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Dedicated to a better Brisbane

13 August 2018

Ms Deborah Jeffrey
Committee Secretary
Transport and Public Works Committee
Parliament House
George Street
BRISBANE QLD 4000
tpwc@parliament.qld.gov.au

Dear Ms Jeffrey

Thank you for the opportunity to provide a submission to the Parliamentary inquiry into Transport Technology. Brisbane City Council's (Council's) submission is enclosed.

Council is currently finalising the Transport Plan for Brisbane – Strategic Directions (Transport Plan) to guide the evolution of Brisbane's transport network over the next 25 years and beyond. The final Transport Plan will be released later this year. A significant part of this Transport Plan is understanding how future technologies will affect how we plan the way our residents and industries move about the city, and the way that these new technologies can be best harnessed to benefit Brisbane.

If you have any questions about Council's submission, please contact Ms Marie Gales, Manager, Transport Planning and Strategy and Congestion Reduction Unit, Brisbane Infrastructure, on [redacted]

Yours sincerely

Colin Jensen
CHIEF EXECUTIVE OFFICER

COUNCIL'S SUBMISSION TO THE QUEENSLAND PARLIAMENT'S INQUIRY INTO TRANSPORT TECHNOLOGY

A) Identifying trends and changes in fuel type usage in the sectors of personal transport, freight transport and public transport, such as the increasing uptake of hybrid and electric vehicles.

As a significant consumer of fuel, the impacts of new fuel types on Council's bus fleet are constantly being evaluated. Whole-of-life costs play a vital role in the decision making for adopting alternative fuel technologies for buses. However, operational reliability cannot be compromised while trying to achieve lower fuel costs and emissions targets.

- A variety of hybrid bus types are being introduced to government fleets around Australia but the larger scale introduction is occurring overseas. It is generally accepted that commercial viability is still to be realised due to the high purchasing cost.
- For many bus fleets, biodiesel is an obvious choice as emissions benefits can be achieved quickly with no modifications. However, rising food demand and special storage requirements make the availability and cost effectiveness of biodiesel not guaranteed in the future.
- Hydrogen fuel cell buses have zero emissions from the vehicle but the extremely high cost makes adoption of this technology unfeasible at present. It will probably be a decade of technology development before hydrogen buses can be seriously considered.
- Electric buses with on-board battery storage provide flexibility without the need for expensive infrastructure to deliver the electricity to the bus. Although the cost of charging stations makes electric buses less attractive, these stations can be used for buses on different routes passing through the same station or depot.
- The emissions benefit that Compressed Natural Gas (CNG) buses had over diesel 10 years ago is no longer present since the introduction of new emissions standards and the development of ultra-low sulphur diesel. CNG buses are approximately 10% more expensive than an equivalent diesel powered bus and the extra fuel infrastructure and regulatory compliance issues negate the fuel saving costs benefits of CNG.

Table 1 summarises the advantages, disadvantages and costs of the various fuel types on a standard 12.5 metre length bus.

Council will continue to consider new fuel types for vehicle and equipment fleet as they become increasingly available, reliable and with a whole-of-life cost that ensures ratepayers' money is well spent.

Table 1 – Cost comparison by fuel type of a standard 12.5 metre bus unit

Fuel types	Hydrogen	Biodiesel	CNG	Hybrid	Electric on-board battery
Advantages	No tailpipe emissions	Can be used with current diesel buses	Low carbon emissions	Low carbon emissions Numerous trials around the world	No tailpipe emissions Less noise
Disadvantages	Very high purchase cost Fuel source and infrastructure still to be developed Early development stages	Fluctuating fuel cost Fuel source still to be developed commercially	High maintenance and regulatory cost	Higher purchase cost Performance uncertainty exists	Electricity charging infrastructure has to be built Battery technology is still a hurdle Electricity generation results in extra emissions Manufacture and disposal of batteries will have an environmental impact
Initial cost	$2,000,000/bus	$450,000/bus	$500,000/bus	$750,000/bus	$750,000/bus $150,000/station

B) Examining the readiness of the transport network for increasing electrification of vehicles in coming years.

Challenges

- The increased usage of Electric Vehicles (EVs) will bring benefits to the community through the reduction of greenhouse gases, transport costs and the support of renewable energy. For Council to provide infrastructure support to encourage the uptake of EVs there are some challenges. As a variety of vehicles with different chargers are currently available there is a risk, as an early installer of charging infrastructure, that the stations will become obsolete in time. Council would also be taking on an additional liability if a vehicle fails to charge or a fire occurs due to a technical fault. As some forms of charging take an extended amount of time, the impacts on the availability of on-street parking spaces could be significant if on-street charging is used.
- As the technology is not yet well understood or taken up by the public, it is possible that developers may be reticent at this stage about including EV charging infrastructure in new developments.
- As demand for traditional fuels reduces, petrol station owners may convert to providing fast EV charging facilities in addition to traditional fuel outlets.

