Network Electric Vehicles Tactical Plan

Edition 2 – 2023

12 May 2023

ERGON ENERGY NETWORK | energex

Part of Energy Queensland

Part of Energy Queensland

Network Electric Vehicles Tactical Plan 2023

CONTENTS

Purpose, Vision and Scope 3

Abbreviations, Acronyms and Initialisms 4

The last two years 5

Current market analysis 6

Overview of tactics 7

13 EV tactics 9

- Tactic 1 — Implement mechanisms to identify EV charging clusters and analyse charging profiles 9
- Tactic 2 — Enhance network monitoring in areas of high EV penetration and integrate insights into strategic network planning 10
- Tactic 3 — Develop an EV data ecosystem 11
- Tactic 4 — Explore and articulate the challenges of EV charging in fringe-of-grid and isolated communities 12
- Tactic 5 — Evolve public charging station network connection processes 13
- Tactic 6 — Understand and respond to the charging needs of EV customer groups 14
- Tactic 7 — Support Vehicle-to-Grid, particularly as an element of climate resilience 15
- Tactic 8 — Support the electrification of fleets, from motorcycles to buses 16
- Tactic 9 — Evolve EV-related connection standards, spanning residential to public charging stations 17
- Tactic 10 — Deploy a Network EV Stakeholder Engagement and Communications Plan 18
- Tactic 11 — Support Energy Queensland's pursuit of an EV leadership position 19
- Tactic 12 — Support existing and future network tariffs relevant to EV owners 20
- Tactic 13 — Engage with EV salespeople, EVSE installers and owners about EV charging options 21

Overview of completed tactics 22

Network Electric Vehicles Tactical Plan 2023

PURPOSE, VISION AND SCOPE

There is an inevitability about the future of EVs, globally and in Queensland. The main uncertainties are around the speed of the transition to near-100% electric, or at least zero emissions, vehicles, and the impact of that on the electricity supply chain, especially distribution networks.

The key purpose of this plan is to articulate and integrate our highest-priority, no-regret actions over the next one to two years to ensure we have a structured and agreed path to prepare for the impact, and opportunities, of EV charging.

Our vision is to build on our network business's long history in implementing well-accepted demand management programs to guide and enable our customers' EV charging priorities related to affordability, convenience, safety, the environment and other factors.

We have moved through our initial research and data-gathering phase and are leveraging those insights to implement smart charging, data integration and analysis, network monitoring and related projects that will provide additional real-world knowledge to inform our policies, approaches and initiatives.

The 13 tactics do not form an exhaustive list of current and potential EV initiatives by the network business. As defined by our (internal) Network Electric Vehicles Strategy, this Tactical Plan will be revised within one year of release and tactics defined as completed or reframed, and new tactics added to address emerging issues.

We have shared this plan, and the previous version, freely in pursuit of encouraging other Distribution Network Service Providers (DNSPs) and other entities to develop, and ideally publish, their own EV-related plans. With more visibility of each other's projects, collaboration and knowledge-sharing opportunities can be more easily identified and maximised.

In the context of this document, references to 'our network business' cover Energex and Ergon Energy Network and relevant corporate support functions.

Whole-of-business actions such as increasing the number of EVs in our own fleet and exploring the issues associated with the electrification of a broader range of transport options (e.g. air, water-borne, rail, agricultural machinery) are outside the scope of this plan and will be considered through other strategies. In this document, 'EVs' covers all electrified road transport from motorcycles to cars, buses and trucks, but not electric bicycles and scooters. In some data, electric motorcycles are excluded; however, this is highlighted where relevant.

If you have any questions about this plan, email ev@energyq.com.au

ABBREVIATIONS, ACRONYMS AND INITIALISMS

AEMO	Australian Energy Market Operator
BEV	Battery Electric Vehicle
CPO	Charge Point Operator
DEPW	(Queensland) Department of Energy and Public Works
DNSP	Distribution Network Service Provider
EQL	Energy Queensland Limited
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
kVA	Kilovolt Amperes
kW	Kilowatt
kWh	Kilowatt hour
NMI	National Metering Identifier
PDF	Portable Document Format
PHEV	Plug-in Hybrid Electric Vehicle
QECM	Queensland Electricity Connection Manual
TMR	(Queensland Department of) Transport and Main Roads
V2B	Vehicle-to-Building
V2G	Vehicle-to-Grid
V2H	Vehicle-to-Home
V2L	Vehicle-to-Load

Network Electric Vehicles Tactical Plan 2023

THE LAST TWO YEARS

It's more than two years since we published our first Network Electric Vehicles (EV) Tactical Plan [1]. Our original plan included 11 tactics designed to help prepare our network business for the impacts and opportunities of EV charging.

Since June 2020, the number of EVs (including electric motorcycles, plug-in hybrid and battery passenger cars and trucks, and electric buses) in Queensland has increased from around 3,900 to more than 23,000 in April 2023. Passenger EVs took a 4.7% market share of new passenger car registrations in Queensland across the 2022 calendar year. Globally, 'electric cars' achieved a sales market share of almost 13% in the same period [2].

The previous Federal Government released its Future Fuels and Vehicles Strategy [3] in November 2021. The current Federal Government released its National Electric Vehicle Strategy Consultation Paper [4] in September 2022, and its National Electric Vehicle Strategy [5] in April 2023.The Queensland Government released its Queensland Zero Emissions Vehicles Strategy [6] in April 2022 that included a $3,000 rebate on EVs costing up to $58,000. Every Australian state and territory now has an EV strategic document, and most have a similar rebate. In April 2023, the Queensland Government raised the rebate to $6,000, raised the threshold to $68,000 and imposed an eligibility cap based on household income.

In September 2022, the Queensland Energy and Jobs Plan [7] was released and added momentum to the Queensland Government's commitment to ensure Queensland's charging infrastructure, buildings and relevant policy were ready to enable Queenslanders' transitions to EVs.

