Integrating consumer insights

Renate Vogt

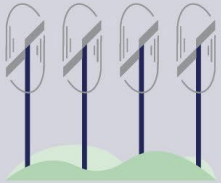
The scale and scope of these changes is unprecedented.

Our networks will need to adapt

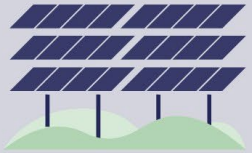
By 2031 in Victoria...

Additional **900,000 people**

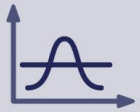
22% of cars on the road will be EVs



Victorian **renewable generation to double**



Multiple system security **emergency events**



No new residential gas connections

Customer behavioural trends are **increasing dependence on a reliable supply at home**

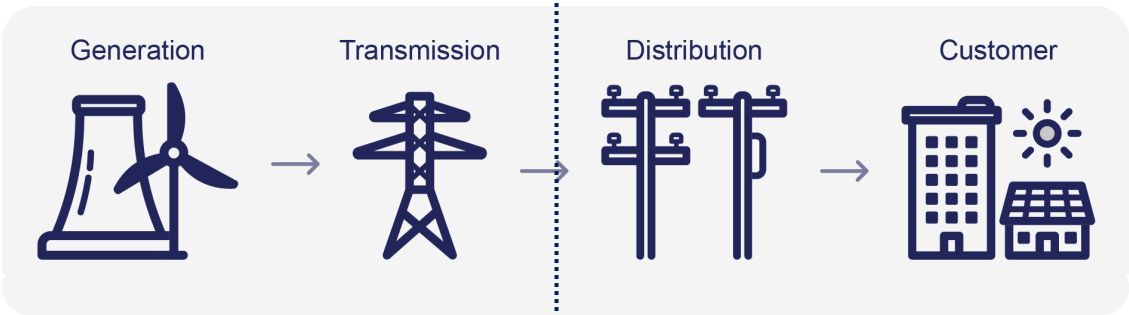
Leading to network-wide and localised impacts...

	CitiPower	Powercor	United Energy
Annual consumption will **increase by**	26%	35%	25%
Peak demand will **grow by**	10%	15%	8%
Rooftop solar will	triple to 300MW	double to 2,200MW	double to 1,450MW
Zone substations changing from summer to **winter peaking**	35%	10%	11%

Growing volatility between **minimum** and **maximum** demand

Distributors must understand customer preferences and behaviour to effectively plan at a local distribution level

AEMO
Integrated System Plan



Distributors
Five-year determinations

- ISP is **evolving**
- Transmission planning **considers network and market**
- Plans at a **national level**
- Makes **broad and diversified customer assumptions**, including orchestration of customer resources
- System-first planning

- Distribution planning **dynamic and considers customers**
- Plans at a **localised level** for **individual or small groups of customers**
- Makes **specific and individual customer assumptions** about customer preferences and behaviours
- Customer-first planning

CitiPower Powercor Australia united energy

The ISP assumes orchestration – but delivering it requires ongoing social licence and buy-in from customers

We must get it right

Future orchestration will be beneficial, but it is not a given

- ISP shows $4.1bn more grid-scale investment is needed if no additional coordination from today is achieved from batteries.
- Orchestrating EV charging stands to deliver broad system benefits to customers

Social license is needed for customers to buy-in to orchestration. We must get it right