Opportunities

- Council could potentially play a role in encouraging the uptake of EVs through the installation of recharge stations at some Council facilities. Council could also provide onsite solar or grid contracts to provide renewable power. Council currently has public EV charging in King George Square Car Park and for Council fleet vehicles at Council offices.
- Engagement with industry associations will facilitate readiness for new technologies.

C) Identifying other emerging technological factors which will impact on transport networks into the future, such as driver aid technology and 'driverless car' technologies.

At this point, research is inconclusive as to the rate at which Automated Vehicle (AV) technologies will be deployed or adopted in the community. The technological challenges to achieve safe operation in all types of road environments are significant. There is however, general agreement that significant adoption is likely to occur after 2040 and between now and then, local and state governments will need to begin planning as it becomes clear what the implications will be for our community and transport network.

It is likely that AVs will have a substantial price premium over the next one to three decades compared to conventional vehicles, which would suggest a commercial and fleet-based ownership at least initially.

Challenges

- Governments will need to take a strong leadership role to ensure adoption of AVs occurs in such a way that the benefits are maximised. Studies in a number of jurisdictions have shown that if the AV fleet is dominated by personal ownership then the congestion levels may actually increase. Shared fleets and shared mobility may be one way to mitigate against this.
- Additional capacity may be created by the shorter headways (distance between vehicles) AVs can operate with, but greater convenience, access and lower costs may create additional demand regarding any capacity gains.
- In addition, the greater convenience of AVs could reduce public transport use and increase car mode shares, although the magnitude of the changes is highly uncertain.
- A major challenge for congestion management is the advent of the 'zero occupancy vehicle', which will emerge with AVs repositioning around road networks and changing demand patterns across networks.
- AVs will provide non-drivers (elderly people or people with disability) with improved mobility which could also increase the total number of kilometres being travelled. One upper-bound estimate predicts 14% more vehicle kilometres travelled.
- AVs may require line markings and signage to be maintained to a higher standard and with a greater consistency across jurisdictions. Data needs to be exchanged between vehicle infrastructure to standard protocols. However, there is no information from the vehicle manufacturing industry to guide governments towards development of new standards. Road authorities are therefore unsure of the scope of future upgrade programs which will ensure other infrastructure is brought up to new standards in a reasonable timeframe.

- Kerbside allocation may need to change over time as parking needs reduce and demand increases for pick-up/drop-off zones. As a significant amount of the increase may come from people with limited mobility, these drop-off zones will need to have a high level of accessibility.
- Reduced parking needs would lead to a corresponding parking revenue reduction for local governments. Commercial parking operators will need to adapt to these changes to stay viable. Overall reduced demand for parking could also provide areas for redevelopment.
- Cybersecurity will become an issue with AVs. All levels of government will need to agree on the enforcement measures to minimise impact and maintain confidence in the safety of our roads.
- Other risks include hardware and software failures, malicious hacking, increased risk taking (as car occupants believe they are protected).

Opportunities

- It is likely trials and earlier commercial adoption in the United States of America and Europe will provide Australia with valuable information we can use to plan our approach.
- The most obvious benefit of AVs is the increase in safety, however, there will also be significantly improved mobility for seniors, non-drivers and people with disability.
    - Federal and state governments will need to take a strong policy role to ensure that AVs contribute positively to the transport task in Brisbane through a lower total number of vehicle kilometres travelled. Key policy initiatives could include the encouragement of the shared economy, technological innovation and reforms in road pricing.
- AVs could assist in fulfilling the 'last mile' task in public transport where demand cannot justify the provision of bus and rail services. Council is very interested in the results of the Logan Demand Responsive Transport trial to better inform how these services could work.
- EV uptake will reduce revenues from fuel excise and may be a key catalyst to consider alternative means of charging for road use.
- The increase in online shopping is prompting parcel delivery organisations to look at a wide variety of new delivery methods such as out-of-hours delivery robots. While this will be of benefit to consumers, these delivery methods may have impacts on the amenity of neighbourhoods.

D) Examining how technology is affecting employment arrangements in the transport industry, particularly in the food delivery area.

Over time, increasing use of EVs and AVs could result in the reductions of some jobs, including drivers and mechanics.