

<b>DOCKET</b>	
<b>08-ALT-1</b>	
DATE	AUG 31 2009
RECD.	AUG 31 2009

**Comments of Joseph T. Dalum  
President, Odyne Systems, LLC  
Executive Vice President, DUECO, Inc.**

**August 31, 2009**

**Submitted to the California Energy Commission  
Re: Alternative Fuels Investment Plan, AB 118 for  
Funding years 2008 – 2009, and 2009 – 2010**

**California Energy Commission  
Dockets Office, MS-4  
Re: Docket No. 08-ALT – 1  
1516 Ninth Street  
Sacramento, CA 95814-5512**

**Joseph T. Dalum  
President, Odyne Systems, LLC  
Executive Vice President, DUECO Inc.  
N4 W22610 Bluemound Road  
Waukesha, WI 53186  
Ph. (262) 547-8500 ext. 8365**

## Overview:

Odyne / DUECO is pleased to submit comments to the California Energy Commission to seek clarification regarding specific funding questions, and unique opportunities, for the CEC under the Alternative Fuels Investment Plan for funding years 2008-2009 and 2009-2010 (and beyond).

DUECO, Inc., headquartered in Waukesha, Wisconsin, is one of the largest final stage manufacturers of utility trucks in the country. Our affiliate company Odyne develops and manufactures propulsion systems for Plug-in Hybrid Electric Vehicles (PHEV's) for medium and heavy-duty trucks. Since 2007, Odyne / DUECO has produced over 20 plug-in hybrid medium and heavy-duty trucks for use by several utilities around the country, including PG&E, AEP, Progress Energy, Xcel Energy, Arizona Public Service, Florida Power & Light, and We Energies.

Odyne / DUECO has been awarded \$1.903 million in Congressionally-directed funds under the Omnibus Appropriations Act of 2009 to research, develop and test advanced plug-in hybrid medium and heavy-duty trucks with truck-mounted equipment (such as aerial lifts, digger derricks, cranes and other devices) over a two-year period. This project is being administered by the Department of Energy, and requires about 35% matching funds. The total amount of co-funding being sought will depend on the final project size, however, we are seeking to pursue a project of about \$4 million (or greater).

Our Congressionally-directed funds project fits into the CEC Alternative Fuels Investment Plan funding categories under the Electric Drive category, targeting projects that (a) improve medium- and heavy-duty vehicle technology and applications, and (b) position Odyne / DUECO to better perfect PHEV retrofit technologies for medium- and heavy-duty trucks. The final scope of work for the project is still evolving, as are project partners, but is expected to include California utilities and contractor companies, the Electric Power Research Institute, and California charging infrastructure providers, among others. Outlined below is a more specific discussion of the project.

Odyne / DUECO is submitting comments to the CEC to determine whether the CEC could potentially be a co-funding partner in our current Congressionally-directed funds project, and future projects. Specifically, Odyne / DUECO:

- (1) Requests a determination about whether the California Energy Commission can participate in projects by providing co-funding for eligible initiatives under the 2008 – 2009 Alternative Fuels Investment Plan (or the 2009-2010 Alternative Fuels Investment plan), where matching funds are provided by Congressionally-directed funds that have been awarded to Odyne / DUECO; and
- (2) Requests whether the CEC can leverage its 2008-2009 and/or 2009-2010 Alternative Fuels Investment Plan funding by participating in our current project as a co-funding partner with Odyne / DUECO, using the \$1.9 million Congressionally-directed funds awarded to Odyne / DUECO as matching funds. Additionally, we seek guidance on how

to submit a proposal to the California Energy Commission to seek co-funding participation on this project in the amount of \$1.9 million.

Over the past 12 months, Odyne / DUECO has participated in the California Energy Commission's public hearings and provided comments regarding the development of the Alternative Fuels Investment Plan. Via CALSTART, Odyne / DUECO submitted an application for co-funding under the CEC ARRA solicitation this year; the CEC determined that our application merited a Letter of Intent to co-fund, should it be awarded ARRA funds. Unfortunately, the CALSTART proposal was not awarded ARRA funding.

