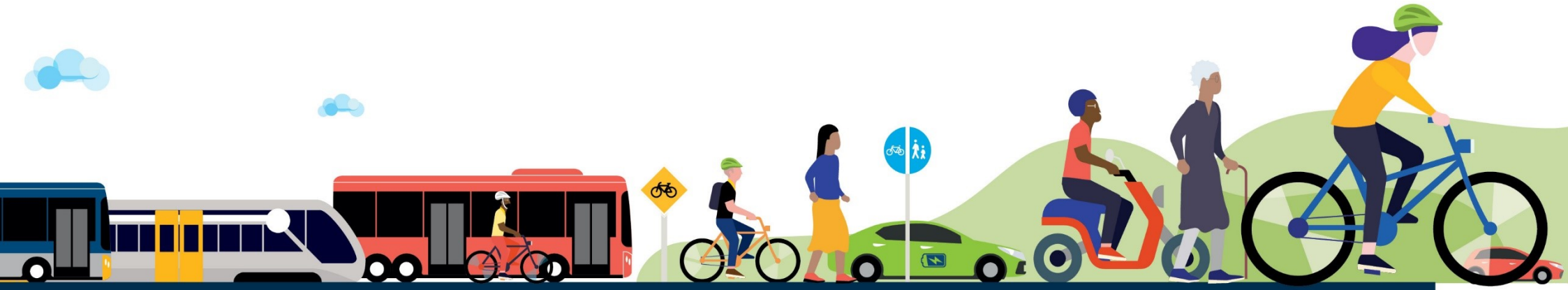
Sustainable Access for a Thriving Future

Auckland's transport emissions reduction pathway



How transport in Auckland can give effect to

Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan

Mihi

E Ranginui e tū iho nei

E Papatūānuku e takoto ake nei

Tēnā rā kōrua

Koutou, ngā tūpuna maunga o Tāmaki Makaurau,

Tēnā rā koutou

Waihoki koutou

Ko te Moananui ā – Toi, ko te Waitematā , ko te Tikapa Moana o Hauraki,

Ko te Mānuka, ko te Moananui o Rehua

Tēnā koutou

E ngā awa, e ngā roma

E rere nā, e rere nei

Tēnā rā koutou

E ngā mate tuatini

Kua riro atu ki te po

Haere, haere, haere atu rā

Whakangaro atu rā

E mihi ana ki a Kīngi Tuheitia me tōna Whare Ariki

E ngā mana whenua o Whātua, o Marutuahu, o Waiohua Tāmaki,

Waihoki ngā whanaunga o Ngāti Manuhiri, o Ngāti Wai, o Ngāti Rehua

Turou Hawaiki

E ngā mātā waka

Tēnā te mana o Rehua

E ngā manuwhiri tuārangi o ngā pito o te ao

Tēnā koutou, tēnā koutou, tēnā koutou katoa

Tāmaki herenga waka

Tāmaki herenga tangata

Foreword

Auckland is changing as we all move to more sustainable forms of transport – exciting options that create less congestion and a cleaner, more connected city.

Auckland Transport and Auckland Council share a goal to halve Tāmaki Makaurau's emissions by 2030, as set out in Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, a plan that was created in partnership with mana whenua and supported strongly by Aucklanders. The time to act is now - we must start putting climate change at the centre of our planning and decision making. It can no longer be tomorrow's problem.

This document gives Auckland a pathway to achieve our goals - it's a big ask: Auckland needs to reduce transport emissions by 64% over the next eight years to be consistent with international agreements to urgently address the need to reduce greenhouse gas emissions. This goal was supported unanimously by the Mayor, all Councillors, members of the Independent Māori Statutory Board and all local boards. To get and stay on a pathway to that goal, Auckland and Aucklanders will need to change.

Climate action can seem overwhelming, but it doesn't have to be. Hundreds of thousands of Aucklanders already get on a bus, train, ferry, or get on a bike or walk every day. There are changes we can all make to protect the things we care about. Try using public transport, cycling or walking rather than getting behind the wheel of your car whenever possible. Even just taking the bus to work a few times a week or walking the kids to school sometimes will help – it doesn't have to be all or nothing.

Our choices and behaviour are the product of our goals and our context. We have the goal – now we need to transform the transport system that supports that goal.

We are on our way to a safer transport network that easily enables more people to connect with more of the places they want to go. More and better walking, cycling and public transport options will unlock a safer, more affordable, and more accessible Auckland for everyone.

We want an Auckland we can all be proud of with a low-carbon, safe transport system that delivers sustainable access for all.

As we progress towards our vision Aucklanders will:

- have many more sustainable transport choices for moving around the region, and more housing options in places with good transport access
- experience more equitable transport outcomes, safer roads, cleaner air, less noise pollution, more opportunities for physical activity and social interactions, and greater resilience against external shocks, such as increased fuel prices
- see a stronger partnership approach from the council with mana whenua
- know that council is making prudent financial decisions and better use of existing resources
- be part of a much more resilient, equitable and liveable city.

We are proud to share Auckland's Transport Emissions Reduction Pathway and to collaborate with our partners to progress its goals.

A thriving future is possible for Auckland. And it starts now. With all of us, together. A connected Auckland opens up a world of possibility.

Councillor Richard Hills

Chair Environment and Climate Change Committee

Adrienne Young-Cooper

Chair Auckland Transport Board

Contents

This Transport Emissions Reduction Pathway articulates three things:

1. **What the transport system needs to look like in 2030 –**

   a description of the transport system that achieves Auckland's emissions goals.

2. **The transformation required –**

   a description of 11 areas of transformation that will create the sustainable transport system needed in 2030

3. **Pathway implementation –**

   a list of sequenced actions to give effect to the transformation areas, the supportive transport planning system needed, and what is required to integrate the pathway into the existing planning system.

Executive Summary

The climate is changing. Average temperatures are increasing globally because of rising greenhouse gas emissions. Rising temperatures will affect crops, accelerate sea level rise, and cause more frequent extreme weather events. Mitigating these risks means reducing emissions and creating a low-carbon society.

The transport sector is the largest source of Auckland's emissions, emitting over 40% of the total. The bulk of these emissions come from road transport (86%).

Changing the way Aucklanders and visitors get around the region is critical to making an impact and achieving **Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan's** goal to halve emissions by 2030 and reach net zero emissions by 2050.

This document sets out a pathway to reduce transport emissions by 64% (relative to 2016) to around 1.75 megatonnes (CO_2e) by 2030 as directed by Auckland's climate plan. The pathway describes how the transport system must transform in just eight years to enable Aucklanders to cut emissions and realise the benefits of a much more sustainable, safer, and healthier transport system.

The pathway requires every lever available to be pulled as hard as is credibly possible. Mode shift, electric vehicle uptake, reduction in car trips and every other lever are all stretched to the limit of what is possible in eight years to chart a path to a 64% reduction in transport emissions. For this reason only one pathway is presented.

Fundamentally, **the distance travelled in light vehicles must reduce by around 50%** by 2030. This does not mean no one will drive anymore. It means sustainable (low-emissions) modes such as walking, cycling, micromobility and public transport must be as convenient, attractive, and affordable for as many people as possible. Increasing sustainable access is key to reducing transport emissions. This means increasing the number of opportunities that can be reached via sustainable modes of transport. **The shift to sustainable modes must happen fast**.

This document is about the entire transport sector. Mana whenua partners, Ministry of Transport, Waka Kotahi, and other transport sector groups were engaged in the development of this document. While it sets formal strategic direction only for the council group, it illustrates a pathway for the whole sector to meet our collective goals. The Transport Emissions Reduction Pathway is not a funding plan nor a detailed implementation plan with identified programmes. A range of established processes perform this function. Rather, the Transport Emissions Reduction Pathway (TERP) provides direction that Auckland Council and Auckland Transport must incorporate into future Auckland Transport Alignment Project, Regional Land Transport Plan and Long-term Plan processes.

While the challenge is huge, many solutions to rapidly decarbonise the transport sector already exist, can be rolled out quickly, cost less than other mitigation strategies, and help to achieve other wellbeing goals. Cities around the world are transforming their transport networks to be more affordable for more people, more energy efficient and much safer for everyone. It can be done. This document sets a pathway for Auckland to join the world in transforming the way we move around.

Avoiding the worst effects of climate change and reducing the need for costly adaptation measures, requires global warming to be limited to 1.5° C. To do this, countries around the world have adopted targets to reach net-zero emissions by 2050. The Climate Commission's modelling shows the cost to **New Zealand of reaching its net-zero target is a little over 1% of GDP in 2050, while doing nothing will cost around 2.3% of GDP.**

Ultimately, the transition to a low-emissions and climate-resilient transport future is a pathway towards wellbeing for all Aucklanders. The actions presented in this document would mean more affordable transport choices; noticeably safer streets that promote independent travel for all ages and abilities; increased levels of healthy physical activity; improved air quality and reduced noise pollution; reduced congestion; and more effective use of limited public funds and road space leading to economic and social benefits.

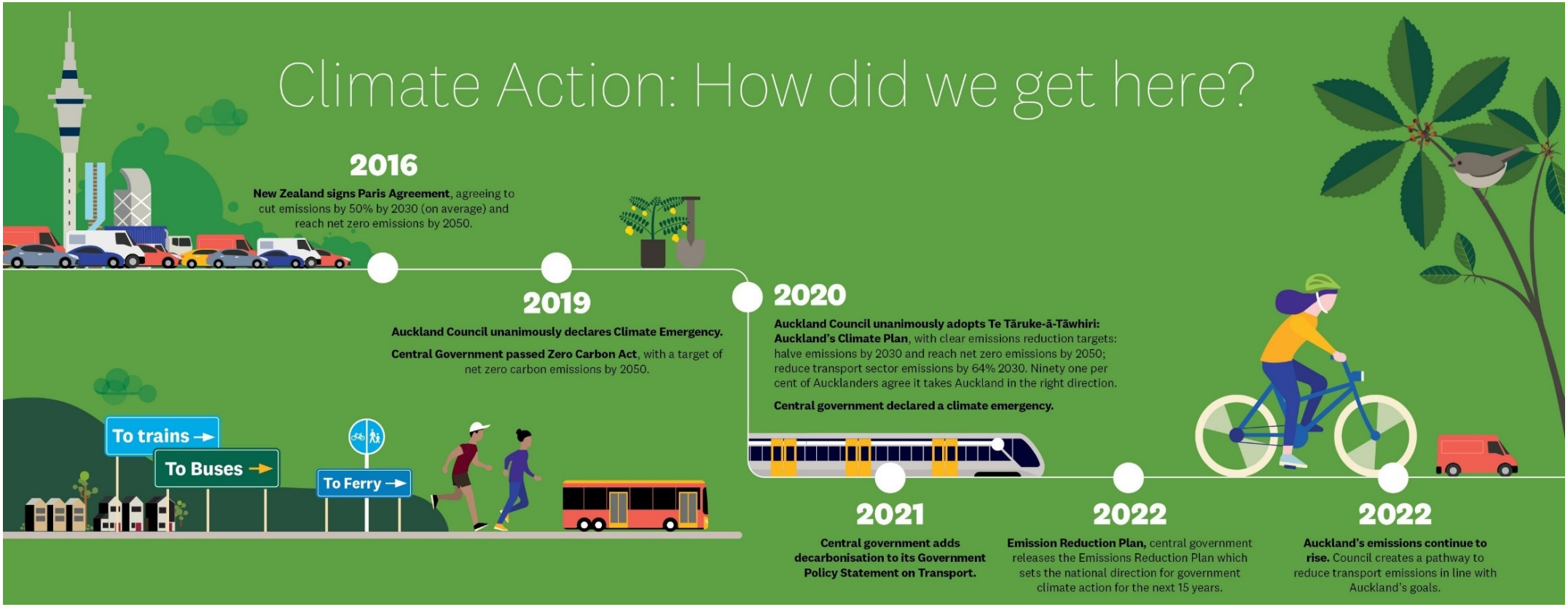
On top of this, the changes that deliver emissions reduction are popular. More than two thirds of Aucklanders supported a Climate Action Targeted Rate to combat the climate crisis. Public expectation on taking climate action is increasing. Central and local government are taking action to meet public expectations. **Climate action will also become more important as Auckland competes on the world stage as a world-class city where talent wants to live.**

The scale of the emissions reduction challenge is enormous; but so too is the significance of the moment. So much will need to change and only eight years – less than 100 months – remain to make it happen. **To meet the target, Auckland cannot rely on incremental change; it needs transformation.**

Key feedback themes

We spoke with mana whenua, local boards, businesses, young people and community groups about the TERP, who told us to:

- Address transport inequities and high cost of travel
- Invest much more in walking, cycling and public transport
- Be bold and transformational
- Address personal safety concerns and ensure universal access
- Tailor solutions rather than make one-size-fits-all changes, e.g. rural
- Support compact urban form
- Work with iwi and local boards to supercharge engagement
- Partner with iwi, communities and business to take climate action
- Provide subsidies for e-bikes, public transport and EVs



The Transformations we need to make together

Together, eleven transformation areas will put Auckland on the pathway to 64% reduction in emissions by 2030.
Ten areas are organised by the three groupings in government's Emissions Reduction Plan to align joint local and central government efforts.
The 11th area underpins all other transformation areas and taps into the power of communities to create long-term systemic change

Reduce reliance on cars and support people to walk, cycle and use public transport

1 Supercharge walking and cycling

1.1 Safe, attractive, and accessible pedestrian environments

1.2 An extensive, dense and connected cycle network of quality routes and appropriate destination infrastructure

1.3 Safe speeds

1.4 Provide anyone who wants to cycle with the opportunity do so

1.5 Regulatory changes that support prioritisation of walking and cycling

2 Massively increase public transport patronage

2.1 Increase the performance and attractiveness of the public transport network

2.2 Implement a "fair fares" strategy

2.3 Improve the accessibility of the public transport network

3 Prioritise and resource sustainable transport

3.1 All projects must repair current network imbalance

3.2 Swift and strategic action to redefine space

3.3 Coordinated approach to parking management and enforcement

3.4 Move to vision-led transport planning

Rapidly adopt low-emissions vehicles

7 Electrify private vehicles

7.1 More incentives to increase the rate of uptake of low and zero emissions vehicles

7.2 No fossil fuel light vehicles imported by 2030, preferably earlier

7.3 Expand the EV charging network and its capacity

8 Enable new transport devices

8.1 Incentives and subsidies to supercharge the uptake of emerging new ways to move

8.2 Clarity of the regulation around emerging modes to promote their use

Begin work now to decarbonise heavy transport and freight

4 Reduce travel where possible and appropriate

4.1 Equitable and impactful pricing of the road network

4.2 Restrict road expansion that induces light vehicle VKT

4.3 Reduce air travel

4.4 Equitable digital access to encourage remote activity

5 Safe low-traffic neighbourhoods for people

5.1 A network of vibrant, mixed-use neighbourhoods for people across Auckland

5.2 A network of low-traffic neighbourhoods

5.3 Put sustainable access and universal design at the heart of council group strategies and plans

6 Build up not out

6.1 Plan for an increase in access via sustainable modes and a reduction in light vehicle VKT

6.2 Reduce the scale of planned urban expansion

6.3 More intensive development in areas with good access to opportunities

9 Low emissions public transport

9.1 Maintain the commitment to fund low-emissions public transport

9.2 Invest in the energy network infrastructure to keep up with increased demand

10 Efficient freight and services

10.1 Move freight around the transport network as efficiently and safely as possible.

10.2 Improve the efficiency of the road freight fleet

10.3 Reduce road and air freight

Empower Aucklanders to make sustainable transport choices

11. Empower Aucklanders to make sustainable transport choices

11.1 Enable deep and ongoing dialogue with Aucklanders on climate action

11.2 Greater support for Māori, citizen and youth-led responses to climate change

11.3 Greater awareness and understanding of sustainable transport options

11.4 Better understanding of Auckland's diverse populations through travel data

Reaching Auckland's 2030 emissions goal requires sustained delivery of programmes over time to achieve transformation of the system. The diagram below illustrates the 2022-2030 pathway at a high level. The pathway is not a list of specific projects to be implemented: it is a pathway of systemic change that reflects the enduring transformation that is required. On the left, the performance metrics of the current transport system; on the right, what needs to be achieved by 2030 to meet the 64% goal. Links between programmes are important considerations for how programmes are delivered and in achieving equitable change. For example, a 'fair fares' programme and the City Rail Link should be in place before congestion charging.

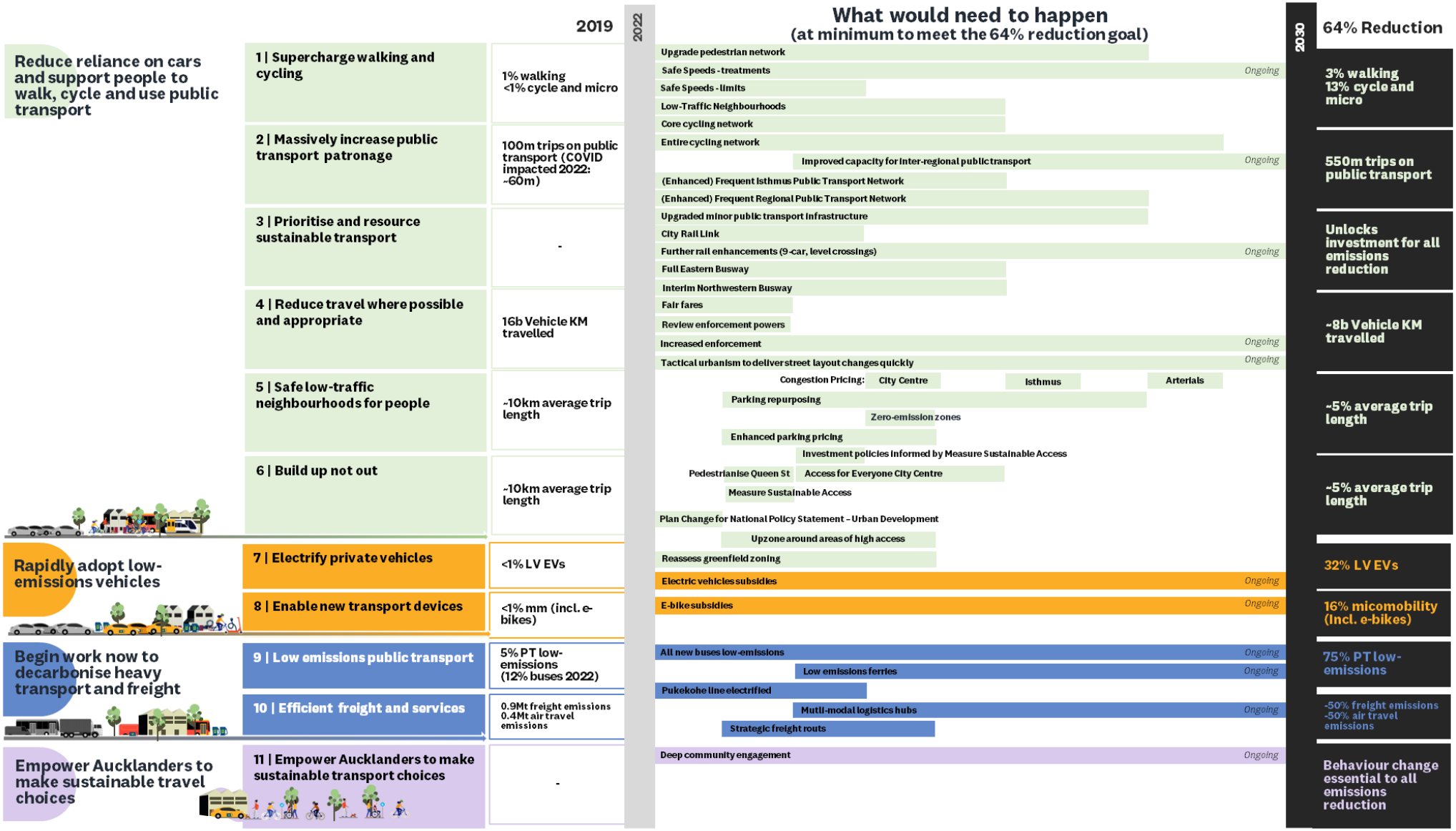
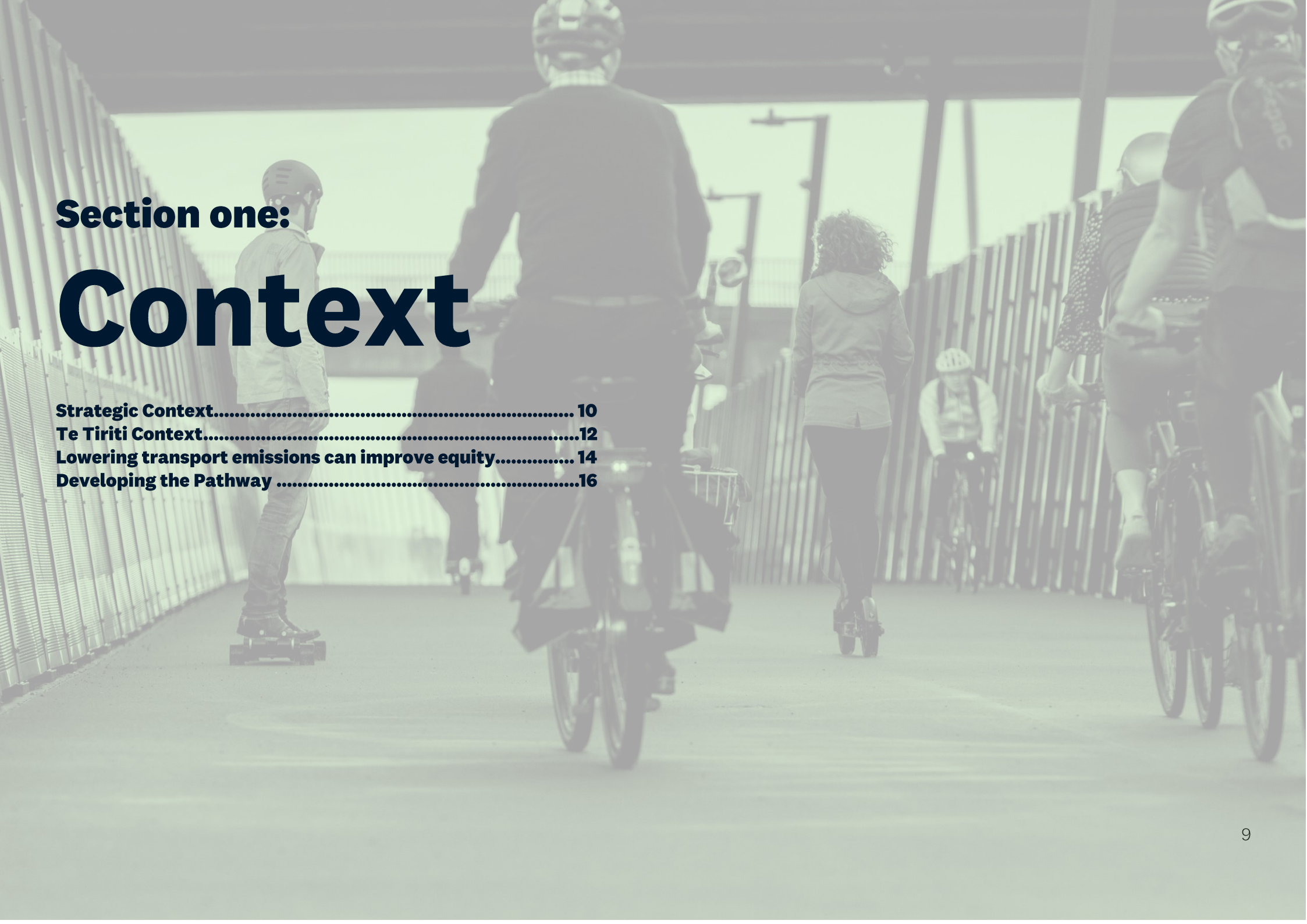


Figure 1 - What would need to happen



Section one:

Context

Strategic Context

In 2020, **Auckland Council adopted Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan,** with clear emissions reduction targets: halve emissions by 2030 and reach net zero emissions by 2050. It stated that Auckland's transport sector emissions must reduce by 64% on 2016 levels by 2030 to reach this target.

