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HTUF™

hybrid truck users forum

HTUF DiaLog

November 2010

10-02

Commercializing Hybrid & High Efficiency Trucks

10th HTUF National Conference Rolls Into Dearborn Nearly 700 Focus on Clean Truck and Bus Tech, Policies

**HTUF 2010
by the Numbers**
Attendees: 672
**Exhibits/Vehicle
Displays: 66**
**Convoy/ Ride & Drive
Vehicles: 38**

HTUF 2010 in Dearborn was the biggest national conference in program history, signaling the expanding need for hybrids and advanced trucks and the growing market. Nearly 700 attendees drove nearly 40 hybrid and advanced trucks, attended three days of briefings and working group meetings and helped plot the course for next steps in the industry.

What are the key takeaways?

Hybrid and advanced truck industry capabilities are growing with expanding competition and multiple technology types and variants. But there is an **urgent need to expand** to the "next level" of

Continued on Page 4



**Military a Driving Force
in Commercializing
Hybrids**
See Pages 2,3,6



Calif. Expands 'HVIP' Incentives in '11 for Hybrid, Electric Trucks *Federal Incentives Still Lacking*

Due to its tremendous success and rapid sell-out, California's Air Resources Board (ARB) has approved **up to \$25 million more dollars for hybrid and electric truck incentives in 2011**. Its award-winning Hybrid Truck and Bus Voucher Incentive Program (HVIP) supported more than 650 hybrid truck and bus purchases in 2010; the 2011 program will add electric trucks to the qualified vehicle list. Fleets and manufacturers have been unqualified HVIP program supporters because of its simplified design. The ground-breaking HVIP

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Fleets Speak Up at HTUF 2010 *User Needs Guide Program, OEMs, Market*

HTUF held a key fleet-only meeting in Dearborn to gather input and feedback from users on the operation of the hybrid trucks they have used to date and hear suggestions on future improvements.

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HTUF 2010 Conference: Highlights from Dearborn More. Bigger. Better. HTUF!

The tenth HTUF National Conference, which attendees hailed as a “home run,” beat attendance and convoy records from last year’s event in Atlanta. Nearly 700 fleet operators, truck makers and supplier firms, together with military, industry and government experts attended the Dearborn conference, gaining access to a rich array of information to assist market growth, technology development and fleet purchase decisions. The conference featured the latest production truck products on display and in a huge ride and drive, as well as briefings on OEM product offerings, fleet operation experience with hybrids and advanced trucks, purchase incentives and market growth projections, and a comprehensive session on the barriers and opportunities for using advanced hybrid technology in military vehicles.

Military Leads the Parade

Ten years ago, the U.S. Army and collaborative partner CALSTART launched an initiative to promote hybrid and high-efficiency dual-use technologies for the commercial trucking industry and military platforms. TARDEC – based at the U.S. Army Detroit Arsenal – played a prominent role in the conference as it does in the program itself. TARDEC engineers spoke on panels and made themselves available for discussions at a display with some of the Army’s “greenest” technologies.



On display was TARDEC’s Clandestine Extended Range Vehicle (CERV), (shown left) which led the world’s largest convoy of clean trucks and buses on September 30.

Jointly designed by Quantum Fuel Systems Technologies and TARDEC’s NAC, CERV was designed for quick-paced mobility operations, including reconnaissance, surveillance and target designation. The unit can maintain speeds of 80 miles per hour and climb 60-percent grades – all while reducing fuel consumption by up to 25 percent compared with conventional vehicles of comparable size.



**A special thank you
to the HTUF 2010
conference
sponsors**

**Tenth Anniversary
Co-Hosts**



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Mini Hybrid Systems

HTUF Key Session Highlights: *Supporting and Driving Change*

This session provided a good overview of the important role that the public sector continues to have in supporting and driving technological innovation and accelerating the transition to a cleaner transportation future. **Christina Gikakis**, Program Manager at the Federal Transit Administration, discussed the progress being made in clean transit technologies through programs such as the National Fuel Cell Bus Program. **Patrick Davis**, head of the Department of Energy's Vehicle Technologies Program, outlined how billions of dollars in Recovery Act funding was directed to clean advanced transportation, with a focus on manufacturing and electrification. Several CALSTART members and HTUF attendees were among the recipients. The goal is to establish a manufacturing base that can move the industry forward. DOE does view the stimulus as a one time event, though the industry would certainly benefit from consistent, long term funding.

