

# Enabling the clean energy future

SEC State Energy Summit South Australia

2 August 2022

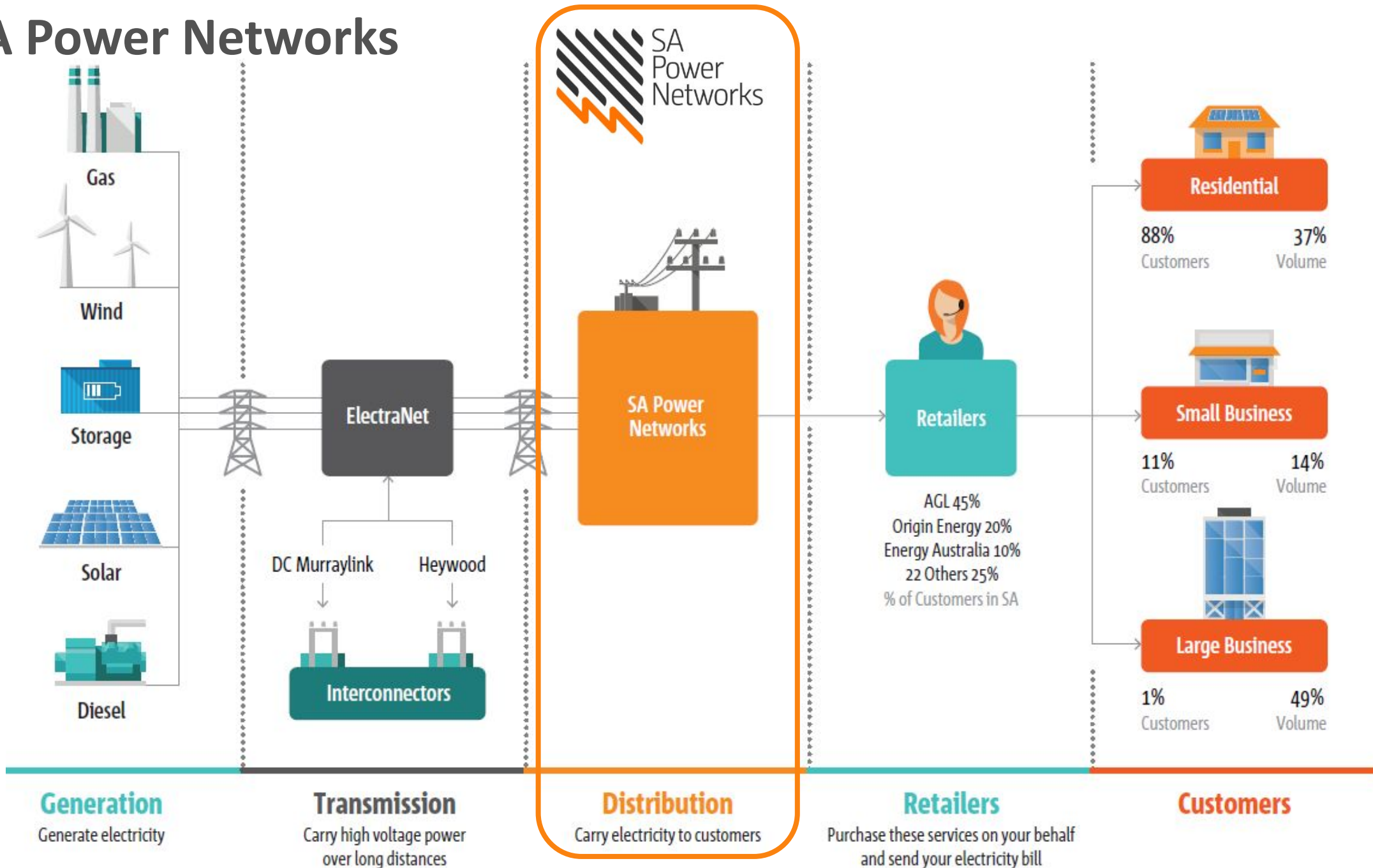


**Brendon Hampton**  
Head of Network Strategy  
SA Power Networks



