

Gas Networks 2050

Access Arrangement

Customer Forum 5

Sunday 23 July 2023



Acknowledgement of Country

We acknowledge the Traditional Owners of the lands upon which we operate and recognise their continuing connection to land, waters, and culture.

We pay our respects to their Elders past, present, and emerging.

Pictured: artwork by Aboriginal artist Chern'ee Sutton from Mount Isa for our Group's Reflect Reconciliation Action Plan



Our session today

Topics we will cover:

Section 1: Let’s get started

What’s today about? Let’s warm up. What have you been thinking about overnight?

Section 2: Revisiting some evaluation questions and identifying the trade-offs

Do our evaluation questions still feel right?

What trade-offs do we need to consider as we set the responses?

Morning tea

Section 3: Setting the responses

Poster presentations and group work

Lunch

Section 4: drafting recommendations

Afternoon tea

Section 5: final drafting, wrap up

Close

Duration
(6.5 hours)

25 mins

50 mins

15

35

15 mins

125 mins

30 mins

55 mins

15 mins

75 mins

Timing

9.30

10.00

10.20

10:45

11.00

13.05

13.35

14.30

15.45

16.00

Purpose

- 1 Revisiting the evaluation questions
- 2 Responses – identifying balances
- 3 Setting the responses
- 4 Drafting initial recommendations



What's today about?

Shaun Reardon

Executive General Manager Networks

Jemena



Let's warm up!

Instructions:

- What have you been thinking about overnight?
- Get into pairs and share some thoughts.



Do our evaluation questions still feel right?

Instructions:

- Questions from yesterday have been written up and handed out
- Volunteers to read out the evaluation questions!
- Turn to your partner and discuss if they still seem right?
- L-scale activity on the questions.
- Looking for 80% live with it and above. (consensus).

Setting the scene

Shaun Reardon

Executive General Manager Networks

Jemena



Reminder: the remit

Australia is transitioning to net zero carbon emissions by 2050. We see a role for Jemena Gas Networks in the transition and beyond 2050. However, there is more and more uncertainty in the energy sector, and cost of living pressures and energy prices are rising.

We want to adapt and take action now so we can create our future, but we need the support of customers to do this.

Can we do this in a way that is fair for customers over the next five years, and beyond, whilst managing uncertainty and remaining affordable in the future?

Let's go back to the 'quadrants' or 'scenarios'

War-time effort, with ambitious policies for net zero and rapid decarbonisation, supported by customers



Scenario 1: Electric Hare

Decarbonisation is supported by strong government policy driving electrification across industry and residential customers, with limited use of green fuels for hard to abate sectors



Scenario 2: Big Hydrogen

Government policy support underpins a hydrogen export economy with a renewable gas target and certification, subsidies, and tax-offsets, driving down the cost of hydrogen production

Biomethane focus limited to gas-dependent users and Hydrogen is a niche product.



Scenario 3: Electric Tortoise

Residential customers slowly electrify and industrial users transition to biomethane, as hydrogen remains not commercially viable. Transition is market-led and is less centrally coordinated

Biomethane is a stepping stone to the Hydrogen mass market.



Scenario 4: Market Hydrogen

A near-term technological breakthrough driven by the market results in renewable gases becoming competitive with electrification, creating a diverse energy mix.

Renewable gas penetration

Market led vs Government led

Policy is outcomes-based and low intervention, with a focus on economic affordability. Decarbonisation is driven by the market.

Let's explore the Electric Tortoise scenario

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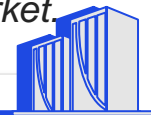
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Small group activity

- Consider the quadrants from yesterday
- Discuss in small groups.
- What do we need to consider to strike the right balance?
- What questions do you have for the Jemena team in the next activity?

Balances might include:



Customer impact:

Haves vs have nots



Pay: All pay vs some pay



Time: Now vs future



Benefit: All vs some

Morning tea – back at 11.15am



Response options

Jemena workstream leads



Keep moving towards renewable gas

Brent Davis

Senior Business Development Manager

Renewable Gas team, Jemena

Customer values: Planning for our future, choice, environment, fairness, reliability and affordability

International settings for renewable gas



United States

Biomethane:

- 2,300 sites producing biogas across 50 states
- Primary pathway: landfill gas collection

Hydrogen:

- Comprehensive policy and funding support introduced in IRA 2022 paves way for US to become the global leader in renewable energy production and export
- Total of US\$369bn funding and tax credits earmarked to support energy security and transition



Latin America

Biomethane:

- Holds ~20% of global bioenergy potential

Hydrogen:

- Significant renewable hydrogen potential harnessing world class and low-cost solar, wind and hydro resources



Middle East & North Africa

Hydrogen:

- Significant renewable hydrogen ambitions among various member countries, with individual and collective national hydrogen strategies (e.g. Saudi Arabia, Oman, UAE, Egypt, Africa Green Hydrogen Alliance).
- Harness region's substantial renewable energy resources and location as gateway between key EU and Asian markets



Europe

Biomethane:

- 20,000 biogas plants in Europe - 10,000 in Germany alone
- >20% biomethane in Denmark's gas networks and >11% in Italy

Hydrogen:

- Key pillar of EU decarbonization and energy security strategy – target of 65% system demand from renewable hydrogen by 2030.
- Policy frameworks and dedicated funding mechanisms under implementation



United Kingdom

Biomethane:

More than 80 biomethane plants connected to the grid

- Green Gas Certification Scheme,

Hydrogen:

- Low-carbon hydrogen production capacity ambition of 10GW by 2030
- Launched policy consultation and funding rounds (from £240m) to support hydrogen development.



Asia

Biomethane:

- Holds ~30% of global bioenergy potential
- Policies support household digesters in rural China

Hydrogen

- Leading region in the development of renewable hydrogen production and equipment manufacturing capacity (India, China)
- Leading region in the development of global hydrogen supply chain – investing heavily in import infrastructure, transport and storage technologies (Japan, Korea)

What is happening in Australia



Australia



Biomethane:

- Looking to recognise biomethane under the guarantee of Origin
- Australia's Bioenergy Roadmap

Hydrogen:

- Federal Hydrogen Guarantee of Origin Scheme
- Hydrogen Head Start Program \$2bn in hydrogen projects
- 10% Hydrogen blend in Natural Gas recognised under the Natural Gas Law Q4 2023



Queensland

Biomethane:

- 83 biogas projects majority combustion heat to power

Hydrogen:

- Queensland Hydrogen Industry Strategy 2019-2024
- Over \$15M in state government funding for hydrogen projects



Western Australia

Biomethane:

- 9 biogas projects

Hydrogen:

- Hydrogen blending project ATCO into the AGIG network
- \$110M state government investment into Hydrogen projects



South Australia

Biomethane:

- 24 biogas projects all creating electricity through CHP

Hydrogen:

- \$593M in government funding for hydrogen production



Victoria

Biomethane:

- 87 biogas projects all creating electricity through CHP

Hydrogen:

- Hydrogen Park Murray Valley – Blending Hydrogen
- Hydrogen House in Victoria



New South Wales



Biomethane:

- First grid connected Biomethane plant (Malabar)
- GreenPower Renewable Gas Certification Scheme
- 87 biogas projects all creating electricity

Hydrogen:

- Western Sydney Green Hydrogen Hub blending hydrogen into the Jemena Network
- NSW Hydrogen Strategy with over \$150M hydrogen funding
- Renewable Fuels Scheme development

Gas supply now and into the future

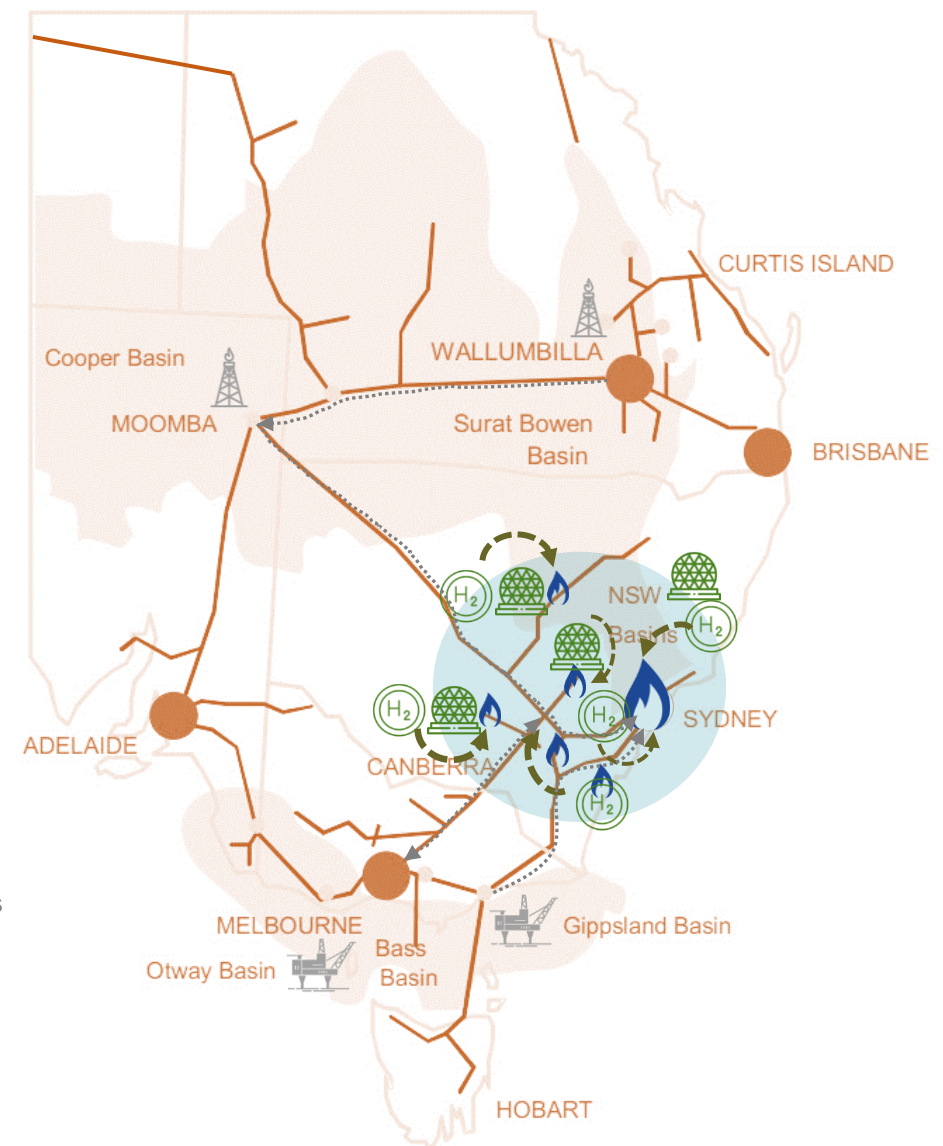
Current State

Gas has come from a few, very large gas basins which are a long way from where we use our gas, being supplied by large transmission pipelines.



