



Agenda Date: 10/16/13
Agenda Item: 8F

STATE OF NEW JERSEY
Board of Public Utilities
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CLEAN ENERGY

IN THE MATTER OF THE CLEAN ENERGY)
PROGRAMS AND BUDGET FOR FISCAL YEAR 2014:) ORDER
MODIFICATIONS TO THE COMBINED HEAT AND)
POWER –FUEL CELL PROGRAM)
) DOCKET NO. EO13050376V

Parties of Record:

- Joe Gennello, Honeywell Utility Solutions
- Diane Zukas, TRC Energy Services
- Michael Ambrosio, Applied Energy Group
- Mark Mader, Jersey Central Power & Light Company
- Timothy White, Atlantic City Electric Company
- Scott Markwood, Orange & Rockland Utilities
- Bruce Grossman, South Jersey Gas Company
- Susan Ringhof, Public Service Electric and Gas Company
- Tracey Thayer, New Jersey Natural Gas
- Mary Patricia Keefe, Elizabethtown Gas
- Stefanie A. Brand, Esq., Director, New Jersey Division of Rate Counsel

BY THE BOARD:

This Order memorializes action taken by the Board of Public Utilities ("Board") at its October 16, 2013 public meeting, where the Board considered the proposed changes to the fiscal year 2014 ("FY14") programs for New Jersey's Clean Energy Program ("NJCEP") related to the combined heat and power ("CHP")/fuel cell ("FC") program.

BACKGROUND AND PROCEDURAL HISTORY

By Order dated June 21, 2013, Docket No. EO13050376V ("the June 21, 2013 Order"), the Board approved FY14 programs and budgets for the NJCEP. The Order approved the compliance filings of the various program managers which set out program descriptions and detailed budgets.

During the previous budget cycle from January 1, 2012 through June 30, 2013, the New Jersey Economic Development Authority ("EDA") managed a large scale combine heat and power and fuel cell program for systems greater than 1 megawatt ("MW") and TRC managed a small scale CHP-FC program for systems sized up to 1 MW. In its June 21, 2013 Order the Board approved Staff's recommendation to combine the two programs into a single program managed by TRC.

TRC required certain modifications to its contract with the State to manage the new, combined CHP-FC program. However, given the anticipated transition to a new Program Administrator, the proposed contract modifications were not considered by Treasury. As a result, the CHP-FC program has been closed to new applicants since July 1, 2013. In this Order, Board Staff makes recommendations for an alternative, interim, approach to managing the CHP-FC program.

As part of its deliberation regarding the FY14 programs and budgets, the Board considered numerous comments submitted on the draft programs and budget. Several comments raised issues related to the CHP-FC program that required additional investigation by Staff. In this Order, Staff makes recommendations related to the CHP-FC program.

CHP-FC Program Management

The Board's June 21, 2013, Order approved a new, combined (small scale and large scale) CHP-FC program to be managed by TRC. Subsequent to issuance of the Order, Staff commenced discussions with TRC to develop the applications and processes for managing the new program. However, the contract modifications needed for TRC to manage the new program were not approved. Therefore, Staff has commenced discussions regarding an alternative structure for managing the program.

As noted above, during the previous budget cycle from January 1, 2012 through June 30, 2013, TRC managed a small scale CHP-FC program for systems up to 1 MW. TRC has in place the processes and contract approvals required to continue managing this component of the program without the need for any contract modifications. Therefore, Staff recommends that TRC be authorized to manage the component of the program related to small scale CHP-FC projects up to 1 MW. TRC is in a position to reopen this component of the program upon Board approval.

Board Staff previously supported the EDA in its management of the large scale CHP-FC program by providing technical support, assisting in the program design and development of application materials. Staff performed technical reviews required for CHP-FC applications submitted to EDA. Staff is very familiar with the program procedures and possesses the technical capabilities to review applications. Therefore, Staff recommends that the large scale component of the CHP-FC program, as described in TRC's compliance filing, be managed by the Office of Clean Energy ("OCE") until the new Program Administrator begins work or an alternative structure for managing the program is established.

