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August 18, 2008

Ms. Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: Pepco Holdings, Inc., Potomac Electric Power Company, Delmarva Power & Light Company, and Atlantic City Electric Company -- Request for Incentive Rate Treatment for Mid-Atlantic Power Pathway, Docket No. ER08-\_\_\_\_-000**

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act (“FPA”)<sup>1</sup> and Part 35 of the Commission’s regulations,<sup>2</sup> Pepco Holdings, Inc. (“PHI”), on behalf of its transmission-owning public utility affiliates Potomac Electric Power Company (“Pepco”), Delmarva Power & Light Company (“Delmarva Power”), and Atlantic City Electric Company (“Atlantic City Electric”) (collectively “PHI Companies”), hereby respectfully requests authorization to implement certain rate treatments for its Mid-Atlantic Power Pathway (“MAPP”) Project, a planned 230-mile, 500 kV transmission line between northern Virginia and southern New Jersey that will provide substantial reliability improvements throughout the geographic area encompassed by PJM Interconnection, L.L.C. (“PJM”), as well as other relief to customers in the eastern portion of PJM. PHI is submitting proposed amendments to the PJM Open Access Transmission Tariff (“OATT”) necessary to permit the PHI Companies to recover the incentive rate treatments requested in this filing. PHI requests an effective date of November 1, 2008 for the revised tariff sheets.

## **I. EXECUTIVE SUMMARY**

The MAPP Project, approved by the PJM Board of Managers in October, 2007 as Project b0512 in the 2007 Regional Transmission Expansion Plan (“RTEP”), is the largest infrastructure project ever undertaken by PHI. It also is one of the largest transmission projects

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<sup>1</sup> 16 U.S.C. § 824d.

<sup>2</sup> 18 C.F.R. Part 35.

Ms. Kimberly D. Bose

August 18, 2008

Page 2

to be undertaken within the PJM footprint. The MAPP Project, a 230-mile transmission line, is the very type of multi-state transmission line -- with large-scale, region-wide benefits and associated risks, and substantial advanced technologies -- to which FPA Section 219 rate treatments are intended to apply.

The MAPP Project will provide reliability benefits to the entire PJM region as well as significant improvements for import capability and congestion relief to its Mid-Atlantic region, in particular. MAPP, expected to be placed in service in 2013, will resolve 33 of 40 "reliability criteria violations" that are expected to occur without MAPP.<sup>3</sup> The MAPP Project will help resolve reliability and congestion issues triggered by PJM's central and eastern interfaces -- that is, the portion of the PJM transmission system that both supports and limits west-to-east flows of power across central Pennsylvania and the Baltimore-Washington region, and into the Delmarva Peninsula and the load centers of New Jersey. Furthermore, the MAPP Project will incorporate significant advanced technologies that will make the line a "smart grid," consistent with inter-operability encouraged by the Department of Energy (DOE) and the GridWise Architecture Council.

In addition, the MAPP Project will provide substantial congestion benefits. If the MAPP Project is constructed solely as an alternating current ("AC") line, it would provide approximately \$70 million of annual savings to the entire PJM RTO. In addition, the production cost, which is a measure of system efficiency, is projected to drop by \$35 million annually for the entire PJM RTO. These savings are expected to be even more pronounced if the portion of the line across the Chesapeake Bay is built as a 640 kV state-of-the-art high-voltage direct current ("HVDC") transmission line. In that event, the annual savings for the entire PJM RTO are projected to be approximately \$91 million. In addition, the production cost for the entire PJM RTO with the HVDC option is projected to drop by \$58 million annually.<sup>4</sup>

The MAPP Project will connect four states, cross three rivers and complete the first-ever crossing of Chesapeake Bay by an electric transmission line. The MAPP Project will originate in Northern Virginia, cross Southern Maryland, including above-ground crossings of the Potomac and Patuxent Rivers, and a submarine crossing of the Chesapeake Bay, traverse the Delmarva Peninsula, cross over the Delaware River, and end in Southern New Jersey. PJM currently has not a single backbone transmission facility that traverses the Chesapeake Bay or the Delmarva Peninsula, and the MAPP line will be the first backbone facility to be installed in these important areas.<sup>5</sup> Although the project will be installed on existing rights-of-way

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<sup>3</sup> Gausman Testimony, Exhibit PHI-1 at 28-29.

<sup>4</sup> *Id.* at 33-35.

<sup>5</sup> Exhibit PHI-5B at 16; Exhibit PHI-4 (map of PJM backbone system).

Ms. Kimberly D. Bose  
August 18, 2008  
Page 3

wherever possible, a significant portion of the project will require acquisition of new rights-of-way through wetlands and other environmentally-sensitive areas.

Because of the high risks and substantial benefits associated with the planned facility, PHI requests that the Commission approve for the MAPP Project: (1) a return on equity ("ROE") adder of 150 basis points, to be added to the companies' existing ROE of 11.3%, resulting in a 12.8 percent ROE;<sup>6</sup> (2) authorization to include in rate base 100 percent of construction work in progress ("CWIP"); and (3) authorization to recover 100 percent of all prudently-incurred development and construction costs if the MAPP Project is abandoned or cancelled for reasons beyond the control of the PHI Companies. PHI also submits proposed amendments to the PJM OATT necessary to permit the PHI Companies to recover the rate treatments requested in this filing. As noted above, PHI requests an effective date of November 1, 2008 for the revised tariff sheets.

The MAPP Project and the rate treatments requested in this filing readily meet the standards established by Congress in Section 219 of the Federal Power Act and by the Commission in Order No. 679.<sup>7</sup> First, based on the express language of FPA Section 219, an "applicant must demonstrate that the facilities for which it seeks incentives either ensure reliability *or* reduce the cost of delivered power by reducing transmission congestion."<sup>8</sup> Second, an applicant must demonstrate that "there is a nexus between the incentive sought and the investment being made."<sup>9</sup> Finally, an applicant must demonstrate that the rates sought will be "just and reasonable and not unduly discriminatory or preferential."<sup>10</sup> The rate treatments requested by PHI for the MAPP Project demonstrably satisfy all three criteria.

Projects that are not found to be "routine" are more likely to satisfy the Commission's nexus standard.<sup>11</sup> To determine whether a project is routine, the Commission examines evidence on: (1) the scope of the project (*e.g.*, dollar investment, increase in transfer capability, involvement of multiple entities or jurisdictions, size, effect on region); (2) the

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<sup>6</sup> As noted below, the PHI Companies have a base ROE of 11.3%, which was approved in the rate settlement in *Baltimore Gas & Electric Co.*, 115 FERC ¶ 61,066 (2006). The base ROE determination is not at issue in this proceeding and thus, should not be subject to a hearing.

<sup>7</sup> *Promoting Transmission Investment Through Pricing Reform*, Order No. 679, FERC Stats. & Regs. ¶ 31,222, order on reh'g, Order 679-A, FERC Stats. & Regs. ¶ 31,236 (2006), order on reh'g, 119 FERC ¶ 61,062 (2007).

<sup>8</sup> *PPL Electric Utilities Corporation, et al.*, 123 FERC ¶ 61,068 at P 28 (2008). See also 18 C.F.R. § 35.35(d)(2007) (emphasis added). The MAPP Project will strengthen reliability *and* reduce the cost of delivered power.

<sup>9</sup> *Potomac-Appalachian Transmission Highline*, 122 FERC ¶ 61,188 at P 32 (2008) ("*PATH*").

<sup>10</sup> *Id.* at P 25.

<sup>11</sup> See *Baltimore Gas & Electric Co.*, 120 FERC ¶ 61,084 at P 48 (2007).

Ms. Kimberly D. Bose  
August 18, 2008  
Page 4

effect of the project (*e.g.*, improving reliability or reducing congestion costs); and (3) the challenges or risks faced by the project (*e.g.*, siting, internal competition for financing with other projects, long lead times, regulatory and political risks, specific financing challenges, other impediments).<sup>12</sup> The MAPP Project is far from routine when judged on these criteria.

PJM predicted that the congestion on its eastern, central, and western interfaces, combined with load growth in the load centers east of those interfaces and a high rate of generator retirements there, will cause deliverability issues over the next ten to twenty years.<sup>13</sup> PJM sought transmission solutions across three separate corridors -- the "Mid-Atlantic Corridor," the "Allegheny Mountain Corridor," and the "Delaware River Corridor" -- to address these issues.<sup>14</sup> In response to the need expressed by PJM for a transmission solution across the Mid-Atlantic Corridor, PHI proposed the MAPP Project. The MAPP Project is a significant enhancement to the PJM high-voltage transmission system along with other proposed long-line, high voltage transmission projects -- most notably the Potomac-Appalachian Transmission Highline ("PATH") project, the Trans-Allegheny Interstate Line ("TrAILCo") project, and the Susquehanna-to-Roseland project -- that PJM has approved as part of its Regional Transmission Expansion Plan ("RTEP"), and for which the Commission has been willing to grant incentive rates. The MAPP Project provides a solution to critical reliability and congestion issues triggered by limited transmission capacity in PJM. These benefits are reinforced by the substantial advanced technologies that PHI plans to incorporate into the project, as described more fully in the testimony of PHI's Senior Vice President, Mr. William Gausman and the accompanying technology statement.

Although the MAPP Project will provide substantial benefits to customers throughout PJM, it also carries significant financial, regulatory, engineering, construction, and environmental risks. The currently estimated \$1.05 billion cost of the line, for which PHI is responsible to construct approximately \$950 million, represents an investment substantially greater than the cost of any other infrastructure project in PHI's history and roughly equivalent to its existing transmission rate base.<sup>15</sup> The MAPP Project will impose substantial stresses on PHI's financial metrics, and, without the requested rate treatments, carries the potential to lower the credit ratings of PHI and the PHI Companies, and thus raise their cost of borrowing.

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<sup>12</sup> *PPL Electric Utilities*, 123 FERC ¶ 61,068 at P 31.

<sup>13</sup> Exhibit PHI-5A (2007 RTEP) at 10-13; Exhibit PHI-5C (PJM RTEP) at 53-54.

<sup>14</sup> Comments of PJM Interconnection, L.L.C., on Designation of National Interest Electric Transmission Corridors, filed with the U.S. Dept. Energy, Oct. 10, 2006 ("PJM NIETC Comments") at 3-5.

<sup>15</sup> See Exhibit PHI-5C (2007 RTEP) at 69. These estimates are preliminary and are subject to revision in the face of rising commodity prices and as project design is completed.

Ms. Kimberly D. Bose

August 18, 2008

Page 5

To finance such a significant project, PHI must turn not only to external debt markets, but also to new shareholders. Because the MAPP Project constitutes the signature infrastructure investment by PHI over the next decade, a decision to contribute new equity to the company is largely a decision that the returns to be earned on that investment are comparable to or better than those earned on similar projects by other companies. Thus, the MAPP Project must earn an ROE sufficient to attract this new capital. The requested ROE for the MAPP Project reflects the significant risks and benefits of the proposal, including the advanced technologies to be incorporated into the facility. Furthermore, recovery of CWIP is appropriate to reduce the financial stresses that otherwise would be caused by the substantial financial outlay required and the long lead-time of the MAPP Project. In addition, approval of cost recovery in case of abandonment will remove significant disincentives to the construction of this important project.