Future Potential

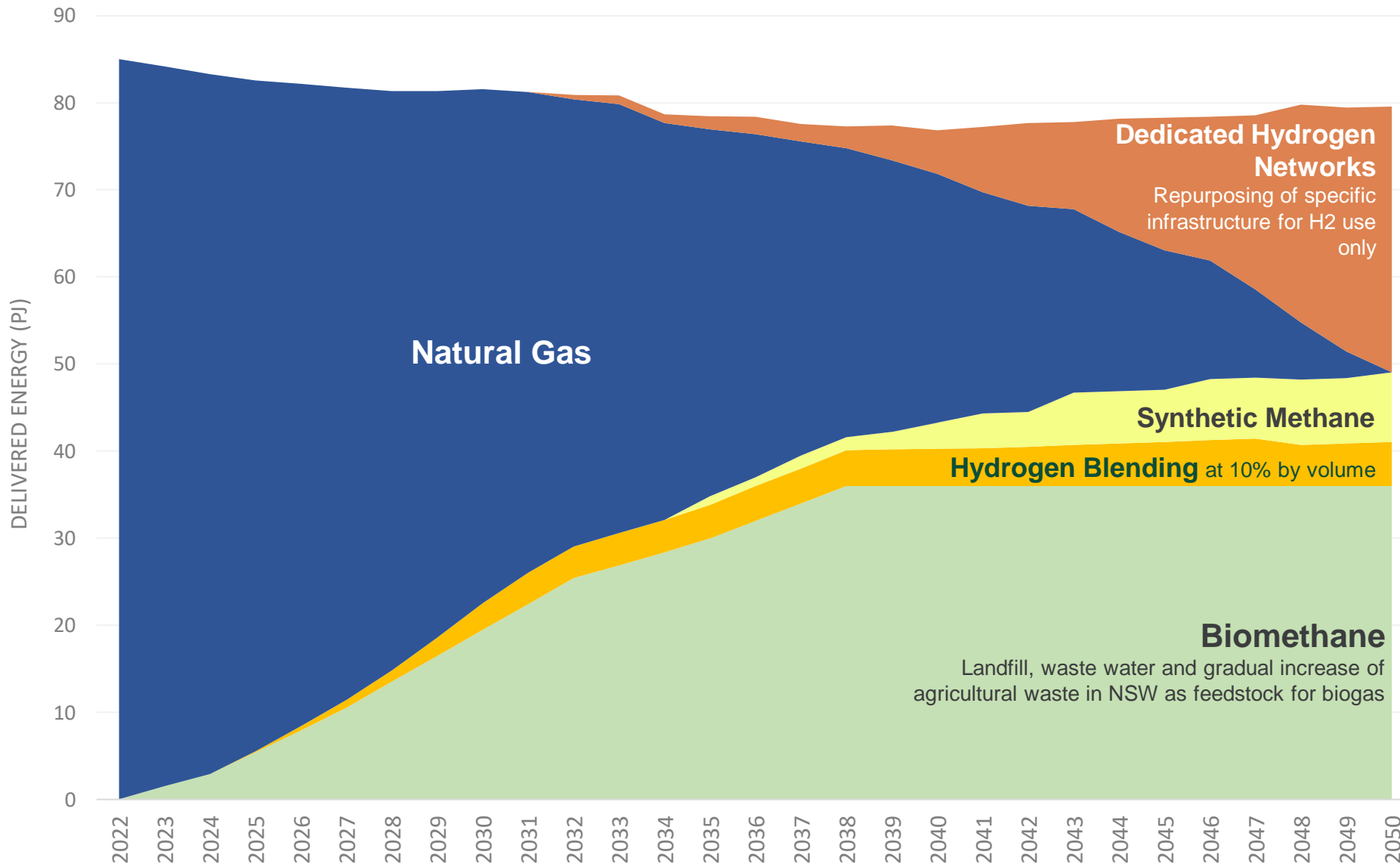
Gas could be sourced from a decentralised network of local smaller-scale renewable gas production facilities.



Potential pathway to lower emissions

By attracting renewable gas into the gas network we can lower the emission of gas use

Example of a blend of renewable gas in the gas network



Indicative only

The scenarios most optimistic about renewable gases are Big Hydrogen and Market Hydrogen



Government policy support underpins a hydrogen export economy with a renewable gas target and certification, subsidies, and tax-offsets, driving down the cost of hydrogen production



A near-term technological breakthrough driven by the market results in renewable gases becoming competitive with electrification, creating a diverse energy mix.

Regulatory response slider



electrification future on its own **Renewable Gas connections in the future** *electrification working with renewable gases*

DO NOT pursue any renewable gas connections **SUPPORT** renewable gas connections **EXPEDITE** renewable gas connections

Renewable gas blend	None	~10% renewable gas blend by 2030	~20% renewable gas blend by 2030
Electrification	Households may need to electrify earlier	Some households may delay electrification	Some households may delay electrification
Customer retention	Customer numbers may decline over time more quickly	More customers are retained on the gas network	More customers are retained on the gas network
Reliability in regional areas	No change to gas supply reliability in regional areas	Gas supply reliability in regional areas slightly improved	Gas supply reliability in regional areas slightly improved
	Bill impact, 2025-30	Bill impact, 2025-30	Bill impact, 2025-30
		\$3 a yr	\$6 a yr

If significant numbers of customers leave the gas network, bills may increase

Managing Jemena's financial risk through accelerating capital recovery

Jerrie Li

Senior Regulatory Advisor

Jemena

Customer values: affordability, planning for our future and fairness



Coffee shop parable: Making coffee under uncertainty

Every **7 years**, you invest **\$7,000** in a new coffee machine



La Pavoni Commercial Volumetric
2 Group Espresso Machine

You sell **200 cups** of coffee per year... at **\$5 per cup**.

Each year, you get **\$1,000** in revenues
(\$5 X 200 cups)

It takes **7 years** to recover your coffee machine.
(\$1,000 X 7 years)



However, the government has announced that:

- There may be phasing out of coffee in the future
- Some people think coffee is unhealthy which is starting to gain momentum via social media and published expert reports!

Demand for your coffee will start declining in the next 7 years. How do you price your coffee after the government announcements?

Situation without government announcements

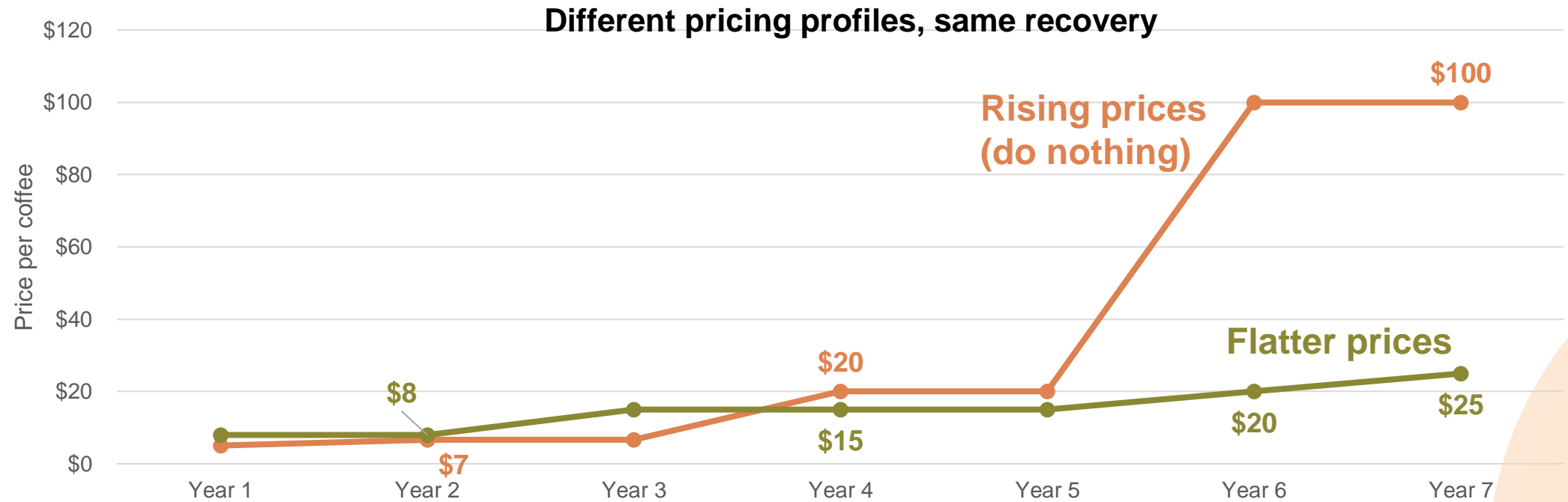
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Price per cup of coffee	\$5	\$5	\$5	\$5	\$5	\$5	\$5
Coffee cups sold (demand)	200	200	200	200	200	200	200
Cost recovered	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000

Total cost recovered in 7 years: **\$7,000**

Pricing your coffee under uncertainty

How would you price your coffee in the future?

What are the considerations?



\$7,000

Do nothing to address declining demand							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Price per coffee	\$5	\$7	\$7	\$20	\$20	\$100	\$100
Coffee cups sold (demand)	200	150	150	50	50	10	10
Cost recovered	\$1k	\$1k	\$1k	\$1k	\$1k	\$1k	\$1k
Total cost recovered in 7 years: \$7,000							

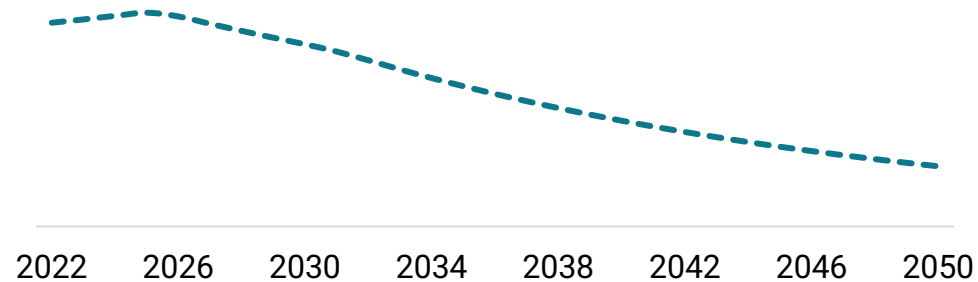
Increase prices by a little right now							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Price per coffee	\$8	\$8	\$15	\$15	\$15	\$20	\$25
Coffee cups sold (demand)	200	150	150	50	50	10	10
Cost recovered	\$1.6k	\$1.2k	\$2.3k	\$0.8k	\$0.8k	\$0.2k	\$0.3k
Total cost recovered in 7 years: \$7,000							

Delivering gas under uncertainty

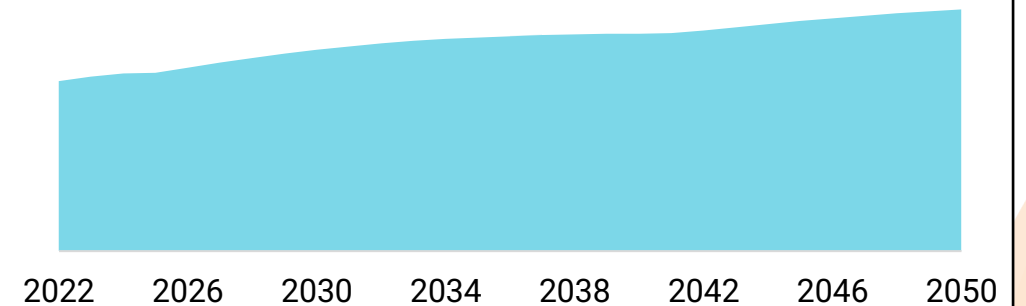
In the transition to net zero, the gas network faces similar issues to the coffee shop.