CHP-FC Program Issues

In its June 21, 2013 Order, the Board identified three CHP-FC program issues that required additional investigation by Staff prior to making a final recommendation:

- That all systems that receive NJCEP incentives have the ability to automatically island/disconnect and operate independent from the grid in the event of substantial grid congestion, interruption or failure.
- That the program requirement that limits the system size to no more than 100% of a customer's historic electric consumption was too restrictive and served no societal purpose.
- That the minimum efficiency standard of 50% Lower Heating Value ("LHV") for fuel cells without heat recovery should be reduced.

By email dated June 24, 2013, Staff circulated for comment a number of questions related to the three issues identified above. The questions were circulated to the CHP-FC work group listserv and were posted on the NJCEP website. Below is a summary of the comments submitted related to these three issues:

Summary of Comments from Public Stakeholders

Written comments were submitted by: Clear Edge Power ("Clear Edge"); E-Finity; DCO/Energenic, ("DCO"); New Jersey Natural Gas Company, ("NJNG"); Jersey Central Power & Light Company, ("JCP&L"); Public Service Electric and Gas Company, ("PSE&G"); Rockland Electric Company, ("RECO"); the New Jersey Division of Rate Counsel, ("Rate Counsel"); Bloom Energy Corp, ("Bloom"); the Environmental Defense Fund, ("EDF"); and Nexant.

General Comments:

Rate Counsel stated that there should be an analysis of the poor responses to the existing CHP-FC programs to identify program features that would remedy any deficiencies found. This analysis should be a formal process evaluation study conducted by an independent entity. Only then will Staff and others possess enough information to make informed decisions regarding changes to the CHP program.

Response: Staff concurs with this recommendation. As recommended in Staff's Revised CRA Straw Proposal approved by the Board in June 2013, Staff recently formed an evaluation working group that will prepare a list of specific evaluations to be performed. Rate Counsel is a member of this committee. Staff supports an evaluation of the CHP-FC program and will propose such a study to the working group.

Proposed Islanding Requirement

Comments:

Clear Edge strongly discouraged the State from requiring grid independent functionality for all fuel cell and CHP projects. Alternatively, Clear Edge recommended an additional incentive of \$1/watt to help defray the costs associated with the additional equipment needed to provide the grid independent benefit.

E-Finity stated that islanding and independent operations from the distribution grid should be a requirement for public/critical facilities. There should be an additional incentive of \$0.50/watt to help alleviate the costs of additional engineering, equipment cost, relay switches, and electrical gear to prepare a facility for dual mode installation.

DCO stated that in order to create an effective critical asset hardening program the State needs to develop a regional plan that would specifically delineate critical facilities. Once established, project developers could begin the engineering analysis to balance the cost and functionality assessments required to achieve the most cost effective result. While it is difficult to estimate additional costs since costs are very site specific, cost related to islanding of between 10% and 20% of the total capital cost for standard CHP applications should be expected.

RECO believes that if SBC funds are to be used to incentivize DG for public and critical facilities, the facilities should be able to begin generating power independent of the grid as a resiliency measure. The CHP system must have the ability to operate during a grid outage. Because additional equipment is required to operate independent of the grid, it is reasonable to provide additional incentives to achieve this objective, but only for public and critical facilities.

Rate Counsel stated that the OCE must better develop the two distinct goals implied by introducing a requirement that CHP systems have the ability to operate independent of the grid, that is, to encourage the development of CHP, and to promote islanding at critical facilities. The OCE should consider the benefits and costs that are likely to result from concomitantly pursuing these goals. Additional incentives should not be considered until an evaluation of the existing programs is completed.

NJNG stated that given the NJCEP's primary interest is rooted in the original objective of increasing energy efficiency, it is important that any new mandates not serve as a disincentive to promoting CHP. For many projects, independent operation requirements could add substantial cost. Accordingly, it would be very important to identify and offer additional incentives if it is to be established as a requirement. The absence of an additional incentive could inhibit the number of projects that move forward which would be counter to clean energy and resiliency objectives.