The Australian Energy Market Operator-led Distributed Energy Integration Program's Electric Vehicle Taskforces on EV Data Availability [8] and Vehicle-Grid Integration Standards [9] both released valuable reports, highlighting the needs of key stakeholders and recommending solutions.

Research with aspiring EV buyers and people more generally, including our own Queensland Household Energy Survey [10], revealed that the appetite to consider buying an EV is increasing notably. However, the relative price of new EVs and the limited number of public charging stations continue to be cited as barriers to purchase. More recently, the limitations on the supply of EVs into Australia has risen to be the primary impediment to the growth in EV numbers.

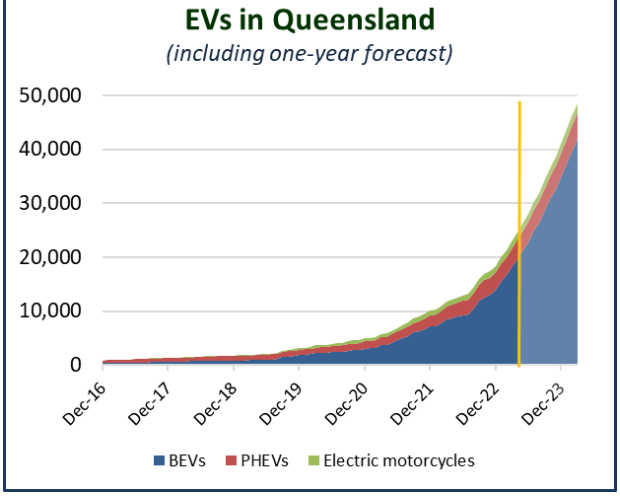
In the past year, we updated the EV webpages on both the Ergon Energy Network [11] and Energex [12] websites, including publishing 'EV Insights' [13] into EV numbers in Queensland and our EV research outcomes, including the EV SmartCharge Queensland Insights Report.

In June 2021, Brisbane was announced as the host of the 2032 Olympic and Paralympic Games. These Games are the first required to be 'climate positive', creating significant opportunities, expectations and time pressures on our business around supporting the electrification of transport during the hosting period.

In April 2023, we finalised our (internal) Network Electric Vehicles Strategy. This Network EV Tactical Plan sits under and outworks the Network Electric Vehicles Strategy, which in turn sits under the Energy Queensland group's (internal) Electric Vehicles Strategy, finalised in June 2021.

Network Electric Vehicles Tactical Plan 2023

CURRENT MARKET ANALYSIS



Queensland EV market overview

- EV registration numbers over the 12 months to April 2023 were 105% higher, i.e. more than double, than in the previous 12 months.
- The EV fleet in Queensland (excluding motorcycles) is comprised of 85% Battery EVs (BEVs) and 15% Plug-in Hybrid EVs (PHEVs).
- Less than 10% of EVs in Queensland are registered outside the south-east corner. This percentage has been essentially unchanged for the past seven years.
- Queensland Household Energy Survey results (2022) show that Queenslanders' level of interest in buying an EV is increasing rapidly. Of the 50% of respondents intending to buy a car in the next three years, 71% would consider buying an EV, up from 54% in the previous survey and 40% the year before that.

Queensland Government financial incentives to buy an EV

- For BEVs (not PHEVs) with a dutiable value of up to $68,000 and which meet criteria, a $6,000 rebate can be applied for. A total of 15,000 rebates has been budgeted for. [14]
- Reduction in stamp duty from 3% to 2% of the dutiable value of a new vehicle, representing a one-off reduction of, for example, $700 on a $70,000 BEV or PHEV,
- Annual discount on registration, of $72.70 on a $70,000 BEV or PHEV compared to a same-priced 4-cyclinder petrol- (or diesel-) only vehicle or $271.15 compared to a same priced 6-cylinder vehicle. [15]

Queensland Government targets

The Queensland Zero Emissions Vehicle Strategy [6] includes these targets to support Queensland's 50% renewable energy target by 2030 and zero net emissions by 2050:

- Every new TransLink-funded bus added to the fleet to be a zero emissions bus from 2025 in south-east Queensland and from 2025–2030 across regional Queensland.
- 50% of new passenger vehicle sales to be zero emission vehicles by 2030.
- 100% of new passenger vehicle sales to be zero emission vehicles by 2036.

Network Electric Vehicles Tactical Plan 2023

OVERVIEW OF TACTICS

Implementations of three of the 11 tactics from the original Network EV Tactical Plan are complete:

Tactic 6	EV Data Repository
Tactic 7a	EV SmartCharge Queensland program
Tactic 7b	EV Customer Experience Journey Mapping

These tactic implementations are summarised in Appendix 1 on page 24.

The former Tactic 10 to quantify the network benefits of EV charging has not been carried over as a discrete tactic and has been incorporated into Tactic 2 re. network monitoring. All other tactics have been reframed and reiterated in this plan.

We have defined six new tactics:

- Develop an EV Data Ecosystem
- Explore and articulate the challenges of EV charging in fringe-of-grid and isolated communities
- Understand and respond to the charging needs of EV customer groups
- Support the electrification of fleets, from motorcycles to buses
- Support Energy Queensland's pursuit of an EV leadership position
- Support existing and future network tariffs relevant to EV owners.

