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**FUEL CELL CONNECTION - May 2009 Issue**  
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## News on U.S. Government Fuel Cell Programs

### *1. President's FY2010 Budget Proposes Major Cuts to Hydrogen, Fuel Cell Funding*

President Barack Obama released details of his FY2010 proposed budget, which recommends major cuts of funding for hydrogen and fuel cell projects. Within the budget for the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy, the Administration proposes zeroing out funding for the Hydrogen Program, which was funded at \$168.9 million in the FY2009 Appropriations bill. The Administration instead recommends \$68.2 million in funding for "Fuel Cell Technologies," refocusing the program on fuel cell systems R&D for stationary, portable, and transportation applications. In the DOE Office of Fossil Energy, the budget proposes zeroing out funding for Hydrogen from Coal Research, which received \$20 million in the FY2009 budget. The Fossil Energy budget's Fuel Cells activity proposes \$54 million for the Innovative Systems Concepts/SECA program, a reduction of \$4 million from the FY2009 appropriation. The Fuel Cell & Hydrogen Network has established an action alert for concerned citizens to "Tell Congress to Restore Hydrogen and Fuel Cell Funding".

<http://capwiz.com/fuelcells/home/>

<http://www.cfo.doe.gov/budget/10budget/Start.htm>

### *2. DOE Launches ARPA-E to Fund Cutting-Edge Energy Research*

DOE has launched the Advanced Research Projects Agency-Energy (ARPA-E), a new organization modeled after the Defense Advanced Research Projects Agency (DARPA). ARPA-E was authorized by Congress in 2007, but received its first funding -- \$400 million -- through the American Recovery and Reinvestment Act. ARPA-E's mission is to "fund energy technology projects that translate scientific discoveries and cutting-edge inventions into technological innovations, and it will also accelerate technological advances in high-risk areas that industry is not likely to pursue independently." The agency's first Funding Opportunity Announcement has been announced and is listed below in the "RFP/Solicitation News" section of this newsletter.

<http://www.arpa-e.energy.gov/>

### *3. New Compound Can Store 30 Percent of Its Weight as Usable Hydrogen*

Researchers at DOE's SLAC National Accelerator Laboratory have discovered a new material, a high-pressure form of ammonia borane, which can store around 30 percent of its weight as usable hydrogen. Researchers worked with the parent material, which already contains hydrogen, "at high pressure in a hydrogen-enriched atmosphere" to increase the hydrogen content of the material by 50 percent.

<http://today.slac.stanford.edu/feature/2009/ammonia-borane-hydrogen.asp>

### *4. U.S. is Signatory for New International Partnership for Energy Efficiency Cooperation*

A new International Partnership for Energy Efficiency Cooperation (IPEEC) has been formed, with signatories including the United States, Canada, France, Germany, Italy, Japan, the Russian Federation, the United Kingdom, as well as key emerging economies including Brazil, China, India and Mexico. The International Energy Agency will host the IPEEC Secretariat in Paris. An initial set of tasks for the group's draft work plan includes the establishment of a Sustainable Buildings Network to promote efficiency in residential, commercial and industrial buildings. IPEEC also issued a statement endorsing a comprehensive approach to addressing global greenhouse

gas emissions. The launch of the IPEEC was part of the G8 (Group of 8) Energy Ministers Meeting in Rome, where G8 members and others discussed topics including new clean energy and energy efficiency technologies.

<http://www.energy.gov/news2009/7420.htm>

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RFP/Solicitation News
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*5. ARPA-E Issues First FOA for Transformational Energy R&D Projects*

The Advanced Research Projects Agency-Energy (ARPA-E) has issued its first Funding Opportunity Announcement (FOA), which is aimed at “prospective applicants who already have a relatively well-formed R&D plan for a transformational concept or new technology that can make a significant contribution towards attainment of the Administration’s Energy and Environment Agenda...if and when successfully deployed.” A total of up to \$150 million is available under this FOA, with individual project funding ranging from as low as \$500,000 to a ceiling of \$10 million, or greater, at ARPA-E’s discretion. Concept papers are due June 2, 2009. ARPA-E will review concept papers and notify applicants if the idea “is likely to form a basis of a successful full application.”

