

Charging Ahead: Western Sydney's EV Future Western Sydney Economic Outlook

March 2025

Executive summary

Western Sydney's EV future

In this edition of the Western Sydney outlook, we explore the potential for Western Sydney's Solar and EV future and the positive outcomes which this could produce in the form of a cheaper, cleaner and more efficient method of transport. As of 2024, there are 11,000 EVs in Western Sydney out of 50,000 in Greater Sydney. This number is expected to grow to 371,000 EVs in just six years and we need to be prepared for this paradigm shift.

Solar-powering the EV transition

In order to power the electricity demanded by Western Sydney households, in large part driven by the electrification of transport, we will need to rethink how we source electricity. Fortunately, Western Sydney is naturally well placed to take advantage of abundant energy in the form of rooftop solar. The installed capacity in Western Sydney equates to around the same electricity produced by a nuclear power station and has the potential to produce six-times as much if the full potential of rooftops were utilised. Incentives will also play an important role here to change the behaviour patterns of households to minimise the peak time pressure placed on the grid.

The barriers to EV Uptake in Western Sydney

EV uptake in Western Sydney is lagging behind the rest of Sydney as EVs currently represent less than one percent of the car fleet, compared to almost 9% of vehicles registered in the CBD.

A key barrier is the lack of charging infrastructure as we move further away from the CBD. 30 km away from the CBD, petrol stations still out-number EV chargers two-to-one. Under these circumstances, it's no surprise that the adoption hasn't been as quick as we would like.

With a \$40,000 to \$80,000 public EV charger cost, the 400-charger deficit in Western Sydney could be reversed for around \$12-24 million - a tiny amount in the context of multi-billion-dollar infrastructure investments being made by the NSW government.

The benefits of switching to EVs

Despite these challenges, it's important to remind ourselves of the fundamental reason why we need this transition in the first place, especially for residents of Western Sydney who stand to gain the most. The EV transition will place more money back into the pockets of households. An average Western Sydney household that switches from a petrol car to an EV will see their annual fuel bill drop from over \$3,000 down to less than \$800 in charging costs, saving them over \$2,200 each year. This disparity is even more pronounced when you consider what this means as a share of household incomes.

Not only do the costs to vehicle owners come out to be lower, when you factor in the reduction in Greenhouse Gas emissions, noise pollution, air pollution and soil & water pollution of ICEs compared to zero emissions vehicles (ZEVs), Western Sydney households could reduce the social and environmental cost from vehicle emissions upwards of \$850 each year.

It's clear that the EV transition is well underway and the positive outcomes it will generate for all parties as well as the environment. What is also clear, is that we also need community leaders, businesses and policymakers to support this transition in order to build a greener and cleaner future for Western Sydney. This means support for the cost of adoption of EVs, batteries and solar such as building the infrastructure needed to make owning and operating an EV as easy and reliable as a traditional ICE vehicle.

By taking the necessary steps, we will ensure that all of Sydney's residents are able to partake in one of the most substantive and beneficial transitions of how we move to take place in our lifetimes.



1. Western Sydney's EV future

In the last two years, electric vehicles (EVs) have taken off in Australia. There are now more than 180,000 EVs on Australian roads, a majority of which were purchased in the last two years.² EVs now represent almost 10% of new vehicle sales, as charging infrastructure improves and lower-cost options become more competitive with traditional internal combustion engine vehicles (ICEs). As older cars hit the scrapheap, EVs will increase their share of Australia's vehicle fleet, helping to deliver a cleaner and more efficient transport sector.

This is good news for our environment, cities and wallets. The transport sector represents 20% of NSW's emissions, of which passenger cars represent a significant majority. By the end of the decade, transport is forecast to be, by far, the largest source of emissions, as renewables decarbonise the energy sector.¹ Supporting and accelerating the EV transition will be key to hitting net zero by 2050 and meeting Australia's obligations under the Paris Agreement. More locally, EVs emit substantially less noise, air and water pollution, offering the potential for quieter, cleaner and more pleasant streets.

While these overall trends are positive, headline figures mask large spatial inequalities. Wealthy suburbs in Sydney's East and North have seen substantially greater uptake in EVs than the West. If this pattern continues, people living in the West risk missing out on the benefits of the EV transition. Indeed, Western Sydney has the most to gain from EVs – with more people driving further distances than in the East, significant solar potential at low cost, emissions-free charging and larger hip pocket savings for families.

Figure 1: Projected EV Uptake, Sydney and Western Sydney.



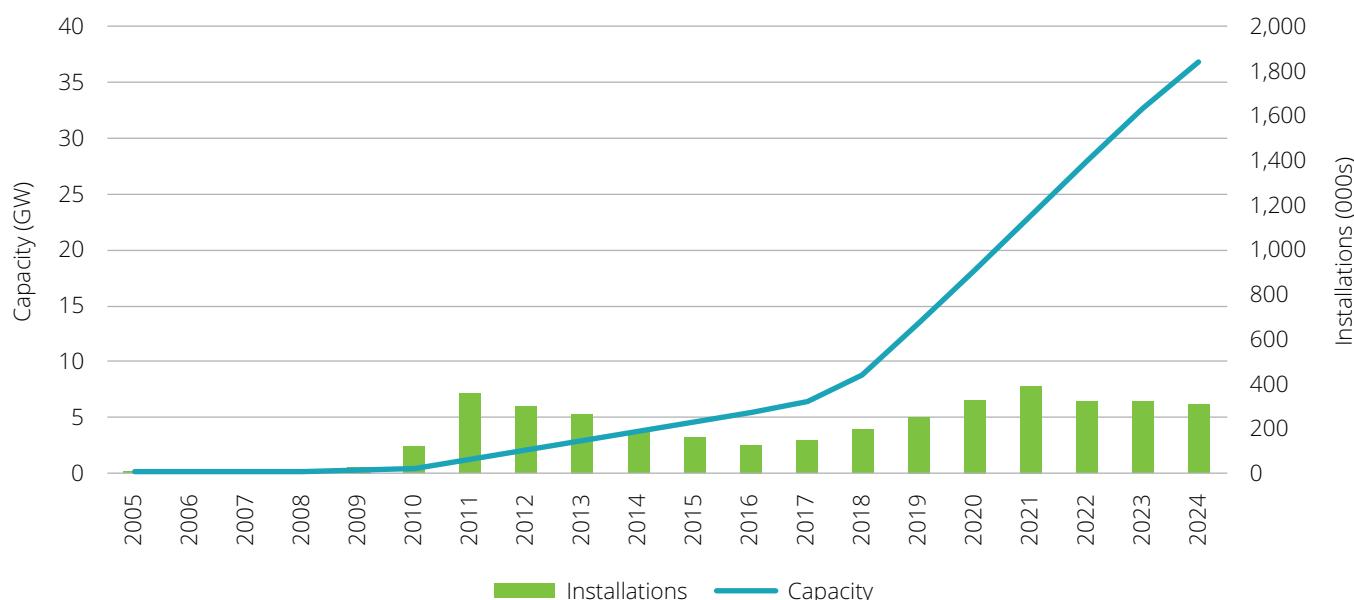
Source: CSIRO EV Uptake Projections (Medium scenario), Deloitte Access Economics