However, managing the gas network under uncertainty has some added complications...

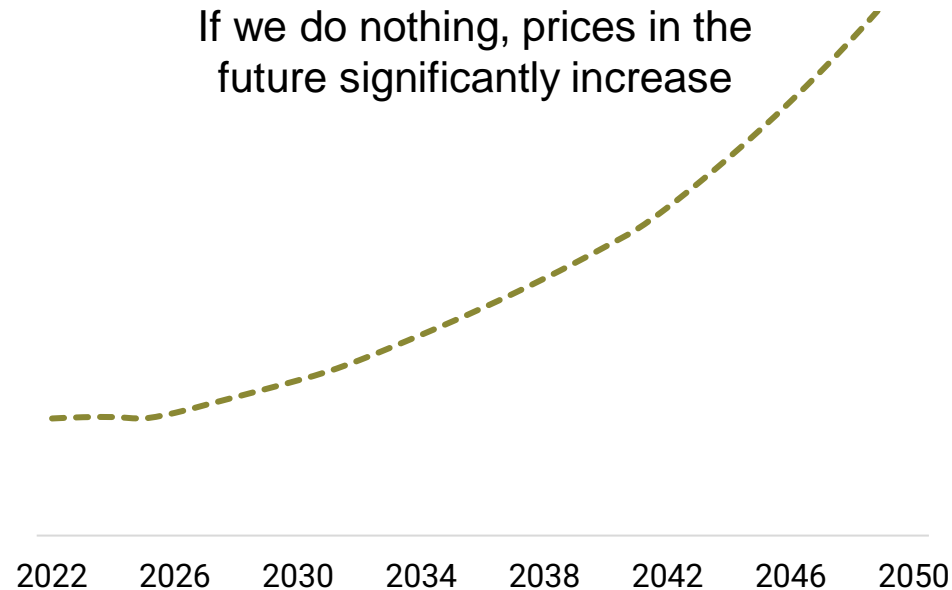
There is significant uncertainty in future gas demand



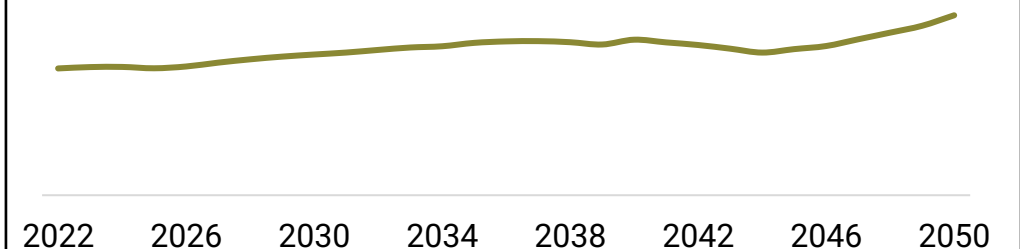
Even with minimal investment, our asset base continues to grow due to long asset lives



