“SmartTrip” proof-of-concept study

Audience

TCC Commissioners, 12 May 2023, presenter

Summary

- SmartTrip core story
- SmartTrip study results
- Counter-factual: what if no road pricing
- SmartTrip innovation enables financing and funding opportunities
- Where to from here

Appendix:
Study results and observations

SmartTrip core story

- SmartTrip pricing in Tauranga would be viable technically and valuable if the customer value proposition was compelling

- SmartTrip pricing is needed to:
  - Optimise network performance for UFTI outcomes
  - Inform real costs of travel choices, which influences behaviour, which therefore influences network outcomes – and therefore also delivers wider national outcomes
  - Fund UFTI projects that deliver strategic local and national outcomes
  - Get best value from future investments (e.g. PT capex and opex, network improvements)

- Without SmartTrip pricing, or with only congestion charging:
  - LG and CG will continue to be unduly reliant on a public investment model that is not set up to deliver local or national outcomes at best value
  - Delays in striking a “financing and funding deal” will continue to result in social, financial and economic costs locally and nationally (as documented by NZIER, 2022)

- The future national revenue system is a long way off - need pragmatism in next decade or so to enable local pricing solutions that will match local travel demand with supply

SmartTrip study results

Something different is needed to deliver agreed Urban Form + Transport Initiative (UFTI) programme and therefore local and national benefits

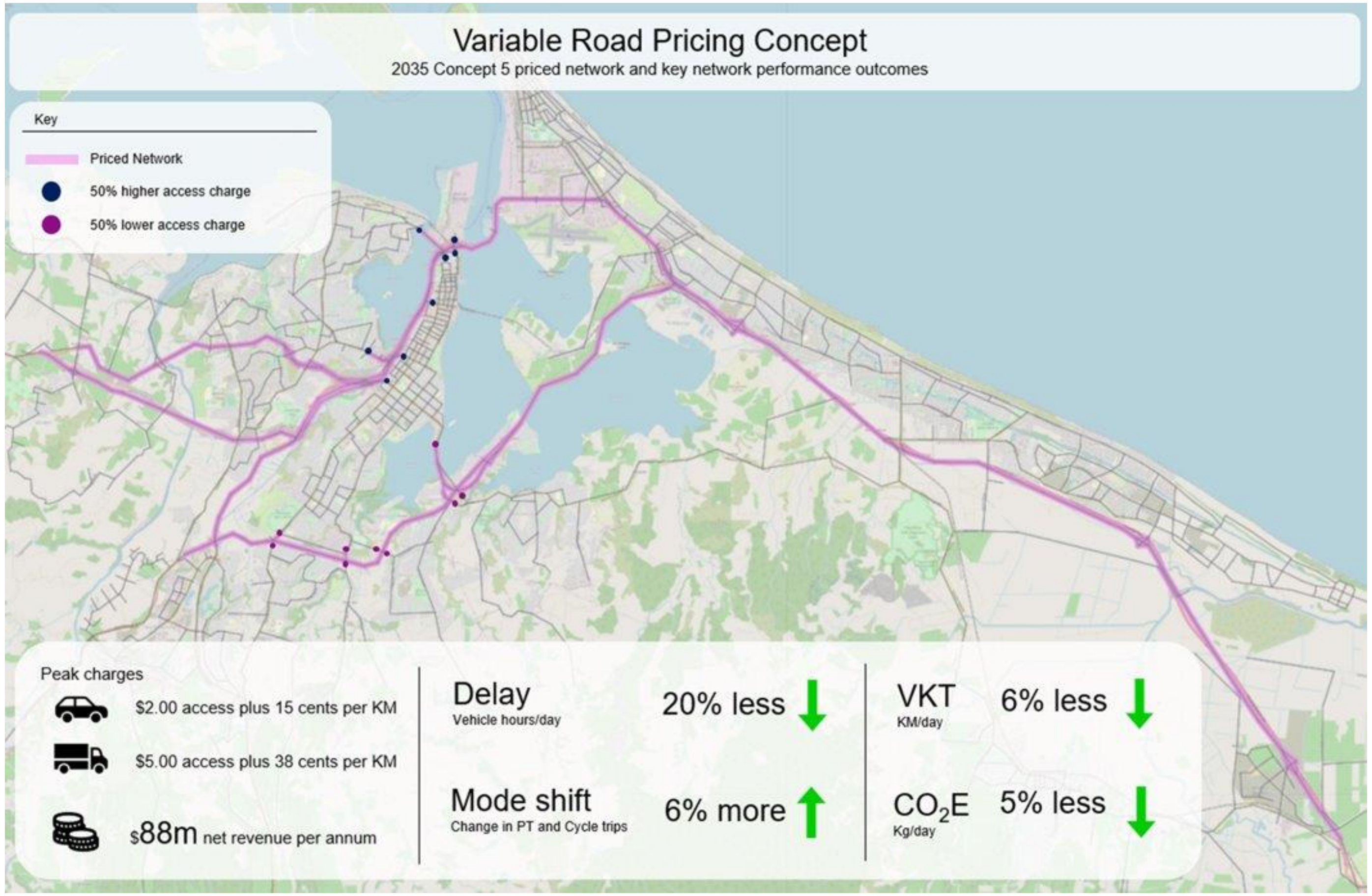
- UFTI being refreshed to include updated evidence and Government urban light vkt reduction direction
- Tauranga cannot deliver transport efficiencies, community wellbeing, accommodate development, and improve urban form quality using current public investment model
    - LG and CG have assumed "someone" will find the local, and national, funds for UFTI land transport projects
    - Investment alone is insufficient to influence travel behaviours to extent needed to deliver national outcomes
    - Markets lack clarity, certainty, and stability of forward work programme
    - Houses, jobs and GDP are supressed (as reported by NZIER)
    - Communities and Councils not confident that can deliver outcomes under BAU policy
    - UFTI land transport improvements planned for coming decades will increase network delays significantly: +55% in 2035, and +63% in 2048 over 2018 baseline year without SmartTrip pricing

