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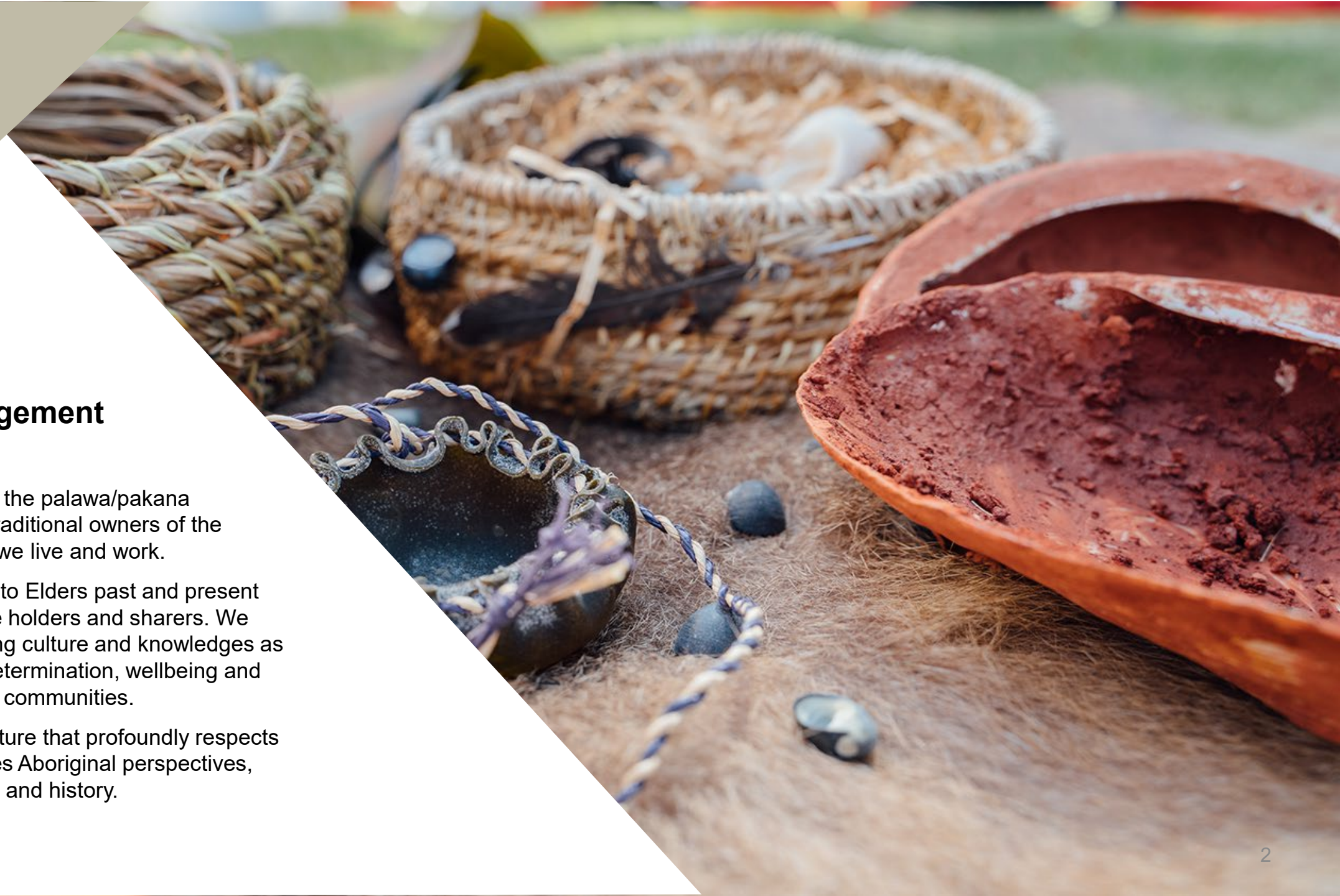
Driving Net-Zero: Options for reducing Tasmania's transport emissions

Technical Policy Paper

Prepared by the

Tasmanian Policy Exchange

July 2023



Acknowledgement of Country

We acknowledge the palawa/pakana of lutruwita, the traditional owners of the land upon which we live and work.

We pay respects to Elders past and present as the knowledge holders and sharers. We honour their strong culture and knowledges as vital to the self-determination, wellbeing and resilience of their communities.

We stand for a future that profoundly respects and acknowledges Aboriginal perspectives, culture, language and history.

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Acknowledgments

The Tasmanian Policy Exchange has been established at the University of Tasmania to make timely and informed contributions to key policy debates occurring in Tasmania and beyond thus making a positive contribution to the future of our state and its people.

We would like to thank the numerous colleagues from across the University who have contributed to the background work that has informed this report.

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About this report

The Tasmanian Policy Exchange welcomes the Tasmanian Government's development of the state's first Emissions Reduction and Resilience Plan for the transport sector. It is hoped that this Technical Policy Paper will support the development of the Plan, helping to transition Tasmania to a low-carbon society.

This Technical Policy Paper is a resource designed to support the *Driving net-zero: Options for reducing Tasmania's transport emissions Discussion Paper* and survey.

For more information, please go to www.utas.edu.au/tpe/netzerotransport.

Contents

Introduction

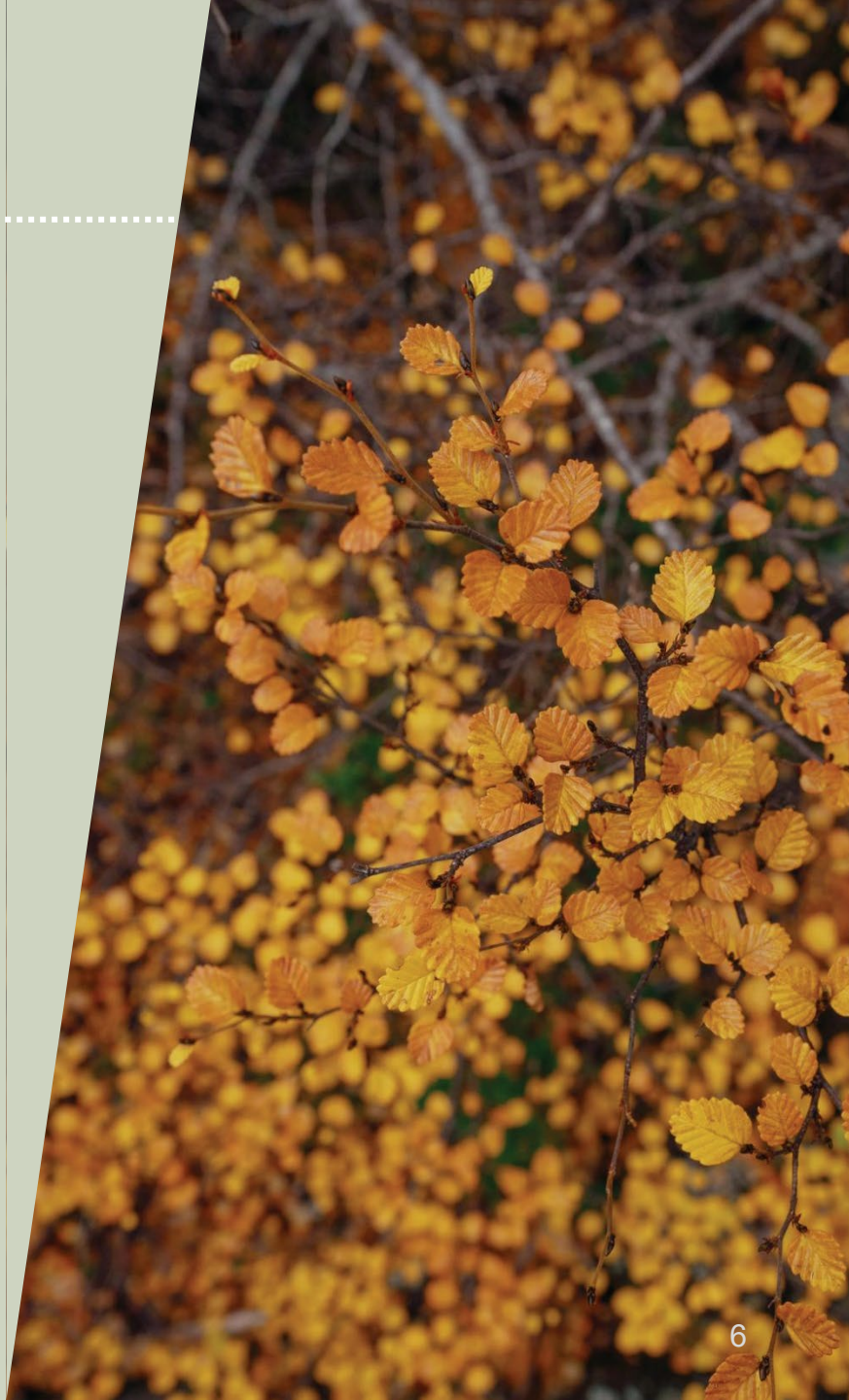
The Australian and Tasmanian Governments have committed to emissions reduction targets and initiatives to reach them; however, these commitments are not yet ambitious enough to sufficiently do our part in limiting global warming to 1.5 degrees in line with IPCC imperatives.

If we are to avoid further damage to our natural ecosystems, society, economy, and individual health and welfare, we must urgently take more ambitious action. As one of only a handful of net carbon-negative jurisdictions on the planet, Tasmania is well-placed to contribute to addressing this critical challenge by further reducing our absolute emissions.

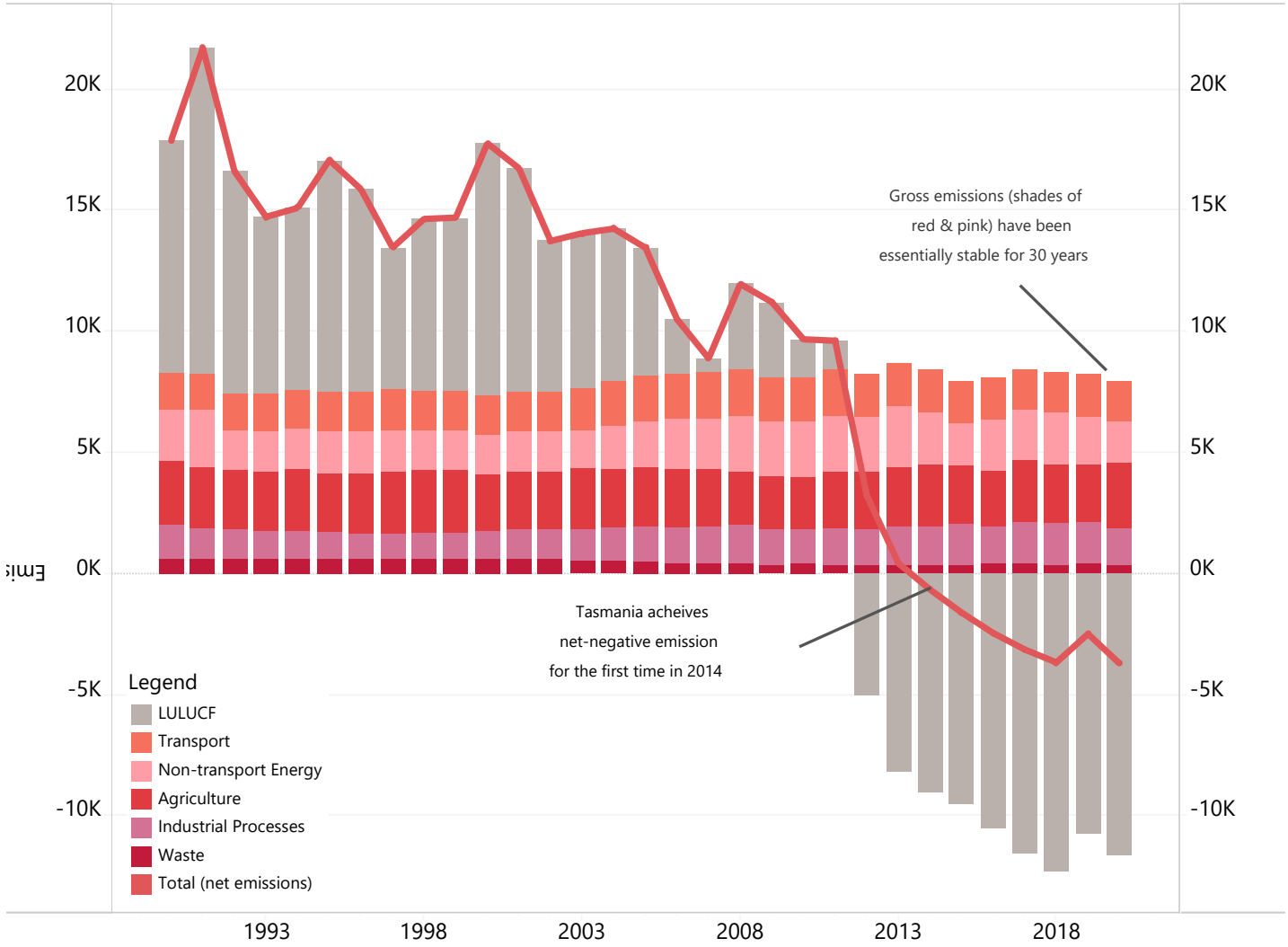
The Tasmanian Government has launched a Climate Change Action Plan outlining the government's plans for action on climate change for the next two years and has legislated a target of Tasmania being net zero emissions, or lower, from 2030. Following the recent passage of the new state *Climate Change Act*, the Tasmanian Government will also work with the community to prepare sectoral Emissions Reduction and Resilience Plans; the first plan will be for the transport sector and is to be completed by November 2023.

Transport is the 'low-hanging fruit' of decarbonisation opportunities in terms of abatement potential, economic feasibility, and technological readiness, and should therefore be our priority. The need for Tasmania to act on decreasing its transport emissions is clear and has been highlighted in recent analysis elsewhere.

This technical report presents clear, evidence-based strategies to inform public debate and inspire action to reduce transport emissions in Tasmania. We hope that this paper can provide evidence and options to facilitate a productive conversation.



Tasmanian Net CO_2-e Emissions by Sector, 1990-2020



SOURCE: *Australian State and Territory Greenhouse Gas Inventories 2021*, available at https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories

Why does Tasmania need to reduce its greenhouse gas emissions?