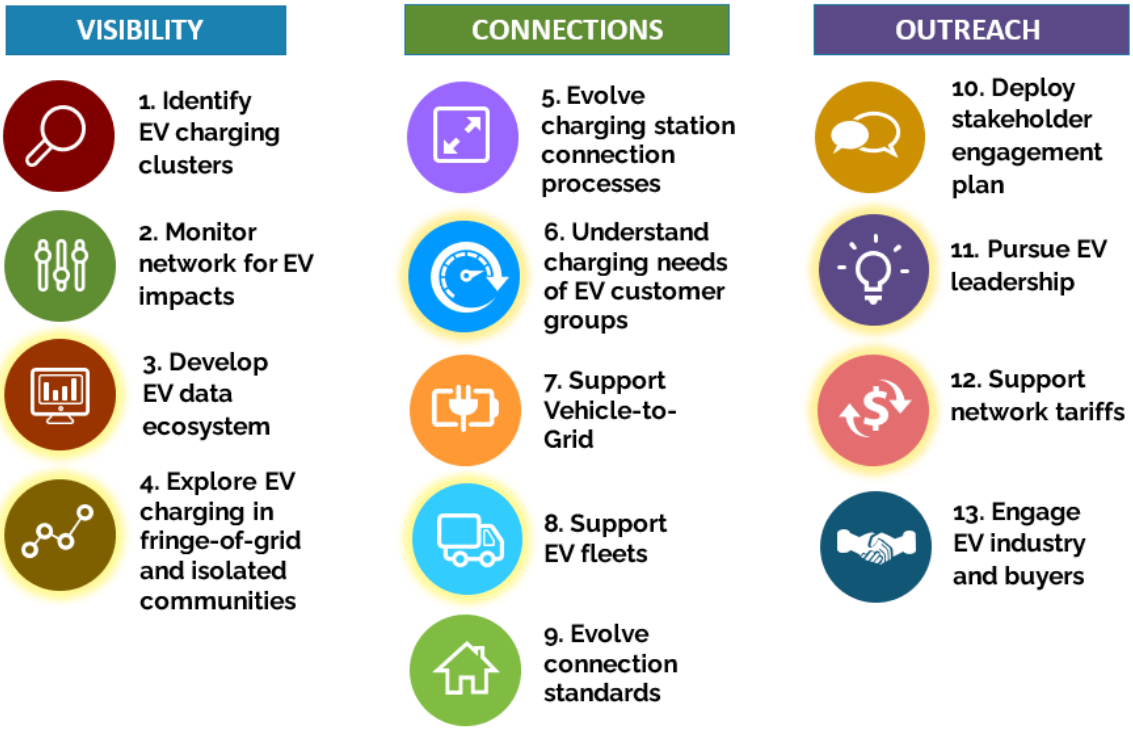
These tactics reflect emerging issues, opportunities to enable and influence EV charging connections (for network, stakeholder and customer benefits) and growing sophistication of our EV-related data management. All tactics are detailed in the document and depicted in the diagrams on the following page. The five new tactics are highlighted with a yellow glow. To demonstrate the interrelationships between many of these tactics, they are categorised in three pillars of:

VISIBILITY – covering data collection and analysis about EVs, charging, markets and electricity network impacts.

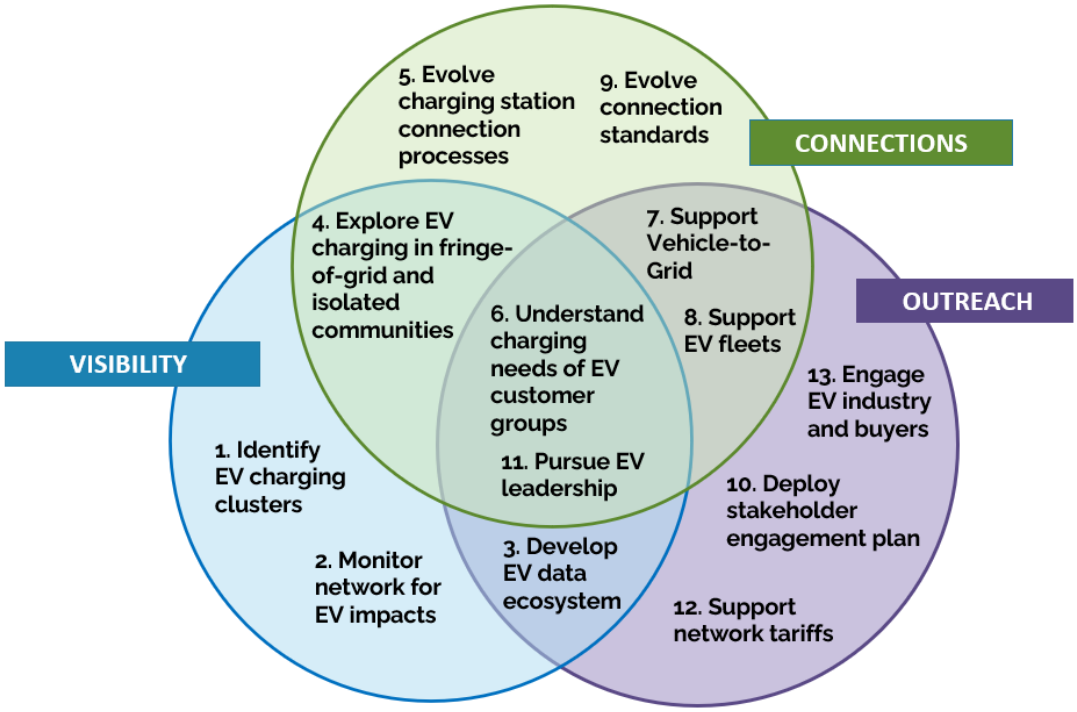
CONNECTIONS – covering residential, fleet, destination and public charging.

OUTREACH – covering engagement, education, sharing, leading and communication.

Network Electric Vehicles Tactical Plan 2023



There is significant interrelationship between many of the 13 tactics, and many of the tactics overlap in terms of Visibility, Connections and Outreach. Our tactics combine in pursuit of achieving the primary objective of a critical mass of smart charging in all its forms. This Venn diagram illustrates those overlaps:



13 EV TACTICS

These tactics articulate our focus over the next 12 months to continue preparing for the increase in EV numbers in Queensland and the associated impact of, and opportunities presented by, their charging on our networks. They are in no particular order beyond the three categories and are at various stages of implementation.

