

# ECOLAW

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BY EMAIL

Daniel S. Morris, Acting Regional Administrator  
U.S. Department of the Interior  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Region  
55 Great Republic Drive  
Gloucester MA 01930-2276

**Re: Pilgrim Nuclear Power Station: Request to Reinitiate Consultation for Entergy Nuclear Generating Corporation Operating License Renewal**

Dear Mr. Morris,

Jones River Watershed Association (JRWA) and Pilgrim Watch (PW) hereby request that the National Marine Fisheries Service (NMFS) reinitiate consultation under Section 7 of the Endangered Species Act, 16 USC § 1536, for the relicensing of the Pilgrim Nuclear Power Station (PNPS). By letter dated May 17, 2012, NMFS stated it concluded informal consultation with the NRC with a “not likely to adversely affect” finding for all species under NMFS jurisdiction, and “no effect” for right whale critical habitat. (Determination), p. 30. For the reasons stated below, we believe the Determination is arbitrary, capricious and an abuse of discretion, and otherwise not in accordance with law.

The content of the Determination demonstrates NMFS’ imperfect understanding of the impacts of Entergy’s operations during the relicensing period and ignores facts about compliance with the NPDES permit. Under 50 CFR § 402.16(b), consultation must be reinitiated “if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.” Forest Guardians v. Johanns, 450 F.3d 455 (9th Cir June 13, 2006). Greenpeace Found. v. Daley, 122 F. Supp. 2d 1110 (D. Haw. June 5, 2000). We herewith provide you with more information documenting that PNPS operations during the relicensing period may affect listed species and/or critical habitat in a manner and/or to an extent not previously

considered by NMFS in making the Determination. This new information requires that consultation be reinitiated pursuant to 50 CFR § 402.16(b).<sup>1</sup>

**1. NMFS conclusions about the “effects of the action” are based on scientific reports for a different operating scenario.**

The “effects of the action” are caused by impingement, entrainment, discharge of a thermal plume, and point source and non-point source discharges. All of the conclusions NMFS draws about the effects of the action are invalid because during the relicensing period (2012-2032), PNPS will be *operating at a higher electrical rating and higher annual capacity* that it was during the periods covered by the scientific studies from which NMFS draws its conclusions.

Power Upgrade and Operating Time. The Determination is based on a narrow set of data and models for PNPS based on operating scenarios that existed *prior to* the 2003 uprate *and* at a time when PNPS was operating few days of the year. In 2003, Energy increased PNPS’s electrical rating to the current 715 MW from 655 MW megawatts electric.<sup>2</sup> In addition, during the period covered by the reports the Determination primarily relies on, PNPS average running time was 58%. In recent years, PNPS has been operating at a higher capacity, around 85% to 98.5%.<sup>3</sup> Nowhere does the Determination acknowledge or recognize the different operating scenario that will occur during the relicensing period, and the “effects of the action” under this scenario, including the discharge of more water, heated to higher temperatures, even though this issue was identified in PNPS reports. Excerpts from these reports state as follows:

A-T Committee, #34, 71st meeting, 7/17/89, p. 2, discusses asking the NRC for an “extra 10% power output in the near future (from 670 to 740 Megawatts)...Pilgrim would draw in more seawater to maintain the same [delta]T, which may require new circulation pumps. The thermal plume would be concomitantly farther out.”

A-T Committee, #46, 83d meeting, 6/13/95, p. 1, (Meeting attended by Boston Edison consultants from ENSR, MRI, including Mike Scherer) “Also, the engineers have considered increasing the power output of the plan. The Delta-t would stay the same, but flow would increase by 13%.”

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<sup>1</sup> On May 25, 2012, the NRC reissued Entergy’s operating license, based on votes taken before the NRC received the Determination.

<sup>2</sup> PNPS EIS, p. 2-4.

<sup>3</sup> From 1973 to 1999, the average running time for PNPS was 58%. In 2010, the annual capacity factor was 98.5%, and in 2011 it was an annual average of 85.5%, and operated at almost 100% capacity during the hotter months-June through October. The 2011 capacity factors by month are: January-99.3%, Feb. 85.8%, March 95.4%, April 46.8%, May 39.9%, June 99.5%, July 98.9%, August 99.8%, September 98.8%, October 99.6%, November 72.4%, December 87.0%, for an annual average of 85.5%. Entergy 2011 “Annual Radiological Environmental Operating Report for January 1 through December 31, 2011, Table 1.3.1.