<http://www.arpa-e.energy.gov/apply.html>

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*6. Naval BAA Issued for Advanced Aircraft Power Systems, Fuel & Energy Conservation*

The Naval Air Systems Command (NAVAIR), Propulsion and Power Engineering Department, Science and Technology Office, has issued a Broad Agency Announcement (BAA) titled “Advanced Aircraft Power Systems, Fuel & Energy Conservation Technology, Alternative Fuel Test & Certification Methodology Improvements, and Aircraft Energy Conservation.” Initial White Papers are due June 15, 2009. Only selected White Paper offerors will be invited to submit a formal cost and technical proposal.

[https://www.fbo.gov/index?s=opportunity&mode=form&id=b8ed7b191aa52aadeb0604c78324ad4a&tab=core&\\_cview=1](https://www.fbo.gov/index?s=opportunity&mode=form&id=b8ed7b191aa52aadeb0604c78324ad4a&tab=core&_cview=1)

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*7. PIER EISG Issues Solicitation for Transportation Program*

The California Energy Commission Public Interest Energy Research (PIER) Energy Innovations Small Grant (EISG) Program has issued a solicitation for its Transportation Program. Included among topics of interest are improvements in overall vehicle energy efficiency using a variety of research avenues, such as onboard energy generation. Maximum per project grant awards are \$95,000 for hardware projects requiring physical testing and \$50,000 for modeling projects. Optional pre-proposal abstracts will be accepted through June 19, 2009. Grant applications will be accepted through July 23, 2009.

[http://www.energy.ca.gov/contracts/smallgrant/09-01T\\_transportation/index.html](http://www.energy.ca.gov/contracts/smallgrant/09-01T_transportation/index.html)

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*8. NRL BAA Includes Fuel Cell Interest*

The Naval Research Laboratory (NRL) has issued an NRL-Wide Broad Agency Announcement (BAA) which covers a wide variety of topics, including Power Source Materials and Systems. Within that topic, NRL seeks proposals for the improvement of power sources for small military systems, “particularly fuel cells and batteries.” Interested offerors must first submit a White Paper. Only selected White Paper offerors will be invited to submit a formal proposal. While this is an open BAA, prospective offerors are encouraged to submit White Papers as early as possible to maximize the potential for award.

[https://www.fbo.gov/index?s=opportunity&mode=form&id=a82d6da282bb58f87a0acd25f1344e55&tab=core&\\_cview=1](https://www.fbo.gov/index?s=opportunity&mode=form&id=a82d6da282bb58f87a0acd25f1344e55&tab=core&_cview=1)

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Contract / Funding Awards
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*9. White House Announces \$777 Million for Energy Frontier Research Centers*

The White House announced that the DOE Office of Science will invest \$777 million in new Energy Frontier Research Centers (EFRCs) over the next five years, supported in part by funds from the American Recovery and Reinvestment Act. The 46 new EFRCs will be established to accelerate scientific breakthroughs in energy fields including innovative energy storage and molecular electrocatalysts. The Centers will each receive between two million and five million dollars per year for a planned initial five-year period.

<http://www.sc.doe.gov/bes/EFRC.html>

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*10. \$19.2 Million Awarded to NREL for Renewable Energy and Site Infrastructure*

The National Renewable Energy Laboratory (NREL) will receive \$19.2 million from the American Recovery and Reinvestment Act to use solar, and potentially geothermal and fuel cells to replace power currently purchased from utility companies, and to reduce use of carbon resources.

[http://apps1.eere.energy.gov/news/progress\\_alerts.cfm/pa\\_id=164](http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=164)

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*11. NASA to Lead Hydrogen Fueling Station Demonstration in Cleveland*

The National Aeronautics and Space Administration (NASA) Glenn Research Center will lead a team demonstrating a prototype hydrogen fueling station that uses wind and solar powered electrolysis to generate hydrogen. The station will be located at the Great Lakes Science Center in downtown Cleveland. Hydrogen generated at the station will be used in a Greater Cleveland Regional Transit Authority fuel cell bus. Funding for the project is being provided by the Ohio Aerospace Institute through a \$310,000 grant from The Cleveland Foundation.

