

Docket No. 11-362

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DELAWARE P.S.C.



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Office of the
Secretary

Phone: (302) 739-9000
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August 19, 2011

Alisa Carrow Bentley
Secretary
Public Service Commission
861 Silver Lake Boulevard
Cannon Building, Suite 100
Dover, DE 19904

RE: CONCERNING NEW TARIFFS FOR QUALIFIED FUEL
CELL PROVIDERS – RENEWABLE CAPABLE DOCKET
NO. 11- (Filed August 19, 2011)

Dear Ms. Bentley:

On behalf of the Department of Natural Resources and Environmental Control, please find enclosed for filing the original and ten copies of my direct testimony in the above-referenced matter. Thank you for your assistance in this matter.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Collin P. O'Mara".

Collin P. O'Mara
Secretary

Enclosure

Delaware's Good Nature depends on you!

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF DELAWARE

IN THE MATTER OF THE APPLICATION)
OF DELMARVA POWER & LIGHT) PSC DOCKET NO. 11-XXX
COMPANY FOR APPROVAL OF)
QUALIFIED FUEL CELL PROVIDER)
PROJECT TARIFFS)
(Filed August 19, 2011)

**STATE OF DELAWARE DIRECT TESTIMONY OF COLLIN O'MARA,
BEFORE THE DELAWARE PUBLIC SERVICE COMMISSION
CONCERNING NEW TARIFFS FOR QUALIFIED FUEL CELL PROVIDERS –
RENEWABLE CAPABLE**

The Honorable Collin P. O'Mara
Cabinet Secretary
Department of Natural Resources and
Environmental Control
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1 **STATE OF DELAWARE DIRECT TESTIMONY OF COLLIN O'MARA,**
2 **BEFORE THE DELAWARE PUBLIC SERVICE COMMISSION**
3 **CONCERNING NEW TARIFFS FOR QUALIFIED FUEL CELL PROVIDERS –**
4 **RENEWABLE CAPABLE**
5 **DOCKET NO. 11-__**
6

7 **1. Q: Please state your name and position, and business address.**

8 **A:** Collin O'Mara, Secretary of Natural Resources and Environmental Control for
9 the State of Delaware, located at 89 Kings Highway, Dover 19901.

10 **2. Q: What is your educational and professional background?**

11 **A:** Dartmouth College, Presidential Scholar
12 University of Oxford, Marshall Scholar
13 Maxwell School of Citizenship and Public Affairs, University Fellow
14 Stanford Business School, Executive Management Program
15 Clean Technology Officer, City of San Jose, CA
16 Director of SyraStat, City of Syracuse, NY

17 **3. Q: Please describe the overall economic development opportunity that the Bloom**
18 **Energy Fuel Cell Project (“Bloom Project Company” or “Diamond State**
19 **Generation Partners, LLC.”) is part of.**

20 **A:** Bloom Energy is emerging as a global leader in manufacturing next-
21 generation solid oxide fuel cell technology. The company has proposed creating 900
22 direct jobs in Delaware at their “factory of the future”. Bloom Energy anticipates that
23 up to six of the company’s key suppliers are likely to co-locate at their manufacturing
24 facility, resulting in an additional 600 jobs.

1 The planned development site will be located on a portion of the former
2 Chrysler plant in Newark. Construction of the factory is projected to create 375 jobs
3 and Bloom Energy could spend more than \$50 million in capital expenditure. This
4 project will accelerate the brownfield redevelopment of the site, which will serve as
5 the future Science and Technology Campus of the University of Delaware. Co-
6 location with the University of Delaware creates significant synergies with existing
7 fuel cell and composites research programs, as well as internship opportunities for
8 students.

9 As the home of Bloom Energy's manufacturing center, and up to 1,500 jobs,
10 Delaware will have a vested interest in Bloom Energy's long term success, and
11 through the 30 MW generation program, which is focused on the utility deployment
12 of Bloom Energy's technology, Delaware can help accelerate Bloom Energy's overall
13 success. Showcasing to investors, potential customers, and the world, the power of
14 the Bloom Energy Server to stabilize energy costs, reduce the State's carbon
15 footprint, produce reliable 24/7 energy supply with almost no particulate emissions,
16 and improve energy security across not only a diverse customer base, but an entire
17 utility footprint, will assist Bloom Energy to fulfill its promise as a leading global
18 energy company of this generation. In turn, Delaware can best assure that those
19 potential 1,500 jobs are sustained well into the future.

