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April 8, 2009

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RE: PSC Case No. 9179 (MAPP) - DNR Data Request No. 1 to PEPCO/BGE

Dear Messrs. Boone, Mellot and Guy:

Accompanying this letter is DNR Data Request No. 1 to Pepco Holdings, Inc, Potomac Electric Power Company, Delmarva Power and Light Company, and Baltimore Gas and Electric Company in PCS Case No. 9179. Please provide responses as promptly as possible, but no later than 10 business days upon receipt of this Data Request. If responses to certain questions are available in advance of others, please provide such responses as soon as available rather than waiting to complete responses to each question of the Data Request.

To facilitate the use of the answers before the Commission, please answer each question separately in writing. For each response, please state the question being answered followed by the response on the same page. For each separate answer, please identify the name and title of the principal person who supplied the information for the answer. It will expedite our analysis if you can provide the data responses electronically. If it is possible to furnish your answers electronically, only one set of hard copy answers need be served on the State agencies.

All responses, both hard and electronic copies, should be addressed to:

M. Brent Hare
Brent A. Bolea
Assistant Attorneys General
c/o Maryland Energy Administration
1623 Forest Drive, Suite 300
Annapolis, Maryland 21401
email: bhare@energy.state.md.us
bbolea@energy.state.md.us

Please also furnish copies of all responses directly to:

Sandi Patty
Power Plant Research Program
Maryland Department of Natural Resources
Tawes State Office Building, B-3
580 Taylor Avenue
Annapolis, Maryland 21401
email: spatty@dnr.state.md.us

With respect to data requests which seek the production of documents, the term "document" means any writing whatsoever (including any study, report, memorandum, letter, or any information stored in a computer) in the possession or control, or available from PJM or otherwise, to PEPCO, Delmarva or BGE, and their consultants or counsel. If any document covered by this request is withheld, please identify each such document and the reasons constituting the basis for withholding the document.

These requests are continuing in nature. All responses must be corrected or updated as necessary to provide DNR with the most current information available to PEPCO, Delmarva and BGE.

If you are unable to answer or object to any data request, please contact me at your earliest opportunity so that we can attempt to achieve a reasonable accommodation. Questions on the substance of the questions should first be directed to the Project Manager, Sandi Patty, at the Power Plant Research Program. Ms Patty's telephone number is (410) 260-8668. Thank you for your cooperation.

Sincerely,



Brent A. Bolea
Assistant Attorney General

bab/Enclosure

cc: Parties/Service List
S. Patty, PPRP

PPRP Data Request No. 1
Mid-Atlantic Power Pathway (MAPP) 500-kV Transmission Line Project
PSC Case No. 9179
Pepco Holdings, Inc., PEPCO, Delmarva, & BGE

Needs Determination

- 1-1 In Volume II of the Needs Determination, Mr. Mitchell (p. 17) testified that “PJM incorporated the MAPP Project and several other large scale projects as part of the 2007 RTEP in order to resolve reliability problems originally identified at the April 2006 TEAC meeting”. Mr. Mitchell (p. 16) also testifies that “PJM considered approximately 30 transmission alternatives including the MAPP Project.”
- a. Please indicate whether the approximately 30 transmission alternatives reviewed by PJM in the 2006 and 2007 time frame were exclusively alternatives to the MAPP Project.
 - b. If the 30 transmission options reviewed were alternatives to the MAPP Project, please reconcile this assertion with the Direct Testimony of Mr. Mitchell at page 16.
 - c. Please list each reliability problem originally identified at the April 2006 TEAC meeting.
 - d. Please explain how the MAPP Project helps resolves or does not resolve each of these reliability problems.
 - e. Please provide maps showing the location of equipment that is associated with each reliability problem, including the origination and termination points for any transmission lines that are associated with any reliability problems. Multiple reliability problems can be combined onto a single map to minimize the number of maps required to respond to this request provided that the location of equipment that is associated with each reliability problem is clearly identifiable by the naked eye.
 - f. Please provide maps showing the location of the approximately 30 transmission system alternatives referred to in this testimony. Multiple alternatives can be combined onto a single map to minimize the number of maps required to respond to this request provided that the location of each alternative is clearly identifiable by the naked eye.
- 1-2 Please provide hardcopies and electronic copies of all documents presented at PJM committee or sub-committee meetings between 2005 and the present that addressed the MAPP Project.

- 1-3 In Volume II of the Needs Determination, Mr. Mitchell testifies (p. 6) that “the facilities comprising the MAPP Project are needed to address 25 electric reliability criteria violations, arising from overloaded transmission facilities. In addition, Paul McGlynn has identified, and Pepco and Delmarva have verified, several voltage collapse scenarios that would occur beginning in 2013 if the MAPP Project is not constructed.”

In Volume I of the Needs Determination, Mr. Gausman (p. 4) testifies that the MAPP Project will “[r]esolve at least 36 “Reliability Violations” some anticipated to occur as soon as 2013, including an unacceptable risk of voltage collapse and a resulting widespread unscheduled outage or “blackout”.” Mr. Gausman (p. 25) also testifies that “[t]he MAPP Project provides a solution to a large number of potential violations identified in PJM’s 15-year planning horizon.”