2. Solar-powering the EV transition

There has been considerable uptake of rooftop solar in Western Sydney but we are yet to scratch the surface of the full potential.

Since 2005, Australia's solar capacity has increased from below 10 MW to over 36 GW with over 384,000 solar installations under the Renewable Energy Target (RET) scheme. Installations saw rapid growth between 2010-2013 with larger commercial installations driving the growth in capacity in more recent years.

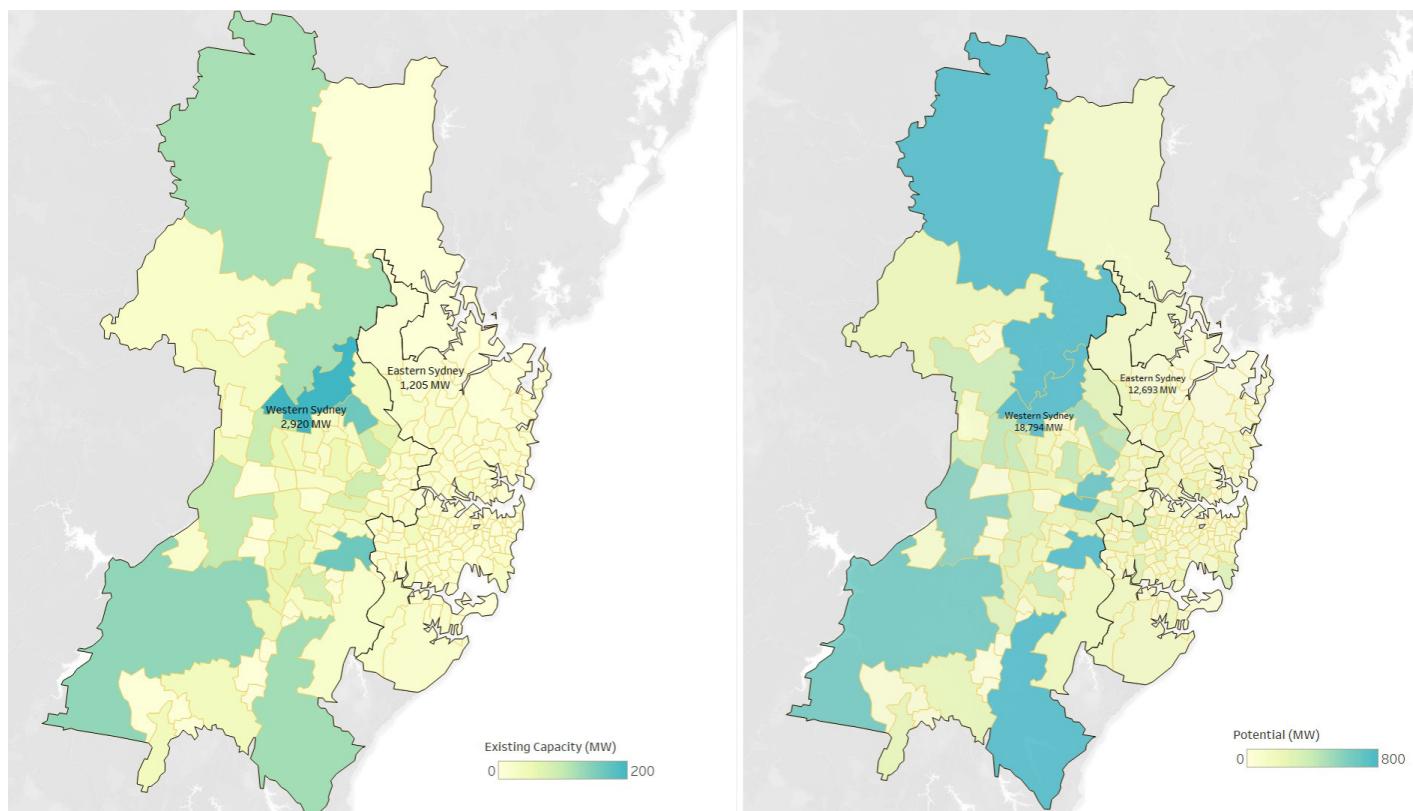
Figure 2: Australian PV capacity and installations since 2005



Source: Australian Photovoltaic Institute

A closer look at Sydney reveals that there has been considerable uptake of rooftop solar throughout, with 4.1 GW of existing capacity, which is 13% of the total potential capacity if all rooftop space was fully utilised. In Western Sydney, the uptake has been above the Greater Sydney average, with almost 3 GW of existing capacity, or 16% of total rooftop solar potential. This is driven in

part by the prevalence of free-standing houses in Western Sydney which increases the viability of solar installations in the region. On a per-capita basis, the uptake in Western Sydney is 0.12 KW per person, which is approximately triple the uptake per person in the rest of Sydney.