The testimony of Mr. Anthony Kamerick, PHI's Vice President and Treasurer, and Dr. William Avera, President of FINCAP, Inc., each demonstrate that the requested rate treatments are justified from a financial perspective. Dr. Avera's testimony, in particular, shows that the PHI Companies are eligible for an ROE at the upper end of the zone of reasonableness, even after accounting for the reductions in risk provided by the other incentives. Dr. Avera notes that even with those incentives, the MAPP Project still carries substantial risks. In addition, the testimony of Mr. Alan Heintz, Vice President of Brown, Williams, Moorhead & Quinn, Inc., will explain the proposed revisions to the companies' formula rate that will allow PHI to implement the recovery of CWIP in rate base for the MAPP project. Mr. Warren Smiley, PHI's Director, Technical Research and Controls, will discuss the internal controls that PHI will implement to ensure that PHI does not double-recover both an allowance for funds used during construction ("AFUDC") and current return on CWIP. Thus, this filing demonstrates that the rate treatments requested by PHI are just and reasonable and should be approved by the Commission without a hearing.

## II. CONTENTS OF THE FILING

The following items are included in support of this filing:

- This Transmittal Letter;
- **Appendix A** -- Revised PJM Tariff Sheet Nos. 298B, 298E, 298R, 298S, 298T, 298U, 300F, 300I, 300V, 300W, 300X, 300Y, 310B, 310E, 310S, 310T, 310U, 310V incorporating revisions to the PHI Companies' formula rates to permit the collection of CWIP and the 150 basis point adder requested in this filing.

Ms. Kimberly D. Bose

August 18, 2008

Page 6

- **Appendix B** -- Redlined versions of the PJM Tariff Sheets.
- **Appendix C – Testimony of William M. Gausman (Exhibit PHI-1 - PHI-20).** Mr. Gausman will describe the significant reliability and other benefits that the MAPP project will bring. He will also describe the risks associated with construction of the project and the sensitive environmental challenges facing, among other things, the several water crossings required. Finally, he will describe the advanced technology that PHI intends to use in developing the MAPP project.
- **Appendix D -- Testimony of Anthony J. Kamerick (Exhibit PHI-21 - PHI-23).** Mr. Kamerick will describe the financial risks presented by the MAPP Project and the integrated package of rate incentives that PHI is requesting and explain why each of the requested incentives is needed to offset the significant financial risks the MAPP project will place on PHI's financial position.
- **Appendix E -- Testimony of Dr. William E. Avera (Exhibit PHI-24 - PHI-29).** Dr. Avera presents his independent analysis of a fair rate of return on equity ("ROE") range of reasonableness for the PHI Companies. Using established Commission precedent, he evaluates the reasonableness of the incentive ROE requested for the MAPP project and concludes that a 12.8% ROE is well below the upper end of the zone of reasonableness.
- **Appendix F -- Testimony of Alan Heintz (Exhibit PHI-30 - PHI-35).** Mr. Heintz will explain the tariff revisions that will allow PHI to recover CWIP in rate base in connection with the MAPP project and how those revisions will be implemented.
- **Appendix G -- Affidavit of Warren Smiley (Exhibit PHI-36).** Mr. Smiley explains the internal controls that will be in place to ensure that PHI does not double-recover both AFUDC and CWIP in connection with the MAPP Project.
- **Appendix H** -- Attestation required by 18 C.F.R. § 35.13(d) (2007).



Ms. Kimberly D. Bose  
August 18, 2008  
Page 7

### III. COMMUNICATIONS

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### IV. BACKGROUND

#### A. Description of PHI and the PHI Companies

PHI is a public utility holding company organized and existing under the laws of the State of Delaware. PHI, which is headquartered in Washington, D.C., was formed after the 2002 merger of Pepco and Conectiv. The PHI Companies are engaged primarily in the transmission and distribution of electricity, and, in certain instances, the provision of default electricity under state retail access programs to retail customers in Maryland, Delaware, and New Jersey and the District of Columbia. Pepco is a wholly owned subsidiary of PHI, a publicly held Delaware and Virginia corporation. Delmarva and ACE are wholly owned subsidiaries of Conectiv, which in turn is a wholly owned subsidiary of PHI. Pepco, Delmarva and ACE are electric distribution and transmission companies regulated by this Commission and various state commissions. Each is a participating member of PJM and has turned over operational control of its transmission facilities to PJM pursuant to the PJM Consolidated Transmission Owners Agreement and the PJM Tariff. Each of the PHI Companies recovers the

Ms. Kimberly D. Bose  
August 18, 2008  
Page 8

costs of its transmission facilities through formula rates adopted pursuant to a settlement agreement in Docket No. ER05-515, and incorporated into the PJM OATT.<sup>16</sup>

## **B. Description of the MAPP Project**

The MAPP Project serves as a long-term solution to significant reliability and congestion issues presented by limited transfer capability over PJM's central and eastern interfaces. PHI developed the idea for the MAPP Project in response to requests by PJM for proposals to address identified reliability issues on the eastern, central, and western interfaces. As noted, the MAPP Project is a 500 kV, 230 mile transmission line that will originate in Northern Virginia, cross Southern Maryland (including above ground crossings of the Potomac and Patuxent Rivers, and a submarine crossing of the Chesapeake Bay), traverse the Delmarva Peninsula, cross over the Delaware River and end in Southern New Jersey.<sup>17</sup> A map of the MAPP Project is included as Exhibit PHI-3 and a map of the PJM backbone system as enhanced by the MAPP Project is included herein as Exhibit PHI-4.

PHI anticipates that it will complete construction of the MAPP Project during 2013.<sup>18</sup> As noted, the MAPP Project is the largest infrastructure project ever undertaken by PHI, and forms the core of its transmission expansion plans over the next decade. As outlined in more detail below and in the attached testimony of Anthony Kamerick, the MAPP Project as approved by PJM in the August 2007 RTEP was estimated at \$1.05 billion, with approximately \$950 million of that construction responsibility belonging to PHI. The MAPP Project will effectively double the PHI utility affiliates' transmission rate base.<sup>19</sup>

## **V. BENEFITS OF THE MAPP PROJECT**

### **A. Reliability Needs are the Primary Driver of the MAPP Project.**

The MAPP Project was approved by the PJM Board in October 2007, and integrated into the 2007 PJM RTEP as a key segment in reinforcing the PJM backbone transmission system.<sup>20</sup> The PJM Board approved the project primarily because of its ability to resolve

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<sup>16</sup> See *Baltimore Gas & Electric Co.*, 115 FERC ¶ 61,066 (2006) (order approving settlement).

<sup>17</sup> Gausman Testimony, Exhibit PHI-1, at 14.

<sup>18</sup> *Id.* at 19.

<sup>19</sup> Kamerick Testimony, Exhibit PHI-21, 6.

<sup>20</sup> Exhibit PHI-5C (2007 RTEP) at 71 (stating that "[t]he transmission system on the Delmarva peninsula is quickly reaching the point where the reliability improvement that incremental 'band aid' solutions can offer are being exhausted.").

Ms. Kimberly D. Bose  
August 18, 2008  
Page 9

numerous reliability problems across a large portion of the PJM system in the mid-Atlantic region.

PJM's analysis showed that the MAPP Project will relieve expected overloads on the existing PJM system, and will improve transmission capabilities in PJM, particularly in the eastern and southwestern Mid-Atlantic regions and on the Delmarva Peninsula.<sup>21</sup> PJM noted that the MAPP Project will provide an additional path across the eastern interface, which (as outlined above) is one of the major constrained interfaces limiting west-to-east power flows across the PJM regional grid.<sup>22</sup> PJM further noted that MAPP will improve reactive performance for eastern PJM and transient stability margins for artificial island generation, will improve the ability to deliver electricity to customers on the Delmarva Peninsula, and addresses power supply concerns raised by the pending retirements of two power plants near Washington, D.C.<sup>23</sup>

The line also will provide "enhanced access to generation resources from the west, delivered via the Allegheny Mountain Corridor, and from proposed new nuclear generation projects in eastern Virginia and south of Baltimore."<sup>24</sup>

PJM has predicted that the congestion on the eastern and western interfaces will cause both load deliverability and generator deliverability issues over the next ten to twenty years.<sup>25</sup> Most of the load deliverability and generator deliverability issues in the coming years are a result of the congestion across the eastern, central, and western interfaces, combined with significant load growth and the retirement of existing generation on the eastern side of those constraints.<sup>26</sup> Similarly, the generator deliverability issues arise because of impending generator retirements on the eastern side of the eastern and western interfaces.<sup>27</sup>

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<sup>21</sup> Exhibit PHI-5C (2007 RTEP) at 69-73.

<sup>22</sup> Exhibit PHI-5A (2007 RTEP) at 11.

<sup>23</sup> Exhibit PHI-5C (2007 RTEP) at 71.

<sup>24</sup> PJM NIETC Comments at 5; *see also* Exhibit PHI-5C (2007 RTEP) at 95.

<sup>25</sup> Load deliverability "refers to the system's capability to deliver energy from the aggregate of all capacity resources to an electrical load area when it is experiencing a capacity deficiency." PJM NIETC Comments at 20. Generator deliverability, in turn, "refers to the capability of the system to deliver excess energy from a cluster of generators when it is experiencing higher than normal availability to the remainder of the system when it is experiencing a shortage of capacity." *Id.* at 21.

<sup>26</sup> Exhibit PHI-5B at 35; PHI 5C at 53, 71. PJM has also stated that: "Load deliverability criteria violations have been identified throughout PJM's 15-year planning horizon in eastern load centers, including New Jersey and the Baltimore/Washington/Northern Virginia area. These violations are due to load growth and the combination of generation retirements and little or no new generation being installed in these areas. As a result, the existing

Ms. Kimberly D. Bose  
August 18, 2008  
Page 10

PJM and its member transmission owners cannot rely solely on the addition of new generation to resolve the reliability and congestion issues triggered by generator retirements and load growth. Indeed, PJM -- in describing the challenges associated with resolving congestion and reliability issues on the eastern interface in comments to DOE-- concluded that generator additions alone may not present a realistic solution to those issues.<sup>28</sup>

### **B. Reliability Benefits of the MAPP Project**

As part of its 2007 RTEP analysis, PJM conducted deliverability analyses on transmission interfaces across the eastern portion of the PJM region -- including Maryland, Delaware, western and central Pennsylvania, and southern and central New Jersey -- and found that the MAPP Project would solve overloads on those interfaces that otherwise would occur as early as 2012.<sup>29</sup> The overloads of larger facilities that will be addressed by the MAPP Project are identified in Table 3.7 of the 2007 RTEP. The MAPP Project also will bring substantial reliability benefits to the larger transmission facilities in and around the PHI Companies' service territories.<sup>30</sup>

In addition, PJM found that the MAPP Project will "significantly improve the reactive performance of eastern PJM," and will improve the transient stability margins of the Artificial Island complex in New Jersey, which contains the Salem and Hope Creek generating facilities, and which currently has limited stability margins.<sup>31</sup> PJM's current plans do not provide long-

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transmission capability becomes insufficient, in future years, to deliver energy to those load centers during the conditions specified for the load deliverability test." PJM NIETC Comments at 21.

