

Electricity Regulation in Supporting Electric Vehicle Ecosystem

ABB E-Mobility Innovation
Forum

September 27th, 2023

#TransisiEnergi



MANAGEMENT OF ELECTRICITY SUPPLY IN INDONESIA

(Law No. 30/2009 on Electricity & Law No. 11/2020 on Job Creation)

AUTHORIZATION



STATE

GOVERNMENT
REGIONAL GOVERNMENT

- Regulation, policy, standard
- RUKN, RUKD, IUPTL, Op. License, Tariff, and Business Area
- Provides funding for:
 - Low income society
 - Development of electricity supply infrastructure in undeveloped regions
 - Development of electricity in remote and border areas
 - Development of rural electricity

BUSINESS

ELECTRICITY BUSINESS LICENSE HOLDER (IUPTL)



STATE-OWNED
ENTERPRISE*



REGION-OWNED
ENTERPRISE**



PRIVATE
ENTITIES**



COOPERATIVES**



SELF-RELIANT
COMMUNITIES**

* : First Priority ; ** : Given the opportunity as integrated electricity business license organizer for not electrified areas

Article 11 of Law 30/2009 in conjunction with Law 11/2020 on Job Creation

- 1 The electricity supply business for public can be performed by State-Owned Enterprises (SOEs), Regional-Owned Enterprises (ROEs), Private Enterprises, Cooperatives and Non-Government Organizations (NGO).
- 2 State-owned enterprises as referred in article (1) is given the first priority to execute the electricity supply business for the public.

Article 3 President Decree No. 4/2016 on Acceleration of Electricity Infrastructure Development

- 1 The government has assigned PT PLN (Persero) to carry out the acceleration of electricity infrastructure
- 2 Supervision for the implementation of acceleration of electricity infrastructure by PT PLN (Persero) as referred in article (1) is conducted by the minister in energy and mineral resources sector.



GRAND NATIONAL ENERGY STRATEGY

VISION

The realization of national energy mix based on the principles of justice, sustainability, and environmental insight in order to create resilience, independence and energy sovereignty

CHALLENGES

Energy demand is increasing* and energy supply capacity is limited:

1. Production of crude oil decreased, imports of crude oil & gasoline increased, utilization of NRE was still low
2. LPG is still imported
3. Coal exports depressed
4. Gas and electricity infrastructure has not been integrated

*economic growth average 2020-2040: 5% (RUEN 7,5%)

SOLUTION/STRATEGIC PROGRAM

1. Accelerate the utilization of NRE power plants by 38 GW by 2035 (Solar PV and other NRE)
2. Increase crude oil production 1 million bopd and acquisition of overseas oil fields for refinery needs
3. Increase the capacity of existing refineries and build new refineries
4. Provide gas-based energy for industrial areas and transportation (such as CNG)
5. Increase the use of battery-based electric motor vehicles
6. Optimize biofuel production (biodiesel or biohydrocarbons)

7. Increase the development of the city gas infrastructure
8. Increase domestic LPG production
9. Encourage the utilization of electric stoves
10. Develop DME production

11. Build gas transmission, LNG receiving terminal, and energy buffer infrastructure
12. Develop methanol, fertilizer & syngas production, as well as coal mining synergies with smelters
13. Build electricity transmission & distribution, smart grid, off grid and nuclear power plants as needed and establishing the Nuclear Energy Program Implementing Organization (NEPIO)
14. Encourage efficiency, energy conservation and innovation in the field of energy such as Hydrogen, NH3, and CCUS



LEGAL BASIS FOR BATTERY EV

Chapter IV of Presidential Regulation No. 55 of 2019 on Acceleration of the Battery Electric Vehicle Program for Road Transportation

Article 17 clause (1)

Central and Local Governments **provide incentives** to accelerate the Battery EV for road transportation program

Article 17 clause (3)

Incentives are given to:

- f. companies that provide **battery swaps for Electric Motorcycles**;
- i. companies that **provide EV charging station (EVCS)** and/or agencies or residences that **use private electrical installations to charge EV**;

Article 22 clause (3)

Charging Station infrastructure for Battery EV as referred to in clause (1) **must comply with electricity safety provisions in accordance with the laws and regulations**

Article 23:

In carrying out the assignment as referred to in clause (2), PT PLN (Persero) **may cooperate with BUMN and/or other Business Entities in accordance with the laws and regulations**

Article 27:

Electricity tariff applied to BEV charging is set by the **minister in charge of energy and mineral resources affairs**.

