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**FUEL CELL CONNECTION -- December 2000 Issue**  
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About *Fuel Cell Connection*

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**News on U.S. Government Fuel Cell Programs**  
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*1. LLNL Researchers Demonstrate Planar SOFC*

Lawrence Livermore National Laboratory researchers have demonstrated a planar solid oxide fuel cell with a peak power density of 1.05 W/cm<sup>2</sup> at 800 degrees Celsius, which they say represents the highest reported power density for a SOFC stack. The researchers say the proprietary Colloidal Spray Deposition technology used for cell fabrication would significantly reduce the cost of SOFCs. For more information on the project, contact Robert Glass, Ph.D., Program Leader for Energy Conversion and Storage, Applied Energy Technologies Program, LLNL, via telephone at (925) 423-7140, or via email at glass3@llnl.gov.

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*2. "Future Soldier" Presentation Shows Extensive Use of Fuel Cells*

Members attending the annual meeting of the Association of the US Army were treated to a presentation of the Army Soldier and Biological Chemical Command (SBCCOM) Land Warrior Soldier System, a look at the soldier of 2020 who will use fuel cells for running electronic systems. The future "Land Warrior" will need the fuel cell to run the Predator Advanced Multi-layer Uniform's heating and cooling equipment, as well as systems that monitor the soldiers heartbeat and temperature. Electronic equipment run by the fuel cell also includes a helmet mounted monitor that would allow the soldier to view maps and other images, and a computer mounted on the soldier's back.

[http://www.janes.com/regional\\_news/americas/news/jpce/jpce001030\\_1\\_n.shtml](http://www.janes.com/regional_news/americas/news/jpce/jpce001030_1_n.shtml)

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*3. NRECA, DOE to Study Rural Residential Fuel Cell Performance*

The National Rural Electric Cooperative Association (NRECA) and DOE have signed an agreement to conduct more joint research, the first of which will be a study of the performance of residential fuel cells from major manufacturers. NRECA's Cooperative Research Network will be responsible for managing research efforts with DOE.

[http://www.nreca.org/news/CRN\\_DOE\\_MOU\\_release.html](http://www.nreca.org/news/CRN_DOE_MOU_release.html)

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*4. TVA to Build 12-Megawatt Fuel Cell Power Plant*

The Tennessee Valley Authority Board has approved the construction of a 12-megawatt fuel cell power plant in Mississippi. British company Innogy Technology Ventures has been contracted to design and provide the regenerative fuel cell power plant. The plant is expected to begin operation in 2003.

[http://www.gnet.org/Coldfusion/News\\_Page2.cfm?NewsID=13542](http://www.gnet.org/Coldfusion/News_Page2.cfm?NewsID=13542)

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*5. Distributed Energy Taskforce Publishes Strategic Plan Online*

The Distributed Energy Resources Taskforce of the DOE has published online its Strategic Plan for achieving its goal of meeting 20% of the nation's generating capacity additions with distributed energy technologies by the year 2010.

<http://www.eren.doe.gov/der/taskforce.html>  
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6. *Argonne, Shd-Chemie Sign Licensing Agreement for POx Catalyst*

Argonne National Laboratory has signed a licensing agreement under which Shd-Chemie (formerly United Catalysts Inc.) will manufacture and distribute a partial oxidation catalyst developed and patented by Argonne. The catalyst is for use in a fuel reformer.

<http://www.anl.gov/OPA/news00/news001128.htm>

7. *Hydrogen Program Annual Review Scheduled for April 2001*

DOE's Hydrogen Program will hold its Annual Review on April 17-19, 2001, at the Baltimore Hilton & Tower in Baltimore, Maryland. A registration fee is required. Proceedings from the 2000 Hydrogen Program Review have been posted on the Program's web site.

<http://www.eren.doe.gov/hydrogen/news.html>

**RFP/Solicitation News**

8. *State Energy Project Solicitation's Clean Cities Topic Deadline Nears*

California Energy Commission is accepting proposals in the "Transportation Technologies: Clean Cities/Alternative Fuels Special Projects" category of the U.S. Department of Energy's 2001 State Energy Program (SEP) Special Projects solicitation. There is \$3.8 million available nationwide this year for Clean Cities in 5 categories, including AFV Refueling Infrastructure and Niche Market/AFV Acquisition. The deadline for proposals in this topic area is January 5, 2001.

