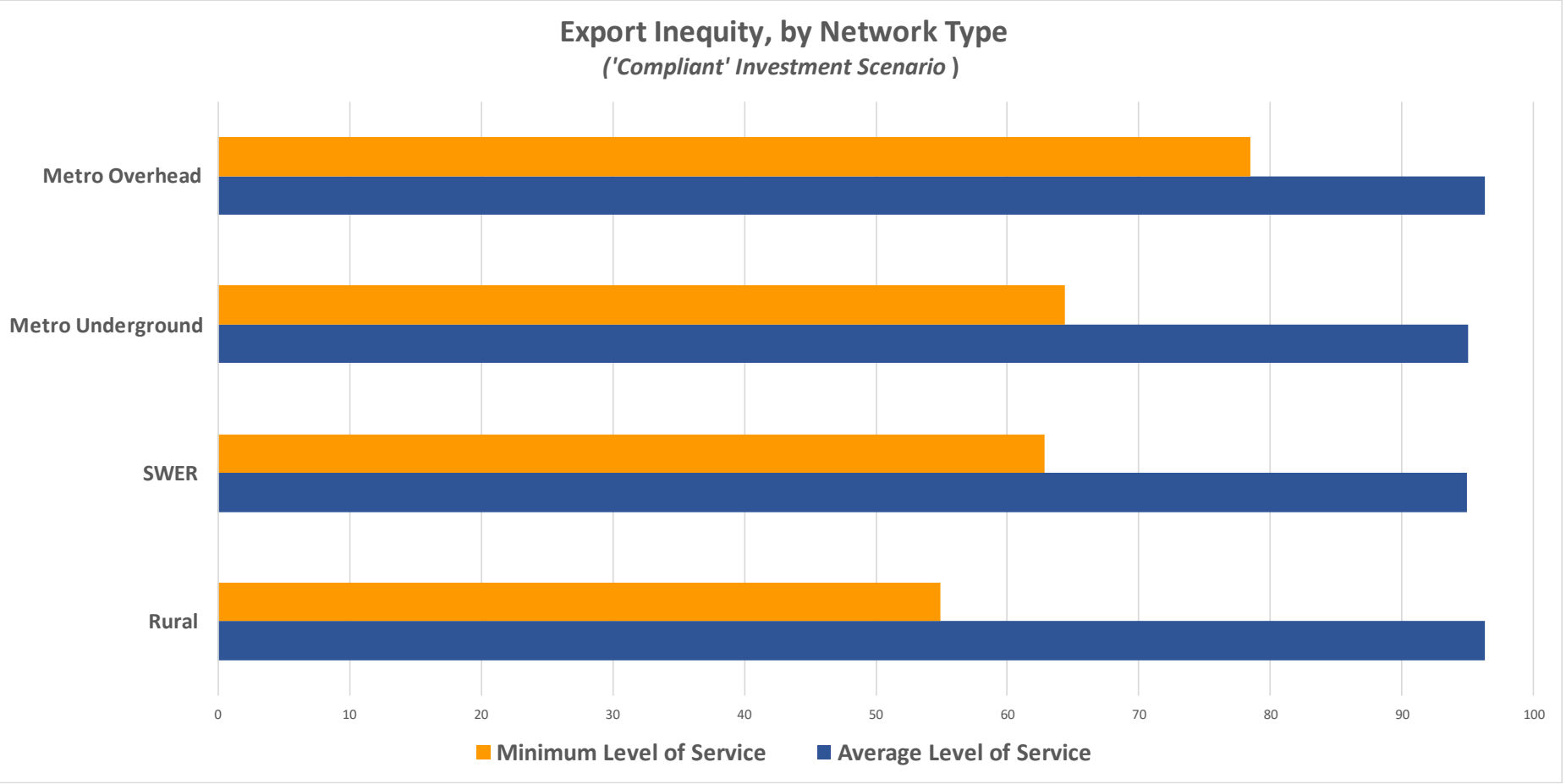
- Without investment, the network will become increasingly ‘congested’ as more DER is installed
- Constraints will need to be placed more frequently on exports
- Current spend is maintained, but increasing DER uptake overtakes network hosting capacity

Level of Service = % of daytime that maximum export capacity is available

For illustration only – preliminary modelling

Scenario 2 – Invest according to CECV

We can compare equity of access under different scenarios. An investment plan based on maximising market benefits, e.g. CECV, is likely to result in greater variation in levels of service. A statewide service level target seeks to allow all customers equal export access.

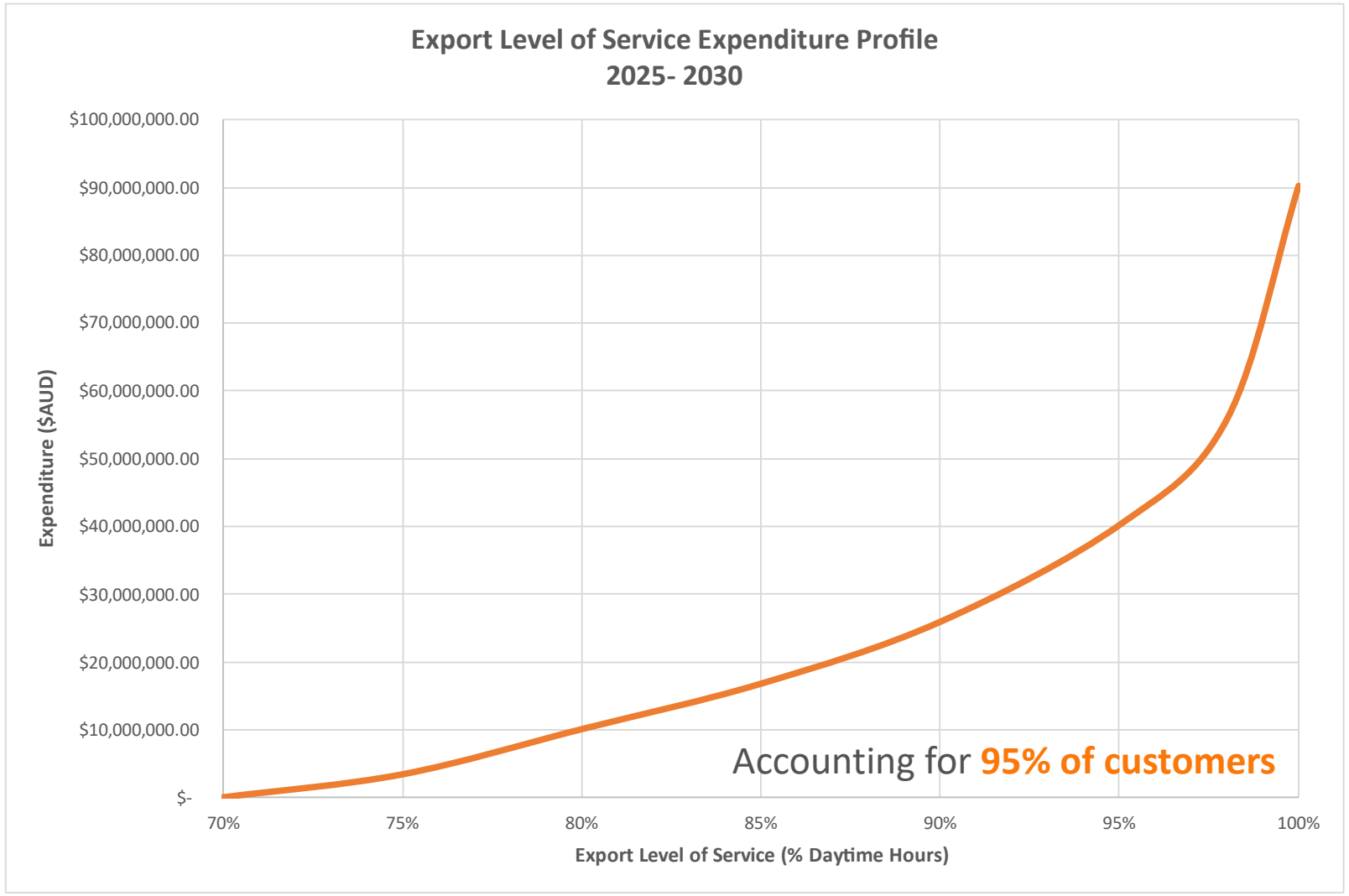


The level of service that you receive may vary by factors in your local area, such as:

- Network construction (i.e. overhead/underground)
- The age of the network
- The amount of solar PV & batteries installed
- The amount of load, including electric vehicles

For illustration only – preliminary modelling

Scenario 3 - Maintain target Level of Service



- If we seek to provide a **statewide minimum** level of service, increased expenditure may be required
- The relationship between network investment and the minimum export level of service we can provide is **non-linear**
- We are investigating the optimal level of service to target – a balance between the **level of service customers desire**, and **cost**
- The CECV can be used to determine and remove **least value / highest cost** work

