UTC Power
A United Technologies Company

July 11, 2007

Hon. Eleanor Stein
Administrative Law Judge
Public Service Commission
State of New York
Three Empire State Plaza
Albany, NY 12223

Re: **07-M-0548 - Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard –** ***Initial Comments in Response to Staff's Questions to the Parties***

Dear Judge Stein:

UTC Power appreciates the opportunity to provide brief Written Comments in connection with several questions related to distributed generation (DG) and combined heat and power's (CHP) potential to help New York achieve its ambitious energy efficiency objectives. Distributed generation, particularly when operating in CHP mode and providing cooling, should be an integral part of New York's plan to achieve a 15% electricity consumption reduction by 2015. Simultaneously, increased CHP will benefit New York's efforts to reduce emissions levels, improve air quality, reduce grid strain and increase energy security.

The *Ruling on Scope and Schedule* dated June 15, 2007 counsels that given the expedited schedule and the broad scope in this matter, issues such as the energy efficiency potential of DG and CHP be given lower priority in this initial phase. Accordingly, UTC Power submits abbreviated comments at this time and will be pleased to work with others and the Staff in later phases. UTC Power offers a brief description of its energy efficient technology followed by responses to several questions posed by Staff.

Company Background

UTC Power, a business unit of United Technologies Corporation, is a world leader in commercial stationary fuel cell development and deployment. UTC Power also develops innovative combined cooling, heating and power applications for the distributed energy market. Since 1991, UTC Power has installed more than 260 fuel cell systems in 19 countries around the world. UTC Power's PureCell™ 200 system provides base-load power and can operate connected to or independent from the grid and also switch between modes automatically or on command. The PureCell™ 200 system operates seamlessly during grid outages. Additionally, it is one of the cleanest power sources available today.

UTC Power also develops innovative combined cooling, heating and power applications for the distributed energy market. One example is the PureComfort™ power solution, an ultra-efficient natural gas driven combined cooling, heating and power solution, capable of satisfying energy needs with or without the grid. It is flexible, environmentally benign and can reach

efficiencies in excess of 80 percent. PureComfort™ power solutions consist of microturbines and a double-effect absorption chiller/heater from the Carrier Corporation. Both the PureCell and the PureComfort™ systems can operate in two modes: in parallel with the grid, shutting down in the event of a grid failure or in dual mode, operating in parallel with the grid and then operating independently from the grid in the event of a grid outage. When a UTC Power system is integrated with a facility's central heating or cooling system, the efficiencies can exceed 80 percent, resulting in substantial energy cost savings. We have deployed a total of 32 PureCell™ 200 and PureComfort® systems in New York state.

Preliminary Responses to Staff Questions

9. What role could innovative rate design play in enabling greater penetration of energy efficiency and how might this vary by market segment? Should energy tariffs recognize and differentiate between the relative level of energy efficiency designed into new buildings?

The Public Service Commission's decision to decouple utility revenue from sales is a critical step in redesigning rates to increase the penetration of CHP in New York. Accordingly, it is most important that New York fully implement as expeditiously as possible the revenue decoupling mechanisms consistent with its prior policy decision. (See, Case 03-E-0640 and Case 06-G- 0746 *Order Requiring Proposals for Revenue Decoupling Mechanisms* issued April 20, 2007.) We concur that tariffs should recognize and differentiate between the relative level of energy efficiency designed into new buildings and also reflect capacity and emission levels.

Additionally, New York should consider implementing further natural gas rate mechanisms to increase the amount of CHP in the state's resource mix. Increasing the amount of CHP could reduce the need for new electric infrastructure, and therefore provide electricity to customers at a lower cost. Accordingly, to encourage highly efficient CHP, it is constructive to review natural gas and electric tariffs in tandem. For example, Connecticut has adopted a program offering natural gas waivers in an amount equivalent to the customer's retail delivery charge for transporting natural gas from the gas utility to the DG project. The costs of such rebate are recoverable by the electric distribution companies because ultimately, the electric system and customers benefit from increased CHP installations. (See, Connecticut Department of Public Utility Control Final Decision in Docket No. 05-07-16, dated March 27, 2006.) We encourage New York to consider such a program, structured to meet its energy efficiency goals by, for example, offering a natural gas waiver for highly efficient CHP installations that provide cooling, thus reducing system strain during peak summer periods.

