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**FUEL CELL CONNECTION – August 2009 Issue**  
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**News on U.S. Government Fuel Cell Programs**  
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*1. Study Helps Scientists Better Understand Biological Hydrogen Production*

A study by scientists at Pacific Northwest National Laboratory and Washington University in St. Louis is helping researchers better understand biological production of hydrogen. In hydrogen-producing plants, algae and blue-green bacteria, it is the degradation and regeneration of a large protein complex, called Photosystem II, which results in the production of hydrogen. The study allowed the scientists to better understand how the regeneration process works.

<http://www.ornl.gov/info/news/pulse/no293/story1.shtml>

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*2. Fuel Cell Hybrid Vehicle Completes Government Field Evaluation*

The U.S. Department of Energy (DOE), the Savannah River National Laboratory, and the National Renewable Energy Laboratory have completed their evaluation of a Toyota Highlander Fuel Cell Hybrid Vehicle – Advanced (FCHV-adv) as part of a government-funded field evaluation in California. The FCHV-adv achieved an estimated range of 431 miles on a single full tank of compressed hydrogen gas, and an average fuel economy of 68.3 miles/kg during the day-long trip.

<http://pressroom.toyota.com/pr/tms/toyota/toyota-advanced-fuel-cell-hybrid-97782.aspx>

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*3. NETL Supports Opening of Hydrogen Fueling Station at West Virginia Airport*

The National Energy Technology Laboratory (NETL) supported the construction and operation of a hydrogen production and dispensing facility at Yeager Airport in Charleston, West Virginia. The facility uses coal-generated grid electricity to split water to produce the hydrogen. About 300 gallons of water is used to produce up to 12 kilograms of hydrogen per day, which can completely refuel three of the fuel cell and hydrogen vehicles being demonstrated in the area.

[http://www.fossil.energy.gov/news/techlines/2009/09057-Yeager\\_Airport\\_Ribbon\\_Cutting.html](http://www.fossil.energy.gov/news/techlines/2009/09057-Yeager_Airport_Ribbon_Cutting.html)

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*4. DOE Offers Online Hydrogen Training Course for Code Officials*

DOE is offering a free, online “Introduction to Hydrogen for Code Officials” training course, which includes short quizzes at the end of each of four modules. The course also features a Library section with related links and a glossary of terms.

[http://www.hydrogen.energy.gov/code\\_official\\_training.html](http://www.hydrogen.energy.gov/code_official_training.html)

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*5. NASA and CAFE Launch Green Aircraft Challenge*

The National Aeronautics and Space Administration (NASA) and the Comparative Aircraft Flight Efficiency (CAFE) Foundation announced the 2011 Green Flight Challenge, a contest where teams will develop an aircraft that can average at least 100 mph on a 200-mile flight while achieving greater than 200 passenger miles per gallon. The top prize is \$1.5 million. The

challenge will be conducted from July 10 to July 17, 2011, at the CAFE Flight Test Center in Santa Rosa, California. Teams may begin registering now.  
[http://cafefoundation.org/v2/main\\_home.php](http://cafefoundation.org/v2/main_home.php)

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*6. DOE and DLA Mark 7,000+ Fuel Cell Forklift Fuelings at DOD Distribution Depot*  
DOE and the Defense Logistics Agency (DLA) surpassed 7,000 fuel cell forklift fuelings in August at the Department of Defense Distribution Depot (DDSP) in Susquehanna, Pennsylvania. The 40 forklifts in use are the first installment of a total of 100 fuel cell forklifts that will be deployed by DLA across the country.  
[http://apps1.eere.energy.gov/news/progress\\_alerts.cfm/pa\\_id=228](http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=228)

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**RFP/Solicitation News**  
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*7. DOE SBIR/STTR Funding Opportunity Announced*  
DOE issued its Annual Phase I Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Funding Opportunity Announcement. Approximately \$8.5 million is available for Phase I awards of up to \$150,000 per project, with an emphasis on clean energy technologies. Research areas of interest include smart controllers for smart grid applications, advanced manufacturing processes, and advanced gas turbines and materials. Proposals are due September 4, 2009.  
<http://sbir.er.doe.gov/sbir/>

