CHBC News: May 2009

1. Register Now for New Beginnings, June 18, AQMD

On June 18, the California Hydrogen Business Council will come together with leading industry groups to discuss what resonates in Washington and Sacramento, with the business community, environmentalists and the media. A level-setting panel will provide real world input on hydrogen cars, buses, supply and infrastructure and assess how hydrogen measures up. Then we'll look at the world tomorrow and how hydrogen helps get us there. Before the day is through, attendees will be armed to become Hydrogen Ambassadors and learn how to nurture broad based support. Thanks to South Coast Air Quality Management District for hosting us. Register now. Pre-registration pricing is in effect.
New Beginnings: http://www.californiahydrogen.org/page.cfm?content=48

2. California Adopts Low Carbon Fuel Standard

The California Air Resources Board (ARB) has adopted a regulation that will implement Gov. Schwarzenegger's Low Carbon Fuel Standard calling for a 10 percent reduction of greenhouse gas emissions (GHG) from California's transportation fuels by 2020. The new regulation will boost the market for alternative-fuel vehicles and achieve 16 million metric tons of GHG reductions by 2020. ARB representatives describe the measure as the most important early action called for under AB 32, the Global Warming Solutions Act.The

standard is expected to boost the use of biofuels and drive the availability of plug-in hybrid, battery electric and fuel-cell powered cars while promoting investment in electric charging stations and hydrogen fueling stations.
ARB: http://www.arb.ca.gov/newsrel/nr042309b.htm

3. CEC Adopts Far-Reaching Green Transportation Plan
The California Energy Commission (CEC) recently took action to change the face of California's fuel and vehicle types by adopting the state's first transportation Investment Plan. The Alternative and Renewable Fuels and Vehicle Technology Program's Investment Plan allocates $176 million over the next two years to stimulate green transportation projects and encourage innovation to help meet the state's aggressive climate change policies. Over the next two years, the Energy Commission will invest $46 million for electric vehicles, public charging stations, and manufacturing plants, $40 million for hydrogen fueling stations, and $43 million for natural gas vehicles, fueling stations and biomethane production facilities.
AB118: http://www.californiahydrogen.org/page.cfm?content=20&display=106

4. Secretary Chu Announces $41.9 Million to Spur Growth of Fuel Cell Markets
To expand the use of clean and renewable energy sources and reduce America's dependence on foreign oil, Energy Secretary Steven Chu announced $41.9 million in American Recovery and Reinvestment Act funding for fuel cell technology. The $41.9 million will support immediate deployment of nearly 1,000 fuel cell systems for emergency backup power and material handling applications (e.g., forklifts) that have emerged as key early markets in which fuel cells can compete with conventional power technologies. Additional systems will be used to accelerate the demonstration of stationary fuel cells for combined heat and power in the larger residential and commercial markets. The increase in manufacturing volume in key early markets will also bring costs down and encourage the growth of a domestic supplier base.
Fuel Cells: http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=160

5. Honda FCX Fuel Cell Car Named 2009 World Green Car
At a recent New York International Auto Show press conference, the Honda FCX Clarity was named the 2009 World Green Car. The FCX Clarity was chosen from an initial entry list of 22 contenders nominated by 59 World Car jurors from 25 countries worldwide. The FCX Clarity, a sleekly styled hydrogen fuel cell-powered sedan currently available on a limited lease basis, is powered by an electric motor that runs on electricity generated by an on-board fuel cell stack. The vehicle's only emission is water, and its fuel efficiency is up to three times that of a modern gasoline-powered automobile and two times that of a gasoline-powered hybrid vehicle. The World Green Car awards reflect the reality of the global marketplace, recognize and reward automotive excellence on an international scale.
Honda FCX Clarity: http://www.canadiandriver.com/2009/04/09/honda-fcx-fuel-cell-car-named-2009-world-green-car.htm