20 **4. Q: Why does the State feel Bloom Energy and the product they manufacture should**
21 **qualify for Renewable Energy benefits?**

22 A: Bloom Energy manufactures solid oxide fuel cells that operate at a high temperature
23 and can utilize nearly any fuel source (hydrogen, biogas, natural gas, etc). The

1 electrochemical reaction emits significantly less pollution than traditional fossil fuel
2 combustion alternatives (virtually no nitrogen oxides or sulfur dioxide emissions; no
3 mercury; and significantly less carbon dioxide than traditional base load generation).
4 In addition, the system does not require a continuous supply of water.

5 Since the technology emits significantly less pollution than traditional
6 combustion technologies and is ready to operate on renewable fuels, the State has
7 determined that it should be considered as a generation resource that can be used to
8 satisfy the requirements of Delaware's Renewable Portfolio Standard ("RPS").
9 (Eight other states allow fuel cells operating on non-renewable fuels to be eligible
10 renewable generation resources). In order for fuel cells to gain widespread adoption,
11 renewable fuels and the required infrastructure must become more prevalent;
12 however, such investment is unlikely without sufficient market demand. Early
13 deployment of Bloom Energy's technology, even if running on natural gas, should
14 help accelerate the development of alternative fuels, making it more likely that these
15 units and future units will operate on renewable fuel. I would like to make it clear,
16 however, that for the reasons stated earlier, Delaware and its citizens will continue to
17 reap the benefits of clean base load generation even while the Bloom Fuel Cells
18 operate on natural gas.

19 **5. Q: What role did the State of Delaware have in the Delmarva Power & Light**
20 **Company ("Delmarva") energy portion of the proposed program?**

21 **A:** The State began recruiting Bloom Energy to manufacture in Delaware in
22 2010. As part of this effort, the State introduced Bloom Energy, and its fully owned
23 subsidiary, Diamond State Generation Partners, LLC, to Delmarva to see if an

1 opportunity existed for Bloom Energy Servers to improve Delaware's energy system
2 through a combination of increasing reliability, stabilizing long-term pricing, and
3 improved environmental performance. Although the negotiations were led by Bloom
4 Energy and Delmarva, the State provided ongoing direction to help minimize the
5 projected cost-impacts on customers. For example, the State insisted that any
6 customer impacts must be lower than the highest cost source in Delmarva's
7 renewable portfolio, which is the approved contract for Bluewater Wind.

8 In addition, the State proposed that generation output from solid oxide fuel
9 cells that are identified as an economic development opportunity should be used to
10 satisfy the requirements of Delaware's RPS.

11 **6. Q: Describe the State's expectation for the additional 20 megawatts of fuel cells to**
12 **be located in Delaware, as referred to in Section 364(d)(1)(a) of the Delaware**
13 **Fuel Cell Amendments.**

14 A: The State believes there are significant opportunities for behind the meter
15 commercial installations in Delaware that will benefit both the commercial entity,
16 through increased reliability and distributed generation, but also provide a broader
17 benefit to Delmarva's customers by reducing the overall demand on the grid,
18 particularly during peak consumption. The State will work with Bloom Energy,
19 Delmarva, and interested companies to pursue these opportunities. From the day the
20 Bloom Fuel Cell Project was announced, Delaware's business community has
21 recognized the benefits of this technology, and several have already begun
22 discussions with Delmarva and the State on deploying the Bloom fuel cell
23 technology.

1 7. Q: Please provide the State's role in the final "force majeure" language in the
2 proposed tariff.

3 A: The State worked to make sure the final "force majeure" language minimized
4 the impact to Delmarva customers, while at the same time, providing enough
5 certainty to Bloom Energy's investors so the project could be financed. The final
6 "force majeure" language effectively meets both objectives, such that until Bloom
7 Energy receives an investment grade credit rating, which we expect in the next 2-3
8 years, there is some certainty that investors in the program will receive their
9 investment back, while minimizing the impact to customers. In addition, besides the
10 "force majeure" language, the parties also negotiated additional protections for
11 customers, including a termination payment starting at \$20 million if the Bloom
12 Energy manufacturing facility in Delaware closes.