<http://www.spaceref.com/news/viewpr.html?pid=27988>

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*12. Air Force Awards Contract for Fuel Cell Raven Flight Demonstration*

The Department of the Air Force, AF Research Laboratory, has awarded a contract valued at \$265,000 to Protonex Technology Corporation for advanced development of miniature fuel cells for demonstration in the Raven unmanned aerial vehicle (UAV). The Raven is the highest volume production UAV and is designed for both military and commercial applications.

<https://www.fbo.gov/index?s=opportunity&mode=form&id=ed04233ff48d74fcb956064fd1a3719c&tab=core&tabmode=list>

<http://www.protonex.com/assets/pressrelease/69e58a7c-369d-41f0-bc4f-37cf40c47d98.pdf>

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Legislative / Regulatory News
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*13. President Obama Announces New National Policy on Fuel Economy*

President Barack Obama announced a new fuel economy policy for model years 2012-2016, with the goal of an average fuel economy of 35.5 mpg for model year 2016. The new standard will also reduce carbon dioxide emissions from new vehicles by 30% by 2016. The Environmental Protection Agency (EPA) and U.S. Department of Transportation (DOT) intend to initiate a joint rulemaking for new vehicle standards, which are expected to be divided into categories of vehicles based on vehicle size. The policy is the result of collaboration among DOT, EPA, 10 of

the world's largest auto manufacturers, the United Auto Workers, environmental community leaders, the State of California and other state governments.

[http://www.whitehouse.gov/the\\_press\\_office/President-Obama-Announces-National-Fuel-Efficiency-Policy/](http://www.whitehouse.gov/the_press_office/President-Obama-Announces-National-Fuel-Efficiency-Policy/)

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#### *14. Report Details Alternative Fuel, Advanced Technology Vehicle Issues in Congress*

The Congressional Research Service has published a report titled "Alternative Fuels and Advanced Technology Vehicles: Issues in Congress," which provides background and analysis on topics such as Hydrogen and Fuel Cells, Fuel Tax Incentives, Vehicle Purchase Tax Incentives and Hybrid Vehicles. The report features a table comparing alternative fuel and advanced vehicle technology provisions in the American Recovery and Reinvestment Act of 2009.

<http://ncseonline.org/NLE/CRS/abstract.cfm?NLEid=2213>

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### **Industry News**

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#### *15. New ReliOn Fuel Cell Product to Be Commercially Available in Late-2009*

ReliOn announced its Eco-200™ fuel cell system, which can provide remote backup power for lower power applications, will be commercially available in the fourth quarter of 2009. Key applications include remote backhaul sites, microwave repeaters, and security and sensor sites.

<http://www.relion-inc.com/news.asp#28>

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#### *16. DuPont Announces Extended Life MEA*

DuPont Fuel Cells announced the commercial availability of its Nafion® XL Membrane Electrode Assemblies, which feature a reinforced membrane that provides enhanced chemical stability and improved membrane durability.

[http://www2.dupont.com/FuelCells/en\\_US/assets/downloads/article20090423.pdf](http://www2.dupont.com/FuelCells/en_US/assets/downloads/article20090423.pdf)

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#### *17. Study Says Expansion of Hydrogen Fueling Stations More Affordable than Once Thought*

According to a new report, "The Energy Evolution: An analysis of alternative vehicles and fuels to 2100," the cost of building a national hydrogen fueling infrastructure is more affordable than most people think. The report, which compiles a comprehensive collection of existing transportation research, also found that a scenario that initially includes a mix of alternative vehicles and is later dominated by hydrogen fuel cell electric vehicles is the only way to simultaneously reach U.S. petroleum quasi-independence by mid-century, cut greenhouse gas pollution by 80% below 1990 levels, and reduce societal costs by \$600 billion per year by 2100. The report was published by the National Hydrogen Association.