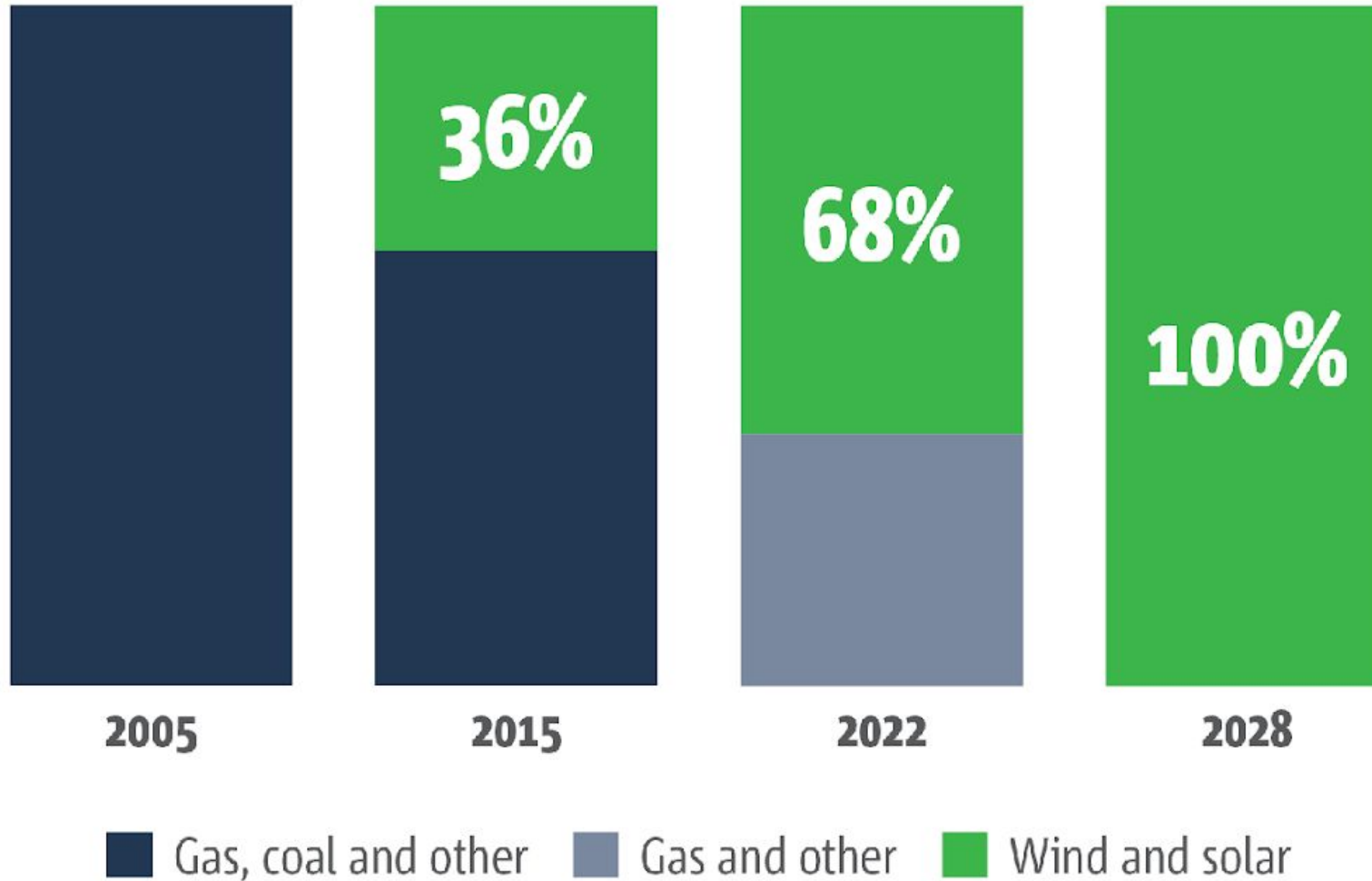
**Empowering South Australia**

# SA Power Networks



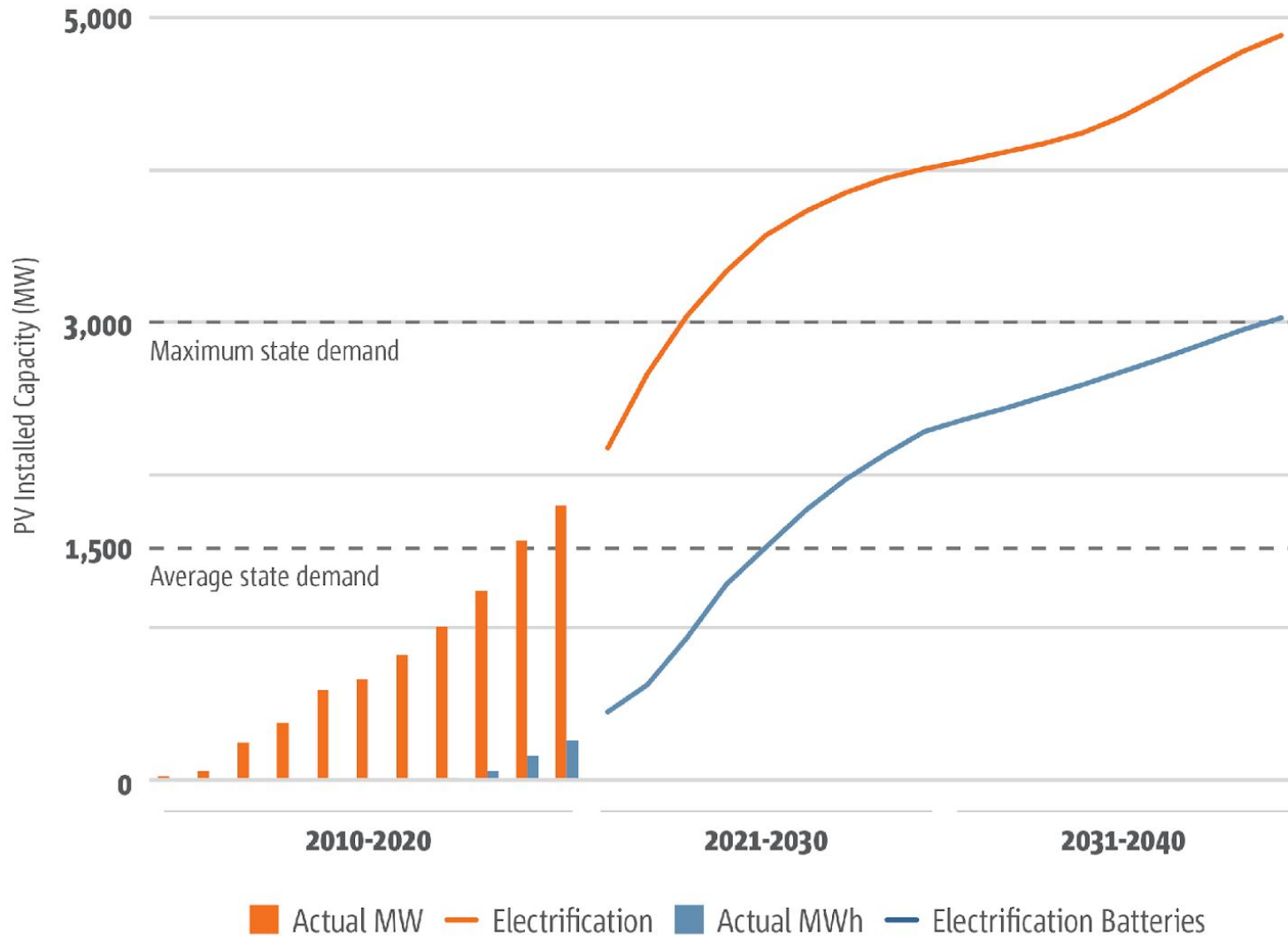
# South Australia's profound transition to renewable electricity