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Though R&D programs and funding were an important portion of the discussion, this panel also focused on technology needs and end use applications. Transit is a logical application for new heavy duty technologies, and considerable progress is being made on that front. **Doug Failing, Executive Director Highway Programs for LA Metro, sees a real need for zero and near zero emission trucks along the I-710 corridor around the ports of LA and Long Beach.** Metro and CALSTART, are working to develop a commercialization path for vehicles that meet this performance, and the display of progress and technological improvement at HTUF was encouraging.



Military as Agent of Change

This session focused on the military's role as a leader in the implementation of advanced technologies, and brought together leaders involved in different aspects of technology planning, development, and deployment. **Paul Skalny**, Director of the National Automotive Center, moderated and was joined by **Dr. Kevin Geiss**, Program Director for Energy Security, Office of the Assistant Secretary of the Army for Installations and Environment, U.S. Army, **Colonel Paul Roeger**, Operational Energy Integrator, TRADOC ARCIC, ATFC-DS, and **Thomas Mathes**, TARDEC Executive Director for Product Development.

The session focused primarily on the growing role energy efficiency plays in Army installations and forward operations. **The Army spends \$2-3 billion annually for fuel and sees efficiency as a major contributor to operational security.** Less fuel consumed equates to fewer fuel convoys and fewer risky situations for our soldiers. So, fuel efficiency is a high priority for the military. Another key take

TARDEC showed a Maneuver Sustainment Vehicle (MSV) at HTUF. As a result of several contracts between TARDEC's NAC and BAE Systems M&PS Sterling Heights, the armored "future truck" contains many new technologies including:

- * A hybrid power train capable of 30 kW of export power
- * Active suspension
- * 360-degree camera system
- * The latest in communications equipment.
- * A semi-robotic crane designed to operate with "boom tip control." The crane unfolds and folds using only one control, and the operator can back up to and load 13 tons without leaving the safety of the armored cab.

away from the panel was that energy should be seen as a contributor to operational security. The industry should think beyond fuel economy and look at the ability to integrate it with the other energy systems.

The panel agreed that future military installations will have to take advantage of smart grids, soldier power, and networked energy (soldier-vehicle-installation). This will require more hybrid and electric vehicles. The panelists noted that decisions need to be made soon on the needed vehicle platforms. In concert with comments in other sessions, all agreed that operators have the biggest impact on fuel economy. Vehicles need more devices to provide information and feedback to the operator to maximize fuel efficient operation, particularly with hybrid and electric drivetrains (also see Military Working Group Update on page 6).

Help to Build and Buy

The final conference session of HTUF 2010 focused on funding, incentives, and policies needed to drive the industry forward. CALSTART's **Bill Van Amburg** opened the session by discussing the need for simple, streamlined incentives and highlighting California's HVIP program as an example of the sort of program we'd like to see spread around the country. Bill also discussed CALSTART's formation of the Hybrid Truck Action Group (HTAG), which is continuing to push for stable incentives and policies to move this industry forward.

During the panel discussion, **Crystal Ellerbe** of Navistar and **Chris Hess** of Eaton discussed efforts to secure both purchase incentives (through an expansion and extension of the hybrid truck tax credit) and R&D funding (through HR 3246, the Advanced Vehicle Technology Act). Due to the current political climate, these efforts have stalled for now. With the uncertainty in Congress, the panel agreed that the best course of action is to continue pushing for incentives and working to raise the profile of the hybrid truck industry and to highlight its job creation potential.

HTUF Key Takeaways - from page 1

beyond today's first leading fleets. There was an emphasis as well on continuing to remove cost from hybrid systems. All speakers **emphasized the significant need for consistency and smart policies to support and drive efficiency** in transportation. There was overwhelming support and a consistent call for the need to grow the demand side: **purchase assistance for trucks remains key.**

Other Key Insights:

- Truck requirements will continue to grow, due to emissions, climate and energy issues. At the same time, truck technology is rapidly changing, some of it transitioning from heavy transit and bus experience.
- The **military is increasingly driven by energy security** and is signaling it will shift its non-tactical vehicle purchases to hybrid and advanced vehicles.
- There was also a recognition that – like HTUF – we need to focus on a “portfolio of technology” and solutions – not just one.
- There is an on-going need to keep taking the cost out of hybrid systems.

