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**Written Comments on Proposed First Energy Generation Corporation Bayshore Station  
Authorization to Discharge Under the National Pollutant Discharge Elimination System  
(NPDES) Application No. OH0002925**

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The Ohio Environmental Council (“OEC”) and the undersigned appreciate the opportunity to submit comments regarding the above referenced application.

As the following comments explain, First Energy Generation Corporation’s Bayshore Station (“Bayshore”) NPDES permit should not be renewed unless and until substantial restitution has been made to the State of Ohio for the massive fish kills that have resulted from the plant over the years. In order to protect against future fish kills resulting from fish impingement, entrainment, and thermal pollution from the Bayshore facility, Cooling Towers should be required by Ohio EPA as best available technology. Further, the Pollutant Minimization Plan incorporated into the NPDES permit as part of a general mercury waiver should not be approved without firm timelines for completing the required evaluations and reviews and substantial and measurable reductions in mercury emissions.

### **Importance of Lake Erie**

Lake Erie, Ohio’s Great Lake, is a foundation of health, economic vitality, and recreation for millions of Ohioans. Lake Erie is unique among the Great Lakes—it is the shallowest, warmest, and most biologically productive. Lake Erie supports one of the largest freshwater commercial fisheries in the world and the largest sport fishery in the Great Lakes, producing more fish for human consumption than the other four Great Lakes combined.

The western Lake Erie basin is particularly vulnerable. It is the shallowest and most southerly location within the Great Lakes. It is, therefore, arguably the most biologically productive location within all the Great Lakes.

The western Lake Erie basin also supplies drinking water to hundreds of thousands of residents. Each year more than seven million people flock to Ohio’s portion of the Lake Erie basin to reconnect with nature and families. As a result, a quarter of a million jobs are sustained. Tourism, wildlife watching, and sport fishing contribute \$10.75 billion a year in revenue to Ohio’s economy.

The Maumee River, where the Bayshore power plant pulls millions of gallons of water a day for cooling purposes, is the most biologically productive river in the Great Lakes. The Maumee Bay, to which the Bayshore plant discharges, is presently designated as Exceptional Warmwater Habitat (EWH). EWH is used for waters with unique and unusual assemblages of aquatic life (e.g., waters with the potential for significant populations of endangered species, unusually good chemical quality, above-average abundance of sensitive species, above-average populations of top carnivores). The thermal pollution emitted from the Bayshore plant has routinely exceeded both the temperatures to protect the potentially vibrant aquatic life in the Maumee Bay and exceeded the Ohio EPA water quality standards.<sup>1</sup> Continued discharge of super-heated effluent to this potentially vibrant ecosystem can and will negatively impact the health of individuals who live near or recreate on Maumee Bay.

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<sup>1</sup> See Ohio EPA, “Thermal Discharge from the Toledo Edison Bayshore Power Plant: An Update” (2004), quoting “The Bayshore Station discharge does exceed water quality standards for temperature within the thermal plume near the facility . . .”

It is clear that Lake Erie and the western basin's natural wonders are essential to humans and wildlife alike; providing food, drinking water, recreation, and economic stability to millions of Ohioans.

## **Bayshore Coal-fired Power Plant and Fish Kills**

According to FirstEnergy Bayshore Power Plant's own consultants, Kinectrics North America Inc., the Bayshore coal-fired plant is killing more than 46 million per a year when fish are slammed and caught against its cooling water system screens, also known as impingement. In addition, the coal-fired power plant is killing more than 2.2 billion larvae fish and nearly 14 million juvenile fish per a year when they pass through the water intake screens and through equipment inside the plant, also known as entrainment.

Section 316(b) of the Clean Water Act requires that the number of organisms pinned against parts of the water intake structure to be reduced by 80 to 95%. Entrainment requirements call for the number of aquatic organisms drawn into the cooling system to be reduced by 60 to 90%. Currently there are technologies that exist, such as mechanical draft cooling towers, that can reduce both impingements and entrainments by 90%.

