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**FUEL CELL CONNECTION – July 2009 Issue**  
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**News on U.S. Government Fuel Cell Programs**  
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1. DOE and Treasury Announce \$3 Billion for Renewable Energy Projects

The U.S. Department of Energy (DOE) and the U.S. Department of the Treasury announced an estimated \$3 billion for the development of renewable energy projects, funded through the American Recovery and Reinvestment Act (ARRA). Funding under this program would allow for direct payments in lieu of tax credits to support installation of renewable energy production facilities by both large companies and small businesses. While applications for the funds are not yet being accepted, the Treasury has posted documents including guidelines and a sample application so that companies can prepare proposals in advance.

http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=200

2. DOE Project to Demonstrate Residential Fuel Cell at Union College

In partnership with DOE, Plug Power and National Grid will test a GenSys® residential fuel cell on the campus of Union College in Schenectady, New York. The 5-kW fuel cell will use natural gas to provide electricity and heat for the Beuth House residence hall. Data collected from the demonstration will be used to determine system refinements for the next-generation residential fuel cell system design.

<http://www.b2i.us/View.asp?b=604&ID=67803&I=204573>

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**RFP/Solicitation News**  
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3. DOE Issues \$40 Million FOA for Combined Heat and Power Projects

DOE has issued a Funding Opportunity Announcement (FOA) soliciting proposals for projects to accelerate the development and deployment of combined heat and power (CHP) technologies and systems. Up to \$15 million from the DOE is allotted for projects in the first level, which covers “large” systems with greater than 20 MW of electricity output. Up to \$15 million in funding is allotted for projects in Area 2, “medium” size systems between 1 MW and 20 MW. Up to \$10 million is allotted for projects in Area 3, “small” size systems, smaller than 1 MW. The deadline for applications is August 4, 2009.

http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=199

4. Southern Hydrogen & Fuel Cell Coalition Seeks Flywheel Demonstration Proposals

The Southern Hydrogen & Fuel Cell Coalition will administer a Flywheel Seeded Demonstration Project, funded by the U.S. Federal Transit Administration, and is accepting proposals for a

project to develop “flywheel technologies in support of fuel cells in the transportation sector.” Accepted proposals will receive up to \$25,000. The deadline for proposals is August 28, 2009.
<http://www.sfcc.tv/c4p/SHFCC%20Call%20for%20Projects.pdf>

5. NASA SBIR & STTR 2009 Solicitation Includes Fuel Cell Subtopic

The National Aeronautics and Space Administration (NASA) released its 2009 Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) solicitation, which includes Fuel Cells for Surface Systems as a subtopic for the NASA Exploration Systems Directive. Additionally, fuel cells are mentioned in the Advanced Structural Concepts research theme under the topic Materials and Structures for Future Aircraft. Individual Phase I awards under this solicitation will have a maximum contract value of \$100,000. Proposals will be accepted until September 3, 2009.

<http://sbir.gsfc.nasa.gov/SBIR/sbirsttr2009/solicitation/index.html>

6. Funding Available for Renewable Energy Deployment Projects in Four Communities

DOE announced the availability of up to \$22 million in ARRA funding to support the planning and installation of utility-scale community renewable energy projects in up to four communities nationwide. Completed applications will be due September 3, 2009.

http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=204

7. ARRA Funding Available for Energy Training Partnership Grants

\$100 million in grant funding is available from the ARRA for projects to provide training and placement services in the energy efficiency and renewable energy industries. National, nonprofit labor management organizations and Statewide or local nonprofit entities are eligible to apply for grant funds under this solicitation, issued by the U.S. Department of Labor, Employment and Training Administration. Approximately \$25 million of the total funds available will be awarded for projects serving communities impacted by auto industry restructuring. Approximately 20-30 projects are expected to be funded through this solicitation. The deadline for applications is September 4, 2009.