13 8. Q: Could you please describe the statutory allowance for the partial fulfillment of
14 Delmarva's obligations towards the State RPS?

15 A: Section 353 of Title 26 of the Delaware Code permits Delmarva to fulfill the
16 equivalent of 1 REC for each megawatt-hour of energy produced by a qualified fuel
17 cell provider project. In addition, Delmarva is permitted to use the energy output
18 produced by the Fuel Cell Project to fulfill no more than 30% of its SREC
19 requirements at a ratio of 6 MWh of RECs per 1 MWh of SRECs.

20 9. Q: What is the projected cost impact assuming the statutory allowance for partial
21 fulfillment of Delmarva's RPS obligations?

22 A: Based on certain assumptions of the future market price of energy and
23 renewable energy credits outlined in the testimony of Witness Maria Scheller, ICF

1 informed the State that the projected cost impact above market for the average
2 residential customer under the statutory allowance was \$1.63 per month on a
3 levelized basis.

4 **10. Q: What statutory allowance for the partial fulfillment of Delmarva's obligations**
5 **towards the State RPS are you proposing in this proceeding?**

6 **A:** Section 353(d)(1)(b) of Title 26, grants the Secretary of DNREC the
7 discretion, in coordination with the Commission and Delmarva, to adjust the statutory
8 allowances for the partial fulfillment of Delmarva's obligations towards the RPS
9 standards. In order to lower the cost impact to Delmarva's customers of this project, I
10 am proposing for the Commission's consideration that Delmarva be permitted to
11 fulfill the equivalent of 2 RECs for each megawatt-hour of energy produced by a
12 qualified fuel cell provider project during the first 15 years of each Qualified Fuel
13 Cell placed into service, and fulfill the equivalent of 1 REC for each megawatt-hour
14 of energy produced by a qualified fuel cell provider project for the remaining years of
15 the Project. In addition, I am proposing that Delmarva be permitted to use the energy
16 output produced by a qualified fuel cell provider project to fulfill a portion of SREC
17 requirements at a ratio of 6 MWh of RECs per 1 MWh of SRECs for the first 15 years
18 of the Project, and at a ratio of 3 to 1 in years 16 through 21. Finally, Delmarva may
19 fulfill no more than 25% of its annual SREC requirements in years 1-5, 30% in years
20 6-15, and 35% in years 16-21 of the Project. The annual application of the equivalent
21 of RECs and SRECs would be determined through a process established by the
22 Commission, in consultation with Delmarva and the DNREC, with priority given to

1 minimizing customer impacts, avoiding Alternative Compliance Payments, and
2 ensuring sufficient opportunity for in-state renewable energy economic development.

3 **11. Q: What is the projected cost impact assuming your proposed allowance for partial**
4 **fulfillment towards Delmarva's RPS obligations?**

5 A: According to the analysis performed by Witness Scheller as outlined in her
6 testimony, and based on certain assumptions of the future market price of energy and
7 renewable energy credits, the levelized monthly cost impact to the average residential
8 consumer using the proposed allowances is projected to be \$1.00 (\$0.996).

9 **12. Q: Why should the Commission adopt the Allowances you have proposed?**

10 A: When the statutory allowances were enacted, based on a preliminary analysis,
11 it was projected that the levelized cost impact to the average residential customer was
12 going to be around \$1.00. After the final analysis was completed by ICF, the monthly
13 cost impact was determined to be \$1.63. As a result, the State, in consultation with
14 Delmarva, examined ways to lessen the monthly impact. At the same time, it was
15 important to make sure not to adversely harm the potential development of renewable
16 energy resources in Delaware – which is the overall purpose of the RPS standards.
17 Section 353(d)(1)(b.) was crafted to give me the discretion, in consultation with the
18 Commission and Delmarva, to adjust the allowances in order to achieve these two
19 objectives, and the allowances I have proposed strike that balance.

20 First and foremost, largely by providing for a 2x multiplier in the first 15
21 years when RECs are forecast to have the most value, the proposed allowances lower
22 the projected levelized monthly impact on residential customers by more than \$0.60
23 per month.