What was the view of the NEXT 10 years? Looking a decade forward, there was a strong sense there would be a high penetration of advanced technology in trucks across all vocational applications – assuming policies are put in place to support consistent technology development and purchase assistance in early markets.



Freightliner Custom Chassis Corporation (FCCC) officially unveiled its new-design all-electric parcel delivery truck at HTUF in Dearborn in front of a packed house of users and attendees. Morgan-Olsen makes the light-weight composite body, Enova the drive system.



Fleets Speak Up at HTUF 2010 cont. from Page 1...

The meeting was attended by close to 30 different fleets including utilities, beverage, food and parcel delivery fleets, telecom fleets, refuse and regional heavy-haul fleets, representing the breadth of the market and the various applications for hybrid technologies. The goals of the meeting were to aggregate fleet needs in a summarized fashion, and to provide fleet feedback to OEMs and suppliers. This approach has led to improving hybrid diagnostics processes, clarifying warranty issues and speeding truck system improvements and updates.

Training and communication critical

All concurred first and foremost that the pre-production deployments and early launch of products are valuable learning experiences that should be shared out with the wider user community and industry. Universal concerns were also voiced that negative experiences early on in testing can leave lasting impressions that are difficult to erase. To eradicate or ease this problem, the fleets recommend that OEMs and Suppliers implement more robust driver training programs, and that the training should be improved with two goals in mind:

1. Set realistic expectations
2. Convey best driver habits to further improve efficiency.

All stakeholders should work to better identify appropriate applications for hybrids prior to purchase, and clear communication between OEMs and hybrid suppliers is needed. The fleets believe that OEMs should be the main responsible party if the fleets have maintenance issues. Fleets would like to see maintenance support provided locally for the vehicles.

Call for more products, speed up ROI

Fleets also expressed an interest in lighter platform applications for hybrids, indicating that smaller engines are needed in lighter applications. Overall, fleets would like to see a trend of decreasing price and would like to hear of strategies that will achieve price reduction in the very near future. They also ask for a return on investment on new vehicles to be closer to five (5) years.

Fleet questions moving forward

- What is the appropriate size of engine in hybrids for each application?
- Is there a way to downsize engines for hybrids in general?
- What strategies and solutions can OEMs and suppliers provide that would allow access to full power that is available when needed?
- What is the state of development of hydraulic hybrids?

PREVIEW: Green Truck Summit Coming March 2011

The Green Truck Summit is known for offering cutting-edge solutions at the forefront of technology, and has become the leading educational forum on how the "green revolution" influences vocational trucks. Last year, the Summit garnered record attendance – with a sold-out crowd - and gained national and international recognition for its distinguished speakers and industry

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insights. The Summit is held in conjunction with The Work Truck Show, North America's largest work truck event, which features 8,000 attendees, displays covering 500,000 square feet of Class 1-8 vocational trucks and equipment, and offers the opportunity to see dozens of product launches and learn from more than 40 educational sessions. The Green Truck Summit is produced as a partnership of NTEA and CALSTART.

Army and Navy Say They're Ready: Military Hybrid Non-Tactical Vehicles Update

HTUF's Military Hybrid Non-Tactical Vehicle Working Group held its first face-to-face meeting during the HTUF National Conference. Attendees included representatives from the Army, Navy, and Air Force. Industry participants were allowed to observe the meeting and ask questions. The main thrust of the meeting was to discuss the deployment of commercially-available hybrid trucks onto domestic military installations. The Army and Navy both indicated that they were ready to deploy some trucks and that they would review their immediate purchase priorities to pinpoint exact models and locations. The group agreed that the General Service Administration will need to be involved in the process since many vehicles are either purchased or leased through the GSA.

The Army and Navy both indicated that they were ready to deploy some trucks and that they would review their immediate purchase priorities to pinpoint exact models and locations.

The meeting also included several presentations about relevant initiatives. **Dean McGrew** from TARDEC discussed the Advanced Vehicle and Power Initiative which is a blueprint for reducing the Army's fuel and power consumption by speeding advanced vehicle deployments. **Dave Cook** from the Navy provided background information on their upcoming demonstration and data collection project with new hybrid refuse and utility trucks. Finally, **Ed Moscatelli** discussed the Army's overall plans for greening their non-tactical vehicle fleet.