[http://www.energy.ca.gov/afvs/clean\\_cities.html](http://www.energy.ca.gov/afvs/clean_cities.html)

Other topics under the State Energy Program Special Projects Solicitation include "Building Technologies," "Power Technologies," "Hydrogen Reformer Field Verification," and "Distributed Energy Resources." Approximately \$15 million total is available for all projects within the Special Projects Solicitation. Deadline for proposals outside of the Clean Cities Topic is February 23, 2001.

[http://www.eren.doe.gov/buildings/state\\_energy/sepsp01-forum.html](http://www.eren.doe.gov/buildings/state_energy/sepsp01-forum.html)

9. *DOE Seeks Comments on Planned Power Plant Improvement RFP*

DOE is seeking comments on a new "Power Plant Improvement Initiative" that would offer up to \$95 million for advanced coal-based technologies that can improve the reliability of the grid. The initial program will apply to existing and new coal-based central power plants, but the program could later include a wider span of technologies such as fuel cells that can operate on natural gas as well as coal. Deadline for comments is January 5, 2001, with a final solicitation expected in February 2001.

[http://www.fe.doe.gov/techline/tl\\_ppii\\_1.html](http://www.fe.doe.gov/techline/tl_ppii_1.html)

10. *Energy Innovations Small Grants Program Accepting Proposals*

The California Energy Commission's Energy Innovations Small Grant Program provides up to \$75,000 for research that establishes the feasibility of new, innovative energy concepts. Proposals must address one of six PIER program areas, including Building End-use Efficiency, Environmentally Preferred Advanced Generation, and Strategic Energy Research. Grant applications are being accepted through January 31, 2001.

<http://www.energy.ca.gov/contracts/smallgrant>

11. *HARC Looking to Procure Fuel Cells for Evaluation*

Houston Advanced Research Center plans to procure and contract for delivery of fuel cell power systems in 2001 and 2002 in support of a fuel cell evaluation project. HARC has issued a request for quotations and expressions of interest from fuel cell system developers. Deadline for response is January 31, 2001. More information about the RFQ will soon be posted on the HARC web site at <http://www.harc.edu/rfq>.

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*12. DARPA Seeks Proposals on Micro Power Generation*

The Defense Advanced Research Projects Agency is soliciting research proposals in the area of Micro Power Generation devices for battery replacement. Awards totaling approximately \$20 million over three years are expected to be made in the first half of 2001. Full proposals are due by January 16, 2001.

<http://www.darpa.mil/baa/baa01-09.htm>

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*13. Energy Storage Technologies Sought for Space Power Solicitation*

Approximately \$1 million is available for basic research to satisfy NASA's demand for space power systems and technologies for use in a wide range of advanced vehicles and missions. Areas of interest include, but are not limited to Energy Storage Technologies and Power Management and Distribution Technologies. Proposals must be received by January 22, 2001.

<http://procurement.nasa.gov/cgi-bin/EPS/sol.cgi?acqid=89721>

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*14. Public Meetings Scheduled for NIST/ATP Funding Seekers*

The National Institute of Standards & Technology's Advanced Technology Program has scheduled three Proposers' Conferences for interested parties to learn about funding opportunities. The first meeting is January 30, 2001, in Rosemont, Illinois. The second is February 1, 2001, in Las Vegas, Nevada. And the third is February 6, 2001, in Gaithersburg, Maryland.

<http://www.atp.nist.gov/atp/proposers.htm>

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*15. Palm Power Proposals Sought by DARPA*

The Defense Advanced Research Projects Agency is seeking proposals for development of small energy conversion devices (20 Watt average power level at 12 Volts DC) to replace batteries for soldier, robotic, and other emerging applications. Science and technology topics include but are not limited to catalysis, combustion, thermal management and integration, and compact integrated fuel processors. The Palm Power Program is estimated for up to \$60 million. Deadline for proposals is February 1, 2001.

<http://www.darpa.mil/baa/BAA01-18.htm>

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*16. Airport LEV Program Solicitation Includes Hydrogen Vehicles*

The Federal Aviation Administration's Inherently Low-Emission Airport Vehicle Pilot Program is making \$2 million available for up to 10 demonstrations of "the benefits and economic feasibility of inherently low-emission vehicles" at public-use airports. Vehicles must operate exclusively on one or more of the following alternative fuels: hydrogen, electricity, CNG, LNG, LPG, or a blend of fuel at least 85 percent methanol. Proposal deadline is February 9, 2001.