Tasmania is one of the few jurisdictions on earth whose 'net' CO_2-equivalent emissions are below zero. Our emissions profile, while laudable, relies almost exclusively on two key factors:

1. Our renewable hydro-electricity generation; and
2. The significant increase in removal of CO_2 from the atmosphere and its storage in forests and soils (referred to as LULUCF) since 2012.

The graph opposite illustrates Tasmania's problem: although our net emissions are indeed world-leading, 'absolute' or 'gross' emissions (depicted in shades of red and pink) have been practically unchanged throughout the entire period for which records are available.

Modelling conducted for the Tasmanian Government's independent review of climate change legislation (discussed on the next page) suggests that without ambitious reductions in other sectors, we could easily become a net-positive carbon emitter again before 2030.

In order to avoid this outcome, we must reduce absolute emissions across all sectors of the Tasmanian economy. **This report argues that we should start with the transport sector.**

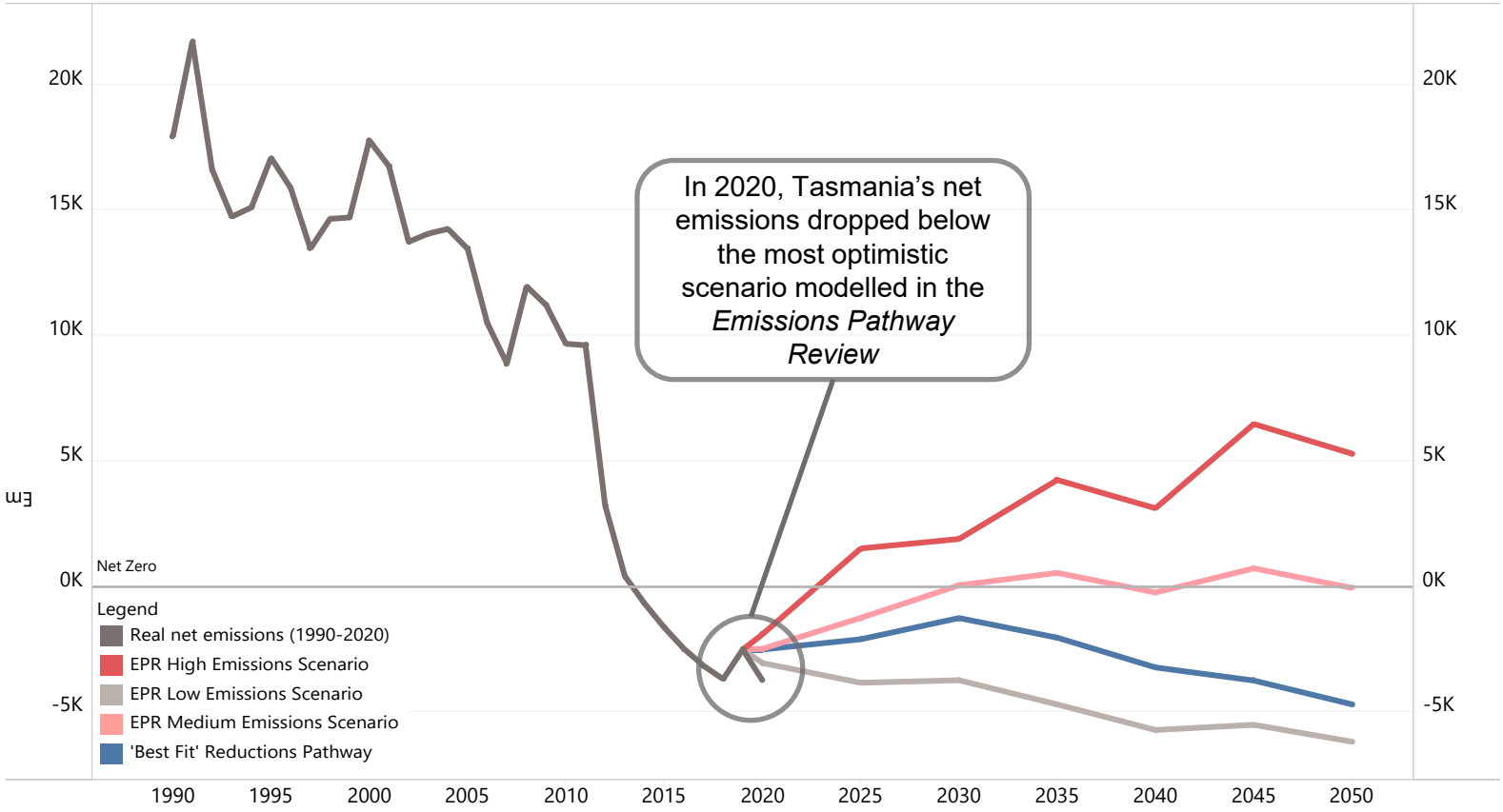
Tasmania could return to net-positive emissions status before 2030

In 2021, an independent review of Tasmania's climate change legislation conducted by Point Advisory modelled our likely future emissions under a range of different possible scenarios.

Under the most optimistic pathway (illustrated in grey on the chart opposite), continued growth in LULUCF sequestration keeps our emissions well below zero and trending down to 2050 and beyond. The most likely scenario (in pink) and the more pessimistic high emissions scenario (in red), however, would both see a return to net-positive emissions before 2030. The blue line shows how our profile will likely track if we act now to reduce absolute emissions.

Tasmania's reported 2020 emissions were below the lowest modelled emissions scenario, suggesting that (at least for now) we are still on track to remain net-zero in 2030. But, as the modelling shows, unless ambitious steps are taken to reduce emissions across all sources, Tasmania is likely to return to net-positive status before 2030.

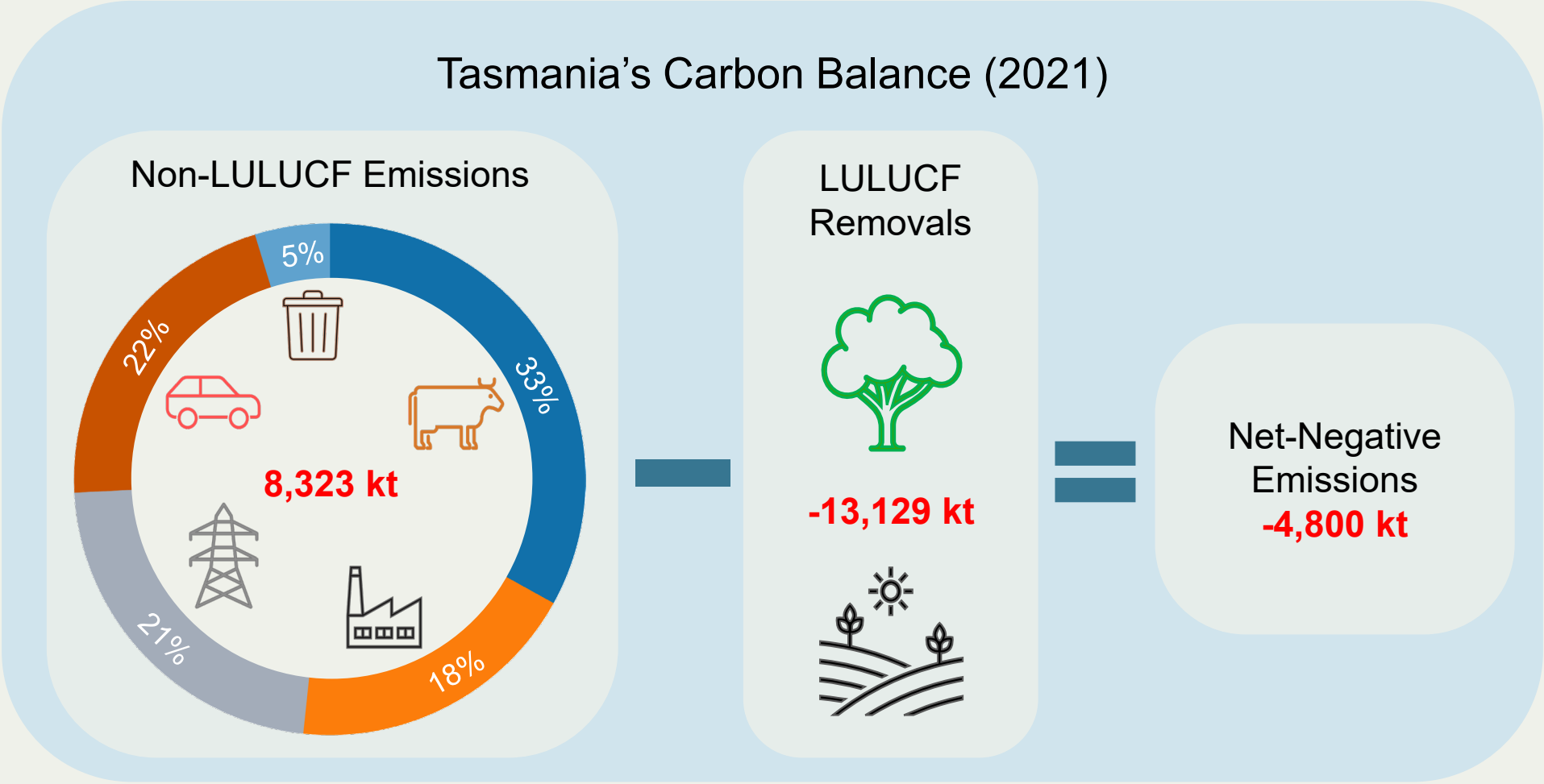
Tasmanian Net CO_2-e Emissions and Point Advisory Modelled Pathways, 1990-2050



SOURCE: *Australian State and Territory Greenhouse Gas Inventories 2021; Point Advisory Tasmanian Emissions Pathway Review*, available at https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories; https://www.dpac.tas.gov.au/__data/assets/pdf_file/0028/136828/Update_of_Tasmania_s_Emissions_Pathway_Review_-_technical_report.pdf

Tasmania's carbon balance in 2021

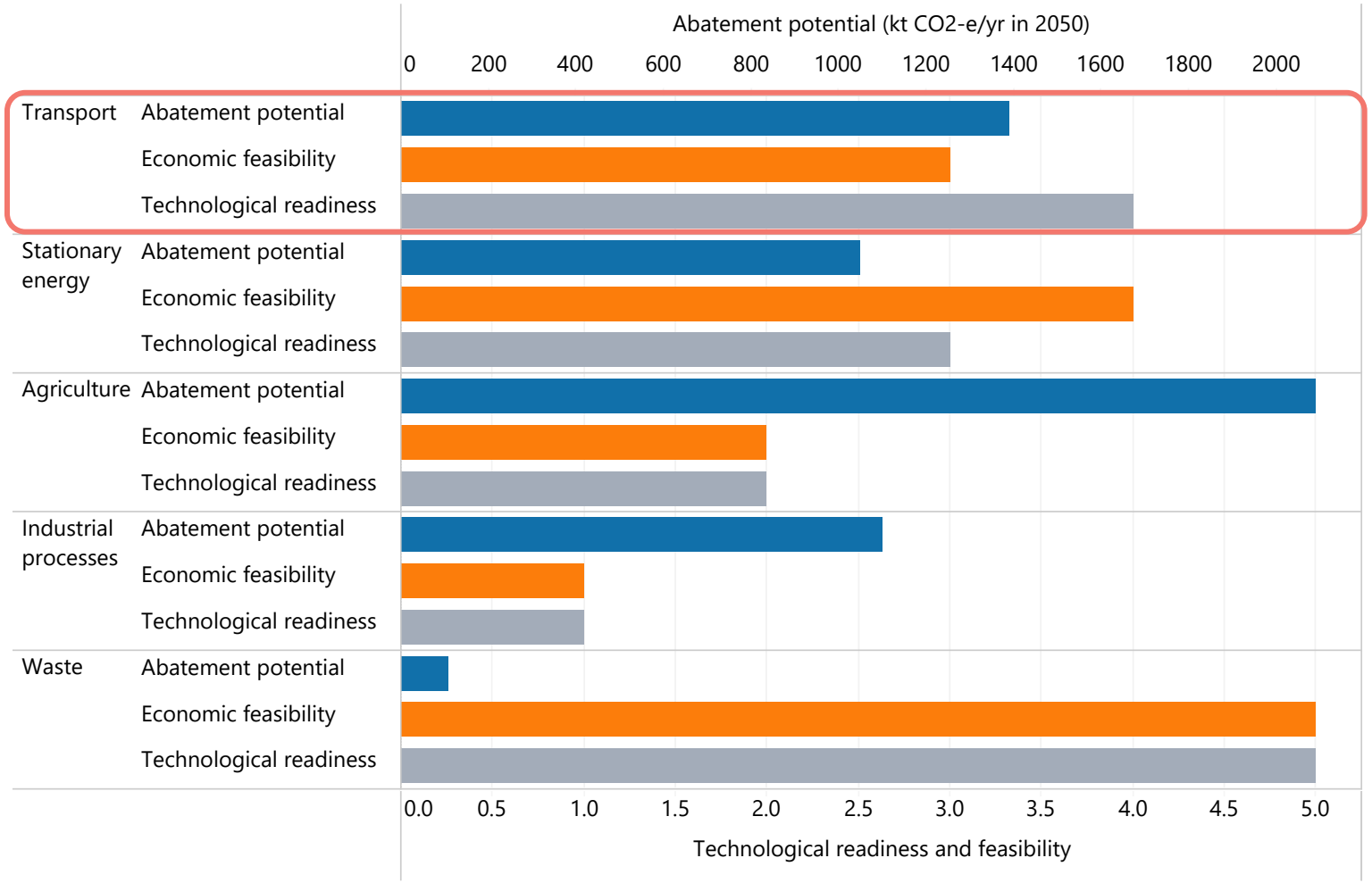
Transport is Tasmania’s second highest emitting sector, responsible for 22% of Tasmania’s total greenhouse gas emissions. In 2021, LULUCF removals exceeded absolute emissions, resulting in net-negative emissions (-4,800 kt).



SOURCE: *Australian State and Territory Greenhouse Gas Inventories 2021*, available at https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories

For further analysis of Tasmania’s emissions profile see TPE’s most recent greenhouse gas analysis.

Impact, feasibility, and technological readiness of abatement options by sector



SOURCE: *Point Advisory Tasmanian Emissions Pathway Review*, available at https://www.dpac.tas.gov.au/__data/assets/pdf_file/0028/136828/Update_of_Tasmania_s_Emissions_Pathway_Review_-_technical_report.pdf.

Why focus on transport?

All emissions reduction initiatives have pros and cons, but we believe that transport offers the best mix of impact, cost, and technological readiness.