<sup>27</sup> According to PJM, "[w]ith the retirement of eastern generation and continued load growth, the transmission capability across the system is no longer sufficient to ensure the deliverability of clusters of western generation under prescribed test conditions. Due to eastern generation retirements, a greater percentage of the energy from western generation clusters must flow eastward, and those flows exceed existing transmission capability under the conditions specified for the generator deliverability test." PJM NIETC Comments at 22.

<sup>28</sup> *Id.* at 87 (stating that "[t]he slow recent pace of net additions of generation capacity in [the eastern portion of PJM], particularly when considered together with increasingly strict environmental controls (such as new mercury emissions limits proposed in Pennsylvania and siting restrictions proposed in New Jersey that will make new traditional coal-fired generation very difficult to site in those states) and increasingly contentious local opposition to siting of such facilities, makes it highly unlikely . . . that the addition of new, high-voltage transmission capability could be avoided through additional generation capacity . . ."). Similarly, demand-side resources or other load mitigation measures currently are not sufficiently extensive or dependable to address the full extent of the reliability and congestion issues identified by PJM. Exhibit PHI-5B (2007 RTEP) at 43 (stating that new DSR will not be developed in sufficient amounts to eliminate the need for new backbone transmission capability).

<sup>29</sup> See Exhibit PHI-9; see also Exhibit PHI-5C at 70.

<sup>30</sup> See Exhibit PHI-9; see also Exhibit PHI-5C at 70.

<sup>31</sup> See Exhibit PHI-5C at 71.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 11

term solutions to the reactive power issues confronting PJM, and can trigger operational issues. The MAPP Project is a far better long-term solution to these issues, and can provide much of the reactive support needed in eastern PJM. PHI estimates that the MAPP Project will significantly improve the voltage profile and reactive performance equivalent to approximately 2500 MVAR in eastern PJM.<sup>32</sup>

PJM also found that the MAPP Project will “bring relief to the Baltimore-Washington area in light of the retirement of the Benning and Buzzard Point generating facilities, the deactivation of which already requires transmission upgrades to mitigate reliability criteria violations, even before the construction of MAPP.”<sup>33</sup> As explained in Mr. Gausman’s testimony, once the Benning and Buzzard Point generating units are retired, Pepco’s system will need to import an additional 800 megawatts of energy from the west – primarily through the Burches Hill substation -- to replace the two retired plants. The MAPP Project will add a second line between Possum Point and Burches Hill, and provide necessary redundancy to ensure the reliability of service to the Washington, D.C. metropolitan area.<sup>34</sup>

Finally, as Mr. Gausman explains in his testimony, the MAPP Project is a significant enhancement to the other high-voltage backbone transmission facilities that PJM has approved for construction over the Allegheny Mountain Corridor and the Delaware River Corridor, including the Amos to Kemptown 500 kV project, the 502 Junction to Loudoun 500 kV project, and the Susquehanna to Roseland 500 kV line. Existing transmission facilities used to move power from western PJM to and through the Mid-Atlantic region have become increasingly overloaded in recent years -- a fact specifically recognized by the Department of Energy when it designated the Mid-Atlantic Area National Electric Transmission Corridor in October 2007.<sup>35</sup> The need for increased transfer capability from west-to-east in PJM has only become more pronounced in recent years, particularly as states in the eastern portion of PJM have adopted Renewable Portfolio Standards (“RPS”) that require load-serving entities in those states to rely heavily on wind resources from the west. Indeed, as Mr. Gausman notes, it is very difficult for states in eastern PJM to satisfy their RPM mandates without additional access to such wind resources.<sup>36</sup>

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<sup>32</sup> Gausman Testimony, Exhibit PHI-1 at 32.

<sup>33</sup> See Exhibit PHI-5C at 71.

<sup>34</sup> Gausman Testimony, Exhibit PHI-1 at pp. 30-31. Currently, there is only one set of 500 kV lines that connect the Burches Hill substation, which is the gateway to the Pepco system and essential to reliable service for Washington, D.C., to the Possum Point substation and other points to the west.

<sup>35</sup> National Electric Transmission Congestion Report, Docket Nos. 2007-OE-01 and -02, issued by the U.S. Dept. Energy, Oct. 5, 2007, 72 Fed. Reg. 56992, 57008; see also PHI-5B (2007 RTEP) at 17-18.

<sup>36</sup> Gausman Testimony, Exhibit PHI-1 at 35-37.

Ms. Kimberly D. Bose

August 18, 2008

Page 12

As discussed in additional detail in Mr. Gausman's testimony, the MAPP Project will provide a second major transmission connection to the Delmarva peninsula, and will be the first backbone transmission facility to actually traverse the length of the peninsula. Currently the Delmarva peninsula is supplied by only one 500 kV line in the northern portion of the peninsula. Any event that limits the flow across that line will impact the reliability of service across the entire three-state peninsula, and affect service not only to PHI customers, but also to customers of cooperative and municipal electric systems that provide service in Delmarva. The MAPP Project will substantially enhance the reliability of service on the peninsula.<sup>37</sup>

In addition, PHI currently is engaged in performing major upgrades to a number of its substations in Maryland, Delaware, and New Jersey, including several of the substations through which the MAPP Project will interconnect. For example, PHI is conducting significant upgrades to the Burches Hill and Indian River Substations and related facilities.<sup>38</sup> The MAPP Project supplements and enhances these facilities because it acts as an additional transmission line that is able to take advantage of the enhanced capacity that these substation upgrades provide.<sup>39</sup>

### C. Additional Benefits that MAPP Will Bring to the PJM Region

The MAPP Project will traverse a number of zones in eastern PJM where congestion costs have been among the highest in all of PJM. These high congestion costs are a result, in large measure, of the constraints across the PJM interfaces. For example, when the eastern interface is constrained, PJM is limited in its ability to supply load east of the constraint with electricity from more economical generating units west of the constraint -- which results in elevated nodal prices east of the constraint.<sup>40</sup> The MAPP Project helps to resolve these constraints by improving import capability across eastern PJM. PHI analysis indicates that eastern PJM import capability would increase by 1000-2500 MW as a result of the MAPP Project. This substantial increase in import capability will help integrate and reliably deliver PJM queued generation projects located in various parts of the PJM grid, including new nuclear upgrades planned at Calvert Cliffs in Maryland and North Anna in Virginia.

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<sup>37</sup> See Exhibit PHI-5C at 70-71.

<sup>38</sup> See Gausman Testimony, Exhibit PHI-1 at 37.

<sup>39</sup> *Id.*

<sup>40</sup> See Exhibit PHI-5B (2007 RTEP) at 17. PJM also stated in the 2007 RTEP that "[h]istorically, PJM Western, Central, Eastern and AP South interfaces ... have imposed binding constraints on PJM's ability to import power to eastern Mid-Atlantic and Baltimore/Washington/Northern Virginia load centers. These constraints often drive congestion charges arising from locational marginal price (LMP) differentials from out-of-merit-order dispatch necessary to alleviate such constraints. *Id.*

Ms. Kimberly D. Bose  
August 18, 2008  
Page 13

The MAPP will provide substantial congestion relief benefits. As Mr. Gausman discusses further in his testimony, a PHI consultant, ICF Resources, performed a congestion analysis, which used a 2013 PJM RTEP Case, and which included other major PJM projects: the Prexy - 502 Junction - Mount Storm - Meadow Brook - Loudoun transmission line, the Amos - Bedington - Kempton transmission line, and the Susquehanna - Roseland transmission line included in the base case. This analysis demonstrated the effects of the MAPP Project by analyzing anticipated conditions in 2013 on the assumption that the MAPP Project had been built, and then analyzing those same conditions on the assumption that the MAPP Project had not been built. The results of this study showed that if the MAPP Project were constructed solely as an AC line, it would provide \$113 million of annual savings to the Mid-Atlantic region, and \$70 million of annual savings to the entire PJM RTO. In addition the production cost, which is a measure of system efficiency, is projected to drop by \$35 million annually for the entire PJM RTO. These savings are projected to be even more pronounced when the portion of the line across the Chesapeake Bay is built as a 640 kV HVDC transmission line. The annual savings for the Mid-Atlantic region is projected to be \$174 million and for the entire PJM RTO the annual savings are projected to be \$91 million. In addition the production cost for the entire PJM RTO with the HVDC option is projected to drop by \$58 million annually.<sup>41</sup>

MAPP also will help integrate and reliably deliver PJM queued generation projects located in various parts of the PJM grid. For example, as PJM noted in the RTEP report on the MAPP Project, new nuclear generation additions are planned at Calvert Cliffs in Maryland, and at the North Anna facility in northern Virginia. The MAPP Project will enhance deliverability of new energy from those projects "into the Baltimore/Washington, DC area, onto the Delmarva peninsula and into southern New Jersey."<sup>42</sup> The ability of loads in the Baltimore/Washington region, the Delmarva peninsula, and New Jersey to access this additional generation will help to mitigate the effects of congestion in those regions.

The MAPP Project will also provide significant environmental benefits because it will facilitate compliance by the PHI Companies and others in eastern PJM with the RPS that most states in the region have adopted over the past several years.<sup>43</sup> A significant amount of the power acquired to satisfy these requirements will be wind power. Indeed, of all the renewable

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<sup>41</sup> See Gausman Testimony, Exhibit PHI-1 at 33-35.

<sup>42</sup> See Exhibit PHI-5C (2007 RTEP) at 71.

<sup>43</sup> For example, Maryland's RPS requires that retail suppliers in the state provide at least 20 percent of their electricity from renewable sources by 2022. Of this amount, two percent will have to come from solar, while the rest will have to come from wind, geothermal, biomass, and other, related energy sources. Similarly, Delaware requires that retail electric suppliers provide 20 percent of their power from renewable resources -- primarily solar, wind, and biomass -- by 2019, while New Jersey requires that 22.5 percent of their power come from renewable resources by 2021. Gausman Testimony, Exhibit PHI-1 at 35-36.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 14

resources specified under each state's RPS, wind power is expected to be the most abundant over the next few decades. As Mr. Gausman explains, most of the wind power available to serve these states is physically located in Appalachia and the Midwest. Maryland, Delaware, and New Jersey may need to import wind power from these resources to the west of their service territories notwithstanding the potential for significant off-shore wind generation along the Atlantic coast.<sup>44</sup> The MAPP Project substantially increases the import capability into the Mid-Atlantic region, will facilitate the delivery off-shore wind power, and permit the PHI Companies to acquire the wind resources necessary to satisfy their RPS obligations.

