

CHBC News: November 2009

1. [Welcome back Members](#)
2. [Congress Restores Hydrogen Funding With \\$187 million in Appropriations Bill](#)
3. [UTC Proposes to get Hydrogen From Wind, Solar, and Lake Erie Water](#)
4. [California Governor Introduced a Hydrogen Fueled Truck](#)
5. [Ballard's FC Module Powers The First BC Transit Zero-Emission Fuel Cell Bus](#)
6. [FuelCell Energy and POSCO Power Sign License Agreement](#)
7. [U.S. Army Lab Seeks Fuel Cell Solutions that Lighten Soldier's Load](#)
8. [Funding Clean Vehicle and Energy Technologies is Right Choice](#)
9. [FuelCell Energy wins US DOD Award](#)
10. [SFC Smart Fuel Cell Launches Emily 2200 FC](#)
11. [Heliocentris Wins Order for Autonomous FC Power Supply Solution](#)
12. [New Ceramic Material May Expand Uses for Solid Oxide Fuel Cells](#)
13. [Coca-Cola to Install Hydrogen Fueled Forklifts with Plug Power FC Systems](#)
14. [Air Products Designs Self-Service Hydrogen Fueling Station](#)
15. [First GE-BP Joint Carbon Capture Power Plant Goes Ahead](#)
16. [London Moves a Step Closer to Hydrogen Buses](#)
17. [Air Products Building World-Scale Hydrogen Plant at Monsanto in Louisiana](#)
18. [Air Products' Hydrogen Fueling Technology Now Available on Long Island](#)
19. [H-Prize Competition Offers \\$1 Million for Advances in Hydrogen Storage](#)
20. [Toshiba Launches First Commercial Rfillable Fuel Cell Charger](#)
21. [What The ARPA-E Bets Mean for the Future of Green Cars](#)
22. [Whole Foods Market to use Plug Power Gendrive Power Solutions](#)
23. [U.S. Army Renews Contract with Hydrogen Power Plant co. FuelCell for \\$1.5M](#)
24. [ISE's Hybrid FC Drive System Powers the First BC Transit Production Bus](#)
25. [Message From CHBC New Managing Director](#)

1. Welcome back Members

AJ Cornish renews his membership. Welcome back!

2. Congress Restores Hydrogen Funding With \$187 million in Appropriations Bill

Department of Energy Secretary Steven Chu is not getting his way in Washington. Recently (and, at this point, still allegedly) he said that he "would put every cent into electric cars." The Senate, though, has other plans and has now restored almost all of the hydrogen funding money that the DOE slashed in May. Back in July, the Senate hinted that it would fight back against the DOE cuts when the Energy and Water Development Appropriations Subcommittee marked up the FY 2010 DOE budget and then restored hydrogen vehicle funding. Yesterday, the full Senate made it official. As part of an appropriations bill that the House had previously approved, Congress has appropriated \$187 million for continued research and development for hydrogen fuel cell cars. Jerome Hinkle, vice president of government affairs for the National Hydrogen Association, said he believes that the Obama Administration has "made peace" with the idea of hydrogen cars. Obama is expected to sign the appropriations bill when it reaches his desk.

[Congress Resores H2 Funding](#)

3. UTC Proposes to get Hydrogen From Wind, Solar, and Lake Erie Water

The NASA Glenn Research Center is working with RTA, the Great Lakes Science Center and United Technologies Corp. to power a fuel cell electric bus with hydrogen drawn from Lake Erie water. State documents reveal that the NASA consortium, which includes 12 partners, has applied for a \$2.6 million grant from the Ohio Third Frontier Wright Projects program. The Ohio Aerospace Institute, serving as the group's fiscal agent, applied for the grant. The consortium is competing with 36 other applicants asking for seed money for a variety of projects to commercialize laboratory technologies. Awards will be announced in May. The NASA group's plan is to use electricity produced by the wind turbine and large solar panel array at the science center to power the equipment that would break water into its elemental components - hydrogen and oxygen.

[UTC - Fuel Cell - Lake Erie water](#)

4. California Governor Introduced a Hydrogen Fueled Truck

LOS ANGELES--Vision Industries Corp. (OTCBB: VIIC), producers of the zero emission hydrogen fuel cell/plug-in electric hybrid Tyrano" semi truck, are pleased to announce that Governor Arnold Schwarzenegger (introduced) the Tyrano" to the people of California, at the East Steps of the State Capitol building in Sacramento.

