

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF DELAWARE**

IN THE MATTER OF INTEGRATED RESOURCE )  
PLANNING FOR THE PROVISION OF STANDARD )  
OFFER SERVICE BY DELMARVA POWER & ) PSC DOCKET NO. 14-0559  
LIGHT COMPANY UNDER )  
26 DEL. C. § 1007 (c) & (d) )  
(OPENED DECEMBER 2, 2014) )

**ORDER NO. 8779**

**AND NOW**, this 6th day of October, 2015, the Delaware Public Service Commission ("Commission") determines and orders the following:

**WHEREAS**, 26 Del. C. § 1007 (c) (1) requires Delmarva Power & Light Company ("Delmarva" or the "Company") to conduct integrated resource planning; and

**WHEREAS**, pursuant to 26 Del. C. §1007(c)(1), Delmarva's Integrated Resource Plan ("IRP") is required to systematically evaluate all available supply options (including procurement, generation, transmission, conservation and load management) over a ten-year planning period, and forecast the appropriate mix of such resources that will be utilized to meet the needs of its Standard Offer Service ("SOS") customers, at minimal cost and without sacrificing adequate reliability; and

**WHEREAS**, on December 2, 2014, Delmarva filed its IRP pursuant to its statutory obligation; and

**WHEREAS**, on December 16, 2014, in Order No. 8694, the Commission opened this docket to perform its oversight and review of the IRP, and

appointed a Hearing Examiner to make findings on Delmarva's proposed IRP; and

**WHEREAS**, the Commission Staff ("Staff"), the Division of the Public Advocate (the "DPA"), the Delaware Department of Natural Resources and Environmental Control ("DNREC"), and the Mid-Atlantic Renewable Energy Coalition ("MAREC") (collectively, the "Parties") intervened or otherwise participated in the proceedings; and

**WHEREAS**, pursuant to Commission Order, on or about March 30, 2015, the Parties filed their respective comments as to the IRP; and

**WHEREAS**, on June 10, 2015, the Parties conducted a technical working group meeting regarding the issues raised by various parties, which meeting was publically noticed on the Commission's agenda; and

**WHEREAS**, subsequently, the Hearing Examiner asked Delmarva to provide an update as to the status of the case and to summarize the result of the working group meeting, which was provided to the Hearing Examiner on August 6, 2015, and along with the Parties' filed comments, was summarized by the Hearing Examiner in his August 24, 2015 Findings; and

**WHEREAS**, since no settlement was proposed by the Parties, and the Hearing Examiner assumed that the Parties would make oral argument to the Commission, he stated that he made no specific recommendations concerning the IRP, concluding only that there is ample evidence that the requirements of 26 Del. C. § 1007 and 26 Del. Admin. C. §3010 have been satisfied, including the public investigation and comment requirements required by 26 Del. Admin. C. §3010-9.2;

**WHEREAS**, the parties agreed that, prior to the filing of the 2016 IRP in December, 2016, most likely in March or April, 2016, the parties would conduct working group meetings to discuss the parties' suggestions as to what Delmarva should include in the 2016 IRP;

**WHEREAS**, the parties also agreed that, unless the regulatory provisions are amended, Delmarva Power will continue to include an evaluation of externalities as part of the 2016 IRP;

**WHEREAS**, the Commission met in public session on October 6, 2015, to hear the Parties' oral argument and conduct deliberations on the issues summarized in the Hearing Examiner's Report; and

**NOW, THEREFORE, IT IS HEREBY ORDERED BY THE AFFIRMATIVE  
VOTE OF NOT FEWER THAN THREE COMMISSIONERS:**

1. The Commission ratifies the IRP appended as **Exhibit "A"** to the Hearing Examiner's Report with amendment, finding that it was filed in compliance with the requirements of 26 Del. C. § 1007 and 26 Del. Admin. C. §3010, including the public investigation and comment requirements required by 26 Del. Admin. C. §3010-9.2;

2. The Commission reserves the jurisdiction and authority to enter such further Orders in this matter as may be deemed necessary or proper.

BY ORDER OF THE COMMISSION:

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Chair

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Commissioner

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Commissioner

\_\_\_\_\_  
Commissioner

\_\_\_\_\_  
Commissioner

ATTEST:

\_\_\_\_\_  
Secretary

E X H I B I T "A"

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(OPENED DECEMBER 2, 2014) )

FINDINGS OF THE HEARING EXAMINER

DATED: August 24, 2015

MARK LAWRENCE  
SENIOR HEARING EXAMINER

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FINDINGS OF THE HEARING EXAMINER

Mark Lawrence, duly appointed Hearing Examiner in this Docket pursuant to 26 *Del. C.* §502 and 29 *Del. C. Ch.* 101, by Commission Order No. 8694 dated December 16, 2014, reports to the Commission as follows:

I. APPEARANCES

On behalf of Delmarva Power & Light Company ("Delmarva," "Delmarva Power" or "the Company"):

By: PAMELA J. SCOTT, ESQ., ASSISTANT GENERAL COUNSEL

On behalf of the Public Service Commission Staff ("Staff"):

By: JULIE M. DONOGHUE, ESQ., DEPUTY ATTORNEY GENERAL

On behalf of the Division of the Public Advocate ("DPA"):

By: REGINA A. IORII, ESQ., DEPUTY ATTORNEY GENERAL

On behalf of Delaware Department of Natural Resources and Environmental Control ("DNREC"):

By: WILLIAM KASSAB, ESQ., DEPUTY ATTORNEY GENERAL

On behalf of Calpine Mid-Atlantic Energy, LLC. ("Calpine")

By: C. DAVID LAMOREAUX, ESQ., SENIOR COUNSEL

On behalf of Mid-Atlantic Renewable Energy Coalition. ("MAREC")

By: BRUCE BURCAT, ESQ., EXECUTIVE DIRECTOR

JILL AGRO, ESQ.

## II. BACKGROUND

### A. Procedural History of the 2014 IRP

1. The Electric Utility Retail Customer Supply Act of 2006 ("EURSCA") requires Delmarva Power & Light Company ("Delmarva" or the "Company") to bi-annually file an Integrated Resource Plan ("IRP") with the Delaware Public Service Commission (the "Commission"), the State Energy Office, the Controller General and the Director of the Office of Management & Budget. In the IRP, Delmarva is required to "systematically evaluate all available supply options during a 10-year planning period in order to acquire sufficient, efficient and reliable resources over time to meet its customers' needs at a minimal cost," "set forth [Delmarva's] supply and demand forecast for the next 10-year period," and "set forth the resource mix with which [Delmarva] proposes to meet its supply obligations for that 10-year-period..." (26 Del. C. §1007(c) (1)).
2. On December 2, 2014, Delmarva filed its 2014 IRP as required by EURSCA. Pursuant to Order No. 8694 dated December 16, 2014, the Commission opened this Docket to perform its oversight and review of the IRP. In Order No. 8694, the Commission appointed me as the Hearing Examiner to: a) conduct the proceedings; b) develop the evidentiary record; c) publish any required or necessary public notices; and d) file my proposed findings and, if necessary, proposed recommendations concerning Delmarva's 2014 IRP. (*Id.* at ¶9.) Public notice of the filing of Delmarva's IRP was published on February 2, 2015 in the News Journal, and on February 2, 2015 in the Delaware State News.
3. On December 16, 2014, pursuant to 29 Del. C. §8716, the Division of the Public Advocate (the "Public Advocate") intervened in this docket. Subsequently, Petitions for intervention were received and granted for three (3) entities:

DNREC, MAREC and Calpine. All parties actively participated in this docket.

4. In Order No. 8694, the Commission established the filing deadline for comments as to the IRP as March 30, 2015. The Intervening Parties which submitted comments were: DPA, DNREC and MAREC. In addition to sending informal discovery requests, "Staff also sent to the Company a list of issues prior to the Working Group meeting to assist in focusing the discussions and in planning for possible changes the Company could incorporate into the 2016 IRP." (DPL Status Report, p.3.)
5. On June 10, 2015, the Company, Staff, the parties conducted a technical working group meeting as to the docket's issues. (DPL Status Report, p.4.) This Working Group Meetings was publicly noticed on the Commission's agenda.
6. On behalf of the parties, on August 6, 2015, Delmarva Power provided me with a status report of this docket, including a summary of what occurred at the parties' working group meeting. This Status Report is entitled "Status Report to Hearing Examiner," and is discussed in Section IV, *infra*.

#### B. COMMENTS OF THE PARTIES

1. **DPA's COMMENTS.** The DPA's Comments (including its footnotes) are repeated below.

The DPA retained David Stevenson, President of Alternative Strategies Consulting, to review the IRP. The DPA offers the following comments on Delmarva's IRP.

#### GENESIS OF INTEGRATED RESOURCE PLANNING

Integrated resource planning began in the late 1980s in response to the oil embargoes of the 1980s and nuclear construction cost overruns occurring in the late 1970s and into the 1980s, which led to several utilities in the New England region declaring bankruptcy. As defined in the federal Energy Policy Act of 1992, integrated resource planning for an electric utility means:

... a planning and selection process for new energy resources that evaluates the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, cogeneration and district heating and cooling applications, and renewable energy resources, in order to provide adequate and reliable service to its electric

customers at the lowest system cost. The process shall take into account necessary features for system operation, such as diversity, reliability, dispatch ability, and other factors of risk; shall take into account the ability to verify energy savings achieved through energy conservation and efficiency and the projected durability of such savings measured over time; and shall treat demand and supply resources on a consistent and integrated basis.

16 U.S.C. §2602(19).

The General Assembly established Delmarva's IRP requirement in 2006 in response to the transition to a deregulated energy supply. When price caps expired in 2006 and Delmarva customers were finally exposed to market rates, the increase was staggering: a nearly 60% increase for residential customers, and even more for industrial customers. In response to public outcry over these increases, the General Assembly passed the Electric Utility Retail Customer Supply Act ("EURCSA"), in which it created the IRP requirement. 75 Del. Laws c. 242.

The EURCSA originally required Delmarva to file an IRP every two years, starting in 2006.<sup>1</sup> It defines integrated resource planning as "the planning process of an electric distribution company that systematically evaluates all available supply options, including but not limited to: ~~generation~~, transmission and demand-side management programs, during the planning period to ensure that the electric distribution company acquires sufficient and reliable resources over time that meet its customers' needs at a minimal cost." 26 Del. C. §1001(16). Delmarva must "systematically evaluate all available supply options during a 10-year planning period in order to acquire sufficient, efficient and reliable resources over time to meet its customers' needs at a minimal cost;" must set forth Delmarva's supply and demand forecast for the next 10-year period and the resource mix with which Delmarva proposes to meet its supply obligations; and cannot rely exclusively on any particular resource or procurement process. *Id.* §1007(c)(1)a. Beginning in 2009, Delmarva was statutorily required to submit a report to the Commission, the Governor and the General Assembly that details its progress in implementing its IRPs. *Id.* §1007(c)(1)b. Finally, EURCSA provides that Delmarva shall recover the costs that it incurs in developing and submitting its IRPs through its distribution rates. *Id.* §1007(c)(1)d.

#### SUMMARY OF THE DPA'S RECOMMENDATIONS

The DPA has been vocal in its belief that the IRP requirement

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<sup>1</sup>The General Assembly has since amended the EURCSA to require Delmarva to file an IRP every three years.

should be abolished. In a deregulated supply situation such as Delaware's, in which the incumbent electric utility no longer owns any generation facilities, every supplier of electricity - not simply the electric distribution company subject to this Commission's regulation - has an incentive to obtain wholesale energy for resale at the lowest possible costs consistent with its obligations under the Renewable Energy Portfolio Standards Act (the "REPSA") and consistent with the obligations to which it is subject as a member of the independent system operator, PJM Interconnection, Inc. ("PJM"). Although there are several energy suppliers operating in Delaware (third-party competitive suppliers, the Delaware Electric Cooperative ("DEC"), municipal utilities such as the Cities of Dover, Newark and New Castle), only *Delmarva* is subject to the IRP requirement and therefore only *Delmarva* customers bear the significant expense of the IRP process.

The original intent of the IRP was to ensure regulated electric utilities secured a reliable electric supply at the lowest cost while meeting mandated environmental goals. Instead, as we will explain, each of these goals is being met in other ways. The IRP process is out of date even before it is filed, and returns little value to *Delmarva* electric ratepayers for its \$2 million cost.

We understand that other stakeholders - primarily DNREC - disagree that the IRP no longer has value. But DNREC (and those other stakeholders) has a vested interest in prolonging the IRP misery: every penny that *Delmarva* spends on IRPs (especially externality studies) (and which can be recovered from ratepayers) is a penny that DNREC does not have to spend from its budget on such studies.