MEMR Regulation

No. 13 of 2020 → No. 1 of 2023

on the Provision of Electricity Charging Infrastructure for
Battery-Based Electric Vehicles **has been published**

This regulation consists of 9 chapters, 44 articles, and 7 appendices, with main regulatory points:

- EV Charging Station in the form of EVCS and Battery Swap Station (BSS);
- BSS Business Entity is Business Entity that has Business Registration Number and Ratification of the Establishment from the Ministry of Law and Human Rights;
- EVCS Business Entity is Integrated Electricity Provision Business License for Public Use (IUPTLU) or IUPTLU-Sales holding Business Entity which has cross-provincial Business Area
- EVCS licensing process is served through the Online Single Submission (OSS);
- EVCS and BSS business schemes;
- EVCS and BSS ID Number Codefication;
- Electricity Tariff for EVCS and BSS;
- Incentives for EVCS and BSS Business Entities; dan
- Electricity Safety for SPBKLU, SPKLU, and Private Electrical Installations



MEMR REGULATION NUMBER 1 YEAR 2023 ON PROVISION OF EV CHARGING STATION INFRASTRUCTURE

ELECTRICITY STIPULATION

- Gas Stations
 - Dept. Store
 - Office Complex
 - Parking Area
- Public Use Electricity Provision Business License (IUPTLU) and Business Area;
 - State Owned Energy Company or Private Company;
 - First assignment is assigned to PLN;
 - PLN can cooperate with another State-Owned Company or Private Sector.