NPDES Permit The Determination erroneously assumes that Entergy's state-federal water pollution permits (last reviewed in 1994) are based on the current electrical rating (715 MW) and on current operating capacity factors. That is not the case--the 1994 water pollution permits are based a 655 MW rating, operating at an annual capacity factor in the range of 58.5%, not the current scenario in which PNPS is running in the 85-100% range.

## **2. NMFS conclusions about the "effects of the action" are based an insufficient portrayal of the thermal plume**

NMFS' conclusions about the effects of the thermal plume are flawed because the underlying data is outdated and insufficient. Determination, pp. 15- 24. The overarching flaw is that the data NMFS relied on to assess the extent of the plume and its temperature are based on effluent discharges prior to the up-rate to 715 MW and assumes lower annual capacity factors (see part 1 above).

Moreover, the two thermal plume reports NMFS relied on are between 16 and 40 years old. First, NMFS relied on the 1974 MIT study, which focused on characterizing the plume based on surface water temperatures. Determination p. 15-16. This document is not readily available to the public, is not part of the PNPS EIS record, and appears to be only available as a non-circulating book at the MIT library. If NMFS wants to rely on this source, it should make the document publicly accessible to the public.

The MIT study is based on a limited number of temperature measurements. While it is impossible to see what the 1974 report really says, since it is not available, it appears to be based on temperature measurements taken in at least July, August, and November, apparently in 1973 or 1974. From January to June 1974, PNPS was shut down.<sup>4</sup> Thus, any temperature measurements in July 1974 do not reflect even the lower operating rates of 30 years ago.

The second report NMFS relies on is the 1995 EG&G study (focused on bottom water temperature measurements to characterize the benthic thermal plume and validate mathematical models to predict bottom plume characteristics). Determination p. 16. NMFS use of this 17-year-old 1995 EG&G study is unreasonable. It is not based on the operating scenario that Entergy proposes for the relicensing period. Moreover, in the EG&G report, only 2.5 days of data are used, not the 6 weeks of study design because Pilgrim shut down unexpectedly during the data collection period. The study itself describes its limited utility:

§ 4.1 "The study was cut short by shut down of PNPS from 29 of August to 29 of November 1994, limiting detailed observation of the plume to a single weather regime....

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<sup>4</sup> Boston Edison's Semi Annual Report No. 4, for period Jan. 1974 to June 1974 states that "during this reporting period, the Pilgrim reactor was shut down for refueling and maintenance for contested licensing hearings regarding a change in fuel design." Report, Part A.

The measurement of the plume extent therefore rests on a relatively few time series measurements.”

§ 4.2 “Due to the short length of the full array measurement period, the foregoing conclusions cannot be applied directly to assess plume extent or maximum bottom temperatures under other wind, current, and tide conditions....”

§ 4.3 the “objective of the study was not achieved....”

Finally, NMFS relies on the 2000 ENSR study<sup>5</sup>, which merely summarizes the 1995 EG&G and contains no new field data or models.

### **3. Use of inaccurate thermal plume data renders all conclusions about impacts on species, prey, and critical habitat erroneous.**

NMFS conclusions about the effects of PNPS relicensing on *Whales, Sea Turtles, and Atlantic Sturgeon* (pp. 17-21) are based on the 1974 MIT study and the EG&G 1995 study, and an inaccurate operating scenario. NMFS conclusions about *Effects to Prey* (pp. 22 to 24) from the thermal plume are erroneous for the same reasons. See, e.g., p. 23- claim that benthic area affected is 8.4 acres is based on the 1995 EG&G report; claim that the area that would be used by Leatherback turtles for foraging is “no larger than .91 acres”; claim that the surface area effected is “smaller than 11.25 acres”; p. 23- claims about distribution of fish species that humpback and fin whales prey upon based on 2000 ENSR report which in turn is based on the 1995 EG&G report; p. 24-claims about impacts to distribution of copepods based on ENSR 2000 report.

