

The Role of Technology in the Transit Industry

The Mass Transportation Authority

**Introduction of Diesel Electric Hybrid Vehicles
And Fuel Cell Vehicles Into Genesee County**

November 7, 2007

Challenge Created by Growing Unmet Public Transportation Needs

- Expanded Programs for Seniors
- Charter School Transportation
- General Public Due to Increase in Fuel Prices
- Regional Transportation Expansion
- Limited Federal, State and Local Operating Assistance

Possible Solutions

- Increase Efficiency and Effectiveness Through the Use of Technology
- Extend Useful Life of Vehicles Through Summer and Mid-life Rehabilitation Programs
 - Large Bus - Useful Life 24 Years
 - Small Bus - Useful Life 15 Years
 - Van - Useful Life 400,000 Miles

Technology - Areas of Concentration to Increase Efficiency and Effectiveness

MTA Infrastructure Improvements

- Clean Diesel
- Current Hybrid Technology
- Advanced Hybrid Technology Program
- Fuel Cell Technology Program
 - Design and Construct the Hydrogen Generation Facility
 - Purchase a 40 Foot Transit Bus That Utilizes Fuel Cell Power

Hydrogen Generation Facility

- Located in Grand Blanc Township
- Issue Request for Proposals by March, 2008
- Construct Facility by January, 2009
- Capacity to provide Hydrogen for 3 to 5 Buses

Technology Program

Develop New Engine Technologies

- Michigan State University - Technology
- Kettering University - Commercialization
- Mass Transportation Authority - Testing
- Transportation Techniques, LLC (Transteq) - Production

Mass Transportation Authority

- Purchase Five Small Buses
 - Convert to Diesel Electric Hybrid for Test Vehicles
- Provide 40' Bus for Conversion to Current Hybrid Technology in FY 2008
- Provide 40' Bus for Conversion to Advanced Hybrid Technology in FY 2009
- Design and Construct Hydrogen Generation Facility
- Establish Program to Fund Fuel Cell Bus Purchase in FY 2009
- Establish Program to Fund Advanced Hybrid Production Bus Purchase by FY 2010
- Implement Bio-Diesel Fuel Purchase Program in MTA

Kettering University

- Coordinate the New Technology, Commercialization, Testing, Production Process
- Develop and Provide Bus Operator Training Program for Diesel-Electric Hybrid Buses
- Develop and Provide Maintenance Employee Training Program for Diesel-Electric Hybrid Buses
- Establish Professor/Student Program to Monitor and Implement Improvements for Diesel-Electric Hybrid Buses
- Establish Program to Monitor and Implement Improvements in the Hydrogen Fueling System
- Establish Program to Monitor and Implement Improvements in Fuel Cell Bus Technology

Michigan State University

- Develop and Provide Advanced Technology for Diesel-Electric Hybrid Bus Systems
- Monitor Bus Testing Program
- Provide Initial Funds for Program Development Through a Twenty-First Century Fund Grant
- Provide Additional Development Funds as Program Progresses into Production Phase

Transportation Techniques, LLC

- Convert 40' Mass Transportation Authority Bus to Current Diesel-Electric Hybrid Technology in FY 2008
- Convert 40' Mass Transportation Authority Bus to Advanced Diesel-Electric Hybrid Technology in FY 2009
- Monitor Bus Testing Program
- Establish Production Facility for Power Plant Production Using Advanced Diesel-Electric Hybrid Technology by FY 2010
- Establish Production Facility in Michigan

Program Goals

- Develop and Implement Advanced Hybrid Program that Provides a 40% Reduction in Use of Fossil Fuels by 2010. When Bio-Diesel is Added to Program the Goal is a 50% Reduction
- Establish Training Programs as Required for Transition to Diesel-Electric Hybrid Buses
- Create Private Production Capability in Michigan by 2010
- Create 200 New Jobs in Michigan by 2010
- Provide the Technology Base for Fuel Cell Development that will make Michigan a Leader in Fuel Cell Technology

Cleaner Air, Brighter Future

- Introduction of Five Diesel Electric Vehicles to Genesee County
- Provides Vehicles for Students & Faculty of Kettering University to Evaluate Current Technology
- Constitutes First Step Toward the Introduction of Advanced Power Plant Technology in the MTA