The DPA is aware that the Commission cannot abolish the IRP requirement itself. But this Commission's conclusion that it is no longer serving the purposes for which it was intended could go a long way toward convincing the current General Assembly that it is time to bury the IRP.

The DPA recommends scheduling one (and only one) workshop to consider the following:

- Addressing the concerns/questions of the parties to minimize or eliminate the need for additional comments and responses so as to allow rapid progress toward the Commission's final approval of the IRP; and
- Obtaining support for introducing legislation in this session to eliminate the IRP requirement.

## DISCUSSION

### A. The IRP Is Outdated Even Before It Is Filed.

The IRP is outdated even before it is filed. In order to run the various models with the various assumptions, those assumptions obviously have to be locked down by a point certain.

However, many things can happen to change those assumptions. Consider the following game changing events that have occurred since the assumptions needed to create this IRP were determined:

- The EPA released proposed regulations for reducing greenhouse gas emissions and ozone that could lead to further shut down of existing electric generation facilities;
- The Supreme Court reinstated EPA Cross State Air Pollution standards that could lead to the retirement or modification of existing generation facilities;
- The Court of Appeals for the District of Columbia overturned a Federal Energy Regulatory Commission ("FERC") order that allowed PJM to permit Demand Response ("DR") to participate in PJM's wholesale energy market sources on the same footing as actual generation sources; if the Supreme Court does not hear an appeal of this decision, DR growth could be drastically reduced;
- PJM submitted a request to FERC for approval of a new capacity performance fee paid to electric generators to guarantee fuel supply; if approved, electric supply prices could increase significantly;
- Depending on the interpretation of the Renewable Energy Portfolio Standards Act ("REPSA"), renewable portfolio standard requirements could be frozen at current levels, which would reduce the need for wind and solar power, at least in the near term and possibly in the long term;
- If approved, a proposed settlement of the merger of Delmarva Power parent Pepco Holdings, Inc. with Exelon Corporation would establish new reliability goals, set caps on reliability investment, and establish ground rules for contract supply of an additional 120 MW of land-based wind power;
- Besides increasing the time between IRPs from two to three years, the passage of House Bill 150 made significant changes to strengthen energy efficiency in Delaware.

In past years, equally dramatic developments have occurred, and interveners have submitted extensive comments about the filed IRP. Yet neither these developments nor the comments have resulted in any changes to the filed IRP. It is clear that the process is not limber enough to deal with developing events. It represents a snapshot in time - accurate at that precise moment, perhaps, but not before and not afterward.

And the process is expensive, both in monetary terms and in terms of the time spent by the various stakeholders in the process. According to information filed in Delmarva's most recent rate case (Docket No. 13-115), Delmarva estimated that it would spend almost \$2 million on the 2014 IRP. Delaware law permits Delmarva to remove the cost of IRPs in rates. And in previous IRP dockets, the parties have met numerous times, requiring some Delmarva personnel to travel from Washington D.C., and preventing other stakeholders from focusing on more important, productive and useful matters.

B. The Original Intent of the IRP - to Ensure that Regulated Electric Utilities Secured Reliable Electric Supply at the Lowest Cost While Meeting Mandated Environmental Goals - Is Being Met in Other Ways.

Since the electric supply market in Delaware has been deregulated and Delmarva has exited the electric generation business, the only strategy to control supply prices revolves around the policies for procuring supply. Delmarva is the only supplier whose procurement of supply is subject to Commission oversight - because it is the default supplier of electricity ("Standard Offer Service" or "SOS") in its service territory. As one of the reasons for the enactment of EURSCA was to promote supply price stability,<sup>2</sup> Delmarva has been using Commission- approved three-year laddered contracts as a hedge against the potential volatility of the power market. However, language contained in Section 66 of the 2014 Bond Bill appointed the Secretary of State to chair a committee to evaluate "the development of an electricity aggregation program(s) for residential customers." This language further gives the Secretary of State the authority to select and contract with a Commission-certified electricity supplier if it is ultimately determined that costs for residential and small commercial customers will be lower using an aggregation method.. Further, as a result of a Staff motion, the Commission has opened its own investigation into Delmarva's long-term (20 to 25 years) supply planning. This could lead to changes in the procurement

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<sup>2</sup>See 26 Del. C. §1007(c) (1)b.7.

process or even to Delmarva re-entering the electric generation market. These issues are not - and will not be - considered inside the IRP process.

If approved, the settlement agreement in Docket No. 14-193 will establish a new minimum System Average Interruption Duration Index ("SAIDI") and a cap on investment for "blue sky" reliability. Unfortunately, Delmarva may be falling short with respect to Major Outage Events ("MOEs"). Additional investment may be needed to boost hardening, the ability to resist damage from storms, electromagnetic pulse events, and physical attacks on the electric grid, and to improve resiliency (the ability to recover quickly from such events). The proposed settlement agreement in Docket No. 14-193 provides that Delmarva will meet with Staff and the DPA to discuss reliability investments. These issues are not - and will not be - addressed in the IRP.

The General Assembly created a Renewable Energy Task Force ("RETF") to make recommendations about the establishment of trading mechanisms and other structures to support the growth of renewable energy markets in Delaware. 26 Del. C. §360. In recent years, the RETF has focused on creating an auction mechanism for Delmarva to procure Solar Renewable Energy Credits ("SRECs"), which is are presented to the Commission for approval. There is a distinct possibility the upcoming SREC auction will be significantly under-subscribed. ~~Should that~~ occur (and assuming the REPSA SREC requirement has not been frozen), it is most likely that the RETF will determine future compliance mechanisms, not Delmarva or the Commission. This issue is not - and will not be - considered in the IRP.

These are just a few examples of matters that affect Delmarva's supply and distribution decisions but which are not and will not be part of the IRP process. As can be seen, the IRP does not even present a complete picture of what is actually occurring at the point in time the snapshot is taken.

C. The Externality Report In the IRP Is of Limited Future Value and Is Not a Sufficient Reason to Continue the Expensive IRP Process.

Delmarva is committed to meeting federal and state environmental mandates. Generally, those mandates come with specific strategies for meeting the goals. A significant portion of the IRP is dedicated to reporting Delmarva's progress in meeting these environmental goals, along with a complicated analysis of the costs and benefits of the programs not directly reflected in prices (commonly called "externalities"). Some stakeholders (particularly DNREC) place a high value on the externality report. As we will show, this report is of limited future value, and is not a sufficient reason to continue the IRP process.

The IRP correctly limits the externality benefit calculation to the changes in emissions of electric generators located within Delaware's geographic boundaries. We can argue about the externality benefit theory, and how Delmarva is currently calculating the estimate. However, in this IRP the key issue is whether there will be any reductions of emission levels over the ten-year forecast period: basically, if there is no reduction in emissions, there will be no externality benefits.

Figures 2 through 4, starting on page 10 of the 2014 IRP, show forecasted reductions in emissions of CO<sub>2</sub>, SO<sub>2</sub>, and NO<sub>x</sub>. Table 1 shows the approximate forecast from the IRP:

**Table 1: 2014 IRP Emissions Forecast in Metric Tons (pages 10-11) by Compliance Year**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	% Change
CO <sub>2</sub> 1000s tons	7,000	6,000	5,400	5,000	5,000	5,000	5,000	5,000	5,000	5,000	-29%
SO <sub>2</sub> tons	8,500	6,500	4,900	3,000	3,400	5,100	5,100	5,100	5,000	5,000	-41%
NO <sub>x</sub> tons	3,500	3,000	2,500	2,200	2,400	3,100	3,100	3,100	3,100	2,600	-26%

The problem is, the IRP is simply *wrong*. Other information sources show that emissions are already below the IRP's projected levels in 2024. Compare this to the *actual* data on Delaware emission levels from the U.S. Energy Information Agency ("EIA") and the CO<sub>2</sub> emission data from the Regional Greenhouse Gas Initiative's ("RGGI") CO<sub>2</sub> Allowance Tracking System ("COATS"):

**Table 2: Actual Delaware Emission Data Compared to IRP Forecast - Metric Tons**

	2012 EIA <sup>1</sup>	2013 RGGI COATS <sup>2</sup>	2014 RGGI COATS	2015 IRP
CO <sub>2</sub>	4,981,052	4,285,052	3,933,001	7,000,000
SO <sub>2</sub>	2,427	Not Available	Not Available	8,500
NO <sub>x</sub>	2,840	Not Available	Not Available	3,500

Note 1 source: US EIA Electricity State Data Delaware 2012, <http://www.eia.gov/electricity/data/state/> (latest release available)

Note 2 source: US EIA Electric Power Monthly January 2015, Tables

1.6B to 1.20B, <http://www.eia.gov/electricity/monthly/><sup>3</sup>

We note that in 2012, Indian River Unit 3, a coal-fired plant, had not yet closed.<sup>4</sup> Its closure would further reduce SO<sub>2</sub> and NO<sub>x</sub>. We acknowledge that the Calpine Dover natural gas combined cycle facility to be completed in 2015 might add 600,000 tons of CO<sub>2</sub> a year, based on similar generating units at Hay Road. Since no other generating changes are planned, emissions will likely be stable through the ten-year planning period. Tables 3 and 4 below show that we can expect about 5 million tons annually of CO<sub>2</sub>, about 2,000 tons annually of SO<sub>2</sub>, and around 2,500 tons annually of NO<sub>x</sub>.

**Table 3: 2015 CY CO<sub>2</sub> Estimated Emissions by Electric Generating Unit ("EGU"):**

EGU	2015 CY Metric Tons CO <sub>2</sub>	Estimating Basis
Christiana	1,415	2012-2014 Avg. RGGI COATS
Edgemoor	541,535	"
McKee Run	15,880	"
Vansant	1,325	"
Beasley	16,488	"
Delaware City	50,096	"
Hay Road	2,330,726	"
NRG Dover	99,649	2014 RGGI COATS as it has ramped up
Indian River	1,182,426	2013-2014 RGGI COATS Unit 4 only
Calpine Dover	<u>606,000</u>	26% of Hay Road, 309 MW Capacity vs. 1193 MW
Total	4,845,540	
Adjusted Total	4,995,402	RGGI COATS misses 3% of emissions below 25 MW

**Table 4: 2015 CY SO<sub>2</sub> and NO<sub>x</sub> Estimated Emissions by Fuel Source**

Fuel	2012 <sup>1</sup> MWh	2015 CY <sup>2</sup> Est. MWh	Generation Ratio Year to Year	2012 <sup>3</sup> SO <sub>2</sub> Tons	2012 <sup>3</sup> NO <sub>x</sub> Tons	2015 CY SO <sub>2</sub> Tons	2015 CY NO <sub>x</sub> Tons
NG	6,815,000	6,332,000	0.93	25	1,214	23	1,129
NG Calpine Dover	0	1,242,422				5	221
Coal	1,423,000	1,152,630	.81	2,356	794	1,737	585

<sup>3</sup>The EIA information covers all Delaware generation. The RGGI COATS information omits generation units below 25 MW, but the 2012 RGGI COATS report covered 97% of the EIA total, so it is reasonable to use RGGI COATS information as a proxy for actual emissions.

<sup>4</sup>It shut down in 2013.

Pet. Liquids	22,000	163,000	7.4	38	9	281	67
Other Gas	244,000	208,300	0.85	8	24	7	20
Biomass	105,000	58,000	0.55	0	799	0	439
Total	8,609,000	9,156,352		2,427	2,840	2,053	2,461

Note 1: Note 2 source: US EIA Electric Power Monthly January 2015  
Tables 1.6B to 1.20B

<http://www.eia.gov/electricity/monthly/> Note 2:

Derived from Table 3.

Note 3: US EIA Electricity State Data Delaware 2012

<http://www.eia.gov/electricity/data/state/>

**Stable emissions mean no change in externality cost and no justification for externality studies at Delmarva ratepayer expense.**

The IRP Completely Ignores the Price Impact of New RGGI Rules on Electricity Costs.

In 2013 new rules for RGGI's carbon permit auctions greatly reduced the number of available permits. The number of available permits dropped from 147 million in 2012 to 78 million in 2014 - the approximate number electric generators needed to meet their expected emissions. But speculators entering the market to buy permits for resale at a higher price drove demand up to 215 million permits in 2014. This imbalance in supply versus demand caused prices to increase from \$1.93/ton in 2012 to \$4.73/ton in 2014.

With demand far exceeding supply, how were prices determined? Ostensibly to protect electric customers, the new rules established cost caps escalating from \$4/ton in 2014 to \$6 in 2015, to \$8 in 2016, to \$10 in 2017, and rising 2.5%/year thereafter. The chart below shows how prices are rising in the quarterly auctions in direct relation to the cost caps. Basically, the RGGI states are setting auction prices.