Figure 3: Existing (left) and potential (right) capacity for rooftop solar in Sydney by postcode

Source: Australian Photovoltaic Institute, Deloitte Access Economics

At-home charging will significantly ease pressure on the electricity grid which would otherwise be caused by EV uptake

A clear benefit to consumers of owning an EV is the ability to simply plug a vehicle to a wall socket to charge but that would underestimate the importance of at-home charging to ensure that the electricity demands of EVs can be met in a cost-effective and sustainable way. By 2030, there is projected to be 371,000 Battery Electric Vehicles (BEVs) in Western Sydney and 743,000 across Greater Sydney.³

According to the Electric Vehicle Council, a typical passenger EV, driven 12,000 km per year, will consume about 2,000 kWh of electricity per year.⁴ If each EV had a peak time impact of 2 kW per vehicle, this would amount to 741 MW of peak time power demand in Western Sydney by 2030, placing considerable pressure on the grid. This means that rooftop solar will need to play a significant role to meet the future electricity demands of the average household.

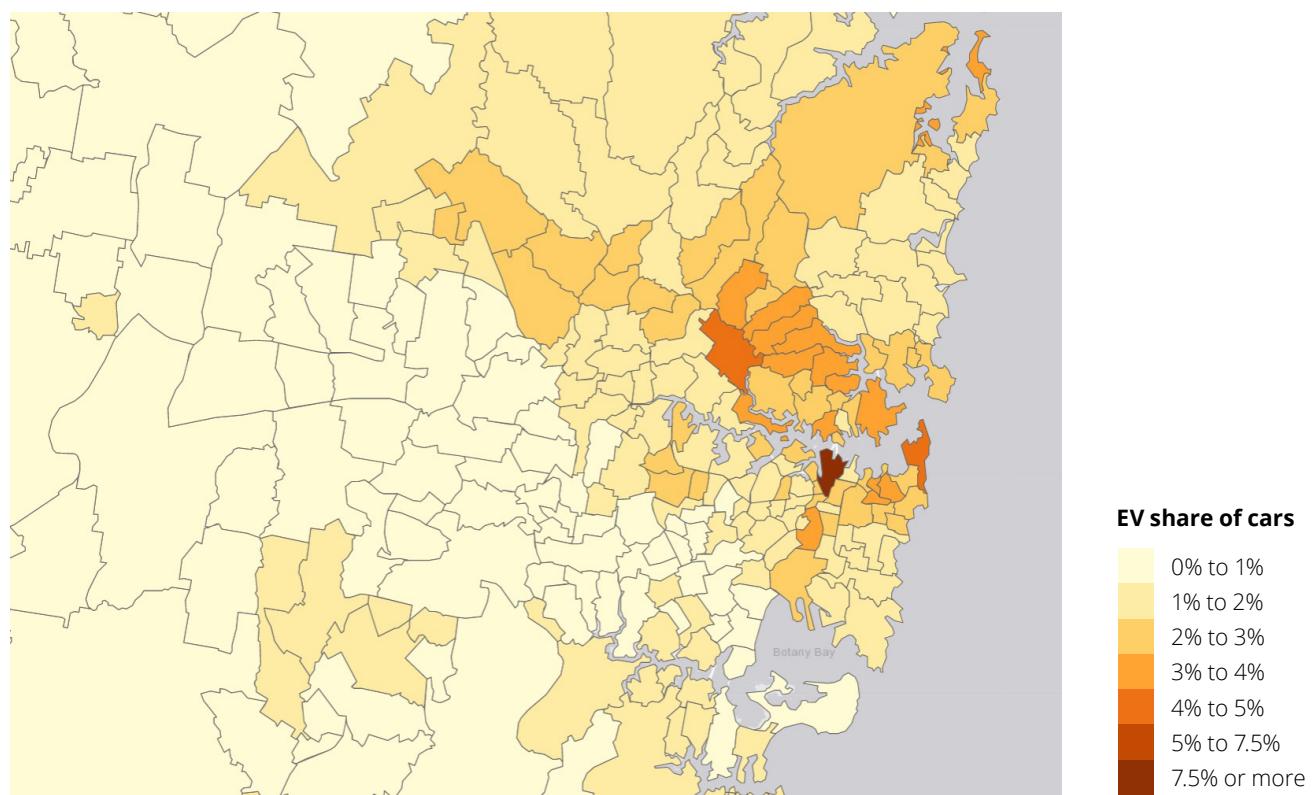
If the current rooftop solar capacity in Western Sydney were left unchanged (~2.9 GW), a quarter would be used to charge Western Sydney EVs during the peak period by 2030, which is approximately equivalent to the electricity produced by a mid-sized nuclear reactor.

In addition to more rooftop solar installation, a way to further address this problem is by altering the behaviour of energy users to reduce their peak-time energy usage. An EV smart charging trial by Origin Energy found that, with no incentives on EV charging time, 30% of EV energy consumption occurred between the peak period between 3pm and 9pm, equal to 400W per EV per hour during the period.⁵ However, with a moderate price incentive of 10c/kWh, this was reduced to 10% or 167W per EV per hour during the peak period. This shows that price incentives are highly influential on residential charging behaviour which provided added assurance that the EV transition in Western Sydney can be achieved in a largely self-sufficient and sustainable way.

The Barriers to EV Update in Western Sydney

EV uptake in Sydney is heavily concentrated in the inner city, Eastern Suburbs and North Shore. In comparison, Western Sydney is lagging behind, with EVs representing less than 1% of the car fleet, with the rapidly-growing South-West having particularly low uptake. By comparison, EVs represent almost 9% of vehicles registered in the CBD and nearly 5% in many suburbs in the North Shore and Eastern Suburbs.