Demand met by renewables



# South Australia is leading the way in distributed energy

SA Forecasts AEMO ESOO 2021



**~300,000 Rooftop solar systems**

>1 in 3 customers, world's highest

State's largest generator

Record growth continues



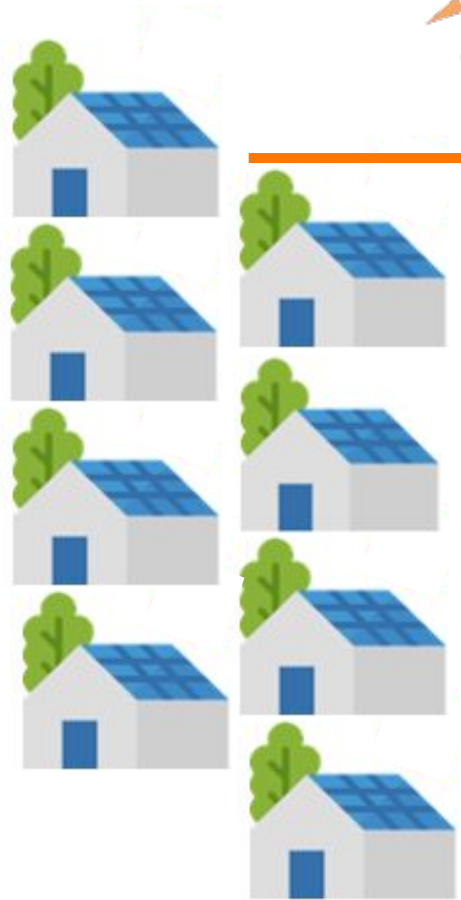
**~30,000 Home batteries**

9 Virtual Power Plants operating in SA

# We are seeing challenges on local networks



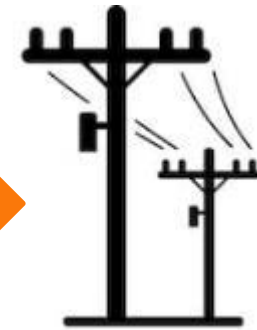
We currently impose a **fixed 5kW export limit** on solar PV systems



Solar PV industry continuing **strong growth**

Excess exports cause parts of the **network to become congested** at certain times

Today's network can only **host 1-2kW of export per customer**



1 in 3 residential customers

# And also at the system level

In October 2020 we reached a major milestone

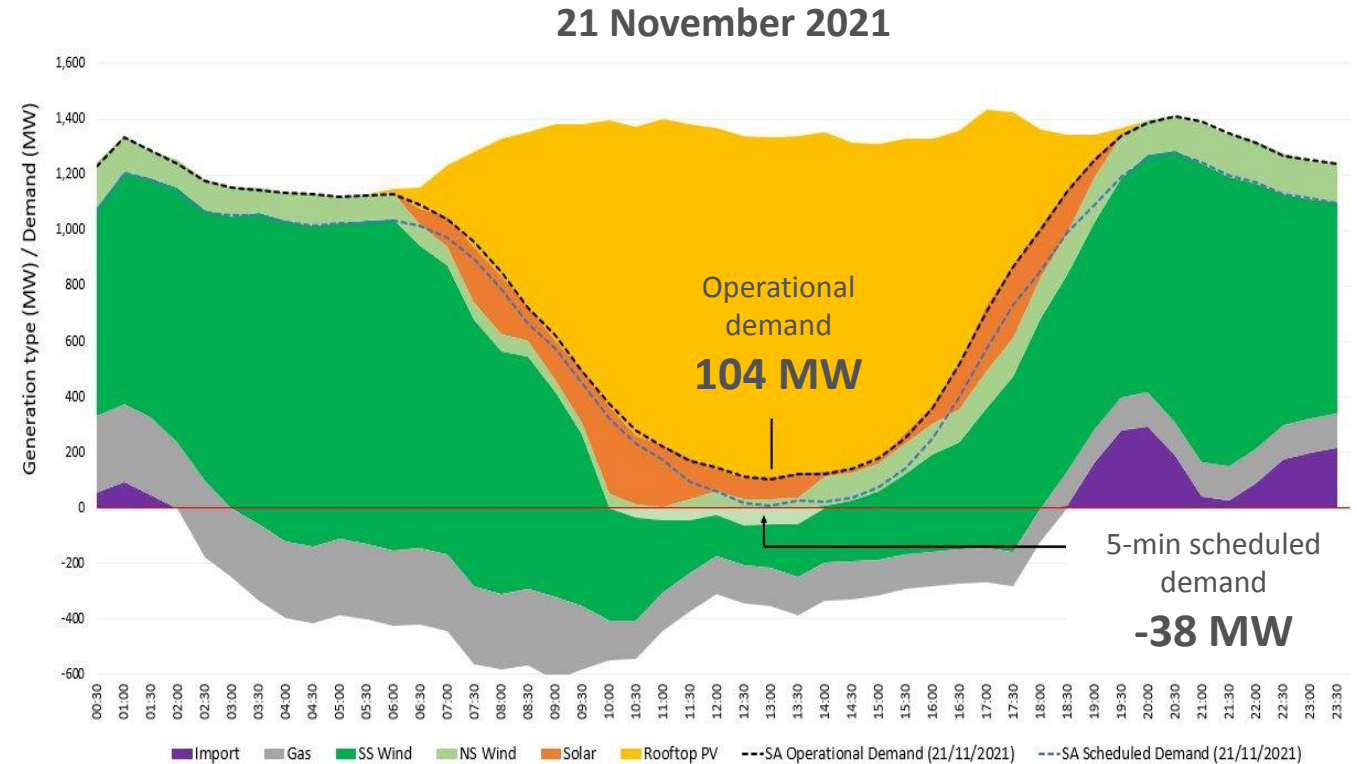
**All of South Australia's power comes from solar panels in world first for major jurisdiction**