This has significant implications in forecasting future prices of carbon permits and the impact on electric bills. When the price cap hits \$10/ton in 2017 we can expect carbon permits to cost at least that much. In Delaware, electric customers' cost will rise from \$5.8 million in 2012 to at least \$43 million in 2017. Residential customers will see costs rise from about \$6/year to about \$44/year, and the largest industrial customers could see cost increases from \$125,000/year to \$1 million/year. Such increases could make electricity unaffordable for many Delaware residential customers, and could cause the few remaining industrial customers in Delaware to decamp for areas with less expensive electricity.



<u>Delaware RGGI by Year</u>	<u>CO2 Permits</u>	<u>Average \$/Permit</u>	<u>Revenue - \$</u>
2012	3,000,882	1.93	5,791,703
2013	5,551,860	2.92	16,193,082
2014	3,798,360	4.73	17,968,750
2015	4,420,727	6.00	26,524,362
2016	4,321,651	8.00	34,573,208
2017	4,317,737	10.00	43,177,370
2018	4,221,235	10.25	43,267,659
2019	4,127,145	10.51	43,376,294
2020	4,035,408	10.77	43,461,344

#### CONCLUSION

At the one workshop we recommend, we would ask Delmarva the following questions:

- 1) How did it come up with such high base line emission estimates? We ask it to respond to the emission forecast analysis in this report which are based on EIA and RGGI information, and to consider our suggestion that externality cost estimates, and the IRP process, be discontinued.
- 2) Given the state of natural gas prices, would it now use the low gas cost case instead of the reference case with higher gas cost as the alternate case?
- 3) It appears that wholesale electric supply costs do not reflect rapidly increasing auction prices for RGGI carbon permits. Did it address RGGI permit costs in the IRP? Where and how?

- 4) In the 2015 compliance year, Delaware EGUs will emit 5 million tons of CO<sub>2</sub> compared to 4.4 million tons of available RGGI permits. By compliance year 2020, the gap increases to a million tons. Will the EGUs have to curtail generation by 20%? If so, what impact will that have on electric supply price and reliability?

**2. DNREC's COMMENTS. DNREC's Comments (including its footnotes) are repeated below.**

### Introduction

The Delaware Department of Natural Resources & Environmental Control ("DNREC") respectfully submits these comments on the Delmarva Power and Light, Inc. ("Delmarva" or "DPL") 2014 Integrated Resource Plan ("IRP") filed December 1, 2014.

The IRP provides useful data and analysis and presents us with the opportunity to discuss broader policy issues that face us today and in coming years. The IRP is necessarily incomplete, given ongoing developments like the Exelon merger, RPS cost cap rule-making, energy efficiency planning under the newly established Energy Efficiency Advisory Council, the EPA 111(d) process, and broader changes in utility practices and regulation relating to distributed generation and microgrids. DNREC is not proposing to debate or discuss all of these issues, but simply to identify them as examples of ways in which the energy policy landscape is changing. Since the IRP is necessarily a work in progress, we should use the IRP process as an opportunity to further our understanding and clarify our thinking relating to current issues. In that spirit, DNREC proposes that the issues of

externalities, energy efficiency, RPS compliance costs and avoided costs and prices suppression effects be placed on the table for discussion in this docket.

#### 1. Externalities

The IRP Regulations require that DPL shall "[i]nclude a current evaluation, detailing and giving consideration to environmental benefits and externalities associated with the utilization of specific methods of energy production." (IRP Regulations 6.1.4) The IRP Regulations go further in stating "[t]he IRP must show an investigation of all reasonable opportunities for a more diverse supply at the lowest reasonable cost, including consideration of environmental benefits and externalities." (IRP Regulations 5.2)

The 2010 and 2012 IRPs broke new ground in considering environmental and health externalities in resource planning, and the 2014 IRP builds on the methods developed in the previous versions. By including externalities and a broader economic analysis of energy efficiency and renewable energy, the IRP provides us with a more complete picture of all of the costs and benefits of the energy Delmarva procures for Delaware ratepayers. DPL has streamlined the externality analysis by building upon some of the modeling used in the previous iteration—a time and money saving approach that DNREC thinks is appropriate.

DNREC believes that some particulars of the externality calculations should be examined, particularly the amount of PJM generation mix displaced by renewable generation and the price put on

CO2 emissions. Tables 13, 14, 15 and 16 on pages 78-9 present estimated benefits of renewable energy generation based on 50 percent and 25 percent of average PJM emissions avoided. These may be safe, conservative assumptions, but a fuller discussion of the rationale for these assumed rates of avoided emissions would be useful.

Tables 15 and 16 present estimated values of avoided CO2 emissions based on the avoided emissions estimates in Tables 13 and 14. DPL has assigned a value of \$1/ton to CO2 emissions, the low end of a range of \$1 to \$100, which is two orders of magnitude. While DPL also used the low end of the ranges for SO2 and NOx to be conservative, it should be noted that the ranges for SO2 (\$43,000 to \$110,000) and NOx (\$9,500 to \$25,000) are narrower than the CO2 range. To better understand the externality value of reducing carbon emissions, a value from the mid-range of the EPA tables would be more appropriate.

On September 12, 2013, Governor Markell signed Executive Order 41 creating the Cabinet Committee on Climate and Resiliency, which "shall oversee development of an implementation plan to maintain and build upon Delaware's leadership in responsibly reducing greenhouse gas emissions, including identifying appropriate interim goals."<sup>5</sup> Delaware's Sea Level Rise Advisory Committee has published a comprehensive vulnerability assessment, which details economic and environmental risks from sea level rise along the state's entire

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<sup>5</sup>Executive Order Number Forty One: Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions. Available at <http://governor.delaware.gov/orders/EO41.pdf>.

coastline.<sup>6</sup> On December 1, 2014, the State's Climate Change Advisory Committee released an impact assessment of the effects of higher temperatures and increased precipitation on Delaware.<sup>7</sup> While climate change is a global problem, the effects in Delaware will be local and are expected to be significant. Delaware's decision makers have an obligation to understand the extent to which our energy use contributes to the problem.

## **2. Energy Efficiency**

HA 2 to SB 150, which was passed in the last legislative session, gives DPL the authority to provide energy efficiency ("EE") programs working with the Energy Efficiency Advisory Council ("EEAC") and present them to the PSC for rate recovery. The EEAC has begun the work of developing EE program portfolios. The IRP includes some projections of energy efficiency savings that should be considered a starting point for understanding the possible scope of energy efficiency savings while specific programs are considered and proposed by the EEAC. It is to be expected that more meaningful projections will be developed when the EEAC proposes programs for DPL to present to the Commission for approval.

## **3. RPS Compliance Costs**

DPL has used conservative cost estimates in its RPS cost

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<sup>6</sup> *Preparing for Tomorrow's High Tide: Sea Level Rise Vulnerability Assessment for the State of Delaware*, Sea Level Rise Advisory Committee. Available at <http://www.dnrec.delaware.gov/coastal/Pages/SLR/DelawareSLRVulnerabilityAssessment.aspx>.

<sup>7</sup> *Climate Framework for Delaware*, December 1, 2014. Available at <http://www.dnrec.delaware.gov/energy/Pages/Climate-Framework.aspx>.

projections. For instance, the cost of SRECs is projected to increase significantly in the coming years. The cost of installed solar power has declined over the last several years, and while some incentives are likely to decrease or even disappear (which may be appropriate given decreasing supply costs), it may be that DPL is erring on the high side. The cost assumptions and the factors driving those assumptions should be discussed.

#### **4. Avoided Cost and Price Suppression Effects of Renewable Energy**

The IRP includes cost projections for compliance with the state's Renewable Portfolio Standards. However, these figures do not provide a complete picture of the costs and benefits of renewable energy, which would include estimated avoided cost and price suppression benefits from the siting of renewable energy resources in Delaware.

Even though renewable energy sources such as wind and solar photovoltaics (PV) are more expensive than conventional baseload generation, they provide net positive benefits to the grid when they replace expensive, inefficient generating units within the PJM region. When demand peaks, as on hot summer afternoons, more expensive generating units are called into service to meet the demand, driving up the locational marginal pricing (LMP) for the region, including Delaware. Distributed solar PV generation, which roughly matches demand on such occasions, can reduce the need for such expensive power and reduce the need to import this power over overloaded transmission lines. By helping to ameliorate LMP costs, distributed PV

can benefit all power customers.

These avoided cost or price suppression effects, which have been calculated in other regions, can be substantial. DNREC is engaged in research into the price suppression effects of distributed PV and would welcome the opportunity to discuss this investigation as part of this docket.

### Conclusion

The IRP is a valuable tool that illuminates and expands our understanding of all the costs of our energy supply and provides us with a more complete picture that includes environmental externalities. DNREC is committed to working with DPL and all stakeholders to engage in this docket in a collaborative way to more fully illuminate the overall picture of costs and benefits of our changing energy picture.

### **3. MAREC's COMMENTS. MAREC's Comments (including its footnotes) are repeated below.**

The Mid-Atlantic Renewable Energy Coalition ("MAREC") submits these comments on the 2014 Integrated Resource Plan ("IRP") filed by Delmarva Power & Light Company ("Delmarva" or "Company"). MAREC appreciates the opportunity to comment on the IRP. For purposes of these comments, MAREC will focus primarily on Delmarva's compliance with the Delaware Renewable Portfolio Standard ("RPS"). MAREC will also address the opportunity through the integrated planning process to incorporate more wind energy resources to act as a hedge against

the price volatility of fossil fuels used to generate electricity, and utilize wind as a resource to help meet the requirements of the EPA's Clean Power Plan. MAREC will additionally comment on the importance of integrated resource planning in Delaware as a result of the Electric Utility Retail Customer Supply Act of 2006 ("EURCSA") and the erosion of the State of Delaware's policy supporting renewable energy development due to the non-solar RPS requirements being satisfied in large part by fuel cell generated renewable energy credits ("RECs") derived from natural gas powered fuel cells.

#### I. INTRODUCTION

MAREC is a non-profit corporation that was formed to help advance the opportunities for renewable energy development in a substantial portion of the region where the Regional Transmission Organization, PJM Interconnection, LLC ("PJM"), operates. MAREC's footprint includes Delaware, Ohio, New Jersey, Pennsylvania, Maryland, Virginia, West Virginia, North Carolina, and the District of Columbia. MAREC's membership consists of wind developers, wind turbine manufacturers, service companies, nonprofit organizations, and a transmission company dedicated to the growth of renewable energy technologies to improve our environment, boost economic development in the region, and diversify our electric generation portfolio thereby enhancing energy security. The primary areas of focus for MAREC are to work with state regulators and policymakers to develop rules and supportive policies for renewable energy; provide education and expertise on the environmental sustainability of wind energy; and offer technical

expertise and advice on integrating variable wind energy resources into the electric grid. Many of the wind turbines that have been installed regionally have been manufactured by MAREC members. MAREC members are committed to significant growth in renewable energy technologies to support economic development in the region while helping meet Delaware's legislative mandate for renewable energy through the RPS and similar mandates in other jurisdictions in the region.

## II. BACKGROUND

Under the RPS, Delmarva is required to procure an annually increasing amount of its energy from renewable resources to serve its Standard Offer Service ("SOS") customers. In compliance year 2015-2016, Delmarva is required to purchase a minimum of 13.0% of its supply for SOS customers from these resources with that percentage increasing to 25% by 2025-2026. In compliance year 2015-2016, 1.0% of the supply procured by Delmarva for the SOS customers must come from solar photovoltaic resources and increases to 3.5% by the 2025-2026 compliance year.<sup>8</sup> Pursuant to 26 DEL. C. § 352(6), "eligible energy resources" that can be used for compliance with the RPS includes electricity derived from wind, geothermal, and solar electric technology, and a number of other technologies typically considered renewable technologies, such as energy derived from ocean waves and biomass that has been cultivated in a sustainable manner, but not energy derived from a waste-to-energy facility.

When enacting the RPS in 2005, the General Assembly declared that

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<sup>8</sup> 26 DEL. C. § 354(a).

the "benefits" of renewable energy accrued to the public. The General Assembly defined these benefits to include, "improved regional and local air quality, improved public health, increased electric supply diversity, increased protection against price volatility and supply disruption, improved transmission and distribution performance, and new economic development opportunities." <sup>9</sup>

In 2006, after it was determined that Delmarva customers would be seeing increases in their electricity rates in excess of 60% after rate caps were removed as part of the electric restructuring process, the General Assembly moved resolutely to pass EURCSA, which among other things reinstated integrated resource planning for Delmarva and also authorized Delmarva, subject to Commission approval, to enter into long-term contracts for procurement of power.<sup>10</sup> These contracts could be approved as part of the integrated resource planning process or through a separate application process. Costs for these contracts could be approved by the Commission and included in the rates charged to SOS customers. In developing its IRP, Delmarva is asked to consider, "resources that provide short- or long-term environmental benefits to the citizens of the State (such as renewable resources like solar or wind power);" "resources that promote fuel diversity;" and "resources that encourage price stability."<sup>11</sup> In fact, by passing the EURCSA the General Assembly recognized the need to immediately have a process to

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<sup>9</sup> 26 DEL. C. § 351(b).