The Application to Establish the Overall Need of the Project (Volume I, p. 9) states that “PJM conducted both short term and long term analyses and found that numerous reliability violations will occur beginning in 2013 absent significant transmission enhancements. PJM sought transmission solutions to address these issues. PJM evaluated over 30 alternatives to address the expected reliability violations.”

- a. Please indicate if any of these references to “reliability violations” or “issues” are to a set of reliability violations other than those shown in Exhibits PFM-1 and PFM-2 attached to Mr. McGlynn’s testimony.
 - b. For any references to a set of reliability criteria violations other than those shown in Exhibits PFM-1 and PFM-2, e.g., Mr. Mitchell’s statement on page 17 of his Direct Testimony, please provide a list of the reliability violations to which the Application or Direct Testimony refers.
- 1-4 In Volume I of the Needs Determination, Mr. Gausman (p. 4) testifies that the MAPP Project will “[p]rovide, from the perspective of system operations now and into the foreseeable future, the most robust, economic and flexible solution to known and expected reliability and operational challenges.” What are the known and expected operational challenges to which Mr. Gausman refers? Please fully describe why these operational challenges are important to consider when evaluating the MAPP Project.
- 1-5 Page 9 of the Application (Volume I) states that “PJM evaluated over 30 alternatives to address the expected reliability violations.”

In Volume I of the Needs Determination, Mr. Gausman (p. 25) testifies that “PJM reviewed approximately 30 transmission alternatives, and two other 500 kV transmission solutions.”

In Volume III of the Needs Determination, Mr. Herling (p. 30-31) testifies that “[i]n June and October 2007, the PJM Board formally approved three additional backbone transmission facilities as a result of the 2007 RTEP process analysis and findings. These three backbone projects were the PATH line, the Susquehanna – Roseland line and the MAPP Project.” Mr. Herling goes on to testify that “[t]ransmission system options were considered in approximately 30 alternative combinations and yielded a number of key conclusions that guided selection of the upgrades submitted to and approved by the PJM Board in 2007. Additional details are presented in the testimony of Paul McGlynn.”

- a. Please list the 30 transmission alternatives to which these statements refer.
- b. What were the two other 500 kV transmission solutions to which Mr. Gausman refers?
- c. Please indicate whether the 30 alternative combinations of transmission system options referred to by Mr. Herling that were considered in arriving at the PJM recommendations that went to the PJM Board in June and October 2007 were all exclusively considered as alternatives to the MAPP Project.
- d. Please identify where in Mr. McGlynn’s testimony he discusses the 30 alternative combinations of transmission system options that are discussed by Mr. Herling as referred to above.
- e. Please list each “key conclusion” to which Mr. Herling is referring. Also, please explain how each key conclusion “guided” selection of the upgrades.

1-6 Within the Needs Determination, Volume 1, Gausman testimony, exhibit WMG-7C, provides the 2007 RTEP. Under section heading “3.2.3 – Alternatives Considered” for the Susquehanna – Lackawanna – Jefferson – Roseland 500 kV line (p. 60), the 2007 RTEP explains that “PJM considered various transmission alternatives to the Susquehanna – Roseland line. One main alternative considered was a circuit from Bossards through Jefferson to Roseland.”

Under a section heading “3.3.3 – Alternatives Considered” for the Amos – Bedington – Kempton line (p. 65), the 2007 RTEP explains that “[s]everal transmission alternatives were evaluated prior to selecting the Amos –

Bedington – Kemptown solution” and then lists seven different transmission lines that were considered.

Under a section heading “3.3.4 – Alternatives Considered” for the Project (p. 72), the 2007 RTEP explains that “[t]he MAPP transmission project was considered in two pieces, as noted. The first section – “MAPP I” – included the portion of the line between Possum Point and Calvert Cliffs. The second section – “MAPP II” – included the remaining portion of the line from Calvert Cliffs to Salem.”

- a. Will Mr. Herling confirm that multiple transmission alternatives to the Susquehanna – Lackawanna – Jefferson – Roseland 500 kV line were considered by PJM as part of the 2007 RTEP, as is clearly shown in the 2007 RTEP in Section 3.2.3?
- b. Will Mr. Herling confirm that multiple transmission alternatives to the Amos – Bedington – Kemptown line were considered by PJM as part of the 2007 RTEP, as is clearly shown in the 2007 RTEP in Section 3.3.3?
- c. Will Mr. Herling confirm that first section of the MAPP Project and the second section of the MAPP Project are, in total, the MAPP Project? If not, please explain why not.
- d. Please indicate whether the transmission alternatives listed in Section 3.4.3 of the 2007 RTEP, which is the section of the 2007 RTEP that describes the alternatives to the MAPP Project that were considered by PJM, actually are transmission alternatives to the MAPP Project? If so, please explain why.

1-7 Table 3.1 (p. 58) in the 2007 RTEP lists the reliability criteria violations driving the need for the Susquehanna – Lackawanna – Jefferson – Roseland 500 kV line. Tables 3.7 and 3.8 (p. 70) list the impact of the MAPP Project on load deliverability criteria violations.