SmartTrip pricing can be part of the solution

- Pricing makes transparent real costs of travel choices, which influences behaviour, and therefore local (journey experience and network efficiencies) and national (e.g. reduction in Co2E and light vkt) outcomes
- The proof-of concept study identifies a "20% delay reduction" beyond planned UFTI investments - that's with only moderate prices and limited peak period pricing. What pricing would mean for customers is: increased average speed (circa +6% in 2035, +5% in 2048) and reduced travel time (e.g. circa -12% in 2035, circa -6% in 2048 on Western Corridor)
- Annual net revenue available for investment in local transport solutions - which would unlock land development constraints, improve land transport performance, deliver national climate outcomes
- Indicative National Benefit Cost Ratio: 12-22 (excludes benefits from investing $5.5b SmartTrip net revenue over 40 years into transport solutions)

SmartTrip pricing is not the same as (is more than) congestion charging

- Local network characteristics mean that need pricing beyond relieving "link" constraints and achieve desired shifts in travel modes (to PT, reduce light VKT) while maintaining choice and supporting economic development



Counter-factual: what if no road pricing

If no SmartTrip pricing

- Network performance and customer experiences continue to worsen despite significant investments – e.g. +83 increase in delay by 2048
- Very difficult to reduce Co2E and light vkt, and ensure future quality urban development, without pricing to influence behaviour and therefore demand and therefore outcomes – and pricing to influence demand effectively is not the same as pricing to relieve congested “links”
- Network and service investments will deliver sub-optimal benefits (because pricing improves value of investment package)
- New additional funding solutions will still be needed by local government and central Government – *Council needs use-related, as well as property-based, revenue tools*
- Unable to create sufficient scale and pace of investment to re-set land development model, improve land utilisation, unlock supressed GDP
- Continued supressed urban system performance:
  - Adverse impact on ability to accommodate quality development that provides jobs and houses
    - Unacceptably high house prices because sub-region can’t bring on land supply to meet demand – e.g 25,000 homes linked to 12,500 jobs in Tauriko held up for want of transport capacity on SH29
    - NZIER reports that housing supply constraints (approx. 5,000 houses short in 2021) could lead to foregone GDP of up to $1.609 billion in 10 years
  - The daily congestion impacting quality of life for workers and families
  - Productivity worsening - and logistics delays drives up customer costs
- Inequitable experience on current priced and unpriced corridors - drivers paying a toll 24/7 on Takitimu Drive and TEL to access a congested network, and drivers on unpriced network experience worsening congestion