<http://www.faa.gov/arp/app600/ileav/ILEAV.htm>

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*17. ARB Program Seeks Fuel Cell & Hydrogen Proposals*

The California Air Resources Board is seeking applications for grants from its Innovative Clean Air Technologies Program, which will provide up to \$1 million for each program selected. "Fuel Cells and Hydrogen" is one of the subjects the program is focused on. Proposal abstracts are due by February 9, 2001, and the deadline for full proposals is February 23, 2001.

<http://www.arb.ca.gov/research/icat/solicit.htm>

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*18. Alternative Fuel Technology Development Program RFP Issued*

Up to \$2.22 million is available from the California Energy Commission for diesel-fueled and alternative fuel technologies projects through the Carl Moyer Heavy -Duty NOx Reduction Advanced Technology Development Program. The maximum award for any one project will be \$1 million. Deadline to submit applications is February 13, 2001.

[http://www.energy.ca.gov/contracts/2000-11-28\\_CARL\\_MOYER\\_PON.PDF](http://www.energy.ca.gov/contracts/2000-11-28_CARL_MOYER_PON.PDF)

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*19. DOE Issues Fuel Cell Mining Vehicle Solicitation*

The U.S. Department of Energy's Broad Based Solicitation Involving Research, Development and Demonstration has issued its first Supplemental Announcement of topics, "Fuel Cell Mining Vehicles." Up to \$4 million may be available from DOE for this multi-year effort, including approximately \$1.4 million in government-furnished equipment and services. Deadline for proposals is February 15, 2001. Further topics under the Broad Based Solicitation will be released in future "Supplemental Announcements."

<http://www.golden.doe.gov/Business%20Opportunities/SolFiles/go90000.pdf>

<http://www.golden.doe.gov/Business%20Opportunities/SolFiles/go90000Sup1.pdf>

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*20. DOE Fossil Energy RFP Seeks Fuel Cell and Fuel Processing Proposals*

DOE's National Energy Technology Laboratory has issued an RFP – Development of Technologies and Capabilities for Developing Coal, Oil and Gas Energy Resources – for energy research and development related activities that promote the efficient and sound production and use of fossil fuels (coal, natural gas, and oil). "Fuel Cells" is one of the Areas of Interest, along with "Fuel Processing." As of the date of this report, funding for the Fuel Cell topic is not currently available, but pre-applications are being accepted. Funding for the Fuel Processing area of interest is estimated at \$100,000 to \$1 million per award.

<http://www.netl.doe.gov/business/solicit/2000pdf/41048/41048.pdf>

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*21. Power Generation/Storage Proposals Sought by Defense Sciences Office*

The Defense Sciences Office of DARPA is soliciting proposals for research and development of technologies that could make radical improvements to national security, including "Materials and concepts for power generation and storage at all scales." Deadline for full proposals is June 28, 2001.

<http://www.darpa.mil/baa/BAA00-36-l.htm>

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*22. Northwest Alliance Requests Energy Efficiency Project Proposals*

The Northwest Energy Efficiency Alliance has issued a Request for Proposals to develop, demonstrate, or disseminate information on energy efficient technologies that would help save electricity in the Pacific Northwest. Natural gas projects will be funded if the project also saves a significant amount of electricity. The process for submitting unsolicited proposals began in November 2000 and is continuously open.

<http://nwalliance.org/proposals/>

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*23. DOE Science Office Announces Grant Availability for Basic Energy Research*

Approximately \$400 million is available for grant and cooperative agreement awards through the DOE Office of Science for projects in various program areas, including Basic Energy Sciences and Energy Research Analyses. Within the Basic Energy Sciences topic are research areas

such as ceramics, materials chemistry, and renewable resource production for fuels and chemicals.

There is no deadline for applications.

[http://www.science.doe.gov/production/grants/fr01\\_01.html](http://www.science.doe.gov/production/grants/fr01_01.html)

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*24. EPA Issues Engine & Vehicle Development Solicitation*

The Environmental Protection Agency's Office of Air and Radiation seeks a contractor to provide its National Vehicle Fuels Emission Laboratory's Advanced Technology Support Division with engineering support for the design, fabrication, development and testing of vehicles, engines, components, control systems, and fuel systems. The contractor may be required to convert appropriate equipment to operate on a variety of fuels including gasoline, diesel, or alcohols. The RFP is expected to be posted in early-February 2001, and will be open for 30 days. Information on funding levels is not being released.

