

Types of Electric Vehicles

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Types of vehicles : Drive-train & Fuel

Conventional ICE
vehicle

Alternative fuel
ICE vehicle

Electric vehicle

Types of EV

1. Hybrid electric vehicle, HEV
(Series, parallel, series-parallel)

2. Plug-in hybrid electric vehicle, PHEV

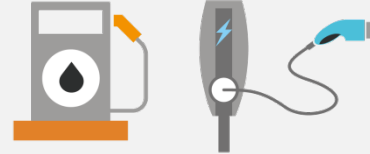
3. Battery electric vehicle, BEV

4. Fuel cell electric vehicle, FCEV

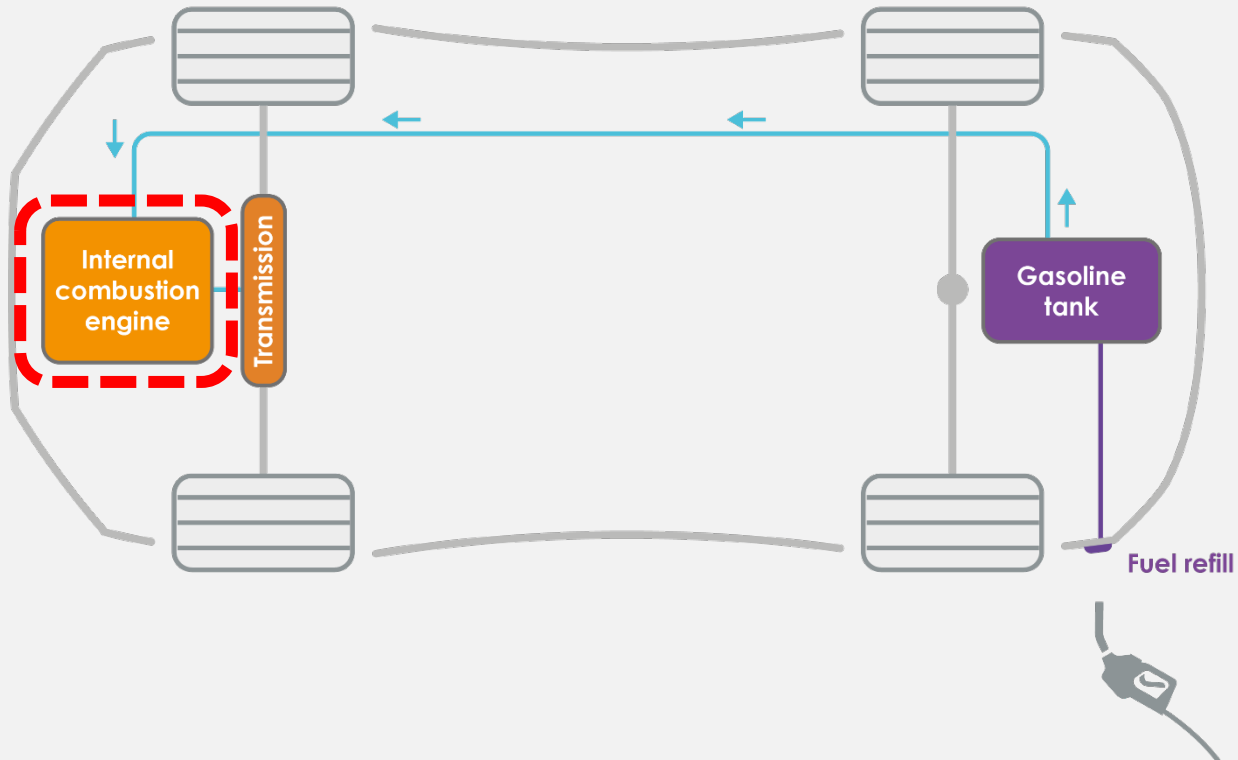
