Green Transport Energy Solutions

October 2022

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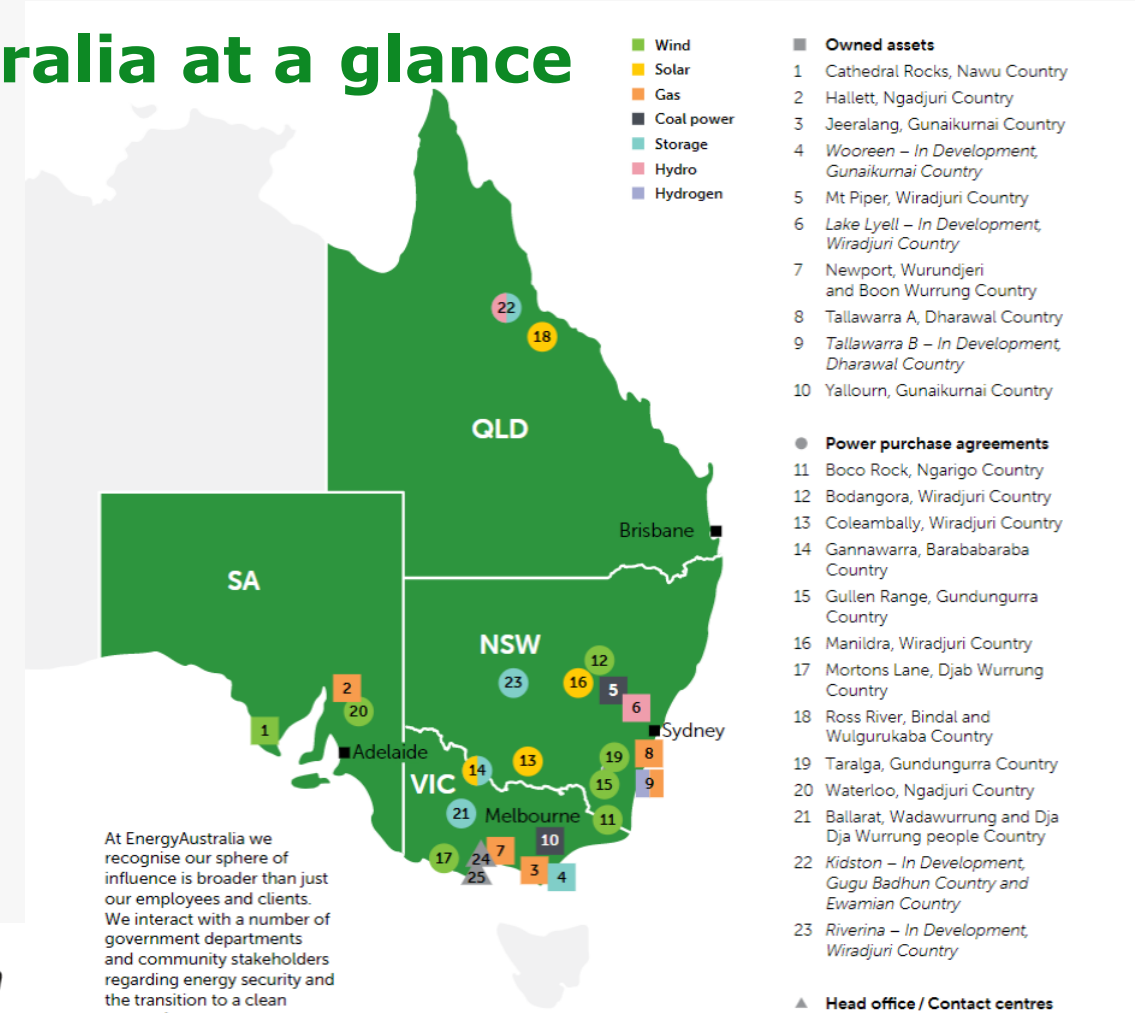
EnergyAustralia at a glance



Owned assets

1 Cathedral Rocks, Nawu Country
2 Hallett, Ngadjuri Country
3 Jeeralang, Gunaikurnai Country
4 *Wooreen – In Development, Gunaikurnai Country*
5 Mt Piper, Wiradjuri Country
6 *Lake Lyell – In Development, Wiradjuri Country*
7 Newport, Wurundjeri and Boon Wurrung Country
8 Tallawarra A, Dharawal Country
9 *Tallawarra B – In Development, Dharawal Country*
10 Yallourn, Gunaikurnai Country

