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Department of Energy Awards Nearly $7 Million to Advance Fuel Cell and Hydrogen Storage Systems Research

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Washington, D.C. – The **U.S. Department of Energy** recently announced nearly $7 million over five years for independent cost analyses that will support research and development efforts for fuel cells and hydrogen storage systems. The four projects – in California, Ohio, and Virginia – will generate rigorous cost estimates for manufacturing equipment, labor, energy, raw materials, and various components that will help identify ways to drive down production costs of transportation fuel cell systems, stationary fuel cell systems, and hydrogen storage systems. These projects will provide important data that will help the Department focus future research and development funding on the fuel cell components and manufacturing processes that can deliver the greatest gains in efficiency.

> "These projects will help advance our fuel cell and hydrogen storage research efforts and bring down the costs of producing and manufacturing next generation fuel cells," said U.S. Energy Secretary Steven Chu. "These technologies are part of a broad portfolio that will create new American jobs, reduce carbon pollution, and increase our competitiveness in today's global **clean energy economy.**"

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These projects will generate lifecycle cost analyses of existing and conceptual fuel cell systems for transportation and stationary applications. The projects will analyze a range of system sizes, manufacturing volumes, and applications, including transportation, backup power and material-handling equipment such as forklifts. Cost analyses are conducted by designing the system and conceptualizing its manufacturing process, selecting manufacturing equipment, determining labor and energy, and obtaining prices for materials and manufacturing equipment. The design of systems and manufacturing process is guided and vetted through system models at National Laboratories, patent and literature research, presentation from developers, and peer review.

The four projects selected for award are:

- **Directed Technologies, Inc. –** Arlington, VA – up to $3 million for two projects
  Directed Technologies will conduct two cost analyses under these awards – one focused on transportation fuel cell systems and the other on hydrogen storage systems. The transportation fuel cell systems project will analyze and estimate the cost of transportation fuel cell systems for use in vehicles including light-duty vehicles and buses. The cost analyses of hydrogen storage systems will also examine various cost parameters including capital equipment, raw materials, labor, and energy to gain an understanding of system cost drivers and future pathways to lower system costs. The analyses will include rigorous annual cost estimates of fuel cell power systems or hydrogen storage systems that will help industry optimize the design of components and manufacturing processes at various rates of production. Sensitivity studies will examine how total manufacturing costs are affected by changes to the fuel cell system design and cost parameters such as platinum price, cell power density, operating pressure, operating temperature or the number of cells in the fuel cell stack.

- **Lawrence Berkeley National Laboratory – Berkeley, CA** – up to $1.9 million
  Lawrence Berkeley National Laboratory will develop total cost models for low- and high-temperature stationary fuel cell systems up to 250 kilowatts (kW). This project will yield accurate projections of current system costs and assess the impacts of state-of-the-art manufacturing technologies, increases in production volume, and design changes on system and life-cycle costs for several near-term and emerging fuel cell markets.

- **Battelle Memorial Institute – Columbus, OH –** up to $2 million
  Over the course of this project, Battelle Memorial Institute will provide cost assessments for stationary fuel cell applications up to 25 kW, including forklifts, backup power units, primary power, and combined heat and power systems. The project will also provide cost analyses of large-scale fuel cell applications ranging from 100 to 250 kW, such as auxiliary power, primary power, and large-scale combined heat and power systems. The analyses conducted under this project will provide a better understanding of performance, design and manufacturing options, and life-cycle costs, which will help optimize fuel cell designs, manufacturing methods, and target applications.