

# Electric Vehicle Charging Solution

Affordable, Intelligent, Reliable



# The Need for EV Charging Solution

• EV will become the main mode of transportation as part of SG government's plan

#### **Our EV Vision**

Singapore aims to phase out Internal Combustion Engine (ICE) vehicles and have all vehicles run on cleaner energy by 2040.

In Singapore, where most of our power is generated from natural gas, we can be more sustainable by switching from internal combustion engine (ICE) vehicles to electric vehicles (EVs). An EV emits half the amount of  $CO_2$  as compared to a similar vehicle powered by ICE. If all our light vehicles run on electricity, we would reduce carbon emissions by 1.5 to 2 million tonnes, or about 4% of total national emissions.

Source: LTA website

• It is recommended that each carpark be fitted with at least one EV charger to accommodate the shift to EV



### Important Notes about EV Chargers

• EV chargers are regulated by LTA in SG

SINGAPORE - The Land Transport Authority (LTA) will take over the regulation of electric vehicle chargers from the Energy Market Authority, under a new law passed in Parliament on Tuesday (May 11).

This move will see the LTA regulate both electric vehicles (EVs) and charging infrastructure, which Senior Parliamentary Secretary for Transport Baey Yam Keng said will help push adoption of EVs.

Source: The Straits Times

- It must meet the TR-25 requirements, and
- Receive a letter of no objection (LNO) from the authority



#### EV Chargers Basic – Part 1 Type of EV Chargers

• There are 4 charging modes



- Mode 1 is not permitted as it is unsafe
- Mode 2 is recommended for domestic premises, while Mode 3 and 4 are recommended for public & shared charging stations
- Energo provides mode 2 (cable AC), mode 3 (AC) and mode 4 (DC) chargers



#### EV Chargers Basic – Part 2

### Comparison of EV Chargers

	Mode 2 (Cable Charger)	Mode 3 (7kW AC Charger)	Mode 4 (50kW DC Charger)
Price (SGD) <sup>1</sup>	Low	6 x price of mode 2 charger	60 x price of mode 2 charger
Charging duration (40kWh Nissan Leaf)	At least 13 hrs	At least 6 hrs (overnight charging)	Within an hour <sup>2</sup>
Other Remarks	Recommended for domestic EV charging	Recommended for public EV charging	Recommended for public EV charging

<sup>1</sup>Price could be significantly higher, depending on available power in the premises and the no. of chargers to be installed. Please contact us for actual pricing. <sup>2</sup>Not all EV can be fast-charged



#### EV Chargers Basic – Part 3 EV Charger Connector



In SG, EV charger connectors have been limited to the following. Almost all EVs in SG can use these connectors.



Type 2 – AC connector



**CCS 2** – Combo AC & DC connector



**CHAdeMO** – DC connector (Mainly for Japanese EV. It will be accompanied with a Type 2 connector as per regulation)



#### EV Chargers Basic – Part 4 EV Charger Software

Mode 3 and 4 chargers can communicate with a backend system through the OCPP protocol.

This protocol is universal and is used in many chargers.

Through this protocol, the following functions can be made available:

- User authorization
- Reservation
- Data collection (power consumed, charging duration, etc.)
- Firmware update
- Remote reset
- Change configuration

Operators and users can use the frontend program to access these functions.

Energo can provide the backend and the frontend system for managing the EV chargers







### About Us



- We are newly established in 2019
- We provide EV charging system
- We also provide EVC operator system solution
- Our mission is to support SG in its electrification of transportation
- Our charging equipment are certified
- Our staffs are experienced with EV chargers and EV
  - We have been involved in a few related projects. Contact us to find out more.



Tel: 6100 0133 Email: enquiry.energo@gmail.com

### **Our EV Charging Solutions**

#### **AC Chargers**

**DC Chargers** 









\*Disclaimer: Certain models are not available in SG yet. Please talk to our staff for more details



Tel: 6100 0133 Email: enquiry.energo@gmail.com

### Charger Info



EVlink Smart Wallbox - 22 kW (EVB1A22PCRI)	
Schneider Electric	
Right side Type 2 attached cable	
Wall-mounted	
RFID Badge/Card	
IP54 (suitable for outdoor use)	
8.3kg	
Yes. Received LNO	



# EVC Installation Workflow

- 1. We will first visit your site to understand your needs and assess the premises. After which, we will propose within one to two weeks.
  - 2. Upon acceptance of the proposal, we will commence work by first setting up the electrical infrastructure.
- 3. Once the infrastructures are laid out, we will install the charger(s) and commission it.
  - 4. As per TR-25 requirements, we will perform routine maintenance of the chargers.



# Common Constraint

- EV charging takes up a lot of power. Unfortunately, most car parks are not equipped with sufficient power capacity to meet this demand.
- While electrical infrastructure can be upgraded to provide the required power capacity, it can get expensive and may face some limitations.



COOKER



### **Our Solution to Power Constraint**



- Energo provides integration of battery energy storage system (BESS)
- During the day where the power usage is low, excess power will be stored inside the BESS
- When the vehicles are charging at night, the BESS will release these stored power to supplement the grid
- This shift in load helps reduce the strain to the power supply and minimize the upgrade needed, cutting down on installation cost





#### **Proposal Preview**

Package 1

**Client** incurs the full cost of installation and operations.

Ownership of the chargers goes to the client.

**Energo** will provide backend (optional) and maintenance at a fee.

#### Package 2

**Client & Energo** share the cost of installation and operations on a 50:50 basis.

**Energo** will own and manage the chargers for the first three years. After which, ownership and management of the chargers will be passed back to the **client**.

#### Package 3

**Energo** incurs the full cost of installation and operations.

**Client** shall provide **Energo** publicly accessible car parks which will only be used for EVcharging.

Contract can be terminated without penalty at the end of every 3-years service period.

\*Disclaimer: These are some of the possible arrangements. Please talk to our staff for more details



#### Available Grants & Discounts

Grants		
EV Common Charger Grant (up to \$4000)	Only for non-landed private residences (NLPR), such as condos and private apartments. For 1% (rounded-up) of residential parking lots within each NLPR.	
Discounts		
Early-bird discounts	Available till 31 <sup>st</sup> Sep 2021	

- Last updated 21<sup>st</sup> July 2021.
- Please contact our staff for latest info on grants and discounts.



#### Additional Products

Looking to improve the quality of lives of your residences and staffs, Energo also offers first-and-last-miles connectivity solutions and other advanced technologies.



Shuttle Services



7m (left) and 4m (top) electric buses. Autonomous mode available upon request.





# Interested? Contact Us @ 6100 0133 or enquiry.energo@gmail.com