

**BEFORE THE
PUBLIC SERVICE COMMISSION OF MARYLAND**

In the Matter of the Reliability Pricing Model :
and the 2013/2014 Delivery Year Base Residual : **Administrative Docket PC22**
Auction Results :

COMMENTS OF PJM INTERCONNECTION, LLC

I. Introduction and Summary

In its August 16, 2010 Notice of Public Conference (Notice) in the above captioned docket, the Maryland Public Service Commission's (Commission) invited PJM Interconnection, LLC (PJM) and other interested parties to submit comments on issues related to PJM's capacity market, called the Reliability Pricing Model (RPM), and, specifically, the prices resulting from that market for capacity in the 2013/2014 delivery year. PJM Interconnection, LLC (PJM) is an independent regional transmission organization (RTO) authorized by the Federal Energy Regulatory Commission to administer an open access transmission tariff; operate wholesale energy, capacity and ancillary service markets; plan the transmission system; and otherwise conduct the day-to-day operations of the bulk power system across all or part of 13 states and the District of Columbia.¹ PJM submits the following comments to provide relevant facts related to the objectives of RPM, the need and reasons for locational pricing of capacity in RPM, the historic price performance of RPM, and the amount of new capacity resources made available to PJM, the Mid-Atlantic, and Maryland since the implementation of RPM.

- **RPM Objectives and Need for Locational Pricing:** RPM is designed to ensure that sufficient capacity resources will be committed to assure that established resource adequacy reliability criteria are met in the PJM footprint, and within all sub-regions or Locational Deliverability Areas (LDAs) on a three-year forward basis at the lowest possible cost, subject to transmission constraints. If there are binding transmission limits that do not permit the transfer of sufficient lower cost capacity resources into transmission constrained areas to achieve the resource adequacy requirement, the transmission

¹ See *Pa. – N.J. – Md. Interconnection, L.L.C.*, 81 FERC ¶ 61,257 (1997), *reh'g denied*, 92 FERC ¶ 61,282 (2000), *modified sub. nom. Atl. City Elec. Co. v. FERC*, 295 F.3d 1 (2002).

constrained LDAs will likely face a different, higher market clearing price for capacity resources as those resources must be located within the constrained LDA. This is identical in concept to the use of Locational Marginal Prices (LMP) in the PJM Energy Market where more expensive energy resources are dispatched when it is no longer possible to serve load with lower cost resources outside the transmission constrained location.

- **Historic Price Performance of RPM:** In most of the RPM Base Residual Auctions (BRAs) to date, LDAs within Maryland have faced higher prices than in the larger sub-regions or the entire PJM RTO as there have been binding transmission constraints identified as part of the planning process leading up to the BRA. However, in the two delivery years in which LDAs within Maryland were deemed not to be transmission constrained, the Maryland LDAs faced the same market clearing prices as the entire PJM RTO exemplifying the value to potentially constrained LDAs of available transmission capacity. On average over the seven BRAs conducted, RPM prices in Maryland have been below the Net Cost of New Entry (Net CONE) signifying that it has been more cost-effective for Maryland customers to rely on lower costs options such as energy efficiency and demand response and imports using available transmission capacity rather than on new natural gas combustion turbines built within Maryland to maintain resource adequacy.
- **New Capacity Resources Available since RPM Implementation:** Since the implementation of RPM in 2007, over 33,000 MW of installed capacity resources, including new generation, uprates to existing generating resources, energy efficiency and demand resources, withdrawn or deferred deactivation (retirement) requests and resource reactivations have been made available to PJM to meet resource adequacy targets in PJM. Over 10,000 MW of unforced capacity is located in the Mid-Atlantic (MAAC) sub-region where Maryland is located, and over 3,500 MW of unforced capacity resources located within the State of Maryland.
- **Benefits of Interconnection and Value of Transmission Capacity:** In addition to new capacity resources located within Maryland, load in Maryland also benefits from the additional capacity located outside the state through the ability to cost-effectively benefit from lower cost capacity that can be imported via available transmission capacity from the larger MAAC sub-region into Locational Deliverability Areas (LDAs) located within Maryland, and by extension from the larger RTO region into the MAAC sub-region. The lower cost capacity imported using available transmission to help Maryland achieve resource adequacy targets is monetized through Capacity Transfer Rights (CTRs) that recognize the lower cost resources used to meet resource adequacy within the State of Maryland, and reduces the overall cost of meeting capacity obligations to load in Maryland. Consequently, load in constrained LDAs within Maryland do not pay the constrained LDA capacity price for all of their capacity obligations, but only pay the constrained LDA price for capacity located within the LDA. As available transmission capability to import capacity and energy increase, there would be increasing cost savings to constrained LDAs, such as those in Maryland.

II. Comments

In its Notice, the Commission claims that RPM has “failed to attract new generation,” stating that the May 2010 RPM Base Residual Auction for the 2013/2014 Delivery Year is the “seventh Base Residual Auction that has failed to attract significant new generation in Maryland, and all indications are that no new generation is on the horizon in Maryland or the relevant zones as a direct result of RPM.” The Commission also claims that “RPM has also not attracted a sustained increase in demand response participation.”