## VI. RISKS OF THE MAPP PROJECT

### A. Financial Risks

The financial risks associated with the MAPP Project are substantial. With an estimated project cost to PHI of \$950 million, the project will place significant stress on the financial metrics of the PHI Companies. As explained in the testimony of Mr. Kamerick, the investment in the MAPP Project will double the companies' transmission rate base at the end of 2007.<sup>45</sup> As Mr. Kamerick also explains, the average annual capital investment in transmission during the 2008 through 2012 period – which is when the MAPP line will be constructed – will be \$300 million. This is several orders of magnitude higher than the average annual transmission investment of \$60 million during the 2001 to 2007 period.<sup>46</sup>

One of the primary financial risks that the development of the MAPP Project poses to PHI is the potential impact on credit ratings. As Mr. Kamerick explains in his testimony, PHI's current senior unsecured debt rating from Standard & Poor's Rating Service ("S&P") is BBB-, and its senior unsecured debt rating from Moody's Investor Service ("Moody's") is Baa3.<sup>47</sup> Both ratings are at the very bottom of the "Investment Grade" scale, meaning that any further drop in those ratings will place PHI's senior unsecured debt in the "Non-investment grade" category -- more commonly known as the "junk bond" category. The substantial financial outlay required by the MAPP Project can place downward pressure on the credit ratings of PHI and the PHI Companies. As Mr. Kamerick explains, financing a capital program such as MAPP puts additional pressure on credit metrics and cash flows, especially serious complications for capital

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<sup>44</sup> For example, Delmarva Power recently signed agreements for an aggregate of 370 MW of wind energy. These agreements consist of 200 MW for off-shore wind energy located off the coast of Delaware and 170 MW of onshore wind energy located in Maryland and Pennsylvania.

<sup>45</sup> Kamerick Testimony, Exhibit PHI-21 at 6.

<sup>46</sup> *Id.* at 6.

<sup>47</sup> *Id.* at 10.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 15

intensive companies such as PHI.<sup>48</sup> In short, credit ratings below investment grade mean higher borrowing costs, and thus higher costs of service for the PHI Companies.

The sheer size of the MAPP Project also poses significant financial risks to the company. In order to finance the project, PHI intends to rely, in part, on an infusion of new equity. As Mr. Kamerick explains, however, new equity issuances require a corresponding increase in the company's earnings to prevent the dilution of both existing and new equity shares in the company. There are risks to the company's ability to fully recover all costs related to the project, which are highlighted by the persistent opposition to socialization of high-voltage upgrade costs throughout the PJM footprint. These risks are magnified by the generally weak state of the U.S. economy, and increasing challenges by stakeholders to the market designs adopted by the Commission for PJM and surrounding regions.<sup>49</sup>

Because the MAPP Project has a long lead time, there is a significant risk that the overall cost of the project could increase for reasons beyond the control of the PHI Companies. The risks presented by the substantial financial outlay required by the MAPP Project are compounded by the fact that the project has a long lead time. Mr. Gausman explains in his testimony that a long lead time poses the risk of unhedgeable increases in materials and labor costs. Indeed, over the past several years, the costs of materials used in the construction of electric generation and transmission infrastructure has increased substantially, and there is a risk that those costs may rise further in the coming years.<sup>50</sup>

Furthermore, most of the components of the MAPP Project will be specially-designed and specially-ordered by PHI, and there are only limited supplies of such equipment. There is also a limited pool of workers qualified to construct the core elements of such a project. The MAPP Project easily could be delayed – and its overall costs raised – due to a shortage of skilled workers, or an inability to procure necessary components when they are needed.<sup>51</sup> The long lead-time of the project and associated risks of cost increases also places downward pressure on the credit ratings of PHI and the PHI Companies. Indeed, a long lead-time and associated cost increases can complicate cost recovery, triggering a reduction in credit ratings. Thus, the financial risks of a long lead-time project are not only the risks of price increases for project inputs, but also the risks of higher debt service costs -- and in some cases, foreclosure from credit markets altogether -- as a result of lower credit ratings.

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<sup>48</sup> *Id.* at 9-10.

<sup>49</sup> *Id.* at 17-19.

<sup>50</sup> Exhibit PHI-18.

<sup>51</sup> Gausman Testimony, Exhibit PHI-1 at 52-55.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 16

In short, if PHI cannot give investors reasonable assurances of cost recovery and a reasonable ROE, PHI will face significant difficulties in attracting the capital necessary to construct the MAPP Project.<sup>52</sup>

## **B. Regulatory Risks**

The MAPP Project requires numerous federal and state regulatory approvals. As noted above, PHI must procure new rights-of-way for about 20 percent of the new line, and many of those new rights-of-way will cross wetlands and similarly-sensitive areas.<sup>53</sup> Permits must also be obtained for many portions of the line that will track existing rights-of-way because the construction will require portions of those rights-of-way to be widened. PHI is still in the relatively early stages of procuring the necessary federal and state approvals. A failure to obtain approval from any one of the necessary federal or state agencies could impair the entire project.

The key state-level permits that PHI must obtain are (1) a Certificate of Public Convenience and Necessity from the Maryland Public Service Commission; (2) a Coastal Zone Consistency Determination from the Maryland Department of Natural Resources; (3) a Tidal Wetlands Permit from the Maryland Board of Public Works; (4) a Maryland Historic Trust Approval from the Maryland Department of Planning; (5) Sub-aqueous Land Permits for Tidal Wetlands and Lease Agreements for Waters of the State from the Delaware Department of Natural Resources and Environmental Control; and (6) a Coastal Wetlands Permit from the New Jersey Department of Environmental Protection. In addition to obtaining permits from state agencies, PHI is required to consult with other agencies and non-governmental organizations to obtain many of the required permits.<sup>54</sup> Many of these permits are necessary because of the four water crossings required by the project. The most significant water crossing for the project is the Chesapeake Bay crossing, which has never before been done for an electric transmission line and thus there is little precedent on which PHI or the agencies may rely.

The key federal approvals that must be obtained are permits from the U.S. Army Corps of Engineers under Sections 401 and 404 of the Clean Water Act and Section 10 of the Rivers

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<sup>52</sup> Kamerick Testimony, Exhibit PHI-21 at 17; Avera Testimony, Exhibit PHI-24 at 7, 75-80.

<sup>53</sup> Obtaining new rights of way may be hampered by the fact that PHI does not have condemnation authority in Delaware. Gausman Testimony, Exhibit PHI-1 at 41.

<sup>54</sup> A complete list of the state permits required by PHI is attached to Mr. Gausman's testimony as Exhibit PHI-13, while the lists of entities that must be consulted are contained in Exhibits PHI-14 and PHI-15. Finally, in addition to the approvals that PHI must obtain, Dominion and PSE&G must obtain approvals for their portions of the MAPP Project. *See* Request for Transmission Investment Incentive, Virginia Electric and Power Company, Docket No. ER08-1207-000, filed July 1, 2008, at 15 (stating that the Dominion portion of the MAPP Project will require permitting authority from Virginia).

Ms. Kimberly D. Bose  
August 18, 2008  
Page 17

and Harbors Act. These permits are also subject to consultation by numerous federal agencies, including the U.S. Fish and Wildlife Service, National Park Service, U.S. Environmental Protection Agency, U.S. Coast Guard, National Oceanic and Atmospheric Administration, and National Marine Fisheries Service. Also, notification must be provided to the Federal Aviation Administration under the Federal Aviation Act due to the height required for these towers and to assure that there is no conflict with aircraft traffic.<sup>55</sup>

### C. Technical Challenges as well as Construction and Environmental Risks

The MAPP Project presents a number of significant technical challenges. The crossing of the Chesapeake Bay is an extraordinarily challenging proposition from the perspectives of technology and engineering, as well as environmental protection. The submarine crossing being proposed will be ten to twelve miles in length, depending on where the crossing originates and terminates. Besides designing the crossing, completing the necessary environmental studies and permits, and actually installing the submarine cables, other challenges include siting and installing the cable termination stations on each shore. This challenge is particularly acute on the Eastern Shore of Maryland in Dorchester County, where there are numerous cultural and environmentally sensitive areas that must be avoided.<sup>56</sup> As with all water crossings, the Chesapeake Bay and the Potomac, Patuxent, and Delaware Rivers crossings pose a number of challenges with respect to potential impacts on plant and animal life, as well as cultural resources. Similar issues are present with respect to the crossing of wetlands on the Eastern Shore of Maryland.

The presence of these environmental challenges can significantly complicate the environmental permitting process. Indeed, the iterative nature of the process provides a tremendous challenge to control the project cost and schedule. For example, if a small portion of a proposed route has insurmountable hurdles, PHI would have to identify a new route. This may require the re-initiation of studies and evaluation of routes not previously reviewed, thereby causing significant delays in the project schedule, with no guarantee that the new route under consideration would be approved.<sup>57</sup>

In addition, existing transmission lines will have to be taken out of service for periods of time during the construction of the MAPP Project.<sup>58</sup> These outages will have to be coordinated with PJM and other transmission owners, and likely will have to take place during low-load periods of the year. Coordination of these outages will add complexity to the

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<sup>55</sup> Exhibit PHI-16.

<sup>56</sup> Gausman Testimony, Exhibit PHI-1 at pp. 48-51.

<sup>57</sup> *Id.* at p. 43-44.

<sup>58</sup> *Id.* at p. 42.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 18

construction of the MAPP Project, and the need to minimize outage times will require that construction -- when it can commence -- be conducted speedily.

Finally, the high-voltage cable and advanced technology that PHI plans to incorporate into the project, as discussed in more detail below, present significant challenges of their own. High voltage 500 kV lines and related equipment, such as the ones to be used in the MAPP Project, must be custom-designed and proof tested. The manufacturers of such equipment are relatively few in number, as is the number of people with the necessary expertise in the construction, testing, and installation of such infrastructure. Thus, there is a risk that the necessary custom-designed technology or expertise might not be available when needed by PHI.

## **VII. REQUEST FOR INCENTIVE RATE TREATMENTS**

### **A. Standard for Incentive Rates**

The Commission has established three requirements that must be satisfied in order for an applicant to receive incentive rates. First, based on the express language of FPA Section 219, an “applicant must demonstrate that the facilities for which it seeks incentives either ensure reliability or reduce the cost of delivered power by reducing transmission congestion.”<sup>59</sup> Second, an applicant must demonstrate that “there is a nexus between the incentive sought and the investment being made.”<sup>60</sup> Finally, an applicant must demonstrate that the rates sought will be “just and reasonable and not unduly discriminatory or preferential.”<sup>61</sup> The rate treatments requested by PHI for the MAPP Project satisfy all three criteria.