By Richard Davies  
Posted Sun 25 Oct 2020 at 9:05am

And in 2021 ...

- Rooftop solar met up to **92%** of state demand
- Net load on the SA distribution network fell **below zero** for the first time ever, reaching **-185 MW** on 27/12/21

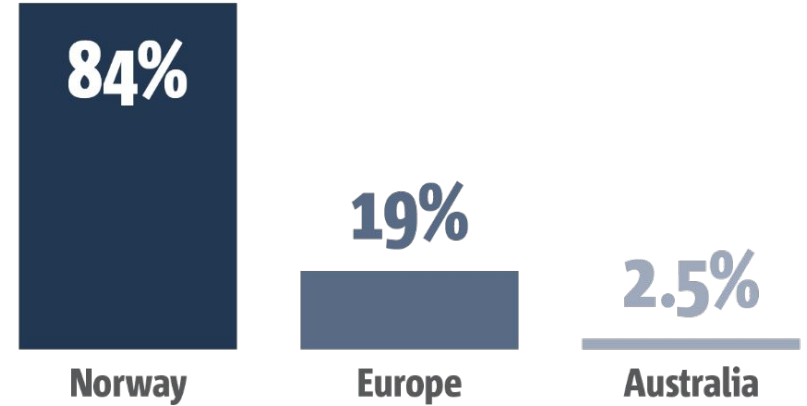
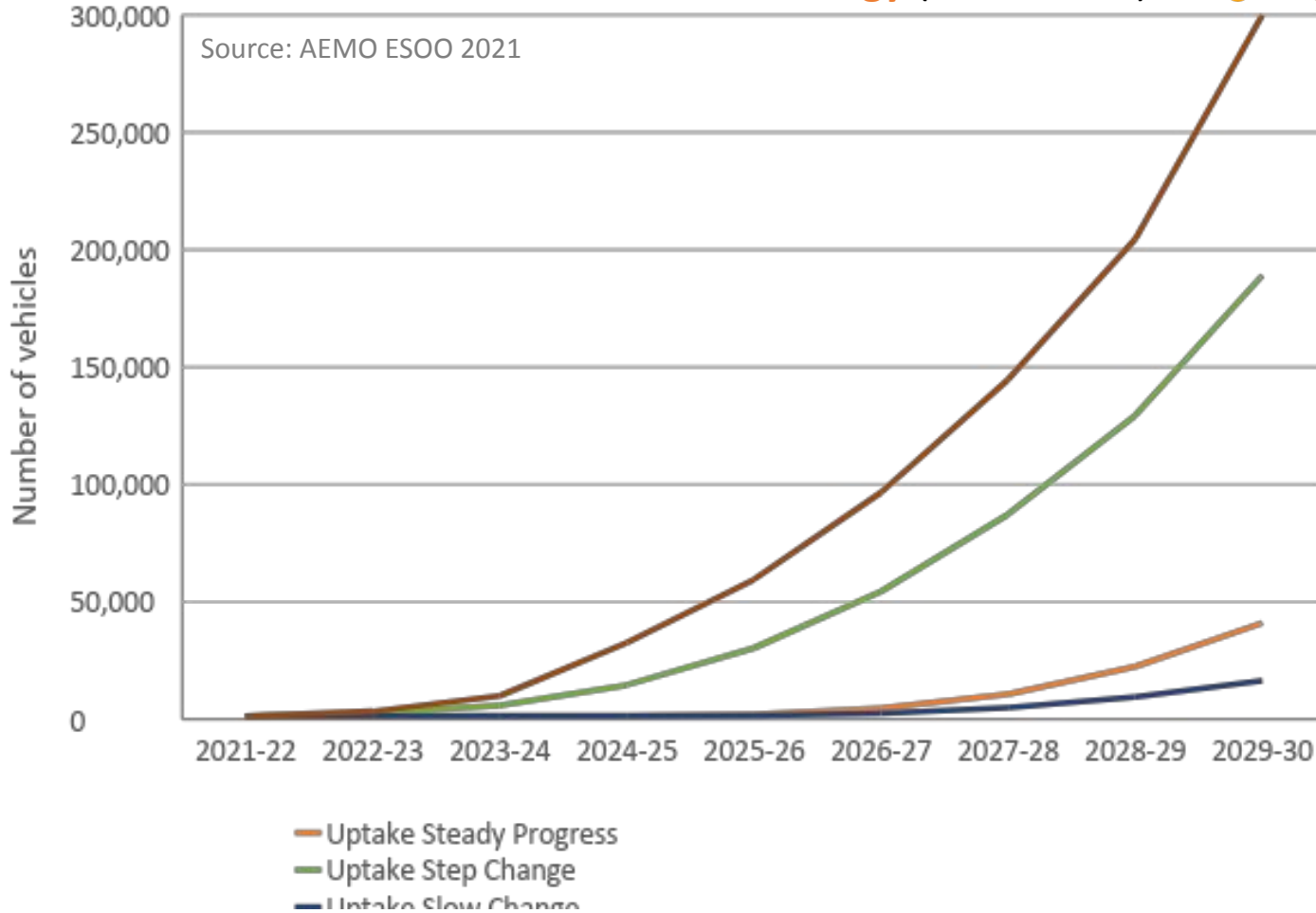
**Whole of SA demand will become negative**  
this spring/summer