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*8. Army Issues BAA for 300-Watt Fuel Cell Battery Charger*  
The U.S. Army has issued a Broad Agency Announcement (BAA), with funding from the American Recovery and Reinvestment Act, to solicit project proposals for development of a 300-Watt Squad Level Fuel Cell System to serve as a portable battery charger capable of charging up to six batteries simultaneously. Proposals are due September 11, 2009.  
<https://www.fbo.gov/index?s=opportunity&mode=form&id=c55ceb47302ec5d565ada5b7aede06a5&tab=core&cvview=1>

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*9. DOE Issues Loan Guarantee Solicitation for Advanced, Clean Energy Projects*  
DOE has issued a "Loan Guarantee Solicitation for Innovative Energy Efficiency, Renewable Energy and Advanced Transmission and Distribution Technologies," including Hydrogen and Fuel Cell Technologies as Category 6 in the listing of Eligible Projects. Approximately \$8.5 billion in loan guarantee funding is provided through the American Recovery and Reinvestment Act, which authorized a new program for rapid deployment of renewable energy and electric power transmission projects. The first Part I application due date is September 14, 2009. Additional due dates for applications will be announced until all funding is allocated.  
<http://www.lgprogram.energy.gov/>  
<http://www.lgprogram.energy.gov/2009-ren-energy-sol.pdf>

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*10. NYSERDA Issues PON for Advanced Transportation Technologies*  
The New York State Energy Research and Development Authority (NYSERDA) has issued a \$2 million Program Opportunity Notice (PON) to support development, demonstration and commercialization of advanced transportation technologies. Maximum funding per project is \$500,000 for R&D projects that will produce a working prototype; \$150,000 for R&D efforts "crucial to the development of a marketable product" but which will not result in a prototype; and \$50,000 for feasibility studies. Deadline for proposals is September 16, 2009.

<http://www.nyserda.org/funding/1520pon.asp>

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*11. Army Solicitation for Efficient Powertrain Technologies for 7- to 9-Ton Vehicles*

The U.S. Army issued a solicitation for proposals for efficient powertrain technologies to reduce fuel consumption, reduce noise, and provide exportable electrical power for vehicles weighing 7 to 9 tons. The Army expects to award a single contract of approximately \$1.32 million for FY2010, with a total estimated funding level of \$7 million for the entire four-year program. Proposals are due October 2, 2009.

[https://www.fbo.gov/index?s=opportunity&mode=form&id=fa67b713e8ffc7ca9384c4fe8edb722d&tab=core&\\_cview=0](https://www.fbo.gov/index?s=opportunity&mode=form&id=fa67b713e8ffc7ca9384c4fe8edb722d&tab=core&_cview=0)

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*12. Army Solicitation for Efficient Powertrain Technologies for 15- to 19-Ton Vehicles*

The U.S. Army issued a solicitation for proposals for efficient powertrain technologies to reduce fuel consumption, reduce noise, and provide exportable electrical power for vehicles weighing 15 to 19 tons. The Army expects to award a single contract of approximately \$1.32 million for FY2010, with a total estimated funding level of \$7.8 million for the entire four-year program. Proposals are due October 9, 2009.

[https://www.fbo.gov/index?s=opportunity&mode=form&id=888ae9b8423bd8f827222f262129a1f7&tab=core&\\_cview=1](https://www.fbo.gov/index?s=opportunity&mode=form&id=888ae9b8423bd8f827222f262129a1f7&tab=core&_cview=1)

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*13. Army Solicitation for Efficient Powertrain Technologies for 20- to 30-Ton Vehicles*

The U.S. Army has issued a solicitation for proposals for efficient powertrain technologies to reduce fuel consumption, reduce noise, and provide exportable electrical power for vehicles weighing 20 to 30 tons. The Army expects to award a single contract of approximately \$1.32 million for FY2010, with a total estimated funding level of \$9.67 million for the entire four-year program. Proposals are due October 16, 2009.