<http://edocket.access.gpo.gov/2009/E9-14924.htm>

8. ONR Seeks Proposals for SOFC Tactical Electric Power Demonstration

The Office of Naval Research (ONR) is seeking proposals to develop and demonstrate SOFC Tactical Electric Power (TEP) prototypes to provide efficient, silent power for U.S. Marine Corps and other DOD applications. ONR has a total of \$9 million available for this solicitation and expects to award a single contract. Proposals are due September 4, 2009.

https://www.fbo.gov/index?s=opportunity&mode=form&id=822a6dae6c1976672f785d9169410a5c&tab=core&_cview=0

9. JP8 Fuel Cell APU System Solicitation Released by Army

The U.S. Army has released a solicitation titled “JP8 Fuel Cell Auxiliary Power Unit (APU) System,” expecting to award up to two contracts of an estimated \$5.25 million per contract over five years. The fuel cell system must operate using 100% JP8 logistic fuel and should be water neutral. Deadline for responses to the solicitation is September 10, 2009.

https://www.fbo.gov/index?s=opportunity&mode=form&id=d59318da37df25d0d23e42aa81174fc0&tab=core&_cview=0

10. \$85 Million Funding Opportunity for Algal and Advanced Biofuels

DOE announced a new \$85 million funding opportunity for research on algae-based biofuels and advanced, infrastructure-compatible biofuels. DOE expects to select two or three partnerships

through this solicitation. Funding comes from the ARRA. The deadline for proposals is September 14, 2009.

http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=210

11. DOD SBIR/STTR 2009.3 Solicitation Includes Fuel Cell, Hydrogen Topics

The U.S. Department of Defense (DOD) Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) 2009.3 solicitation has been released, featuring fuel cell and hydrogen related topics such as DOD Engine Efficiency Enhancement Technology. The funding level for individual Phase 1 projects is between \$70,000 and \$100,000. A total of up to \$850,000 in funding is available for SBIR awards and up to \$850,000 for STTR awards. Potential applicants may ask questions of Topic Authors through August 23, 2009. DOD will begin accepting proposals on August 24, 2009. The deadline for submissions is September 23, 2009.

<http://www.acq.osd.mil/osbp/sbir/>

12. California Announces \$24 Million in Low-Interest Loans for Energy Cost Saving Projects

The California Energy Commission has announced the availability of up to \$24 million in “3 percent interest rate loans” for energy cost-saving projects, including renewable energy and cogeneration system projects. Loans will be awarded on a first-come, first-served basis, with a maximum loan amount of \$3 million per application. Applications will be accepted until all of the funding has been allocated.

http://www.energy.ca.gov/contracts/efficiency_pon.html

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**Contract / Funding Awards**  
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13. DOE Awards \$308 Million in ARRA Funding for CCPI Hydrogen Generation Project

DOE has awarded \$308 million in funding from the American Recovery and Reinvestment Act (ARRA) to Hydrogen Energy International for “Hydrogen Energy California Project: Commercial Demonstration of Advanced IGCC with Full Carbon Capture.” The project will design, construct and operate an integrated gasification combined cycle power plant that will “take blends of coal and petroleum coke, combined with non-potable water, and convert them into hydrogen and CO₂...The hydrogen gas will be used to fuel a power station, and the CO₂ will be transported by pipeline to nearby oil reservoirs where it will be injected for storage and used for enhanced oil recovery.”

http://www.fossil.energy.gov/news/techlines/2009/09043-DOE_Announces_CCPI_Projects.html

14. Air Force Awards \$1.9 Million for Improved Portable Fuel Cell Materials

The U.S. Air Force Material Command has awarded a \$1.9 million contract to Universal Technology Corporation of Dayton, Ohio, under the solicitation “Development and Demonstration of Improved Materials for High-Efficiency Portable Fuel Cells.”

<https://www.fbo.gov/index?s=opportunity&mode=form&id=9c5d64c4cdfa7dd1baf2e1c3b7eedcd&tab=core&tabmode=list>

15. Army Selects CTE for Hydrogen & Fuel Cell Demonstration at Ft. Lewis

The U.S. Army has contracted with the Center for Transportation and the Environment (CTE) for a hydrogen and fuel cell demonstration project at the Army’s Forces Command at Fort Lewis in Tacoma, Washington. Hydrogen will be derived from wastewater treatment plant digester gas, and used in fuel cell-powered forklifts, a fuel cell-powered shuttle bus, and potentially a stationary

fuel cell system. The June 2009 issue of *Fuel Cell Connection* reported on the selection of Plug Power to provide the fuel cells for the forklift trucks.
http://www.cte.tv/pr/Ft_Lewis_Press_Release.pdf

16. NYSERDA Provides \$2 Million for Installation of Fuel Cells at Coca-Cola Production Facility
The New York State Energy Research and Development Authority (NYSERDA) is providing \$2 million for a project to install two UTC Power PureCell® Model 400 fuel cell systems to provide on-site electricity and heat to a Coca-Cola Enterprises production facility in Elmsford, New York. UTC Power will own, operate and maintain the fuel cells as part of a 10-year energy services agreement.
http://www.utcpower.com/fs/com/bin/fs_com_Page/0,11491,0315,00.html