If we do nothing, prices in the future significantly increase



If we adjust our prices early, prices can remain flatter in the longer-term

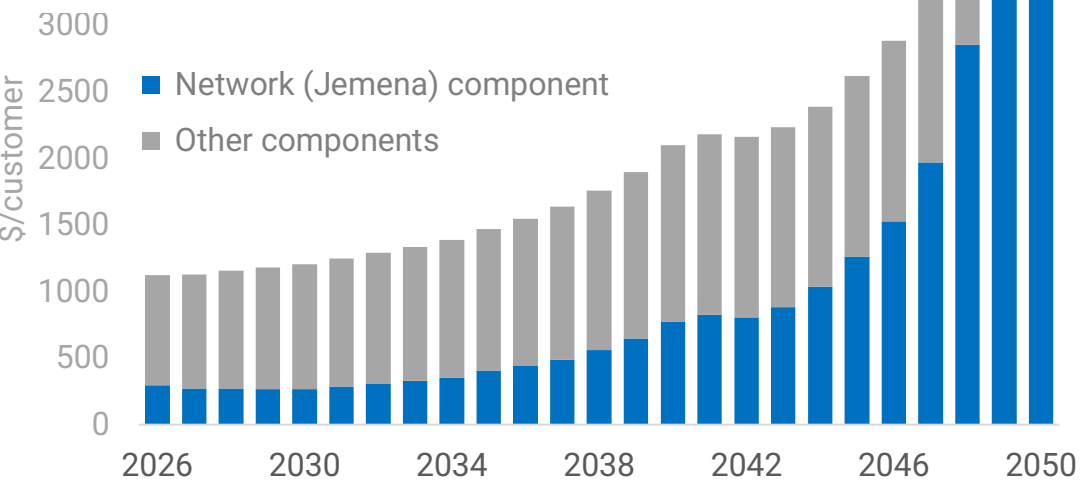


Doing nothing means higher future bills



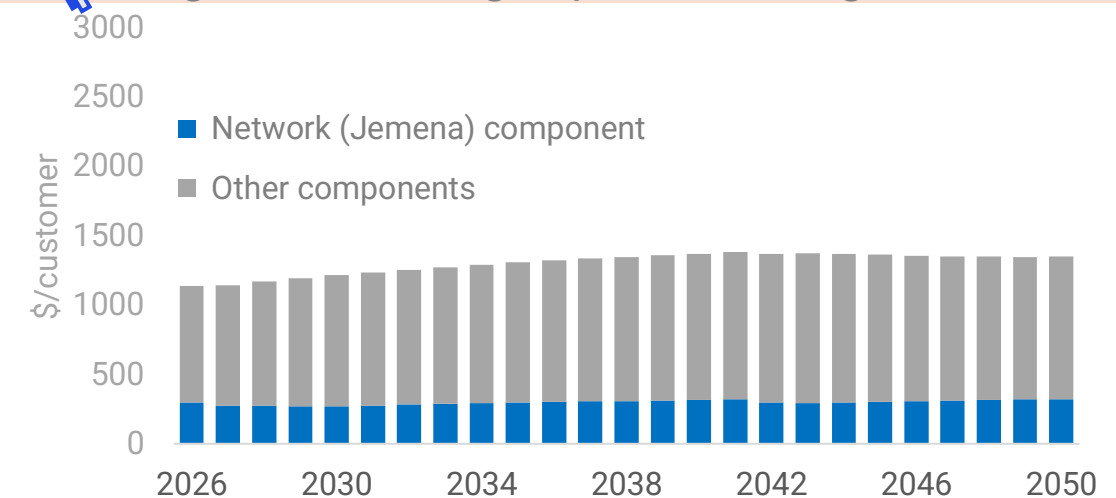
Electric Hare

High electrification, govt. led



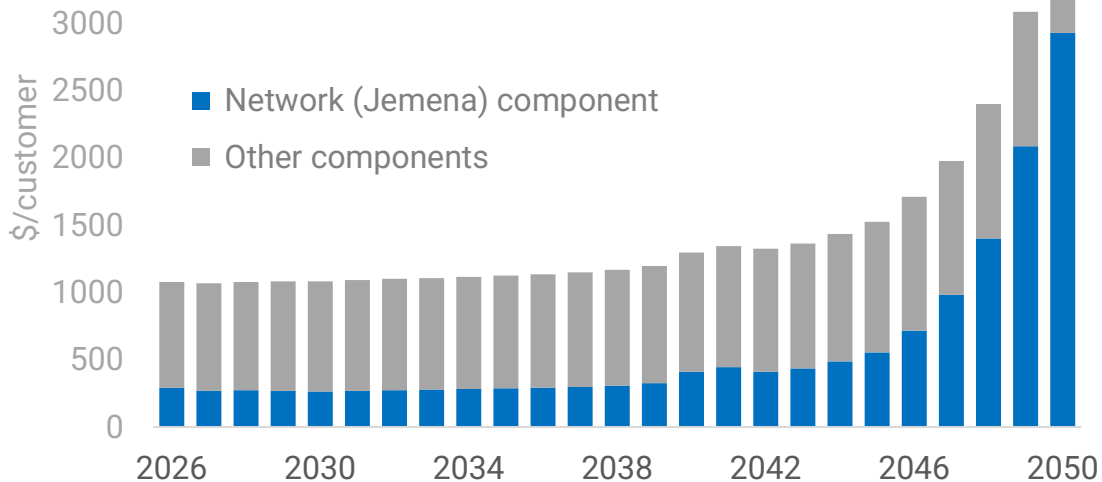
Big Hydrogen

High renewable gas penetration, govt. led



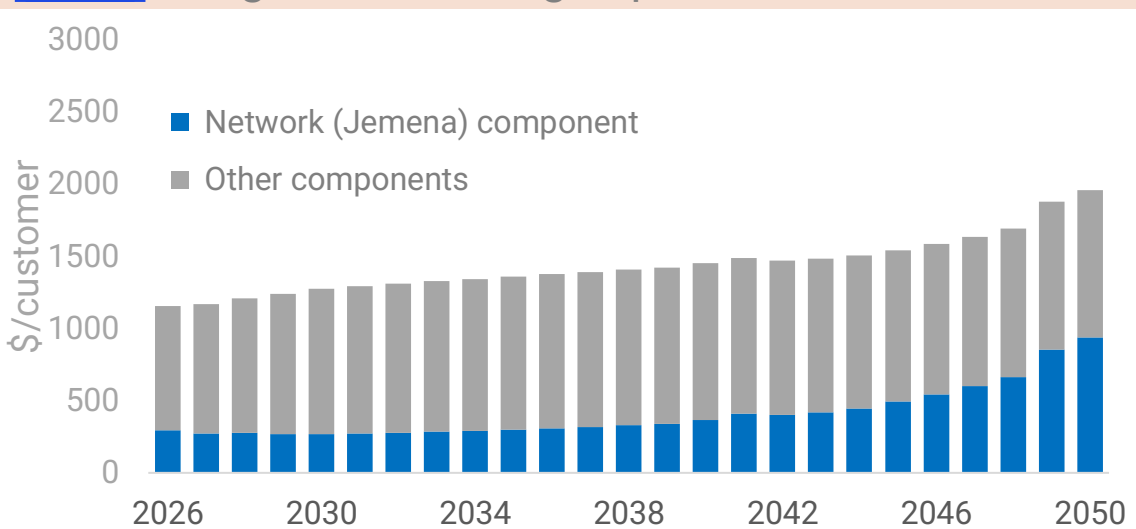
Electric Tortoise

High electrification, market led



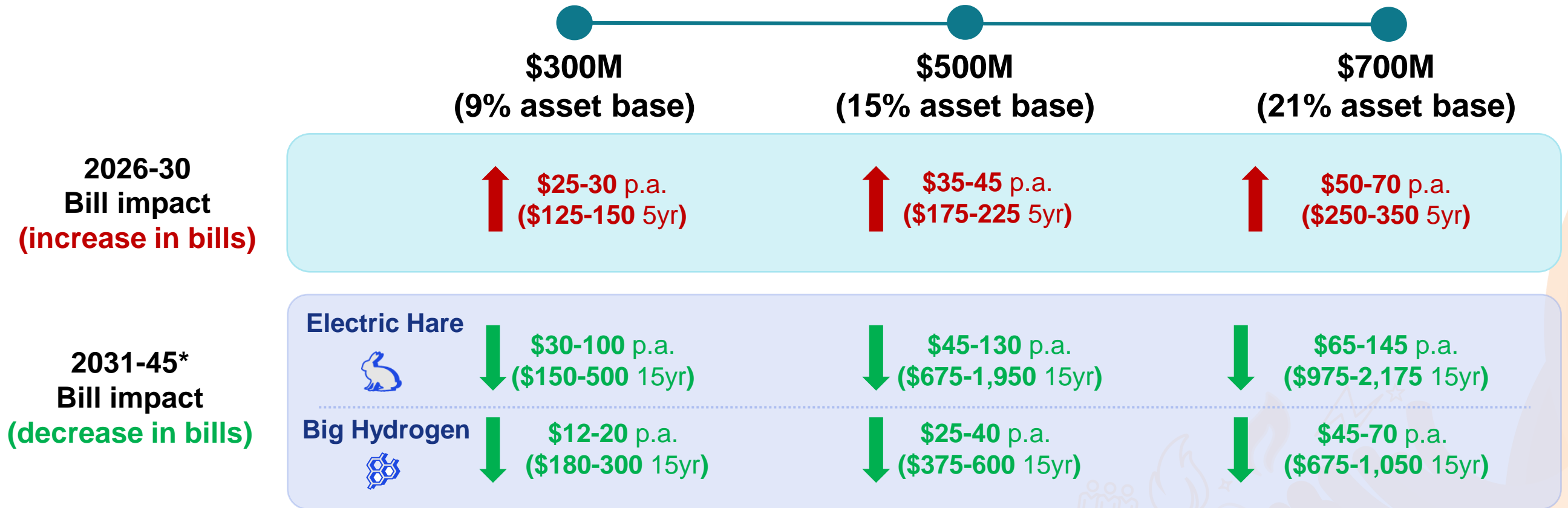
Market Hydrogen

High renewable gas penetration, market led



Regulatory response slider

Accelerate capital recovery in 2025-30:



*Note: The period 2046-50 is excluded here as the 2 electrification scenarios have very high bill shocks due to low demand

How we manage our assets

Shahab Mian
Asset Management AA Stream Lead
Jemena

Customer values: Affordability, reliability, planning for our future, and environmental



Managing your assets



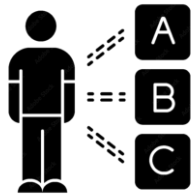
Your Network and its associated assets



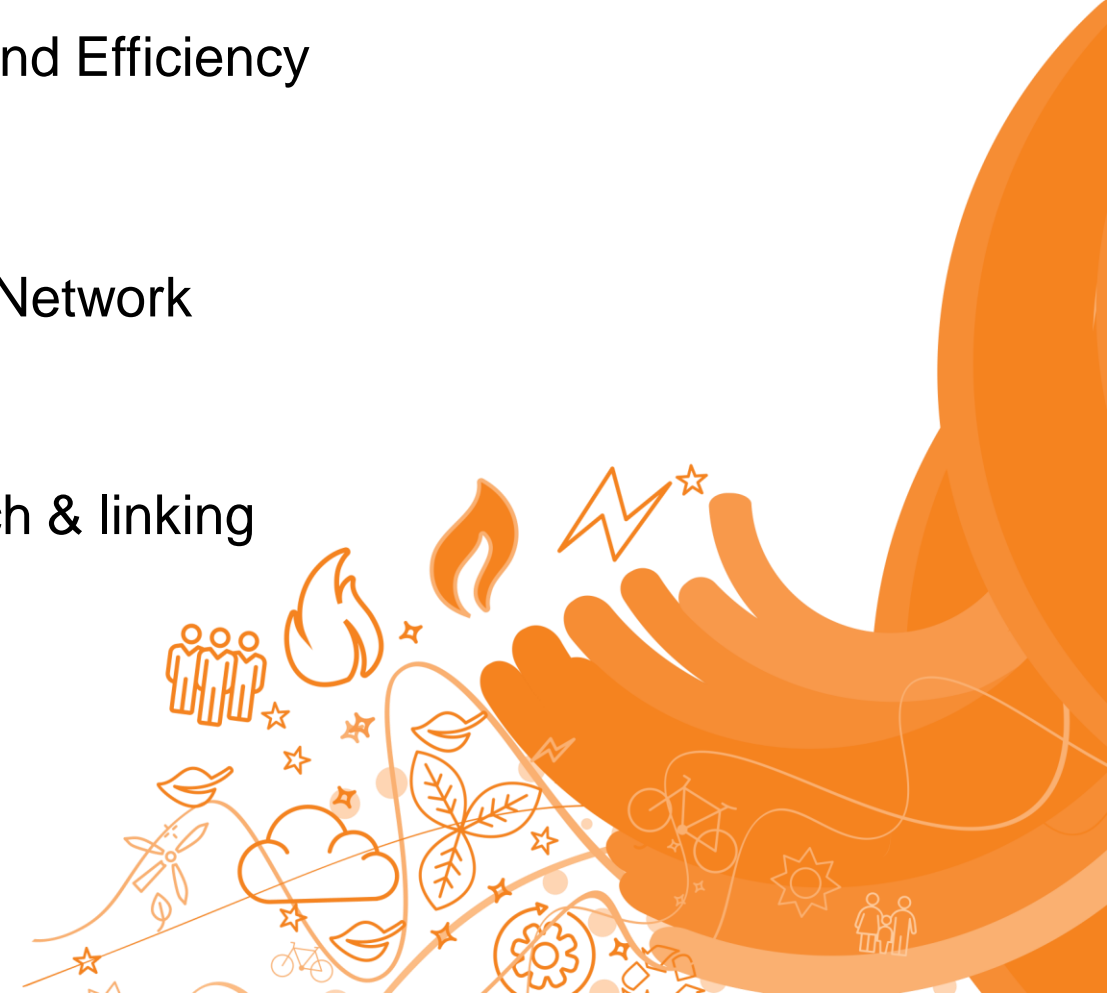
Managing the Network | Safety, Reliability and Efficiency

