

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF DELAWARE

IN THE MATTER OF THE APPLICATION)
OF DELMARVA POWER & LIGHT) PSC DOCKET NO. 11-362
COMPANY FOR APPROVAL OF)
QUALIFIED FUEL CELL PROVIDER)
PROJECT TARIFFS)
(Filed August 19, 2011)

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

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1 substantial economic development benefits associated with the Project. Accordingly, this is the
2 State's rebuttal testimony in response to the Consultant's Report.

3 I. The Manufacturing Facility is "tied" to the tariff

4 The Consultant's Report recognizes the "substantial" economic benefits that
5 Delaware would realize if the Delaware Manufacturing facility is operating with 900 employees
6 for even one year.¹ To that end, the Report concludes the resulting increase in Delaware's
7 Gross Domestic Product (GDP) will be approximately \$296 million annually,² which far
8 exceeds the net present value above market cost to Delmarva ratepayers of approximately \$113
9 million over the life of the tariff.³ However, the Consultant's Report raises questions about the
10 risk that those economic benefits may not be fully realized due to uncertainty about the market
11 for fuel cells in the East Coast market. The Consultant's Report recommends that a stronger
12 "tie" between the manufacturing facility and the tariff be established.⁴

13 It has always been the understanding of the State, Bloom, and Delmarva that the
14 tariff is very much linked to the manufacturing facility being built here in Delaware. Testimony
15 in the record from Bloom representatives' makes it clear that the company fully intends to build
16 an east-coast factory here in Delaware at the former Chrysler site in Newark. In fact, the
17 architectural and engineering design work for the factory is almost complete. Delaware firms
18 have already been retained to begin work once the tariff is approved and Bloom has reached out
19 to Delaware companies to alert them of bids that they expect to issue by the end of this year. In
20 addition, Bloom and the University of Delaware are finishing negotiations for the ground lease

¹ Pages 26, 41 of the Consultant's Report.

² Page 27 of the Consultant's Report.

³ Page 26 of the Consultant's Report.

⁴ Page 68 of the Consultant's Report.

1 for the 50 acres on which the factory will be built and the suppliers will co-locate. These
2 negotiations are anticipated to conclude and the lease executed in the next few weeks.

3 The structure of the tariff itself also requires that two-thirds of the fuel cells put
4 into service are physically manufactured in Delaware. If those fuels cells are not manufactured
5 in Delaware, there is no obligation under the tariff. As a result, we are confident that
6 construction of the factory will commence shortly after the tariff is approved.

7 The Consultant's Report raises an important question with respect the first 10MW
8 under the tariff and the risks associated with Bloom reversing its decision to build a factory in
9 Delaware thereafter. The reality is timing concerns related to certain available tax credits
10 necessitated that 10MW of the fuel cells manufactured outside of Delaware are allowed to be
11 put in service in the 30MW project while the factory is being built.

12 After receiving the Consultant's Report, the State recognized additional clarity
13 and protection for ratepayers on this issue is important. As a result, the State and Bloom have
14 agreed to additional protections that would make ratepayers whole in the unlikely event the
15 manufacturing facility is not constructed. In response to specific questions raised in the
16 Consultant's Report on Page 69, attached as Exhibit A please find a revised Termination
17 Agreement, whereby Bloom is obligated to pay the State of Delaware, for the benefit of
18 Delmarva's ratepayers, the sum of \$41 million – which is calculated to be the net present value
19 of the cost to Delmarva's ratepayers if the first 10MW of Bloom Energy Servers are installed
20 and the factory is not constructed.⁵ This payment would become due and payable to the State

⁵ The \$41 million assumes that Bloom will not build the factory but still be able to provide replacement component parts and the necessary maintenance to keep the fuel cells running at their guaranteed heat rate. If Bloom is unable to provide the replacement component parts or the necessary service, then the net present value potential cost to Delmarva ratepayers would be either \$19 million or \$36 million, depending on whether Bloom is able to retire 10MW worth of RECs. Regardless, if Bloom is able to provide the replacement component parts or the necessary maintenance service, the State would receive \$41 million from Bloom for the benefit of Delmarva ratepayers.