STANDARD & SAFETY

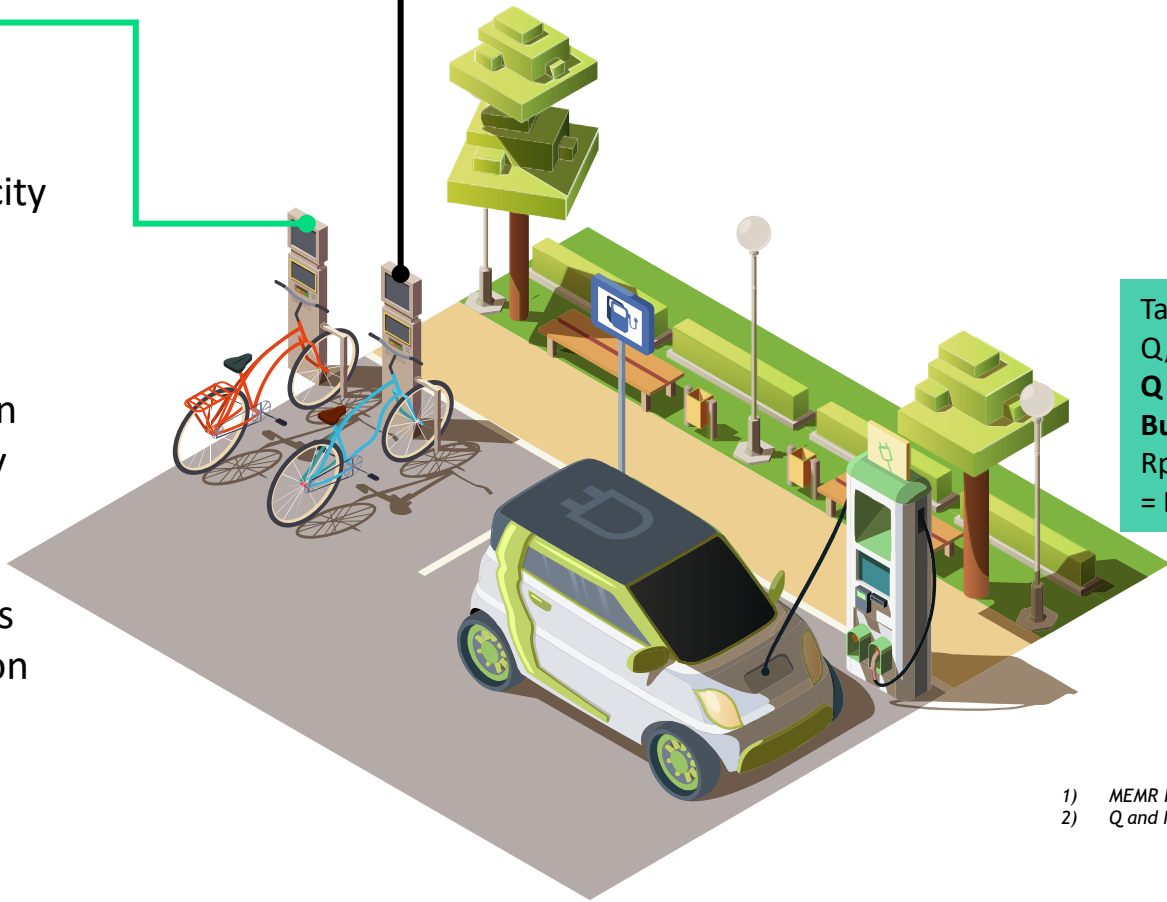


EVCS must comply to Electricity Safety Standards stated by MEMR;

EVCS' Certificate of Operation Worthiness (SLO) is issued by Technical Inspection Agency;

EVCS' standards conformity is issued by Product Certification Agency (BSN and MEMR).

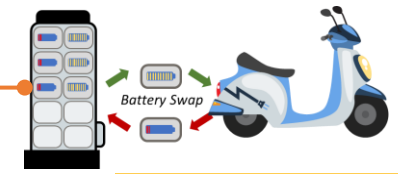
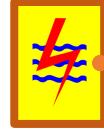
- EV Charging Station;
- Battery Swap Station.



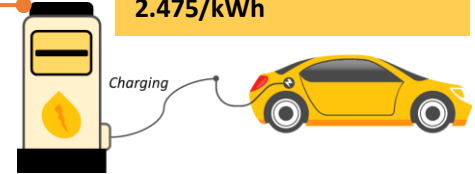
Tariff¹⁾

Tariff: Bulk Tariff x Q, where $Q = 1,01^{2)}$
Bulk Tariff:
 Rp707/kWh x 1,01 = **Rp 714,07/kWh**

Battery Lease Cost:
 Charging Cost + Swap Station Investment



Tariff:
 Special Purpose Tariff x N,
Where N = 1,5²⁾
Special Purpose Tariff:
 Rp 1.650/kWh x 1,5 = **Rp 2.475/kWh**