### **4. Impingement of Listed Species**

In this section of the Determination, NMFS claims that “as a condition of their existing license, Entergy must report to NRC any observations of listed species.” Determination p. 9. There is no citation or reference given for this statement, therefore it is unreliable.

### **5. Impingement and Entrainment-Effects on Prey**

Right Whales. The Determination states that “we expect any effects to foraging right whales to be insignificant.” Determination, p. 12. This conclusion is based on NMFS evaluation of the effects of relicensing on the right whale’s main food supply, copepods, a type of zooplankton which would be entrained in PNPS and suffer mortality. The Determination relies primarily on one source for the assessment of mortality to copepods from PNPS, the Bridges and Anderson 1984 study. This study does not reflect the operational scenario that will exist during PNPS relicensing (715 MW, higher capacity factor, and warmer water coming into PNPS). NMFS states, “Entergy reports that studies conducted in 1984 indicate that mortality of entrained zooplankton is approximately 5%

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<sup>5</sup> In 2000, US EPA contracted with TetraTech to evaluate Entergy’s 2000 ENSR report. Entergy and US EPA have withheld this document from the public under a FOIA exemption. JRWA has challenged the agency’s refusal to release the document. Until the TetraTech report is provided to the public, neither the NRC nor NMFS can rely on the ENSR report because doing so does not provide a fair and balanced assessment of the ENSR 2000 report.

during most operating conditions, with an additional loss of 8.3% of entrained zooplankton that are exposed to chlorine. Thus, more than 85% of entrained zooplankton are likely to survive entrainment. Bridges and Anderson.) What the Bridges and Anderson paper actually says is:

“Entrained zooplankton generally had high survival rates ranging from 95% to 100% under most operating conditions. However, exposure to heat combined with chlorination resulted in mortality rates of 100% when discharge temperatures exceeded 29 C. [84.2 F] No attempt was made to identify separately the effects of mechanical damage.”

Under the 1994 NPDES permit, Entergy is allowed to continuously chlorinate each service water system. Permit No. MA 003557, A.1.(a)(2). It appears that this chlorinated water is mixed with the condenser cooling water discharged through discharge point 001-1. A cursory review of discharge monitoring reports shows that often the discharge temperature at this outlet is above 84.2 F (June 2011, average temperature 98.6 F, July 2010 average temperature 99 F)

## 6. Atlantic Sturgeon

NMFS should consider the June 1, 2012 report of Atlantic Sturgeon found in the North River, the outlet of which is about 16.6 miles north of Pilgrim in Hanover, Massachusetts. According to the state, “These fishes are basically poking their head into river mouths, checking things out, migrating around the coasts,” said Mike Armstrong, the assistant director of the state Division of Marine Fisheries. “We are definitely hearing more reports of encounters with them,” he said.

Read more: <http://www.patriotledger.com/features/x1347549919/Women-pull-six-foot-sturgeon-from-North-River-in-Hanover#ixzz1yB3DLPU6>

## 7. Climate change

In addition to the specific inaccuracies and outdated information cited in 1-5, above, new information relating to climate change itself should be reconsidered with regard to NMFS conclusion that “any water temperature changes would be significant enough to affect the conclusions reached by this consultation.” NMFS states the following as the basis for this conclusion:

*“Assuming that there is a linear trend in increasing water temperatures and decreasing pH, one could anticipate a 0.03-.04°C increase each year, with an increase in temperature of 0.6-0.8°C between now and 2032 and a 0.0030.004 unit drop in pH per year, with a drop of 0.06-0.08 units between now and 2032.”* Determination p. 28. NMFS does not support the unusual claim that “there is a linear trend in increasing water temp and decreasing pH” with any reference or data. Moreover, the meaning of the statement is unclear. NMFS should explain whether it is saying temperature and pH are inversely related to each other in a linear way. While it is true that increasing temperature and decreasing pH are inversely related to each other, they are not related in a linear fashion. The statement could also be interpreted to mean that temperature and pH are independent

of each other but both happen to be linear trends. Science shows, however, that pH is not currently changing nor predicted to change in a linear fashion. At the most fundamental level pH is a log scale measurement. NMFS own statement that pH will change "0.003 to 0.004 unit drop in pH per year" shows the flaws in the statement because the drop described is not a linear change, but an exponential change.