Tactic 1 Implement mechanisms to identify EV charging clusters and analyse charging profiles

(Updated from previous Tactical Plan.)

Why? *There is no legislation to compel a customer, or their agent, to lodge an application for an EV charger – or EV Supply Equipment (EVSE) – installation with their DNSP. Clusters of EVs could remain invisible to us until a distribution transformer fails or quality of supply issues arise due to EV charging. Analysis of the demand and other impacts of EV clusters on individual transformers will inform many teams in our business.*

Background

We have implemented several targeted and holistic mechanisms to source the addresses, and ultimately the National Metering Identifier (NMI), of EV owners, with a focus on identifying residential premises. By April 2023, we had identified around 850 relevant premises, representing ~5% of EVs In Queensland with 'Private' registration.

Recently, we developed an EV Charging Detection Model, which is applied to smart meter data to detect demand profiles consistent with EV charging, and thereby identify the NMI and distribution transformer serving each NMI. The first output revealed thousands of residential locations where the model is confident that EV charging has taken place recently.

Objective

Identify the address and NMI of an increasing number of premises where EV charging is, or is likely to be, occurring. This will allow us to identify EV clusters on individual transformers and analyse transformer data to detect early EV charging impacts on the grid (Tactic 2).

Interdependencies

The success of Tactic 2 (network monitoring) depends heavily on the successful implementation of this tactic and ongoing identifications of EV charging locations.

Our approach

- Evolve our EV Charging Detection Model to enhance detection confidence,
- Continue to participate in forums considering the potential of a legislated, or at least incentivised, national register of EVSE installations,
- Refine EV charging profiles of customer segments (e.g. residential, fleet and public charging stations) and vehicles (BEVs, motorcycles, trucks, etc.), and
- Evolve the integration of EV charging profiles into demand forecasting.

Tactic 2 Enhance network monitoring in areas of high EV penetration and integrate insights into strategic network planning

(Updated from previous Tactical Plan.)

Why? *Coincident EV charging will at some stage and in some areas create adverse network impacts. It is important that we proactively establish EV-related network demand, voltage and other monitoring to detect those impacts and inform proactive responses before expensive network upgrades are required.*

Background

As solar PV penetration grew rapidly in many areas, we were compelled to upgrade local networks to accommodate excess PV generation being exported to the grid in the middle of the day. As the timing of EV charging is more flexible, if we identify areas of high EV penetration early, we can take steps to mitigate the need for network upgrades.

Objective

Enhance EV-related network demand analysis to identify areas of high EV penetration where proactive intervention is likely to create network and customer benefits.

Interdependencies

The ongoing deployment of Tactic 1 to identify EV clusters is critical to identifying and monitoring areas of high EV penetration. Data about the impact of EV clusters on the network will be fed into the EV data ecosystem (Tactic 3) to inform other EV initiatives.

Our approach

- Identify EV clusters on individual transformers,
- Identify if a transformer monitor is installed on those transformers with highest EV penetrations, and if not, prioritise monitor installations. Monitors record the impact EV charging and other loads are having on the local network,
- Where EV clusters have been identified on transformers that already have monitors, commence EV-specific analysis, and
- If EV charging is accelerating the growth of local peak demand or quality of supply issues, design and implement proactive and cost-effective network and/or non-network solutions to shift EV-related demand out of peak demand periods and ideally into minimum demand periods.

Tactic 3 Develop an EV data ecosystem

(New tactic)

Why? *We are building a multitude of EV-related data flows and sources. Each element is valuable; however, greater value can be extracted and shared by integrating data sets to create deeper and unique insights, and greater automation and accessibility.*

Background

We have collected EV-related data at four levels, each with multiple types:

	Data types (examples, not exhaustive list)					
PEOPLE	Aspiring EV buyers	EV owners	Car buyers not interested in EVs	EV industry participants		
VEHICLES	EV volumes (by suburb, statewide)	EV types per suburb	EV model attributes	Charging profiles	Trip profiles	kWh consumption by model
PREMISES	Charging profiles	kWh consumption per EV	Smart meters	PV ownership and export	BESS ownership	Public charging stations
NETWORK	Transformer monitors	Feeder load profiles	EV-related expenditure			

Objective

Optimise the collation, storage, accuracy, accessibility, analysis, understanding and promotion of our EV-related data to inform EV strategy, forecasting, demand modelling, demand management and other functions and ultimately enhance outcomes for our business, governments, the EV industry, EV owners and other stakeholders.

Interdependencies

Most tactic implementations, especially of Tactic 2 (network monitoring), will benefit from an EV data ecosystem. Tactics 1 (charging locations) and 2 (network monitoring), in particular, provide key sources of EV-related data.

Our approach

- Explore the optimal data platform to connect all or most relevant data sets, with a focus on integrating data while minimising system enhancements and maximising accessibility to all relevant employees,
- Identify all internal and external potential users of the data and document their needs and visions for applying the data, and
- Identify additional or enhanced data types, and their sources, with specific relevance to our network business's priority to manage the grid integration of EVs.

Tactic 4 Explore and articulate the challenges of EV charging in fringe-of-grid and isolated communities

(New tactic)

Why? *The charging of EVs, including heavy transport, present specific challenges to fringe-of-grid and isolated networks due to those networks' inherent electrical limitations. Strategic market scanning, consultation and planning will help predict those challenges and support proactive and prudent initiatives.*

Background

There are limited numbers of EVs registered or charging in Ergon Energy Network's 33 isolated communities and fringe-of-grid communities. The temporary or permanent addition of even small numbers of EVs could impact these types of networks.

It is envisaged that government-owned fleets, for example, could be transitioned to electrified versions relatively quickly. It is important that such customers understand the implications of such decisions and consult with our relevant teams early.

Objective

Explore and articulate the potential challenges, and opportunities, presented to fringe-of-grid and isolated networks by the transition to EVs. Use this exploration to inform the development of strategies and plans to create positive outcomes that both support EV adoption and deliver community, network, financial and environmental benefits.

