**STATE OF NEW YORK**
**PUBLIC SERVICE COMMISSION**

---

**In the Matter of the System Benefits Charge III** **Case 05-M-0090**

---

# COMMENTS OF PLUG POWER INC.

**Rudy Stegemoeller, Esq.**
**For Plug Power Inc.**

**P.O. Box 359**
**Poestenkill, NY 12140**
**(518) 283-0933**
**rudysteg@capital.net**

**March 4, 2005**

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

---

In the Matter of the System Benefits Charge III Case 05-M-0090

---

COMMENTS OF PLUG POWER INC.

Introduction

Plug Power Inc. is a designer, developer and manufacturer of on-site energy generation systems utilizing proton exchange membrane (PEM) fuel cells for stationary applications. Plug Power is based in Latham, New York. Plug Power's fuel cell systems for small stationary commercial applications have been delivered to select customers through a joint venture with the General Electric Company, and fuel cell systems for residential and small stationary commercial applications are expected to be sold globally through a joint venture with the General Electric Company, and through DTE Energy Technologies. Other strategic partners include Vaillant GmbH, Honda R&D Co., Ltd., Engelhard Corporation and Celanese Ventures.

Plug Power currently employs approximately 300 people in New York State, at an average annual salary exceeding $64,000. Since 1999, Plug Power has paid over $177,000,000 in wages and compensation to its employees, and over $60,000,000 to suppliers located within New York. Plug Power employees have paid over $9,500,000 in State income taxes.

Summary of Comments

Plug Power supports, and is a signatory to, the Comments of the Clean Energy Advocates ("CEA"). In addition, Plug Power submits the following comments that provide more elaboration with respect to fuel cells and their role in the System Benefits Charge ("SBC"):

- A separate funding category for fuel cells should be established within the Research and Development program
- Fuel cell R&D should be funded in a manner consistent with the Renewable Portfolio Standard
- SBC funding allocation should place a high priority on the development of the fuel cell industry in New York State
- The increased importance of energy security indicates that the SBC should fund clean and efficient distributed generation technologies for system security
- The SBC should fund programs that enhance the cost-effectiveness, the reliability and the security of distribution systems, including Smart Grid programs and off-grid technologies that reduce the need for infrastructure investment
- A natural gas component of the SBC should fund highly efficient small-scale CHP
- The SBC should fund demonstration of network interconnections
- The SBC should fund research, development and demonstrations to develop data regarding the benefits that distributed generation provides to distribution systems
- The SBC should fund research, development and demonstration of sustainable technologies to produce and store hydrogen

Comments

The following comments are presented with reference to the Questions presented in the Notice Soliciting Comments.

Question 3.

*Backup power*. Subsequent to the establishment of the SBC, two major events – the terror attack of September 11 and the blackout of 2003 – have highlighted a need to enhance the security and reliability of the electric system, particularly as it pertains to critical infrastructure. Many facilities serving critical distribution, transmission and

communications infrastructure receive backup power from conventional lead-acid batteries, which are maintenance-intensive, prone to failure, and represent environmental hazards in their manufacture, storage and disposal.

As was noted in the Commission's Initial Report on the August 14, 2003 Blackout, February 2004, utilities' physical security systems were compromised due to the failure of battery backup systems (pg. 74). Natural gas pipelines, which rely on electric power for critical functions, are also vulnerable to battery failure (pg. 116).

Cleaner, more effective and more reliable alternatives to batteries are available. Hydrogen-powered PEM fuel cells are an example. One of the limiting factors for batteries is run-time. Extending the run-time of a battery installation requires a large capital investment in additional batteries. A scalable alternative such as fuel cells however, can be designed to run for longer periods by storing more fuel on site with little additional capital cost. Backup power at a substation can be provided by a fuel cell for periods of twenty-four hours or more.

Additionally, traditional battery technology is susceptible to rapid degradation caused by environmental conditions, and batteries are most prone to failure under the weather conditions when they are most needed. For this reason, batteries are very labor-intensive to maintain and support during times when the system is under the most stress. Fuel cell systems offer improved reliability and performance under adverse conditions.

Although the need for improved technology is greatest at critical infrastructure applications, risk aversion with respect to new technologies may also be greatest at these applications. The R&D program of the SBC should contain funding for the development and demonstration of advanced backup power technologies, to accelerate their widespread adoption.

*Benefits of distributed generation.*

During the past five years, the Commission has undertaken a concerted effort to revise traditional regulatory structures to accommodate the development of distributed generation. Progress has been made on interconnection and rate design issues.

The SBC should fund projects demonstrating network interconnections. The extension of interconnection standards to networks was a very important step forward, because areas served by network systems tend to be most in need of distributed generation. It will be important to gain practical experience with the new interconnection standards as rapidly as possible, before widespread deployment of distributed generation within the downstate load pocket will be feasible.

