

ITEM 3 ELECTRIC VEHICLES AND ASSOCIATED CHARGING INFRASTRUCTURE

Australia has a low uptake of Electric Vehicles (EV's) in comparison with other developed nations. Research has identified existing high EV purchase costs (with no current Government subsidies or benefit) and 'range anxiety' as two of the biggest factors contributing to low uptake rates. This is expected to change as the range of EV models increases and prices continue to trend downwards.

In support of the environmental benefits of EV's, Council is investigating the installation of privately managed electric vehicle charging stations on public land and is currently assessing the policy implications of the use of public land for such ventures.

Council has commenced the introduction of hybrid vehicles in the light vehicle fleet, noting that these vehicles have the lowest total emissions ratings of most other vehicles available today inclusive of EV offerings when the source of the charging electricity is included.

This report provides a summary of actions taken to date in relation to low-emission vehicles and EV charging infrastructure and proposed next steps in this journey.

RECOMMENDATIONS

- 1 Council endorse the development of an Electric Vehicle (EV) Charging Stations on Public Land Policy.
- 2 Council note the addition of hybrid and lower-emission vehicles into the Council light vehicle fleet.

REPORT AUTHORISATIONS

Report of: Todd Hopwood, Manager Governance and Customer Service and Chris Stewart, Manager City Strategy
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ATTACHMENTS

There are no attachments for this report.

BACKGROUND

At its meeting held on 31 July, 2017 Council considered a Notice of Motion in relation to electric vehicles and resolved as follows:

- “1 A report come to Council, accompanied by a briefing, on measures available to Council to accelerate the uptake of electric vehicles in the Wollongong Local Government area.
- 2 The report to include the feasibility of electric vehicles replacing some of Council's existing fleet.”

There are 5 existing charging station options available in the Wollongong LGA, none of which are completely accessible on public land. These sites are at the University of Wollongong (1 station Northfields Avenue Keiraville), the UOW Innovation Campus (1 station Squires Way Fairy Meadow), Figtree Grove (2 stations near the up ramp for first floor parking), the Wollongong Central Market St parking station (3 stations – 2 Tesla) and Warrawong Plaza (2 stations near Jax).

In 2018, approximately 2,700 EV were sold in Australia, which represents an 18% increase from the previous year but is still only minor (0.23%) in terms of total worldwide electric vehicle sales which in 2017 exceeded 1.153 million vehicles.

In 2017 the number of electric vehicle charging stations in Australia increased by 64%, and there is now approximately 1 charging station for every 6 vehicles (783 stations now in total). Previously there was a prevalence of the recharging stations in our capital cities but various initiatives have seen this ratio change to almost 50:50 split between city and regional areas.

Despite these changes, there is still 'range anxiety', that is that a driver will run out of charge before they reach a charging station and be left stranded, due to the size of the regional area to be covered in Australia and the communication of where these sites are.

GLOBAL COVENANT OF MAYORS FOR CLIMATE AND ENERGY

Council became a signatory to the Global Covenant of Mayors for Climate and Energy (GCoM) in August 2017 following a resolution of Council. The GCoM is an international alliance of cities and local governments with a shared long-term vision of promoting and supporting voluntary action to combat climate change and move to a low emission, climate resilient society. The GCoM merges the Compact of Mayors and the EU based Covenant of Mayors with 9,174 cities around the world having committed to date.

The GCoM is comprised of two streams; climate change mitigation and climate change adaptation. Transportation emissions account for 19% of community emissions and the provision of EV charging infrastructure would support emissions reductions in this area thereby contributing to climate change mitigation.

PROPOSAL

This report addresses both parts of the previous resolution. Detailed below is a summary of the actions taken thus far and intended future actions in relation to the measures available to Council to accelerate the uptake of EVs in the Wollongong Local Government Area as well as the actions taken to introduce low-emission vehicles into Council's light vehicle fleet.

EV CHARGING STATIONS ON PUBLIC LAND

Council has the opportunity to install charging infrastructure in existing accessible parking locations to assist with the uptake of EVs in the council area.

