



HTUF | hybrid truck users forum

H-TUF Utility Hybrid Truck Working Group Hybrid Task Force

Request for Proposal (RFP)

Pre-production hybrid-electric drive system
integrated in standard utility truck chassis.

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Queries to: George Survant, Fleet Services Director, Florida Power and Light
George_Survant@fpl.com

Bill Van Amburg, Senior VP, WestStart-CALSTART
2181 E. Foothill Blvd. Pasadena, CA 91107
bvanamburg@calstart.org

Deadline for questions: May 10, 2004

Deadline for proposals: May 31, 2004

Selection Period: June 1 – June 20, 2004

Selection Made: June 21, 2004

Contract negotiation: June 22 – July 15, 2004

First Deliveries for Testing: *October 15, 2004 Proposed*

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RFP Background

This Request for Proposal (RFP) is a product of the Hybrid Truck Users Forum (HTUF) and the Utility Hybrid Truck Working Group of HTUF. HTUF is a joint project of WestStart and the US Army National Automotive Center (NAC) to speed the commercialization of heavy-duty hybrid trucks.

For the past year, the Utility Working Group has identified common chassis, drivelines and truck utilization practices across utility fleets nationwide. This group of roughly 25 utility fleet operators have jointly developed their key performance requirements and selected the first platform size(s) best suited for a hybrid truck.

The result of this effort is a desire by the entire Utility Working Group to speed the introduction of a hybrid work truck for utility fleet operations. The next step in this effort is to request proposals, select, purchase and deploy for assessment a pre-production volume of hybrid work trucks.

The intention of the group is to assess the performance and function of these trucks in standard fleet service. If the vehicles meet the performance requirements agreed to, and if reductions in future hybrid system costs show that a business case can be made on total cost of ownership, it is the intention of the utility fleets involved to begin purchasing hybrid trucks as their standard replacement vehicle.

This first pre-production order, based on this RFP, involves at least nine (9) of the first mover fleets in the broader Utility Working Group. This first group serves as a “Task Force” (the Task Force) of the full Working Group but operates autonomously. It is currently made up of a geographically diverse group, consisting of:

- Florida Power and Light;
- Alabama Power;
- Georgia Power;
- Pepco;
- TXU;
- Southern California Edison;
- Pacifica Gas & Electric;
- Hydro Quebec; and
- Missouri Department of Transportation.

Each Task Force member has ordered between 1 and 3 vehicles for purchase and operation/assessment.

RFP Overview

Overall Number of Trucks/Type. The Hybrid Task Force of the Utility Working Group requests a proposal from a truck original equipment manufacturer (OEM) and/or hybrid system supplier team (hereinafter “Supplier Team”) to produce and deliver:

- At least 15 (and possibly up to 20+) trucks of the 27,000-33,000 lb GVWR range
- Hybrid utility trouble or "bucket" truck/cab chassis and drivelines.

These are understood to be pre-production chassis/drivelines. They are not prototypes and will be placed into regular fleet service for assessment, validation and testing. They will be expected to perform as well or better than the work truck they are replacing. However, it is also recognized that these hybrid drivelines are still more expensive than traditional truck engine/transmissions. With that understood, a winning proposal will show a strong case for future driveline price reductions and for a strong investment from the Supplier Team.

Integrated Chassis/Driveline Focus. The RFP itself is specifically focused on obtaining an integrated hybrid electric driveline/chassis from the supplier team that is selected. Proposal responders are NOT required to provide the body and aerial lift device for these trucks. Once produced, the integrated cab/chassis/driveline will then be sent to the fleet’s normal truck body “upfitter” for installation of truck body, aerial device, tool circuits and other accessories.

The Supplier Team with a winning proposal will work cooperatively with the aerial lift and truck body upfitter(s) to ensure the truck systems correctly function with the body and lift, as is the custom in the industry. The three major utility upfitters, Altec, Time and Terex, have agreed to cooperate in this project.

Delivery. Unless negotiated otherwise with the selected Supplier Team, it is the goal of this RFP to have the participating fleets take final delivery of their trucks from their truck body upfitters. This is the standard practice in the industry and will add comfort and speed commercialization. Payment for the complete trucks ideally will be made via the upfitters.

Customization Within a Range. Outside of the hybrid drivelines, the Task Force users desire that the trucks be "customizable" as much as possible, in keeping with the normal order and purchase flexibility fleets enjoy. Within the weight limits specified in the RFP for the overall trucks (27,000-33,000, variable by utility), the Task Force would want flexibility for each utility member’s final order in the following items:

- Aerial lift;
- Truck body and storage;
- Energy storage (battery pack) size
- Certain cab and chassis elements, including wheelbase (within limits noted), engine size (within limits) and driver comfort (cab) and safety elements.

These specific requests will come at the time of the final order, once a Supplier Team is selected. Notwithstanding any of the above, the Task Force is willing to discuss less flexibility per truck if that is required for an acceptable proposal, and that should be noted in the proposal. The Task Force is assuming a certain amount of flexibility is possible, and needs to be informed if it is not.

