

Oregon Joint Committee on Transportation: Role of Hydrogen & Fuel Cell Electric Vehicles in Transportation

January 28, 2021

TOYOTA MOTOR
NORTH AMERICA

Commitment to improving our environment

6 CHALLENGES TOWARD 2050







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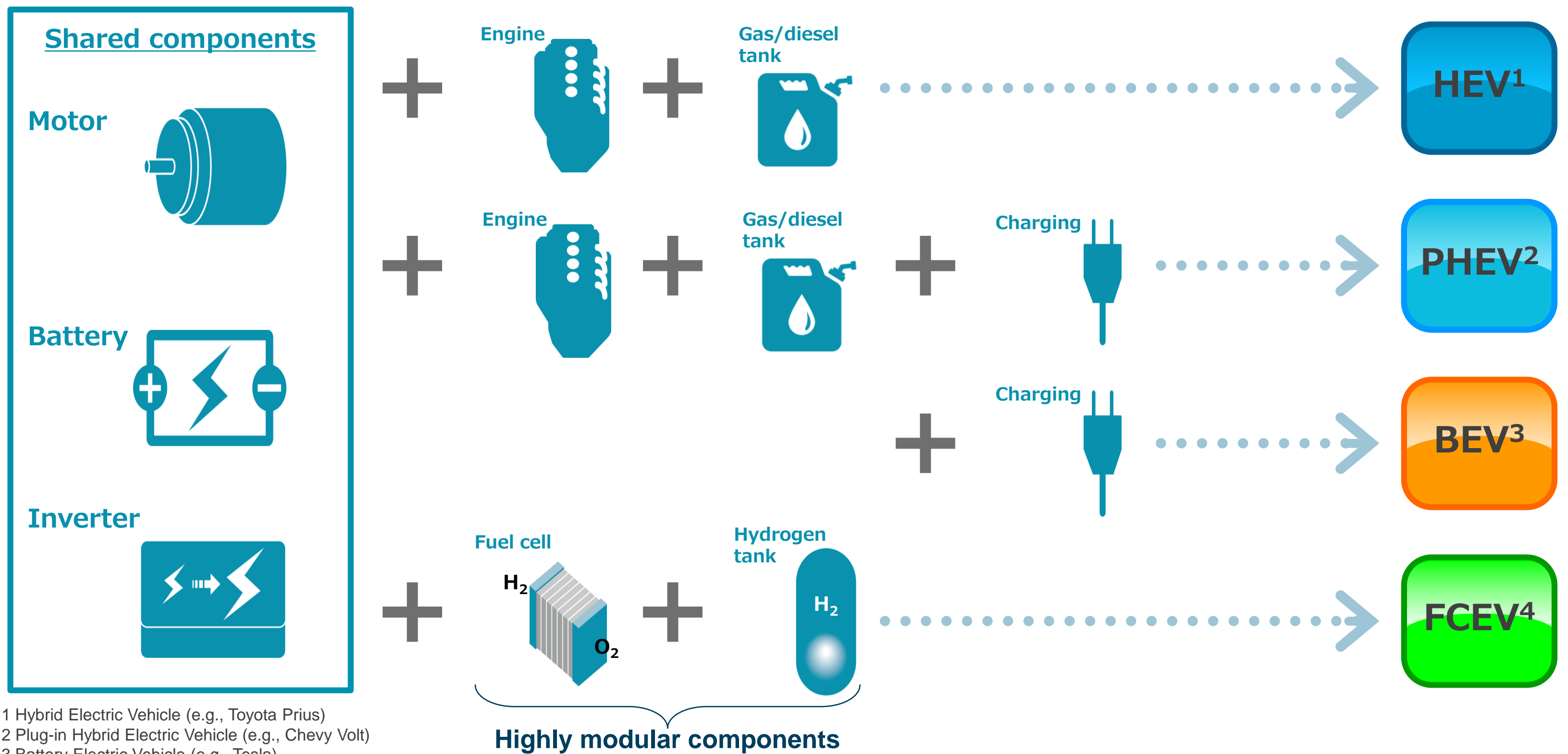
ENVIRONMENTAL

