

A publication for members of the Hybrid Electric Truck Users Forum (HTUF) - a project of the US Army and WestStart.



hybrid-electric truck users forum

Hybrid DiaLog

December 2002

Issues of Interest for Hybrid-Electric Trucks

First Working Group Meeting Successful - 2nd Meeting Set Utility Working Group Identifies “Bucket” Truck as Target - Begins Framing Hybrid “Specification”

The first meeting of the HTUF Specialty/Utility Truck Working Group – **hosted by Florida Power and Light (FPL)** – took place December 13 in Hollywood Beach, Florida with more than 45 attendees on hand, including 21 users from 13 different fleets.

The Working Group reviewed research information and began the task of outlining performance requirements and chassis sizes needed for a successful hybrid-electric utility truck that could be used – and purchased – by utility fleets nationwide. **The group set a second meeting for February 19 in Tempe, Arizona.**

Attendees were briefed on the latest status of heavy-duty hybrid technology, including projects by the U.S. Army, FedEx, EPRI and Southern California Edison. They were then shown the preliminary results of a utility fleet survey that identified a target truck type used by most utilities that might benefit from hybrid technology: the trouble or aerial lift “bucket” truck. The initial survey of eight larger utilities operating more than 10-thousand heavy-duty trucks identified bucket trucks in three size ranges – **17,500 GVW; 27,500 GVW; and 33,000 GVW** – as the most promising ([click for survey results, page 2](#)). These are the “backbone” trucks of most utility fleets and primarily perform service restoration and line maintenance duties.

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Key Meeting Results

- *Members agreed there is a base range of truck chassis – before any equipment packs are added – that most utilities purchase.*
- *Members will recruit more utility, telecom & other fleets to take part.*
- *WestStart will continue gathering fleet data*
- *Fleets will contribute top KPPs (Key Performance Parameters) to help define a specification requirement for a utility hybrid truck.*

Working Groups: Background

The **Specialty/Utility Truck Working Group** is the first focus group to come from the HTUF process. Made up of leaders from utility and military fleets interested in using hybrid trucks, it also includes truck makers, key suppliers, system developers and the Army’s National Automotive Center (NAC). The goal is to identify a truck type, size and duty cycle that might be common across fleets, and determine if that platform might work as a hybrid truck. If so, the group plans to outline a common performance specification, then work with truck makers to build and sell such a truck.

The **Package/Beverage Delivery Working Group** is forming and will also meet [Feb. 19](#).

Also Inside this Issue

Fleet Survey Results: Key preliminary findings of the HTUF utility fleet survey. [Page 2 Click here.](#)

Setting the KPPs: Key Performance Parameters will be focus of next meeting. [Page 3 Click here.](#)

Next Meetings: Two Working Groups will meet February 19 in Tempe, Arizona. Find out more details to take part. [Page 3 Click here.](#)

Take the Survey: Can you help us gather information on your fleet? [Page 4 Click here.](#)



Preliminary Utility Fleet Survey Results

Trouble/Aerial Lift “Bucket” Truck Top Hybrid Candidate

Preliminary data from an HTUF/ WestStart survey of utility fleets has identified strong interest in hybrid trucks, and has pointed at several sizes of aerial “bucket” trucks as one of the most promising platforms upon which to focus.

The initial survey currently has data from eight utilities operating more than 10,500 medium and heavy-duty vehicles.

Key Findings to Date:

Utility Interest: Utilities surveyed are on average interested in using hybrids in their fleets, but need to better understand the technology. Among the most committed fleets:

Hybrid Familiarity (1-10 scale): **6.3**

Hybrid Interest (1-10 scale): **7.4**

Three top truck sizes identified for hybrids:

- Light Bucket/Trouble Trucks – 16-19,000 lbs. GVW (17,500 GVW average)
- Trouble/Aerial Lift Trucks – 26-28,000 lbs. GVW (27,500 GVW average)
- Medium Trouble/Bucket Trucks – 33-37,000 lbs. GVW (33,000 GVW average)

Description: All three types provide service restoration, repair and maintenance functions and the heavier trucks can provide construction duty as well. Most – but not all – mount aerial booms carrying “buckets” for linemen. Boom heights vary from 29 to 65 feet from smallest to largest trucks. Life cycles range from 5-7 years for the lighter trucks to 10 years for the heavier trucks.

Top Chassis:

- International 4400 and 4300
- Freightliner FI 60/70/80
- Ford F-550

Duty Cycles: All three also mostly operate in varying degrees of stop-and-go duty cycles, often involving multiple service locations per day. Most illuminating, engine idling to operate tools and the lift on site was a big concern, along with fuel use. These trucks can idle more than 60% of the time. An increase in fuel economy and a reduction in engine hours of operation would provide benefits to users.

Additional functionality desired:

1. Electrical power generated on the truck – for tools, lights, lift actuation and in some cases, emergency power for homes.
2. Quiet operation in neighborhoods and for safety of operators on booms – including a several hour on-site battery operation.

Issues Raised:

1. These trucks have a high “up-time” of 97-98%. Reliability is critical as these trucks provide the “bread and butter” services of utilities.
2. Would like Energy Policy Act (EPA) credits for operating heavy-duty hybrids.
3. Need to have more involvement from field users, and more familiarity with hybrids.

