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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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Mr. Brian E. Holian, Director
Division of License Renewal
Office of Nuclear Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

OCT 12 2010

Mr. David J. Wrona, Chief
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

**Re: Indian Point Generating Unit Nos. 2 & 3 License Renewal;
Docket Nos. 50-247 and 50-268; Essential Fish Habitat Consultation**

Dear Messrs. Holian and Wrona:

The National Marine Fisheries Service [NMFS] has reviewed the essential fish habitat [EFH] assessment and supplemental information provided within the United States Nuclear Regulatory Commission's [NRC] 'Generic Environmental Impacts Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3' [dGEIS], and its attendant appendices. These documents evaluate the proposed renewal of the operating licenses for Indian Point Energy Center's Units 2 [IP2] and 3 [IP3] for a period of twenty years. The documents include a brief description and analysis of adverse effects to a variety of diadromous and estuary-dependent fishes, crustaceans and other invertebrates, as well as EFH that is designated in the immediate project vicinity. We will elaborate on the affected resources and our concerns regarding continued operations at IP2 and IP3 under present conditions in subsequent sections of this letter. However, upon our review of the available information, NMFS does not reach all of the same conclusions as the NRC with respect to adverse effects that relicensing IP2 and IP3 would have on fishery resources and their habitats. We appreciate the opportunity to provide comments at this time in accordance with Mr. Wrona's letter of 21 September 2010.

The current licenses for the two Indian Point nuclear generation facilities are due to expire in 2013 and 2015, respectively. Because IP2 and IP3 withdraw and discharge water into the Hudson River, a navigable surface water body, their operations are subject to Clean Water Act oversight. In New York, this oversight is administered by the New York State Department of Environmental Conservation, which issues Clean Water Act §401 Water Quality Certificate [WQC] decisions under its State Pollutant Discharge and Elimination System [SPDES] program. The New York State Department of State also has a bearing on these proceedings in that it is responsible for any decisions relating to the consistency of the proposed action with the state's Coastal Management Program. Entergy Corporation [Entergy], the current owner-operator of the Indian Point Energy Center [Indian Point] generating units, has made application for the necessary state and federal authorizations and has requested that they are issued to run concurrently. Since these state actions may effect EFH, the NMFS is invoking its option to share our comments and recommendations to the involved state agencies on their activities as provided by the EFH implementing regulations. We do so here by including them in the service list for this correspondence.

The dGEIS and EFH assessment prepared by the NRC evaluate the proposed action of the license renewal for IP2 and IP3 and form the base documentation for consultation between NRC and the National Marine Fisheries Service [NMFS]. The authorities under which we engage in consultation include the



NRC's environmental protection regulations in Title 10, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions", of the Code of Federal Regulations (10 CFR Part 51), which implement the National Environmental Policy Act of 1969, as amended (NEPA); the Fish and Wildlife Coordination Act (FWCA), the Endangered Species Act (ESA), and the requirements of our EFH regulation at 50 CFR 600.905 of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which mandates the preparation of EFH assessments and generally outlines each agency's obligations in this consultation procedure. The comments provided in this letter pertain to the FWCA and MSFCMA coordination issues that are part of your NEPA and relicensing processes.¹ To summarize briefly, these documents acknowledge that operating once-through cooling systems at Indian Point has resulted in adverse environmental impacts, yet both documents nonetheless conclude with NRC's preliminary determination that the adverse effects associated with license renewal would have only minimal impacts on both living aquatic resources themselves and on EFH designated for federally managed species in the immediate Indian Point area. NRC's analysis of impacts relies upon comparing near field impacts that would occur in the immediate project vicinity versus all EFH designated for a particular species. We frame the issue differently, and instead consider both the adverse effects to the local fishery stocks emanating from the Hudson and the unusually high potential capacity of the mid-Hudson for recruitment of estuary-dependent fishes and production of forage species as important defining issues that lead us to a different conclusion.