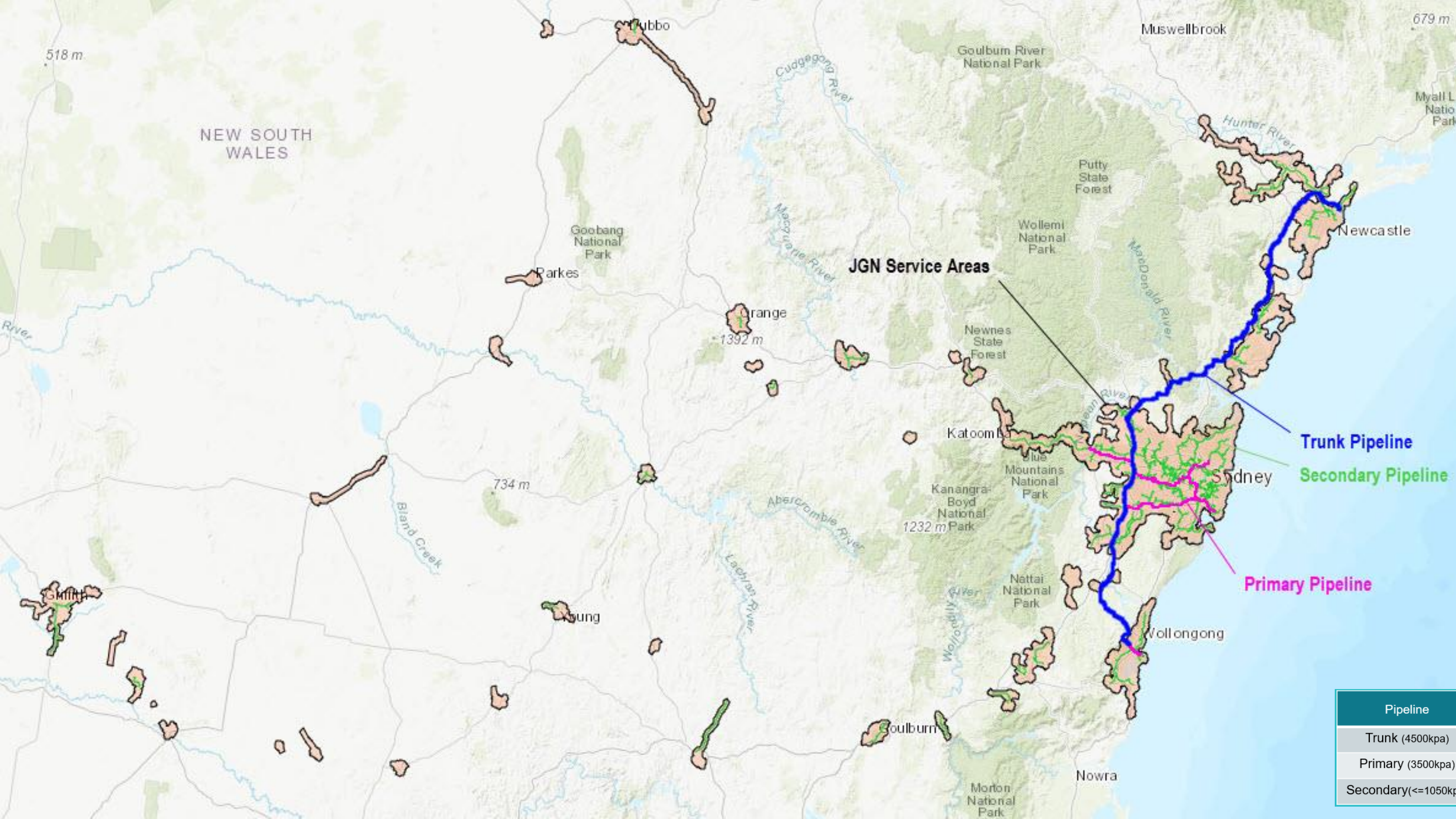


Capex v Opex | Replacing and Maintaining Network

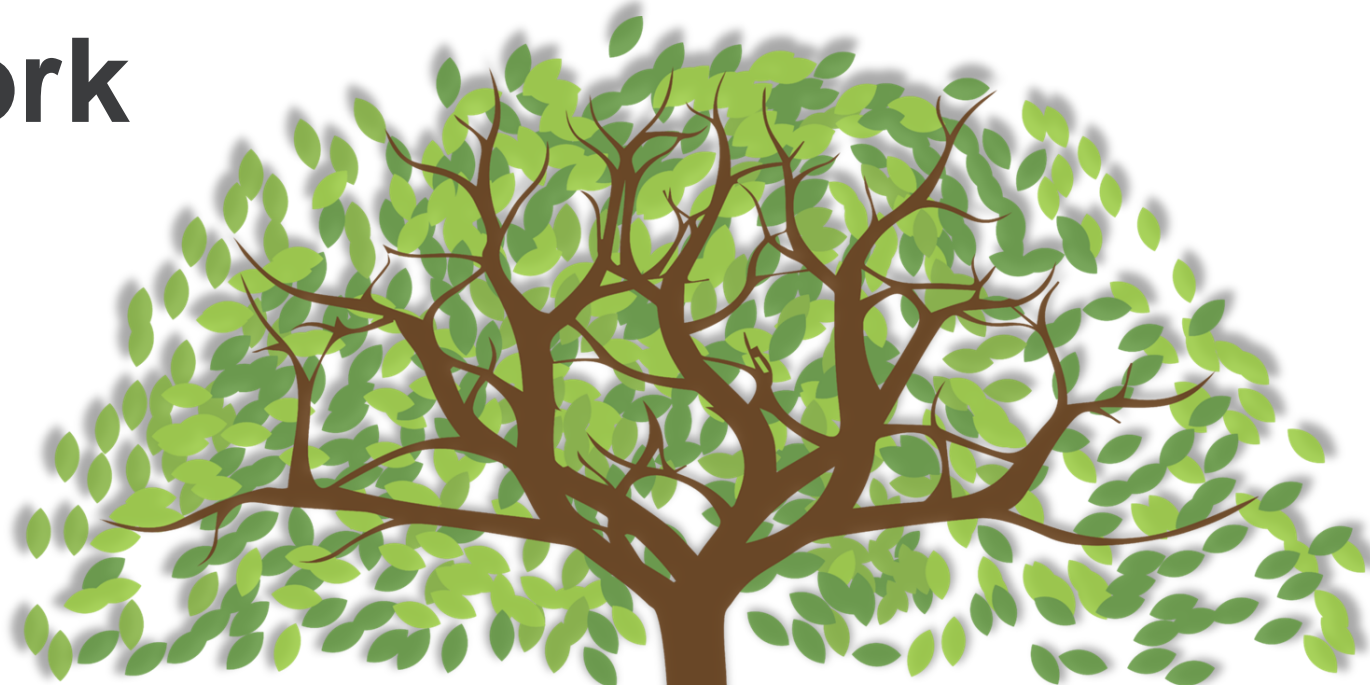


Options around Asset rehabilitation approach & linking to future scenarios





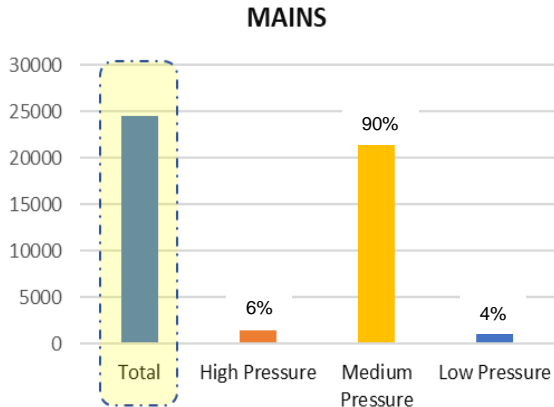
Your Network



Trunk
271 km

Primary & Secondary
1598 km

Medium & Low Pressure
24,430 km



Capex v Opex |

Replacing and Maintaining Network

CAPEX



Capital Expenditure (Capex) can be likened to purchasing a car. When you decide to buy a car, you make a one-time investment to acquire the vehicle.

OPEX



Operating Expenditure (Opex) is ongoing costs. These expenses occur regularly and are necessary to keep the car running. i.e. fuel costs, servicing and repairs.

Trade-Offs



One Off \$ Cost

Ongoing \$ Cost

Emissions

Leaks

Reliability


Optionality

Risk / Safety


Managing your network |

Safety, Reliability and Efficiency


Asset Replacement Program



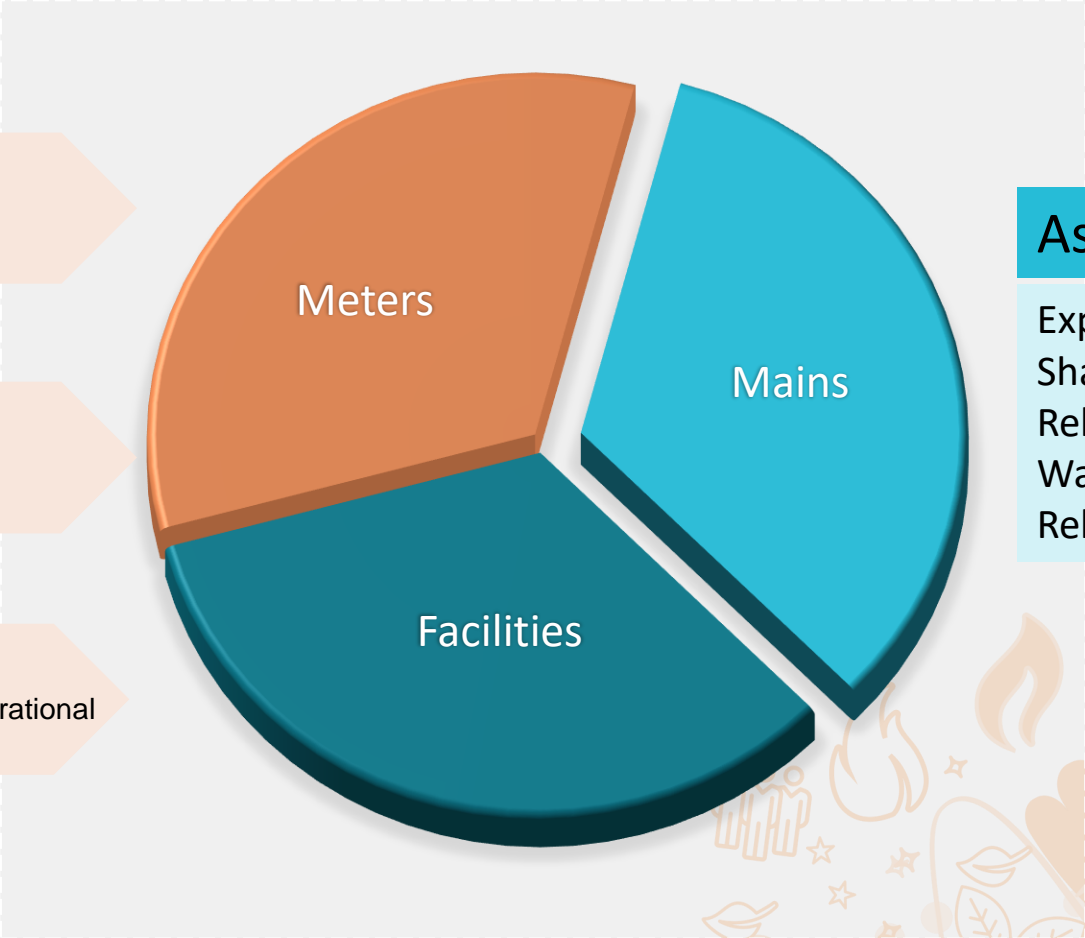
Safety & Compliance
To ensure as a gas operator we comply with relevant safety standards and regulations.



Integrity & Reliability
Address defects and damage on the gas assets to make sure they are appropriate for their intended purpose.



Efficiency
To improve the network's operating efficiency by reducing operational costs related to leaks and repairs.



Associated Activities

- Exposed Mains
- Shallow Mains
- Rehabilitation
- Washaways
- Relocations



Approach | Mains Rehabilitation

As we do today

We identify leakages via **foot surveys** of JGN's network. Undertaken over a five year cycle, or via **publicly reported** leaks.



On identification of too many leaks, we **replace** the whole part of the network. Giving the main a **new life (30-50yrs)**. This also enables us to utilise the network in the **future**.



With use of technology

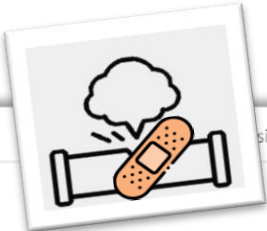
Using **technology**, it will enable us to pin-point leaks rather than estimating location/size of leaks.

This helps in **targeting** the specific part of the part of the network. This also enable us to **identify the areas of emissions**.

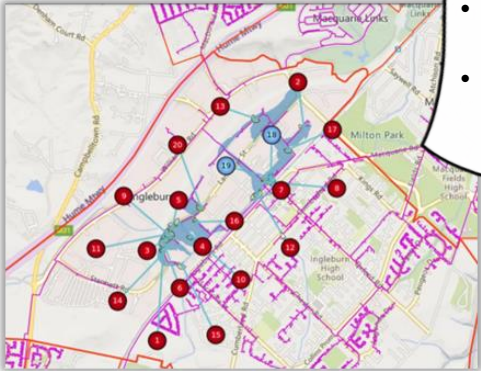
Picarro – our gas leak detection car



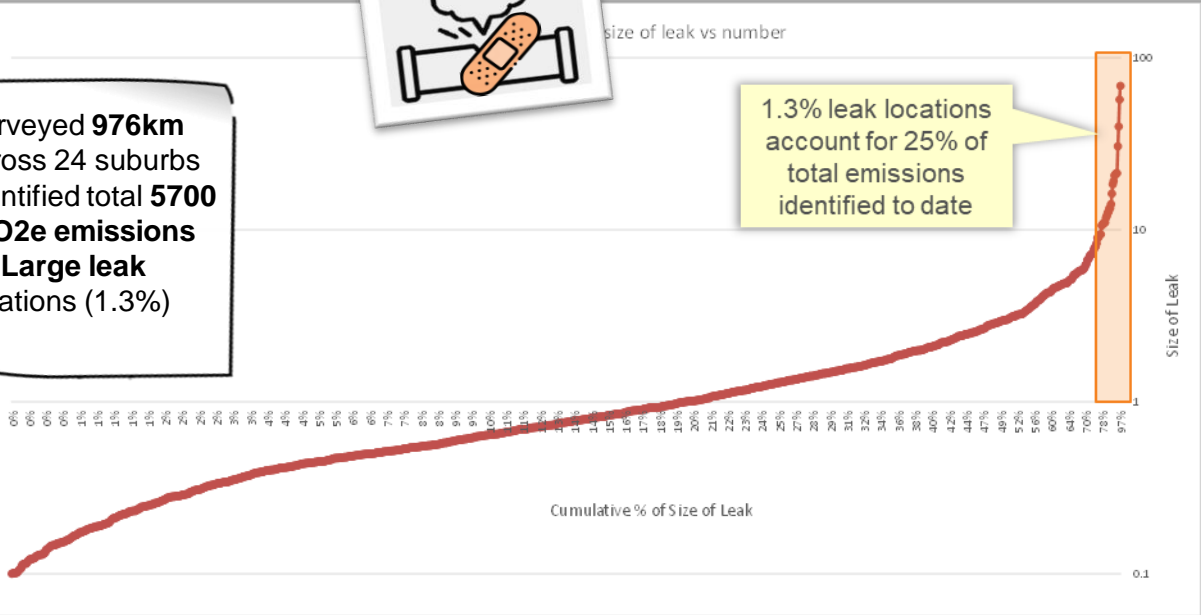
Picarro international experience shows 20% of leaks account for 80% of emissions



- Surveyed **976km** across 24 suburbs
- Identified total **5700 tCO2e emissions**
- **24 Large leak** locations (1.3%)