Te Tāruke-ā-Tāwhiri was developed and will be delivered in partnership

Mana whenua, through the Tāmaki Makaurau Mana Whenua Forum, gifted the cultural narrative of Te Tāruke-ā-Tāwhiri. This contribution is deeply acknowledged, and that cultural expression is central to the plan.

The narrative calls for a change in our response to climate change, re-framing, re-imagining and re-setting the current system, and a shift from a human-centred approach to an ecological-centred approach given our symbiotic relationships with the natural environment.

Te Tāruke-ā-Tāwhiri sets the direction for this document

Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan identifies areas for change: changing travel behaviour and getting around more by walking, cycling and public transport; changing the vehicles we use for low-and-zero-emissions versions; and more efficient freight.

The Transport Emissions Reduction Pathway provides 'the next level of detail' by setting out the pathway to a 64% reduction in emissions in the transport sector. It answers questions like how much walking and cycling? How fast do we need to change to a low-or-zero-emissions fleet? This document frames the challenges that require investment by council and central government.

Partnership with central government

As part of its obligations under the Paris Agreement and the Climate Change Response (Zero Carbon) Amendment Act 2019, government recently released its first Emissions Reduction Plan (ERP). The ERP sets out a pathway to an approximate 41% reduction (on 2019 levels) in New Zealand's carbon emissions by 2035. Transport is expected to play a crucial role in meeting this target. The ERP also includes details on New Zealand's first three five-yearly, legally binding, carbon budgets.

The transport chapter of the ERP includes several nationwide sub-targets for 2035:

- reduce vehicle kilometres travelled (VKT) by 20% (versus baseline 2035 forecast)
- increase zero emissions vehicles to 30% of light fleet
- reduce freight emissions by 35%
- reduce the emissions intensity of transport fuel by 10%.

The ERP's national pathway and targets are not directly comparable to TERP's more ambitious pathway for Auckland. Nevertheless, partnership between government and council is crucial to reduce emissions and transform the transport system. Auckland is better placed than other regions to contribute to government's transport goals through accelerated mode shift. It is also better placed to intensify land use around good public transport nodes, which is crucial to help people drive less. As such Auckland needs to reduce its emissions and its light vehicle VKT far more than other parts of the country if the ERP's goals are to be achieved. Conversely, many aspects of Auckland's pathway rely on government action or additional government funding.

The government will work with councils to establish targets for each region's contribution to ERP targets. This will narrow the gap between ERP and TERP targets but is unlikely to close it completely. That is because Auckland is working towards the internationally adopted goal of a 50% reduction in its overall emissions by 2030 and the ERP is not.

Despite the differences in targets, the direction of the two pathways and the specific actions included in both, are very well aligned. Crucially, both documents recognise mode shift as a primary contributor to emissions reduction in the near-term.

Transport interventions in the ERP are grouped into three focus areas:

- reduce reliance on cars and support people to walk, cycle and use public transport
- rapidly adopt low emissions vehicles
- begin work now to decarbonise heavy transport and freight

The areas for transformation in the TERP are grouped around these same three focus areas (see section 2).

Government's Budget 2022 allocated an initial $1.3 billion over the next three years for rapid transport emissions reduction. This includes significant allocations to encourage mode shift to public transport, walking and cycling in the largest urban areas. This funding will enable Auckland to accelerate early action on the TERP.

Central government action, and in some cases funding, in each of the focus areas is crucial for Auckland to achieve significant emissions reductions. Similarly, without rapid action by Auckland, New Zealand will not achieve its emissions reduction targets. The pathways in both the TERP and ERP therefore depend on one another for success.

Aucklanders are supportive of climate action

Ninety one percent of Aucklanders agreed Te Tāruke-ā-Tāwhiri takes Auckland in the right direction. Feedback from mana whenua, local boards, and the public show overwhelming support for more investment in sustainable transport. For example, 63% of Aucklanders felt building more cycleways is a strategic priority.

Ultimately, the transition to a low-emissions and climate-resilient transport future is a pathway towards wellbeing for all Aucklanders. Taking action to cut transport emissions delivers multiple benefits such as cleaner air, public health (especially from active travel), safer streets from reduced traffic volume and speed (a Vision Zero goal), less resource-intensive ways of meeting the needs of the region, and enhanced resilience to shocks such as fuel price increases.

However, there are persistent challenges that must be overcome

Aucklanders have very high car ownership rates compared to other international cities. This means investment in providing alternatives to travel by car can be perceived as not meeting their current needs.

The average distance travelled has increased over time as Auckland's urban area has grown, and this is projected to continue rising.

The ongoing recovery from the Covid-19 pandemic has been uneven. Car traffic volumes are back to 2019 levels, but public transport patronage is still much lower compared to 2019 levels – we therefore start from an even lower PT base.

Streets can be dangerous for cyclists in particular, who do not have access to a connected and safe regional network that provides a real substitute for car ownership.

This document considers this context and charts a Transport Emissions Reduction Pathway for Auckland.

Te Tiriti Context

Te Tiriti o Waitangi provides the context for a partnership approach between the council and Māori. It creates the foundation for a dynamic and evolving relationship and enriches the future of Tāmaki Makaurau with the unique perspectives of te ao Māori.

Māori are kaitiaki of te whenua and te moana, contributors to the economy, and leaders of their communities. Partnership with Māori enables the council and government to harness the extensive expertise and networks of Māori in tackling the climate crisis.

The **Tāmaki Makaurau Mana Whenua Forum** is an independent, governance-level Forum with membership held by the 19 recognised mana whenua entities in Tāmaki Makaurau. The Forum has taken a lead role in anchoring and guiding a Māori response to climate change within Tāmaki Makaurau. Mana Whenua, through the Forum, gifted the cultural narrative of Te Tāruke-ā-Tāwhiri. This contribution is deeply acknowledged, and that cultural expression is central to the plan.

The narrative calls for a change in our response to climate change; re-framing, re-imagining, and re-setting the current system, and a shift from a human-centred approach to an ecological-centred approach given our symbiotic relationships with the natural world.

A Tāmaki Makaurau response

Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan commits the council to responding to climate in a way that embodies Auckland's place in the world. The *Tāmaki response* reflects Tāmaki Makaurau's uniqueness and the need to embed equity, te ao Māori and a strong rangatahi voice. This means that action set out in this document should be delivered in partnership with Māori, in ways that align to mātauranga Māori, and that seek out and embed rangatahi views.

Mana whenua exercise mana motuhake

A stronger mana whenua leadership role strengthens our response to climate change. Mana whenua have consistently supported strong climate action in partnership with Māori. They also have the ability to influence others through their strong business and cultural networks.

At a governance level, mana whenua are challenging short-term decision-making and siloed ways of working, and seek ways to reduce emissions while improving equity. But this is often resource and time intensive. Genuine partnership requires greater resourcing for Māori led responses and better council engagement processes.

Mātauranga Māori is embedded in our climate response

The Forum partnered with the council to provide a te ao Māori perspective throughout the development of Te Tāruke-ā-Tāwhiri and developed a Te Ao Māori wellbeing framework called **Te Ora ō Tāmaki Makaurau** in response.

Reducing transport emissions through the lens of te ao Māori gives us a framework for action that is just, holistic, and enduring.

Māori rights and interests are protected

Māori will be uniquely affected by climate change; its effects on te whenua, te wai and taonga species threaten traditional practices connected to Māori identity and wellbeing. Reducing transport emissions will help reduce the impacts of climate change on Māori. Māori also face specific transport barriers and can be vulnerable to the cost of emissions reductions. This must be understood and be factored into an equitable transition process.

Mana whenua and mataawaka shape their own climate response

Māori have complex travel patterns and tend to live and work in many localities, from urban to rural. This means there cannot be a one-size-fits-all approach. Low-emissions iwi and hapū-based transport projects help broaden the range of responses, as would improving data gaps on Māori travel patterns and barriers. Some iwi and hapū are already developing their own sustainable transport solutions. These te ao Māori solutions should be resourced and amplified.

Figure 2: Ōrākei Papakāinga with the city centre in the background

Taking action: Ngāti Whātua Ōrākei

Ngāti Whātua Ōrākei is a hapū and tangata whenua of the central Tāmaki isthmus. The hapū has a bold and holistic vision for climate and environmental action that recognises the interconnected web of relationships and reciprocity between Te Taiao and people.

Ngāti Whātua Ōrākei aims for net zero emissions across its organisational operations by 2030, and over time, aspires to draw down more emissions than it produces.

Being an urban hapū, Ngāti Whātua Ōrākei has a strong focus on transport emissions reductions. The hapū is trialling a shared electric vehicle scheme to make it easier and more affordable for whanāu to access EVs, recognising that the high upfront cost of EVs put these vehicles out-of-reach for many Māori.

To support this scheme, the hapū plans to develop a mobility-as-a-service (MaaS) platform while working directly with whānau to increase the awareness of EV technology, demonstrate potential emissions and costs savings and support behaviour change. Insights from the trial will be used to forecast future demand and charging infrastructure requirements.

Ngāti Whātua Ōrākei is also redeveloping its ancestral whenua and papakāinga at Ōrākei, which will integrate affordable medium density housing with open spaces and restored biodiversity, while ensuring it is easier and more attractive to travel by sustainable modes such as walking, cycling and public and shared transport. The papakāinga model provides an excellent case study of a vibrant, sustainable and people-friendly neighbourhood model that could apply to many parts of Auckland.

Through its innovative actions at the papakāinga level, Ngāti Whātua Ōrākei is demonstrating the unique perspective of te ao Māori and the power of collective action and partnership in achieving Tāmaki Makaurau's ambitious climate goal. Partnership and support from council and the government could extend the reach of these programmes, showcase Te Tiriti in action, and create an equitable transport system that increases access, choice and affordability for all Aucklanders.

Lowering transport emissions can improve equity

Rapidly transitioning to a low-carbon transport system can have significant positive equity outcomes, but only if equity is consciously and deliberately addressed during that transition. Low-income households, children, older people, Māori, Pasifika, women, LGBTQI+ people and those in remote and rural communities can be underserved by the current transport system. These groups will benefit from an equity-first approach.

Transport plays a key role in the lives of all Aucklanders. The transport system determines how easily, safely and affordably people can access the jobs, education, goods, services and other things that are critical to their wellbeing and daily lives.

When the transport system does not serve particular needs, it creates inequities; either because of **a lack of transport choices** – limiting the options to participate in social, cultural and economic activities – or because of the **unaffordability of the options** that people have no choice but to use – such as the high cost of car dependency that people are often forced into.

A car dependent society is an inequitable society by nature. On the other hand, **low-carbon transport policies can also be equity policies**. They rebalance the transport system and give everyone more transport choices to meet their specific needs.

The current system is inequitable

Auckland's transport network is currently most useful to those with access to a car. It can be a challenge to navigate for those without. More than a third of the population cannot drive, and are dependent on walking, cycling, public transport, taxis and lifts from others.

Children are the largest group of those who cannot drive. The rise of traffic dominated streets has reduced their independence, increased their risk of being hit by a car, and reduced their opportunities for play and physical activity.

Low-income households and people living in areas with high socio-economic deprivation tend to be the most negatively impacted by the car-dependent system. They are more likely to be forced to own a vehicle, as destinations they tend to travel to (particularly industrial workplaces and/or night shifts) are often not well served by the PT network. They are also more exposed to fuel price volatility and more likely to forgo important trips, such as medical appointments, due to transport costs.

Disabled people, older people and other mobility impaired people regularly face accessibility challenges because of transport environments that poorly suit their needs. Around one in five Aucklanders identify as disabled. Disability is diverse and requires a transport system that works well for different types of journeys.

Māori, Pasifika, women and LGBTQI+ people face transport barriers such as harassment, violence, and concerns for personal safety in public spaces, more complex travel patterns not well served by public transport, and challenges when using services not designed for universal access.

Remote or rural communities face unique equity and decarbonisation challenges, including infrequent or non-existent PT services, lower availability of nearby goods, services and jobs, and higher road safety risks.

Some groups are also much more exposed to danger; **pedestrians and cyclists** are many times more likely to die on our roads for example. **Māori, Pasifika and low-income households** also experience disproportionally higher rates of road trauma and transport-related pollution.

Those belonging to more than one group experience compounding transport inequity, especially if they are also on low incomes. Yet, there is poor data collection and understanding about the transport needs of these groups, as well as the trips they forgo because of a lack of transport options.

To add to the inequity, many of the groups currently disadvantaged by the transport system tend to emit the least emissions. For example, Pasifika travel the shortest distances, own the fewest cars, and contribute around one third less carbon emissions compared to the general population. Pedestrians and cyclists produce negligible emissions from the trips they make.

A deliberate just transition

Continuing down the path of car dependency will lock in emissions for decades to come and lock many people out of opportunities to thrive.

The current inequity in Auckland's transport system cannot be solved with transport solutions alone, or by piecemeal action. It requires leadership, sustained effort and fundamental changes to the way transport, land use planning, health and social services are planned, prioritised, and delivered to achieve outcomes greater than its parts.

The pathway set out in this document cannot address transport inequity itself. It must be addressed through the deliberate implementation actions of Auckland Council, Auckland Transport, central government and other providers of transport services and infrastructure.

In essence, this requires a transport system that:

- provides **realistic alternatives to driving throughout Auckland** that reduces transport poverty by removing people's need to purchase and maintain a car
- prioritises **sustainable access that enables everyone** – including children, older people and disabled people – that meets their needs to access opportunities and move around easily and independently.

However, this has to be supported by additional initiatives such as potential subsidies and discounts for more sustainable travel modes, land use changes and consideration of where facilities and services are located, and helping those new to these travel options understand what is available and how to use them safely.

Auckland Council and Auckland Transport are committed to taking deliberate action that creates a more equitable, accessible, and climate-resilient transport system for current and future generations. They will work together to develop a **framework to assess the positive and negative impacts of initiatives on equity**.

Equity assessments will be done independently of assessing emissions impacts and will recommend changes to interventions to maximise equity where needed. The framework will inform prioritisation processes and help ensure the needs of disadvantaged groups are addressed throughout the implementation of TERP.

Developing the Pathway

Modelling shows rapid transformation is required

Auckland's emissions goals can only be achieved through a complete transformation of the transport and land use planning system. This pathway represents a 'stretch goal' for every element of the transport system to enable both a 64% reduction and many other benefits that interact and combine in mutually-reinforcing ways.

Current policies and planned investments are projected to reduce transport emissions by only about a tenth of what is needed by 2030. This is why the Transport Emissions Reduction Pathway is required.

Figure 3 shows scenarios for Auckland's 2019-30 transport sector emissions. To achieve the 64% (on 2016) target, transport emissions must reduce from their current (2019) levels of around 4.9Mt CO_2e to around 1.75 Mt CO_2e in 2030.

The **Business As Usual line** projects emissions to 2030 by adding the associated increase in total travel from population growth. It holds per-capita emissions at 2019 levels. This indicative line is useful for reference: it shows that with population growth and no planned changes, emissions would continue to increase.

The **Baseline** is Auckland's current trajectory. It accounts for population growth and the impact of current planned programmes in the Regional Land Transport Plan and Long-Term Plan. The projected impacts of known central government commitments, such as the Sustainable Biofuels Obligation and Clean Vehicle Package, are also included. Accounting for all of this, the projected baseline emissions reduction (as of early 2022) is only a small amount of what is needed by 2030.

The following assumptions were used to develop the current baseline:

- fuel will produce fewer emissions at the tailpipe over time
- electric vehicles are getting more popular
- public transport patronage will grow
- total trips are growing
- total vehicle kilometres travelled is growing.

The **Pathway line** shows **Auckland's Transport Emissions Reduction Pathway** to the Tāruke-ā-Tāwhiri goal. The gap between the baseline and pathway is immediately apparent.

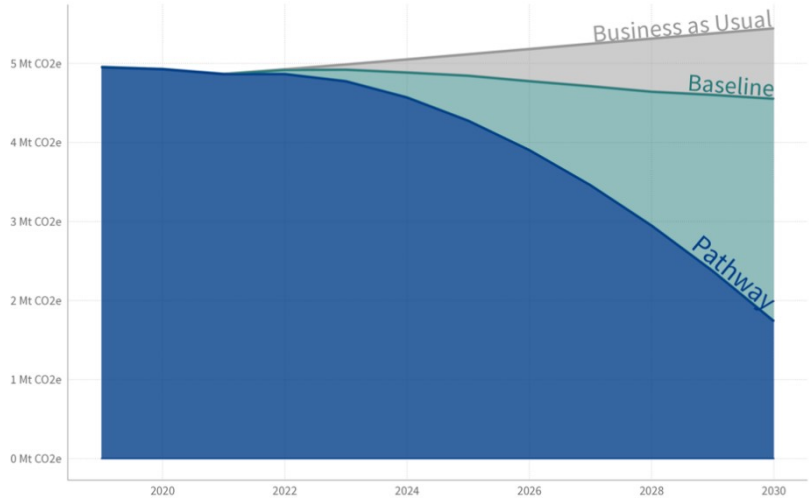


Figure 3 – Pathway scenarios 2019-2030 (graph)

Figure 4 further illustrates the scale of the change required. Planned programmes are projected to reduce emissions by around 0.9 Mt CO_2e (**green block**). However, population growth is projected to add a further 0.5 Mt CO_2e (**red block**), which nullifies some of these expected impacts. Overall, this reduction under the baseline scenario amounts to around 0.4 Mt CO_2e, for an overall annual emissions figure of between 4.5 and 4.6 Mt CO_2e in 2030.

This leaves a significant gap (**blue block**) of 2.8 Mt CO_2e between the **Baseline** and the **Pathway**. Transformative changes are required to bridge this gap by 2030.

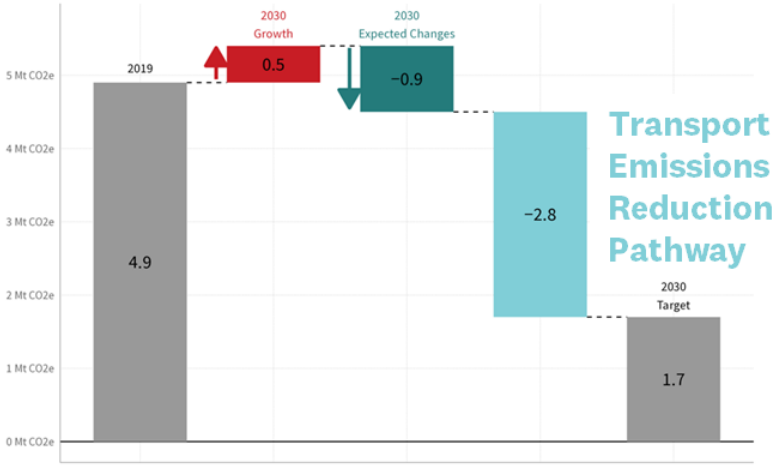


Figure 4 – The transport emissions reduction pathway (graph)

The modelling analysis that underpins the pathway started with the end in mind — the Tāruke-ā-Tāwhiri goal — and then identified the scale of change and types of high-level system level changes needed to get there.

The system level levers that were modelled include for example:

1. **Mode shift:** moving trips from high-emissions to low and no-emissions modes. The analysis considers what can be achieved given the current profile of light vehicle (LV) trips.
2. **Total trips:** avoiding trips through actions like working from home, smarter travel choices, and trip-chaining enabled by land use planning.
3. **Trip length:** reduction in trip length possible through smarter neighbourhood design and intentional, transport-oriented development.
4. **Fleet electrification:** the portion of electric vehicles (EVs) in the fleet, including the LV fleet, public transport, and micromobility (including e-scooters, e-bikes, e-mopeds and microcars).
5. **Fuel Efficiency:** what might be possible through policies such as the *Clean Vehicle Package* and other initiatives that might be applied for freight.
6. **Industry:** The amount of emissions reduction required from shipping and aviation, which contribute significant emissions within the transport sector.

The combined modelled pathway settings reduce expected annual transport emissions in 2030 by 64%. Figure 5 illustrates the distribution of this change by transport mode and compares the composition of 2019 emissions with where the pathway would lead to in 2030. The change between the two represents a combination of mode shift to low and no-emissions modes, electrification and a reduction of vehicle kilometres travelled. Please see the **Modelling assumptions** appendix for more detail.