<sup>10</sup> See 26 DEL. C. § 1007(b) and (c).

<sup>11</sup> 26 DEL. C. § 1007(c)(1)(b)

obtain long-term contracts for the purpose of stabilizing prices.<sup>12</sup> In 2010, the General Assembly strengthened the RPS law when it increased and extended the law's requirements for the minimum percentage of renewable energy procurement.<sup>13</sup>

In order to meet its RPS requirements, Delmarva, with Commission approval, has executed several long-term power purchase agreements ("PPAs") for energy and/or RECs/SRECs from renewable resources.<sup>14</sup> According to Delmarva's IRP, "Delmarva Power has created a portfolio of renewable resources that when supplemented with REC and SREC offsets from the Bloom Energy project and spot market purchases, will assure compliance with RPS."<sup>15</sup> Currently, Delmarva has three long-term contracts with wind generators:

- AES Armenia Mountain in North Central Pennsylvania for up to 50 MW of wind resources. Delmarva executed this 15-year PPA on June 6, 2008, with contract purchases beginning in December 2009.

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<sup>12</sup> See 26 DEL. C. § 1007(d) ("As part of the initial IRP process, to immediately attempt to stabilize the long-term outlook for standard offer supply in the DP&L service territory, DP&L shall file on or before August 1, 2006, a proposal to obtain long-term contracts.").

<sup>13</sup> See Senate Substitute No. 1 for Senate Bill No. 119 from the 145th General Assembly, available at <http://delcode.delaware.gov/sessionlaws/ga145/chp451.shtml>.

<sup>14</sup> These PPAs include: (1) *In the Matter of the Application of Delmarva Power and Light Company for Approval of Solar Renewable Energy Credit Contracts as SREC Supply Sources for Standard Offer Service Customers*, DE PSC Docket No 10-198; (2) *In the Matter of the Application of Delmarva Power and Light Company for Approval of a Pilot Program for the Procurement of Solar Renewable Energy Credits*, DE PSC Docket No. 11-399; (3) *In the Matter of the Application of Delmarva Power and Light Company for Approval of the 2013 Program for the Procurement of Solar Renewable Energy Credits*, DE PSC Docket No. 12-256; and (4) *In the Matter of the Application of Delmarva Power & Light Company for Approval of Land-Based Wind Contracts as a Supply Source for Standard Offer Service Customers*, DE PSC Docket No. 08-205.

<sup>15</sup> IRP at 66-67.

- Gestamp Roth Rock in Western Maryland for up to 40 MW of wind resources. Delmarva executed this 20-year PPA on May 30, 2008, with contract purchases beginning in August 2011.
- Gamesa Chestnut Flats in Central Pennsylvania for up to 38 MW of wind resources. Delmarva executed this 20-year PPA on May 30, 2008, with contract purchases beginning in December 2011.

Impacting Delmarva's responsibility under the RPS is Delaware's Energy Efficiency Resource Standards Act of 2009 ("EERS"), which in part requires Delmarva to meet the State's goal of an electricity savings equivalent of 15% of the 2007 base year electricity demand by 2015.<sup>16</sup> To the extent that there is electricity demand savings as a result of this requirement, lower electricity consumption in a year as a result of compliance with the EERS would reduce the number of RECs needed to comply with the RPS in that year. Although the legislation required that regulations be promulgated by DNREC no later than July 29, 2010, regulations have yet to be issued. Among a number of other important considerations required by EERS, these regulations were to cover energy efficiency measurement and verification standards; how affected energy providers, like Delmarva, would demonstrate, document, and report their compliance with the energy savings goals; detailed procedures and standards concerning what energy efficiency measures count toward compliance; the useful lives of energy efficiency measures; and how to adjust for differences between the base and current years to account for weather, population, and programmatic

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<sup>16</sup> 26 DEL. C. § 1502(a)(1).

changes.<sup>17</sup> Notwithstanding that there are no formalized measurement and verification standards, the IRP attempts to estimate Delmarva's compliance with EERS for purpose of determining future electricity demand in the IRP.

In July 2011, Senate Bill No. 124 was enacted amending the RPS to permit Delmarva to count the energy produced from a "qualified fuel cell provider project" towards the compliance requirements of the RPS. The bill was enacted as part of a package offered by the State to incentivize Bloom Energy, a fuel cell manufacturer, to develop a manufacturing facility in Delaware, which the State maintained would lead to the creation of at least 900 direct jobs at the plant. Under the bill, Delmarva is permitted to fulfill the equivalent of 1 REC for each megawatt-hour of energy purchased from a qualified fuel cell provider project.<sup>18</sup> In addition, Delmarva also has the ability to use the energy output produced by the fuel cell project to fulfill no more than 30% of its SREC requirements at a ratio of 1 MWh of RECs per 1/6 MWh of SRECs.

The Delaware Code gives the Secretary of the Department of Natural Resources and Environmental Control ("DNREC") discretion, in coordination with the Commission and Delmarva, to adjust the statutory allowances for the partial fulfillment of Delmarva's obligations towards the RPS standard.<sup>19</sup> In testimony before the Commission in the docket to approve a tariff to implement a surcharge on Delmarva customers for the Bloom Energy project, Collin O'Mara, the Secretary

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<sup>17</sup> 26 DEL. C. § 1504(a).

<sup>18</sup> 26 DEL. C. § 353(d)(1).

<sup>19</sup> 26 DEL. C. § 353(d)(1)(b).

of DNREC at that time, proposed that in order to lower the cost impact of the fuel cell project, Delmarva should be able to fulfill the equivalent of 2 RECs for each megawatt hour of energy produced during the first 15 years that the qualified fuel cell project is in service.<sup>20</sup> Secretary O'Mara also proposed that Delmarva not be able to fulfill more than 25% of its SREC compliance requirements with the output of the project in years one through five; 30% in years six through fifteen; and 35% in years sixteen through twenty-one of the project. The Commission adopted the adjustments proposed by DNREC in its decision approving the tariff.<sup>21</sup>

In 2011, with the passage of Senate Bill No. 124 as amended by Senate Amendment No.1, Delmarva became directly responsible for obtaining RECs and SRECs to comply with the State RPS standards for all distribution customers. The requirement for REC procurement would no longer be satisfied through a full requirements contract as part of the SOS auction process.

On April 30, 2014, Exelon Corporation ("Exelon") announced a proposed merger with Pepco Holdings, Inc. ("PHI"), the parent company of Delmarva. On June 18, 2014, Delmarva, Exelon, and PHI jointly filed an Application with the Delaware Public Service Commission ("Commission") to merge the companies.<sup>22</sup> PHI would be merged into

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<sup>20</sup> *In the Matter of the Application of Delmarva Power and Light Company for Approval of Qualified Fuel Cell Provider Tariffs*, PSC Docket No. 11-362, Findings Opinion and Order No. 8079, dated December 1, 2011, at 16.

<sup>21</sup> *Id.* at 28.

<sup>22</sup> *In the Matter of the Application of Delmarva Power & Light Company, Exelon Corporation, Pepco Holdings, Inc., Purple Acquisition Corporation, Exelon Energy Delivery Company, LLC and New Special Purpose Entity for Approvals Under the Provisions of 26 DEL. C. §§ 215 and 1016*, DE PSC Docket No. 14-193.

Exelon, whereby control of Delmarva would be assumed by Exelon. Similar filings were made on or about that date in all of the other jurisdictions where PHI has operating utilities (New Jersey, Maryland, and the District of Columbia) and at the Federal Energy Regulatory Commission ("FERC") in order to obtain approvals from the various regulatory commissions. A filing was also made in Virginia where PHI still owned some distribution and transmission assets. Exelon and PHI must obtain approval from all of the regulatory commissions where they have filed in order for the merger to move forward. To date New Jersey, Virginia, and FERC have approved the merger.

In Delaware, a number of the parties in the matter, including MAREC, have reached a proposed settlement agreement ("PSA").<sup>23</sup> The PSA may potentially impact the IRP in several respects. First, the merger if consummated would change the control of Delmarva from PHI, an entity comprised of primarily wires or wires-related companies, to Exelon, an entity that has wires companies and also is heavily invested in electricity generation. This potential change of control could change Delmarva's approach to its IRP in future filings. Secondly, the PSA contains an important provision that addresses a concern that MAREC has had with past and current IRPs concerning the Delmarva's compliance with the RPS.<sup>24</sup> In essence, Paragraph 84 of the

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<sup>23</sup>The PSA was filed with the Delaware Public Service Commission as Exhibit A to the Joint Applicants' Motion to Amend the Scheduling Order, on February 13, 2015. See DE PSC Docket No. 14-193, Docket Item 16.

<sup>24</sup>Other provisions, such as additional funding for energy efficiency programs, ring fencing protections, etc. may have significant relevance to the IRP, but will not be addressed as part of

PSA would require competitively sourced procurements via long-term contracts for wind RECs for a portion of the remaining compliance requirements under the non-solar requirements of the RPS. MAREC believes this to be a very positive development, which could lead to a major improvement in Delmarva's ability to cost-effectively comply with the RPS, as more fully discussed herein.

Table 7, on page 71 of the IRP, provides an overview of what Delmarva predicts will be its net RPS REC position during the IRP planning horizon. Table 7 has been recreated below:

**Table 7**  
**QFCP Impact on Delmarva Power's Projected Net RPS**  
**Position**

Compliance Year	REC Requirement	QFCP ERECs	Contracted Resources	Net Position
2015/16	817,508	457,272	338,627	-21,609
2016/17	902,830	457,272	338,627	-106,932
2017/18	980,809	457,272	338,627	-184,911
2018/19	1,054,541	457,272	338,627	-258,643
2019/20	1,127,656	457,272	338,627	-331,757
2020/21	1,167,720	457,272	338,627	-371,822
2021/22	1,209,257	457,272	338,627	-413,359
2022/23	1,251,376	457,272	338,627	-455,477
2023/24	1,292,086	457,272	338,627	-496,188
2024/25	1,334,553	457,272	338,627	-538,655

As this table shows, the Company is forecasting a non-solar REC deficiency in compliance years 2015/16 through 2024/25.

**III. DISCUSSION**

**A. Delmarva's Compliance with the RPS Should Include Competitive Procurements for Renewable Energy Sourced through Long-Term Contracts.**

As previously indicated, Delmarva must comply with the RPS'

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these comments.

annually increasing requirements. Table 7 above from the IRP reflects that Delmarva has an immediate deficit of non-solar RECs that will grow to an estimated deficit of nearly 540,000 RECs by compliance year 2024/25. To date Delmarva has met its compliance requirements with a combination of long-term contract procurements, an allocation of the QFCP ERECs to the non-solar REC requirements, and the balance being met through spot market purchases. MAREC commends Delmarva, as it has in previous comments to earlier IRPs, on the Company's efforts to meet a portion of its non-solar REC requirements through long-term contracting as a result of competitive procurements. However, the last long-term contract procurement for the non-solar compliance requirements was entered into in June 2008.

In its last IRP, Delmarva made the assumption that it was going to meet the energy efficiency standard of EERS, which required Delmarva to meet the State's goal of reducing electricity consumption 15% by 2015, based on electricity consumption figures for the year 2007.<sup>25</sup> Without the existence of standards for measuring reduction in energy usage from energy efficiency measures and an insufficient level of energy efficiency programming, it was determined at the conclusion of the 2012 IRP case that Delmarva would come back in the current (2014) IRP and reassess the level of demand reductions due to energy efficiency measures. As a result of the reassessment, what was indicated as a surplus of RECs for several of the years in the 2012 IRP turned into a REC deficiency for the entire planning period in the

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<sup>25</sup> 26 DEL. C. § 1502(a)(1).

present matter as Table 7 indicates.

