



U.S. Department of Energy
Energy Efficiency and Renewable Energy

***Pre-solicitation Meeting for the
CONTROLLED HYDROGEN FLEET AND
INFRASTRUCTURE DEMONSTRATION AND
VALIDATION PROJECT***

***Sig Gronich, Technology Mgr.
John Garbak, Technology Mgr.
Hydrogen, Fuel Cells and
Infrastructure Technologies***

March 19, 2003
Detroit, MI



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Meeting Objective and Agenda

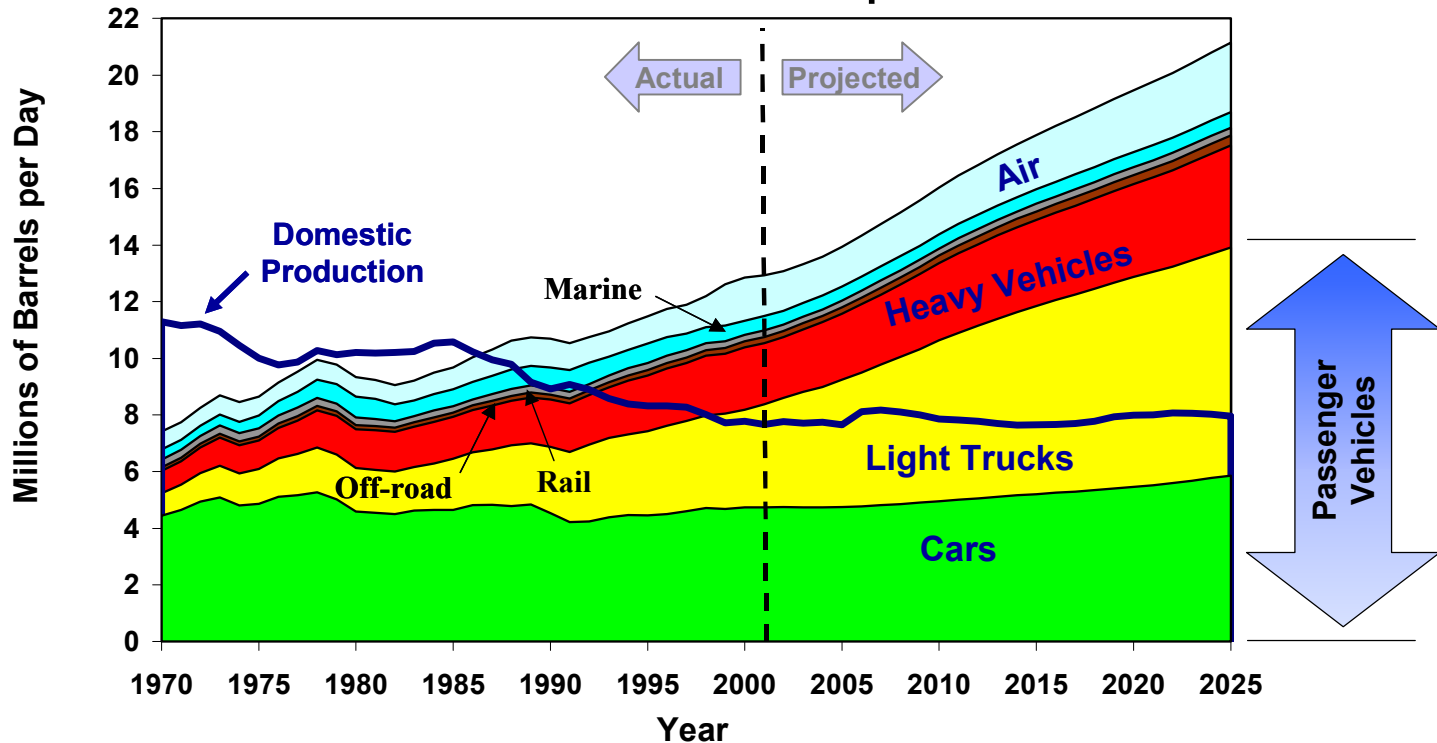
- Meeting Objective
 - Provide an opportunity for industry to ask questions and provide comments regarding the draft solicitation
- Agenda
 - DOE Review of Solicitation
 - DOE to answer questions submitted prior to meeting
 - Open Discussion on the solicitation



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U.S. Energy Dependence is Driven By Transportation