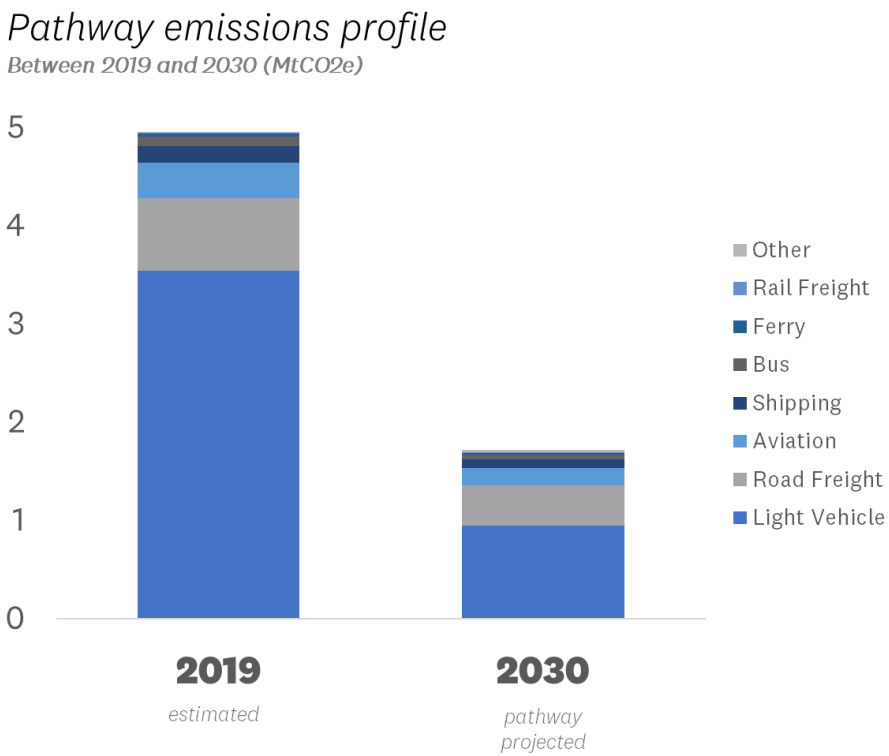


Figure 5 – Pathway emissions profile (graph)

Effects of COVID-19 on the transport system and the Pathway

During various levels of restrictions in 2020 and 2021, Aucklanders rapidly altered their travel behaviour for many weeks at a time. Travel by car and PT during these times reduced dramatically and increases in walking and cycling were observed. It is unclear what the longer-term impact of these restriction periods, and potentially others, will be over the coming decade.

Note that, **Pathway** modelling is based on 2019 data as this is the most recent year that a full data set is available from which to model projections and draw conclusions. The **Baseline** - Auckland's current trajectory - was also developed using forecasts which take limited account of the effects of COVID-19. However, the important point is that COVID-19 does not change the level of ambition of the projected **Pathway** as this is what needs to be to true to achieve the 2030 target. It rather means that the gap between the baseline and projected pathway may be different, and potentially larger, however, it is likely this difference is not significant and would not affect the strategic direction arrived at.

The trend toward working from home and public perceptions around the safety of using PT during a pandemic have contributed to a significant reduction in patronage levels. This has been further exacerbated by reliability issues since 2020 related to both COVID-19 and extended maintenance on the rail network. These factors have led to a reduction in patronage of around 40% on 2019 levels (noting that this figure varies across different parts of the network and in relation to the prevalence of the factors discussed above). This means that the relative increase to reach the 2030 goal is in some ways even larger than if travel patterns were 'normal.' This presents an even larger patronage increase challenge.

Reduced patronage is also a challenge because it affects funding. In the current transport system, user fares are expected to fund around 50% of overall service costs. The reduced patronage associated with COVID-19 means that running the same level of service requires a higher proportion of public funding.

Recovering patronage must therefore be a priority through actions like ensuring reliability of service; on-road priority to increase competitiveness with general traffic; and first and last mile improvements that have benefits outside of the public transport network. It is also important to take steps to ensure PT passengers are as safe from COVID-19 transmission as possible.

Many cities across the world have seen similar reductions in PT patronage during the pandemic and have taken the opportunity to re-focus their transport systems through road space reallocation to sustainable, personal transport modes - walking and cycling - which carry a low risk of transmission. Importantly, PT climbed steadily over a decade to reach more than 100m trips on the 2019-20 network. The 2019 network and patronage are important as we look towards the ambition of the pathway's increase in patronage and the system's ability to accommodate the patronage that is required.

It must be recognised that the PT network in 2022 is an expanded version of the 2019 network - there is already capacity for more patronage on the 2022 network. The Climate Action Targeted Rate will expand the network even further.

Pathway options

Combinations of system settings were tested to assess their impact on Auckland's 2030 emissions profile. While many different combinations of system changes were modelled, the reality is that the 64% target requires every single lever across the system to be pulled as far as is credibly possible. The pathway represents a balance of (high) ambition across all system levers (see pathway on a page diagram, p8).

For this reason, one pathway is presented. Reducing ambition in one area, mode shift to PT for example, would require a commensurate increase in ambition in other areas, cycling or EV uptake for example. When all levers are already at the edge of what is credible by 2030, further increasing ambition in any of these areas is not tenable.

The pathway options ruled out include:

Discounted: A much higher proportion of the LV fleet converted to EVs

Light Vehicle emissions account for around 70% of transport emissions. If the LV fleet were to be 100% EV by 2030, the 64% reduction would likely be achieved through that single transformation. It is reasonable then to ask, should the pathway include an even higher proportion of electric vehicles?

The pathway includes 32% EV share of total VKT in 2030. This is a much more ambitious approach than the ERP, which assumes this level of uptake at 2035. Note that total VKT of the pathway also reduces over this time.

An even higher EV share scenario was discounted because:

- EVs have a high upfront cost. It is unreasonable to assume that even more people than the pathway requires will be able or willing to purchase an EV. The government is providing subsidies, but these are not generating EV conversion at levels that suggest the pathway models EV conversion too low.
- Supply constraints and NZ's slow fleet turnover rate suggest a constraint on conversion above that modelled in the pathway.
- Infrastructure upgrades would likely not meet the demand for electricity in the eight-year timeframe of the pathway.

- Planning on the basis that fleet conversion alone will deliver the required scale of emissions reduction will likely lead to lower investment in alternative strategies that support more effective emissions-reduction approaches and produce a wider range of co-benefits. For example, total fleet conversion does not solve the current and growing congestion challenges across the region, nor does relying on EVs address transport equity for those who cannot drive/do not have someone that can drive them.
- Note also that the 32% modelled reflects the reduction in total travel in the pathway. Achieving a higher proportion of light vehicle VKT by EV in 2030 suggests even higher rates of mode shift than modelled, which is unlikely.

Discounted: A larger reduction in average trip distance, because of denser development

The pathway includes a 5% reduction in average trip length in 2030 (on 2019). Given that urban form generates trip length, which influences trip emissions, and importantly can enable mode shift, it is reasonable to ask why the reduction in average trip length isn't even greater in the pathway.

A larger reduction in average trip distance was discounted as:

- Land use changes at the regional level can take time: zoning changes must be accompanied by infrastructure that enables capacity and redevelopment must become attractive to the market before that capacity is realised. However, where there has been more permissive zoning, the market has responded quickly, as demonstrated by consent data showing more intensive urban development in brownfield areas.
- Average trip length is predicted to increase over the next decade, due to enabled development at or beyond the urban periphery, which generates longer trips relative to those generated by growth within the existing urban area. To prevent average trip length from growing it is necessary to stop or cut back on peripheral development, but there are barriers to doing so.
- The existing, expansive urban form will continue to be the key driver of expected trip length in 2030.

What needs to be true in 2030

The pathway presents a picture of what needs to be true in 2030 to achieve the target; it is not an assessment of whether it is feasible to deliver the mix of programmes that would lead to the required transformation. Modelling revealed several key features of the pathway and the nature of the change required to achieve the 2030 target:

Every single system level lever must be pulled as hard as credibly possible - achieving the target will be incredibly challenging.

Aucklanders must drive less – no progress is possible unless people drive much less than they do now. This is by far the single most important contributing factor to achieving the target.

A massive mode shift is required – to facilitate trips no longer taken by car, a huge increase in the uptake of public transport, walking, cycling and emerging forms of micromobility is required.

Many current car trips can be taken by more sustainable modes – and when people use more sustainable modes, they choose more local destinations too. Currently around half of all trips of less than 2.5km are taken by car, and around half of all car trips are less than 6km in length. It is these trips that represent the greatest opportunity for mode shift, especially to active modes.

Cars will still have a place in the system, but they must be more efficient – many trips will still be taken by car. However, in 2030 a much higher proportion of the fleet needs to be electric and non-electric vehicles must be more emissions efficient.

Trips need to be shorter – this means people need more amenities available closer to them. This will happen as the existing urban area intensifies and infrastructure, services and facilities are provided and better distributed.

These key features underpin the 11 areas for transformation described in the next section of the document.

Section two:

The Transformation Required

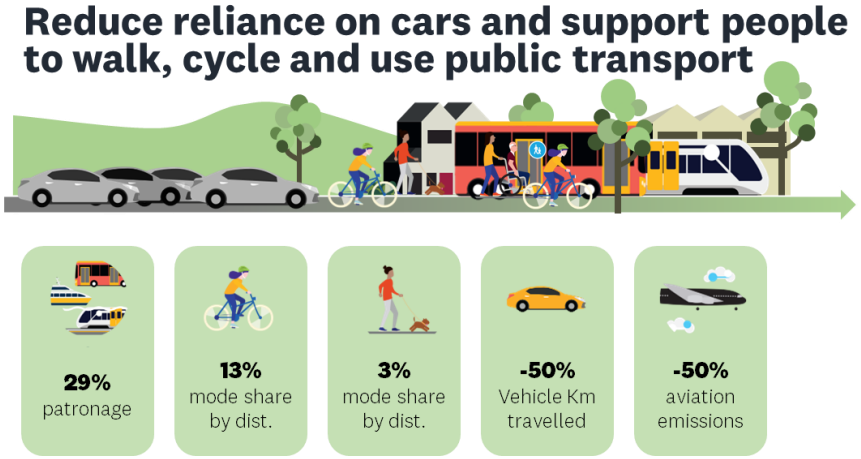
The Transformation Required

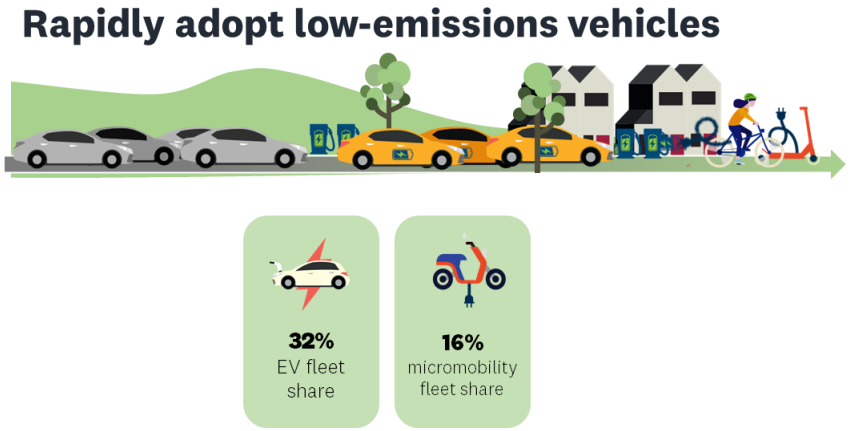
The previous section explains that, with a complete transformation of the transport and land use system, the required 64% reduction in transport emissions can be achieved.

Transforming the transport sector is extremely challenging. However, unlike other sectors where reductions in emissions are needed, it does not depend on technological breakthroughs; the key solutions are already known, we only need the will to resource and implement them.

While the feasibility of the pathway's actions is not assessed, all could be delivered in the next eight years, provided there is strong political support, funding is made available, and agencies make the necessary changes to their own processes and to the wider transport and land use planning system.

The pathway's actions will bring about very substantial emissions reductions and significant improvements to safety, environmental outcomes, economic wellbeing and equity. However, whether the scale of emissions reductions will be sufficient to meet the 64% goal cannot be predicted. There are too many variables and unknowns, including whether Aucklanders will respond to improved travel choice to the extent required. What is certain is that if the pathway is not implemented, there will not be meaningful progress on reducing emissions or fixing the many existing problems with the transport system. Auckland has no choice other than to implement the pathway if it wants to play its part in addressing the climate crisis. The sooner it makes a start on doing so, the sooner the pathway's benefits will accrue for all.





This section provides strategic direction to help decision makers place (and keep) Auckland on a pathway to emissions reduction by 2030 and beyond. The changes described are not an exhaustive list of everything that will be needed to deliver a two thirds reduction in emissions, but they are what is required to give us a chance of achieving targets in 2030 and into the future. They act as strategic directives to sharpen the discussions, planning processes and decisions to come. Some will have an immediate effect on emissions, others will take longer, and in some cases regionally significant change may take longer than the focus period of the pathway. Nevertheless, it is critical that the right decisions are made now.

There are **11 areas for transformation** over the next eight years. The transformation areas are an integrated set, designed to work as a package and not a 'pick and mix': for example, reallocating road space to prioritise public transport should be accompanied by an improvement in service levels.

Several **strategic directions** are described for each transformation area. More detailed actions for each of these strategic directions are listed in section three of this document. **Key actions** that will have an especially significant impact on the transport system are listed on the next page, with additional detail throughout this section. These key actions must be prioritised to deliver the pathway's targets.

The first 10 transformation areas are grouped in the same way as the government's Emissions Reduction Plan to align to national objectives and provide for coordination of central and local government resources. They focus on the systemic changes and actions that will create the infrastructure and services to give Aucklanders sustainable transport choices.

The 11th transformation area – **Empower Aucklanders to make low carbon choices** – underpins all other transformation areas and, as with Te Tiriti and equity, is fundamental to the pathway. Achieving the pathway's targets can only be done through the ability and willingness of Aucklanders to make more sustainable transport choices.

Begin work now to decarbonise heavy transport and freight

75% low-emissions PT vehicles

-50% shipping emissions.

-45% road freight emissions

-50% aviation emissions

Empower Aucklanders to make sustainable travel choices

Behaviour change essential to all emissions reduction

These key actions will have an especially meaningful impact and must be delivered as a priority

Reduce reliance on cars and support people to walk, cycle and use public transport

1 Supercharge walking and cycling

i. Expand and deliver the walking programme business case.

ii. Expand and deliver the cycling and micromobility programme business case.

iii. Rapidly deliver safe speeds across urban Auckland.

2 Massively increase public transport patronage

iv. Deliver a frequent, reliable and accessible PT network capable of achieving 550 million trips per year.

v. Deliver a fair fares strategy

vi. Rapidly roll out PT-related minor infrastructure to make PT safer and more accessible to all Aucklanders

3 Prioritise and resource sustainable transport

vii. Repurpose existing road space to rapidly expand Auckland's walking, cycling and public transport networks

viii. Deliver street layout changes quickly using tactical urbanism

ix. Implement the Parking Strategy

4 Reduce travel where possible and appropriate

x. Deprioritise projects and processes that induce light vehicle travel

xi. Deliver a congestion pricing scheme, including strategies to mitigate its equity impacts

5 Safe low-traffic neighbourhoods for people

xii. Deliver a network of low-traffic neighbourhoods across Auckland

6 Build up not out

xiii. Enable greater intensification in areas with good access to opportunities

Rapidly adopt low-emissions vehicles

7 Electrify private vehicles

xiv. Further incentivise the uptake of EVs

8 Enable new transport devices

xv. Further incentivise the uptake of micromobility including e-bikes

Begin work now to decarbonise heavy transport and freight

9 Low emissions public transport

xvi. Ensure all new PT vehicles are low-emissions as the fleet grows

10 Efficient freight and services

xvii. Investigate and establish Low Emissions Zones in appropriate centres across Auckland

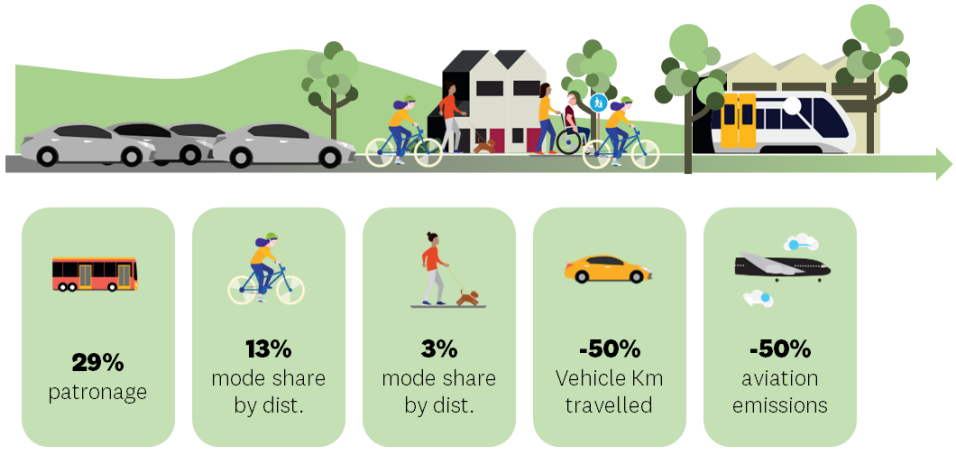
xviii. Deliver multi-modal logistics hubs and right-sized, safer, low-emissions freight vehicles for last-mile delivery

Empower Aucklanders to make sustainable transport choices

11. Empower Aucklanders to make sustainable transport choices

xix. Deliver comprehensive engagement, information and behaviour change programmes to support mode shift

Reduce reliance on cars and support people to walk, cycle and use public transport



Fundamentally, reducing transport emissions is about reducing reliance on traveling by high emitting modes and making sustainable transport modes more attractive. Supporting Aucklanders to change their travel behaviour will take sustained, integrated effort.

Travel choices are firstly a response to land use and the location of key destinations. They are also a response to the available travel options and their suitability for the trips that people need to make. Over the past 70 years, Auckland has chosen to invest overwhelmingly in road infrastructure above other modes and people's travel habits reflect the transport system they live with. As a result, light vehicles account for the bulk of trips and, consequently, the bulk of transport emissions.

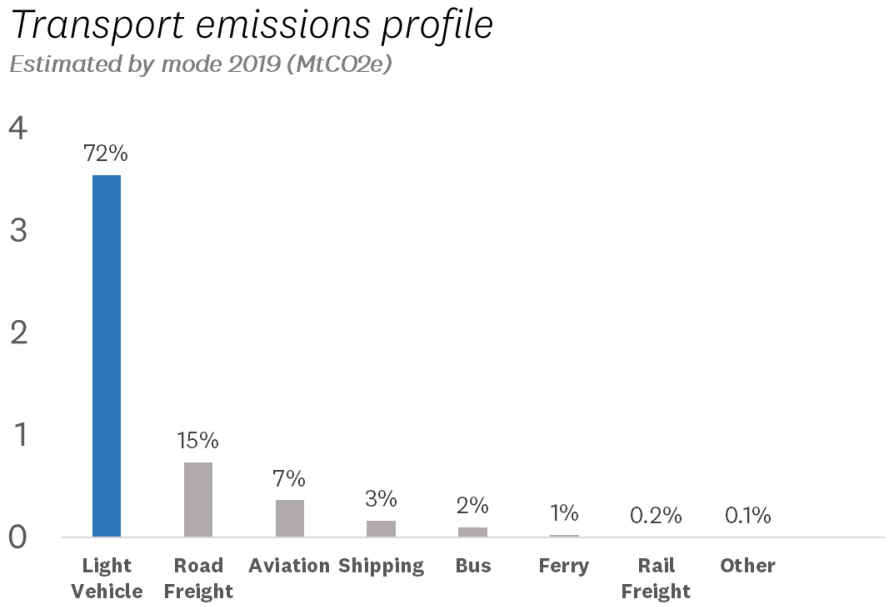


Figure 6 - Auckland's transport emissions profile (graph)

The transport emissions challenge is directly related to the amount of VKT in fossil-fuelled vehicles. There are challenges associated with electrifying the private vehicle fleet in the short to medium-term and therefore **the reduction of light vehicle VKT is key to decreasing transport emissions.**

To make a real difference to transport emissions as many trips as possible need to be made by modes with the lowest emissions. There is real opportunity to switch short trips to walking, cycling and micromobility and Auckland needs to invest in making these modes attractive. Light Vehicle emissions are just over 70% of Auckland's emissions profile.

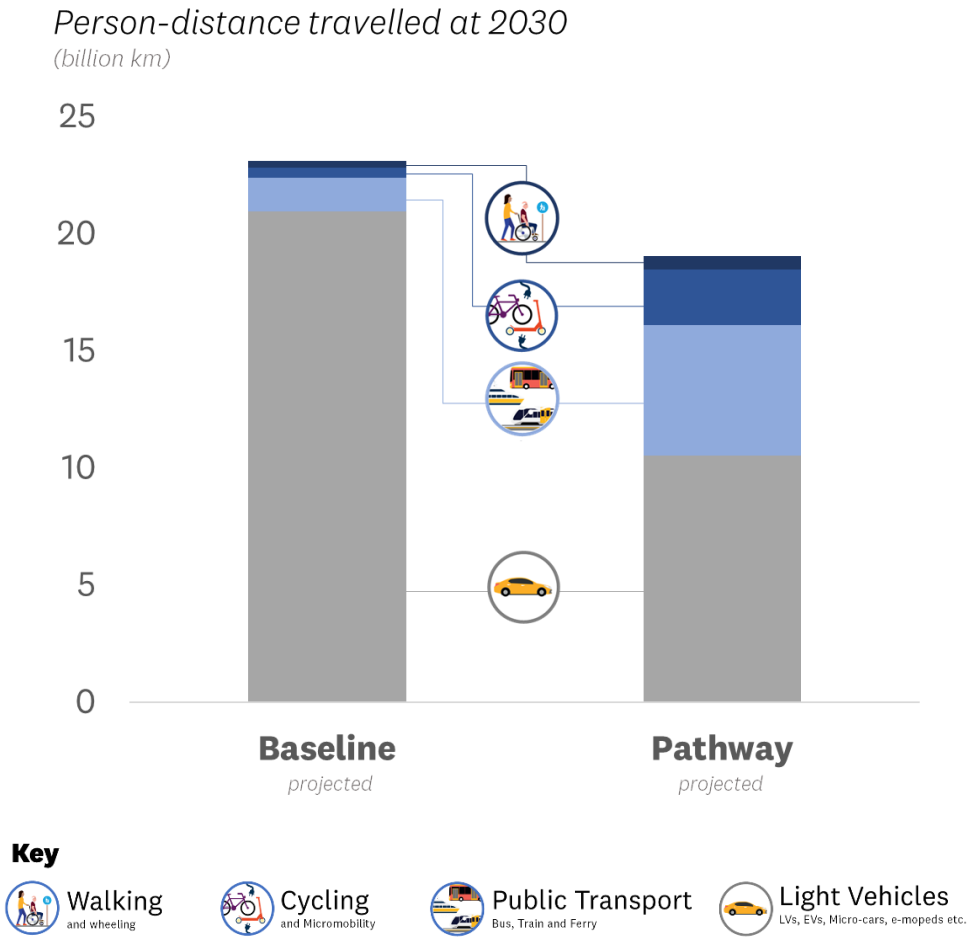


Figure 7 – Person distance travelled at 2030 (graph) - pathway compared to Baseline

The pathway models a **50% reduction in light vehicle VKT by 2030**.To achieve this, travel by walking, cycling, micromobility and public transport must increase, and total distance travelled must decrease.