Nevertheless, Odyne / DUECO is proceeding with research, development and demonstration projects using the \$1.903 million in Congressionally-directed funds, administered by the Department of Energy. (See attached one-page Technical Summary, submitted to the DOE on May 12, 2009; also attached is a copy of the text from the Omnibus Appropriations Act, 2009, that shows DUECO's award of \$1.903 million in Congressionally-directed funds).

#### **Funding / Partnership Background Information:**

Odyne / DUECO is seeking a broad mix of partners for this project, with an emphasis on California partners. In May, 2009, Odyne / DUECO submitted a pre-proposal for co-funding consideration of advanced clean technology research, development, demonstration and deployment projects from the South Coast Air Quality Management District (See Odyne / DUECO's attached submittal to the SCAQMD PON#2009-01). Odyne / DUECO requested \$750,000 in funding from the SCAQMD, for a total project size of \$4 million. In August, 2009, the SCAQMD was awarded ARRA funding for projects, including the development of plug-in hybrid medium-duty utility trucks. Therefore, Odyne / DUECO is refining our proposed project to ensure our initiative achieves differentiated, broad objectives beyond the SCAQMD ARRA-funded program effort.

In Southern California, we are in discussions with Los Angeles County and with the Los Angeles Department of Water and Power to participate as customers and operators of the PHEV trucks. Additionally, we are in discussions with PAR (a large electrical contracting firm that would operate vehicles in California), PG&E, and with the Electric Power Research Institute to provide technical assistance. Coulomb Technologies has agreed to be a partner in the development of appropriate charging technology/equipment for our PHEV medium- and heavy-duty trucks, and we are in discussions with Clipper Creek regarding charging technology partnership participation. We have several non-California prospective partners, including Con Edison, Potomac Holding Inc. in Washington, DC (holding company for PEPCO), among others.

Odyne / DUECO is submitting comments to the CEC to inquire about co-funding participation from the California Energy Commission. We are seeking co-funding from the CEC of \$1.9 million. We are also exploring whether there might be co-funding opportunities with the Bay Area Air Quality Management District, as well.

Cash funding from California agencies will directly translate into greater customer participation in California, and also facilitate the evaluation of fuel economy and air quality benefits (versus comparable, non plug-in hybrid EV vehicles).

### **Project Description and Benefits:**

The purpose of this project is to research, develop, test, validate and deploy 5 – 10 advanced Plug-in Hybrid Electric trucks with truck-mounted equipment for the utility, telecommunications and municipal markets. To date, Odyne / DUECO has manufactured plug-in hybrid electric heavy-duty trucks (PHEVs) over 26,000 GVWR utilizing conventional Lead-Acid batteries (with a 35 kWh battery pack). Several customers have expressed interest in Odyne's plug-in hybrid electric technology for their vehicle fleet, however (a) they seek to utilize advanced batteries (such as Lithium-Ion or advanced Lead-Acid), and other advanced technology, or (b) they wish to deploy medium-duty PHEVs ( 14,001 – 26,000 lbs. GVWR).

Odyne / DUECO's current project goals are to (1) develop PHEV systems for Class 5 to 8 diesel and gasoline-powered trucks, utilizing smaller, more robust and advanced technologies (including advanced batteries), (2) re-design current heavy-duty diesel PHEVs – using an engine meeting 2010 emissions standards -- so that these PHEVs may incorporate smaller, more robust and advanced technologies (including advanced batteries), and explore adaptation for CNG-powered heavy-duty PHEVs, and (3) focus efforts so that Odyne / DUECO is positioned to refine PHEV retrofit kits for use with medium- and heavy-duty trucks.