The emissions pathway modelling conducted as part of the independent review of Tasmania's climate change legislation weighed the costs and benefits of many different emissions reduction opportunities. On the basis of this modelling, it is possible to compare the feasibility, technological readiness, and potential abatement impact of a wide range of different options.

While some options are highly feasible but not very impactful (such as those on offer in the waste sector), others will produce high abatement impact but are more challenging or expensive to implement (such as in the agriculture sector).

It makes the most sense then, to start by aggressively targeting sectors whose abatement initiatives are impactful, but also feasible and available now. Transport fits the bill better than any other sector.

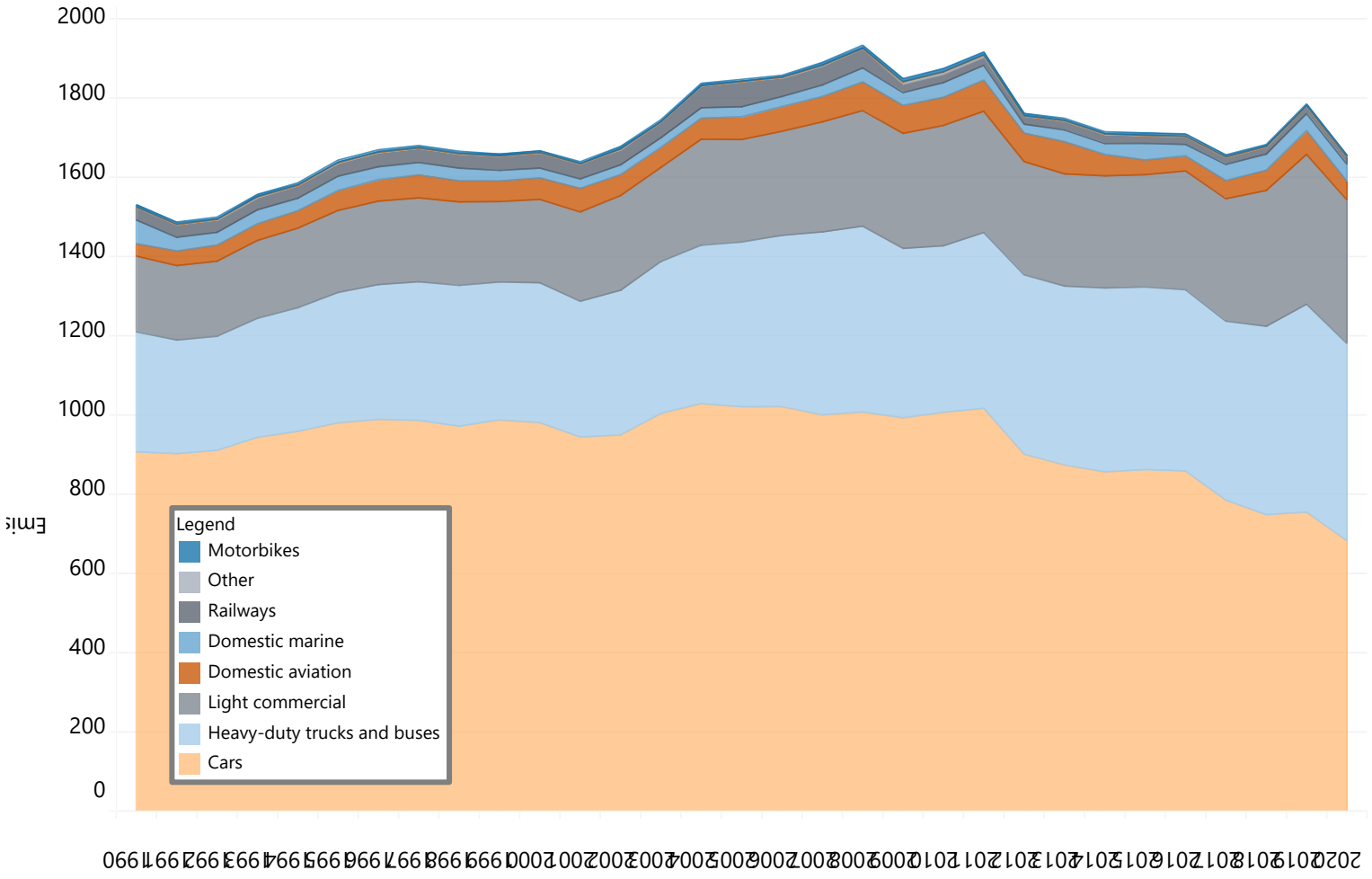
Transport emissions have fallen steadily since 2008

According to the most recent greenhouse gas inventory data, transport emissions account for roughly 22% of Tasmania's total 'absolute' emissions (not including LULUCF removals) and have fallen by almost 15% since their peak in 2008. However, this trend has not been consistent across all sub-sectors; it has been driven primarily by a long-term decline in emissions from cars (down approximately a third since peaking in 2004), while emissions from heavy-duty trucks and buses have increased steadily since 1990.

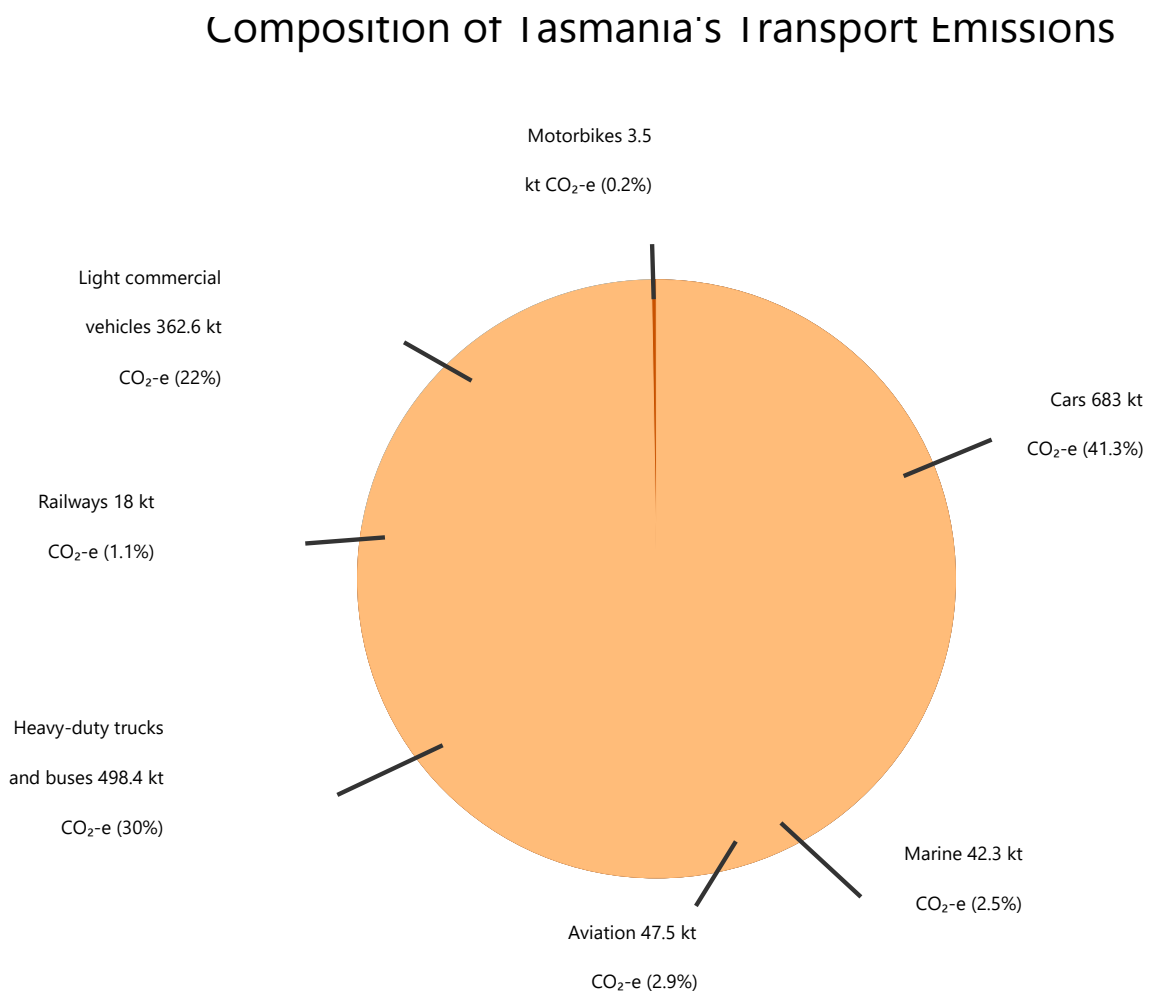
Patterns of private car usage in Tasmania have not changed a great deal over this time, which suggests that the decline in emissions from cars is likely explained by shifts in consumer preferences towards smaller, more fuel-efficient models. Tasmanians drive, on average, the oldest cars in the nation (13.3 years) which likely means that they are also the most emissions intensive. As older and less fuel-efficient cars are gradually replaced, the carbon intensity of Tasmania's vehicle fleet will continue to fall, although not fast enough to achieve reductions consistent with limiting warming to 1.5 degrees.

The fall in emissions from cars is also, however, a technicality due to shifts in consumer preferences towards utes. Most utes and vans are classified in the inventories as light commercial vehicles, meaning that some emissions from cars have simply been transferred into the growing light commercial sub-sector.

Tasmanian transport sector emissions by sub-category, 1990-2020



SOURCE: *Australian State and Territory Greenhouse Gas Inventories 2020*, available at https://www.industry.gov.au/data-and-publications/national-greenhouse-accounts-2020



SOURCE: *Australian State and Territory Greenhouse Gas Inventories 2020*, available at https://www.industry.gov.au/data-and-publications/national-greenhouse-accounts-2020

Cars remain Tasmania's largest source of transport emissions

Cars are responsible for slightly less than half of Tasmania's total transport emissions (41.3%). The next largest emitters are heavy-duty trucks and buses (30%), followed by light commercial vehicles (22%). The remaining share is comprised of domestic marine, aviation, and rail emissions.

It is important to note that interstate aviation and marine emissions are reported in the national inventories but not in state or territory ones, which explains why their slice of our transport emissions 'pie' opposite is relatively small.

We already have the technology to transform our car and light vehicle fleets to electric, while technology to decarbonise heavy vehicles and buses will become available over the next decade (see page 42).

Public and active transport also offer the potential to provide both transport emissions reductions, cost savings, and public health co-benefits.

For these reasons, it makes sense for the transport sector to be a major near-term emissions reduction focus for Tasmania.

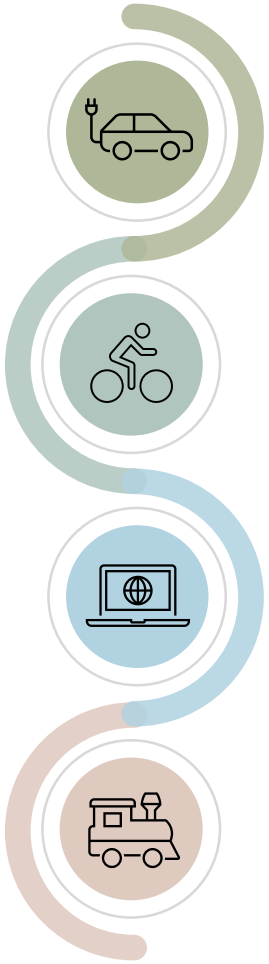
What transport emissions reduction target should we set?

We believe Tasmania should set an ambitious but achievable transport emissions reduction target. Any such target must take three important factors into account:

- **First** and foremost, it must (at minimum) be consistent with the objective of limiting global warming to 1.5 degrees, and with Tasmania's target of maintaining net-zero through 2030 and beyond.
- **Second**, it must be ambitious but achievable. Australia is a long way behind the eight ball on vehicle-emissions standards, fuel-quality standards, and zero-emissions vehicle (ZEV) uptake among other things. Tasmania can catch up, but we must aim to do so over a realistic timeframe.
- **Third** and finally, it must be equitable. Achieving emissions reductions at the cost of increasing inequality or disadvantage would be incompatible with our values as a community.

We believe that a **target of reducing transport emissions by 37% on 2020 levels** satisfies these objectives and, while challenging, is achievable by 2030. Importantly, our previous analysis has demonstrated that a 37% reduction should ensure that Tasmania retains its current net-negative emissions status to 2030 and beyond under all scenarios modelled in Point Advisory's *Emissions Pathway Review* (page 7).

A 37% reduction in transport emissions by 2030 could be achieved by meeting the following four targets. Though challenging in some cases, additional gains are also on offer in the heavy vehicle, maritime, and aviation sub-sectors.