Enabling more trips to be made by walking, cycling and public transport

	Trip share		Mode share by distance	
Mode (rounded)	**2019**	**2030**	**2019**	**2030**
Sustainable Modes	17%	62%	6%	45%
• Walking	11%	22%	1%	3%
• Cycling and Micromobility	1%	17%	1%	13%
• Public Transport	4%	23%	4%	29%

Table 1 – Sustainable mode share

The pathway models a very ambitious uptake of active modes and public transport by distance by 2030: 3% walking, 5% cycling, 8% micromobility and 29% PT (12% of which is on-road bus). Taken together, that is around 45% of distance by sustainable modes. By contrast, the current distance shared for these modes is around 6%. This is a colossal change by any standard.

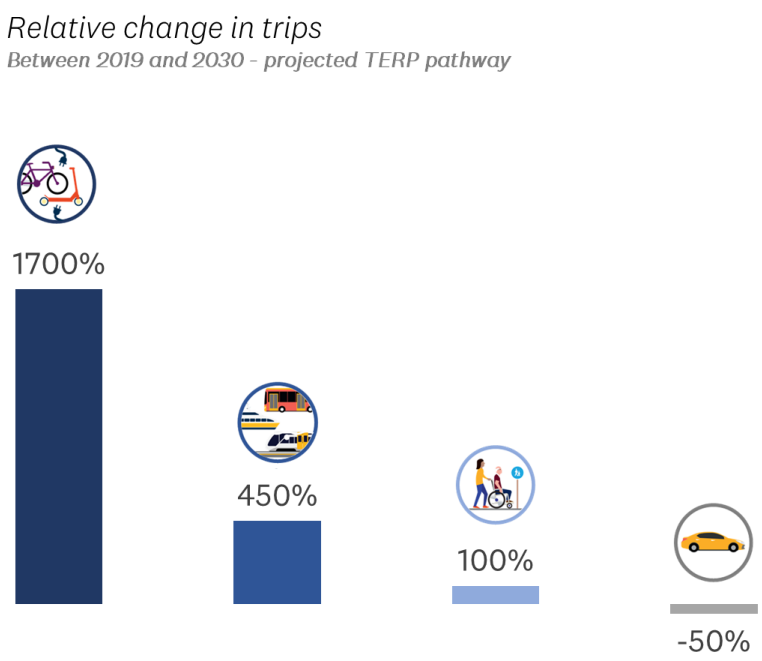


Figure 8 – Relative change in trips (graph) - 2019 compared to the pathway at 2030

The simple act of supporting more people to walk, cycle and take PT will deliver significant benefits to Aucklanders, such as reducing road trauma, cleaning up the air, increasing people's health, providing low-cost and accessible travel options, revitalising local centres, and reducing congestion for those who still need to drive.

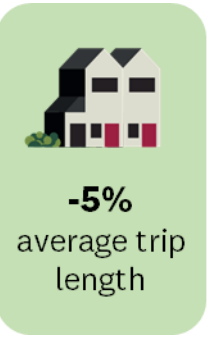
In 2019, a third of all trips less than 2km and around half of all trips less than 6km were taken by car. *Supercharging walking and cycling, massively increasing public transport patronage, and prioritising and resourcing sustainable transport* are the key areas to make walking, cycling and public transport the preferred transport choices for short to medium-distance trips.

Reducing car dependency is important to address congestion. There is limited space on the road network. So long as most people continue to travel primarily by car, congestion will only worsen. Making those cars electric will not solve fundamental space (and cost) constraints: the network must get more efficient. Cycling, micromobility and public transport are tools that can deliver this.

Reducing distance travelled

The transport system is a key enabler for people to access the jobs, goods and services they need. However, urban sprawl, low-density suburbs and car-led planning have increased the distance that people need to travel each day, resulting in less quality time with family, higher transport costs, and greater mental stress.

The pathway models a 5% reduction in journey length in 2030, against 2019 levels. *Neighbourhoods for people*, *reducing travel where possible and appropriate*, and *building up not out* are the key areas to reduce distance travelled, while improving Aucklanders' quality of life.



Equity impacts

Income and resources determine the choices available to people. People need transport options so that they can make low-carbon choices, but they also need to be able to afford their transport costs.

The actions related to this section will rebalance the transport system by addressing historical imbalance. In particular, it will improve travel choice and accessibility for low-income and marginalised communities, by providing more frequent, safe and accessible public transport, safe and connected walking and cycling networks, and vibrant and mixed-use neighbourhoods where people can easily access most of what they need via sustainable and affordable modes of transport.

Some actions, such as road pricing, will require specific mitigations to ensure a just transition to a zero-carbon transport system.

Actions and responsibility

Auckland Council and Auckland Transport control many of the policy levers under the *reduce reliance on cars and support people to walk, cycle and use public transport* category. For example, road space reallocation is one of the most cost-effective tools available to rapidly deliver sustainable transport networks. However, central government needs to provide greater support for an enabling regulatory framework, increase funding for sustainable modes and streamline decision-making processes.

The council is also responsible for many of the levers within the *neighbourhoods for people* and *build up not out* transformation areas, although central government is taking an increasingly strong and hands-on role. Therefore, it is essential that government's land use decisions consistently support the pathway.

1: Supercharge walking and cycling

The pathway would require:	Trip share		Mode share by distance	
Mode (rounded)	**2019**	**2030**	**2019**	**2030**
Walking, Cycling and Micromobility	12%	38%	2%	16%
• Walking	11%	22%	1%	3%
• Cycling	1%	8%	<1%	5%
• Micromobility	<1%	9%	<1%	8%

Table 2 – Walking, cycling and micromobility mode share

+1700% trips

+100% trips

Auckland needs close to a ten-fold increase in passenger distance travelled via walking, cycling and micromobility by 2030. It is estimated about half of all trips less than 2.5km are made by car and about half of all car trips are less than 6km. Replacing car trips with walking, cycling and micromobility is a highly effective way to cut emissions quickly. A 6km trip is only 15 minutes by e-bike.

The dramatic increase in cycling and micromobility trips is needed because of Auckland's low starting base. Other cities around the world have shown that significant increases in mode share are possible if sufficient investment is made in developing safe and connected networks, supported by a range of complementary initiatives. To achieve the ambitious targets identified, the strategic walking and cycling networks need to be largely delivered by 2030, accompanied by traffic calming measures, safer speed environments and programmes which support people to shift to active modes of transport.

The pathway requires:

Safe, attractive and accessible pedestrian environments to enable walking to be the default choice for short trips under 2km. To achieve this, walkable neighbourhoods must be delivered across Auckland, focusing on connected, pleasant and direct pedestrian routes that minimise travel time. Land use planning should ensure a wide range of desired destinations are within walking distance for people.

An extensive, dense and connected cycle network of quality routes, supported by appropriate destination infrastructure. Strategic delivery of the cycling network includes rapid deployment of routes that provide access to high demand destinations and linking them with area-wide networks around neighbourhoods, schools and rapid transit stations. Much higher levels of funding for cycling investment, land use changes, stronger political and organisational support for road space reallocation, and policies that make it less attractive to drive, are all needed to dramatically increase the uptake of active modes.

Safe speeds. To align with the Vision Zero strategy adopted by government and Auckland Transport lower speed limits should be adopted across parts of the urban local road network to encourage take up of cycling, walking and micromobility. Reducing speed limits is the most cost-effective way to immediately reduce deaths and serious injuries from traffic crashes. Safe speeds need to be accompanied by changes to road design that give drivers clear signals to slow down and share with other users. These changes create a more pleasant urban environment and make it safer for children to travel independently.

Anyone who wants to cycle be provided with the opportunity do so by making bikes widely available, including for children, and funding cycle skills training and bike maintenance workshops. Community-led programmes such as bike hubs and bike burbs, as well as Auckland Transport's Travelwise school programmes, help to normalise walking and cycling and support their uptake, and should be properly resourced.

Regulatory changes that support prioritisation of walking and cycling. This includes making it easier for local government to:

- make minor street layout changes and trial new traffic measures (work underway)
- enforce rules intended to stop behaviour that creates danger or inconvenience for people walking and cycling
- implement low emissions zones and car-free areas
- require the delivery of walking and cycling paths in any new developments, above a certain threshold
- ensuring that those who can do the greatest harm to others have a greater level of responsibility to reduce the danger they represent.

What are other cities doing?

London rolled out more than 100km of additional cycleways during the first 12 months of Covid-19, contributing to significant mode shift. The proportion of Londoners living within 400m of a safe cycling route grew from 12% to 18% in the year to October 2020.

Seville has delivered an extensive cycleway network from a very low baseline since 2005, resulting in a tenfold increase in cycling mode share. The first stage, completed in 2007 (costing ~NZ$49m), was built primarily through road space reallocation, and led to a 450% increase in cycling trips in 5 years.

Medellín plans to expand its cycling network by 50% within three years. The city also aims to make 50,000 e-bikes available to rent at low cost, to address transport inequities.

Key Actions

i. **Expand and deliver the Walking Programme Business Case.**

All Aucklanders, no matter their age, ability or background, must have access to safe and attractive pedestrian environments. This programme must be funded, accelerated and expanded to deliver increased crossing points along busy roads (particularly within centres, around schools and close to PT hubs and stops), traffic calming to support the introduction of safer speeds, improved street lighting, as well as other non-infrastructure improvements.

ii. **Expand and deliver the Cycling and Micromobility Programme Business Case.**

The cycling network must be largely completed by 2030. This programme must be funded, accelerated and expanded to fill in missing gaps in the cycling network, repair intersections to prioritise bicycle and micromobility use, deliver secure bike parking in key locations, and better align with other transport capital and renewals programmes. Funding for non-infrastructure improvements such as bike hubs and bike training will also need to increase to maximise the delivery of cycling infrastructure.

iii. **Rapidly deliver safe speeds across urban Auckland.**

To give effect to the Vision Zero strategy, Auckland Transport is introducing phase 3 of its safe speeds programme, which will see safer speeds around schools, at town centres, and for rural roads. This programme must be accelerated and expanded, supported by the government's new speed limit setting legislation which makes it easier for road controlling authorities to take a whole-of-network approach to speed management.

2: Massively increase public transport patronage

The pathway would require:	Trip share		Mode share by distance	
Mode (rounded)	**2019**	**2030**	**2019**	**2030**
Public Transport	4%	23%	4%	29%
• Train	1%	9%	1%	15%
• Bus	3%	13%	3%	12%
• Ferry	<1%	1%	<1%	2%

Table 3 – Public transport mode share

+450%
patronage

Auckland needs to see a five to six-fold increase in bus, train and ferry patronage by 2030. By any standard this is a rapid shift to public transport.

By contrast, over the ten years to the end of 2019, a period of strong growth facilitated by significant improvements to the public transport network, patronage grew by around 5% per annum. A similar growth rate over the next eight years will see annual patronage in 2030 at only about a third of the level required by the pathway. Figure 9 shows public transport patronage since 1920 and the modelled pathway (in **blue**).

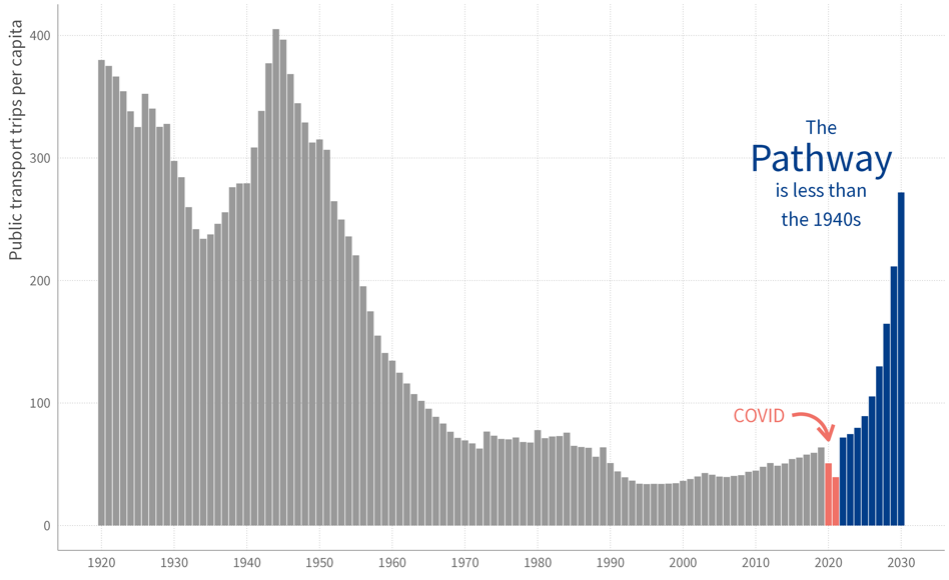


Figure 9 - Public transport patronage in Auckland since 1920 and the projected pathway

The modelled pathway includes patronage at 29% of mode share by trip distance, or 12% bus, 15% train and 2% ferry. This equates to around 270 trips on public transport per Aucklander per year, or roughly one trip per person per day, similar to levels achieved in the first half of the twentieth century.

Service provision by itself is not sufficient to achieve the rate of PT uptake required by the pathway. All areas of the pathway, such as land use changes, pricing and empowering Aucklanders to make sustainable transport choices, are needed to support a much higher utilisation of PT capacity. While a significant increase in the capacity of the network is needed, achieving a six-fold increase in passenger distance does not require a six-fold increase in the number of PT services, vehicles, and/or drivers. Analysis shows that the average hourly patronage across the day would be about two and a half times as many trips as were typically taken during the peak in 2019. This is because better take-up of underutilised off-peak capacity would account for a portion of the increase in overall patronage.

The pathway requires:

Increased performance and attractiveness of the public transport network. To achieve the required increase in patronage, the PT system must be much more useful to many more people for a wider range of trips, not just journeys to work and education. This means services must be more frequent at all times of the day, be faster and more reliable, and connect to more places, particularly for communities that are currently underserved. Perceptions of poor safety need to be addressed.

Greater bus priority and less on-road traffic will improve travel times and reliability for buses, making PT more competitive compared to travel by car. Interim infrastructure improvements, such as pop-up bus lanes, can deliver quick wins in advance of proposed large-scale infrastructure with long lead times and large embodied emissions.

In some instances, larger vehicles (bigger buses, longer trains, larger ferries) will be needed to accommodate the levels of growth required. In other cases, demand responsive transport using smaller vehicles may be more appropriate, to connect dispersed rural areas, for example, to the public transport network.

Fair fares. Fares must be structured so that all Aucklanders can afford to use the PT network. PT is currently expensive for people who take multiple short trips throughout the day, or for groups travelling together. Daily and weekly fare capping and reduced fares for low-income groups will be important tools to assist people to make many more trips by PT. The government's half priced fares initiative is indicative of the kinds of initiatives required in the future.

Improved accessibility of the public transport network. By 2030, all urban areas will need to have frequent services within walking distance or on-demand services to link people to their nearest hub. The accessibility and quality of PT infrastructure is a significant factor in people's decisions about whether and how often they use buses, trains and ferries. Improving the ability of all Aucklanders to safely get to and use the PT network is critical to enabling the scale of patronage growth required. This needs to include:

- continuous improvement to wayfinding and passenger information services, including journey planning support
- easier ways to purchase and top up HOP cards, and introducing an open loop contactless payment system that will enable people – especially new users and visitors – to use PT more spontaneously
- reviewing and improving the location and accessibility of the existing 5,500 bus stops so they serve communities well and are safely accessible for all ages and abilities
- ensuring all transfers between routes are accessible and attractive, including neighbourhood interchanges where frequent routes intersect
- a higher standard of infrastructure at stations on the Rapid Transit Network and other major stops
- enhance first and last-mile walking and cycling connections to public transport stations and stops, with secure parking for bikes and micromobility at stations
- improving perceived and real safety and security on the network in partnership with communities of interest, e.g., LGBTQI+, women, ethnic minorities.

Key Actions

iv. **Deliver a frequent, reliable and accessible PT network capable of achieving 550 million trips per year.**

The capacity of PT services needs to increase by around three times as a pre-requisite to enabling a five to six-fold increase in patronage levels. A significant increase in PT operating expenditure and supporting infrastructure will be required to deliver a PT system that is frequent at all times of the day and connect to more places. PT must also be prioritised to ensure services are fast and reliable.

v. **Deliver a fair fares strategy.**

Fares can be a barrier to some groups. The current fare structure will be reviewed to maximise the usefulness of the PT system to everyone. Additional support from central government is needed to ensure fair fares are in place before the implementation of congestion pricing.

vi. **Rapidly roll out PT-related minor infrastructure to make PT safer and more accessible for all Aucklanders.**

The minor public transport infrastructure budget will need to increase significantly so that all stops and stations can be made safe to use, are fully accessible (including safe and convenient access across nearby roads), with good seating, shelter, service information and wayfinding. Wherever services intersect it should be as safe and convenient as possible to interchange from one service to another.

What are other cities doing?

Singapore is investing heavily in expanding its rapid transit network to facilitate patronage growth. Between 2009 and 2019, daily patronage on the city's metro system increased by 88%, on light rail by 131%, and on its bus network by 35%.

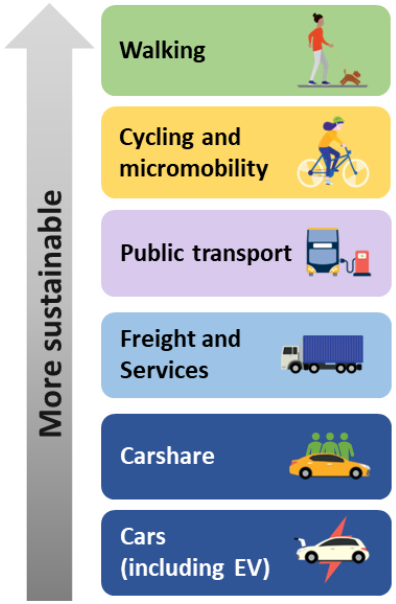
Bristol has been improving its bus services, which resulted in patronage increasing by more than 50% in the 5 years to 2018. This included the roll out of 48km of busways and bus lanes (costing ~NZ$430m), as well as corridor improvements which reduced journey times for more than 70 bus routes.

Sydney has the highest public transport mode share of any large city in Oceania and is focusing on further patronage growth through significant investment in public transport modes, including buses, automated metro, light rail and inter-city rail. In 2019, the weekly adult fare cap across all modes was reduced to $50, creating a more equitable fare structure and encouraging people to use public transport for a variety of trips throughout the week.

3: Prioritise and resource sustainable transport

The pathway would require:	Trip share		Mode share by distance	
Mode (rounded)	**2019**	**2030**	**2019**	**2030**
Sustainable Modes	17%	62%	6%	45%
• Walking	11%	22%	1%	3%
• Cycling and Micromobility	1%	17%	1%	13%
• Public Transport	4%	23%	4%	29%

Table 4 – Sustainable transport mode share



Auckland needs a sustainable transport hierarchy that prioritises walking, cycling and public transport, particularly in urban areas. The hierarchy will be evident in the options available to all Aucklanders where they experience active modes and PT as the most convenient way to travel, particularly for short to medium distance trips.

This reprioritisation must be embedded in all aspects of the transport system including funding processes and decision making, policy and planning processes, project implementation, maintenance, and enforcement.

Figure 10 - The sustainable transport hierarchy

A shift towards these sustainable and space-efficient means of travel also enables the reliable movement of delivery and service vehicles, and more pleasant public spaces.

More funding required for walking, cycling and public transport. Reprioritising the transport system in favour of sustainable modes requires funding for those modes to be significantly increased. This means reallocating existing funding from projects that return poor emissions reduction outcomes and identifying new funding sources, such as the Climate Emergency Response Fund (CERF). Walking, cycling and public transport should be allocated a substantial majority of capital expenditure funding in future iterations of the Government Policy Statement on Land Transport (GPS), the Regional Land Transport Plan (RLTP) and the Auckland Transport Alignment Project (ATAP).

Rural areas with low population density and highly dispersed destinations require an adapted approach, where the priority should be on creating and maintaining walkable rural towns, improving the safety of rural roads, connecting networks of schools, services and jobs, and supporting the use of demand-responsive mobility options to connect people to their nearest PT hub.

Allocating space away from light vehicles (parked cars in particular) and towards walking, cycling, micromobility and public transport is fundamental to rebalancing the transport system. More space can also be made available for other productive uses, such as the movement of goods and service vehicles.

Building new infrastructure is expensive and creates more embodied emissions. Auckland needs to do more with its existing assets. Experience from other cities shows that projects to improve walking, cycling and PT can be achieved much more quickly and affordably by reprioritising space within existing transport corridors. Rather than widening roads and purchasing properties, the focus must be on the far cheaper and quicker approach of repurposing existing road space to prioritise the needs of cyclists, pedestrians, micromobility users and PT patrons. Without this rebalancing of network space, significant progress towards sustainable mode share targets is impossible within the TERP timeframe.

The pathway requires:

All projects to repair current network imbalances: For decades transport investment focussed primarily on the needs of cars. While this has changed in recent years, the principal focus of transport planning must be on redressing current network imbalances, by focussing on the needs of those using sustainable modes, and improving freight efficiency.

- Light vehicle VKT reduction, and safety and access for sustainable mode users, should be prioritised over minor travel time improvements for private vehicles for all projects
- All projects, including road and intersection improvements and renewals, should include road space reallocation assessments.
- A comprehensive review of high-risk intersections that encompasses safety and prioritises the pathway's outcomes must occur immediately.

Swift and strategic action to redefine road space. The network of connected cycleways and bus lanes must grow quickly. Changing people's travel pattens can happen quickly if the infrastructure is provided to support the switch. To do this, space can be redefined by using cheaper, less emissions intensive, adaptable materials such as concrete biscuits and planter boxes. In time this can be replaced with more permanent infrastructure if required. The earlier the commitment to these changes, the sooner people will have access to more low carbon travel options and start to make behaviour changes. This approach builds off existing programmes such as Waka Kotahi's Streets for People and Auckland Council's Ngā Tiriti Ngangahau – Vibrant Streets.

Better coordinated parking management and enforcement. Parking availability is a key driver of VKT, which we need to reduce over time to reach our goals. Strategies such as appropriate pricing, car park time restrictions and workplace car parking levies, help to encourage (and fund investment for) more sustainable forms of travel, reduce the number of cars travelling on the network, and enable limited road space to be used for higher priority purposes such as bus priority, shared spaces and loading zones. While there is a need to reduce the overall levels of parking there will always be a need for mobility parking to be provided. Council should also assess the feasibility of divesting its off-street parking assets to enable high-quality developments.

Clarification of existing powers and potential regulatory changes are required to ensure better enforcement against behaviours that endanger or inconvenience pedestrians, cyclists and PT users. This includes illegal parking on footpaths, berms and pedestrian malls, and speed limit adherence, particularly in low-speed zones.