# Electric Vehicles (EVs) will be the next big thing

EV new vehicle sales Q1 2022

Up to 300,000 EVs by 2030  
20% more energy (1,400 GWh)



>20 countries have announced plans to phase-out of internal combustion engine (ICE) car sales between 2025-35

e.g. Scandinavian countries, UK, China, Japan, EU

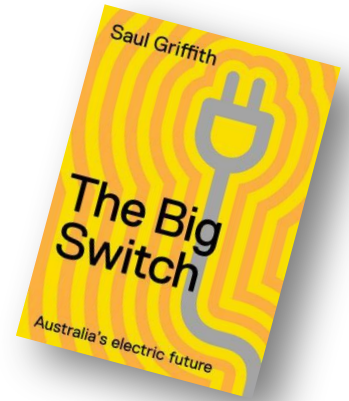
Many major automakers are also planning to cease making ICE vehicles between 2025–35

e.g. Jaguar, Volvo, Audi, VW, GM, Ford, Lexus

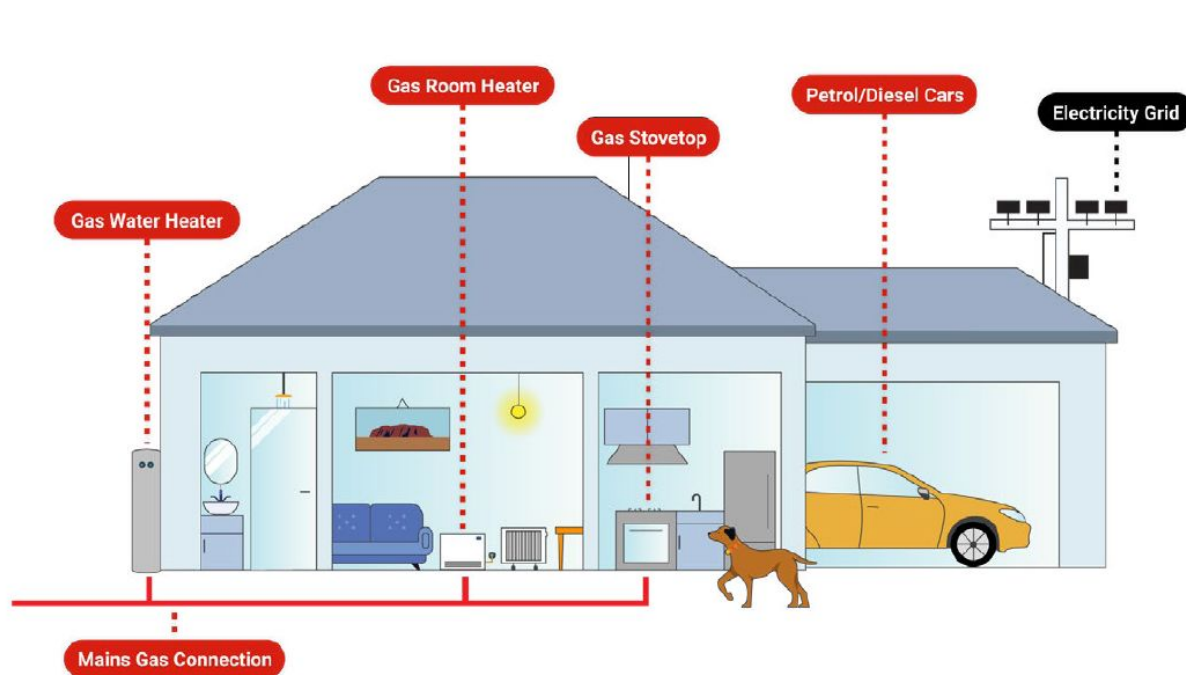
# And broader electrification is coming

For most applications, electricity has significant advantages

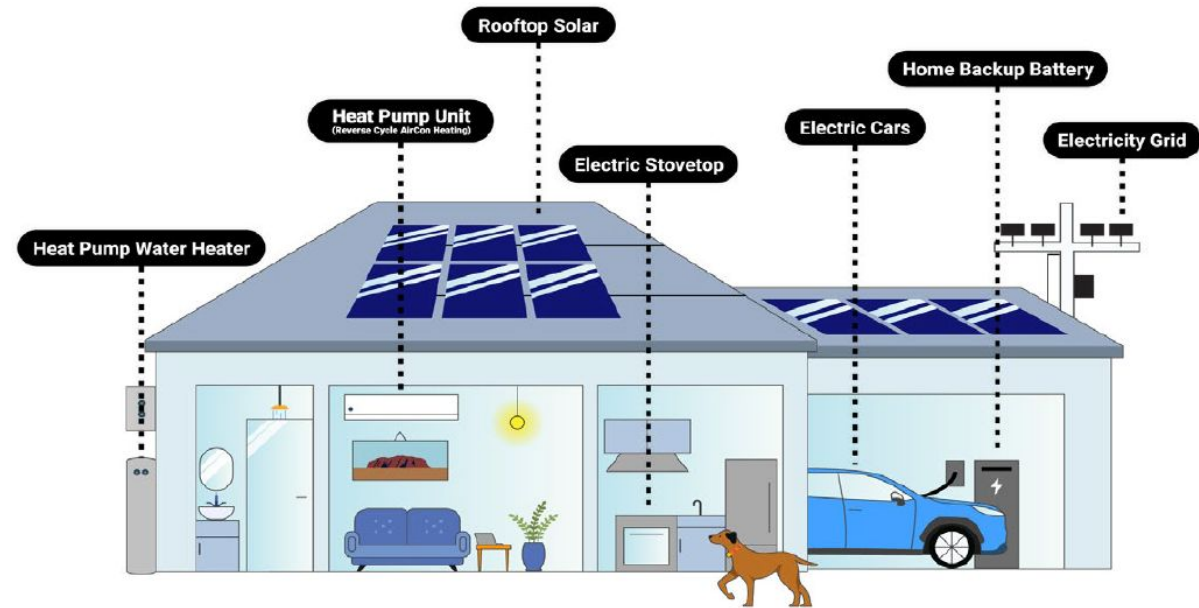
Rooftop solar allows energy to be generated very cheaply, close to where it will be consumed