PJM respectfully disagrees with the Commission’s conclusions. RPM performance to date demonstrates that there not only has been a significant increase in incremental new generation² and Demand Resources but also a significant number of deferred generation retirements across the PJM footprint, including within Maryland. RPM, in fact, has provided reliability benefits in a cost-effective manner to the Mid-Atlantic region and to Maryland specifically. The facts on each of these issues are detailed below.

PJM’s comments below attempt to address many of the questions raised by the Commission in its Notice in addition to explaining the locational element of the RPM construct, the historic performance of RPM, and the reliability benefits Maryland experiences from RPM.

A. RPM Assuring Regional Reliability

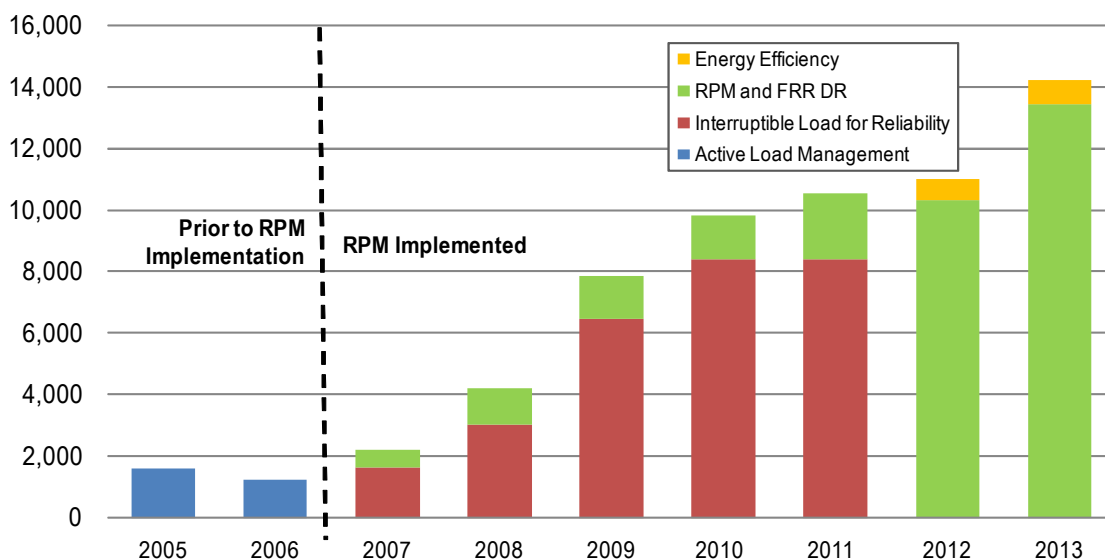
PJM’s Reliability Pricing Model (RPM) capacity market is designed to ensure that sufficient capacity resources will be committed to assure that established reliability criteria are met in the PJM footprint on a three-year forward basis. Experience to date has shown that RPM has led to significant current and future investment across PJM’s footprint in (1) new generation, Demand Resources and Energy Efficiency resources, (2) uprates to existing resources, and (3) deferred generation retirements. A total of **4,831.9 MW of year-over-year incremental, new capacity** across the PJM footprint was available for the 2013/2014 Base Residual Auction. This incremental, new capacity includes new generation capacity resources, capacity upgrades to existing generation capacity resources,

² Incremental new generation includes generation resources that were not available prior to RPM and includes new generation resources and uprates to existing generation resources.

new Demand Resources, upgrades to existing Demand Resources, and new Energy Efficiency Resources. The increase in incremental, new capacity was partially offset by de-ratings to existing generation capacity resources, yielding a net increase of over 2,907.8 MW of incremental, new capacity across the PJM footprint.

Additionally, the total quantity of Demand Resources offered into the 2013/2014 Base Residual Auction was 12,952.7 MW which represented an increase of 3,105.1 MW (32%) over the Demand Resources that offered into the 2012/2013 Base Residual Auction. Approximately 72%, or **9,281.9 MW, of these Demand Resources** cleared in the auction.³ A historic view of the increasing levels of Demand Resources shows the significant growth in demand response across the PJM footprint since RPM implementation in Figure 1.⁴

Figure 1: Demand Response and Energy Efficiency as Capacity Resources



*MW are reported in UCAP terms

Similarly, the total quantity of Energy Efficiency (EE) Resources offered into the 2013/2014 Base Residual Auction increased 33%, or 756.8 MW, over the 2012/2013 Base Residual Auction. Approximately 90%, or **679.4 MW, of these Energy Efficiency Resources** cleared in the auction.

³ Part of this increase (1,384.8 MW) occurred in the new ATSI transmission zone that is participating for the first time in the Base Residual auction due to the ATSI integration. The remaining 1,720.3 MW increase was in the remaining zones of the market.

⁴ PJM notes the efforts of Maryland with the Gap RFP and EmPower Maryland initiatives that also have contributed to increased demand response participation in Maryland.