1 Second, the REC equivalents generated through Qualified Fuel Cells
2 manufactured in Delaware would be available at a time when there are limited
3 opportunities for non-solar in-state renewable energy generation, other than limited
4 small wind and landfill gas, and focus investments spurred by the RPS requirements
5 on in-state economic development. The stepped nature of the proposed allowances
6 during the 21 year term of the Bloom project, decreases the likelihood that Delmarva
7 will pay the alternative compliance payment. While offshore wind, if it is
8 constructed, will likely provide a significant portion of local renewable energy
9 generation in the years ahead, fulfillment of a portion of RPS requirements through
10 the proposed project, particularly in the early years, will provide a significant hedge
11 against potentially significant alternative compliance payments should offshore wind
12 deployment be further delayed. The \$1.00 projected monthly impact does not reflect
13 the benefit of this hedge should off-shore wind deployment be delayed beyond 2016.

14 Finally, the stepped nature of the proposed allowances, combined with the
15 Commission-led process to ensure appropriate fulfillment of REC requirements, are
16 designed to ensure that there is sufficient availability in Delmarva's REC and SREC
17 obligations under the RPS so as to continue to encourage renewable development in
18 Delaware while minimizing rate impacts.

19 For these reasons, the stepped allowances I have proposed under my
20 discretionary authority in Section 353 of Title 26 of the Delaware Code should be
21 adopted by the Commission in this proceeding.

22 **13. Q: Please discuss the estimated cost impact of the project and if they are reasonable**
23 **for electric customers.**

1 A: Assuming that the proposed allowances are adopted by the Commission, the
2 levelized cost impact for the Fuel Cell Project on the average residential customer per
3 month as estimated by Witness Scheller is \$1.00. In comparison to the previously
4 approved renewable energy contract for offshore wind, which is currently the highest
5 cost resource in Delmarva's portfolio, the Fuel Cell Project cost impact is lower to
6 residential customers on a final, levelized basis than that for the wind farm project.
7 Delmarva's final, levelized cost estimate for the offshore wind project was between
8 \$1.70 and \$2.28, which is at least \$0.70 higher than the levelized cost estimated for
9 the Fuel Cell Project.

10 More importantly, there are several areas that I believe will provide an
11 additional economic benefit to Delmarva's customers which are not included in
12 Witness Scheller's estimated market cost impact of \$1.00. While these tangible
13 benefits are difficult to quantify, it is likely Delmarva's customers will realize most of
14 these benefits over the life of the project. For example, there is a real benefit to
15 Delmarva's customers of having additional local generation closer to load centers,
16 including reduced strain and efficiency losses on the grid. The ICF model does not
17 include the environmental and health benefits of cleaner energy (recent studies have
18 suggested that environmental benefits of cleaner sources of energy may be \$.10/kWh
19 or more, in the form of avoided pollution and the correlated health impacts).

20 In addition, Delmarva customers would receive 30 MW of in-state, distributed
21 generation that provides the benefit of cost-avoidance to Delmarva and their
22 customers. Bloom Energy Servers provide reliable 24/7 generation that reduces the
23 need to buy peak priced kWh off the spot market -- which is when energy is its most

1 expensive. Similarly, this project can help reduce capacity pricing and costly
2 transmission upgrades.

3 In addition, by structuring this project as proposed, Delmarva will predictably
4 and cost-effectively fulfill a significant portion of their RPS obligations, which
5 reduces the chance Delmarva will pay Alternative Compliance Payments or buy
6 renewable energy credits generated outside of Delaware which do not provide local
7 economic development benefits to the State. By using Delaware manufactured fuel
8 cells to help Delmarva satisfy its obligations under the RPS, it may actually be less
9 costly to Delmarva consumers than without this project.

10 Finally, the program will result in up to 1,500 jobs in Delaware. In
11 comparison again to the Bluewater Wind project, where the only guaranteed jobs
12 were in the physical construction of the project, the Bloom Energy program offers
13 tangible manufacturing, facility construction, and project installation jobs that
14 coupled with the program we believe will be sustainable for years to come. Taken
15 together, I believe all of these factors outweigh the incremental costs to Delmarva's
16 customers.