17. NYSERDA Selects Plug Power for Residential Fuel Cell Installations
NYSERDA has selected Plug Power for a \$1.4 million award to install and operate three combined heat and power (CHP) GenSys® fuel cell systems in New York State homes. The fuel cells will run on natural gas to provide electricity, heat and hot water. Plug Power estimates each homeowner will save approximately 30% on their monthly utility bill by using the fuel cell system.
<http://www.b2i.us/View.asp?b=604&ID=68022&I=204573>

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**State Activities**  
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18. California Seeks Comments on Draft Guidelines for CHP Certification
The California Energy Commission is directed by the Waste Heat and Carbon Emission Reduction Act to adopt by January 1, 2010, guidelines establishing technical criteria for eligibility of CHP systems for programs to be developed by the California Public Utility Commission and publicly owned utilities. The Energy Commission has posted Draft Guidelines and is seeking public comments. Written comments must be submitted by 5:00 p.m. on August 4, 2009.
<http://www.energy.ca.gov/2009publications/CEC-200-2009-016/CEC-200-2009-016-D.PDF>

19. California to Host Workshop to Discuss Status of Advanced Generation Technologies
The California Energy Commission will host a Staff Workshop on August 10, 2009, to discuss and receive stakeholders' input on the current status of advanced generation technologies, and research, development, and demonstration opportunities. Presentations and audio from the meeting will be broadcast via a web conferencing system for those who cannot attend in person.
http://www.energy.ca.gov/2009_energypolicy/notices/2009-08-10_workshop.html

20. West Virginia Passes Alternative and Renewable Portfolio Standard
A new "credit based" alternative and renewable energy portfolio standard is now in effect in West Virginia, beginning with a requirement that the state's electric utilities hold "credits" for at least 10% of their retail sales by 2015, and an ultimate goal of 25% by 2025. Eligible technologies include fuel cells and biomass, as well as advanced coal technologies and fuel from coal gasification or liquefaction.
http://www.legis.state.wv.us/Bill_Status/bills_text.cfm?billdoc=hb103%20ENR.htm&yr=2009&sess_type=1X&i=103

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**Industry News**

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21. New Gasket Technology Could Reduce Fuel Cell Stack Size and Weight

Federal-Mogul Corporation announced it has developed a new fuel cell stack gasket technology, Liquid Elastomer Molding (LEM™) gaskets, which can be manufactured at a thickness of 0.3-0.5 mm, about half the thickness of conventional molded gaskets. Federal-Mogul says the thinner gaskets can significantly reduce the size and weight of each fuel cell stack.

http://www.federalmogul.com/NR/rdonlyres/600250A6-CCB1-478C-BA12-BE7C79F4F78F/0/LEMTechnology_701.pdf

22. Motorola Selects Ballard Fuel Cell Systems for Telecom Backup Power

Motorola has contracted with Ballard Power Systems for FCgen™-1020ACS fuel cells to be the power sources for 1.6-kW backup power systems being deployed by Motorola. The systems will provide backup power to 123 Motorola TETRA base stations throughout Denmark's SINE network.

[http://phx.corporate-ir.net/phoenix.zhtml?c=76046&p=irol-newsArticle&ID=1307073&highlight =](http://phx.corporate-ir.net/phoenix.zhtml?c=76046&p=irol-newsArticle&ID=1307073&highlight=)

23. WTTIL Contracts to Purchase 200 GenSys® Fuel Cell Systems from Plug Power

Wireless TT Info Services Limited (WTTIL), the tower arm of a major telecom operator in India, has contracted with Plug Power for the purchase, installation and maintenance of 200 GenSys® fuel cell systems, to be installed at cell towers in India.

<http://www.b2i.us/View.asp?b=604&ID=68423&I=204573>

24. Hydrogen Filling Station Opens at JFK Airport as Part of Project Driveway

Shell has opened a hydrogen filling station at New York City's JFK Airport as part of General Motors' Project Driveway, which selects consumers to participate for two months at a time in a demonstration of fuel cell Chevrolet Equinox vehicles. This is Shell's second hydrogen filling station in the greater New York City area. A third will open in 2009 in the Bronx.