An important consideration for the supply of EV charging infrastructure is the source of electricity used to charge the batteries. In NSW the majority of power is generated from coal fired power stations, in spite of this, the emissions from EV are still lower than that of petrol/diesel passenger vehicles; with EVs having an average emissions intensity of 160 g CO₂/km when including the consideration of where the re-charging power is generated. This may decrease further as the electricity grid becomes 'greener'.

It is worth noting that Hybrid vehicles generally have much lower volumes of emissions, for example the Toyota Prius, only emits approximately 84g CO₂/km, which is almost half of the emissions of the average EV if it is charged from standard coal fired powered electricity.

The NRMA has embarked on a project for the installation of charging stations in New South Wales based upon radial distances from Sydney in an endeavour to address "range anxiety". The proposed initial skeleton network of the 40 sites did not include Wollongong due to the consideration that Wollongong is too close to Sydney and therefore not aligning with addressing "range anxiety" considerations. The NRMA worked on a range of charging stations every 200km from Sydney, as such Wollongong was considered too close to Sydney to participate in this program.

Conceptually NRMA proposes "Destination Charging" where tourism/extended visits are encouraged with the placement and subsequent use of this regional re-charging network to encourage business interaction. Council continues to engage with the NRMA as they have called for local councils to demonstrate their interest in having a charging station in their local area. The NRMA is committed to further rollouts of EV Charging Infrastructure and Council has expressed its desire to be involved as a potential partner as Wollongong is a popular day trip and short stay destination for many of their members based in Sydney. Acknowledging the fast pace change in this area, Council has also made contact with Australian based EV Charging Infrastructure manufacturers so staff are aware of technical and site requirements of equipment to ensure that this is incorporated into any criteria for potential site selection.

To support the changing motor vehicle market place, and in consideration of the possibility that Council may not be selected to participate in any future stages of the NRMA Electric Vehicle Fast Charging Network, Council is progressing the introduction of additional charging points on council owned land within Wollongong LGA. A policy on charging stations on public land is in the early draft stages and will provide criteria for the provision, installation, management, maintenance and removal of EV charging infrastructure situated on public land.

There are specific requirements for site selection to minimise infrastructure costs, for example the existence of 11kV high voltage power lines. Council will also need to dedicate 2 existing car parking spaces if installing charging units at the locations chosen. This is due to location of charging points on the vehicles being unregulated and they can differ in location depending on the make of vehicle.

The specific locations for these sites requires further investigation in alignment with operational needs and Policy guidelines once developed. It is anticipated that preferable locations will be locations that are attractive/accessible to tourists rather than in areas such as shopping, business districts as people who would generally use those would only be driving short distances and would have the opportunity to charge at home. The policy will identify a number of criteria that will assist in determining suitable locations for charging stations.

The costs associated with installing rapid chargers are anywhere from \$70,000 to \$150,000 per unit, depending on site costs (the unit cost is approximately \$35,000).

It is intended that Council would conduct an Expression of Interest / Tender process to have a third party operator supply, install and manage charging stations located on public land throughout the Wollongong LGA. An EOI / Tender process will commence upon adoption of the EV Charging Stations on Public Land Policy.

EV CHARGING STATIONS ON PRIVATE LAND

Council has limited avenues to encourage the installation of charging stations on private land. Individual consumers can install a slow or trickle charger in a residential property for approximately \$1500 - \$3000. Council can however look at incentives or concessions that can be provided to developers of high density residential or commercial properties to provide EV charging stations within their developments. This is currently being investigated by the City Strategy team.

MOTOR VEHICLE FLEET SELECTION

At this stage in the development and maturity of Battery EVs in Australia, Council has not proposed to implement these types of vehicles within Council's Motor Vehicle fleet until the availability of more affordable "general" market Battery EVs is increased and better infrastructure is available in the Wollongong LGA for the recharging of these vehicles. This decision has also taken into consideration the source of electricity that would be used to charge the batteries of any Council EVs. As Council's electricity supply is still primarily generated from coal fired power stations, hybrid vehicles currently present the lowest emission footprint for Council. This may change if Council moves to procure green energy at a future point.

With the impending arrival on the Australian market of more Hybrid Technology Vehicles, Battery EVs and Hydrogen Powered Vehicles, Council's Vehicle Acquisition Strategy has been re-drafted and adopted to allow for the inclusion of such varying vehicle types to be considered.