RPM in conjunction with expected revenue streams from PJM’s energy and ancillary services markets are making it worthwhile for some capacity resource developers and demand response providers to make investment decisions today to ensure resource adequacy requirements are met. Considering the response to RPM since its inception, a minimum of 33,090.4 MW of incremental capacity was made available and offered into the 2013/2014 Base Residual Auction as shown in Table 1.

Table 1: Sources of Newly Available Installed Capacity in RPM

Change in Capacity Availability	Installed Capacity MW
New Generation	6,376.8
Generation Upgrades (not including reactivations)	4,675.5
Generation Reactivation	529.7
Forward Demand and Energy Efficiency Resources	13,699.9
Cleared ICAP from Withdrawn or Canceled Retirements	3,050.9
Net increase in Capacity Imports	4,757.6
Total Impact on Capacity Availability in 2013/2014 Delivery Year	33,090.4

*Source: 2013/2014 PJM Base Residual Auction Report⁵

Table 1 shows RPM also is incenting generation to remain on the system (canceling or deferring retirements) that, without RPM, is revenue inadequate. This is an important benefit of RPM. The uniform treatment of existing and new resources addresses the fact that “existing” and “new” cannot be distinguished over time. Every “new” plant eventually becomes “existing.”

Table 2 shows the changes that have occurred regarding resource deactivation and retirement since the RPM was implemented. The MW values illustrated in the table below represent the quantity of unforced capacity cleared in 2013/2014 Base Residual Auction that came from resources that have either withdrawn their request to deactivate, postponed retirement, or been reactivated (i.e., came out of retirement or mothball state for the RPM auctions) since the RPM Settlement. This total accounts for 3,356.2 MW of cleared UCAP in the 2013/2014 Base Residual Auction which equates to 4,231.4 MW of ICAP Offered.

⁵ 2013/2014 PJM Base Residual Auction Report, p. 20; <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/2013-2014-base-residual-auction-report.ashx>

**Table 2: Newly Available Capacity from Withdrawn Deactivations,
Postponed Retirements and Reactivations**

Generation Resource Decision Changes	ICAP Offered	UCAP Cleared
Withdrawn Deactivation Requests	2,083.1	1,831.2
Postponed or Cancelled Retirement	1,816.7	1,219.7
Reactivation	331.6	305.3
Total	4,231.4	3,356.2

*Values represent offered Installed Capacity and cleared Unforced Capacity in the 2012/2013 Base Residual Auction across the RTO.

Thus, capacity prices provide an important price signal for facilitating the most cost-effective entry, investment and retirement decisions and to help assure future resource adequacy.

B. RPM Assuring Reliability in Maryland

RPM prices are location-based. Locational Deliverability Areas (LDAs) are sub-regions of PJM with limited import capability due to transmission constraints. PJM evaluates the capability of the transmission system to deliver energy to a portion of the system experiencing a localized shortage of generating capacity from the unaffected remainder of the system. Pricing capacity by location explicitly recognizes the deliverability limitations identified in the PJM Regional Transmission Plan to ensure that the capacity price in each transmission zone properly reflects the reliability value of generation in that zone.⁶ A Reliability Requirement and a Variable Resource Requirement (VRR) Curve are established for each LDA that is modeled in the Base Residual Auction. If an LDA is constrained, locational capacity prices will exceed the capacity price in the unconstrained part of PJM. Potentially constrained areas are identified through PJM's Regional Transmission Planning (RTEP) process.⁷ To reflect the differences in price for resources used to maintain resource adequacy within a constrained LDA, RPM includes a

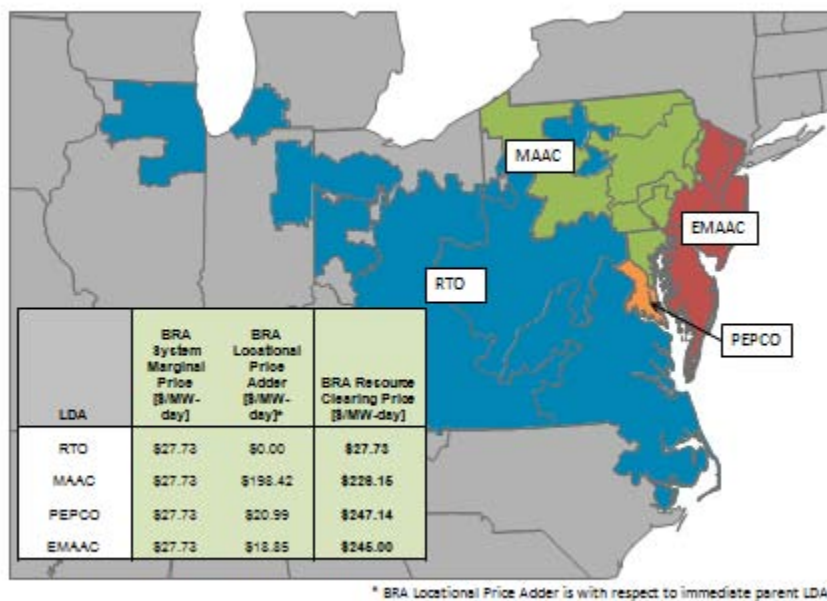
⁶ PJM zones correspond to the service territories of the traditional utilities within the PJM region. For example, Baltimore Electric and Gas Company is a zone and Pepco is a zone.

