

EPA Fuel Cell Activities

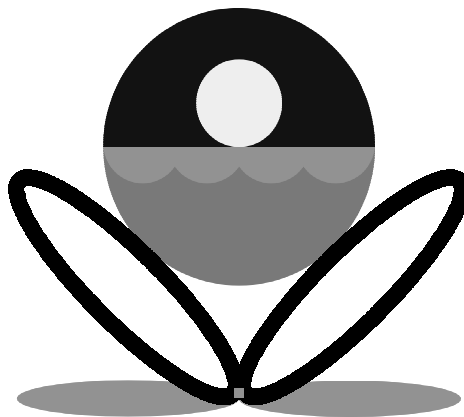
Presentation to the Federal Advisory Committee Act
Mobile Sources Technical Review Subcommittee

Joseph McDonald

Fuel Cell and Hydrogen Fuel Team

U.S. EPA - Office of Transportation and Air Quality

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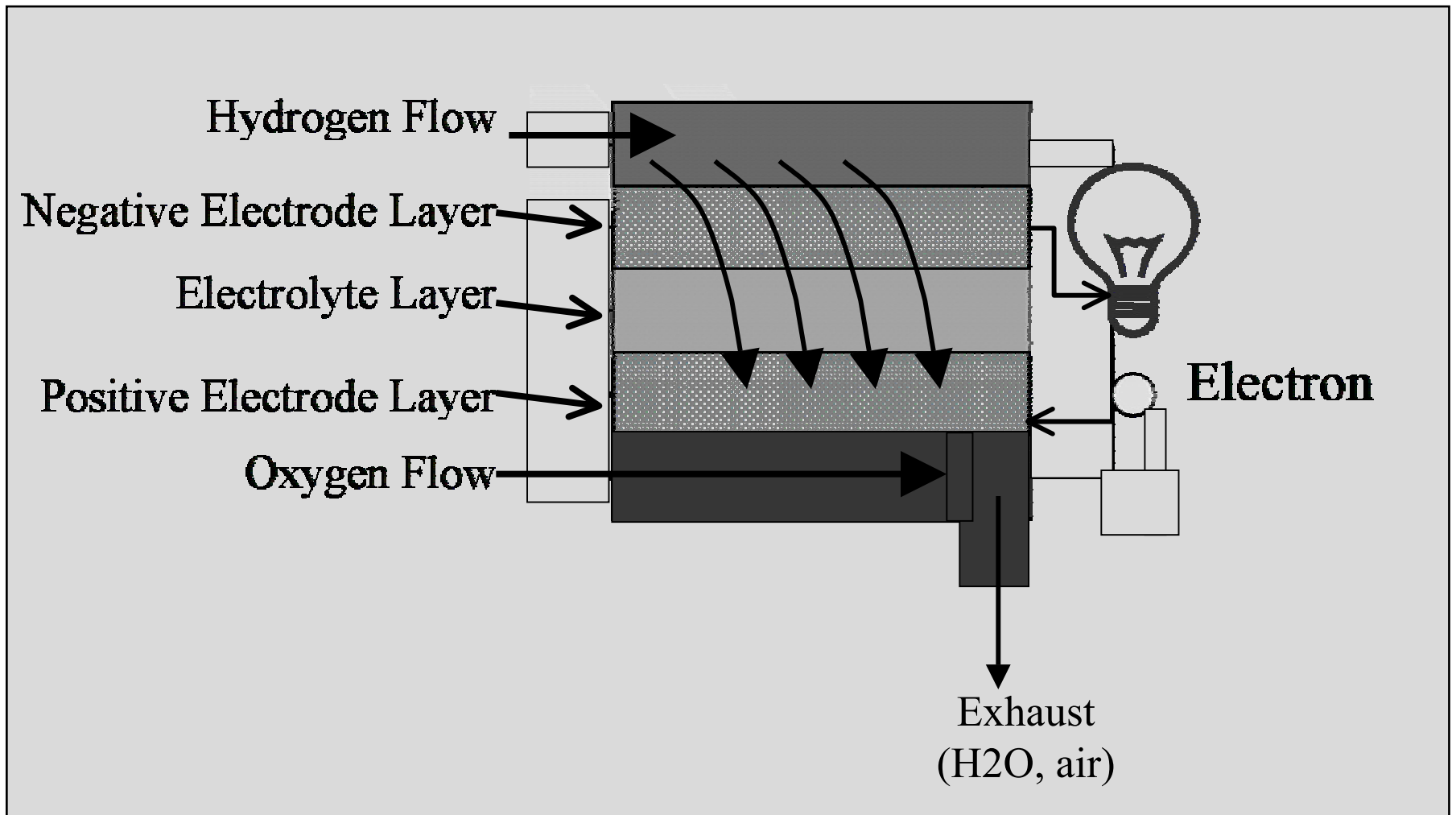
Background



- ◆ Fuel Cells have a long history
 - First demonstrated by William Grove - 1839
 - Electrochemical devices that take a fuel, usually hydrogen, and produce electricity and water
 - Until very recently, limited to highly specialized applications
- ◆ In the 1990s, breakthroughs made transportation applications possible
 - CA and NE ZEV requirements
 - Discussion of further limits on CAFE
- ◆ Significant investments in fuel cell technology by vehicle manufacturers

PEM Fuel Cell

Functional Schematic



More Recently...