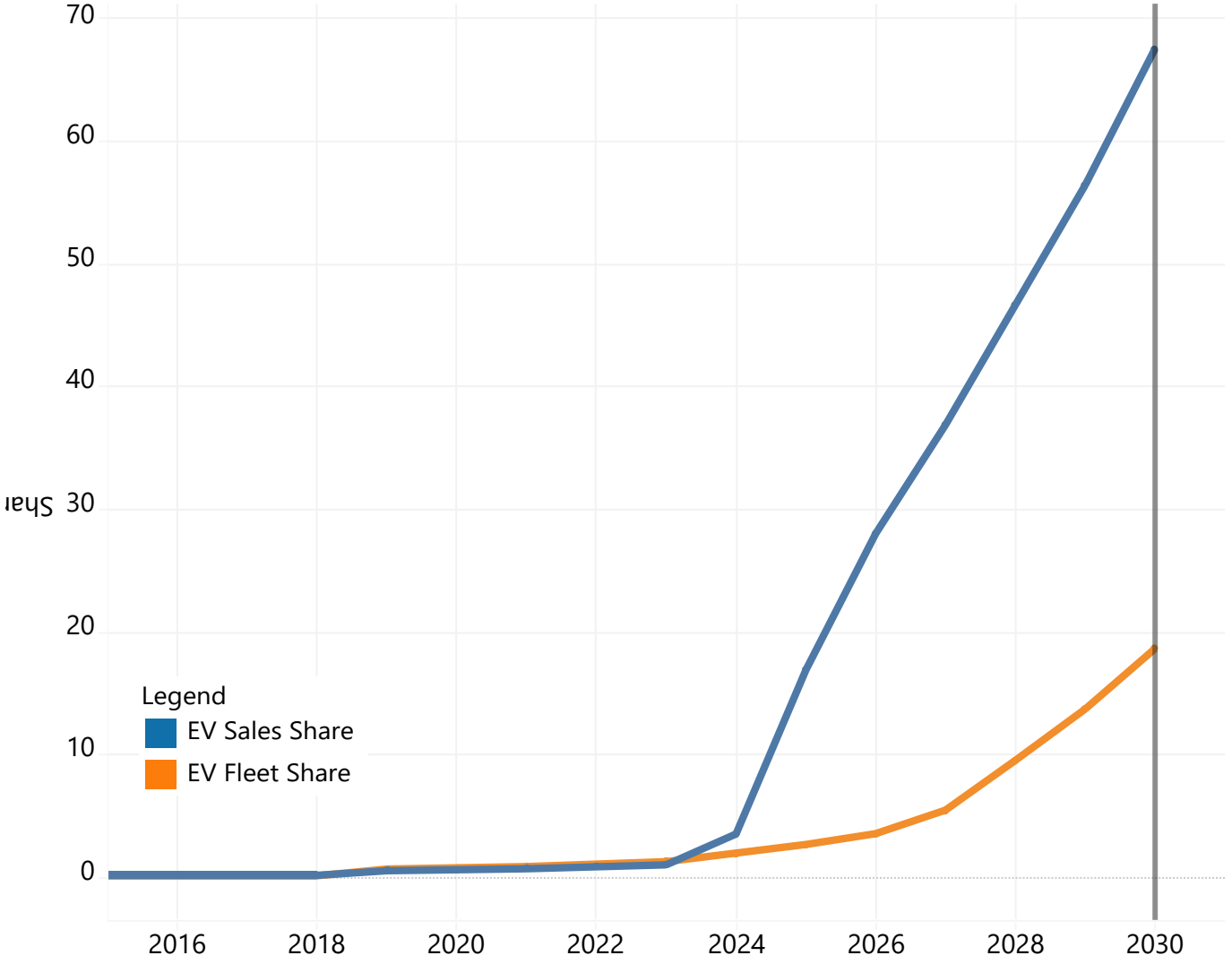
Follow CSIRO high ZEV uptake pathway (~20% fleet share by 2030):
15% overall reduction

Raise share of public and active transport to an average 15% of km travelled:
4.1% overall reduction

Achieve 2 days per week (on average) of remote work in eligible jobs:
14.5% overall reduction

Increase mode share of rail freight from 22% to 30%:
3.6% overall reduction

ZEV Sales and Market Share (CSIRO High Uptake Scenario), 2016-2030



SOURCE: *CSIRO Electric Vehicle Projections 2021*, available at https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2021/csiro-ev-forecast-report.pdf

Tasmania should aim to achieve a 67% ZEV market share by 2030

The average life of a car in Australia is 22 years, meaning that most internal combustion engine (ICE) cars purchased today will still be on the road long after 2030.

This means that if Tasmania were able to achieve the CSIRO's highest uptake scenario for ZEVs, which equates to 67% market share by 2030 (as per the graph opposite), only 20% of cars on our roads would be ZEVs. Under alternative modelling scenarios, such as that commissioned for the ALP's *Powering Australia Plan*, even uptake of 89% translates to just 15% fleet share in 2030.

Many jurisdictions around the world already have targets of 100% ZEV sales by 2030, and some have already exceeded a 67% sales share threshold in 2022.

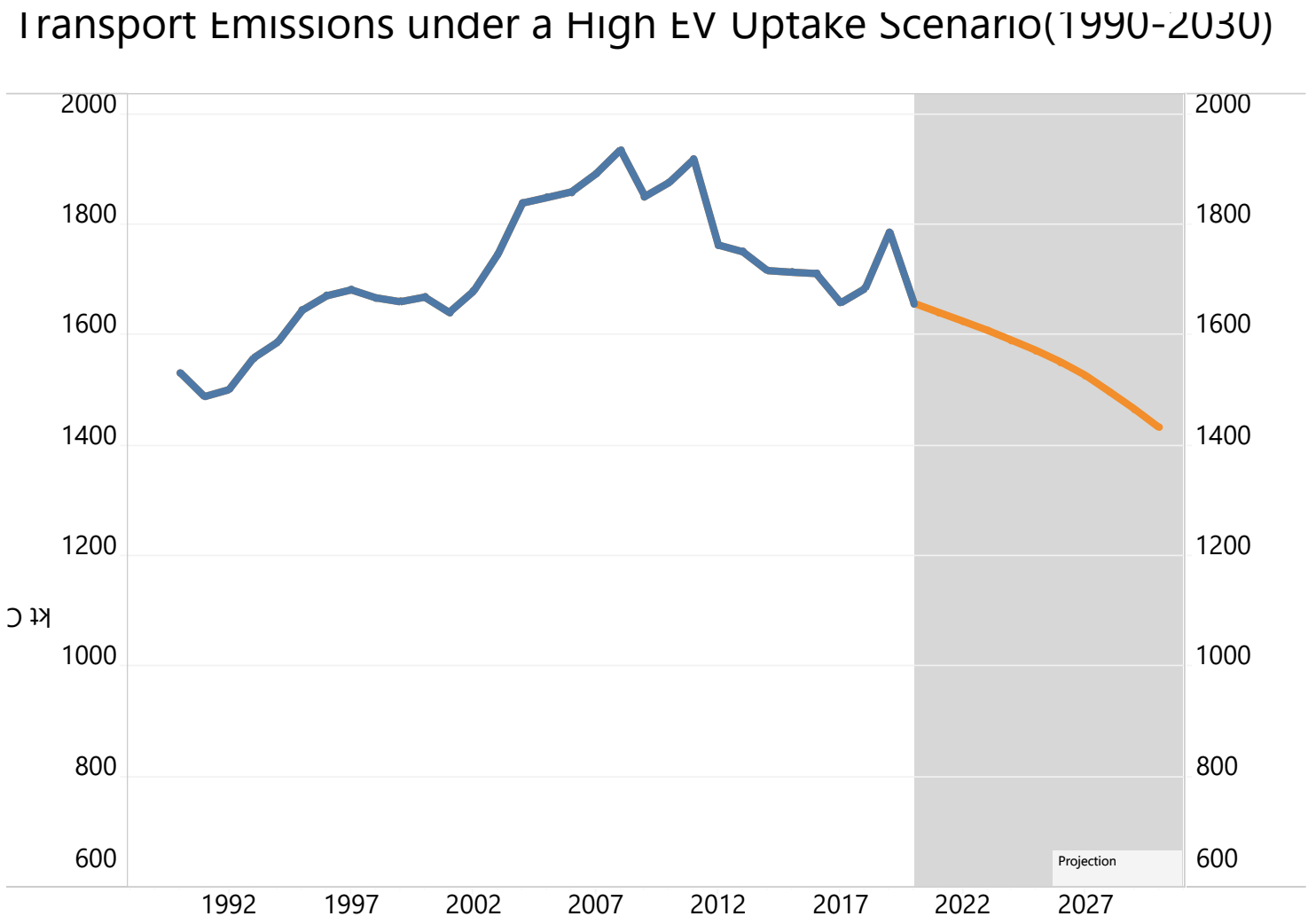
Therefore, Tasmania can and should aim for 67% of new passenger vehicle sales to be ZEVs by 2030, and 100% by 2035. To provide certainty for businesses and the community, Tasmania should also commit to banning the sale of new ICE vehicles after 2035, in line with more ambitious jurisdictions elsewhere.

Even if these objectives are achieved, however, the long life of ICE cars means that other steps will still need to be taken to reduce transport emissions.

High ZEV uptake is vital, but it will only get us so far

As the previous page illustrated, even if Tasmania does reach 67% ZEV market share by 2030, 80% of cars on the road will still be ICE vehicles. Assuming that new ZEVs are powered by 100% renewable generation, this scenario would reduce our emissions from cars by roughly 20%. This would be a major improvement, but it wouldn't be enough to ensure that we maintain our emissions at current net-negative levels under a potential high-LULUCF emissions scenario (see page 7).

Assuming that the efficiency of ICEs continues to improve at the same rate as it has over the past ten years, and that zero-emissions heavy vehicles are adopted at roughly half the rate of zero-emissions cars (as shown in the graph opposite), **the impact on our overall transport emissions will be in the order of 13.6% below the 2020 baseline by 2030.**



SOURCE: historical data from *Australian State and Territory Greenhouse Gas Inventories 2020*, available at https://www.industry.gov.au/data-and-publications/national-greenhouse-accounts-2020

A two-pronged strategy to reduce Tasmania's transport emissions

For the reasons explained on the previous two pages, electrifying transport must go hand-in-hand with strategies to promote behavioural change, including increasing our use of public and active transport options and embracing remote or flexible working arrangements where practicable. Therefore, we propose a two-pronged strategy to reduce Tasmania's transport emissions:

1. Promoting ZEV uptake

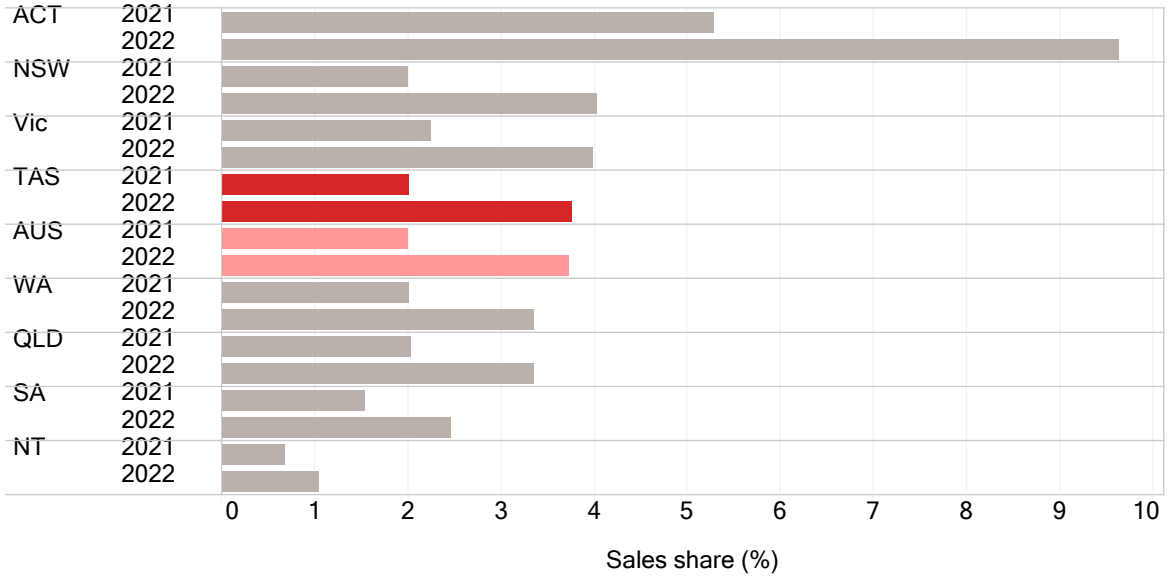
- Develop a ZEV sales target
- Expand charging access in public and in the home
- Offer financial incentives (e.g., subsidies, stamp duty discount, registration exemptions, free parking incentives)
- Provide low- and zero-interest loans
- Promote car sharing models for ZEVs
- Rapidly transition government and private fleets

2. Reducing dependence on private vehicles

- Improve public and active transport access and options
- Address underlying social and cultural factors that inhibit ZEV uptake (such as range anxiety)
- Prioritise remote and flexible working arrangements as well as digital technology and service provision
- Rethink urban planning strategies to focus on increasing density

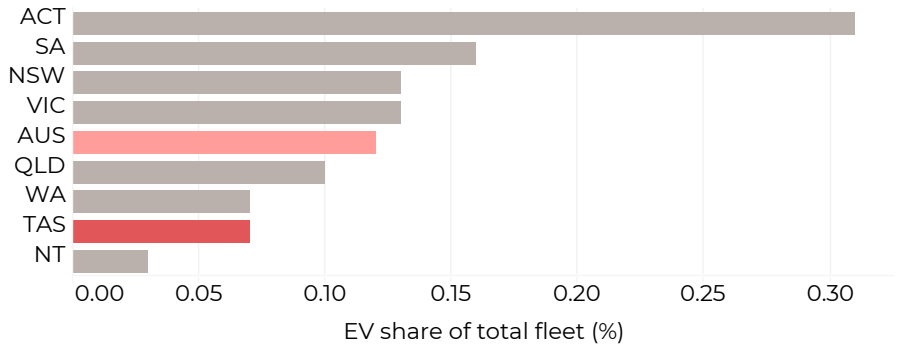
Reduce transport emissions by 37% on 2020 levels by 2030

EV sales share by jurisdiction, 2021-2022



SOURCE: Electric Vehicle Council of Australia, available at *https://electricvehiclecouncil.com.au/wp-content/uploads/2023/02/AUSTRALIAN-ELECTRIC-VEHICLE-INDUSTRY-RECAP-2022.pdf*

EVs as Share of Total Fleet by State, 2021



SOURCE: Electric Vehicle Council of Australia, available at *https://electricvehiclecouncil.com.au/reports/state-of-electric-vehicles-2021/*

1. Promoting electric vehicle uptake

Tasmania's rate of ZEV uptake has increased in recent years (from roughly 2% in 2021 to 3.7% in 2022) (see top chart opposite). However, as a share of our total vehicle fleet, ZEVs remain low (see bottom chart opposite), which could be a result of our relatively low per capita incomes and limited government ZEV subsidies.

While many factors influencing ZEV uptake are outside the direct control of the Tasmanian Government (such as federal vehicle emissions standards), with ambitious policy intervention Tasmania can and should be aiming to catch up to South Australia over the short term.

This section highlights options to promote ZEV uptake in Tasmania with strategies such as improving access to charging infrastructure; implementing subsidy schemes; providing low- and zero-interest loans; and introducing car sharing models.

