New Energy Landscape: How eMobility and microgrids shape the future of energy

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Commitment to reduce Green House gas Emissions by 2030 by 43%

The emissions in 2022 compared to 2005 decreased by 21%

32% of the emissions comes from Electricity generation

21% of the emissions comes from Stationary energy*

*includes emissions from direct combustion of fuels, predominantly from the manufacturing, mining, residential and commercial sub-sectors

Source: Quarterly Update of Australia’s National Greenhouse Gas Inventory: September 2022
Australia’s Energy Transition will continue to see the acceleration of DERs representing ~half of the total energy by 2050

Distributed Solar PV

- NOW: 18 GW
- 2032: 41 GW
- 2050: 69 GW

Storage Capacity

- NOW: 10 GW
- 2032: 30 GW
- 2050: 67 GW

Grid-scale wind & solar

- NOW: 20 GW
- 2032: 55 GW
- 2050: 139 GW

Electrical Vehicles

- NOW: 34k
- 2032: 360k
- 2050: 1.2m

**319MW** behind the meter controlled by 39 Virtual Power Plants as of 2023

Source: BNEF
The Energy Value Chain Transition

Historical Energy Value Chain

Centralized Generation → HV Transmission → MV/LV Distribution → Energy Customer

or

Fuel based Standalone generation

or

Off grid microgrid w/ new clean generation

The New Value Chain

Centralized Generation → Transmission → Distribution → Prosumer
eMobility - Market trends in Australia

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual EV sales (cars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>43,300</td>
</tr>
<tr>
<td>2024</td>
<td>57,900</td>
</tr>
<tr>
<td>2025</td>
<td>73,300</td>
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<tr>
<td>2026</td>
<td>98,586</td>
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<tr>
<td>2027</td>
<td>126,264</td>
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<tr>
<td>2028</td>
<td>160,470</td>
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<tr>
<td>2029</td>
<td>201,365</td>
</tr>
<tr>
<td>2030</td>
<td>250,334</td>
</tr>
</tbody>
</table>

National Construction Code – NCC 2022
Section J9D4 – Infrastructure for EV charging
eMobility – EVlink Pro AC chargers

**From 7 to 22 kW**

Mode-3 Charging

Highly reliable, flexible, and sustainable smart charging for buildings of the future, optimizing energy use, maximizing uptime and efficiency, and ensuring a seamless user experience for installers, operators, and EV drivers

**Key Features**

- **Connected**
  - Advanced connectivity and interoperability

- **Reliable**
  - Robust tested and certified products by 3rd party (IEC 61851 ed3)

- **User-friendly**
  - Simple and intuitive to install, commission, use, operate and maintain

- **Safe compliant**
  - Reinforced safety thanks to embedded protection

- **Sustainable**
  - Sustainable product, Green Premium labelled

- **Flexible**
  - Scalable, interoperable, modular and customizable look and feel
eMobility – EV Charging Expert (Load Management System)

One of the challenges faced by building owners is to size the EV charging infrastructure properly in order to limit the impact on the energy costs of the building while providing high service level to the EV drivers. The solution is EcoStruxure EV Charging Expert.

This edge control software solution:
- Distribute available power in your building among charging stations with flexible, smart rules defined by the system algorithms.
- Maximize building continuity of service all while offering fair EV charging capabilities to EV users.
- Manage user access & authentication via RFID/NFC badges.
- Remote control of charging stations (start, stop, reboot, etc.).
- Consumption data visualization and export for analytics.
- Integration into upper supervision systems and backends.
- Configuration assistant to support easy commissioning.
- Centralized Configuration to Manage up to 100 charging stations.
- Central supervision from embedded webserver user interface dashboard.
Microgrids to serve the energy transition

A microgrid provides a decentralized, digitized & decarbonized alternative...

... delivering integrated outcomes

➔ A group OF INTERCONNECTED LOADS ...
➔ ... and DISTRIBUTED ENERGY RESOURCES within clearly defined electrical boundaries
➔ acting as a SINGLE CONTROLLABLE ENTITY with respect to the grid

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Microgrids to serve the energy transition

Off-grid
Designed and engineered reduce carbon footprint, deliver resilient energy and reduce operational cost.

Grid-tied
Optimise electrical bill & sustainability footprint.

Island-able
Manage blackouts while optimizing your electrical bill. Designed and engineered to transition to and from on and off grid.
EcoStruxure Microgrid Solutions for flexible systems

**EMS**
Energy Management System
EcoStruxure Microgrid Advisor
Forecast and Optimize when to consume, produce, store, or sell energy.

**PMS**
Power Management System
EcoStruxure Microgrid Operation
Ensure stability and safety of energy supply in all grid conditions.

**ED**
Electrical Distribution
Power Meter, Circuit Breaker, LV panel, MV etc.
Core offers of SE, ensure easy integration and management of DER.

**DER**
Distributed Energy Resources
BESS, PV inverter, BMS, EV chargers
Build your microgrid with core DER.

**Services**
- DER sizing
- Power System Engineering
- Financing