Vision-led transport planning. The pathway requires a vision-led approach which accepts that behaviour change will occur if the infrastructure and services that enable it are provided i.e., more people will walk, cycle, or take PT if it is easy and safe for them to do so. This is a departure from traditional transport planning, known as predict and provide, which projects that people will continue to drive for most trips. This can undermine planning for sustainable modes by prioritising car trips.

Key Actions

vii. **Repurpose existing road space to rapidly expand Auckland's walking, cycling and public transport networks.**

A regional road space reallocation programme is needed to create networks for active travel and PT, as well as space for people to shop or socialise, and for children to play. Changes to the way in which road space is used must be designed in partnership with local communities to maximise benefits for all.

viii. **Deliver street layout changes quickly using tactical urbanism.**

Temporary street layout changes, using semi-permanent materials such as planter boxes, must be used to give Aucklanders the chance to try out more people-friendly street layouts and adapt them to suit the needs of their community. This will help build support for more significant longer-term action.

ix. **Implement the Parking Strategy.**

The Parking Strategy responds to the needs of a growing population and aims to ensure that the provision of street parking on Auckland's busiest and most congested roads are fit-for-purpose. To achieve the pathway's goal, implementation of the strategy must be accelerated and built upon to deliver a safer Auckland and support the efficient movement of people, goods and services on these corridors as our population grows.

What are other cities doing?

Dublin is pedestrianising several streets within its City Centre to accelerate mode shift for journeys in the central city. The city is also trialling the part-time closure of certain streets to provide more space for pedestrians, cyclists and outdoor dining at the busiest times of day.

Buenos Aires has proposed a programme called Meeting Streets, where selected streets are closed to private vehicles and transformed into spaces for walking, cycling and recreation. The initial focus is to create at least one Meeting Street in each of the city's 48 neighbourhoods, to spread the benefits of the initiative equitably.

4: Reduce travel where possible and appropriate

Auckland needs an 8% reduction in trips in 2030, compared to the baseline. This means reducing travel where possible and appropriate by:

-8%
total trips

- **avoiding** the most emissions-intensive modes of travel if alternatives exist
- **replacing** some trips with online options, for example working from home and enabling online access to more services (such as telehealth)
- **reducing** the number of trips made by making it easier to combine different trips together (e.g., picking up groceries on the way home from the train station) and reducing the reliance on chauffeuring by creating a safer transport system that enables more people to travel independently.

The pathway requires:

Equitable and impactful pricing of the transport network. Road pricing, such as congestion pricing, encourages people to think about the way they use the transport network and consider replacing car trips with trips by other modes. By reducing discretionary car trips, pricing can help reduce congestion for those who must drive (freight and tradespeople for example). Road pricing also increases the reliability of buses, reduces local air pollution and can improve safety outcomes. All of which help contribute to a more equitable transport system.

However, before any road pricing scheme can be introduced on any given corridor, high quality and affordable alternatives to driving must be in place. For this reason it will not be rolled out until the City Rail Link is operational, and even then the initial focus will be on the city centre as it has the best PT and active mode options in the region. Road pricing can then be progressively rolled out in other parts of the region as sustainable alternatives to driving are improved.

It is also important that other aspects of the transport system, such as parking, are properly priced to influence behaviour and reflect the costs they impose on the wider public. Demand for on-street parking will likely drop if it was priced to reflect the cost of using road space for non-travel purposes. That space could then be more readily reallocated to higher priority uses, such as bus or active mode priority, which in turn would encourage mode shift.

All revenue generated by road pricing charges and parking fees should be reinvested back into PT and active modes, especially in areas without viable alternatives to driving. This supports low-income residents who tend to live in places without good access to public transport and active modes.

Restricting road expansion that induces light vehicle VKT. Road expansion projects that provide extra capacity inevitably stimulate additional travel. If that travel is taken by internal combustion engine vehicles, the emissions generated over the life of the new link or road expansion will undermine the goal of the TERP.

Reduced air travel, especially business travel, with the use of innovative communication tools. This leads to both emissions reduction and cost savings. Aviation emissions account for 7% of Auckland's emissions profile. The pathway requires that this is reduced by 50% by 2030. A national public transport network of rail, bus and ferry services is needed to support low emissions inter-regional travel. Electric planes for short-haul trips may be available by the end of the decade.

-50%
aviation
emissions

Equitable digital access to encourage remote activity as an alternative to taking a trip where appropriate. This includes access to affordable and reliable internet and digital devices. **Teleservices** could further reduce the need to travel and improve access for those who currently face barriers to travel.

Key Actions

x. **Deprioritise projects and processes that induce light vehicle travel.**

Investments to expand urban state highways and roads induce urban sprawl and car travel. To reduce Auckland's transport emissions, local and central government will have to reconsider planned investments that induce more light vehicle travel. Funding from these projects will be redistributed towards sustainable transport modes.

xi. **Deliver a congestion pricing scheme, including strategies to mitigate its equity impacts.**

Congestion pricing is an effective means of encouraging mode shift and reducing congestion on the road network at peak times. The revenue generated will be reinvested into public transport and active modes, to give people viable alternatives to driving. As access to sustainable transport options improve, the initial scheme should be expanded.

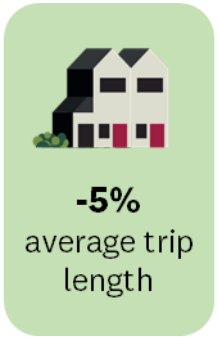
What are other cities doing?

Stockholm is disincentivising private vehicle trips to encourage mode shift and reduce avoidable travel. A congestion charge was introduced in the City Centre in 2006, resulting in a 20% reduction in vehicle trips into the central city. The scheme discourages travel at times with the heaviest congestion and provides an additional source of funding for PT improvements. Public support has been strong: five years in, over 70% of residents supported the scheme.

Cape Town is pursuing initiatives focused on reducing travel, such as rolling out Travel Demand Management programmes and encouraging flexible working, both within the public and private sectors.

5: Safe, low-traffic neighbourhoods for people

Auckland needs neighbourhoods where people do not need to travel far to reach most of their daily needs, leading to shorter overall journeys and making walking and cycling in particular more feasible and attractive travel options.



The pathway models a 5% reduction in journey length in 2030, against 2019 levels. This is an overall regional figure. To reach this goal, Aucklanders need to be better able to live, work and play locally, reducing the need for long trips. This requires greater diversity and density of land uses and housing types across the region, and a higher level of service for sustainable modes, e.g., better quality footpaths. These neighbourhoods need to link together to amplify sustainable access.

Each neighbourhood is unique. This requires partnerships with communities to redesign streets and neighbourhoods to help build trust and create the momentum for change.

The pathway requires:

Vibrant, mixed-use neighbourhoods for people across Auckland, where residents can easily access most of their daily needs by walking, cycling and PT. Building on the existing quality compact approach and continuing the trend to a greater diversity of land uses and an increased mix of housing typologies will transform single-use residential and commercial suburbs into vibrant, mixed-use neighbourhoods.

Cities across the globe have made this a key component of their efforts to reduce transport emissions, with concepts such as Complete Neighbourhoods and the 15-Minute City being widely embraced. These ideas focus on retrofitting low-density suburbs into more healthy, accessible and equitable neighbourhoods, predicated on enhanced walkability and improved cycling access. Achieving this will require changes to current planning provisions.

There is also much to learn from the Māori co-housing model of papakāinga, where Māori live communally on ancestral land, with shared access to facilities, community gardens and even onsite renewable energy production and storage in some cases. Greater partnership between Māori and council can help to broaden the reach of Māori solutions and create a more equitable, accessible and sustainable city for all Aucklanders.

A network of connected low-traffic neighbourhoods creates clusters of traffic-calmed local streets that connect to the strategic walking and cycling networks. These areas are designed for slower vehicle speeds and are closed off to through-traffic – people can drive to, but not through, them. This stops people using residential roads as shortcuts and makes it safer and easier to walk and cycle. They can be implemented through physical modal filters, camera-based enforcement, or wider changes to a city's traffic circulation patterns. They are generally most effective when they are part of an integrated, city-wide plan and can be applied to both existing and new street networks.

Put universal design and access by sustainable modes at the heart of council group strategies and plans. Auckland currently lacks a consistent framework to assess the level of access via sustainable transport modes (e.g., walking, cycling, micromobility and PT). Such a framework would help prioritise neighbourhoods for improvements. By facilitating access to daily needs via sustainable transport modes through its policies, planning and investment, the council can enable many more low-carbon trips to occur. Some cities have ensured this is prioritised by setting targets based on frameworks such as the *Place Standard* and *WalkScore*, while others have developed bespoke methods for measuring sustainable access.

Universal design means creating buildings, spaces and places that can be used and enjoyed by all people regardless of their age or ability. Disabled people comprise approximately 20% of the population. Auckland Council has universal design guidelines in place and Auckland Transport has recently released its Accessibility Action Plan. They need to be given effect to in order to create a more equitable, inclusive and accessible transport system.

Facilities and services provided by central and local government (schools, libraries and health services for example) generate a substantial number of trips within the region. These facilities should be universally accessible and located in areas easily accessible by walking, cycling and public transport, allowing people to live locally without having to own or use a private vehicle. Research highlights the importance of ensuring public facilities are accessible by transport modes other than driving, both to help reduce transport emissions and improve social equity.

Key Action

xii. **Deliver a network of low-traffic neighbourhoods across Auckland** in conjunction with the creation of walking, cycling and PT networks. This prevents local streets from becoming overwhelmed by cars as road space reallocation takes place on main corridors. Low-speed and traffic-calmed streets enables everyone, but especially children, disabled and older people, to benefit from increased safety and comfort when moving around local neighbourhoods.

What are other cities doing?

Barcelona is rolling out Superblocks, a form of low traffic neighbourhood where active modes are prioritised, and through-traffic is restricted. Results from the first examples show improved air quality, reduced noise and increases in residents' perceptions of walkability and accessibility. The city is planning to calm at least 15km of streets through Superblocks by 2025.

Los Angeles is improving walkability through pedestrian-centric design and development of more mixed-use neighbourhoods. The city has a goal of increasing its average Walk Score from 69 to 75 (out of 100) by 2025.

Paris is implementing the 15-Minute City concept, which allows residents to access most of their daily needs within 15 minutes by walking, cycling or PT. Centred on the relationship between transport and land use planning, the city is implementing a range of connected actions to transform the city's streetscapes and the ways people choose to travel.

6: Build up not out

Auckland needs most future growth to be accommodated through intensification in the existing urban area, particularly locations with shorter average trip lengths and access to good quality transport options, rather than continued expansion into greenfield and rural areas.

-5%
average trip length

People who live within the existing urban area close to good public and active transport tend to drive less and travel more via sustainable modes than those who live in greenfield developments in formerly rural areas. Conservatively, and based on data from Melbourne and Sydney, people who live in greenfield areas generate approximately four times the transport emissions of people who live in already developed and well served areas of the city.

Without intervention, Auckland is expected to continue expanding and the average motorised vehicle trip length is expected to increase by around 5% by 2030. This trend must reverse, and the average journey by motorised vehicles must reduce by 5% by 2030.

The pathway requires:

Planning that supports an increase in access via sustainable modes and a reduction in light vehicle VKT. Helping Aucklanders drive less and make more sustainable transport choices must be central to our planning framework. This requires access via sustainable modes and a reduction in car dependency to be clearly signalled in planning documents and prioritised in land use planning decisions – including revisions of strategic land use planning documents, consenting decisions, and consideration of potential plan changes. Cities around the globe have recognised the essential role land use planning must play in reducing transport emissions and upholding their climate commitments. Achieving this requires action from both government and the council.

Reducing the scale of planned urban expansion. Current growth plans envisage significant urban expansion over the next three decades, and the NPS-UD requires councils to be 'responsive' to private plan changes. Both drive expectations of opportunities for future greenfield growth. Research shows a strong correlation between transport emissions and the distance between a development and the city centre, even when accounting for differences in density and PT provision. Minimising future urban expansion is imperative to reducing transport emissions.

Growth in greenfields areas comes at a cost of growth within the existing urban area, where residents have easier access to more sustainable transport options and typically travel shorter distances. It means the lower density areas which could benefit from more community members and more PT ridership do not receive the intensification needed. However, where greenfield growth does occur, travel patterns of new communities must be shaped in a positive way by providing them with sustainable transport options right from the outset and designing streets that give priority access to walking, cycling and PT ahead of car access. This will involve costs, however, and it is important that the majority of the cost of sustainable growth in new urban areas is incorporated into the cost of development, rather than being reliant on funding from public sources.

More intensive development around places with good access to opportunities. Auckland is a rapidly growing city, and its population growth is projected to continue. To minimise transport emissions, much more growth needs to occur near existing and emerging employment hubs and in areas with good access to jobs, services and amenities, so that it is easier for people to access these opportunities via sustainable modes of transport. It is also easier and more cost-effective to deliver sustainable transport options in higher density areas.

More growth is also needed in locations which are best served by PT. While recent government driven changes have set a minimum level of density that councils must permit around rapid transit stations, council and the government must do more to support mixed-use urban renewal around PT stations in the near term. While quality development in an area can incentivise further development other cities are more explicitly incentivising development within the walkable catchment of their rapid transit networks, and some have set explicit targets for the proportion of new dwellings that should be located within these catchments.

Key Action

xiii. **Enable greater intensification in areas with good access to opportunities.**

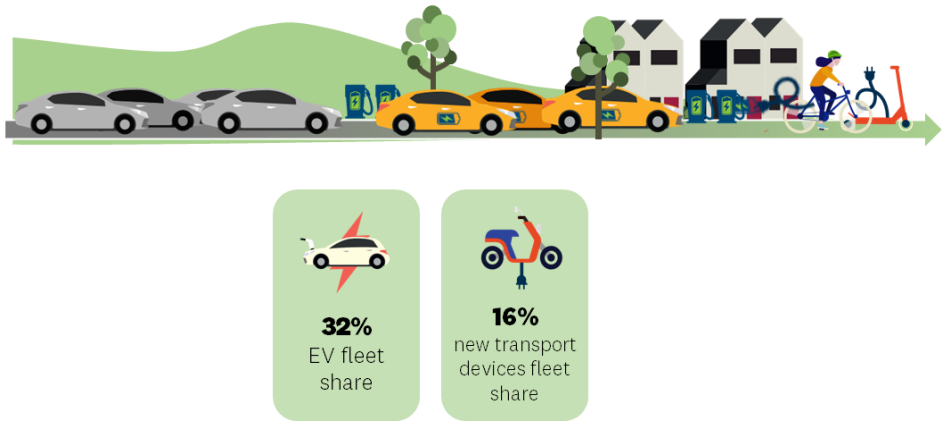
Auckland Council will review its land use planning to enable greater intensification in areas with good access to employment opportunities, services and amenities. This will make it easier for more people to live within an easy walking, cycling or public transport trip of the places they need to get to. In turn this will increase uptake of these modes, make it easier to improve service levels and create a positive feedback loop between land use and more sustainable travel patterns.

What are other cities doing?

Vancouver has focused its planning regime on the integration of transport and land use, with growth being concentrated along its rapid transit network. The city has achieved a high degree of intensification within walking distance of many of its SkyTrain stations and the central city.

Canberra is pivoting away from its past reliance on greenfield growth in favour of planning that places more emphasis on intensification. Plans direct relevant authorities to deliver 'up to 70% of new housing within our existing town and group centres and along key transit corridors.'

Rapidly adopt low-emissions vehicles



Over 70% of transport emissions come from the light vehicle fleet which means that addressing its composition is critical to reducing transport emissions. Light vehicles will continue to play an important role in the transport system, especially for longer trips not well served by PT, and trade and business trips.

Auckland needs to convert its fleet as fast as possible. However, given the slow turnover of the vehicle fleet in New Zealand and global supply constraints on the availability of electric vehicles, Auckland is a long way from meaningfully converting the fleet, especially by the goal of 2030. The pathway models an ambitious 32% EV light vehicle fleet by 2030.

New electric cars are a high upfront cost that is unaffordable for many. E-bikes, e-scooters, electric wheelchairs and the like (micromobility) are cheaper, more readily available, and represent a key opportunity to convert trips otherwise taken by internal combustion engine vehicles to lower emission modes.

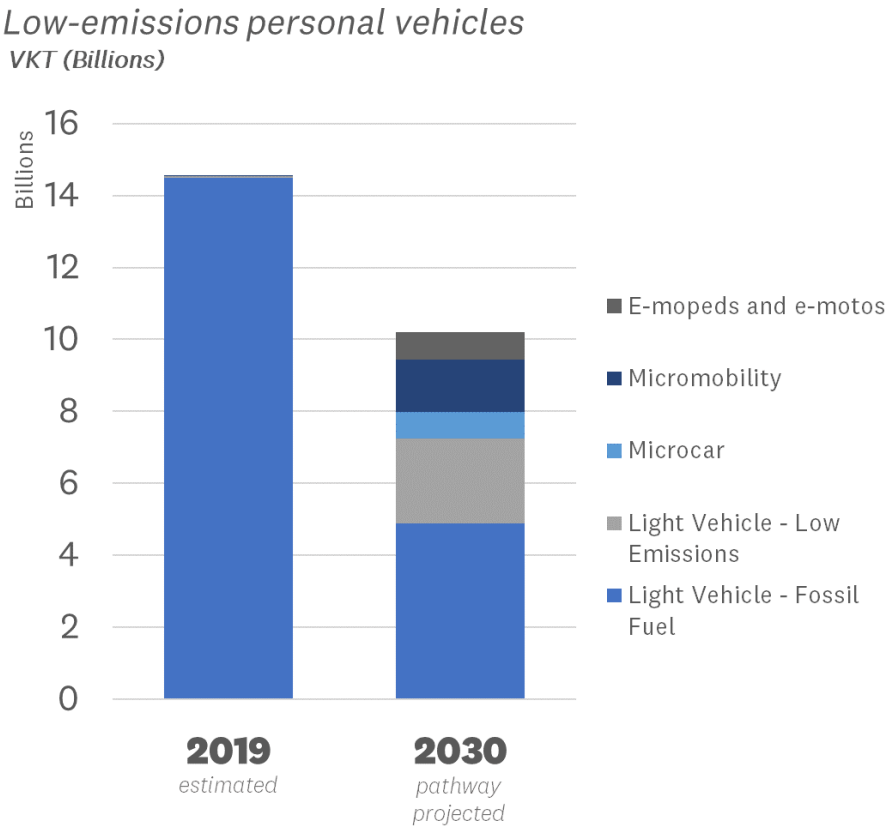


Figure 11 – Low-emissions personal vehicles (graph)

This means:

- increasing the share of the light vehicle fleet that is electric
- expanding the range of personal low-emissions vehicle options that are available, e.g., micromobility, e-mopeds, e-motos and microcars, and
- increasing the efficiency of the residual light vehicle fleet.

Widespread uptake of EVs, including micromobility and microcars, can lead to lower greenhouse gas emissions, increased energy security through reduced fossil fuel dependence, and improved public health through better local air quality and noise levels.

The benefits of decarbonising the light vehicle fleet will not fully occur until later in the decade and beyond.

Equity impacts

Due to the high upfront costs of EVs, it is essential to prioritise their access (through purchasing or sharing) for low-income earners. Targeted support for low-income groups to access new forms of low-carbon personal mobility devices such as e-bikes and cargo bikes can support an equitable transition, and in some cases, reduce the need for motor vehicles (e.g., second household car).

The rapidly expanding range of micromobility devices can provide options for people who may not be able to use more traditional active modes such as bikes.

Low carbon mobility opportunities for rural communities will also be an important part of an equitable transition. This can range from rural on-demand services to an increase in the type of zero emissions vehicle options. The availability of charging infrastructure is a key barrier to the adoption of EVs in rural and remote areas.

Actions and responsibility

Most of the actions needed to accelerate the transition to low-emissions vehicles are within government's control. However, Auckland Council and Auckland Transport can put in place specific measures to support a swifter uptake of micromobility and EVs, funding e-bike libraries and partnering with Māori on the rollout of EV share schemes, for example. Council and Auckland Transport can also deliver zero emissions zones, starting with the implementation of the Access for Everyone concept in the city centre.

7: Electrify private vehicles

The pathway would require:

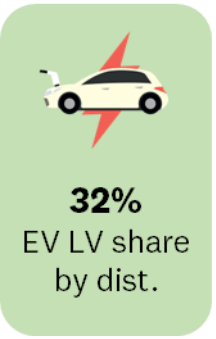
Light Electric Vehicles (rounded)	Baseline 2030	Pathway 2030
VKT (million)	~800	~2350
Fleet Proportion (vkt)	8%	32%

Table 5 – Light Vehicle Electrification

Auckland needs 32% of its light vehicle fleet to be electric by 2030. Light vehicles (private and commercial cars, utes and vans) are responsible for around 80% of transport emissions. Given the low carbon-intensity of New Zealand's electricity supply there are significant benefits to electrifying the light vehicle fleet, although this requires increasing demand for electricity being met through the development of additional renewable generation capacity (as opposed to fossil fuel power stations).

The pathway requires:

More incentives to increase the rate of uptake of low and zero emissions vehicles and address the slow turnover of the vehicle fleet.



- The government's Clean Vehicle Standard, Clean Car Discount and ERP's 'scrap and replace' trial will make a start but on their own are unlikely to incentivise enough uptake to reach the pathway's target. Subsidies should be broadened to include e-bikes and cargo bikes, which cost less and can replace many car trips.
- Targeted incentives are needed to help increase the affordability of these modes for low and middle-income households. Electric car-sharing schemes already exist and could be expanded to communities lacking transport options.
- Replacing fossil fuel vehicles with low or zero emission vehicles could focus on commercial vehicles, taxis, community transport and shared fleets. This ensures that the limited pool of low emissions vehicles is used most efficiently to maximise emissions reductions.
- Mana whenua and mataawaka are trialling the rollout of EV share schemes (e.g., at papakāinga and marae), with behaviour change programmes that are built on te ao Māori. There is tremendous opportunity for council to partner with Māori to maximise the uptake of these programmes and support equitable access to EVs.
- Council could provide more space to operators of shared EV schemes and reduce cost and regulatory barriers for operators.