<http://www.hydrogenassociation.org/general/evolution.asp>

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### **University Activities**

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#### *18. 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](mailto:khaq@nfcrc.uci.edu))

<http://www.media.wayne.edu/2009/04/27/danto-engineering-development-center-jumpstarts-michigans-new>

On April 28, U.S. Patent No. 7,523,770 was issued to Alan M. Horowitz of Cherry Hill, NJ; Walter Weissman of Basking Ridge, NJ; and Charles Hall Schleyer of Lincoln University, PA, for their design of a fueling station meeting the needs of multiple vehicle technologies. The patent was assigned to ExxonMobil Research And Engineering Company in Annandale, NJ. An abstract filed with the U.S. Patent & Trademark Office contains the following description: "A service station is provided with a plurality of vehicle servicing islands including liquid fuel blending pumps for dispensing and blending fuel components from underground storage tanks for refueling standard gasoline engine driven vehicles, standard diesel engine vehicles, vehicles with engines requiring dual fuels, vehicles with HCCI [homogeneous charge compression ignition] engines require low octane gasoline blended with standard diesel fuel, and fuel cell powered vehicles having onboard reformers. Other service islands include pumps for dispensing compressed hydrogen to fuel cell powered vehicles that do not include onboard reformers. In addition, service islands are provided for recharging the batteries of pure electric powered vehicles. A service station is further provided with a wireless communicator for receiving signals indicative of a vehicle's fuel requirements and transmitting signals to direct the vehicle to a service island capable of servicing the vehicle."

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetacgi%2FPTO%2FSrchnum.htm&r=1&f=G&l=50&s1=7,523,770.PN.&OS=PN/7,523,770&RS=PN/7,523,770>

A fuel cell researcher is among five Arizona State University faculty recently named ASU Regents' Professors for 2009. Their selection was ratified by the Arizona Board of Regents and announced by the university on May 1. Bruce Rittmann, professor in the Department of Civil and Environmental Engineering and the Biodesign Institute, Ira A. Fulton School of Engineering, conducts research aimed at developing microbiological systems that capture renewable resources and minimize environmental pollution. For example, Rittmann explores microbial fuel cells, which utilize organic materials in water to directly generate electricity. He also is acclaimed for his development of biofilm fundamentals, which are used widely in the cleanup of contaminated waters and soil and in microbial fuel cells.

[http://asunews.asu.edu/20090501\\_regentsprofessors](http://asunews.asu.edu/20090501_regentsprofessors)

A Streetsboro, Ohio, car dealership has donated a 2004 Oldsmobile Bravado SUV to Kent State University's College of Technology so students there can transform the gas-powered vehicle into an electric fuel cell vehicle. Classic Pontiac, GMC, Cadillac donated the vehicle at a ceremony on May 13.

<http://www.kent.edu/media/2009NewsReleases/CarDonation.cfm>

Material scientists at Washington University in St. Louis, MO, have developed a technique for a bimetallic fuel cell catalyst the developers say is “efficient, robust and two-to-five times more effective than commercial catalysts.” Younan Xia, the James M. McKelvey Professor of Biomedical Engineering, led a team of scientists at WUSTL and the Brookhaven National Laboratory in developing the catalyst.

<http://news-info.wustl.edu/news/page/normal/14161.html>

[http://www.bnl.gov/bnlweb/pubaf/pr/PR\\_display.asp?prID=961](http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=961)

David Schiraldi, an associate professor of macromolecular science at Case Western Reserve University, is one of four Case faculty members recently recognized for outstanding contributions to the education of graduate students through advising and classroom teaching. He was one of



four full-time faculty members to receive The Diekhoff Award, which was established in 1978. Schiraldi, who develops new composite materials and studying fuel cell durability, was recognized for "Excellence in Mentoring."

<http://blog.case.edu/case-news/2009/05/15/diekhoffaward2009>

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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).

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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>)