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Transport and Infrastructure Committee
Parliament Buildings
Wellington

Dear Mr Chairman and Committee Members,

SUBMISSION TO THE INQUIRY INTO CONGESTION PRICING IN AUCKLAND

1. Thank you for the opportunity to submit to your inquiry. I write to support the introduction of congestion charging in Auckland.

2. I am a New Zealand citizen reading for an honours' degree in economics and computer science at Yale-NUS College in Singapore. Yale-NUS is a highly-selective liberal arts college, formed as a joint venture between Yale University and the National University of Singapore, both of which regularly rank in the top ten universities in the world.

3. My usual place of residence while in New Zealand is in Pukekohe, Auckland. I am a registered elector in the Port Waikato electorate. I am submitting in a personal capacity.

4. In this submission, I will focus on the advantages of a theoretically-optimal congestion charge. Such a system would scale the price paid by road users based on the time, place, and number of kilometres travelled. It might also account for the road-space used by each vehicle.

5. The gold standard which Auckland should adopt is Singapore's next-generation Electronic Road Pricing system, which will use in-car GPS units (like those already produced by New Zealand company EROAD) and dynamic prices set regularly to keep traffic flowing between predetermined optimum speeds[1]. Such prices should be made available through a publicly-accessible website and API, allowing consumers to make informed decisions about their travel plans and apps like Google Maps to include this data in their interfaces.

6. I trust that many other submitters will have already provided the Committee with the strong empirical evidence that congestion charging significantly reduces congestion and

[1] N.b., as the Committee will be aware, the optimum speed on a road is rarely free-flow. The Singaporean Land Transport Authority, for instance, aims to keep speeds on expressways between 45-65 km/h, as compared to the speed limit of 90 km/h.

does so at a price much lower than alternative policies like the construction of public transport networks or new roads. I will not repeat this argument.

7. Instead, I will focus on the other benefits of such a policy. In particular, congestion charging:

   7.1. Is a fairer way of funding infrastructure development than alternatives;

   7.2. Provides crucial signals for infrastructure investment, from both the public and private sectors; and,

   7.3. Is a crucial component of a sensible market-based approach to land use allocation.

8. I will also refute the oft-cited objection that introducing congestion charging is likely to be unfair or ineffective without the existence of an adequate public transport system.

Why Congestion Charging is a Fairer Way to Raise Revenue

9. In this section, I assume that revenue collected by congestion charging will either be used to reduce alternative taxes like RUCs and petrol excise or to fund additional infrastructure investment, which would otherwise be funded by increases in such taxes.

10. As the Committee will be aware, roading infrastructure in New Zealand is typically funded out of five major revenue sources:

    10.1. Road tolls (including those levied on the Auckland Northern Gateway);

    10.2. Road user charges;

    10.3. Fuel taxes (including the national petrol excise and the Auckland regional fuel tax);

    10.4. General local government revenue (including rates levied on land and capital value, development contributions, and uniform annual general charges); and,

    10.5. General central government revenue (including GST, company tax, and income tax revenue).

11. Those five revenue sources are not ordered in terms of their revenue contribution but in order of their alignment with the principle of 'user-pays'. This principle should be at the heart of New Zealand's infrastructure financing policy, because:

    11.1. It is fair that those who receive the benefit of services pay for them where practical. The Committee would not, for instance, hopefully expect that taxpayers who never go to cinema be expected to pay for the tickets of those who do.

11.2. Distributional objectives are better served through the rest of the tax and transfer system, which directly targets people based on their income, rather than their particular consumption choices. We already have, for instance, a progressive income tax system. When we subsidise particular consumption choices, we do not only subsidise them for the poor, we also subsidise them for the rich.

11.3. User-pays systems can ration access to services in proportion to the actual value that consumers place on those services. Queueing – which is the current primary method of rationing access to the road network – provides access to those services based on people's willingness to wait. For those with a high opportunity cost of time, this represents a significant waste of productivity – either because they spend their time in traffic or they choose not to drive, even when it would be most valuable for them to do so.

Congestion Charging as a User-Pays Improvement

12. If the Committee accepts that users-pays should be principle under which infrastructure is funded, then congestion charging is the best way to achieve it. Each of the other revenue sources is a poor approximation. The marginal cost imposed by a consumer using a road does not scale perfectly with:

    12.1. The number of times he uses a particular road (as captured by tolls);

    12.2. The number of kilometres he travels and the tonnage and axle count of his vehicle (as captured by RUCs);

    12.3. The amount of fuel he uses (as captured by fuel taxes);

    12.4. The value of his property or the number of people who live in it (as captured by council revenue sources); or,

    12.5. His income or consumption (as captured by central government revenue sources).

13. Rather, the societal cost imposed by a road user is best understood as the social opportunity cost of him using that road, i.e., what other people miss out on by him using that road. As such,

    13.1. A road user travelling when the road is entirely empty imposes only the marginal cost of traffic law enforcement and increased road maintenance on society (ignoring environmental costs, for which other policy instruments exist), because his use of the road does not diminish the ability of others to use it.