If Congestion Charging only

- Limited ability to use pricing to manage demand in a way that network performance supports UFTI strategic urban system outcomes
- Toll comes off Takitimu Drive circa 2031 – network and CBD outcomes worsen if can’t maintain 24/7 price on that corridor - and optimise the parallel mass transit (Te Papa peninsula) corridor
- Limited public acceptability – pricing is a fee for an experienced benefit for the pay-as-you-go driver
- Minor contribution to address the funding gap
- SmartTrip pricing is more than congestion charging, and different than revenue tools (such as land rates and levies and Regional Fuel Tax) which have less than minor impact on the level and shape of travel demand

SmartTrip innovation enables financing and funding opportunities

UFTI funding requirements

- More than $2b needed per decade to deliver local and national outcomes – *there is no financing or funding plan in place, and sub-region has exhausted time and money looking for self-help solutions*
- The current scale and pace of funding is: insufficient, uncertain looking forward, and supresses local and national outcomes. The State highway capex programme funding is periodic - in recent years partly financed and paid for locally (e.g. Eastern Link toll road) or Crown funded (e.g. Northern Link stage one)
- Outcomes are not driving central Government responses – *and NZIER reports that every year houses, jobs, and GDP is supressed*
- New additional funding solution needed for Local Government and central Government – *need use-related as well as property revenue tools*
- Shared opportunity to accelerate delivery of the anchor investments to unblock constraints, improve quality of travel choice, improve freight logistics productivity, deliver national Co2E and VKT outcomes

Early thinking about pricing

- Pricing needs to reflect costs of financing local improvements (beyond short or long run marginal social cost to reflect congestion externalities)
- Further work will identify need much higher prices in peak travel times to reduce Co2E and VKT - that would increase significantly the avoided emissions profile, and increase PT Patronage, and result in delivering more Government benefits that would attract Climate Emergency Response Fund (CERF) funding grants

Early thinking about financing assuming SmartTrip pricing

- *Indicative borrowings envelope:* SmartTrip pricing and Crown matching contribution 1:1 - $2.0b finance total. DBC would look at pricing, elasticities and financing
- *Indicative financing options:* Market approach (e.g. concession, sell revenue rights to third party, resulting NPV's of revenue streams provided as upfront for capex OR a public sector approach (e.g. financed by Crown/green fund, supplementary CERF funding pledged if VKT and/or PT patronage milestones met)

Early thinking about funding and financing plan assuming SmartTrip pricing and Government partnership

- Leverage revenue streams to repay financing: SmartTrip pricing and Crown contribution, IFF levy and Development Contributions on land development enabled by SmartTrip pricing
- Crown grants (e.g. CERF) to support ambitious Co2E and VKT reduction, to supplement Regional Council rates (for PT opex and capex), Territorial Authority rates (for road corridor opex), NLTF (State highway opex) and NLTF and FAR rates set to deliver agreed UFTI package and achieve agreed performance metrics
- Integrate local complements and substitutes that interact with pricing (e.g. parking fees, PT fares, corridor regulation)

Borrowings and Crown CERF grants totalling $4.0b could fund anchor enabling infrastructure with national benefits, such as:

  - PT facilities and corridor regeneration to support transformative PT service offering
  - Active travel infrastructure to provide safe travel choices
  - Western Corridor upgrades with PT lanes to shape future development and secure outcomes in Tauriko/Keenan road growth areas (SH29, SH36)
  - Protect Port Access (Hewlett's road)

Where to from here

- Innovative proof-of-concept partnership between local and central government
  - Collaborative implementation planning and delivery model
  - Set the 2024 ten-year LTP with a stable pathway to address underinvestment effectively
  - Shared investment to deliver targeted local and national outcomes

- The demand management and investment policy setting for late 2020s needs to be different than today's
  - Pilot something new and pragmatic to deliver local and national outcomes
  - Enabling rather than prescriptive and restrictive policy (legislation and details such as price setting)
  - Tauranga residents have demonstrated innovation previously:
    - Application of road tolling (first one in 1988, now two State highway toll roads, amended LTMA to transfer Route K)
    - Water metering and volumetric pricing (2002)
    - Spatial planning (SmartGrowth in 2004)

- Support the sub-region if it progresses to next step and engages with communities about an innovative SmartTrip pricing partnership to achieve shared outcomes

- Reduce the ambiguity, uncertainty and costs in the next step: Detailed Business Case – partnership-based, outcome-focused ambition, and urgency to work backwards from implementation

