



Agenda Date: 2/22/17  
Agenda Item: VIIIA

**STATE OF NEW JERSEY**  
**Board of Public Utilities**  
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CLEAN ENERGY

IN THE MATTER OF THE APPEAL FROM DENIAL OF )  
INCENTIVE APPLICATION BY THE NEW JERSEY'S )  
CLEAN ENERGY PROGRAM COMBINED HEAT & )  
POWER / FUEL CELL PROGRAM FOR CONDENSING )  
TURBINE - MERCK RAHWAY ) CORRECTED ORDER<sup>1</sup>  
DOCKET NO. QO16030250

**Party of Record:**

**Luis Torreiro, Senior Engineer, Merck & Co., Inc.**  
**John Rundell P.E., LEED AP, CPMP, WM Group Services, LLC**

**BY THE BOARD:<sup>2</sup>**

By letter dated March 10, 2016, Merck & Co., Inc. ("Merck" or "Petitioner") filed a petition ("Petition") in the above-captioned matter requesting that the New Jersey Board of Public Utilities ("Board") reverse the denial of Merck's application to the New Jersey Clean Energy Program's ("NJCEP") Combined Heat and Power & Fuel Cell ("CHP/FC") Program.<sup>3</sup> For the reasons noted herein, the Board affirms the denial of the incentives.

**PROCEDURAL AND FACTUAL BACKGROUND**

The Board administers the NJCEP pursuant to its authority under the Electric Discount and Energy Competition Act ("EDECA"), N.J.S.A. 48:3-49 to -109. NJCEP's programs are open to all commercial and industrial ("C&I") customers paying into the Societal Benefits Fund<sup>4</sup> and

<sup>1</sup> A corrected order is being issued to address some formatting issues and to insert text that was inadvertently omitted as a result of the formatting issues.

<sup>2</sup> Commissioner Joseph L. Fiordaliso has recused himself from this matter.

<sup>3</sup> The Waste Heat to Power ("WHP") technology is eligible to receive incentives under the CHP/FC Program. WHP is the process of capturing waste heat discharged as a byproduct of the process and "[h]eat recovery or other mechanical recovery [is] from existing equipment utilizing new electric generation equipment." NJCEP FY2016 Program Descriptions and Budget, (June 15, 2015, p. 64.)

<sup>4</sup> The Fund is made up of the societal benefits charge ("SBC") imposed on ratepayers. See N.J.S.A. 48:3-60.

includes several programs that offer incentives to both residential and C&I customers to invest in energy efficiency ("EE") and renewable energy ("RE") measures. The CHP/FC Program provides eligible participants financial incentives for installations which further enhance energy efficiency in their buildings through on-site power generation with recovery and productive use of waste heat, and reducing existing and new demands to the electric power grid. The CHP/FC Program offers incentives for three distinct technologies: combined heat and power systems, fuel cells without heat recovery, and waste heat to power systems.

On June 15, 2015, NJCEP published the FY2016 Program & Budget Filing, which made program incentive guidelines publicly available to potential applicants. On June 26, 2015, the Board approved initial on funding level of \$14,776,000 for the CHP/FC Program.<sup>5</sup> In that Order, the Board recognized that "[h]istorically, NJCEP incentives have been utilized to promote efficient end use measures and to promote the generation of electricity using renewable sources of fuel. CHP and Fuel Cells with heat recovery capture waste heat to offset boiler fuel or other uses of on-site energy." Id. at 151. The CHP/FC Program application states that the goal is to "[increase] energy efficiency to reduce energy cost and consumption." (Combined Heat and Power Workbook, Program Overview).

### **Summary of the Application and Staff Review**

Merck is a global pharmaceutical company engaged in the business of healthcare services that include research, development, manufacturing and distribution of medicines and healthcare related products. (Application, Appendix A, p. 1). In its application, Merck states that it began its operation in the Rahway, New Jersey location in 1903 and owns the 150-acre campus which includes office, laboratory, and research facilities covering over 4 million square feet. Ibid. The Rahway campus consists of three main buildings that house a boiler plant, back pressure steam turbines; and central utilities. Ibid. In 1992, Merck started to expand into other campuses. Ibid. Over the past decade, the Rahway campus has experienced a reduction of roughly 19% in its space requirements and a corresponding drop in energy needs of approximately 22%. Ibid.