For illustration only – preliminary modelling

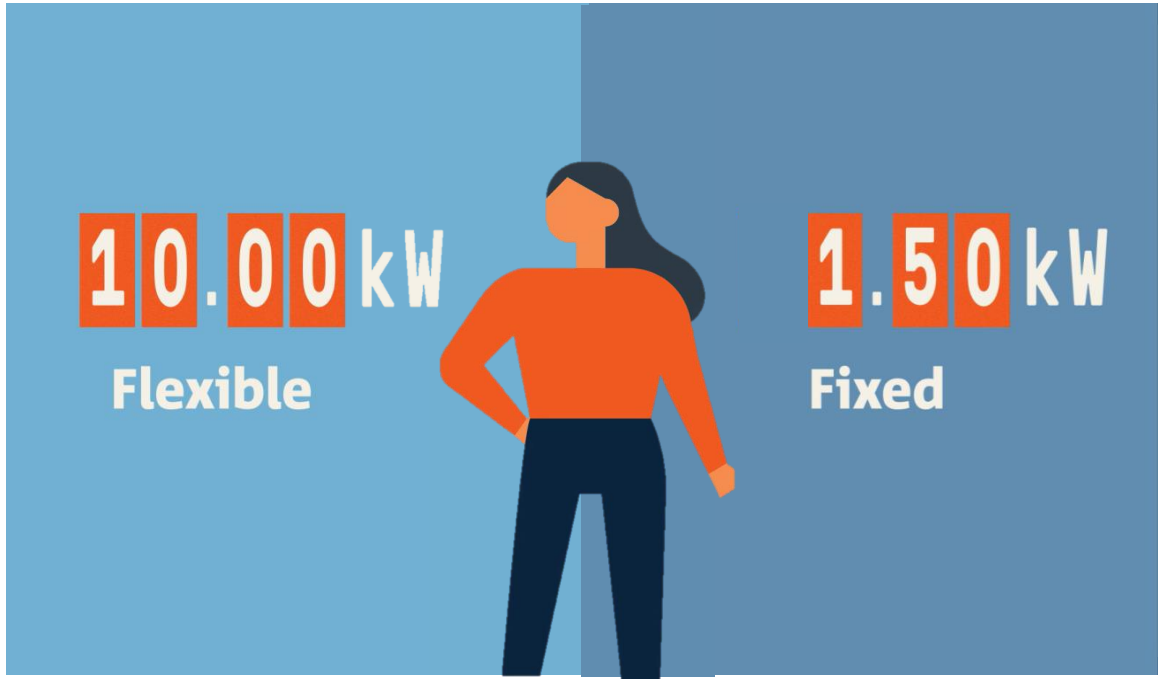
DER integration initiatives – increasing export capacity

Initiative	Scenario 1	Scenario 2	Scenario 3
Indicative annual bill impact range (to be refined for workshop 3)*		$2-$20 residential $10-$60 business	
Enhanced Voltage Management (EVM) phase 2			
Investment in more advanced dynamic voltage management at the substation level – implement closed-loop voltage control	No	Yes	Yes
LV transformer re-tapping program – reduce average voltage across the network	BAU only	Yes	More LV areas
LV phase balancing program			
Targeted export capacity augmentation			
LV transformer capacity upgrades	No	Yes	More LV areas
Replace old fixed-tap LV transformers	No	Yes	More LV areas
Infill transformers – add capacity by splitting LV areas	No	Yes	More LV areas
Install voltage regulators	BAU only	Yes	More LV areas
Other HV voltage management equipment	BAU only	Yes	Yes
Zone substation upgrades	No	Northfield, Meadows	Northfield, Meadows, + 1-2
Supporting systems and business functions			
Flexible exports engine and API recurrent maintenance and scaling costs	Yes	Yes	Yes
Operations centre staff – DER management systems and optimisation	2xFTE	2xFTE	4xFTE
SCADA to substations with reverse flows but no visibility	Yes	Yes	Yes
Compliance program			
Working with industry to improve compliance to technical standards (e.g. inverter standards) that enable the network to operate efficiently, plus automated systems	No	Yes	Yes

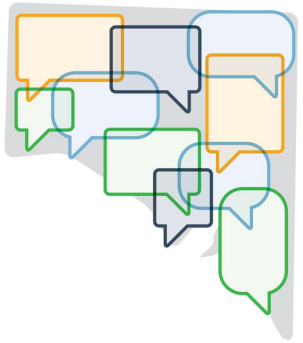
*The numbers supplied are forecasts and will be updated due to stakeholder input and external market influences over time. Our final numbers will be provided in our 2025-30 Regulatory Proposal to be lodged with the AER in January 2024

Service level choices

- Today we offer customers a choice of two **export service levels**
- In future we could consider offering greater choice
    - A fixed export limit
    - A standard flexible service
    - A higher grade of service for a higher cost (e.g. a different tariff)
    - Could allow for a higher export limit, or less curtailment, or both
- We need to consider the trade-off between customer choice and complexity



Discussion



Straw poll

1. Have we adequately explained our approach to forecasting demand, what we mean by ‘DER integration expenditure’, and the kinds of investments we are considering to resolve voltage and capacity constraints?

   Yes / No

2. Is there anything we’ve not considered?

3. Do you agree with our proposed approach to expressing the level of service we provide to DER customers?

   Yes / No

4. Should we target a market economic outcome, or a customer service level outcome?

   Yes / No

5. How important is equity of access?

6. Should we offer DER customers a choice of export service levels?

   Yes / No

   Yes: Choice is good

   No: Things are complicated enough

Afternoon tea break





Topic 2

Empowering our customers

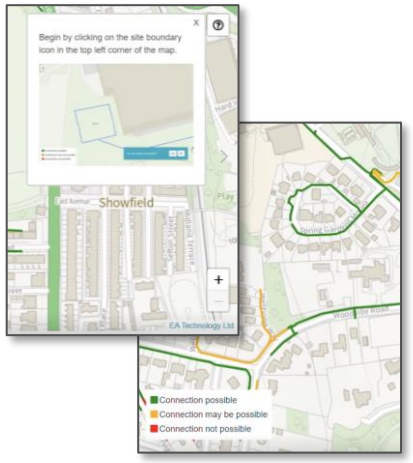




Goals for today for this topic

We have discussed the following potential initiatives in this area in other Focussed Conversation workshops:

- Enhanced customer services
- Energy advisory services
- A ‘solar for renters’ scheme
- A community energy fund

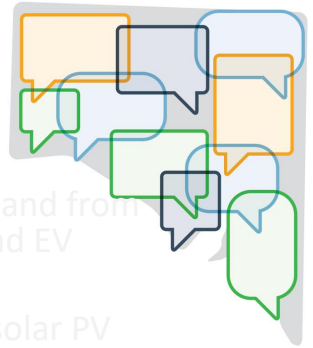


In this part of today’s session we will:

- Recap feedback on this topic from Workshop 1
- Share outcomes from other Focussed Conversation workshops on the above

In workshop #1 we also canvassed the potential to invest in accelerating the rollout of smart meters to facilitate shifting hot water loads. The AEMC’s metering review now looks likely to set rollout targets which would make this unnecessary.

Feedback captured in workshop #1



- Will the network support service procurement platform be linked to AEMO (and the Project Edge work) or separate?
- What is the actual benefit of a community battery - is it designed to allow access to power during blackouts i.e. in a library/community centre?
- Would rolling out more smart meters give you better access to data and hence allow for better decision making in the future?
- What about energy efficiency programs? Are there opportunities there? Home insulation etc. Should SAPN do this? Or advocate for it?
- Show modelling of benefits of load shifting e.g. hot water – can we quantify this?
- Solar for renters – consider Building Upgrade Finance model (recover costs through council rates)?
- Solar for renters – is it our role to provide, or to advocate?
- Is ‘solar for rentals’ the best approach or would ‘batteries for rentals’ be better? Batteries could provide network support also.
- What is ‘equity’ – is it equal access to resources, or equal savings overall?
- Isn’t it more about reducing cost to customers than solar per se? Is solar (for renters) just a means to that end?
- What about renters who can’t have solar because they have no suitable roof? Should we consider ‘solar gardens’?
- Is it also about zero emissions, not just cost savings?
- Solar for rentals is of significant interest
- Have we considered how to purchase network services to offset any capex spend, such as voltage management and min. demand from retailers and/or aggregators with solar, solar & battery and EV customers?
- Why not go the whole hog and simply subsidize modest solar PV systems completely for rental properties, i.e. free 3kW systems for rental properties?
- Is the hot water program also targeting houses with gas hot water, to get them to change over?
- Do you think customers resist smart meters due to a fear of being forced onto time of use billing when they (like renters, low income) do not have the means to mitigate their costs?
- Will you be revisiting Time-of-Use Network Tariffs for community programs; solar, battery, micro-grid?
- Solutions for 'community batteries' and solar PV in community titled sites would be good.
- Note City of Adelaide did Solar Savers where the cost of installing Solar PV on concession and rental households was placed as a 10 year separate charge on participating property

Enhanced customer services – options considered

Scenario	Outcome				Residential bill impact p.a.*	Business bill impact p.a.*
	 Channel choice	 Self Service	 Personalisation	 Escalation		
Scenario 1 – Basic self service (as is)	• Speak to a contact centre agent • Receive a digital response via social media or email (5 business day response time) • Perform some basic online self service	• Self serve for a few core interactions such as Connections, Outages, and Consumption History • Can't support accessibility standards including some services on a mobile device	• Receive an SMS when your power is interrupted based on high level information, we have about you	• Call one of our contact centres if you experience issues online and/or need further help	-	-
Scenario 2 – Portal and data consolidation	• Access improved website services • Speak to a contact centre agent who has a single view of your details	• Access a single entry point for **existing** online services • Meet accessibility requirements (WCAG) • Access our services on any device	• Access a **tailored service** based on your customer profile / previous interactions	• Expect that our contact centre agent have **visibility of your previous interactions** with us (online or via our contact centre)	$3.60	$28.15
Scenario 3 – Digital customer experience uplift	• Access website services for a broader range of your needs • Receive a **consistent experience** across our channels • Access to services via a **mobile app** • Access to a **web chat** capability	• Enhanced online tools to enable a **greater level of self service** • Includes online connection quotes, large construction projects, general requests, feedback, complaints and service order tracking	• Receive **more proactive communications** regarding your service needs • Includes communications for to constraints affecting solar exports or EV charging times, service order updates, status alerts, improved information regarding energy matters	• Be **automatically directed** to the agent best equipped to handle your call via webchat or telephone channels	$7.15	$55.90

*The numbers supplied are forecasts and will be updated due to stakeholder input and external market influences over time. Our final numbers will be provided in our 2025-30 Regulatory Proposal to be lodged with the AER in January 2024

Consensus: Scenario 3

Stakeholders were divided into 6 groups. Four groups supported scenario three, the other two supported a hybrid of scenario two and three.