There are several Hybrid EVs that are on the Australian Market now that are available under the NSW Government Pre-Qualification scheme for Motor Vehicles (SCM0653). These Hybrid EVs are fuelled by Unleaded Petrol and run Petrol and Electric Motors in synergy. These vehicles are now priced at a minimal initial capital premium to the traditional internal combustion powered equivalents. Toyota manufacture and supply the Prius range of hybrid vehicles and have now included this hybrid technology in less expensive vehicles in their fleet including Corolla, Camry and now the new RAV4 SUV.

Council's Vehicle Acquisition Matrix has included provision of Hybrid Vehicles within Council's Fleet. The Toyota Camry Hybrid has now been included in place of the standard petrol model Camry, the Toyota Corolla Hybrid has been included in place of the standard petrol model. Council is currently trialling the recently released hybrid Toyota RAV4 with a view to introducing it into Council's fleet if the trial results are favourable. Council is already now operating a hybrid Corolla within Council's fleet, with an additional two to be introduced into the fleet in the near future. Council's only dedicated pool vehicle will be replaced soon with a hybrid Toyota Corolla.

The addition of Hybrid EVs to Council's fleet will help Council to reduce its fuel consumption and tailpipe emissions from the motor vehicle fleet whilst still providing capability to provide a range of services to the community.

Council is investigating other low emission technologies and has commenced discussions with Toyota in relation to the trialling of their Mirai Hydrogen Fuel Cell Vehicle. This vehicle has already been tested in Victoria successfully and Council staff attended the Toyota "Insight to the Future" program in May to review this technology and Toyota's other developing low emission products and technologies. Their projections for future transport options include a wide variety of fuel options and vehicle types, depending on user requirements.

FUEL SECURITY

Australia has a significant reliance on imported petroleum fuels, with 90% of petroleum fuels being imported. This dependence leaves our transport networks and national security vulnerable to geopolitical instability.

With electricity generation being based within our country and zero reliance on imports, there is greater potential for Australia to be less vulnerable to fuel security issues (subject to the installation of charging infrastructure being accessible) with the greater uptake of the EV.

There has also been an upswing in the promotion of hydrogen fuel cell technology for fleet applications and also the potential of an export commodity market for hydrogen generation export from Australian resources. Such self-generation of power via hydrogen further reduces Australia's reliance upon international markets and importation of "fuel", and also assists with fuel security and reducing emissions.

In identifying the opportunities for further low emission technologies Council has been in initial discussions with the University of Wollongong (UOW) - Future Fuels Cooperative Research Centre (CRC). This CRC is where six universities are federally funded to research into the pivotal roles alternate fuels will play in a low-carbon emission economy. This is inclusive of fuels such as hydrogen and biogas and liquid derivatives - ammonia and methanol. Council will continue to work with manufacturers, the UOW and other local, state and federal entities to identify opportunities to continue to reduce the overall emissions of Council's light vehicle fleet.

CONSULTATION AND COMMUNICATION

Council staff have consulted with a number of organisations to inform the development of Council's approach in this important area. These include:

- The NRMA in relation to exploring opportunities to participate in their EV charging open road network.
- Toyota Australia to discuss evolving technologies, including fully electric, plug in hybrids, hybrids and Hydrogen vehicles. This has led to the current trial of a Toyota Hybrid RAV 4 in Council's light vehicle fleet.
- UOW - Future Fuels CRC - to determine potential benefits and opportunities arising from current research into future fuel alternatives.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Wollongong 2028 “Goal 1 - We value and protect our natural environment, Goal 2 – We have an innovative and sustainable economy, Goal 6 – We have sustainable, affordable and accessible transport”. It specifically delivery on the following objectives -

Objective 1.2 – We practice sustainable living and reduce our ecological footprint

Objective 2.2 – The regions industry base is diversified

Objective 6.1 – Wollongong is supported by an integrated transported system.