[Article](#)

[Video](#)

5. Ballard's FC Module Powers The First BC Transit Zero-Emission Fuel Cell Bus

VANCOUVER, Oct. 5 /PRNewswire-FirstCall/ - Ballard Power Systems (TSX: BLD; NASDAQ: BLDP) congratulates BC Transit, the Province of British Columbia, the Government of Canada, and its consortium partners on the introduction of the first bus in BC Transit's fleet of 20 hydrogen fuel cell buses. Representatives from Ballard were on site as Premier Gordon Campbell unveiled "Bus 1" on Friday, October 3, 2009 in Vancouver. BC Transit's fleet will become the largest single deployment of zero-emission fuel cell buses worldwide and it is powered by Ballard's heavy-duty fuel cell module, the FCvelocity(TM)-HD6. "All of us at Ballard are proud of to be partners in helping BC lead the way in adopting new technologies that support sustainable practices and reduce greenhouse gas emissions," said John Sheridan, Ballard's President.

[Largest Single Deployment of Zero-emission FC Buses Worldwide](#)

6. FuelCell Energy and POSCO Power Sign License Agreement

FuelCell Energy, Inc. has signed a licensing agreement with POSCO Power Corp., a South Korean power generation company, allowing POSCO to manufacture fuel cell stack modules from cell and module components provided by FuelCell Energy. FuelCell Energy is a US-based company engaged in the development and manufacturing of fuel cell power plants for electric power generation. Under the agreement, POSCO Power will manufacture fuel cell modules from components and cells manufactured in the US by FuelCell Energy. The fuel cell modules will be combined with balance-of-plant manufactured in South Korea to complete electricity-producing fuel cell power plants for sale in South Korea. The agreement includes an upfront license fee of \$10 million, which was paid at signing, as well as an ongoing royalty, initially set at 4.1% of the revenues generated by sales of the fuel cell stack modules by POSCO Power.

[Signed Licensed Agreement](#)

7. U.S. Army Lab Seeks Fuel Cell Solutions that Lighten Soldier's Load

Soldiers carry a heavy load, with basic body armor alone weighing about 45 pounds, not to mention firearms, ammunition, radio equipment, food and other tools they may need for a mission. The Army Research Laboratorys Electrochemistry Branch in the Sensors and Electron Devices Directorate is working to lighten their load by creating fuel cells that are lighter and more efficient and durable than existing batteries. Cynthia Lundgren, chief of the electrochemistry branch at Aberdeen Proving Ground, Md., described the benefits of fuel cell technology during an Oct. 21 webcast of Armed with Science: Research and Applications for the Modern Military on Pentagon Web radio. The new fuel cells will help soldiers by lessening the number of batteries they carry for missions lasting longer than 24 hours, Lundgren explained. Depending on their role in the battalion, some soldiers may carry up to 35 pounds of batteries with them for a 72-hour mission, she said. Shed like to see that weight reduced to 12 pounds. Wed like to reduce the weight a soldier carries by a third to a half, she said.

[FC Lighten Soldier's Load](#)

8. Funding Clean Vehicle and Energy Technologies is Right Choice

The comprehensive approach to advancing transportation and clean energy technologies embodied in the energy spending bill signed by President Obama this week is the best way to assure that the nation ends its dependence on imported fuels and reduces greenhouse gas emissions, three international trade associations said today. The FY 2010 Energy & Water Development Appropriation funds a full portfolio of advanced technologies and fuels for power generation and vehicles, including fuel cells, hydrogen, and batteries, the Electric Drive Transportation Association (EDTA), National Hydrogen Association (NHA) and US Fuel Cell Council (USFCC) said in a joint statement. Congress and the Administration are wisely investing in all the most promising advanced transportation and low carbon electricity options. All these pathways work cooperatively with renewable and traditional domestic energy sources. The bill allocates \$311 million to vehicle electrification and advanced combustion systems, \$220 million for advanced biofuels and \$283 million for hydrogen and fuel cells in all applications.