- a. Will Mr. Herling confirm that no reliability criteria violations shown on Tables 3.7 and 3.8 also appear on Table 3.1?
- b. Is it then fair to conclude that transmission alternatives to the Susquehanna – Lackawanna – Jefferson – Roseland 500 kV line considered by PJM during the 2007 RTEP process cannot also be legitimately considered as transmission alternatives to the MAPP Project? If this is not a fair conclusion to reach, please explain.

1-8 Table 3.4 in the 2007 RTEP (p. 65) lists the reliability criteria violations driving the need for the Amos – Kemptown line. Tables 3.7 and 3.8 (p. 70)

list the impact of the MAPP Project on load deliverability criteria violations.

- a. Will Mr. Herling confirm that only three reliability criteria violations shown on Tables 3.7 and 3.8 also appear on Table 3.4, and these three reliability criteria violations are: Keystone – Airydale 500 kV, Airydale – Juniata 500 kV #1, and Airydale – Juniata 500 kV #2?
- b. Regarding the Keystone – Airydale 500 kV reliability criteria violation, Table 3.4 indicates that this facility will be overloaded in 2012, and Table 3.7 indicates that this facility will be overloaded in 2020 without the MAPP Project. Please confirm that the information presented in Table 3.7 reflects the assumption that the Amos – Kemptown line is already in service.
- c. Is it then fair to conclude that transmission alternatives to the Amos – Kemptown line considered by PJM during the 2007 RTEP process cannot also be legitimately considered as transmission alternatives to the MAPP Project? If this is not a fair conclusion to reach, please explain.
- d. What transmission alternatives or combinations of transmission alternatives did PJM review during the 2007 RTEP process to resolve the seven reliability criteria violations listed in Table 3.7 that do not involve the Keystone – Airydale 500 kV line or the Airydale – Juniata 500 kV lines?
- e. What transmission alternatives or combinations of transmission alternatives did PJM review during the 2007 RTEP process to resolve the eight reliability criteria violations listed in Table 3.8 for the Delmarva Peninsula?

1-9 In Volume III of the Needs Determination, Mr. McGlynn (p. 30) testifies that “[i]n addition to the MAPP solution that was selected, consideration was also given to installing voltage support equipment to correct the low voltage and voltage collapse conditions” and “[a] new 500 kV circuit from Conastone to Peach Bottom, a new 500 kV circuit from Peach Bottom to Keeney as well as a 500 kV circuit that combined each of these alternatives from Conastone to Peach Bottom to Keeney were also considered.” Mr. McGlynn also testifies (p. 31) that “[c]onsideration was given to installing new conductors so that the overloaded facilities were capable of transporting more power.”

- a. Would Mr. McGlynn agree that voltage support equipment and a 500 kV line from Conastone to Peach Bottom to Keeney, described on page 30 of his Direct Testimony, and the alternative of installing

new conductors on overloaded facilities, described on page 31 of his Direct Testimony, are the only transmission alternatives to the MAPP Project presented in the Application and the supporting testimony and exhibits in this case? If not, please explain.

- b. Please list any combination of transmission alternatives to the MAPP Project, in addition to the alternatives described in Mr. McGlynn's testimony at pages 30 and 31, that PJM personnel considered prior to recommending the MAPP Project to the PJM Board.
 - c. If there were any other combinations of transmission alternatives that PJM considered as an alternative to the MAPP Project, please explain why PJM witnesses Herling and McGlynn did not include a discussion of these alternatives in the Application and the supporting testimony and exhibits in this case?
- 1-10 In Volume II of the Needs Determination, Mr. Mitchell (p. 15) testifies that "[t]he number of overloads projected to occur on numerous transmission facilities and the system voltage problems identified throughout the Mid-Atlantic Region indicates an extra-high voltage ("EHV") path is necessary." Mr. Mitchell concludes in his testimony (pp. 15-16) that "[t]his EHV line needs to start west of the Mid-Atlantic Region in Dominion Virginia Power's territory and traverse the entire Mid-Atlantic Region to terminate at the Salem substation in southern New Jersey."
- a. What is the basis for the conclusion that the referenced reliability violations require a solution involving construction of an extra-high voltage transmission line that needs to start in Dominion Virginia Power's territory?
 - b. Are there no points west of PJM's Eastern Transfer Interface (see McGlynn Direct, p. 24) other than in Dominion Virginia Power's territory that would serve as an origination point for an extra-high voltage transmission line designed to address the referenced reliability violations? Please explain.
 - c. Are there no points east of PJM's Eastern Transfer Interface (see McGlynn Direct, p. 24) other than the Salem substation in southern New Jersey that would serve as a termination point for an extra-high voltage transmission line designed to address the referenced reliability violations? Please explain.
 - d. What long term transmission solutions to the referenced reliability violations did Mr. Mitchell review as alternatives to the MAPP Project?