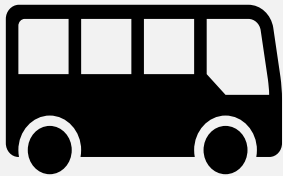


Sample – Ingleburn



Options | Mains Rehabilitation Approach

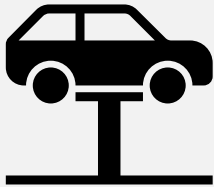
Option A



Market Hydrogen

Maintain current asset rehabilitation program

Option B



Big Hydrogen



Electric Hare

Defer current rehabilitation program for 5 years to wait for certainty about the future of gas with short term maintenance impacts

Option C



Electric Tortoise

Targeted rehabilitation to reduce long-run capex. Medium to Long term will continue to attract some maintenance & repairs

Current rehabilitation plan

Defer rehabilitation for 5 years

Targeted rehabilitation plan

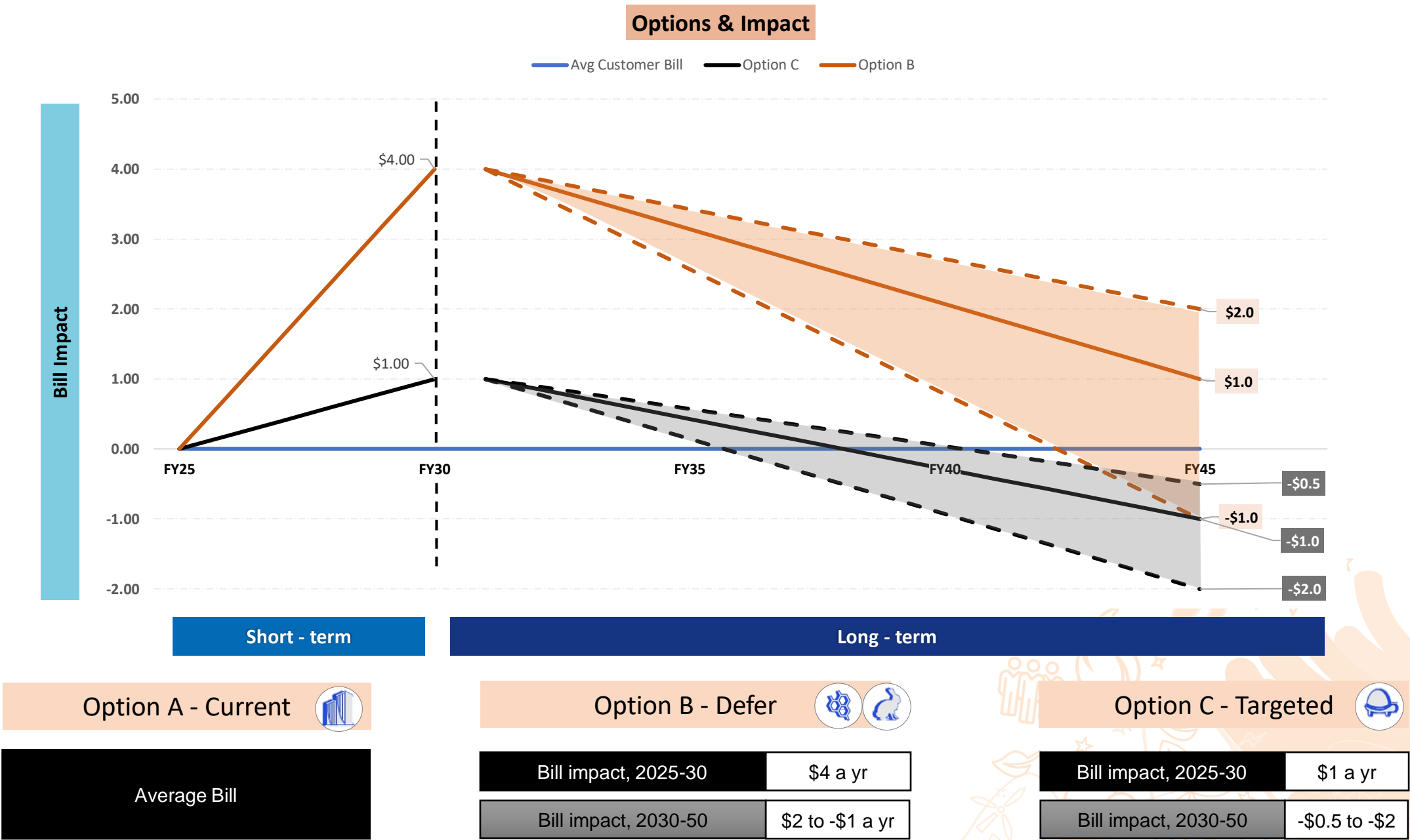
Key Areas	Short-term FY25-FY30	Long-term FY31 & Beyond
Capex \$	↔ Baseline	
Opex \$	↔ Baseline	
# of leaks reduced	Most	Most
Maintaining service level	Most	Most

Short-term FY25-FY30	Long-term FY31 & Beyond
↓ \$ 50M	↔ Baseline
↑ \$ 10M	↔ Baseline
Least	Least
Least	Least

Short-term FY25-FY30	Long-term FY31 & Beyond
↓ \$ 10M	↓ \$ 2M / Yr
↑ \$ 1M	↑ \$ 0.2M /Yr
Median	Median
Median	Median

Note: For all options we will repair assets when required for safety reasons

Bill Impact | Across Options



Managing Jemena's financial risk through a new approach to connections

Alban Delpey

Commercial Manager – Gas Distribution

Jemena

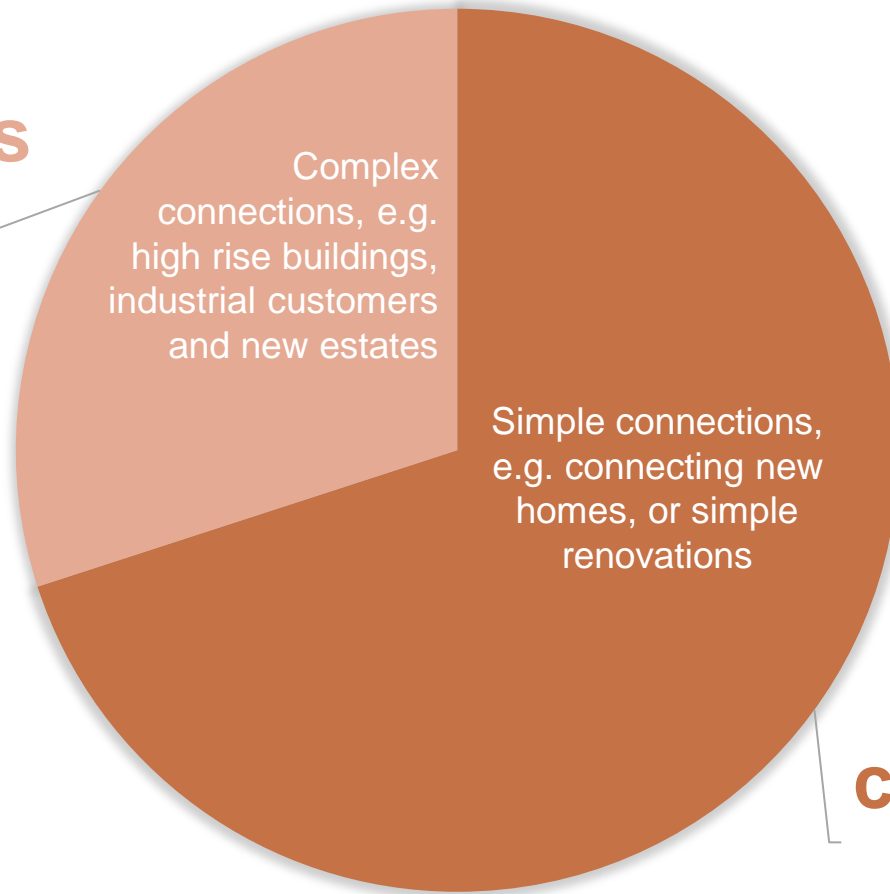
Customer values: Planning for our future and fairness

Connecting to our network



**negotiated
connections**
30%

Complex connections, e.g. high rise buildings, industrial customers and new estates



Most new connections are
basic connections



**basic
connections**
70%



Split of new connections: basic vs negotiated

Connection charges

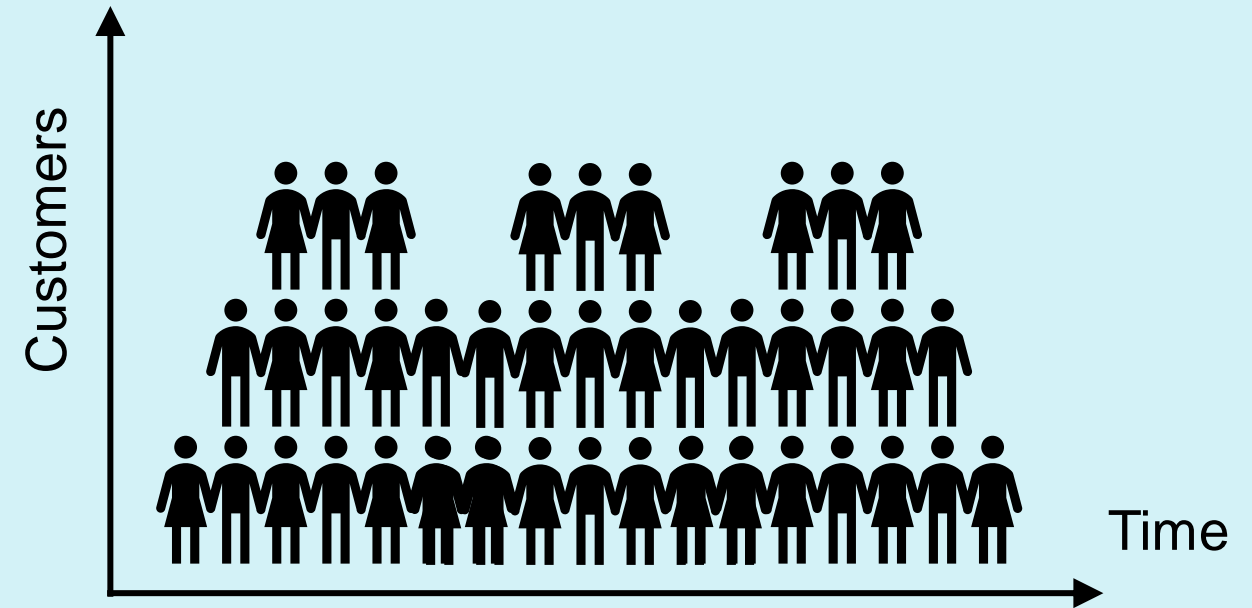
Connection charges

We are allowed to charge an upfront amount that allows us to “break even”