Strategic Benefits

Promote mode shift to public transport, walking and cycling

Promote car sharing trips, work from home, time shift

and encourage higher value trips, pricing off low value discretionary trips, support trip chaining

Reduced carbon emissions

Improved efficiency of the existing and future network

Additional revenue to undertake necessary improvements (without this revenue these other improvements might not be possible)

Study results and observations

Tauranga City

Study results and observations

Summary

- Context
- Study objectives
- Pricing concepts
- Challenges
- SmartTrip is feasible and valuable
- SmartTrip pricing opportunities
- Government opportunities
- Findings
- Costs and revenues
- SmartTrip innovation enables financing and funding opportunities
- Observations

Context

What

- Discussed possibility of a Tauranga road pricing study late 2021

Why

- UFTI investment delivers modest transport choice benefits but **network performance worsens** in 2035 and 2048 scenario years (despite circa $7.5b capex and opex over coming decades) - *and Commissioners are concerned about the current and forecast journey experience of most road users, and the wider economic impact on upper North Island logistics*

- SmartGrowth partners need **additional funding tools** to deliver the horizontal infrastructures and services to deliver UFTI outcomes - *and have spent years and money looking at revenue alternatives to property rates (e.g. KPMG, Mafic, Ascari)*

- Need to **accelerate funding** (e.g. finance and fund the first decade network and service improvements and bring forward SH29 upgrade from second decade) - *as tangible actions and agreed forward plan to deliver UFTI sub-regional outcomes and national benefits*

Study objectives

- Support urban form outcomes (primary outcome)
- Optimisation of the whole transport system, including past investment and the role of each travel mode
- Improve travel time reliability and levels of service
- Raise revenue to invest in local transport solutions
- Incentivise lower carbon emissions
- Incentivise travel choice

*“**SmartGrowth has commissioned sub-regional funding and financing studies to identify options to finance and fund needed horizontal infrastructure**, such as wastewater, potable water and transport networks, and social amenities like the libraries and community centres needed to cater for a growing population. These studies, conducted by KPMG and Mafic in 2021 and 2022, and reviewed by Ascari in 2022, confirm that for the SmartGrowth councils, there are few alternative funding tools that could be used to raise revenue for transport investment.”*

Source SmartTrip context report, May 2022

Pricing concepts

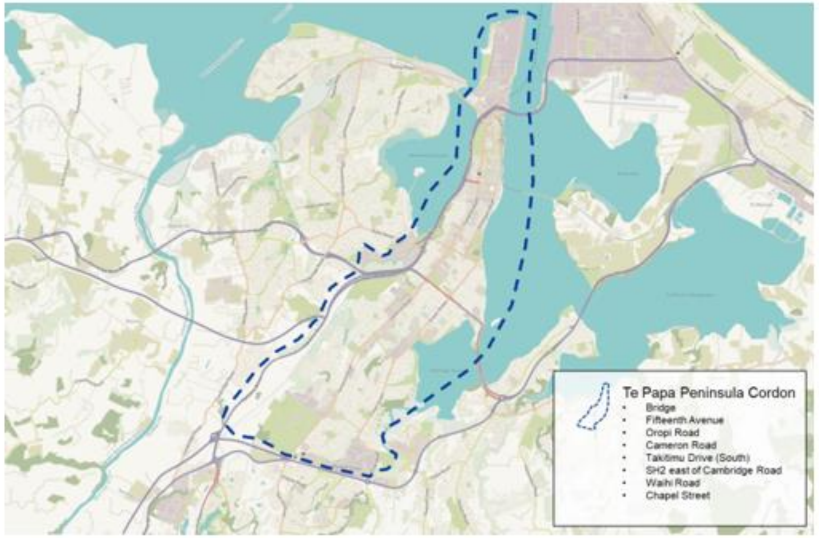
Four preliminary pricing concepts assessed against the study objectives, using six network performance indications:

- VKT. Vehicle Kilometers travelled Average daily vehicle kilometers travelled
- Emissions Carbon dioxide equivalentCO_2E Kg / Day
- Delay. Average Daily vehicle hours of delay: Congested time - free flow time
- Public transport mode share
- Level of service. Proportion of the priced network links at LOS D or better
- Revenue. The amount of net revenue generated