- e. What were the origination and termination points for any transmission lines reviewed by Mr. Mitchell as alternatives to the MAPP Project?
- 1-11 In Volume II of the Needs Determination, Mr. Mitchell testifies (p. 15) that “[a]fter reviewing the studies performed by PJM and the studies commissioned by Pepco and Delmarva and performed under my direction by Siemens, it is clear that the MAPP Project provides the best long term solution to the reliability violations and voltage collapse scenarios that are expected to begin occurring in 2013 and beyond if these facilities are not constructed.”
- a. Please list each alternative transmission solution that Mr. Mitchell reviewed as an alternative to the MAPP Project, and please explain why Mr. Mitchell concludes that the MAPP Project is superior to each of these alternatives.
 - b. Please list each study performed by PJM that Mr. Mitchell reviewed and which Mr. Mitchell used as a basis to formulate his opinion that the MAPP Project provides the best long-term solution to reliability violations and voltage collapse scenarios presented in this case. Please also explain how each study reviewed by Mr. Mitchell helped him formulate his opinion.
 - c. Please explain how the Siemens study helped Mr. Mitchell formulate his opinion that the MAPP Project provides the best long-term solution to reliability violations and voltage collapse scenarios presented in this case.
 - d. Please list all alternatives to the MAPP Project that Mr. Mitchell directed Siemens to study, and why Mr. Mitchell directed Siemens to study these alternatives.
- 1-12 In Volume I of the Needs Determination, Mr. Gausman testifies (p. 4) that the MAPP Project will “[p]rovide, from the perspective of system operations now and into the foreseeable future, the most robust, economic and flexible solution to known and expected reliability and operational challenges.”
- a. Define “robust” as used by Mr. Gausman in this testimony.
 - b. In Mr. Gausman’s opinion, why is the MAPP Project the most robust transmission solution to known and expected reliability and operational challenges? Please explain.
 - 1) What alternative transmission solutions, or combinations of transmission alternatives, did Mr. Gausman consider before arriving at this conclusion?

- 2) Which of these alternative transmission solutions, or combinations of alternatives, does Mr. Gausman consider as coming closest to providing the robust transmission solution, which Mr. Gausman believes the MAPP Project provides?
- c. Define "economic" as used by Mr. Gausman in this testimony.
- d. In Mr. Gausman's opinion, why is the MAPP Project the most economic transmission solution to known and expected reliability and operational challenges? Please explain.
 - 1) What alternative transmission solutions, or combinations of alternatives, did Mr. Gausman consider before arriving at this conclusion?
 - 2) Which of these alternative transmission solutions, or combinations of alternatives, does Mr. Gausman consider as coming closest to providing the most economic transmission solution, which Mr. Gausman believes the MAPP Project provides?
- e. Define "flexible" as used by Mr. Gausman in this testimony.
- f. In Mr. Gausman's opinion, why is the MAPP Project the most flexible transmission solution to known and expected reliability and operational challenges? Please explain.
 - 1) What alternative transmission solutions, or combinations of alternatives, did Mr. Gausman consider before arriving at this conclusion?
 - 2) Which of these alternative transmission solutions, or combinations of alternatives, does Mr. Gausman consider as coming closest to providing the most flexible transmission solution, which Mr. Gausman believes the MAPP Project provides?

1-13 In Volume I of the Needs Determination, Mr. Gausman testifies (p. 25) that "the MAPP Project is the most efficient, optimal solution to rectify expected reliability violations."

- a. Define "efficient" as used by Mr. Gausman in this testimony.
- b. Please explain why the MAPP Project is the most efficient solution to rectify the expected reliability violations to which Mr. Gausman refers.
 - 1) What alternative transmission solutions, or combinations of alternatives, did Mr. Gausman consider before arriving at this conclusion?
 - 2) Which of these alternative transmission solutions, or combinations of alternatives, does Mr. Gausman consider as

coming closest to the MAPP Project in terms of providing the most efficient transmission solution?

- c. Define "optimal" as used by Mr. Gausman in this testimony.
- d. Please explain why the MAPP Project is the optimal solution to rectify the expected reliability violations to which Mr. Gausman refers.
 - 1) What alternative transmission solutions, or combinations of alternatives, did Mr. Gausman consider before arriving at this conclusion?
 - 2) Which of these alternative transmission solutions, or combinations of alternatives, does Mr. Gausman consider as coming closest to the MAPP Project in terms of providing the optimal transmission solution?

1-14 Mr. Gausman testifies (Volume 1, p. 4) that the MAPP Project will "[r]eflect sensitivity to the environment by performing detailed studies and evaluation prior to construction and use of state of the art construction techniques during construction." Does Mr. Gausman believe that PHI's proposed state of the art construction techniques are a factor that should be considered when evaluating the MAPP Project versus other transmission alternatives that address the reliability violations at issue in this case? Please explain.

1-15 Mr. Gausman testifies (Volume 1, p. 25) that "[a]ny combination of other transmission alternatives to address the pressing violations would be less reliable, less comprehensive, and more expensive to Maryland customers."

