EPA Fuel Cell Activities

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

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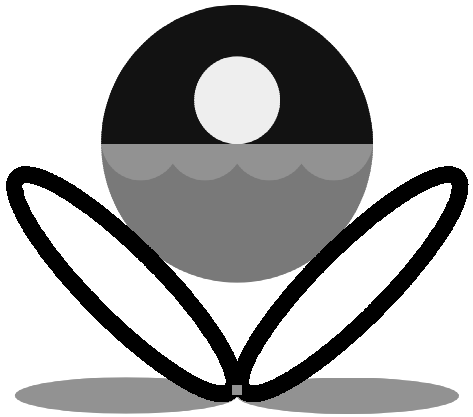
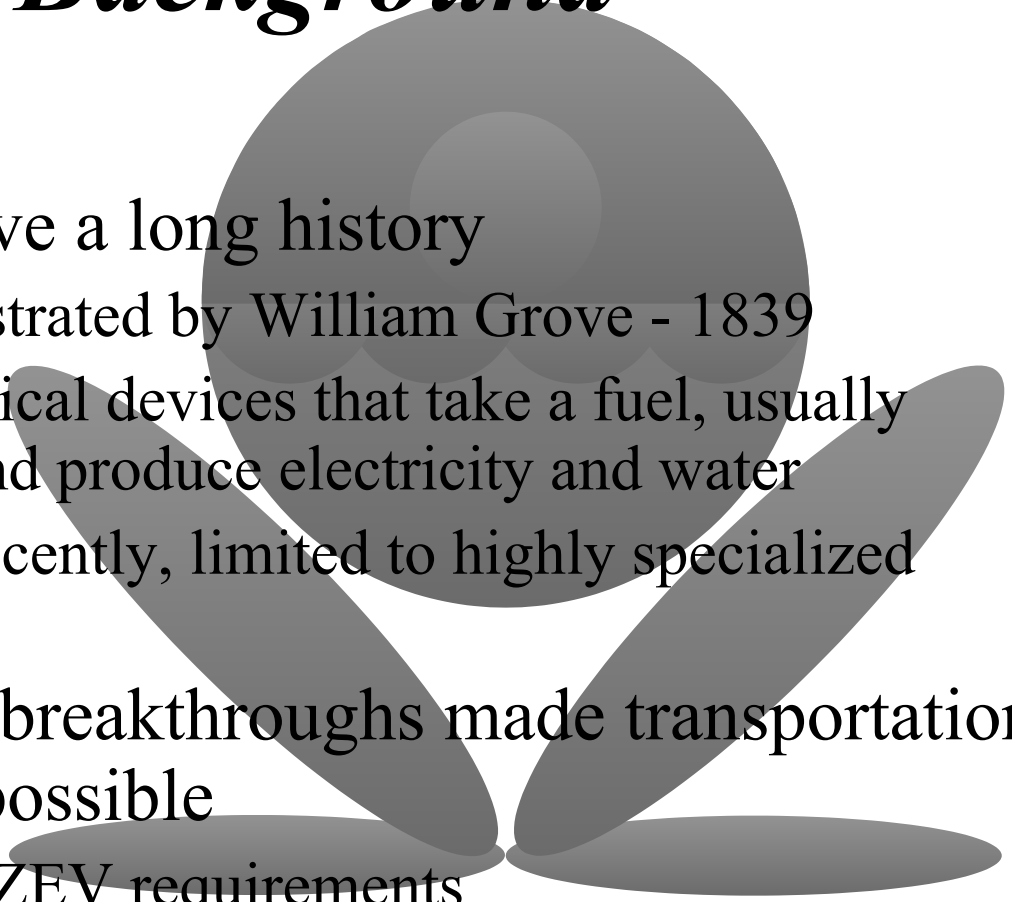
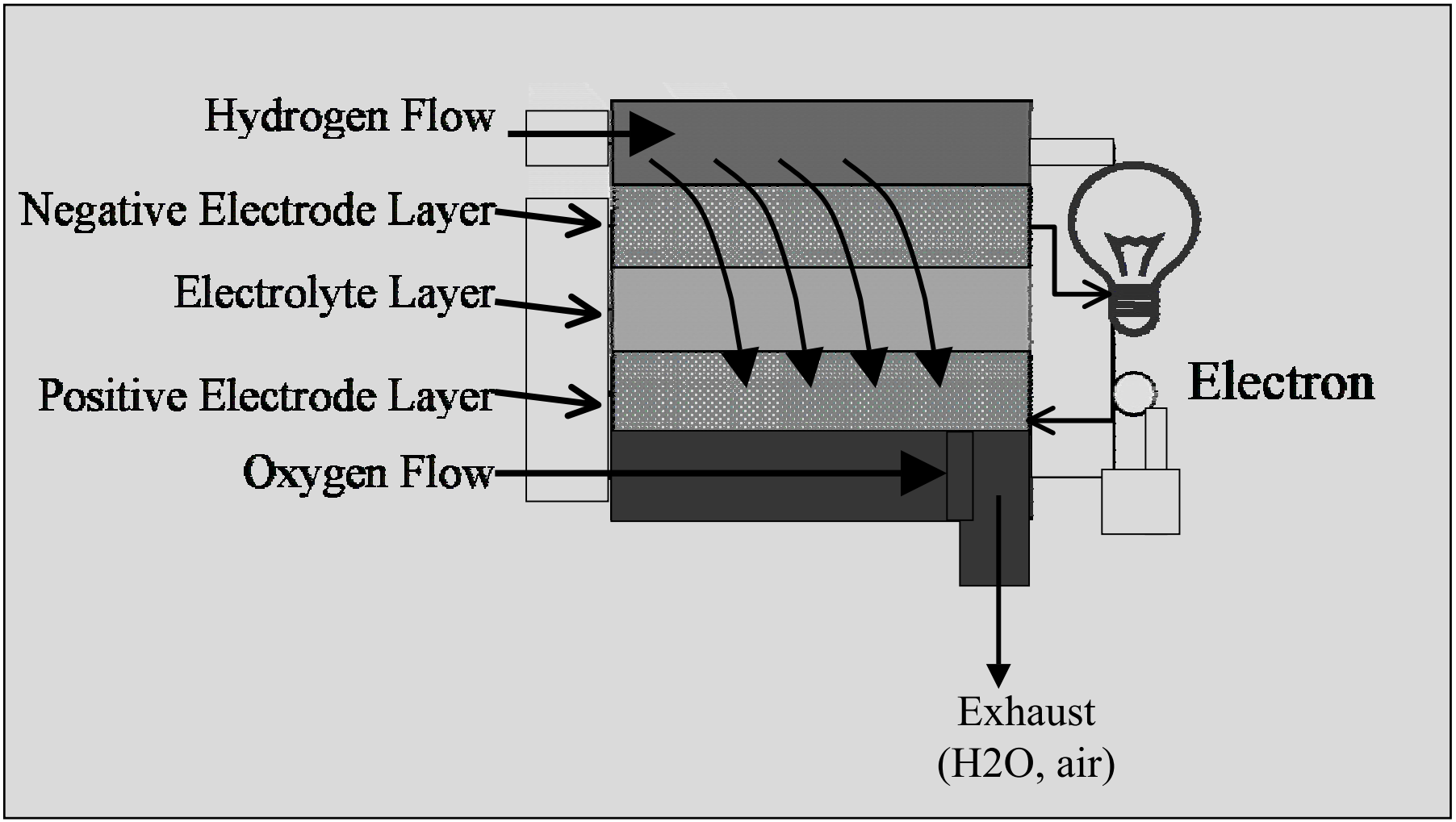


