



**WRITTEN TESTIMONY OF
EXELON GENERATION COMPANY, LLC
AS SUBMITTED TO THE
U. S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE
FIELD HEARING ON
FINDING COOPERATIVE SOLUTIONS TO ENVIRONMENTAL CONCERNS
WITH THE CONOWINGO DAM TO IMPROVE
THE HEALTH OF THE CHESAPEAKE BAY**

MAY 5, 2014

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Exelon Generation Company, LLC, a subsidiary of Exelon Corporation (Exelon), appreciates the opportunity to provide the Subcommittee with an overview of the licensing process for Conowingo Hydroelectric Project (Conowingo) and a description of the status of the licensing.

Exelon is one of the largest competitive power generators in the nation, with owned generating assets totaling approximately 35,000 megawatts of capacity comprising one of the nation's cleanest and lowest-cost power generation fleets. With strong positions in the Midwest, Mid-Atlantic, Texas and California, Exelon is the largest owner and operator of nuclear plants in the United States and maintains a growing renewable energy development business.

Conowingo Dam

Exelon's clean generation fleet includes the Conowingo Hydroelectric Project, located on the Susquehanna River (at river mile 10) in Pennsylvania and Maryland. Conowingo is a 572 megawatt run-of-river hydroelectric power plant, consisting of 11 turbines, which has been in operation since 1928. The Conowingo Project is the furthest downstream of the five hydroelectric projects located on the Lower Susquehanna River, which has a total drainage area of 27,510 square miles. The upstream projects (York Haven, Safe Harbor, Holtwood, and Muddy Run) are located at river miles 56, 32, 24, and 22, respectively.

The reservoir, known as Conowingo Pond and formed by Conowingo Dam, extends approximately 14 miles upstream from Conowingo Dam to the lower end of the Holtwood Project tailrace. The lowermost six miles of the Conowingo Pond are located in Cecil and Harford counties, Maryland. The remaining eight miles of Conowingo Pond are located in Pennsylvania, in York and Lancaster counties. The Conowingo Pond serves many diverse uses including hydropower generation, water supply, industrial cooling water, recreational activities and various environmental resources. Relative to hydropower generation, the Conowingo Pond serves as the lower reservoir for the 1,070-MW Muddy Run Pumped Storage Project (Muddy Run Project), located 12 miles upstream of the Conowingo Dam. The 1,100 MW York Energy Center (formally referred to as the Delta Power Project) withdraws cooling water approximately seven miles upstream of Conowingo Dam as well. In addition, Conowingo Pond is used as a public water supply source, with the City of Baltimore and Chester Water Authority having permitted withdrawals of 387 cfs (250 MGD) and 46 cfs (30 MGD), respectively.

The Project currently operates two fish lifts. The West Fish Lift, adjacent to the dam's right abutment, is operated under an agreement with the United States Fish and Wildlife Service (USFWS) for American shad egg production and other research purposes. The newer East Fish Lift is used primarily to pass American shad, river herring and other migratory fishes during the April-June migration season.

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Conowingo Dam Benefits

Conowingo is an economic engine for the region providing vital clean energy while protecting the Chesapeake Bay.

Economic Benefit

Conowingo provides economic benefits to the regional economy. In 2013, Exelon spent approximately \$15 million of O&M, \$18 million of capital, and \$3.9 million in Maryland property taxes associated with operation of the Conowingo station.

Conowingo and Muddy Run are operated and maintained by 62 full-time employees. During periodic outage periods, employment at the facilities can increase substantially. Over the past three years, the projects have employed an average of more than 100 contracted workers per year. These jobs contribute to local employment, resulting in people spending their paychecks on a variety of goods and services in southern Pennsylvania and northern Maryland. According to a November 2012 study commissioned by Exelon Generation, *Socioeconomic Gains to Maryland of the Conowingo Hydroelectric and Muddy Run Projects*, National Economic Research Associates (NERA) concluded that Conowingo and Muddy Run deliver \$273 million in annual economic benefits to Maryland and its local communities. These projects directly and indirectly contribute 298 full-time and part-time jobs to the local economy annually.