[https://www.fbo.gov/index?s=opportunity&mode=form&id=2d929ee300a47f249e3f87bfd0a0facc&tab=core&\\_cview=1](https://www.fbo.gov/index?s=opportunity&mode=form&id=2d929ee300a47f249e3f87bfd0a0facc&tab=core&_cview=1)

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*14. DOE/Treasury Announce \$2.3 Billion Advanced Energy Manufacturing Tax Credit Program*

The U.S. Departments of Energy and Treasury (DOE and DOT) announced a new program, funded through the American Recovery and Reinvestment Act, to provide \$2.3 billion in tax credits to support new, expanded, or re-equipped domestic manufacturing facilities, specifically advanced energy manufacturing projects. Projects must be completed within four years of their tax credit acceptance. Preliminary applications are due September 16, 2009, followed by a final application deadline of October 16, 2009.

<http://www.energy.gov/recovery/48C.htm>

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*15. DOE/Treasury Program to Fund Renewable Energy Projects Now Accepting Applications*

A new program, created by DOE and DOT and funded through the American Recovery and Reinvestment Act, is now accepting applications from companies seeking funding to create and place in service renewable energy projects. Approximately \$3 billion in funding is available for distribution as direct payments to the companies, in lieu of tax credits. The program expects to support approximately 5,000 projects. Applications will be accepted until all funding is allocated.

[http://apps1.eere.energy.gov/news/progress\\_alerts.cfm/pa\\_id=217](http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=217)

<https://treas1603.nrel.gov/>

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**Contract / Funding Awards**  
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*16. DOE Awards \$377 Million for 46 Energy Frontier Research Centers*

DOE has awarded \$377 million for the creation of 46 new Energy Frontier Research Centers (EFRCs), which will work toward “fundamental advances in solar energy, biofuels, transportation, energy efficiency, electricity storage and transmission, clean coal and carbon capture and sequestration, and nuclear energy.” EFRCs that will work on fuel cell or hydrogen related topics include the Center for Electrocatalysis, Transport Phenomena and Materials for Innovative Energy Storage EFRC, and the Nanostructured Interfaces for Energy Generation, Conversion, and Storage EFRC.

<http://www.energy.gov/news2009/7768.htm>

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*17. Clean Cities Funding Awards Include Hydrogen Station Project*

DOE announced nearly \$300 million in Clean Cities Grants to support clean fuels projects across the country, including a \$13.19 million grant to the Greater New Haven Clean Cities Coalition’s Connecticut Clean Cities Future Fuels Project, which will include deployment of a hydrogen fueling station.

[http://apps1.eere.energy.gov/news/progress\\_alerts.cfm/pa\\_id=232](http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=232)

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*18. DOE to Provide Technical Assistance for Government to Implement Efficiency Technologies*

DOE announced it will provide \$20 million in technical assistance to help federal agencies implement energy efficiency technologies across the federal government. DOE’s Federal Energy Management Program will provide expertise from the National Laboratories for projects such as renewable energy, smart grids, sustainable buildings, and energy and water retrofits. The fifteen agencies benefitting from the assistance include the Architect of the Capital, the Department of Homeland Security, the Department of Veterans Affairs and the National Archives.

[http://apps1.eere.energy.gov/news/progress\\_alerts.cfm/pa\\_id=221](http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=221)

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*19. Army Provides Follow-Up Funding for Body-Worn Fuel Cell Power Source*

The U.S. Army has awarded a follow-up order to DuPont and SFC Smart Fuel Cell AG for development of the M-25 fuel cell, which is part of an integrated body-worn power source carried by a soldier for multi-day missions. The cost of the M-25 fuel cell project, which was awarded \$1 million in October 2008, is approximately \$3 million.

<http://www.sfc.com/en/sfc-press-release/11099-dupont-und-sfc-smart-fuel-cell-ag-liefere-portables-brennstoffzellensystem-fuer-u.s.-army.html>

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*20. Air Force Awards \$622K for SOFC Production Deposition System*

The Department of the Air Force has awarded a \$622,896 contract to Optomec under the “Advance Manufacturing Techniques for Large Area Solid Oxide Fuel Cells and Other Energy Applications” solicitation. Optomec will use the funding to scale-up and enhance the capabilities of a deposition system for the production of large area SOFCs and other energy related applications.