⁷ Prior to each Base Residual Auction, the import capability requirement (i.e., how much generation outside of the LDA is needed to be delivered into the LDA to meet reliability requirements) called Capacity Emergency Transfer Objective (CETO) and the import capability limit (i.e., the physical limitation of the transmission system) called Capacity Emergency Transfer Limit (CETL) are calculated for each potential LDA. An LDA with a CETL less than 1.15 times its CETO is modeled as an LDA in the upcoming BRA. In addition, an LDA is modeled in the upcoming Base Residual Auction if the LDA had a Locational Price Adder in any one or more of the three immediately preceding Base Residual Auctions. Per the requirements in the PJM Tariff, the MAAC, EMAAC and SWMAAC LDAs are modeled in a Base Residual Auction regardless of the outcome of the CETL/CETO test or prior Base Residual Auction results.

Capacity Transfer Right (CTR) that explicitly recognizes the lower cost resources imported using available transmission capacity into a constrained LDA. Capacity Transfer Rights are allocated to Load Serving Entities (LSEs) in constrained LDAs and they reduce overall capacity charges to load within the constrained LDA by explicitly accounting for the lower cost imports used to maintain resource adequacy in the constrained region.

MAAC, EMAAC, SWMAAC, PSEG, PSEG-North, DPL-South, and PEPCO were modeled as Locational Deliverability Areas (LDAs) in the 2013/14 RPM Base Residual Auction; however, only MAAC, EMAAC, and PEPCO were binding constraints that resulted in Locational Price Adders. Figure 2 maps the regional boundaries for these LDAs with price differences in the PJM footprint for the 2013/2014 Base Residual Auction.

Figure 2: Locational Deliverability Areas (LDAs) in the 2013/2014 Base Residual Auction (BRA)



The Resource Clearing Prices for MAAC, EMAAC, and PEPCO are \$226.15/ MW-day, \$245.00/MW-day, and \$247.14/MW-day, respectively. The MAAC and EMAAC prices increased by \$92.78/MW-day and \$105.27/MW-day, respectively compared to the 2012/2013 BRA. These price increases were caused primarily by the reduced capacity transfer margins into these regions that can result from changes in transmission system topology, including the addition or removal of transmission facilities and changes in the load distribution profile within a zone or region

as well as the addition or retirement of generation facilities. The specific factors that affected the 2013/2014 results are: 1) A significant increase in load in northern Virginia resulting in higher loading on limiting transmission facilities for importing power into MAAC and SWMAAC which is the most significant factor affecting constrained LDAs in Maryland; 2) A secondary contributing effect is related to the PPL portion of the Susquehanna-Roseland 500 kV project not being included in the system model for the 2013/2014 delivery year because it did not satisfy the project development milestones set forth in the tariff for inclusion. (The entire Susquehanna-Roseland 500 kV project was included in the system model for the 2012/2013 Delivery Year.); and 3) The minor effect of Eddystone units 1 and 2 and Cromby units 1 and 2 were not being included in the system model for the 2013/2014 delivery year due to their proposed May 31, 2011 deactivation.⁸

The Commission's inquiry into whether RPM is resulting in the development of new generation is focused on the differential in the clearing prices for the Locational Deliverability Areas (LDA) in which Maryland resides, specifically, the MAAC LDA and the Pepco LDA⁹, as compared to the unconstrained region as well as a year-over-year differential in the LDA clearing prices. The Commission seems to conclude that RPM prices in the Maryland LDA's have increased substantially, and, in the Commission's view the increase in price occurred without incenting substantial new generation to be built in Maryland. PJM believes, however, that higher RPM prices help ensure sufficient resources including new generation, maintaining existing generation and demand response and energy efficiency to help maintain adequate reliability. In its questions the Commission questions whether the goal of RPM should be to "levelize" capacity prices across the PJM footprint. However the goal of RPM is to ensure sufficient capacity resources are committed to ensure PJM achieves established reliability criteria at least-cost given the physical limitations that exist on the transmission system. However, the transmission planning process examines potential additions of new high voltage transmission which can be built for both reliability as well as economic

⁸ "2013/2014 RPM Base Residual Auction Planning Period Parameter," March 12, 2010 available at : <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/planning-period-parameters-report.ashx> . The most significant impact on capacity transfer margin for the MAAC and SWMAAC areas resulted from a change in the load distribution in the system model. Specifically, the 2013/2014 system model showed a significant increase in load in the northern Virginia area. The increase in load in this area resulted in higher loading of the Pleasant View 500/230 kV transformer which is the primary limit into the MAAC and SWMAAC LDA.

⁹ The MAAC LDA includes Baltimore Gas and Electric Company. Maryland falls within the MAAC LDA, and the Pepco zone is another separate LDA that falls within the MAAC LDA.

purposes. Otherwise, the presence of binding transmission constraints necessitates price differentials between constrained LDAs and unconstrained parts of the PJM system to ensure sufficient capacity is procured to maintain resource adequacy in all parts of PJM in the most cost-effective manner possible.