Region	Employment (jobs)	Gross Regional Product (million 2012\$)	Disposable Personal Income (million 2012\$)	Population (people)
Cecil & Harford	298	46	26	366
Maryland	2,060	273	228	2,764
United States	20,857	2,372	1,987	-

Source: REMI Model and calculations as described in Socioeconomic Gains to Pennsylvania of the Muddy Run Pumped Storage Project and the Conowingo Hydroelectric Project prepared by NERA

The projects also contribute to the local and regional economies by increasing the demands for various products and services. Expenditures of the projects in 2013 were \$4.4 million in contracting, \$1.3 million in materials and supplies and roughly \$3.7 million in other operating and maintenance expenditures (not including compensation). In addition, the projects provide popular recreational activities in the surrounding areas including hiking, bird watching and

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boating, which helps drive the tourism economy in Cecil and Harford Counties by attracting 250,000 recreational visitors a year.

Electric Grid Benefit

The projects can ramp up generation very rapidly when electricity demand or supply change unexpectedly and, therefore, ensure service reliability and lower costs of electricity for all customers. The projects provide additional important contributions to the electricity grid by supplying ancillary services that are essential for the proper functioning of a regional electricity grid. These services include Black-start, Regulation, Voltage Control and Spinning and Non-Spinning Reserves. These benefits have long been recognized by policymakers and operators of electricity grids.

Reduced Emissions Benefit

Conowingo is Maryland's largest source of renewable energy, producing more clean energy than all other sources in Maryland combined. In 2013, Conowingo supplied over 1.7 million megawatt hours (MWh) of generation to the regional grid. Unlike electricity produced by fossil fuel generation, the electricity produced at Conowingo does not produce harmful emissions of greenhouse gases or other pollutants, such as sulfur dioxide, nitrogen oxide and mercury. Conowingo helps states in PJM, like Maryland, meet renewable portfolio standards that require increased use of renewable electricity. In the PJM system, electricity generation from Conowingo and Muddy Run displaces generation from fossil fuel sources, such as coal and natural gas, which leads to reduced emissions of pollutants including carbon dioxide, sulfur dioxide, and nitrogen oxide. Conowingo prevents 6.5 million tons of greenhouse gas emissions each year. This is the equivalent of taking 1.2 million cars off the road.

Community Involvement

Exelon and its Conowingo employees are very involved in the local community. Conowingo sponsors several community events, including being the lead sponsor of the Lower Susquehanna Heritage Greenway's Riversweep, which brings hundreds of volunteers together each spring to clean up the nearly ten miles of Susquehanna River in both Cecil and Harford County. The site also sponsors the Port Deposit Chamber of Commerce Annual Rockfish Tournament, promoting tourism and youth fishing. Conowingo and its employees give generously to the community through a variety of charitable activities, including the local United Way chapters, the Boys and Girls Clubs of Cecil and Harford Counties and the Plumpton Zoo. Employees conduct annual food and clothing drives and donate their time to support the work of the Ray of Hope Mission in Port Deposit. Each year the staff at Conowingo participates in Exelon's Operation Warm,

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providing warm winter coats to area school children. Partnering with the Baltimore County Council of the Boy Scouts of America, employees from Conowingo work to preserve hundreds of hemlock trees in Harford County. Exelon has also donated the 79-acre Roberts Island on the Susquehanna River to the Chesapeake National Historical Trail, administered by the Maryland Department of Natural Resources. In 2009, Exelon invested \$4.5 million in a fish wharf at the Conowingo Dam that allows visitors access to the river for fishing, bird-watching, picnics and photography. Located approximately ten miles upstream of the Chesapeake Bay, the 14-mile-long Conowingo Pond behind the dam and the tailrace area provide numerous public recreational facilities and activities. Conowingo's strong community involvement includes a social media network that has more than 25,000 individuals who follow dam operations and recreational events on various social media platforms (such as Twitter, Facebook and YouTube) and contribute to a broad public discussion about the value of the dam on the Support Conowingo Dam website.

