



**SunLine**

# SunLine Transit Agency Hythane<sup>®</sup> - Hydrogen Bus Experience

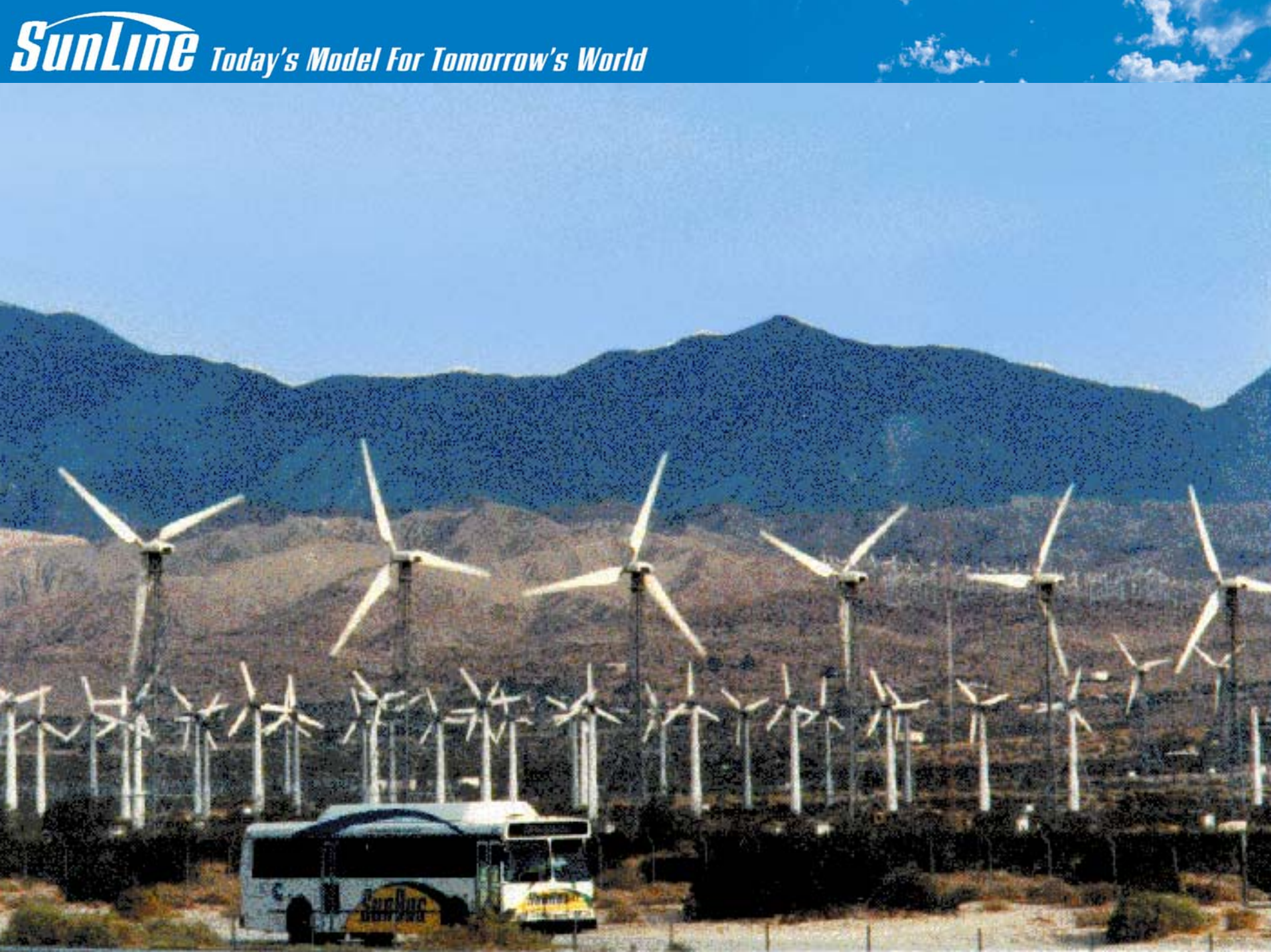
Presented to  
Natural Gas Vehicle Technology Forum

Dallas, Texas

January, 2003



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Hythane<sup>®</sup> = Performance  
Efficiency  
Fuel Consumption  
**CNG bus**

Plus reduces greenhouse gas  
and NOx emissions





**The cost of a new fuel cell bus:  
10x the cost of a new CNG bus**

**Rehab and upgrade to Hythane<sup>®</sup>:  
Half the cost of a new CNG bus**





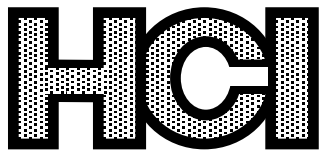
# Phase 2 Partners

## Committed Partners

-  **Hydrogen Components, Inc.**
-  **Cummins-Westport**
-  **South Coast Air Quality Management District**
-  **SunLine Transit Agency**