Specifically, Odyne / DUECO's project Scope of Work would include two preliminary research and development tasks: (1) Review of "Lessons Learned" from DUECO's first generation PHEV systems currently deployed in the field, and (2) Data collection on the duty cycles of conventional trucks deployed in fleets. This research will aid in "right sizing" the hybrid system components, such as motors, drives, and battery systems. The advanced PHEVs will offer plug-in hybrid functionality, including idle reduction, propulsion assist, regenerative braking, optional climate controls and exportable power, as well as advanced battery technology such as Li-Ion or advanced Pb-Acid. To mitigate OEM compliance issues, the PHEV systems will be designed without any changes to OEM engine or powertrain parameters. Significant engineering efforts will be required, followed by the development of prototypes. Once prototypes are refined, these PHEVs will be deployed by several California and non- California partners, and monitored in the field. (Please review the attachments, including the one-page Technical Summary for the Department of Energy and the Program Opportunity Notice for the SCAQMD for more discussion of Odyne / DUECO's proposed engineering and technical approach).

To meet the needs of SCAQMD public agency customers to utilize vehicles operating on gasoline or alternative fuels in trucks over 14,000 lbs. GVWR, DUECO/Odyne is proposing to work with SCAQMD customers to develop and deploy a PHEV gasoline-powered medium-duty truck. Additionally, Odyne / DUECO is exploring the possibility of offering municipal lease options, to better enable customers to obtain PHEVs. Northern California and non-California customers are interested in diesel-powered medium-duty trucks, which will be developed, deployed and tested as part of this project, as well. In addition, several customers are interested in heavy-duty PHEVs utilizing smaller, lighter, more robust and advanced technologies,

including advanced battery technology. Odyne / DUECO will design and deploy advanced heavy-duty PHEVs as part of this project, and compare them to conventional diesel-powered counterparts. Depending on interest and funding, Odyne / DUECO may pursue CNG-powered heavy-duty hybrid-electric trucks as part of this project.

In addition, Odyne / DUECO seeks to evaluate the fuel economy and emissions benefits (both conventional and greenhouse emissions) of the PHEVs compared to conventional alternatives. Odyne / DUECO seeks to ascertain the emissions and fuel economy benefits of: (a) gasoline versus diesel-powered PHEVs in the medium-duty arena; (b) heavy-duty diesel-powered PHEVs (utilizing an engine meeting 2010 emissions standards) versus conventional, comparable diesel trucks, and if funding permits, to CNG-powered heavy-duty PHEVs.

Substantial interest has been expressed by customers and government agencies regarding the potential of Plug-in Hybrid Electric Vehicle retrofits for the medium and heavy-duty truck sector. Retrofits could enable a much broader market than just new truck sales to achieve emissions and fuel economy benefits, sooner. Additionally, the availability of retrofit technology could potentially create significant local job opportunities, as retrofit kits would be installed on fleets locally, reducing transportation costs and bringing jobs to California.

Odyne / DUECO's parallel plug-in hybrid electric technology is uniquely well-positioned for the retrofit market, since our approach does not require alteration of engine, transmission, or emissions equipment. Odyne / DUECO has retrofit some trucks in the field to date. However, there are several factors to consider – including packaging space for components, the type of transmission and availability of PTO opening, drive train communications, and available payload for the additional weight of the PHEV system. By pursuing this DOE Congressionally-directed funds project to employ smaller, lighter, more robust, advanced technologies (including advanced battery technology) on a range of vehicles (from medium to heavy-duty; gasoline-powered, diesel-powered and potentially CNG-powered), Odyne / DUECO will develop the expertise to be positioned to refine retrofit kits for a broad market.

## **Conclusion:**

Odyne / DUECO is submitting comments to the CEC to determine whether the CEC could potentially be a co-funding partner in our current Congressionally-directed funds project in the amount of \$1.9 million, and for future projects. Specifically, Odyne / DUECO is seeking to learn whether the CEC could be a co-funding partner on our current project utilizing current Alternative Fuels Investment Plan funds for either 2008 - 2009 or 2009 - 2010, and how we should submit a proposal to the CEC. We appreciate your consideration of this inquiry, and look forward to your response.