1 should the manufacturing facility not be constructed in Delaware, as evidenced by a certificate
2 of occupancy by December 31, 2013. The payment, as described in Exhibit A, will be secured
3 by an unconditional, evergreen letter of credit, surety bond or other instrument that would
4 protect Delmarva's ratepayers in the unlikely event of a Bloom bankruptcy, and which is
5 acceptable to the State in its sole and absolute discretion. As a result, under any possible
6 scenario, no matter how unlikely, the State believes Delmarva's ratepayers will be made whole
7 if the manufacturing facility is not constructed.

8 II. The Delaware Factory Will Operate on a Sustainable Basis

9 The Consultant's Report confirms the economic development benefits exceed the
10 net present value of the costs of this project after one year of operation with 900 jobs, and the
11 economic development benefits for each year of operation thereafter are substantial. However,
12 this very significant upside potential for the State depends, in part, on the sustainability and/or
13 viability of Bloom's business model.⁶ Based on the State's due diligence, the State believes the
14 Delaware factory will operate on a sustainable basis due to the size of the east coast market, the
15 unique attributes of this technology compared to other market competitors, and the anticipated
16 cost reductions resulting from large scale manufacturing efficiency and technology
17 advancements.

18 Over the past twelve months, the State has asked many of the very same questions
19 Staff's Consultant asked regarding the long-term sustainability of the market for Bloom's
20 technology outside of the California market. To address these questions, the State has spent a
21 significant amount of time with Bloom's senior management, investors, and customers, during
22 which Bloom shared proprietary information with the State regarding their cost curve, customers,
23 order pipeline, their financials, and their investors. In short, the State believes Bloom has a

⁶ Page 68-69 of the Consultant's Report.

1 strong business case and a compelling business plan to seize the significant market opportunities.
2 The State is confident that Bloom will not only build the planned manufacturing facility in
3 Delaware, but that they have the resources, personnel, and business plan in place to generate
4 sufficient orders and manufacture the anticipated annual output from the factory for years, if not
5 decades to come. This confidence is further solidified by the fact that sophisticated private
6 investors from several different investment firms have also reviewed this issue and have decided
7 to invest hundreds of millions of private dollars into this venture. Delmarva's rebuttal testimony
8 will provide a more detailed answer as to why Bloom expects to be successful in manufacturing
9 and selling its fuel cells, or Bloom Energy Servers, on a sustainable basis, and how it plans to
10 overcome market challenges, especially ones pertaining to the cost and marketability of its
11 products.

12 III. The State Has Managed the Risk to Ratepayers If Manufacturing Ceases
13 _____
14

15 The Consultant's Report raised a concern about a situation in which Bloom were
16 to cease manufacturing prior to the end of the 23 year term of this Project. As noted in the
17 Report, each year the Delaware manufacturing facility is in operation employing 900 people
18 Delaware's gross domestic product would increase by at least \$296 million,⁷ which is nearly
19 three times greater than the expect net present value of above market costs to Delmarva's
20 ratepayers over the life of the tariff. Therefore, after even one year of full operation, the benefits
21 to Delaware have outweighed the costs.

22 Even so, the State has taken specific steps to manage this risk to protect
23 Delmarva's ratepayers. To protect ratepayers in the event of a factory closure, the State and
24 Bloom have entered into an agreement by which Bloom will be obligated to pay the State for the

⁷ Page 27 of the Consultant's Report.

1 benefit of Delmarva’s ratepayers a termination payment if Bloom ceases manufacturing at any
2 point in the next ten years.⁸ This payment is separate and apart from the “Failure to Commence
3 Fee” noted in Section I above. The termination payment begins at \$20 million dollars and
4 decreases incrementally over the next 10 years to \$344,000 in 2021. The rationale for the
5 decreasing termination payment is that over time the State will be receiving substantial economic
6 development benefits and tax revenues from the manufacturing facility, and thus the parties
7 agreed to a declining structure. The termination payment schedule is not intended to reflect the
8 difference between the benefit received and the above-market cost to ratepayers, because as
9 noted above, after year one of operation with 900 employees the benefits are almost three times
10 the expected cost to ratepayers for the life of the project. Instead, the termination payment is
11 solely intended to provide a disincentive for Bloom to cease manufacturing in Delaware at any
12 time over the next 10 years. The termination payment is backed by a security interest in the
13 Delaware manufacturing facility, which would be behind only third party debt and capital
14 equipment investors in the factory. As Bloom does not intend to finance more than half of the
15 approximately \$50 million dollar factory with third party debt, the State believes its interests
16 would be covered in the unlikely event of a bankruptcy.

