

132 FERC ¶ 61,038  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;  
Marc Spitzer, Philip D. Moeller,  
John R. Norris, and Cheryl A. LaFleur.

Exelon Generation Company, LLC

Project No. 2355-014

ORDER DENYING REHEARING

(Issued July 15, 2010)

1. On May 5, 2010, the Director, Office of Energy Projects (Director), issued a formal dispute resolution determination letter regarding certain studies proposed for Exelon Generation Company, LLC's (Exelon) 800-megawatt (MW) Muddy Run Pumped Storage Project No. 2355, located on the lower Susquehanna River. On June 4, 2010, the Department of the Interior (Interior) and Pennsylvania Department of Environmental Protection (Pennsylvania DEP) each filed a timely request for rehearing of the Director's letter. In this order, we deny rehearing.

**Background**

2. The Muddy Run Project is the second lowermost of five hydroelectric projects on the lower Susquehanna River. The most upstream of these projects is the 19.6-MW York Haven Hydroelectric Project No. 1888 at river mile (RM) 55. Proceeding downstream from the York Haven Project are the 417.5-MW Safe Harbor Hydroelectric Project No. 1025 (at RM 33), the 107.2-MW Holtwood Project No. 1881 (at RM 25), and the 573-MW Conowingo Hydroelectric Project No. 405 (at RM 10). The Muddy Run Project is a pumped storage project located between the Holtwood and Conowingo Projects and uses the Conowingo Pond as its lower reservoir. Three of these projects, York Haven, Conowingo, and Muddy Run, are currently in the relicensing process.<sup>1</sup>

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<sup>1</sup> The current license for the Conowingo Project was issued in 1980 (19 FERC ¶ 61,348) and will expire in 2014. The license for the Muddy Run Project was issued in 1964 (32 FPC 826) and will expire in 2014. The license for York Haven was issued in 1980 (21 FERC ¶ 61,430) and will expire in 2014. The licenses for the Safe Harbor and Holtwood projects will expire in 2030.

3. On March 12, 2009, Exelon filed with the Commission a notice of its intent to apply for a new license for the Muddy Run Project, pursuant to the integrated licensing process (ILP),<sup>2</sup> as well as a pre-application document (PAD).<sup>3</sup> In the PAD, Exelon provided general information about fishery resources in the area, including both resident and migratory species.<sup>4</sup> In its preliminary issues and study list, which is a required part of the PAD, Exelon proposed several studies, but none for fisheries issues, noting that it believed the existing information regarding these matters was adequate.<sup>5</sup>

4. On May 11, 2009, Commission staff issued a notice and scoping document for the purpose of obtaining public comment on its initial determination of the issues to be studied in the proposed environmental document in the relicensing proceeding, and seeking comments and study requests from interested stakeholders.

5. Interior and Pennsylvania DEP filed comments and requested, among other things, that Exelon conduct a study of entrainment of migratory and resident fish from the pumping and generating operations at the Muddy Run Project.<sup>6</sup>

6. Exelon proposed to conduct an entrainment and impingement study (Study 3.3) that included some but not all of the components requested by the agencies.<sup>7</sup> On September 22 and 23, 2009, Exelon and numerous stakeholders participated with Commission staff in a meeting to discuss the proposed study plans and try to resolve disagreements about what the plans should address.<sup>8</sup> In its revised study plan, Exelon

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<sup>2</sup> The ILP was established by the Commission in 2003 with the goal of creating efficiencies by integrating a potential license applicant's pre-filing consultation with the activities of the Commission and other agencies pursuant to the Federal Power Act, the National Environmental Policy Act (NEPA), and other applicable legislation. *See Hydroelectric Licensing Under the Federal Power Act*, Order No. 2002, 68 Fed. Reg. 51,070 (Aug. 25, 2003), FERC Stats. & Regs., Regulations Preambles 2001-2005 ¶ 31,150 (2003).

<sup>3</sup> *See* 18 C.F.R. § 5.6 (2009) (requiring filing of PAD).

<sup>4</sup> *See* PAD filed on March 12, 2009, at section 4.4.3.

<sup>5</sup> *See* PAD at sections 5.1 and 5.2.

<sup>6</sup> *See* letter filed by the Interior on July 13, 2009, Interior Requested Study 3; and letter filed by the Pennsylvania DEP on July 13, 2009, Pennsylvania DEP Requested Study 1 at p. 2.

<sup>7</sup> *See* Exelon's Proposed Study Plan, filed August 24, 2009, at section 3.3.

