SUMMARY

Network Electric Vehicles Tactical Plan

Edition 3 – 2024

Part of Energy Queensland

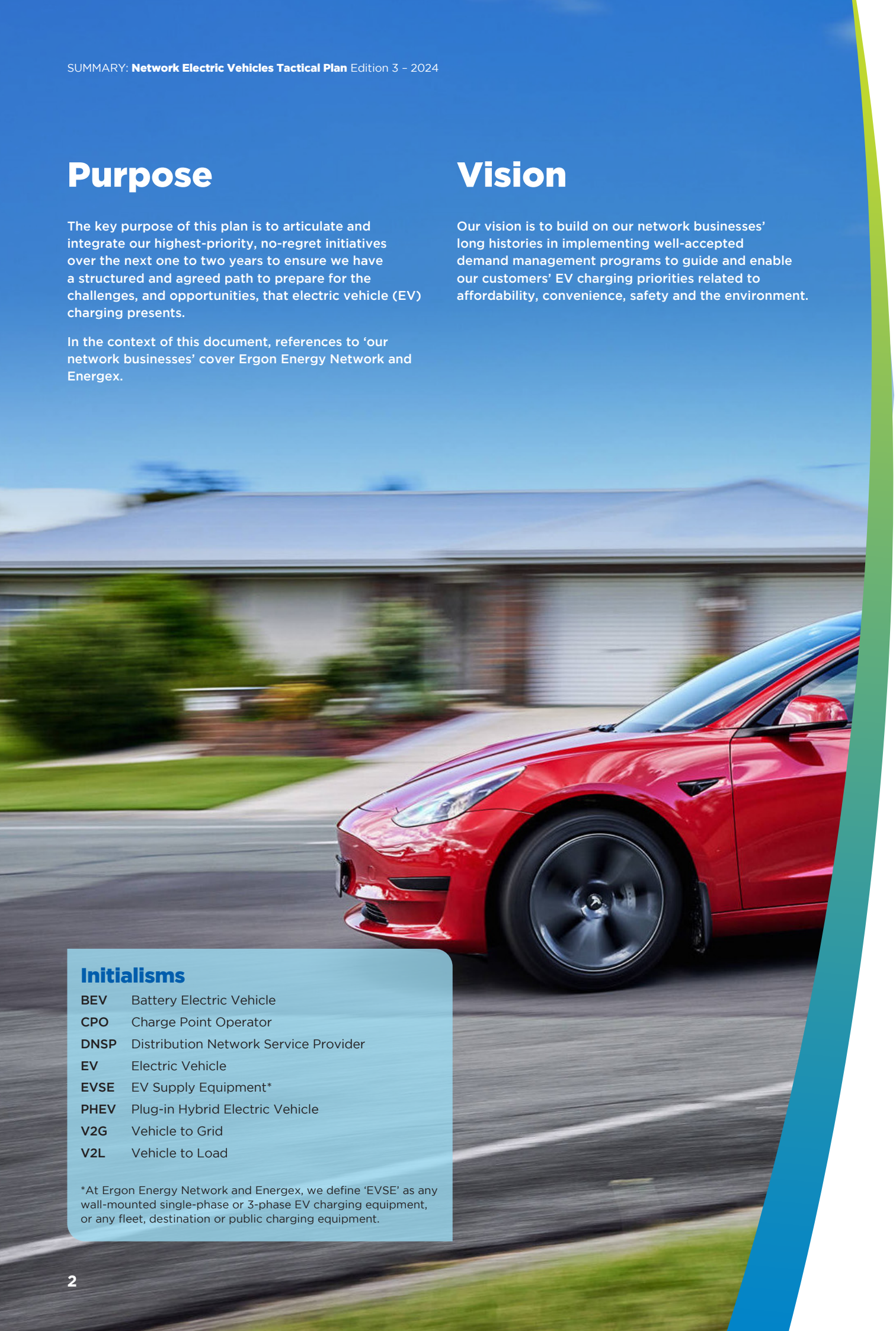
Purpose

The key purpose of this plan is to articulate and integrate our highest-priority, no-regret initiatives over the next one to two years to ensure we have a structured and agreed path to prepare for the challenges, and opportunities, that electric vehicle (EV) charging presents.

In the context of this document, references to 'our network businesses' cover Ergon Energy Network and Energex.