Stakeholders valued:

- Ability to self-manage personal information and self-serve
- Meeting modern accessibility guidelines as a minimum
- Bringing our online services up to the standards in other industries
- Access via an app

Some stakeholders wanted more information on:

- Incremental benefits of scenario 3 vs 2, given the difference in bill impact, particularly for vulnerable customers
- Opportunity to co-design services with different demographics and customer groups

Energy advisory services - options considered

Scenarios	Description	Outcome	Residential bill impact p.a.*	Business bill impact p.a.*
Scenario 1	Current SA Power Networks call centre support and limited market education activities.	Approximately 150 Customers served annually	No bill impact	No bill impact
Scenario 2	Enhanced digital advice services with a small level of phone support. Focus on: 1. Electricity Education 2. Bill and tariff advice 3. Electrification and the Smart Home/Business including solar and battery advice 4. Advice on carbon reduction 5. Electric Vehicles 6. Partnerships with community organisations to provide energy advice services to harder to reach/vulnerable customer/small business groups.	Accessible to everyone online + small contact centre	$2.50	$19.30
Scenario 3	Scenario 2 plus additional of phone or in-person support with Energy Educators / Advisors.	Accessible to everyone online and up to 22,000 customers p.a. could access a more personalised service	$3.20	$24.80

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Consensus support for scenario 3 was reached in the workshop

Stakeholders valued:

Getting information from a centralised source that is independent

Low cost for the likely value, esp. to small businesses in time saving

Some stakeholders wanted more information on:

- The benefit for the customer i.e. dollar savings or valuable advice that the customer can use
- Will those without solar/not in a position to invest in solar be able to recover any benefit from this service?
- How can it be targeted at the more vulnerable rather than the people who already know how to access good information or have assets?
- Role of SA Power Networks in delivering advisory services – should it be a service offered by SA Power Networks, a partnership with other providers or an advocacy piece?

‘Solar for renters’ service

What we heard

The concept of a ‘Solar for renters’ initiative received strong support in our broad and diverse engagement

- **Improve the equity of access to solar**
- **Support the most vulnerable and disadvantaged households**
- **Additional bill-impacts *not* supported**

Concept of ‘solar for renters’ service

SA Power networks designed a ‘solar for renters’ service

- Tenant pays for the solar through an additional charge added to the electricity service charge (zero up-front)
- Payments continue until system ‘paid off’ (5, 10 or 20yr)
- The solar system and additional charge remain with the electricity meter
- Service includes ongoing monitoring and maintenance of systems
- Scheme operating costs covered by participating households - ‘cost neutral’
- Delivered by SA Power Networks (or appropriate third party)

Benefits of scheme

- Tenant has access to benefits of solar and participates voluntarily
- Independent from electricity retailer
- Additional charge is linked to meter on property and occupant who pays the energy bill, so tenants and owners may come and go
- As universal as possible for tenants

‘Solar for renters’ service

Exploring ‘solar for renters’ service identified a number of significant complexities and risks, including:

- **SAPN cannot own behind the meter assets or increase the supply charge** – a regulatory exemption is required
- **Landlord may increase rent** over repayment term which may off-set any benefit to the tenant
- A **net-benefit for the tenant isn’t always realised** – many variables impact its viability, including system size, feed in tariffs, household energy usage
- **Due to these complexities and risks, SA Power Networks proposed:**

Options	Number of votes
Option 1: SA Power Networks or third party-delivered scheme with no bill impact	4
Option 2: Advocate for SA Government-led rental support scheme	7
Both – continue to investigate Option 1 and advocate for State Government programs	7

Recommendation for People’s Panel

Both - continue to investigate Option 1 and advocate for State Government programs (Option 2)

Community Energy Fund

What we heard

***Community batteries** and other new **community-led energy initiatives** received strong support in our broad and diverse engagement*

SA Power Networks proposes a new Community Energy Fund

- A **new grant fund for the 2025-30 period** to provide flexibility to support a wide range of community-led energy initiatives
- Initiatives may include **community batteries, solar banks, community EV charging and microgrids**
- Governance will be designed to **enable community input into fund criteria and decision making**
- Criteria will be defined to ensure it has flexibility to support community-led energy initiatives

Fund criteria may include:

- Community benefits (direct, in-direct and scalability)
- Grid benefits
- Financial co-contributions and project partners
- Innovation and trials
- *Criteria as required to meet regulatory objectives*

Community Energy Fund

Options	Outcomes	Bill impact p.a.
Option 1 **$5M** ($1M p.a.)	**5-10** community energy projects (eg, community batteries, solar banks, microgrid batteries, EV chargers)	• Residential: $0.75 • Business: $5.55
Option 2 **$10M** ($2M p.a.)	**10-15** community energy projects (eg, community batteries, solar banks, microgrid batteries, EV chargers)	• Residential: $1.45 • Business: $11.10

Recommendation for People's Panel

Option 1 - $5M Community Energy Fund ($1M per annum)

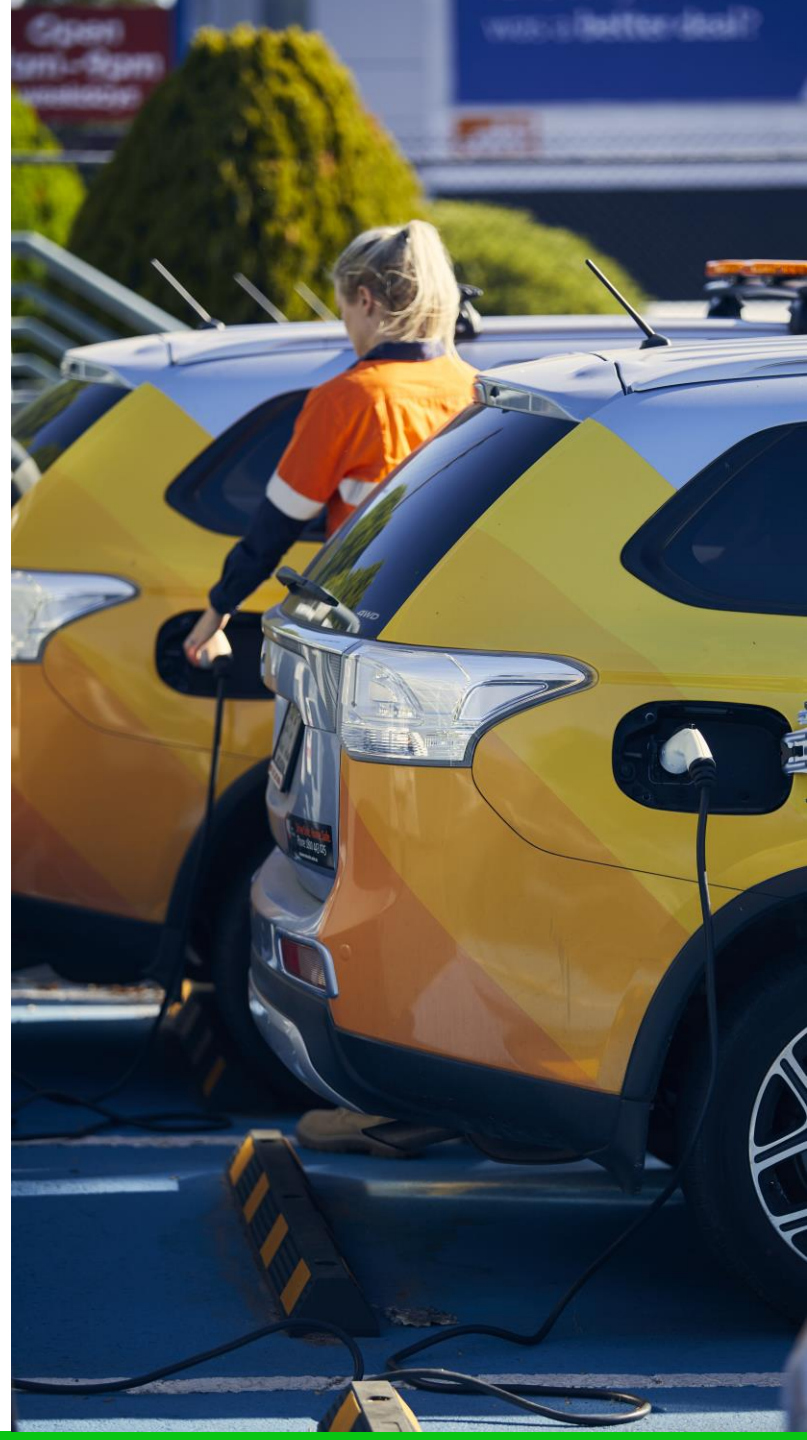
Questions?