Interdependencies

Outcomes of most other tactics will inform related initiatives in fringe-of-grid and isolated communities.

Our approach

- Explore potential impacts of EV charging on fringe-of-grid and isolated networks, covering residential, business and public charging,
- Consult with communities and potential electrified fleet operators, e.g. government services, and
- Explore and develop potential solutions to overcome network limitations and deliver benefits to regional Queensland.

Tactic 5 Evolve public charging station network connection processes

(Updated from previous Tactical Plan and separated into new Tactics 5 and 9.)

Why? *Public charging station developers' expectations and regulated DNSP connection processes may not always align, creating frustration and longer-than-expected timeframes for those customers.*

Background

Public charging station developers (or Charge Point Operators [CPOs]) have expressed their desire to have access to DNSPs' network capacity data in a form that could guide them to choose sites that had lower network connection and other establishment costs and timeframes. While we provide online network capacity maps and related data, we recognise that this is not at the granularity CPOs desire. As we work to enhance that data, we are exploring other ways in which the connections process can be streamlined and communicated to applicants.

In addition, the Queensland Energy and Jobs Plan [7] includes activity 2.5.c regarding innovative 'smart' integration and management of EV charging infrastructure.

These contexts present opportunities for innovation and unprecedented collaboration between Federal and State Governments, DNSPs, regulators, CPOs and others to work towards solutions that reduce any impediments to charging station deployment to ensure the number of charging stations is not perceived to be a barrier to the adoption of EVs.

Objective

Streamline CPOs' connection experiences to deliver efficiencies to both their operations and ours. This will be achieved through continued CPO engagement and the management of expectations, greater efficiencies and leveraging of technologies.

Interdependencies

The effective implementation of Tactic 10 (stakeholder engagement plan) will be important to the success of this tactic. This tactic is supported by Tactic 9 (connection standards).

Our approach

- Engage the charging station industry and relevant other customers on issues such as connection requirements, tariffs, timeframes and other considerations through channels such as web-based check lists, webinars, face-to-face presentations, et al. Our guidance for the bus industry [16] is the first example,
- Investigate the practicality of providing online network capacity maps to guide public charging station developers towards sites with lower connection costs and timeframes,
- Investigate automation of elements of the connection process,
- Identify resources and capabilities required to shorten enquiry response timeframes, and
- Collaborate with DNSPs, regulators and relevant others to pursue greater national consistency in DNSP connection rules, communications and other aspects.

Tactic 6 Understand and respond to the charging needs of EV customer groups

(New tactic)

Why? *Diverse groups of EV owners are emerging and their needs, motivations, levels of knowledge and other attributes differ. A successful EV charging environment that delivers value to a range of stakeholders requires a complex interaction of technologies, stakeholder value stacks, price signals, customer engagement, education and more. Deeply understanding then moulding that environment accordingly is critical to our ability to deliver maximum value.*

Background

We have already gathered significant data and insights on the charging needs and behaviours of EV owners; enough to understand how much more we would ideally learn to better inform our efforts to influence charging away from the traditional peak periods and into the middle of the day.

'Smart charging' can be defined as EVSE having the ability to send and receive information and respond to that information by increasing or decreasing the rate, and/or changing the timing, of electricity flowing through that equipment. While not all charging will be 'smart' in the foreseeable future, without a suitable degree of smart charging, it will be more difficult to influence EV owners to charge outside peak periods, especially at times of critical peak demand.

Objective

Develop EV charging-related research, trials and education to support a mutually beneficial charging environment and products across relevant customer segments. Integrate metering, solar PV, Battery Energy Storage Systems, Home Energy Management Systems, Dynamic Operating Envelope signals, et al. to deliver safe, accurate, effective and compliant solutions.

Interdependencies

This tactic is particularly supported by Tactics 9 (connection standards) and 13 (engagement), and particularly informs Tactics 5 (connection processes) and 7 (Vehicle-to-Grid). In light of Tactic 8 (fleets), better understanding fleet customers is covered by that tactic.

Our approach

- Continue to research the charging behaviours, influencers and intentions of residential EV owners through the Queensland Household Energy Survey and other channels, and disseminate outcomes,
- Develop the (internal) Electric Vehicle Charging Options paper,
- Continue collaborating with the Department of Energy and Public Works on EV charging, in line with the Queensland Energy and Jobs Plan [7] actions around a smart connections framework (2.1.b), EV charging infrastructure in buildings (2.1.d), a customer information portal (2.5.b) and 'smart' EV charging (2.5.c),
- Explore market-based EV charging products and their applicability to customer segments,
- Analyse Australian and overseas smart charging trials to inform our initiatives, and
- Collaborate with relevant stakeholders – including other DNSPs – around tariffs, standards, policies, et al. to align customer choices with the stakeholders' collective priority to meaningfully influence the electricity demand profile.

Tactic 7 Support Vehicle-to-Grid, particularly as an element of climate resilience

(Updated from previous Tactical Plan.)

Why? *Although Vehicle-to-Grid arrangements are not yet apparent in Queensland, that will soon change, and both the challenges and the opportunities they present to DNSPs are significant.*

Background

The technology and supporting frameworks to allow electricity to flow from an EV battery into the premises and even out to the grid is termed Vehicle-to-Grid (V2G). When the system design is only intended to transfer electricity into the home or commercial or other premises, that is termed Vehicle-to-Home (V2H) or Vehicle-to-Building (V2B) within the V2G concept.

V2G holds great promise to place EVs at the heart of customers managing their own electricity flows. Customer-owned generating and storage systems can be leveraged by DNSPs to better orchestrate electricity flows on the LV network and by retailers and other industry participants to smooth and respond to the fluctuations in wholesale electricity prices, delivering financial value to customers as well. We're also interested in the application of V2G technology to enhance community climate resilience in post-disaster and other situations where the grid electricity supply is disrupted.