Vision

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

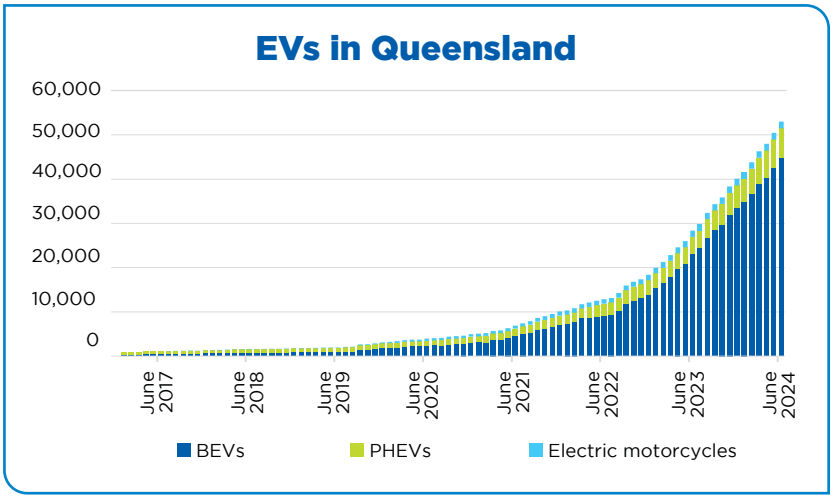


Initialisms

BEV	Battery Electric Vehicle
CPO	Charge Point Operator
DNSP	Distribution Network Service Provider
EV	Electric Vehicle
EVSE	EV Supply Equipment*
PHEV	Plug-in Hybrid Electric Vehicle
V2G	Vehicle to Grid
V2L	Vehicle to Load

*At Ergon Energy Network and Energex, we define 'EVSE' as any wall-mounted single-phase or 3-phase EV charging equipment, or any fleet, destination or public charging equipment.

Current market analysis



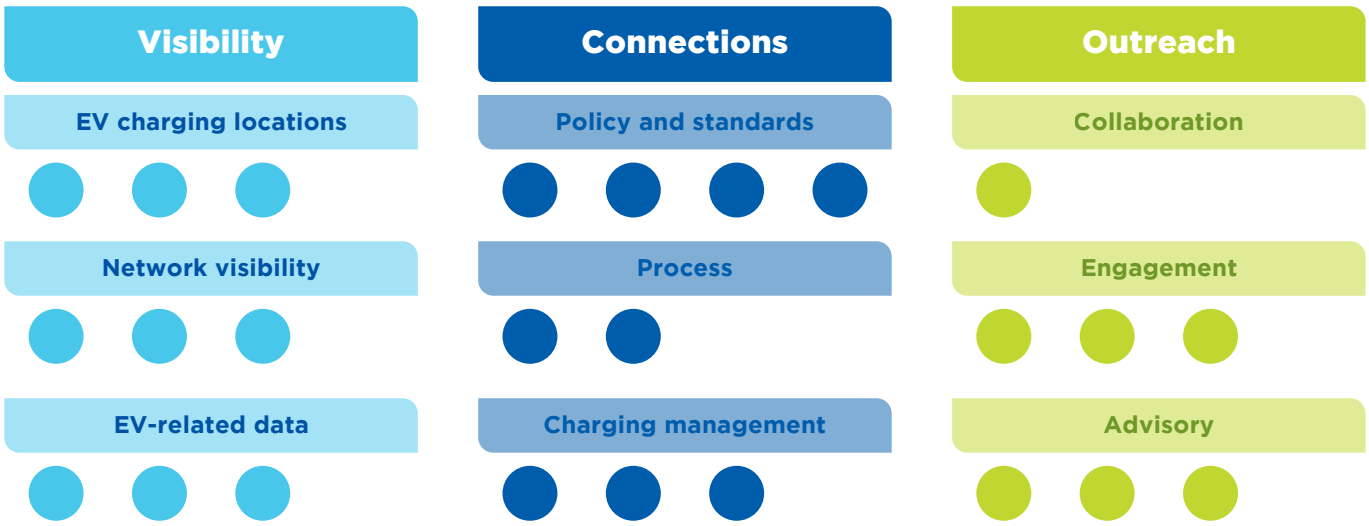
Of the ~53,000 EVs (including motorcycles) in Queensland as at June 2024:

- 87% are Battery EVs (BEVs) and 13% are Plug-in Hybrid EVs (PHEVs).
- Only 10% are registered outside the south-east corner. This percentage has changed minimally over the past six years.
- 5% of EVs in Queensland have Vehicle-to-Grid (V2G) capability enabled and 20% have Vehicle-to-Load (V2L) functionality.

Overview of tactics

Our updated suite of tactics reflects emerging issues, opportunities to enable and influence EV charging connections (for customer and network benefits) and growing sophistication of our EV-related data management. All tactics are outlined in the document.

To demonstrate the interrelationships between many of these tactics, we have categorised them under VISIBILITY, CONNECTIONS and OUTREACH, each with three sub-categories. Each dot represents one of the 25 tactics:



25 EV Tactics

The following tactics and explanations articulate our focus over the next one to two years to continue preparing for the increase in EV numbers in Queensland and the associated impact on, and opportunities related to, their charging on our networks. Apart from their categories, they are in no particular order and are at various stages of implementation.