Power purchase agreements

11 Boco Rock, Ngarigo Country
12 Bodangora, Wiradjuri Country
13 Coleambally, Wiradjuri Country
14 Gannawarra, Barababaraba Country
15 Gullen Range, Gundungurra Country
16 Manildra, Wiradjuri Country
17 Mortons Lane, Djab Wurrung Country
18 Ross River, Bindal and Wulgurukaba Country
19 Taralga, Gundungurra Country
20 Waterloo, Ngadjuri Country
21 Ballarat, Wadawurrung and Dja Dja Wurrung people Country
22 *Kidston – In Development, Gugu Badhun Country and Ewamian Country*
23 *Riverina – In Development, Wiradjuri Country*

Head office / Contact centres

24 Melbourne, Wurundjeri Country
25 Geelong, Wadawurrung Country

At EnergyAustralia we recognise our sphere of influence is broader than just our employees and clients. We interact with a number of government departments and community stakeholders regarding energy security and the transition to a clean energy future.

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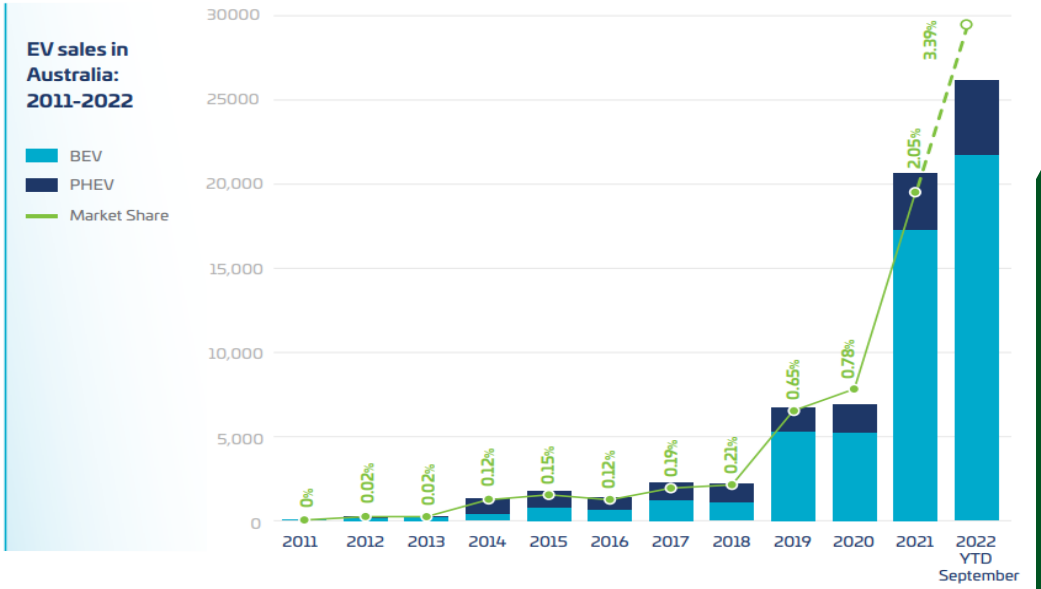
Electric Vehicle Trends

Market trends relating to EVs

During the first three quarters of 2022 a total of 26,356 EVs were sold. The share of new vehicles sold in Australia that were EVs increased to 3.39% (YTD September 2022), compared to 2.05% in 2021. This represents a 65% increase in the market share of electric vehicle sales so far in 2022.



Source: State-of-EVs-October-2022.pdf (electricvehiclecouncil.com.au)

What this means for OPEX

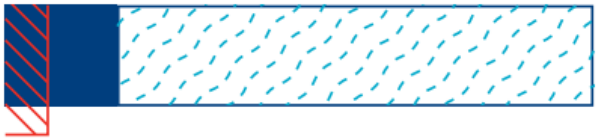
Despite fossil fuel prices increasing, demand of electric vehicles will continue to rise.

Once the backlog supply of EVs reaches Australia, the market demand for electricity will need to be met.

Transport Emissions Contribution

EMISSIONS AND NET-ZERO

19% Transport emissions in Australia make up 19 per cent of our total emissions. [3]



38% The road freight sector contributes 38 per cent of our total transport emissions.[4]

4%

Heavy vehicles make up around only 4 per cent of the road vehicle fleet

8%

yet they perform about 8 per cent of road vehicle kilometres travelled (VKT).