JCP&L believes that CHP-FC systems should only be able to island and operate independently from the grid for emergency situations. Other CHP-FC installations should be designed to meet the needs for the application without additional requirements. No additional incentives should be necessary to facilitate the deployment of public/critical systems. Systems operating independent of the distribution system during emergencies should be based on the needs of the public/critical facilities in support of the State's goals.

Bloom believes that islanding should be a requirement but that absent additional incentives, such a requirement would amount to a reduction to the current incentive. Bloom proposed an additional incentive of approximately \$750/kW for projects that can operate independent of the grid.

PSE&G states that the Energy Master Plan ("EMP") endorses further development of CHP where net economic and environment benefits can be demonstrated and the existing program supports this objective. If the Board now has an interest in ensuring that public/critical facilities can operate during storms and other disruptions to the grid, and wishes to use CHP as one of several means to accomplish this, then the requirement for islanding is appropriate.

EDF is in favor of requiring CHP and fuel cell systems to have the ability to island. Because the costs associated with equipment that makes islanding possible are incurred in substantial part for public purposes, separate incentives should be provided for islanding capability. Incentives should be tied to the cost of equipment that enables the plant to island.

Response: Staff initially proposed that all systems that receive NJCEP incentives have the ability to automatically island/disconnect and operate independent from the grid in the event of substantial grid congestion, interruption or failure. Staff determined that this recommendation was premature and withdrew its proposal pending further assessment of the impacts of such a requirement. The final program approved by the Board in its June 21, 2013 Order did not include a requirement that all CHP-FC systems have the ability to island.

The comments received on this issue distinguish between public/critical facilities and non-public/critical facilities. Several commenters recommend that the program should not require non-public/critical facilities to have the ability island/disconnect and operate independently from the utility. Such a requirement would increase the cost of the systems which could inhibit the number of projects that move forward which would be counter to clean energy objectives. Staff concurs.

For CHP-FC systems that do not serve public or critical facilities, the decision regarding whether or not to add the equipment necessary to operate independent of the grid should be a business decision made by customers. The decision should be based on an analysis of the benefits of having the ability to operate during an outage, the costs of the additional equipment required to operate during outages, and the costs of not being able to operate during an outage. If a business determines that the added costs do not exceed the benefits and chooses not to pursue islanding capability, the program should not require the business to invest in additional equipment.

Alternatively, any public/critical facilities that install CHP-FCs should have the ability to operate independent of the grid. This will serve the public purpose of enabling critical facilities to remain operational during emergencies. Staff is exploring a number of initiatives to achieve this objective, including defining critical facilities and identifying potential sources of funds aimed at "hardening" the grid post Superstorm Sandy by covering the costs of any additional equipment required to operate independent of the grid.

Based on the above Staff recommends that the NJCEP not require CHP-FC systems to have the ability to automatically island/disconnect and operate independent from the utility. At this time Staff will explore the potential use of other sources of funding to achieve the policy objective of requiring CHP-FC systems at public/critical facilities to have the ability to operate during extended utility outages.

Capping System Size based on Historic Consumption

Comments:

Clear Edge stated that projects should not be limited by the current sizing requirement.

E-Finity stated that the program should allow for installations to meet 100% of the thermal requirement even when that would be over 100% of the electric requirement with the surplus power sold to the utility. The incentive should only be available for on-site load and should not include exported power.

DCO stated that while it is difficult to think of any potential CHP application in NJ where the thermal load is so great it would create excess electric generation, there should not be a blanket prohibition on the creation of this additional capacity resource.

RECO states that the current program requirement that limits system size based on historic electric consumption ensures that customer-funded incentives will not be used to subsidize excess electric generation that provide no additional benefit to the grid or utility customers. RECO argues that the current sizing requirement should be kept.

Rate Counsel states that systems should be sized to meet thermal demands, not electric demands, in order to maximize both the thermal and electric benefits and the economics of CHP systems. Rate Counsel recommends lifting the current "100% of annual load" restriction, as long as all excess generation continues to be sold to PJM.

JCP&L recommended that the public/critical facilities systems be sized to all or a portion of the customers electric load and not exceed 100% of historic consumption.

Bloom supports the requirement for equipment to be sized to meet all or a portion of the electric load. This sizing requirement ensures that projects receiving funding are providing the benefits of distributed generation.

