

**California Hydrogen Business Council  
December 2003 Report**

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**1. New York State Hydrogen "HI WAY"**

\$2 million in federal support has been awarded to establish the Hydrogen "HI WAY" Initiative in New York State. Funding for the project, which will create a hydrogen energy infrastructure validation platform across the state, is included in the Conference Report for Fiscal Year 2004 Energy and Water Appropriations. A team of industry, academic, state and federal partners will come together under the initiative to create the infrastructure and end-use technology to support production of hydrogen energy.

<http://www.fuelcelltoday.com/FuelCellToday/IndustryInformation/IndustryInformationExternal/NewsDisplayArticle/0,1602,3677,00.html>

**2. Stuart Energy receives groundbreaking order from South Coast Air Quality Management District for Hydrogen Energy Station in California**

Long Beach, California (20th Electric Vehicle Conference), November 17, 2003 - Stuart Energy Systems Corporation (TSX: HHO) announced today that it has secured a groundbreaking contract from the South Coast Air Quality Management District (AQMD), based in Diamond Bar, Calif., for a Hydrogen Energy Station with both vehicle fueling and power generation capabilities (HESfp). Using Stuart Energy's proprietary water electrolysis technology, the HESfp will generate and dispense zero-emission hydrogen fuel to a fleet of AQMD hydrogen-powered vehicles. The AQMD also plans to evaluate and demonstrate clean hydrogen-based power applications such as peak shaving and back-up power using the same HESfp infrastructure. The station, which is expected to be delivered to SQACMD's headquarters in early 2004, will represent the first fully integrated, multi-purpose HESfp in California.

[http://www.stuartenergy.com/media\\_center/press\\_releases/press\\_nov17.html](http://www.stuartenergy.com/media_center/press_releases/press_nov17.html)

**3. Hydrogen and Fuel Cell Vehicle Programs at ITS-Davis.**

University of California-Davis' Institute of Transportation Studies (ITS-Davis) hosted several research and demonstration programs on transportation technology. These included unveiling ITS-Davis' first Federal Transit Agency hydrogen enriched natural gas bus, which will be powered by hydrogen and compressed natural gas (CNG) blended fuel prepared on-site using Air Products' proprietary equipment. Collier Technologies provided conversion of the existing CNG engine to operate on HCNG in an ultra-lean burn mode to reduce controlled exhaust emissions while maintaining engine power output. The purpose of the program is to validate clean, advanced hydrogen fuel technologies in a transit bus application. A second Air Products

technology to be used in the program is the company's Series 100 hydrogen-fueling system, which is the cornerstone of Northern California's newest hydrogen fueling station at UC-Davis. The hydrogen will be provided to Toyota Fuel Cell Hybrid Vehicles and other ongoing fuel cell vehicle (FCV) research programs. The fueling technologies will be supplied with hydrogen from a storage tank sited at the fueling station.

[http://www.airproducts.com/pressroom/companynews/current/areaofinterest/markets/hydrogenfuelcells/04006\\_20oct03.htm](http://www.airproducts.com/pressroom/companynews/current/areaofinterest/markets/hydrogenfuelcells/04006_20oct03.htm)

<http://www.bestemissions.com/index.html>

#### **4. Honda Develops Home Energy Station.**

Honda R&D Co., Ltd. has installed an experimental Home Energy Station (HES) that generates hydrogen from natural gas for use in fuel cell vehicles while supplying electricity and hot water to the home. The new HES system, jointly developed with Plug Power Inc., is located on the grounds of Honda R&D America in Torrance, California, and will undergo experiments in hydrogen production, storage and fueling, as part of ongoing research into hydrogen energy sources.

[http://biz.yahoo.com/prnews/031002/lath029\\_1.html](http://biz.yahoo.com/prnews/031002/lath029_1.html)

#### **5. DTE to Build Hydrogen Energy Park in Michigan.**

DTE Energy is partnering with the U.S. Department of Energy, the state of Michigan and the city of Southfield to develop, build and operate a hydrogen energy pilot project that will create hydrogen gas from tap water and use that gas in fuel cell generators and to refuel fuel cell vehicles. The \$3 million, five-year pilot project will result in a system capable of delivering about 100,000 kilowatt-hours of electricity per year – enough to power a small office park or about 20 homes – and enough compressed hydrogen gas to fuel three vehicles per day.