As at April 2023, around 5% of EVs in Queensland had V2G capability, with the percentage declining from a peak of 13% in early 2021. With few of the promoted EV releases in 2023 having V2G capability, we expect that market share to fall further, before rising, potentially dramatically, as more EV manufacturers offer V2G capability.

Objective

Capitalise on the slow emergence of V2G technologies in Australia to prepare for the inevitable increase in the proportion of EVs with V2G capability and the greater customer accessibility to bi-directional EVSE and associated programs of management of EV battery charging and discharging.

Interdependencies

This tactic is particularly supported by Tactics 6 (understanding charging needs) and 9 (connection standards).

Our approach

- Research V2G adoption and trials in other countries to support our own trials and V2G adoption forecasting,
- Test the V2G capabilities of a relevant EV and associated bi-directional EVSE, particularly to evaluate compliance with safety and connection standards and assess V2G's potential contribution to enhancing resilience to climate-related impacts,
- Update the Queensland Electricity Connection Manual (QECM) [17] as V2G technologies and standards evolve, and
- Provide V2G information on our EV webpages and to our customer-facing employees.

Tactic 8 Support the electrification of fleets, from motorcycles to buses

(New tactic)

Why? *Both Federal and State Government EV strategies have made the support of fleet electrification a priority. Fleet EV charging has high potential to create challenges for networks and customers if the charging arrangements are not optimised.*

Background

The former Federal Government's Future Fuels and Vehicles Strategy [3] highlights that '40% of light vehicles sold in Australia in 2020 [were] purchased by businesses' and 'fleet vehicles generally travel greater distances than private vehicles'. The current Federal Government's National Electric Vehicle Strategy [18] calls for greater Commonwealth, state and territory collaboration on fleet procurement and reiterates Commonwealth zero-emissions fleet targets,

In the Queensland Government's Zero Emission Vehicle Strategy [6], 'Priority 1: Encouraging cleaner, greener transport modes' includes Action Area 1.2 – Transitioning Government and corporate fleets, and Action area 1.3 – Zero emissions vehicles in our public transport networks.

The requirement for the 2032 Olympic and Paralympic Games in Brisbane to be 'climate positive' also underlines the critical role that zero-emissions fleets in Queensland will play in achieving that.

Fleet EVs are typically charged at the business premises, or at public charging stations. However, over time, more of the fleet vehicles that employees are allowed to take home will be EVs, and the charging of fleet EVs will increasingly occur more randomly at employees' homes.

In April 2022, we published on our websites a guidance document titled 'Charging electric buses: Key considerations' [17] for bus operators starting to electrify their fleets. The information is largely relevant to any fleet operator in the same position.

Objective

Support and leverage government initiatives to create network and customer value by engaging, educating and supporting fleet operators as they embark on their transition to electrified transport.

Interdependencies

There's a relationship between this tactic and Tactics 13 (engagement) and, in time, 7 (V2G).

Our approach

- Advise fleet operators wanting to start their transition to electrified transport about the network connection requirements, timeframes and other issues that could influence the nature of their new connection,
- Provide general network tariff, connection and related information for fleet operators on the Energex and Ergon Energy Network websites, and
- Collaborate with the Queensland Departments of Energy & Public Works and Transport & Main Roads in particular to plan 'climate-positive' transport components of the 2032 Olympic and Paralympic Games in Brisbane.

Tactic 9 Evolve EV-related connection standards, spanning residential to public charging stations

(Updated from previous Tactical Plan and separated into Tactics 4 and 5.)

Why? *Our standards are critical enablers of emerging technologies to deliver increasing customer choice in EV charging options so that both private and commercial EV owners are more likely to charge in ways that minimise network impacts, and support those customers to manage their charging costs. Our connection standards also play a significant role in the deployment of public charging stations.*

Background

Residential, multi-residential and business customers with EVs can currently implement charging arrangements from a suite of options that are technically compliant and that support the customer's affordability, convenience, safety, environmental and other priorities.

However, EVSE market offerings, EV owner and industry desires, and the rules and guidance on EVSE installation provided in our Queensland Electricity Connection Manual (QECM) [17] are perceived to be misaligned. We also recognise the challenges created for Charge Point Operators, particularly when embedding their public charging stations within existing electrical installations.

Objective

Explore and implement ways to increase customer choice and flexibility in EV charging options without placing the quality of electricity supply at risk or unduly increasing peak network demand. Also consider ways to evolve connection standards to assist the public charging industry to deploy charging stations in a more timely and cost-effective manner.

Interdependencies

This tactic directly supports Tactic 5 (public charging connection processes) and overlaps with Tactics 6 (understanding charging needs) and 7 (Vehicle-to-Grid).

Our approach

- Evolve EVSE connection rules in the QECM for private, commercial and public charging,
- Specifically consider our role in addressing challenges associated with EV charging in multi-residential dwellings, particularly in the context of the Australian and Queensland EV strategies' actions on this topic,
- Design managed charging options and related requirements for EVSE based on commercially available products,
- Design Dynamic Operating Envelope technical standards and related requirements for EVSE, in line with those for solar PV systems,
- Assess After Diversity Maximum Demand calculation protocols and network design standards for a range of premises types to ensure suitability for higher EV penetration, including consideration of single phase or 3-phase greenfield developments, and
- Collaborate with DNSPs, regulators and relevant others to pursue greater consistency in connection rules, interoperability/communications and other aspects.

Tactic 10 Deploy a Network EV Stakeholder Engagement and Communications Plan

(Updated from previous Tactical Plan.)

Why? *Our scope and number of EV-related stakeholders grows weekly. Consistent, coordinated and streamlined communications and engagements are important to building and maintaining stakeholder relationships to support our mutual and individual EV initiatives and ambitions.*

Background

A Network EV Stakeholder Engagement and Communications Plan has been developed and is ready to deploy in a structured and strategic way.