<https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=c5326c1c66d07ead748e2a0059f7ac52>

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*21. Army Awards Contracts to UltraCell for Fuel Cell Systems*

The U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC) awarded a contract to UltraCell Corporation for a project to build fuel cell systems based on the company’s XX55™ reformed methanol fuel cell technology. The goal of the project is to produce working fuel cell systems capable of delivering greater than 50 watts of continuous power for a 72-hour off-grid mission. UltraCell was also selected by the Agile Integration Demo

and Experimentation (AIDE) program, which is part of the Army's Research, Development and Engineering Command (RDECOM). For AIDE, UltraCell will build 30 fuel cell systems based on the XX55™ fuel cell technology, which will be field tested by U.S. soldiers for three months.  
[http://www.ultracellpower.com/assets/PressReleases2009/July%2014,%202009\\_CERDEC.pdf](http://www.ultracellpower.com/assets/PressReleases2009/July%2014,%202009_CERDEC.pdf)  
[http://www.ultracellpower.com/assets/PressReleases2009/July%2014,%202009\\_AIDE.pdf](http://www.ultracellpower.com/assets/PressReleases2009/July%2014,%202009_AIDE.pdf)

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*22. DOT Selects ITS-DAVIS for Sustainable Transportation Energy Pathways Program*  
DOT announced it will award a \$60,000 contract to the Institute of Transportation Studies at the University of California, Davis (ITS-DAVIS) for the "University of California Davis Sustainable Transportation Energy Pathways (STEPS) Program." Under the program, DOT will purchase studies, reports and modeling to address technical, operational, and logistical issues related to the transition to an alternative fuel-based economy.  
<https://www.fbo.gov/index?s=opportunity&mode=form&id=223f809456bdc075d437196a7e3f91ee&tab=core&cvview=0>

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**State Activities**  
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*23. California Seeks Comments on PIER Draft Advanced Generation Roadmap*  
The California Energy Commission (CEC) is seeking comments and input from stakeholders on a draft Advanced Generation Roadmap for the Public Interest Energy Research (PIER) Program Advanced Generation Program. The draft report was discussed at an August 2009 meeting, but public comments are still being accepted and posted on the CEC web site. Presentations from the August meeting are also available online. A stakeholder WebEx meeting is scheduled for September 3, 2009, to further discuss the draft roadmap, including recommended research issues for PIER Advanced Generation funding.  
[http://www.energy.ca.gov/2009\\_energypolicy/documents/index.html#081009](http://www.energy.ca.gov/2009_energypolicy/documents/index.html#081009)

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**Industry News**  
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*24. Medis Fuel Cell Products Now Available on Costco.com*  
Medis Technologies is now selling its 24/7 Xtreme Portable Fuel Cell Power Solution and Fuel Cell Power Emergency Kit, along with replacement fuel cells, on the Costco.com web site in the Electronics section under the category of Batteries, Charging & Portable Power.  
<http://www.medistechnologies.com/Portals/Medistech/DataFiles/Documents/082509%20Medis%20Costco.pdf>

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*25. Seminars For Engineers Announces October Fuel Cell Seminar*  
Seminars For Engineers, a company that specializes in technical courses for engineers, announced a two-day seminar titled "Principles and Applications of Fuel Cell Technologies," which is scheduled for October 7-8, 2009, in Hartford, Connecticut. The seminar is geared towards engineers, material scientists, and technical managers interested in energy efficiency, energy storage, and related fields.  
<http://www.seminarsforengineers.com/fuelcell/>

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material and the inherently conductive polymer. The electrode is suitable for use with an ion-conducting membrane and fuel such as hydrogen, an alcohol or borohydride to form a fuel cell. The electrode is also suitable for use with an anode, such as a reactive metal and an electrolyte to form a battery.”