Figure 4: EV Passenger Vehicle Uptake, Sydney, January 2024

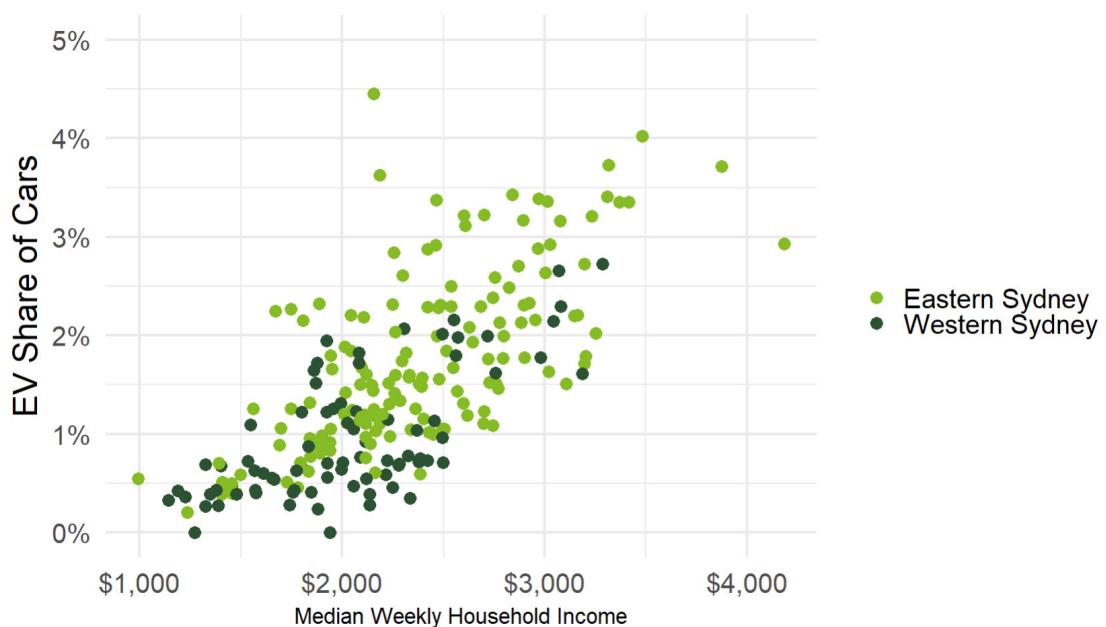


Source: BITRE, Deloitte Access Economics.
Note: EVs exclude hybrids.



There are a range of factors contributing to this differential. Firstly, with lower incomes than households in the East (see appendix), the higher cost of buying a new EV than a comparable new ICEV is a greater barrier in the West. Similarly, with very few EVs on the second-hand market, there aren't many options for people looking for lower-cost options. As a result, the more socioeconomically disadvantaged areas in Sydney, concentrated in the West, see substantially lower rates of EV take-up than the most advantaged areas (figure 5).

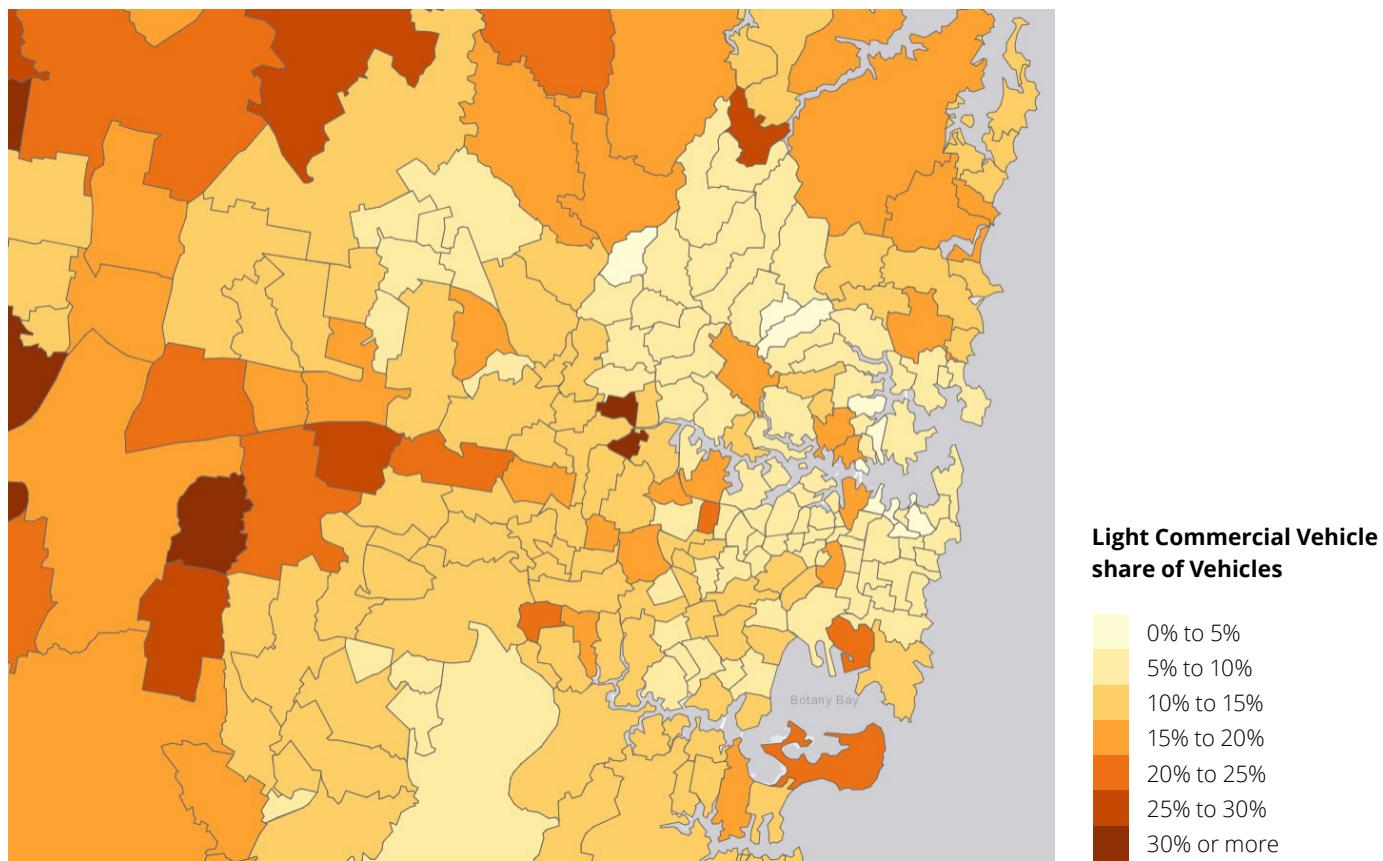
Figure 5: EV uptake by household income, Sydney