CHALLENGE 2050



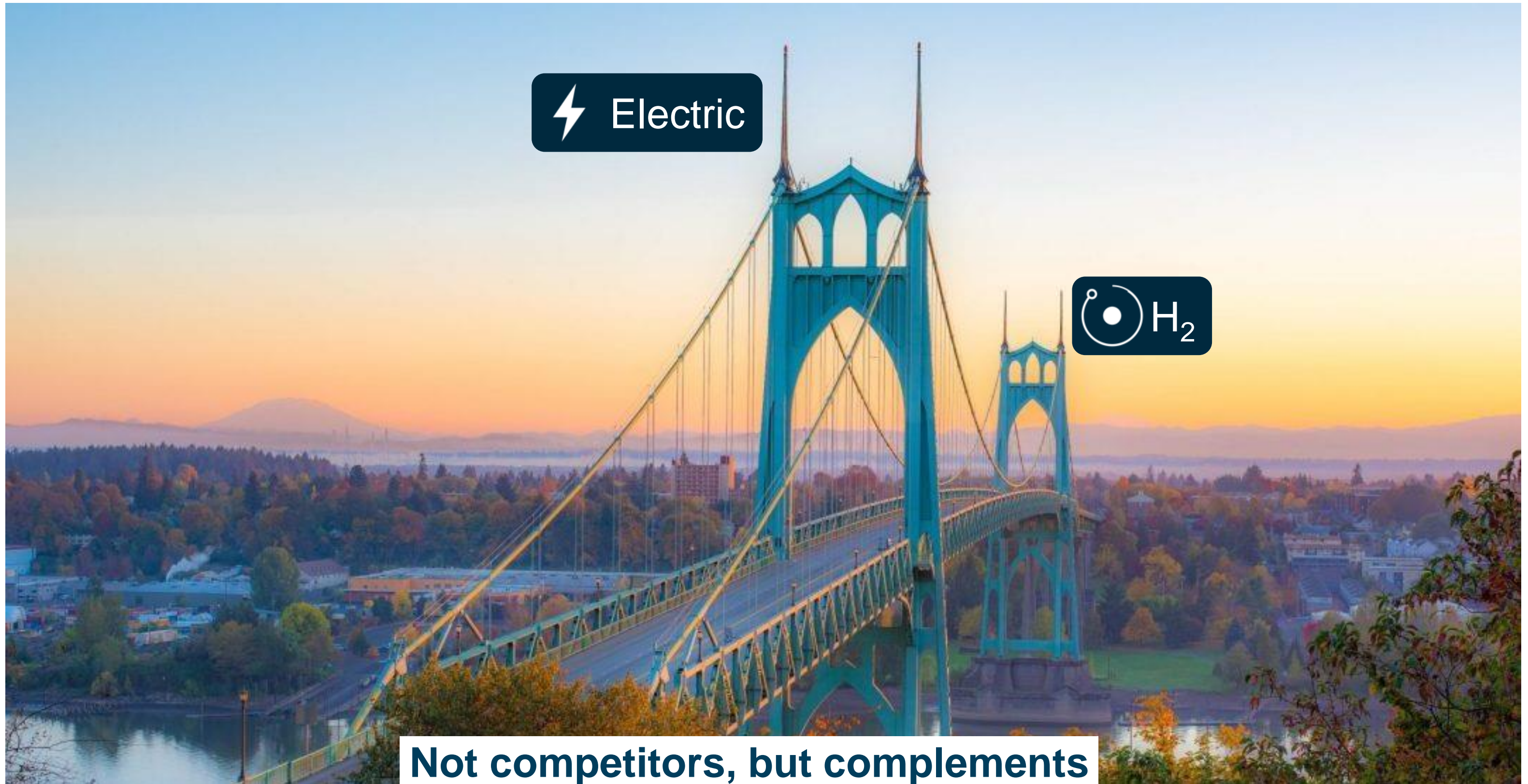
CHALLENGE 1	CHALLENGE 2	CHALLENGE 3	CHALLENGE 4	CHALLENGE 5	CHALLENGE 6
New vehicle Zero CO ₂ Emissions Challenge	Life Cycle Zero CO ₂ Emissions Challenge	Plant Zero CO ₂ Emissions Challenge	Challenge of Minimizing and Optimizing Water Usage	Challenge of Establishing a Recycling-based Society and Systems	Challenge of Establishing a Future Society in Harmony with Nature
					

Electric Vehicles: some components shared across all types, but different powertrains based on specific configuration