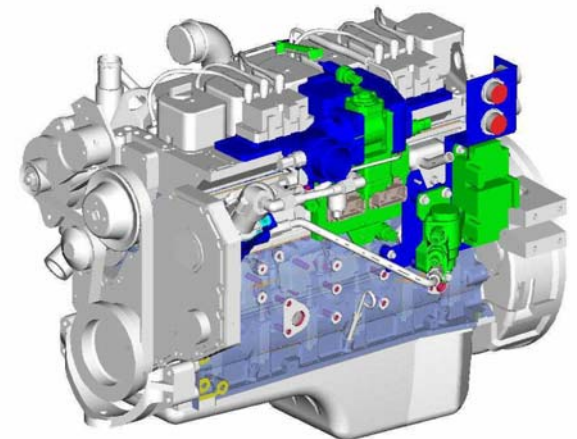
## Approval Pending

-  **National Renewable Energy Lab (U.S. Department of Energy)**



# Program Objectives

- ✍ **Determine compatibility**
- ✍ **Determine the optimal fueling & ignition settings**
- ✍ **Modify two Cummins B+ engines for Hythane<sup>®</sup>.**
- ✍ **Perform baseline emissions testing**
- ✍ **Use the vehicles in revenue service for three months**
- ✍ **Retest emissions**
- ✍ **Operate buses in revenue service for a period of one year.**
- ✍ **Final evaluation**