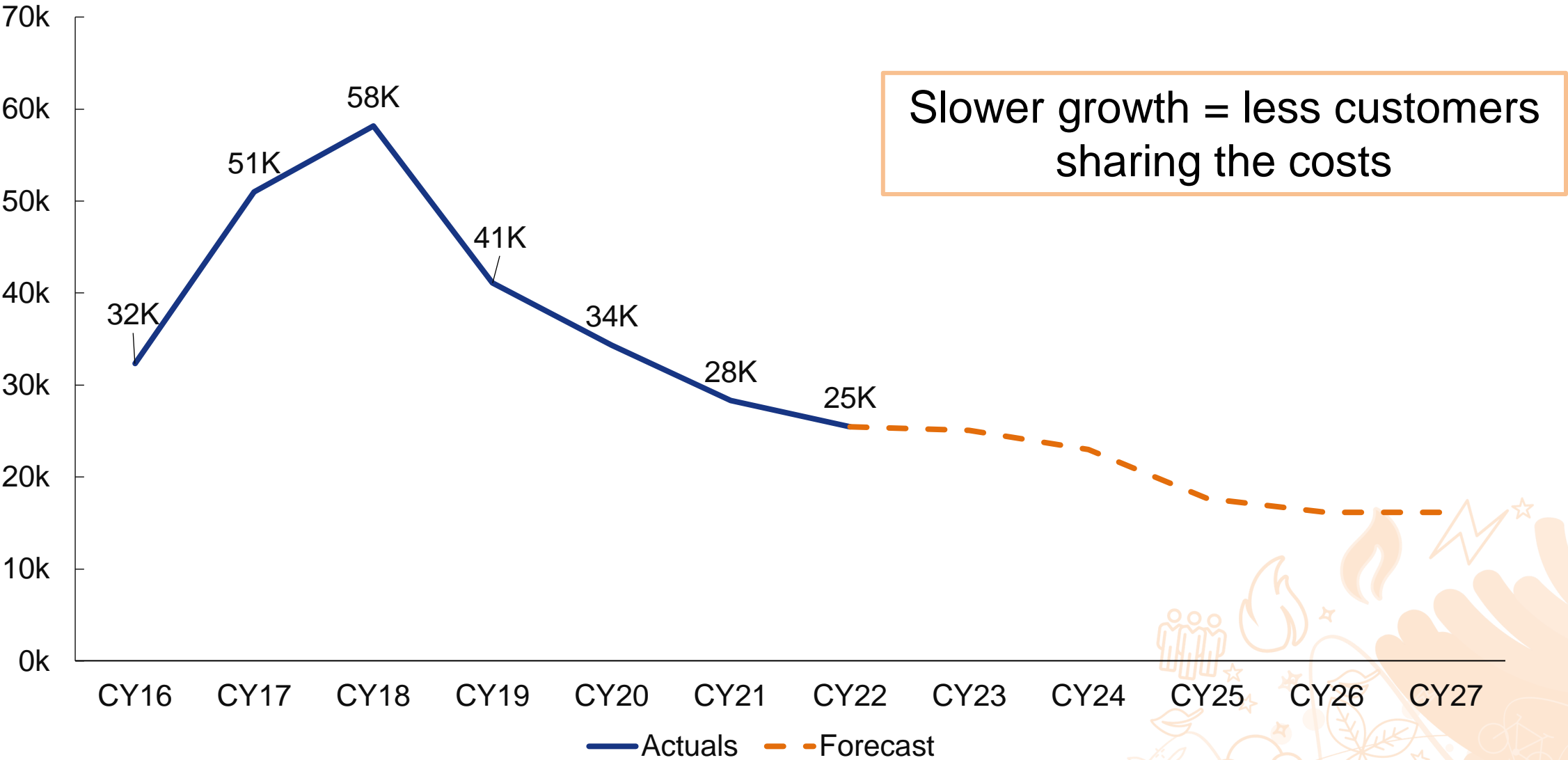
The amount we charge for a new connection must not exceed the difference between our costs and revenues derived

Currently, the cost of new connections is recovered over many years, across the customer base



This method of **sharing** costs is what enabled us to **keep connection charges low**.
More customers means that our fixed costs are spread over a larger customer base.

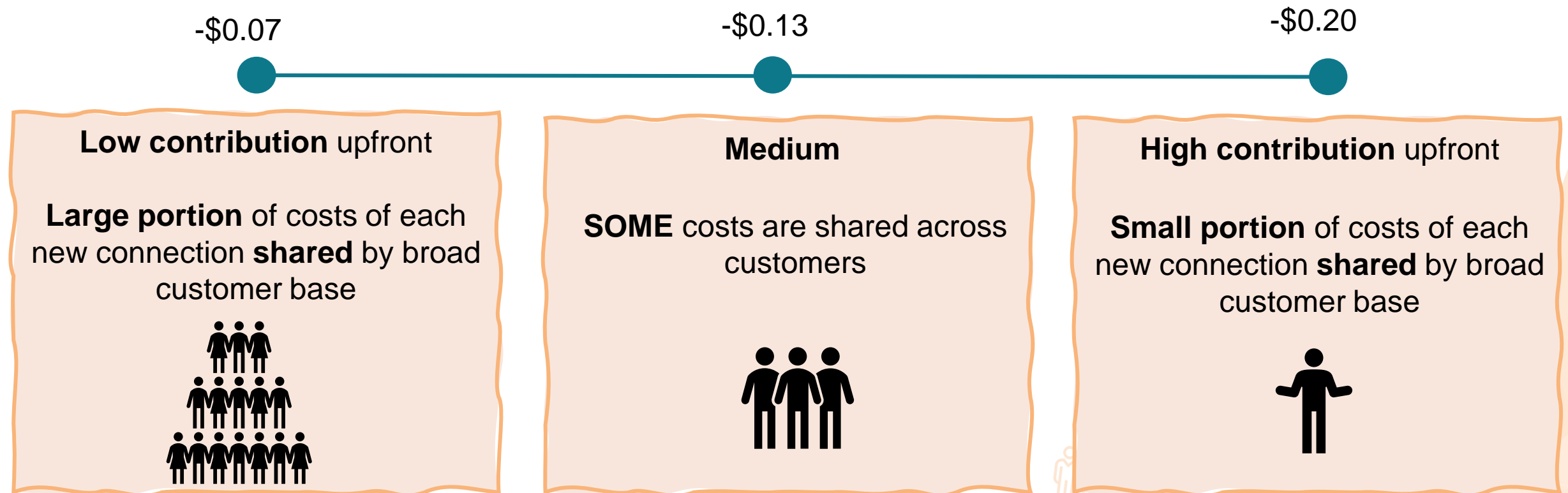
New connections growth



Regulatory response slider

In the context of current uncertainty about the future role of our network, should we reconsider our current approach to how we charge for connections?

Should costs be largely spread across the customer base or should new customers pay a greater portion upfront?



These bill impacts do not account for changes in new connection numbers that could result from customers choosing not to connect because of higher contribution charges. If less customers connect, our costs will need to be shared across a lower customer base potentially resulting in higher bills.

Supporting Vulnerable Customers[☆]

Anson An

Strategy Manager, Customer and Commercial
Jemena

Customer values: Affordability and fairness



Understanding vulnerability

We have worked with our customers, communities and internal stakeholders to understand what vulnerability means for Jemena.



‘Consumers experiencing vulnerability’ refers to circumstances that mean a person may be less able to protect or represent their interests, engage effectively and/or are more likely to suffer detriment. This includes having insufficient capacity to pay for energy use.

Australian energy consumer overview

Vulnerability is a complex topic, entailing a range of characteristics and causal factors which may be permanent or transient.

1 in 5

National Debt Helpline callers with energy issues experiencing mental health problems

34%

of households are more concerned about paying their energy bills than they were prior to COVID-19

63%

of Jemena customers find energy bills and usage information confusing

1 in 10

Jemena gas and electricity customers often struggle to pay their energy bills

2x

More disposable income is spent by low-income households on energy than average-income households.

30%

of Australians have savings equivalent to or less than one month's income, leaving them just a few paychecks away from financial hardship

Who supports customers experiencing vulnerability?

The NSW Government and energy retailers can play a bigger role for households facing energy bill stress, because of their direct contact with customers.

Non-exhaustive

Government



National Energy Price Relief Plan including coal price cap and Commonwealth temporary gas price cap.

NSW Energy Rebate Support

NSW Government National Energy Bill Relief Fund

Retailer



"Power On" program to help customers manage their energy use and bills and making debt collection and disconnection the last resort.



"Staying Connected" that offers payment plans, bill smoothing, and other support to customers experiencing financial hardship.



"National Hardship Policy" provides assistance to customers facing financial difficulties and having trouble paying their energy bills.

Network



A Vulnerable Customer Program provides assistance to customers who may be at risk of disconnection or experiencing financial hardship. Customers must meet certain criteria, such as being on a low income, having a medical condition that requires electricity, or experiencing financial hardship due to unforeseen circumstances.



'Priority Service Program' including services such as a dedicated customer support team, advice on efficient usage, support for CALD communities.



Vulnerable Customer Program offers a range of services and assistance to eligible customers to help them manage their energy bills and access additional support where needed.

How has Jemena supported customers experiencing vulnerability?

Jemena continues to play a pivotal role in supporting vulnerable customers and communities. The following highlights some of the key initiatives undertaken to date.

Voices for Power 'Train the Trainer' Project (NSW)

546 participants trained in 2022

Uniting Energy Assist Program

85 appointments in FY 21-22

Bring your bill days (VIC)

Ca. 160 customers p.a

Aboriginal Workforce Mentoring Program

350+ aboriginal job seekers across the NT supported to date

Community Grants Program

21 grants awarded

Sponsorships and donations

21+ organisations in 2022

Energy Charter #BetterTogether - Knock to Stay Connected (Trial)

