

## **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: \_\_April 3, 2006\_\_\_\_\_

Report for the **Monthly** period:

Starting Date \_\_03/01/06\_\_\_\_\_ Ending Date \_\_03/31/06\_\_\_\_

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. At this point, International has indicated it expects an 8-week delay in truck delivery. If that delay holds, the overall schedule will be updated with each task examined for delay impact.

- **Vehicle Construction** –

- **Azure Dynamics** – The initial portion of hybrid drivetrain conversion is complete. The ultra capacitors, drive motor, and controls have been installed, as has most of the wiring required to connect the components. Final installation and testing is expected to be complete by 4/10, and optimization of drivetrain operation will occur at that time. Azure will take advantage of the schedule delay by further optimizing the control system and putting test and break-in miles on the vehicle.

A visit was paid to the Azure facility in Vancouver BC to review the project and to inspect initial installation/conversion. The quality of build looked very good, with few issues noted. A clear path to finish and deliver the unit was outlined.

- **Eaton/International** – The base chassis has been disassembled in preparation for hybrid drive train conversion. International has indicated they are expecting an 8 week vehicle delivery delay. The stated reason for the delay is the unexpected amount of time required to secure commercial agreements and documentation between International and Eaton Corp. The team is currently exploring opportunities to accelerate activities to reduce the anticipated delay. The biggest opportunity is reducing the software tuning time required, which is currently estimated to take 8 weeks. Frito-Lay and International have reached verbal agreement on the purchasing terms & conditions, and are in the final stages of securing the paperwork.

- **Testing/Data Acquisition**

**LopezGarcia Group**

A project review was conducted at the National Renewable Energy Lab (NREL), which operates the Advanced Heavy Hybrid program for the Dept. of Energy. The intent of the review was to present the Frito-Lay project plan and have industry experts provide feedback and suggestions based on their prior testing experience. Input will be incorporated into the testing protocol, which must be submitted to TCEQ for approval prior to testing initiation.

- **Emissions Instrumentation** – NREL agreed with the selection of the CAT Montana system to measure emissions during the testing. A purchase order will be issued in April for rental of the emissions equipment for the duration of the testing.
- **Testing Protocol** – The NREL team agreed with the drive cycle analysis approach. The data has shown that the majority of variability is between routes within the Frito-Lay delivery system, versus day-to-day on a given route. The proposed protocol outlined a routine or rotating between 8 routes through a 16 week testing period, with few replicates. The NREL team indicated that NOx measurements are very noisy, and 10-15 runs were required to get reliable test results.

Also, since each route requires a different driver, we would experience significant driver performance variability, as well as requiring more drivers to be trained on the hybrid vehicles. The protocol will be adjusted to have a minimum of 10 replicates on each route, and routes will be selected based on profile versus overall average in terms of total miles per day, drive time, and average speed.

- o A purchase order was issued to Southwest Research for the lab-based portion of vehicle testing. Exact dates for testing will be communicated to SwRI once the schedule delay is finalized.
- o LG Group will update the proposal document and the project team will review prior to submission for approval.

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

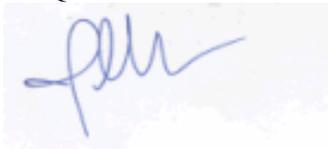
The above activities are directly related to Article 2, Scope of Work, Task 1: Development and Delivery of Hybrid Vehicles, specifically sections 2.1.1, 2.1.2, and 2.1.3.

**Section II: Problems/Solutions**

<p><b>Problem(s) Identified</b></p> <p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	<p><i>International Corp. has indicated it expects an 8-week vehicle delivery delay due to a delay in securing commercial agreement between International and sub-supplier Eaton.</i></p>
<p><b>Proposed Solution(s)</b></p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	<p><i>Each step required to complete the vehicle will be examined for opportunity to accelerate. The biggest opportunity at this point is likely to be the 8 weeks Eaton has requested for vehicle and drive train tuning.</i></p>
<p><b>Action(s) Conducted and Results</b></p> <p><i>(Please describe the action(s) taken to resolve the problem(s) and its effect)</i></p>	<p><i>No action as of this report; examination of options underway.</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. Continue to update project timeline based on latest available information from suppliers.*
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. *Issue purchase order for emissions monitoring equipment.*
4. *Finalize proposed testing protocol using input from environmental consultants and National Renewable Energy Lab (NREL).*



Date: April 3, 2006

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*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.*