Right now Bayshore power plant is considering reverse louvers. Tetra Tech, an independent consultant hired by the Ohio Environmental Protection Agency (OEPA) to evaluate the intake and thermal discharge NPDES compliance option, eliminated the louvers from the options available to reduce the number of fish killed each year. They state, as much of the literature does, including Bayshore power plant's own consultant, Kinectrics, that louvers are species specific and do not reduce the number of fish sucked through the intake screens and sent through the plants cooling system. Kinectrics states in their report to FirstEnergy, "The annual effectiveness for the louver system was estimated to be approximately 3.9%. Overall, placement of a louver system within the intake channel is expected to provide only a *minimal* benefit for entrainment at Bay Shore Power Plant."<sup>2</sup> (emphasis added)

According to Kinectrics, adding a fine mesh screen system behind the louver **reduces** the effectiveness of the louver system even further, which again is a mere 3.9%. In addition, this reverse louvers and fine mesh screen system would only reduce a number of certain species killed each year. As Kinectrics points out, certain fish do not have a high enough sustained speed to bypass the louvers altogether, such as the Western Banded Killifish and the Channel Darter, both of which are listed in Ohio as endangered and threatened respectively. Those fish that have enough sustained speed to bypass the louver system, however, may become damaged or die in the thermal plume that they are bypassed into.

## **Bayshore Coal-fired Power Plant Should Be Fined**

If a business or facility killed millions of adult fish they would be fined by the Ohio Department of Natural Resources (ODNR), Division of Wildlife. Using ODNR's, Division of Wildlife, Wild Animal Prices and using the Kinectrics report on the amount and species of fish killed, a reasonable calculation shows that Bayshore impinges nearly \$8 million, conservatively, worth of fish each year (see table 1). If you take the \$8 million and multiple it by the 55 years that the power plant has been in existence the cost of the fish killed in that 55 years is more than \$440 million. Currently any violator of a massive fish kill must pay their finds into the Wildlife fund. Those funds are then used to restore prized sportfish through stocking efforts. The Bayshore power plant should be held

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<sup>2</sup>Kinectrics North America, January, 2010. *Modeling of Options to Address Entrainment and Impingement Reductions at Bay Shore*. Kinectrics Report: 409025-001-RA-0001-R00

accountable and be fined the proper amount for all fish killed, including juvenile and larval fish that have been entrained, as well as natural resource damages. The fine money should then be used to restore prized sportfish in the Maumee River and Bay. As the Ohio EPA's consultants pointed out, there will only be a slight reduction in fish kills with the proposed louvers, slightly reducing Bayshore's take of Ohio wildlife. The cost to Ohio, to our wildlife, and our Lake will rise through the life of this permit.

**Table 1.** Conservative Cost Estimates of Fish Impinged Annually at the Bayshore Coal-fired Power Plant Using the Ohio Department of Natural Resources, Division of Wildlife, Wild Animal Prices<sup>3</sup>

<b>Fish Species</b>	<b>Number of fish impinged</b>	<b>price per fish at 2in * number of fish</b>	<b>average size</b>	<b>price at average size * number of fish</b>
Emerald shiner	24,080,877	\$2,167,278.93	2 in	\$2,167,278.93
Gizzard shad	14,313,113	\$1,717,573.56	10 in	\$1,717,573.56
White perch	4,769,163	\$619,991.19	7 in	
White bass	1,593,199	\$573,551.64	10 in	\$2,835,894.22
Spottail shiner	313,326	\$28,199.34	3 in	\$28,199.34
Freshwater drum	225,706	\$29,341.78	12 in	\$139,937.72
Trout-perch	159,379	\$14,344.11	2 in	\$14,344.11
Yellow perch	123,405	\$40,723.65	5 in	\$93,787.80
Walleye	77,812	\$11,671.80	14 in	\$613,936.68
Channel catfish	77,469	\$21,691.32	15 in	\$110,780.67
Logperch	51,547	\$4,639.23	3 in	\$4,639.23
Sand shiner (carp)	32,112	\$2,890.08	2 in	\$2,890.08
Bluegill (sunfish)	23,103	\$8,086.05	6 in	\$25,182.27
Brook silverside	20,538	\$1,848.42	2 in	\$1,848.42
Silver chub (carp)	10,703	\$963.27	4 in	\$963.27
Common carp	8,673	\$780.57	15 in	\$5,897.64
Brown bullhead	7,448	\$1,862.00	8 in	\$13,406.40
Smallmouth bass (sunfish)	4,445	\$1,555.75	12 in	\$24,892.00
Pumpkinseed (sunfish)	3,333	\$1,166.55	5 in	\$2,599.74
Largemouth bass (sunfish)	3,031	\$1,060.85	15 in	\$22,126.30
Bluntnose minnow	2,357	\$212.13	2 in	\$212.13
Orangespotted sunfish	1,621	\$567.35	2 in	\$567.35
Shorthead redhorse (sucker)	1,555	\$637.55	10 in	\$3,685.35
Quillback (sucker)	1,430	\$586.30	15 in	\$7,965.10
Redhorse (sucker)	1,315	\$539.15	18 in	\$12,518.80
White crappie	1,306	\$509.34	9 in	\$3,643.74
Tadpole madtom (catfish)	1,272	\$356.16	2 in	\$356.16
Yellow bullhead	1,249	\$312.25	6 in	\$1,036.67
White sucker	1,172	\$480.52	10 in	\$2,777.64