<http://www.epa.gov/oamcinc1/0111610/coverpg.htm>

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**Regulations**  
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*25. GTL Fuels From Natural Gas Designated Alternative Fuels*

The U.S. Congress has designated domestically produced Gas-to-Liquids (GTL) fuels made from natural gas as an Alternative Fuel as defined under the Energy Policy Act of 1992.

[http://biz.yahoo.com/prnews/001220/co\\_rentech.html](http://biz.yahoo.com/prnews/001220/co_rentech.html)

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*26. New Regulations on Truck Pollution Approved*

The Clinton Administration has approved new EPA regulations on pollution from heavy -duty trucks and buses that are expected to cut air pollution from these sources by more than 90 percent over the next decade. The new regulations require a steep reduction in the amount of sulfur in diesel fuel to 15 parts per million, and will result in heavy -duty trucks being equipped with pollution controls that capture exhaust chemicals – similar to catalytic converters on cars.

<http://www.epa.gov>

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*27. Cash for ZEV Buyers*

A new Zero-Emission Vehicle Incentive Program has been established to provide a total of \$18 million in grants to Californians purchasing or leasing ZEVs, with individual grants totaling up to \$9,000. The first grants will be distributed by February 1, 2001.

<http://www.arb.ca.gov/msprog/zevprog/zip/zip.htm>

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*28. Hearing Set on Possible Changes to California ZEV Mandate Guidelines*

A hearing has been set for January 25, 2001, for the California Air Resources Board to listen to public comments on a proposal to give consideration to non-battery technologies – such as fuel cells, hybrids, and natural gas engines – for automakers to meet California's ZEV Mandate. In 1990, the Board mandated that 10% of all vehicles sold be zero-emission by 2003. That was amended earlier in 2000 to 4% pure ZEV and 6% hybrids. The new proposal would change the requirement to 2% pure zero emission (including hydrogen fuel cell vehicles), 2% hybrids and methanol fuel cell vehicles, and 6% extremely clean gas and other vehicles.

<http://www.arb.ca.gov/msprog/zevprog/2001rule/2001rule.htm>

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## Industry Headlines

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**29. GreenVolt Power Plans Commercial 1.3 kW Fuel Cell Availability for 2001**

GreenVolt Power has purchased a 10,000 sq. ft. manufacturing facility in anticipation of introducing and commencing full-scale production of its portable 1.3 kW alkaline fuel cell unit. The company expects to commercially introduce the fuel cell in third quarter 2001.

[http://www.e-newsservices.com/en/document.html?document\\_id=46402](http://www.e-newsservices.com/en/document.html?document_id=46402)

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**30. Ballard Commissions Fuel Cell Plant**

Ballard Power Systems has commissioned its initial fuel cell manufacturing facility – Plant 1 – which will enable the company to begin mass-manufacturing commercial products for portable power and automotive applications in 2001.

<http://www.ballard.com/viewpressrelease.asp?sPrID=181>

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**31. UC Davis-ITS to Present Paper on Benefits of Fuel Cell APUs**

The Institute for Transportation Studies at University of California (Davis) will present a paper on the potential benefits of fuel cell auxiliary power units at the annual Transportation Research Board Conference in Washington, DC, January 7-11, 2001. An abstract of the paper posted on the Institute's web site notes that researchers estimates diesel engine idling uses 1,818 gallons of fuel per year for an average late model truck, which could be virtually eliminated with the use of fuel cell APUs.

<http://its.ucdavis.edu/e-news/dec00.html>

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**32. Fuel Cells 2000 Announces Availability of Fall 2000 Fuel Cell Directory**

The Fall 2000 edition of the *Fuel Cell Directory* is now available for sale from Fuel Cells 2000. The Directory features more than 750 listings of fuel cell developers, researchers and consultants, suppliers to the fuel cell industry, associations and interested government agencies. The cost of the new edition of the Directory is \$100.00.

<http://www.fuelcells.org/fuelpr.html#dec14>

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**33. AMI Releases Progress Report on FCV Development**

The American Methanol Institute has released a progress report on the development of fuel cell vehicles, titled "Beyond the Internal Combustion Engine – The Promise of Methanol Fuel Cell Vehicles." The report predicts that by 2020, seven to 20 percent of all new cars sold will be powered by fuel cells. The report is available on the Institute's web site.

<http://www.methanol.org>

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