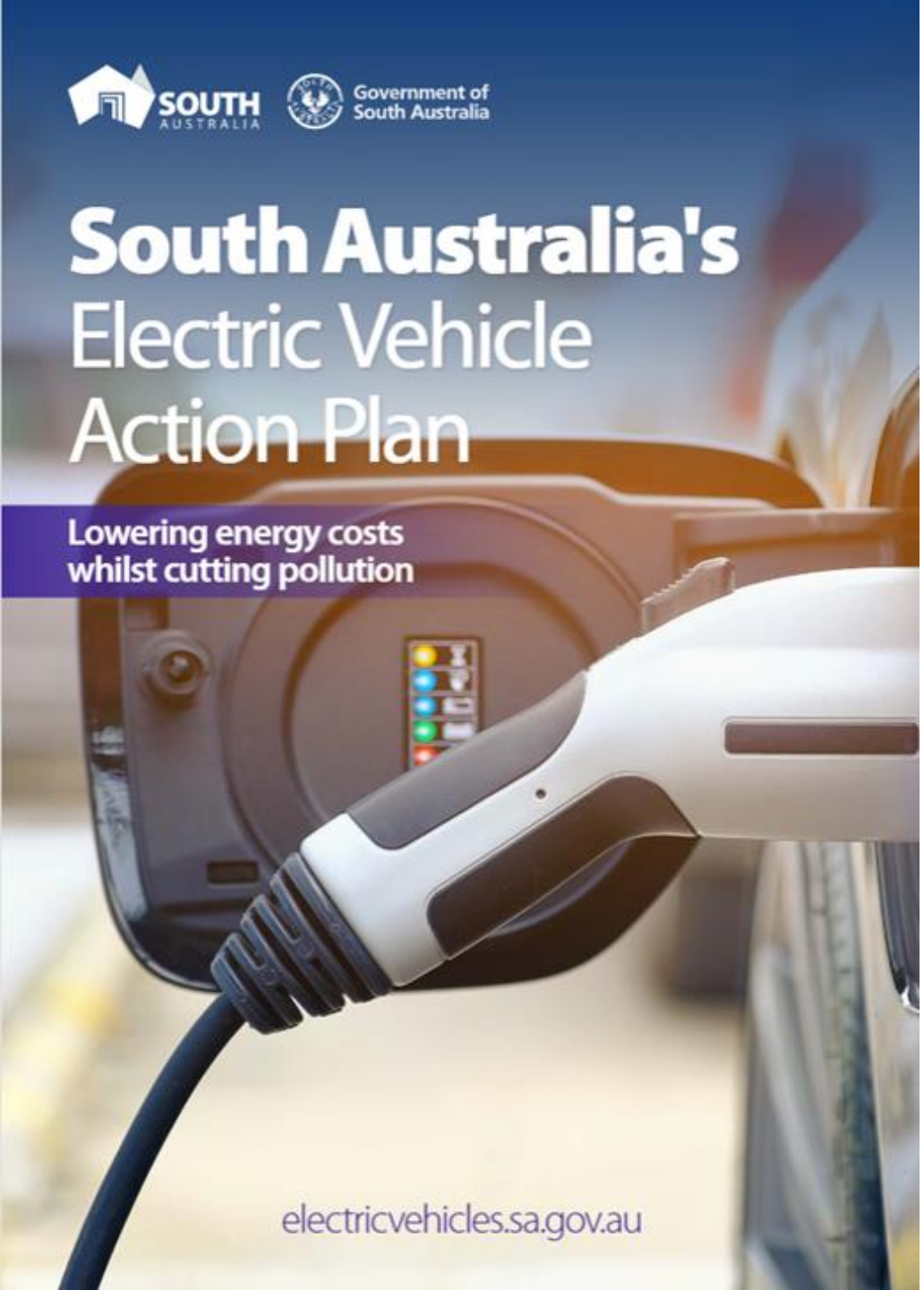




Topic 3

Enabling the EV transition



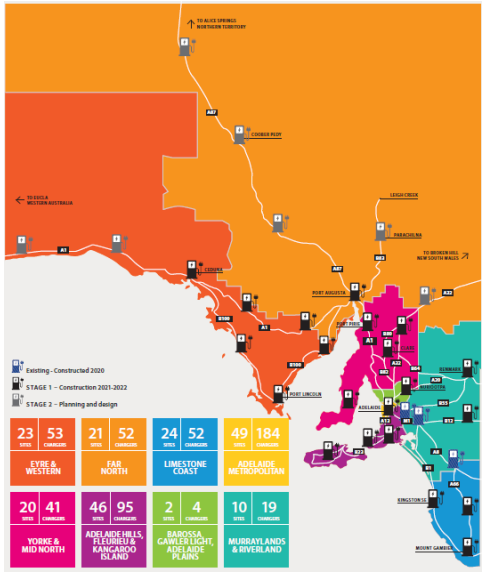


Vision

We will be a national leader in electric vehicle uptake and smart charging by 2025: harnessing renewable energy to reduce motoring costs, lower air, noise and carbon pollution, and reduce electricity costs for all South Australians.

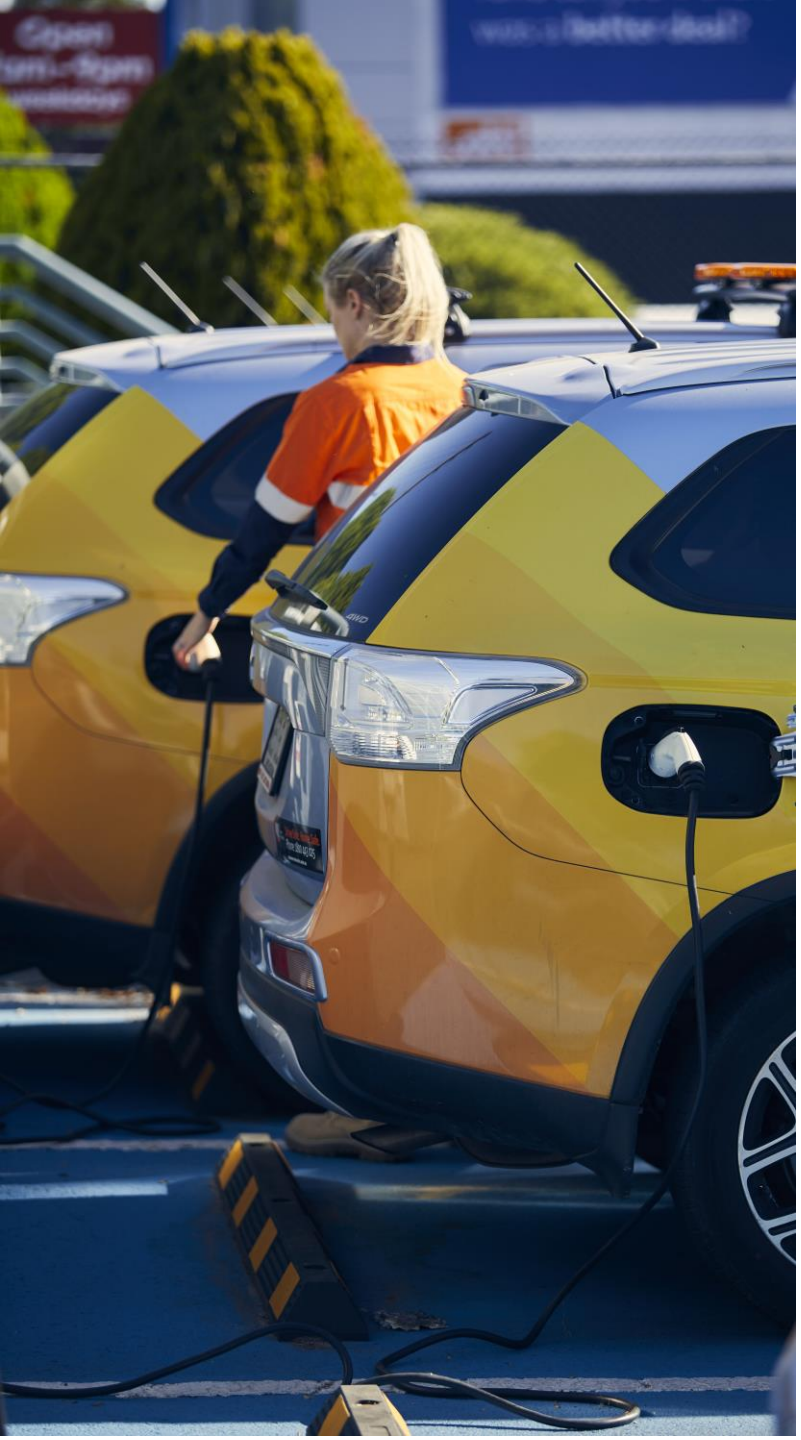
Key elements

- EVs to be default choice by 2030
- No new ICE sales by 2035
- $15m statewide charging network
- $3m smart charging trials
- Fleet pledge



Also…

- $3,000 subsidy for 7,000 EVs (<$68,750)
- Registration waiver for 3 years



Goals for today for this topic

In this part of today's session we will:

- Recap feedback on this topic from Workshop 1
- Share more details of our approach to enabling smart charging and transitioning our own fleet
- Answer questions and seek feedback, as input to the options we will consider in workshop 3

We'll be asking:

- Do you support our proposed approach to developing 'flexible load' connection options
- Should we be accelerating our fleet transition to EVs?
- Is there anything we have not considered?