17 IV. There Will Be a Minimum of 900 Jobs at the Delaware Factory

18 On pages 26-27 of the Consultant’s Report, the Staff consultant estimates the
19 overall economic development benefits to Delaware net added costs of approximately \$296
20 million dollars in its first full year of operations with 900 employees. The Consultant’s Report
21 then cautions that actual employment could be “substantially lower”, which would lower the net
22 benefits to Delaware.⁹ Specifically, the Consultant’s Report states that because the DEDO letter

⁸ See Exhibit B.

⁹ Page 27 of the Consultant’s Report.

1 agreement states “up to” 900 jobs, that “there is a risk that employment might be a fraction—say
2 50%—of Bloom’s estimates.”¹⁰

3 There is no basis in the record to surmise that the actual employment will be
4 “substantially lower” or 50% of estimates as suggested in the Consultant’s Report. While the
5 Consultant did not have the benefit of these details, Bloom and the Delaware Economic
6 Development Office are finalizing a term sheet whereby Bloom will be obligated to spend \$36
7 million dollars a year in payroll (\$40K a year jobs times 900 jobs, which is what the IMPLAN
8 analysis was based on), or else a claw-back provision would be triggered and Bloom would owe
9 the difference for each year it is not in compliance. These terms are very similar to other
10 Delaware economic development agreements and the Commission should afford some deference
11 to the Agency charged with negotiating these agreements on behalf of the State.

12 To that end, the reason for the “up to” language in the DEDO letter agreement
13 that went before the Council on Development Finance is because Bloom believes the \$40,000
14 per year salary may fluctuate given the skilled workforce in the area and therefore Bloom would
15 rather be bound by the State’s expected payroll numbers than a firm number of jobs. Since the
16 IMPLAN analysis adopted by Consultant assumes \$36 million in payroll, the relevant figure for
17 purposes of calculating the expected benefits to Delaware is the payroll figure, which Bloom is
18 obligated to meet.

19 In addition, while the Consultant Report notes that the economic development
20 impact does not include the potential 600 supplier jobs¹¹ or the 350 construction jobs, the Report

¹⁰ Page 33 of the Consultant’s Report.

¹¹ The Consultant assumes that 371 indirect or “supplier” jobs in the IMPLAN analysis are the 600 supplier jobs Bloom has committed to attracting to Delaware. This is not correct. IMPLAN does not label the indirect jobs as “supplier” jobs, as they are not the same. Instead, the 371 correlates to indirect jobs related to 900 jobs being created at the manufacturing facility, such as wholesale trade businesses, food services and drinking places and retail stores for example (See, State Response to Staff Data Request No. 163). The 600 supplier jobs would actually be *Bloom’s supply chain* who they hope to co-locate at the site of their manufacturing facility.

1 nets out as “a cost to ratepayers” the entire DEDO incentive package offered to Bloom.
2 However, by the very terms of the DEDO incentive package, the DEDO supplier incentive is
3 only paid if Bloom in fact attracts at least 600 supplier jobs (over a five year period) and makes
4 \$50 million of capital expenditures on the manufacturing facility, thus creating 350 construction
5 jobs. Accordingly, if the Commission is going to include the supplier incentive and the capital
6 expenditure incentive as a cost to ratepayers, the 600 supplier jobs and 350 construction jobs
7 must be included in the economic development impact modeling as well.

8 Importantly, the State has consistently put forth conservative estimates for the
9 economic impact of this Project by only modeling the economic development benefit to
10 Delaware of 900 direct jobs. However, if the 600 supplier jobs and 350 construction jobs were
11 included in the IMPLAN analysis, which is just as likely, if not more so than some of the
12 downside risks suggested by the Consultant, the economic development benefits of this Project
13 would increase significantly. In short, if the Commission is to give significant weight to the
14 potential risks based on unknown future variables identified in the Report, it should also
15 recognize the significant additional economic development benefits that the Project may achieve
16 as specifically contemplated by the State and Bloom, especially considering such benchmarks
17 are clearly accounted for in the DEDO incentive structure.