*Electrification presents a significant opportunity to save customers money and rapidly decarbonise*



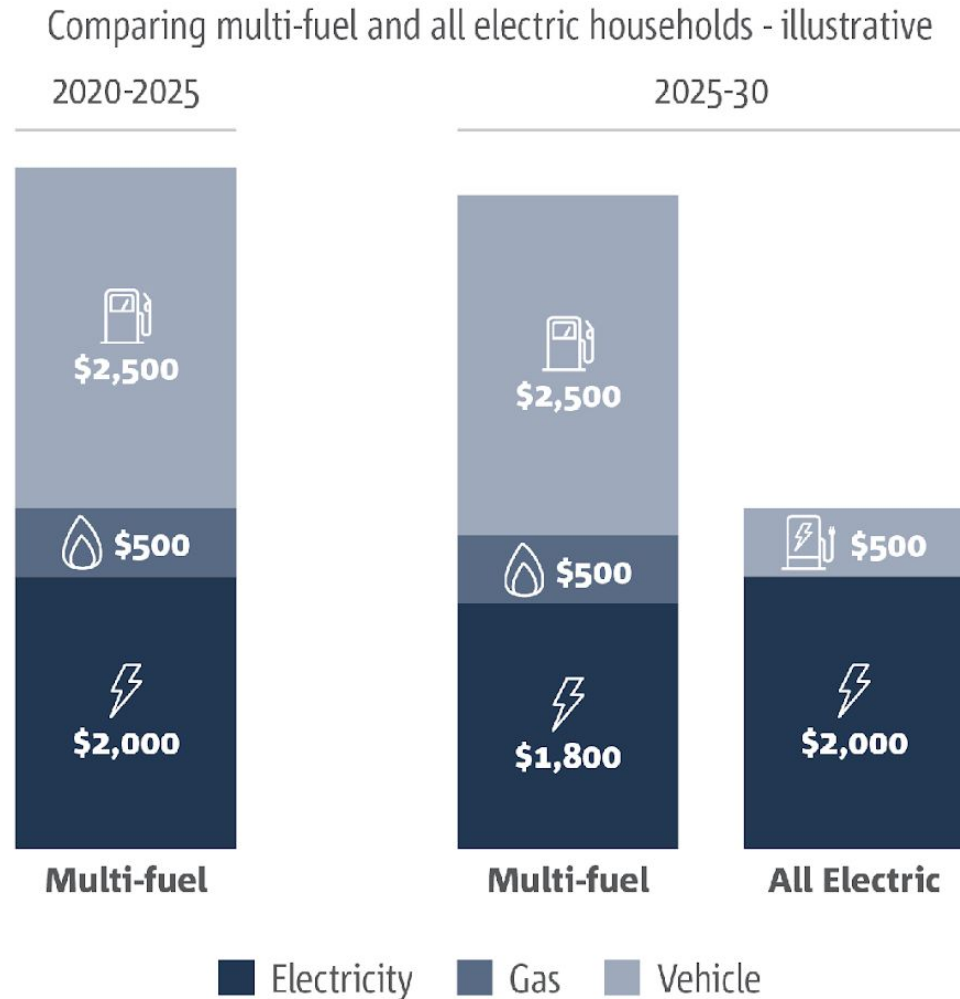
Conventional Home



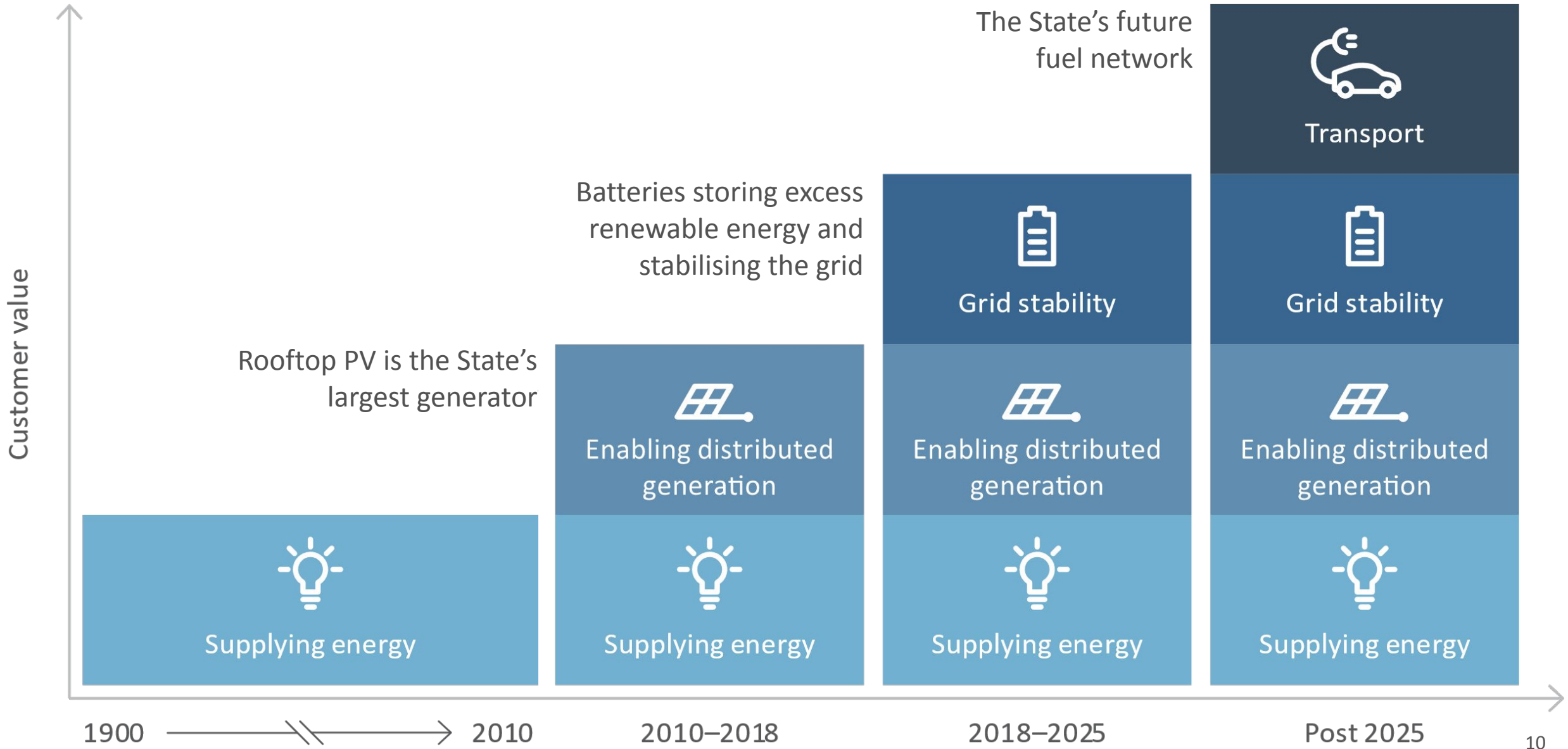
Electrified Home