- ◆ In 1999, California Gov. Gray Davis announced the formation of the California Fuel Cell Partnership (CaFCP)
 - Brought vehicle mfrs, fuel cell companies, energy companies, and government officials together to demonstrate FC vehicles and H2 fueling in CA
 - Initial goal of 60 vehicles and 20 buses by 2003
- ◆ In 2002 President Bush announced the “FreedomCAR” program

- ◆ Initial discussions on EPA certification requirements for fuel cell vehicles
- ◆ Honda FCX: First fuel cell vehicle to receive EPA certification for sale or lease in the US (for MY 2003)



What will EPA's role be?

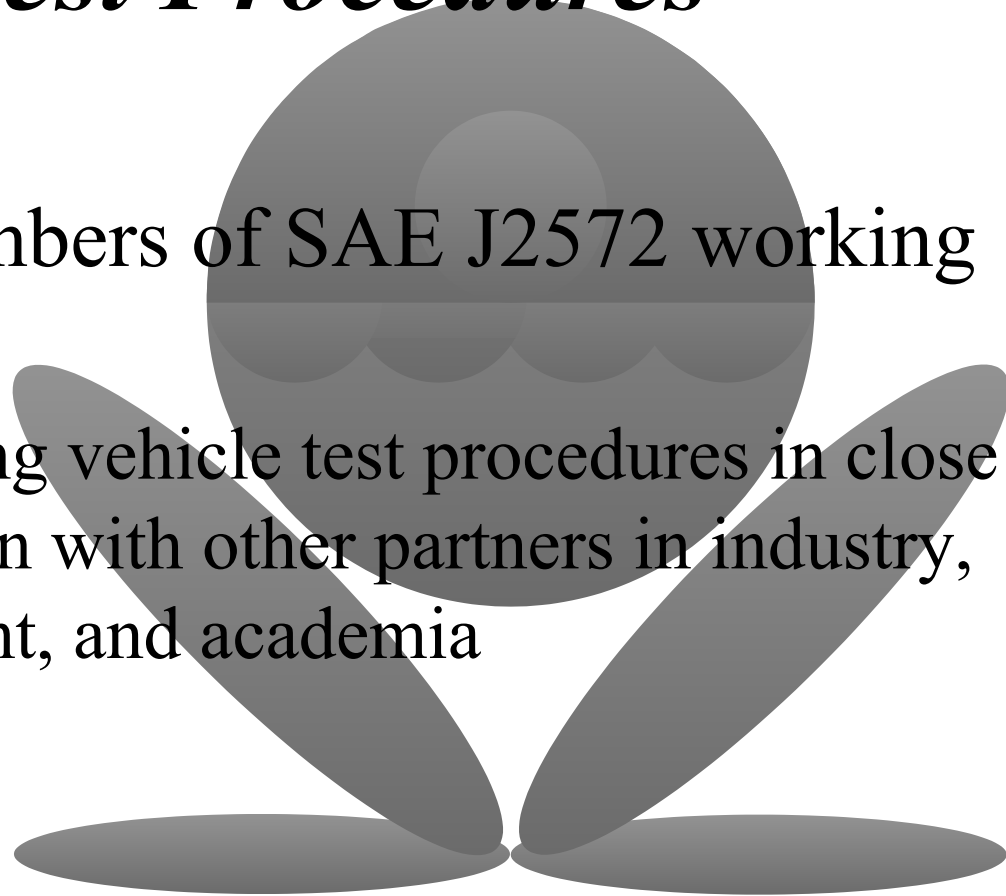
- ◆ EPA will play a national leadership role in
 - Development of test procedures and safe, cost effective vehicle test facilities
 - Life-cycle modeling (criteria pollutants, climate change and fuel consumption) to develop sound policies with respect to different technological pathways available
 - Establishment of a neutral test site for evaluation of fuel cell and hydrogen fueled vehicles
 - Cooperative development and technology demonstration

H2 Vehicle Test Facilities at EPA-NVFEL

- ◆ Initial H2 vehicle chassis dynamometer test capability beginning in mid-October 2002
- ◆ Capabilities include:
 - H2 fuel economy measurement
 - H2 bag-emission measurement
- ◆ Full compliment of H2 safety systems
 - H2 monitoring
 - Increased ventilation
 - Limiting of contained hydrogen
 - » “Live” external vehicle fueling during testing
 - Laboratory electrical systems interlocks
 - Break-away connections and H2 flow limiting

Test Procedures

- ◆ Active members of SAE J2572 working group
 - Establishing vehicle test procedures in close cooperation with other partners in industry, government, and academia

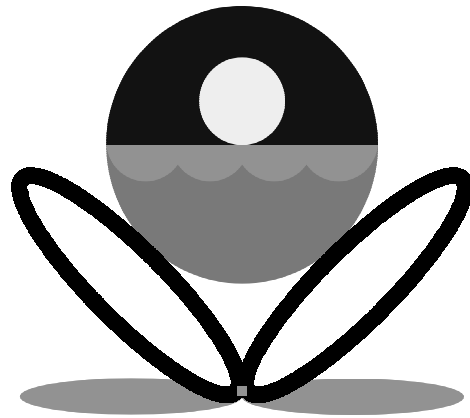


Partnership Opportunities



- ◆ U.S. EPA is the newest member of the CaFCP
 - Life cycle modeling
 - Chassis dynamometer testing
- ◆ Currently under consideration for next year:
 - Cooperation with Michigan NextEnergy in SE Michigan
 - Fuel cell truck APU demonstration
 - Delivery truck fleet demonstration
 - Establishment of H2 fast-fill refueling facilities

Thank you



Questions?