23%

In total, heavy vehicles account for 23 per cent of all road transport fuel consumed in Australia.[5]

Source: Electric Vehicle Council, Electric trucks: Keeping shelves stocked in a net zero world

What this means for OPEX

Currently the average age of trucks in Australia is 10-15 years. In comparison to Austria 6.4 years, France 9.3 years, Germany 9.5 years

The age of truck fleets in Australia results in higher emissions through vehicle inefficiency and increased fuel consumption (Higher OPEX)

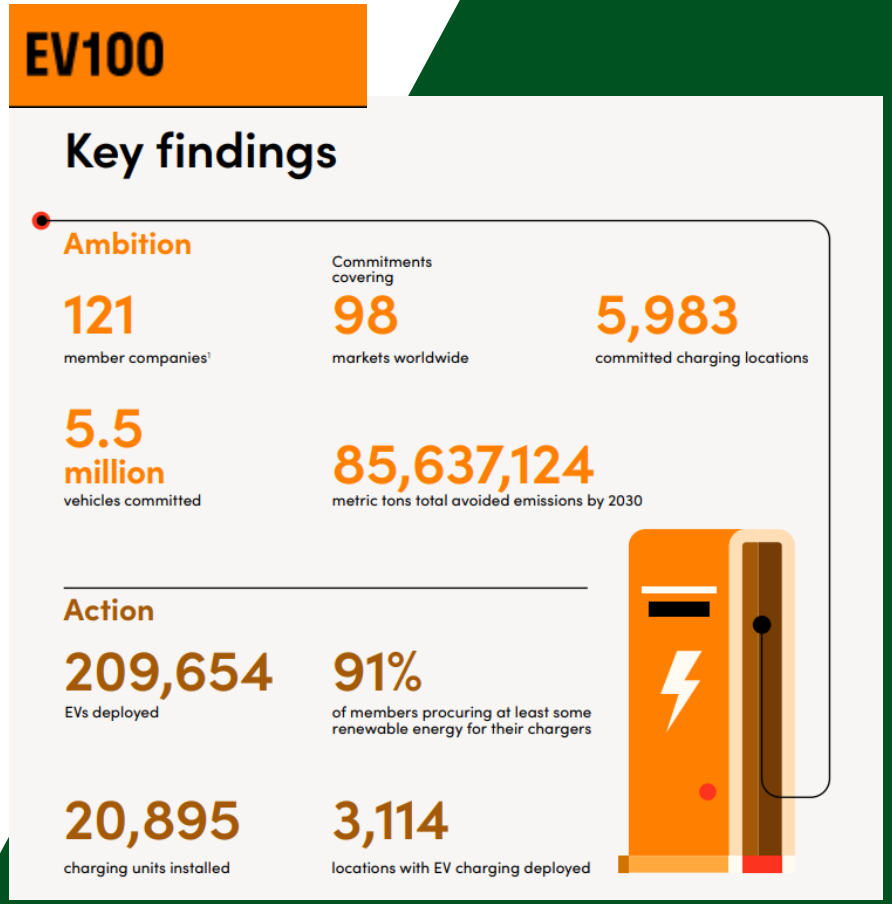
Increased cost savings in the transport industry have a strong flow-on effect to other industries within the Australian economy

EnergyAustralia | Commitment to Electrification

As part of our goal to be carbon neutral by 2050, EnergyAustralia is a signatory to EV100 (through its parent company, CLP):

- Our entire fleet will be electric by 2030
- All our facilities will be equipped with EV charging infrastructure
  - Five EV's
  - DC chargers at Mt Piper Power Station H
  - DC and AC chargers at Yallourn Power Station

Source: EV100



Diesel vs Electricity Fuel Costs

- Diesel is one of the most significant costs for a trucking business
  - around 20 per cent for short haul operators
  - around 35 per cent for long haul operators
- Lower maintenance costs
- Need for globally competitive freight costs
- Urban freight efficiency

ELECTRICITY VS. DIESEL COSTS.

In a **22-tonne electric truck,** covering 300 km unladen would use 280 kWh of electricity.

In a **22-tonne rigid diesel truck,** covering 300km requires 70-85L of fuel.