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**Technical Summary: DUECO Plug-In Hybrid Engines (WI), 66.09**

**May 12, 2009**

Organization Name and Point of Contact

Dueco, Inc. - Mr. Jack Pollock, Dir. of Business Planning and Contracts 262-547-8500, [Jack.pollock@Dueco.com](mailto:Jack.pollock@Dueco.com)

Purpose

The purpose of this project is to research, develop, test, validate and deploy an advanced Plug-In Hybrid Electric Drive system and charging stations for Class 5 (16,001 – 19,500 lbs. GVWR) utility trucks with truck-mounted equipment for the telecommunications and other markets. Several customers in the telecommunications industry have expressed interest in DUECO's current plug-in hybrid electric technology for their vehicles but wish to utilize advanced batteries (such as Li-Ion and advanced lead-acid) and other advanced technology. To date, DUECO has manufactured plug-in hybrid electric heavy-duty trucks (PHEVs) over 26,000 lbs GVWR utilizing conventional Pb-acid batteries. The telecommunications industry principally uses lighter Class 4, 5 and 6 trucks (14,001 lbs. GVWR – 26,000 lbs. GVWR).

Scope of Work (SOW)

The SOW begins with two Preliminary research and developments tasks: (i) Review of the "Lessons Learned" from DUECO's first generation PHEV system currently deployed (including test results), and (ii) Data collection on the duty cycles of conventional trucks currently deployed in fleets. This research will aid in "right-sizing" the hybrid system components, such as motors, drives, and battery systems. The advanced PHEVs will offer plug-in hybrid functionality, including idle reduction, propulsion assist, regenerative braking, optional climate controls and exportable power, as well as advanced battery technology such as Li-Ion and/or advanced Pb-Acid. Major Design Engineering activities include system requirements definition, modeling and simulation, design of recharging infrastructure and the following subassemblies: Power-take off/integrated motor, battery system, propulsion motor, controls and software. Prototype Development follows and may incorporate further improvements. Major activities include system integration, validation testing, compliance, and field testing/evaluation of the prototype units, leading into the final phase of the SOW: Deployment, Demonstration, and Field Monitoring. Major activities within Demonstration include production and deployment of several vehicles, along with field training, demonstration, and vehicle performance evaluations. Field testing and vehicle evaluation will enable the optimization of vehicle performance to best achieve customer satisfaction, fuel savings and emissions reduction benefits.

Technical Approach

To mitigate OEM compliance issues, the system will be designed without any changes to OEM engine or powertrain parameters. The project will combine the efforts of leading component, battery (such as Quallion) and chassis suppliers, along with system designers, charge station and infrastructure providers, and utility and telecommunications providers. The architecture will enable the use of standard, automotive-grade components to leverage the existing supply base, resulting in a cost effective PHEV system. Anticipated enhancements include design modularity, control system communication with the electric grid, improved driver interface, flexibility for adaptation to Li-Ion and/or advanced Pb-acid or other battery systems as well as charge station interaction.

Project Stage

Based on the proposed SOW, DUECO estimates 80% of this project falls within the development stage, and 20% in demonstration. Significant development activities occur through the Prototype Development stage, with some development activities such as field monitoring and performance improvement continuing throughout the Deployment stage.

Expected Outcomes (Benefits)

Medium-duty PHEVs offer customers, and the nation, extensive benefits. Through a combination of idle reduction, propulsion assist, and regenerative braking, each PHEV medium-duty truck is anticipated to generate fuel savings of up to 50%, depending upon duty cycle and corresponding reductions in GHG emissions, along with reductions in other pollutants. In addition, customers will benefit from lower operating costs and extended vehicle life due to reduced engine usage. Quiet work-site operation will yield improved safety for workers. Through the use of off-peak charging and smart-grid interface, greater electric utility asset utilization can be achieved, potentially lowering electricity costs. Reliance on domestically-produced electric energy (rather than imported oil) to power much of the operation of these vehicles will improve national energy security, and create opportunities for use of more renewable electric power sources. Furthermore, technology improvements may expand PHEV applications.