[http://www.wipo.int/pctdb/en/fetch.jsp?LANG=ENG&DBSELECT=PCT&SERVER\\_TYPE=19-10&SORT=41273797-KEY&TYPE\\_FIELD=256&IDB=0&IDOC=1653241&C=10&ELEMENT\\_SET=B&RESULT=1&TOTAL=1&START=1&DISP=25&FORM=SEP-0/HITNUM,B-ENG,DP,MC,AN,PA,ABSUM-ENG&SEARCH\\_IA=AU2009000135&QUERY=%28FP%2fWO%2f2009%2f097654%29](http://www.wipo.int/pctdb/en/fetch.jsp?LANG=ENG&DBSELECT=PCT&SERVER_TYPE=19-10&SORT=41273797-KEY&TYPE_FIELD=256&IDB=0&IDOC=1653241&C=10&ELEMENT_SET=B&RESULT=1&TOTAL=1&START=1&DISP=25&FORM=SEP-0/HITNUM,B-ENG,DP,MC,AN,PA,ABSUM-ENG&SEARCH_IA=AU2009000135&QUERY=%28FP%2fWO%2f2009%2f097654%29)

In a report published online by *Advanced Materials* on Aug. 12, a team led by chemistry professors Alexander Star and Stéphane Petoud in the University of Pittsburgh 's School of Arts and Sciences describe the creation of nanosized capsules that are universally compatible with a range of substances, particularly related to medicine and energy. Energy applications include the storage of lithium and hydrogen in batteries and fuel cells. Pitt graduate chemistry student Brett Allen was the paper's lead author.

<http://www.news.pitt.edu/m/FMPro?-db=ma&-lay=a&-format=d.html&id=3790&-Find>

Singapore's Land Transport Authority will collaborate with Nanyang Technical University (NTU) and SBS Transit to develop the country's first fuel cell bus. The partnership is supported by the Singapore Urban Transport Solution program, which aims to establish Singapore as a center for world-class urban transport solutions. The bus is expected to be ready by next March and will be used during the Youth Olympic Games in August, according to NTU's Website.

[http://www.lta.gov.sg/corp\\_info/index\\_corp\\_press.htm](http://www.lta.gov.sg/corp_info/index_corp_press.htm)

[http://news.ntu.edu.sg/pages/newsdetail.aspx?URL=http://news.ntu.edu.sg/news/Pages/Media2009\\_Aug14.aspx&Guid=dc14a366-3a04-44d5-a376-0529f9b6d02a&Category=Media+Reports](http://news.ntu.edu.sg/pages/newsdetail.aspx?URL=http://news.ntu.edu.sg/news/Pages/Media2009_Aug14.aspx&Guid=dc14a366-3a04-44d5-a376-0529f9b6d02a&Category=Media+Reports)

John Zhu, a professor in the School of Chemical Engineering at the University of Queensland in Australia, has successfully completed a lab-scale test on a Direct Carbon Fuel Cell that promises to create twice as much power from coal as current methods and minimize greenhouse gas emissions.

<http://www.uq.edu.au/news/index.html?article=19264>

S. Scott Goldsborough of Milwaukee's Marquette University is one of eight college professors to receive SAE International's Ralph R. Teetor Educational Award. The awards were presented at the SAE 2009 World Congress in Detroit. Goldsborough is an assistant professor of mechanical engineering and teaches courses in thermodynamics, heat transfer, internal combustion engines, and combustion. His research is focused on improved chemical kinetic models for conventional and alternative fuels, novel engine configurations including linear designs, and integrated fuel reformer designs for solid oxide fuel cells.

[http://www.sae.org/servlets/pressRoom?OBJECT\\_TYPE=PressReleases&PAGE=showRelease&RELEASE\\_ID=1072](http://www.sae.org/servlets/pressRoom?OBJECT_TYPE=PressReleases&PAGE=showRelease&RELEASE_ID=1072)

Japan's *Jiji Press Ticker Service* reported Aug. 20 that a new fuel cell research and development center backed partly by a Japanese government affiliate has opened in Kofu in the Yamanashi Prefecture, west of Tokyo. The Fuel Cells Nanomaterials Center will develop technologies to bring down costs and improve the durability of fuel cells used for automobiles. The center, headed by University of Yamanashi Professor Masahiro Watanabe, will bring together a total of 30 researchers, including nine from the United States, Germany, France, South Korea and China. It is backed by the university, the Yamanashi prefectural government, and the New Energy and Industrial Technology Development Organization, a central government affiliate better known as NEDO.

