

**STATE OF NEW YORK
PUBLIC SERVICE COMMISSION**

**Proceeding on Motion of the Commission
Regarding a Retail Renewable Portfolio
Standard**

Case 03 -E- 0188

COMMENTS OF PLUG POWER, INC.

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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. Since 1999, Plug Power has paid over \$146,000,000 in wages and compensation to its employees, and over \$50,000,000 to suppliers located within New York. Plug Power employees have paid approximately \$8,000,000 in State income taxes. Additionally, Plug Power has successfully been awarded over \$70M in federal funding for fuel cell research, development and demonstration.

Plug Power fully supports the Comments of the Renewable Energy Technology and Environmental Coalition (RETEC), of which Plug Power is a signatory and an active member. On March 23, 2003, Plug Power offered comments in support of the following four statements:

- Establishing an RPS will help to promote the development of a renewable energy industry within the State.
- Fuel cells should be included in the definition of renewable resources.
- The RPS should include provisions that encourage the participation of emerging technologies.
- The RPS should include distributed generation.

To avoid repetition, Plug Power refers all parties to the comments of RETEC and to the Plug Power comments of March 28, 2003. In addition, Plug Power offers the following comments:

Distributed generation can easily be incorporated into the RPS process.

Concerns have been raised regarding the ability to account for energy produced “behind the meter” by distributed resources. In the case of a PEM fuel cell, the inverter includes an output monitor, which records kilowatt-hours. (The output monitor is not a “utility-grade meter;” it is designed specifically to record the output of a small inverter.) The total output of the fuel cell unit could be reported on an annual basis or any other basis coinciding with regular service calls.

For residential and small commercial customers, rather than accounting for each kWh produced at each customer’s site, it will be far more practical to estimate the output of typical units, based on unit capabilities and customer load patterns. Payments under the RPS would be based on these estimates, subject to certification that the unit was available throughout a reasonable period. Actual output from a sampling of units could be obtained by inspection of the units’ output monitors.

In the case of PEM fuel cells, estimating output will be very simple. Depending on the size and type of customer, PEM units can run at baseload or can be programmed to run at preset output levels that roughly approximate the average load profile of the customer. At present, Plug Power’s GenSys5C runs at a minimum level of 2.5 kW, with settings of 4 kW and 5 kW to accommodate peak times. Within the next two years, it is anticipated that the minimum setting will be established at 1 kW or lower. PEM fuel cells that are delivered within the next several years will be programmed to operate at a pattern of preset levels designed to accommodate the customer’s anticipated load patterns. Estimating the total output of a group of these units would require no judgment; it would simply require a calculation of the settings multiplied by the expected number of hours of availability.

Fuel cells using liquid propane gas (LPG) should be eligible to participate in the RPS.

The Comments of RETEC provide a full discussion of the use of gas-fueled fuel cells as a bridge toward pure hydrogen fuel cells. In fact, Plug Power currently offers a back-up fuel cell system, the GenCore 5T, that utilizes commercially available bottled hydrogen as its fuel source.

In 2003 Plug Power introduced a 5 kW fuel cell that uses hydrogen transformed from liquid propane gas. Liquid propane gas is a combination propane and butane. Butane is derived primarily from natural gas. Propane is derived from a variety of sources, primarily from waste products of petroleum refinement, which would otherwise be burned off at the refinery.

Fuel cells transforming LPG into hydrogen provide unique system benefits because they will be deployed mainly in rural and exurban areas where the cost-per-customer of providing electric distribution is relatively high. Where rural areas experience growth, causing pressure on existing distribution systems, LPG-fueled fuel cells will be a valuable alternative to expensive distribution upgrades. Customers in these areas may also be subject to more frequent outages or outages of greater duration, which increases the value of the added reliability provided by fuel cells.

It is critically important for the success of the “emerging technologies” incentive that interconnection standards be extended to include networks.

There is a large amount of economic potential for photovoltaic and fuel cell technology in the New York City and Westchester area, due to the relatively high retail rates in this area. This is also the area most in need of distributed resources, as a way of reducing need for transmission and distribution investments. It is also the area most in need of clean electric generation, because it remains in non-attainment of air quality standards.

Unfortunately, at present the Standardized Interconnection Requirements adopted by the Commission, which have worked quite well for radial systems since being amended in 2002, do not presently apply to networks. Because almost the entire New York City area is served by networks, PV and fuel cell units eligible to participate under the RPS will likely have difficulty (and unreasonable expense) obtaining interconnection approvals. Although the RPS is not the forum for establishing detailed interconnection requirements, the Commission must recognize that important purposes of the RPS may be frustrated unless reasonable interconnection standards for networks are put into place.

Offering “incentives” for small distributed resources is not in itself sufficient to redress the regulatory imbalance favoring traditional power supplies.

Under the RETEC proposal, at least 20% of the emerging technologies incentive would be targeted toward non-demand-billed customers. If adopted by the Commission, this will represent a productive step forward in what must be a comprehensive approach to the widespread adoption of small-scale distributed resources.

Although financial incentives under the RPS will be helpful, in the larger context far more needs to be done to realize the tremendous benefits offered by small-scale DG. Many of the obvious benefits of small, clean DG remain unaccounted for in a regulatory process which, despite restructuring, remains oriented toward central station power and bulk transmission as the “normal” way to provide power service.

In several proceedings, the Commission has begun to address the regulatory issues that distort markets in favor of traditional power sources. However, a great deal remains to be done. For example:

- At this time, it is difficult or impossible in most jurisdictions for the capacity value of DG units under 100 kW to be accounted for in regional markets.

- The numerous environmental benefits of small DG remain unaccounted for. Fuel cells and PV units operating during peak hours could displace peaking combustion units that have very high emission rates. Reduction in need for new transmission and distribution infrastructure eliminates the environmental impacts associated with these facilities.
- Rate design continues to provide utilities with incentives to maximize kWh sales in order to increase profits; this gives utilities a disincentive to utilize DG. (The institution of standby rates, which place the large majority of the rate burden into unavoidable charges, was done without regard for the system benefits of small DG.)
- Reasonable interconnection rules are only available in limited circumstances.
- Line losses prevented by DG units remain uncounted.
- The potential for DG to reduce costly transmission and distribution investment remains uncounted.
- Security and reliability benefits of DG, which are heavily underscored by recent events, remain unaccounted for in the regulatory process.

For the foreseeable future, central station power will continue to play a dominant role in the electric industry, and Plug Power strongly supports the efforts of the RPS to introduce more wind generation and other clean renewable power sources into the mix of central station power. In the long term, these technologies will be vital to an integrated, clean, renewable power supply system.

It must be strongly emphasized, however, that any “incentives” for small distributed resources in the RPS must be viewed within a larger context, in which a wide range of regulatory presumptions favoring traditional power sources are still in place. Including incentives for small DG within the RPS will make the market function more equitably and will provide for the competitive availability of these resources beyond 2013.

Respectfully submitted,

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