California Hydrogen Business Council
April 2006 Report

Summarized in this issue (with links to complete articles):

1. Welcome New Members

CHBC welcomes new Silver member Ballard Power Systems and new Individual member Susan Schoenung. We appreciate your support!
http://www.ballard.com

2. CHBC News Gets International Distribution

As of last month, CHBC's newsletter is now getting international distribution through the Canadian Hydrogen Association. We thank CHA for passing along important industry news and look forward to future collaborations.
http://www.h2.ca

3. Register Now for May 19 CHBC Meeting

CHBC is excited to present several speakers we've not heard from before at the May 19 General Meeting at AQMD. Included are Nancy Sutley, Deputy Mayor for Energy and the Environment, City of Los Angeles; Professor Andy Frank, one of the fathers of Plug-in Hybrids, UC Davis; and Steve Kukucha, Director of External Affairs and Government Business Development, Ballard Power Systems. Please see the CHBC website for a complete agenda. Pre-registration pricing is in effect. Register now and save!
http://www.californiahydrogen.org/page.cfm?content=48

4. AC Transit Takes the HyRoad
March 13, Alameda-Contra Costa Transit District (AC Transit), formally dedicated the HyRoad demonstration program during a ceremony at AC Transit's Oakland operating division. Highlights of the HyRoad program include operation of three fuel cell hybrid electric buses powered by UTC Power 120 fuel cell systems and ISE hybrid-electric drive systems, a fleet of up to 10 zero-emission Hyundai and Kia fuel cell cars, also powered by UTC Power fuel cells, an on-site Chevron Hydrogen energy station that integrates state-of-the art technologies to reform natural gas into hydrogen, and use of hydrogen fuel cell hand tools by AC Transit mechanics.
http://www.actransit.org/news/articledetail.wu?articleid=0571160f

5. PG&E Receives Three DaimlerChrysler Vehicles
Pacific Gas and Electric Co. (PG&E) has received three hydrogen-powered DaimlerChrysler F-Cell fuel cell vehicles. The vehicles will supply DaimlerChrysler and PG&E with operational experience and technical data that will help improve the next generation of fuel cell vehicles. The data collected will also contribute to the U.S. Department of Energy's Hydrogen Learning Demonstration Project and support the federal Freedom Car Program.
http://www.pge.com/news/news_releases/q1_2006/060215.html

6. California Governor's Hydrogen Initiative Faces Roadblocks
The California Legislative Analyst's Office (LAO), in its Feb. 23 analysis of the governor's proposed Fiscal Year 2006-07 budget, recommends lawmakers reject the administration's request for $6.5 million from the Motor Vehicle Account (MVA) to develop hydrogen-powered vehicle technologies and infrastructure. The LAO considers the request premature because the state has spent little of the money it was allotted in last fiscal year's budget for the Hydrogen Highway initiative, and because the California Air Resources Board (CARB) has not yet submitted a legislatively required progress report to enable lawmakers to evaluate whether continued funding is warranted. (Editor's Note: This is the time to contact your legislators and explain the need for sustained funding!!!)
http://www.californiahydrogen.org/page.cfm?content=20&display=50

7. SB1505 Seeks to Set Environmental Standards for H2 Stations
Introduced by Senator Lowenthal on February 28 and amended on March 28, SB1505 seeks to ensure that the California Hydrogen Highway Network develops in a clean and environmentally responsible manner. To read the bill in its entirety (and we suggest you do), click the link below. Send comments to Jason Mark, Union of Concerned Scientists -- the bill's sponsor, at jmark@ucsusa.org.
http://leginfo.ca.gov/pub/bill/sen/sb_15011550/sb_1505_bill_20060328_amended_sen.pdf

8. BMW to Start Selling Commercial HICE 7-Series In Two Years
Within the next two years, BMW will produce a car running on hydrogen based on the current 7-Series model, a BMW spokesman said, confirming a report in the German Automobilwoche magazine. "The vehicle will be able to run on both hydrogen and petrol because the hydrogen infrastructure is still poor," he added. Production volume would be in the three digit range based on the availability of hydrogen. BMW has for some time successfully tested in Berlin several 7- Series cars running on a hydrogen combustion

engine. German Transport Minister Wolfang Tiefensee and his French counterpart Dominique Perben in early March opened in Berlin the second hydrogen filling station in the city.
http://www.motortrend.com/features/auto_news/2006/112_news12/