# Customers moving to all-electric could halve their energy costs

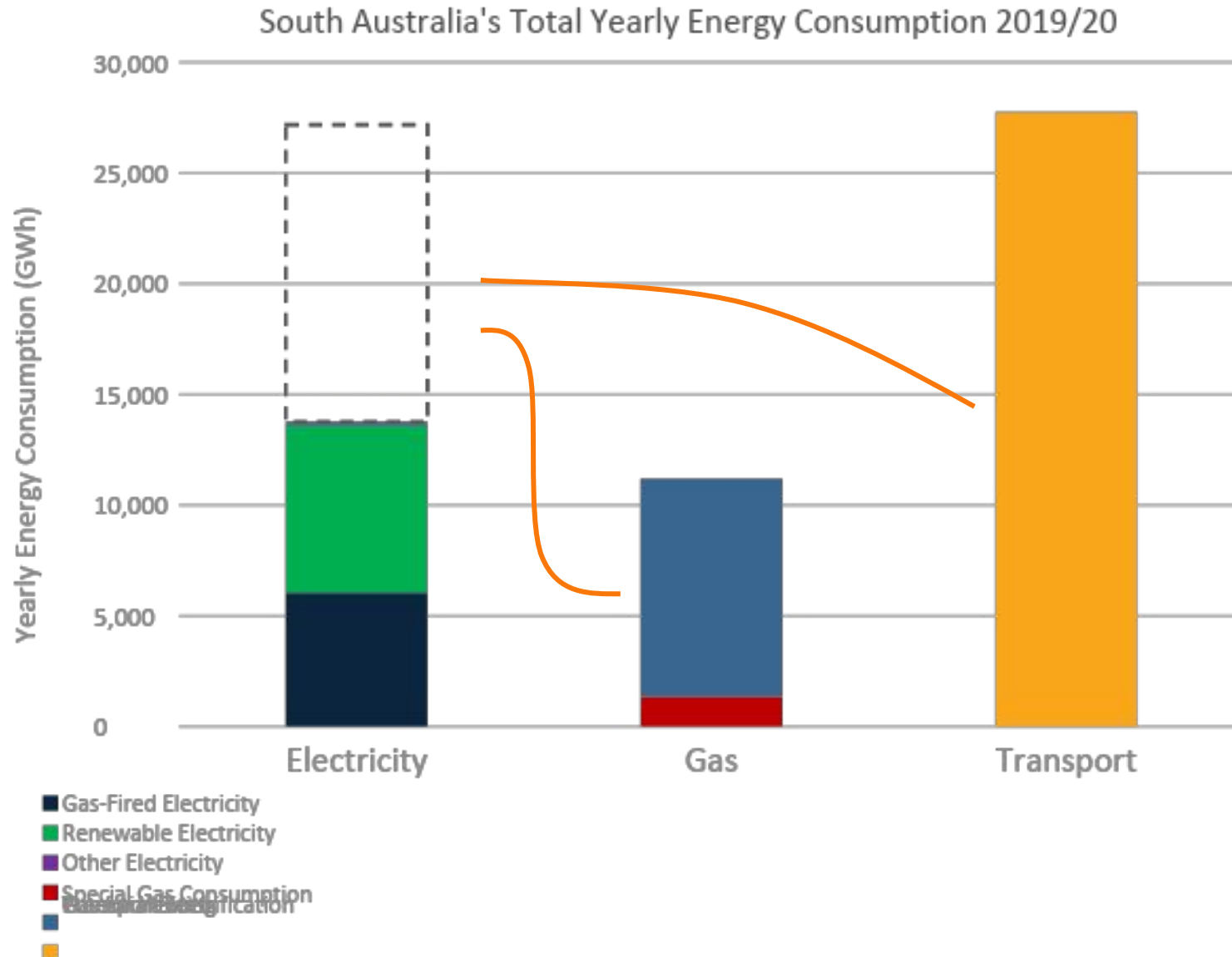
Although 'traditional' customers are expected to see modest reductions in their bills, customers moving to electric vehicles, or all-electric homes, could potentially halve their energy bills