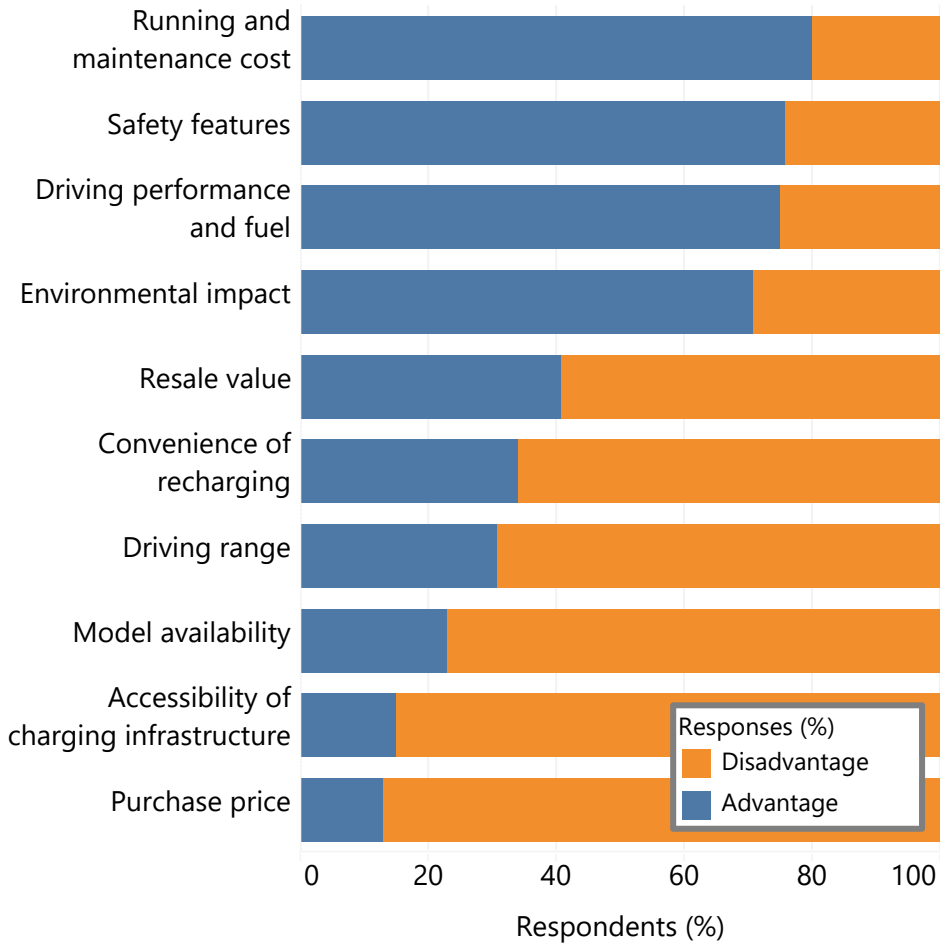
Barriers to greater uptake of ZEVs

Demand for ZEVs in Tasmania is strong. Survey research conducted by the Good Car Company reported that over 81% of survey participants stated they would consider purchasing an ZEV, 18% of those within the next two years. Nevertheless, high levels of consumer enthusiasm have not yet translated into substantially increased uptake. Potential ZEV consumers are deterred by:

1. Limited vehicle supply and choice
2. Vehicle cost
3. Infrastructure and range
4. Awareness and education
5. Lifecycle and longevity of existing ICE vehicles

ZEV uptake in Australia is significantly constrained by lack of supply rather than lack of demand. While the federal government setting a vehicle emissions standard (see page 20) will help, at the state level setting a ZEV sales target would send a firm signal to manufacturers and infrastructure providers and incentivise an increase in supply.

Pros and Cons of EV Ownership Reported in EV Council Consumer Attitudes Survey 2021



SOURCE: *EV Council Consumer Attitudes Survey 2021*, available at https://electricvehiclecouncil.com.au/wp-content/uploads/2021/10/2021-EVC-carsales-Consumer-attitudes-survey-web.pdf

What is Tasmania's existing ZEV policy?

The Tasmanian Government's ZEV policy has thus far committed to:

A stamp duty discount which has been extended to 31 December 2023. In the first year of the discount operating, it was applied to 676 ZEV purchases.

Free ZEV registration between 1 July 2023 and 30 June 2023 for car rental companies and coach operators.

A 100% ZEV government fleet target by 2030 and the Smarter Fleets Program to support Tasmanian Government agencies, councils, and heavy vehicle fleets to reduce their vehicle fleet greenhouse gas emissions.

$773,000 through the ChargeSmart Grants Program to support installation of charging infrastructure (following the first ChargeSmart round which supported the installation of 14 fast chargers and 23 destination and workplace chargers).

A road user charge which will be introduced once EVs comprise 30% of new vehicle sales, or 1 July 2027 (whichever takes place first).

Australian states' and territories' ZEV policy initiatives

While these existing policy initiatives are a good start, as can be seen in the table opposite, the Tasmanian Government has not yet committed to:

- A ZEV sales target that would send a firm signal to markets and consumers.
- A broader ZEV registration exemption for private purchasers, and extending the stamp duty discount beyond the end of 2023. The Australia Institute found 68% of Tasmanians support registration and stamp duty discounts for ZEVs.
- A short-term ZEV rebate or loan scheme to support or incentivise faster uptake. The Australia Institute reported that 73% of Tasmanians support government subsidies to reduce ZEV purchase cost.
- Signing the COP26 declaration on ZEVs.

If Tasmania is to maintain its reputation as a leader on climate action, it should seek to achieve best-practice ZEV policy in line with other states and territories.

Policy mechanism	NSW	ACT	SA	VIC	QLD	WA	NT	TAS
ZEV sales target	✓	✓	✓	✓	✓	✗	✗	✗
Registration discount or exemption	✓	✓	✓	✓	✓	✗	✓	✗*
Direct subsidies, rebates or low- or zero-interest loans	✓	✓	✓	✗**	✓	✓	✗	✗
Stamp duty discount	✓	✓	✗	✓	✓	✗	✓	✓
Charging infrastructure investment	✓	✓	✓	✓	✓	✓	✓	✓
Road user charges (current or planned)	✓	✗	✓	✓	✗	✓	✗	✓
Government fleets target	✓	✓	✓	✓	✓	✓	✓	✓
Signatory to COP26 declaration on ZEVs	✓	✓	✓	✓	✗	✗	✗	✗

*Tasmania had a registration discount for car rental companies and coach operators which expired on 30 June 2023.
**Victoria had a $3000 EV subsidy however it ended in June 2023, one year earlier than planned.

National ZEV strategies

New electric vehicle (EV) purchases almost doubled in Australia in 2022 compared to 2021, reaching 3.8% of all new cars purchased. While this is promising, we still lag behind the global average, which is estimated to be around 12-14%.

In April 2023 the Australian Government announced the new National Electric Vehicle Strategy (NEVS). The NEVS aims to increase the uptake of EVs by improving EV supply, the systems and infrastructure needed to support EV uptake, and demand for EVs. The Government has, critically, committed to introducing Australia's first Fuel Efficiency Standard for new light vehicles, which is a positive step given over 80% of vehicles sold around the world are already covered by a fuel efficiency standard. The government has published a consultation paper seeking input on how the Australian fuel efficiency standard should be designed.

The Government has not yet committed to any targets for ZEV uptake or a target for the phasing-out of ICE vehicles in line with many international jurisdictions and Australian states and territories (see page 21).

Other key Australian ZEV strategies include the Electric Car Discount introduced in 2022 which exempts eligible EVs from fringe benefits tax (FBT) and import tariffs. The exemption aims to encourage a greater uptake of EVs by making them more affordable. The Australian Government has also:

- Signed the 2021 Glasgow Breakthrough on Road Transport, which states ZEVs must be accessible, affordable and sustainable in all regions by 2030-35.
- Committed $500 million to the Driving the Nation Fund to establish a national EV charging and hydrogen refuelling network on major highways.
- Set a Commonwealth fleet target for 75% of new leases and purchases to be EVs by 2025.
- Announced plans for a National Battery Strategy, National Reconstruction Fund, and Critical Minerals Strategy to drive investment in clean energy component manufacturing.

ZEV targets around the world

LDV = light duty vehicle. MHDV = medium- and heavy-duty vehicle. EVs = electric vehicles, which include battery electric vehicles (BEVs). ZEVs = zero-emissions vehicles, which include BEVs and fuel cell electric vehicles (FCEVs). NEV = new energy vehicle (China), which includes BEVs and FCEVs.

Country	Target for zero-emission LDVs	Target for zero-emission MHDVs
Signatories to COP26 ambition: Australia, Belgium, Canada, Denmark, Finland, Iceland, Netherlands, New Zealand, Norway, Sweden, United Kingdom, India, Mexico, and more. In Australia, the ACT, NSW, SA and Vic.	100% share of ZEVs in new car and van sales by 2040 globally, and by 2035 in 'leading markets'	
Norway	100% share of ZEVs in passenger LDV sales by 2025	100% share of ZEVs in new heavy van sales by 2030 75% share of ZEVs in new long-distance bus sales by 2030 50% share of ZEVs in new truck sales by 2030
Netherlands	100% share of ZEVs in passenger LDV sales by 2030	30% of ZEVs in new truck and bus sales by 2030, 100% by 2040
China	100% share of ZEVs in passenger LDV sales by 2035 (of which 50% are NEVs and 95% of those are BEVs) (20% share of NEVs in LDV sales by 2025)	20% share of NEVs in HDV sales by 2025
United Kingdom	100% share of BEVs/FCEVs in passenger LDV sales by 2035	30% share of ZEVs in sales of new trucks and buses by 2030, 100% by 2040
Canada	100% share of ZEVs in LDV sales by 2035 (20% by 2026, and 60% by 2030)	30% share of ZEVs in MHDV sales by 2030, 100% by 2040
Japan	100% share of EVs in passenger LDV sales by 2035	
United States	50% share of EVs in passenger LDVs by 2030	30% share of ZEVs in MHDVs by 2030, 100% by 2040
India	30% share of EVs in passenger LDV sales by 2030, 80% share of two and three-wheelers to be EVs by 2030	

Principles for ZEV policy

Policies aimed at increasing ZEV uptake require trade-offs and choices, and should therefore be informed by the following principles:

1. Subsidies should be equitable and sustainable. Where possible, subsidies should be means tested and not disproportionately benefit high income households.

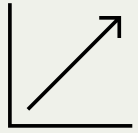
2. Subsidies should be phased out once ZEVs reach price parity with ICE-powered vehicles (or subsidies should be transitioned to taxes on high-emissions vehicles).

3. New road user charges should only be introduced once ZEVs reach price parity with ICE-powered vehicles.

4. Policies should improve access to and cost of transport for low-income households.

Policy options to promote faster electric vehicle uptake

With all of this in mind, there are several policy options that Tasmania could adopt to equitably and affordably drive greater ZEV uptake. Policy initiatives should be ambitious, consistent with maintaining Tasmania's net-negative emissions status, and designed in accordance with the principles outlined on the previous page. Some potential options include:

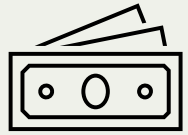


1. ZEV sales target

Tasmania should aim for 67% of new passenger vehicle sales to be ZEVs by 2030. This will send a firm signal to suppliers and consumers. (See p. 13 and p. 24)

2. Investment in charging infrastructure

Ensuring that charging infrastructure is widely available across the state will be the best way to allay range anxiety. (See p. 25)



3. Subsidy scheme

A carefully designed subsidy program funded by a small, stamp duty-style surcharge on new ICE vehicles could help to drive ZEV uptake. (See p. 26 and 27)

4. Low- and zero- interest loans

Financial assistance such as low- or no-interest loans would help lower-income consumers overcome affordability barriers. (See p. 28)

5. ZEV car sharing models

Car sharing models where users can rent ZEVs for short periods of time – typically by the hour or day - have been shown to lead to emissions reduction. (See p. 29)

Develop a ZEV sales target

If Tasmania is to maintain its reputation as a leader on climate action, it should seek to achieve best-practice ZEV policy in line with other states and territories which have already implemented ZEV sales targets:

- ACT: 80-90% of new light vehicle sales to be ZEVs by 2030.
- NSW: 52% of new car sales to be EVs in 2030-31, the "vast majority" of new car sales to be EVs by 2035.
- Qld: 50% of new passenger vehicle sales to be ZEVs by 2030, and 100% by 2036.
- SA: 100% of new passenger car sales to be fully electric by 2035.
- Vic: 50% of all light vehicle sales in Victoria to be ZEVs by 2030.

According to our analysis (see page 13), Tasmania can and should aim for 67% of new passenger vehicle sales to be ZEVs by 2030, and 100% by 2035. This would send a firm signal to manufacturers and markets and would ensure Tasmania's ZEV policy is in line with world-leading sustainability practice.

https://www.goodcar.co/tasmania

Charging infrastructure

Widespread ZEV uptake depends on access to charging infrastructure in public, at home, and in workplaces.

Establishing charging networks across metropolitan and regional areas is essential to overcoming range anxiety and enabling long-distance travel. Governments need to invest in improving public fast-charging infrastructure, access to which is particularly important for renters, apartment owners, and people without off-street parking.

It is important that building codes are updated to ensure future buildings are 'EV ready' and have the electrical infrastructure to support future EV charging. Governments can further incentivise the installation of EV charging infrastructure in peoples' homes through subsidies and loans to reduce the upfront cost of installation. Support is needed to help disadvantaged households access at home charging.

As the transition to EVs will cause additional electricity demand, governments should consider pricing signals to encourage charging at times that benefit the electricity grid (i.e., off-peak charging). For example, a range of energy providers are offering off-peak discounts for EV owners in certain states and territories to charge their vehicles at specific times, such as between 12am and 6am.

As can be seen in the table below, Tasmania is lagging behind when it comes to encouraging the rollout of charging infrastructure. While every state and territory has made some form of commitment to funding public charging infrastructure, the ACT, SA, and the NT are leaders in household charging, offering subsidies and/or zero-interest loans for charger installation.

The Australia Institute found that 74% of Tasmanians support a government funded network of fast charging stations for EVs, and 70% support requiring all new apartment blocks to include EV charging stations.

In the recently released Climate Change Action Plan the Tasmanian Government stated its plans to embed consideration of EV charging infrastructure into the Tasmanian Planning Scheme, and to develop a whole-of-government 'master plan' for EV charging infrastructure.

Policies to support EV charging infrastructure	Fed.	ACT	SA	NT	NSW	Vic	WA	Qld	Tas
Invest in public charging infrastructure	✓	✓	✓	✓	✓	✓	✓	✓	✓
Subsidise home charging infrastructure	✓	✓	✓	✓	✗	✗	✗	✗	✗
Commit to EV-ready development/retrofit existing buildings	✓	✓	✓	✓	✓	✓	✓	✗	✗

Source: https://aeva.asn.au/news/new-hobart-waterfront-chargers-by-tasports/

Financial incentive programs

The Electric Vehicle Council recommends that state and territory incentive programs should complement Commonwealth initiatives such as the FBT exemption and include:

- A full exemption from purchase stamp duty (already offered in Tas until the end of 2023 and in the ACT, NSW, NT, and Qld).
- At least 2 years' free vehicle registration (already offered by the ACT, NT, Qld, SA, and Vic. Was offered in Tas for hire car and coach operators until June 2023).
- An upfront rebate, subsidy and/or zero-interest loan of at least $3000 available to all ZEVs up to the fuel-efficient luxury car tax limit of $84,916.