Licensing Process

The licensing process for Conowingo and Muddy Run is known as the Integrated Licensing Process (ILP) as set forth in Part 5 of the Federal Energy Regulatory Commission's (FERC or the Commission) regulations (18 C.F. R. Pt. 5). The ILP was developed to integrate the pre-filing consultation with the Commission's scoping pursuant to the National Environment Policy Act (NEPA) (42 USC 4321, et seq.).

Exelon formally initiated the FERC relicensing process for Conowingo with the filing of a Notice of Intent and Pre-Application Document (PAD) on March 12, 2009. Since that time, Exelon has engaged in extensive stakeholder outreach with state and Federal resource agencies, non-governmental organizations, local municipalities, recreational users, and other individuals with an interest in the project. As part of the ILP, Exelon developed and conducted 32 FERC-approved resource studies examining the benefits and impacts of Conowingo. Exelon also conducted 15 resource studies for Muddy Run, many of which also informed development of the Conowingo Final License Application. Together, these ILP processes and associated studies have cost over \$34 million. A list of Exelon's filings and studies in connection with the Conowingo licensing process is attached at Appendix A.

Using the information in the Pre-Application Document, the ILP resources studies, and input from stakeholders throughout the relicensing process, including comments received on Exelon's Draft License Application, Exelon prepared the Conowingo Final License Application, which was filed with FERC on August 31, 2012. Where the studies and ILP consultations identified project impacts, Exelon proposed resource protection and mitigation measures. Where studies and ILP consultations identified opportunities to improve Conowingo features, Exelon proposed appropriate enhancements. The Final License Application submitted to FERC reflects Exelon's

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efforts to maximize the benefits of Conowingo for the community, the environment, and Exelon's shareholders.

As part of the licensing process, a number of resource agencies, such as U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and Maryland Department of the Environment (MDE) have mandatory conditioning authority, which allows them to impose conditions on the FERC license. In addition, in accordance with Section 401 of the Clean Water Act (33 U.S.C. § 1341), before FERC can issue a license for Conowingo, MDE must issue a 401 water quality certification that Conowingo meets applicable Maryland water quality standards.

Since the filing of the Final License Applications for Conowingo and Muddy Run in August 2012, Exelon has continued to engage in extensive stakeholder outreach with state and Federal resource agencies, non-governmental organizations, local municipalities and others. Exelon has engaged in discussions with USFWS, NMFS, the U.S. Army Corps of Engineers (USACE), the National Park Service, MDE, Maryland Department of Natural Resources (MDNR), Pennsylvania Department of Environmental Protection (PADEP), the Susquehanna River Basin Commission, the Nature Conservancy, the Lancaster Conservancy, among others, on issues relating to Conowingo. We continue to work cooperatively to develop solutions and resolve differences.

Earlier this year, Exelon worked with PADEP to reach a negotiated resolution of the fish passage issues identified by stakeholders during the relicensing of Muddy Run. The terms of the agreement between PADEP and Exelon, which have been incorporated into the conditions for the draft water quality certification issued by PADEP, include measures for trapping and trucking American eel from below Conowingo Dam to locations upstream of York Haven Dam, and an annual commitment of \$500,000 through 2030 for fish habitat restoration and sediment mitigation. As required by the Federal Power Act, these conditions will be incorporated into the license issued by FERC.

The conditions imposed by PADEP in the proposed water quality certification will provide measurable and immediate benefits to the American eel population and will ensure that any significant impacts to shad associated with Muddy Run operations can be adequately addressed in the future.

Exelon also has reached a conceptual settlement with the USFWS to address fish passage concerns related to Muddy Run. Exelon continues to work with USFWS to finalize a formal settlement agreement, which Exelon believes will be completed in the second quarter of 2014.

Exelon has also been and remains an active participant in the USACE Lower Susquehanna River Watershed Assessment (LSRWA).