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3328 Concord Road  
York, PA 17402  
(717) 840-0226  
FAX: (717) 852-0432

South Coast Air Quality Management District  
PON # 2009-01  
Attention: Procurement Section  
21865 Copley Drive  
Diamond Bar, CA 91765

To Whom It May Concern:

On behalf of DUECO, Inc. and Odyne, I am pleased to submit this pre-proposal for co-funding consideration of advanced clean technology research, development, and demonstration and deployment projects in mobile source applications for the South Coast Air Basin.

DUECO, Inc. is submitting a pre-proposal under Program Opportunity Notice 2009-01, Technology Advancement Office, for co-funding of Advanced Technology Plug-in Hybrid Electric Heavy-duty Trucks for the Telecommunications market.

I will oversee project management of this endeavor. My name is Joseph T. Dalum, Executive Vice President, DUECO, Inc. and President, Odyne. Our business and mailing address is N4 W22610 Bluemound Road, Waukesha, Wisconsin 53186. My phone number is (262) 547-8500 ext. 8365, and our fax number is (262) 547-8407. My e-mail address is [joe.dalum@dueco.com](mailto:joe.dalum@dueco.com).

We appreciate the opportunity to propose a project to develop Class 5 plug-in hybrid electric trucks for the telecommunications industry, with co-funding from Congressionally-directed sources, our project participants, and the South Coast Air Quality Management District.

If you have any questions, please do not hesitate to call me.

Sincerely,

A handwritten signature in cursive script that reads "Joseph T. Dalum". The signature is written in dark ink and is positioned above the printed name and title.

Joseph T. Dalum  
Executive Vice President  
DUECO, Inc.  
President, Odyne

**Program Opportunity Notice 2009-01 Technology Advancement  
Advanced Technology Plug-in Hybrid Electric Heavy-duty Trucks**

**Submitted by:** DUECO, Inc.

N4 W22610 Bluemound Road  
Waukesha, Wisconsin 53186

**Contact:** Joseph T. Dalum, Executive Vice President, DUECO, Inc. and President, Odyne

**Phone:** (262) 547-8500 Ext. 8365

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**Email:** [joe.dalum@dueco.com](mailto:joe.dalum@dueco.com)

**Executive Summary**

DUECO, Inc. is pleased to submit this response to Program Opportunity Notice 2009-01. DUECO, Inc. and its affiliate company, Odyne, propose to develop, test, validate and deploy advanced new Class 5 plug-in hybrid electric trucks with truck-mounted equipment for the Telecommunications and other markets. DUECO, Inc. proposes to work with California partners and customers (Verizon, Coulomb, Clean Fuel Connection, the Electric Power Research Institute, among others) to deploy, monitor and evaluate performance of new prototype vehicles over a 2-year period. Approximately 5 – 10 vehicles would be deployed and tested. Field testing and evaluation of vehicles through this project will enable the optimization of vehicle design for improved vehicle performance and greatest emissions reduction benefits. The advanced PHEVs will offer plug-in hybrid functionality, including idle reduction, launch assist, regenerative braking, climate controls and exportable power (per customer specification), as well as advanced Li-Ion and/or advanced Pb-Acid batteries. Expanding the market for plug-in hybrid electric trucks to Class 5 telecommunications and other markets will help lower production costs across all medium and heavy-duty plug-in hybrid electric trucks, furthering customer acceptance and use. Replacement of conventional diesel-powered trucks with plug-in hybrid electric medium or heavy-duty trucks will help the South Coast Air Quality Management District reduce both greenhouse gas emissions and particulate emissions, as well as reduce petroleum fuel consumption.