### **B. FPA Section 219 Criteria**

Order No. 679 established that an

applicant will be entitled to a rebuttable presumption under section 219 [that it ensures reliability or reduces congestion] if: (i) the transmission project results from a fair and open regional planning process that considers and evaluates projects for reliability and/or congestion and is found to be acceptable to the Commission; or (ii) a project has received construction approval from an appropriate state commission or state siting authority.<sup>62</sup>

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<sup>59</sup> *PPL Electric Utilities Corp.*, 123 FERC ¶ 61,068 at P 28 (2008); *see also* 18 C.F.R. § 35.35(d)(2007).

<sup>60</sup> *Potomac-Appalachian Transmission Highline*, 122 FERC ¶ 61,188 at P 32 (2008) (“*PATH*”).

<sup>61</sup> *Id.* at P 25.

<sup>62</sup> Order 679 at P 58; *see also PATH*, 122 FERC ¶ 61,188 at P 29.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 19

In Order No. 679-A, the Commission clarified “the operation of this rebuttable presumption by noting that the authorities and/or processes on which it is based (*i.e.*, a regional planning process, a state commission, or siting authority) must, in fact, consider whether the project ensures reliability or reduces the cost of delivered power by reducing congestion.”<sup>63</sup>

In addition to establishing this rebuttable presumption, the Commission on numerous occasions has held that facilities approved under the PJM RTEP are eligible for this presumption. Indeed, the RTEP is a “fair and open regional planning process,”<sup>64</sup> and it specifically considers whether a particular project either ensures reliability or reduces congestion. For this reason, the Commission has repeatedly held that projects that have been approved as Baseline Projects in the PJM RTEP satisfy the first criterion for incentive rates. For these reasons, the Commission should find that the MAPP Project ensures reliability, and thus is eligible for incentive rates pursuant to FPA Section 219.

### C. Nexus Requirement

The Commission has clarified that the nexus test is met when an applicant demonstrates that the total package of incentives requested is “tailored to address the demonstrable risks or challenges faced by the applicant.”<sup>65</sup> In its evaluation of “whether an applicant has satisfied the required nexus test, the Commission will examine the total package of incentives being sought, the interrelationship between any incentives, and how any requested incentives address the risks and challenges faced by the applicant in constructing the project.”<sup>66</sup> Furthermore, the Commission has emphasized that there is no “but for” test for incentives – meaning that an applicant need not establish that it would not build the facilities absent the requested incentives. Rather, an applicant need only establish that there is a rational relationship between the incentives requested and the risks and benefits of the project.<sup>67</sup>

A key aspect of determining whether incentives satisfy the nexus test is whether the proposed upgrades are routine. If a project is not routine, it is more likely to satisfy the nexus standard.<sup>68</sup> To determine whether a project is routine, the Commission examines evidence on: (1) the scope of the project (*e.g.*, dollar investment, increase in transfer capability, involvement

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<sup>63</sup> Order 679-A at P 49; *PPL Electric Utilities*, 123 FERC ¶ 61,068 at P 29 (stating that PJM’s 2007 RTEP regional planning process consists of a fair and open process in accordance with Section 219).

<sup>64</sup> *PATH*, 122 FERC ¶ 61,188 at P 31.

<sup>65</sup> *PPL Electric Utilities*, 123 FERC ¶ 61,068 at P 31 (citing Order No. 679-A at P 40).

<sup>66</sup> *PATH*, 122 FERC ¶ 61,188 at P 32.

<sup>67</sup> See Order No. 679 at P 48.

<sup>68</sup> See *Baltimore Gas & Electric Co.*, 120 FERC ¶ 61,084 at P 48 (2007).

Ms. Kimberly D. Bose  
August 18, 2008  
Page 20

of multiple entities or jurisdictions, size, effect on region); (2) the effect of the project (*e.g.*, improving reliability or reducing congestion costs); and (3) the challenges or risks faced by the project (*e.g.*, siting, internal competition for financing with other projects, long lead times, regulatory and political risks, specific financing challenges, other impediments).<sup>69</sup> Based on these criteria, the MAPP Project is far from routine.

**1. The MAPP Project is Not Routine Because of Its Size and Scope.**

As noted previously, the MAPP Project is the largest infrastructure project ever undertaken by PHI, and one of the largest to be constructed in the PJM region over the past several decades. Also as noted, the \$950 million estimated cost to PHI is approximately equivalent to the PHI Companies' transmission rate base at the end of 2007.<sup>70</sup> The rise in average annual transmission expenditures that will accompany the development of the MAPP Project also indicates that the line is not routine. Over the period from 2001 to 2007, the PHI Companies' average annual capital expenditures on transmission were approximately \$60 million. By contrast, over the five years that it will take to develop the MAPP Project, their average annual capital expenditures on transmission will rise to \$300 million, with most of that increase attributable to the MAPP Project.<sup>71</sup>

As the Commission is well aware, investment in new high-voltage transmission facilities across the United States has lagged over the past 30 years, and where such facilities have been constructed, they have tended to address localized rather than regional issues. This has been particularly true of the Mid-Atlantic region that comprises the heart of the PJM footprint. The MAPP Project stands in contrast to localized, short-range transmission investments in the region over past decade. Indeed, the MAPP Project is intended to address reliability issues, congestion and import capability on a PJM-wide basis.

The non-routine nature of the MAPP Project is illustrated by its scope. It will connect four separate states. The resulting need to obtain permitting from numerous federal and state agencies significantly raises the regulatory risks for a project like the MAPP line, and is the mark of a transmission project that is far out of the ordinary.<sup>72</sup> Finally, the extraordinary nature of the MAPP Project also is illustrated by the fact that PHI must coordinate closely with three other large utilities in order to construct the line (Dominion, BGE, and PSEG), including coordinating the use of rights-of-way and optimizing design and construction activities.

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<sup>69</sup> *PPL Electric Utilities*, 123 FERC ¶ 61,068 at P 31.

<sup>70</sup> Kamerick Testimony, Exhibit PHI-21 at 6.

<sup>71</sup> *Id* at 6.

<sup>72</sup> Gausman Testimony, Exhibit PHI-1 at 43-48.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 21

## 2. The MAPP Project is Not Routine Because of Its Regional Benefits.

The Commission has consistently held that projects included as Baseline Projects in the PJM RTEP are not routine, and thus satisfy the nexus standard applicable to incentive rates.<sup>73</sup> The PJM-wide reliability benefits of the MAPP Project are themselves indicative of the extraordinary nature of the line.<sup>74</sup> As illustrated above, and in the attached testimony of Mr. Gausman, the MAPP Project will have beneficial impacts on three major west-to-east transmission lines in western and central Pennsylvania.

Similarly, the MAPP Project will have beneficial reliability impacts on facilities in and around the PHI Companies' service territories. Many of the major transmission facilities in that region will experience overloads very soon without the construction of the MAPP Project. Once the MAPP Project is constructed, however, those problems will be resolved until after 2022. These reliability benefits for major transmission facilities in both the PHI Companies' region, and in other parts of PJM, illustrates that the MAPP Project is not a routine transmission project.

The non-routine nature of the MAPP Project also is illustrated by the improvements in congestion and the increased transfer capability that the line will achieve. As outlined above, the MAPP project will traverse a number of zones in eastern PJM where congestion costs have been among the highest in all of PJM.<sup>75</sup> When the eastern interface is constrained, PJM is limited in its ability to supply load east of the constraint with electricity from more economical and environmentally friendly generating units west of the constraint -- which results in elevated nodal prices east of the constraint.<sup>76</sup> The MAPP project will add from 1000 to 2,500 MW of

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<sup>73</sup> See *Baltimore Gas & Electric Co.*, 120 FERC ¶ 61,084 at P 58.

<sup>74</sup> In *Baltimore Gas & Electric*, the Commission stated that

“[w]e note that PJM’s scrutiny of baseline projects is significant in our analysis of whether a project has met the nexus test...Projects that are identified as “baseline” projects in the PJM RTEP process are those that benefit customers in one or more transmission owner zones for the purpose of maintaining reliability or mitigating congestion on the PJM grid. Such projects therefore are, by definition, regional projects and thus, not routine. The Commission therefore finds that the regional benefits provided by PJM-approved baseline projects serve to make these facilities non-routine for purposes of the nexus requirement for an ROE incentive.

120 FERC ¶ 61,084 at P 58.

<sup>75</sup> Gausman Testimony, PHI-1 at 11-12, 33-35; Exhibit PHI-10.

<sup>76</sup> Exhibit PHI-5B at 17. PJM stated in the 2007 RTEP that “[h]istorically, PJM Western, Central, Eastern and AP South interfaces ... have imposed binding constraints on PJM’s ability to import power to eastern Mid-Atlantic and Baltimore/Washington/Northern Virginia load centers. These constraints often drive congestion charges arising from locational marginal price (LMP) differentials from out-of-merit-order dispatch necessary to alleviate such constraints. *Id.*

additional import capability across eastern PJM and add significant transfer capability.<sup>77</sup> This substantial increase in import and transfer capability will help integrate and reliably deliver PJM queued generation projects located in various parts of the PJM grid, including large baseload generation in various portions of PJM. These benefits demonstrate that the project is not a routine investment.

### **3. The MAPP Project Will Incorporate Significant Advanced Technologies.**

The non-routine nature of the MAPP Project is highlighted by the numerous advanced technologies that will be incorporated into the line.<sup>78</sup> As explained below, the line will incorporate a number of advanced AC technologies, including phase angle regulators, advanced conductor materials, switchable shunt reactors, microprocessor-based relays and digital fault recorders, fiberoptic protection and communications links, and integrated substation automation and equipment and line monitoring. PHI also intends to incorporate, subject to approval by PJM, state-of-the-art HVDC technology that will be more efficient, and give PJM more operational control over power flows, than either AC or classic DC technology.

These technologies fit within the categories of “advanced transmission technology” set forth in Section 1223 of EAct 2005 and, as well, will enable the MAPP Project to be a “smart grid.” As explained below, these upgrades will make the transmission of energy over the line more efficient, give PJM additional control over both power flows and power stability in the eastern portion of PJM, allow for modifications to increase the power flow over existing infrastructure with a minimum of additional upgrades, improve the quality of power flows in the eastern portion of PJM, allow for faster correction of interruptions or problems that could potentially lead to interruptions, and facilitate the development of competitive markets in PJM.

### **4. The MAPP Project Carries Significant Risk for PHI and the PHI Companies.**

Finally, the non-routine nature of the MAPP Project is illustrated by the significant financial risks that PHI and the PHI Companies are undertaking to build the line. As noted above, the costs to build the MAPP Project will place stresses on PHI’s cash flow, and potentially even upon its ability to provide reasonably-priced electric service. The long lead

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<sup>77</sup> See Exhibit PHI-11, demonstrating an increase in transfer capability of 2500 MW for the AC crossing and up to 5100 MW for a DC system.