6. GM to Show Hydrogen Cars in Tonawanda
General Motors is bringing two hydrogen-powered vehicles to the Tonawanda engine plant in a drive to promote GM's development of alternative fuel technology. They are among 100 Chevrolet Equinox crossover fuel-cell vehicles being tested under real-world conditions in Los Angeles, New York City, Rochester, Washington, D.C., and several overseas locations. "We'll probably have a production model ready for showrooms in 2014 or 2015," said Daniel O'Connell, director of fuel cell commercialization at GM's fuel cell research laboratory near Rochester. Since the start 18 months ago, they have logged more than 700,000 miles, 10,000 fills at hydrogen filling stations, and proven through two frigid winters and blistering

summers that the technology is viable, O'Connell said.
GM: http://www.bizjournals.com/buffalo/stories/2009/04/13/daily34.html

7. Royal Mail to Speed Development of Hydrogen FC Postal Vans
Royal Mail, UK's postal operating authority, is working with the European associations of public postal operators and fuel cell developers to develop a universal design specification for hydrogen fuel cell postal vans. Once a draft design specification has been developed, Royal Mail intends to share it with all the other European postal operators for input and presentation to major vehicle manufacturers around the world. Royal Mail's Head of Sustainability Dr. Martin Blake said, "We clearly see hydrogen fuel cell technology as the future means of small and medium vehicle propulsion in the not too distant future, it is now just a question of seeing which one of the major motor manufacturers can bring such fuel cell commercial vehicles to market in large numbers and reasonable prices first."
Postal Vans: http://www.fleetdirectory.co.uk/fleet-news/index.php/2009/04/14/royal-mail-joins-forces-to-accelerate-development-of-hydrogen-fuel-cell-postal-vans/

8. GM and SAIC Promote Fuel Cell Propulsion Technology
General Motors Corp. and Shanghai Automotive Industry Corp. Group (SAIC) recently announced the launch of SAIC's Shanghai Brand Fuel Cell Vehicle, which is powered by GM's latest fourth-generation fuel cell propulsion technology. The vehicle from SAIC uses the same 700 bar high-pressure hydrogen fuel cell system adopted in the Chevrolet Equinox Fuel Cell. Ten Shanghai Brand Fuel Cell Vehicles will be built. The zero-emission high-tech vehicles will join the Equinox Fuel Cell as part of a fleet of both GM and SAIC vehicles to shuttle VIPs at World Expo 2010 Shanghai. GM and SAIC are the exclusive joint global automobile partner of World Expo 2010 Shanghai.
Shanghai:
http://www.streetinsider.com/Press+Releases/GM+and+SAIC+Promote+Fuel+Cell+Propulsion+Technology/4570627.html

9. Lawrence Tech Students Build Prize-Winning Hydrogen Race Car
Lawrence Technological University, Southfield, MI, has created its own hydrogen race car which was recently on display at the National Hydrogen Association Conference and Hydro Expo. A team of about a dozen students from Lawrence Tech's transportation design program make up Element One, the team that created the hydrogen car, or kart. It uses a Hydrogenics HyPM8 fuel cell, a hydrogen tank, an electric motor and ultracapacitors for rapid acceleration. It weighs 40 pounds and can hit speeds of up to 60 mph. The Lawrence Tech hydrogen car also utilizes a unique carbon-fiber body, which took first place in the design competition and was featured in Popular Science magazine.
Race Car:
http://www.metromodemedia.com/innovationnews/lawrencetechhyrdogenracecar0110.aspx

10. Ambitious Plans for Hydrogen Cars in Copenhagen & Denmark
The new climate plan for the municipality of Copenhagen sets the target that 85 percent of all cars in the municipality service will be electric and hydrogen-powered in 2015, corresponding to 600 cars. A new energy plan from the Conservatives government party in Denmark suggest a continuation of the present registration tax exemption on electric and hydrogen cars throughout 2015, thus avoiding the normal taxation on up to 180 percent of the base car price. The plan also calls for strong investments in hydrogen refueling stations allowing for all new car sales in 2025 to be electric and hydrogen only. Further public funding for energy RD&D is to be doubled to EUR 134 million annually. In the past, one-third of the funds has been spent on hydrogen and fuel cells.
Copenhagen-Denmark: http://www.hydrogenlink.net/eng/news-240309-ambitions.asp