Military hybrid adoption has been a consistent HTUF goal. Early deployments should be finalized very soon: the **military services are ready to aggressively add more hybrid trucks to their fleets.**

For more information about the working group contact Steve Sokolsky at (510) 307-8772 or ssokolsky@calstart.org.

Parcel Working Group Progress Continues

Reports from Dearborn on the HTUF Parcel Delivery Group are promising. The group is making good progress, with vehicle delivery expected in May of 2011. The truck will have "advanced engine off" or power split capability, allowing the vehicle to operate solely under hydraulic power with the engine off.

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Arrangements are in place for long term support, and the final step before delivery is to conclude pricing and acquisition processes. Data will be collected from currently deployed prototypes, which are an earlier design, and can then be compared to the newer "advanced engine off" designs.

Want to take part in this fast-track effort? To find out more, please contact Mike Ippoliti at CALSTART, mippoliti@calstart.org

Class 4/5 Hybrid Trucks, Utility WG Looking at Duty Cycles

The Utility Working Group had an in-person meeting in Dearborn at the HTUF 2010 Conference. The Utility Working Group was the first working group formed under HTUF. Initially this group focused on the Class 6/7 hybrid bucket truck, leading to pre-production and deployment of the first medium and heavy-duty hybrids. **This is an experienced group with many of the participants having had two generations of hybrids in their fleets for five or more years.** The meeting was well attended with representatives of more than twenty five fleets participating.

Current focus of this working group is on Class 4/5 trucks - a truck widely used in many utility, telecom, tree-trimming, and municipal fleets. The group is examining the performance requirements and best applications for a hybrid truck in this class.

The topics discussed were:

- importance of duty cycle - split between work-site operations and driving
- distinction and benefits of plug-in hybrids
- use of core base platform for different variants (i.e. different body types)
- fuel economy benefits expectations with no or minimal performance changes
- importance of users' first impression
- importance of reliability and durability of hybrids
- possibility of programmable system allowing optimizing performance vs economy.

The next steps for the group are to distribute a letter of interest to industry to get feedback on the current performance parameters. In the meantime, the group will examine in more detail the duty cycle among the different fleets.

For more information on the Utility WG, contact Jasna Tomic at JTomic@calstart.org



Telecom Group Meets, Expresses Interest in US-Built Vehicle

The Telecom Working Group has been publicly announced, and the HTUF meeting was an excellent information gathering session. Founders AT&T and Verizon were there, along with a guest from Cox Cable, who expressed interest in joining and providing data.

The group determined that a domestically made vehicle is, if not required, is at least a very strong preference. It could be a pickup truck chassis, with an "insert" used to create the van-like space and storage needed. One of the key drivers is "electrification", meaning the delivery of off-board power, up to 10 kW. The current use of generators, either carried or towed, is a major fuel use and maintenance annoyance.

Want to take part in this unique collaborative effort? To find out more, please contact Mike Ippoliti at CALSTART, mippoliti@calstart.org

Commercial Construction Equipment Users Forum ‘Eager to Demonstrate Retrofit Options’

HTUF’s Commercial Construction Equipment Users Forum had an informative meeting during the HTUF National Conference in Dearborn. The main priority was to communicate the shift in the group’s focus toward military-led demonstrations. TARDEC’s Combat Engineering Group is eager to demonstrate retrofit options and new equipment configurations in some of the construction equipment that they are using. A retrofit hydraulic system demonstration will be the first project, starting in November. Several other demonstration opportunities were presented and discussed. The results of these demos will serve as the basis for future activities of the working group.

The meeting also included several technical and market presentations. **Clark Fortune** from Eaton discussed some of the challenges involved with measuring efficiency in off-road equipment. **Adam Puzzouli** from TARDEC described how the Army develops user requirements and key performance requirements for construction equipment. **Joe Calavita** from the California Air Resources Board gave an overview of their upcoming program to demonstrate and collect data on early-production hybrid off-road equipment. Finally, a roundtable discussion was held with **Ben Treichel** of Caterpillar, **Steve Herbert** of TARDEC, **Bart Conry** of Palfinger, and **Doyle Sumrall** of NTEA. This discussion centered on identifying some of the obstacles to the introduction of higher-efficiency equipment.