PSE&G supports the existing requirement that caps system size based on historic consumption as it believes ratepayer funds should not be used to invest in what would be the development of non-renewable wholesale generation. This also avoids potential FERC jurisdictional issues that can complicate the CHP program.

EDF supports the construction of CHP systems sized to exceed 100% of peak demand. Sizing a single CHP plant to meet the load of multiple public or critical facilities, with differing electric and thermal needs, could enable the system to be more cost effective and valuable to the public.

Response: Staff concurs with Rate Counsel's recommendation that CHP systems should be sized to meet thermal demands, not electric demands, in order to maximize both the thermal and electric benefits and the economics of CHP systems. Sizing CHP systems to meet thermal demand maximizes the energy savings by maximizing the amount of waste heat utilized. Rate Counsel's recommendation does not address fuel cells without heat recovery which are discussed further below.

Staff recognizes the concerns raised by the electric utilities related to subsidizing wholesale generation but believes other program requirements address those concerns. Specifically, the program requires that any CHP-FC system with heat recovery have a minimum efficiency of 65% LHV. This ensures that a large portion of any waste heat generated is utilized. A CHP system oversized on the electric side could not achieve this requirement without having a large thermal load and utilizing waste heat to serve the thermal load. In addition, the program caps incentives for large CHP systems at the lesser of 30% of the projects cost or \$3 million. Thus, any system larger than approximately 6.8 MW would not receive any additional incentive.

TRC's Board-approved compliance filing dated June 18, 2013 includes the following language on page 52 regarding the CHP-FC program:

- Systems must be sized to meet all or a portion of the customer's on-site load, not to exceed 100% of the most recent historical annual consumption or peak demand, although any surplus power that may become available during the course of a given year may be sold to PJM.

Based on the above, Staff recommends that this requirement be eliminated for CHP systems. However, since fuel cells without heat recovery, unlike CHP systems, are not limited by the amount of thermal energy utilized as discussed above, Staff recommends that the requirement remain in place for fuel cells without heat recovery.

Minimum Efficiency Level for Fuel Cell without Heat Recovery

Comments:

Clear Edge stated that the program should strongly consider leaving the electric only (fuel cells without heat recovery) efficiency level unchanged and instead lower the CHP fuel cell minimum efficiency standard from 65% to 55% LHV.

E-Finity stated that fuel cells with waste heat recovery should not be able to qualify for electric efficiency only. The electric efficiency should be greater than the 50% LHV and more in line with CHP efficiencies. Based on a California evaluation study, fuel cells average \$8.97/watt (installed cost) versus \$3.97/watt (installed cost) for micro-turbine CHP which also emit less CO₂ than fuel cells.

DCO believes that fuel cell technologies deserve appropriate consideration irrespective of LHV or energy efficiency standards. These considerations, however, should more importantly focus upon the utilization of these technologies as a best fit for the circumstances presented and upon the cost effective level of incentives required for their use in these applications.

RECO stated that it sees no reason to carve out an exception for fuel cells without heat recovery and does not see any reason to relax the programs current standards.

Rate Counsel continues to support the inclusion of fuel cell technologies with heat recovery. However, fuel cells without heat recovery do not provide the energy efficiency benefits resulting from the concurrent generation of useful thermal output and electricity. Rate Counsel does not support extending the "with waste heat" incentives to fuel cell systems that do not meet the current 65% LHV efficiency threshold. Such systems do not represent a cost-effective use of CHP, and therefore should not be included in the program.

JCP&L stated that electric only fuel cells without heat recovery should not be eligible for CHP incentives unless they meet the existing CHP requirements.

Bloom believes that fuel cells deployed in an all-electric mode should be required to meet the 50% LHV. Maintaining the 50% LHV ensures the Board's energy efficiency objectives are met.

PSE&G believes that the existing minimum efficiency requirements for both CHP-FCs with and without heat recovery are consistent with the policy objectives of the EMP and should not be changed.