12. What role should a) distributed generation, b) demand response, and c) combined heat and power play in reaching New York's energy efficiency goals?

On-site electric generation systems that make productive use of waste heat should be an integral part of New York's plan to reduce electricity consumption. Over the long term, buildings that use no net energy from power grids and produce zero net carbon dioxide emissions will require a combination of onsite power generation and ultra-efficient building materials. In the near term, increasing the amount of highly efficient DG should be an essential element in energy efficiency program design.

For perspective, more than 60 percent of energy extracted from the ground is wasted before it becomes useful work. About 60 percent of the energy is lost as waste heat vented to the atmosphere at central generating plants. Another seven percent is lost in the form of heat in

transmitting electricity. We lose *all* of the energy in the heat which cannot be transmitted over any significant distance at all. The solution is to generate the power on-site where the heat can be capture and used for heating and cooling during peak summer months.

An illustration demonstrates the potential efficiency gains achievable through a CHP unit that also provides cooling. A high school installed a PureComfort™ power solution to produce its own power, reduce grid strain and create a public space insulated from grid disturbances that could serve as a place of refuge in the case of natural or manmade disasters. The school began to use the waste heat from the system to provide its own space heating in the winter and chilled water for air conditioning in the summer, which contributed to peak demand reduction. The building now achieves efficiencies over 80 percent. That is far ahead of the 33 percent efficiency levels typical of electricity generated at and then transmitted from central power stations.

Another reason CHP should play a central role in New York's energy efficiency objectives is that it can meet diverse facility needs. For example, it can provide domestic hot water year round at a hotel, sub-cooling for a refrigeration system and dehumidification in a grocery store, or heat and hot water at a hospital. Each of these installations can achieve well over 80% in total energy efficiency and UTC Power units have demonstrated total system efficiencies of up to 93 percent.

An important incremental benefit of increasing the use of highly efficient DG is that whether in New York's more confined urban areas or its quiet rural settings, DG's benign footprint makes it universally welcomed. It is so unobtrusive, in fact, it can be installed indoors. For example, UTC Power has installed two of its fuel cell systems on the second floor of the Conde Nast building at 4 Times Square in New York City.

14. What could be an appropriate role for utilities with respect to the delivery of energy efficiency programs within their service territories? How might that role vary by market segment?

In our experience, customers are best served when utilities partner with customers and providers of energy efficient power solutions. Utilities are particularly well positioned to help educate consumers about ways to maximize energy efficiency at their facilities and to identify facilities well-suited to reduce electric consumption through alternative technologies.

Utilities should be economically incented to educate and encourage customer installation of highly efficient CHP and other efficiency measures. Connecticut, for example, offers utilities a one time award for educating and assisting customers install distributed resources that achieve certain public policy objectives important to that state. (See, Connecticut Department of Public Utility Control Final Decision in Docket No. 05-07-16, dated March 27, 2006.) An incentive of this type, tailored to New York's energy efficiency objective, would be a straightforward way to align utility economic interests and New York's energy efficiency goals. Such incentive should, of course, be modest so that the vast majority of investment is in efficient technology to benefits all consumers. Finally, utilities should be encouraged to own and operate DG when DG technology can improve system efficiencies more than traditional infrastructure solutions.

17. Should utilities (or other entities) receive incentives for implementing successful energy efficiency programs? If so, what is the appropriate level and form that these incentives should take and should such incentives be performance based?

As noted above, utilities' economic opportunity should be aligned with the state's public policy objectives. In this case, New York utilities' profit motives should run in parallel with the objective of increasing the penetration of cost effective energy efficient resources, including CHP. Two straightforward ways to do this include: 1) authorizing a slightly higher rate of return for utility investments that meet system and customer needs through means that advance New York's energy efficiency goal than the authorized rate of return for traditional investments; and, 2) providing utilities with specific economic rewards for their contribution to energy efficiency goals, such as allowing them a percent of a program budget for achieving established targets, such as the number of CHP units installed, energy savings achieved and program cost reductions.

UTC Power appreciates the opportunity to comment and looks forward to participating in subsequent phases of the proceeding when issues related to CHP are considered in greater depth.

Sincerely,

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