5. In future, Solar electric vehicle

Energy Source

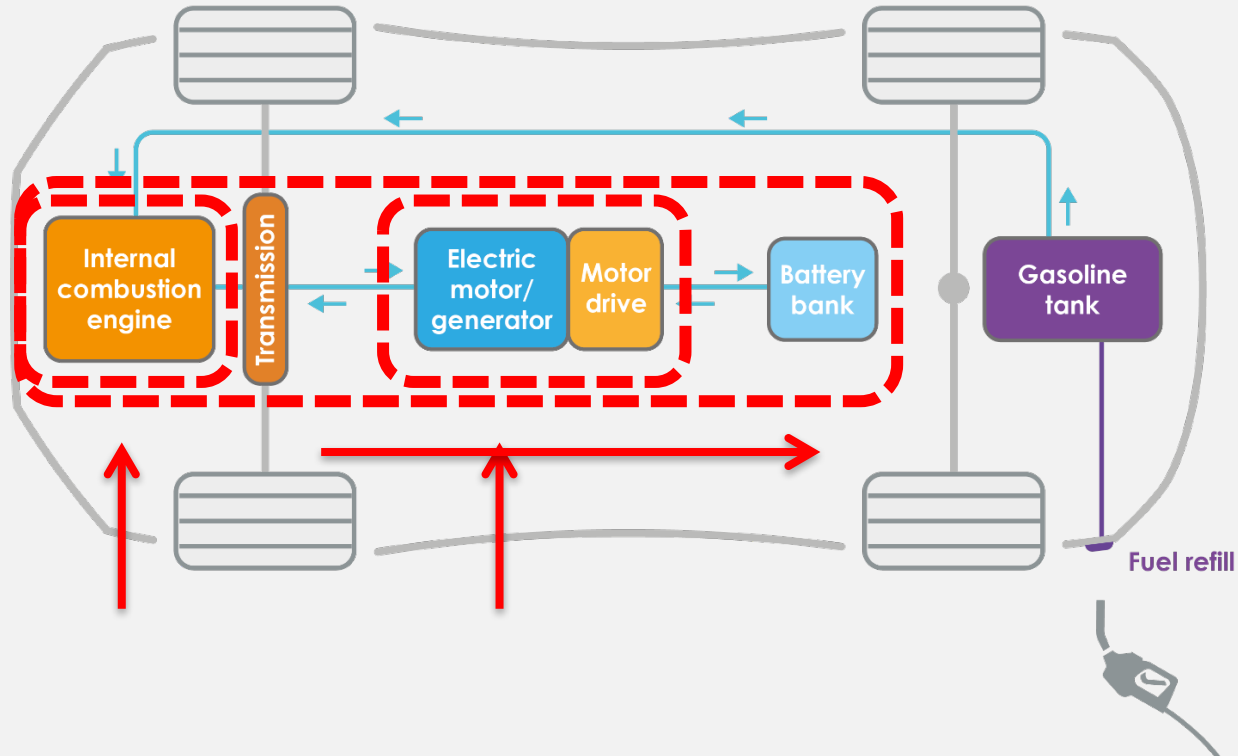
Propulsion



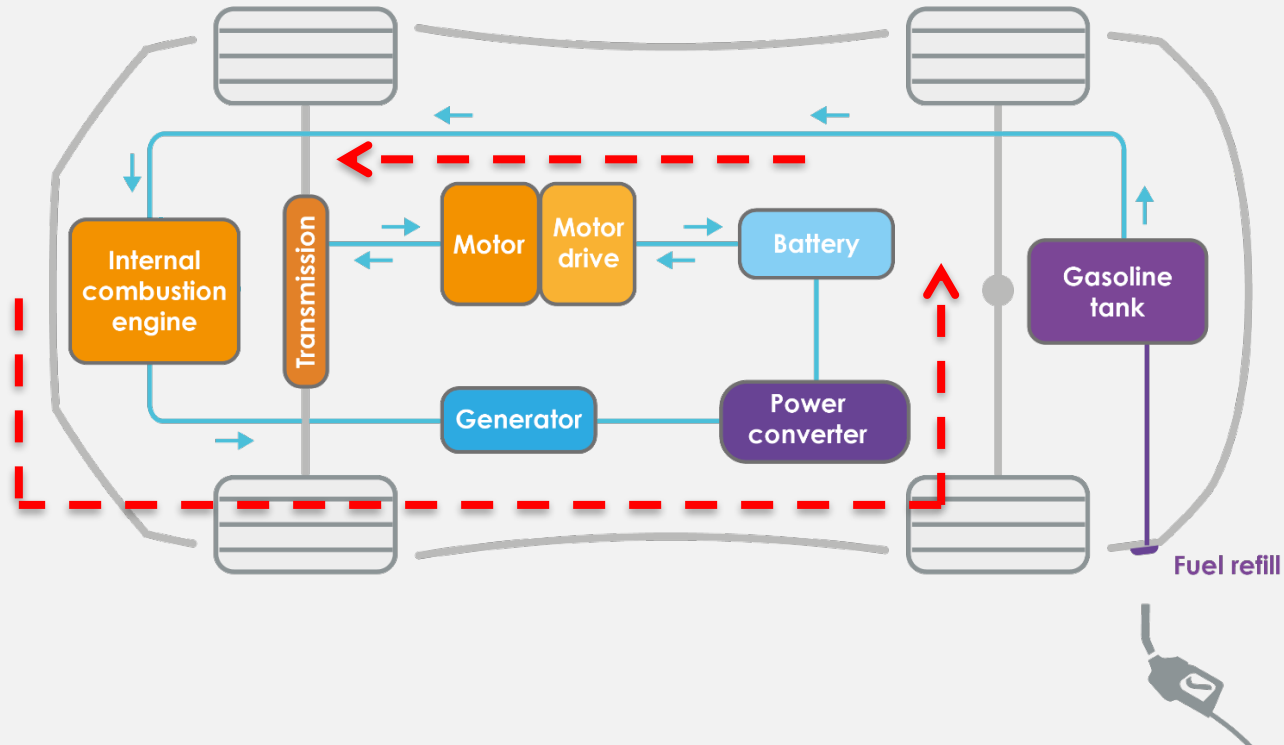
Gasoline/Diesel vehicle



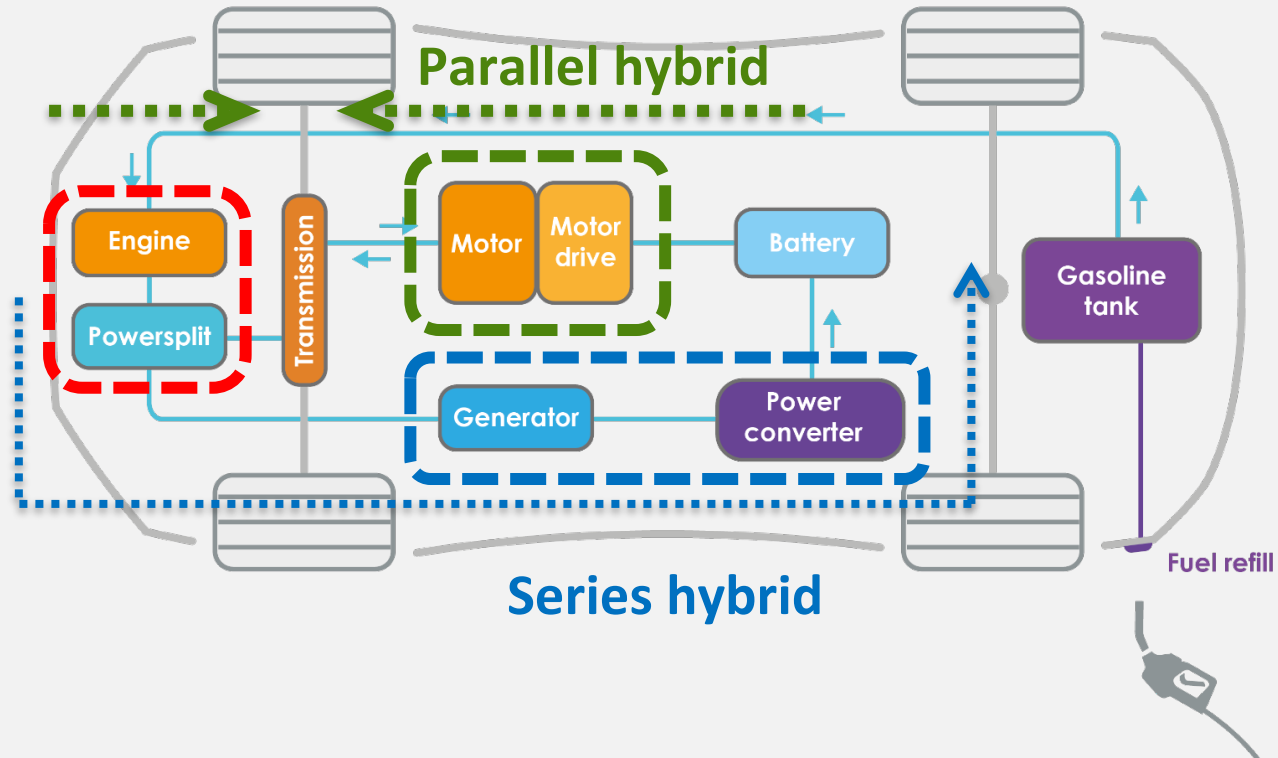
Hybrid electric vehicles (HEV): Parallel