<sup>78</sup> Consistent with the Commission’s policy, PHI’s request for the ROE adder is based on Order No. 679 and supported by the entire project including, but not limited to the use of advanced technology. *PATH*, 122 FERC ¶ 61,188 at P 13.

time needed to complete the project only exacerbates the financial risks of the project, because it increases the risk that costs will go up.

There are also substantial regulatory, technical, and environmental risks associated with the MAPP Project. As noted above, PHI requires approvals from numerous federal agencies and state agencies before proceeding with the project, and there is no guarantee that it will receive those approvals. PHI also requires the development of approximately 50 miles of new rights-of-way, many of them across large bodies of water (*e.g.*, the Chesapeake Bay) or sensitive wetlands (*e.g.*, Dorchester County on the Eastern Shore of Maryland). These are not the risks associated with a routine transmission project. Indeed, they are extraordinary, and illustrate that the MAPP Project is itself far from routine. The project's risks are described above in Section VI and detailed in the testimonies of Mr. Gausman and Mr. Kamerick.

**D. Each of the Requested Incentives is Tailored to Specific Risks and Benefits of the MAPP Project.**

**1. The Requested ROE for the MAPP Project Reflects the Significant Risks and Benefits of the Proposal, Including the Advanced Technologies to be Incorporated into the Facility.**

The requested ROE adder of 150 basis points, resulting in an ROE for the project of 12.8 percent, is justified by the significant risks and benefits associated with the MAPP Project, including the use of advanced technology.<sup>79</sup> As the Commission has recognized, a higher ROE is justified when there are "significant risks related to the magnitude of the financial investment required, the involvement of multiple jurisdictions, and regulatory risks."<sup>80</sup> For example, in *PATH*, the Commission approved an ROE of 14.3 percent -- within a zone of reasonableness of 6.7 to 16 percent -- for a 290-mile, \$1.8 billion transmission line that is being constructed by a joint venture between two utilities.<sup>81</sup>

Similarly, the Commission has recognized that a higher ROE is justified for benefits provided by a large-scale transmission project, particularly where it involves the use of significant advanced technologies.<sup>82</sup> The Commission has relied in part on the incorporation of

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<sup>79</sup> The PHI Companies are using as the base ROE the 11.3% ROE approved in the rate settlement in *Baltimore Gas & Electric Co.*, 115 FERC ¶ 61,066 (2006). Thus, the base ROE determination is not at issue in this proceeding and need not be subject to a hearing. In any event, the DCF analysis conducted by Dr. Avera supports the requested ROE. Avera Testimony, Exhibit PHI-24 at 87.

<sup>80</sup> *PPL Electric Utilities*, 123 FERC ¶ 61,068 at P 37.

<sup>81</sup> See *PATH*, 122 FERC ¶ 61,188 at P 104. In approving the *PATH* ROE, the Commission cited the substantial financial and regulatory risks associated with the project; see also *Southern California Edison*, 121 FERC ¶ 61,168.

<sup>82</sup> *Order No. 679*, P 298; see also *PATH*, 122 FERC ¶ 61,188 at P 13.

these technologies in granting an ROE requested by the applicant and, significantly, did not lower that ROE even though the applicant received authorization to recover 100 percent CWIP and abandonment costs.<sup>83</sup>

In the case of the MAPP Project, both the risks and the benefits provide a basis for granting PHI's requested ROE adder (an overall ROE of 12.8 percent). As outlined above, the MAPP Project presents substantial financial, regulatory, technical, and environmental risks. The \$950 million estimated cost of the project to the PHI Companies will impose substantial stresses on the PHI Companies' financial metrics, and those stresses have the potential to reduce the PHI Companies' credit ratings and therefore raise their costs of doing business. The numerous federal and state siting and environmental permits that PHI must procure in order to construct the facility also pose substantial risks for PHI and the PHI Companies. The processes for acquiring those permits are still in their early stages, and an unsuccessful effort to acquire the necessary authorizations could jeopardize the entire project. The risks associated with the permitting process are compounded by the fact that the project must receive approvals from agencies in multiple states.<sup>84</sup>

At the same time, the MAPP Project will incorporate substantial advanced technologies throughout the AC portion of the project, and PHI hopes to incorporate state-of-the-art DC technology into the Chesapeake Bay crossing.<sup>85</sup> Given the substantial risks and benefits associated with the MAPP Project, an ROE adder of 150 basis points reflects the complexity, risks, and benefits of constructing a transmission line of the scale of the MAPP Project, while remaining well within the zone of reasonableness.<sup>86</sup>

## **2. The Requested ROE Will Facilitate PHI's Ability to Finance the MAPP Project.**

The requested ROE will enable PHI to obtain equity financing for the facility. As Mr. Kamerick explains, PHI will use new equity issuances to fund a portion of the MAPP line, and in order to attract the new investors necessary to implement such financing, PHI will have to offer a return that is competitive with comparable investments. These risks are magnified by the size and scope of the financial outlay that will be required of PHI in order to construct the

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<sup>83</sup> *PATH*, 122 FERC ¶ 61,188 at P 13.

<sup>84</sup> *PATH*, 122 FERC ¶ 61,188 at P 39 (two states); *SoCal Edison* 121 FERC ¶ 61,168 at P 26 (two states); *PPL*, 123 FERC ¶ 61,068 at P 5 (two states); *TrAILCo*, 119 FERC ¶ 61,219 at P 18 (three states).

<sup>85</sup> These technologies, as discussed below, are comparable to the advanced technologies incorporated into the *PATH* project, and will provide substantial reliability and efficiency benefits to PJM as a whole.

<sup>86</sup> *Avera* Testimony, Exhibit PHI-24 at 88.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 25

project, and the mounting challenges to existing market structures by participants in eastern wholesale electricity markets (and the consequent regulatory uncertainties).

The ROE adder of 150 basis points for the PHI Companies will facilitate the use of new equity financing to fund the MAPP Project by making returns competitive with comparable investments in both the electric sector and other, similar industries. An ROE adder of 150 basis points for the PHI Companies also will add support for the PHI Companies' credit ratings, thus helping to keep PHI's overall debt costs reasonable.

Dr. Avera states that in evaluating the ROE for jurisdictional transmission operations, it is important to consider the uncertainties associated with the PHI Companies and the challenges they face in raising capital for transmission investment – including a recent focus on regulatory uncertainties.<sup>87</sup> Taking into account the requested adder, the allowed ROE for the PHI Companies reflects the need to provide returns that are sufficient to meet the established policy goals of promoting capital investment in transmission, and encouraging the deployment of advanced technologies, while recognizing investors' renewed focus on the associated risks, including the significant challenges specific to the MAPP project.<sup>88</sup> Dr. Avera concludes that these considerations confirm the reasonableness of the adder and the resulting ROE.<sup>89</sup>

**3. Recovery of CWIP Will Help Mitigate the Financial Stresses that Otherwise Would be Caused by the Substantial Financial Outlay Required and the Long Lead-Time of the MAPP Project.**

Earning a current return on CWIP will help relieve the financial stresses associated with the MAPP Project. The \$950 million cost of the MAPP Project is an extraordinary outlay for PHI and the PHI Companies, and will pose significant cash flow issues for those companies. These cash flow issues are likely to be exacerbated by the fact that the MAPP Project has a long lead-time, and requires significant expenditures over many years.

These cash flow issues have the potential to lower the credit ratings of PHI to levels below investment grade. As discussed above, the lowering of PHI's credit ratings to "junk" status would have significant adverse effects on both shareholders and utility customers because it would increase borrowing costs.<sup>90</sup>

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<sup>87</sup> *Id.* at 6, 13, 22-27, 75-77.

<sup>88</sup> *Id.* at 7, 89-91.

<sup>89</sup> *Id.* at 75-80, 89-91.

<sup>90</sup> Kamerick Testimony, Exhibit PHI-21 at 12-14; Exhibit PHI-23.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 26

Earning a current return on CWIP will help alleviate the cash flow issues that can trigger reductions in credit ratings. Indeed, as Mr. Kamerick explains in his testimony, cash flow is one of the primary determinants of a company's credit ratings. Thus, by helping to alleviate the cash flow problems that otherwise would be triggered by the financial outlays required by the MAPP Project, recovery of CWIP costs will help ensure that the PHI Companies' debt costs remain reasonable.<sup>91</sup>

As Dr. Avera concludes, including CWIP in rate base would ease the financial pressure on the PHI Companies associated with the MAPP project by improving cash flow and providing greater regulatory certainty, both of which are instrumental in supporting the PHI Companies financial integrity and ability to attract capital.<sup>92</sup> Considering the magnitude of the projected construction expenditures associated with the MAPP project, especially in light of the PHI Companies' capital expansion plans, including CWIP in rate base would help support financial integrity and remove disincentives to construction of new transmission by providing greater certainty and enhanced cash flows.<sup>93</sup>

#### **4. Approval of Cost Recovery in Case of Abandonment for Reasons Outside of PHI's Control Will Remove Significant Disincentives to the Construction of this Important Project.**

As outlined above, there are at least 35 state and federal approvals that must be obtained in order for the MAPP Project to be constructed.<sup>94</sup> A failure to obtain any of the necessary approvals could compel PHI to abandon or significantly alter the MAPP Project.

The development of the MAPP Project will require substantial financial outlays even before it will be certain that the line can go forward. Absent assurances that such costs can be recovered in the event of contingencies that are outside of the control of PHI and the PHI Companies, the risks associated with the project are increased substantially. Indeed, such risks are sufficiently high that they can have the effect of discouraging the construction of large, multi-state transmission facilities that require substantial new state and federal permits. The approval of recovery of prudently-incurred costs in the event of abandonment for reasons

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<sup>91</sup> As discussed by Mr. Kamerick, without CWIP in rate base, this project, by itself, has the potential to lower PHI's utilities' Funds Flow from Operations (FFO)/Debt ratio from 16.1% in 2007 to 13.5% in 2011. The 13.5% ratio is dangerously close to the 13.0% ratio level that would trigger a downgrading of PHI by Moody's. If allowed to recover CWIP in rate base, PHI's FFO/Debt ratio would remain relatively stable within a range of 16.1% to 15.4% over the same time period. Kamerick Testimony, Exhibit PHI-21 at 12-14 and Exhibit PHI-23.

<sup>92</sup> Avera Testimony, Exhibit PHI-24 at 83-85.

<sup>93</sup> *Id.*

<sup>94</sup> See Exhibit PHI-15; Exhibit PHI-16.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 27

outside the control of PHI or the PHI Companies helps to ameliorate these risks, and thus removes a significant disincentive to the development of the MAPP Project.