<http://fc-nano.yamanashi.ac.jp/english/center/index.html>

*Autoblog.com* reported Aug. 20 that Toyota and Japan's University of Tohoku had announced the development of a new technology that uses less graphite and boosts the capacity of lithium-ion

batteries. The blog quotes Toyota spokesman Paul Nolasco, who says the improvement in storage is so large that batteries could store up to 10 times more ions than current batteries, which could result in a tenfold increase in range. Toyota says the technology needs at least a decade to come to fruition.

<http://green.autoblog.com/2009/08/20/toyota-university-of-tohoku-improve-lithium-ion-batteries-ten-f/>

Tennessee Tech University is launching a new alternative/renewable energy curriculum and creating a new teaching laboratory to supply an exploding demand for energy engineers. The new \$500,000 teaching lab has been named the EDGE Lab: Electronics, Drives, and Generators of Energy Lab. This new lab will support both traditional training in motors, generators, and power electronics as well as exploration of new alternative energy sources, including solar energy, wind energy and fuel cell systems.

[http://www.tntech.edu/publicaffairs/rel/2009/aug09/edge\\_denso09.html](http://www.tntech.edu/publicaffairs/rel/2009/aug09/edge_denso09.html)

In a dedication ceremony this month, Florida State University unveiled the Off-Grid Zero Emissions Building, a 1,000-square-foot solar-powered structure that serves as a real-world testing facility for solar and hydrogen power, hydrogen combustion and other innovative clean-energy and design technologies developed at the university. The building is powered by solar energy collected from a solar array installed on the roof. The energy collected can be used for all of the facility's electrical needs, but it also powers an innovative system that converts water into hydrogen, which is then converted back into electricity when sunlight isn't available. The hydrogen is stored in tanks that are able to hold enough to produce up to 30 days' worth of electricity. So at night or on cloudy days, when electricity is not being produced by the solar panels, or if more power is ever needed, the stored hydrogen is recombined with oxygen in a fuel cell, producing more electricity for the house.

<http://fsu.edu/news/2009/08/14/clean.energy/>

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**Administration**  
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Press releases and story ideas may be forwarded to Bernadette Geyer, editor, for consideration at [fuelcellconnection @ yahoo.com](mailto:fuelcellconnection@yahoo.com).

Subscribe at <http://www.usfcc.com/resources/subscribe.html>

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**About *Fuel Cell Connection***  
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**The Sponsors**

*US Fuel Cell Council* -- The US Fuel Cell Council is the business association for anyone seeking to foster the commercialization of fuel cells in the United States. Our membership includes producers of all types of fuel cells, as well as major suppliers and customers. The Council is member driven, with eight active Working Groups focusing on: Codes & Standards; Transportation; Power Generation; Portable Power; Stack Materials and Components; Sustainability; Government Affairs; and Education & Marketing. The Council provides its members with an opportunity to develop policies and directions for the fuel cell industry, and also gives every member the chance to benefit from one-on-one interaction with colleagues and opinion leaders important to the industry. Members also have access to exclusive data, studies, reports and analyses prepared by the Council, and access to the "Members Only" section of its web site. (<http://www.usfcc.com/>)

*National Fuel Cell Research Center* -- The mission of the NFCRC is to promote and support the genesis of a fuel cell industry by providing technological leadership within a vigorous program of research, development and demonstration. By serving as a locus for academic talent of the highest caliber and a non-profit site for the objective evaluation and improvement of industrial products, NFCRC's goal is to become a focal point for advancing fuel cell technology. By supporting industrial research and development, creating partnerships with State and Federal agencies, including the U.S. Department of Energy (DOE) and California Energy Commission (CEC), and overcoming key technical obstacles to fuel cell utilization, the NFCRC can become an invaluable technological incubator for the fuel cell industry. (<http://www.nfcrc.uci.edu/>)

*National Energy Technology Laboratory* -- The National Energy Technology Laboratory is federally owned and operated. Its mission is "*We Solve National Energy and Environmental Problems.*" NETL performs, procures, and partners in technical research, development, and demonstration to advance technology into the commercial marketplace, thereby benefiting the environment, contributing to U.S. employment, and advancing the position of U.S. industries in the global market. (<http://www.netl.doe.gov>)