Hybrid electric vehicles (HEV): Series



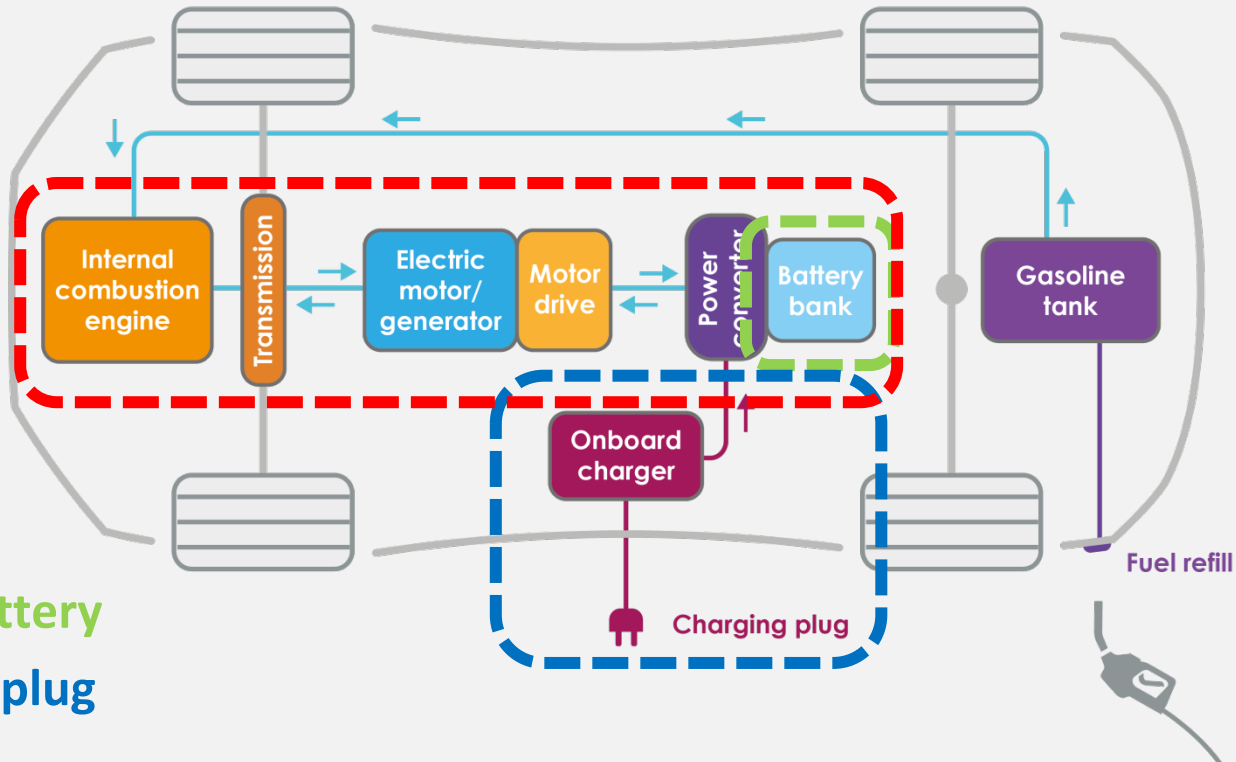
Hybrid electric vehicles: Series-Parallel



HEV – Toyota Prius



Plug-in hybrid electric vehicles (PHEV)