Source: BITRE, ABS Census (G02), Deloitte Access Economics

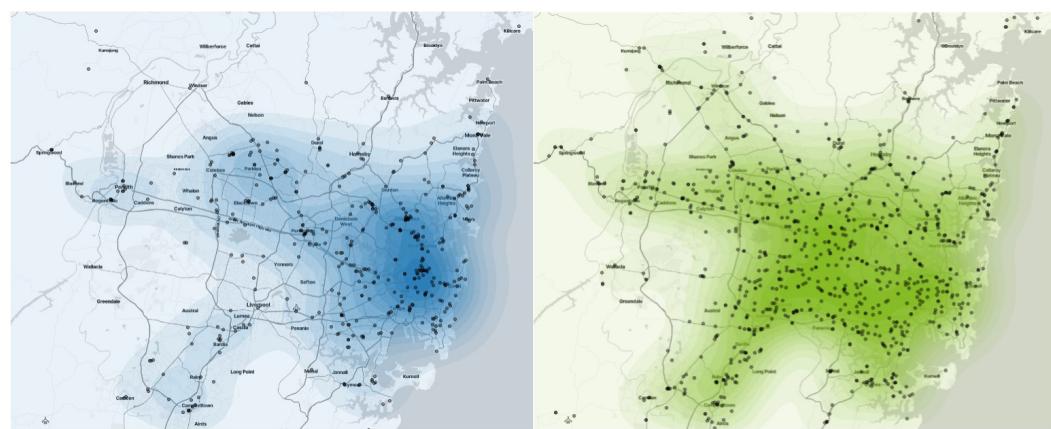
Another key factor in this disparity is a mismatch in the EV models available to the type of models demand in the West. Larger vehicles, including utes and SUVs, are much more common in the West; in some parts of Western Sydney, these vehicles make up more than a quarter of all vehicles on the road. Until this year, there was only one EV ute available in Australia- with a price starting at nearly \$100,000. More affordable and greater variety in EV ute options will be key to uptake in the West. In 2024, several additional models have been launched in Australia, with even more on the horizon. While these models are still priced at the premium end of the market, as technology improves and more manufacturers launch utes in Australia, fierce competition for sales will drive down costs to the consumer.



Figure 6: Light Commercial Vehicle market share, Sydney

Source: BITRE, Deloitte Access Economics.

While the distribution of income and preference for larger vehicles across Sydney is unlikely to change in the near future, the good news is that more controllable factors are also a significant contributor to EV uptake. One such factor is the provision of public EV chargers. While most EV charging happens at home, research has found that public charging facilities serve a major role in encouraging EV uptake by providing a sense of security that drivers won't run out of battery, even when making longer or unplanned trips. Further, public chargers are the only way to charge for the 30% of people without access to charging facilities at home, such as those who don't have a dedicated parking space or where an apartment building has not been retrofitted for EVs.

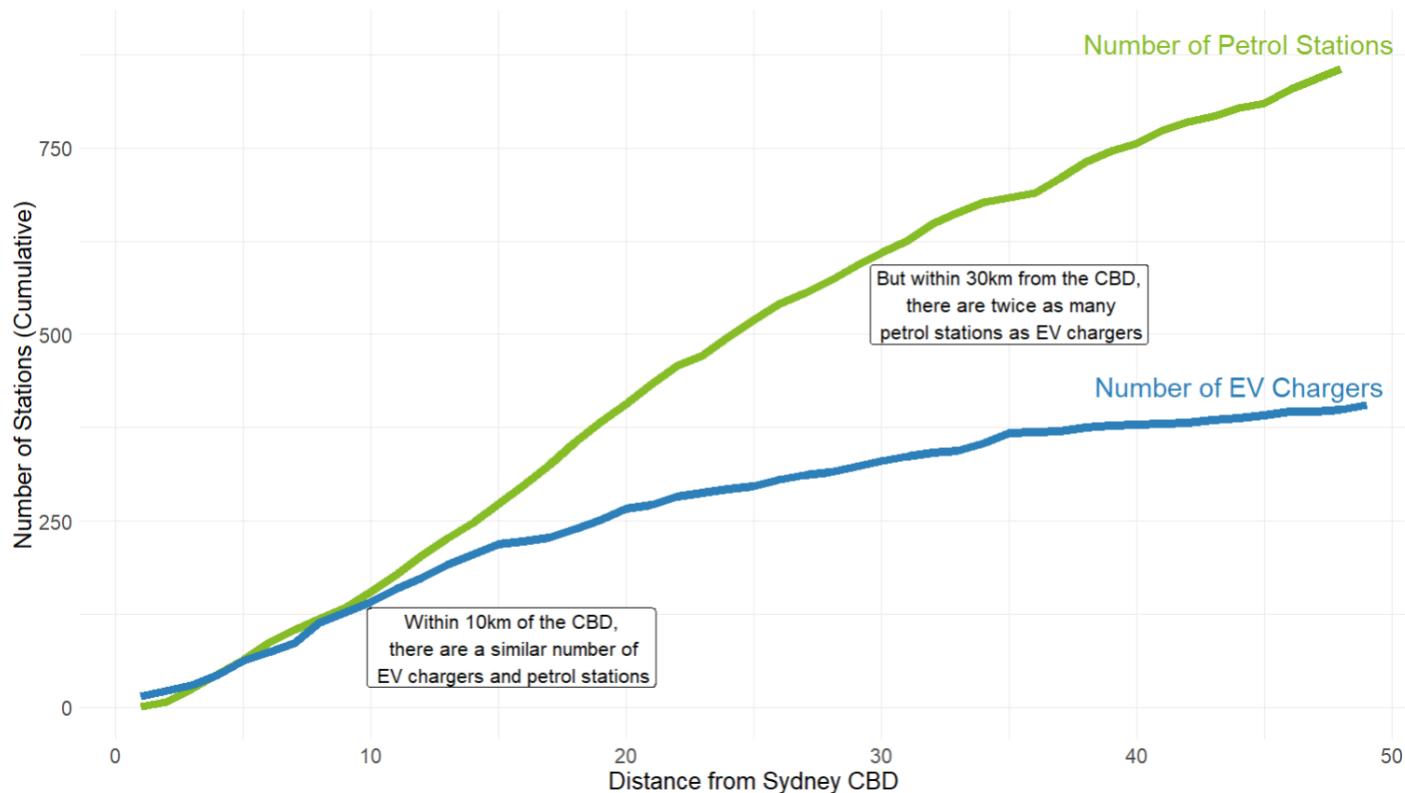
Figure 7: EV Chargers (left) and Petrol Stations (right) in Sydney