Feedback captured in workshop #1



- How to help superchargers locate in the best places to keep costs down for all?
- Role of network in controlling EV charging to ensure the system is used efficiently and keep costs down?
- We could show leadership in our EV transition
- Opportunities for community energy schemes including solar, backup and EV charging?
- How to encourage and support workplace or other daytime charging? (away from home)
- Customers can face difficulties going through retailers to access off-peak rates for EV charging – it's complex
- What about the 20A limit for home chargers?
- How do people make the right decisions around the size of charger(s) they need at home? Will it cause problems if people want two 32A chargers at home? Should SAPN set standards and/or give guidance?
- What about V2G vs home batteries? Customers are wondering whether to invest in a battery or wait until they have an EV and can use that instead.
- How do renters / apartment tenants access home charging?
- Note that 'solar sponge' TOU tariff is well suited to EVs …but retailers need to offer it. How does SAPN engage with retailers to encourage this?
- Are our tariffs less friendly for big EV chargers than other DNSPs'?
- Agree with benefits of fleet transition
- Need to consider ring-fencing issues with SAPN providing charging infrastructure
- What about public transport, e.g. bus electrification? Are there opportunities for SAPN to collaborate on public transport electrification?
- SAPN already has a role in public lighting – could we use street lights for access for public charging, like in EU?
- Can we provide a simple, provider-agnostic connection point for EV chargers on the network?
- The difficulty finding/using bidirectional EVs is a big factor today
- With the rail electrification, has planning/thought/capacity been allowed for charging units in the train station car parks?
- What about apartment EV charging? Apartments are looking at chargers that link to their electricity meters to manage load.
- Specialised trial tariffs are all very well, but typically see very little uptake (100-200 people is normal). The standard RTOU tariff currently applies to ~260,000 connections. Getting the signals associated with the ~260,000 passed through to a greater degree will likely be more impactful than a new trial tariff.
- Often customers may not have sufficient supply at home for fast EV charging due to other appliances and the 63A limit
- Comment on scope: assume we will focus these discussions on the need for investment in 2025-30 – not beyond that

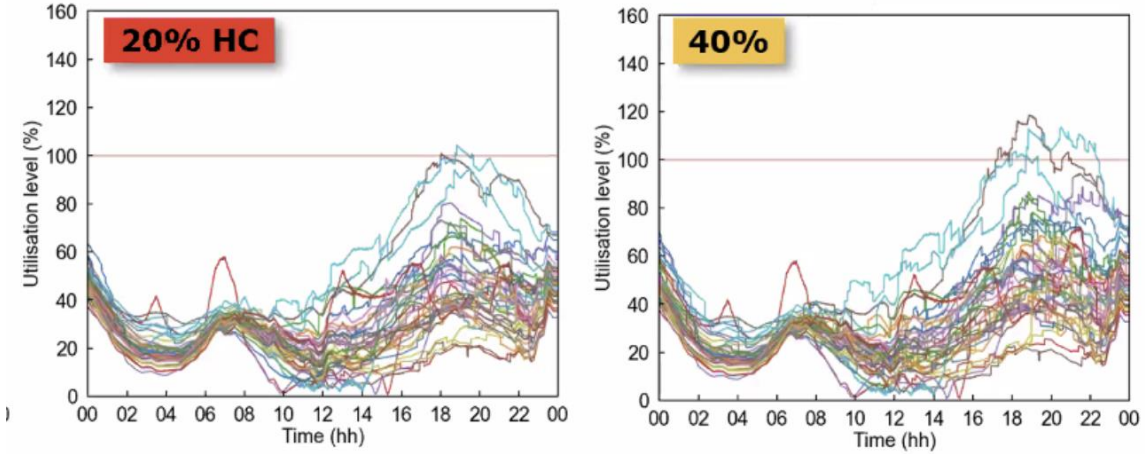


Enabling smart home charging

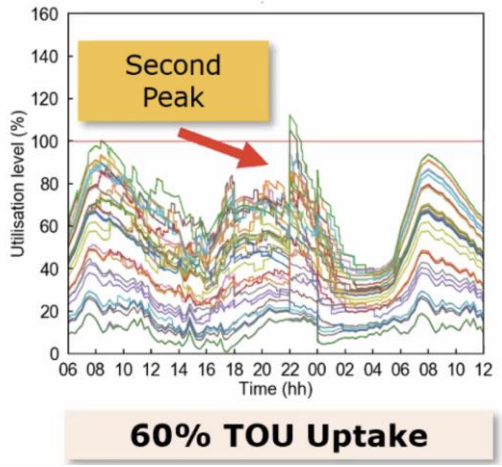
- We believe most EV charging for private vehicles in South Australia will occur at home
- A home EV charger is a significant load for the home and on the network – comparable to adding an air conditioner or electric hot water system
- To minimise network costs we want to encourage EV owners to charge outside peak times, and ideally charge during the solar day
    - Customers with solar have a strong incentive to charge from their own solar when possible
    - Customers on TOU tariffs also have strong incentive to charge during the ‘solar sponge’ daytime period or overnight
    - In many cases, overnight charging may often be most convenient

University of Melbourne study examined what %age of EVs could be accommodated before local transformers became overloaded, for different types of network in NSW, Tas and Victoria

- With no incentives, peak demand issues arose at 20% - 40% EV penetration
- TOU tariffs increased capacity by 20%
- However, TOU tariffs can lead to 'second peak' issues
- Adding control signals to shift charging out of extreme peak demand times can mitigate these issues and allow for 100% EV uptake with low customer impact
  - Only 21% - 38% of customers would experience some level of charge management
  - Impacted customers experience infrequent shifting of charging loads out of peak and into overnight period



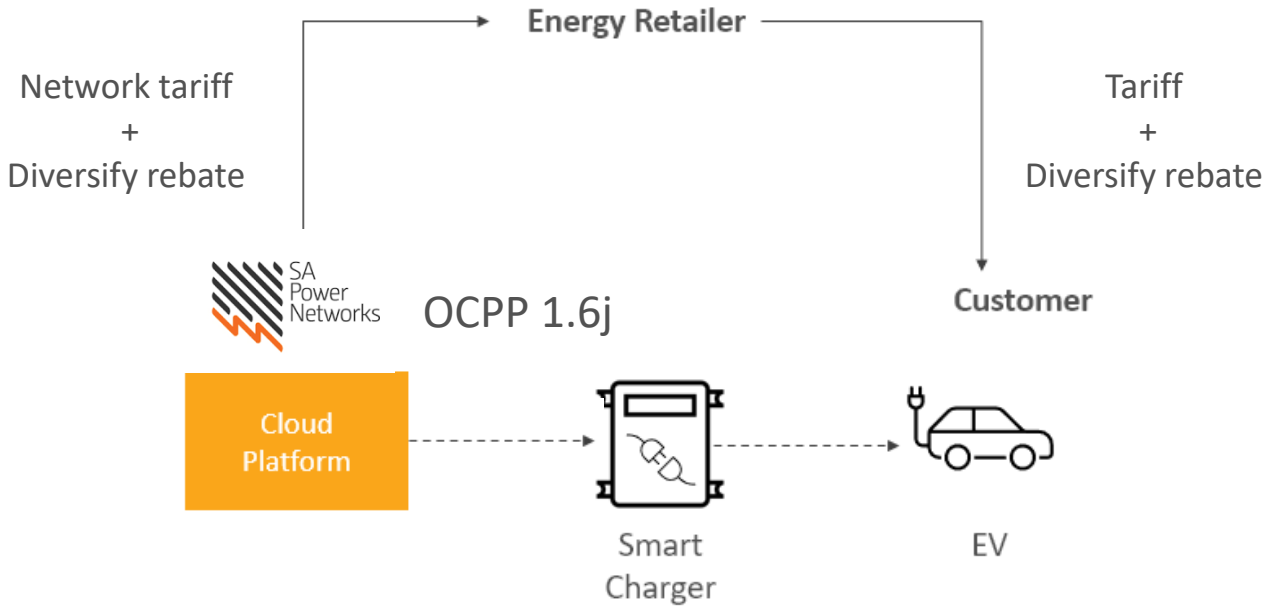
Rural NSW transformer with convenience charging



TOU tariff second peak (Tas)

https://electrical.eng.unimelb.edu.au/power-energy/projects/ev-integration

Diversify – RDIV



*Trial operation state

- We have developed a trial tariff targeted at smart home EV chargers called **‘diversify’**
- It works to incentivise charging flexibility
  - Like ‘flexible exports’ but for flexible loads
- Diversify is a daily rebate to residential customers who enrol their smart charger to receive a maximum demand profile from SA Power Networks