[Article](#)

9. FuelCell Energy wins US DOD Award

The US Department of Defenses Engineer Research & Development Center Construction Engineering Research Laboratory (ERDC-CERL) has awarded Connecticut-based FuelCell Energy approximately \$1.5 million to continue development of the companys electrochemical hydrogen separator (EHS). The EHS system separates pure hydrogen from gas internally generated in a fuel cell, that can be used for industrial and transportation applications.

[FuelCell Energy and US DOD](#)

10. SFC Smart Fuel Cell Launches Emily 2200 FC

German-based SFC Smart Fuel Cell has unveiled its Emily 2200 fuel cell. The Emily 2200 direct methanol fuel cell is a long-lasting, reliable power supply for on- and off-vehicle defense applications. Integrated into tactical vehicles or in the field, the fuel cell operates as a ruggedized fuel cell power generator.

[Reliable Power Supply](#)

11. Heliocentris Wins Order for Autonomous FC Power Supply Solution

German-based Heliocentris Fuel Cells, a leading system integrator for PEM fuel cells, has won a major order for the delivery of an autonomous power supply solution to the University of Applied Sciences Wildau, near Berlin. The fuel cell power supply will be used to supply energy to selected applications in a building, and will serve as a link between training and applied research.

[Major Order for FC Delivery](#)

12. New Ceramic Material May Expand Uses for Solid Oxide Fuel Cells

A new ceramic material developed at Georgia Tech in the US could help expand the applications for solid oxide fuel cells (SOFCs), by offering improved sulfur tolerance and resistance to carbon build-up. The BZCYYb (barium-zirconium-cerium-yttrium-ytterbium oxide) material could be used in a variety of ways: as a coating on the traditional Ni-YSZ anode, as a replacement for the YSZ in the anode, and even as a replacement for the entire YSZ electrolyte system in SOFCs.

[Georgia Tech](#)

13. Coca-Cola to Install Hydrogen Fueled Forklifts with Plug Power FC Systems

The second largest Coca-Cola bottler in the US will install 40 hydrogen-powered forklifts at its Charlotte, North Carolina production center. Plug Power will provide its Class 1 sit-down counterbalanced GenDrive" fuel cell solution to Coca-Cola Bottling Co Consolidated early in 2010.

[Coca-Cola, Hydrogen FC Forklifts, and Plug Power](#)

14. Air Products Designs Self-Service Hydrogen Fueling Station

Air Products will install and operate the first 24-hour self-service hydrogen fueling station in H₂oerth, Germany. The station, based at the Infracore-Knapsack Chemical Park, will be in regular operation by March 2010, when it will initially supply hydrogen to two buses run by the local council.

[Self-Service Hydrogen Fueling Station](#)

15. First GE-BP Joint Carbon Capture Power Plant Goes Ahead

GE Energy is joining forces with Hydrogen Energy on a proposed 250 MW integrated gasification combined-cycle (IGCC) power plant in Southern California that will capture up to 90% of its CO₂ emissions. Hydrogen Energy is a joint venture between BP Alternative Energy and Rio Tinto Hydrogen, while GE and BP formed an alliance two years ago to develop and deploy five IGCC power plants. The project at Bakersfield in Kern County would be the first of these power plants. This is a homecoming of sorts for GE and IGCC technology, says Monte Atwell of GE Energy. GE technology was involved in the first IGCC pilot plant in Barstow, California, and we are pleased to be deploying the next generation of this technology. IGCC technology converts solid fossil fuels like coal into a hydrogen-rich fuel that burns much more cleanly and efficiently. The process reduces other emissions such as dioxide, nitrous oxide, mercury and particulate matter, as well as water consumption.

[Capture up to 90% of CO₂](#)

16. London Moves a Step Closer to Hydrogen Buses

A major milestone has been reached in bringing a fleet of five hydrogen fuel cell buses to the Capital. The Olympic Delivery Authority has granted planning permission for a hydrogen refuelling facility to be built in east London. First, who will operate the five hydrogen buses, were granted the planning

permission for the facility to be located at their bus garage on Temple Mills Lane, Leyton. Work is due to begin early in the New Year, by Air Products, who will supply the hydrogen and refuelling equipment and provide specialist maintenance equipment. Work is due to be completed by summer 2010. The five hydrogen hybrid fuel cell buses are due to join Transport for London's (TfL) bus fleet next year operating on route RV1 which runs between Covent Garden and Tower Gateway. Kit Malthouse, Chair of the London Hydrogen Partnership and Deputy Mayor for Policing, said: This is excellent news which secures the arrival of five zero-polluting hydrogen buses on London's streets next year. With the right refuelling structure, we can expand our use of hydrogen technology to provide cleaner fuel for transport and greener energy to heat homes and businesses. Hydrogen has massive potential to cut carbon emissions and improve air quality in the Capital to enhance Londoners' quality of life.

