

NTRD Program Disclaimers

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Texas Commission on Environmental Quality
New Technology Research & Development (NTRD) Program
Monthly Project Status Report

Contract Number: __582-5-70807-0011 _____

Grantee: __Rolling Frito Lay Sales, LP_____

Date Submitted: __November 4, 2005_____

Report for the **Monthly** period:

Starting Date __November 1, 2005_____ Ending Date __November 30, 2005_____

Section I. Accomplishments *(Please provide a bulleted list of project accomplishments as well as a description of their importance to the project.)*

- **Updated Integrated Project Timeline** – The projected timeline has been continuously updated to reflect progress against objectives. All portions of the project are moving ahead according to the schedule at this point, for an April 2006 vehicle delivery.
- **Vehicle Construction** –
 - **Azure Dynamics** – A meeting was held with the Azure Dynamics program manager on 11/09 to review the project status and timeline. All long lead items have been ordered from sub-suppliers. Engineering for integration of the hybrid drive components is continuing on-track. The floor of the vehicle in the area of the transmission will have to be raised slightly to ensure clearance for the new electric motor being installed between the existing engine and transmission. A project review is planned at Azure Dynamics' facility in late January or early February to gauge progress on the vehicle and to further review the design and installation approach.
 - **Eaton/International** - A document requesting a change to the contract scope of work to reflect International being the vehicle integrator versus Eaton has been submitted to TCEQ for approval; no official response has been received. The formal proposal from International Corp. shows a total project cost of the same amount as the original proposal from Eaton and the project budgeted amount. Purchasing documentation is being finalized, with a purchase order expected to be formally issued in December 2005. The project continues to move ahead at International for a truck delivery in April 2006.
- **Testing/Data Acquisition**
 - **LopezGarcia Group**
 - **Emissions Instrumentation** - LG Group has investigated the real-time vehicle emissions testing equipment currently available on the market, and had identified two vendors who will lease equipment to the project at a lower total cost versus purchasing the instruments. The sensor systems are made by Semtech (the supplier in the original project proposal) and Clean Air Technologies. A 4-month lease for 2 Montana sensor units has been received from Clean Air Technologies for \$100,000, compared to the \$200,000 purchase price. The Semtech instruments leased for a similar price. The on-board emissions monitoring equipment will be interfaced with a GPS unit to enable live tracking capability and automated remote data acquisition and transfer. A final decision as to which unit is recommended for use during the road testing portion of this project is expected by 12/14. If the recommendation is to use Clean Air Technology's Montana brand sensors, a formal change-of-scope document will be prepared and proposed to TCEQ.
 - **Testing Protocol** – A draft of the testing protocol to be used has been reviewed and is currently in revision. The testing protocol document describes the testing regime that the hybrid and baseline trucks will be subjected to for both the laboratory (dynamometer) and real-world delivery operation. This protocol must be reviewed and approved by TCEQ prior to initiation of vehicle testing. In preparation for that step, a review has been scheduled for December 14 at the

National Renewable Energy Lab's Heavy Hybrid Program center in Golden, Co. Given NREL's extensive prior experience in testing and performance modeling of heavy-duty hybrid vehicles, the project team thought it wise to receive their point of view and input regarding the proposed testing protocol prior to submission to TCEQ. NREL's input will be incorporated into the protocol document, and it is expected that the project team will submit the proposal to TCEQ by mid-January.

- o Drive-Cycle Analysis – A significant amount of data has been gathered on some current Frito-Lay delivery vehicles outfitted with GPS monitors. The data is being analyzed to evaluate the range of drive cycles in F/L's delivery system, and to identify a "typical" or representative drive cycle to use for both lab/dynamometer testing and for the on-road testing portions of the study. In addition, the project team is attempting to match some of F/L's drive cycles with industry standard ones for modeling purposes. A number of meetings and phone calls have been conducted with industry experts to identify the preferred analysis approach and drive cycle comparison metrics.

Indicate which part of the Grant Activities as defined in the grant agreement, the above accomplishments are related to:

The above activities are directly related to Article 2, Scope of Work, Task 1: Development and Delivery of Hybrid Vehicles, specifically sections 2.1.1, 2.1.2, and 2.1.3.

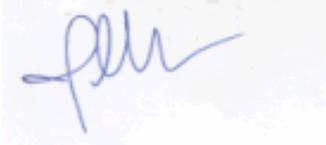
Section II: Problems/Solutions

<p>Problem(s) Identified</p> <p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	<p><i>Some difficulty and delay has been encountered in finalizing the necessary purchasing documentation and confidentiality agreements with International Truck and Engine Corp. It has been difficult to coordinate legal resources in both companies to modify the standard purchasing documents to reflect the developmental nature of this project. To date, there have been no delays or other adverse effects on the project of not having the agreements in place.</i></p>
<p>Proposed Solution(s)</p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	<p><i>Continue pursuing completion of the documents and issuance of a purchase order. Continue to ensure with International any schedule or other impact to the project of not having the paperwork complete.</i></p>
<p>Action(s) Conducted and Results</p> <p><i>(Please describe the action(s) taken to resolve the problem(s) and its effect)</i></p>	<p><i>Conference calls and e-mail correspondence on a weekly basis to keep the situation moving forward. Resolution is expected by early January, given the holiday and vacation season.</i></p>

Section III. Goals and Issues for Succeeding Period: *(Please provide a brief description of the goal(s) you hope to realize in the coming period and identify any notable challenges that can be foreseen)*

1. *Continue vehicle fabrication Activities with each supplier. Ensure each supplier is staying on task with project scope and timeline.*
2. *A formal Purchase Order needs to be issued to International once the purchasing agreement paperwork is in place (terms and conditions, final contract, etc.)*
3. *Finalize recommendation of GPS and emissions monitoring equipment. LG Group has identified the sensors available on the market and a lease option.*

4. *Review proposed testing protocol with industry experts. The proposed testing protocol will be reviewed at the National Renewable Energy Lab's Heavy Hybrid program center, and learnings and input from that review will be incorporated into the proposal by mid-January.*
5. *Data analysis on current vehicle drive cycles - using GPS units to analyze current drive cycle for input into testing plans (ongoing activity). Pilot program independent of the hybrid project has activated GPS on a number of vehicles currently in use, and the data is now becoming available for analysis after lengthy effort by Frito-Lay to set up the data bases and reporting protocol. The drive cycles seen in day-to-day delivery activity at Frito-Lay need to be characterized and a determination of what is representative needs to be made for inclusion into the road testing. This activity is expected to be complete in December.*



Date: December 07, 2005

Authorized Project Representative's Signature

NOTE: *Please attach any additional information that you feel should be a part of your report or that may be required to meet the deliverable requirements for tasks completed during this reporting period.*