- a. Define "less reliable" as used by Mr. Gausman in this testimony.
- b. Is it Mr. Gausman's testimony that there exists no possible combination of transmission alternatives to address the pressing violations that would be more reliable than the MAPP Project? Please explain.
- c. Define "less comprehensive" as used by Mr. Gausman in this testimony.
- d. Is it Mr. Gausman's testimony that there exists no possible combination of transmission alternatives to address the pressing violations that would be more comprehensive than the MAPP Project? Please explain.
- e. Is it Mr. Gausman's testimony that there exists no possible combination of transmission alternatives to address the pressing violations that would be less expensive to Maryland customers than the MAPP Project? Please explain.

- f. Please list each “combination of other transmission alternatives” that Mr. Gausman reviewed prior to concluding that the MAPP Project would be more reliable, more comprehensive, and less expensive to Maryland customers in addressing pressing violations than any combination of other transmission alternatives. For each combination of other transmission alternatives, please list all information that Mr. Gausman relied upon to formulate the position he has stated here in his testimony.
- 1-16 Mr. Gausman testifies (Volume 1, p. 35) that “[t]he MAPP Project, as well as the other large-scale transmission projects that I have referenced above, will ensure that wind power is able to reach loads in the Mid-Atlantic region, and that LSEs in the Mid-Atlantic are able to satisfy their RPS obligations.
- a. Please list the other large-scale transmission projects to which Mr. Gausman refers.
- b. Is it Mr. Gausman’s testimony that there exists no possible combination of transmission alternatives to the MAPP Project that are at least equally as capable as the MAPP Project in ensuring that wind power is able to reach loads in the Mid-Atlantic region? Please explain.
- 1-17 Mr. Gausman testifies (Volume 1, p. 38) that “[l]arge base load generation is likely to be located further from major eastern load centers, and all states in the region will continue to increase their reliance on renewable energy. The transmission system must tie these needs together and ensure the overall reliability of the electric system. As PJM has found, the MAPP Project must be a significant and necessary part of that overall trend.” Is it Mr. Gausman’s testimony that the MAPP Project must be a significant and necessary part of that overall trend or, rather, is it Mr. Gausman’s testimony that the MAPP Project is one of various alternative solutions that can tie these needs together and ensure the overall reliability of the electric system? Please explain.
- 1-18 Mr. Gausman testifies (Volume 1, p. 44) that “if this Commission rejects this application for the MAPP Project, electric reliability throughout PJM’s Mid-Atlantic region and especially within Maryland will be unacceptably compromised.”
- a. Is it Mr. Gausman’s contention that there are no alternatives to address electric reliability throughout PJM’s Mid-Atlantic region

and especially within Maryland other than the MAPP Project?
Please explain.

- b. Does Mr. Gausman believe it would be prudent to immediately initiate the review of the second and possibly third best alternatives to the MAPP Project to potentially avoid compromising the reliability of electric service in PJM's Mid-Atlantic region if it is determined that the MAPP Project should be indefinitely delayed? Please explain.

1-19 In Volume III of the Needs Determination, Mr. McGlynn testifies (p. 31) that "[t]he line from Conastone to Peach Bottom and the line from Peach Bottom to Keeney were each dismissed as alternatives because they would not resolve the low voltage and voltage collapse criteria violations and were not effective at reducing the thermal violations that were expected to occur throughout the 15-year planning horizon. The combined Conastone to Peach Bottom to Keeney line was dismissed as an alternative because it was not as effective at reducing the flow on the overloaded facilities throughout the 15-year planning horizon."

- a. In this testimony, Mr. McGlynn makes no mention of whether or not a new 500 kV circuit from Conastone to Peach Bottom to Keeney would resolve the low voltage and voltage collapse criteria violations listed in Mr. McGlynn's Exhibit PFM-1. Please confirm that a new 500 kV circuit from Conastone to Peach Bottom to Keeney would resolve the low voltage and voltage collapse criteria violations identified in that exhibit.
- b. What is the length of the existing 500 kV transmission line between Conastone and Peach Bottom?
- c. What is the length of the existing 500 kV transmission line between Peach Bottom and Keeney?
- d. Is it true that the alternative of a new 500 kV transmission line from Conastone to Peach Bottom to Keeney would need to be on separate structures from the existing 500 kV circuit for PJM to consider this alternative as a resolution of the low voltage and voltage collapse criteria violations identified in Exhibit PFM-1? Please explain.
- e. What is PJM's estimate of the current cost to construct this new 500 kV circuit? Please provide any workpapers used to develop this estimate.
- f. What is PJM's estimate of the time it would take to construct this new 500 kV circuit?
- g. In PJM's opinion, which transmission owners would be involved in constructing this line?

- h. Did any of these transmission owners bring a proposal for this new 500 kV circuit to PJM? If so, please provide the information that was presented to PJM when this proposal was made.

- 1-20 Please provide hardcopies and electronic copies of any studies prepared by or for PJM or any of the PHI companies since 2000 that address the need to expand the transmission capability into or on the Delmarva Peninsula.

- 1-21 Please provide a map or multiple maps that show the transmission facilities on the Delmarva Peninsula that are at or in excess of 69 kV, including the location and names of any switching stations or substations.