# We can adapt the network to release significant value



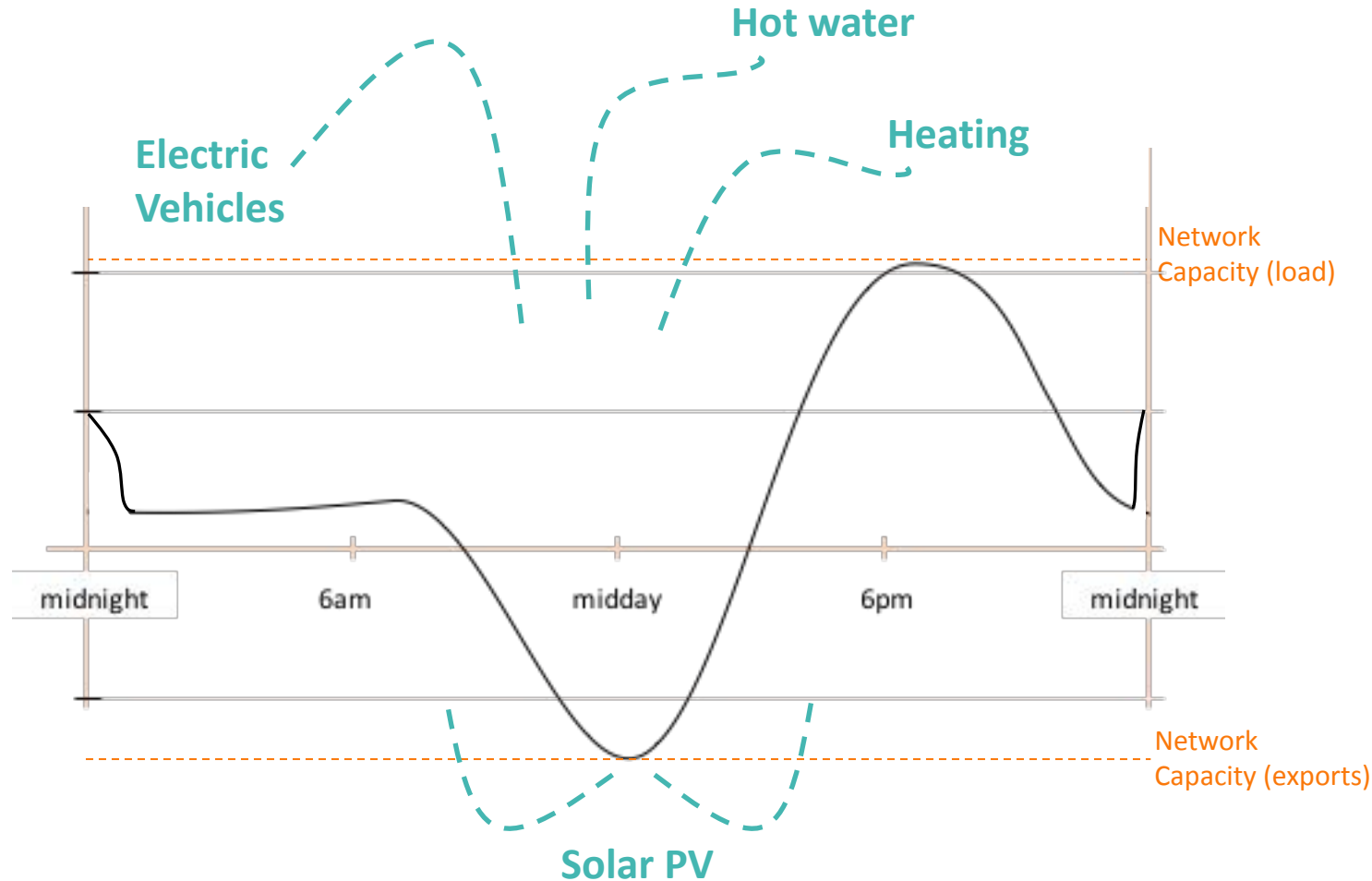
# However, this will require the distribution network to carry vastly more energy



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

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

# Fill – our opportunity and challenge



- Our investment in capacity to meet air-conditioning demand means we have enough spare for **ALL** these new applications
- Our challenge is to fit this into the current network
- Doing so would increase energy throughput and lower costs
- However it's not trivial!

*Encouraging supply and demand flexibility is key to an efficient renewable energy power system*

# Our vision: breaking the energy trilemma

Traditionally, the trilemma has been seen as a key challenge to the industry ...

**How do we trade off sustainability, reliability and affordability?**



**The energy transition presents a unique opportunity in South Australia:**

- Abundant renewable resources
- Significant latent capacity in our network
- Existing strong industry collaboration
- Bipartisan political support

Our goal is to continue to transform our network and services to support this **customer-led energy transition**

We believe we can **maintain reliability**, while **fully decarbonising** and **dramatically reducing customers' energy bills**

***A future of energy prosperity, where energy is clean, reliable and affordable***



**Empowering** South Australia