Can you talk with us about your fleet and its structure and needs? Please contact Bill Van Amburg at WestStart: bvanamburg@calstart.org.

Want to see a copy of the survey results presentation? Send Bill Van Amburg a note or call (818) 248-2272.

Want a copy of the survey? [Click here](#).



Working Group Meeting - continued from page 1

The majority of these trucks work stop-and-go duty cycles and often work in neighborhood, urban environments – though that is not universal. However, most of these trucks also “idle” extensively at work sites to power their lifts and equipment – and one of the key findings of the meeting was that hybrids might help both reduce fuel use as well as reduce engine hours – each large costs of operations.

Working Group members started to outline performance requirements (see info box this page), and based on guidance from the U.S. Army's National Automotive Center (NAC) they will focus on developing high-level Key Performance Parameters (KPPs). Utilities also agreed to set boundaries around their discussions – in other words, agreed to leave some topics for later, including those that pertain to work methods. Also deferred were discussions of whether the hybrid needed electric-only driving range.

KPPs - Key Performance Parameters

Early Outlines of a Performance "Spec"

Over the next two months, the members of the Utility/Specialty Truck Working Group will be framing ideas for a high-level set of common performance requirements known by the military as KPPs, or Key Performance Parameters. KPPs allow the creation of a framework of agreement - and a target for truck makers to meet with a new model.

This effort will start with the sharing of performance requirement examples from other efforts, and then collecting top requirements from Working Group members. These will be discussed in Tempe February 19 - and likely trade-offs will also be discussed.

From the first meeting in Florida, these **initial boundary conditions** were discussed:

- Weight range: 17,500 - 33,000 lbs. GVW
- Roadability: Equal to current product
- Daily time on duty: 10-16 hours
- Maximum Payload: TBD
- Expected Fuel Economy: TBD
- Tow: Up to 25,000 lbs.?
- Power Generation Output: TBD

Next Meetings Feb. 19, '03

Working Groups: Mark Your Calendars

The two current Hybrid Truck Users Forum (H-TUF) Working Groups will next meet on February 19th, 2003, in Tempe, Arizona.

Agendas are being developed, but both meetings will take place at the Tempe Mission Palms in advance of the 3rd Annual Clean Heavy-Duty Vehicle Conference (Feb 19-21).

Please RSVP and sign up for the meetings as soon as possible so we can plan facilities needed. Contact Carolyn Riehn at WestStart at (626) 744-5683, or criehn@calstart.org.

You should also consider attending the Clean Heavy-Duty Vehicle Conference. Click here or visit www.calstart.org for information.

The Hybrid Truck Users Forum (H-TUF) is a joint project of the U.S. Army National Automotive Center (NAC) and WestStart to assist with the commercialization of heavy-duty hybrid technologies. The Army has already selected hybrids for its future combat vehicles to significantly reduce its fuel use and increase performance.

For additional information on the HTUF program, please call Fred Silver or Bill Van Amburg at 626 744-5600, or e-mail: fsilver@weststart.org; bvanamburg@calstart.org.

Do you find this publication valuable? Please let us know!

HTUF Utility Fleet Survey

Brief M-/H-D Fleet Description and Requirements (one truck type/size per row - see example)

Truck Type	Truck Use/Description	# in Fleet	Payload GVWR	Capacity	Current MPG	Top Speed	Miles/day driven	% Gradability	Years Lifecycle	Chassis Cost	Tow? Y/N
<i>Example: Medium trouble truck</i>	<i>Repair power outages and field service - carries 30' aerial lift, tools, cable</i>	<i>55</i>	<i>27,000 lbs.</i>	<i>8,000 lbs.</i>	<i>4 diesel</i>	<i>Need 60</i>	<i>120 - 8 hours</i>	<i>35%</i>	<i>7</i>	<i>\$20,000</i>	<i>N</i>

3. Which of the above do you think is the best or first candidate(s) for operating as a hybrid? _____

4. **Operations/Maintenance:** For each truck you think might be good fit for a hybrid, can you tell us:

4a. What is its rough duty cycle description?

4b. Rough percent of time idling? _____%

4c. What are the biggest driver or user needs?

4d. What are its biggest operational and maintenance cost issues?

4e. What maintenance expectations would you have for it as a hybrid?

5. On Board Power - *A key benefit of hybrids is the potential to generate power in the field.*

5a. Do you generate on-board power, or carry a generator with your listed trucks (Such as Temp Power to re-power buildings, aux. power, etc.)?

5b. How much power do you generate, and of what type (3-phase AC, etc.)?

6. Miscellaneous

6a. What kinds of activities would you like to perform with the trucks that would be valuable that you can't do now?

(for example - silent operation in neighborhoods; electrical power for tools; eliminate noise from aerial life)

6b. Other issues you'd like to add?

7. Optional - If Time Available

On-board Power

7a. What is its purchase cost?

7b. Maintenance intervals?

7c. Replacement intervals?

Thank you very much for your time! We will present the overview of this information at the December 13th Utility Truck Working Group meeting, and will share it with you via e-mail as well.