American Shad

Various parties have raised concerns regarding Conowingo's impact on upstream and downstream passage of American shad and the current Conowingo fish lifts. Specifically, these parties have advocated increasing the size of the existing east fish lift and constructing additional fish lift facilities on the west side of Conowingo.

Exelon believes that the existing east fish lift has sufficient capacity to facilitate the upstream passage of American shad based on existing and foreseeable population estimates, especially given the coastal-wide decline in the American shad population. The current capacity of the east fish lift is 750,000 American shad and five million river herring per season. In comparison, the maximum passage of American shad at the Conowingo east fish lift, in 2001, was approximately 194,000 fish. In 2013, the east fish lift passed approximately 13,000 American shad. Exelon, however, is in discussions with USFWS, MDE and other stakeholders regarding expansion of and improvements to the existing fish passage facilities to address their concerns.

American Eel

During the relicensing process, parties also raised concerns regarding Conowingo's impact on upstream and downstream passage of American eel. Specifically, these parties have noted that there are currently no upstream passage facilities in place for American eel, and have recommended that Exelon construct upstream volitional passage facilities for American eel. According to these parties, Exelon should engage in trap and truck of American eel upstream until those volitional passage facilities are operational.

As part of the agreement with PADEP, Exelon is putting in place an eel management plan contained in the water quality certification issued by PADEP. Under the plan, Exelon will trap and truck American eel from Conowingo, construct upstream volitional passage facilities, and will establish an Eel Passage Advisory Group, including representatives of USFWS, MDE and MDNR. Exelon believes that these measures address the requests of interested stakeholders regarding upstream eel passage, and demonstrate that immediate and substantial benefits to American shad and eel populations can be achieved through negotiated resolution.

Sediment

The issue of sediment in the Lower Susquehanna River Basin and its impact on aquatic wildlife and vegetation in the Susquehanna River and Chesapeake Bay has become a significant issue in the Conowingo licensing.

Sediment introduced to the Susquehanna River originates from upstream point sources, such as municipal wastewater facilities, and non-point sources such as agricultural lands and storm water runoff. Although Conowingo introduces negligible amounts of sediment as a result of project operations, the dam traps significant amounts of sediment and associated nutrients generated by upstream sources. It has been estimated that Conowingo Pond has trapped two-thirds of the sediment generated upstream in Pennsylvania and New York since Conowingo was constructed in 1928.

Conowingo Pond is reportedly in a state of dynamic equilibrium, in which sediment deposition is periodically interrupted by scour associated with high flow events. Preliminary results from the LSRWA, scheduled for release in late 2014, indicate that water quality impacts on Chesapeake Bay related to Conowingo Pond scour have been significantly overstated by previous studies, and that the overwhelming majority of the impact of sediment in high-water flow events is due to sediment from upstream sources.

During the FERC relicensing process, certain parties have asserted that Exelon should be required to mitigate the impact of sediment passing through Conowingo. Conowingo continues to trap sediment, thus providing an ongoing benefit to the Bay. Further, the preliminary results for the LSRWA released to date indicate that there is no feasible solution to increasing this sediment trapping capacity. Regardless of feasibility, anything done in Conowingo Pond would be addressing the effect and not the cause of the problem. Exelon believes that sediment in the Susquehanna River and Chesapeake Bay should be addressed regionally by continuing to reduce the amount of sediment entering the Susquehanna River upstream of Conowingo by implementing best management practices for point and non-point sources.

Exelon recognizes that the Susquehanna River and Chesapeake Bay are treasured environmental resources that must be protected and preserved. As Senator Cardin has recognized by convening this hearing, the Susquehanna sediment issue is a complex problem and identifying a practical and cost effective solution is difficult. Preliminary results from the LSRWA (the most comprehensive study on Susquehanna sediment to date) confirm this.

Susquehanna sediment is not solely a New York problem, a Pennsylvania problem, or a Maryland problem. It is a basin-wide problem that demands that all of the Susquehanna River stakeholders work together to resolve. As a result, Exelon is with working the U.S.