Trucks to be Purchased. The purchasing fleets intend to operate these pre-production trucks as part of their daily working fleets and assess their performance, benefits and potential payback.

- The purchasing fleets will pay the costs equivalent to the base truck/chassis, standard engine/driveline, aerial device, body and accessories that would be standard practice for this class of vehicle (including their custom orders).
- H-TUF through a combination of federal, state and regional funds will attempt to provide most or all of the funding for the incremental cost of the hybrid driveline and system that is above this standard cost, up to a limit.

Qualifying Proposal. To provide a qualifying proposal, the responder should ideally be composed of a truck or chassis manufacturer and a driveline supplier team (Supplier Team). The truck/chassis manufacturer should provide the integration of the hybrid driveline and systems into the truck/chassis. A hybrid driveline supplier proposing this work on its own in the absence of a truck/chassis manufacturer will not be rejected; however, the proposal might not be as acceptable to the Task Force.

A qualifying proposal will also ideally include truck/chassis manufacturers and driveline suppliers who have a strong knowledge of the work truck market, and the utility market. This knowledge can be provided through team members, or through the final truck upfitters (the companies that provide aerial lift/truck body elements).

Warranty/Service. A qualifying proposal will include warranty and service for the chassis and driveline comparable to and delivered in the same fashion as the truck normally offered, and for the normal life of this class of truck (5-7 years).

First Truck Validator. The qualifying proposal will include a first truck to be used as the "validator" for performance goals against a benchmark vehicle, *the testing and process to be proposed by the Supplier Team*. After testing of the Validator, the Task Force fleets will make the determination to proceed with the remaining trucks based on ability to meet the performance goals.

The performance goals and the measurement of achieving those goals will be specifically established in final negotiations with the selected Supplier Team, and should be a component of the proposals. However, proposals must include a third party chassis dynamometer test to assess fuel economy and emissions.

Single Winner. It is the goal and the intent of this RFP to select a single supplier/OEM team (Supplier Team) for all the trucks produced in this first effort. The rationale is the intent to significantly increase knowledge and move toward higher production volumes

and away from prototype activities. However, the Task Force highly values competition and reserves the right to award more than one winner if it deems this necessary for timely delivery and/or industry growth. The Task Force also reserves the right to award no winner if no proposal is deemed satisfactory.

RFP Selection Criteria

The selection of the winning proposal and Supplier Team will be a weighted assessment based on key criteria for success and the confidence of the Task Force utility fleets. In its selection criteria, the Utility Working Group Task Force will weigh the following parameters in choosing the winning team:

1. Quality of hybrid driveline solution, experience and track record with hybrid drivelines and ability to match performance and eventual cost goals
25% of selection weight
2. Commitment by supplier(s) to commercialization of system and ability to show commercially viable cost reductions and manufacturing in 3-5 year timeline.
20% of weight
3. Experience of supplier(s) in work truck market and knowledge of utility fleet truck market.
15% of weight
4. Cost-effectiveness of proposed driveline and project proposal.
15% of weight
5. Maintenance and support plan and commitment for the hybrid truck systems over the 5-7 year life of the vehicle.
15% of weight
6. Data collection options
10% of weight

The Utility Working Group Task Force will – after one-on-one meetings with suppliers – award the RFP to the Supplier Team, among the satisfactory proposals, with the overall highest ranking on these criteria.

Post Selection Negotiations. Once award has been made, negotiations to shape the final form of the agreement, delivery/testing plan and final truck orders will be made between the Task Force and the Supplier Team.

Form of RFP Proposal

Deadline. The final proposal must be received by May 31, 2004, by 5 pm Pacific Time at the WestStart-CALSTART offices, 2181 E. Foothill Blvd., Pasadena, CA 91107.

Three hard copies and one electronic copy of the final proposal must be included.

This proposal will include the following elements:

1) Cover Page

- a. Name of Companies Proposing
- b. Names, Addresses and Key Contacts for the companies proposing
- c. Overall cost of the proposal for the chassis/cab/drivelines
- d. Proposed times to be interviewed by the Task Force to review proposal

2) Proposal Summary (1-3 pages)

Outline team involved and expertise, technical approach, expected benefits and support plan for trucks

3) Technical Description (3-5 pages)

Provide description of the technical design of the system being proposed, its strengths, its flexibility to variations, and maintenance and support required

4) Vehicle Delivery, Acceptance and On-going Support (3-5 pages)

Provide the timetable for production of the vehicles, the delivery of the first “validator” for testing and your proposed acceptance/testing program, and the on-going support and data-collection/sharing plan

5) Cost Description (3-4 pages)

Provide a cost description outlining the proposed cost as a per-unit cost, based on the 15-20 truck pre-production build. The important issue is the cost of the hybrid driveline integrated into the chassis, delivered and supported. We are interested in the cost of the drivelines on a per-unit basis. This should be shown both per unit, and as an incremental cost per unit (the increment above the normal cost of the driveline the system is replacing).