1) MEMR Regulation Number 28 Year 2016
 2) Q and N values are set by PLN

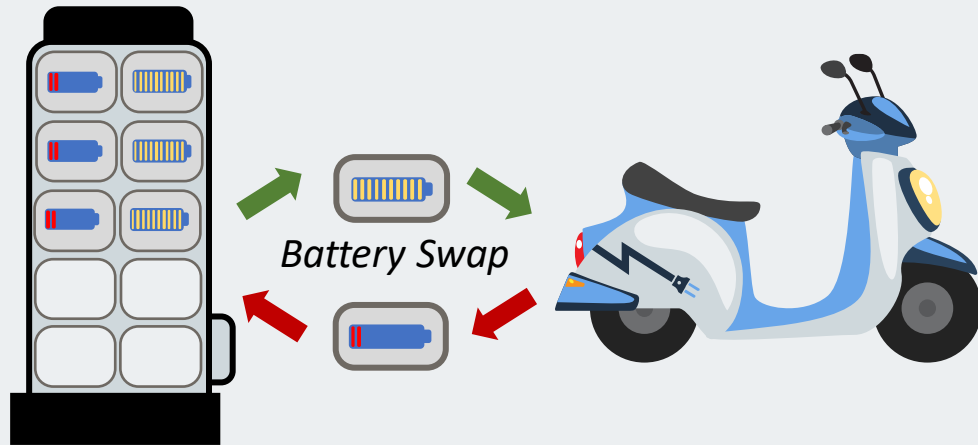
MAIN REVISION

MEMR Regulation No. 13/2020 → No. 1/2023

- 1** The requirement of 3 (three) connector types in 1 (one) SPKLU machine is agreed to be a minimum of 1 (one) connector type according to the charging type. The type of connector used must comply with the Indonesian National Standard (SNI), international standards or other standards which are mutually agreed between the Government of Indonesia and the Government of the Producing Country;
- 2** Regarding the IT Integrator Application, the Ministry of Energy and Mineral Resources will develop and manage the **Single Gateway SPKLU application**, which can function both as an SPKLU monitoring and evaluation application and as an information center for KBLBB users, to find out the location of the SPKLU according to the type and availability of connectors;
- 3** To encourage **battery standardization at SPBKLU**, it is regulated that SPBKLU load batteries with a rated voltage of 48, 60 or 72 volts, with a minimum battery capacity of 20 Ampere Hours (Ah);
- 4** The business scheme for **Electric Power Support Service Business Entities that operate Private electricity installations** is carried out in accordance with the provisions of the Minister of Energy and Mineral Resources Regulation Number 12 of 2021 concerning Classification, Qualification, and Certification of Electricity Support Service Businesses;
- 5** Additional conditions for the **type/minimum charging speed are adjusted to the SPKLU installation location**, following traffic regulations, for example: minimum fast charging on toll roads where the transit time is limited to 3 hours;
- 6** SPKLU Business Entities are given the flexibility to subscribe to Low Voltage (Special Services) or Medium Voltage (Bulk Tariff) with PT PLN (Persero). In addition, to support the growth of SPKLU Fast and Ultrafast Charging, **business entities are given incentives in the form of additional service fees (capacity charge)** in accordance with the SPKLU technology being pursued (fast charging or ultrafast charging).

BATTERY EV CHARGING STATION INFRASTRUCTURE

BATTERY SWAP STATION (SPBKLU)



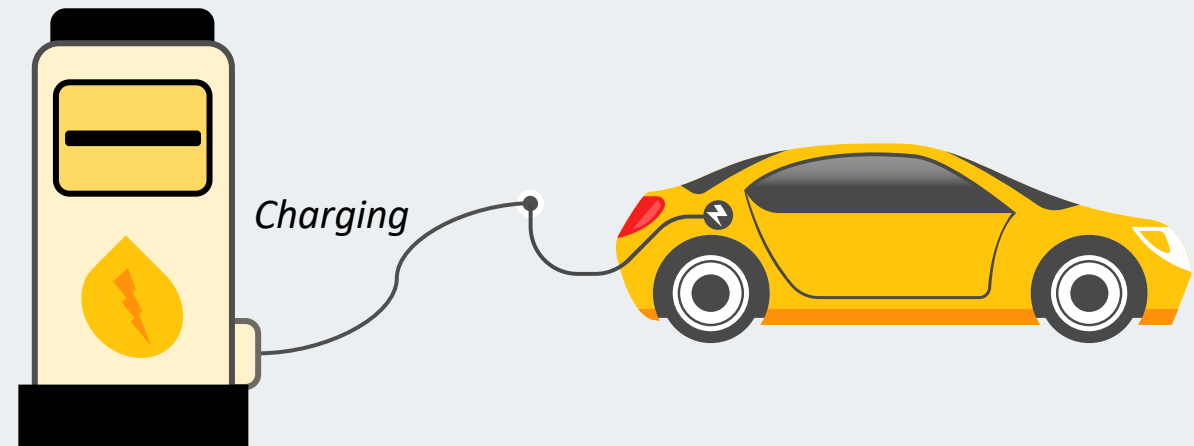
Battery Swap Station Business License:

- ✓ Business Registration Number (NIB); dan
- ✓ Ratification of the Establishment of a Business Entity

1 For the first time, the provision of EVCS for Battery EV is carried out through **an assignment to PT PLN (Persero)**

2 In carrying out assignments, PT PLN (Persero) may cooperate with State-Owned Company and / or other business entities.

EV CHARGING STATION (SPKLU)



EVCS Business License:

- ✓ Integrated Electricity Provision Business License for Public Use (IUPTLU); or
- ✓ Electricity Provision Business License for Public Use (IUPTLU)-Sales.

Development of Electric Vehicle Supporting Infrastructure

The total number of SPKLUs up to 1st Semester of 2023 is 842 units or an increase of 749 units compared to 2020. The total number of SPBKLU is 1,331 units or an increase of 1,320 units compared to 2020.

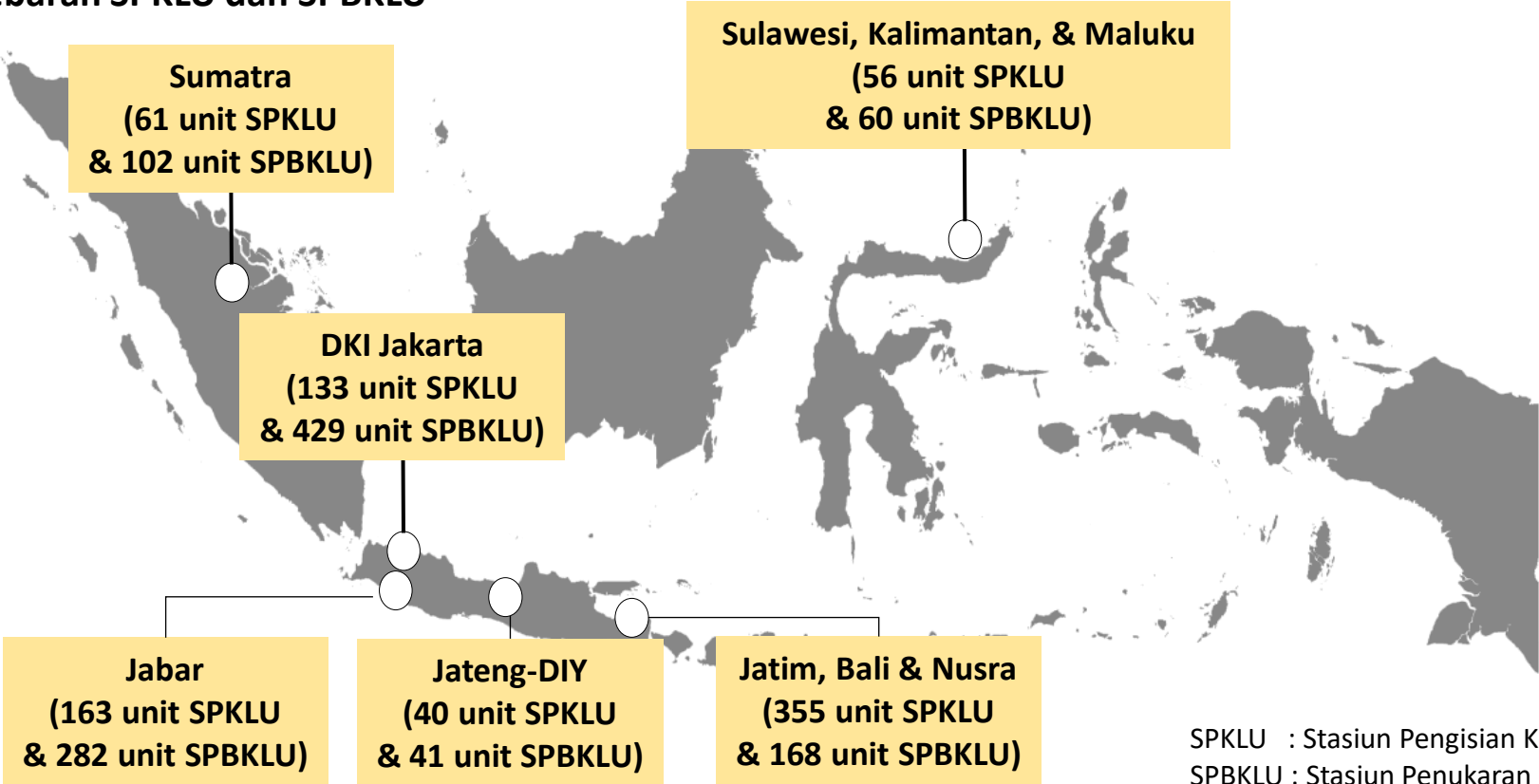
Total Number of SPKLU and SPBKLU

	2020	2021	2022	June 2023
SPKLU	93	267	439	842
SPBKLU	11	266	975	1.331

SPKLU and SPBKLU Development Plan






	2024	2025	2026	2027	2028	2029	2030
SPKLU	5.573	9.287	14.254	20.870	28.043	38.177	48.118