The Tasmanian Government should extend the timeframe of its stamp duty discount, expand the scope and timeframe of its free ZEV registration policy, and design a subsidy scheme which is equitable, sustainable, and which can be phased out once ZEVs reach price parity with ICE-powered vehicles (see the following page).

Potential design of a revenue-neutral, means-tested ZEV subsidy scheme

Add a (~1%/$350) stamp duty-style surcharge on new ICE purchases

Use revenue generated to establish a subsidy for ZEVs below a nominated price point

Subsidy per ZEV, as well as the stamp duty surcharge per ICE, is reduced as uptake increases and emissions decline

Year	Estimated ZEV market share	ICE Sales	ZEV Sales	Surcharge revenue	Subsidy value (/ZEV)
2023	3.5%	19,290	710	$6,751,500	$3500
2024	16.9%	16,620	3380	$5,817,000	$2500
2025	28%	14,400	5600	$5,040,000	$1500
2026	36.8%	12,640	7360	$4,424,000	$750
2027	46.6%	10,680	9320	$3,738,000	$500
2027	56.4%	8,720	11,280	$3,052,000	$500
2030	67.5%	6,600	13.400	$2,310,000	$500
Net	-	128,566	51.434	$44,998,100 (total income)	$43,583,000 (total cost)

Low- or zero-interest loans

Low- or zero- interest loans provided by banks or governments can enable households to purchase ZEVs and invest in charging infrastructure, therefore helping to overcome affordability barriers, especially as interest rates increase.

The ACT is one such jurisdiction making energy-efficient upgrades more affordable through their Sustainable Household Scheme. Those who own a home or hold a driver's licence in the ACT are eligible to apply for up to $15,000 in zero-interest loans to buy energy-efficient products, including ZEVs (both new and used), EV charging infrastructure, rooftop solar panels, and more.

The Australian Government-owned Clean Energy Finance Corporation (CEFC) is offering discounted ‘green car loans’ for eligible borrowers purchasing ZEVs. A number of banks are also offering low- and zero-interest loans to help customers purchase electric and hybrid vehicles, including Westpac, Bank Australia, Macquarie, and RACQ Bank. Bank Australia has additionally announced it will no longer fund loans for petrol or diesel cars from 2025.

The Tasmanian Government is offering zero-interest loans up to the value of $10,000 through the Energy Saver Loan Scheme to help with the purchase of energy efficient products, which includes solar panels, but does not extend to ZEVs or related infrastructure at this point in time.

Car sharing or ‘service’ models

Car sharing is a type of car rental aimed at replacing car ownership, wherein people rent cars for short periods of time – typically by the hour or day – from a fleet of vehicles stationed across a city.

Car sharing leads to transport emissions reductions through behavioural change in the form of changes to vehicle ownership patterns – getting rid of a car or avoiding the purchase of a car – and mobility behaviour. Shared cars could serve as a second vehicle for most households, with studies conducted in the UK and Germany finding that 16% and 15% of members respectively sold a personal car after joining a car sharing scheme.

Users of car sharing services get a much stronger behavioural nudge to think twice about driving versus other transport options, because they pay the real cost-per-km (as opposed to owning a vehicle where the bulk of costs are forgotten about). Car sharing provider Zipcar reported that on average, each car share member reduces their personal CO_2 emissions by over 500kg a year, drives 40% fewer kilometres, and increases their public transit trips by 46%, walking trips by 26%, and bicycling trips by 10%.

The best emissions reductions are derived from using ZEVs in a car-sharing program. Car sharing models are economically and environmentally efficient because personal vehicles are expensive, resource intensive to produce, and only used a fraction of the time by most owners. Given the supply constraints on ZEVs, a car sharing model ensures that the ZEVs that are available are utilised to their full potential. ZEV car sharing programs are also a way of providing low-cost access to clean personal transport for households that cannot afford – or do not need – to privately own a ZEV.

To a limited extent, car sharing programs such as Car Next Door and Flexicar are already available in Tasmania. ZEV car sharing programs could be rolled out across the state and help fill gaps in areas with inadequate or unsuitable public transport options.

Increasing renewable energy production

Tasmania generates enough renewable electricity to meet current levels of demand on an annual basis (though we do import non-renewable energy during periods of high demand), but our generation capacity will have to increase to meet greater demand associated with electrification of transport. In other words, Tasmania does not currently generate enough renewable electricity to power high levels of EV uptake without relying on imported, emissions-intensive coal-fired electricity. In order to be carbon neutral, the transition to electrification must be powered by new renewable sources of electricity generation.

Around 65% of the 516,000 registered vehicles on Tasmanian roads are passenger vehicles, travelling an average 10,900km per annum. Assuming an average EV energy consumption of 22kWh/100km, the additional renewable generation required to **completely electrify** Tasmanian passenger transport without relying on imported fossil fuel energy is roughly 1700 GWh of new renewable generation. This shortfall could be met by around 450-500MW of additional wind generation or by approximately 1600MW of new rooftop solar PV (around 80,000 residential systems plus 2000 larger commercial/ industrial installations). It could also be met by increasing our hydro-electric capacity and using that energy on island, through projects such as the Marinus Link. The most likely and most feasible option is some combination of these two.

Finally, as EV market share increases, it is likely that more households will make use of two-way charging systems at times of peak residential demand. While not widely available currently, this will further increase the additional renewable generation required to ensure that EVs consume only zero-emissions electricity.

2. Reducing dependence on private vehicles

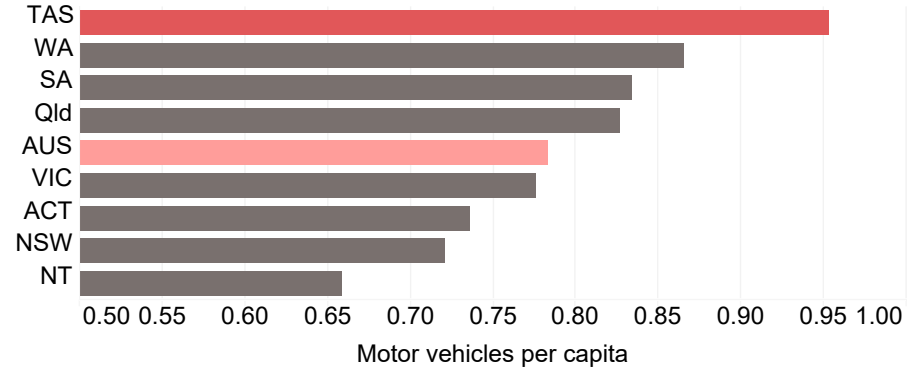
Tasmanians are highly dependent on private transport, with statistics from the 2021 ABS *Motor Vehicle* census indicating:

- Tasmanians own the most vehicles of any states (at 0.95 vehicles per person versus the Australian average of 0.78 vehicles);
- Tasmanians own the oldest vehicles (13.3 years versus the Australian average of 10.6); and
- Tasmania is the second most car-dependent state (70% drove to work according to the 2021 Census versus the Australian average of 57%).

To adequately reduce Tasmania's transport emissions, we will need to do more than simply replace existing vehicles with electric ones. Tasmania's high car dependence is largely a result of its low-density development and sprawling settlements, limited public transport options, decades of poor urban and regional planning, and inclement winter weather. Tasmanians will likely remain heavily dependent on private cars without ambitious strategies to improve services and infrastructure, and to address the underlying social and cultural factors that inhibit behavioural change.

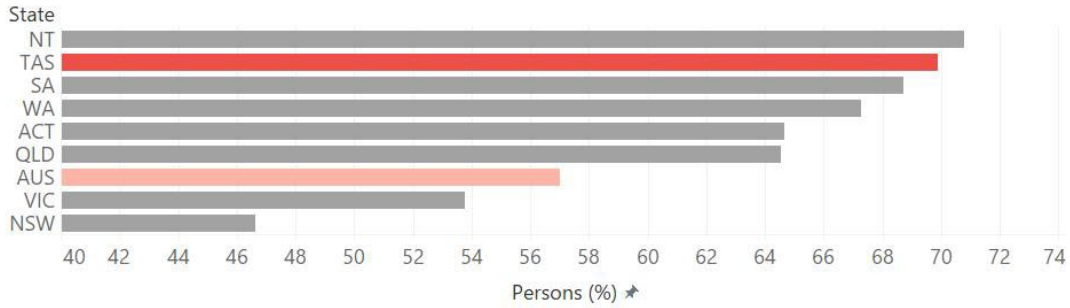
We need to address Tasmanians' car dependence by promoting transitions to public and active transport options; embracing remote or flexible working arrangements; and rethinking urban planning strategies.

Registered Motor Vehicles per Capita by State, 2021



SOURCE: ABS Motor Vehicle Census 2021, available at https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/latest-release

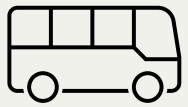
Share of Persons Commuting to Work in Private Cars by State, 2021



SOURCE: ABS Census of Population and Housing 2021, available at https://www.abs.gov.au/census

Policy options to reduce dependence on private vehicles

Interventions to decrease the use of private vehicles can contribute significantly to reducing our greenhouse gas emissions, alongside numerous health co-benefits. Some strategies that can be implemented to promote fair and equitable behavioural change include:



1. Increase the use of public transport

Rates of public transport use in Tasmania are among the lowest in the nation. While the reasons Tasmanians rely so heavily on private cars are complex, issues of access, availability, efficiency, scale, and culture all contribute to Tasmanians' reluctance to use public transport. (See p. 33-35)

2. Increase the use of active transport

Walking and cycling for transport has a wide range of environmental, economic and health benefits. Strategies that combine behavioural change and structural or financial elements are most likely to be successful in encouraging greater active transport usage. (See p. 36-37)

3. Increase remote working

COVID-19 taught us that remote work can be a viable alternative to the car-dominated office commute for many employees. Further normalising and encouraging remote work can turn this experience into a longer-term emissions reduction opportunity. (See p. 40).

4. Urban planning and consolidation

Tasmania's high car dependence is partly a result of its low-density development. Land use and urban planning strategies that encourage urban consolidation have the potential to improve transport emissions by allowing residents to travel shorter distances. (See p. 41)

Promoting public transport

Increasing public transport use

Rates of public transport use in Tasmania are among the lowest in the nation. The Tasmanian Government is addressing this issue, with plans to improve Hobart's major transit corridors with dedicated bus lanes, rapid bus services, park and ride facilities and other infrastructure upgrades. The state government is also investigating possible sites for new ferry terminals under the Derwent Ferry Masterplan following the success of the Bellerive-Hobart service. In mid-2023, a statewide fare structure was introduced to deliver fare reductions to a majority of passengers travelling between non-urban and urban interchanges, aiming to incentivise more people living in regional areas to use public transport. According to the recently released Climate Change Action Plan, the Tasmanian Government also plans on continuing to work with Metro Tasmania to trial zero emissions (battery electric and hydrogen fuel cell) buses in both Hobart and Launceston.

Co-benefits

Increased uptake of public transport can result in reduced traffic congestion, parking, and spending on road infrastructure. Furthermore, it has important health co-benefits, largely related to increased physical activity associated with walking to and from transport terminals/stops and destinations. Public transport users are typically more physically active than those using private motor vehicles, with the Menzies Institute writing that public transport users accumulate up to 33 minutes of physical activity per day and are 3.5 times more likely to be classified as 'sufficiently active' compared to motor vehicle drivers.

Strategies to drive public transport uptake

There is limited evidence internationally regarding the effectiveness of strategies to increase public transport use. Locally, a Menzies trial used economic incentives in the form of bus trip credits to encourage bus use. Although this project was abandoned early due to the COVID-19 pandemic, preliminary evidence suggested that it was successfully achieving increases in bus use, with high acceptability and feasibility to participants and the public transport provider. Additional funding has been secured to restart the trial in 2023.

An earlier Menzies study of around 1000 Tasmanians posed 10 hypothetical strategies to increase public transport use and found that structural strategies – real-time information and bus-only lanes – were the top two preferences in terms of likelihood of increasing bus use. Individual economic strategies (e.g., incentives/rewards, free travel) were also popular, coming in at third, fourth, and fifth place. Underpinning all strategies' appeal was the need for an efficient, reliable, and affordable public transport system.

In addition to existing public transport improvement initiatives, the Tasmanian Government could expand and expedite the current Metro Tasmania zero-emissions bus trial being conducted in Launceston and Hobart and adopt a target for zero-emissions public transport in line with leading mainland jurisdictions, including, for example:

- NSW: 100% electric public transit fleet by 2030
- VIC: > 50% of buses to be ZEVs by 2031
- ACT: 100% zero-emissions public transit by 2040
- QLD: 100% of new buses to be ZEVs by 2030

Innovative public transport models

On-demand public transport services – also known as demand responsive transport (DRT) – are increasingly being adopted in regions around the world to help provide improved access to public transport as well as emissions reduction benefits.

DRT services are typically booked by passengers through a Smartphone app or call centre, cost a similar amount to conventional public transport, and are characterised by flexible operating schedules, stops, and/or routes. Different types of DRT include door-to-door, first and last mile, and corporate transport services.

DRT is more responsive to community transport needs than conventional fixed-route mass transit, which has historically served densely populated urban areas and neglected those in suburbs and rural regions. DRT is not intended to replace fixed-route and mass transit options entirely, but rather to provide an affordable, convenient, and low-emissions transport option in areas where conventional public transport options are underutilised, too expensive to run, or unable to service an area well.

DRT enables fleet decarbonisation because it often uses smaller ZEVs which are available now, while it may take years for electric buses to become commonplace. In 2021 Auckland Transport introduced a fully electric on-demand public transit service, routed by technology from Liftango, which resulted in a 100,000kg annual decrease in emissions and provided access to public transport for 38% more people than the previous network. This example demonstrates how it is possible to reduce transport emissions quickly, using technology and vehicles already available, while simultaneously providing more equitable access to public transport for a greater number of people.

https://ourauckland.aucklandcouncil.govt.nz/news/2021/10/new-transport-service-for-takanini/

Promoting active transport

What is active transport?

