Department of Defense Fuel Cell Demonstration Program

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Brief Synopsis of Presentation:

Frank Holcomb (CERL): Department of Defense Fuel Cell Demonstration Program
The Department of Defense has helped fund numerous demonstration projects for fuel cells around the U.S. The first systems demonstrated were 200-kW phosphoric acid units from International Fuel Cells (aka ONSI, UTC Fuel Cells). Recently the program has expanded to include residential-scale proton exchange membrane (PEM) units. These later units reflect improvements in the technology that are apparent in their higher availabilities: the ONSI Model Cs average 75% compared to the earlier Model B's 57%. These percentages are raw availability; the numbers do not include downtime for site work, scheduled maintenance, etc.

In the new residential program, ERDC/CERL is looking for units that can satisfy minimum 1-year commitments to power at 90% availability. The Plug Power units installed to date have shown about 98% availability over 24,000 hours since they were installed in January 2002, operating at about 25-27% electrical efficiency.

DoD's objectives for these demonstration programs are to contribute to reduced fuel cell prices through manufacturing economies of scale and to effect improvements in the units from actual field use. In the FY01 Residential PEMFC Program, approximately $3 million was awarded to six contractors for a total of 21 units at nine sites. A similar level of funding is anticipated for FY02.

Rebate Program: In 1995, Congress appropriated funds for the Office of the Deputy Under Secretary of Defense, Environmental Security (ODUSD-ES) to establish a competitive, cost-shared, near-term Climate Change Fuel Cell Program (H.R. 103-747). The overall goal of this incentive program is to expedite the market introduction of fuel cell systems. Currently, the program provides up to $1,000 per kilowatt of power plant capacity with a not-to-exceed limit of one-third of the total program cost (capital and installed costs, pre-commercial operation).

Most of the fuel cell projects receiving grants were feasible only with support from the rebate program. The primary benefits of this program include:

- Enables early adopters to participate in demonstrations and field tests.
- Facilitates manufacturer cost reductions through increased production quantities.
- Encourages financial project support from other supporting agencies.
- Expands options for distributed generation technologies needed to meet growing electricity demand.

ERDC/CERL is a major sponsor of the Fuel Cell Test & Evaluation Center (FC*Tec*). Operated by Concurrent Technologies Corporation (CTC), it is located in Johnstown, PA. FC*Tec* 's primary mission is to provide independent and unbiased testing of fuel cell power plants for military and commercial applications. Its primary goal is to significantly accelerate the development and commercialization of fuel cell power plants. Specific objectives for the FC*Tec* are:

- Validate prototype, pre-production systems and components.
- Evaluate design and off-design characteristics of fuel cells.
- Develop standards for commercial and near-commercial applications.
- Reduce life-cycle costs for commercial fuel cell technologies.
- Enhance the performance of fuel cells.