SPBKLU	8.872	18.379	35.433	61.780	97.300	142.575	196.179

Sebaran SPKLU dan SPBKLU



TOTAL INDONESIA (up to 1st Semester 2023)
 SPKLU : 842 unit
 SPBKLU : 1.330 unit

There are **842 SPKLU** units spread across **482 locations**, including in the areas:

-  SPBU and SPBG
-  Office
-  Mall and Shopping Center
-  Parking Area
-  Hotels

SPKLU : Stasiun Pengisian Kendaraan Listrik Umum / Charging Station
 SPBKLU : Stasiun Penukaran Baterai Kendaraan Listrik Umum / Battery Swap Station

CHARGING TYPE

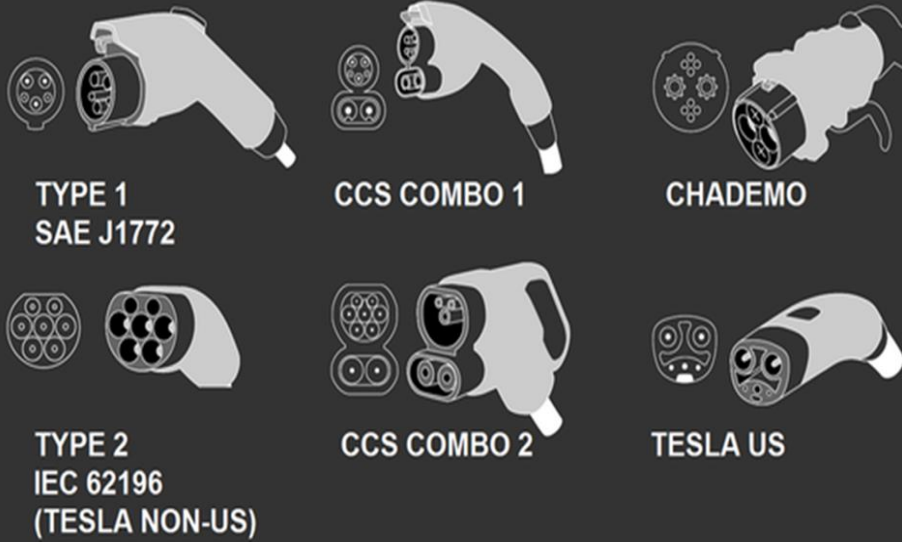
Description	Level 1 (Slow Charging)	Level 2 (Medium Charging)	Level 3 (Fast Charging)	Level 4 (Ultra Fast Charging)
Location	Private Installation (House)	Private Installation (Office)	SPKLU (Charging station)	SPKLU (Charging station)
Maximum Output Current (A)	16 AC	63 AC	100 AC/250 DC	300 AC/500DC
Power Output (kW)	≤ 3,7 kW	≤ 22 kW	≤ 50 kW	≤ 150 kW
Plug-in Connector Type	Type 1 and 2 (IEC 62196-2)	Type 2 (IEC 62196-2)	Combined Charging Type CSS and Chademo (IEC 62196-3)	Combined Charging Type CCS2 and Chademo (IEC 62196-4)
Charging Time	8 hours	4 hours	30 minutes	15 minutes