[Arrival of Five Zero-polluting Hydrogen Buses on London's Streets](#)

17. Air Products Building World-Scale Hydrogen Plant at Monsanto in Louisiana

Air Products (NYSE:APD), the leading global hydrogen provider, today announced the signing of a long-term supply contract with Monsanto Company (NYSE: MON) to build a new world-scale hydrogen production plant to be located at Monsanto's Luling, Louisiana Roundup \square facility. The new hydrogen plant is scheduled to begin stream in January 2012. Air Products will build a steam methane reformer (SMR) producing over 100 million standard cubic feet per day (MMSCFD) of hydrogen. The SMR will be connected to Air Products' East Gulf Coast pipeline network, which supplies refineries with hydrogen needed to make cleaner burning transportation fuels, in addition to meeting the hydrogen needs of the local petrochemical industry. In addition, the facility will produce additional hydrogen via a clean-up of a hydrogen-rich off-gas feed coming from Monsanto. Monsanto will use steam from Air Products' SMR process to benefit its Roundup \square production plant.

[Air Products](#)

18. Air Products' Hydrogen Fueling Technology Now Available on Long Island

Long Island, New York now boasts hydrogen vehicle fueling capability. Air Products' (NYSE: APD) hydrogen fueling technology was formally dedicated at a ceremony today as part of an alternative fuel, green energy initiative led by the Town of Hempstead. Air Products is a member of the project team establishing Long Island's first hydrogen fueling station, along with the Town of Hempstead, the New York State Energy Research Development Authority (NYSERDA), National Grid, and Proton Energy Systems. "This is a wonderful project with a lot of visibility being located on Long Island. It showcases our dispensing technology, which has the capability to provide hydrogen generated from multiple sources, and in this case, generated by electrolysis from water. We have also fueled vehicles and provided hydrogen at other sites from electrolysis driven by solar and wind methods. The Town of Hempstead and all the New York agencies involved with this green energy demonstration project should be applauded for their effort," said Bruce Luff, business development manager-Hydrogen Energy Systems at Air Products.

[Air Products](#)

19. H-Prize Competition Offers \$1 Million for Advances in Hydrogen Storage

The U.S. Department of Energy (DOE) has launched the H-Prize competition, offering a \$1 million cash award to the individual or team that creates the most advanced materials for hydrogen storage in vehicles. The H-Prize is open to U.S. companies, U.S. citizens and legal U.S. residents, with certain restrictions. Participants must register on the H-Prize website by February 15, 2010. Sponsors and

Contestants are Encouraged to Participate. Deadline is February 15, 2010.

[\\$1 M Award for Advanced Materials for Hydrogen Storage in Vehicles](#)

20. Toshiba Launches First Commercial Refillable Fuel Cell Charger

No company in the consumer electronics industry is more hell-bent on the idea of fuel cells than Toshiba, which trots out innovation after innovation in this space every year. Finally all those years of research seem to have led to a breakthrough that we consumers can actually obtain. To wit: Toshiba is now launching a product called Dynario, an honest-to-God methanol fuel cell which, unlike other "fuel cell" products on the market, can be refilled endlessly with liquid fuel by the consumer. (Other products purporting to use fuel cell technology have been around for a couple of years, but none of them can be refilled -- a key component to most experts' definition of what a fuel cell is.) A standalone device, it's designed to be used to recharge existing battery-powered electronics like cell phones and digital cameras, much like a traditional, battery-operated portable charging device.