**5. The Entire Package of Incentives Requested by PHI is Carefully Tailored to Address the Specific Risks and Benefits of the MAPP Project.**

Considered as a whole, the rate incentives requested by PHI are tailored to the specific risks and benefits of the MAPP Project, and should be approved. PHI is mindful of the Commission's directive that a requested ROE reflect reductions in risk provided by other incentives such as CWIP and abandonment cost recovery.<sup>95</sup> Accordingly, PHI has adjusted its ROE request accordingly. The recovery of CWIP and abandonment costs does mitigate, to a certain degree, the risks associated with the MAPP Project. The ROE of 12.8 percent reflects an adjustment to account for the reduced risks of the project provided by the CWIP and abandonment cost recovery incentives. Indeed, without those incentives, the PHI Companies would be eligible for a higher ROE to account for the substantial risks of the MAPP Project. The requested ROE of 12.8 percent is indeed well below 15.6 percent, the high end of the zone of reasonableness.

Even after accounting for the reductions in risk provided by the other incentives, the MAPP Project still carries substantial risks, including risks posed by the use of advanced technologies. Even with the recovery of CWIP and abandonment costs, PHI still faces substantial risks in developing the project. As explained above, the equity investors that PHI will need to attract in order to finance the project will be concerned with the substantial financial outlay required, as well as the risk that the company might not be able to obtain full recovery of those costs, and the risk that equity shares in the company might be diluted. The CWIP and abandonment incentives do not address these risks fully; rather, PHI will need an ROE at the upper end of the zone of reasonableness in order to attract the necessary investment.

Furthermore, the package of rate treatments being sought for the MAPP Project is justified because the project will provide substantial benefits to both the PHI Companies' customers and customers across PJM. Those benefits, including reliability, economic, and environmental benefits, and the incorporation of advanced technologies that will improve operations of the project and lessen its environmental impacts, are outlined in more detail above. In sum, the entire package of rate treatments requested by PHI is carefully tailored to fit the specific risks and benefits of the MAPP Project. Accordingly, the Commission should approve the requested ROE adder of 150 basis points (yielding an ROE of 12.8 percent), as well as recovery of CWIP and prudent abandonment costs.

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<sup>95</sup> See *Southern California Edison*, 121 FERC ¶ 61,168 at n. 250.

Ms. Kimberly D. Bose

August 18, 2008

Page 28

### E. Just and Reasonable Requirement

The final criterion to be considered is that the requested rates be within the zone of reasonableness. As explained in Dr. Avera's testimony, the ROE that results from the application of the requested ROE adder is within the zone of reasonableness. Dr. Avera concludes that the 12.8 percent incentive-based ROE requested by the PHI Companies is reasonable for the MAPP project. In accordance with *Order Nos. 679 and 679-A*, this ROE falls well below the upper end of the 8.1 percent to 15.6 percent adjusted zone of reasonableness produced by applying the Commission's DCF approach to a proxy group of electric utilities. As the PHI Companies' witnesses have documented, the complexities of construction, scope of the investment, and reliance on new technologies with the MAPP project present substantial risks and challenges. An ROE above the midpoint of the range of reasonableness is consistent with these special risks, established Commission precedent, and the need to maintain the credit standing of the PHI Companies.<sup>96</sup> Thus, Dr. Avera's analysis and results reflect the regulatory uncertainties and financial challenges the PHI Companies face in raising capital for transmission investment.<sup>97</sup>

In addition, as outlined in his testimony, Dr. Avera developed an alternative proxy group using the slightly different DCF approach that was specified in *Virginia Electric and Power Company*,<sup>98</sup> and *PATH*.<sup>99</sup> This alternative proxy group analysis produces a range of 8.6 to 15.6 percent. Thus, Dr. Avera's analyses support an ROE zone of reasonableness for the PHI Companies of 8.1 to 15.6 percent (his recommended method) and 8.6 to 15.6 percent (using the *VEPCO* and *PATH* methodologies).<sup>100</sup> This testimony confirms that the 12.8% ROE is well within the zone of reasonableness, above the mid-point but substantially below the high end of 15.6 percent in each case.

Dr. Avera concludes that approval of the package of rate treatments requested by the PHI companies does not warrant any adjustment to the requested ROE. In *Order 679-A*, the Commission stated its intention to consider the total package of the requested rate treatments,

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<sup>96</sup> Avera Testimony, Exhibit PHI-24 at 87-92.

<sup>97</sup> *Id.*

<sup>98</sup> 123 FERC ¶ 61,098 (2008).

<sup>99</sup> 122 FERC ¶ 61,188 at P 32 (2008). As does Dr. Avera's preferred methodology, this analysis uses a proxy group of utilities located in PJM, the New York Independent System Operator, and ISO-New England. Dr. Avera develops an initial proxy group of 15 utilities using the same criteria adopted in *PATH* and then eliminates certain members of the proxy group that do not have comparable credit ratings to PHI, and that have DCF results that are unreasonably high or low.

<sup>100</sup> Avera Testimony, Exhibit PHI-26; Exhibit PHI-27.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 29

and noted that any lower risks “will be taken into account in any request for an enhanced ROE.”<sup>101</sup>

Including 100 percent of CWIP in rate base will support the PHI Companies’ credit standing, but it will not have a measurable impact on the overall investment risks of the PHI Companies or investors’ required rate of return.<sup>102</sup> Dr. Avera’s cost of equity estimates for the RTO Proxy Group developed using the Commission’s DCF method already reflects a reduction in the required risk premium associated with the opportunity to earn a return on CWIP.<sup>103</sup> Unlike other incentives available under the Commission’s rulemaking, including CWIP in rate base changes only the timing – not the absolute amount – of cost recovery.<sup>104</sup> Because including 100 percent of CWIP would not lead to a significant reevaluation of investors’ overall risk perceptions for the PHI Companies, there is no basis to reduce the requested ROE.

In addition, while the opportunity to recover costs associated with plant that is abandoned due to factors beyond the PHI Companies’ control moderates regulatory risk associated with new transmission investment, this reduction in investment risk is offset by the uncertainties that accompany a section 205 filing, which the Commission requires before abandoned plant costs can be recovered.<sup>105</sup>

Thus, approving an ROE within the high end, but below the highest point, of the zone of reasonableness would appropriately reflect the total package of incentives and is reasonable and consistent with *Order No. 679*. Taken together, these factors indicate that approving the package of incentives requested by the PHI Companies does not warrant a reduction in the requested 12.8 percent incentive ROE, especially in light of the risks specific to the MAPP project and the fact that this value is already significantly below the high end of the ROE zone of reasonableness. Moreover, the 12.8 percent ROE requested by the PHI Companies falls below the return approved by the Commission for other similarly situated transmission projects, which also included multiple incentives.<sup>106</sup>

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<sup>101</sup> *Order 679-A* at P 6.

<sup>102</sup> *Id.* at 90.

<sup>103</sup> *Id.* (stating that “the Commission has repeatedly recognized, including up to 50 percent of CWIP in rate base has already been found to be just and reasonable under FERC’s authority pursuant to section 205. Investors also recognize that it is not uncommon for state regulators to include CWIP in rate base when establishing retail rates.)

<sup>104</sup> The Commission distinguished between incentives that reduce the risks of investment (*e.g.*, abandoned plant recovery) and CWIP in *Order No. 679-A* at P 38. See also Avera Testimony, PHI-24 at 90.

<sup>105</sup> *Order No. 679* at P 166.

<sup>106</sup> *PATH*, 122 FERC ¶ 61,188 at PP 120, 121.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 30

## VIII. ADVANCED TECHNOLOGIES TO BE INCORPORATED INTO THE MAPP PROJECT

The MAPP Project will incorporate and deploy a series of advanced technologies that are among the most modern and sophisticated electrical systems being designed in the U.S. today. These advanced technologies fall within the types of technologies deemed to be “advanced transmission technologies” under Sections 1223(a)(3), (5), (8), (10), (14), (16), and (17) of the Energy Policy Act of 2005.<sup>107</sup> In addition, PHI plans to incorporate into the Chesapeake Bay crossing and the portion of the facility that traverses the Maryland Eastern Shore advanced VSC-based HVDC technology, subject to approval by the PJM Board. That technology falls within the “advanced transmission technology” specified by Sections 1223(a)(2), (6), and (9). Regardless of the cable crossing ultimately selected, the technology will be among the most advanced and innovative available. These advanced technologies will make the MAPP Project a “smart grid,” as discussed below.

### A. Overview of Advanced Technologies to be Used

As described in the testimony and accompanying technology statement, the various technologies that are expected to be deployed for use in the design of the MAPP project include:

**Phase Angle Regulators.** A phase angle regulator allows a transmission operator to control the flow of electricity over its wires. The effect of installing phase angle regulators on the MAPP Project will be to force increased power flow across the MAPP line, thereby reducing flows on other potentially constrained lines and providing PJM increased control on the overall transmission grid. This control, in turn, will provide for greater overall transfer capability into eastern PJM.<sup>108</sup> PHI will use regulators that require the largest phase angle and will be sized for 1000 MW, which makes them unlike any others currently in existence.

**Switchable Shunt Reactors.** In the transmission of electric energy on high-voltage lines over long distances, reactive power -- that is, the power used to maintain voltage on an AC line -- is generated or consumed, according to the load of the line. In certain circumstances, reactive power can be produced when a line’s overall loading is relatively low, a result that can disturb the necessary voltage levels on that line. For the MAPP Project, this generation of reactive power may be especially pronounced when the Chesapeake Bay cable crossing is lightly loaded. Switchable shunt reactors, which are installed at substations, are used to manage the amount of reactive power produced under these conditions, and thus to

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<sup>107</sup> Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005).

<sup>108</sup> Exhibit PHI-19 at 2.

Ms. Kimberly D. Bose

August 18, 2008

Page 31

ensure that voltage conditions on the line remain within acceptable limits.<sup>109</sup> The application voltage and sizes to be used for MAPP represent new uses of this technology.

**Advanced Conductor Materials.** Advanced conductor materials -- such as composites and non metallic cores -- increase the amount of power that can flow across a circuit, and thus allows a transmission developer to maximize use of existing infrastructure, such as towers, substations, and rights-of-way, without having to make changes to that infrastructure. They also allow a transmission developer to minimize the footprint of a transmission facility, which is particularly helpful in environmentally sensitive locations such as wetlands.<sup>110</sup>

**Microprocessor-Based Relays and Digital Fault Recorders.** Microprocessor-based relays and digital fault recorders can detect, record, and analyze faults and other reliability and power quality events at substations. They allow the transmission system to self-diagnose detected problems, and facilitate the correction of those problems, often automatically.<sup>111</sup> Microprocessor-based relays and digital fault recorders thus provide for a “smart substation.” A more complete diagram of the type of smart substation that PHI will include as part of the MAPP Project is attached to Mr. Gausman’s testimony as Exhibit PHI-1. MAPP will utilize the latest advances in this technology.