This **working group is poised to start its first on-the-ground activities** and the military is an excellent partner and test bed. These demonstration opportunities will also attract new industry partnerships that will enhance of overall effectiveness of the working group.

Those interested in participating in the CCEUF should contact Steven Sokolsky at (510) 307-8772 or ssokolsky@calstart.org.

Class 8 Working Group’s Specs Include Alt Fuels

Richard Parish welcomed the participants and noted the success of the working group format as CALSTART and the NAC partnership celebrate the 10th anniversary of the Forums.

Richard noted that HTUF working groups typically focus on the end-user requirements inviting in the suppliers and OEMs as required. At the last face-to-face meeting, the working group decided to include suppliers and OEMs as well as end-users. Working group fleet membership includes Con-way Freight, FedEx Freight, Penske Truck Leasing, the ports of Long Beach and Los Angeles, Purolator and UPS.

Additional Class 8 fleet users are welcome and encouraged to take part in the working group.

The group is also engaging all truck manufacturers.



This session reviewed the system requirements included in the working group Project Definition Document (PDD) which is posted on the HTUF website. Richard began by covering the goals of the PDD, reviewing the specific requirements.

In terms of a vehicle procurement concept, the potential framework is that fleets will rent the hybrid vehicles from Penske for fleet demos of a few months. OEMs would retain ownership of the vehicles. Vehicles would be returned to the OEMs after the project duration of the one to two years of the vehicle deployment. (Richard asked for

reaction from any of the OEMs to this plan – none was voiced).

Successful demonstrations are expected to culminate in vehicle purchases by participating fleets. Active fleet involvement is very important and Richard invited other fleets to step forward and join in with the existing group.

The truck initial specifications as identified in the draft PDD were reviewed. The truck would have a GCWR of 80,000 to 105,000 lbs in a 4x2 axle configuration with a conventional Day Cab. Nominal engine performance is targeted as 375-425 hp with 1550-1750 lb-ft torque with 2010 emissions on diesel fuel, B5 and B20. Alternative fuels may include CNG & LNG with 400-450hp with 1600-1800 lb-ft torque ratings. Michelin has agreed to supply tires for these vehicles to explore whether unique torque characteristics results in additional wear effects on the tires and to demonstrate the positive characteristics of their single-wide tire.

A significant goal is minimum weight impact from the “hybrid system” in order to preserve cargo load capacity. System features include regenerative braking, with launch assist presumed, automatic engine off, and, possibly, vehicle creep with engine off.

Fuel reduction goal is pegged at 20% fuel use reduction as a stretch goal.

The fuel reduction goal is pegged at a 20% fuel use reduction as a stretch goal. Also reviewed were the ranked Performance Parameters of 17 KPPs (Key Performance Parameters) that were defined. The intent is to work with the fleets to continue to prioritize these parameters and to help suppliers.

During the meeting, the OEMs were quizzed about their readiness to demonstrate pre-production vehicles in early 2011. The initial answer from several of the OEMs was “no” probably not until 2012, but they expressed a need to discuss this off-line. Richard remarked that Mid-2011 may be more reasonable for this project and encouraged the suppliers and OEMs to work with the fleets to target this time period.

Additional topics that surfaced included:

- Cost-benefit and life-cycle analyses need to be accomplished to assure that the vehicle development meets the fleet needs and cost constraints.
- Is this a science experiment? No, it’s a technology demonstration and evaluation. The vehicles will be pre-production, so capability has already been established; we now need to determine the viability of the vehicles in fleet operations
- This is a first step to define the benefits of the technology and where costs can be reduced. We expect continued improvements in the technology and cost reduction due to these demonstrations.
- **CALSTART expects to have some early funds to offset the rental costs of the vehicles to fleets.**

Jay Schultz, Product Manager of Parker Hannifin, provided a briefing to identify a concept on which they have been working. Jay presented a series, turbine hybrid-electric Class 8 truck for intermodal transport. Partners include Artisan Vehicle Systems, Parker and Capstone Turbine integrating components on a Freightliner Columbia-Series, Class 8, GVW 80,000 lbs chassis. The vehicle is zero emission mode capable using a Parker 400 hp (300 kW) PMAC traction motor and inverter with a power generation range extender micro-



turbine rated at 87 hp (65kW), providing 760VDC @ 96,000 rpm. The battery pack is a 100 kWh lithium ion-phosphate providing 30 miles range. This design is expected to provide a 40% operating cost reduction with prototype payback in 5 yrs and production model payback in <3 years. The Parker vehicle (shown right) participated in the Ride and Drive activity at the HTUF Conference and drew a very interested crowd. Indeed, there was an impressive collection of Class 8 production and development vehicles on display at the conference.

