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DOE Provides up to \$51.8 Million to Modernize the U.S. Electric Grid System

Superconductor Research Crucial to Improving Power Delivery Equipment

WASHINGTON, DC – U.S. Department of Energy (DOE) Secretary Samuel W. Bodman today announced that DOE will provide up to \$51.8 million for five cost-shared projects that will help accelerate much-needed modernization of our Nation's electricity grid. This research will advance the development and application of high-temperature superconductors, which have the potential to alleviate congestion on an electricity grid that is experiencing increased demand from consumers. Making investments to modernize our electricity grid; securing a diverse and stable supply of reliable, affordable and environmentally responsible energy; as well as increasing efficiency, are central to the Bush Administration's effort to increase energy and economic security.

"Modernizing our congested and constrained electric grid - through the development of advanced, new technologies - is vital to delivering reliable and affordable power to the American people," Secretary Bodman said. "As demand for electricity continues to grow, we must take steps now to identify potential problems, identify solutions, and deploy new technologies to provide a secure and steady energy supply. We look forward to the success of this research and recognize it will help us realize President Bush's goal of a more modern and efficient electricity system."

The selected projects will help advance the future generation of power delivery equipment and aid the development of a highly efficient electricity grid system for the Nation. Two of the research projects will help increase reliability and efficiency of power delivery cables, and the remaining three projects will place an emphasis on fault current limiters. DOE's National Energy Technology Laboratory will manage these projects, which are expected to last two to five years. Projects will be equally cost-shared between DOE and selected teams, totaling \$103.6 million in DOE/team project cost. DOE funding is expected to be allocated in Fiscal Years (FY) 2007-2012, subject to appropriations from Congress, with \$10 million from FY2007, and \$7 million requested in FY2008.

Selection of these projects allows DOE to build on its past successes in superconductivity, which include operating two distribution-level voltage superconducting cables and utility grids. Superconductors - solid ceramic compounds

that conduct electricity more efficiently than traditional copper wires - can be a key to improving the capacity, efficiency, and reliability of electric power equipment. A major challenge prior to commercialization is to develop superconductors that can operate at relatively “high” temperatures, from approximately -320 to -370 degrees Fahrenheit (50 to 77 Kelvin), and in magnetic fields from 1 to 4 Tesla.

DOE’s Office of Electricity Delivery and Energy Reliability (OE) will oversee the research projects announced today. OE leads national efforts to modernize the electric grid; enhance the security and reliability of the energy infrastructure; and facilitate recovery from disruptions to the energy supply.

Selected projects are as follows:

POWER DELIVERY EQUIPMENT

Southwire Company - (DOE cost share: \$13.3 million)

Southwire Company (Carrollton, GA) will use a 13.8-kilovolt superconducting cable to connect two existing substation sites and solve a real-world electrical load problem near downtown New Orleans. The cable will connect the LaBarre and Metairie substations, owned by Entergy Corporation of New Orleans, LA, a member of Southwire’s project team. The team also includes: DOE’s Oak Ridge National Laboratory and nkt cables of Germany.

American Superconductor - (DOE cost share: \$9 million)

American Superconductor Corporation (Westborough, MA) will develop the key components required to commercially deploy second-generation, high-temperature superconductor cables and demonstrate a single-phase prototype cable in the Long Island Power Authority power grid. In addition to the power authority, American Superconductor’s team includes: Nexans (France) and Air Liquide Advanced Technologies U.S. LLC (Houston, TX).

FAULT CURRENT LIMITERS

American Superconductor - (DOE cost share: \$12.7 million)

American Superconductor will also address the development and in-grid testing of a three-phase high-voltage, 115-kilovolt fault current limiter, called a SuperLimiter™, by using second-generation wire. The SuperLimiter™ features a proprietary Siemens-developed, low-inductance coil technology that makes the fault current limiter invisible to the grid until it switches to a resistive state. The demonstration will occur at a location operated by team member Southern California Edison. The team also includes: Nexans (France), the University of Houston (Houston, TX), Los Alamos National Laboratory (Los Alamos, NM), and Siemens AG (Germany).

SC Power Systems - (DOE cost share: \$11 million)

On the Southern California Edison grid, SC Power Systems (San Mateo, CA) will design, test, and demonstrate a 138-kilovolt saturable reactor-type fault current limiter. In this type of fault current limiter, a high-temperature superconductor is used with a direct

current power supply to saturate an iron core that interfaces with the line in which the current is to be limited. SC Power's team includes: DOE's Los Alamos National Laboratory (Los Alamos, NM); Air Products and Chemicals Inc. (Allentown, PA); Cryo-Industries of America Inc. (Manchester, NH); Consolidated Edison Company (New York, NY); California Edison Inc. (Rosemead, CA); Delta Star Inc. (San Carlos, CA); and Trithor GmbH (Germany).

SuperPower Inc. - (DOE cost share: \$5.8 million)

SuperPower Inc. (Schenectady, NY) will design, test, and demonstrate on the American Electric Power grid a 138-kilovolt fault current limiter that features a matrix design consisting of parallel "second-generation" high-temperature superconductor elements and conventional coils. SuperPower's team includes: Sumitomo Electric Industries Ltd. (Osaka, Japan); Nissan Electric Co. Ltd. (Kyoto, Japan); The BOC Group Inc. (Murray Hill, NJ); American Electric Power (Gahanna, OH); and DOE's Oak Ridge National Laboratory (Oak Ridge, TN).

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