18

19 V. The Consultant’s Report Underestimates the Environmental and Health
20 Benefits of this Project
21

22 Under the legislation, one of the four factors that the Commission must weigh
23 against the incremental costs to ratepayers is whether this project offers environmental benefits
24 to the State relative to conventional baseload generation technologies. The Consultant’s Report

1 ultimately concludes that “there are such environmental benefits” (Consultant’s Report at p 41);
2 however, the State would like to address several statements within the Staff Consultant’s analysis
3 which weaken the Report’s ultimate conclusion.

4 While thorough and well written, the Consultant’s Report significantly
5 underestimates the environmental and health benefits. The Report posits that there are not
6 significant environmental or health benefits because “much of the energy that will be displaced
7 will be zero emission renewable energy.”¹² While this analysis may be appropriate if we were
8 comparing one intermittent source with another, due to the specific nature of the technology, this
9 is not the appropriate comparison. Since Bloom's fuel cells will provide baseload power, their
10 deployment reduces the need for older, dirtier baseload units to operate and reduces the need for
11 firing up dirtier peaking units during times of high demand. Air pollution from these older units
12 is significant and will be displaced by deploying the cleaner fuel cell technology.

13 An analysis of the comparison to baseload technologies that could be displaced by
14 Bloom’s technology demonstrates significant environmental benefits. As provided for in the
15 record, Bloom Energy Servers virtually eliminate ozone depleting, acid rain causing, and smog
16 forming pollutants. By utilizing an electrochemical reaction rather than combustion, Bloom
17 Energy Servers produce de minimus sulfur dioxide (SO₂), <0.002 lbs/MWh of nitrogen oxides
18 (NO_x), and an average of 884 lbs/MWh of carbon dioxide (CO₂). The average emissions rates
19 from natural gas-fired generation are 1,135 lbs/MWh of CO₂, 0.1 lbs/MWh of SO₂, and 1.7
20 lbs/MWh of NO_x. The average emission rates from coal-fired generation are 2,249 lbs/MWh of
21 CO₂, 13 lbs/MWh of SO₂, and 6 lbs/MWh of NO_x.

22 The displacement of 30 MW of capacity or 252,000 MWh has the potential to
23 reduce emissions significantly. While the analysis could be compared to either an average

¹² Consultant’s Report, page 40.

1 natural gas or coal plant, a more appropriate comparison may be against the average PJM mix
2 (40% coal, 29% natural gas, 18% nuclear, 6% oil, etc.) since the source of displaced energy
3 cannot be predicted. The PJM mix has emissions on average of 3 lbs/MWh of NO_x, 6 lbs/MWh
4 of SO₂, and 1110 lbs/MWh of CO₂, so the integration of Bloom will displace annually more than
5 750,000 lbs of NO_x, 1.5 million lbs of SO₂, and more than 59 million lbs of CO₂ (when
6 compared against PJM's marginal off-peak CO₂ emissions rate of 1,867 lbs/MWh or marginal
7 on-peak CO₂ emissions rate of 1,854 lbs/MWh, the carbon emissions displaced increases to more
8 than 247 million lbs of CO₂ annually). When comparing water usage, Bloom systems require no
9 water during normal operations, therefore reducing water consumption by more than 97 million
10 gallons of water per year or 2 billion gallons over the 21 year project life compared to combined
11 cycle natural gas. Therefore, the project has the potential to produce significant environmental
12 and health benefits to Delaware.

13 This comparison point is important because it more accurately reflects the
14 environmental benefits of Bloom's technology. The Staff Consultant is correct in that the
15 proposed project will be used to fulfill a portion of the State's renewable energy portfolio
16 standard and displace demand for some carbon-free power; however the Consultant over-
17 estimates the environmental impacts of such a substitution. Until there is greater penetration,
18 storage, and transmission capacity, the lower capacity factors of solar and wind, 15% and 30%
19 on average respectively compared to Bloom's fuel cell at greater than 96%, lead to fossil-based
20 grid electricity being used to supplement market demand, resulting in greater net emissions than
21 considered by the Staff Consultant.

22 Finally, the Consultant's Report also assesses the environmental benefits of this
23 project by comparing it to a similarly sized combined cycle natural gas facility (NGCC). Given

1 gains to Delaware, and as a result the State did not move forward. Based on the State's due
2 diligence, it is clear that the potential benefits to Delaware of the Bloom project far outweigh the
3 risks that may exist. And where there are risks, the State has tried to manage those risks to
4 minimize their potential impacts. No economic development initiative is risk-free, but this
5 Project has the full support of the State, and is in the best interests of Delaware.