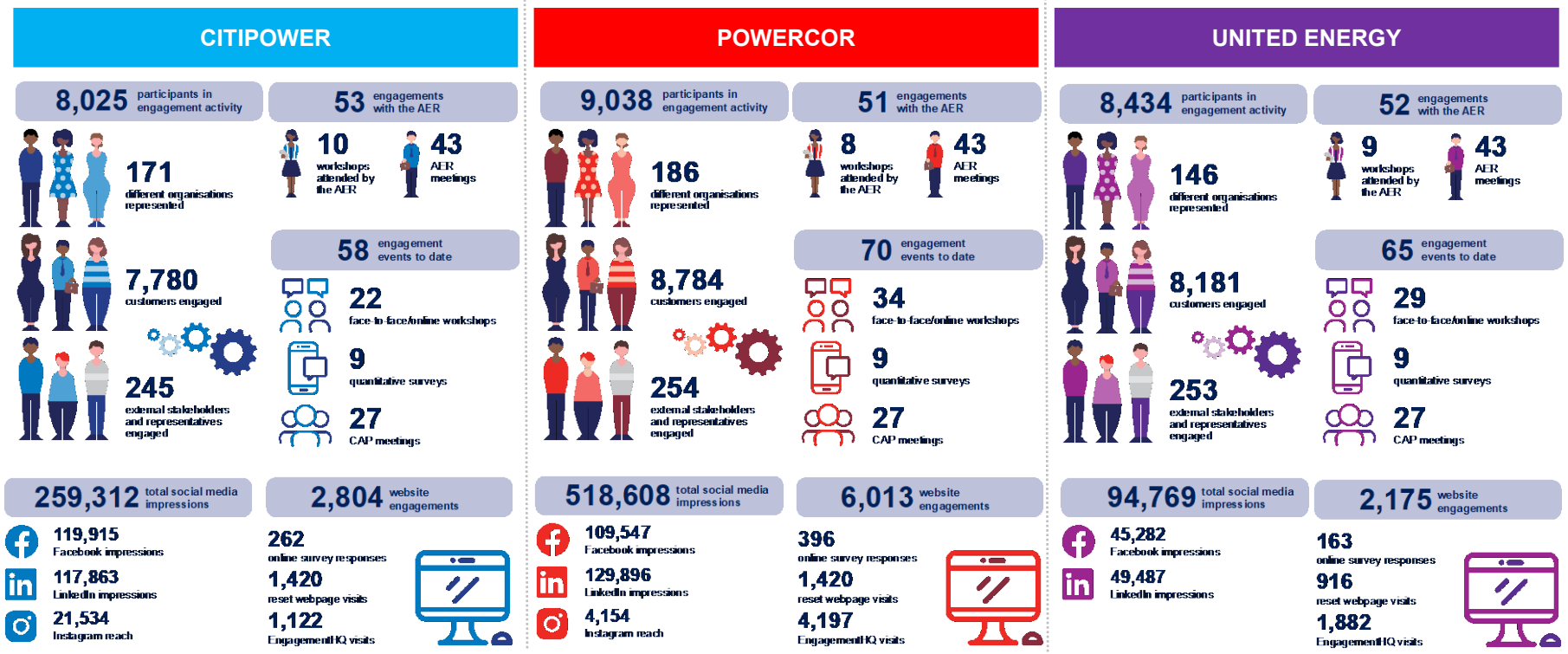
- Social license is hard to build and easy to lose → everything must work seamlessly when it is implemented
- Orchestration will take time to develop and cannot be implemented poorly or we risk stalling the energy transition.

Building customer trust in the system requires consistent positive outcomes

- Distributors have an important role to build and maintain social license with responsibility to deliver service level outcomes to customers → positive customer experiences are critical
- Our direct customer engagement to understand customer preferences and behaviours is underpinning our plans
- We are thinking customer-first rather than system-first to build social license with our customers

CitiPower Powercor Australia united energy

Our stakeholder engagement program, supported by a multi-faceted communication approach, has enabled more customers and stakeholders than ever before to participate in the regulatory reset

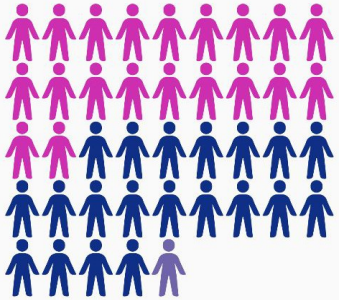


An innovative new study with Monash University's Emerging Technologies Research Lab from within customers' own homes

36 Households

10	14	12
CITIPOWER	POWERCOR	UNITED ENERGY

Gender within households



20 Women 20 Men 1 Non-binary

9
CALD
HOUSEHOLDS

4
BATTERY STORAGE

PLUS
1325
SURVEY RESPONDENTS

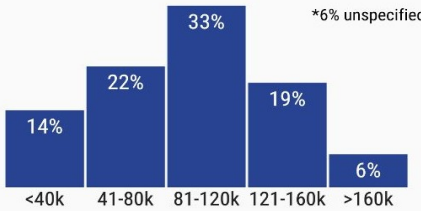
Age groups

25%	22%	22%	22%	9%
< 34	34-54	55-64	65-74	75+

4
ELECTRIC VEHICLES

19
ROOFTOP SOLAR

Income range



5 x No-tech

19 x Low-tech

12 x Digi-tech

7 x Energy-tech

The research uncovered 51 emerging digital energy trends, categorised across nine practice domains that encompass significant areas of household life where energy demand is prominent or undergoing substantial changes