US Oil Use for Transportation



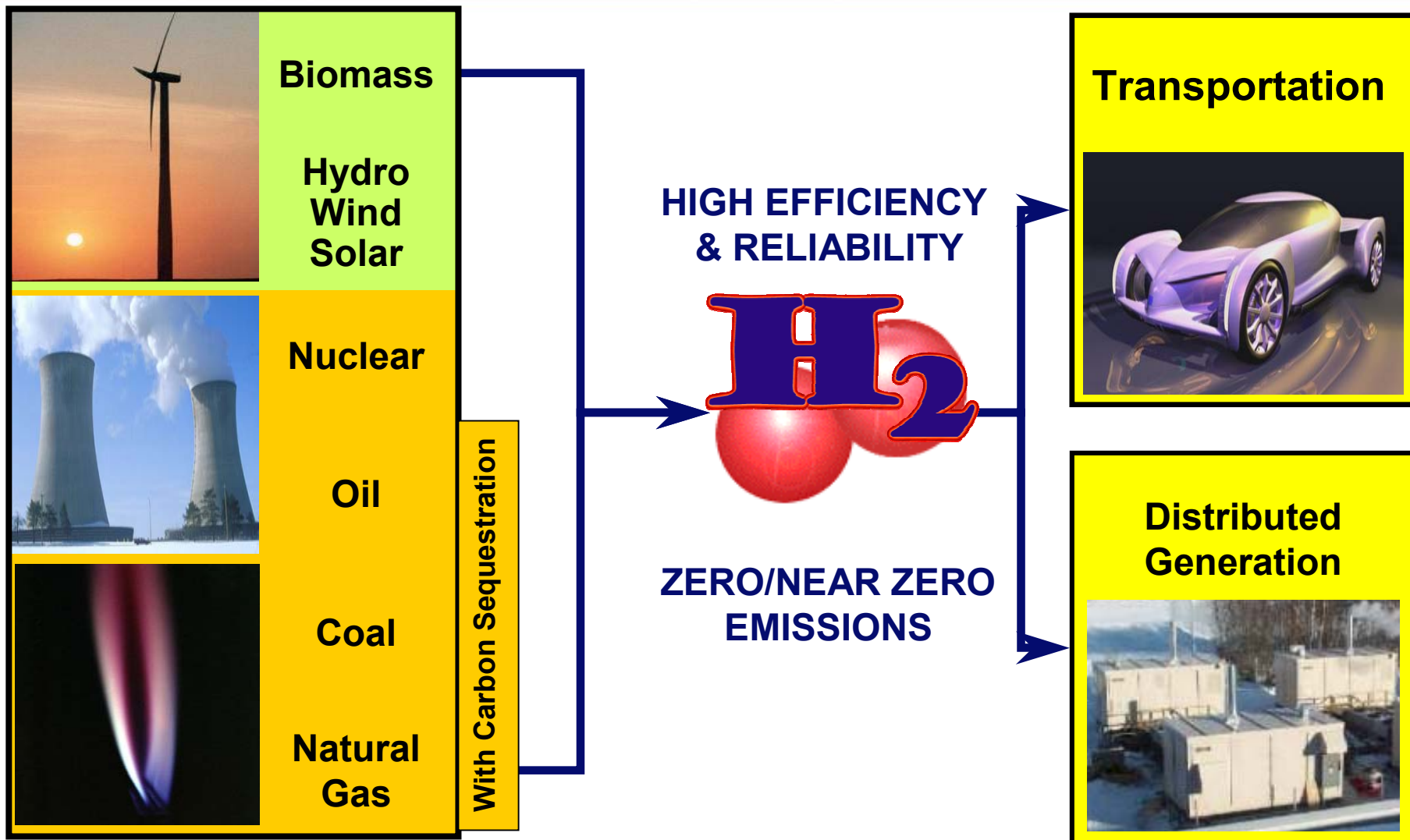
Source: Transportation Energy Data Book: Edition 22, September 2002,
and EIA Annual Energy Outlook 2003, January 2003

- Transportation accounts for 2/3 of the 20 million barrels of oil our nation uses each day.
- The U.S. imports 55% of its oil, expected to grow to 68% by 2025 under the status quo.



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Why Hydrogen? It's abundant,
clean, efficient, and can be derived
from diverse domestic resources.