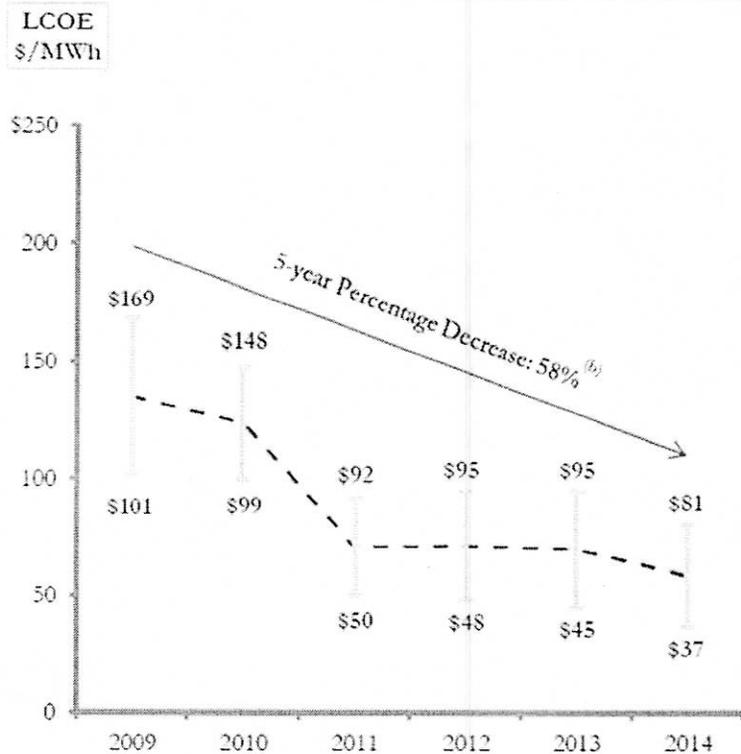
MAREC has consistently maintained that Delmarva should meet a reasonable portion of its deficiency in non-solar RECs for RPS compliance through long-term wind energy and REC contracts competitively procured. This position is even more apparent as a result of the restated non-solar REC deficiencies now shown on Table 7.

Wind energy is becoming an increasingly cost-effective resource. The following chart produced by Lazard, the asset management firm, demonstrates the downward trend in the levelized cost of energy ("LCOE") for wind resources.<sup>26</sup> This chart reflects trend declines in the unsubsidized cost of wind energy.

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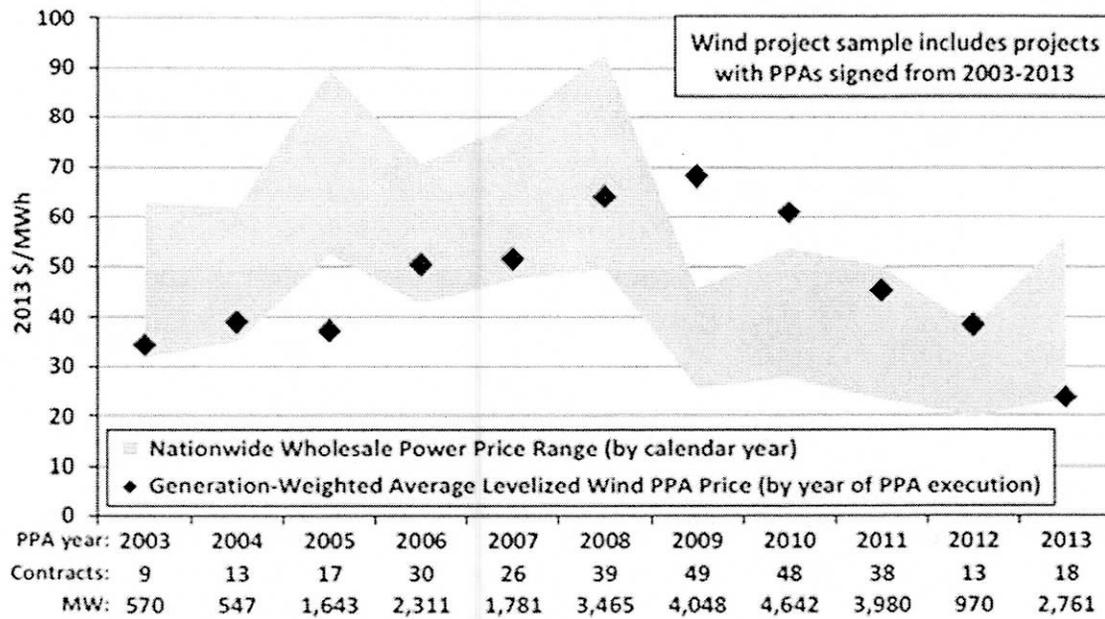
<sup>26</sup> Lazard, *Lazard's Levelized Cost of Energy - Version 8.0*, at p. 9 (September 2014), available at <http://www.lazard.com/PDF/Levelized%20Cost%20of%20Energy%20-%20Version%208.0.pdf>.

## WIND LCOE



Lawrence Berkeley National Laboratory's ("LBNL") 2013 Wind Tech Report tracked wind power purchase agreements and compared them to average wholesale power prices. The following chart demonstrates that wind power purchase agreement prices have been falling since 2009 and are consistent with wholesale power prices (note: LBNL's review of wind power purchase agreements reflects prices that are inclusive of federal subsidies such as the production tax credit). The Department of Energy's 2013 Wind Technologies Market Report also stated that, "Wind PPA prices have reached all-time lows."<sup>27</sup>

<sup>27</sup>U.S. Department of Energy, 2013 Wind Technologies Market Report, at p. ix (August 2014), available at [http://emp.lbl.gov/sites/all/files/2013\\_Wind\\_Technologies\\_Market\\_Report\\_Final3.pdf](http://emp.lbl.gov/sites/all/files/2013_Wind_Technologies_Market_Report_Final3.pdf).



Source: Berkeley Lab, FERC, Ventyx, IntercontinentalExchange

Figure 47. Average levelized long-term wind PPA prices and yearly wholesale electricity prices over time

Given the rate of decline in the LCOE of wind energy and the all-time low prices for wind energy PPAs, MAREC recommends that the Commission direct Delmarva to perform an ongoing review of potential wind energy power purchase agreements in order to capture potential savings as wind energy becomes an increasingly competitive form of energy.

A long-term strategy, especially in the context of the IRP process, makes economic sense. Long-term procurements of renewable energy through a request-for-proposal process would act as a hedge against price volatility and be a competitive tool utilized to help meet Delmarva's present and future RPS requirements. These contracts enable projects to be financed at more advantageous financing terms, which also benefits ratepayers. As previously discussed, when the Delaware General Assembly passed EURSCA, it recognized the need for

long-term contracts to reduce price volatility and stabilize pricing. Benefits from such an arrangement would include long-term price certainty, since wind generators (unlike traditional generators) do not have fuel costs and incur minimal production costs. There would be no price volatility with wind, as the price of energy and RECs during the term of the contract would essentially be fixed; whereas market changes could cause drastic price swings with traditional resources, like natural gas and coal.

As previously indicated, MAREC and other parties in the Exelon/PHI merger case in Delaware (PSC Docket No. 14-193) negotiated a provision in the PSA for competitively sourced long-term contracts to procure wind RECs. The provision, which was agreed to by Exelon and Delmarva, calls for three separate competitively sourced sequenced procurements for RECs via long-term contracts. Although MAREC believes the proposed agreement on REC procurement is a very important and positive development in Delmarva's ability to prudently satisfy the non-solar compliance requirements of the RPS, the PSA and the merger itself must first receive Commission approval. Moreover, the proposed merger must also obtain the approval of both the Maryland and District of Columbia Public Service Commissions, and the merger must be finalized before the agreement in Paragraph 84 of the PSA, including the wind long-term PPA provision can be implemented. If the merger is not consummated by the time the Commission renders a decision on the IRP, MAREC respectfully requests that the Commission require a competitively sourced procurement for long-term contracts for renewable energy as part of its decision on this IRP.

**B. The Same Principles Supporting Long-Term Contracts for Wind Energy for RPS Compliance Should Also Be Considered for General Supply Procurement Purposes.**

The same Act that reinstated a requirement for integrated resource planning,<sup>28</sup> EURCSA, significantly changed the course for Delmarva's responsibility to serve its SOS customers. Section 1007(b) of Title 26 of the Delaware Code reads as follows:

(b) Subject to the approval of the Commission, the standard offer service provider to meet its electric supply requirements shall have the ability to:

- (1) Enter into short- and long-term contracts for the procurement of power necessary to serve its customers;
- (2) Own and operate facilities for the generation of electric power;
- (3) Build generation and transmission facilities (subject to any other requirements in any other section of the Delaware Code regarding siting, etc.);
- (4) Make investments in demand-side resources; and
- (5) Take any other Commission-approved action to diversify their retail load.

No longer did 100 percent of electricity supply have to come from the regional wholesale market through an auction process as had been the requirement under the Electric Restructuring Act of 1999. EURCSA reduced that requirement to only a minimum of 30 percent<sup>29</sup> and clearly sent a strong signal that diversity of supply, environmental benefits of supply choices, renewable energy, and long-term price stability were key components of an IRP. Indeed, 26 DEL. C.

§1007(c) (1) (b) states:

b. In developing the IRP, DP&L may consider the economic and environmental value of:

1. Resources that utilize new or innovative baseload technologies (such as coal gasification);

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<sup>28</sup> 26 DEL. C. § 1007(c) (1).

<sup>29</sup> 26 DEL. C. §1007(c) (1) (a).

2. Resources that provide short- or long-term environmental benefits to the citizens of this State (such as renewable resources like wind and solar power);
3. Facilities that have existing fuel and transmission infrastructure;
4. Facilities that utilize existing brownfield or industrial sites;
5. Resources that promote fuel diversity;
6. Resources or facilities that support or improve reliability; or
7. Resources that encourage price stability.

The IRP must investigate all potential opportunities for a **more diverse supply** at the lowest reasonable cost. (emphasis added).

Consistent with the previous section of these comments showing the rapid rate of decline in prices for wind energy PPAs and the clear direction provided in EURCSA to "promote fuel diversity," "encourage price stability," and utilize resources that provide environmental benefits, MAREC recommends that the Commission direct Delmarva to perform an ongoing review of potential wind energy power purchase agreements in order to capture potential savings as wind energy becomes an increasingly competitive form of energy. This review should be **in addition to** Delmarva's review of its compliance with the State's RPS compliance requirements.

C. Integrated Resource Planning Serves a Critical Function in Delaware.

The Delaware General Assembly reinstated integrated resource planning as a as part of its response to an electricity price increase of more than 60 percent in 2006, when rate caps under the electricity restructuring regime expired. The General Assembly took a

measured and holistic approach to remedy what was perceived to be an overreliance on short-term markets and the lack of a diverse electricity supply. No doubt, the prices ratepayers were facing at the time were a reflection of the market conditions, but the General Assembly's response was clearly intended to mitigate the potential for widely fluctuating prices going forward.

Integrated resource planning is a means to ensure that SOS suppliers are taking all practical steps to meet their electric supply requirements in a prudent manner while limiting the potential for these types of price increases from occurring again. Had the General Assembly chosen to leave the market as it was in 2006, relying entirely on short-term market procurements through an auction process, then the need for an integrated planning process would not have been necessary. However, this was not the course chosen by the General Assembly in 2006, and MAREC strongly supports the current law's requirement for such planning as a very reasonable approach to help ensure long-term price stability, cost-effective compliance with the RPS, a more diverse fuel mix, and energy security.

**D. Delmarva Should Be Directed to Update Its Carbon Dioxide Scenarios to Reflect the EPA's Final Clean Power Plan.**

On June 2, 2014, The Environmental Protection Agency ("EPA") released its proposed Clean Power Plan ("CPP") under Section 111(d) of the Clean Air Act, which would regulate carbon dioxide emissions from existing coal plants. The final rule is expected in the summer of

2015. The CPP charges states with developing compliance plans to meet interim and final carbon dioxide targets set by EPA. The plan proposes, though does not require, that states use four "building blocks" in order to meet the CPP's carbon dioxide reduction targets. Those building blocks are: (1) efficiency upgrades to existing coal-fired power plants; (2) increased dispatch of natural gas power plants; (3) additional use of renewable energy; and (4) greater use of energy efficiency.

EPA's proposed CPP rulemaking establishes carbon dioxide emissions baselines and interim and final goals for each state. Delaware's carbon dioxide baseline is 1255 lbs/MWh. The interim and final goals are 913 lbs/MWh and 841 lbs/MWh, respectively.<sup>30</sup> While the CPP is not yet final, it is highly probable that the final plan will require Delaware to meaningfully reduce emissions of carbon dioxide from existing power plants. The four building blocks, including renewable energy, are likely policy mechanisms to achieve the required carbon dioxide emissions reductions.