It specifically delivers on the following Strategies and Actions:

Community Strategic Plan	Delivery Program 2018-2021	Operational Plan 2018-19
Strategy	3 Year Action	Operational Plan Actions
1.2.1 Reduce our ecological footprint, working together to minimise the impacts of climate change and reduce waste going to landfill	1.2.1.1 Develop and implement a range of programs that encourage community participation in reducing Wollongong’s ecological footprint	1.2.1.1.1 Coordinate community environmental programs including: Rise and Shine, Clean Up Australia Day, World Environment Day, National Recycling Week, International Composting Week and other waste education activities
	1.2.1.3 Methods to reduce emissions are investigated and utilized.	1.2.1.3.3 Participate in the Global Covenant of Mayors and set emissions reduction targets for the LGA
		1.2.1.3.4 Monitor and report on organizational water, energy and greenhouse gas emissions trends
1.2.2 Government and community work together to mitigate the impacts of climate change on our environment and future generations	1.2.2.1 Our community is proactively engaged in a range of initiatives that improve the sustainability of our environments	1.2.2.1.3 Develop a project and work with partners to further explore the United Nations Sustainable Development Goals and how they align to the community’s goals with funding to be considered through the business proposal process
		1.2.2.1.4 Implement resourced priority actions from the Environmental Sustainability Strategy 2014-22
2.2.1 Further diversify the region’s economy through a focus on new and disruptive industries and green technology	2.2.1.1 The development of renewable energy products and services is supported	2.2.1.1.1 Seek out opportunities to incorporate green technologies in Council’s projects and contracts
6.1.3 Effective and integrated regional transport with a focus on road, bus, rail and freight movement (including the port of Port Kembla)	6.1.3.1 Plan and implement an integrated and sustainable transport network	6.1.3.1.2 Develop a Sustainable Transport Strategy

Reducing greenhouse emissions is also a priority in the Environmental Sustainability Strategy 2014-2022:

- Focus Area 2 - Reducing our ecological footprint – reducing emissions from Council operations.
- Focus Area 5 – demonstrating Sustainable Leadership and Governance – complying with Global Covenant of Mayors requirements, which includes setting emissions reduction targets and developing an action plan to achieve the target.

Ecological Sustainability

The provision of EV charging stations will facilitate the uptake of electric vehicles by providing publicly available charging options within the LGA. This will result in reduced transport emissions (as emissions from EVs with black power are still less than petroleum fuels). The reduction in transport emissions and the provision of hybrid and/or electric vehicles in the fleet will reduce the emissions from Council's own operations and also assist in reaching the community emissions reduction target of the Global Covenant of Mayors for Climate and Energy requirements.

RISK ASSESSMENT

There are a number of potential risks to both installing and not installing EV charging infrastructure.

The risks associated with not installing the charging stations are based upon reputational, cost and environmental concerns. The reputational risk is Council being seen as not supporting environmental infrastructure when surrounding Councils and the NRMA are facilitating the installation of these charging stations on public land.

The risks associated with installing charging stations are predominantly the costs of installing of the infrastructure, costs may have to be solely borne by Council. Future partnerships with external retailers could alleviate such risk/expense. There is additionally a technology risk and financials risks if the EV charging technology becomes redundant and there is a need to remove or replace equipment prior to operational life cycles being fulfilled and full cost recovery has occurred.

FINANCIAL IMPLICATIONS

There are no direct cost implications of the development of an EV Charging Stations on Public Land Policy nor the continued work to reduce the overall emissions of Council's light vehicle fleet which are undertaken using existing resources of the City Strategy and Supply Chain Logistics teams respectively.

If Council progresses to the installation of EV charging stations, this will involve between \$10,000 - \$50,000 of site costs per site, plus at least \$35,000 for the relevant charging infrastructure.

CONCLUSION

There are currently five electric vehicle charging stations that are publicly accessible in the Wollongong LGA, all located on accessible private land. Installing charging infrastructure on public land, with particular focus on areas visited by tourists, would assist to alleviate range anxiety and provide increased public access to charging infrastructure – encouraging engagement of the EV technology.

The continued introduction of low emission technologies within Council's operational fleet via the increased availability of hybrid vehicles and other emerging technologies and variants will reduce Council's emission profile.

It is important for Council to not only introduce technology that provides a community benefit but also provide infrastructure to support the community to transition to low emission alternatives and technologies. This will involve collaboration with industry, government and bodies such as the UOW in investigating all options available and being adaptable and responsive to evolving technologies and markets.