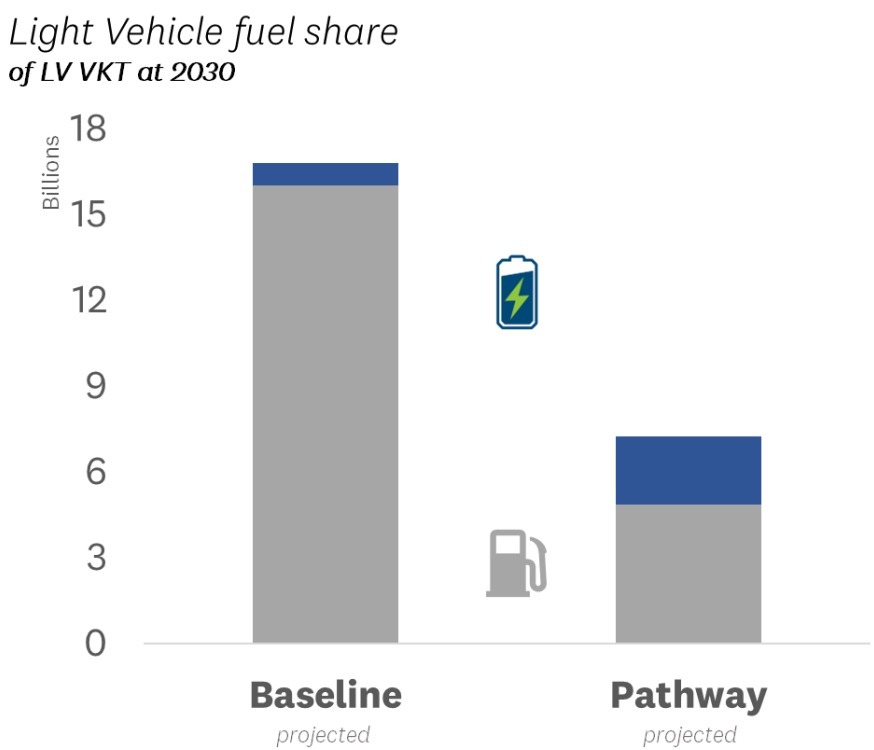


Figure 12 - Light Vehicle fuel share (graph)

No fossil fuel light vehicles to be imported by 2030, preferably earlier. This will further accelerate the transition to EVs and prevent the country from turning into a dumping ground for polluting vehicles as other countries implement their own import bans.

Expanding the EV charging network and its capacity. This is important to support increased levels of EV uptake and ensure future EV charging demand is sufficiently met. The Building Code and planning rules should be updated to require the provision of charging infrastructure where parking is provided in new developments.

Key Action

xiv. **Further incentivise the uptake of EVs.**

Greater subsidies and regulatory incentives are needed to address the slow conversion of Auckland's fleet. By 2030, many more of the light vehicles in Auckland will need to be electric, particularly high-use vehicles such as commercial vehicles, taxis and shared fleets.

What are other cities doing?

Oslo is a global leader in electrifying its fleet, having the most EVs per capita of any city. Both the city's council and Norwegian government support electrification of the city's light vehicle fleet through measures such as tax incentives for buying EVs. In 2021, 65% of new passenger cars sold in Norway were fully electric vehicles, and a further 22% were plug-in hybrids.

Boston is taking an equity focused approach to EV adoption, reflected by two related targets in its climate plan; that public EV charging is available in every neighbourhood by 2023, and that all residents are within a 10-minute walk of a public EV charger or EV car share facility.

8: Enable new transport devices

The pathway would require:	Trip share		Mode share by distance	
Mode (rounded)	**2019**	**2030**	**2019**	**2030**
Enable new transport devices	<1%	16%	<1%	16%
• Micromobility	<1%	9%	<1%	8%
• E-motos, e-mopeds, etc.	<1%	4%	<1%	4%
• Microcar	<1%	3%	<1%	4%

Table 6 – Enable new transport devices mode share

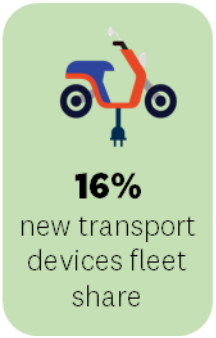
Micromobility are devices that operate like powered alternatives to bicycles and kick scooters. They include e-bikes, e-scooters, e-cargo bikes and powered mobility assistance devices such as wheelchairs. When planned regulatory changes take effect most micromobility devices will be able to use cycleways and lower speed streets.

Microcars are smaller versions of cars and are generally two-seaters. They are designed for urban travel and are much lighter and more efficient than conventional motor vehicles.

Electric mopeds and electric motorcycles are electric-powered versions of conventional mopeds and motorcycles. They do not require pedalling and can reach higher speeds than electric bikes.

Auckland needs to see a more diverse range of low-carbon personal mobility options by 2030. This decade will bring a host of new ways to move around our city. These will be more carbon-efficient, require less space on the network and be more cost-efficient to own and operate.

These emerging travel modes are made possible by new and cost-effective battery and electric motor technologies. E-bikes and e-scooters are already here and are the vanguard of a diverse array of new electrically powered devices and vehicles that are smaller and more efficient.



The pathway requires micromobility to make up around 8% of mode share by 2030. Microcars, electric mopeds and electric motorcycles make up an additional 8% of mode share by 2030. Combined, these new ways of moving need to achieve a 16% of mode share by 2030. In addition to directly replacing vehicle trips, the increasing adoption of micromobility devices will allow some households to reduce the number of cars they own, reducing car dependency and increasing the use of other sustainable modes of transport, such as walking and public transport.

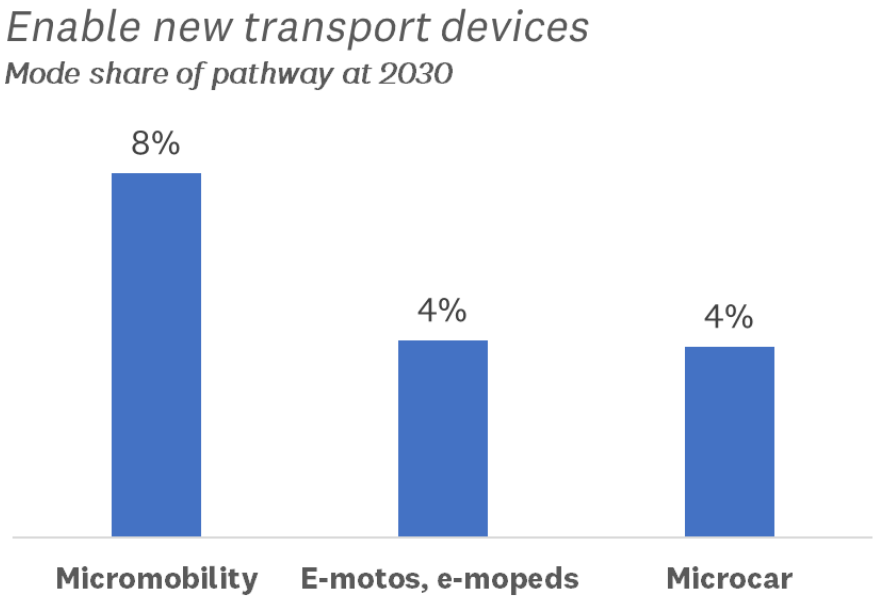


Figure 13 – Enable new transport devices mode share at 2030 (graph)

The pathway requires:

Incentives and subsidies to supercharge the uptake of emerging new ways to move. Research suggests that investing in e-bikes has one of the highest emissions reduction potential per dollar spent. Recent data shows that e-bike users (whether through purchase or trial schemes) increased their average daily bike use from 2km to 9km, a 340% increase, and more than doubled the trips they made by bike. Programmes could be established to subsidise e-bikes or enable people to trial the adoption of micromobility. Council supports the government providing a comprehensive e-bike subsidy. Council could also make it easier for shared micromobility operators to provide more devices in more diverse locations.

Future proofing networks to accommodate micromobility. Many of these micromobility modes can use existing classes of infrastructure, but network design needs to be future proofed for them. This means wider cycleways and shared paths, appropriate modal filters, and secure parking and charging locations. Continuing to invest in the networks for more conventional active modes will allow the city to more easily accommodate new ways to move as they continue to develop and increase in popularity. These actions are discussed under Transformation Area 1: Supercharge walking and cycling.

Clarifying the regulation around these modes. Changes to current regulations are required to facilitate the import of new devices and to prevent the import of unsafe devices. There is also a need to clarify regulations in relation to the use of these new modes on the road network and to ensure they do not impede pedestrian access to footpaths when they are not in use.

Key Action

xv. **Further incentivise the uptake of micromobility including e-bikes.**

This expands the government's Clean Car Discount to include subsidies for micromobility. These modes are more affordable and efficient compared to EVs, and accessible to more users, making them incredibly cost-effective.

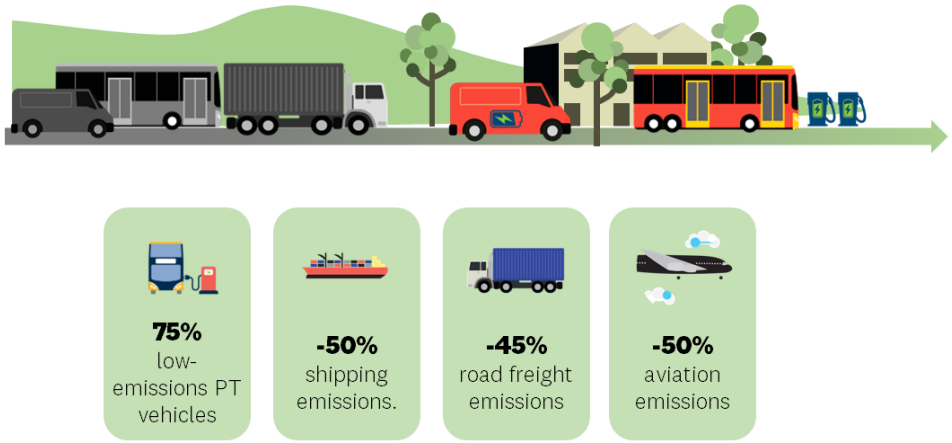
What are other cities doing?

Dublin has embraced the potential of innovations like electric bikes to reduce transport emissions. The council launched a scheme in 2021 to allow businesses to trial electric cargo bikes, capable of carrying up to 60kg of goods, which can replace trips previously made by cars and vans.

Rotterdam is trialling a scheme where residents can hire electric cargo bikes and trailers for free to transport large items to a recycling centre. This encourages people to recycle unwanted goods instead of sending them to a landfill, and minimises the transport emissions from doing so.

New York City recognises the role e-scooters can play in replacing private vehicle trips. In 2021, the city launched a pilot e-scooter hire scheme to expand the catchment of the city's rapid transit network by providing a convenient 'first and last mile' solution. Addressing transport inequity is integral to the scheme, with the initial focus being on areas with limited active transport options. Operators must also offer more accessible micromobility devices and attachments for people with specific accessibility needs.

Begin work now to decarbonise heavy transport and freight



Heavy transport and freight emissions are a growing component of transport emissions. In 2019, they made up the following proportion of Auckland's emissions:

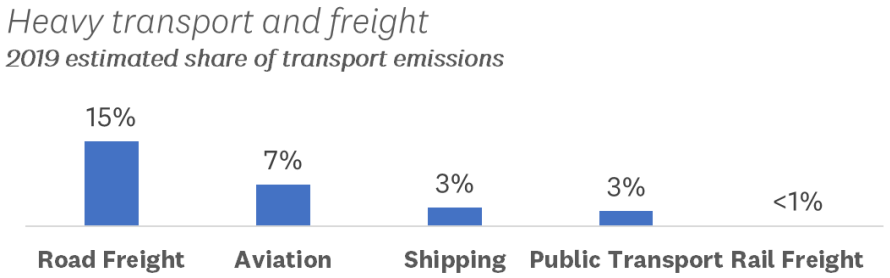


Figure 14 - Heavy transport and freight share of transport emissions in 2019 (graph)

Reducing emissions from public transport, freight and aviation will be critical to achieving a 64% reduction in transport emissions by 2030. This means:

- shifting some of the freight tasks to less carbon-intensive modes such as rail and coastal shipping
- making operational improvements to reduce supply chain emissions, such as optimising freight routes, equipment and vehicles, and making better use of data
- decarbonising PT, freight and aviation vehicles. While there is a high degree of uncertainty around the timeframe in which zero emissions heavy freight and airplanes will be available, the technologies for low emissions PT and sustainable fuels (e.g. biofuels and hydrogen) are rapidly maturing.

Apart from emissions reduction, faster electrification of buses and freight will improve local air quality. Reducing private light vehicle VKT will improve the efficiency of freight trips.

Equity impacts

Decarbonising freight improves equity. Low-income and marginalised communities are more likely to live near major freight routes and therefore disproportionately suffer the air pollution related health impacts.

There is a large gap between the number of flights taken by wealthy people and those less well-off. Flying less has environmental and social justice benefits in that it will reduce emissions without compromising travel choice for low-income communities, who are also more likely to suffer the worst impacts of climate change.

A just transition requires a staged and orderly decarbonisation of the heavy transport and freight sector, to ensure that workers' rights are protected.

Actions and responsibility

Auckland Council and Auckland Transport have significant control over the decarbonisation of the PT fleet and can incentivise freight decarbonisation, but have relatively little control of aviation emissions. Auckland Council owns Ports of Auckland, though has limited control over its operations due to the Port Companies Act. Government leadership and industry action is needed to drive shipping emissions reductions at the national and international levels.

9: Low-emissions public transport

Low-emissions PT fleet (VKT)	Baseline 2030	Pathway 2030
Train	100%	100%
Bus	40%	70%
Ferry	30%	75%

Table 7 – Low-Emissions public transport

Auckland needs the majority of its public transport fleet to be low emissions by 2030 to capitalise on the roughly five-fold increase in patronage required by that time. This means:

- fully electrifying rail passenger operations,
- purchasing only low-emissions buses as the fleet expands to provide more services,
- accelerating the decarbonisation of the ferry fleet.

It is expected that all of Auckland's passenger trains will be electric by 2024, but there is still much room for improvement in the decarbonisation of the bus and ferry fleet.

Auckland has already committed to purchasing only low-emissions buses. Its current Low Emissions Bus Roadmap aims for full decarbonisation of the bus fleet by 2030, subject to funding. The pathway requires a stronger ambition to achieve 70% electrification of the bus fleet by 2030 and 100% by 2035 to align with government's 2035 Mandate, noting that the fleet will need to be much larger than it currently is to provide more frequent services throughout the network.

Similarly, although ferries account for a relatively low fraction of public transport travel, they contribute 21% of public transport emissions due to the age and high emissions of diesel ferry engines. The pathway requires 75% of the ferry fleet to be low emissions by 2030.

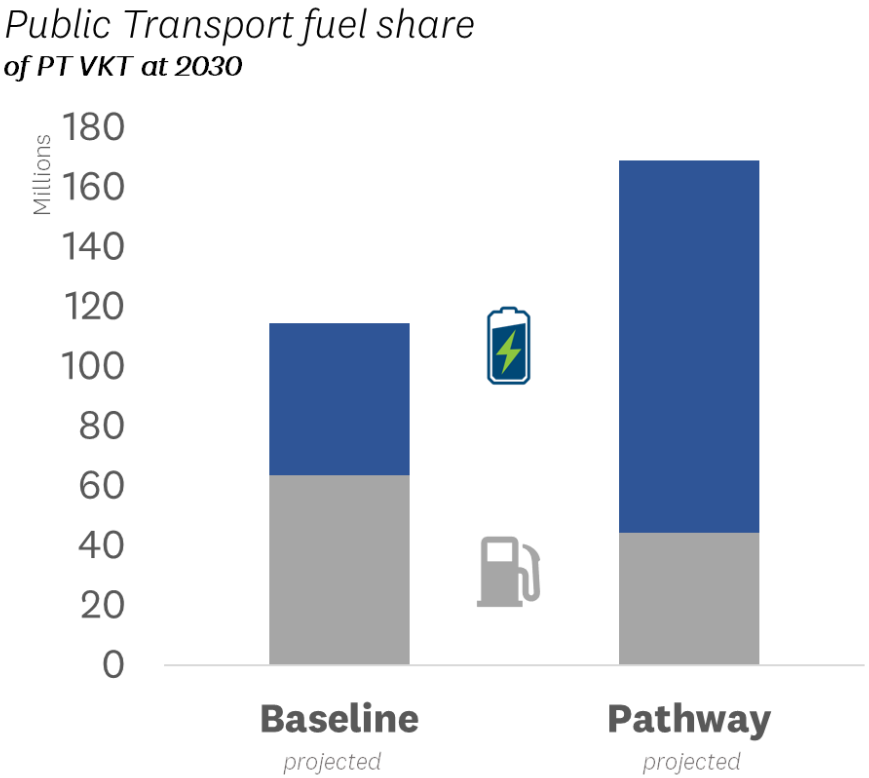


Figure 15 – Public transport fuel share (graph) - Baseline vs Pathway at 2030

The pathway requires:

Maintaining the commitment to fund low-emissions public transport. With the completion of the Pukekohe to Papakura electrification project, all local train services will be fully electric. Electrification of inter-regional rail to Hamilton and Tauranga should be the next priority for government, which would also support freight decarbonisation.

The fleet of buses will need to grow to provide for the 12% mode share in the pathway. Council must maintain its commitment to purchasing only low-emissions vehicles and work with government to enhance funding for the Low Emission Bus Roadmap rollout to account for increases in the bus network's size and level of service.

Auckland Transport's Ferry Decarbonisation Programme needs to be fully funded and extended across the Hauraki Gulf.

Energy network infrastructure that keeps up with increased demand. Industries will need to build capacity to deliver enough low-emissions vehicles and supporting infrastructure, particularly charging and electricity network capacity.

Key Action

xvi. **Ensure all new PT vehicles are low-emissions as the fleet grows.**

The last part of the rail network, from Pukekohe to Papakura, is being electrified. There is a commitment to making all new buses electric and bringing in electric ferries. But funding is required to enable a faster rollout of low-emissions PT vehicles so that they form a higher proportion of a much larger fleet. This minimises emissions from PT even as services greatly expand.

What are other cities doing?

Coventry plans to fully electrify its bus fleet by 2025; 300 new electric buses are being deployed within the next few years. Bus depots are being upgraded with charging infrastructure, and at least one depot will have solar panels installed to provide a source of renewable electricity.

Vancouver already has a high proportion of electric vehicles in its PT fleet, including its light metro system and extensive trolleybus network. The city is advocating to the provincial and federal government to decarbonise the region's current diesel heavy rail network, and is implementing strategies to decarbonise maritime transport and aviation.

10: Efficient freight and services

Auckland needs freight emissions to halve by 2030, relative to 2019 levels. Road freight currently makes up around 15% of transport emissions, while shipping makes up 3% and rail freight 0.2%.

-45% road freight emissions

Road freight accounts for 95% of Auckland's freight task and is considerably more carbon-intensive than rail and coastal shipping. 84% of the freight task occurs within the region. The vast majority of these urban freight trips are undertaken by light commercial vehicles and small-to-medium sized trucks.

There is significant opportunity to shift short intra-regional freight trips to low emissions modes such as electric vans and cargo bikes for last-mile delivery. This technology already exists.

-50% shipping emissions.

Creating a carbon efficient freight sector is complex and requires a whole-of-system approach, coordinated at the national level. As noted in the Auckland Freight Plan, Auckland Council and Auckland Transport will work with government and other partners to set ambitious decarbonisation targets for the sector and put in motion supporting programmes to achieve those targets.

The pathway requires:

Operational efficiency improvements to move freight around the transport network as efficiently and safely as possible. This means greater use of dynamic routing and accurate real-time freight data to reduce the likelihood of empty trucks on the network. Research shows that eco-driving training for truck drivers can improve fuel efficiency and reduce carbon emissions by more than 10%.

Multi-modal logistics hubs address critical challenges with last-mile delivery by enabling smaller modes such as e-bikes to conduct deliveries and by providing a place for people to pick up goods, reducing the need for deliveries. Reducing the number of large vehicles in urban areas and ensuring their operation is safe for vulnerable users on the road is critical for enabling the level of mode shift required by the pathway.

Improving the efficiency of the road vehicle fleet through the adoption of electric trucks and other heavy vehicles. The technology needed to make this possible is rapidly evolving. Small electric trucks are already in use for deliveries in the city centre as part of the Zero Emissions Area trial. Heavy electric and hydrogen trucks are also currently being trialled. Cities such as Oslo have set ambitious targets of having their entire heavy vehicle fleet capable of using renewable fuels by 2030.

The emissions intensity of road-based freight transport can also be reduced through vehicle upgrades, as well as improved vehicle designs, fuels and drive-train technologies. Actions to reduce the emissions impact of non-road-based transport modes include electrifying rail lines and using shore power to minimise emissions from ships docked in ports.

Reducing road and air freight and shifting freight towards rail and sea; or to smaller low-emissions modes such as cargo bikes for last-mile deliveries. Encouraging the adoption of low emissions modes, by offering businesses subsidised trials of electric cargo bikes for example, can help with this mode shift. It can also be facilitated through actions which discourage the use of highly emitting freight vehicles, such as the introduction of Clean Air Zones and Low Emissions Zones, which have already been implemented in a range of cities.

-50% aviation emissions

Key Actions

xvii. **Investigate and establish Low Emissions Zones in appropriate centres across Auckland.**

Legislative changes are needed to enable Low Emissions Zones, which require light and heavy vehicles to meet minimum emissions standards. These zones improve road safety and local air quality, support multi-modal logistic hubs and help create more people-friendly environments. These zones must be prioritised in areas with high pedestrian or population counts and poor air quality.

xviii. **Deliver multi-modal logistics hubs and right-sized, safer, low-emissions freight vehicles for last-mile delivery.**

Council and Auckland Transport, with support from industry, will assess and repurpose underutilised spaces (car parks for example) in key locations for use as multi-modal logistics hubs that cater for smaller, low-carbon freight vehicles such as cargo bikes and reduce the need for motorised freight vehicles in centres. Starting with the city centre, this network of hubs will be expanded to other centres.

What are other cities doing?

London has implemented a Low Emissions Zone across most of the city, which requires heavy vehicles to meet minimum emissions standards or pay significant daily charges. This reduces freight emissions by encouraging a switch to lower emissions vehicles, as well as the adoption of more efficient practices such as the consolidation of freight trips.

Adelaide is trialling an electric rubbish truck, in collaboration with three neighbouring jurisdictions. In addition to reduced emissions, benefits include lower operating costs, less noise and the opportunity to operate vehicles earlier in the morning and later at night due to reduced noise pollution.

Paris plans to create multi-modal logistics hubs throughout the city to optimise freight transport and encourage active modes for last-mile deliveries. To support this, the city is investigating ways to increase the use of its rail network, canal system and the River Seine for freight transport. Paris is also banning diesel vehicles from 2024, followed by petrol vehicles by 2030, necessitating the electrification of its heavy vehicle fleet.

Empower Aucklanders to make sustainable transport choices

The first 10 transformation areas focus on the systemic changes and actions that will create the infrastructure and services required to vastly improve the low carbon travel choices available to Aucklanders. Without the changes set out in the transformation areas many Aucklanders will continue to have limited or no choices in how they move around their city.