One regulatory gap that still exists is the inability of the regulatory structure to account for the system benefits provided by distributed generation. Avoided line losses, increased reliability, and avoided infrastructure investments remain unaccounted for. Until this gap is addressed, distributed generation will continue to be at a competitive disadvantage.

For this reason, the SBC should fund research and demonstration to develop data regarding the system benefits of distributed generation.

Question 4

The R&D program should emphasize hydrogen research, particularly the development of technologies for producing hydrogen from renewable resources, and the continued development of end-use technologies.

The development of fuel cells by New York companies should be a high priority of the SBC. Plug Power is an example of the high-quality jobs and economic ripple effect that result from the promotion of new industries in the state. Plug Power currently employs approximately 300 people in New York, at an average annual salary exceeding $64,000. Since 1999, Plug Power has paid over $177,000,000 in wages and compensation to its employees, and over $60,000,000 to suppliers located within New York. Plug Power employees have paid over $9,500,000 in State income taxes.

SBC funding allocations for fuel cell product development and demonstration should include a strong preference for products developed and manufactured in New York State. As demonstrated by Plug Power, the return to the State's economy in the form of taxes, jobs and supplier orders will in many cases far exceed the investment, while the environmental and energy security goals of the SBC will be met.

Questions 5 and 7

Plug Power recommends that a separate funding category should be established for fuel cells, either within the DG/CHP program or as a separate area within the R&D program.

Implementing SBC programs for fuel cells, in a manner consistent with the RPS, presents a unique issue. Fuel cells have received some funding support through the DG/CHP program of the SBC, yet fuel cells are classified as renewable under the Governor's Executive Order No. 111 and under the Renewable Portfolio Standard. Most of the funding in the DG/CHP category has gone to internal combustion technologies.

Fuel cells exhibit characteristics of both renewables and conventional CHP. They resemble renewable generation in that they are cleaner than any combustion resource and, in the long run, they represent a potential end-use technology for renewably derived hydrogen. They resemble conventional CHP in their near-term fuel source and their capture of heat byproduct.

The Commission has determined that RPS and SBC programs should not be duplicative. This standard will require the establishment of criteria for the SBC renewables program that will not be appropriate when applied to combustion projects and other non-RPS-eligible technologies. The criteria that are needed to prevent overlap between the SBC and the RPS must be applicable to fuel cells, but should not be applicable to combustion

projects. For that reason, it will often be impractical to design a PON that includes both fuel cells and combustion technologies. A separate category of fuel cell PONs will be needed to remain consistent with the treatment of other RPS-eligible technologies.

The differing needs of the fuel cell industry and the conventional CHP industry provide another reason to establish separate categories for fuel cells and combustion technologies. Because fuel cells are still an emerging technology, product development is a high priority. Combustion sources, on the other hand, are less in need of product development and more in need of demonstration funds.

Another important consideration is the experience with fuel cells that has been developed by NYSERDA staff in the DG/CHP program. The establishment of a separate category for fuel cells should be accomplished in a manner that continues to utilize the expertise of NYSERDA staff.

The success of the SBC in promoting wind technologies to the point of commercial readiness can be duplicated for fuel cells manufactured in New York. The fuel cell program should take a multi-phasing approach that allows for research, product development and demonstration of products up to the point where they are eligible to participate in RPS programs.

Question 12

The SBC should be extended to selective programs designed to reduce the cost, and enhance the security, of distribution systems.

As detailed in the comments of the Clean Energy Advocates, a separate funding category should be established for Smart Grid projects.

SBC funding should also be available for off-grid projects that avoid the need for distribution infrastructure investments, where the cost of supporting the project is less than the cost of the avoided grid investment. A customer installing a clean off-grid generation system, forgoing the free footage that would otherwise be available from the distribution utility, should be eligible to receive funding in recognition of the utility cost that has been avoided.

Question 13

Plug Power supports the expansion of the SBC to natural gas customers, for the reasons stated in the Comments of the Clean Energy Advocates.

Plug Power agrees with CEA that the primary focus of the natural gas SBC should be end-use efficiency measures, but that highly efficient small-scale CHP projects should also be eligible for funding.

PEM fuel cells with heat recovery have demonstrated combined end-use efficiencies exceeding 80%, making them a far more efficient alternative than centralized gas-fired generation of electricity. This figure does not include the additional efficiency from the avoidance of line losses associated with centralized generation. Although these projects have been funded through the DG/CHP program, the benefits that they provide to the gas system have not generally been accounted for.

## Conclusion

For the reasons stated above, the Commission should adopt the recommendations of Plug Power and of the Clean Energy Advocates.

Respectfully submitted,

Rudy Stegemoeller, Esq.
For Plug Power Inc.

P.O. Box 359
Poestenkill, NY 12140
(518) 283-0933
rudysteg@capital.net
March 4, 2005