Source: Deloitte Access Economics analysis of Google Places data

Unfortunately, Western Sydney is falling well behind the rest of the city when it comes to public charging facilities. Unlike petrol stations, which are evenly distributed across Sydney, EV chargers are heavily concentrated in the CBD and inner suburbs, while the West and South-West are home to very few chargers.

Put another way, within 10km of Circular Quay, there's a similar number of public EV chargers and petrol stations - around 125 of each. However, within 30 kilometres of the CBD, there's twice as many petrol stations as EV chargers, and almost no chargers located 40-50km from the city- a range that includes rapidly growing areas like Penrith and Campbelltown.

Figure 8: Public EV chargers and petrol stations by distance to the CBD.



Source: Deloitte Access Economics analysis of Google Places data

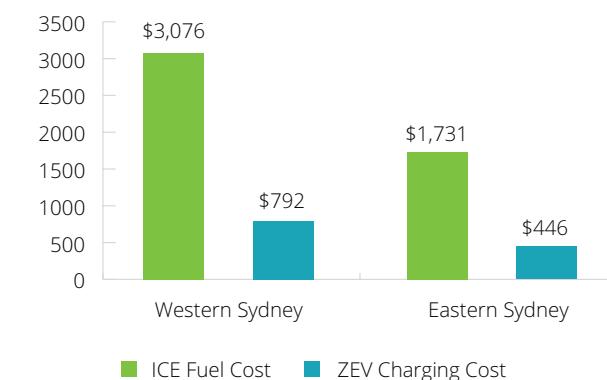
Extending the progress made in the inner city to the middle and outer suburbs will be key to encouraging EV uptake. Fortunately, this is a relatively low-cost investment. Each public EV charger costs around \$40,000 to \$80,000 to install, and when installed, can be operationally cost-neutral or run to generate revenue.⁶

At these costs, the 400-charger deficit in Western Sydney could be reversed for around \$12-24 million - a tiny amount in the context of multi-billion-dollar infrastructure investments being made by the NSW government.

3. The benefits of switching to EVs

While behind in uptake, the West stands to gain the most from the EV transition. With larger distances, lower density and fewer public transport options than the East, Western Sydney households are more reliant on cars to get around; on average driving almost 5,000 kilometres further each year than the average households in the East. As a result, Western Sydney households currently spend \$1,300 more on fuel each year- despite having significantly lower incomes.

Figure 9: Annual average household expenditure on fuel and charging in Western Sydney vs Eastern Sydney



The EV transition can help to alleviate this inequality. On average, charging an EV costs around a third of the equivalent cost to run an ICEV car- \$4.20/100km.^{7,8} An average Eastern Sydney household that switches from a petrol car to an EV will see their annual fuel bill drop from over \$1,700 down to less than \$450 in charging costs, saving them about \$1,350 per year. Meanwhile, in Western Sydney, these potential savings are even more significant. An average Western Sydney household that switches from a petrol car to an EV will see their annual fuel bill drop from over \$3,000 down to less than \$800 in charging costs, saving them over \$2,200 each year.

If all Western Sydney households make the EV switch, we estimate that the savings could reach as high as \$1.5 billion each year- money that can be saved, used to ease cost of living pressures or injected back into the local economy, whilst reducing the emissions impact on NSW.

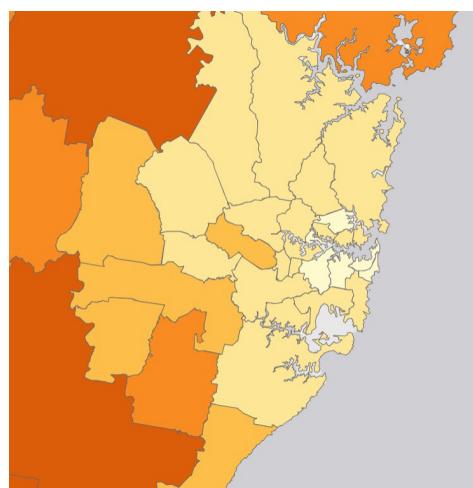
Figure 10: Proportional increase in household spending on fuel and convenience since July 2020 in Western Sydney compared with Eastern Sydney.⁹



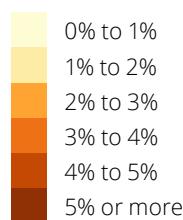
Source: Mastercard SpendingPulseTM, Deloitte Access Economics analysis.