But it also requires a willingness from Aucklanders to make different choices and change current behaviours when they have access to better travel options than they have now. Strong political support as well as leadership from council and Auckland Transport is crucial to deliver transformational change. This is the focus of the 11th transformation area.

Aucklanders are diverse and have different views on and ability to take climate action. Where options are available many Aucklanders have chosen to drive less and use low emission modes more. However, some parts of Auckland do not have genuine transport choices and require greater investment to provide people with safe, affordable and sustainable transport options. Other parts of Auckland may already have good transport options, but uptake is low. Targeted marketing programmes are needed to assist communities with understanding what options are available, how to use them, and what the benefits of using them are.

Auckland Council and Auckland Transport will work alongside Aucklanders, to ensure meaningful engagement with communities on the transport changes that are needed to achieve our climate goals. This deep engagement will mean we can develop local solutions that are tailored to the needs of our diverse communities.

11: Empower Aucklanders to make sustainable transport choices

Behaviour change essential to all emissions reduction

Auckland needs mindset shifts and collective action to deliver systemic change across the transport and land use system. Auckland has had over 70 years of transport and land use policies that entrenched car dependency. Habits can be difficult to change, and Aucklanders may be reluctant to give new ways of travelling a go, or slow to take them up, especially if they are not equipped with sufficient skills and information to make the most of the sustainable modes of transport available to them. Empowering Aucklanders and bringing communities along the climate action journey is crucial to delivering the pathway's ambitious targets.

The pathway requires:

Deep and ongoing dialogue with Aucklanders on climate action. New engagement methods are required to help translate the high levels of regionwide support for climate action and network changes into rapid project delivery. We need to reach groups who are under-served by current consultation processes, such as youth, Māori and Pasifika communities, and ensure that their voices are heard.

To avoid consultation fatigue, project engagement should focus on the details of delivery, instead of relitigating whether city-wide networks should be implemented if they have already been consulted on. Communications throughout project design and delivery can be successful at building public support for change.

Research in the behavioural sciences identifies a range of ways to support people change their travel choices and try new ways of doing things. Applying this knowledge will help Aucklanders in the transition towards a low-carbon transport future. Supporting the capacity of Māori and our community to lead and deliver their own transport solutions will also be crucial to a successful transition.

Greater support for Māori, citizen and youth-led responses to climate change. Local ownership of actions creates the buy-in needed to bring communities along the journey. Communities and iwi / hapū can ensure action is targeted to their specific needs, particularly those who will find change the hardest.

Māori are already developing their own sustainable transport solutions, community and papakainga-level shared low emissions vehicles schemes for example. Partnership between council and Māori could further unlock programmes like these. Local Boards and Zero Carbon communities could be supported and funded to set their own local pathways to meet regional emissions reduction targets. Empowering young people to participate in and lead climate action has long-term positive effects, including giving youth ownership over the transport system they will inherit and the ability to hold decision-makers to account.

Greater awareness and understanding of sustainable transport options. Many Aucklanders are not aware of the different travel options that are available to them. Information about alternative modes can be difficult to find, and customer information does not always match that available in best practice cities across the world.

A comprehensive public engagement and information campaign is needed to help lift the uptake of sustainable transport modes to the levels required by the pathway. This will include marketing campaigns tailored to the needs of specific demographic groups and specific geographic locations, personalised journey planning and workplace travel planning, and promotions aligned to specific service improvements.

Better understanding Auckland's diverse population through travel data. Aucklanders have diverse experiences of the transport system in terms of the quality of their access to it and the complexity of their travel needs. Better data is needed to understand travel needs and the barriers different groups face, particularly groups that have been historically under-represented in travel surveys, such as Māori and Pasifika, disabled people, low-income groups and LGBTQI+ people. This data will be used to ensure our transport services and solutions work for diverse communities.

Key Action

xix. **Deliver comprehensive engagement, information and behaviour change programmes to support mode shift.**

Agencies must engage much more effectively with Aucklanders to support their transition to new ways of travelling around the city. The council and Auckland Transport will trial new ways of engaging with communities, help people better understand the changes that are happening in their neighbourhoods, and work with communities to make the most of the opportunities that come with change.

Taking action: Ōtara Bike Burb

The Ōtara Bike Burb was established by residents in 2019 to get more people cycling in the neighbourhood. Located in the heart of Ōtara town centre in South Auckland, the bike burb holds various events and local cycling tours, teaches people to ride and fix bikes, and provides low cost or free bikes to those who need it. It also is an effective advocate for safe cycling infrastructure for the community.

The Ōtara Bike Burb taps into Ōtara's proud bike culture and community spirit and has grown to be one of the fastest growing bike burbs in Tāmaki Makaurau. The bike burb's strong connection with the community means it has a good understanding of local aspirations and barriers. As such, it is also able to reach more people than traditional council engagement processes can.

The needs of diverse communities cannot be met by a one-size-fits-all approach. Partnership between local government and community groups such as the Ōtara Bike Burb helps to broaden the reach of council investment and enables more meaningful local participation in addressing the climate crisis.

Section three:

Implementing the Pathway

Implementing the Pathway

This section of the document sets out how the pathway will be implemented through the:

1. **Actions to transform the transport system**, responding to the strategic direction and areas of transformation set out earlier in the document
2. **Creating a supportive transport planning system** and some of the solutions for this
3. Process of **Integrating the TERP** in the current planning system.

Given that there are only eight years to achieve the required reduction in transport emissions, coordinated implementation of the pathway will need to start immediately.

1: Actions to transform the transport system

The actions in this section are organised by transformation area, which are categorised by the government's ERP key actions. Actions are sequenced and prioritised to ensure levers with the potential to yield more immediate results are fully utilised. A number of the actions require central government funding.

- Immediate actions (2022-23) (in light green) are actions that can likely be taken now without additional funding, but may require re-prioritisation of existing funding. Some are fundamental to ongoing reductions beyond 2030.
- Medium-term actions (2024-26) (in dark green) require additional funding and build on early action.
- **Key actions** will lead to especially significant changes in the transport system. They must be prioritised to deliver the pathway's targets and are in both immediate and medium-term timeframes. Further description of each key action is provided throughout section two, under the relevant transformation.

The primary entity responsible for the action is also shown:

- **CG** for central government.
- **AC** for Auckland Council
- **AT** for Auckland Transport
- **CG** for central government
- **MOT** for Ministry of Transport
- **WK** for Waka Kotahi.
- **E** denotes actions that either aim to directly address or inform equity matters, or actions that specifically warrant equity considerations.

Reduce reliance on cars and support people to walk, cycle and use public transport

1. Supercharge walking and cycling

1.1. Safe, attractive, and accessible pedestrian environments

1.1.1. Prioritise pedestrian access and safety on the transport network, and ensure Level of Service and design standards reflect the pathway's focus on walking **(AT) (AC) (E)**

1.1.2. Remove travel time savings criteria from design standards and business cases **(WK) (AT)**

1.1.3. **Expand and deliver the Walking Programme Business Case (AC) (AT) (CG) (E)**

1.2. An extensive, dense and connected cycle network of quality routes and appropriate destination infrastructure

1.2.1. Prioritise cycling access and safety on the transport network, and ensure Level of Service and design standards reflect the pathway's focus on cycling **(AT) (AC) (E)**

1.2.2. **Expand and deliver the Cycling and Micromobility Programme Business Case (AC) (AT) (CG) (E)**

1.3. Safe speeds

1.3.1. **Rapidly deliver safe speeds across urban Auckland (AT) (AC)**

1.4. Provide anyone who wants to cycle with the opportunity do so

1.4.1. Ensure funding to provide bikes to those who need it at low or no cost **(CG) (AC) (E)**

1.4.2. Increase the scale of cycling customer growth initiatives, including marketing, events, activation, cycle skills and bike hubs **(AT) (AC) (E)**

1.5. Regulatory changes that support prioritisation of walking and cycling

1.5.1. Make legislative changes that support the prioritisation of walking and cycling, such as pedestrian priority, low emissions zones, enforcement improvements and street layout changes **(CG) (E)**

2. Massively increase patronage

2.1. Increase the performance and attractiveness of the public transport network

2.1.1. Prioritise PT over general traffic travel time savings when undertaking improvement and renewal projects on the strategic PT network **(AT) (AC)**

2.1.2. **Deliver a frequent, reliable and accessible PT network capable of achieving 550 million trips per year (AT) (AC) (CG) (E)**

2.1.3. Fully fund key parts of the strategic PT network, similar to how the state highway system is fully funded by government **(CG)**

2.2. Implement a "fair fares" strategy

2.2.1. **Deliver a fair fares strategy (CG) (AT) (AC) (E)**

2.3. Improve the accessibility of the public transport network

2.3.1. **Rapidly roll out PT-related minor infrastructure to make PT safer and more accessible for all Aucklanders (AT)**

2.3.2. Consistently apply guidelines to improve universal accessibility and personal safety in transport infrastructure and services **(CG) (AT) (E)**

2.3.3. Partner with Māori and community groups to provide low carbon shared community transport, where appropriate **(CG) (AT) (E)**

3. Prioritise and resource sustainable transport

3.1. All projects must repair current network imbalance

3.1.1. **Repurpose existing road space to rapidly expand Auckland's walking, cycling and public transport networks (AT) (AC)**

3.1.2. Leverage off renewals, safety and other programmes to deliver improved outcomes for sustainable transport modes, and work with the council and government to address operational impediments **(AT)**

3.1.3. Develop and deliver a programme of intersection repair to make intersections safer and better suited to walking, cycling and public transport **(AT)**

3.2. Swift and strategic action to redefine road space

3.2.1. **Deliver street layout changes quickly using tactical urbanism (AT) (AC)**

3.3. Coordinated approach to parking management and enforcement

3.3.1. **Implement the Parking Strategy (AT)**

3.3.2. Clarify powers, and introduce regulatory changes if required, to improve enforcement in relation to illegal parking, prioritising locations where illegal parking inconveniences sustainable transport modes **(AT) (AC) (CG)**

3.4. Move to vision-led transport planning

3.4.1. Prioritise space-efficient, sustainable modes in policy and planning, funding, maintenance, operations and enforcement **(AC) (AT) (CG)**

3.4.2. Ensure the evaluation phase for all projects considers scenarios that achieve the pathway's targets **(AT) (WK)**

3.4.3. Create a methodology to prioritise each strategic direction (and its actions and investment) based on their contribution to the pathway's goal. This prioritisation will map roles and responsibilities at the appropriate level of detail to each agency to aid implementation **(AC) (AT)**

3.4.4. Develop a 'decide and provide' framework to inform decision-making on the interventions required to achieve the pathway's targets **(AT) (WK)**

3.4.5. Develop a transport equity framework to inform planning and investment decision-making **(CG) (AC) (AT) (E)**

4. Reduce travel where possible and appropriate

4.1. Equitable and impactful pricing of the road network

4.1.1. **Deliver a congestion pricing scheme, including strategies to mitigate its equity impacts (AC) (AT) (CG) (E)**

4.2. Restrict road expansion that induces light vehicle VKT

4.2.1. **Deprioritise projects and processes that induce light vehicle travel (AC) (AT) (CG)**

4.3. Reduce air travel, especially business air travel

4.3.1. Develop a funded national long-distance PT strategy of train and coach services that connects regions and main centres **(CG)**

4.4. Equitable digital access to encourage remote activity

4.4.1. Ensure all communities are able to access affordable and reliable internet services **(CG) (E)**

5. Safe, low-traffic neighbourhoods for people

5.1. A network of vibrant, mixed used neighbourhoods for people across Auckland

5.1.1. Make legislative and process changes to give councils greater ability to manage the impacts that land use has on transport emissions **(CG)**

5.1.2. Enable a greater mix of land uses in residential and commercial neighbourhoods **(AC)**

5.2. A network of connected, low-traffic neighbourhoods

5.2.1. **Deliver a network of low-traffic neighbourhoods across Auckland (AT) (AC)**

5.2.2. Deliver the Access for Everyone programme in the City Centre Masterplan **(AT) (AC)**

5.3. Put sustainable access and universal design at the heart of council group strategies and plans

5.3.1. Deliver a framework that measures sustainable urban access to daily needs and use it to inform investment decisions **(AC)**

5.3.2. Provide facilities and services in areas that are accessible by sustainable modes, enable partners to do the same, and consistently ensure universal accessibility **(AC) (AT) (CG) (E)**

5.3.3. Prioritise sustainable access improvements in areas with poor access and high need **(AC) (AT) (E)**

6. Build up not out

6.1. Plan for an increase in access via sustainable modes and a reduction in light vehicle VKT

6.1.1. Assess the likely VKT and emission impacts of planned urban expansion, and prioritise light vehicle VKT and emissions reduction in spatial planning reviews **(AC) (CG)**

6.1.2. Ensure that regulatory instruments used to direct the planning system do not incentivise development that is fundamentally detrimental to light vehicle VKT reduction targets **(CG)**

6.2. Reduce the scale of planned urban expansion

6.2.1. Defer live-zoning, or potentially revoke previous zoning decisions, if they are likely to be fundamentally detrimental to light vehicle VKT reduction targets **(AC)**

6.3. More intensive development in areas with good access to opportunities

6.3.1. **Enable greater intensification in areas with good access to opportunities (AC) (AT) (E)**

6.3.2. Introduce mechanisms to encourage development of sites near high quality public transport to their maximum potential **(CG) (AC)**

Rapidly adopt low-emissions vehicles

7. Electrify private vehicles

7.1. More incentives to increase the rate of uptake of low and zero emissions vehicles

7.1.1. **Further incentivise the uptake of EVs (CG)**
7.1.2. Partner with mana whenua and community groups to trial shared EV schemes **(CG) (E)**
7.1.3. Ensure procurement contracts require the use of EVs where appropriate **(AC) (AT)**

7.2. No fossil fuel light vehicles imported by 2030, preferably earlier

7.2.1. Consider banning the import of fossil fuel vehicles by 2028 and provide clear signals to the industry **(CG)**

7.3. Expand the EV charging network and its capacity

7.3.1. Support the delivery of a national EV charging infrastructure network **(CG)**
7.3.2. Update the Building Code and Auckland Unitary Plan to require EV charging facilities in new developments where parking is provided **(CG) (AC)**

8. Enable new transport devices

8.1. Incentives and subsidies to supercharge the uptake of emerging new ways to move

8.1.1. **Further incentivise the uptake of micromobility, including e-bikes (CG) (E)**
8.1.2. Incentivise the uptake of micromobility through local initiatives, e.g., e-bike libraries, free trials **(AC) (AT) (E)**

8.2. Clarity on the regulation of emerging modes to promote their use

8.2.1. Update current regulations to enable and regulate the importation, use and parking of new mobility devices and vehicles on the transport network **(CG)**

Begin work now to decarbonise heavy transport and freight

9. Low-emissions public transport

9.1. Maintain the commitment to fund low-emissions public transport

9.1.1. Support commercial operators to implement decarbonisation programmes as quickly as possible **(AT)**

9.1.2. Make legislative changes that require all public transport ferry operations to decarbonise in accordance with an agreed strategy and timeline **(CG)**

9.1.3. **Ensure all new PT vehicles are low-emissions, as the fleet grows (CG) (AT) (AC)**

9.2. Invest in energy network infrastructure to keep up with increased demand

9.2.1. Work with network operators to ensure energy network infrastructure keeps up with increased public transport service demand for electricity **(AT) (AC)**

10. Efficient freight and services

10.1. Move freight around the transport network as efficiently as possible

10.1.1. Support industry to reduce supply chain emissions **(CG)**

10.1.2. Deliver operational improvements on the freight strategic network by prioritising freight over private vehicle movements **(AT)**

10.2. Improve the efficiency of the road freight fleet

10.2.1. Accelerate the decarbonisation of freight vehicles through additional incentives, funding and regulatory changes **(CG)**

10.3. Reduce road and air freight

10.3.1. **Investigate and establish Low Emissions Zones in appropriate centres across Auckland (AT) (AC)**

10.3.2. **Deliver multi-modal logistics hubs and right-sized, safer, low carbon freight vehicles for last-mile delivery (AC) (AT)**

10.3.3. Commit to long-term investment in rail infrastructure to increase the resilience and reliability of the rail network, and to support low-emissions freight movement **(CG)**

Empower Aucklanders to make sustainable transport choices

11. Empower Aucklanders to make sustainable transport choices

11.1. Enable deep and ongoing dialogue with Aucklanders on climate action

11.1.1. Update statutory requirements to improve consultation processes, including compressing consultation timeframes and clarifying consultation requirements **(CG)**

11.1.2. Transform engagement processes to better enable citizen participation in transport decision-making, using participatory models such as deliberative democracy **(AT) (AC) (CG) (E)**

11.2. Greater support for Māori, citizen and youth-led responses to climate change

11.2.1. Ensure transport plans are developed in partnership with mana whenua **(AC) (AT) (CG) (E)**

11.2.2. Provide support and funding for mana whenua, local boards, mataawaka and community groups to shape their own low-carbon transport solutions **(AC) (AT) (CG) (E)**

11.3. Greater awareness and understanding of sustainable transport options

11.3.1. **Deliver comprehensive engagement, information and behaviour change programmes to support mode shift (AT)**

11.4. Better understanding of Auckland's diverse populations through travel data

11.4.1. Improve the Household Travel Survey and Census methodologies to better account for Auckland's diverse populations and their trips, e.g., demographics, geographical locations, and quality of choices available to different populations **(MOT) (E)**

2: Creating a supportive transport planning system

The TERP requires transformation across 11 areas. The current transport planning system has evolved over decades. Changing transport outcomes within the context of this system is difficult as many of its processes are set up to maintain the status quo or deliver only incremental change. Supporting the scale and pace of transformation required to meet the ambitions of the TERP (and the government's ERP) therefore requires significant reform across many aspects of the transport planning system.

The opportunity for Auckland Council is to work with government to urgently address specific systemic barriers to change in a way that enables progress not just on shared emissions reduction goals but also across multiple other outcome areas.

First, some land use decisions undermine emissions reduction goals. Transport investment is a response to land use. While it is important that new communities on the urban periphery are provided with good transport options, doing so is very expensive and in the case of public transport services it can take many years for patronage to build. Even where there are good public transport options research has found that new communities in greenfield areas typically still drive more than those communities closer to centres. There is also a significant opportunity cost involved as investment in transport infrastructure for new urban areas reduces the amount available for investment in existing urban areas where it can be more effectively used to achieve mode shift.

Transport planning in Auckland is complex. It involves many agencies, funding arrangements, strategies, plans and priorities. Priorities must be signalled in the Auckland Plan and/or the GPS, which inform investment allocations in ATAP and the RLTP. ATAP and the RLTP both inform and are informed by many lower level and more detailed plans and strategies. In turn proposed investments are subject to a multi-stage business case process. Urgent work is required to streamline these arrangements.

Many regulations that allocate and manage the road network have long privileged convenience for cars over sustainable modes. This has entrenched car dependence. For example, it is unnecessarily onerous to trial temporary changes to how streets are used, implement low emission zones, or change speed limits. The government's Accessible Streets programme of reform is seeking to make changes in these and other areas.

Existing funding must be allocated effectively. Funding will always be constrained. It is therefore important that funding allocation decisions reflect the government and council's priority of reducing emissions. Work is required to ensure that the transport funding system incentivises projects that will reduce emissions while also enhancing other critical outcomes such as equity and safety. The prevailing focus on minor travel time savings often undermines the case for investment in public transport, walking and cycling.

Better and more holistic approaches to assessing the impacts of transport projects are required, including assessment of their long-term emissions impacts. This requires less reliance on predict and provide approaches to transport modelling and a fast transition toward vision-based approaches that are better able to provide a sense of the impacts of abrupt and/or large-scale changes in the transport system.

Waka Kotahi has recently made improvements to the way projects are assessed and the ERP signals that more work will be undertaken on this in the near future. The high level prioritisation framework set out in the next section provides an indication of the new approach that is required.

More funding is required. As stated above, funding allocations must reflect the priority of reducing emissions. While savings can be made by reallocating funds from projects that entrench car-dependency, additional funding will be needed to enable transformation, especially in the short to medium-term. Covid-19 and global supply chain shortages have exacerbated existing funding constraints and placed extreme pressure on the budgets of Auckland Transport and Waka Kotahi (with reduced revenue and significant cost increases) and both central and local government more generally.

There are real constraints on resources and skilled workers. Acute shortages of professional staff, labour and materials continue to constrain the capacity of the transport sector. Skilled drivers are needed to maintain and expand the PT network: New Zealand is already short of an estimated 500 to 600 bus drivers and the TERP envisages a much larger network of services. Public sector agencies are also impacted by the competition for skilled professional staff. Constraints on the availability of EVs also present a risk to the ability to achieve the goals of the pathway. Global demand is expected to outstrip global supply for electric cars for some years to come.

Strong public support for climate action but support for local change is less clear. The public report strong support for climate action in the abstract but sometimes this does not translate to on the ground support for meaningful change at the local level.

While public opposition to specific proposals can originate from a reluctance to change entrenched travel behaviours, it also often arises from inadequate consultation processes or a misunderstanding of the benefits of climate action. Often, communities that stand to gain the most from more sustainable and accessible transport options find it difficult to participate in lengthy and technical consultation processes given they have more pressing priorities. Consequently, their voices are not heard or are given less weight in formal consultation.

Organisations need to stand firm and deliver to their stated goals in the face of what is very often minority opposition. Clear and consistent political support is also required to build social license and provide delivery agencies with the confidence they need to take the necessary action.

The council and Auckland Transport are well placed to work with communities, build support, and explain the benefits of change. But this requires meaningful change to engagement processes including forming early and meaningful partnerships with the community.

Organisational conservatism. All the agencies involved in Auckland's transport system have strategies stating the importance of reducing transport emissions. However, this strategic intent is not always reflected in their investment priorities, detailed project implementation or their supporting policies. There are several reasons for this including:

- objectives that are often poorly defined and not prioritised
- legislative mandates that do not explicitly cite emission reduction as a key objective
- organisational structures and processes that reinforce the status quo or deliver only incremental change
- entrenched ways of working amongst transport and land use planning professionals
- political, stakeholder and public pressure that often makes change on the ground difficult.

Agencies are therefore incentivised to maintain the existing transport system which tends to be reflected in risk averse cultures and thinking that fails to adequately account for climate change impacts and adaptation costs.

Actions to help create a more supportive transport planning system:

1. **Land use decisions undermine emissions reduction goals**
   Progressively refocus funding from growth in new urban areas to supporting investments that more effectively promote mode shift in the existing urban area.

2. **Complex transport planning and decision-making processes**
   Multi-agency work to recommend more efficient transport planning processes that enable both evidence based, robust decision-making and rapid transformation.

