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U.S. Green Hydrogen Market for Mobility - A Regional Analysis: Focus on Hydrogen Infrastructure and Refuelling Stations

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Abstracts

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This report will be delivered in 7-10 working days.Introduction to the U.S. Green Hydrogen Market for Mobility (Including Market in 2025 and Beyond)

The U.S. Green Hydrogen Market for Mobility is gaining traction as policy incentives, infrastructure investments, and advancements in electrolyzer and fuel cell technologies converge. By 2025, the combination of clean hydrogen production and expanding hydrogen refueling infrastructure is set to accelerate adoption of fuel cell electric vehicles (FCEVs) across multiple segments—from passenger cars to heavy-duty commercial trucks. Moreover, growing corporate and government commitments to decarbonize transportation will reinforce this shift, with hydrogen offering a zero-emission solution for longer ranges and heavy payloads.

Looking further, policy measures (like the Inflation Reduction Act) and regional hydrogen hubs will help reduce green hydrogen costs, making it increasingly price-competitive with conventional fuels. By the early 2030s, large-scale projects in wind- and solar-rich regions are projected to supply cost-effective green hydrogen, fostering robust ecosystem growth that caters not only to vehicles but also to other mobility applications such as rail, marine, and aviation.

Segmentation by Application

Passenger FCEVs

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Expanding fuel cell models from OEMs, focused on personal cars and SUVs.

Early growth primarily in states like California, with new incentives potentially broadening adoption.

Commercial FCEVs (Trucks and Buses)

Fleet applications (municipal transit, logistics, heavy-duty trucking) benefit from hydrogen's rapid refueling and extended range.

Pilot deployments in major freight corridors to test feasibility and scale.

Confined Space Equipment (Forklifts, Cargo Handlers, etc.)

Warehouses and ports adopt hydrogen to enhance productivity (quick refueling, zero emissions).

Ongoing expansions with large retail distribution centers.

Hydrogen Locomotives

Emerging rail sector applications for lower-emission freight and passenger rail in specific corridors.

Marine

Ranging from small ferries to larger vessels in pilot phases; focuses on port-based hydrogen bunkering infrastructure.

Aviation (Including Air-Side Vehicles)

Primarily ground support equipment and short-haul plane prototypes; benefits from on-site electrolysis for fueling.

Segmentation by Design Type

Proton Exchange Membrane (PEM) Electrolyzer: Suited for dynamic operations,

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matching intermittent renewables.

Alkaline Electrolyzer: Generally cost-effective, well-established design.

Anion Exchange Membrane: Emerging technology with potential lower-cost catalysts.

Solid Oxide Electrolyzer: High-temperature operation for high efficiency, typically coupled with industrial processes.

Segmentation by Renewable Energy Source

Wind Energy: Large-scale projects in states with strong wind resources (e.g., Midwest).

Solar Energy: PV-based electrolysis, popular in the Southwest where solar irradiance is high.

Others: Could include hydropower or geothermal in niche regions.

Green Hydrogen Mobility Supporting Markets

1. Hydrogen Fueling Stations (Station Size)

Small-Size Stations: Local distribution, pilot or demonstration projects.

Mid-Size Stations: Typical for urban fleet use, bridging passenger and commercial vehicles.

Large Stations: High-throughput sites serving major freight lanes, bus depots, or logistic hubs.

2. Hydrogen Fueling Stations (Station Type)

Fixed Hydrogen Station: Permanent facilities with on-site storage and dispensing.

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Mobile Hydrogen Station: Temporary or flexible solutions, supporting events or remote areas.

3. Hydrogen Fueling Stations (Supply Type)

Off-Site: Hydrogen delivered as gas or liquid from centralized production.

On-Site: Electrolysis or steam methane reforming integrated at the station for localized production.

Regional Overview

Northeast

Early hydrogen mobility clusters in populous states (e.g., New York, Massachusetts), often government-sponsored.

Focus on public transit buses, fleet vehicles, potential corridor expansions for medium- to heavy-duty trucks.

Southeast

Industrial and logistics corridors seeing forklift or cargo handler adoption.

Potential synergy with automotive manufacturing for passenger FCEVs.

Midwest

Strong wind resources support on-site electrolysis.

Growing interest in hydrogen-powered agriculture and heavy-duty freight.

Southwest

Solar-driven hydrogen production, especially in Texas, Arizona, and New Mexico.

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Potential synergy with large trucking corridors.

West

California leads with policy support and largest installed network of H2 refueling stations.

Washington and Oregon investigating hydrogen for maritime and port operations.

Key Players in the Market

Linde plc

Air Liquide

Air Products and Chemicals, Inc.

Plug Power Inc.

Olin Corporation

Cummins Inc.

Invenergy

Bloom Energy

Chevron

Ballard Power Systems

Trend in the Market

A prominent trend is state- and federal-backed hydrogen hub initiatives that cluster production, distribution, and consumption in designated regions. By co-locating

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electrolyzer facilities near large fleet operations (e.g., logistics, transit authorities), stakeholders reduce transportation costs, ensuring consistent hydrogen supply and fueling infrastructure scale-up.

Driver in the Market

Increasing net-zero transportation commitments at federal and corporate levels push the adoption of hydrogen vehicles as a zero-emission alternative for long-haul trucking and fleet vehicles. The combination of robust policy incentives, especially from the Inflation Reduction Act, and growing consumer awareness ensures continued momentum for building out green hydrogen supply chains.

Restraint in the Market

Despite progress, the lack of widespread hydrogen refueling infrastructure remains a major obstacle. Even with policy backing, deploying stations demands high upfront capital investment, complex permitting, and a nascent distribution network—creating a chicken-and-egg dilemma for broad FCEV adoption.

Opportunity in the Market

Heavy-duty and commercial fleet applications offer a significant early-growth opportunity. These segments often feature set routes, centralized depots, and corporate sustainability targets, making it easier to justify hydrogen investments. Scalable hydrogen fueling solutions at distribution centers or cargo hubs can jumpstart volumetric demand and support broader market expansion.

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6. MARKETS - COMPETITIVE BENCHMARKING & COMPANY PROFILES

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7. RESEARCH METHODOLOGY

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