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Environmental Protection Agency (USEPA), USACE, MDE, MDNR, the U.S. Geological Survey (USGS) and the University of Maryland Center for Environmental Science (UMCES) to develop and implement additional studies relating to Susquehanna sediment and nutrients and their impact on aquatic wildlife and vegetation in the Susquehanna River and the Chesapeake Bay, along with additional information relating to the sources of sediment and impacts of scour from high-water flow events. The additional sediment studies will build on the significant work done by the USACE and USGS, and leverage the existing hydrological and nutrient-impact modeling developed by USEPA and USACE. The studies are anticipated to take a few years and cost approximately \$2 million, which will be funded by Exelon.

Exelon will continue to collaborate and work with elected officials, Federal and state resource agencies, non-governmental organizations, and other stakeholders to collectively resolve the Susquehanna sediment issue.

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**Appendix A
List of Exelon Filings and Studies
In Connection with Conowingo Licensing**

List of Exelon Conowingo FERC Relicensing Filings

Activity	Deadline
Filed Pre-Application Document (PAD)	March 12, 2009
Filed Proposed Study Plan	August 24, 2009
Filed Revised Study Plan	December 22, 2009
Filed Study Progress Report	September 30, 2010
Filed Initial Study Report	February 22, 2011
Filed Updated Study Report	January 23, 2012
Filed Draft License Application	April 3, 2012
Filed License Application Filed Maryland Coastal Zone Management Act Certification Application	August 31, 2012
Filed FERC Additional Information Request No. 1	December 28, 2012
Filed FERC Additional Information Request No. 2	March 29, 2013
Filed Maryland 401 Water Quality Certification Application	January 31, 2014
Filed Reply to Agency Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Prescriptions	March 17, 2014

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List of Conowingo Relicensing Studies

- RSP 3.1-Water Quality in Conowingo Pool and below Dam
- RSP 3.2-Downstream Fish Passage Effectiveness Study
- RSP 3.3-Biological and Engineering Studies of American Eel at the Conowingo Project
- RSP 3.4-American Shad Passage Study
- RSP 3.5-Upstream Fish Passage Effectiveness Study
- RSP 3.6-Conowingo East Fish Lift Attraction Flows
- RSP 3.7-Fish Passage Impediments Study Below Conowingo
- RSP 3.8-Downstream Flow Ramping and Fish Stranding Study
- RSP 3.9-Biological and Engineering Studies of the East and West Fish Lifts
- RSP 3.10-Maryland Darter Surveys
- RSP 3.11-Hydrologic Study of the Lower Susquehanna River
- RSP 3.12-Water Level Management (Littoral Zone and Water Level Fluctuation)
- RSP 3.13-Study to Assess Tributary Access in Conowingo Pond
- RSP 3.14-Debris Management
- RSP 3.15-Sediment Introduction and Transport (Sediment and Nutrient Loading)
- RSP 3.16-Instream Flow Habitat Assessment below Conowingo Dam
- RSP 3.17-Downstream EAV/SAV Study (Water Level Vegetative Cover Study)
- RSP 3.18-Characterization of Downstream Aquatic Communities
- RSP 3.19-Freshwater Mussel Characterization Study below Conowingo Dam
- RSP 3.20-Salinity and Salt Wedge Encroachment
- RSP 3.21-Impact of Plant Operations on Migratory Fish Reproduction
- RSP 3.22-Shortnose and Atlantic Sturgeon Life History Studies
- RSP 3.23-Study to Identify Critical Habitat Use Areas for Bald Eagle

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RSP 3.24-Zebra Mussel Monitoring Study

RSP 3.25-Creel Survey of Conowingo Pond and the Susquehanna River below Conowingo Dam

RSP 3.26-Recreational Inventory and Needs Assessment

RSP 3.27-Shoreline Management

RSP 3.28-Archaeological and Historic Cultural Resource Review and Assessment

RSP 3.29-Effect of Project Operations on Downstream Flooding

RSP 3.30-Osprey Nesting Survey

RSP 3.31-Black-crowned Night Heron Nesting Survey

RSP 3.32-Re-evaluate the Closing of the Catwalk to Recreational Fishing