C. RPM Provides Reliability Benefits to Maryland

While it is true that the clearing price of capacity resources in the Mid-Atlantic region has generally been higher than the clearing price in the unconstrained region of PJM (called the RTO LDA) since the introduction of RPM, this price differential is reflective of the transmission constraints in moving power from western PJM into the Mid-Atlantic and the need for resources to be located inside the Mid-Atlantic Region. Locational pricing under RPM creates incentives for resources to assure reliability in the locations where the resources are needed. The Mid-Atlantic region has experienced an increase in the commitment of (1) new generation resource development (new plants and uprates to existing plants), (2) the commitment of new load management and energy efficiency program development, and (3) the retention of existing capacity that might otherwise be retired.

1. Maryland as part of the Mid-Atlantic Region

Maryland benefits from the commitment of new generation, new demand response, and the retention of economic, existing resources within the larger MAAC LDA by virtue of its location within the Mid-Atlantic region (or MAAC LDA). The reliability value and economic benefit of new generation within the Mid-Atlantic region does not terminate at Maryland's borders. Maryland's reliability is directly tied to the resource adequacy of the Mid-Atlantic region; and the economics of capacity pricing for Maryland is tied to the availability of capacity resources *within* the Mid-Atlantic region as well as the available transmission capability to deliver capacity from the wider RTO LDA *into* the Mid-Atlantic region.

There has been a significant amount of incremental capacity added in the Mid-Atlantic region as well as a significant amount of canceled generation retirements in the Mid-Atlantic region since the first RPM Base Residual

Auction. Table 3 provides a breakdown of the 10,666 MW total incremental capacity resulting for the Mid-Atlantic region.

Table 3: Sources of Additional Unforced Capacity in the Mid-Atlantic Region

Resource	Amount (UCAP MW)
Demand Response	5,871
Energy Efficiency	152
New Generation	658
Upgraded Generation	935
Cancelled Retirements	3,050
Total	10,666

Maryland's ties to the broader Mid-Atlantic Region, as well as that broader Mid-Atlantic Region's ties to the rest of the PJM Region, affords it benefits of access to lower cost capacity that can be delivered into Maryland. Capacity Transfer Rights explicitly recognize the lower cost resources imported using available transmission capacity into a constrained LDA, and ensure load in the constrained LDA pay the less constrained price for the capacity resources imported into the constrained area. Translating this for Maryland, BGE and PEPO receive Capacity Transfer Rights credits to reflect that ability to deliver cheaper capacity into Maryland. Table 4 enumerates the daily CTR credits for BGE and PEPCO for each RPM delivery year. (The CTR credit rate is expressed in terms of \$/MW Unforced Capacity obligation per day. To calculate the daily credits, the CTR credit rate is multiplied by the BGE and PEPCO zones' unforced capacity obligation.

Table 4: Value of Capacity Transfer Rights for Load in BGE and Pepco Zones

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013**	2013/2014**
BGE UCAP Obligation	8082.8	8062	8362	8468.6	8295.5	8462.7	8590.8
BGE CTR Credit Rate	\$48.38	\$29.53	\$19.21	\$ -	\$ -	\$3.49	\$2.30
BGE Daily CTR Credits	\$391,045.86	\$238,070.86	\$160,634.02	\$ -	\$ -	\$29,534.75	\$19,758.73
PEPCO UCAP Obligation	7598.7	7622.6	7843.7	7882.4	7817.6	7912.1	7996.7
PEPCO Daily CTR Credit Rate	\$48.38	\$29.53	\$19.21	\$ -	\$ -	\$ 3.49	\$10.21
PEPCO CTR Credits	\$367,625.11	\$225,095.38	\$150,677.48	\$ -	\$ -	\$27,613.09	\$81,646.66

**2012/2013 and 2013/214 UCAP Obligation and CTR Credit Rate are not final until the Third Incremental Auction Results are posted

2. Within Maryland's Borders

Notwithstanding the reliability benefit Maryland derives from the Mid-Atlantic region, the evidence to date also shows that within the borders of Maryland, since the inception of RPM, there has been an increase in the committed level of demand response,¹⁰ energy efficiency, new generation development and uprated existing generation, and canceled generation retirements. Table 5 identifies the incremental capacity availability by source in Maryland since the inception of RPM.

Table 5: Sources of Newly Available Unforced Capacity in Maryland

Resource	Amount (UCAP MW)
Demand Response	1629
Energy Efficiency	117
New Generation	275
Uprated Generation	271
Canceled Retirements	1260
Total	3552

¹⁰ Again, as stated above, PJM notes the efforts of Maryland with the Gap RFP and EmPower Maryland initiatives that also have contributed to increased demand response participation in Maryland.