The plan summarises, for each internal and external stakeholder or stakeholder group:

- Engagement goals/objectives,
- Stakeholder issues/interest,
- Engagement strategy and channels,
- Key messages,
- Responsibility, and
- Timing/status.

The plan will not be published externally.

Objective

Design and implement EV-related engagements and communications in a strategic and coordinated manner to both deliver and receive higher value than uncoordinated actions would.

Interdependencies

This tactic will both inform and be guided by Tactic 13 (engagement). It will also support the sharing of data from Tactic 3 (EV data ecosystem).

Our approach

- Ensure messages are delivered consistently across stakeholders – especially in collaboration with our Queensland Government stakeholders – with modifications made as appropriate for different parties and groups,
- Ensure multiple internal stakeholders who are dealing with an external stakeholder organisation are communicating objectives and contacts with each other, coordinating stakeholder interactions and ensuring those interactions are appropriately managed,
- Ensure stakeholder interactions are prioritised against each other and that stakeholders are appropriately considered, and
- Articulate which employees should lead interactions with which external stakeholders, and who has secondary and tertiary responsibilities.

Tactic 11 Support Energy Queensland's pursuit of an EV leadership position

(New tactic)

Why? *We believe that pursuing and holding a perceived EV leadership position attracts opportunities to collaborate and influence, attracts knowledge and insights, motivates our people, and generally creates a strong foundation from which to launch all EV initiatives.*

Background

Energex and Ergon Energy Network are part of the Energy Queensland Limited (EQL) group. Energy Queensland developed its (internal) Electric Vehicles Strategy in 2021, featuring seven Strategic Platforms, including 'Pursue an EV leadership position'. That platform describes a mindset focused on attracting collaboration opportunities and ensuring Energy Queensland has a role in supporting the EV ambitions of governments at all levels and our other stakeholders. Energex and Ergon Energy Network together play a key role in our group's pursuit of an EV leadership position.

We are demonstrating leadership by being the first DNSP in Australia to, for example:

- Release a Network Electric Vehicles Tactical Plan, or similar document, in 2020,
- Launch a SmartCharge program, collecting comprehensive, longitudinal, real-world data on EV charging and trips, and
- Share our EV data and research insights [13] freely to raise the common understanding of the issues around EV charging and its potential impacts on electricity networks.

Objective

Contribute to Energy Queensland's pursuit of an EV leadership position in a strategic manner that guides and prioritises our initiatives and capitalises on our efforts in order to increase value to the network business and its stakeholders. The creation and promotion of EV-related benefits for all electricity customers through well-considered policies and standards will drive industry best practice.

Interdependencies

This tactic is supported by Tactic 10 (stakeholder engagement plan) and is contributed to by all tactic implementations.

Our approach

- Develop a strategic (internal) plan to detail how the network business can contribute to EQL's pursuit of an EV leadership position, including benefits and challenges,
- Leverage our EV data, research and other insights to engage Federal, State and Local Governments and electricity regulators to inform the development of their strategies, policies and other initiatives,
- Continue to publish EV data and findings from our EV research,
- Overtly and proactively support the electrification of fleets, and associated Australian and Queensland Government initiatives (Tactic 8), and
- Continue to identify and accept presentation opportunities at national, state and local levels.

Tactic 12 Support existing and future network tariffs relevant to EV owners

(New tactic)

Why? *More cost-reflective network tariffs were introduced in Queensland on 1 July 2020 and can deliver significant financial and other value to our network business, customers and intermediaries. The rate at which most retailers have reflected those price signals in residential retail tariffs, and the subsequent adoption by customers, has been modest to date. However recently, it has notably increased.*

Background

At the beginning of each five-year DNSP regulatory period, new network tariffs are introduced that are more cost-reflective in response to changes in demand, generation sources and other factors. There is more detail on the network tariffs pages on the Energex [19] and Ergon Energy Network [20] websites.

However, electricity retailers are not obliged to reflect those price signals in their retail tariffs, resulting in many customers not seeing the full cents/kWh rate variations or demand charges in network tariffs and therefore not modifying their electricity use as strongly as ideal, if at all.

Many aspiring and current EV owners are under-informed about tariff options, as a critical element of the home charging arrangement. Business customers and Charge Point Operators are also often under-informed about network tariffs and network connection processes.

Objective

Within the limits of our role and remit as a DNSP, increase customer and EV-charging influencer awareness of types of network tariffs and their benefits in the specific context of EV charging, at both the residential and commercial level. Engage with electricity retailers to increase the reflection of network tariff price signals in retail tariffs.

Interdependencies

This tactic supports Tactics 5 (public charging), 8 (fleets), 9 (connection standards) and 13 (engagement).

Our approach

- Continue to collaborate with electricity retailers to reflect network tariff pricing signals in retail tariffs,
- Where appropriate, educate customers about general network tariff options for EV charging,
- Continue to consult with EV-related stakeholders in the development of our 2025–2030 Tariff Structure Statements, including education about general network tariff options for EV charging, and
- Continue to collaborate with relevant Australian and Queensland Government departments and regulators on network tariff development and education.

Tactic 13 Engage with EV salespeople, EVSE installers and owners about EV charging options

(Updated from previous Tactical Plan.)

Why? *Many new EV owners, and salespeople, are generally poorly informed about charging options and network connection aspects. EV salespeople and EVSE installers can have significant influence on home and other EV charging arrangement decisions at times when aspiring and current EV buyers are most receptive.*

Background

We have already gained value from, and delivered significant value to, EV stakeholders through our various communications channels and engagement initiatives.

When EV owners' charging choices are better informed, this will likely lead to improved outcomes for them as well as electricity networks. Those improved mutual outcomes are broadly:

- Less charging during the typical evening peak demand period, when electricity is often more expensive for customers, especially on new cost-reflective tariffs, and
- More charging during the day when solar PV systems are generating and grid-supplied electricity is often cheaper and increasingly coming from renewable energy sources.