    13.2. By contrast, a road user travelling when there is significant congestion is depriving those who cannot use the road at its full speed because he is on it of the ability to get where they are going quickly.

14. The limited resource each driver is using – road space – is the same in both situations. But, when there is excess demand for the road, the value of that road space is significantly higher. Thus, if the principle of user-pays is that each user of a service should pay for the resources used in providing that service, **congestion charging more effectively lives up to that principle.**

15. Naturally, the marginal cost imposed by each road user does not include the cost of actually constructing the road: Whether he uses it or not, the road would still be there. Nonetheless, in the spirit of user-pays, each road user could additionally be expected to contribute the average cost per vehicle-kilometre of constructing the road. Thus, even with the presence of congestion charging, road user charging or road tolls could still be appropriate.

Congestion Charging as a Distributional Improvement

16. However, even if the Committee prefers to focus on distributional questions, congestion charging represents an improvement over fuel taxes, RUCs, and some local government revenue sources.

17. Fuel taxes are levied on vehicles based on their fuel consumption, rather than the number of kilometres travelled. As the submission by Sam Warburton, formerly of the New Zealand Initiative, to the Finance and Expenditure Committee on the regional fuel tax[2] pointed out, this results in a significantly higher per-kilometre road price for those who drive less efficient cars. This impact will fall hardest on the poor. By contrast, congestion charging, if designed properly, will be levied on a per-kilometre basis – or, at worst, a per-vehicle basis – eliminating this inequity.

18. RUCs charge the same price for driving on all roads in New Zealand. Compared to a neutral congestion charge achieving the same reduction in congestion, this results in a significantly higher road price for relatively-uncongested rural roads. Given the income distribution in New Zealand is significantly in favour of those in urban areas, this is also a more regressive outcome.

19. Similarly, uniform annual general charges levied by local governments do not vary based on the value of the property or the incomes of its residents. This results in a regressive tax which accounts for a higher percentage of income taken from poor residents than from well-off ones. Congestion charges, though still levying a flat rate which does not vary with income, at least vary with driving behaviour. High-income people do tend to drive more than the poor, as pointed out by the previous Minister of Transport when defending the regional fuel tax[3].

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[2] https://www.parliament.nz/resource/en-NZ/52SCFE_EVI_77658_1594/937e32a3265521ecd9c7c8cf6856deeca00d61d7

[3] https://www.stuff.co.nz/business/105081051/transport-minister-reveals-the-impact-of-new-fuel-taxes-critics-dismiss-his-figures

20. Further – and this should be noted as speculative, rather than empirical, analysis – it is likely that drivers at rush-hour, who will bear most of the impacts of congestion charging, are better off than drivers at off-peak hours, who could well be those in shift-work.

21. Naturally, funding sources which derive from progressive taxes like the income tax achieve superior distributive outcomes. Nonetheless, such sources do not serve the rationing purpose of road taxes.

Congestion Charging and Climate Change

22. Some object to congestion charges replacing fuel taxes on the basis that fuel taxes better serve environmental objectives. This should not enter into the Committee's reasoning.

23. Fossil fuel use in transport is already captured by the Emissions Trading Scheme. The ETS has a binding cap on emissions. Adding additional taxes on fuel will not reduce overall CO2-equivalent emissions in New Zealand. It will simply free up credits for use elsewhere, while double-taxing New Zealanders who cannot afford expensive electric cars.

24. If the Committee wishes to reduce emissions, they should recommend the Government purchase NZUs from the ETS[4].

25. As a crucial corollary of the binding cap argument, the Committee should also recommend against the introduction of special rates for environmentally-friendly vehicles in any congestion charging system. Such rates shift the burden of congestion charging onto those in internal combustion engine vehicles, acting in the same fashion as a fuel tax.

Why Congestion Charging Provides Useful Signals for Investment

26. Political decision-making about infrastructure investment is deeply fraught. Much of the problem lies in the difficulty of establishing good cost-benefit analyses of large-scale infrastructure projects. The Committee will be familiar with such problems.

27. A well-functioning congestion charge creates real – rather than shadow – prices for the reduction in congestion created by various transport projects:

    27.1. If the pricing authority – presumably Auckland Transport – set the road price so that traffic flows at the predetermined minimum speed, they have essentially auctioned off road spaces until the number of purchasing users equals the number of available spaces.