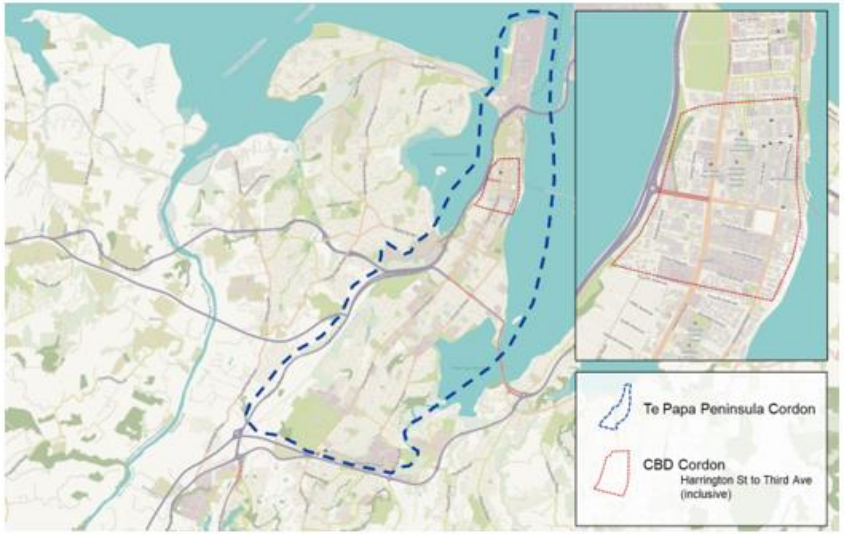
Concept 1. Priced network with an access based charge