On July 9, 2015, Merck applied for a financial incentive of \$2,357,500 to the CHP/FC Program for a waste heat to power system on its Rahway, New Jersey campus ("Rahway Project"). (See generally, Application).

Merck's Rahway facility has an existing CHP system that includes two steam turbines with electric generation capacities of 10 MW and 5 MW. (Application, Appendix A, p. 3). These units are dispatched by Merck's utility operators based on the site energy requirements. Application, Table 12. The proposed project includes the installation of a 4.715 MW condensing turbine which will operate in parallel to the existing turbines. (Application, Appendix A, p. 2).

Over the past decade, Merck has consolidated its operations and moved production out of the Rahway campus. Application, Appendix A, p. 1. This led to a reduction in the overall electric and thermal energy requirements of the campus. Ibid. The loss of thermal load that resulted from moving production to another facility has resulted in the existing 10 MW steam turbine

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<sup>5</sup> See I/M/O the Comprehensive Energy Efficiency and Renewable Energy Resource Analysis for the Fiscal Year 2016 Clean Energy Program, Dkt. No. QO15040476, Order dated June 25, 2015, 2015 N.J. PUC LEXIS 181, \*168.

operating at an average capacity of only 3.3 MW. (Application, Table 13; Application, Appendix B, p. 3).

Waste heat to power is the process of capturing waste heat discharged as a byproduct of a process and using that heat to generate power.<sup>6</sup> Typically, a source fuel is first used to provide thermal energy to meet load requirements of a process or system.<sup>7</sup> The byproduct of this process is heat that would otherwise be wasted to the atmosphere.<sup>8</sup> The waste heat is then repurposed to produce electricity, as opposed to directly consuming additional fuel for this purpose.<sup>9</sup>

The crux of the issue in this matter is whether Merck is utilizing what is otherwise waste heat at its facility to generate electricity, which would be eligible for NJCEP incentives, or is simply creating excess waste heat/thermal energy for the purpose of generating additional electricity which is not eligible for NJCEP incentives. Based on its review of Merck's application, Staff concluded that the system as proposed was consuming additional fuel for the purpose of creating excess thermal energy to generate electricity which does not meet the requirements for waste heat to power incentives.

After a thorough review, NJCEP Staff determined that the proposed system did not meet the CHP/FC Program's eligibility requirements for WHP technologies. On February 29, 2016, Staff issued a project cancellation letter to Petitioner stating that the proposed project did not meet the eligibility requirements as "[t]he heat recovery used to power the condensing steam turbine generator is the direct result of increased fuel consumption. All incremental fuel is used for the production of power only with no thermal energy use incorporated in the incremental portion of the project."

### **Summary of Merck's Petition**

By letter dated March 10, 2016, WM Group Services, LLC ("WM"), Merck's engineer, filed a formal petition on behalf of Merck, with the Board. Petitioner contests NJCEP's interpretation of the project and asks the Board to reverse the denial of the application.

Petitioner argues that the Rahway Project should qualify for the CHP/FC Program because: (1) its use of heat recovery from the increased fossil fuel use would make the system more efficient; (2) conversion of the system's waste heat to electricity is more useful to New Jersey, by reducing grid congestion, than its conversion to thermal energy; and (3) it would permit the operation of the existing system to its full rated capacity without increasing air emissions. Petition at para. 2-4. Petitioner also alleges that the Rahway Project "fundamentally meets the program objective of 'improving the reliability of the grid electric supply.'" (Petition at 4.1).<sup>10</sup>

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<sup>6</sup>USEPA, Waste Heat to Power Systems, May 30, 2012, available at [https://www.epa.gov/sites/production/files/2015-07/documents/waste\\_heat\\_to\\_power\\_systems.pdf](https://www.epa.gov/sites/production/files/2015-07/documents/waste_heat_to_power_systems.pdf).

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> Petitioner has not provided a source for their contention. As such, this quotation has been unverified.