AFFORDABILITY & EQUITY

- Recreation and play

CUSTOMER SERVICE

- Smart home and automation
- Working and studying from home

ENERGY TRANSITION

- Mobility & charging
- Cooking and eating
- Making, saving, sharing and storing energy

RELIABILIY AND RESILIENCE

- Caring at home
- Healthy indoor air and thermal comfort
- Cleaning showering and laundering

Access to a location to charge EVs at home, such as off street parking or a garage, will significantly impact the rate of EV adoption

Maintaining control over charging continues to be a priority over relying on automation

70 per cent of customers who expected to charge EVs at home preferred to use fast-charging equipment

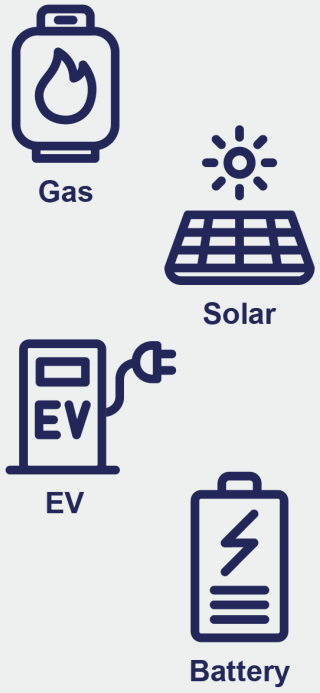
Free-standing houses are 20x more likely to adopt an EV than an apartment

Current charging behaviours are likely to persevere in the short-term → using current charging behaviours is appropriate

Using 70 per cent fast charging profiles in street-level distribution network forecasting

Our electrification and CER integration strategy shows our holistic approach to forecasting change drivers, and how we are exhausting low-cost solutions before any augmentation

Customers are increasingly investing in consumer energy resources (CER) to electrify their homes



We have developed enhanced forecasting capabilities to better understand customer impacts

Inputs

- Smart meter data
- Customer insights
- AEMO/Vic Gov forecasts
- Network data
- Tariff impacts
- Weather

HV forecast tool

Provides view of our HV network, including minimum and maximum demand forecasts for every ZSS and HV feeder, supporting visibility of thermal constraints

NEW

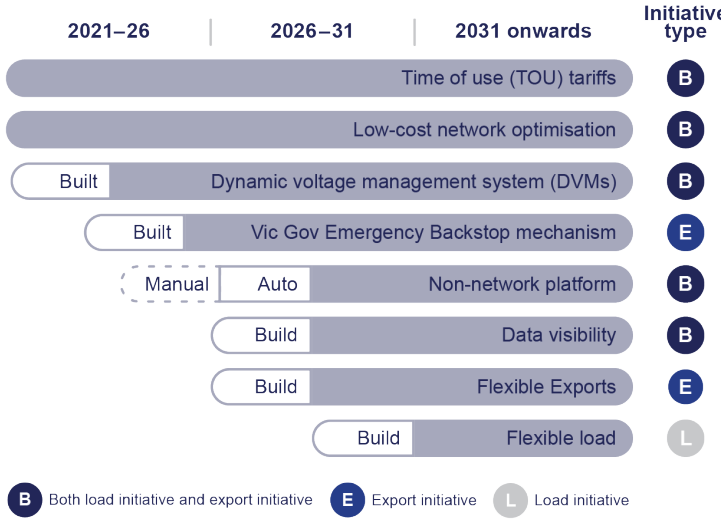
LV forecast tool

Provides 30-minute, time senes view of thermal and voltage constraints, based on power flow modeling, for every LV and HV asset on our network (including distribution circuits)

CUTTING EDGE

More accurate customer impacts quantified

We are exhausting all possible low-cost solutions



Optimising remaining augmentation

Smarter HV solutions for clustered LV constraints

CER integration capex to deliver value for customers

Deferring lower value augex in response to stakeholder uncertainty of energy transition timing

Future-proofing repex for electrification when augmentation will soon be needed

Enabling customers to derive value

95% of customers can freely export 90% of the time

All customers can **export up to system limits**

All customers have **universal access to standard wall charging**

Maintain voltage compliance to protect all customers as CER uptake grows

Enable **regional and rural customers** to participate in the energy transition

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