Strategy

- To conduct learning demonstrations that emphasize co-developing hydrogen infrastructure in parallel with hydrogen fuel cell-powered vehicles to allow a commercialization decision by 2015.
 - Test, demonstrate, and validate optimum system solutions
 - Refocus R&D Program



Teaming

- An automobile manufacturer and an energy company;
- A hydrogen supplier;
- A fuel cell supplier;
- Utility and/or gas company
- A fleet operator of vehicles (private, local, state, or federal fleets);
- System and component suppliers;
- Small businesses;
- Universities, educational, and outreach organizations;
- State, local, and federal governments.

The automobile manufacturer or the energy company will be the prime



General Information

- Five year project 2004 – 2008
- Government/industry cost shared co-operative agreement
- \$150M –\$240M Government share subject to the appropriations process
- Data from project to help refocus R&D projects
- 2 Generations of vehicles
- Cold climates to be included by 2nd generation
- Must include renewable feedstock for H₂ generation
- Codes, Standards and Education integral to the success of the project
- Stationary facilities that co-produce electricity and hydrogen are encouraged



Program Targets

2008 Targets:

- 2,000 hours fuel cell stack durability per vehicle;
- Vehicles with a 300+ mile range; and,
- Hydrogen cost of \$3/kg, untaxed, when produced in quantity.



Solicitation Schedule

- Solicitation Schedule (estimated)
 - Pre-solicitation Meeting - March 19, 2003
 - Solicitation Issued - April 15, 2003
 - Proposals Due – 90 days after solicitation issued
 - Selections made – 4th quarter CY 2003
 - Awards – 1st quarter CY 2004



Review Criteria

- Team organization and project management plan 10%
- Site management plan 10%
- **Technical approach 25%**
- **Performance Data Plan 25%**
- Project safety and health 20%
- Education and Training 10%



Vehicle Type

- Only 100% hydrogen-fueled vehicles will be accepted;
- A maximum of 50 hydrogen-powered fuel cell vehicles will be accepted per vehicle manufacturer;
- Leased vehicles are preferred over purchased vehicles and leases for 2 to 3 years are encouraged for each vehicle; and,
- Vehicles from the following categories will be considered:
 - light duty vehicles (LDV) such as automobiles;
 - light duty trucks (LDT) and medium duty passenger vehicles (MDPV) such as SUVs, light trucks and vans;
 - light and medium heavy duty trucks such as large passenger vans and urban delivery trucks
 - Hydrogen hybrid ICE vehicles in generation 1 can be considered where it can contribute to advanced storage system development, advanced hydrogen vehicle development and/or advanced fueling interface and safety devices for generation 2 fuel cell vehicles.



Cost Share

- Federal cost share of up to 50% for hydrogen fuel cell vehicles from USCAR auto manufacturers;
- Federal cost share of up to 50% for automobile fuel cells from U.S. fuel cell companies;
- Federal cost share of up to \$10,000 per month per application for the purchase of data from non-USCAR auto manufacturers;
- Federal cost share of up to 50% for hydrogen infrastructure;
- Federal cost share of up to 50% for stationary hydrogen fuel cells or up to a maximum of \$1,250/kW, for co-production units for integrated networks up to 7.5 MW.
- Federal cost share of up to 25% for generation 1 hydrogen hybrid ICE vehicles from USCAR auto manufacturers.



Performance Measures

- Vehicle Performance Measures
 - Operations
 - Fuel economy
 - Range
 - Vehicle refueling time
 - Vehicle Fuel Cell Systems and Components
 - Durability
 - Efficiency
 - H₂ tank cycle life
 - Performance
 - Top speed, Acceleration
 - Gradability
 - Minimum/maximum temperature
 - Cold drive-away
 - Emissions
 - Safety
 - Unplanned failures,
 - fuel tank release,
 - Grounding, sensor, and passenger compartment alarm



Performance Measures (cont)

- Infrastructure Performance Measures
 - Site
 - Purity of hydrogen from storage tank
 - Fueling System
 - Durability
 - Hydrogen production and delivery, refueling rate
 - Safety
 - Release of hydrogen from fueling connector
- Fuel cell co-generation facility (Optional)
 - Cost of co-generation
 - Fuel cell durability
 - Electrical efficiency of fuel cell
 - Safety
 - Electrical overload
 - Ground short
 - Alarms