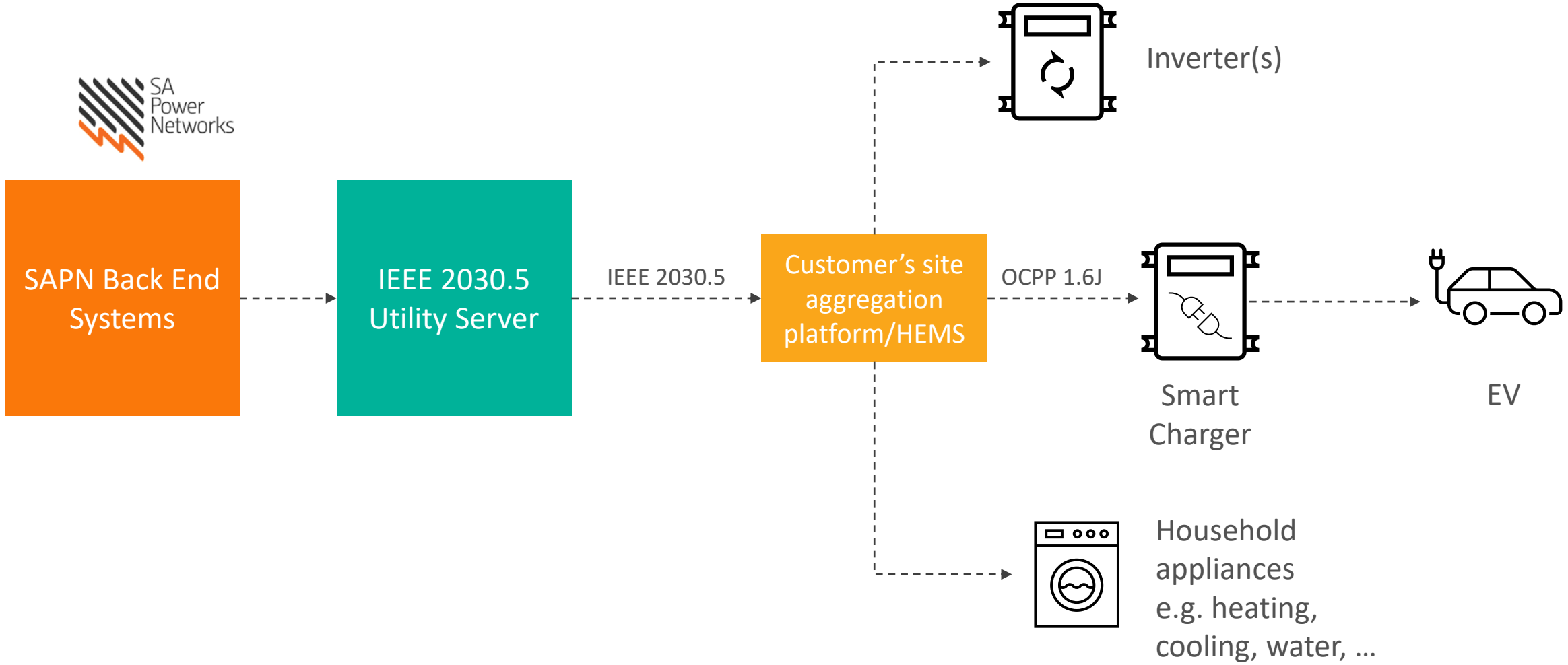
33 c/day or $120 p.a. excluding GST. in 2022-23

Diversify – RDIV

- In the development of this concept a rebate attached to a smart device was considered the optimal way to incentivise customer behaviour due to its simplicity
- Communicating with a smart device means that a customer doesn’t have to establish a separate circuit in their metering arrangement, unlike Controlled Load
- Allows for reducing charging loads during occasional summer demand peaks, and also in future to diversify loads to avoid ‘second peak’ issues
- The customer can pair the rebate with any residential network tariff – the rebate is tariff and meter agnostic
- Trial scheduled to launch in December 2022
- Trial will run through 2025, in conjunction with a research project to design our full flexible load service

Future Flexible EV Connections

We propose to extend our flexible exports systems in 2025-2030 to enable flexible load connections and tariffs, based on outcomes of the Diversify trial









Transitioning our own vehicle fleet to EVs

- We operate a significant fleet of **690 light vehicles** and **281 heavy vehicles** in **35 locations** across South Australia
- We are founding signatories to the SA Government's **EV Fleet Pledge.** This commits us to seek opportunities to transition fleet vehicles to EVs as equivalent EVs become available at the same or lower cost
- We are currently developing our fleet transition plan, as well as our plans for rolling out the necessary charging infrastructure across our depots and offices

- We are modelling three scenarios for EV inclusion within our fleet:
    - Business-as-usual – replace ICE with ICE
    - Cost-optimised – replace ICE with EV when lower cost
    - Leadership – accelerate the transition beyond the purely economic

- Accelerating the transition of our fleet would incur additional costs, but could lead to increased benefits
    - Greater reduction in CO_2 emissions
    - Help drive demand for manufacturers to bring new models to Australia
    - Increase flow of affordable EVs to the second-hand market
    - Promote greater awareness of EVs and help lead the transition more broadly

- We are seeking customer and stakeholder views on whether we should propose an accelerated fleet transition in our regulatory proposal

Our Fleet EV Transition Strategy

Where are we now?

Plug-in Hybrid Electric Vehicles
- 12 x Mitsubishi Outlander at Keswick

Electric Vehicles
- 5 x Hyundai Kona Electric
- 1 x Kia Nero Electric
- 3 x Tesla Model 3
- 9 PHEV / EV on order

Charging Stations
- 12 at Keswick
- 4 at Network Innovation Centre
- 1 at Angaston

2025 Goals

Electric Vehicles
- Transition of passenger vehicle fleet commenced

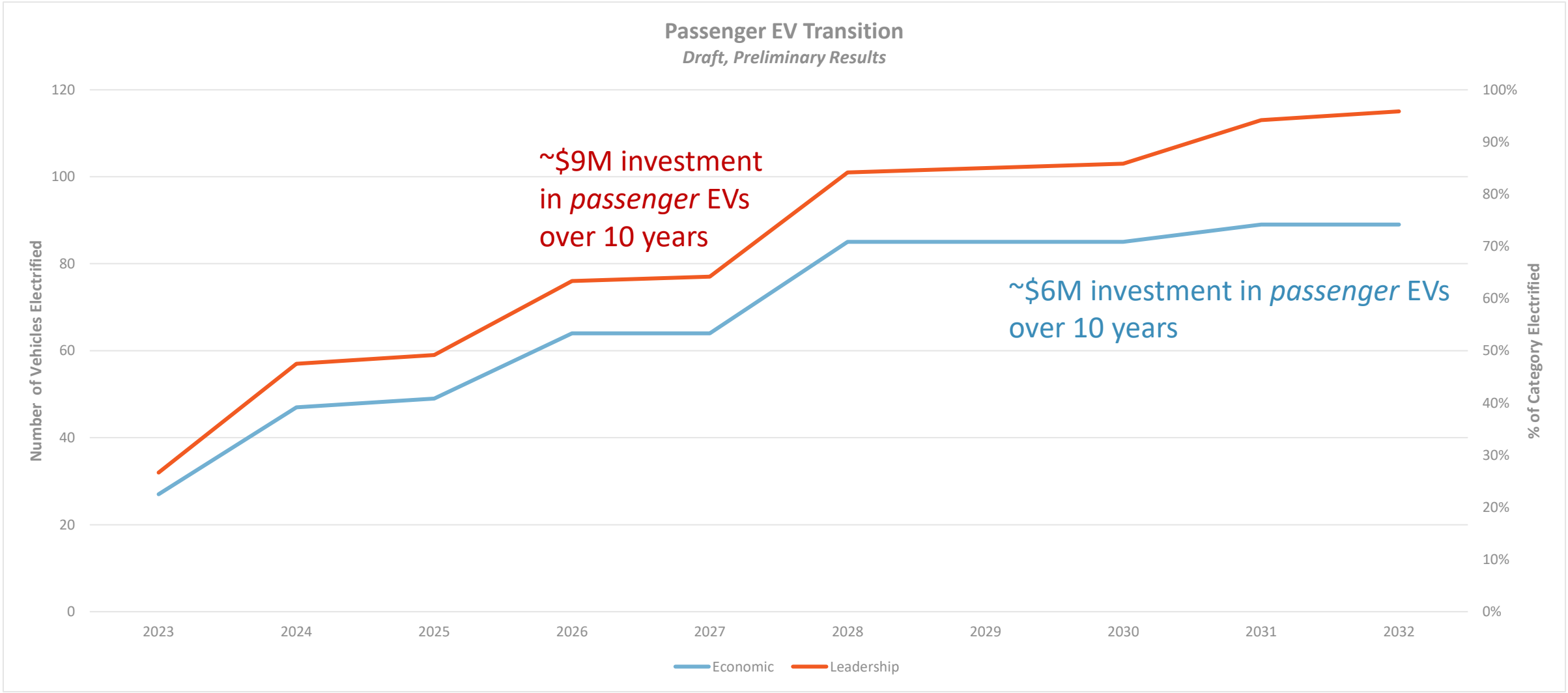
Charging Stations
- Chargers at at least four primary depots
- Plan for rollout to additional metro depots
- Trials at regional depots

