

2010-2025 Scenario Analysis for Hydrogen Fuel Cell Vehicles and Infrastructure Meeting

Review and Discussion of Preliminary Results

August 9-10, 2006, Washington, DC

**Discussion Group 2:
Summary Presentation**

Market Penetration Rates

- *General Comment* – Customer acceptance is *crucial* to achieving market penetration
- *General Comment* – Strong political support and national programs are needed to create the underlying basis for consumer support and the value proposition
 - Achieving a market penetration of 2.5 million vehicles by 2025 (Scenario 3) will require strong incentives and a very compelling value proposition
 - Achieving Scenario 3 levels with gasoline at \$4/gallon is unlikely
- *General Comment* – Consumer adoption issues (e.g., alternative choices such as HEVs and EVs and trade-offs) need to be assessed as part of scenario analysis. What makes hydrogen FCVs more compelling to consumers than the alternatives?
- *General Comment* – A critical mass of vehicles is needed to support development of fueling infrastructure, so support the roll-out in phases and concentrate it in a few locations
- *Missing Element* – Should we consider a scenario with lower adoption rates than Scenario 1 (500,000 vehicles by 2025)? Would this lead to **any** penetration?

Lighthouse Networks & Station Layout

- *General Comment* – Lighthouse should start at 2010 in one metro region (e.g., Los Angeles) with 20 stations; stations should be placed where OEMs are operating vehicles; increase to 50 stations by 2015; develop corridor fueling stations to San Francisco or other. Such a lighthouse could support thousands of vehicles (exact number of vehicles depends on manufacturing decisions of various OEMs).
- *General Comment* – Timing is tied to targets; 2010 lighthouse begins only if 2010 R&D targets are met, etc.
- *Suggested Improvement* – Federal government (e.g., DOE, DOT, DOD, EPA) should facilitate coordination of lighthouse design and siting of stations
 - Ensure overall effort is well-managed
 - Include collaboration and coordination with state and local programs (e.g., CARB, AQMD, etc.)

Hydrogen Production & Delivery Options

- *General Comment* – It is important to test & evaluate *all* production & delivery technologies; need to understand everything from cost to efficiency to life-cycle analysis
- *Suggested Improvement* – Suggest investigating and including options to minimize required set-back distances
- *Suggested Improvement* – Include non-technical barriers, e.g., time involved in getting permits (need help with permitting)
- *Suggested Improvement* – Consider local resources and regulatory/consumer “climate” when modeling fueling scenarios, and leverage regional characteristics (especially in California)
- *Suggested Improvement* – Cost of storage at \$820/kg may be underestimated and should be reviewed

Options for Policies & Incentives

- *General Comment* – Dates are determined by advancements in technology; cannot force the timeframe
- *General Comment* – Strong education programs about “why hydrogen” are important to accelerate demand
- *Suggested Improvement* – Robust funding for fleet vehicles should begin in 2010 and transition into milder incentives like rebates
- *Suggested Improvement* – Consider adopting policies/programs that will drive higher volume fuel cell production for near-term markets (e.g., Federal/state government purchase of stationary fuel cells or forklifts during lighthouse phase) -- this would lower the cost of fuel cells and components for transportation markets

Demonstration Program Scenarios

- *General Comment* – For continuity, continue into the lighthouse program immediately following learning demonstrations (assuming targets are met)
- *General Comment* – Production lots of about 10 cars per generation is enough for technology validation, but more vehicles are needed for market development
- *General Comment* – The rollout from 2010 may be too optimistic
- *Suggested Improvement* – May need policies dealing with liability issues for public fueling stations in the lighthouse phase