<sup>8</sup> *See* Exelon's Revised Study Plan, filed December 22, 2009, at section 3.3.

proposed to (1) describe the characteristics of the area, fish, and intake/turbine facilities; (2) review existing site-specific entrainment data; (3) augment site-specific data with available entrainment literature; (4) estimate turbine mortality using existing balloon tag data; (5) estimate turbine mortality using a blade strike model; (6) conduct a field validation-type turbine mortality study using a balloon tag recapture technique if a test demonstrated that it could be accomplished successfully; (7) assess impingement potential by examining the barrack spacing; and (8) prepare an overall entrainment/impingement assessment report. Certain of the agencies' requested study components were not included.<sup>9</sup>

7. On February 4, 2010, the Director issued his study plan determination letter, which, among other things, modified and approved Exelon's study 3.3 (entrainment and impingement study). The Director required Exelon to perform the radio telemetry study of juvenile shad requested by the agencies.<sup>10</sup> He did not require Exelon to conduct hydroacoustic-based studies of fish entrainment as requested by the agencies, or to determine turbine mortality rates using balloon tagging recapture methods as requested by the agencies and proposed (albeit in a substantially smaller study than the agencies sought) by Exelon. On February 24, 2010, Interior and Pennsylvania DEP each filed a formal dispute notice.

8. On March 16, 2010, the Commission issued a notice which convened a dispute resolution panel for study 3.3 (entrainment and impingement study) and notified parties of a technical conference to be held in Holtwood, Pennsylvania, on March 31, 2010. The conference included representatives from Interior, Pennsylvania DEP, Exelon, the Commission, and other individuals. On April 15, 2010, the panel filed its findings with the Commission. The panel found that an entrainment study using netting could not be safely accomplished and would not likely provide reliable results. The panel recommended that entrainment be evaluated by conducting a radio-telemetry study of juvenile shad and adult American eel, and a hydroacoustic study. The panel concluded that an evaluation of entrainment occurring at times other than when migratory fishes are present could be used to determine whether a radio-telemetry study of resident fishes should be conducted. The panel recommended that a turbine mortality study, using balloon tagging methodology, be conducted unless the parties could agree upon a mortality rate following conclusion of the required literature search.

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<sup>9</sup> See Exelon's Revised Study Plan filed December 22, 2009, at Table 1-1.

<sup>10</sup> In a March 1, 2010 amendment to the study plan determination, the Director required Exelon to also conduct a radio-telemetry study of adult American eel, which the agencies had requested. In response, Interior withdrew a notice of dispute it had filed as to that study.

9. On May 5, 2010, the Director issued his formal dispute resolution determination, agreeing with the panel that a netting study to determine fish entrainment was not required, and that radio-telemetry studies of juvenile shad and American eel were required. The Director disagreed with the panel that the hydroacoustic and radio-telemetry studies of resident fish were needed to evaluate fish entrainment and that a balloon tagging study was needed to evaluate mortality associated with passage through the project turbines.<sup>11</sup> On June 4, 2010, Interior and Pennsylvania DEP each filed a request for rehearing of the Director's letter, claiming that the Director erred in declining to require the hydroacoustic, resident fish radio-telemetry, and balloon tag studies.

### **Discussion**

10. In the integrated licensing process, participants in a hydropower licensing proceeding, following issuance of the pre-application document, file requests that specified studies be performed by the prospective applicant. Study requests must satisfy the following criteria: describe the goals of the study; explain the management goals of the agencies or Indian Tribes with jurisdiction over the resource to be studied; describe existing information and the need for additional data; explain any nexus between project operations and effects on the resource to be studied, and how the study will inform the development of license requirements; explain how the proposed methodology is consistent with accepted scientific practice; and describe considerations of level of effort and cost.<sup>12</sup>

11. The prospective applicant then issues a proposed study plan and holds a meeting or meetings to discuss it,<sup>13</sup> receives comments,<sup>14</sup> and files a revised study plan.<sup>15</sup> The Director then issues a study plan determination, including any modifications deemed to be necessary.<sup>16</sup>

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<sup>11</sup> With respect to two of the studies, the Director indicated that depending on the results of the first year studies, Exelon could be required to conduct a balloon tagging study or radio-telemetry studies of resident fish.

<sup>12</sup> See 18 C.F.R. § 5.9(b) (2009). An additional criterion, not applicable here where the request at issue was made by agencies, calls for non-agencies to explain the public interest consideration relevant to their requests.

<sup>13</sup> 18 C.F.R. § 5.11 (2009).

<sup>14</sup> 18 C.F.R. § 5.12 (2009).

<sup>15</sup> 18 C.F.R. § 5.13(a) (2009).

<sup>16</sup> 18 C.F.R. § 5.13(c) (2009).

