Global Hydrogen Mobility Applications

NASEM Webinar

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ZEV technologies are just one pillar of Toyota’s global commitment to sustainability.
Many FC mobility applications will be developed and commercialized by 2030
Toyota Fuel Cell Development

Toyota has 25+ years of FC development for multiple vehicle platforms.

25+ Years
Target: 15 million total sales by 2020
Cumulative sales reached 13 million in 2018

Mass adoption takes time; Mirai following similar methodical scale up as Prius
Mirai leverages cost reduction from Prius development; further cost reduction expected
Hyundai is making similar production ramp up plans:
- 40,000 by 2022
- 700,000 by 2030 (500,000 passenger/commercial, 200,000 other applications)
- Intent to leverage FC technology for diverse mobility applications

FC global production capacity greatly increasing in the future as Toyota and other OEMs expand.
Other Light-Duty OEMs

**Available Today**

- [Image of car 1]
- [Image of car 2]
- [Image of car 3]
- [Image of car 4]

**In Development (or available outside U.S.)**

- [Image of car 5]
- [Image of car 6]
- [Image of car 7]
- [Image of car 8]

Multiple OEMs have entered the market; others to launch in early 2020s
Global Toyota ZEV Approach

**Global FCEV markets continue to expand for many mobility markets**

**EUROPE**
Balanced BEV & FCEV approach

**JAPAN**
Primary: FCEV
Secondary: BEV
*largest market

**CANADA**
Balanced BEV & FCEV approach

**UNITED STATES**
Primary: FCEV
Secondary: BEV
*largest market

**China**
Increasing interest in FCEV

**TOYOTA**
U.S. Market Expansion

California
- 40 Open retail stations
- ~25 additional stations funded
- Over 6,000 FCEVs on the road

Blue: Existing development

Northeast States
- Infra development underway
- Interest in PORTAL (NY/NJ Ports)

FCEV market expansion continues beyond California
Toyota provided strong infrastructure development support to multiple station operators.
San Pedro Ports Environmental Landscape

Desire to expand while reducing emissions

High impact to disadvantaged communities

Clean Air Action Plan
- 2030: Terminal Trucks ZEV
- 2035: All Trucks ZEV

Requires ZEV solution

Ports of LA/LB have established aggressive goals to reduce emissions
Blue-chip collaboration leveraging Toyota’s FCET development are enabling ZEV freight movement
Key Heavy Duty Projects

ZANZEFF Project

$41MM Grant

10 Class 8 FC Trucks
2 H2 stations to support HDTs

Tri-Generation

HD Fueling Development

Large demonstration projects support development for trucks, infrastructure, and renewable H2
HD and LD markets grow together synergistically to reduce costs and enable a hydrogen society.
Significant growth, innovation, and scale are needed now to realize the full opportunity of hydrogen
Thank you!