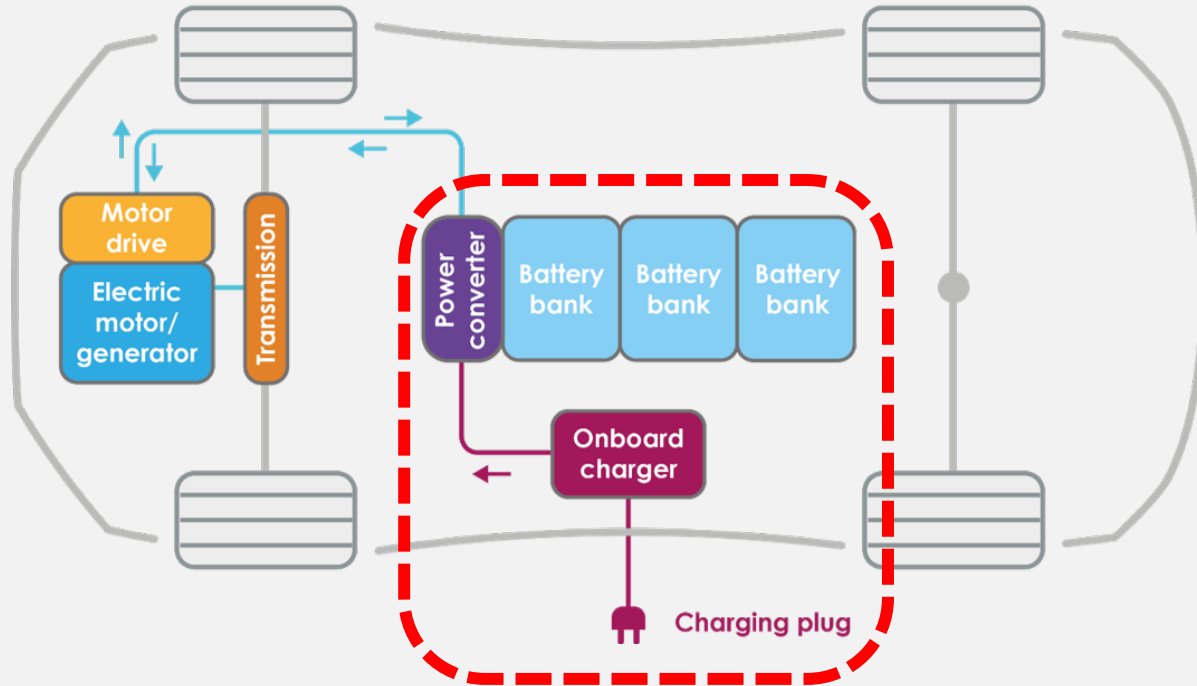
1. Larger Battery

2. Charging plug

PHEV- Chevrolet Volt



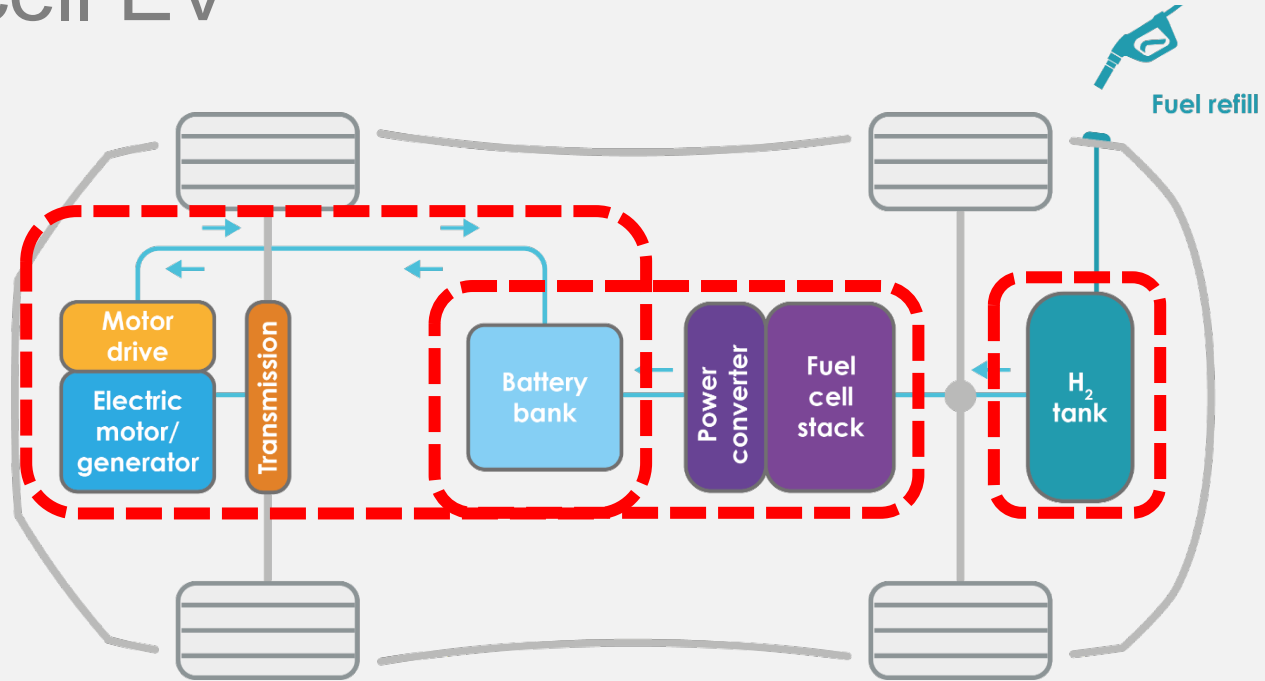
Battery electric vehicles (BEV)