FUEL TYPE	Electricity	Diesel
ENERGY REQUIRED FOR 300KM RANGE	280kWh	84L
COST PER KWH (OFFPEAK COMMERCIAL)	$0.05-$0.15/kWh*	
COST PER L ($ AVERAGE)		$1.33/L
COST PER 100KM	$4.67-$14.00 (93.33kWh/100km)	$38.78** (28.6L/100km)
COST FOR 300KM WORTH OF FUEL	$14-$42	$116.34

* Electricity price is based on a commercial off-peak tariff for a depot-based fleet.
** including diesel cost of $37.24 (28L/100km) and Adblue of $1.54)

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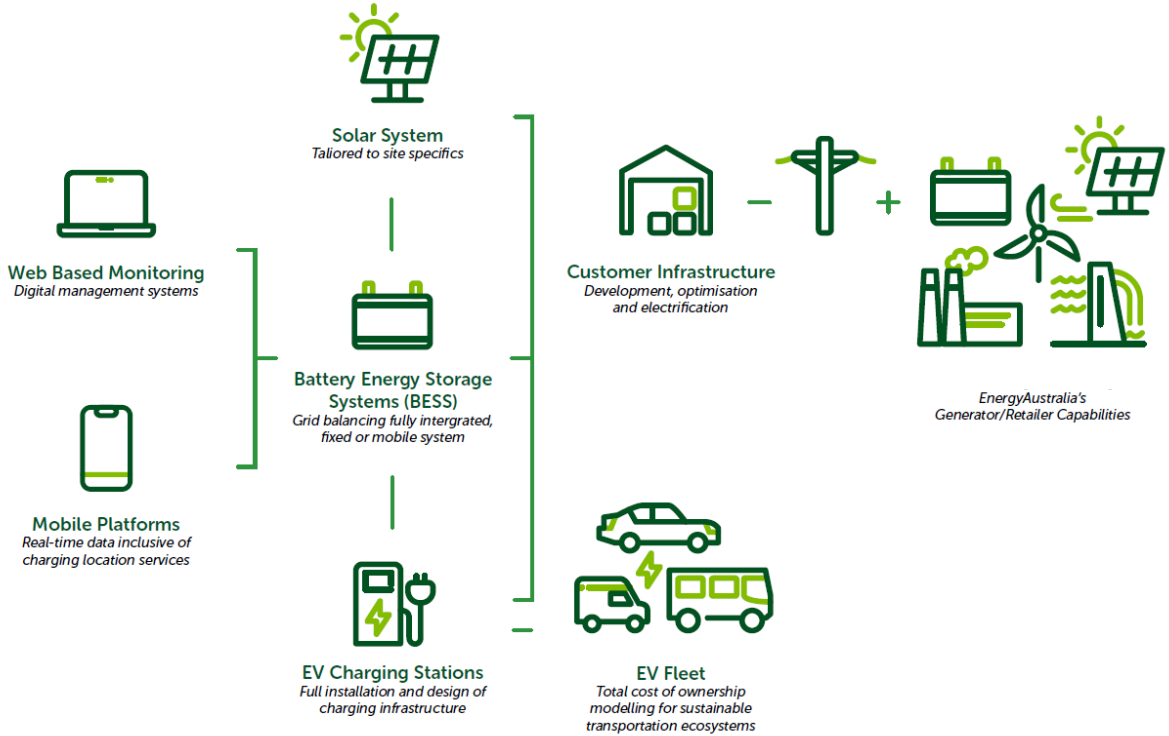
Green Transport Energy Ecosystem



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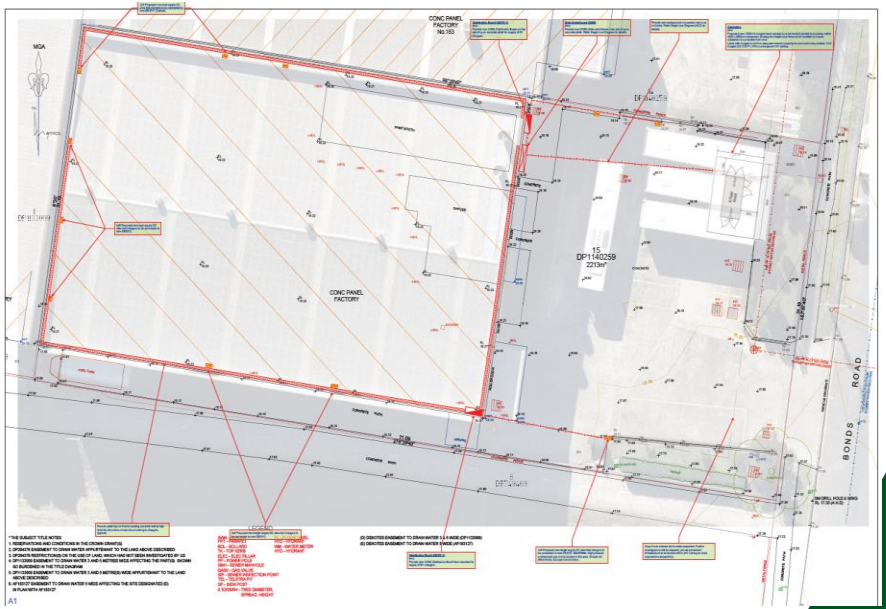
Past Electrification/Greenification Tenders Developed

Green Transport team have collaborated with our partners more than 15 sites and assisted fleet operators to fully electrify/g reenify.