Representatives from Arvin Meritor and Peterbilt also spoke to provide updates on their system developments, including an advanced system using an Eaton drive that has the ability to drive short distances in all-electric mode with the main engine off.

For more information on the Class 8 Working Group and to join the effort, contact Richard Parish, CALSTART at rparish@calstart.org.

New Federal Truck Fuel Economy, Carbon Rules Unveiled

For the first time, the federal government has developed regulations setting requirements for the fuel economy and the climate emissions of medium- and heavy-duty trucks. The new rules were announced October 25th but have been in development over many years.

Truck Rule Highlights

- Efficiency will go up and carbon emissions down for ALL classes – overall a 7-20% reduction in fuel and carbon over 2010
- Three broad categories, each with own goals and rules:
 - Combination Tractors (Line haul) – 7-20% reduction
 - Vocational (Class 3-8 work trucks) – 7-10% reduction
 - Heavy pickups & vans (>8500 lbs) - ~15% reduction
- Will use engine and full vehicle certification approaches
- Will have several forms of flexibility or credits
 - Engine averaging, banking and trading (within category)
 - Vehicle averaging, banking and trading (within category)
 - Credit for early action (reductions ahead of rule)
 - Credit for advanced technology such as hybrids, turbines, electric
 - Credit for new & innovative technology that is harder to test
- Comment period on rule until January 11

Passenger cars and light trucks have had fuel economy rules for decades but have only recently added climate emission (greenhouse gases such as carbon dioxide) limits. Now trucks will follow suit, with the new rules set to start by 2014.

The two federal agencies which co-manage the car rules are also cooperating on those for trucks. The Environmental Protection Agency (EPA) has set the climate emission limits, while the National Highway Traffic Safety Administration (NHTSA) has set corresponding fuel economy levels. The intent of the agencies is to make a coordinated rule that allows truck manufacturers to comply with one set of standards. Truck manufacturers and suppliers have generally been supportive of a new rule, but have wanted supporting policy assistance to make it succeed.

EPA signaled at the HTUF conference that it wants to work with not just the overall truck industry, but with the hybrid and advanced truck segment to encourage continued

development and product introduction. Margo Oge, director of the Office Transportation and Air Quality at EPA, said that key elements of the EPA's new carbon and fuel economy rule for trucks will be:

- to make a "fast start" (starting by 2014);
- to include all classes of trucks;

- and to encourage new technology.

EPA has built in flexible incentives into its new regulation, partly to encourage technologies that can exceed the standards (see chart). The rule comment period is open until early January.

Next Generation Incentives and Policies Needed for High-Efficiency Heavy-Duty Trucks

New Report Will Outline Best Approaches

A soon-to-be-released report by CALSTART will outline recommendations for the best next generation of policies and incentives needed to support the development, production and purchase of high-efficiency heavy-duty trucks. The white paper is being developed based on findings and research conducted via surveys of fleets, manufacturers and suppliers and through discussions with an industry task force assembled for the effort. Efficiency improvements are a critical issue to the industry: more than 90 percent of fleet, supplier and manufacturer respondents characterized greater efficiency in trucks as “very important” or “critical/must have” for their business.

However, key among issues identified was that while industry and fleets generally support the new fuel economy rules for trucks, the consensus is that regulations alone will not guarantee the success of these more-efficient vehicles. To make the new rules effective, industry needs a comprehensive approach that includes supporting policies, investments and incentives. In other words, carrots and sticks together.

Preliminary recommendations for policies include these prioritized approaches:

- Vouchers for efficient vehicle/tech purchase that are tech neutral and reward co-benefits
 - Tax credits and grants for purchase are less effective and are a secondary approach
- Long term R&D Funding for efficiency technology
- Manufacturing grants for producing efficient transportation technology

The report is titled **Public Incentive and Investment Options for Supporting the Transition to High Efficiency Trucks: Key Needs and Policy Recommendations**. It will be released by late November. Funding for its development was provided by the Energy Foundation.