Energy Charter #BetterTogether - Cost of Living Initiative

Potential focus areas

Non-exhaustive

Awareness

Building a network of support
for customers experiencing
vulnerability

Education program

Supporting to build resilient
communities

Accessibility

More accessible language

Enhanced social media
presence and greater visual
information

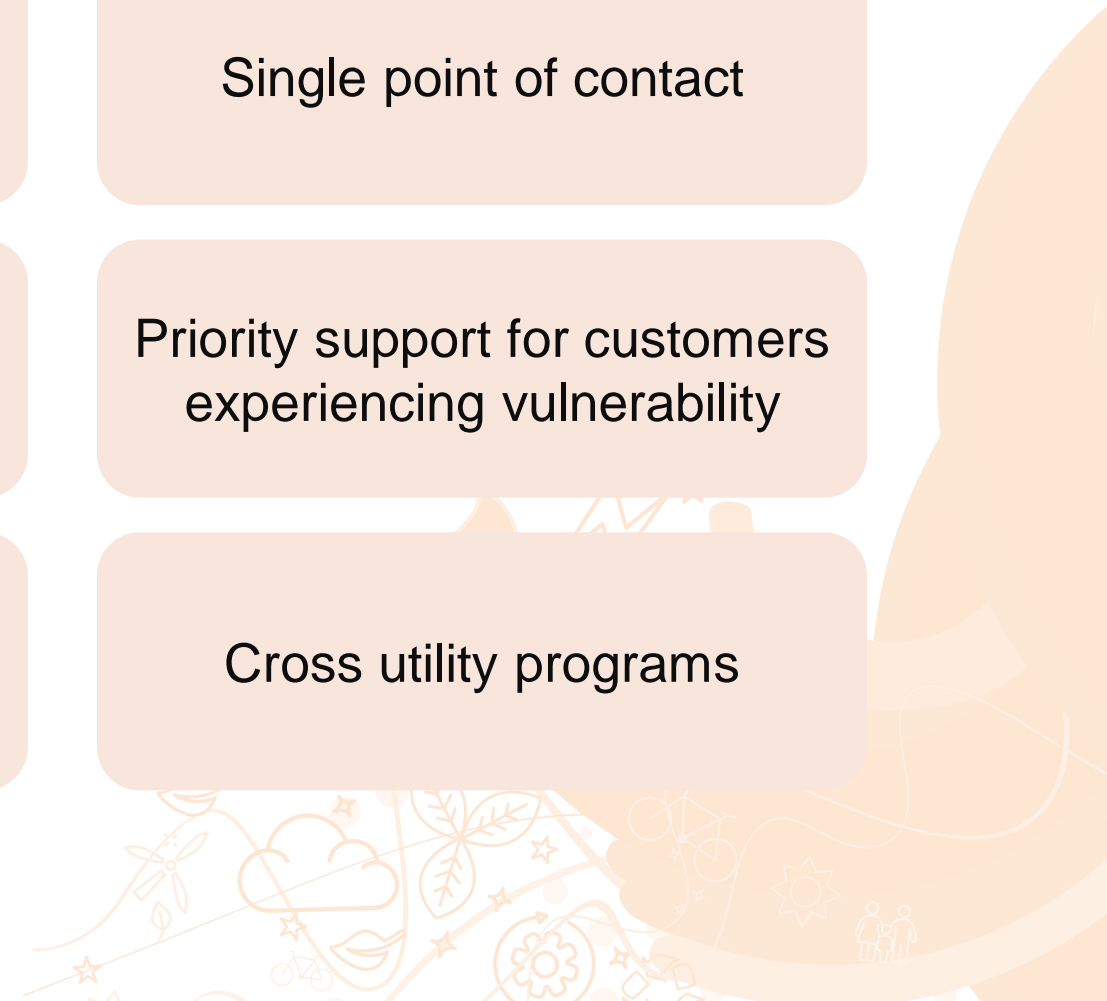
Support hub

Action

Single point of contact

Priority support for customers
experiencing vulnerability

Cross utility programs



Regulatory response slider

Vulnerable Customer Strategy and Programs

When customers get into trouble, or when customers are in a vulnerable situation, what role should the gas distribution network play in supporting customers in vulnerable circumstances?



Assuming a spend of \$500,000 per year across Jemena, the indicative bill impact per customer in 2025-2030 is 30 cents per year.

Customer values: Affordability, Fairness

Rolling Out Digital Metering

Reagan Lobo

Interval Meter Data Manager, Customer and Commercial
Jemena

Customer values: planning for the future, fairness, reliability



Gas residential and small business meters

Mechanical
gears

Rotation
movements

Large in size



Dials for
meter
reads

Location and accessibility of meters



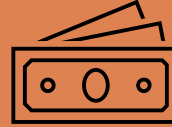
Unsafe locations

Relies on
customer
availability to
access



Challenges

Estimated
Bills



Safety



Unable to
access our
meters

Sudden high
bills



Safe & timely
disconnection



Solution – Digital Meter

Features include

Accurate reads

On demand reads

Able to disconnect remotely

Ease of household energy consumption monitoring

Smaller size








**But it is
more
expensive!**

Regulatory response slider

Digital meters



There is a digital meter solution. Who should receive digital meters?

					
	Do nothing after the trial	Replace hard-to-access meters, but only if they are aged / defective	Replace all hard-to-access meters	Replace all hard-to-access meters AND all internal meters	Replace all aged & defective meters
No. of new meters installed	0	8,000	36,000	70,000	245,000
Bill impact per annum, 2026-30 (per customer)	\$0	\$1	\$1	\$1	\$3
Bill impact per annum, 2031-45 (per customer)	\$0	\$1	\$4	\$6	\$21

Managing Permanent Disconnections

Catherine Marshall

AA Commercial Stream Lead, Customer and Commercial
Jemena

Customer values: affordability, planning for our future, fairness and reliability



Permanent disconnections

What

Steps involved in a permanent disconnection

- 1 Meter is removed from the premise
- 2 Customer service is cut from the main and capped
- 3 While the service is left on the property it is no longer “live” and has no gas
- 4 After permanently disconnecting, a customer needs a new connection to get gas again

Why

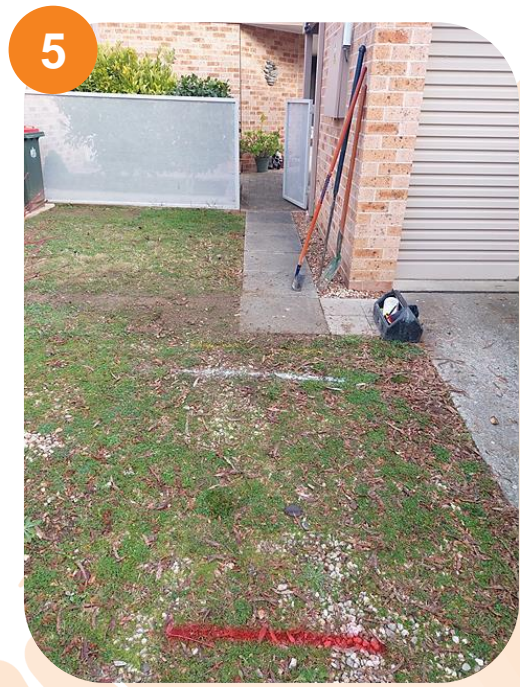
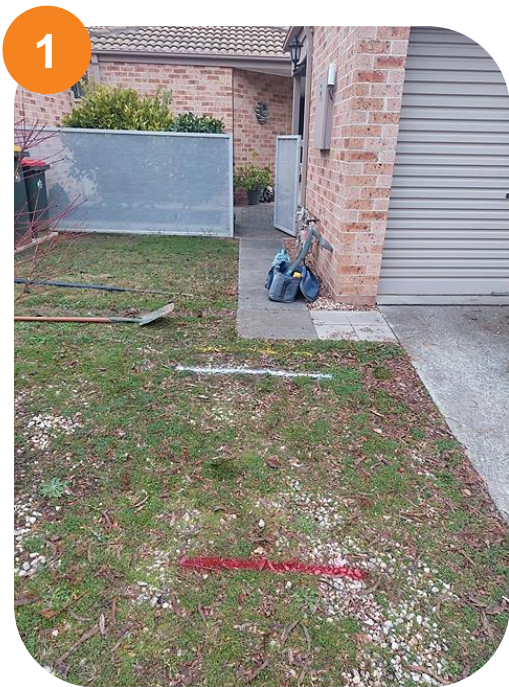
A permanent disconnection may be required for safety reasons, e.g. if someone is doing a knock down/rebuild of their house, or if the site is being developed.

If customers remove all their gas appliances, they may choose to permanently disconnect from the gas network

How many

In recent years, approximately 4,000 customers permanently disconnect from the gas network.

A look at permanent disconnections



Current cost of permanently disconnecting



Cost

Currently, residential customers are charged around **\$1,400 (including GST)** to permanently disconnect from the gas network.



Who pays

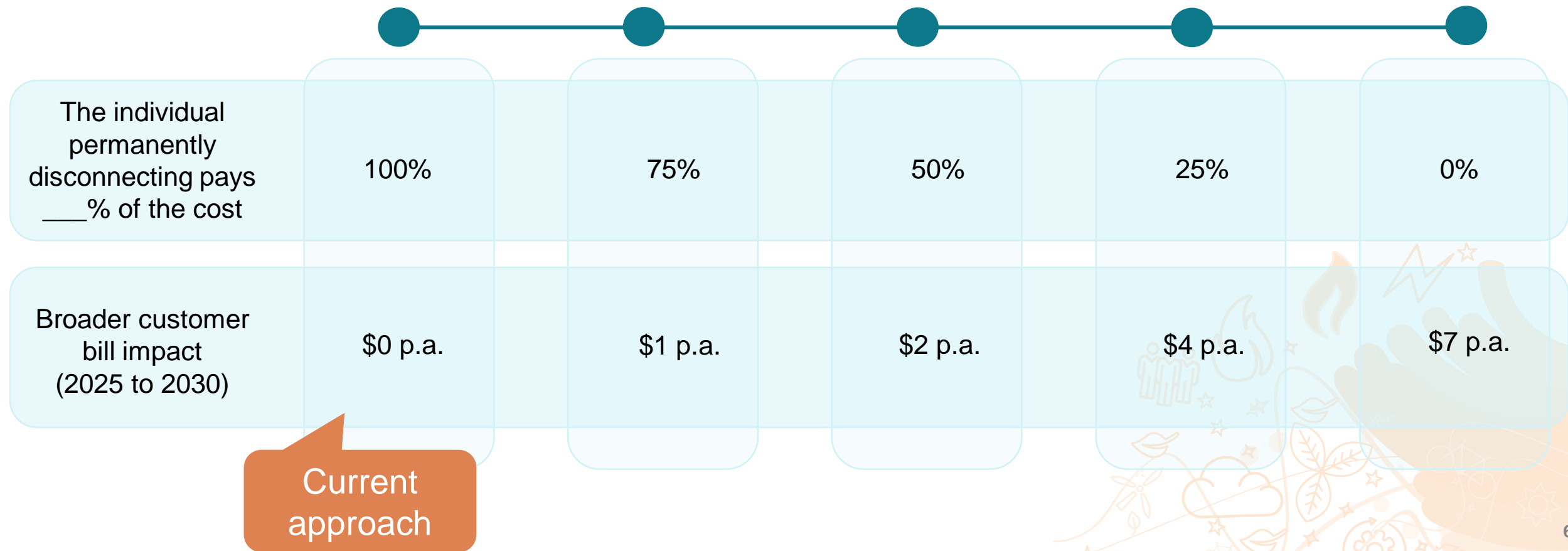
For Jemena, the customer requesting the permanent disconnection pays for it.

In some cases, the cost of permanent disconnection cannot be recovered from the customer.

Regulatory response slider

Permanent disconnections

If an individual permanently disconnects from the gas network, what proportion of that disconnection cost should be shared amongst the broader gas network's customer base?



Group work

- Each group discusses what they've learned and how they think the responses should be set.
- Use the evaluation questions as a guide; and consider the trade-offs just discussed.
- Each person writes their individual assessment of the response on a card. On the card they write a reason for where they've 'set the dial'.
- Look at the consolidated slider for all the responses.
- Is there anyone who is persuaded to move?
- Note overall consensus = 80%

**Lunch – back at
1.45pm**



Reminder: the remit

Australia is transitioning to net zero carbon emissions by 2050. We see a role for Jemena Gas Networks in the transition and beyond 2050. However, there is more and more uncertainty in the energy sector, and cost of living pressures and energy prices are rising.

We want to adapt and take action now so we can create our future, but we need the support of customers to do this.

Can we do this in a way that is fair for customers over the next five years, and beyond, whilst managing uncertainty and remaining affordable in the future?

Drafting recommendations in response to the remit

We've now come to a landing on where you think the responses should be set. You've learned a lot along the way. We'd like you to reflect on the responses but also back on the Remit, to draft some initial recommendations for Jemena.

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Afternoon tea – back at 3.15pm



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Wrap up and thank you!



We will see you online for session six

6pm-9pm Tuesday 15 August 2023.

Any feedback:
GasNetworks2050@jemena.com.au

Login to your private online community to discuss what you heard:
yournetwork.jemena.com.au/login