New Revenue Streams- Advertisement

- Charge two vehicles simultaneously
- Local support and parts availability
- From 50 to 150kW charge rate
- 55" media screen for video or image advertising
- Share customised content for messaging or advertsing
- Fully OCPP 1.6/2.0.1 compliant
- LAN, 4G and Wi-Fi connectivity
- Plug-n-play, RFID, QR or PoS
- Closed loop product
- RCM Compliant

Recommend EVDC-60S-EU model for dealerships

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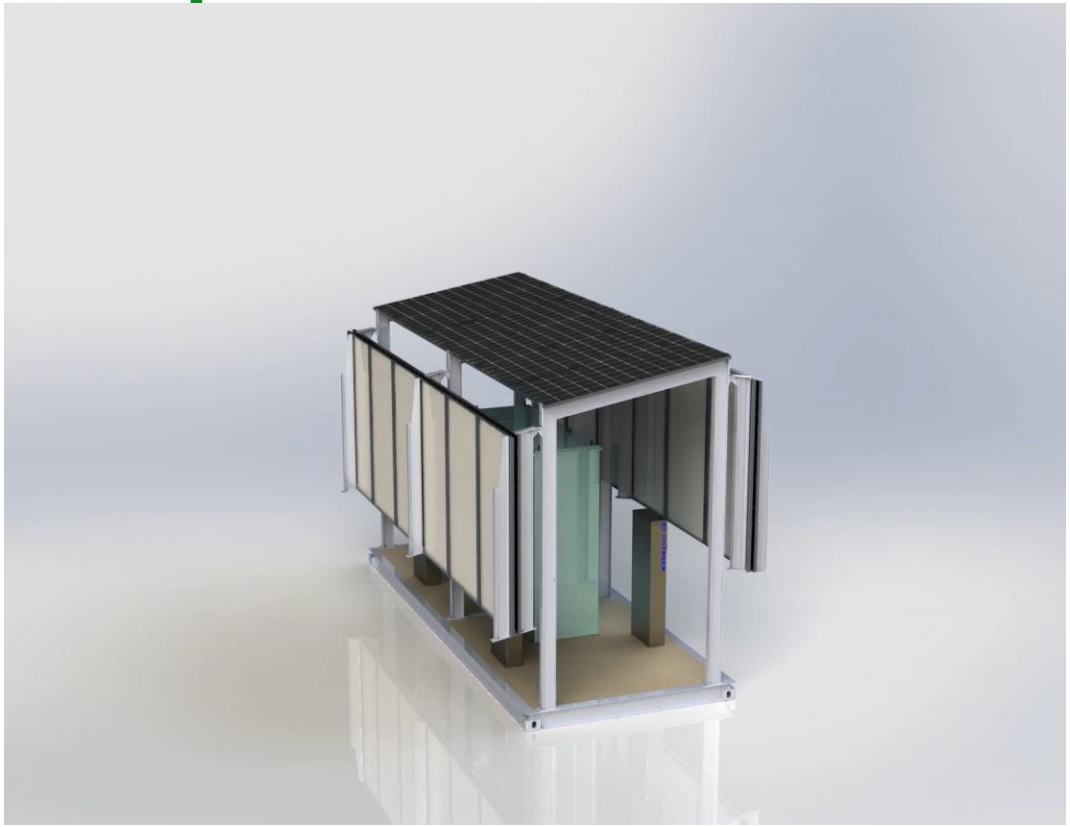
Green Transport Relocatable Solutions