11. Fuel Cell Buses Embraced Among Transit Agencies and Passengers
Fuel cell buses have operated successfully in public transit fleets around the world, according to a new report written for the Federal Transit Administration by the Breakthrough Technologies Institute and the Center for Transportation and the Environment. The report examined hydrogen bus demonstrations in 19 cities in North America, Europe, Asia and Australia. The vast majority of buses performed better than expected and were very popular among passengers and drivers, many of whom reported being less tired at the end of their shifts, primarily because fuel cell buses make significantly less noise than internal combustion buses. The fuel cell buses typically were operated daily in 16-hour duty cycles. Collectively, they covered more than 1.6 million miles and served more than seven million passengers.
Buses:
http://www.businesswire.com/portal/site/google/?ndmViewId=news_view&newsId=20090416006213&newsLang=en

12. Hydrogenics Continues to Advance FC Bus Programs in North America
Hydrogenics Corp. recently announced that it has sold another HyPM HD fuel cell power module as part of the Federal Transit Administration's (FTA) National Fuel Cell Bus Program (NFCBP). Serving a project under the Northeast Advanced Vehicle Consortium, Hydrogenics was selected by being able to offer a flexible and cost competitive module with a proven track record. "This is our third project under the auspices of the NFCBP,"said Daryl Wilson, president and CEO. "We are now tied with the most projects awarded among the various fuel cell providers. Approximately 4,500 full-size transit buses are sold annually in the U.S., and Hydrogenics is dedicated to becoming a leading provider of zero emission, domestically fueled power solutions for this important target market."
Hydrogenics: http://www.marketwire.com/press-release/Hydrogenics-Corporation-TSX-HYG-979888.html

13. Hyundai Unveils Blue Drive Products at Seoul Motor Show
Hyundai Motor Company showcased a wide range of new eco-friendly Blue Drive products and technologies at the Seoul Motor Show. In addition to Hyundai's first plug-in hybrid electric vehicle, also on display was the second generation hydrogen fuel cell electric city bus. The next major step forward for the fuel cell bus program will come in late 2010 when a fleet of these second-generation buses will be put into daily service in cities around Korea in line with the government's recently declared "green growth" goals. The details of the second phase program are currently being negotiated by the various ministries, municipal authorities and bus fleet operators.
Hyundai: http://www.tradearabia.com/news/newsdetails.asp?Sn=MTR&artid=159081

14. $6.8 Million Will Assist Construction of Four Hydrogen Stations
The California Air Resources Board has awarded Mebtahi Station Services (see 15), San Francisco Airport (see 16), Shell Hydrogen and UCLA (see 17) $1.7 million each to supplement their construction of hydrogen refueling stations. The new stations will serve the growing number of fuel-cell vehicles on the road and double the amount of hydrogen available to the public. Shell Hydrogen will add hydrogen to an existing retail gasoline station at 1600 Jamboree Road in Newport Beach. The station will produce up to 100 kilograms of hydrogen per day through a natural gas steam-reformation system. UCLA, in a partnership with Air Products, General Physics and South Coast Air Quality Management District, plans to build a hydrogen station at its transit facility at the corner of Veteran and Kinross Avenues in Westwood.
ARB Awards: http://www.arb.ca.gov/newsrel/nr040609.htm

15. Harbor City Filling Station to Sell Hydrogen Fuel
As noted above, Mebtahi Station Services has been awarded a grant to add hydrogen fuel to its existing Chevron Station in Harbor City. The California Air Resources Board said the station near Western Avenue and Pacific Coast Highway won $1.7 million to supplement the construction of refueling stations that can be used by the public. The grants, provided by the state legislature and distributed by the board through a competitive bidding process, aim to increase the use of alternative fuels, CARB officials said. In a partnership with Capital Investment Group, Air Products and Chemicals, Inc., and General Physics, Mebtahi will provide up to 100 kilograms of hydrogen per day to vehicles.
Harbor City Station: http://www.dailybreeze.com/latestnews/ci_12087570