2030 Goals

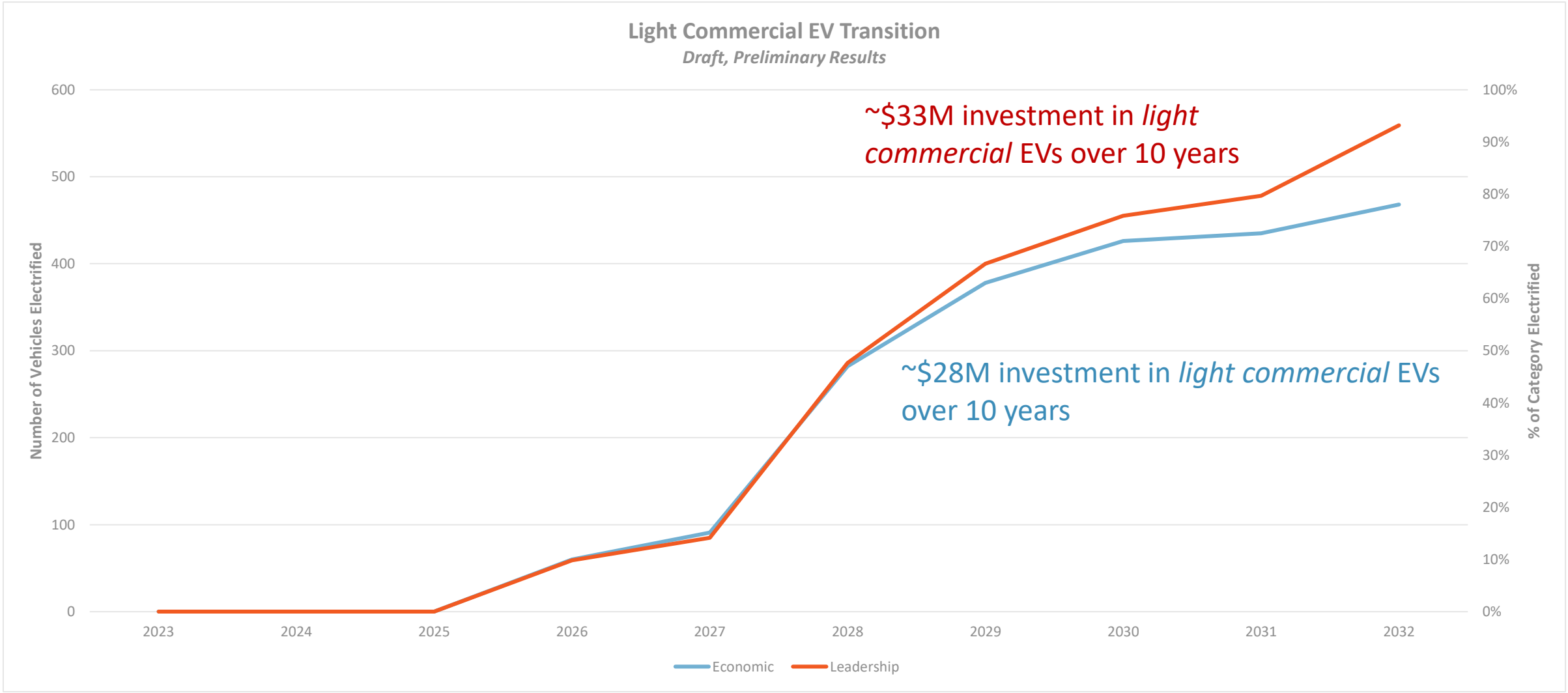
Fleet Vehicles
- Most passenger vehicles are electric vehicles
- Significant percentage of light commercial vehicles are PHEVs or EVs

Charging Stations
- Available across majority of depots

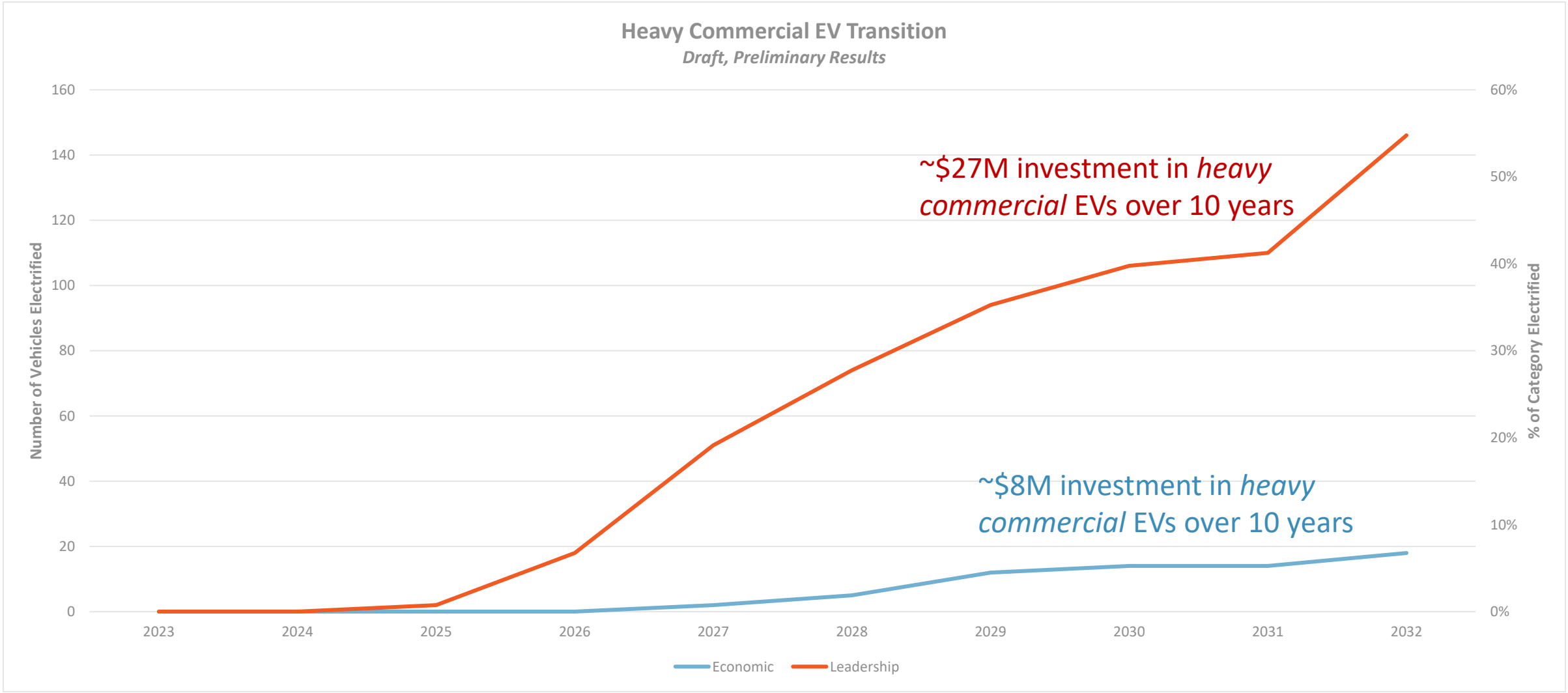
Fleet transition – Passenger vehicles



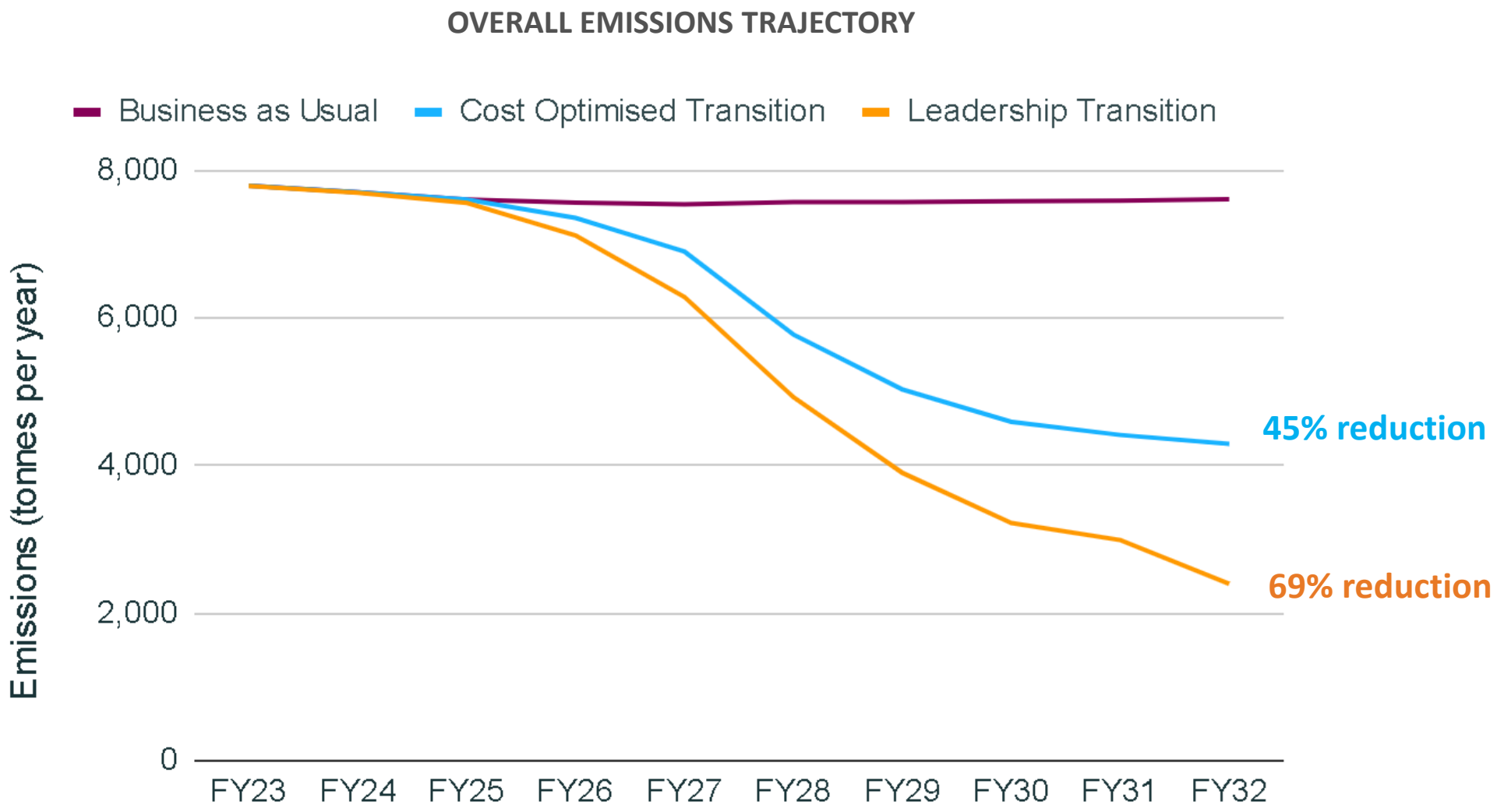
Fleet transition – Light Commercial vehicles