[Refillable FC Charger](#)

21. What The ARPA-E Bets Mean for the Future of Green Cars

ARPA-E has also reached into fuel cells. The University of California at Riverside won funding for work on alkaline polymer electrolyte fuel cell membranes, ... Of the \$151 million in grants announced this week under ARPA-E (Advanced Research Projects Agency-Energy), the Department of Energy's highly competitive program for high-risk, early-stage energy technologies, more than a fifth -- some \$33 million -- has been allocated for green vehicle projects. Since the program is meant to support work on tech that other investors consider too risky, each of the projects -- from boosting the fuel economy of gas-powered cars to replacing lithium-ion batteries as the technology of choice for electric vehicles -- represent something of a gamble. So when it comes to choosing ideas for transforming the auto industry and cleaning up transportation, how wisely is the DOE placing its chips?

[Article](#)

22. Whole Foods Market to use Plug Power GenDrive Power Solutions

LATHAM, NY - October 20, 2009 - Plug Power Inc. (NASDAQ: PLUG), a leader in providing clean, reliable energy solutions, announced today that Whole Foods Market, the world's leading natural and organic foods supermarket, will be using 61 GenDrive™ fuel cell-powered forklifts in its Landover, Maryland distribution center in 2010. Whole Foods Market is partnering with Plug Power and GENCO Supply Chain Solutions, North America's second largest third party logistics provider, to complete this installation. The funding for the fuel cells is part of a \$6.1 million award made to GENCO in April of 2009 by the US Department of Energy (DOE) through the American Recovery and Reinvestment Act. Alliance Material Handling, a Maryland-based Crown lift truck supplier, will supply the fork lifts for this site. The fleet will consist of 45 class-3 pallet jack and 16 class-2 standup reach trucks, all powered by GenDrive fuel cells. The decision to move from lead-acid batteries was facilitated by the opportunity to improve the Company's productivity in their Maryland operations, while also achieving environmental and economic benefits. Joe Strong, Facility Team Leader at Whole Foods, states "Whole Foods Market is committed to healthy food and a healthy planet. We are fulfilling that commitment by choosing to use greener technology in our own operations that will improve our productivity and lower our long-term costs."

[FC Powered Forklifts](#)

23. U.S. Army Renews Contract with Hydrogen Power Plant co. FuelCell for \$1.5M

FuelCell Energy, a developer of hydrogen separator technology for fuel cell-based power plants, announced today that it landed a \$1.5 million contract from the U.S. Army Corps of Engineers to continue its work with the military. The Connecticut-based company first partnered with the Army in 2007 when it received \$1 million for this research, which remains unfinished. The technology in question, used to separate hydrogen out of gas mixtures to generate electricity, could potentially be used to power transportation and other industrial processes for the military. The new money, to be used over the next 20 months mostly for research, is expected to result in a field demonstration plant using the hydrogen separator, and owned and operated by FuelCell. This facility would generate up to 300 kilowatts of ultra-clean electricity, as well as heat and 300 pounds pure hydrogen as byproducts. FuelCell scored \$1.9 million in stimulus funds via the U.S. Department of Energy last month to work on a high-temperature recuperator for its existing hydrogen fuel cell systems (different than what it is doing for the army). It also bagged \$24.2 million in June from a sale of 6.7 million shares of common stock, which it earmarked for expansion of manufacturing.

[FuelCell Energy](#)

24. ISE's Hybrid FC Drive System Powers the First BC Transit Production Bus

The BC Transit Fleet will be the worlds largest zero-emission fleet operating in a single location, and ISE is responsible for developing and manufacturing the hybrid fuel cell drive system. These vehicles will be used at the 2010 Olympic & Paralympic Winter Games in Whistler, British Columbia, Canada. This represents a significant milestone for ISE as well as a huge opportunity for global exposure to our systems.

[ISE FC Bus at Winter Olympics](#)

25. Message From CHBC New Managing Director

Dear Hydrogen Community, Thank you for your well wishes on my new assignment as the CHBC's Managing Director. I would like to take the opportunity to wish Catherine Rips success on her next hydrogen adventure. Her seven years of service and dedication to the CHBC Board is unmatched. Her time and talent shared with the organization and her departure will create an opportunity for me to expand her activities. I look forward to sharing the CHBC News with the community and look forward to working with you in the future! Sincerely, Karen Farrell, Managing Director, California Hydrogen Business Council, 14271 Jeffrey Road, #101, Irvine, CA 92620

Karen Farrell, Editor/Publisher

California Hydrogen Business Council

714-300-9755

www.CaliforniaHydrogen.org