<http://www.dteenergy.com/pressRoom/pressReleases/hydrogenPowerPark2.html?searchType=&searchValue=DTE+Energy>

#### **6. Proton Energy to Deliver Solar-Powered Hydrogen System to UNLV.**

Proton Energy Systems, Inc. has received a contract award from the University of Nevada Las Vegas Research Foundation (UNLVRF) to design, build, integrate, and commission a hydrogen system utilizing its HOGEN® RE hydrogen generator and a purchased PV solar panel array and storage tank.. Proton will cost share 50 percent of the \$1,376,640 contract award and can receive up to \$688,320 in payments from UNLVRF.

<http://www.protonenergy.com/index.php/html/companyinfo/news/pressreleases.html>

#### **7. U.S. Fuel Cell Council honors CARB Chairman Dr. Alan Lloyd**

The California Air Resources Board (CARB) recently announced the recognition by the U.S. Fuel Cell Council CARB chairman Alan Lloyd as a "Fuel Cell and Hydrogen Pathfinder," acknowledging his efforts in "leading the acceleration of fuel cell vehicles and hydrogen technologies." According to CARB, this award recognizes Dr. Lloyd's "long commitment to a hydrogen future and his stewardship as chairman of both [CARB] and California Fuel Cell Partnership for 2003." Previously, Lloyd served as executive director of the Energy and Environmental Engineering Center at the Desert Research Institute (DRI) in Reno, NV, and was chief scientist for the South Coast Air Quality Management District (SCAQMD). "I am pleased and honored to be recognized for the work on hydrogen and fuel cells that I have been privileged to foster at [CARB] and [SCAQMD] as well as at [DRI]," said Lloyd. "It is critical that hydrogen and fuel cell technologies be advanced to attack smog and gain energy diversity as we move toward zero emissions." Lloyd is also a co-founder of the California Stationary Fuel Cell Collaborative, a group of organizations dedicated to commercializing stationary fuel cells for power applications in California.

#### **8. Bush signs Budget with Hydrogen Cuts**

On December 1, President Bush signed into law the Consolidated Appropriations Act, 2004. In so doing, The President approved the DOE Hydrogen Program budget as outlined in the FY 2004 ENERGY AND WATER DEVELOPMENT APPROPRIATIONS CONFERENCE REPORT

released by the House Appropriations Subcommittee on November 5th. Originally the budget request from the DOE was for \$88 million. The final budget, which can be found on page 140 of House Report 108-357 allocates \$78 million for this important program. However, the conference report itself contains \$37.2 million in congressional earmarks. After other adjustments, including FY 2003 carryovers, the budget available for the DOE to fund research authorized under the Hydrogen Future Act of 1996 comes to about \$32 million. There has been some concern expressed that this will seriously curtail anticipated R&D efforts in favor of more heavily cost shared technology demonstration programs.

#### **9. Hydrogen Increases Foothold in Combustion Science and Engineering**

Important papers were presented at the Western States Section of The Combustion Institute dealing with research into practical applications of hydrogen in combustion systems. Dr. Jacqueline Chen of Sandia National Laboratories described combustion strategies for hydrogen-fueled diesel-cycle engines. Reinhard Seiser of UC San Diego presented numerical modeling and experiments on hydrogen ignition phenomena relevant to internal combustion engines. Professor Christopher Cadou of the University of Maryland described guidelines for developing micro-scale hydrogen-fueled engines that might be used to efficiently generate useful work and energy for future miniaturized devices ranging from unmanned aerial vehicles to laptop computers. At this point, according to Professor Cadou, the major obstacle is a cost-effective and light-weight means for storing hydrogen.

[www.wssci.org](http://www.wssci.org) or [www.combustioninstitute.org](http://www.combustioninstitute.org)

#### **10. Industry Coalition Launches National Fuel Cell Bus Initiative.**

WestStart-CALSTART is coordinating the National Fuel Cell Bus Technology Initiative – a six-year, \$150-million development effort to support the research, development and demonstration of fuel cell and hydrogen technology. The effort will address fuel cell and hydrogen vehicle technology commercialization challenges, focus on reducing technical and cost barriers for fuel cell and hydrogen use in the transit sector, and use transit demonstrations as rolling classrooms for fuel cell and hydrogen education.