Although Delmarva acknowledges the CPP and its potential impact on the current IRP, on page 24 of the IRP, Delmarva suggests that because the CPP has not been finalized and that the states in the region have not yet chosen how to comply, that it would be premature for Delmarva to include the CPP's impact in its current IRP analysis. MAREC suggests that it is not too soon for the Commission to direct Delmarva to begin considering CPP requirements, given that the rule

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<sup>30</sup> U.S. Environmental Protection Agency, Office of Air and Radiation, *Goal Computation Technical Support Document* (June 2014), available at <http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-goal-computation.pdf>.

is planned for finalization (summer 2015). MAREC notes that interim targets of the CPP begin in 2020, and the need to make significant progress toward the final 2030 target is well within the current planning horizon of 2025. Additional renewable energy, including wind energy, is a likely policy option for cost effectively reducing carbon dioxide from existing power plants and should be examined as part of the IRP process. To this end, MAREC recommends that the Commission direct Delmarva to update its carbon dioxide scenarios to reflect the final CPP after it is issued this summer.

**E. The Delaware RPS Should Be Increased as a Result of the Impact of the Bloom Fuel Cell RECs on the RPS Non-Solar Compliance Requirements.**

MAREC acknowledges that neither the Commission nor Delmarva has any authority to increase the RPS requirements, which have been implemented as a statutory enactment of the General Assembly.<sup>31</sup> However, MAREC believes it is important to recognize that the application of the Bloom fuel cell RECs or QFCP ERECs have been and will continue to be a serious drain on the need for true renewable energy resources to meet the compliance requirements of the RPS. Assuming a capacity factor of 83%,<sup>32</sup> the two Bloom fuel cell projects with a total of 30 MW of nameplate capacity drain 457,272 non-solar RECs a year for the foreseeable future—well past the planning period

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<sup>31</sup>The lack of authority to increase the RPS does not mean that Delmarva is restricted to the level of purchases found in the RPS, which is only a minimum procurement amount. Moreover, as discussed in Section III.B of these comments, there is significant support under EURCSA for Delmarva to purchase renewables to meet its general electricity supply needs if prudently procured.

<sup>32</sup> IRP at 23.

of this IRP. To bring this into context, for the current 2015/16 compliance year, where 12%<sup>33</sup> of retail electricity supply is to come from non-solar renewable energy resources, the Bloom fuel cells account for about 56% of the RECs needed for RPS compliance.<sup>34</sup> Bloom fuel cells are powered by natural gas, which does not provide the same environmental benefits that resources like wind and solar energy provide. In essence, only 5.3% (of the 12% standard)<sup>35</sup> of the non-solar RPS for compliance year 2015/16 is actually being supplied by truly renewable resources. Even reaching out to the end of the planning period of 2024/25, the Bloom fuel cell impact will be dramatically felt as the QFCP ERECs will comprise about 34%<sup>36</sup> of the non-solar REC requirements.

MAREC understands the economic development purpose behind the qualification of Bloom fuel cells and is not disagreeing with the reasons for seeking the subsidy for this resource. However, MAREC raises this issue for awareness purposes to show the likely unintended consequences of implementing this policy and the need to increase the non-solar requirements of the RPS to account for the undue impact on renewable energy development, which by the very enactment of the RPS law is a key public policy of the State.

#### CONCLUSION

For the reasons stated herein, MAREC respectfully requests that the Commission direct Delmarva to conduct competitively sourced

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<sup>33</sup> 12% = 13% total renewable resource standard minus the 1% solar carve-out.

<sup>34</sup> 457,272 QFCP ERECs / 817,508 REC requirements.

<sup>35</sup>  $1.0 - 0.56 = 0.44$ ;  $0.44 \times 12 = 5.3\%$ .

<sup>36</sup> 457,272 QFCP ERECs / 1,334,553 REC requirements.

procurements for long-term contracts for renewable energy and RECs and also perform an ongoing review of potential wind energy power purchase agreements for both RPS compliance purposes and general supply-side considerations. MAREC further requests that the Commission direct Delmarva to include an update of its carbon dioxide scenarios to reflect the final CPP.

MAREC appreciates the opportunity afforded to it to provide these comments.

### III. DELMARVA POWER'S STATUS REPORT TO HEARING EXAMINER

On August 6, 2015, pursuant to my request, on behalf of the parties, Delmarva filed a Status Report to Hearing Examiner. The following section from the Status Report (and footnotes) is repeated below for the Commission's consideration.

"During the Working Group meeting, Staff noted that Delmarva had not addressed the recommendations it had made in the 2012 IRP Commission Staff Report ("Staff's 2012 Report"), which included: a study by an independent consultant with recommendations on how to lower the cost of electricity in Delaware,<sup>37</sup> alternative approaches to dynamic pricing (along with possible modifications to the dynamic pricing program), limiting the Company's purchases of renewable energy credits and solar renewable energy credits, and having DNREC complete an analysis to determine if Delmarva Power's RPS obligation exceeds the cost caps for the compliance year. Although some of the

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<sup>37</sup> Staff acknowledges that this issue may be addressed in PSC Docket No. 14-0283; this docket was opened to review Delmarva's current process of securing Standard Offer Service ("SOS") retail electric energy, capacity and ancillary services and the potential options available to lower retail energy costs in Delaware.

suggestions in Staff's 2012 Report are outside Delmarva Power's control (e.g., DNREC's cost cap rules have not been finalized as of the writing of this report), other suggestions (like the independent study regarding lowering the overall cost of electricity) are being addressed in separate dockets. Staff believes that certain evolving issues that were finalized after the Working Group met (such as PJM's capacity performance revisions) will likely influence the planning process and should be considered in the 2016 IRP. Hence, Staff looks forward to addressing these issues with the parties in the planning workshops as Delmarva Power prepares to submit the 2016 IRP filing."

"At the end of the Working Group meeting, the parties, with the exception of MAREC<sup>38</sup>, agreed that although there was not unanimity on all of the findings presented in the IRP, there was agreement that the IRP, as filed, meets the requirements of 26 Del. C. §1007 and 26 Del. Admin. C. §3010 and thus should be ratified by the Commission." (Status Report, pp. 3-4).

#### Conclusions and Recommendations

Based on the comments received, both filed and as part of the working group meeting, the parties in this docket recommend that the Hearing Examiner take the following steps:

1. The Hearing Examiner should recommend to the Commission that it ratify the IRP as meeting the requirements of 26 Del. C. §1007 and 26 Del. Admin. C. §3010.
2. Additional recommendations for analysis resulting from the Working Group meeting can be incorporated into the next IRP, as appropriate, to be filed December 1, 2016.
3. Prior to the filing of the 2016 IRP, in the March/April 2016 time frame, Delmarva Power agrees to hold

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<sup>38</sup> While MAREC continues to have some concerns with the IRP, they do not oppose the ratification of the 2014 IRP as filed on the basis that Delmarva has agreed to discuss the parties' concerns from this IRP in Working Group meetings prior to the filing of its 2016 IRP."

additional Working Group meetings for any party wishing to participate in order to obtain input into the analyses to be included in the 2016 IRP.

4. Unless and until the regulatory provisions are amended, Delmarva Power will continue to include an evaluation of externalities as part of the next IRP."

#### IV. DISCUSSION

The parties' Status Report discussed in Section III seeks that the Commission approve the 2014 IRP as filed. Since the parties have not agreed upon a settlement, I assume that some or all of the parties intend to make oral argument to the Commission regarding their respective positions. Therefore, I do not make any recommendations. However, I do find that there is ample evidence that the requirements of 26 Del. C. § 1007 and 26 Del. C. §3010 have been satisfied, including the public investigation and comment requirements required by 26 Del. C. §3010.9.2. I attach a draft proposed Order as Exhibit "B" hereto for the Commission's consideration. This Order may have to be modified based upon the parties' oral argument and the Commission's deliberations.

Respectfully Submitted,

ML/AKL

Mark Lawrence  
Senior Hearing Examiner

DATED: August 24, 2015

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF DELAWARE

IN THE MATTER OF INTEGRATED RESOURCE )  
PLANNING FOR THE PROVISION OF )  
STANDARD OFFER SERVICE BY DELMARVA ) PSC DOCKET NO. 14-0559  
POWER & LIGHT COMPANY UNDER )  
26 DEL. C. §1007 (c) & (d) )  
(OPENED DECEMBER 2, 2014) )

AMENDMENT TO THE HEARING EXAMINER'S REPORT

The Hearing Examiner amends his Hearing Examiner's Report, by including the attached Response to Comments filed by Delmarva Power & Light Company ("DPL") in this Docket on April 29, 2015.

The Hearing Examiner respectfully requests that the Commission give due consideration to DPL's Comments, along with the parties Comments included in the original Hearing Examiner's Report, during deliberations and in making its final decision.



Mark Lawrence  
Senior Hearing Examiner

September 1, 2015



A PHI Company

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April 29, 2015

**FILED VIA DELAFILE**

Ms. Donna Nickerson, Secretary  
Delaware Public Service Commission  
861 Silver Lake Boulevard  
Cannon Building, Suite 100  
Dover, DE 19904

Re: PSC Docket No. 14-0559 – Delmarva Power & Light Company's  
2014 Integrated Resource Plan

Dear Ms. Nickerson:

Enclosed for filing is Delmarva Power & Light Company's Response to Comments Filed by Intervening Parties in Docket No. 14-0559. This Response is being filed pursuant to the provisions of PSC Order No. 8694 dated December 16, 2014.

Should you have any questions, please feel free to contact me at the number referenced above.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Pamela J. Scott".

Pamela J. Scott

Enclosure  
cc: Service List – Docket No. 14-0559

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF DELAWARE

IN THE MATTER OF DELMARVA  
POWER & LIGHT COMPANY'S 2014  
INTEGRATED RESOURCE PLAN  
(FILED DECEMBER 2, 2014)

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PSC DOCKET NO. 14-0559

**RESPONSE OF DELMARVA POWER & LIGHT COMPANY TO COMMENTS  
FILED BY INTERVENING PARTIES**

Pursuant to the procedural schedule approved by the Hearing Examiner in this docket, Delmarva Power (the “Company” or “Delmarva Power”) by and through its counsel, submits the following responses to the comments filed by some of the intervening parties to this docket.

### **Background**

On December 2, 2014, Delmarva Power filed its 2014 Integrated Resource Plan (“IRP”) with the Delaware Public Service Commission (the “Commission”). The IRP was filed consistent with the requirements of the Electric Utility Retail Customer Supply Act of 2006 (“EURCSA”)<sup>1</sup> and the IRP regulations promulgated by the Commission in Order No. 7693 pursuant to EURCSA (the “Regulations”)<sup>2</sup>. The IRP addressed the requirements set forth in the Regulations, including, among other things, a projected analysis of future energy demand and supply conditions for Standard Offer Service (“SOS”) customers; evaluations of various options to meet the needs of SOS customers; environmental analyses; and information on energy efficiency and demand response programs.

On March 30, 2015, three (3) of the five intervening parties submitted comments regarding the IRP<sup>3</sup>. These intervening parties include:

- The Division of the Public Advocate (“DPA”);
- The Delaware Department of Natural Resources and Environmental Control (“DNREC”);
- and
- The Mid Atlantic Renewable Energy Consortium (“MAREC”).

Neither Delaware Public Service Commission Staff (“Staff”) nor Calpine Mid-Atlantic Energy, LLC (“Calpine”) submitted any comments within the deadline for same set by the Commission in PSC Order No. 8694 dated December 16, 2014. None of the comments submitted by the intervening parties claimed or suggested that the IRP failed to meet the EURCSA requirements

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<sup>1</sup> 26 Del. C. §1007,

<sup>2</sup> 26 Del. Admin. C. §3010.

<sup>3</sup> References to the comments filed by the intervening parties shall be cited as the party name followed by the page number where the comment appears. For example, “DPA at page \_\_\_\_\_”.

or the requirements of the Regulations, that the IRP was administratively incomplete or that the IRP should not be ratified by the Commission.

Delmarva Power's responses to the interveners' comments are organized by the following general topic areas:

1. The Need for and the Cost of the IRP;
2. Issues for Further Discussion;
3. Calculation of Solar Renewable Energy Credits;
4. Assumptions Underlying the IRP;
5. Value of Externalities;
6. Level of Base Emissions in Delaware;
7. Regional Greenhouse Gas Initiative ("RGGI");
8. Natural Gas Price Forecast;
9. Long Terms Contracts for Non-Solar RECs;
10. Wind Energy and SOS Supply; and
11. Environmental Protection Agency ("EPA") Clean Power Plan.