Source: PT PLN (Persero)



PLUG SOCKET-OUTLETS TYPE FOR SPKLU



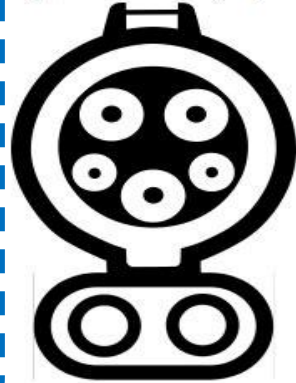


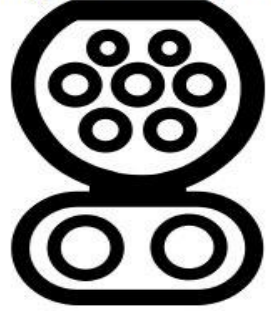
Common Connector Types:



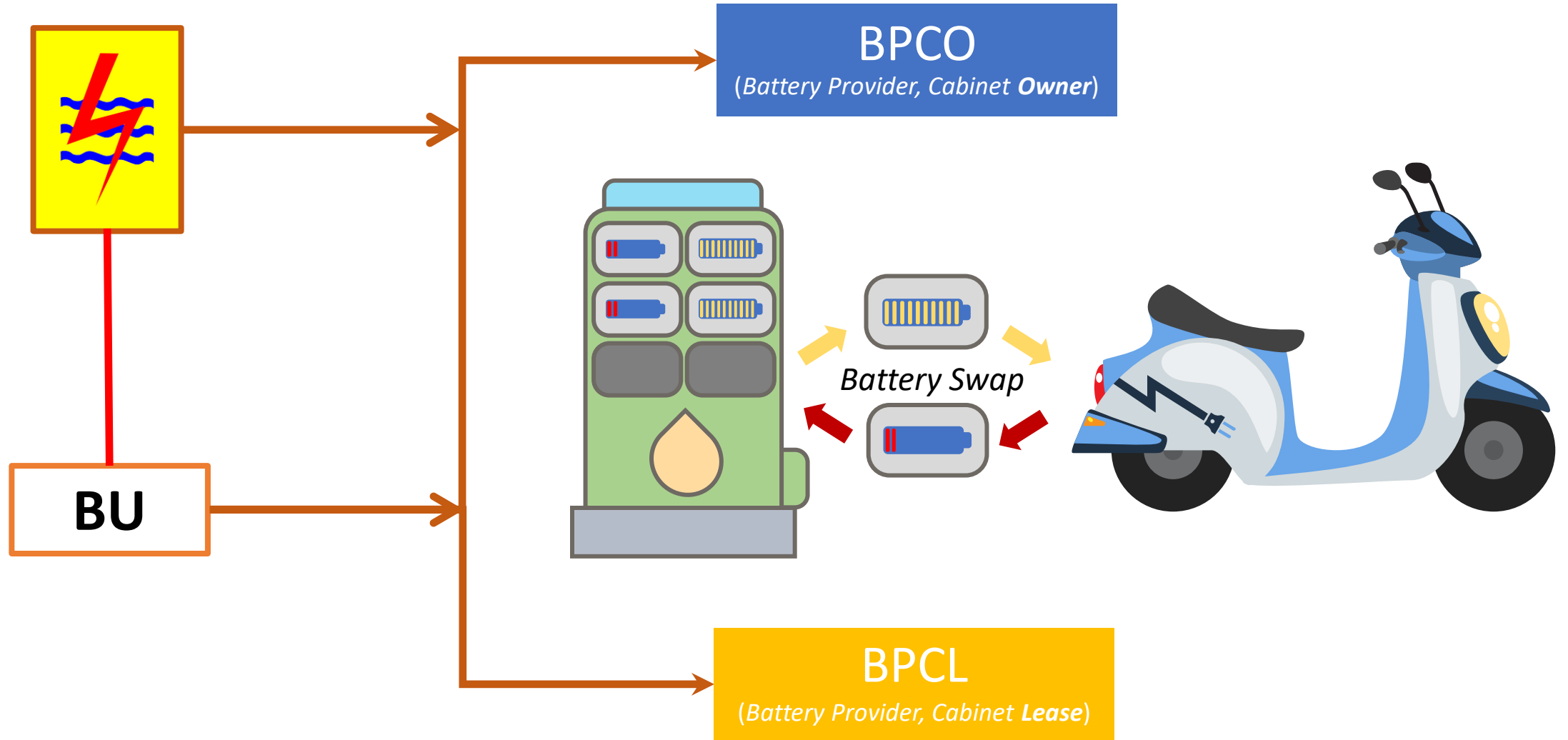
The SPKLU socket-outlets plug type based on MEMR Regulation No. 1*):