<sup>3</sup> Ohio Department of Natural Resources, Division of Wildlife. Wild Animal Prices. Inservice Document 22 (R304)

Fathead minnow (carp)	995	\$89.55	2 in	\$89.55
Black redhorse (sucker)	826	\$338.66	10 in	\$1,957.62
Central stoneroller (carp)	815	\$73.35	3 in	\$73.35
Spotfin shiner (carp)	741	\$66.69	3 in	\$66.69
Black crappie	545	\$212.55	5 in	\$436.00
Black bullhead	458	\$114.50	5 in	\$348.08
Northern pike	421	\$842.00	20 in	\$10,314.50
Golden shiner (carp)	416	\$37.44	4 in	\$37.44
Green sunfish	384	\$134.40	3 in	\$168.96
Black darter	372	\$122.76	2 in	\$122.76
Channel darter (threatened in OH)	342	\$342,000.00	2 in	\$342,000.00
Stonecat madtom (catfish)	296	\$82.88	2 in	\$82.88
Bigmouth buffalo	281	\$42.15	15 in	\$399.02
Lepomis spp. (sunfish)	171	\$59.85	2 in	\$59.85
Western banded killifish (endangered in OH)	171	\$171,000.00	2 in	\$171,000.00
Flathead catfish	158	\$44.24	20 in	\$581.44
Creek chub (carp)	130	\$11.70	4 in	\$11.70
Northern redbfin shiner (carp)	130	\$11.70	3 in	\$11.70
Sauger	128	\$19.20	9 in	\$25.22
Rainbow trout	93	\$23.25	20 in	\$1,926.03
Steelhead trout	<u>93</u>	<u>\$23.25</u>	25 in	<u>\$3,782.31</u>
<b>Total</b>	<b>45,919,625</b>	<b>\$5,768,770.96</b>		<b>\$8,392,436.42</b>

Gentner Consulting Group, hired to take a look at the economic losses due to the impingement and entrainment of key sport fish found that there was a \$21.4 million economic loss to the region as a result of the loss of fish at the Bayshore power plant. In addition, the economic damages for commercial and recreational target species at this level of mortality equal \$29.7 million per a year if prey losses are included and the net present value of a twenty year stream of these losses equals \$315 million, or \$22.1 million more than the cost of the cooling towers.<sup>4</sup> This amount of damages to the fishery use clearly supports the instillation of cooling towers.

## Thermal Discharges

We share the OEPA's concerns, stated in the NPDES Fact Sheet, that the heated effluent from the Bayshore Station may be causing or contributing to ". . . undesirable aquatic life or result in dominance of nuisance species . . ." within the mixing zone of the cooling water discharge. The heated/thermal waters from the Bayshore power plant keep the southern shore line of Maumee Bay east of the plant from freezing east of the plant to the marina at Maumee Bay State Park – a distance of over two miles. The heated waters change the ecology, facilitate the growth of harmful algae, and deprive people from winter ice fishing, ice skating, ice boating along the southern shores of Maumee Bay. Thermal waters from Bayshore need to be reduced.

<sup>4</sup> Genter, B., Bur, M., and Lupi, F., 2010. *Economic Damages of Impingement and Entrainment of Fish, Fish Eggs, and Fish Larvae at the Bay Shore Power Plant.*

Section 316(a) of the Clean Water Act (CWA) allows for a variance from applicable thermal limitations to surface water if the permittee can demonstrate that the balanced indigenous community of aquatic organisms is protected and maintained. Past performance by Bayshore has demonstrated quite the opposite; any balance in aquatic life is dramatically threatened by this plant's current operation and its current thermal impact to Maumee Bay.

