

# Emerging Skills Programme Open Government Licence Guidelines

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# What Is Open Government Licence (OGL)

### **Basic guidelines**

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### **ELEC304 - Automotive Electric Vehicle Charging**

LO4 - Electrical Vehicle Charging System Overview



# **Function (Charging)**

#### Function

- To store external power in the HV (High Voltage) battery.
- It is controlled by the VCU (Vehicle Control Unit).
- There are two different charging methods.

#### Slow/Fast (regular) charging:

- Connect the EVSE (Electric Vehicle Supply Equipment) to a wall outlet.
- Converts single-phase 240 VAC via the OBC (On-Board Charger) (3.3kW/6.6kW).
- Charging time (0 > 100%): Approx. 8 hours (240 VAC).

#### Rapid (direct) charging:

- Charging with DC, 400 VDC using the rapid charger.
- Charging time (10 > 80%): Approx. 30 minutes.

#### A relay (located in the junction box) is used in the charging circuit for safety.



### **Function (Slow/Fast Charging AC)**





### **Function (Rapid Charge DC)**





### **Component Parts (Regular Charge Port)**



#### Function

To feed 240 VAC coming from the EVSE to the OBC/controlled by the VCU

Slow/Fast (regular) charge connector





### **Component Parts (Rapid Charge Port)**



#### Function

To feed 400 VDC coming from the rapid charger to the HV battery during a charging cycle



Rapid (DC direct) charge connector



# **Electric Vehicle Supply Equipment (EVSE)**



#### EVSE comes as standard with most vehicles.

#### Function

It is a power cable which connects a vehicle to a wall socket outlet.



### It has an added safety function:

It stops charging if there is a build-up of heat, or an electrical insulation leak is detected.

EVSE plugged into the (regular) charging port