EDF noted that there may be uses for fuel cells in public or critical facilities where CHP is not appropriate or cost effective. For end users that are designated as a public/critical facility, that do not have thermal needs or large electric needs, fuel cells might be a viable option. EDF invited further discussion regarding whether and where this can be achieved if the LHV is less than 50%.

Response: As demonstrated by the summary of comments above, there is no consensus regarding the treatment of fuel cells without heat recovery. Rate Counsel and others recommend no incentives for fuel cells without heat recovery while Bloom and PSE&G recommend leaving the standard as is.

A fuel cell without heat recovery is distributed generation that does not produce the energy savings associated with CHP, because waste heat is not utilized to offset thermal load. Fuel cells are a form of distributed generation that provide reliability benefits to the host customer and distribution system benefits to the electric utilities. However, they do not result in the same energy efficiency or renewable energy benefits associated with other NJCEP measures.

Based on the above, Staff recommends that the existing minimum efficiency requirement of 50% LHV for fuel cells without heat recovery remains. Staff also recommends that the Board consider a separate proceeding to assess the benefits of fuel cells without heat recovery and other distributed generation technologies and to determine if incentives should be provided for such technologies and, the appropriate source of that funding.

Staff Recommendations and Proposed Modifications to TRC's Compliance Filing

Based on the above Staff recommends the following:

1. Authorize TRC to continue to implement the small scale component of the CHP-FC program for systems up to 1 MW.
2. Authorize the OCE Staff to implement the large scale component of the CHP-FC program for systems greater than 1 MW.
3. Staff previously recommended that all systems that receive NJCEP incentives be required to have the ability to automatically island/disconnect and operate independent from the utility in the event of substantial grid congestion, interruption or failure. Based upon additional discussions with interested stakeholders, Staff is withdrawing this recommendation. Alternatively, Staff will explore utilizing other sources of funding to provide incentives for public and critical facilities to install the equipment required to operate independent of the utility grid.
4. The minimum efficiency requirement for fuel cells without heat recovery should remain unchanged at 50% LHV.
5. TRC's Board approved compliance filing dated June 18, 2013 includes the following language on page 52 regarding the CHP-FC program:

"Systems must be sized to meet all or a portion of the customer's on-site load, not to exceed 100% of the most recent historical annual consumption or peak demand, although any surplus power that may become available during the course of a given year may be sold to PJM."

This requirement should be eliminated for CHP projects but maintained for fuel cells without heat recovery.

TRC submitted a revised compliance filing dated October 1, 2013 and the OCE submitted a revised compliance filing dated October 1, 2013 that incorporate the changes discussed above. Staff recommends that the Board adopt the revised compliance filings and authorize TRC and the OCE to implement the CHP-FC program.

DISCUSSION AND FINDINGS

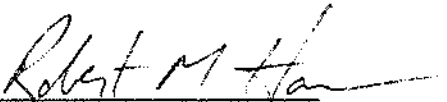
The installation of CHP and fuel cell systems is an important component of the State's energy policy as set out in the State Energy Master Plan. CHP and fuel cells can also play a role in rebuilding the grid and adding resiliency to the grid which gained importance subsequent to Superstorm Sandy.


The Board has reviewed the comments submitted and Staff's recommendations. The Board **FINDS** that promoting CHP is an important component of the State Energy Master Plan and that CHP and fuels cells offer a potential opportunity for public and critical facilities to remain operational during emergencies when the electric grid is down.

Based on the above, the Board **HEREBY APPROVES** Staff's recommendations set out above and **APPROVES** TRC's revised compliance filing dated October 1, 2013 and the OCE's revised compliance filing dated October 1, 2013. The OCE and TRC are authorized to implement the CHP-FC program described in the revised compliance filing effective as of the date of this Order.

DATED: 10/16/13

BOARD OF PUBLIC UTILITIES
BY:



ROBERT M. HANNA
PRESIDENT


JEANNE M. FOX
COMMISSIONER

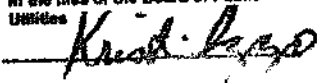

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KRISTI IZZO
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities



In the Matter of the Clean Energy Programs and Budgets for Fiscal Year 2014 –
Modifications to the Combined Heat and Power-Fuel Cell Program
Docket No. EO13050376V

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