HVIP Hybrid Funding Returns for 2011 contd from page 1

program has become a national model for smart, streamlined incentives to help fleets and manufacturers speed clean truck purchase and production. This past summer, in recognition of this, HVIP was recognized as the number one emerging state energy program by the American Council for an Energy Efficient Economy (ACEEE). CALSTART operates the program for ARB.

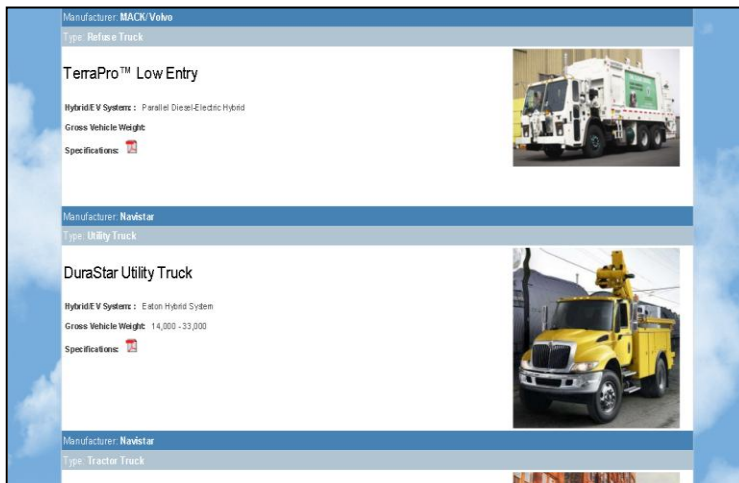
HVIP vouchers are requested at the time of truck order and paid at the time of delivery and purchase, thereby reducing capital costs for fleets. The vouchers equal about half the incremental cost of a hybrid truck. Demand was so high in year one that all \$19.4 million worth of vouchers were sold out by August, only six months from being available. To augment the program, the South Coast Air Quality Management District (SCAQMD) has added \$1.4 million for hybrid trucks purchased and used in the L.A. region. There is a waiting list for the funds.

New 2011 funding will likely be available for voucher requests by January 2011. ARB is looking to expand use of the vouchers by public fleets, whose budgets have been reduced by the recession. Visit www.californiahvip.org for information and timing.

When and where's the 2011 HTUF National Conference?
Stay tuned. Dates and Location TBD.
Plan to attend and keep up with the latest innovations: www.htuf.org.
To sponsor, contact Debby Dubose: ddubose@calstart.org.

In case you missed it, or need a refresher, the HTUF 2010 Conference proceedings are now available online. Contact calstart@calstart.org for purchasing info and password.

New from CALSTART: HTUF Vehicle Directory



Check it out! Visit htuf.org and click on the vehicle directory. Find key information and images on the universe of hybrid and electric trucks and small buses. The directory provides information on the vehicle's make, model, hybrid/electric system, gross vehicle weight, specs, and a link to the vehicle's web site.

The directory was created to serve as a living compendium to gather all of the hybrid and electric trucks and small buses in one place, and celebrate the success of CALSTART's HTUF program in partnership with the U.S. Army TARDEC National Automotive

Center. Stakeholders who are interested in learning about hybrid and electric trucks and small buses will find this site to be a great resource of all of the latest vehicles in these markets.

Visit today! HTUF Vehicle Directory
Go to htuf.org and click on Vehicle Directory.

Note: If you have a vehicle that you feel should be on this list but isn't, or if you see something that needs to be updated or corrected, please contact David Kantor at dkantor@calstart.org, or 626-744-5611.

*The **Hybrid Truck Users Forum (HTUF)** is a North American program to speed the commercialization of heavy-duty hybrid technologies. It is a project operated by CALSTART to assist fleet truck users to identify hybrid requirements and organize joint purchases of early production vehicle. HTUF is operated by CALSTART under contract to TARDEC/NAC. HTUF focuses on developing the commercial industry through increasing user-driven volumes in key platforms to provide the dual-use benefits of reduced fuel use, lowered emissions and increased performance.*

Sign up to receive the HTUF DiaLog free at www.htuf.org. For HTUF program information, contact:
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Steve Sokolsky, Commercial Construction Equipment Users Forum, ssokolsky@calstart.org;
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