Concept 2. Priced network with a distance based charge

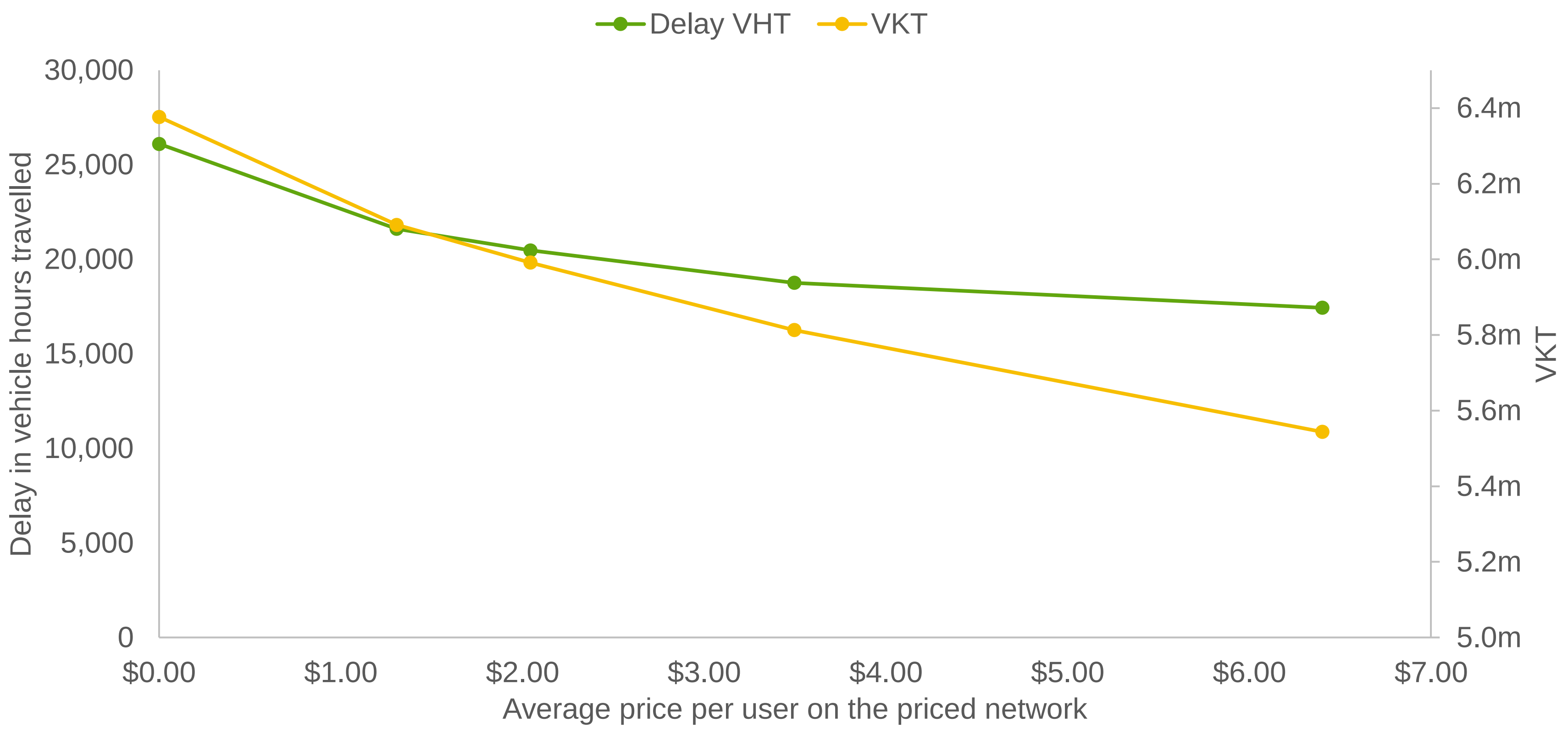
Concept 3. Te Papa Peninsula Cordon



Concept 4. Te Papa Peninsula Cordon + CBD Cordon



Challenges



Trade-off between: price points + travel delay + traffic diversion

Above $2 diminishing delay benefits and significant displacement of private travel, could have a negative trip suppression effect (social wellbeing and economic impacts)

Primary risks

- A primary risk is political motivation to ensure that road pricing is implemented
- A primary risk is public acceptability
- There is only one way to secure the necessary social licence – by:
    - Providing a compelling value proposition to the pay-as-you-go-driver, and
    - Ensuring there are viable and attractive travel alternatives, especially public transport options - which need up-front investment