Active transport is any form of travel that requires the physical exertion of the traveller to directly contribute to motion, most often consisting of walking and cycling (both conventional bikes and e-bikes). However, other forms of active travel such as scootering, roller skating/blading, and skateboarding, while far less common, are also valid means of active travel because they require physical exertion of the traveller to directly contribute to motion. Measuring active transport, like measuring any behaviour, is challenging. Methods include surveys, device-based measurements, and app-based measures that incorporate GPS tracking.

Co-benefits

There are a range of co-benefits arising from active transport, including environmental benefits associated with reduced greenhouse gas emissions, reduced traffic accidents due to fewer vehicles on the road, economic benefits due to increased foot and cyclist traffic through local businesses, and the economic, mental, and physical health benefits arising from greater levels of activity. The adoption of active travel decreases the risk of all-cause mortality by at least 10%. For example, a large study from the United Kingdom found that compared to private motor vehicle users, bicycle commuters had a 20% lower rate of all-cause mortality, a 16% lower rate of cancer mortality, and an 11% reduction in the rate of incident cancers, while walking commuters had a 7% lower cancer incidence.

Strategies to drive active transport uptake

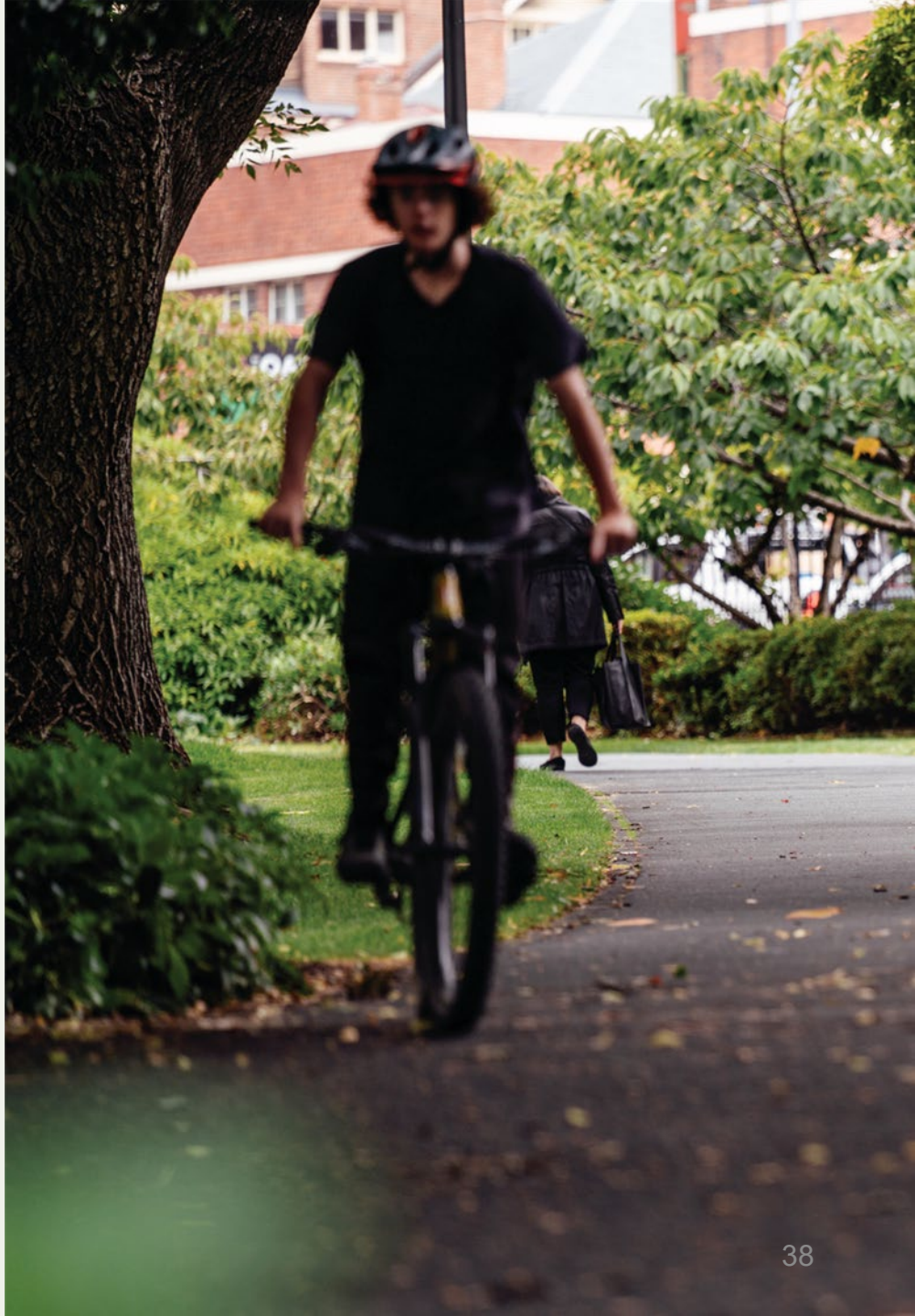
Behavioural and structural strategies have had consistent and positive effects on promoting active transport, although further research and more robust evidence is needed.

In the recently released Climate Change Action Plan, the Tasmanian Government committed to implementing a range of active transport policies, including delivering a grant program to support Tasmanians to purchase an e-bike or e-scooter; updating the Tasmanian Walking and Cycling for Active Transport Strategy; and working with local governments to improve active transport and micro-mobility infrastructure and facilities.

In addition to investing in and improving physical infrastructure (such as cycle and pedestrian paths) and prioritising street connectivity and green spaces, the government could also consider educational and marketing programs to promote the benefits of active transport; bicycle access/sharing programs; and changes in active transport laws.

New Zealand, for example, implemented a model communities program which aimed to create safe urban environments and encourage citizens to walk or cycle. The program focused on infrastructure upgrades (e.g., footpaths, cycle paths, lighting, bike stands), running public awareness campaigns to change attitudes towards walking and cycling, improving safety for walkers and cyclers through education programs, and improving connectivity in key CBD, school, and residential areas.

Key barriers to people choosing active transport often include perceptions of safety (which can be improved by increasing cycle and pedestrian paths and through education programs), weather conditions (rates of active transport tend to fluctuate seasonally), and above all, deeply embedded habits and a dominant culture of driving. Accordingly, the next two pages explore behavioural insight policies in more depth, which are relevant to both active and public transport.



Applying behavioural insights to public and active transport policies

To achieve long-lasting emissions reductions, both structural and behavioural strategies need to be used in tandem. Large-scale structural barriers such as inaccessible public and active transport infrastructure restrict commuting options and promote driving. However, even when structural barriers are addressed, significant cognitive barriers may continue to prevent people from lowering their transport emissions.

Transport behaviours are often habitual, ingrained over time, and can be resistant to traditional policy levers that tend to target peoples' conscious behaviour. Some examples of common cognitive barriers include:

- Status quo bias: people have a tendency to stick with current patterns of behaviour, as this involves the least mental effort. The status quo is taking ICE cars, and the existing social and physical structures in many countries nudge people in the direction of using cars.
- Bounded rationality: due to limited information and cognitive abilities, people lack awareness of the negative externalities and consequences of their behaviour. People also suffer from cognitive overload if they are provided with too much information they cannot easily process.
- Present bias: people often prefer short term gains over longer term benefits. Sustainable choices require people to incur tangible costs now for (perhaps intangible) future benefits.
- Loss aversion: people treat losses more seriously than equivalent gains. For example, many people perceive public transport will take longer than the same trip by car, and the perception that they will lose this time will cause them to avoid public transport, regardless of the benefits.

Structural strategies involve changes to the physical environment (e.g., road and fuel pricing, bus and cycle lanes, pedestrian infrastructure, road safety measures).

Behavioural strategies involve targeting communities or individuals to change beliefs and attitudes (e.g., providing feedback, encouraging social comparison, self-monitoring, intention formation, economic incentives).

Policies informed by behavioural insights (BI-policies) are those where the choice architecture is designed to gently ‘nudge’ people’s behaviour in a certain direction. BI-policies are often lighter in touch compared to more traditional policies, such as taxes, subsidies, mandates, and prohibitions. They are also more cost-effective; a message based on descriptive social norms is cheaper to implement than providing subsidies or monitoring compliance with regulations.

Some examples of BI-policies include:

- Introducing a period of free fares to encourage people to try public transport. As a trial conducted in Western Australia, 134 people were given free bus cards and received weekly email reminders for four weeks. The financial incentive and emails resulted in participants being more than twice as likely to take public transport. Offering discounted or free fares can also be effective when done on a time-limited basis, allowing them to be promoted using loss aversion and anticipated regret.
- Introducing contactless payment systems or live bus updates to improve the perceived ease of use of public transport services.
- Targeted messaging that highlights the possible benefits rather than the perceived losses of taking public and active transport e.g., highlighting the possibility of reading the morning newspaper or having some ‘me time’ to pursue a hobby while riding the bus to work.
- Targeted messaging that makes people perceive transport emissions reduction as the social norm, such as “most people in this neighbourhood take the bus. Join your neighbours and take the bus” (Cialdini 2003).
- Helping people match their future actions with their current intentions using commitment devices e.g., getting households to commit to walking/cycling a number of times within a particular period, and helping them stick to it via monitoring, feedback, advice and/or incentives.

The University of Tasmania launched a Behavioural Insights Lab in February 2023 to help apply behavioural insights and methods about how humans think and act to design effective policies.

Remote and flexible working

The COVID-19 pandemic has shown that remote and flexible working is often a viable alternative to the conventional car-dominated office commute, with the share of people working from home rising to 40% through the pandemic. While many have since returned to worksites, the appetite for and possibility of greater workplace flexibility has been clearly demonstrated and would have a dramatic impact on transport emissions if embraced more widely.

The Framework for an Australian Clean Transport Strategy (FACTS) encourages policymakers to capitalise on the high public support for remote work generated during COVID-19. According to the Productivity Commission's *Working from Home Research Paper* (2021), most workers want to continue working from home at least some of the time, with a primary benefit being the avoided commute; in 2019, full-time workers in Australian major cities reportedly spent an average of 67 minutes per day commuting. Working from home can thus – in addition to minimising transport emissions – improve work-life balance and create smarter cities with reduced congestion, road accidents, and air pollution. Policymakers and employers should recognise this opportunity, with one report finding that 35% of Australians would be likely to quit their job if their employer forced them to return to the office full time.

If Tasmanians in suitable occupations undertook remote work an average of two days per week, it could result in a 14.5% reduction in the State's transport emissions. This hybrid model balances the benefits of working in the office with the flexibility and lack of commuting associated with working from home.

Urban planning and consolidation

The '15-minute' city concept, which was developed to reduce carbon emissions, aims to ensure each local neighbourhood contains all the necessities for living and working within a 15-minute radius on foot, bicycle, or by public transport. Land use and urban planning strategies that encourage urban consolidation have the potential to improve transport emissions, traffic congestion, liveability, and wellbeing for cities over the long-term.

This is the ethos behind the new *30-Year Greater Hobart Plan* released in August 2022, which seeks to integrate transport, housing, and precinct planning to make Hobart the “world’s best small capital city”. The Plan promotes a ‘live local’ ethos, “where we can have employment options close to where we live, where we can send our children to school close to home, where we can easily visit a local park, where we can shop locally, and where other essential services are relatively close by”.

The Plan estimates that by 2050, the population of Greater Hobart will increase by 60,000 people, accommodated in 30,000 new dwellings. Until now, Greater Hobart has tended towards outward growth and urban sprawl. The Plan seeks to ensure that “additional housing will be primarily delivered through urban consolidation and infill development rather than greenfield development at the urban fringe”. This would enable residents to travel shorter distances, enable more frequent public transport services, generate more local employment, and reduce the city’s overall environmental impact.

In the short term, the Greater Hobart Plan will be used to inform an update to the Southern Tasmania Regional Land Use Strategy (STRLUS).

What about heavy transport and rail freight?

While this report's main focus is passenger vehicle electrification and behavioural change, with over 1.5 million buses and trucks on Australia's roads, decarbonising medium- and heavy-duty vehicles (MHDVs) and increasing the mode share of rail freight will be critically important to achieving net-zero emissions across the country by 2050. Even though trucks and buses only comprise around 4% of Tasmania's vehicle fleet, they're responsible for about 30% of Tasmania's transport emissions. Clearly, decarbonising this sector should be a priority, however the majority of action has been taken at the federal rather than Tasmanian state level to date.

The Australian Government has announced the adoption of Euro VI noxious emissions standards for heavy vehicles to improve air quality and increase the supply of more efficient MHDVs, bringing Australia's vehicle standards into closer alignment with international standards.

Electric urban trucks are becoming increasingly competitive for distances between 250-750km, while hydrogen fuel cell technology will likely play a role in the decarbonization of long-distance buses and trucks. Australia's National Hydrogen Strategy aims to promote hydrogen as a clean, cost competitive fuel option for Australian land and marine transport, particularly for heavy duty and long-range transport applications. Tasmania is an ideal environment for electric and/or hydrogen fuelled MHDVs due to its relatively short travel distances and limited number of heavy vehicle routes.

Furthermore, electric and hydrogen powered ferries are increasingly being adopted in various jurisdictions, including in Sydney where electric harbour ferries are already in use. Zero-emissions ferries are yet to be introduced in Tasmania, but given the growing popularity of the Hobart ferry service, and the fact that Tasmanian company Incat is constructing one of the world's largest lightweight zero-emissions ferries, Tasmania should certainly aim towards decarbonizing its ferry fleet.

Another significant emissions reduction opportunity is in increasing the mode share of rail freight in Australia, which has declined in recent decades. Rail is already the cleanest option for containerised and bulk freight, with emissions up to 16 times lower than road haulage. These benefits are amplified even further in the case of electric trains, which are faster and more powerful than their diesel counterparts. While Tasmania has no passenger rail, many businesses rely on the Tasmanian Rail Network to move freight between primary production, processing centres and export points. However, the majority of Tasmania's freight is still carried by road. Tasmania should explore opportunities to increase the usage of rail freight and to transition existing railways to zero-emissions technology.

Conclusions

This report recommends several specific policy options intended to help inform the development of Tasmania's first sector-based Emissions Reduction and Resilience Plan for the transport sector. This report has also argued that Tasmania should set a transport sector emissions reduction target of 37% by 2030.