9. Honda will Offer a Commercial Next Generation FCX Hydrogen FCV by 2010
Signaling a rapid advancement in its fuel cell vehicle technology, American Honda Motor Co. announced it will begin production in Japan of its next generation FCX hydrogen FCV in three to four years. The FCX concept boasts a fuel cell system that delivers more power in less space, in a unique, low-floor fuel cell platform. The new compact V Flow 100kW fuel cell platform makes possible the lowest-floor platform in an FCV ever. Oxygen and hydrogen flow from the top to the bottom of the fuel cell stack (vertical gas flow) and the fuel cells are arranged vertically in the center tunnel (vertebral layout) for new, high-efficiency fuel cell packaging (volume efficiency). The FCX Concept drive train features three energy-efficient motors- one 80kW in the front and a 25kW space-efficient motor in each rear wheel, leaving ample room for a spacious cabin. Honda has a newly developed hydrogen absorption material in the tank doubles capacity to 5 kg of hydrogen at 5000 PSI, extending cruising range to 350 miles.
http://world.honda.com/news/2006/4060108FCX/

10. NREL Publishes Report on VTA Buses
NREL has published the detailed evaluation of Santa Clara's implementation of three hydrogen fuel cell buses and the Air Products liquid hydrogen storage and gaseous fueling. The study includes helpful details about infrastructure, codes and standards, emergency responder issues, fueling and transportation. More than 300 successful fuel cell bus and light-duty vehicle fills have been achieved with no injuries or reportable incidents. Until April 2005, it took approximately 18-24 minutes to fuel a fuel cell bus. Since then, when Air Products put the new cryogenic compressor online, fueling time has been reduced to an average of 10-14 minutes. Hydrogen fuel cost an average of $8.56 per kg throughout the evaluation period.
http://www.eere.energy.gov/hydrogenandfuelcells/tech_validation/pdfs/vta_prelim_eval_results.pdf

11. GE Targets $3/kg Hydrogen with New Electrolysis Technology
Researchers at GE say they've come up with a less expensive, easy-to-manufacture apparatus that can directly produce hydrogen via electrolysis for about $3 per kilogram. The core problem in improving electrolyzers for hydrogen manufacture is not how to improve the fundamental conversion efficiency, says Richard Bourgeois, an electrolysis project leader at GE Global Research in Niskayuna, NY. Bourgeois' research team came up with a way to make future electrolyzers largely out of plastic. They used a GE plastic called Noryl that is extremely resistant to the highly alkaline potassium hydroxide. Inside the plastic housing, metal electrodes still do the same job. But because GE is using less electrode material, the reactivity of the electrodes' surfaces is improved.
http://www.technologyreview.com/BizTech/wtr_16523,295,p1.html

12. UTC Power Teams with Van Hool on a Fuel Cell Bus for Europe
The bus will be delivered to DeLijn, the largest bus fleet operator in Belgium, where it will operate in Belgium for six months before being leased to other transit agencies in

Europe. UTC Power President Jan van Dokkum said, "We believe 'try-before- you-buy' lease opportunities will accelerate sales of these zero-emission buses equipped with our PureMotion(TM) 120 fuel cells. Similar Van Hool buses with our fuel cell system are in revenue service today at AC Transit and SunLine Transit Agency operations in Oakland and Palm Springs, California. The SunLine bus is operating up to 16 hours a day."
http://www.calstart.org/dailynewsnotes/daily_nns_detail.php?id=8122

13. Hydrogenics Delivers Fuel Cell Backup Generator to Bell Canada
Hydrogenics Corp. has successfully delivered and commissioned a hydrogen fuel cell backup power generator at a Bell Canada telecommunication site in Burlington, Ontario. The backup power generator, developed in collaboration with Emerson Network Power, uses Hydrogenics' 8 kW HyPM XR fuel cell power module. This project, announced in 2005 as part of Toronto's Hydrogen Village initiative, was made possible through an investment from the Government of Canada's 'Hydrogen Early Adopters' program (h2EA).
http://www.hydrogenics.com/ir_newsdetail.asp?RELEASEID=187832