See, EPA information on ocean acidification.

<http://www.epa.gov/climatechange/science/futurecoa.html> ("It is important to note that ocean acidification is not a result of climate change, but is rather a direct consequence of the increased CO2 levels that also cause climate change. Ocean acidification will, however, affect future climate change by causing a decline in the ocean's capacity to absorb increasing atmospheric CO2 (IPCC, 2007b).") Decreased pH and increased temperature have some of the same negative impacts on marine life, which are cumulative impacts not considered by NMFS.

Further, we provided information that "*preliminary* information from the winter of 2011-2012 indicates that Cape Cod Bay water temperatures during the season of right whale residency have been elevated above the 15 year average by 2 - 2.5°C." NMFS should assess the impacts of the current operating scenario described in part #1 above (as opposed to the pre-2003 scenario) in light of this new information.

Further, the Determination states, "The temperature of the discharged water is a function of the temperature of the incoming seawater." Thus, if ocean temperatures rise, and PNPS is taking in warmer water during the relicensing period, it will be discharging water that is also warmer than it was prior to the climate change impacts. This was not considered in the Determination. To the extent NMFS conclusions are based on PNPS operating scenarios prior to the 2003 uprating, and at lower capacity factors, the conclusions about climate change impacts are erroneous.

#### **8. Effects of dredging during the relicensing period are reasonably certain**

NMFS improperly failed to consider the effects of dredging during the relicensing period. NMFS gives two reasons why the effects of dredging were not considered: first, it claims no specific plans are available, and second claims a lack of information on the types of dredges, volume of material, timing, and duration and type of dredge to be used. Determination, p. 29. NMFS concludes that the "effects of the dredging are not reasonably certain at this time for us to consider them in this consultation." NMFS further states, any proposals for future dredging need a permit from the U.S. Army Corps of Engineers "which would trigger the need for a subsequent ESA Section 7 consultation."

Publicly available data shows that the effects of dredging during the licensing period are reasonably certain, and therefore should be considered. Dredging was done less in December 2011, and was the same type of activity that had been done in prior years. This public data describes the dredging that occurs at PNPS on a regular basis. The PNPS EIS, p. 2-11, describes the dredging of the intake in 1982 and the "late 1990s," sediment testing, EIS, § 2.2.5.2, and cites to a 1996 Boston Edison report prepared for the dredging. EIS, p. 2-132. Entergy's Environmental Notification Form #14744 and

dredging plans filed with the Commonwealth of Massachusetts for the 2011 dredging activity give the acreage, method of dredging, volume of dredged and overdredged material, and timing of the dredging. See also, Certificate of the Secretary of Energy and Environmental Affairs, dated May 9, 2011, EEA # 14744, referring to dredging in 1982 and between 1997 and 1999. These and other public documents describe all of the things about future dredging that NMFS says “are not reasonably certain at this time” --- in fact, future dredging is reasonably certain to mirror past dredging.

Finally, the 2007 PNPS EIS claimed “there are no current plans for future dredging of the discharge canal or the intake embayment at PNPS.” Id. p. 2-12. The credibility of this statement is questionable, as clearly, at the time the EIS was prepared, Entergy was aware of the need for dredging the intake channel in the near future, and certainly during the 20 year relicensing period. By making this statement, Entergy was able to keep dredging during the relicensing period out of the NEPA review process.

NMFS Determination states that PNPS dredging requires ESA consultation. If this is in fact the case, then it appears the ESA was violated by in December, 2011 when Entergy dredged without any ESA consultation. We request that NMFS investigate this apparent violation of the ESA.

For all of the above reasons, we request that consultation be reinitiated. We look forward to your prompt reply. If you have any questions please contact Meg Sheehan, cell 508 259 9154, meg@ecolaw.biz.

Very truly yours,

*Signed electronically*

Jones River Watershed Association

Pilgrim Watch

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