**Scope of Work**

Several customers in the telecommunications industry have expressed interest in DUECO's plug-in hybrid electric technology for their vehicles that utilize truck-mounted equipment, and they are seeking to utilize advanced batteries (Li-Ion and advanced lead-acid) and other advanced technology. To date, the plug-in hybrid electric trucks that DUECO and Odyne have manufactured have been heavy-duty trucks over 26,000 lbs. GVWR, and have incorporated conventional lead-acid batteries. The telecommunications industry principally uses lighter Class 4 and Class 5 trucks (14,000 lbs. GVWR – 26,000 GVWR).

DUECO and Odyne are proposing to undertake a \$4 million research, development and demonstration project to develop advanced-technology plug-in hybrid electric trucks designed for the telecommunications market, funded in part by \$1.9 million Congressionally-directed funds awarded to DUECO in 2009. In addition to basic R & D, the Congressionally-directed funds will be used in part to cover the costs of advanced-technology components, such as batteries, as well as expand manufacturing and tooling facilities and to expand the supply chain for parts and advanced-technology components.

DUECO and Odyne are seeking to leverage this funding, in order to expand the scope of its demonstration, testing and deployment with telecommunications customers in the South Coast Air Quality Management District. DUECO and Odyne are requesting \$750,000 from the South Coast Air Quality Management District to help defray the cost gap between plug-in hybrid trucks and their fossil fuel counterparts – to lower the customer's costs for advanced plug-in hybrid



technology and other systems, including the cost of charging infrastructure and installation. DUECO will also use SCAQMD funding to test emissions and measure vehicle efficiency, incorporating these data into improved designs to maximize vehicle performance and achieve maximum reductions of both criteria pollutants and greenhouse gas emissions. Verizon, Clean Fuel Connection, Coulomb Technologies, the Electric Power Research Institute, the National Renewable Energy Laboratory, and CALSTART are among the anticipated partners in this project. The project is anticipated to transpire over approximately 2 years.

We propose the following initial tasks to develop, test, validate and deploy advanced-technology Class 5 plug-in hybrid trucks for the telecommunications market:

**Task 1: Class 5 Plug-in Hybrid Telecommunications Truck Engineering and Design**

The initial prototype engineering and design activities are anticipated to take about 6 months.

These tasks will include:

- Evaluation of truck class configuration, system requirements and design elements
- Design of: Power Take-off/Motor/Pump assembly, Enclosure mechanical packaging, battery pack sizing, battery management system, propulsion motor and drive, controls and software
- Driver display interface development
- System modeling, FMEA and simulation
- Charging station design

**Task 2: Prototype Build, Integration, Test and Compliance**

Prototypes will be developed, analyzed and tested. Some of these steps will be initiated during the first 6 months, as appropriate. The timeline for Task 2 is about 4 months. Steps are as follows:

- Order materials
- Create Engineering Drawings
- Integration and de-bug Hybrid Kit on Chassis
- Validation Testing
- Compliance Testing and Documentation

**Task 3: Production and Deployment**

DUECO and Odyne will make a decision on Phase 1 Deployment readiness, and initiate production of vehicles. This phase is expected to take about 2 months. Steps are as follows:

- Installation and test on Chassis
- Install charging stations
- Train customers
- Deploy trucks – Phase 1

**Task 4: Vehicle and Technology Demonstration**

DUECO and Odyne will initiate field monitoring and data collection on the deployed vehicles, in conjunction with customers, NREL and/or CALSTART, and others. These activities will take approximately 1 year, and include:

- Initial monitoring and start of data collection
- Training of fleet operators
- Interim review, and Phase 2 deployment
- Extended Field monitoring and data collection. Data collected will include vehicle efficiency, diesel fuel consumptions (vs. comparable vehicles), charging profiles, operational / duty cycles, battery specific data, operations and maintenance costs
- Feedback, and optimization plans

**Deliverables**

Each task yields specific deliverables. Task 1 deliverables include Documentation and completed Engineering and Design for vehicle and charging station. Task 2 deliverables include

prototype development, and compliance testing and documentation. Task 3 deliverables include the deployment of Phase 1 vehicles in the field, and Task 4 includes field monitoring and evaluation data and feedback, deployment of Phase 2 trucks, and optimization plans. A White Paper summarizing the results of field testing and analysis, and areas targeted for optimization, will be provided to the South Coast Air Quality Management District at the completion of the two-year project. Emissions benefits and petroleum fuel use reductions will be documented.