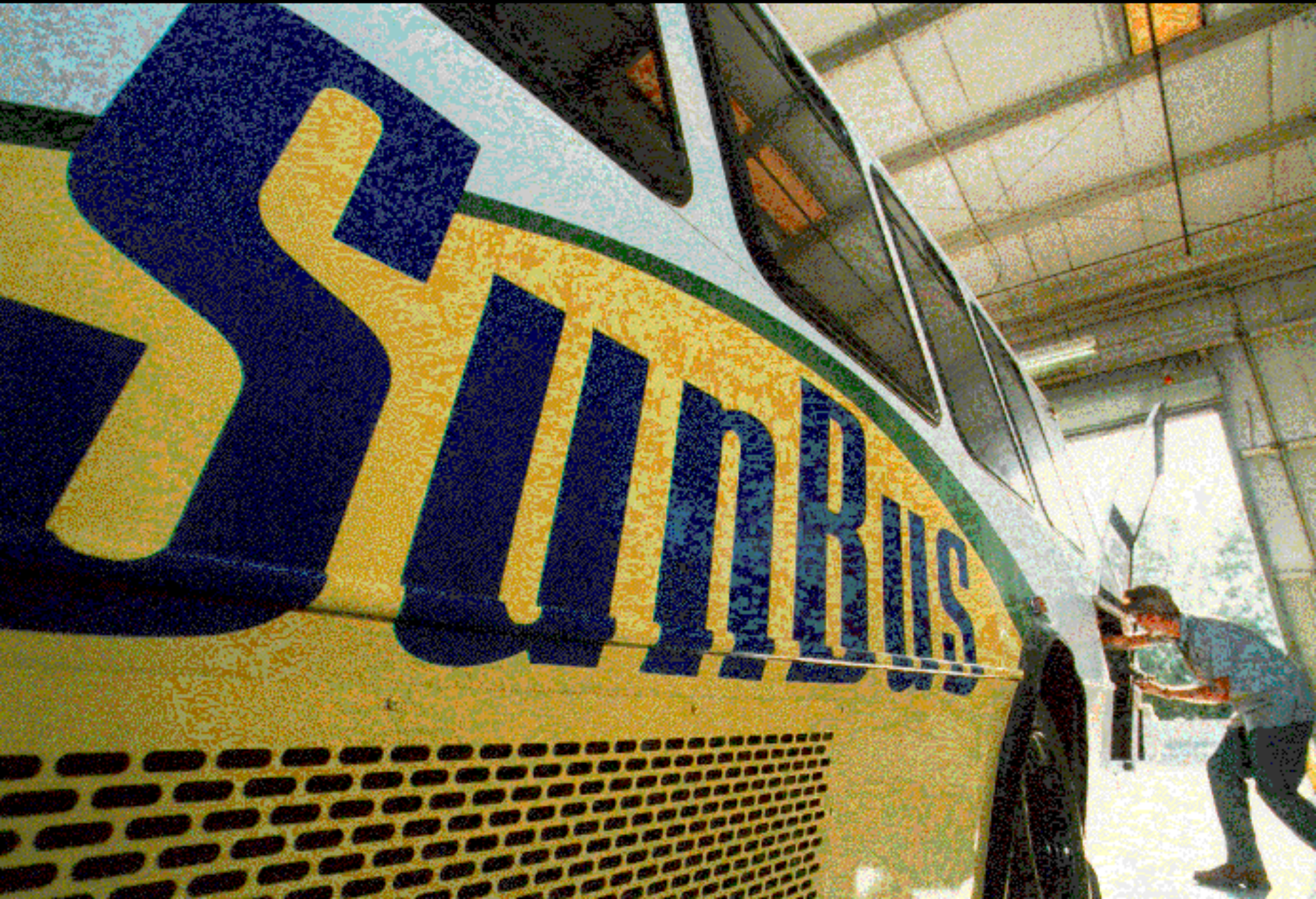


# Work Plan

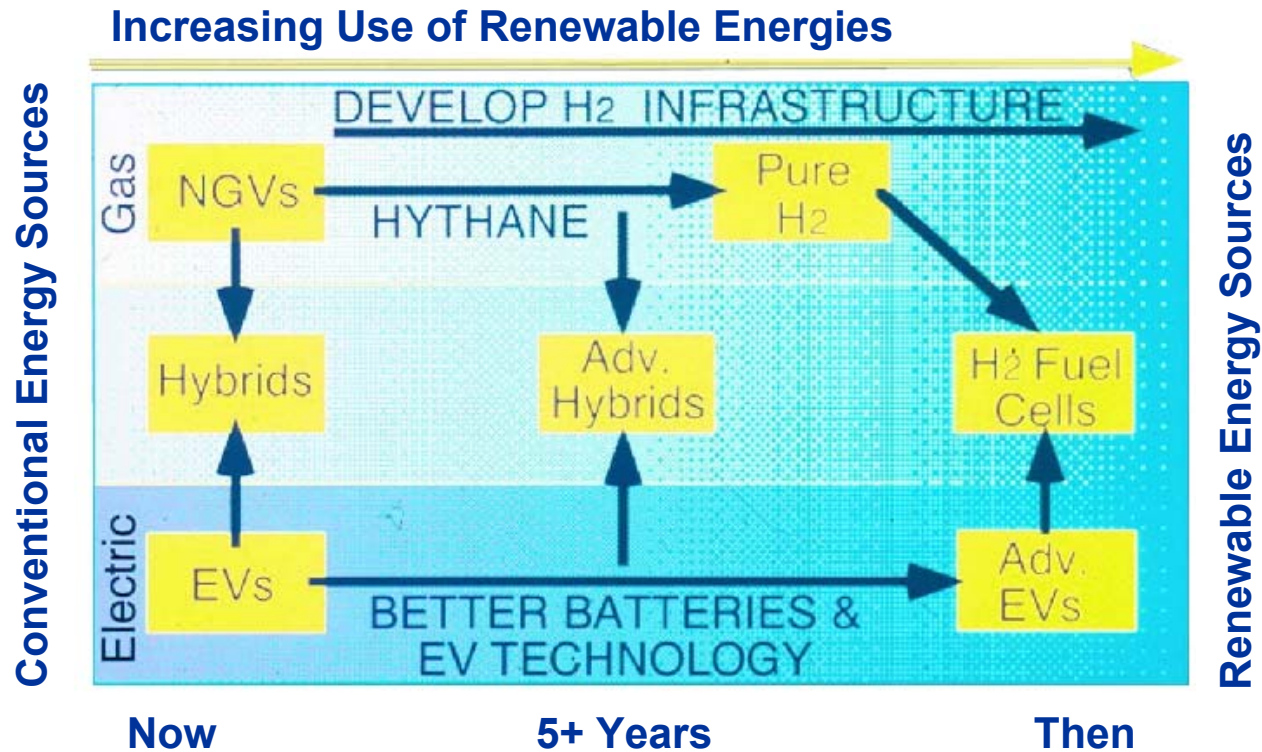
-  **Task 1. Technical Assessment & Evaluation**
-  **Task 2. Engine Specifications & Modifications**
-  **Task 3. Test Development Matrix**
-  **Task 4. Equipment Procurement**
-  **Task 5. Vehicle Preparation & Baseline Emissions Testing**
-  **Task 6. Hythane<sup>®</sup> Bus On-Road Testing**
-  **Task 7. Final Emissions Testing**
-  **Task 8. Final Engine Inspection**
-  **Task 9. Public Outreach/Technology Transfer**
-  **Task 10. Produce a Final Report**



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# Parallel Paths to Renewable Energy





# THANK YOU



**TOMMY EDWARDS**  
*Director of Maintenance*

Phone: 760-343-3456 ext 312

Email: [tedwards@sunline.org](mailto:tedwards@sunline.org)