If Tasmania is to pull its weight in the global fight against climate change, the targets and strategies proposed here should be adopted as a matter of urgency. Unless action is taken now, Tasmania could easily become a net-positive carbon emitter again before the end of this decade. Responsible global citizenship demands that we do everything possible to avoid this outcome.

Tasmania's valuable brand and international reputation as an innovative, sustainable, and climate-positive place to live, visit, and invest depends on our continued commitment to climate action.

While undeniably ambitious, our analysis illustrates that these changes are achievable and feasible within the given timeframe.

It is also essential, however, that ambitious emissions reductions do not come at the expense of disadvantaged Tasmanians. The transport decarbonisation roadmap proposed in this report satisfies these principles and would reduce our transport emissions sufficiently to ensure that our net-zero status is maintained through 2030 and beyond.

References

ABS (2020), *Survey of Motor Vehicle Use, Australia*, https://www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release

ABS (2021), *Motor vehicle census*, https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/latest-release#:~:text=Media%20releases-,Key%20statistics,year%20with%203.0%20million%20registrations

ABS (2021), *MTWP Method of Travel to Work by STATE (EN) by LFHRP Labour Force Status and Hours Worked Not Stated*, Census Tablebuilder, https://www.abs.gov.au/census

ACT Government (2021), *Sustainable Household Scheme*, https://www.climatechoices.act.gov.au/policy-programs/sustainable-household-scheme

Aksoy, C. G, Barrero, J. M, Bloom, N, Davis, S. J, Dolls, M and Zarate, P (2022), *Working from home around the world*, https://www.nber.org/papers/w30446

Aldred, R (2019), *Built Environment Interventions to Increase Active Travel: a Critical Review and Discussion*, Current Environmental Health Reports, 6(4): 309-315, https://link.springer.com/article/10.1007/s40572-019-00254-4

Arbalaez Velez, A. M and Plepys A (2021), *Car sharing as a strategy to address GHG emissions in the transport system: evaluation of the effects of car sharing in Amsterdam*, https://mdpi-res.com/d_attachment/sustainability/sustainability-13-02418/article_deploy/sustainability-13-02418-v2.pdf?version=1614149878

Australian Department of Climate Change, Energy, the Environment, and Water (2022), *Australian State and Territory Greenhouse Gas Inventories 2020*, https://www.industry.gov.au/data-and-publications/national-greenhouse-accounts-2020

Australia Institute (2021), *Climate of the Nation 2021: Tas Supplement*, https://australiainstitute.org.au/wp-content/uploads/2021/10/Climate-of-the-Nation-2021-TAS-supplement.pdf

Australian Government (n.d.), *Vehicle emission standards*, https://www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/vehicle-safety-environment/emission-standards

Australian Government (2023), *The fuel efficiency standard – Cleaner, cheaper to run cars for Australia*, https://www.infrastructure.gov.au/sites/default/files/documents/consultation_paper_-_australias_fuel_efficiency_standard.pdf

Australian Government Productivity Commission (2021), *Working from home: Research paper*, https://www.pc.gov.au/research/completed/working-from-home/working-from-home.pdf

BlueSG (n.d.), https://www.bluesg.com.sg/

CEFC (2023), *CEFC commits $40 million green finance to get more Australians into EVs*, https://www.cefc.com.au/media/media-release/cefc-commits-40-million-green-finance-to-get-more-australians-into-evs/

Cialdini, R. B (2003), *Crafting normative messages to protect the environment*, Current Directions in Psychological Science, 12(4), 105-109, https://journals.sagepub.com/doi/10.1111/1467-8721.01242

Cialdini, R. B, Demaine, L. J, Sagarin, B. J, Barrett, D. W, Rhoads, K and Winter, P. L (2006), *Managing social norms for persuasive impact*, Social Influence, 1(1), 3-15, https://www.tandfonline.com/doi/full/10.1080/15534510500181459

Climate Change Office (2023), *Tasmania's Climate Change Action Plan 2023-25*, https://recfit.tas.gov.au/__data/assets/pdf_file/0011/439634/Tasmanias_Climate_Change_Action_Plan_2023-25_Accessible.pdf

Climate Change Office (2023), *Emissions Reduction and Resilience Plans*, https://recfit.tas.gov.au/__data/assets/pdf_file/0004/439933/ReCFIT_Fact_Sheet_Climate_Change_-_Emissions_Reduction_and_Resilience_Plans_June_2023.pdf

COAG Energy Council (2019), *Australia's National Hydrogen Strategy*, https://www.dcceew.gov.au/sites/default/files/documents/australias-national-hydrogen-strategy.pdf

Corby, S (2021), *Everything you need to know about car sharing in Australia*, https://www.carsguide.com.au/urban/hacks/everything-you-need-to-know-about-car-sharing-in-australia-84634

Department of State Growth (n.d.), *Road and rail networks,* https://www.stategrowth.tas.gov.au/Transport_and_Infrastructure/infrastructure_tasmania/freight/roadrail

Department of State Growth (2022), *30-Year Greater Hobart Plan.* https://www.greaterhobart.tas.gov.au/__data/assets/pdf_file/0009/345717/30-Year_Greater_Hobart_Plan.PDF

References

Dodd, B, Jose, K, Stanesby, O and Cleland, V (2021), *Health by stealth: Transport for an active Tasmania*, Menzies Institute, https://static1.squarespace.com/static/623a545e8b98e16a852629af/t/62959e1b3f26b1712ca41304/1653972511440/Transport+for+an+Active+Tasmania.pdf

Durkin, P (2023), *Victoria's EV targets 'hot air' after $3000 EV discount axed*, Australian Financial Review, https://www.afr.com/policy/economy/victoria-s-ev-targets-hot-air-after-3000-ev-discount-axed-20230608-p5df65

Electric Vehicle Council (2022), *State of Electric Vehicles*, https://electricvehiclecouncil.com.au/wp-content/uploads/2022/10/State-of-EVs-October-2022.pdf

Electric Vehicle Council Australia (2022). *Australian Electric Vehicle Industry Recap 2022,* https://electricvehiclecouncil.com.au/wp-content/uploads/2023/02/AUSTRALIAN-ELECTRIC-VEHICLE-INDUSTRY-RECAP-2022.pdf

Electric Vehicle Council (2022), *Insights into electric vehicle ownership: a survey of Tesla Owners Club Australia members in partnership with the Electric Vehicle Council*, https://electricvehiclecouncil.com.au/wp-content/uploads/2022/09/EVownerinsights.pdf.

Evee (n.d.), https://www.evee.com.au/

Ferguson, M (2023, *More all-access, all-weather bus stops on the way in Tasmania*, https://www.premier.tas.gov.au/site_resources_2015/additional_releases/more-all-access,-all-weather-bus-stops-on-the-way-in-tasmania

Ferguson, M (2023), *More affordable, attractive public transport around Tasmania*, https://www.premier.tas.gov.au/site_resources_2015/additional_releases/more-affordable,-attractive-public-transport-around-tasmania

Fung, B. J and Court, C (2022), *It pays to try public transport: Shifting commuter behaviour in Perth*, https://www.bi.team/wp-content/uploads/2022/04/Applying-Behavioural-Insights-to-Reduce-Commuting-Emissions_PUBLIC.pdf

Graham, P and Havas, L (2021), *Electric vehicle projections 2021,* CSIRO*,* https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2021/csiro-ev-forecast-report.pdf

Hay, R (2023), *Plug it in, change the world: accelerating electric vehicle uptake in lutruwita/Tasmania*, https://www.climatetasmania.org/wp-content/uploads/Climate-Tasmania-Plug-it-in-change-the-world-accelerating-electric-vehicle-uptake-in-lutruwita-Tasmnia.pdf

Holmes, A (2023), *Buses, ferries key to fixing Hobart AFL stadium transport dilemma, Liberals say*, ABC, https://www.abc.net.au/news/2023-05-01/rapid-buses-ferries-touted-as-transport-fix-for-hobart-stadium/102287398

Jaensch, R (2022), *Supporting Tasmanian businesses to go electric*, https://www.premier.tas.gov.au/site_resources_2015/additional_releases/supporting-tasmanian-businesses-to-go-electric

Jose, K, Sharman, M, Stanesby, O, Greaves, S, Venn, A, Blizzard, L, Palmer, A, Cooper, K, Williams, J and Cleland, V (2022), *Incentivising public transport use for physical activity gain: process evaluation of the COVID-19 disrupted trips4health randomised controlled trial*, https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-022-01394-x

Kahneman, D and Tversky, A (1979), *Prospect theory: An analysis of decision under risk*, Econometrica, 47, 263-290

Kelly, P., S. Kahlmeier, T. Gotschi, N. Orsini, J. Richards, N. Roberts, P. Scarborough and C. Foster (2014). *Systematic review and meta-analysis of reduction in all-cause mortality from walking and cycling and shape of dose response relationship*, Int J Behavioural Nutrition and Physical Activity, https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-014-0132-x

Killick, D (2023), *More buses, ferries announced to ease Hobart traffic problems*, The Mercury https://www.themercury.com.au/news/tasmania/more-buses-ferries-announced-to-ease-hobart-traffic-problems/news-story/b588b86d0fa15bb2424394bd559b76b2

Linder, N, Lindahl, T and Borgström, S (2018), *Using behavioural insights to promote food waste recycling in urban households—Evidence from a longitudinal field experiment*, Frontiers in Psychology, 9, 352, https://www.frontiersin.org/articles/10.3389/fpsyg.2018.00352/full

Marinus Link (n.d.), https://www.marinuslink.com.au/

Metro Tas (2023), *Zero Emissions Bus Trial*, https://www.metrotas.com.au/corporate/major-projects/zero-emission-bus-trial/

Mulach, J. and Fisk, K. (2022), *Which banks offer special loans for electric vehicles?,* Wheels, https://www.whichcar.com.au/news/which-banks-offer-special-loans-for-electric-vehicles

References

NSW Government (n.d.), *Decarbonising freight*, https://www.haveyoursay.nsw.gov.au/72522/widgets/352224/documents/216962_

NZ Transport Agency (2011), *Model Communities Information Sheet*, https://www.nzta.govt.nz/assets/resources/model-communities-infosheet/docs/2011-03.pdf

Packham, C (2022), *Labor to spend $20m to accelerate electric truck use*, Australian Financial Review, https://www.afr.com/companies/energy/labor-to-spend-20m-to-accelerate-electric-truck-use-20221205-p5c3v2

Patterson, R, Panter, J, Vamos, E, Cummins, S, Millett, C and Laverty, A (2020), *Associations between commute mode and cardiovascular disease, cancer, and all-cause mortality, and cancer incidence, using linked Census data over 25 years in England and Wales: a cohort study*, https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30079-6/fulltext#seccestitle10

Pohlkamp, C, Oh, A, Nguyen, P and Bert, J (2022), *The future of buses and light commercial vehicles is electric – with cost parity just around the corner*, Boston Consulting Group, https://web-assets.bcg.com/6d/27/4df5a1f4411d8da26d11490f2a5a/bcg-the-future-of-buses.pdf

Point Advisory (2021), *2021 Update of Tasmania's Emissions Pathway Review – technical report*, https://www.dpac.tas.gov.au/__data/assets/pdf_file/0028/136828/Update_of_Tasmania_s_Emissions_Pathway_Review_-_technical_report.pdf

RepuTex Energy (2021), *The economic impact of the ALP's powering Australia plan*, https://www.reputex.com/wp-content/uploads/2021/12/REPUTEX_The-economic-impact-of-the-ALPs-Powering-Australia-Plan_Summary-Report-1221-2.pdf

Sharman, M. J, Lyth, A, Jose, K. A, Ragaini, B. S, Blizzard, L, Johnston, F. H, Peterson, C, Palmer, A. J and Cleland, V. J (2020), *Acceptability and perceived feasibility of strategies to increase public transport use for physical activity gain - A mixed methods study*, Health Promotion Journal of Australian 31(3): 504-517, https://pubmed.ncbi.nlm.nih.gov/31483904/

Tasmanian Government (n.d.), *Reducing our greenhouse gas emissions*, https://www.stategrowth.tas.gov.au/recfit/climate/reducing_our_emissions

Tasmanian Government (n.d.), *Energy saver loan scheme,* https://www.recfit.tas.gov.au/household_energy/energy_saver_loan_scheme

Tasmanian Government (2023), *Southern Outlet transit lane,* https://www.transport.tas.gov.au/projectsplanning/road_projects/south_road_projects/hobart_city_deal_-_southern_projects/small_tiles/southern_outlet_transit_lane

Tasmanian Government (2023), *Kingborough park and ride,* https://www.transport.tas.gov.au/projectsplanning/road_projects/south_road_projects/hobart_city_deal_-_southern_projects/small_tiles/kingborough_park_and_ride

Tasmanian Policy Exchange (2021), *Towards a Climate-positive Tasmania*, https://www.utas.edu.au/__data/assets/pdf_file/0009/1545561/Towards-a-climate-positive-Tasmania-02112021.pdf

Tasmanian Policy Exchange (2023), *Tasmanian Greenhouse Gas Emissions Update*, https://www.utas.edu.au/__data/assets/pdf_file/0006/1661883/2023-UTAS-Emissions-Report_final-June-2023.pdf

Tregebov, S, Krieger, M and Salomon-Ballada, S (2022), *Applying Behavioural Insights to Reducing Commuting Emissions: Research Report*, https://www.bi.team/wp-content/uploads/2022/04/Applying-Behavioural-Insights-to-Reduce-Commuting-Emissions_PUBLIC.pdf

Visontay, E (2023), *Of fumes and freight: why Australian cargo is increasingly being sent on trucks, not trains*, https://www.theguardian.com/australia-news/2023/jan/29/of-fumes-and-freight-why-australian-cargo-is-increasingly-being-sent-on-trucks-not-trains#:~:text=In%20terms%20of%20fuel%2C%20rail,about%207.5%20litres%20for%20rail

WeShare (n.d.), https://blog.we-share.io/en

Whitehead et al. (2022), *FACTS: A Framework for an Australian Clean Transport Strategy*, http://transportfacts.org/wp-content/uploads/2022/06/FACTS-a-Framework-for-an-Australian-Clean-Transport-Strategy-2022.pdf

Wrigley, K (2023), *The best EV electricity plans in Australia*, https://www.canstarblue.com.au/electricity/electric-vehicle-power-plans/#agl

Zipcar (n.d.), *Quantifying the impact of car sharing,* https://sustainabledevelopment.un.org/content/documents/10664zipcar.pdf

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