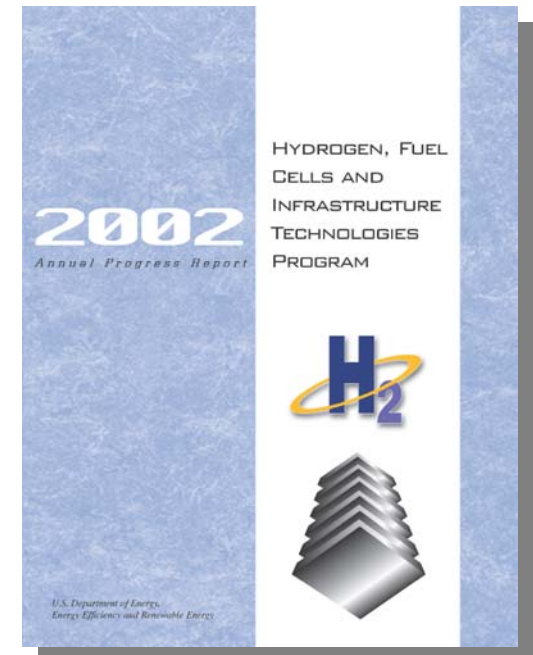
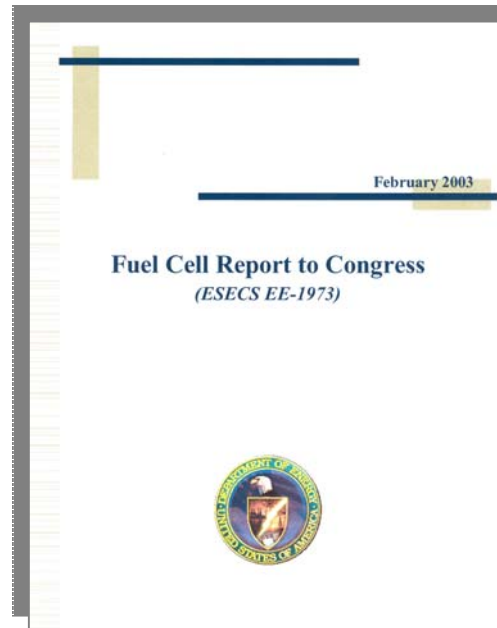
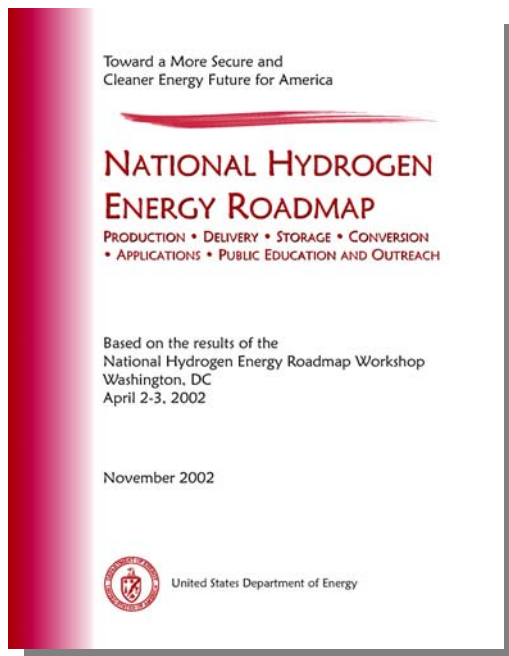
Reporting

- Project Management Plan
- Startup Lessons Learned
- Annual Test and Data Collection Plan
- Vehicle and Facility Training Plan
- Technical Progress Report, to include reporting and analysis of raw data
- Topical Reports Must include:
 - 1. Economic and commercial viability of vehicles at 500K units/year
 - 2. Economic and commercial viability of refueling stations at 1000 refueling stations/year.
- Safety Plan
- Failure Modes and Effects Analysis
- Risk Mitigation Plan
- Communication Plan
- Cost Reports
- Plans and schedules for vehicle delivery and/or facility installations
- Design packages for maintaining garage and other hydrogen facilities
- Final Technical Report



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For More Information about EERE Hydrogen and Fuel Cell Program..



www.eere.energy.gov/hydrogenandfuelcells



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Future Contact

- For more information
 - www.eere.energy.gov/hydrogenandfuelcells
- For future questions
 - James Damm, Contracting Officer, Golden Field Office
 - H2validation@go.doe.gov