**Fiber Optic Protection and Communications Links.** Fiber optic protection and communications links permit an integrated communication system to provide clearer, higher-speed, and more reliable communications between company employees, remotely-monitored equipment and operations centers. As part of the MAPP Project, PHI intends to install fiber optic cable and associated advanced high capacity communications equipment in order to tie together the fiber networks of PHI’s three electric utilities (Pepco, Delmarva and Atlantic City Electric). Advances in this technology will allow PHI to design superior telecommunication networks that enable high bandwidth communications, improve PHI’s ability to efficiently operate the three regional utilities, and allow PHI to back up regional control centers efficiently and reliably.<sup>112</sup>

**Integrated Substation Automation and Equipment and Line Monitoring.** Integrated substation automation and equipment and line monitoring refer to “smart” remote terminal units, “smart” sensors, and other sensors that permit the remote operation and monitoring of the substations, equipment and interconnecting circuits that will make up the MAPP Project. PHI will install such equipment at each of the substations along the MAPP

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<sup>109</sup> *Id.* at 3.

<sup>110</sup> *Id.*

<sup>111</sup> *Id.* at 4.

<sup>112</sup> *Id.* at 6.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 32

Project's route. This technology builds upon the fiber optic infrastructure, outlined above. Such fiber optic technology permits the rapid transfer of information on system conditions to PHI's state-of-the-art control centers, and PJM and, in many cases, allows for remote correction of problems that otherwise might threaten power quality or reliability.<sup>113</sup>

**Underground/Submarine AC Cable.** For the MAPP Project, PHI intends to use multiple parallel segments of a Self-Contained Fluid Filled Cable for the submarine portion of the Chesapeake Bay crossing (if the HVDC option, discussed below, is not approved by PJM). The crossing will require nine legs of cable to obtain the same capacity rating of the overhead portion of the line. The use of high voltage AC transmission cables is limited around the world. PHI is aware of only one other 500 kV submarine line, which is in Canada and which has only a single line, a smaller conductor size and is lower in capacity. MAPP will likely be the highest capacity AC submarine cable system in the world.

**High Voltage Direct Current Technology.** As part of the RTEP process, PHI and PJM have explored the benefits of incorporating state-of-the-art DC technology into the portion of the line that crosses the Chesapeake Bay and the Eastern Shore of Maryland.<sup>114</sup> PHI has conducted studies to assess the impacts on power flows, environmental impacts of AC versus advanced DC technology, and risks associated with incorporating advanced DC technology into the MAPP Project.<sup>115</sup> PHI has determined that the optimal technology is an advanced DC technology known as Voltage Source Converter ("VSC") HVDC technology. As discussed further in Mr. Gausman's testimony and the technology statement, this technology is state-of-the-art, and has been used in commercial operations for only a few years. It has the benefits of standard DC technology -- including allowing PJM an increased measure of operational control over the PJM transmission system and also provides a number of additional benefits that are particularly important in the construction of the MAPP Project, such as resolving the voltage rise issue described above associated with the AC line and increasing transfer capacity over the line. In addition, the VSC HVDC technology will allow PHI to install a cable a much farther distance from Calvert Cliffs across the Chesapeake Bay without having to construct a new substation immediately on the eastern shore of the Bay in Dorchester County, Maryland, and will allow PHI to increase the capacity of that portion of the line in the future with a minimum of upgrades.<sup>116</sup> The incorporation of VSC HVDC technology will raise the overall cost of the

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<sup>113</sup> *Id.* at 8.

<sup>114</sup> The use of VSC HVDC technology was brought before the TEAC in early June 2008, but was subsequently deferred by the PJM Board of Managers to allow the development of additional information on which the Board might base its decision. It now appears that the PJM Board may take up the issue again in the near future. Gausman Testimony, Exhibit PHI-1 at 26.

<sup>115</sup> Gausman Testimony, Exhibit PHI-1 at 25-26.

<sup>116</sup> Exhibit PHI-19.

MAPP Project to approximately \$1.4 billion. The DC technology would provide substantial additional benefits to both the MAPP Project and the PJM grid, and PHI is hopeful that the PJM Board will approve the incorporation of that technology within a relatively short period of time. If the PJM Board does not approve advanced HVDC technology for this portion of MAPP, the MAPP project will use the AC technology discussed above.

**B. The MAPP Project Will Be Operated as a Smart Grid**

The combined effect of these advanced technologies will be to render the MAPP Project a “smart grid.” As noted above, PHI’s technology installations will be consistent with interoperability encouraged by the Department of Energy and the Gridwise Architecture Council.<sup>117</sup>

At the transmission level, “smart grid” features allow the grid operator considerably more control, and provide for better optimization of resources, than a typical transmission system. As Mr. Gausman explains in his testimony, the key features of a “smart grid” at the transmission level include the ability to (1) optimize assets and operate efficiently, (2) minimize sags, spikes, and other disturbances, (3) correct any problems quickly, and with a minimum of intervention by the grid operator, (4) monitor and analyze the condition of equipment, and (5) facilitate the development of competitive markets by expanding available transfer capability, therefore giving loads more supply options.<sup>118</sup>

The AC and HVDC technologies that PHI intends to incorporate into the MAPP Project meet all of these criteria. They will make the transmission of energy over the line more efficient, and give PJM additional control over both power flows and power stability in the eastern portion of PJM. They also will allow for modifications to increase the power flow over existing infrastructure with a minimum of additional upgrades, improve the quality of power flows in the eastern portion of PJM, and allow for faster correction of interruptions or problems that could potentially lead to interruptions. Finally, by giving PJM additional control over the power flows and power stability of the line, and by allowing for additional power flows with a minimum of physical upgrades, the advanced technology to be incorporated into the MAPP Project will facilitate competitive markets in PJM.<sup>119</sup>

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<sup>117</sup> In evaluating technologies for deployment in connection with MAPP, PHI will consider, as appropriate, the *Decision-Makers Interoperability Checklist*, a tool developed by the GridWise Architecture Council. See <http://www.gridwiseac.org/about/publications.aspx>.

<sup>118</sup> Gausman Testimony, Exhibit PHI-1 at 66-67.

<sup>119</sup> *Id.* at 67-69.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 34

**IX. TARIFF AMENDMENTS NECESSARY TO IMPLEMENT INCENTIVE RATES**

Mr. Alan C. Heintz describes the tariff revisions that will allow PHI to recover CWIP in rate based in connection with the MAPP project and how those revisions will be implemented. Pepco, Delmarva, and Atlantic City will be required to amend the formula to implement CWIP recovery. Mr. Heintz explains and supports the changes to the formula and testifies that the changes comport with Commission regulations and are substantially similar to the approved formulas of other transmission-owning utilities for whom CWIP recovery has been allowed.<sup>120</sup> The utility affiliates will also amend the formula to reflect the recovery of the requested ROE adder described above.

Mr. Heintz also describes how allowing a current return on CWIP reduces construction and financing costs and, rather than capitalizing those costs, accruing AFUDC and cutting them into rate base when the project is completed, results in a savings to transmission service customers of \$200 million over the life of project.<sup>121</sup> As shown in the testimony of Mr. Heintz, the recovery of CWIP in rate base will produce an overall cost savings to ratepayers when compared to the use of AFUDC during the life of the project.

**X. ADDITIONAL REQUIREMENTS FOR RECOVERY OF CWIP**

Mr. Heintz sponsors Statement BM as required by Section 35.13(h)(38) of the Commission's regulations.<sup>122</sup> PHI-33 provides the general description of the planning process required in Statement BM and the support for the request for certain waivers of, among other things, the requirement related to forward looking allocators.

In addition, in Exhibit PHI-37, Warren Smiley, the Director, Technical Research and Controls for PHI Service Company, explains the accounting controls in place that will ensure that the operating affiliates do not double-recover AFUDC and a current return on CWIP. Mr. Smiley explains that during the MAPP construction period PHISCO will use both the SAP Project and the PowerPlant asset accounting systems and incorporate unique project identification and work order numbers to accumulate MAPP construction costs in accordance with Electric Plant Instruction 3. The PowerPlant system will recognize the unique identifiers and not calculate and capitalize AFUDC on the MAPP project as a component of the costs to be recorded in account 101, Electric Plant in Service.<sup>123</sup>

<sup>120</sup> Heintz Testimony, Exhibit PHI-30 at 4-5.

<sup>121</sup> Exhibit PHI-35.

<sup>122</sup> Heintz Testimony, Exhibit PHI-30 at 6; Exhibit PHI-33.

<sup>123</sup> Smiley Affidavit, Exhibit PHI-36 at 2.

Ms. Kimberly D. Bose  
August 18, 2008  
Page 35

## **XI. PROPOSED EFFECTIVE DATE AND REQUESTED WAIVERS**

Mr. Heintz sponsors Exhibit PHI-34, which contains Statements BG and BH, showing the rate impacts of the requested ROE and CWIP incentives on PHI Companies' rates in 2008, the year the requested incentives would go into effect. PHI respectfully requests that the Commission waive the requirement to provide Period I and Period II information for Statements BG and BH required under 18 C.F.R. §§ 35.13(h)(32) and (33). The Commission has previously granted such waivers in formula rate filings.<sup>124</sup>

PHI also requests any other waivers of the Commission's regulations necessary for the proposed incentive rate treatments to become effective on November 1, 2008.

## **XII. LIST OF PERSONS ON WHOM THIS FILING IS BEING SERVED**

PHI will make copies of this filing available for inspection at the PHI Companies' offices. In addition, on behalf of PHI, PJM will serve a copy of this filing on all PJM Members (which include all affected transmission customers) and on all state utility regulatory commissions in the PJM Region by providing a link to such posting via e-mail. PHI requests waiver of the requirement to serve by mailing paper copies. Waiver of paper service is consistent with the Commission's decision to establish electronic service as the default method of service on service lists maintained by the Commission's Secretary.

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<sup>124</sup> See *Baltimore Gas and Electric Co., et al.*, 111 FERC ¶ 61,308, at P 56 (2005) (stating that the "filing by the PHI TOs is to establish a formula rate using Form 1 data and, therefore, it is not clear that full Period I and Period II data are needed to evaluate this proposal.").


Ms. Kimberly D. Bose  
August 18, 2008  
Page 36

**XIII. CONCLUSION**

Because of the high risks and substantial benefits associated with the planned facility, PHI requests that the Commission approve for the MAPP Project: (1) a return on equity ("ROE") adder of 150 basis points, resulting in a 12.8 percent ROE; (2) authorization to include in rate base 100 percent of construction work-in-progress ("CWIP"); and (3) authorization to recover 100 percent of all prudently-incurred development and construction costs if the MAPP Project is abandoned or cancelled for reasons beyond the control of the PHI Companies. PHI also requests that the Commission accept the proposed amendments to the PJM Open Access Transmission Tariff ("OATT") necessary to permit the PHI Companies to recover the incentive rate treatments requested in this filing. PHI requests an effective date of November 1, 2008 for the revised tariff sheets.

Respectfully submitted,

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