Section 316(b) of the CWA requires the determination of whether the withdrawal of cooling water causes or has the potential to cause adverse environmental impacts on aquatic populations and communities. More specifically, this subsection requires that the location, design, construction, and capacity of cooling water intake structures reflect the "best technology available for minimizing adverse environmental impact."

In *Entergy Corp. v. Riverkeeper, Inc.*, 129 S. Ct. 1498 (2009), the U.S. Supreme Court concluded that the EPA permissibly relied on cost-benefit analysis in setting the national performance standards and in providing for cost-benefit variances from those standards as part of the regulations under section 316 (b) of the Clean Water Act. Therefore, in the 316 (b) context, regulators can use cost benefit analysis in determining the "best technology available for minimizing adverse environmental impact." While we do not dispute this holding, we do however believe, contrary to First Energy, that the permittee cannot merely have a free pass by merely stating that the best technology costs too much. There must be a case by case analysis of the cost, and the permittee cannot pick and choose what it analyzes in order to obtain the variance.

As detailed below, the environmental benefits of a cooling tower are profound. If First Energy was forced to internalize the externalities of Bayshore's electric generation, i.e pay restitution to the state and the people of Ohio for killing fish by the millions (for a minimum), there would be no question as to whether an increase in upfront cost to site and operate cooling towers would be outweighed by the environmental benefit. In the context of the Bayshore facility and its astonishing negative environmental impact, the cost of business as usual will continue to significantly impact the health of Maumee Bay and Lake Erie. While a cooling tower **generally** may not be considered the "best technology available for minimizing adverse environmental impact" for all point sources, for the Bayshore plant it is clearly is the only viable option left to reach the ecological balance.

## Cooling Towers

Speaking solely to the Bayshore plant and its proposed permit, cooling towers are the best technology available for minimizing adverse environmental impact, as required by the Clean Water Act. Cooling towers can reduce both impingements and entrainments by 90% and thermal pollution. According to TetraTech, 3 mechanical draft cooling towers can be placed just north of the City of Oregon's wastewater treatment plant and just south of the current coal pile storage without significant disruption to facility operations or local activities.

FirstEnergy, Bayshore coal-fired power plant claims that installing cooling towers will result in rate increases. This is a false claim. FirstEnergy purchases their generation on the market through a competitive bid process that sets the rate for a three year period. The power is supplied by a number of competitive suppliers including FirstEnergy, Bayshore power plant. Therefore they can recover the cost through the sale price of energy into the market or they could take a loss if that price may be too high.

Cooling towers also can reduce the amount of water withdrawn for cooling purposes by as much as 95 to 100% compared to a once-through cooling system. This is because the water is recycled a number of times. Reducing the amount of water being pulled through the cooling system reduces the chances of impinged and entrained fish.

## Mercury Variance

FirstEnergy seeks approval to modify its NPDES permit to include a general mercury waiver as authorized by Rule 3745-33-07(D)(10) of the Ohio Administrative Code. The general mercury variance procedure authorized under the Clean Water Act is designed to provide time-limited relief to NPDES permitted facilities in order that they avoid severe economic hardship in the absence of economically-feasible “end-of-pipe” technologies to reduce mercury emissions. The waiver process is not intended, however, to provide a permitted facility the equivalent of a “get out of jail free” card, but to provide interim regulatory relief while the operator makes “reasonable progress” toward meeting the applicable water quality standards. To facilitate progress, the waiver process requires permitted facilities to develop a Pollutant Minimization Program (PMP).

We appreciate that the terms of the proposed NPDES permit have been strengthened from those FirstEnergy agreed to in its initial waiver application. According to the Pollutant Minimization Program that is incorporated into the proposed NPDES permit, FirstEnergy agrees, among other actions, to:

1. evaluate the efficiency of its system for treating mercury, including retention time, settling, filtration and transport through the treatment process, and consider increasing dredging and optimizing the operation of the pond for solids and mercury removal;
2. analyze the ash pond inlet and outlet for dissolved and total mercury, including a particle size distribution of the suspended solids and the portion of mercury in each size range, and;
3. review the current coal source to determine whether other sources of coal would reduce effluent concentration of mercury and the feasibility of changing the coal source.