BEV- Tesla



Fuel cell EV





FCEV- Hyundai Tucson



FCEV- Toyota Mirai

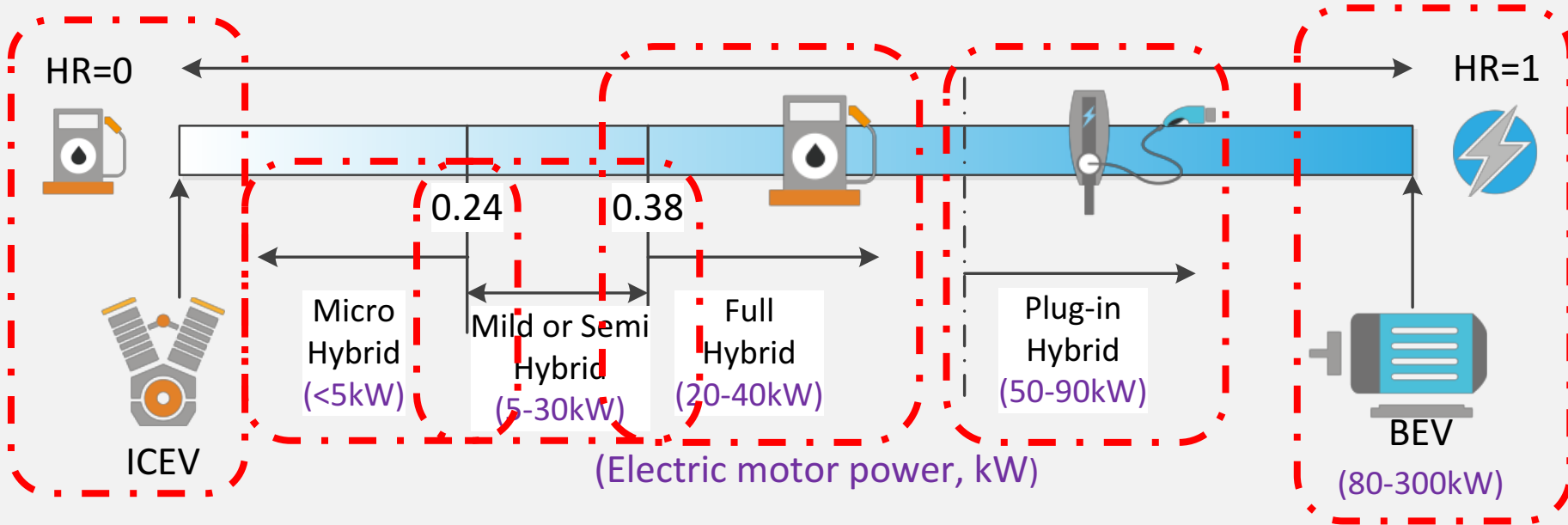
Source: Hyundai Tucson, Photo by Mario Roberto Durán Ortiz, CC-BY-SA-3.0, wikimedia.org; Toyota Mirai, Photo by Turbo-myru-z, CC-BY-SA-4.0, wikimedia.org



Comparison of EV types

Hybridization rate (HR)

$$HR = \frac{P_{em}}{P_{em} + P_{ice}} \times 100$$



Energy source



Propulsion



Emissions



Vehicle type



Gasoline vehicle

Hybrid electric vehicle

Plug-in hybrid electric vehicle

Battery electric vehicle

Fuel cell electric vehicle

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