6) Commercialization Plan (3-5 pages)

Provide a confidential review of your commercialization plans for this system, your expected price curve reductions at what volumes of production (at least at 500, 1000, 5000 units), your compatibility/scalability to other truck platforms, your expected parts support plans, and expected system price premiums

Please place any necessary supporting materials in attached appendices.

Vehicle Baseline Specifications

The “baseline” truck/chassis is based on an aggregated specification from the Task Force utilities. This baseline truck most closely matches the truck these utilities generally use in this weight class, *though there are variations by utility.*

For baseline weight and performance purposes, the most common engine used by the Task Force utilities is the International 8 and the Cat 6, followed by Ford 8; the most common transmission used is the Allison 2000P.

Task Force Utilities desire and assume there can be chassis flexibility that does not affect the core driveline in some categories. Please note your ability to provide flexibility or not in your proposal. The goal is to provide as common an order for a driveline system as possible; and as common a chassis as is useful and keeps costs down. If one driveline can accommodate this weight range it would be highly valuable for commercialization. Once a winning Supplier Team is selected, the utilities will turn in their specific orders for truck cab/chassis/drivelines within the ranges noted below.

| | Aggregated Baseline across all fleets | Flexibility Range Desired |
|-----------------|---------------------------------------|---------------------------|
| GVWR | 27,500 lbs | Range 27,000-33,000 |
| Axles | 4X2 | |
| Wheelbase | 150" | Range 141-186" |
| GAWR F | 10,000 lbs | |
| Payload F | 3,000 lbs | |
| GAWR R | 17,500 lbs | |
| Payload R | 5,000 lbs | |
| HP | 230 hp | Range 230-250 |
| Foot-lbs Torque | 660 | Range 560-660 |

Vehicle Performance Standards

These are the requirements for maintaining existing performance, and adding new capabilities, by which these trucks will be judged.

Truck Size: 27,000 – 33,000 GVWR
 Truck Description: Utility Trouble or “Bucket” Truck; telecom/cable service truck
 Duty Cycle: On call, mostly urban driving, multiple (3+) service calls per day, average time 1-2 hours per call, engine idles to operate hydraulics/lift/tools, carries 30-50-foot boom

Top 15 *Ranked** Performance Parameters:

1. Maintain base vehicle dimensions and core capability
2. No decreased payload capacity
3. Meet or exceed baseline truck’s reliability, durability, maintainability, reparability
4. Ability to merge with traffic on freeways
5. Transparent to user from vehicle and lift perspective – same performance as diesel
6. Significant increase in fuel economy, decrease fuel use over diesel
-50% increase fuel economy
7. Overall lifecycle costs less than or equal to diesel
8. Meet or exceed 2010 EPA emissions standards
9. 65 mph top speed
10. Must provide **engine-off** hydraulic power for lift and tools for a **user-defined** period of time
11. Sufficient bin space and 11 foot clear bed space
12. Generate field power (Target 25kW output)
*-Ideal truck will provide at least 3 kW power panel and sufficient power to operate hydraulic lift and tool circuits (approx. 25 kW total system);
 -This capacity will be provided when truck engine operates or for a utility user-determined “optional” period with engine off (1-2-4-6 hours of continuous engine-off capability, each utility to make own choice – more time means more batteries)*
13. Must be able to tow trailer
-10,000 lbs weight most common
14. Adequate ground clearance
15. Noise levels lower than diesel truck

* based on a weighted analysis of preferences from the participating utility fleets

On-Going Data Collection Requirements

It is the intention of the Task Force utilities to purchase and operate these hybrid electric trucks as part of an intensive in-use assessment and testing effort.

This will include a pre-acceptance test of the “validator” vehicle for emissions and fuel economy against a baseline vehicle to be provided by the selected supplier team.

Task Force fleets will also want on-going data to be automatically collected from vehicle operation and performance. It is a requirement of this RFP that the hybrid electric utility trucks come equipped with a system allowing critical data parameters to be measured and collected for assessment, and for the fleets to be able to collect and analyze this data by download from the truck either through wireless or direct connection. The Supplier Team should propose the actual data parameters to be collected (*suggested parameters are shown below*) and the methodology to allow fleets to graphically analyze this data.

Possible Vehicle Data:

- Speed
- Max speed
- Avg speed
- GPS location/terrain
- Distance driven
- Engine hours
- Driving time (vs. equip. hours of op)
- Hydraulic operation time
 - Including electric/hydraulic ops
- PTO hours
 - PTO likely to be replaced
- “Other” (e.g. electric drive) hours
- Throttle and brake pedal positions
- Mode of operation
 - (parked, boom extended, etc)
- System status and faults
- Traction parameters
 - (torque, power)
- Hybrid system parameters
 - (power outputs, regen activity, etc.)
- Fuel flow or measurement

Possible Battery (energy storage) Data:

- Energy in – kWh
- Energy out – kWh
- Net kWh
- Module voltages
- Pack voltage
- Current
- Capacity in – Ah
- Capacity out – Ah
- Net Ah
- Module temps
- State of Charge (SOC)

Ambient Conditions:

- Max temp
- Min Temps
- Avg temp

Emissions Data:

- If available