## **STAFF RECOMMENDATION**

Staff has reviewed Merck's petition and recommends that the Board deny the requested relief because the initial denial is consistent with the Staff's interpretation of the CHP/FC program. The application and program guidelines clearly require the use of recaptured waste heat to be eligible for the incentive.

Furthermore, Merck's proposal is inconsistent with common industry standard regarding WHP technology. Specifically, the United States Environmental Protection Agency has described that "[t]he key advantage of WHP systems is that they utilize heat from existing thermal processes, which would otherwise be wasted, to produce electricity or mechanical power, as opposed to directly consuming additional fuel for this purpose."<sup>11</sup> ICF International also states that WHP "is the process of capturing heat discarded by an existing process and using that heat to generate electricity."<sup>12</sup> These industry standards are consistent with Staff's interpretation of the program guidelines, which require the utilization of existing waste heat. Merck's proposal to utilize additional fossil fuel would directly contradict not only NJCEP's program guidelines, but industry standards.

Therefore, Staff recommends that the Board deny the Petition and affirm the denial of Merck's application.

## **DISCUSSION AND FINDINGS**

The Board has carefully reviewed the record in this matter and finds that Merck's application was properly denied. Staff denied Petitioner's application because the Rahway Project does not meet the eligibility requirements of NJCEP's CHP/FC Program. Petitioner asserts that the Rahway Project merits an incentive from the CHP/FC Program regardless of whether it meets that program's requirements. (Petition at para. 2).

Petitioner appears to rely primarily upon its assertion that the increased use of fossil fuel to generate increased waste heat will result in a more efficient use of its plant. (Petition at para. 4.1.) This argument goes against the foundation that the incentives are intended to improve efficiency with the goal of reducing fossil fuel use. Petitioner also states that the Rahway Project "saves money and energy for the State of New Jersey as well," claiming a reduction in peak grid demand of 7.2 MW as a result of the Rahway Project. (Petition at para. 2.4.) However, Staff determined the project would be consuming more energy to obtain this projected energy efficiency.

The basis for denial of the application was its failure to meet two basic requirements of the program: (1) the use of waste heat instead of increased fuel consumption and (2) the re-captured heat's use as thermal energy. (See February 29, 2016 Project Cancellation Letter). The Rahway Project meets neither of these criteria and Petitioner does not claim otherwise.

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<sup>11</sup> USEPA, Waste Heat to Power Systems, May 30, 2012, p.1, available at

[https://www.epa.gov/sites/production/files/2015-07/documents/waste\\_heat\\_to\\_power\\_systems.pdf](https://www.epa.gov/sites/production/files/2015-07/documents/waste_heat_to_power_systems.pdf).

<sup>12</sup> ICF International, Waste Heat to Power Market Assessment, March 2015, p. 1, available at <http://info.ornl.gov/sites/publications/Files/Pub52953.pdf>.

Petitioner states that the goal of the CHP/FC program is “. . . to expand CHP/FC and distributed generation resources.” (Petition at 2.1). Petitioner also “contest[s] that any heat recovery project will, by its nature, improve the operating efficiency of the plant as a whole . . . thereby encouraging the owner to operate the plant to the greatest economically favorable extent.” (Petition at para. 2.1). Although Petitioner is correct in identifying the expansion of CHP/FC as a goal, it errs in averring that it is the singular goal of the program. This ratepayer-subsidized program provides incentives to businesses to achieve energy efficiency in order to reduce fossil fuel use.

In characterizing the CHP/FC Program, the Board has identified as its central goal “further enhanc[ing] energy efficiency in [participants’] buildings through on-site power generation with recovery and productive use of waste heat, thereby reducing existing and new demands to the electric power grid.”<sup>13</sup> The application completed by Petitioner also identifies this central goal: to “[increase] energy efficiency to reduce energy cost and consumption.” (See Combined Heat and Power Workbook, Program Overview (emphasis added)). In addition, the program guidelines state that any proposals must be capable “of capturing waste heat energy in the radiator or exhaust systems of a generator and delivering it to a heat load or cooling load. The captured energy is used in heating processes . . . . New electric generation equipment which captures waste heat or energy from existing systems is also allowed.” (NJCEP FY2016 Program Descriptions and Budget, June 15, 2016, p. 61).