Analysis of this data shows that there is a distinct spatial difference in fuel spend between East and West in Sydney. Since 2020, Western Sydney households have consistently spent at least 10% and up to over 25% more on fuel than Eastern Sydney households (figure 10). This trend has persisted despite the volatility of fuel prices and the effects of the pandemic on travel, highlighting the increased savings that Western Sydney households stand to gain by making the EV switch and reducing their expenditure on fuel.¹⁰

Figure 11: Proportion of household income spent on petrol by LGA.



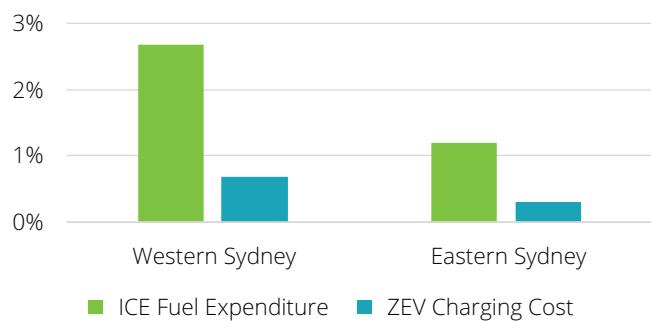
Proportion of income spent on fuel



Source: TfNSW, ABS census, Deloitte Access Economics

The savings for a Western Sydney household switching to an EV are even more significant when looking at them as a proportion of income. The average Western Sydney household spends over 2.6% of their income on fuel. By switching to EVs, the cost of charging would make up just 0.7% of their household income, putting almost 2% of household income back into their pockets. Their Eastern Sydney counterparts would save under 0.9% of their respective household income.

Figure 11: Fuel and EV charging costs as % of household income



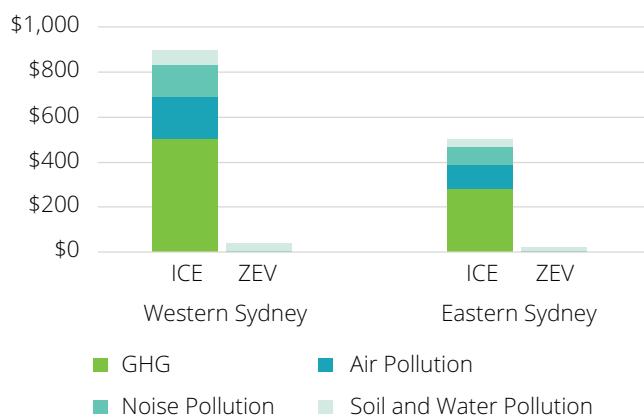
Source: TfNSW, ABS census, Deloitte Access Economics

For households that can use solar to charge their car, the savings are even more significant. An average Western Sydney household that uses their rooftop solar to charge their car, can expect to save over \$500 on their EV charging costs each year, and over \$2,800 in fuel costs.¹¹

Given their reliance on the car and further driving distances, Western Sydney residents switching to EVs have the potential to play a large role in the transition to net zero. Passenger cars and light commercial vehicles made up 10% of Australia's total emissions in 2022.¹¹ Swapping out ICE vehicles for EVs is the fastest way to reduce emissions caused by passenger cars. ICE vehicles are also responsible for other air pollution, noise pollution and soil and water pollution.

For an average Eastern Sydney household, switching to an EV would decrease these costs by almost \$500. Switching to an EV would see Western Sydney households create even more benefits, over \$850 each year. This is largely driven by a \$505 reduction in greenhouse gas emissions externalities and a \$182 decrease in air pollution costs caused by driving.

Figure 12: Externality costs for ICE and EVs in Western and Eastern Sydney



Source: TfNSW, Deloitte Access Economics



4. Conclusion and recommendations

There is a clear incentive for households and governments to make the switch to the solar-powered EV future, particularly in the car-reliant Western Sydney region and this incentive is projected to materialise in a rapid uptake over the next decade.

Alongside the transition, we will also need to look toward more sustainable ways to meet the growing electricity demand from Western Sydney households and to meet this challenge, the extensive potential capacity for solar on Western Sydney roofs will play a critical role.

As charging infrastructure becomes more accessible, the purchase cost of EVs declines and the existing vehicle fleet continues to age, this EV future will increasingly be realised. However, these barriers will need to be addressed to ensure the transition is smooth and everyone is able to participate.

In order to realise this future, there are a few things we will need to get right,

 Support local governments and private providers in Western Sydney to deliver charging infrastructure.

 Support Western Sydney households with lower incomes to be able to purchase an EV and install solar in their homes.

 Develop the electricity generation capabilities of Western Sydney to optimally utilise its valuable rooftop space.

 Provide the incentives needed to ensure that peak-time electricity demand meets the needs of the EV transition without placing undue pressure on the grid.

Decisions made today will have a long-lasting impact on Western Sydney's EV future. Every new ICEV sold today will likely remain on Australian roads for 20 years, delaying the carbon transition, locking drivers into greater operating costs and inflicting noise, air and water pollution on the communities of Western Sydney. Accelerating the transition will require investment in public and at-home charging infrastructure, as well as properly incentivising potential car buyers to consider EVs. If we are able to accelerate this transition, we can secure a cleaner, cheaper and more sustainable future for Western Sydney.