[4] Arguments to this effect can be found in Dr Oliver Hartwich of the NZ Initiative's essay "Effective and affordable – Why the ETS is sufficient to deal with the climate emergency".

27.2. This auctioned price would represent the value of travelling on that road at that particular time.

28. The creation of such a price allows transport decision-makers like the Cabinet, NZTA, or Auckland Council to make better decisions about which routes are most in need of investment. Moreover, it provides real economic evidence to investors, like Macquarie's infrastructure funds or the NZ Superannuation Fund, about the value which they could create (and capture) by investing in the creation of infrastructure to reduce traffic on that particular route.

29. Furthermore, the creation of proper road pricing infrastructure would allow for more creative funding structures for infrastructure in the future.

29.1. If road owners could be allocated the revenue earnt from their roads, equity funding (rather than debt or debt-equivalent funding, as has been the present practice for PPP-style initiatives) from the private sector, for instance, could be forthcoming.

29.2. This would allow local and central governments to remove the risk of failed roading projects from their balance sheets and transfer such risks to the private sector.

29.3. This would allow more infrastructure to be built, while maintaining prudent levels of public debt, and ensure that built infrastructure met actual economic needs, rather than simply the political priorities of whomever was in government at the time.

Why Congestion Charging Contributes to Sensible Market-Based Land-Use Planning

30. Many commentators worry about the possibility that the liberal land-use regime necessary to reduce housing costs will lead to either urban sprawl or over-densification and congestion. Congestion charging ensures that this will not be the case. Thus, recommending congestion charging will allow the Committee to play a significant role in alleviating the housing crisis.

31. Congestion charging provides incentives to would-be home-buyers and renters (and thus, the developers and landlords who sell to them) to settle in parts of the city where there is spare road capacity or easy access to alternative modes of transport. The same signals operate for commercial land-users. For instance, trucking firms will be even more likely to choose to locate themselves near uncongested roadways, reducing the dis-amenity of truck congestion to existing residents. This reduces the total quantum of transport investment required.

32. If consumers choose, instead, to settle where there is not spare road capacity and to drive, they will pay for the additional congestion they impose. This will provide the

revenue required to build the infrastructure such new residents require. This ensures that incumbent residents will not be significantly disadvantaged by new development, discouraging them from raising objections to such construction.

33. Pricing such negative externalities will reduce the political cost of increasing the allowable amount of development on any given section, increasing the amount of housing which can be built and alleviating the housing crisis.

34. Further, when increased demand can be handled through pricing rather than construction, this will allow the Council and Government to take a broadly hands-off approach to land use allocation. This will ensure housing is built where land is available and consumers demand it, rather than where powerful lobby groups prefer it to be built.

Why Congestion Charging is Fair and Effective Even Without a World-Class Public Transport System

35. Many commentators have suggested that congestion charging would be either unfair or ineffective in Auckland in the absence of an effective public transport system as a substitute for driving. This should not persuade the Committee.

36. I do not contest that Auckland currently lacks a world-class public transport system. As a city built on volcanic rock which is difficult to tunnel, the construction of such a system will be incredibly expensive. Nonetheless, I commend efforts like the City Rail Link to construct such a system.

37. Nevertheless, even in the absence of such a system, congestion charging will be fair and effective for three reasons:

    37.1. Congestion charging does not rely simply on mode change to reduce congestion;

    37.2. Congestion charging provides both political and economic capital for the development of such a system; and,

    37.3. Even if the Committee believes that introducing congestion charging without a world-class public transport system is unfair, the alternatives are even more unfair.

It's Not Just Mode Change.

38. Not all of the effects of congestion charging are due to consumers switching to alternative modes of transport. For instance, Singapore's very successful Area Licensing System was introduced in the 1970s before the first plans for the city-state's world-renowned metro had even been drawn up. Singapore had only a rudimentary bus

system. Nonetheless, the scheme reduced congestion by more than 40%[5] in the regulated zone.

39. As the Covid-19 pandemic has shown, the economy can be remarkably resilient even in the absence of in-office work. This is partially due to the ability for work to shift spatially. Congestion charging can engender such shifts even without a life-threatening disease in the backdrop.

    39.1. Congestion charging, for instance, encourages the development of residential housing near to workplaces in the central business district. This reduces overall road use without the need for the development of an alternative network.

    39.2. Similarly, by pricing the use of roads, congestion charging also encourages workplaces to move closer to residences, reducing travel times and congestion without the need for alternative services.