Fleet transition – Heavy Commercial vehicles



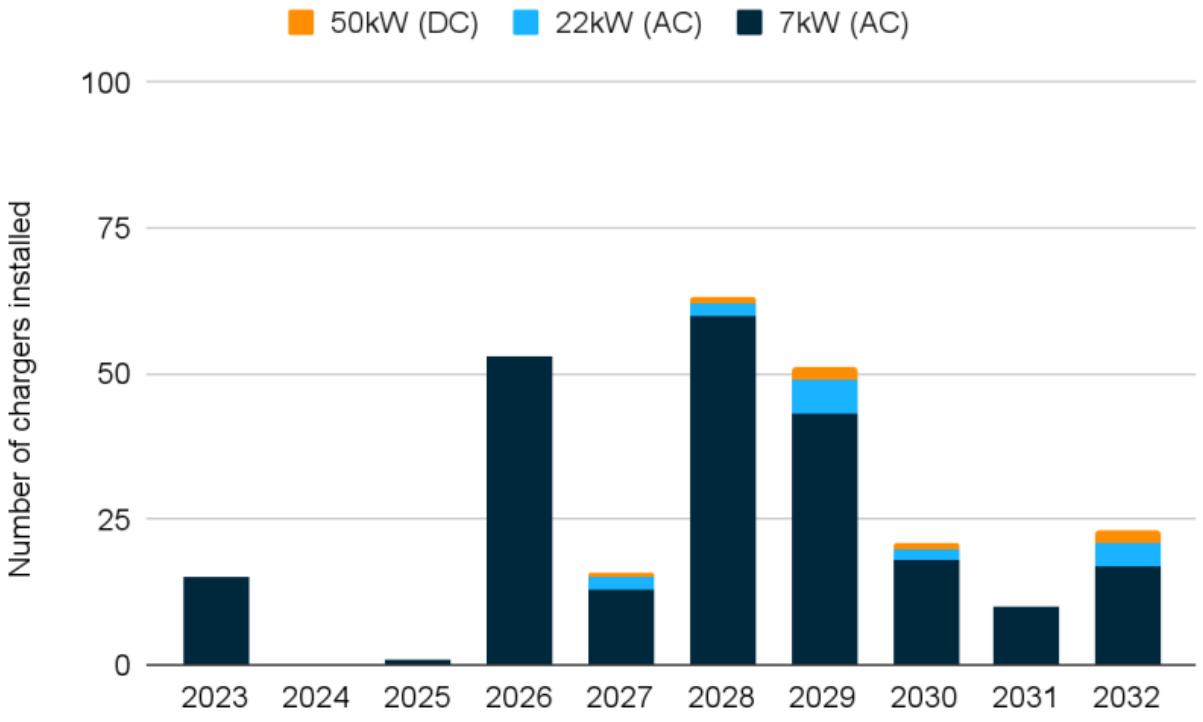
Fleet transition – Emissions reduction



Fleet transition – infrastructure upgrades

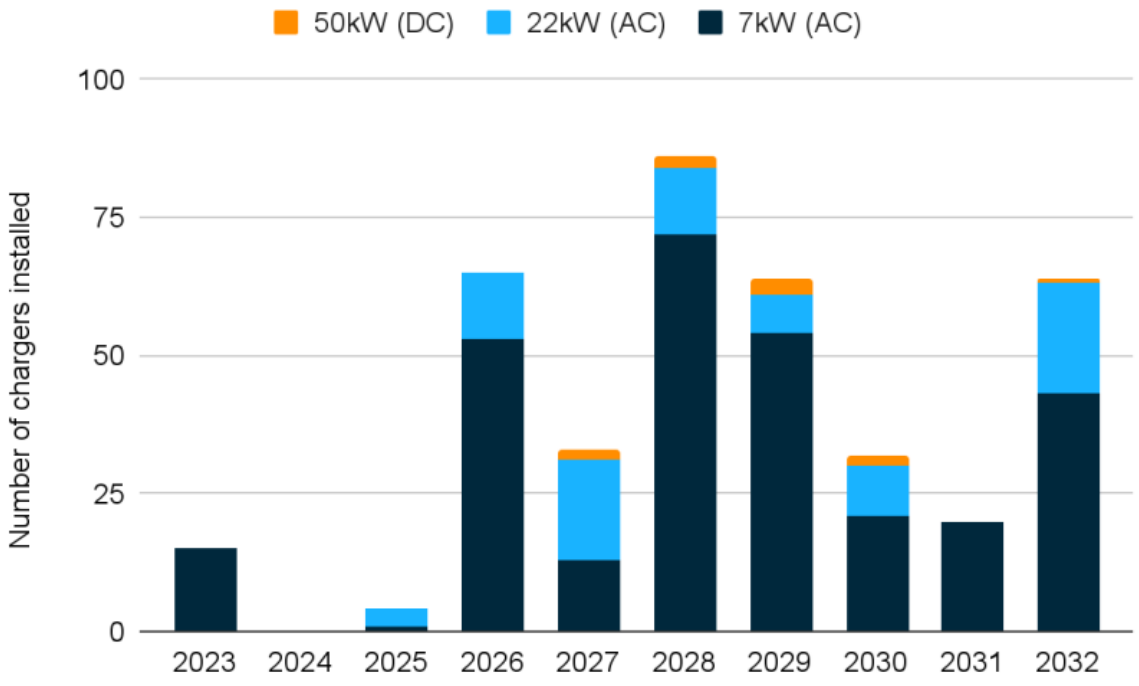
EV Charger Installations - Economic

$2.1M investment in EV charging infrastructure



EV Charger Installations - Leadership

$3.8M investment in EV charging infrastructure



For illustration only – preliminary modelling

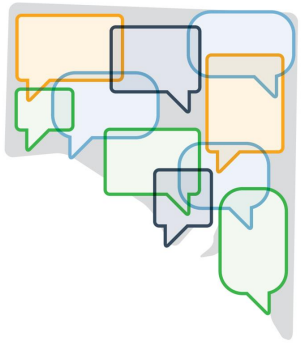
Initiatives – enabling the EV transition

Initiative	Scenario 1	Scenario 2	Scenario 3
Smart EV charging and smart load enablement *Develop 'Diversify' concept to offer flexible load tariff incentive for devices or premises enrolled in a 'dynamic operating envelope' scheme* *Extend our Flexible Exports systems and API*	No	Yes	Yes
Indicative annual bill impact range (to be refined for workshop 3)*		<$2 residential, <$20 business	
Fleet EV transition program *Progressively transitioning our own vehicle fleet to EVs* *Deploying associated charging infrastructure to SA Power Networks' offices and regional depots*	No	EV only when TCO*is equivalent	Bring forward some replacements
Indicative annual bill impact range (to be refined for workshop 3)*		<$1 residential <$3 business	<$5 residential <$10 business

*The numbers supplied are forecasts and will be updated due to stakeholder input and external market influences over time. Our final numbers will be provided in our 2025-30 Regulatory Proposal to be lodged with the AER in January 2024

**TCO = Total Cost of Ownership, considering up-front capital and operating expenses

Discussion



1. Do you support our proposed approach to developing future ‘flexible load’ connection options?

2. Should we be investing to accelerate our fleet transition to electric vehicles?

3. Are there any options or opportunities that we have not considered or explored?

Straw poll

Yes No

Yes No

Yes No

Next Steps – Engagement

Date	Description
October 2022	• Online customer survey being undertaken by Marsden Jacobs • Diverse sample of different customer demographics • Test customer views on levels of service and willingness to pay across a range of topics
Workshop 3 - 10 November 2022	• Address outstanding questions and issues from Workshop 2 • Confirm preferred approaches • Identify any questions to take to deliberative people's panel (Feb/ March 2023)


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