Project Background:

The Indian Point Energy Center [Indian Point] is a three-unit power station located on the east shore of the Hudson River in the Village of Buchanan, Town of Cortlandt, Westchester County, New York. Only two of the generating units are operating. Indian Point Unit 1 was permanently shut down in 1974 because the emergency core cooling system did not meet regulatory requirements and therefore posed an unacceptable public risk; IP2 and IP3 continue to operate and are the subjects of upcoming license renewals requested by Entergy. Indian Point has a long presence in the Hudson and is one of the facilities included in the 'Hudson River Settlement Agreement' [HRSA] agreed among the U.S. Environmental Protection Agency and five New York electric utility companies in a controversy regarding coastal habitat and water uses, fish kills and ecological damage in the Mid-Hudson region.

Under the HRSA, the power plant owners and operators made several concessions to stakeholders representing various environmental interests in exchange for them agreeing to withhold imminent pursuit of forced installation of closed-cycle cooling at Indian Point and several other once-through cooled power plants in the mid-Hudson region. In particular, Consolidated Edison abandoned its plans for developing a major pumped storage [hydroelectric] facility at Storm King Mountain, and the various plant operators agreed to collect data and analyze impacts their facilities were having on living aquatic resources for a period of ten years. Subsequent modifications to the HRSA extended the study period by another decade and have allowed these plants to continue withdrawing about a trillion gallons of river water or more per year. Total river water consumption is dependent upon how many days each plant is operating annually and at what output level. Scheduled outages at Indian Point and more sporadic operation of the fossil fueled plants are all determining factors in terms of the actual water consumption levels at any given time. The biological and ecological effects of these withdrawals are somewhat seasonal in that they reflect the biomass and species assemblage present at the time that the water withdrawals are taking place. The extended study period included implementing a variety of measures that partially mitigated for impingement and entrainment impacts, but these individually and cumulatively did not achieve the level of impact reduction that would result from installing closed cycle cooling at Indian Point.

The Indian Point generating units alone consume about 2.5 billion gallons of water *per day* for their pressurized-water reactors. To meet this need, Indian Point relies upon the Hudson River as a cooling water source and heat sink. Water is withdrawn directly from the river through batteries of seven intake

¹ ESA issues have been coordinated in consultation with our counterparts in the Northeast Regional Office's Protected Resources Division and we do not address them here.

bays into each generating unit and distributed to once-through condensers and auxiliary cooling systems. Cooling water is drawn into the plants by variable- or dual-speed pumps. As it first enters, the withdrawn water is skimmed of floating debris and subsequently passed over modified, vertical Ristroph traveling screens designed to protect aquatic life by retaining water and minimizing vortex stress. These modified screens attempt to reduce, but do not eliminate, impingement mortality. A high pressure spray-wash system removes debris from the front of the traveling screen mechanism and a low pressure spray-wash system flushes impinged fishes off the screen and into a sluice system that returns them to the Hudson River.

Under the HRSA, the former owners of Indian Point conducted impingement monitoring between 1975 and 1990 using a variety of techniques; however, neither the previous nor the current owner-operators have performed validation studies to evaluate the actual performance of the modified traveling screens. The EFH assessment Table 6 contains impingement data for IP2 and IP3 collected between 1981 and 1990. Revised data populating this table were provided to the NRC in December, 2009. Upon NMFS' request, these data were provided for our use on October 01, 2010 and were used in our review. Entrained organisms are not removed from the cooling water stream and instead are carried into and through the plants' cooling systems, as they are first collected by the circulating pumps, and subsequently passed through the plant intakes into the condenser tubes used to cool the turbine exhaust steam. Within the condensers, the organisms are subjected to mechanical damage and shear stress, thermal shock, and exposure to chlorine, industrial chemicals and biocide residues. Both the entrained organisms and heated effluent streams then exit the generating plant and are returned to the Hudson River through a shared discharge channel. According to the dGEIS, the prior Indian Point owner-operators periodically conducted entrainment loss studies for IP2 and IP3 since the early 1970s. The most recent data of this nature reported in the dGEIS are from 1990.

Environmental Setting:

The Hudson River Estuary supports an unusually large and diverse assemblage of fish and shellfish, and has long been recognized as a valuable national and regional resource. That is in part because the Hudson makes large contributions not only to local aquatic resource communities, but also to coastal and offshore fisheries that are supported by prey and other nutrients emanating from the estuary. Some of these fishery resources are managed by an inter-state basis by the Atlantic States Marine Fisheries Commission [ASMFC] and others are managed federally pursuant to the Magnuson-Stevens Fishery Conservation and Management Act [MSFCMA] or the Endangered Species Act [ESA]. All of these aquatic organisms as well as non-managed species such as forage species and other lower trophic level organisms receive consideration under the federal Fish and Wildlife Coordination Act [FWCA] as NOAA trust resources.