Under the terms of the PMP, FirstEnergy must report annually on the status of each of these activities.

While we are pleased to see each of the items enumerated above included as conditions of the NPDES permit, we are very concerned that there is no “date certain” by which any of these studies must be completed and no assurance that one or more of these options (or any alternative) might actually be implemented. Indeed, FirstEnergy is merely agreeing to look at these options and reach its own conclusions as to whether any of them might be useful and cost-effective. FirstEnergy and operators of other facilities in the Great Lakes Basin were put on notice more than 10 years ago that they would have to meet mercury standards established under the Great Lakes Initiative. FirstEnergy should be required to evaluate each of the options enumerated above within a year from the date of the permit to determine potential mercury reductions and costs, and to have actually achieved measurable mercury emissions reductions within two or three years. The permit should include a statement that the mercury variance for the Bayshore plant will not be renewed in the absence of substantial reductions in the levels of mercury emitted to the waters of the Maumee Bay.

The OEPA’s own guidance document clearly states that “the goal of the PMP is to maintain the effluent at or below the WQBEL” (Emphasis in original).<sup>5</sup> While annual progress reporting can be a useful regulatory tool under some circumstances, the PMP as proposed doesn’t actually require any concrete action or investment by FirstEnergy to meet water quality standards on mercury during the terms of the permit, or to have made actual progress in reducing mercury emissions to meet those standards.

## Conclusion

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<sup>5</sup> Ohio Environmental Protection Agency, Permit Guidance 7, Pollutant Minimization Programs, 8/31/1998.

The OEPA should be granting a permit that significantly reduces fish kills, mercury discharges, and discharge of super-heated effluent into Lake Erie. This includes using the maximum percentages for fish kill reduction under the Clean Water Act Section 316b, which are 80% and 95% reduction for entrainment and impingement respectively and using the Best Available Technology as required for thermal plume reduction. The OEPA should not be granting a permit for another four years in which FirstEnergy “studies” whether or not reverse louvers will reduce the amount of fish killed each year and whether it would be cost effective for it to reduce mercury emissions, while the impacts to the Maumee Bay continue. Kinetrics and Tetra Tech have both stated that it is not the best available technology and that the louvers would not significantly reduce fish kills. The study has already been conducted and the results are in – for Bayshore and its impact on Maumee Bay and Lake Erie, cooling towers are “the best technology available for minimizing adverse environmental impact,” and any other technology falls short in protecting Lake Erie.

In the alternative, OEPA should immediately reopen this permit after the proposed louver study is complete, and make the results open to the public for full scrutiny and comment. Additionally, as part of the permitting requirement, the OEPA should require Bayshore power plant to continue to count and report the number of fish killed each day, as well as report where the dead fish are sent and the weight and size of the dead fish.

It also is imperative for the OEPA to put a realistic price tag on the losses of fish and other aquatic wildlife and require annual compensation payments, regardless of what technology is ultimately permitted. Without an economic incentive and the associated long term costs to power generation, innovative and effective means to reduce fish kills at these facilities are unlikely.

Precedent exists for requiring annual payments to compensate for fish kills from power plant intake pipes in the Great Lakes basin. Consumers Energy’s Ludington Pumped Storage Facility on Lake Michigan was the subject of litigation that led to penalties going toward the creation of the Great Lakes Fishery Trust. Utilities provide annual compensation to the Great Lakes Fishery Trust for fish kills caused by the plant and the Great Lakes Fishery Trust provides funding for projects related to Great Lakes fisheries, education, and ecosystem restoration. In this case, the funds should go to the Wildlife fund for stocking and restoration of the fishery in the Maumee River and Maumee Bay.

Thank you again for this opportunity to comment. The OEC and any and all of the undersigned organizations reserve the right to supplement these comments before the end of the comment period concerning these issues and others pertaining to Bayshore’s application for an NPDES permit.

Kind regards,

Kathy Hanratty, Owner  
Enviroscapes Landscape Design

Elaine Marsh, President  
Friends of Crooked River

Ray Stewart, President and Director of Communications  
Friends of Wetlands

Rick Graham, President  
Izaak Walton League of America – Ohio Division

Rick Unger, President

Lake Erie Charter Boat Association

Lauren von Vesterfield, co-founder and President  
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Francille Willis, Concerned Citizen  
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