16. SFO Wins Grant for Hydrogen Refueling Station
Also as noted in 14 above, San Francisco International Airport won a $1.7 million state grant recently to build a refueling station for cars and buses that run on hydrogen. The station will be built near the Millbrae Avenue interchange, along the airport's southern edge. The state grant, awarded by the California Air Resources Board, will cover roughly 70 percent of the project's cost; the rest will be supplied by Linde North America. Several local mass transit agencies, including AC Transit and the Santa Clara VTA, have experimented with fuel-cell buses. San Francisco's Municipal Transportation Agency plans to do the same next year, fueling its buses at the airport. The station also will serve automakers such as Daimler and Toyota that are testing fuel cell vehicles in the Bay Area.
SFO Station: http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/04/06/BU3D16U1Q3.DTL&type=business

17. UCLA Awarded $2.1 Million for Hydrogen Station
Vasilios Manousiouthakis, a professor of chemical and biomolecular engineering at the UCLA Henry Samueli School of Engineering and Applied Science, has been awarded $2.1 million in grant funding to build a state-of-the-art hydrogen fueling station on the UCLA campus. A $1.7 million grant from the California Air Resources Board (see 14 above) and a $400,000 grant from the state's Mobile Source Air Pollution Reduction Review Committee will go toward the construction of one of the largest hydrogen fueling stations in California, with a capacity to produce 140 kilograms of hydrogen a day for use in hydrogen-powered vehicles. The station, which will be available for use by the public, will be run by UCLA Engineering's Hydrogen Engineering Research Consortium (HERC), which Manousiouthakis directs.
UCLA: http://www.newsroom.ucla.edu/portal/ucla/ucla-engineering-professor-awarded-88112.aspx

18. NASA Leads Team in Establishing Renewable H2 Fueling Station
NASA's Glenn Research Center is leading a team of industry and university partners in demonstrating a prototype commercial hydrogen fueling station that uses wind and solar power to produce hydrogen from water. The demonstration is part of an economic development program in the Cleveland area. Local workers will design and build the electrolyzer using commercially available components. The station will be located in downtown Cleveland at the Great Lakes Science Center on the south shore of Lake Erie, where it can be powered from the science center's existing wind and solar power sources. The fueling station will generate hydrogen from Lake Erie water for use in a Greater Cleveland Regional Transit Authority bus powered by fuel cells which will be used in revenue service.
NASA: http://www.spaceref.com/news/viewpr.html?pid=27988

19. UCI to Participate in Groundbreaking Residential Fuel Cell Test
UC Irvine's National Fuel Cell Research Center will partner with New York-based Plug Power

to test the viability of the latest generation of fuel cell technology for providing electricity and heat to homes. The $3.4 million partnership, which includes Southern California Gas Company, is a beneficiary of the $42 million in American Recovery and Reinvestment Act funding for fuel cell technology. The three-year project is intended to verify the durability and commercial readiness of Plug Power's combined heat and power GenSys product. Designed for residential and small business applications, GenSys replaces traditional furnaces and boilers, creating electricity and high-quality heating for consumers. The trial fuel cells will be installed in highly visible locations in Southern California.
UCI: http://www.californiahydrogen.org/page.cfm?content=20&display=105

20. New Hydrogen Storage System Created
U.S. scientists say they've created a hydrogen storage system that allows a car's fuel tank to be filled within five minutes for a 300-mile driving range. Purdue University researchers said their system uses metal hydride powder to absorb hydrogen gas. The researchers have created a heat exchanger that circulates coolant through tubes and uses fins to remove heat generated as the hydrogen is absorbed by the powder. Professor Issam Mudawar, who led the project that was funded by the General Motors Corp., said the heat exchanger is critical because the system stops absorbing hydrogen if it overheats. The scientists have applied for three provisional patents related to the technology.
Storage: http://www.upi.com/Science_News/2009/04/02/New-car-hydrogen-storage-system-created/UPI-37251238693191/