It is important to note that result – the 3552 MW incremental benefit to Maryland -- is a lower cost alternative to building 3552 MW of all new generation in Maryland. The incremental benefit can be calculated by comparing the price of capacity prior to RPM to the average price of capacity resulting from the RPM Base Residual Auctions held to date, divided by the 3552 MW of incremental capacity committed to Maryland since the inception of RPM. To determine the capacity price before RPM, one can turn to the 2009 State of the Market Report published by the Independent Market Monitor. According to the 2009 State of the Market Report, in 2001 the average price of capacity in Maryland was \$95.34/MW-day.¹¹ The average capacity price in Maryland over the last seven RPM Base Residual Auctions is \$162/MW-day. The increase in cost under RPM, therefore, is approximately \$67.02/MW-Day, which equates to an annual cost of approximately \$387 Million in Maryland. Dividing the \$387 Million of annual cost by the 3552 MW of incremental benefits results in per MW cost of \$108,953. *This per MW cost is cheaper than the cost to build new generation resources.* According to the 2009 State of the Market Report, the 20-year levelized cost, reproduced in Table 6, of gas and coal resources exceeds the per/MW-year cost to Maryland for the 3552 MW of incremental resources resulting from RPM.¹²

Table 6: 20 Year Annual Levelized Cost of New Generating Technologies

Generating Technology	20- year levelized cost
Gas-fired Combustion Turbine	\$128,705/MW
Gas-fired Combined Cycle	\$173,174/MW
Coal	\$446,550/MW

In sum, Maryland has experienced reliability and economic benefits both within its borders and by virtue of being physically tied to the Mid-Atlantic Region. There are price differentials in the constrained regions of PJM, largely driven by the limited transmission available to deliver power from cheaper capacity resources to the west of the Mid-Atlantic region into the MAAC and PEPCO LDAs. A portion of this price differential is offset by Capacity

¹¹ 2009 PJM State of the Market Report, Figure 5-1, p. 326, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2009/2009-som-pjm-volume2-appendix1.pdf. The data for 2001 was selected for the comparison as it was the most recent year, under the prior capacity construct, where capacity supply was lower than the capacity demand. The prior capacity construct, which the Federal Energy Regulatory Commission found to be unjust and unreasonable, would result in prices near zero when supply was slightly greater than demand, and prices at or near the capacity deficiency rate when supply was tight.

¹² 2009 PJM State of the Market Report, Table 3-21, p. 159.

Transfer Rights. Moreover, there should be no impending reliability concerns in the short-term of the nature previously expressed by the Commission.¹³ Notably, the Trans-Allegheny Interstate Line (TrAIL) is under construction and scheduled to be in-service by June 1, 2011, and the load forecast has declined due to the economic recession, so there are no impending “gaps” in the projected future resource adequacy situation affecting Maryland. If the Commission’s previous reliability concerns were about to be realized, this would be reflected in RPM prices in Maryland’s constrained LDAs being well in excess of the Net CONE in the most recent BRAs, which has not been the case.

D. Increasing Commitment of Demand Resources in the PJM Region

The Commission raised a concern in its Notice regarding the decline in Demand Resources offered in the 2013/2014 Base Residual Auction as compared to the amount Demand Resources offered in the 2012/2013 Base Residual Auction. Approximately 200 MW fewer Maryland-based Demand Resources were offered in the 2013/2014 auction. While PJM cannot speak for the Demand Response providers as to why fewer Demand Resources was offered; PJM can conclusively state that all Demand Resources offered in the constrained regions of PJM, including the MAAC and PEPCO LDAs cleared. Moreover, PJM can conclusively state that across the PJM region there was an overall increase in the amount of Demand Resources clearing in the Base Residual Auction with 9,281.9 MW across the PJM region having cleared – all that offered into the auction cleared in the auction. Table 7 provides a Maryland specific breakout of the amount of Demand Resources and Energy Efficiency Resources that offered and cleared in the 2013/2014 Base Residual Auction for BGE and Pepco Zones.

¹³ See, In the Matter of the Investigation of the Process and Criteria for Use in Development of request for Proposal By the Maryland Investor-Owned Utilities for New Generation To Alleviate Potential Short-Term Reliability Problems in the State of Maryland; Case No. 9149.

**Table 7: Offered and Cleared Demand Response and Energy Efficiency Resources
in the BGE and Pepco Zones in the 2013/2014 BRA**

Zone	Offered DR MW	Offered EE MW	Total MW Offered	Cleared DR MW	Cleared EE MW	Total MW Cleared
Pepco	547.3	35.8	583.1	547.3	35.8	583.1
BGE	1,102.5	74.8	1,177.3	1,102.5	74.8	1,177.3

MWs are reported in UCAP terms

Additionally, it is important to consider the overall gains in demand response since 2007 to gauge any concerns about a slight decline in the amount of Maryland-based Demand Resources that offered into the 2013/2014 auction. Table 8 breaks out the Demand Resource participation by the BGE and PEPCO zones in Maryland over the first seven BRAs.