### **Air Quality Benefits**

Plug-in hybrid electric vehicles are a major component of regional and state air quality attainment plans. Heavy-duty and medium-duty vehicles are targeted to contribute significant emissions reductions. According to the U.S. Department of Transportation, there were 13.8 million medium and heavy-duty trucks in California, in 2007. An estimated 18,700 vehicles were medium-duty or heavy-duty trucks with aerial lifts. Not counting retirements, an average of 800 medium and heavy duty aerial trucks are added in California each year. If half of these new trucks are deployed in the South Coast Air Quality Management District and were plug-in hybrid electric vehicles, the greenhouse gas emissions reductions would be over 6,000 tons per year. Criteria pollutants such as NOx and PM10 would also be substantially reduced. DUECO has specific data from currently deployed Class 7 plug-in hybrid electric heavy-duty trucks that demonstrate diesel fuel reductions of 40 – 65 % per day, depending on duty-cycle. Fuel reductions are from both improved fuel economy, as well as the fact that the battery operates the hydraulic equipment and climate controls while the vehicle is in work mode (vs. a diesel engine). If trucks are used 250 days per year, this yields 15 – 22 tons of CO2 greenhouse gas emissions reductions/ truck per year.

### **Qualifications**

DUECO, Inc. is one of the largest final stage manufacturers of utility trucks in the country. We manufacture trucks with aerial devices, digger derricks, cranes and other equipment that are sold to electric and gas utilities for the maintenance of their transmission and distribution power lines and underground gas delivery infrastructure. DUECO, Inc. also rents and leases trucks through our rental and leasing company, Utility Equipment Leasing Corporation (UELC), with offices in California and other states. Odyne, an affiliate of both DUECO and UELC, is an advanced technology company that develops and manufactures propulsion systems for advanced Plug-in Hybrid Electric Vehicles (PHEVs) for medium and heavy-duty trucks. DUECO and Odyne have been producing heavy-duty plug in hybrid vehicles for the utility market since 2007, with over 17 trucks in use by several major utilities around the country (including PG&E, Arizona Public Service, WE Energies, Florida Power and Light, Xcel Energy, among others). In January, 2009, DUECO announced the acquisition of most of the assets of Odyne Corporation by an affiliate, further strengthening our commitment to the plug-in hybrid electric medium and heavy-duty market. Coulomb Technologies and Clean Fuel Connection, Inc. are experienced providers of charging infrastructure and installation. CALSTART, the Electric Power Research Institute and NREL offer extensive testing expertise.

### **Schedule**

Upon contract execution, within two weeks we will hold a coordinating meeting with all project participants. Task 1 is expected to take 6 months to complete, Task 2 another 4 months, Task 3, another 2 months (for a total of one year), and Task 4 another year (2 years total).

### **Budget**

The proposed project budget is as follows:

<b>Total Project:</b>	<b>\$ 4.0 million</b>	
<b>DOE Congressionally-directed funds:</b>	<b>\$ 1.9 million</b>	<b>47.5%</b>
<b>SCAQMD funds:</b>	<b>\$ 0.75 million</b>	<b>18.8%</b>
<b>DUECO/Customers/Project Partners (\$ and in-kind)</b>	<b>\$ 1.35 million</b>	<b>33.7%</b>


[House Appropriations Committee Print]

Omnibus Appropriations Act, 2009  
(H.R. 1105; Public Law 111-8)

DIVISION C—ENERGY AND WATER DEVELOPMENT AND RELATED AGENCIES APPROPRIATIONS ACT, 2009

650

CONGRESSIONALLY DIRECTED ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECTS

PROJECT	
CENTER FOR INTEGRATED BIOMASS RESEARCH (NC)	\$1,208,405
CENTER FOR INTERNATIONAL INTELLIGENT TRANSPORTATION RESEARCH (TX)	\$523,325
CENTER FOR NANOSCALE ENERGY (ND)	\$4,757,500
CENTER FOR RENEWABLE ENERGY, SCIENCE AND TECHNOLOGY (TX)	\$1,403,463
CENTER OF EXCELLENCE IN OCEAN ENERGY RESEARCH AND DEVELOPMENT, FLORIDA ATLANTIC UNIVERSITY (FL)	\$1,189,375
CENTRAL VERMONT RECOVERED BIOMASS FACILITY (VT)	\$951,500
CHARITON VALLEY DENSIFICATION—PHASE II (IA)	\$951,500
CHRISTMAS VALLEY RENEWABLE ENERGY DEVELOPMENT (OR)	\$380,600
CITY OF GRAND RAPIDS BUILDING GREEN ROOF DEMONSTRATION (MI)	\$142,725
CITY OF LAS VEGAS PLUG-IN HYBRID VEHICLE DEMONSTRATION PROGRAM (NV)	\$142,725
CITY OF LOUISVILLE ENERGY CONSERVATION INITIATIVE (KY)	\$142,725
CITY OF MARKHAM COMMUNITY CENTER (IL)	\$237,875
CITY OF MIAMI GREEN INITIATIVE (FL)	\$951,500
CITY OF TALLAHASSEE INNOVATIVE ENERGY INITIATIVES (FL)	\$570,900
CLEAN AND EFFICIENT DIESEL ENGINE (PA)	\$1,189,375
CLEAN POWER ENERGY RESEARCH CONSORTIUM (LA)	\$1,903,000
CLEAN TECHNOLOGY COMMERCIALIZATION INITIATIVE (PA)	\$951,500
CLEAN TECHNOLOGY EVALUATION PROGRAM (MA)	\$475,750
CLEARY UNIVERSITY GEOTHERMAL ENERGY RETROFIT (MI)	\$475,750
CLEMSON UNIVERSITY CELLULOSIC BIOFUEL PILOT PLANT IN CHARLESTON (SC)	\$951,500
CLOSED LOOP WOODY BIOMASS PROJECT (NY)	\$475,750
COASTAL WIND OHIO (OH)	\$951,500
COLUMBIA GORGE COMMUNITY COLLEGE WIND ENERGY WORKFORCE TRAINING NACELLE (OR)	\$237,875
CONSORTIUM FOR PLANT BIOTECHNOLOGY RESEARCH (FL, GA, HI, IA, KY, LA, MI, MN, NC, ND, NE, NY, OH, SD, WA)	\$3,806,000
CONTROLLED ENVIRONMENTAL AGRICULTURE AND ENERGY PROJECT (NY)	\$475,750
COOLING HEATING AND POWER AND BIO-FUEL APPLICATION CENTER (MS)	\$1,903,000
DEVELOPING NEW ALTERNATIVE ENERGY IN VIRGINIA: BIO-DIESEL FROM ALGAE (VA)	\$713,625
DEVELOPMENT OF BIOFUELS (NV)	\$1,024,167
DEVELOPMENT OF HIGH YIELD FEEDSTOCK AND BIOMASS CONVERSION TECHNOLOGY FOR RENEWABLE ENERGY PRODUCTION AND ECONOMIC DEVELOPMENT (HI)	\$1,427,250
DOWNTOWN DETROIT ENERGY EFFICIENCY STREET LIGHTING (MI)	\$951,500
 DUECO PLUG-IN HYBRID ENGINES (WI)	\$1,903,000
ECOLOGICALLY SUSTAINABLE CAMPUS - NEW ENGLAND COLLEGE (NH)	\$299,723
ENERGY AND ENVIRONMENTAL RESEARCH CENTER FOR BIOMASS UTILIZATION (ND)	\$2,000,053
ENERGY EFFICIENCY/SUSTAINABLE ENERGY PROJECT (NC)	\$951,500