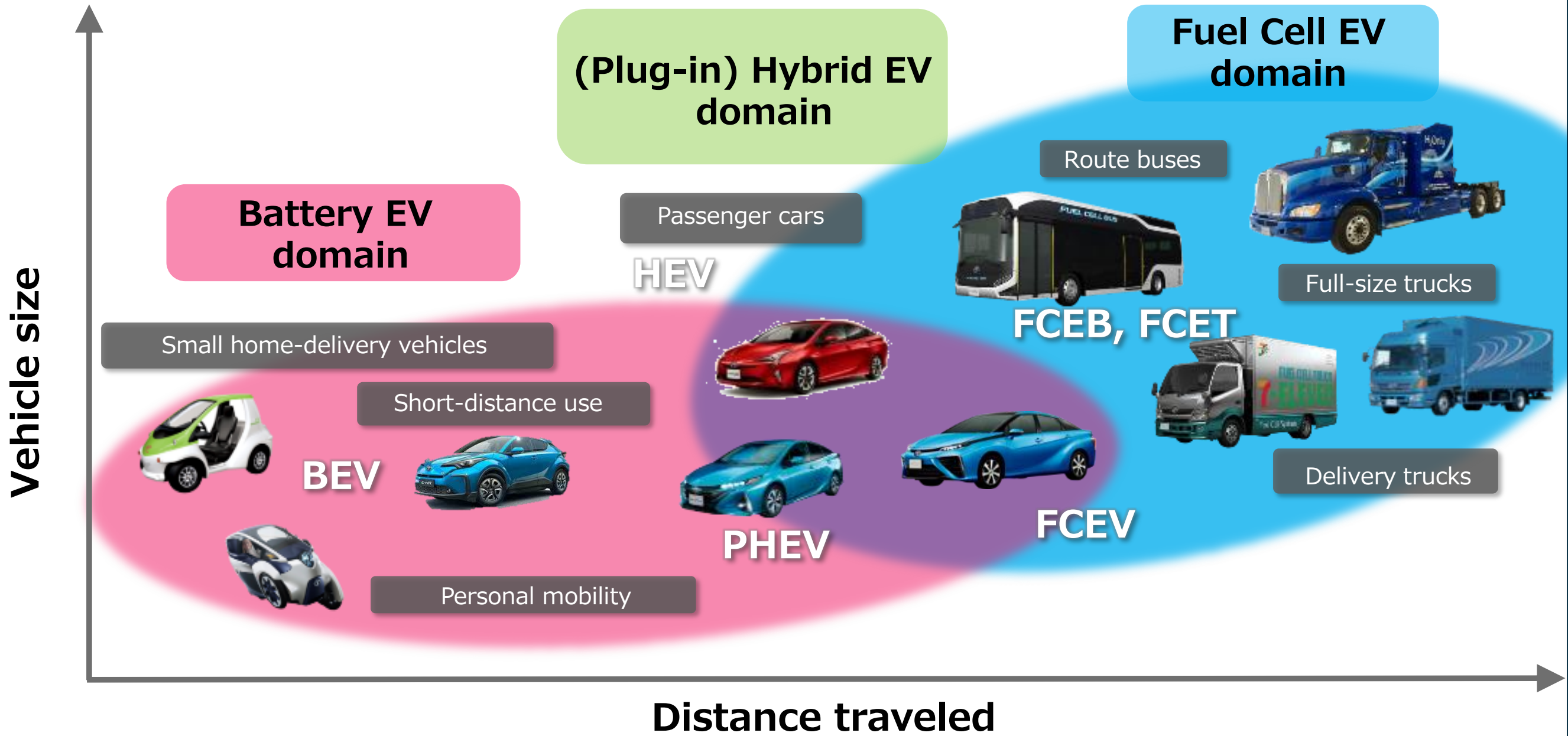


1 Hybrid Electric Vehicle (e.g., Toyota Prius)
2 Plug-in Hybrid Electric Vehicle (e.g., Chevy Volt)
3 Battery Electric Vehicle (e.g., Tesla)
4 Fuel Cell Electric Vehicle (e.g., Toyota Mirai)

Future electrification at scale: portfolio of electric + H₂



BEVs & FCEVs: “both” not “either-or”



Optimal use cases

BEV

- **Small vehicle**
- **Short distance**
- **Low duty cycle**
- E.g., sedan for daily commuting with home charging, local delivery van without night shift

FCEV

- **Large vehicle**
- **Long distance**
- **High duty cycle**
- **Cold weather**
- E.g., Long-haul class 8 trucking, multi-shift Uber/Lyft, transit bus in cold climate

Over 9,000 FCEVs are on the road in California, supported by 43 public hydrogen refueling stations

Toyota Mirai (first generation)

6,500+ sold / leased since 2015 launch



Toyota Mirai (second generation)



Honda Clarity



Hyundai Nexo



2021 Toyota Mirai (Second Generation)



Vehicle specs

- Range: 402 miles
- Power: 182 hp
- Torque: 221 lb.-ft.