- 1-22 The Application (Volume 1, p. 2) states that “[i]n order to schedule outages for construction of the circuit, a decision on this initial phase is requested by December 2009.”
 - a. What circuit is being referenced?
 - b. Provide the outage schedule for transmission facilities required for the circuit. Include the proposed construction start and finish dates for each phase. Describe the construction to be performed during each phase.
 - c. Describe how the outage schedule for “construction of the circuit” will affect the overall schedule for the MAPP Project.
 - d. Provide the construction schedule for each phase of the MAPP Project concluding with the termination of the 500 kV line at the Salem substation. Please include the proposed cable crossing under the Chesapeake Bay, the DC line to Vienna, the DC line to Indian River, and the 500 kV line from Indian River to the Salem substation.

- 1-23 The Application (Volume 1, p. 4) states that the MAPP Project would “lower the cost of delivered power to Maryland consumers.”
 - a. What is the projected estimated reduction in the monthly retail electric bill for a residential customer that consumes 1,000 kWh per month resulting from the construction of the MAPP Project?
 - b. Please provide all workpapers and analysis relied upon to develop this estimate.

Potomac and Patuxent River Crossings Modification Applications

- 1-24 Within the Chalk Point to Calvert Cliffs Modification Application, the testimony of Mr. Jubic (p. 12) states that structures over 200 feet will comply with FAA regulations. However, the associated Environmental Review Document (ERD) states that the maximum height of structures for the project will be 195 feet. Please confirm that no structure will exceed 200 feet and that FAA warning lights will not be installed on any structure.
- 1-25 Please provide GIS (shp) files of the following:
- a. Existing pole placements of the Potomac River crossing and Chalk Point to Calvert Cliffs segments of the project. Please include individual pole heights.
 - b. Proposed pole placements of the Potomac River crossing and Chalk Point to Calvert Cliffs segments of the project. Please include individual pole heights.
- 1-26 For the Potomac and Patuxent River crossings, the PHI applications indicate that there are expected to be no additional visual impacts from adding new, parallel sets of structures. Specifically, the Chalk Point to Calvert Cliffs Modification Application (p. 15) and the Potomac River Modification Application (p. 14), placing the line beneath the river is said to be ruled out "as the existing structures in the river already present any aesthetic impact to the river views." Please indicate, for each river, how PHI determined and quantified the visual impacts that would be associated with:
- a. The current single circuit towers;
 - b. The current single circuit towers with a parallel set of identical towers next to them;
 - c. Rebuilding the line using a single set of double circuit towers; and
 - d. Placing both circuits under the river and removing the current single circuit towers.
- 1-27 Page 2-1 of the Potomac River Crossing ERD states that the piling depths for the transmission structures will be determined following the completion of geotechnical investigations. Please provide an estimate of when these investigations will be conducted and when results are expected. Also, please describe the material through which drilling will take place in the Potomac River in the area where the towers will be

placed and please provide a general estimate of the range of depths expected.

- 1-28 Please describe the material through which drilling will take place in the Patuxent River in the area where the towers will be placed. How far into this substrate will the tower pilings be driven?
- 1-29 Please provide additional details on temporary work spaces described on page 2-2 of the Potomac River Crossing ERD, such as estimated sizes and types of equipment that will be located in the spaces. Does PHI expect to conduct any additional tree clearing for temporary work spaces?
- 1-30 Section 2.1.1.1 (Transmission Line) of the Potomac River Crossing ERD states that the new structures in the Potomac River will be installed on six pilings; however, Section 4.2.2.2 (Sediments) and 4.3.2.2 (Potential Potomac River Crossing Impacts and Mitigation) state that each structure will consist of four piles. In addition Section 2.2.1 (Transmission Line) and Section 4.2.2.2 state that the six new structures proposed in the River will permanently require approximately 0.002 acres of river bottom; however, Section 3.2.1 (Option 1) and 4.6.2 (Potential Impacts and Mitigation) indicate that permanent impacts would be “less than 0.01 acres” and Section 4.3.2.2 states that the towers would permanently encumber “less than 0.003 acres” of river bottom.
- a. Please clarify the number of pilings that will be supporting each new structure in the Potomac River; and
 - b. Please clarify the total number of acres of river bottom that will be permanently impacted by all six new structures in the River.
- 1-31 Is approval needed from the Virginia State Corporation Commission to construct the segment of the circuit that will connect to the Possum Point substation? Has an application for such approval, if required, been submitted?
- 1-32 Please detail the difference in impacts between the proposal to construct an additional single circuit line from the Chalk Point substation to the east side of the Patuxent River and constructing this section of the line as a double circuit line. Explain the reasons that led to the choice of twin single circuits for this section instead of continuing the double circuit configuration that is being used for all other sections of the line.
- 1-33 The Potomac River and Chalk Point to Calvert Cliffs CPCN Modification Applications discuss an aggressive schedule based on the potential for

delays caused by material and labor shortages. According to recent reports, power consumption, construction activity, and labor markets are in the most significant recession in decades. Will these factors allow PHI more flexibility in the construction schedule? Will they reduce the anticipated cost?