Background



- 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

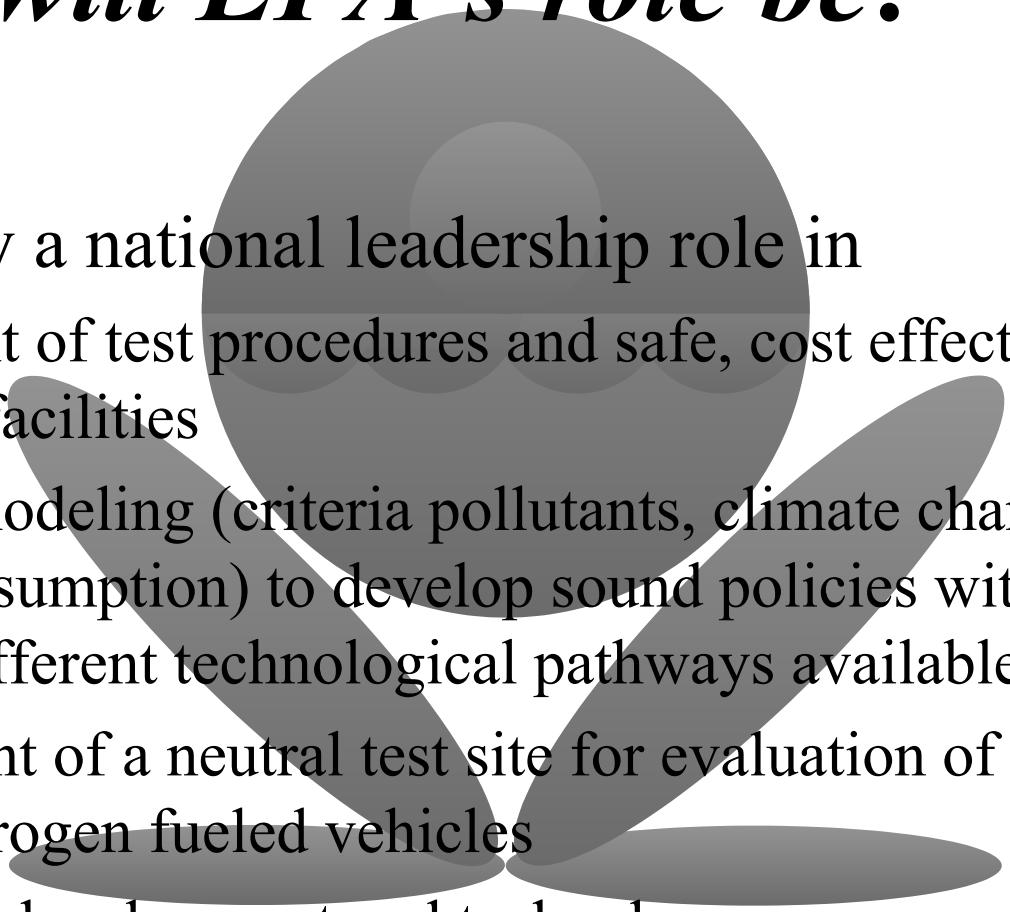


More Recently…

- 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?



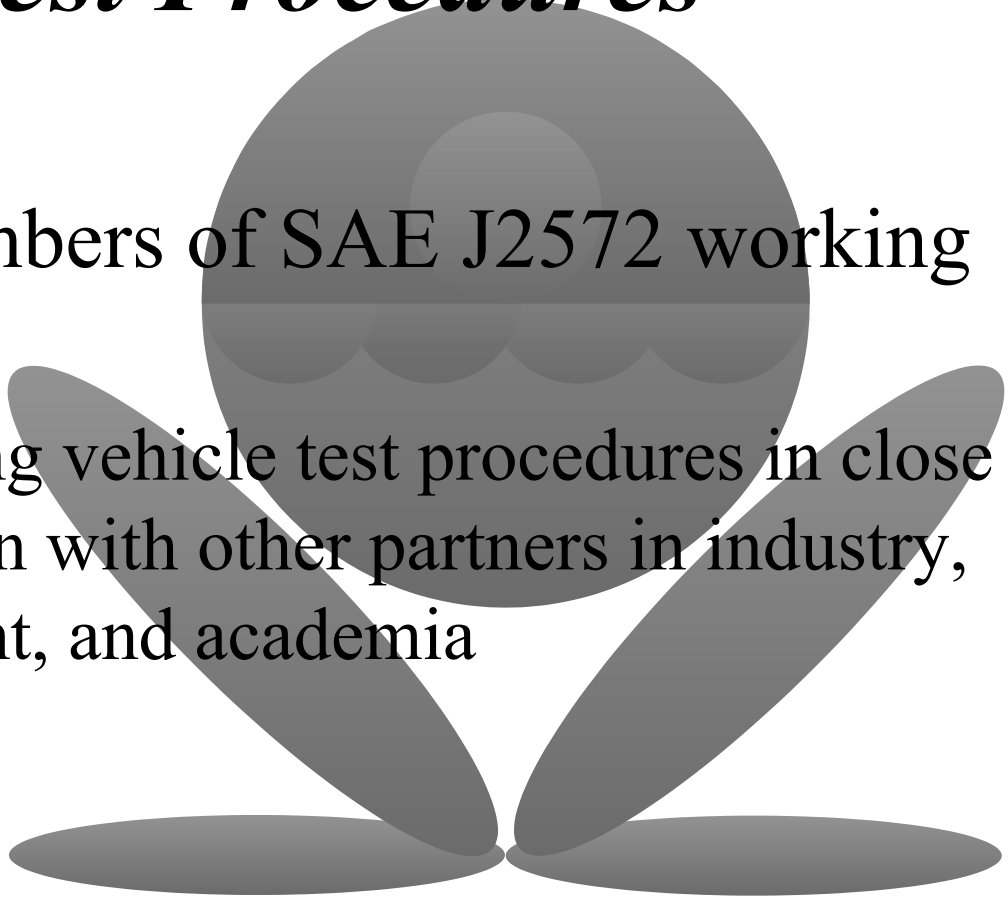
- EPA will play a national leadership role in
  - Development of test procedures and safe, cost effective vehicle test facilities
  - Life-cycle modeling (criteria pollutants, climate change and fuel consumption) to develop sound policies with respect to different technological pathways available
  - 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

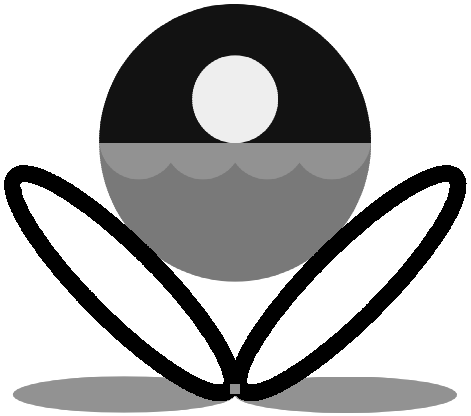
- Active members of SAE J2572 working group
  - Establishing vehicle test procedures in close cooperation with other partners in industry, government, and academia



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?