



**SEMCOG**

# **Detroit Commuter Hydrogen Project**

***Southeast Michigan  
Council of Governments***

Jody Egelton  
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*This presentation does not contain any proprietary, confidential or otherwise restricted information*

# Overview

**METRO CARS®**



**SEMCOG**



## Timeline

- **Project start:**
  - Jan 20, 2009
- **Project end:**
  - July. 2010\*

**\*Subject to fuel availability**

## Barriers Addressed

- **Lack of Performance and Durability Data**
- **Hydrogen Storage**
- **Hydrogen Refueling Performance and Availability**
- **Maintenance and Training Facilities**
- **Public Acceptance**

## Budget

- **\$2.83 mil project**
  - **DOE \$1.29 mil**
  - **SEMCOG \$1.54 mil**
- **Funding FY09: \$0.86 mil**
- **Funding FY10: \$0.42 mil**

## Partners

- **SEMCOG**
- **Wayne County Airport Authority**
- **METRO CARS®**
- **City of Taylor, MI**
- **Ford Motor Company**
- **BP**

***To evaluate the feasibility of using renewable fuels as a part of a sustainable transportation infrastructure feeding a regional, public mass-transit system***

***Compare reliability, acceptability and cost effectiveness of hydrogen and propane powered internal combustion engine powered buses.***

**SEMCOG is working to determine whether a mass transit rail system can be created to link Detroit and Ann Arbor. If the public rail system is implemented, hydrogen ICE vehicles could be used to link Detroit Metropolitan Airport and the rail line at a proposed stop four miles from the airport**

- **Apply hydrogen fuel technology to internal combustion engines**
- **Build and deliver two buses powered by hydrogen fuel**
- **Train *METRO CARS*® bus operators in unique and safe operating procedures**
- ***METRO CARS*® to operate and maintain the buses in normal passenger service in airport parking operations**
  - **Fueling at BP's nearby City of Taylor hydrogen facility**
- **Use a combination of automated and manual data collection methodologies for effective data analysis**

# **SEMCOG** *Hydrogen Powered Ford E450 Shuttle Bus*



**H2 Powered 6.8L V-10 Engine**  
**30kg, 350 bar H2 storage Tank**

# ***Ford E450 H2ICE Bus Specifications***

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- Platform: E-450
- Body Style: Shuttle Bus
- Passengers: 9 Plus Driver
- Wheelbase: 176 Inches
- GVW: 14050 Pounds
- Engine Power: 235 Horsepower 6.8L V10, Supercharged
- Engine Torque: 310 lb-ft
- Fuel: Compressed Gaseous Hydrogen
- Fuel Pressure: 5,000 PSI
- Vehicle Range : 150 miles

- **Safety in operation is addressed with targeted training**
  - *METRO CARS®* Operators receive detailed instructions
  - Fuelers receive hands-on training
  - *METRO CARS®* Service personnel are provided safe procedures
  - Emergency Responders have been given in-depth explanation of the vehicle's systems
- **All training complete prior to buses being placed in service.**
- **A Safety & Communications Plan has been prepared to guide all participants**



**The Hydrogen fueling station in the City of Taylor is operated by BP America. BP has indicated that the DOE Phase 1 sponsorship ends September 30, 2009 and the site will be decommissioned as part of the original project plan. This demands that an alternative fueling source be identified and adapted in order to continue the program as designed.**





- **Two vehicles have been built with hydrogen ready engines and unique fuel storage systems**
- **Operator Training in both vehicle operation and fueling procedures has been complete**
- **Safety Plan has been developed and deployed**
- **All required documentation and agreements have been complete**
- **Buses have been in operation since March 29, 2009 and each bus is operating 8 hours per day**

- **Buses have been operating effectively with no identified problems**
- **Fuel economy comparisons are underway**
- **Collecting rider opinions with on-board survey cards to determine acceptance of the H2 concept by the public**

- **Continue fleet operations with vehicle reliability equal to propane fuel buses**
- **Operate with No safety incidents**
- **Provide comparison of fuel economy and other operational and passenger parameters to other buses in the fleet**
- **Determine method to continue fueling after September, 2009**

- **Preparation and Deployment of buses has been complete**
- **Data collection is underway**
- **Program end date may be affected by fuel availability**



***METRO CARS®***

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