17 **14. Q. In summary, do you believe that the information provided in your testimony**
18 **demonstrates that Bloom Energy's Delaware project is environmentally**
19 **beneficial and promotes economic development in Delaware as set forth in**
20 **Section 364(d)(2) of the Delaware Fuel Cell Amendments?**

21 **A.** Yes. As described in my response to Question 4, the Bloom Energy Servers
22 emits significantly less pollution than traditional combustion technologies,
23 specifically negligible sulfur dioxide, significantly less nitrogen oxides, and limited

1 carbon dioxide. The air quality benefits of the project are equivalent to taking 15,000
2 passenger vehicles off of the road, compared to the typical PJM generation mix.

3 Furthermore, as described in my response to Question 3, bringing Bloom
4 Energy to Delaware will provide economic development in the State. As
5 contemplated for a "Qualified Fuel Cell Provider" under 26 Del. C. § 352(16), the
6 Director of the Delaware Economic Development Office and I have evaluated the
7 economic benefits of Bloom Energy manufacturing in Delaware and have designated
8 Bloom Energy's Delaware Fuel Cell Project as an economic development
9 opportunity, as shown in the certification attached to this testimony.

10 **15. Q: Does this conclude your direct testimony?**

11 **A:** Yes.



WHEREAS, pursuant to 26 Del. C. §352(16)(b), in order to be a “qualified fuel cell provider” Bloom Energy’s plan to build its manufacturing campus in Delaware must be designated by the Director of the Delaware Economic Development Office and the Secretary of Natural Resources and Environmental Control as an economic development opportunity; and

WHEREAS, Bloom Energy is an innovative fuel cell company that generates clean, highly efficient power from natural gas, biogas, hydrogen, or other fuels; and

WHEREAS, Bloom Energy Servers emit significantly less environmental pollution than traditional combustion technologies, specifically negligible sulfur dioxide, significantly less nitrogen oxides, no mercury, and limited carbon dioxide, while not requiring continuous supply of water; and

WHEREAS, on June 8, 2011, Bloom Energy announced its plan to build its new, high-tech manufacturing campus at the site of the former Chrysler factory in Newark to manufacture Bloom Energy Servers, which are already helping to power companies like Google, FedEx, Coca-Cola and WalMart; and

WHEREAS, the Bloom Energy manufacturing facility will create and maintain 50 managerial and 850 skilled and unskilled positions for a total of 900 new jobs; and

WHEREAS, Bloom Energy anticipates that up to six of the company’s key suppliers are likely to co-locate at their manufacturing facility, resulting in an additional 600 jobs; and

WHEREAS, Bloom Energy estimates that 350 construction jobs will also be created for the construction of this facility; and

WHEREAS, this planned project will accelerate the brownfield redevelopment of the site, which will serve as the future Science and Technology Campus of the University of Delaware; and

WHEREAS, co-location with the University of Delaware creates significant synergies with existing fuel cell and composites research programs, as well as internship opportunities for students.

NOW THEREFORE, after duly considering the nature of the business, its competitive situation in Delaware, its location, the employment, the environmental performance, and other requirements, the undersigned do hereby certify that the Bloom Energy plan to locate its manufacturing facility in Delaware is an economic development opportunity that will (i) contribute to maintaining or providing gainful employment of the citizens of the State, and (ii) serve a public purpose by contributing to the prosperity, health or general welfare of the State.

A handwritten signature in blue ink, appearing to read "Alan B. Levin", written over a horizontal line.

The Honorable Alan B. Levin

8/19/11
Date

A handwritten signature in blue ink, appearing to read "Collin P. O'Mara", written over a horizontal line.

The Honorable Collin P. O'Mara

8/19/11
Date

CERTIFICATE OF SERVICE

It is hereby certified that the STATE OF DELAWARE DIRECT TESTIMONY OF COLLIN O'MARA, BEFORE THE DELAWARE PUBLIC SERVICE COMMISSION CONCERNING NEW TARIFFS FOR QUALIFIED FUEL CELL PROVIDERS – RENEWABLE CAPABLE has been served this 19th day of August, 2011 as indicated below:

VIA HAND DELIVERY (Original and 10 Copies)

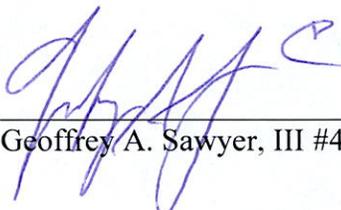
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Geoffrey A. Sawyer, III #4754