**Table 8: Evolution of Offered and Cleared Demand Response
in the BGE and Pepco Zones over the First Seven BRAs**

Year	BGE		PEPCO	
	Offered MW	Cleared MW	Offered MW	Cleared MW
2007/2008	14.7	14.7	5	5
2008/2009	280	277.2	34.1	32
2009/2010	291.6	291.6	64.7	64.7
2010/2011	485.9	485.9	33.1	33.1
2011/2012	628.3	595.8	150.9	144.8
2012/2013	1370.6	1312.9	485.1	460.8
2013/2014	1102.5	1102.5	547.3	547.3

* MWs are reported in UCAP terms

1. Reliability Limitations of the Current Demand Response Products Operating as a Supply Resource

Understanding that Maryland has taken considerable steps to encourage demand response, and the RPM clearing results show the fruit of both Maryland's efforts and the transparency of a forward capacity price, it is important to note that there are reliability limitations to the current demand resource product as PJM may need to become increasingly reliant upon such product in real-time operations in the future. The momentum for demand response should continue, but to ensure reliability, additional, less limiting demand response products may need to be defined.

The current amount of committed demand response for the 2010/2011 Planning Period across the PJM footprint is 6.3%. Under the current product definition, this demand response is a contractual commitment to interrupt load during the summer period for up to 10 times with a duration of 6 hours for each interruption. The increase in demand response committed in RPM, and the corollary displacement of generation supply resources from clearing in RPM and being committed for reliability as a capacity resources, prompted PJM to study the level at which demand response ceases to provide the level of system reliability upon which PJM operations relies.¹⁴ In other words, PJM was interested in understanding when system conditions would necessitate calling demand response more frequently than their contractual commitment of 10 times and for durations longer than 6 hours to cover the peak load periods. PJM's concern may be expressed in a simple, yet admittedly extreme, example, if 50% of the load signed up as demand response and no generation was committed to supply that 50% of the load, demand response would be relied upon for more than peak shaving.

Based on PJM staff analysis, which applied engineering judgment to select a demand response penetration level at which the probability of needing more than ten interruptions is not too large, PJM has suggested the implementation of a reasonable limit to the amount of limited demand response to be relied upon across the PJM footprint. A reasonable limit will be determined by the point at which there is only a 10% chance that more than ten

¹⁴ The study may be found on the PJM website at <http://www.pjm.com/~media/committees-groups/committees/mrc/20100518/20100518-item-05-dr-saturation-report.ashx>.

interruptions are needed to ensure reliability. If the demand response product were to be redefined (or if a new demand response product were added such that not all demand response was limited as under the current definition), the percentage threshold could be higher.

Additionally, PJM evaluated the impact of the six hour interruption duration currently applicable to demand response. The intent of demand response is to shave the daily peak load, not to shift the peak to an hour outside the six hour demand response reduction window. According to PJM staff's analysis, demand response could increase to a level where implementing demand response could have the effect of shifting the daily peak to an early afternoon or evening hour. If this occurred, the daily peak would not be reduced by the full amount of demand response. Said another way, the reduction in daily peak would be less than the amount of demand resources implemented.

PJM stakeholders are considering a range of potential modifications to PJM market rules to address the concerns identified in PJM staff's study. Any changes to the RPM market rules will need to be approved by the Market and Reliability Committee and Members Committee and filed with the Federal Energy Regulatory Committee by November 2010 in order to ensure they are in effect in time for the 2011 Base Residual Auction for the 2014/2015 delivery year.

2. Reliability Value of Price Responsive Demand

The concept of Price Responsive Demand (PRD), on the other hand, does not have the same limitations as the current demand response products which interact in the PJM market as a supply resource. PRD is not limited like the supply-side demand response product that need to be centrally dispatched by PJM and which are limited to a particular number of interruptions during the summer period with a maximum hour duration for each interruption. PJM has been working over the last year with stakeholders to develop wholesale market rules to accommodate the ability of customers, or demand, to respond to energy market price signals without the need for PJM to centrally dispatch that capability or the need for that demand to bid into the wholesale energy market as a supply resource.

In this sense, PRD is a demand resource operating on the demand-side of the market. As an overall load reducer, there is no concern about the level at which such demand response participates in the PJM market.

To be clear, however, PRD is intended to be another option for demand response participation in the PJM market, not a replacement for the existing PJM DR programs. The PJM market design may accommodate both types of products, particularly in recognition that PRD requires metering infrastructure and retail rate design that are outside of PJM's purview, and certain customers may not be able to offer unlimited calls on their ability to reduce.

E. RPM is Not Intended to Drive a Particular Price Result

The RPM construct is not designed to ensure prices are levelized or to ensure any specific price outcome. Rather, RPM is designed to ensure appropriate, transparent, forward price signals are provided to potential resource developers and load suppliers that wish to hedge their future energy costs and to existing resource owners who must make capacity resource investment decisions.

1. Price Level to Incent New Development

Developers of new capacity resources make investment decisions based upon whether the *expected* stream of revenues over the life of the capacity resource exceeds the *expected* costs. In the PJM market, the stream of expected revenues comes from the energy, ancillary Service, and RPM capacity markets.

Historically, new capacity resources have been unable to cover the entirety of their expected costs through revenues from the energy and ancillary service markets alone, and RPM capacity market revenues are a source of revenues that can help cover the remaining gap between expected revenues and expected costs. Expected costs encompass the investment cost, including the cost of capital used to finance the investment and a rate of return; fixed, going forward costs such as fixed operation and maintenance cost, administrative costs, and any additional investments needed to maintain the resource; and variable operating costs such as the cost of fuel, variable operation and maintenance costs, and environmental costs.