<http://media.gm.com/servlet/GatewayServlet?target=http://image.emerald.gm.com/gmnews/viewpressrelDetail.do?domain=2&docid=55670>

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**University Activities**  
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25. University Fuel Cell Roundup

(summaries contributed by Kathy Haq, Dir. of Outreach and Communications, National Fuel Cell Research Center, UC Irvine, khaq@nfcrc.uci.edu)

University of Georgia researchers, led by chemist Jason Locklin, have developed a successful way to grow molecular wire brushes that conduct electrical charges, a first step in developing biological fuel cells that could power pacemakers, cochlear implants and prosthetic limbs. The journal *Chemical Science* calls the technique "a significant breakthrough for nanotechnology."

http://www.franklin.uga.edu/news/2009/article079_09.html

On June 23, U.S. Patent No. 7,550,529 was issued to Lawrence T. Drzal of Okemos, MI, and Hiroyuki Fukushima of Lansing, MI, for a method of expanding graphite used in polymer composites. The patent was assigned to the Board of Trustees of Michigan State University in East Lansing, MI. An abstract filed with the U.S. Patent & Trademark Office contains the following description: "Graphite nanoplatelets of expanded graphite and composites and products

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnethtml%2FPTO%2FSrchnum.htm&r=1&f=G&l=50&s1=7,550,529.PN.&OS=PN/7,550,529&RS=PN/7,550,529>

<http://www.udel.edu/udaily/2009/jun/feathers062309.html>

<http://spider.mc.yu.edu/news/articles/article.cfm?id=101927>

<http://news.ucf.edu/UCFnews/index?page=article&id=00240041037381429012136c33d79004ece>

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi/nph-PTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=7,553,135&OS=7,553,135&RS=7,553,135>

On June 30, U.S. Patent No. 7,553,573 was issued to Steven J. Visco of Berkeley, CA; Craig P. Jacobson of Moraga, CA; and Lutgard C. DeJonghe of Lafayette, CA, for their development of a solid state electrochemical composite. The patent was assigned to the Regents of the University of California. An abstract filed with the U.S. Patent & Trademark Office contains the following description: "Provided is a composite electrochemical device fabricated from highly electronically conductive materials such as metals, metal alloys, or electronically conductive ceramics. The electronic conductivity of the electrode substrate is maximized. The invention allows for an electrode with high electronic conductivity and sufficient catalytic activity to achieve high power density in ionic (electrochemical) devices such as fuel cells and electrolytic gas separation systems including oxygen generation system."

Oregon State University has ordered a ZBB Energy Corporation ZESS 50 energy storage unit to use on campus at the Wallace Energy Systems and Renewables Facility. The ZESS 50 regenerative fuel cell is a 50-kilowatt advanced electrical energy storage device. The unit to be installed at Oregon State incorporates ZBB's patent-pending technology system that controls energy and power inputs from multiple power sources and then delivers energy through an integrated inverter. It will be used in an on-grid configuration with simulated wind and hydro electric sources.

Cody Friesen, an assistant professor of engineering in Arizona State University's School of Mechanical, Aerospace, Chemical and Materials Engineering, started a company that produces a metal-air fuel cell that can store wind and solar power all day, discharging it at peak demand times. Fluidic Energy employs 24 people and just moved into a 16,000-square-foot building. Friesen is profiled as an ASU alumnus.

Thomas H. Epps, assistant professor in the University of Delaware's Department of Chemical Engineering, has been selected to receive a Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the U.S. government on young professionals in the early stages of their independent research careers. His research targets materials design and fabrication to create conducting membranes for current and next-generation energy generation and storage devices, such as batteries, fuel cells, and solar cells.

Ian Arbon, a visiting professor in alternative energy at Newcastle University, recently was appointed as chairman of Waste2Tricity, a new British venture. Professor Arbon's appointment coincides with the news of a proposed joint venture to convert coal into electricity combining alkaline fuel cells manufactured by AFC Energy with underground coal gasification.

Floralis, the technology transfer subsidiary of the University Joseph Fourier, Grenoble, will be responsible for the integration of a scientific platform on what has been identified as the world's first yacht to be equipped with an electric motor driven by a hydrogen fuel cell. The 12-meter "Zero CO₂" will be presented for the first time at the Paris Boat Show in December 2009. The research vessel, built by the RM shipyard of La Rochelle, will be equipped with an electric motor driven by a hydrogen fuel cell developed by CEA Liten of Grenoble, France. The yacht will travel around the Mediterranean coast as far as Turkey on a 10-month journey scheduled to commence in March 2010.

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**Administration**  
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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>)