More than 200 fish species have been recorded from within the entire Hudson watershed, and approximately two thirds of these occur in the estuary itself for all or part of their life cycles. More specifically, the Buchanan reach of the Hudson River is a tidally-dominated habitat that serves as a migratory corridor, spawning habitat, and nursery area for an unusually diverse species assemblage of resident or diadromous fishes, crustaceans, shellfish, and many lower trophic level prey items (Smith and Lake 1990). Ambient salinity conditions vary seasonally, and generally tend to lie in the mesohaline or oligohaline ranges. The immediate project reach is within the EFH designations for the Hudson-Raritan estuary and is significant with respect to the resources under the stewardship of the agencies mentioned above. As is true of other estuarine habitats, local temperature and salinity regimes, water depth, bottom type, sediment load and current velocities all influence the distribution and function of aquatic communities.

Evidence suggests that northeast coast estuaries have lost much of their rich former fishery productivity because of habitat degradation or loss, but lack of absolute species abundance data for early historical periods prior to significant human disturbances makes this conclusion somewhat inferential. Yet the linkage is supported by strong evidence, particularly that stock sizes for most estuarine dependent fishery resources under the jurisdiction of the Atlantic States Marine Fisheries Commission, New England or Mid-

Atlantic Management Councils, or the states of New York and New Jersey fishery management agencies, are not currently over fished, but fall below historic levels (NEFMC 1998; ASMFC 2005). This observation suggests that the Hudson River's ability to support and produce living aquatic organisms has been compromised over the years by lost habitat quality and quantity as humans have dredged, filled, and withdrawn river water for a myriad of uses, resulting in conflicts of use with fishery resources.²

As described above in the Project Background section of this letter, water withdrawals for once-through cooling systems that serve the mid-Hudson power plants has been a major conflict of use that has gone unresolved for decades. A total of five units remain in operation in the mid-Hudson: IP2, IP3, Bowline Point, Danskammer, and Roseton Generating Stations. All of these plants use one-through cooling systems. In the interim since the most recent relicensing was completed for the Indian Point plants, most fish species have experienced declines, and essential fish habitat [EFH] has been designated in order to better manage adverse anthropogenic effects on fisheries. For the immediate Indian Point area, designated EFH includes acreage that produces organisms that are under direct federal stewardship as well as prey items for species further downriver and offshore. The Hudson River is an important regional source for both harvested stocks and prey, so reductions in its productivity are of great significance to fishery ecology and fishery management.

Given the immense natural productive potential of the Hudson River Estuary, and taking into consideration the staggering numbers of organisms that are lost directly, indirectly and cumulatively through continued operation of electric generating stations that continue to use once-through cooling technology in the Mid-Hudson reach,³ the National Marine Fisheries Service [NMFS] suggests that the current Indian Point relicensing process is an appropriate and opportune time to apply the Clean Water Act § 316(a) and 316 (b) provisions regarding large power generation facilities. We note that the Indian Point generating units comfortably fit under the criteria for being required to ensure that the location, design, construction, and capacity for cooling water intake structures reflect the best technology available [BAT] to protect aquatic organisms from being killed or injured by impingement or entrainment. We provide further rationale for this conclusion in the following sections of this letter.

General Comments on NRCs Exposition of Environmental Impacts of Operation in the dGEIS:

Nuclear power plant system operation may create a number of habitat disturbances that range from minor to major risk to aquatic resources. The evaluation of these impacts would have been enhanced by a more expanded discussion rather than being distilled to a series of summaries on pp. 4-3 to 4-6. These bullets address topics related to a variety of predominantly physical impacts that the NRC dismisses based upon prior experience at other nuclear plants or on the basis of information presented elsewhere in the EIS. We suggest that the NRC reconsider their evaluation before the GEIS and supplement is finalized. Several of these bullets mention subjects which have a potential bearing on EFH and other aquatic resources of concern, and some modifications would demonstrate adequate support for its conclusions. For instance, on page 4-3, the NRC considers altered currents at intake and discharge structures and finds:

"Altered current patterns have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term".