[http://www.calstart.org/info/specialannouncementsfyi/coalition\\_of\\_industry\\_leaders\\_launches\\_national\\_fuel\\_cell\\_bus](http://www.calstart.org/info/specialannouncementsfyi/coalition_of_industry_leaders_launches_national_fuel_cell_bus)

#### **11. International Hydrogen Drive from Mexico to Canada**

December 9, 2003. Dennis Weaver and his wife Gerry hosted the premier of a documentary video of The 2003 Drive to Survive. The event was attended by cognoscenti of the hydrogen economy including politicians, businesspeople, entrepreneurs, television and film celebrities, and the press. The 28-minute video shown at the reception is planned for wide distribution to schools, institutions and interested organizations worldwide. Dennis Weaver also announced the International Hydrogen Drive scheduled to take place from June 28 through July 12, 2004 from Mexico to Canada. Interested participants and sponsors, or those seeking more information about the International Hydrogen Drive, should contact Scott Fischler at [scott@netozoic.com](mailto:scott@netozoic.com) or visit the drive website, launching soon at [www.HydrogenDrive.com](http://www.HydrogenDrive.com). For more information about the 2003 Drive to Survive video or the Institute of Ecolonomics contact IOE at 970-626-3820, email at [IOE@ecolonomics.org](mailto:IOE@ecolonomics.org) or visit the web site at <http://www.ecolonomics.org/>

#### **12. BOC vehicle gets 1,200 miles on one kilogram of hydrogen**

BOC, one of the world's leading industrial gases companies, displayed a car that can travel up to 1,200 miles on one kilogram of hydrogen -- equivalent to one gallon of gasoline -- at the technology showcase that accompanied a key hydrogen energy meeting in Washington, D.C. Spencer Abraham, U.S. secretary of energy, visited BOC's booth on his tour through the technology showcase. The 132-pound car, which emits only water as a combustion by-product, is known as the BOC GH2OST. Earlier this year, the car won the Best Renewable Energy Vehicle award in the Shell Eco-Marathon Challenge at the Grampian Transport Museum in Scotland.

[http://www.boc.com/news/article\\_detail.cfm?ID=611](http://www.boc.com/news/article_detail.cfm?ID=611)

#### **13. California Hydrogen Business Council (CHBC) January 23 Meeting**

Join an expected 150 leaders in the hydrogen business at South Coast Air Quality Management District, Diamond Bar, CA for this exciting meeting on January 23, from 9 to 5. Presentations will address commercialization, government, and marketing success in hydrogen fuel cell-power, hydrogen production, delivery, storage, and infrastructure. Add this meeting to your calendar. Save money by paying in advance. Advance registration is \$25 for Members and \$75 for Non-Members. After January 16th the cost goes up to \$35 for Members and \$100 for Non-members. Contact Melissa Stock by mail, telephone or e-mail to ensure your reservation. Payment may be made by check, Visa, M/C or AMEX. Contact information is provided below.

#### **14. Corporate Venturing & Strategic Investing Conference**

Association of Strategic Alliance Professionals. February 3 - 5, in Rancho Mirage, California, there will be a conference of strategic alliance and private equity investment executives. This conference will focus on how Fortune 1000 corporate investors can further develop their investing and strategic alliance programs and navigate investing in this challenging market. The conference will highlight successful alliance programs and detail how they are managing their existing portfolio companies; how they are adding value by returning to the corporate development focus of the core business and which niches they are targeting. At the conference, CHBC Board Member, John Addison, will present "Breakthrough Alliances for Breakthrough Innovation." John Addison, author of Revenue Rocket, will share the new strategies for commercializing disruptive technology, achieving market leadership, and partner excellence. This session will include a panel of executives who will share how they have created successful partnerships in the hydrogen and fuel cell market.

<http://www.strategic-alliances.org/>

#### **15. CHBC Silver Members**

California Hydrogen Business Council gives a big thanks to these Silver Members who are major contributors to our growth and success.

- Air Quality Management District
- Air Products and Chemicals
- Apollo Power
- BOC Gases
- California Air Resources Board
- Clean Energy
- Collier Technologies
- EmeraChem
- General Electric
- Hydrogen Car Company
- Praxair
- Stuart Energy Systems

#### **16. CHBC Board of Directors**

Members have requested CHBC Board contact information. Feel free to contact us at [info@californiahydrogen.org](mailto:info@californiahydrogen.org).

#### **17. Be a member of the California Hydrogen Business Council**

Be part of the organization that is on the "leading edge" of making the hydrogen economy a reality. The California Hydrogen Business Council (CHBC) provides the link between hydrogen-technology developers, businesses, energy leaders, government, and infrastructure providers. You are invited to join the California Hydrogen Business Council (CHBC). Be involved with the leaders in making the hydrogen economy a reality. CHBC is a non-profit organization which offers a common meeting ground for discussing the technologies, methodologies, and opportunities in the hydrogen economy.

Individual membership is \$200 per year. Organizations can send five people per meeting at lower rates, plus benefit from added marketing visibility, being Silver Members for \$1,000 per year. Send your application today with a check made payable to the "California Hydrogen Business Council," or call with your credit card.

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