### **1. The Need for and the Cost of the IRP**

As in prior years, the DPA takes the position that the IRP requirement should be eliminated. (DPA at page 3). DPA then argues that although the Commission cannot eliminate the IRP requirement by itself, a finding by the Commission that the IRP, "is no longer serving the purposes for which it was intended could go a long way toward convincing the current General Assembly that it is time to bury the IRP". (DPA at page 3). Delmarva is required by EURCSA to file the IRP every two (2) years<sup>4</sup> and, despite DPA's argument that it should be eliminated, the Commission has not adopted this position to date. The Commission can determine whether or not it will take any position on the need for the IRP but until the law is changed, Delmarva will continue to file the IRP consistent with the mandates of EURCSA. It is important to note that in PSC Docket No. 10-2, when considering a request by the DPA to amend

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<sup>4</sup> DPA indicates that the General Assembly amended EURCSA to require Delmarva to file an IRP every three years (DPA at page 2); however, this statement is incorrect. Senate Bill 150 from the 147<sup>th</sup> General Assembly originally contained a provision to change the filing requirements of the IRP; however, this provision was removed before the final bill was adopted and signed by the Governor.

the IRP filing schedule to once every three (3) years, the Commission declined to propose such change determining that unless the statutory provision is amended by the General Assembly, the IRP must be filed every two (2) years.<sup>5</sup>

Delmarva Power is committed to preparing and submitting an IRP in accordance with Delaware statutory requirements. If the statutory provision pertaining to the frequency of filing of the IRP is amended, Delmarva Power will adhere to the new amended requirements; however, unless and until the statute is amended, the Company expects to file its next IRP on December 1, 2016.

Concerning the cost of the IRP, DPA states that, “the process is expensive” and that, “in Delmarva’s most recent rate case (Docket No. 13-115), Delmarva estimated that it would spend almost \$2 million on the 2014 IRP”. (DPA at page 4). Delmarva is entitled to recover the costs of preparing the IRP as approved by the Commission as part of retail base rates.<sup>6</sup> As part of that process, the Commission makes a determination as to the dollar amount of IRP expenditures the Company is entitled to recover on an on-going basis through electric base rates. Since the implementation of the requirements to file an IRP, the Company has continually endeavored to meet the IRP requirements in a cost-effective manner which has generally resulted in less money being expended on each successive IRP. Consequently, in each of the last several base rate cases, the Commission has lowered the amount that Delmarva has been able to recover for IRP expenditures. In Docket No. 13-115, the Commission authorized approximately \$420,000.00 in recovery for IRP expenditures to be collected through retail rates on an annual basis. Based upon the statutory requirement of an IRP filing every two years, the amount to be recovered in rates for each IRP is \$840,000.00, not the \$2 million suggested by the DPA.

## **2. Issues for Further Discussion**

Because of continuing changes that could affect the Company, DNREC proposes that a number of issues be discussed further as part of this docket. (DNREC at page 1). These issues include:

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<sup>5</sup> PSC Order No. 8083, Docket 10-2, dated January 10, 2012.

<sup>6</sup> 26 Del. C. §1007(c)(1)(d).

- a. Externalities
- b. Energy Efficiency
- c. RPS Compliance Costs
- d. Avoided Costs and Price Suppression Effects

The Company does not object to discussing these issues further with the other parties in Docket No. 14-0559. The Company respectfully suggests that the results of such discussions be used to help shape the analysis to be undertaken as part of the 2016 IRP.

### **3. Calculation of Solar Renewable Energy Credits**

DNREC notes that the IRP projects that the cost of Solar Renewable Energy Credits (“SRECs”) will increase in the coming years, even while “the cost of installed solar power has declined over the last several years”, and that “while some incentives are likely to decrease or even disappear ...”, Delmarva’s costs estimates seem conservative. (DNREC at page 4). While installed solar costs are currently estimated around \$2,300/kW, the projection embedded in the IRP analysis performed by Pace Global includes a decline to \$2,000/kW in the next few years and below that level into the 2020’s. Although capital costs decline by around 20% over the 10-year IRP Planning Period forecast, the analysis assumes the expiration of the current 30% investment tax credit at the end of 2016, thereby raising the effective all-in cost for solar development and offsetting the technology-driven declines. Further, the statutory requirement for solar increases significantly over the next 10 years<sup>7</sup>, which will require the construction of significant incremental capacity in order to maintain compliance. As demand for solar generation ramps up, new projects with sites that may not include optimal cost or capacity factor conditions are likely to drive up SREC prices, which is the reason behind our rising price forecast until the early 2020’s. Beyond 2023, falling Renewable Energy Credit (“REC”) prices are projected as Renewable Portfolio Standards (“RPS”) requirements plateau and capital cost declines persist.

Delmarva Power understands, however, that although it supports the analysis performed by Pace Global, the analysis results in a “forecast.” In the end, all but the rarest of forecasts are off, to one degree or another – either too high or too low. Delmarva agrees that several other

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<sup>7</sup> 26 Del. C. §354(a).

potential occurrences in the future could lead to lower SREC prices, should the occurrences take place. These include:

- Extension of renewable tax incentives;
- Accelerated capital cost declines; and
- Stronger energy or capacity prices, offsetting the SREC values required by new project developers.

#### **4. Assumptions Underlying the IRP**

The environment in which Delmarva prepares the IRP is not static. Changes in laws, regulations, markets, technology and other events that occur after the IRP planning model is developed and the IRP is filed can often have impacts on the IRP results (e.g., the proposed section 111(d) of the Clean Air Act). However, the fact that the Company must make certain modeling assumptions about the future prior to the filing of the IRP does not render the IRP “outdated before it is filed” as suggested by DPA. (DPA at page 3). DPA lists a number of potential “game changing” events that have occurred since the filing of the IRP. (DPA page 4). While technically it would have been possible for the 2014 IRP to consider these potential future events, such analysis would have greatly increased the cost of preparing the IRP and the analysis more than likely would have needed to be rerun once the specifics surrounding the particular event actually occurred.<sup>8</sup> Discussion of these events by the IRP Working Group prior to the filing of the next IRP in 2016 would result in obtaining the input of interested parties to select the most desirable scenarios (if any) to evaluate in that IRP.

DPA also suggests that in past years, despite “dramatic” developments and extensive comments by intervening parties, the filed IRP has not been changed. (DPA at page 4). Consistent with the agreement amongst the parties participating in the IRP, the practice has been that changes offered during the Working Group process are incorporated into the *next* IRP to be filed. An example of these changes is the inclusion of the percentage impact on average customer electric bills of Delmarva’s compliance with the RPS, now a major section of both the 2012 and 2014 IRP. This addition to the 2012 and 2014 IRPs was due in large part to the efforts

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<sup>8</sup> In their list of “game-changing” events, DPA states: “Besides increasing the time between IRPs from two to three years, House Bill 150 made significant changes to strengthen energy efficiency in Delaware.” The bill that was enacted that strengthened energy efficiency in Delaware was *Senate Bill 150* and this bill, as enacted, did not contain any provision to change the filing schedule for the IRP.

of the Caesar Rodney Institute's participation in the IRP Working Group meetings following the filing of the 2010 IRP. The intervening parties' comments provide a logical starting point for collaborative discussions in the IRP Working Group to improve the *next* IRP. This has proven to be a more cost-effective way to incorporate changes into the IRP as opposed to completely overhauling the current Plan.

### 5. Value of Externalities

The current IRP regulations require that Delmarva prepare a quantification of the external benefits of improving air quality on human health (i.e., "externalities"). The theory is that when emissions from all sources (including power plants) are reduced, air quality, measured as reductions in atmospheric particulate matter and ozone improves thus resulting in external health benefits. Renewable resources such as wind and solar generation have the potential to reduce power plant emissions.

The reduction in power plant emissions occurs because the PJM electric power grid typically operates so as to match customer electrical load requirements with generation output on a real-time basis. Consequently, when the wind blows and the sun shines, and intermittent wind and solar resources generate and inject power into the electric grid, the output of other non-renewable generation sources, which primarily use the combustion of fossil fuels to produce electric power, generally decrease. The fossil fuel combustion process leads to the creation of CO<sub>2</sub>, NO<sub>x</sub> and sometimes SO<sub>2</sub> depending on the fuel being burned. As long as renewable resources such as wind or solar displace the output from fossil fuel based generating resources, emissions of these pollutants into the atmosphere decrease. Conversely, the removal of renewable wind and solar resources from the generation mix would lead to increases in emissions from fossil fueled power plants.

DPA's analysis of externalities posits that expected future power plant emissions in Delaware are stable, and historic levels of these emissions in Delaware are lower than what is projected in IRP planning year 2024/2025. This leads DPA to conclude that: "if there is no reduction in emissions there will be no externality benefits", (DPA at page 6), and that: "stable emissions mean no change in externality cost." (DPA at page 8).

DPA's evaluation and conclusions that expected stable emission levels in Delaware imply no change in externality cost is incorrect and not consistent with the method incorporated in the 2014 IRP. In order to estimate externalities for the 2014 IRP, the Company used data from three sources:

- 1.) Estimates of the external cost per ton of NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub> as provided in the 2012 IRP. (The 2012 figures already provide a wide range of values for each pollutant and using these figures saved customers the expense of rerunning the analysis for the 2014 IRP);
- 2.) The adjusted average emission rates for NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub> for *PJM as a whole*. (As discussed further below, DPA's approach only examined emission levels in Delaware); and
- 3.) The estimated reduction in fossil based generation mWh resulting from Delmarva's RPS portfolio. (This reduction in fossil fuel based generation would otherwise not have occurred absent the RPS).

DPA's analysis does not appear to account for fossil fuel based emissions that are displaced or avoided as a result of increasing levels of renewable resources in the PJM generation mix as described earlier. The IRP model forecasts very significant percentage increases in the energy produced by wind (over 100%) and solar (about 500%) resources across the PJM footprint over the 10 year IRP Planning Period. These projected percentage increases in renewable generation are much greater than the projected 11% increase in all other generation resources. The increase in renewable generation is driven in large part by PJM state mandated RPS requirements.

DPA's suggestion that stable emission levels imply no externality costs ignores the fact that such significant increases in wind and solar resource generation will displace fossil fuel generation and will, therefore, avoid emissions that would have otherwise been created by fossil fuel based generation.

The evaluation of externalities embedded in the 2014 IRP is based primarily on an analysis of particulate matter and ozone formation over the entire Mid-Atlantic Region, which includes the District of Columbia, Delaware, Maryland, New Jersey, most of Pennsylvania and Virginia, and parts of New York, Connecticut, and West Virginia. This approach recognizes that atmospheric emissions created in other states can and do "travel" across state boundaries and into Delaware. Consequently, renewable resources located outside of the State of Delaware can reduce power plant emissions that would otherwise have found their way into Delaware. DPA's

analysis only focusses on emissions created in Delaware and thus misses a significant part of the equation.

#### **6. Level of Base Emissions in Delaware**

As part of the 2014 IRP, the Company presented information on the expected emission levels of NO<sub>x</sub>, SO<sub>2</sub>, and CO<sub>2</sub> arising from generating facilities in Delaware. The emission projections for Delaware are based on a plant-by-plant chronological hourly simulation of generation resources within the PJM market. The near term results of the simulation of expected generation are driven by low natural gas prices in the near-term, and significant coal retirements in the wider PJM footprint expected in 2015 and 2016. This results in expected higher capacity factors for some Delaware natural gas fired generation resources than those realized in recent history. Notably, the combined cycle facilities at Hay Road and Garrison Energy Center (the new Calpine plant) are projected to operate at capacity factors around 60-75% over the next few years. The forecast projects that rising gas prices and more efficient combined cycles and renewables (primarily outside of Delaware) will displace energy production from in-state plants over time. The net impact of these changes is a projected increase in power plant emissions in Delaware in the next few years relative to recent history.

DPA suggests that the level of base emissions for Delaware provided in the IRP is “simply wrong” when compared to historical levels. (DPA at page 6). However, the Company’s estimates of generation emissions in Delaware are based on a market assessment that considers the impact on emission levels in Delaware arising from relative changes in fuel prices and the retirements of coal fired generating units outside of Delaware. The projected levels of emissions described in the IRP are higher than historical levels because market conditions that affect emission levels have changed.

#### **7. Regional Greenhouse Gas Initiative (“RGGI”) Allowance Prices**

The RGGI program is a regional CO<sub>2</sub> cap and trade program among Maryland, Delaware, New York and the six New England States. RGGI is a regional initiative designed to reduce the emission of green-house gases, such as CO<sub>2</sub>, into the atmosphere. An important aspect of RGGI is the pricing of CO<sub>2</sub> emissions from power plants in the participating states. Essentially, power

generators within RGGI must purchase a CO<sub>2</sub> allowance to cover each ton of CO<sub>2</sub> emitted into the atmosphere. For the 2014 IRP, the expected RGGI allowance prices used in the analysis expressed in real 2013 \$/ton of CO<sub>2</sub> are shown below:

**2014 IRP: RGGI Allowance Prices (Real 2013 \$/Ton)**

Year	2013\$/ton
2015	4
2016	6
2017	7
2018	8
2019	9
2020	10
2021	10
2022	10
2023	10
2024	10
2025	10

The 2014 IRP did not ignore the impact of RGGI on power market prices as suggested by DPA (see DPA at page 8). Rather, all results shown in the 2014 IRP reflect the inclusion of the RGGI CO<sub>2</sub> allowance prices as shown above.