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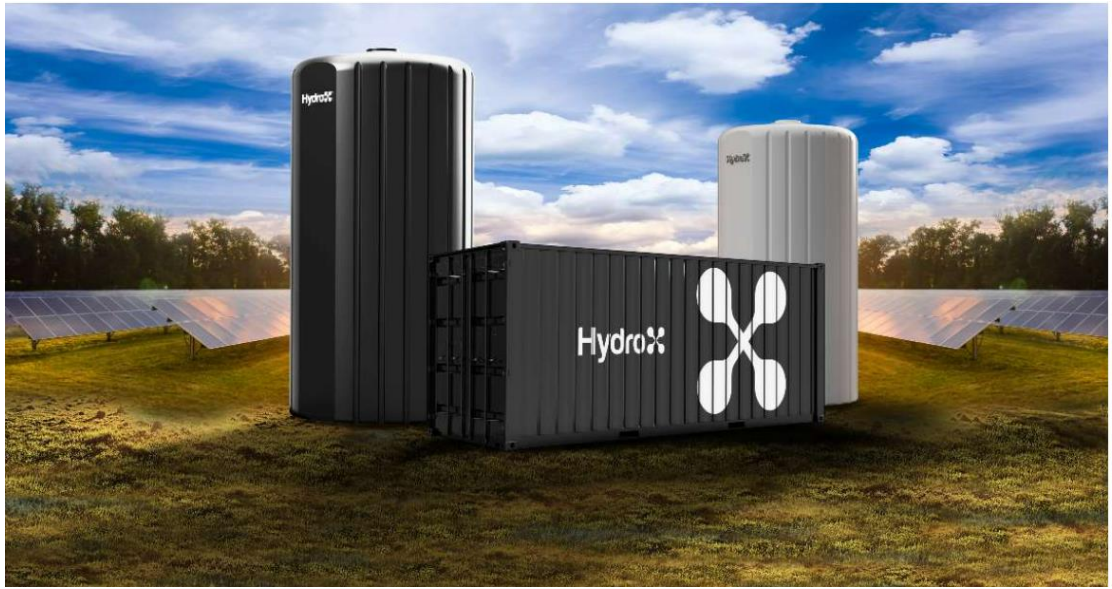
NextGen Green Hydro Innovation



Hydro X for Renewables Applications

Hydrogen storage for solar and wind farms for end-to-end green energy value chain and long-term (seasonal) energy storage

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Traditional Hardware- Synchronous Condenser

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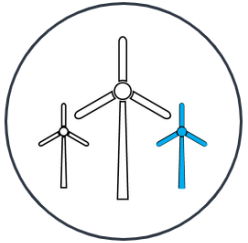
Future Synchronous Condensers Potential Replacement to Enable more EV's and Renewables

Innovative Software

Enhanced grid stability via innovative software that interfaces with inverters, with zero excess equipment.

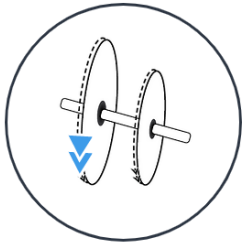


High RES Levels

Synvertec's software enables high levels of renewable energy source (RES) grid penetration, thereby promoting environmental sustainability.

Cost-Effectiveness

Fully software based, Synvertec creates an extremely low total system cost. Grid stability and high RES have never been more cost-effective.



Inertia Capabilities

Artificial inertia capabilities allow inverters to simulate synchronic generator characteristics, thus enhancing grid stability.

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Charging Regimes fit-for-purpose

	Charger type	Charger Power	Charging time
	Slow - Single phase (wall box)	7 kW	2-5 hours
	Fast - three phase (wall box)	11-22 kW	30 min - 2 hrs
	Fast chargers	50 kW	20-60 min
	Super fast chargers	120 kW	20 – 40 min
	Ultra fast chargers	350 kW	10 – 15 min

Level 1/2

Existing power point (10-15 Amp, single phase), used in combination with a specialised cable which is typically supplied with the vehicle.

Typically used in standalone domestic homes.

This method will add between 10 and 20km of range per hour plugged in.

It will top up daily use, but will not fully recharge a typical pure electric vehicle overnight.

Level 2 / Mode 3

A dedicated AC EV charger at up to 22kW (32 Amp, 3-phase).

Typically installed in homes, apartment complexes, workplaces, shopping centres, hotels, etc – anywhere the vehicle will be parked for a while.

This method will add 40 to 100km of range per hour of charging depending on the vehicle.

It will top up average daily vehicle use in an hour, or deliver a full recharge overnight.

Level 3 / Mode 4

A dedicated DC EV charger at power levels from 25kW to 350kW (40 – 500 Amp, three phase)

Typically used in commercial premises and road-side locations to provide for faster recharging than Level 1 and 2 can achieve.

At the lower end, this method will add up to 150km of range per hour plugged in

At the upper end, this method can fully recharge some electric vehicles in 10 to 15 minutes.

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Green Transport
Solar Canopies

Questions

For more information visit
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