



The 3rd Hydrogen Energy Ministerial Meeting



14 Oct 2020

Randy MacEwen, CEO
Ballard Power Systems



What's different?

Key factors impacting the hydrogen and fuel cell sector.

1. Strong supporting policy & sector-coupling
2. Growing number of vehicle deployments
3. PEM fuel cell value proposition
4. Reduction in cost of renewables
5. TCO reports showing cost pathway
6. Corporate investments
7. ESG



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**We are becoming a
CO₂-regulated world**

Why medium- and heavy-duty vehicles?



Strong value proposition

Centralized depot refueling

Disproportionate emissions from hard-to-abate mobility

Hydrogen is most competitive in heavy duty motive applications



Buses & Coaches



Trucks



Trains



Vessels

Our focus is on applications where hydrogen fuel cells have a clear advantage

The advantages of fuel cells over battery electric vehicles

Only fuel cell vehicles can directly replace diesel, route for route



All weather performance



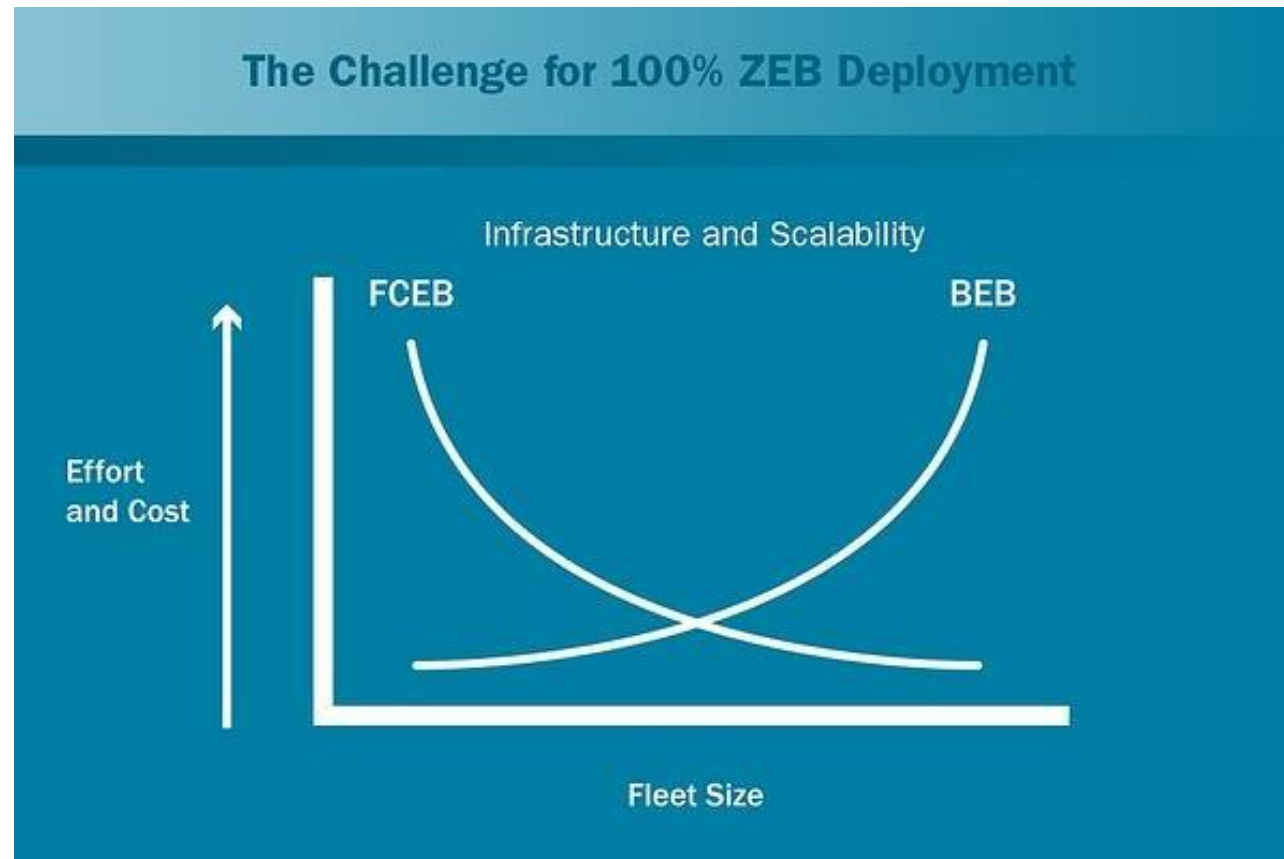
Range and payload



Refueling time

Scaling Up Infrastructure

The infrastructure scaling advantage of fuel cells over battery electric vehicles



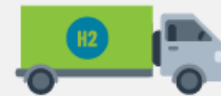
Graph concept courtesy of the Center for Transportation and Environment (CTE)

Changing the discussion from “does it work?” to “how do we achieve cost competitiveness?”