TACTIC 1

Enhance methods to identify and analyse EV clusters

The impact of EV charging on our networks will be first felt at the distribution transformer level. By identifying EV clusters and analysing customer charging behaviour and its impact on each identified local network, we will develop an early warning system that helps protect quality of supply and informs responses and investment decisions.

TACTIC 2

Monitor and better understand the electrification trajectory of heavy machinery

Electrified heavy machinery and other 'Conditional Registration' vehicles are being deployed in many countries, flagging the likely future for Australia and Queensland. The uncoordinated charging of such vehicles, particularly on areas of our network that are remote or have lower capacity for new large connections than in urban areas, could lead to poor customer and network outcomes.

TACTIC 3

Monitor and better understand the electrification trajectory of trucks

The electric truck industry is developing at a steady rate in Queensland, and at a rapid rate globally. The charging capacity required at depots and truck stops will be significant. Deploying appropriate and essential public charging infrastructure cost-effectively will be challenging for all parties, especially in regional Queensland. Success will require proactivity, collaboration and innovation, from truck stop developers, truck fleet operators, EV Supply Equipment (EVSE) suppliers and installers, governments, Distribution Network Service Providers (DNSPs) and electricity retailers.

TACTIC 4

Leverage EV cluster detection to influence the placement of network monitors

If EV clusters form on transformers without a monitor, it will be difficult to assess the impact EV charging is having and therefore when the transformer is approaching constraint. Tripping or failures of such transformers, or even quality of supply issues, could have disproportionate implications for affected customers, leading to complaints, escalations and emergency upgrades. Improving visibility of network impacts supports prudent, just-in-time investment in the network.

TACTIC 5

Evolve our network load capacity mapping capability

Charge Point Operators (CPOs) seek the most appropriate and holistically cost-effective sites for new public charging stations. To support this, our recently launched Network Load Capacity Map provides rich insights about network capacity, which will be further improved to better service CPOs and support the associated action in the Queensland Zero Emissions Vehicle Strategy Action Plan.

TACTIC 6

Explore and design potential network solutions to EV-related network constraints

Where EV clusters form, some transformers may become constrained in the foreseeable future, partly due to EV charging. That could lead to impacts on the quality or availability of electricity supply, with emergency rectifications often being expensive and requiring power outages. Enhanced monitoring may facilitate proactive and cost-effective network interventions to defer major network augmentation.

TACTIC 7

Explore the optimal EV data platform(s) to connect all or most relevant data sets

We are building a multitude of EV-related data sources, flows and uses. Each element is valuable; however, some may sit on their own and not be accessible to some potential users. By connecting data sets, we can create deeper value, unique insights, and greater automation and accessibility.

TACTIC 8

Evolve EV charging demand forecasting methodologies and data collection

Demand forecasts and network modelling will be increasingly influenced by EV charging. We continue to source real-world EV charging data across categories and segments to enhance our knowledge and demand forecasts.

TACTIC 9

Monitor the development, potential and adoption of V2G and V2L

There is significant uncertainty as to how accessible and attractive Vehicle-to-Grid (V2G) connections will be to EV owners, whether they are residential or business customers. While V2G holds great promise for both customers and DNSPs, how quickly, where and in what arrangements it is adopted will determine the network challenges and value. Closely monitoring market and technology developments in the V2G space is critical in being prepared for the challenges and opportunities.

TACTIC 10

Prepare for V2G connections

Based on the likely publication of updates to the AS/NZS 4777 standard and the associated certification of bidirectional EVSE in Australia in late 2024, applications for bidirectional EVSE connections will start arriving soon after. Our systems, policies and processes are ready; however, unforeseen implications are inevitable, and forecasting the number of V2G applications is difficult. We are preparing to respond quickly and effectively.

TACTIC 11

Develop connection options for public charging infrastructure in areas with network constraint

While the numbers of EVs in rural areas are currently small, the desire of other commercial and private EV owners to drive into these areas is increasing. The deployment of some public charging stations, and the promotion of networks of charging stations, attracts significant stakeholder and public attention. Many rural networks where charging stations are proposed, or may be proposed in future, are not readily able to support the electrical demand. The network upgrades necessary to support the forecast demand can be significantly more complex.

TACTIC 12

Collaborate in pursuit of greater national consistency in DNSP EVSE connection rules, requirements, communications and other aspects

It is important that we collaborate with other DNSPs, our associations and relevant industries to explore ways to harmonise our requirements as far as practicable. This will improve EVSE connection compliance, build stronger stakeholder relationships and present a more united front with more defensible positions.

TACTIC 13

Explore our role in facilitating kerbside charging

There are many reasons why EV owners might need and benefit from kerbside charging, and many stakeholders are keen to provide and enable kerbside charging. We are exploring the daytime-charging opportunities that kerbside charging presents and the barriers that exist to broader adoption.