**8. RGGI Emission Caps**

Statewide emission caps are another important aspect of RGGI. The RGGI CO<sub>2</sub> emissions cap is apportioned among each RGGI participating state. The available allowances for auction in 2015 are 66.8 million allowances declining by 2.5 percent each year for a 2020 total of 56.28 million allowances. DPA questions whether the Electric Generating Units (“EGUs”) will have to curtail generation in order to comply with RGGI. (DPA at pages 9-10). Delaware EGUs are able to purchase allowances offered in the RGGI regional allowance auctions from any other RGGI state and use them for compliance purposes. In addition, the RGGI program allows EGUs to bank allowances from one compliance period to the next which provides compliance flexibility and lowers costs. The RGGI program also includes 10 million cost containment reserve (CCR) allowances per year, starting in 2015, that are made available to market participants through the quarterly auctions if allowance price bids reach predetermined levels referred to as the “CCR trigger price”. Consequently, EGUs in Delaware are expected to be able

to procure additional CO<sub>2</sub> allowances and, therefore, not have to curtail production over the IRP Planning Period.

### 9. Natural Gas Price Forecast

An integral part of the 2014 IRP is the forecast of natural gas prices. DPA asks if, given the current state of natural gas prices, the Company would use the Low Gas Case Price forecast instead of the Reference Case forecast. (DPA at page 9). In preparing the IRP natural gas price forecast in October 2014, Pace Global provided a Reference Case Henry Hub gas price forecast that grew from \$3.77/MMBtu in 2015 to \$5.53/MMBtu in 2025 (real 2013 \$). Several variables factored into this Reference Case projection. In the short-term, October 2014 futures markets pointed toward a more costly 2015 on the expectation that a cold 2014-15 winter, together with below average levels of working gas in storage, would keep 2015 prices above \$3.50/MMBtu. In the medium- to long-term, forecasted demand from export markets, power generation, and industrial demand was expected to put significant upward pressure on prices.

Now that we are well past the 2014-15 winter heating season, which proved to be fairly normal (fuel stocks were well managed and New England avoided the spectacular gas price spikes experienced during the Polar Vortex in 2014), 2015 and 2016 prices are expected to be closer to \$3.00/MMBtu due to the lack of demand this past winter and the continued abundant production of natural gas. However, in the medium- to long-term, it is expected that the demand response to sustained low prices will be robust enough to put strong upward pressure on gas prices on the Gulf Coast, where the benchmark Henry Hub market point is located and where most anticipated natural gas demand will be concentrated. Gas demand for power generation, industrial projects, and Mexican exports are expected to grow during this timeframe, even while the onset of LNG exports from Sabine Pass, Cameron, Lake Charles, Freeport, and Golden Pass reduces the proportion of gas demand available to all other sectors. In particular, power generation gas demand is expected to grow, but will compete with LNG for supply. Accordingly, gas prices at the benchmark Henry Hub are still expected to climb to over \$5.00/MMBtu by 2020. In other parts of the country, particularly in the Marcellus region where production continues to grow, gas prices will remain artificially low until either pipeline takeaway capacity increases, new demand grows significantly, or both.

In summary, in the short-term, gas prices may adhere more closely to the Low Gas Case Price forecast. In the medium-to long-term, the demand fundamentals have not changed significantly since the October 2014 assessment and are expected to continue to provide strong upward price pressure at Henry Hub as 2020 approaches.

#### **10. IRP Working Group Meetings**

The IRP Working Group meetings that have taken place in connection with the review of previous IRP's have provided a collaborative, effective and efficient forum for the parties to exchange information and suggestions related to the IRP. Past IRP Working Group meetings have served as catalysts to reach a settlement amongst the parties participating in the IRP, without the need for costly and time consuming evidentiary hearings. Reaching appropriate settlements is consistent with the statutory goal of "encourag[ing] the resolution of matters brought before [the Commission] through the use of stipulations and settlements." 26 Del. C. § 512. In addition, the Working Group meetings have resulted in changes and improvements to subsequent IRPs, based upon comments from and issues raised by interveners during such meetings. The working group process has sped up the review process in a cost-effective manner.

DPA suggests that there be one and only one Working Group meeting related to the 2014 IRP. (DPA at page 3). While the Company will endeavor to respond to the comments and questions of the DPA and other parties in a timely manner at each Working Group meeting, it would not be appropriate to limit the *number* of IRP Working Group meetings *before* they even get started. The parties should be able to decide after each Working Group meeting whether any issues remain that would require additional meetings.

#### **11. Long Term Contracts for Additional Non-Solar RECs**

Currently, Delmarva procures the large majority of the RECs and SRECs needed to comply with its annual RPS requirements through long term contracts and REC offsets provided by a Qualified Fuel Cell Provider ("QFCP"). A much smaller portion of the Company's compliance needs are obtained through spot market purchases. MAREC notes that the IRP is forecasting a "non-solar REC deficiency in compliance years 2015/2016 through 2024/2025"

(MAREC at page 7). Further, MAREC has consistently maintained that Delmarva should meet a reasonable portion of its deficiency in non-solar RECs for RPS compliance through long term competitively procured wind energy and REC contracts. MAREC indicates that this position is even more apparent as a result of the restated non-solar REC deficiencies now shown in Table 7 from Section VIII of the IRP. (MAREC at page 10). Table 7 is shown below; however, a column has been added to show the percentage of non-solar RECs that will need to be procured in order to meet the annual RPS requirements for non-solar RECs:

<u>QFCP Impact on Delmarva Power's Net RPS Position</u>					
Compliance Year	REC Requirement	QFCP ERECs	Contracted Resources	Net Position	% of RPS Requirement
2015/16	817,508	457,272	338,627	-21,609	-3%
2016/17	902,830	457,272	338,627	-106,932	-12%
2017/18	980,809	457,272	338,627	-184,911	-19%
2018/19	1,054,541	457,272	338,627	-258,643	-25%
2019/20	1,127,656	457,272	338,627	-331,757	-29%
2020/21	1,167,720	457,272	338,627	-371,822	-32%
2021/22	1,209,257	457,272	338,627	-413,359	-34%
2022/23	1,251,376	457,272	338,627	-455,477	-36%
2023/24	1,292,086	457,272	338,627	-496,188	-38%
2024/25	1,334,553	457,272	338,627	-538,655	-40%

As can be observed from the modified Table 7, the additional non-solar REC requirements that need to be procured are projected to be relatively modest for the next few years. Given that, at present, spot market purchases of RECs are lower than what the Company is currently paying for RECs through the existing long term contracts and for what the Company could expect to pay under new long-term contracts under current market conditions, it seems reasonable to wait for a few years before pursuing a new competitive solicitation seeking new long-term supply obligations. The Company believes that the level of dependence on spot market purchases would be a reasonable issue to be considered by the Renewable Energy Task Force as part of their duties and responsibilities as set forth in 26 Del. C. §360(d).

## **12. Wind Energy and SOS Supply**

SOS customer energy supply is provided through a Commission approved competitive auction process. As part of the auction, potential suppliers bid full service requirements contracts in 50 mW blocks at a fixed price for three years. Each auction secures approximately 33% of the total SOS electrical load requirements. MAREC suggests that the principles supporting long term contracts for wind energy for RPS compliance SOS supply be considered for general supply procurement purposes. (MAREC at page 13). Such a proposal would be at odds with the current process which secures full service requirements for SOS customers, and would also require the Company to incur significant expense to manage and hedge an SOS portfolio separate from the full service requirements contracts. The Company also notes that current SOS providers are at liberty to include wind resources in their portfolios to support their full requirement service obligations and can do so as profitability dictates.

## **13. Environmental Protection Agency ("EPA") Clean Power Plan**

The EPA is expected to issue its final rule under Sec 111(d) of the Clean Air Act in the Summer of 2015. Sec 111(d) is expected to require the states to develop regional or individual state plans to reduce the rate of CO<sub>2</sub> emissions from electric power plants by 2030. These plans must be approved by the EPA. The final rule is expected to allow the states discretion in how they use the "building blocks" of energy efficiency, heat rate improvement, renewable energy, and increased use of natural gas fired combined cycle plants. At this point, however, the final rules haven't been released and it is not expected that Delaware would have a plan approved by EPA until 2018. MAREC, however, suggests that, "Delmarva be directed to update its carbon dioxide scenarios to reflect EPA's Clean Power Plan". (MAREC at page 15). Not only are the final rules of the Clean Air Act not available at this time, the Delaware plan may be several years away. It would be both premature and unwise to update the Company's analyses without knowing the particulars of the yet to be developed or approved State Compliance Plan. In addition, the EPA rules impact all customers in the *State of Delaware*, not just Delmarva customers. It would be unfair to ask Delmarva's customers to pay for the increased cost to

perform the update requested by MAREC without requiring the same of other non-Delmarva customers.

In the end, MAREC needs to accept the fact that the specifically stated primary purpose of the IRP is to “acquire sufficient, efficient and reliable resources over time to meet [Delmarva Power] customers' needs *at a minimal cost*” and “at the *lowest reasonable cost*.” 26 Del. C. § 1007 (c) (1) (*emphasis added*). MAREC’s position that Delmarva should be required to obligate itself to long term contracts for RECs and wind energy, along with its recommendation to require Delmarva to prematurely update its carbon scenarios to reflect an EPA plan that has yet to be finalized, appear designed to benefit MAREC’s members, rather than Delmarva’s customers. As such, MAREC’s positions are incongruous with both the purpose of the IRP and the best interests of Delmarva’s customers.

#### **Conclusions and Recommendations**

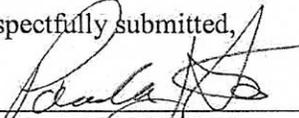
Based on the comments received on March 30, 2015, Delmarva suggests the following steps as a path forward in this docket:

1. An IRP Working Group meeting should be held to discuss the comments filed by the parties in this docket. In order to expedite the process, Delmarva will prepare an agenda in advance based upon the comments received. At the first Working Group meeting, the parties can determine whether their issues have been addressed or whether additional meetings will be necessary. The number of Working Group meetings to be held should be based upon the amount necessary to meet the purposes of the IRP in an effective and efficient manner.
2. Additional recommendations for analysis resulting from the Working Group meetings can be incorporated into the next IRP, as appropriate, to be filed December 1, 2016.
3. Prior to the filing of the 2016 IRP, Delmarva agrees to hold additional Working Group meetings for any party wishing to participate in order to obtain stakeholder input into the analyses to be included in the 2016 IRP.
4. Unless and until the regulatory provisions are amended, Delmarva Power will continue to include an evaluation of externalities as part of the next IRP.
5. Unless and until the statutory provisions are amended by the General Assembly, Delmarva Power will continue to submit an IRP pursuant to the schedule set forth in

EURSCA. Under the existing statute, the next IRP will be filed on or before December 1, 2016.

6. As no party identified any compliance deficiencies with the IRP, the Hearing Examiner should recommend to the Commission that it ratify the IRP as meeting the requirements of *26 Del. C. §1007 and 26 Del. Admin. C. §3010*.

Respectfully submitted,



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Dated: April 29, 2015

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF DELAWARE

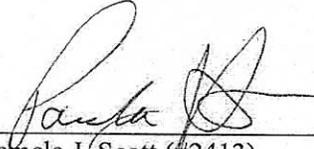
IN THE MATTER OF DELMARVA  
POWER & LIGHT COMPANY'S 2014  
INTEGRATED RESOURCE PLAN  
(FILED DECEMBER 2, 2014)

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PSC DOCKET NO. 14-0559

**CERTIFICATE OF SERVICE**

I hereby certify that on April 29, 2015, I caused the attached RESPONSE OF DELMARVA POWER & LIGHT COMPANY TO COMMENTS FILED BY INTERVENING PARTIES to be served on all persons on the accompanying service list via electronic mail and through DelaFile.



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Dated: April 29, 2015

**Docket Details:**

Docket #:14-0559

Utility Type:Electric

Filed By #:Dela File

Field On Behalf Of:Delmarva Power

Filing Date:12/02/2014

Docket Type:Integrated Resource Plan

Case Manager:Kevin Neilson

Status:Assigned

Docket Caption:IN THE MATTER OF INTEGRATED RESOURCE PLANNING FOR THE PROVISION OF STANDARD OFFER SERVICE BY DELMARVA POWER & LIGHT COMPANY UNDER DEL. C. §1007(C) & (D)

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