EV manufacturers, EV salespeople and EVSE installers are key conduits of charging information to EV buyers. We aim to take our education and engagement of these audiences especially to the next level.

Objective

Engage and leverage influencers to ensure aspiring, new and existing EV owners are more aware of the EV charging options they have – both at home and away from home – and are making choices that reflect their convenience, affordability and other personal priorities, while being positive or neutral for our networks where possible.

Interdependencies

This tactic will both inform and be guided by Tactic 10 (stakeholder engagement plan) and relate to Tactic 9 (connection standards).

Our approach

- Regularly update our EV webpages as an information resource for EV charging influencers (salespeople, EVSE installers, journalists, et al.) and EV buyers and owners to explore and select optimal charging arrangement options,
- Liaise with the Department of Energy and Public Works regarding the EV information portal outlined in activity 2.5.b of the Queensland Energy and Jobs Plan [7], and
- Explore other models of engagement with the EV industry to both impart latest information regarding connecting EVSE and hear of any issues arising from our connection requirements and processes, in pursuit of addressing issues as effectively as possible.

APPENDIX 1

OVERVIEW OF COMPLETED TACTICS

Implementations of three of the 11 tactics from the original Network EV Tactical Plan are complete:

Tactic 6 – EV Data Repository

Key actions:

- Automation of filtering of EV registration data from the Queensland Department of Transport and Main Roads, provided under a Memorandum of Understanding,
- Presentation of that data in an EV dashboard, and
- Collection from publicly available sources of charging and efficiency attributes of more than 800 EVs models and model years, including motorcycles. Updated every month as new models released.
- Correlation with other data sets to provide unique insights, e.g. with Census 2021 dwellings data to define the EV penetration per 1,000 dwellings for every suburb in Queensland

Key outcomes:

- Automated, quicker and more accurate filtering of monthly EV registration data.
- Quantification of EV numbers, storage capacities, average charging rates, dwelling penetration, etc. by suburb.

Next steps:

- Collation of a critical mass of EV charging locations, by National Metering Identifier (NMI) – Tactic 1 – to allow quantifications of EV numbers, capacities and other attributes down to distribution transformer and feeder levels.

Tactic 7a – EV SmartCharge Queensland program

Key actions:

- Recruited owners of 197 EVs to participate for up to two years. Deployed and activated recording devices. Established databases, visualisation tools, internal analysis skills and reports.

Key outcomes:

- Creation of data sets to provide unique (in Australia) real-world EV charging data and insights that are being integrated into strategies and tactical plans, demand forecasting, demand management plans and other initiatives, as well as being shared as widely as feasible,
- In particular, outcomes have been shared to inform the development of the Queensland Government's Zero Emission Vehicle Strategy, the Australian Energy Market Operator's EV demand forecasting and other research programs,

- Deployment of a suite of education, incentives and other influencing factors to the SmartCharge participants to trial and test their relative efficacy and interrelationships, and
- Publication on our websites of progressive EV SmartCharge Insights PDFs, superseded by a final Insights Report [13].

Next steps:

- Analyse outcomes of trial of influencing factors to determine relative successes, potential refinements and future trials,
- Continuing to analyse data for various applications to extract further insights, and
- Consider future EV charging-related research needs.

Tactic 7b – EV Customer Experience Journey Mapping

Key actions:

- In-house researchers conducted in-depth, two-hour interviews with 15 EV owners: eight within the EV SmartCharge Queensland program and seven not in the program.

Key outcomes:

- Report compiled to articulate themes and individual experiences in the journey of evaluating, purchasing, owning and charging an EV, and
- Report posted to 'EV insights' webpages [13] to better inform relevant stakeholders' EV initiatives.

Next steps:

- Continue to integrate insights into EV-related education, stakeholder engagement, data collection, research and other initiatives.
- Consider future EV owner research needs.

Network Electric Vehicles Tactical Plan 2023

CITATIONS

[1] "Ergon Energy Network and Energex – Network Electric Vehicles Tactical Plan," 2020.

[2] EV Volumes, "Global EV sales for 2022," 2023. [Online]. Available: https://www.ev-volumes.com/news/global-ev-sales-for-2022/.

[3] "Future Fuels and Vehicles Strategy," Australian Government, 2021.

[4] "National Electric Vehicle Strategy Consultation Paper," Australian Government, 2022.

[5] Australian Government, "National Electric Vehicle Strategy," 2023.

[6] Queensland Government, "Queensland Zero Emissions Vehicles Strategy," 2022.

[7] Queensland Government, "Queensland Energy and Jobs Plan," 2022.

[8] Distributed Energy Integration Program Electric Vehicle Taskforce, "EV Data Availability," 2021.

[9] Distributed Energy Integration Program Electric Vehicles Taskforce, "Vehicle Grid Integration," 2021.

[10] Energy Queensland, Powerlink, "Queensland Household Energy Survey," 2022.

[11] "https://www.ergon.com.au/network/smarter-energy/electric-vehicles".

[12] "https://www.energex.com.au/home/control-your-energy/smarter-energy/electric-vehicles".

[13] "https://www.energex.com.au/home/control-your-energy/smarter-energy/electric-vehicles/ev-insights".

[14] The Queensland Cabinet and Ministerial Directory, "Making electric vehicles more affordable to slash emissions and act on climate change," 21 April 2023.

[15] Queensland Government, "How registration is calculated, https://www.qld.gov.au/transport/registration/fees/comparison," 2022.

[16] "Charging electric buses: Key considerations"

[17] Australian Government, "National Electric Vehicle Strategy", 2023.

[18] "Queensland Electricity Connection Manual (QECM)" 2020.

[19] "Energex Tariff information".

[20] “Ergon Energy Network tariff information”.