3. **The regulatory framework prioritises private cars**
   The council and Auckland Transport must incorporate the changes and directives from central government policy documents such as Reshaping Streets and Accessible Streets (once adopted by government). They must also jointly advocate for any further changes required.

4. **Allocating existing funding more effectively**

a. Further reform to the business case process including:
   i. merging strategic and programme business cases with planning work in a way that comprehensively identifies interventions
   ii. streamlining later phases of the business case process (indicative, detailed and single stage business cases) to focus on unresolved issues and design details rather than reworking or replicating earlier work
   iii. streamlining approval processes for funding of continuous programmes
   iv. adjusting the threshold above which a full business case process is required (currently $2m) for projects with clear emissions reduction or equity benefits

b. ATAP partners should ensure that light vehicle VKT reduction, emissions reduction and equity are prioritised as key outcomes when reviewing all high-level planning documents

c. When considering investment programmes such as ATAP or the RLTP, ATAP partners must deprioritise those projects that undermine light vehicle VKT reduction, emissions reduction and equity

d. In its review of the transport funding system, the Ministry of Transport should, at a minimum, consider:
   i. the failure of current funding arrangements to incentivise projects to deliver emissions reduction
   ii. the limited extent to which externalities are priced into transport funding decisions
   iii. the appropriate split of local and central government funding for modes
   iv. how any transition to road pricing regimes would be managed and the extent of the revenue it would generate.

5. More funding is required

a. The minimum allocations to public transport and active modes in documents such as the GPS and the National Land Transport Programme (NLTP) must better reflect government and council's shared priorities of light vehicle VKT reduction, emissions reduction and equity.

b. Agencies should continue exploring other funding sources for transport to ensure needed projects can be delivered to the scale and pace required to support transformation.

6. Transport sector capacity constraints

Auckland Council and Auckland Transport must continue to work with central government on issues such as improved conditions for bus drivers and other capacity constraints on the implementation of the TERP.

7. Strong public support for climate action but support for local change is less clear

a. Agencies must adapt their engagement and consultation processes to ensure that all views are heard

b. Once strategic direction is consulted on and set, future consultation should focus on how, not whether, projects that support that direction are delivered

c. Clear messaging and support must be provided for elected-member- and decision-maker-led public discourse on emissions reduction.

8. Organisational conservatism

a. Policy agencies must provide firmer and more consistent direction to their delivery agencies including guidance on balancing objectives, and delivery agencies must implement that direction throughout all of their activities

b. Auckland Council, Auckland Transport and central government agencies must take immediate action to ensure their processes are supportive of the scale of transformation required.

3: Integrating the TERP into the planning system

The Transport Emissions Reduction Pathway is not a funded plan or an implementation plan. It provides direction that must be incorporated into processes that fund and deliver Auckland's transport system.

Numerous documents and processes create the strategic context for transport investment in Auckland. If Auckland is to make progress towards its emissions-reduction goals, the TERP must drive these processes. The next iterations of many of these documents are due in mid-2024 and early work has begun across agencies to embed climate action.

In addition the government will soon work with Auckland Council and Auckland Transport to develop a VKT Reduction Programme that will translate the TERP's direction into a detailed programme of interventions.

Key transport documents to be updated before mid-2024 include:

- Government Policy Statement on Land Transport
- National Land Transport Programme
- Auckland Transport Alignment Project
- Regional Land Transport Plan
- Auckland Council's Long-term Plan
- Auckland Transport's Statement of Intent
- Auckland Council's Future Development Strategy

For some time now, investment in emissions reduction action such as mode shift have been viewed by the industry as one of many competing objectives. It is true that existing transport plans, including the GPS, prioritise a range of outcomes, including improved safety and transport choice, supporting growth, reducing other forms of environmental harm, and maintaining existing transport assets. All of these outcomes will remain critically important to all transport planning processes.

However, as the government has signalled, investments in these and other outcomes must be undertaken in a way that aligns with a reduction in light vehicle VKT and transport emissions, and greater transport equity. This signals a significant change from 'trade-off' thinking (where objectives are seen as in zero-sum competition with one another) to 'co-benefits' thinking where programmes are designed to maximise multiple objectives.

Rather than necessitating trade-offs between emission reductions and other outcomes, a large body of research and empirical evidence demonstrate that many actions in the TERP would enhance multiple outcome areas (safety, health, network efficiency etc.). For example, investing in mode shift to public transport, walking and cycling, as required by TERP, can reduce congestion for those who still need to drive. Similarly, prioritising TERP actions would enhance safety outcomes by demanding a more holistic approach whereby investments are required to improve safety outcomes for all users of the transport network – cyclists, pedestrians, micromobility users and people in cars.

In the updates of key transport and other strategic planning documents, Auckland Council and Auckland Transport will:

- prioritise light vehicle VKT reduction, emissions reduction and equity as their key considerations in line with council and government direction
- plan for and deliver improvements in other key outcome areas in a way that is consistent with these priorities.

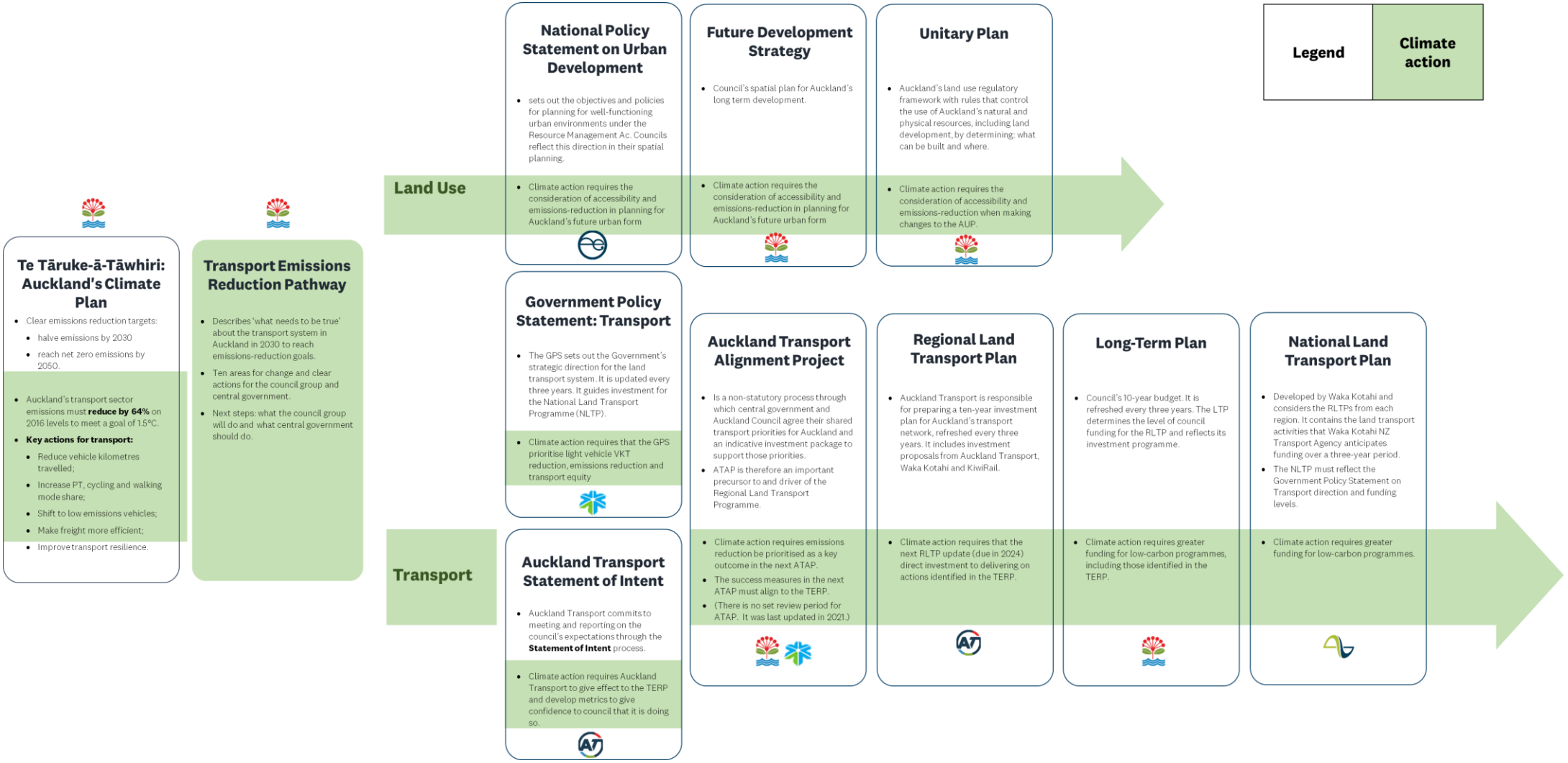
Auckland Council and Auckland Transport will ensure that the priority given to light vehicle VKT reduction, emissions reduction and equity is reflected in:

- the allocation of funding to programmes and projects
- the allocation of funding to specific projects within large programmes such as safety, network optimisation and renewals
- the sequencing of investments.

In future iterations of the Statement of Intent, Auckland Council and Auckland Transport will:

- give effect to the pathway as much as possible, given available funding
- adjust existing targets to reflect the ambition of the pathway as much as possible, given available funding
- develop new targets as required to better reflect the ambition of the pathway. This could include areas such as VKT reduction, active modes accessibility and accessibility via PT for disadvantaged communities

It is critical these documents reflect the emissions reduction goals and focus on access, safety, and equity. The diagram below lists the core transport and land use related planning processes that must be updated to reflect Auckland's Transport Emissions Reduction Pathway and enable its rapid implementation.



Prioritisation processes must reflect the TERP

Investment in the transport network is determined primarily through ATAP, the RLTP and the NLTP. These documents are shaped by the council and government's strategic direction provided through the GPS, Auckland Plan, Te Tāruke-ā-Tāwhiri and now, TERP.

Implementation of the Transport Emissions Reduction Pathway will require its actions to be prioritised in all of these documents and in the context of a highly resource constrained environment.

As an immediate action, Auckland Council and Auckland Transport will:

Create a methodology to prioritise each strategic direction (and its actions and investment) based on their contribution to the pathway's goal. This prioritisation will map roles and responsibilities at the appropriate level of detail to each agency to aid implementation.

Prioritisation of strategic directions will enable agencies to phase their investments and supporting actions in accordance with their impact and co-benefits. The prioritisation methodology must consider: emissions reduction, costs, equity, amplification benefits and other impacts (both transport and non-transport related).

There are a number of principles that will be incorporated into this prioritisation methodology (along with others) to help ensure alignment of investment and actions across modes and infrastructure types with their relative importance to the pathway.

These include:

- whole-of-life emissions
- affordability to user
- financial cost to the system
- spatial efficiency and capacity
- average journey time
- 'deliverability' (cost and design/build time)

A coarse assessment of different modes of transport against these dimensions provides a broad prioritisation approach that aligns to TERP. The prioritisation will not hold true for every circumstance but is broadly accurate and therefore useful in communicating the change in investment approach the council, Auckland Transport, Waka Kotahi and Ministry of Transport must make in order to reach their shared emissions, safety and wellbeing goals.

The diagram below shows the suggested prioritisation principles according to each dimension. Note that, broadly, walking and cycling infrastructure is cheaper to provide and use; generates less whole-of-life emissions and is more efficient at moving people compared to other modes. By contrast, light vehicles and associated infrastructure are more expensive to provide and use, produce more whole-of-life emissions and are more likely to experience and cause congestion. Importantly, journey times via cars are superior in most cases to other modes – which highlights a key area for improvement (the need to make sustainable modes more competitive).

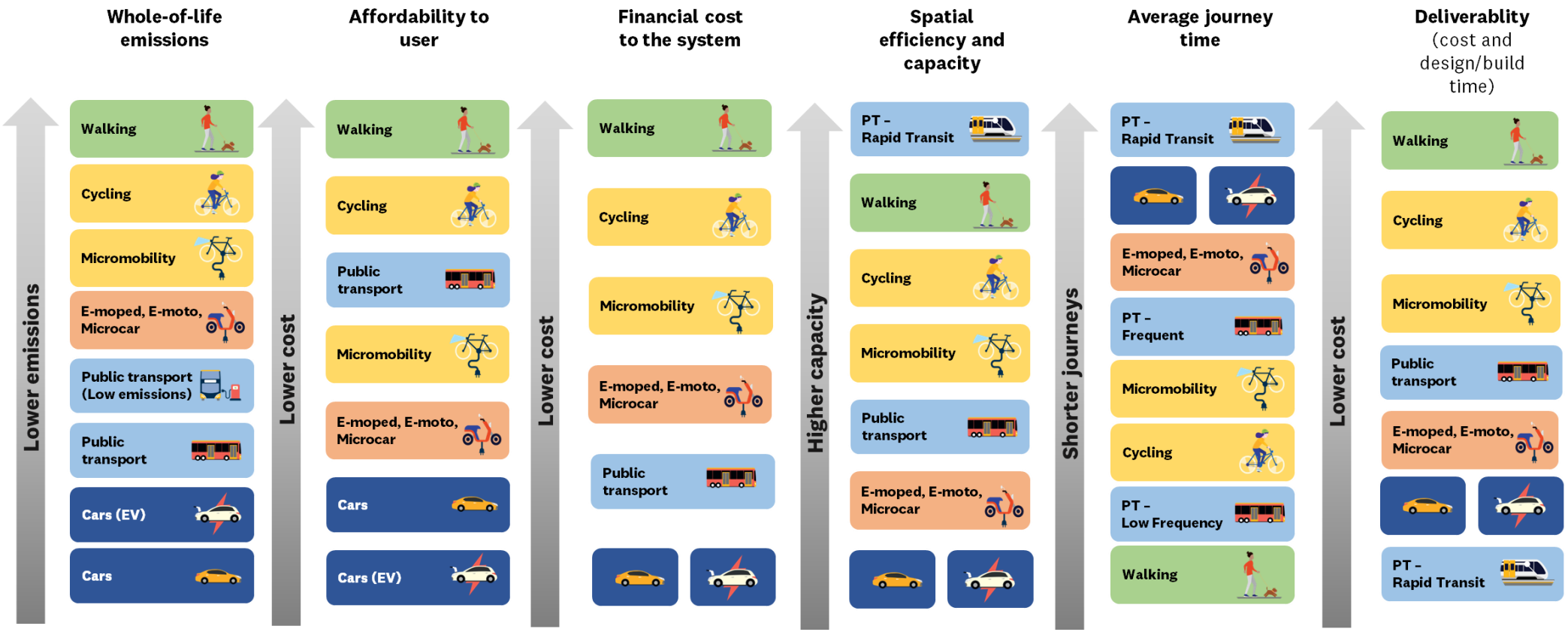


Figure 16 - Suggested mode shift prioritisation according to different dimensions

It is also important to consider the required relative change in trips for each mode as another indicator of where effort should be focussed. Figure 17 highlights the scale of change required for each mode. The relative change required should be considered as a factor driving any high-level prioritisation and sequencing of TERP actions and investments. Operational budgets, infrastructure investment and the priority given to other actions should broadly align with the scale of change in mode share identified in Figure 17. This does not mean that funding allocations should be proportionate to changes in mode share, but rather that those allocations reflect the change required in light of the relative cost of provision for each mode. For example, cycling infrastructure is typically cheaper to provide than PT infrastructure and service improvements, and therefore funding allocations to cycling would not be expected to be three times that of PT even though the difference in relative change required is roughly of that order.

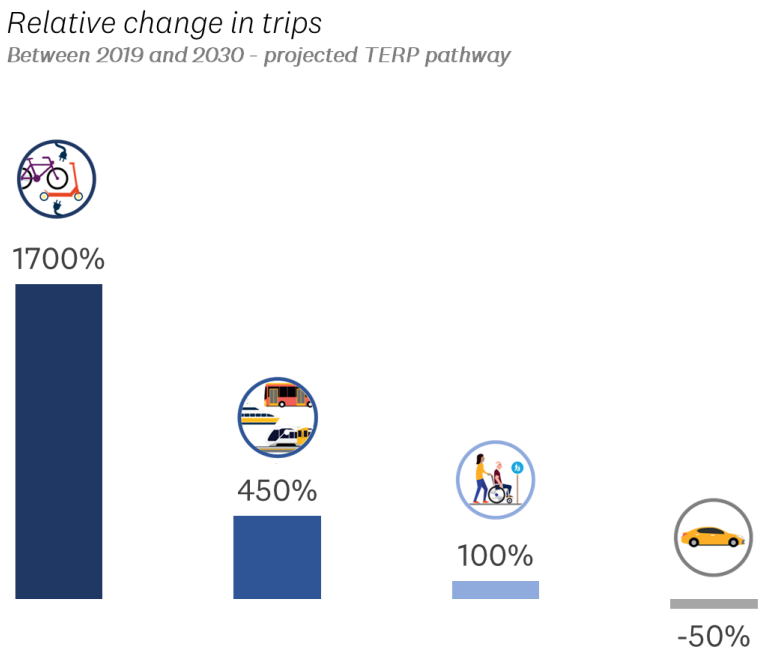


Figure 17 – Relative change in trips (graph)

With these principles in mind, a high-level assessment of how future decision making aligns with the TERP is possible, even before the creation of a more detailed methodology:

1. **Wherever possible have all options to produce mode shift or Vision Zero outcomes been incorporated into all proposed actions and expenditure?**

   All spend, policy changes and other actions should be subject to this test including improvements, renewals and 'committed' spend, and asset recycling (which should consider which assets would be 'stranded' in a 64% reduction world).

2. **Where those mode shift and Vision Zero outcomes are to be delivered, have actions been prioritised by mode?**

   Mode prioritisation can be broadly achieved by considering Figure 16 and the sustainable transport hierarchy in Figure 10.

3. **Has prioritisation considered how best to amplify the effect of other spend, activity and policies? For example, does spend leverage 'network effects'?**

   Consideration should include:
   - actions that amplify impact such as 'first and last mile' improvements that deliver multiple benefits (public transport patronage as well as walking and cycling)
   - policy or other contexts that affect attractiveness of driving such as congestion pricing or fuel price
   - the principle of induced demand – where useful, safe infrastructure is provided, it will attract users
   - feedback loops.

Appendix

Modelling assumptions

The approach to the TERP starts with the end goal (the 2030 64% reduction target) and asks 'what would need to be true to achieve this outcome?'. More specifically, modelling was used to show what mix of mode share, fuel efficiency, total trip length and so on, could be assumed to produce a transport network that produces 64% less emissions than 2016 levels (the TATT goal) - after accounting for population growth and any known policy changes that could be captured (such as clean car policies).

TERP modelling is useful insofar as it credibly estimates the challenge. It is unlikely to accurately identify the exact mix of settings but this is not its primary function, which is to estimate the relative changes required across the transport system to achieve the TTAT goal.

This modelling approach produced a baseline and a pathway. The following assumptions were used to think about the **current baseline**:

Fuel will produce less emissions at the tailpipe over time. Central government established a Sustainable Biofuels Obligation that aims to ensure sustainable fuel replacements for a portion of petrol and diesel used across NZ. Indicative assumptions are for 7% ethanol and 6% conventional biodiesel (in petrol energy equivalent litres) at the point of supply by 2030.

Electric vehicles are getting more popular. Although government's Clean Vehicle Package is expected to increase the uptake of EVs, it is too early to say by how much. Currently, however, baseline expectations are that EVs will grow to around 5% of total VKT by 2030.

Public transport patronage is growing. Auckland is already investing in PT projects that are expected to continue to increase patronage, such as the Eastern Busway and the City Rail Link. Baseline expectations are that patronage will grow by 2030, with over 50% more bus trips, around 15% more ferry trips and almost double the number of train trips (compared with 2019).

Total trips are growing. At the same time as Auckland aims to reduce its absolute emissions, its population is growing. Auckland's population in 2030 is expected to reach 1.9m. This also means that the total number of trips on the transport network each year will grow too and is projected to be around 17% higher.

Total vehicle kilometres travelled is growing. The total distance travelled by light vehicles is expected to grow by more (around 18.5%) than the growth in the number of trips. This is because the average distance of trips in Auckland is also projected to grow in the baseline by 5%. The reason for this is that development at the urban boundary and beyond creates longer trips.

Together, these trends leave a 2.8 Mt CO_2e 'gap' in emissions that must be avoided by 2030.

In general, the key sources of data were:

- The Macro Strategic Transport Model (MSM) and Auckland Strategic Planning Model (ASP), which provides modelled estimates of road and PT transport for Auckland, including the effects of land-use
- Auckland Transport's audited emissions inventory, which includes estimates of patronage, service km, PKT, and emissions
- The Ministry of Transport's Vehicle Fleet Emissions Model (VFEM), which provides numbers for fleet composition and average vehicle efficiency
- Waka Kotahi's Vehicle Emissions Prediction Model (VEPM), which provides further detail on fleet composition, efficiency, and emissions
- The Household Travel Survey, which gives an indication of various trip behaviours and proportion
- Auckland Council's Emissions Inventory, which provides an analysis of aggregate emissions at a sector level
- Fuel sales data, which is drawn on by the Auckland Council emissions inventory, and provides a good account of the total fuel consumption for the region
- Many other data points, such as aggregate HOP data, and vehicle travel counts.

Pathway Assumptions

Initially, the council and Auckland Transport sought to model multiple pathways that would deliver the Te Tāruke-ā-Tāwhiri 64% reduction goal and subject them to options analysis. However, it became apparent that every lever in the model had to be pulled to its plausible maximum to produce the emissions outcome.

While there is always room for subtle adjustments to settings in modelling of this nature, this is largely unproductive because it does not change what the pathway settings indicate first and foremost; that massive change needs to occur in every area of the transport system. The settings used provide a direction and scale to the ambition required to deliver the emissions reduction goal in the timeframe allowed.

Note that the assumptions that are the same for the baseline and the pathway are:

- Fuel emissions, per unit of energy
- Light vehicle efficiency of the fossil fuel fleet.

The following tables give settings for the baseline at 2030 and the pathway at 2030:

Low-emissions PT fleet (VKT)	**Baseline 2030**	**Pathway 2030**
Train	100%	100%
Bus	40%	70%
Ferry	30%	75%

Light Electric Vehicles (rounded)	**Baseline 2030**	**Pathway 2030**
VKT (million)	~800	~2350
Fleet Proportion (vkt)	8%	32%

	Trip share		**Mode share by distance**	
Mode (rounded)	**2019**	**2030**	**2019**	**2030**
Walking	11%	22%	1%	3%
Cycling	1%	8%	<1%	5%
Micromobility	<1%	9%	<1%	8%
E-motos, e-mopeds	<1%	4%	<1%	4%
Microcar	<1%	3%	<1%	4%
Train	1%	9%	1%	15%
Bus	3%	13%	3%	12%
Ferry	<1%	1%	<1%	2%
Light Vehicle	83%	32%	94%	47%

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