- 1-34 PHI is aware that the Patuxent River is a State of Maryland scenic river.
- c. Has PHI considered replacing the existing and planned lattice structure towers with more aesthetically appealing towers that would be more suitable for a scenic river?
 - d. Has PHI communicated with the Patuxent River Commission about its plans? Please document any communications or plans to communicate with the Commission.
 - e. Has PHI evaluated its plans in the context of the Patuxent River Policy Plan and current updates thereof? If so, please indicate how the proposed transmission line modification will support the goals and recommendations for the Patuxent River and its watershed, including protecting environmentally sensitive areas, controlling stormwater runoff, protecting forest cover, and restoring and improving the habitat of aquatic and terrestrial living resources.
- 1-35 Please provide the geographic coordinates (e.g., latitude, longitude, or Maryland State Plane Coordinates) for all proposed pole locations as shown in the Appendix A maps for the Potomac River and Chalk Point to Calvert Cliffs Environmental Review Documents. If possible, provide these data as an ESRI shape file compatible with the ArcGIS system.
- 1-36 The testimony of Mr. Jubic concerning both the Potomac and Patuxent River pile-driving operations indicates that PHI will employ "relatively light tapping" on the piles to discourage fish from entering the pile-driving area and protect them from the (more intense) pressure waves caused by the full force pile-driving operation. Please provide scientific documentation for this approach. At what intervals will the "light tapping" be repeated if full pile-driving operations are interrupted, sporadic, or infrequent? Did PHI consider the use of baffles to attenuate the pressure waves? What time of year restrictions will be observed to protect migratory fish which may not be discouraged by "light tapping"?
- 1-37 Please provide details of the construction barge operations in the Patuxent River, specifically:

- a. How much sediment disturbance will occur from placing "spuds" in the bottom to anchor the barges?
 - b. How long will the barges be in place?
 - c. Will benthic habitat be disturbed if barges are accidentally dislodged?
 - d. What protective measures are employed to protect the river waters, sediments, and living resources from construction materials, oil, paint, or other contaminants that may be on or in the barges or the equipment used from the barges?
- 1-38 It appears that if PHI routed the new Potomac River crossing to the south (downstream) of the existing line, removal of the 4.6 acres of forest in the Critical Area could be avoided, and the towers could be placed in existing cleared area. Was this option considered? If so, why was it rejected?
- 1-39 Have the existing towers raised any concerns with respect to navigation in the Potomac River? Have there been any accidents during the time they have been in place, either with commercial or recreational boats? What is the clearance requirement for the conductors with respect to the maximum size of ships that are permitted to use the River?
- 1-40 PHI considered the effects of EMF on radio and TV reception. Ships navigating the Potomac River will be directly beneath the conductors, with decks possibly as much as 50 or 100 feet above water level. Will electrical or magnetic fields from the line interfere with navigational equipment used by ship traffic?
- 1-41 Will the foundations for the new towers, in either the Potomac or Patuxent River, cause current changes that will lead to scouring a larger area of the River bed than the less than 0.01 acres actually occupied by the foundations? Has PHI measured the influence that the existing tower foundations have on bottom currents and habitat?
- 1-42 Is PHI planning any voluntary offsite mitigation to compensate for the 4.6 acres of trees that will be removed from the Critical Area near the Potomac River and the 7.0 acres of trees that will be removed from the Critical Area near the Patuxent River?
- 1-43 What specific management practices or mitigation measures will be employed in the Patuxent River to protect waterfowl, fish, and sediment-dwelling species during construction activities?

- 1-44 Several species of migratory fish that are not mentioned in the ERDs, such as striped bass, use the Potomac and Patuxent Rivers as spawning habitat. Has PHI identified these species and the time of year restrictions that will be observed to protect them? If not, when does PHI plan to carry out the required studies?
- 1-45 Has PHI conducted any additional benthic sampling studies, other than those reported in the ERDs? If so, please provide the data collected. If not, please indicate when such studies are planned to complete the characterization of the bottom habitat of the Potomac and Patuxent Rivers.
- 1-46 Section 5.1.2 of the Potomac River Crossing and the Chalk Point to Calvert Cliffs ERDs notes that bottom habitat determinations were made using sidescan sonar. Please provide maps showing the results of these determinations, preferably in a digital format compatible with ArcGIS.

Chalk Point to Calvert Cliffs

Terrestrial and Aquatic Ecology

- 1-47 Throughout Section 4.4 (Wetlands) of the ERD for the Chalk Point to Calvert Cliffs portion of the proposed MAPP project, references are made to the planned use of matting in wetlands to lessen impacts during construction. The separate set of large Environmental Features Maps (Appendix A) for the proposed project further depicts the locations of wetlands matting areas along the project right-of-way (ROW). As depicted on these maps, however, many of the panels depict large or entire areas of these wetlands as requiring matting during construction (e.g., Maps 3, 4, 15, 16, etc.), while other panels show narrower areas of proposed matting in wetlands (Maps 28, 42, 49). Temporary wetlands impacts owing to the "Access Matting" and "Matting in Stringing Areas" categories presented in MAPP ERD Table 4.4-1 could be greatly reduced if these proposed matting areas were limited to only what would actually be needed on the ground. Please provide justification for the need to entirely mat many of these wetlands when it appears that relatively narrow access corridors would suffice in most cases to construct the project.
- 1-48 Please provide additional specific details regarding PHI's plans for avoiding three listed Threatened and Rare plants (*Centrosema virginianum*; *Solidago speciosa*; and *Sagittaria longirostra*) known to occur in the existing ROW during construction of the proposed Chalk Point to Calvert Cliffs portion of MAPP, specifically:

- a. When will precise mapping be available for these species on and adjacent to the ROW? This is of particular concern for *Solidago speciosa*, as only general mapping has apparently been performed to date (refer to Environmental Features Maps [Appendix A], Maps 38 to 59).
 - b. Further, what are the specific plans (i.e., maintenance practices) for long-term protection of these three plants species?
 - c. What specific mitigation measures will be employed for unavoidable impacts to these three plant species?
- 1-49 A population of *Sagittaria australis [longirostra]* is depicted on Map 27 of the Environmental Features Maps (Appendix A) for the proposed Chalk Point to Calvert Cliffs portion of the MAPP project. All species within the genus *Sagittaria* in this region are obligate wetlands plants (i.e., they almost never occur outside of wetlands). On Map 27, however, a population of this species is depicted as if it exists in uplands. Is there a parcel of wetlands not depicted on Map 27 where the population of *Sagittaria australis [longirostra]* is located? Please provide an updated Map 27 and an updated Chalk Point to Calvert Cliffs ERD Table 4.4-1 with revised calculations of proposed project wetlands impacts, as appropriate.
- 1-50 On Map 42 of the Environmental Features Maps (Appendix A) for the proposed Chalk Point to Calvert Cliffs portion of the MAPP project, Wetland CC-029 is depicted as if it will be matted during construction. This wetland is quite small, and as mapped, only takes up a small part of the eastern half of the existing ROW. It appears that there is sufficient room in adjacent uplands for construction and line-stringing equipment to avoid this wetland and its buffer. Please provide an explanation on how this wetland can be avoided during construction of the proposed project.
- 1-51 On Map 49 of the Environmental Features Maps (Appendix A) for the proposed Chalk Point to Calvert Cliffs portion of the MAPP project, it appears that Wetland CC-033 will be the location of two new foundations as a result of the proposed project. Please provide a technical explanation discussing the possibility of shifting the new foundations currently depicted on Map 48 at 2219K slightly to the south/southeast, and correspondingly shift the proposed new foundations on Map 49 to the southeast, outside of the wetlands (or at least so that the eastern-most foundation is outside of the wetlands). If this is not feasible, please explain why this shift cannot occur.

- 1-52 Please provide details on the “State-Listed Plant Species” that are labeled (light purple) on Map 1 and Map 2 of the Environmental Features Maps (Appendix A) for the proposed Chalk Point to Calvert Cliffs portion of the MAPP project. At a minimum, these details must identify listed species present and approximate population size. What effects, if any, would construction of the proposed project have on these plants?
- 1-53 In a letter dated May 8, 2008, DNR identified colonies of Great Blue Herons within ¼ mile of the proposed project route. PHI indicated they determined these to be colonies of double-crested cormorants instead, and confirmed this with DNR via e-mail. Please provide a copy of this email confirmation from DNR as well as any other communications regarding colonial waterbirds.
- 1-54 PHI indicates that the National Marine Fisheries Service (NMFS) and Department of Interior (DOI) were consulted regarding potential impacts to protected species. Please provide copies of consultation letters as well as any other communications received from NMFS and DOI concerning rare, threatened, and endangered species potentially affected by the proposed project. Additionally, the Chalk Point to Calvert Cliffs ERD states: “As appropriate, Pepco would request concurrence of the FWS with the finding that the Project would have no effect on any federally-listed endangered or threatened species.” Please provide documentation of PHI’s consultation with the USFWS if this differs from that with DOI.
- 1-55 Published reports and scientific bird counts identify the region of the Patuxent River near the Chalk Point Power Plant, where the proposed transmission line would be placed, as a region of high waterfowl concentrations. The May 8, 2008 letter to Mr. W. S. Twupack from Ms. Lori Byrne of the DNR Wildlife and Heritage Service states that "the open waters there are known historic waterfowl concentration areas". Please provide documentation that supports PHI's claim in Section 4.6.1.1.3 of the ERD that DNR was consulted about waterfowl concentration and staging areas, and that specifically shows that DNR concurs that no such areas are within 0.25 miles of the Project.
- 1-56 PHI was provided digital maps of DNR's Green Infrastructure areas on May 16, 2008 (via DVD-ROM mailed to Art Sauders of Entrix). The Chalk Point-Calvert Cliffs ROW crosses a number of Green Infrastructure corridors and fragments several hub areas. These areas typically operate as a network to sustain viable populations of stream, forest, and avian species, including forest interior dwelling species that are sensitive to the disruptive effects of transmission lines. Did PHI analyze the impacts of

ROW construction or vegetation management on these ecologically valuable areas? Does PHI plan to adopt vegetation management protocols that will protect and enhance the wildlife in these areas and reduce access along the ROW by invasive species?

- 1-57 Please provide PPRP with copies of your responses to any Data Requests propounded on you by any other persons in this proceeding.