12. Following issuance of the study plan determination, agencies with authority to provide mandatory conditions pursuant to FPA section 4(e)<sup>17</sup> or to prescribe fishways under FPA section 18,<sup>18</sup> as well as agencies and Indian Tribes with authority to issue water quality certification under the Clean Water Act, may file a notice of study dispute “with respect to studies pertaining directly to the exercise of their authorities . . . .”<sup>19</sup> A three-person dispute resolution panel then delivers to the Director a finding regarding studies in dispute, “concerning the extent to which each criteria set forth in § 5.9(b) is met or not met, and why, and mak[ing] recommendations regarding the disputed study requests based on its findings.”<sup>20</sup> The Director then reviews and considers the recommendations of the panel, and issues a written determination “with reference to the study criteria set forth in § 5.9(b), and any applicable law or Commission policies and practices,” taking into account the technical expertise of the panel, and explaining why any panel recommendation was rejected.<sup>21</sup>

13. On rehearing, Pennsylvania DEP argues that in not requiring the hydroacoustic and radio-telemetry studies of resident fish entrainment, the Director’s order was inconsistent with the record developed at the panel’s technical conference, and that the order incorrectly concluded that the panel did not explain how the studies would inform the development of license conditions.<sup>22</sup> In its rehearing request, Interior argues that the Director erred in not requiring the balloon tag studies of downstream-migrating American eel and shad as part of the studies for the project.<sup>23</sup> Interior states that the Director failed to provide reasons for not including the study and failed to consider all the relevant factors, as required by the Commission’s regulations. We will address these issues in turn.

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<sup>17</sup> 16 U.S.C. § 797(e) (2006).

<sup>18</sup> 16 U.S.C. § 811 (2006).

<sup>19</sup> 18 C.F.R. § 5.14(a) (2009).

<sup>20</sup> 18 C.F.R. § 5.14(k) (2009).

<sup>21</sup> 18 C.F.R. § 5.14(l) (2009).

<sup>22</sup> Pennsylvania DEP’s Rehearing Request at 3.

<sup>23</sup> Interior’s Rehearing Request at 5-6.

**A. Hydroacoustic and Radio-Telemetry Studies of Resident Fish Entrainment**

14. On rehearing, Pennsylvania DEP lists several statements in the transcript of the technical conference that it believes supports the need for the hydroacoustic<sup>24</sup> and radio-telemetry studies.<sup>25</sup> It states that the Director should have required the studies because the study panel, regulatory agencies, and the license applicant all agree that resident fish species are subject to entrainment and that there is likely substantial mortality as a result of the entrainment.<sup>26</sup>

15. We do not agree. The Director provided the reasons for his decision. In determining that Pennsylvania DEP's requested hydroacoustics study was not required, the Director noted that Exelon's proposed evaluation of potential entrainment -- based on project-specific physical characteristics, characteristics of target species, and the fish communities affected, and a literature review of entrainment at other project locations together with the results from study 3.4 -- should provide sufficient information at a substantially lower cost than hydroacoustic studies to assess the entrainment potential at Muddy Run. The Director also noted that the panel concluded that hydroacoustics may not be able to differentiate between species or life stages and that the netting studies that would be needed to verify hydroacoustic sampling results could not be safely conducted.

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<sup>24</sup> A hydroacoustic study involves the propagation of sound waves into the aquatic environment and the reception and analysis of "echoes" of these waves as they are reflected off objects in the water. With respect to entrainment studies, hydroacoustic technology can be used to determine the approximate number and size of fish passing through an area of interest (e.g., a hydroelectric turbine intake) through analysis of the number and magnitude of echoes from the ensonified area. In some instances, hydroacoustics can determine the species of fish based on a characteristic sonic "signature;" in other instances passing debris or ambient sound "noise" can introduce uncertainty into data analysis.

<sup>25</sup> Radio-telemetry studies involve attaching or implanting a miniature radio transmitter on or in a fish. Once the fish is tagged and released its movements can be determined using mobile and/or fixed radio antennae and receivers. In a radio telemetry study of fish entrainment tagged fish are released upstream or downstream of a project intake and its route of passage either through or by the intake is documented by fixed antennae and recording receivers. Transmitter range and battery life are generally directly related to transmitter size; range also decreases with water depth and the concentration of total dissolved solids.

<sup>26</sup> Pennsylvania DEP's Rehearing Request at 4-6.

16. Regarding the panel's suggested use of hydroacoustics to determine the "chronic" level of entrainment of resident fish and the use of that information to trigger the need for a radio-telemetry study of resident fishes, the Director found that the panel did not explain in its decision how such a study would inform a licensing decision, as required by 18 C.F.R. § 5.9(b)(5), or what the potential cost of hydroacoustic studies would be, as required by 18 C.F.R. § 5.9(b)(7), and that an arbitrary determination of a "chronic" entrainment rate would not inform an evaluation of whether entrainment was having a significant adverse effect on the fishery. We find the Director's reasoning persuasive. Moreover, the fact that the participants agree that there is entrainment does not support requiring the study. Pennsylvania DEP has not demonstrated that the study would provide information not available otherwise to assist in setting license conditions directly related to its conditioning authority.