21. Air Products' H2 Fueling Technology to Power Nestle Waters' Forklifts
Air Products has announced the signing of a long-term agreement with Nestle Waters North America, Inc. to supply hydrogen and hydrogen fueling station technology for Nestle's Dallas, TX facility, where it will be used to fuel a fleet of approximately 32 Class I hydrogen fuel cell powered forklifts to be used in daily operations. Nestle Waters is in the process of expanding its bottling and warehousing operations in Dallas and is converting its materials handling equipment to hydrogen fuel cell forklifts. The fueling station is to be installed and operational during the second quarter of 2009. Air Products' fueling infrastructure at Nestle includes an outdoor liquid hydrogen storage and compression system, along with multiple indoor fueling dispensers for operator refueling.
Forklifts:
http://news.prnewswire.com/DisplayReleaseContent.aspx?ACCT=104&STORY=/www/story/04-09-2009/0005003489&EDATE=

22. New Way to Split Water into Hydrogen and Oxygen Developed
The design of efficient systems for splitting water into hydrogen and oxygen using sunlight is among the most important challenges facing science today. But man-made systems are very inefficient and often require additional use of sacrificial chemical agents. As such, it is important to establish new mechanisms by which water splitting can take place. Now, a unique approach developed by Prof. David Milstein and colleagues of the Weizmann Institute's Organic Chemistry Department provides important steps in overcoming this challenge. So far, Milstein's team has demonstrated a mechanism for the formation of hydrogen and oxygen from water, without the need for sacrificial chemical agents, through individual steps, using light.
Light: http://www.sciencedaily.com/releases/2009/04/090406102555.htm

23. NFCRC Hosts Workshop on Tri-Gen Stationary Fuel Cells
On June 11, the National Fuel Cell Research Center (NFCRC) at the University of California-Irvine will host a one-day expert workshop to discuss a research project examining the potential of tri-generation stationary fuel cell systems, producing heat, hydrogen and power.

The workshop is part of a larger research effort focusing on the potential to leverage early hydrogen vehicle refueling infrastructure requirements by co-producing hydrogen in stationary fuel cell power applications at select facilities (e.g., military bases, postal facilities, airports, etc.). NFCRC researchers are currently seeking guidance and input on the development of the NREL H2A Power model, which is a new H2A model that determines costs for products from tri-generation fuel cell systems.
NFCRC: http://www.nfcrc.uci.edu/2/default.aspx
NREL: http://www.nrel.gov/

24. CRI to Host Fifth International Hydrail Conference June 11-12
Joining in the global effort to advance the transition of the world's railways from diesel to hydrogen fuel cell power, the Charlotte Research Institute (CRI) is preparing to host the Fifth International Hydrail Conference in 2009. Hydrail is an emerging technology using hydrogen fuel cells instead of traditional diesel-electric generators to power rail equipment traction motors. The earliest hydrail applications will be streetcars and commuter rail equipment. Japan now has two hydrail commuter trains in on-track testing.Transit manufacturers in Japan, France, Germany and China have announced systems to eliminate overhead power feeds or "catenaries" by using other external power feeds.
Hydrail: http://www.publicrelations.uncc.edu/default.asp?id=15&objId=526

25. Send Us Your News; Board of Directors
We welcome important news from our members for inclusion on our website and in next month's report. Thank you for helping build a great organization. The board of directors of the California Hydrogen Business Council is as follows: President, Paul Scott, ScD; Vice President, Mark Abramowitz; Treasurer, Josh Mauzey; Secretary, JJ Weston; President Emeritus, Hank Wedaa; Managing Director, Catherine Rips; Membership Chair, Richard Cromwell III; Program Chair, Fred Silver; Directors at Large, Terry Tamminen, Debbi Smith and Larry Watkins. Ex-officio Government Liaisions - Analisa Bevan and Gerhard Atchelik.
To send news or contact the board, please email: info@californiahydrogen.org.

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