We are powering thousands of heavy-duty vehicles globally



1000+
transit buses



2,200+
trucks



4 TRAIN
projects on track



6 SHIPS
in development

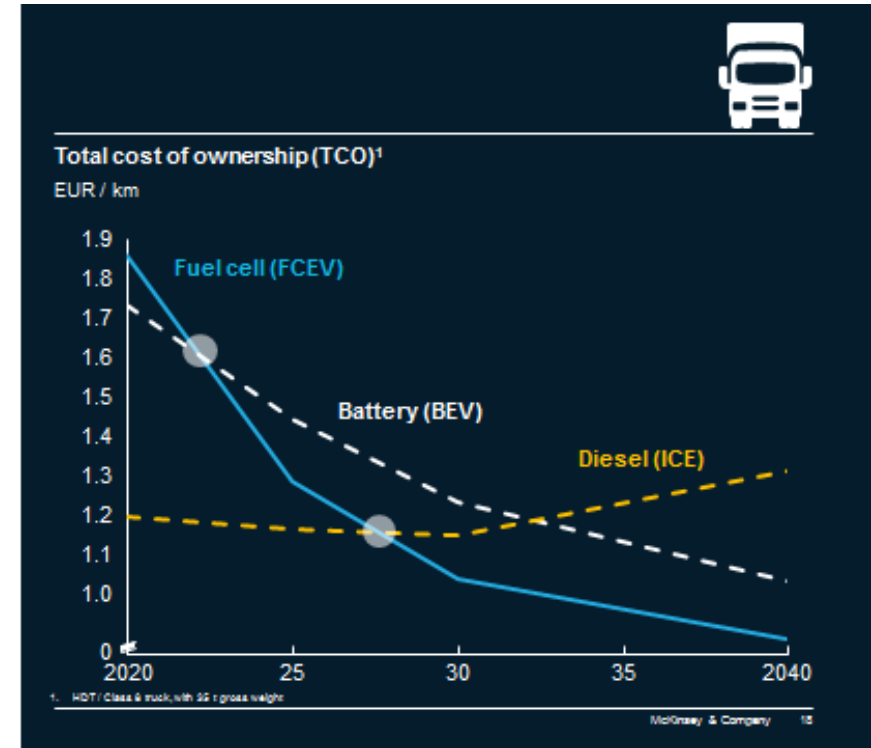


Invest and collaborate to industrialize FCEVs and achieve TCO cross-over

HDT: Commercial heavy duty transport can become cost competitive by 2030

-70%
Fuel cell system

-40%
Distribution and refueling infrastructure



McKinsey - Path to Hydrogen Competitiveness report 2020

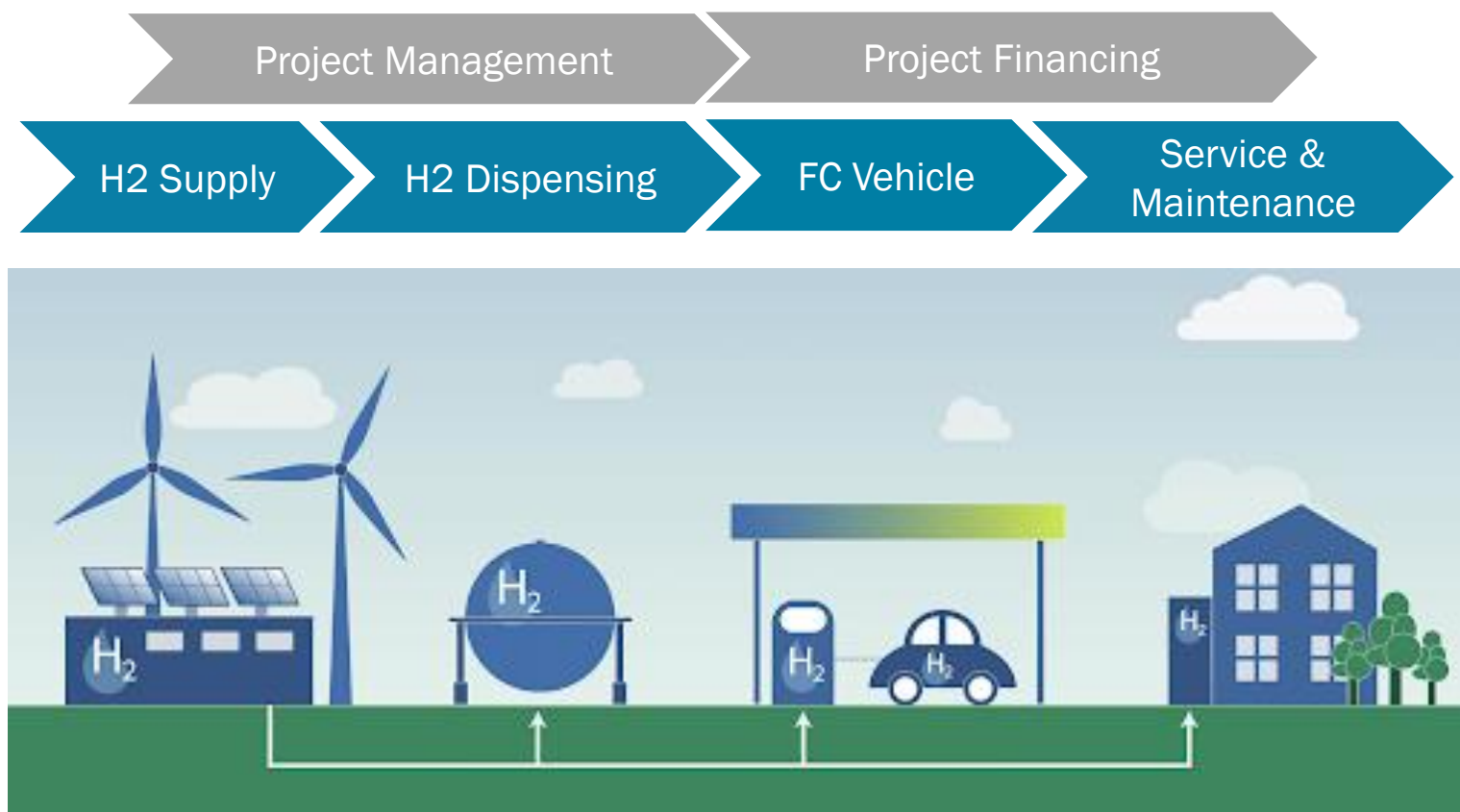
“In less than 10 years, it will become cheaper to run a fuel cell electric vehicle (FCEV) than it is to run a battery electric vehicle (BEV) or an internal combustion engine (ICE) vehicle for certain commercial applications.”

McKinsey - Path to Hydrogen Competitiveness report 2020

Eco-System Development

The industry needs to simply and cost reduce FCEVs.

Foster hydrogen eco-system development to reduce technology adoption friction points.



An aerial photograph of a two-lane asphalt road that curves through a dense, lush green forest. The trees are tall and closely packed, creating a vibrant green canopy. The road is light gray and contrasts with the surrounding greenery. In the top left corner, there is a solid blue square containing the word "BALLARD" in white, bold, sans-serif capital letters.

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Power to change the world®

Thank you