After a careful review of the record in this proceeding, as well as Staff’s recommendation, the Board **FINDS** that there are no material facts in dispute. Therefore, the Board will decide this matter upon the papers that Merck itself has provided. An agency must grant a plenary hearing only if material disputed adjudicative facts exist. (See Bally Mfg. Corp. v. Casino Control Com’n, 85 N.J. 325, 334 (1981)). Here, the record supports that Merck’s application was properly denied in accordance with the CHP/FC Program’s guidelines on qualifying WHP technologies. Specifically, Merck’s application fails to utilize waste heat discharged as a byproduct of a process to produce electricity, and instead directly consumes additional fuel to generate power. In its Petition, Merck admits to the increase in fossil fuel use. (Petition at para. 2-4). Accordingly, Merck’s claims do not show that the proposed project constitutes a qualifying WHP technology which is eligible for an incentive under the Board’s CHP/FC Program.

Based on its review of the record in this matter and its assessment of the Petitioner’s arguments and Staff’s recommendation, the Board **FINDS** that the Rahway Project does not meet the requirements of the CHP/FC Program and does not qualify for the WHP technology and **CONCLUDES** that Petitioner is not entitled to an incentive for the proposed system. Therefore, the Board **HEREBY DENIES** Petitioner’s request to reverse Staff’s denial of its application. The denial of Merck’s application is **HEREBY AFFIRMED**.

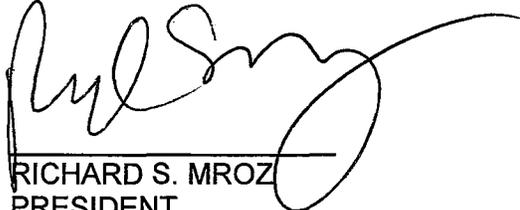
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<sup>13</sup> See, e.g., I/M/O the Clean Energy Program Authorization of Commercial and Industrial Program Energy Efficiency Incentives Exceeding \$500,000: Ahold USA, Inc., Shoprite of Oakland, Inc., Shoprite Eickhoff-Burlington, Dkt. Nos. QG15050627; QG15050628; QG15050629, Order dated June 17, 2015, 2015 N.J. PUC LEXIS 184, \*4; I/M/O the Clean Energy Program Authorization of Commercial and Industrial (C&I) Program Energy Efficiency Incentives Exceeding \$500,000 – Bayonne Medical Center, Dkt. No. EO13050381V, Order dated May 29, 2013, 2013 N.J. PUC LEXIS 148, \*2.

This Order will take effect on March 4, 2017.

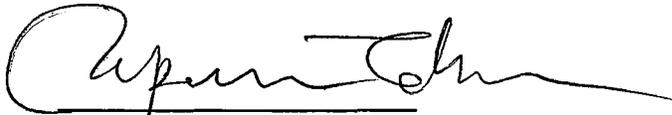
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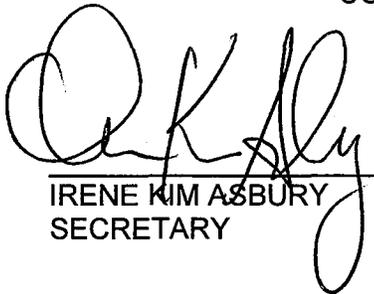
BOARD OF PUBLIC UTILITIES  
BY:

  
RICHARD S. MROZ  
PRESIDENT

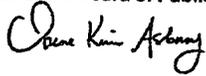
  
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IRENE KIM ASBURY  
SECRETARY

I HEREBY CERTIFY that the within  
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IN THE MATTER OF THE APPEAL FROM DENIAL OF INCENTIVE APPLICATION BY THE  
NEW JERSEY'S CLEAN ENERGY PROGRAM COMBINED HEAT & POWER / FUEL CELL  
PROGRAM FOR CONDENSING TURBINE - MERCK RAHWAY

DOCKET NO. QW16030250

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