Appendix A - Key Economic Statistics

Table A1: Key economic forecasts

	Western Sydney			Rest of Sydney		
	2024 Historical	2029 Forecast	2034 Forecast	2024 Historical	2029 Forecast	2034 Forecast
Regional GDP (\$b)	191.1	210.2	236.1	417.1	463.5	526.1
per employee (\$)	169,776	168,197	169,497	250,700	260,503	284,591
per capita (\$)	92,107	94,321	99,091	135,553	143,138	154,762
Employment (000s)	1,126	1,250	1,393	1,664	1,779	1,849
Population (000s)	2,075	2,229	2,383	3,077	3,238	3,400

Source: Deloitte estimates based on DAE Business Outlook, ABS Regional Population, NSC SALM

Table A2: Key Census statistics

	Western Sydney		Rest of Sydney	
	2016	2021	2016	2021
Number of people who speak a language other than English at home	750,125	933,457	1,340,772	1,415,267
	43.0%	46.6%	56.8%	55.6%
Number of people who were born overseas	626,354	776,473	1,098,986	1,188,881
	38.1%	40.7%	42.7%	43.1%
Number of people with at least a bachelor's degree	288,539	416,276	785,075	956,335
	17%	20.8%	29%	33.2%
Number of households who spend more than 30% of their income on mortgage repayments	47,376	42,451	54,372	38,853
	24.6%	19.5%	25.8%	18.9%
Number of people in the labour force who are employed	790,025	878,781	1,343,077	1,401,054
	6.7%	5.4%	5.6%	4.9%
Number of females in the labour force who are employed	364,083	417,210	636,172	679,604
	7.1%	5.3%	5.6%	4.5%

Source: Deloitte estimated based on ABS Census data

Table A3: Key transport statistics

	Western Sydney			Rest of Sydney		
	2018/19	2019/20	2022/23	2018/19	2019/20	2022/23
Number of trips made by car (000s)	3,487	3,600	3,746	5,179	5,103	4,691
	47%	47%	53%	36%	35%	42%
Number of trips made by public transport (000s)	648	672	477	1,556	1,700	1,126
	9%	9%	7%	11%	12%	10%
Number of trips made by walking (000s)	1,546	1,586	1,523	5,242	5,465	4,089
	21%	21%	21%	36%	37%	37%

Source: Deloitte estimates based on ABS Household Travel Survey data

Table A4: Key economic statistics by Western Sydney LGA, 2024

Local Government Area (LGA)	Regional GDP (\$b)	Regional GDP per employee (\$)	Regional GDP per capita (\$)	Employment* (000s)	Population* (000s)
Western Sydney					
Blue Mountains	3.4	78,655	42,994	43.4	79.5
Camden	7.0	88,696	57,845	78.9	121.0
Campbelltown	11.1	123,575	62,279	89.9	178.4
Hawkesbury	7.1	180,940	103,804	39.4	68.6
Penrith	16.4	129,061	73,759	127.1	222.3
Fairfield	13.4	159,645	62,081	83.6	215.1
Liverpool	15.7	127,157	64,024	123.6	245.5
Wollondilly	36.5	1,110,671	640,854	32.8	56.9
Blacktown	26.7	115,693	64,398	231.1	415.1
Parramatta	35.5	221,479	129,589	160.2	273.9
The Hills Shire	18.3	158,299	92,127	115.7	198.8
Western Sydney	191.1	169,776	92,107	1,126	2,075
Rest of Sydney	417.1	250,700	135,553	1,664	3,077
Greater Sydney	608.2	218,042	118,055	2,789	5,152

Source: Deloitte estimates based on DAE Business Outlook, ABS Regional Population, NSC SALM

Endnotes

- 1 EV Council (2023), Australian Electric Vehicle Industry Recap, <https://electricvehiclecouncil.com.au/wp-content/uploads/2024/03/EVG-Australian-EV-Industry-Recap-2023.pdf>
- 2 EPA, Greenhouse Gas Emissions, <https://www.soe.epa.nsw.gov.au/all-themes/climate-and-air/greenhouse-gas-emissions>
- 3 CSIRO (2021), EV Uptake Projections, <https://agdataservice.csiro.au/ev-uptake-projections>
- 4 Electric Vehicle Council, How much electricity does charging an electric vehicle consume compared to typical household usage?, <https://electricvehiclecouncil.com.au/docs/how-much-electricity-does-charging-an-electric-vehicle-consume-compared-to-typical-household-usage/#:~:text=The%20amount%20of%20electricity%20consumed,kWh%20of%20electricity%20per%20year>
- 5 Arena (2022), Origin Energy electric vehicles smart charging trial, <https://arena.gov.au/assets/2022/05/origin-energy-electric-vehicles-smart-charging-trial-lessons-learnt-2.pdf>
- 6 NSW Climate and Energy Action, Kerbside Convenience: Councils lead the way with public EV charging infrastructure, <https://www.energy.nsw.gov.au/business-and-industry/programs-grants-and-schemes/electric-vehicles/council-kerbside>
- 7 Australian Taxation Office, New EV home charging rate, <https://www.ato.gov.au/tax-and-super-professionals/for-tax-professionals/tax-professionals-newsroom/new-ev-home-charging-rate>
- 8 Transport for NSW Economic Parameter Values <https://www.transport.nsw.gov.au/system/files/media/documents/2024/TfNSW%20Economic%20Parameter%20Values%202023.2%2C%20September%202023.pdf>
- 9 For the analysis in figure 10 Deloitte Access Economics has drawn on unique data from our partnership with Mastercard. This data allows for insights into the Australian economy and business conditions across various sectors. The data is sourced from Mastercard SpendingPulseTM which is a microeconomic indicator of retail sales based on actual, near real-time spend data across various sectors and all payment types. This data source provides a unique view of daily online and in-store sales estimates and forecasts at the national, regional, and local level.
- 10 With a feed in tariff average of 8c per kWh
- 11 Department of Climate Change, Energy, the Environment and Water, Reducing transport emissions, Reducing transport emissions, <https://www.dcceew.gov.au/energy/transport#:~:text=In%202022%20our%20transport%20sector,source%20of%20emissions%20by%202030>

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