TACTIC 14

Investigate and implement ways to streamline the connection process and planning

The number of connection enquiries for public EV charging stations continues to rise markedly. We will continue to work closely with CPOs to improve the efficiency of the enquiry, application and delivery processes. We strive to balance the network and business needs with CPOs' commercial imperatives.

TACTIC 15

Identify and outwork our role in addressing EV charging challenges in multi-residential dwellings

The EVSE installation and strata management industries, bodies corporate, and relevant EV owners and aspiring buyers are grappling with the barriers to cost-efficient, safe, fair and technically feasible EV charging solutions in multi-residential dwellings (e.g. flats, apartments, retirement villages, embedded networks). The network business will define and articulate the roles it could play in developing those solutions.

TACTIC 16

Design and implement trials of residential, fleet and public charging options, where required

As the charging arrangement options increase across all relevant customer segments, trialling of technologies, programs, customer engagement strategies, etc. will become increasingly important to ensuring we are deploying the right solutions to the right customers in the right way at the right time.

TACTIC 17

Explore and articulate the challenges posed by EV charging, and in facilitating public EV charging, on fringe-of-grid networks

Federal and State Government funding of public charging station networks in rural areas is one factor that will encourage some EV owners to venture out of the cities and major towns and encourage rural customers to buy EVs. It is inevitable that constraints will emerge on rural and remote networks and that proposed public charging sites will be difficult to facilitate cost-effectively with traditional network solutions. A proactive approach to understanding challenges will build a strong foundation for future responses.

TACTIC 18

Enable flexibility in EV-related load, at the residential, business and public charging levels

Customers appreciate choice and gravitate towards convenience. Some are more price-sensitive than others, and some are more technology-savvy than others. By more deeply understanding EV owner and charging provider motivations in charging, we can enable solutions and offerings that are attractive to them on a range of attributes. Those solutions will simultaneously enhance our ability to influence underlying demand profiles and manage EV charging during critical peak demand periods to maintain quality of supply and defer network augmentation.

TACTIC 19

Collaborate with stakeholders to promote attractive tariff offerings for residential and business EV owners

While electricity retailers work to simplify price signal structures where possible, they are increasingly reflecting complexity in retail tariffs. We will continue to collaborate and communicate about tariffs, potentially in new ways, with regulators, governments, retailers, customers, their advisers and our employees. This will include improving understanding of the relationship between network tariffs and retail tariffs.

TACTIC 20

Identify all types of EV-related data, the internal and external users, their needs and visions for applying the data

We already have myriad types, sources and internal and external users of EV-related data, and the complexity will only increase. The value of data is largely dictated by its quality and accessibility. If potential internal and external users are not aware of data, or it is not in a form they can access, they cannot extract and deliver value from it.

TACTIC 21

Engage Charge Point Operators through research, meetings, webinars and other forums to listen and inform

When the CPO is presented with a network augmentation cost estimate that is prohibitive to proceeding, after a process perceived to be long, it is frustrating and slows the deployment of charging station networks. New models in process and engagement are being, and will continue to be, developed to ensure that DNSPs are an enabling partner in the growth in the number of public charging sites.

TACTIC 22

Deploy a Network EV Stakeholder Engagement and Communications Plan

The number of EV-related stakeholders for the network business is growing steadily, and those stakeholders and their needs are becoming more diverse. That complexity could lead to engagement overlaps, gaps, confusion, and poor stakeholder and business outcomes overall if not more coordinated in a strategic way.

TACTIC 23

Inform fleet operators and charging providers on charging infrastructure connection considerations

Many fleet operators and destination and public charging providers are underinformed about the electrical infrastructure required to support their planned charging needs. That may lead to poorly informed enquiries and subsequent lengthy application processes, creating wasted time and applicant frustrations.

TACTIC 24

Leverage our EV charging-related research to promote small* customer choices and align them with network priorities

We have gathered a suite of EV-related research data and insights that inform our initiatives, underpin collaboration and build a foundation from which to launch other research, studies and trials. As the charging arrangement options for small customers become increasingly complex, gathering and analysing data and insights becomes more important to informing our role in explaining options and their benefits to our end-customers and other stakeholders.

**A 'small' customer is defined as a residential or business customer in a premises connected to a Low Voltage network and using less than 100 MWh per annum.*

TACTIC 25

Enhance and leverage our EV webpages as an information resource

Our EV webpages are comprehensive; however, the information needs of aspiring and existing EV owners, and other EV-related stakeholders, are growing rapidly. We regularly listen to our stakeholders and improve our webpages to support EV-related initiatives, to enhance customer outcomes, reduce enquiries and thereby enhance business efficiency.

If any of these tactic descriptions stimulate a potential collaboration opportunity in your mind, or you have any questions, we would love to hear from you via ev@energyq.com.au

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