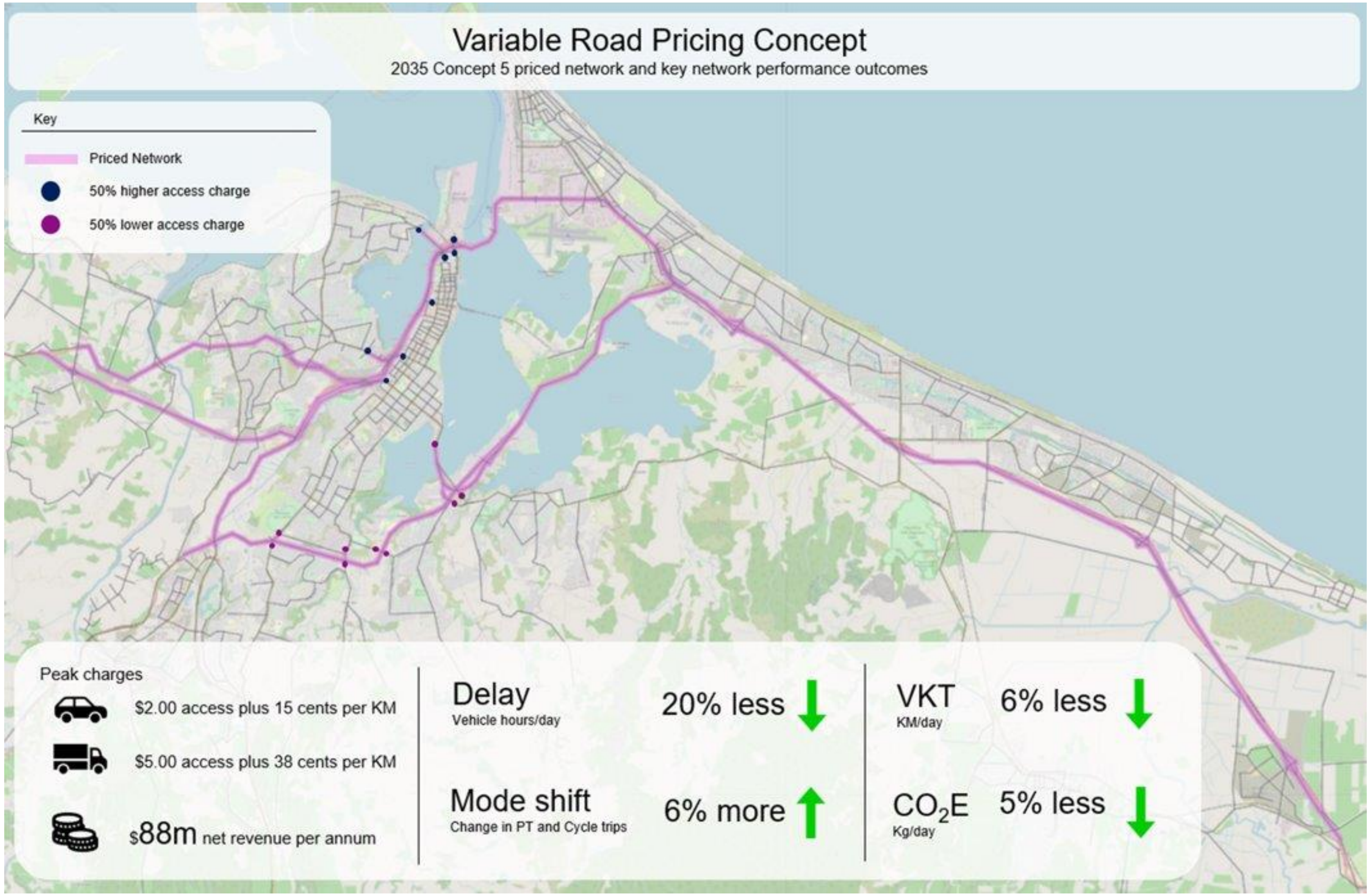
Mitigate and impacts and risks

- Enablers to mitigate risk: clear objectives, smart scheme design, effective communications, investment package
- Mitigate distributional impacts
    - Traffic diversion onto unpriced streets – up to LG to manage
    - Equity of access - LG build mitigation into scheme design
    - Affordability – LG build mitigation into scheme design, CG accountable for any social equity payments

SmartTrip is feasible and valuable

- Supports sub regional and national strategy delivery – influences shape and level of land transport demand to underpin Urban Form and Transport Initiative outcomes
- Viable in small city
- More significant impact on local network performance objectives (such as reduced travel time delay) and national objectives (reduce VKT & CO2E) than most future planned investment combined – *in 2035 and 2048 scenario years*
- Net revenue of circa $100m p.a. in first decade

Caveats: Revenue based on study price points, trip volumes, estimated costs. Mode shift forecasts influenced by legacy behaviours



SmartTrip pricing opportunities

- **Enable and accelerate transport outcomes**
  - Effective network optimisation tool to deliver reduced delay and increased journey time reliability
  - Effective travel demand management intervention
  - Improves the value of transport investments
  - Charges users (beneficiaries) not land owners for improvements - it's a "fee for service"
  - Net revenues can fund some investments needed to deliver Urban Form and Transport Initiative outcomes, including unlock supressed development
  - Additional net revenue above costs would deliver additional transport benefits only available due to pricing, and those benefits would be valued by the driver, and on that basis the net revenue is an economic benefit not a "transfer payment"
- **Enable increased self-help**
  - Local communities already contribute toll tariff revenues to enable national State highway investments
  - Local communities could contribute more funding to local solutions if the deal was fair and compelling VP to communities - rather than everyone in NZ paying (location equity as we all as national allocative efficiency)
- **Enable innovation**
  - Playing forward todays business model with minor changes is not enough to break the:
    - Incremental and ad-hoc investment cycle – something different is needed to achieve sub-regional and national outcomes and unlock supressed urban development (jobs, GDP, housing, wellbeing)
    - Undue and inadequate reliance on private sector to advance and deliver public outcomes (e.g. affordable housing, less VKT and Co2E, wellbeing)
  - Embed variable (adjust regularly) pricing then can consider dynamic (real time) pricing

"NZIER assessed the potential economic impacts of identified housing capacity supply shortfalls. NZIER estimate that with NPS-UD competitiveness margins included it could lead to ***foregone GDP of $436m in three years and $1.609 billion in 10 years….*** *NZIER estimates that the housing market is not in equilibrium at present and there is an* ***existing housing shortage at 2021 which ranges from 4,300 to 5,300 houses.*** *This is in addition to forward estimates of housing shortages." …….This reflects the cumulative population of 14,951 people who could not reside in Tauranga due to this predicted housing shortfall."*

Source: TCC staff strategic advice to Commissioners (A13801002), *September 2022, from NZIER impact of a housing shortage report to TCC August 2022, page 4*