FC system specs

- H2 storage: 5.6 kg
- FC output: 128 kW
- Battery: 1.2 kWh

Project Portal fuel cell electric truck (FCET)

Fully-functional, zero-emission, electric Class 8 truck,
powered by fuel cell stacks from two Mirai sedans



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Specifications

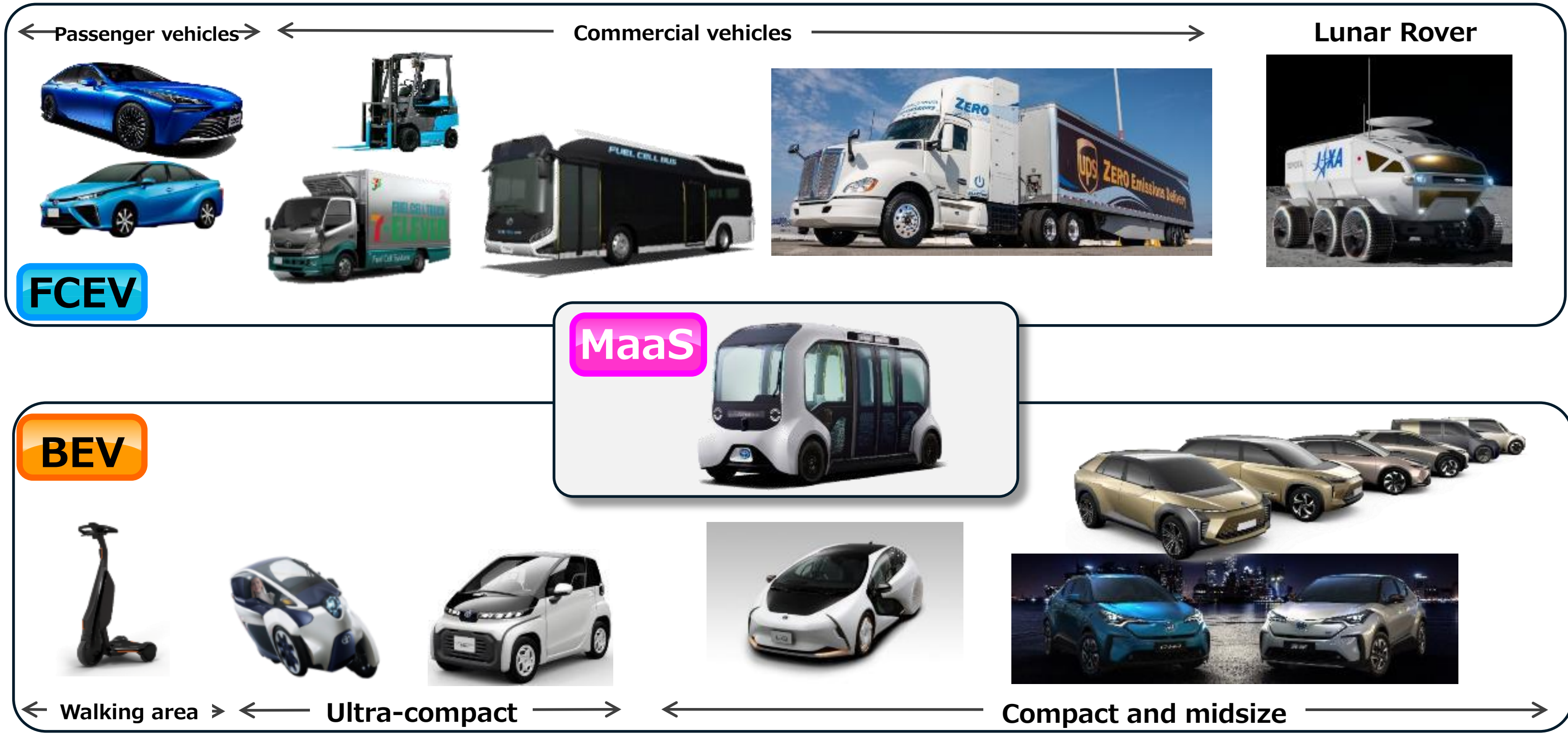
- Based on Kenworth T680 glider
- 2 Mirai fuel cell stacks
- 12 kWh lithium-ion battery
- 60kg 700 bar H₂ storage

Performance

- 670 horsepower
- 1,327 ft.-lbs. torque
- 80,000 lbs. GVWR
- 300+ miles of range

Toyota zero-emission vehicles

(Including development concept, driving demonstrations, and system provision)



Thank you!