14. Alan Lloyd, Former Secretary of Cal EPA, Joins Intl Council on Clean Transportation as President
Dr. Alan C. Lloyd, former Secretary of the California Environmental Protection Agency (Cal/EPA) and former Chairman of the California Air Resources Board (ARB), has joined the ICCT as president. Dr. Lloyd was one of the driving forces behind zero and near-zero emission technology mandates in California, spurring a global research and development effort on advanced technologies, such as hybrid, fuel cell and electric vehicles, that we continue to benefit from and improve upon today. From 1988 to 1996, Dr. Lloyd was the chief scientist at the South Coast Air Quality Management District, where he managed the Technology Advancement office that funded public-private partnerships to stimulate advanced technologies and cleaner fuels. Former chair of the California Fuel Cell Partnership and California Stationary Fuel Cell Collaborative, he is a long-time member of the California Hydrogen Business Council.
http://www.theicct.org/documents/Alan_Lloyd_President.pdf

15. Clean Cities 2006, May 7-10
May 7-10, the annual Clean Cities Congress and Expo will be held in Phoenix. The annual event features over 100 speakers and is expected to draw 1,500 participants for workshops, session, networking and a trade show. More than 25 sessions spotlight topics including the energy bill, technology innovations, government funding, vehicle emissions and health, EPA regs, fuel cells, hybrid advances, biofuels, tax credts, and the economics of natural gas, ethanol, propane and biodiesel.
http://www.afvi.org/PhoenixCongress2006/

16. Clean Energy Trends 2006
This new report is now available. The growth of clean-energy markets reflects its growing acceptance. Global wind and solar markets reached $11.8 billion and $11.2 billion in 2005 -- up 47% and 55%, respectively, from a year earlier. The market for biofuels hit $15.7 billion globally in 2005, up more than 15% from the previous year. For the first time in modern history, clean-energy technologies are becoming cost-competitive with their 'dirtier' counterparts. Consider wind power. It is now one of the least expensive and

most easily deployed sources of new generating capacity. Five trends are detailed. http://www.cleanedge.com/reports/trends2006.pdf

17. Future CHBC Meeting Dates - Save These Dates
Please mark your calendars now for these upcoming CHBC meetings: May 19, 2006 General Meeting at South Coast AQMD; September 15, 2006 General Meeting, location to be announced; December 7, 2006 Special Dinner Meeting and Holiday Party, location to be announced.

18. Silver and Gold Member Benefits
CHBC gives a big thanks to Gold Member Hydrogenics and to our growing list of Silver Members, all major contributors to our growth and success. Gold Membership includes two free registrants to all CHBC meetings for one year as well as five reduced-price registrations and other marketing benefits. To inquire about membership, contact Managing Director Catherine Rips, info@californiahydrogen.org.
http://www.californiahydrogen.org/page.cfm?content=61
http://www.californiahydrogen.org/page.cfm?content=33

19. 2006 CHBC Board of Directors
President - Henry Wedaa; Vice President - Paul Scott, ScD; Managing Director - Catherine Rips; Secretary - Josh Mauzey; Treasurer/Communications Chair: Jerald Cole; Membership Chairman - Mark Abramowitz; Northern California Membership Chair & Newsletter - John Addison; Central California Membership Chair - Gene Johnson; Program Chairman - Henry Wedaa; Director at Large - Gary Dixon; Director at Large - Jon Slangerup; Director at Large - John Williams, PE; Ex-Officio Government Liaison - Shannon Baxter-Clemmons, PhD. To contact the board, please email: info@californiahydrogen.org.

20. Send Us Your News
For international distribution of your news, send it our way! We welcome important news from our members for inclusion on our website and in next month's report. Please send to: info@californiahydrogen.org. Thank you for helping build a great organization.

CHBC Report Publisher, John Addison
Editor, Catherine Rips