- A. Type 2 AC Charging.
- B. DC Charging CHAdeMO.
- C. DC Charging Combo Type CCS2.

*) At least 1 type of 3 socket above must be installed at 1 SPKLU, and the other type of connector used must comply with the Indonesian National Standard (SNI), international standards or other standards which are mutually agreed between the Government of Indonesia and the Government of the Producing Country.

Slow (AC)	Fast (DC)	Combo (slow AC and fast DC)
<p>Type 1 ("J1772") (Japan / US)</p>  <p>Nissan Leaf and eNV200 Mitsubishi iMiev and Outlander Holden Volt Audi A3 e-tron BMW i3, BMW plug-in hybrids</p>	<p>CHAdeMO (Japan / US)</p>  <p>Nissan Leaf and eNV200 Mitsubishi iMiev and some Outlander BMW i3 imported from Japan</p>	<p>Type 1 CCS (Japan / US)</p>  <p>BMW i3 bought in NZ</p>
<p>Type 2 ("Mennekes") (Europe)</p>  <p>Renault Zoe, Kangoo Tesla (see note right on Supercharger)</p> <p>Can be used as a "wall" socket, too.</p>	<p>Tesla Supercharger (Japan/US)</p>  <p>Unlikely to be found on a Tesla in NZ. Tesla bought in Australia and Europe can fast charge using Type 2 (without CCS) due to a special use of the connector.</p>	<p>Type 2 CCS (Europe)</p>  <p>BMW and VW vehicles bought in UK (Not yet common in NZ)</p>

ELECTRICITY LICENSING ON BATTERY SWAP STATION



Notes:

Do not require Electricity Provision Business License (IUPTL) for Battery Swap Station

CLOSING

Support from the MEMR regarding the acceleration of the EV Program:

Consistently carry out Public Launching to invite the public/stakeholders to use EV;

1

2 Actively piloting the work of converting conventional motorcycle to electric motorcycle and planning the conversion of operational motorcycles for MEMR in stages. Phase 1 is planned for 100 units (had been launched by MEMR);

Has prepared a Single Gateway System for EV to record stakeholder commitment on EV utilization planning and will be updated to monitor its realization. This website will be developed for easy access for stakeholders

3

Provide support in the form of conversion training of conventional motorcycle to electric motorcycle to local workshops as well as providing internships/practical work for vocational students; and

4

Listing the EV program as one of the strategic programs in the Grand Strategy of National Energy 2021-2040 and Net Zero Emission Program.

5



THANK YOU