When RPM prices in an LDA are below the Net CONE, it is a signal that there is sufficient capacity available to ensure resources adequacy targets. Conversely, when RPM LDA prices are at or in excess of the Net

CONE, it is a signal that the LDA is just maintaining the resource adequacy target, or that there is insufficient capacity to maintain the resource adequacy target. In the most recent Base Residual Auction, for the 2013/2014 delivery year, only prices in the Pepco LDA exceeded the net Cost of New Entry (CONE), which are the costs for a peaking generator to enter the market less the expected energy and ancillary market revenue that peaking generator would earn. Table 9 below shows the clearing prices in the 2013/2014 Base Residual Auction by LDA compared to the corresponding Net CONE values. The clearing prices were less than Net CONE for each LDA except Pepco.

Table 9: Clearing Prices and Net CONE for the 2013/2014 Base Residual Auction

LDA	Clearing Price (\$/MW-day)	Net CONE (\$/MW-day)
RTO	27.73	317.95
MAAC	226.15	227.20
EMAAC	245.00	261.06
PEPCO	247.14	227.20

2. RPM Is Intended to Mitigate Revenue Uncertainty, Not to Be the Sole Means Supporting Resource Development

Investment decisions need be made in an environment of uncertainty, so capacity resource developers seek to mitigate uncertainty related to future revenue and future costs to the extent possible. One way to mitigate future revenue uncertainty is to find counterparties to engage in long-term contracts for the output of the capacity resource.¹⁵ RPM is not intended to displace bilateral contracting. It is designed to augment long-term contracting by providing a revenue stream that is known with certainty three years in advance of the required delivery of the capacity resource. At the conclusion of each Base Residual Auction, all winning bidders accept a financially binding contractual commitment to provide capacity for one year, three years in advance of the time the capacity is expected to be delivered and available. From a planning and reliability perspective, the financially binding one-year commitment of capacity three years in advance of delivery provides PJM with additional planning certainty in the

¹⁵ Resource developers may also seek to mitigate cost uncertainty through long-term contracts for inputs such as fuel to reduce cost uncertainty.

short-term, and assurance of performance that is enforceable through standard contract enforcement measures. From the perspective of resource developers, RPM provides an opportunity for new entrants to compete with existing capacity providers by providing some certainty in revenue streams in three years in advance of the year of actual operation. The RPM construct also includes a mechanism intended to offer a longer term revenue stream to new resources, called “New Entry Pricing.” Under this mechanism, new resources have the opportunity to lock in revenue for three years at the level those resources initially cleared in a Base Residual Auction creating further certainty in future revenue streams for new resources.

RPM does not prevent resource developers and entities with load serving obligations to enter into long-term contracts with mutually agreeable prices and terms. RPM exists to assure locational resource adequacy, but locational resource adequacy may also be assured through decisions to hedge future energy and capacity price exposure and the timely construction of required new transmission infrastructure to facilitate the delivery of additional economic resources into Maryland.

F. Information Transparency

The Commission in its Notice seeks comments on how it can obtain data that will aide a consideration of what the Commission may do to affect Maryland’s energy future. RPM was designed to provide locational, transparent, forward price signals to allow resource developers and existing resource owners to make investment decisions. However, the clearing prices of the RPM auctions are a result of a dynamic interplay of forecast peak demand and supply that is partially defined by infrastructure limitations (e.g., limited transmission, available generation and demand response or energy efficiency resources). In response to state commission and Member requests for additional information to understand the sensitivity of the RPM clearing prices to resource and transmission infrastructure assumptions, PJM solicited study scenario requests for studies that would be based off the 2013/2014 Base Residual Auction clearing results.¹⁶ PJM has completed and posted results for several of the requested

¹⁶ The requested scenarios: [http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/sensitivity-scenario-requests.ashx](http://www.pjm.com/markets-and-operations/rpm/~/media/markets-ops/rpm/rpm-auction-info/sensitivity-scenario-requests.ashx)

scenarios.¹⁷ The scenarios that involve transmission infrastructure assumptions are still being evaluated, and PJM will post on its website the study results when they are available. It is PJM's goal that this information will better inform all stakeholders as to the impact of a variety of drivers on resultant RPM clearing prices.

III Conclusion

RPM was designed to provide a transparent, three year forward price for capacity to incent investment decisions in new and existing capacity resources. It has resulted in over 33,000 of incremental capacity offering into the 2013/2014 Base Residual Auction for the PJM region, over 10,000 MW of which is in the Mid-Atlantic region, and over 3,500 MW of which is located in Maryland specifically. Maryland benefits from lower cost out-of-state resources located within the Mid-Atlantic region or which may be delivered into the Mid-Atlantic region and into the BGE and PEPCO zones as those resources provide reliability assurance at a lower cost than investing in entirely new resources being developed in Maryland.

Respectfully submitted,



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¹⁷ The scenario analysis results: <http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/scenario-analysis-results.ashx>