17. As to Pennsylvania DEP's requested radio-telemetry study, to be conducted following determination of a "chronic" level of resident fish entrainment, the Director again provided his reasoning, stating that while radio-telemetry studies of migratory fish should be conducted because their reproductive cycle requires them to migrate past the project, resident fishes have no such migratory requirement. Moreover, there has been no showing of a nexus between potential entrainment effects and the status or health of the resident species' populations, as would be required under section 5.9(b)(5) to justify a study. As a result, the Director declined to require radio-telemetry studies of resident fish at this time. However, the Director noted that if the results of study 3.4 *Impacts of Muddy Run Project on Conowingo Pond Fishes* indicate that the resident fish population is being significantly affected by entrainment, then radio-telemetry studies of certain resident species may be warranted in subsequent study seasons. We find the Director's findings reasonable.

**B. Balloon Tag Study of American Eel and American Shad Turbine Mortality**

18. On rehearing, Interior argues that the Director failed to consider the balloon tag study<sup>27</sup> in relation to downstream migrating American eel and American shad, that the

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<sup>27</sup> The injury and mortality of fishes passing through a hydroelectric turbine can be estimated by conducting a balloon tagging study. In a balloon tagging study, one, or more, special deflated balloons is attached to the test fish, which are then introduced into the turbine intake such that they are entrained through the turbine and into the tailrace. A chemical reaction within the balloon causes it to inflate and the balloon(s) with fish attached floats to the water's surface. The balloon and fish are then dip-netted and the fish observed for injury or mortality. Fish may or may not then be held in tanks for a period of time to determine delayed mortality. Observed injury and mortality of test fish are adjusted by injury and mortality of control fish to estimate turbine injury and mortality rates and associated confidence intervals.

Director failed to consider all the relevant factors mandated by the Commission's regulations, and that his decision is inconsistent with the record.<sup>28</sup>

19. The panel recommended that, because there may not be sufficient information in the literature concerning the mortality of entrained fish at pumped storage projects, a balloon tag study be conducted at the project site (unless the parties agree on a mortality rate from the literature search). The panel suggested that the balloon tag study start with a test of 3,600 tagged fish. If retrieval of those tagged fish proved too dangerous or the tagged fish showed a significant mortality rate (90 percent or greater) then Exelon could consult with the parties and Commission staff to end the study.

20. In reviewing the panel's findings, the Director noted that Exelon's proposed literature review would provide more information than just mortality rates from other projects. The Director noted that the study proposed by Exelon and approved in the February 4, 2010 determination would include an assessment of turbine-induced mortality from both the literature and a blade strike mathematical model based on physical features of the project and characteristics of the fish species in question. The Director found that although the literature may not contain mortality study results for projects identical to Muddy Run, the literature does provide mortality rates for a wide range of project types and this information could help inform a reasonable mortality estimate. Based on his finding that the difference in the quality of the information based on a literature- and model-derived estimate and a site-specific balloon tagging study was not sufficient to justify the additional cost of the latter, the Director did not require the balloon tag study.

21. Interior is correct that the Director did not specifically mention the American eel and American shad. However, we note that the radio-telemetry studies of the American eel and American shad, which were required by the Director, will provide information on entrainment and mortality of those species. Therefore, we agree with the Director's findings that a balloon tag study is not required at this time. As noted by the Director, if the results of the literature review are inconclusive, we may require additional studies in the second study season.<sup>29</sup>

22. Interior is also incorrect in asserting that the Director failed to consider the factors mandated by the Commission's regulations. Section 5.14(l) of the regulations<sup>30</sup> states

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<sup>28</sup> Interior's Rehearing Request at 5-6.

<sup>29</sup> In addition, pursuant to the ILP regulations, there will be a report prepared at the end of the first study season that will be circulated to the stakeholders for comment. At that time, requests can be made for additional studies or modifications to existing studies.

<sup>30</sup> 18 C.F.R. § 5.14(l) (2010).

that the Director's decision will be made "with reference to the study criteria set forth in § 5.9(b)." The regulation does not suggest, as Interior implies, that the Director must examine each of the study criteria with respect to any given study. Here, the Director discussed, among other things, the goals and objectives of the studies, the appropriateness of the study methodology, considerations of level of effort and cost, and the nexus between the proposed studies and project effects.<sup>31</sup> This was sufficient.

The Commission orders:

The rehearing requests filed on June 4, 2010, by the Pennsylvania Department of Environmental Protection and the U.S. Department of the Interior are denied.

By the Commission. Commissioner LaFleur voting present.

( S E A L )

Kimberly D. Bose,  
Secretary.

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<sup>31</sup> Moreover, in his February 4, 2010 study determination letter, the Director addressed criteria including the availability of existing information, how the study would inform the development of license requirements, the lack of details on study methodology, and level of effort and cost (5.9(b)(7)).