Government opportunities

- Leverage the timing window
- Use SmartTrip as part of a F&F deal to fund Urban Form and Transport Initiative network and service improvements
- Future focused rather than prescriptive and restrictive enabling legislation
  - Adaptable to innovation and disruption over next decade
  - Provide applicants with certainty
  - Outcome focus rather than constraint and risk focus
    - Pricing to achieve outcomes and not just mitigate congested road “links”
    - Pricing to manage level and shape of travel demand and improve urban form
    - Pricing to manage demand and optimise networks for urban system outcomes is not the same as pricing for congestion relief
- Pragmatism over policy purity
  - Have exhausted time and money exploring viability of land-based and other revenue tools - need economic tools that will charge users who are the beneficiaries rather than land owners for the costs of land transport improvements
  - Coming decades may be messy because need short and medium term demand pricing and then adapt local schemes to future revenue system in the longer term
  - Need use economic tool of pricing to manage travel demand for sub-regional and national outcomes - need focus on the “why” mitigating link congestion
  - Use pricing to disrupt and re-set the current public investment and land use development models
  - Long term revenue system is a different topic, and long lead time

Findings

- It is extremely difficult to implement road pricing even if significant value and enabled by legislation - even harder where the PT service offering is limited

- Road pricing can be viable in a small city

- SmartTrip pricing can deliver reduced congestion and improved network performance

- Pricing is shown to have a greater network impact (VKT, CO2E, delay) than most of the future planned network and service improvements combined in 2035 and 2048 scenario years

- The forecast trip distribution impact of price on top of investment is significant decrease in trips between suburbs and a modest increase in trips within suburbs - similar for 2035 and 2048, overall net small trip reduction in shorter trips (due to “access” charge)

- Higher price points than modelled in proof-of-concept would be needed to shift the dial for light VKT and carbon emissions

- SmartTrip would result in increase in local vehicle traffic on local roads (need mitigate undermining intensification and liveability objectives)

- A tangible value proposition to the pay-as-you-go driver would be essential if want to introduce pricing (it's a fee for service)

- Phased approach to a pricing scheme may demonstrate value if start with congested links, but that would lack transaction and funding scale needed to ensure effectiveness over time

Costs and revenues

- Costs and revenues are very sensitive to scheme type, scale and any phasing
- This table includes guestimates of costs, modelled revenue forecasts
- $5.5b net revenue over 40 years - before any funding partnership, or then leveraging that partnership revenue stream for long term financing

	2035	**2048**
Revenues		
Gross	$205m	$310m
Net (less GST, exemptions, discounts, leakages, existing (and assumed TNL) Toll road financial obligations, transaction costs)	**$88m**	**$158m**
Capital		
Roadside facilities (e.g. 95 cameras and supporting infrastructure)	$30m	TBC
System (one-off to adapt current system, continually improve current system for all users)	$5m set up $10m p.a.	$10m p.a.
Operating		
Fully allocated cost transaction charge (e.g. financial, customer, roadside, back office system)	$42m	$44m

Observations

Strategic value of road pricing

- Road pricing is a **powerful intervention**. It has a more significant impact on behaviour, network performance, and transport outcomes than many other (high cost) demand and supply side interventions – and it can provide a new additional local revenue stream for investment in local transport and urban development outcomes, *and the beneficiaries pay for improvements rather than property owners*
- Reduction in VKT requires changes in land use (recognising there will be little change in the medium term because the settlement pattern is in place), and **economic tools** (to nudge behaviour), and traditional travel demand management initiatives
- Pricing as part of an **integrated package** of demand management and network improvements and services would have the greatest impact on VKT reduction

SmartTrip and delivering UFTI outcomes

- Significant **additional funding** is needed to deliver UFTI investments in the horizontal infrastructures required to create the compact urban form that over time can incentivise the required exponential reduction in light VKT in a growing urban centre
- The **funding challenge** to enable the sub-region to thrive would be much greater if there was no SmartTrip pricing
- **Development scale** is needed to: deliver outcomes, improve land use efficiencies, secure future transport footprint, mitigate total costs, charge all beneficiaries (rather than land owners) for improvements, change the (incremental) investment planning model that unduly subsidises the current (incremental land release) development model

Finance and funding

- Maybe need explore **F&F vehicle** to bring forward enabling investments (so could introduce pricing before 2030)

Implementation

- **A phased roll out** to secure social licence and mitigate equity impacts (expand as corridor choices expand) could undermine effectiveness and value proposition (need sufficient revenues to deliver outcomes)
- Integrate networks and **optimise all prices** (e.g. parking, PT fares) and network incentives (e.g. road space allocation)
- Need **invest more in PT** to increase patronage/mode share significantly in Tauranga