    39.3. Further, as Covid-19 has shown, much work can be shifted online. Congestion charging encourages this by making those who go to the office pay for the full social costs of them doing so.

    39.4. Finally, drivers might choose to shift their behaviour closer to home, even for activities beyond work, to reduce their congestion charging liabilities. For instance, they might choose to send their children to schools closer to home or shop for their groceries at the local Pak'N'Save rather than the New World in town.

40. Further, congestion charging – when designed properly – charges different rates depending on the time which one drives. This engenders significant temporal shifts in driving patterns.

    40.1. For instance, firms could choose to start earlier or later to allow their employees to avoid higher congestion charging rates. Making such changes is in the interests of employers because it costlessly boosts their employees' real wages and increases the firm's ability to hire and retain workers. This would shift driving to off-peak periods and reduce congestion, without the need for new services.

    40.2. The same logic applies to non-employment activities. In order to avoid congestion charges, consumers might prefer to book their doctor's appointments or do their supermarket shopping at non-peak times. Not merely does this shift their own behaviour, it also changes the behaviour of the firms which they frequent and the workers those firms hire.

    40.3. Such changes, when aggregated across road users, change the usage of the road network significantly. Rather than a peaky use distribution, which requires the construction of roads sufficient to meet the peaks, road usage will have a more

[5] https://core.ac.uk/download/pdf/6631029.pdf

uniform distribution across time, allowing lower-capacity roads to serve the same number of users.

41. Both temporal and spatial shifts in driving patterns can significantly reduce congestion. None of the mechanisms identified in this section require the creation of new services. They, therefore, offer avenues for fair and effective reductions of congestion due to congestion charging even without a world-class public transport system.

Congestion Charging Creates Political and Economic Capital for Public Transport

42. However, even if the Committee believes that congestion charging is suboptimal without an adequate public transport system, it should still recommend such charging. Only with congestion charging will Auckland Council have the political and economic capital to provide an adequate public transport system.

43. At present, road users do not pay the real economic costs they impose by using roads during peak hours. Therefore, they do not seek alternatives to doing so. By imposing such costs on those road users, many will seek such alternatives. Some of those alternatives may include temporal and spatial shifts outlined above, but others may prefer to travel to the same place at the same time, but on a different mode which is not subject to the congestion charge.

44. If those alternatives are not available, they will demand they become accessible. This will create dual incentives for their creation:

    44.1. There will be a political incentive on Auckland Transport to create and Auckland Council to consent new public transport alternatives to road transport, to accommodate those road users who do not wish to pay the congestion charge.

    44.2. There will be an economic incentive for both Auckland Transport and possible private sector infrastructure investors to create such alternative modes. Unlike the *status quo*, they will be competing on an even playing-field with road modes of transport. They will therefore be able to profit from providing public transport services by earning the difference between their costs of operation and the congestion charge (or whatever slightly-below-congestion-charge-plus-depreciation-and-petrol price they charge).

The Alternatives Are Even Less Fair

45. Congestion charges do not exist in a vacuum. They are substitutes for alternative sources of revenues and ways to reduce traffic demand (e.g., road tolls, fuel taxes, and RUCs). Therefore, congestion charges' fairness in the absence of an adequate public transport system should be compared to those alternatives.

46. All of the alternative revenue sources which charge road users for road use (e.g., tolls, fuel taxes, and RUCs) have the same purported problem of taxing driving while providing no alternative mode.

47. However, the only way not to pay such taxes is either taking public transport or not going where you want to go. However, as noted above, congestion charging also allows you to avoid the tax by driving at a different time or on a less congestion route. Those options are not available in a system funded solely by tolls, fuel taxes, and RUCs.

48. Therefore, if the Committee recommends a shift to congestion charging as a substitute for other road taxes, it will be increasing fairness of the system, even in the absence of an adequate public transport system.

Conclusion

49. Congestion costs the Auckland economy millions of dollars and minutes each year. Plumbers who could previously do four jobs a day can now only do three. Mothers and fathers who could previously spend an hour each day with their children can now only spend 45 minutes. Those are small differences, but they add up – across time and across people.

50. Congestion charging offers a solution to these ills. It provides fairer funding for crucial infrastructure projects, will allow officials to better allocate taxpayer money, and will allow councils to open up more land for much-needed housing. It will be fair and effective even with Auckland's existing public transport system and will provide the necessary political and economic capital for that system to improve.

51. The Committee, if it takes its responsibility to provide quality infrastructure to New Zealanders seriously, should recommend the immediate implementation of congestion charging in Auckland.

52. I am happy to provide oral evidence to the Committee or any clarification as required. Please contact me via the details I have provided to the Secretariat.