² We note that the U.S. EPA generally has determined that operation of industrial scale cooling water intakes results in a wide spectrum of undesirable and unacceptable adverse effects on aquatic resources including entrainment and impingement; disrupting the food chain; and losses to aquatic populations that may result in reductions in biological diversity or other undesirable effects on ecosystem structure or function. See 66 Federal Register 65,256, 65,292 (December 18, 2001), 69 Federal Register 41,576, 41,586 (July 9, 2004). In addition,

³ Described in NYSDEC's April 2, 2010 denial of Entergy's water quality certificate and also in the NRC's Supplement 38 to the generic Environmental Impact Statement for the proposed re-licensing of IP2 and IP3

Given the large volumes of water consumed at Indian Point each day and the relatively narrow configuration of the Hudson River at the project reach, it seems plausible that under full operation, the plant *could* induce noticeable changes in the current regime or perhaps induce changes in the local erosion and accretion rates that have unintended adverse effects such as losses of submerged aquatic vegetation, chronic disturbances that discourage settlement of tiny prey items, and similar effects. Although NRC regulations do not compel the project proponents to provide plume modeling or field studies, our EFH regulations compel us to assume the worst case scenario that the effluent is creating a barrier to migrating fishes and other unacceptable environmental conditions that would adversely affect the amount and quality of available EFH. We understand that the plant operators have been using various measures to partially mitigate for these effects, but the lack of a detailed study that 1) evaluates the impacts of once-through cooling at Indian Point and the three other generating units *and* 2) clearly demonstrates that the measures they have been implementing are functionally equivalent to the installation of closed-cycle cooling leaves their position on the Clean Water Act § 316(a) and 316 (b) provisions as unsupported assertions. After several extensions of the HRSA, the situation remains fundamentally unchanged with regard to fish stocks and the plants are potential triggers for lost EFH in the form of direct habitat loss compounded by lost productivity in designated EFH.

There is similar concern in the statements for many of the other bullets in this section of the dGEIS, notably as regards the potential release of chemical or thermal pollution [and attendant adverse impacts to fishery resource movements, etc.]; entrainment of phytoplankton and zooplankton; induction of low dissolved oxygen; and other line items that would reduce the quality and quantity of designated EFH as described in the implementing regulations for the MSFCMA. As such, it is difficult for us to dismiss these topics so easily as problems that could be thoroughly assessed in our overall FWCA and EFH coordination. Along these same lines, existing entrainment study results from IP2 and IP3 collected from 1981-1987 do not seem to include hard data or discussion of the entrainment implications for fish eggs and larvae, copepods and other invertebrate prey items that are described clearly as prey in the EFH vignettes included for red hake, winter flounder, windowpane, bluefish and Atlantic butterfish. While Section H.1.2 of the dGEIS and its corresponding subsections do provide a short discussion of entrainment, and even casually observe that a wide variety of phytoplankton, zooplankton, and early life stages of fish and shellfish are vulnerable to becoming drawn into the generating plants via the cooling water stream, the review documents do not provide a thorough analysis of impacts to EFH with respect to their operations. Losses of this nature would have at least indirect and cumulative adverse effects on EFH not just in the mid-Hudson region, but extending into the marine portions of the coastal zone.

Coincidentally, the discussion noted in the foregoing paragraph touches upon the controversial nature of how different stakeholders view entrainment survival, which has a bearing on how a disagreement like the Hudson River power plant example can take deep root, intensify and perpetuate. For entrainment, the NRC documents note a wide range of perceptions on how different stakeholders view the potential for entrainment survival. As these documents suggest, the most conservative estimates consider entrainment 100% fatal, while some of the power companies suggest that some species or life stages could fare considerably better based upon 96-hour survival studies. The NRC correctly acknowledges in the dGEIS that the latter studies do not take into account indirect losses that arise to organisms becoming injured, disoriented or less able to forage in the event that they are fortunate enough to survive entrainment initially, and conclude for the purposes of their assessment that such losses are unknown. Consequently, NMFS does not see justification in the gGEIS to support a conclusion that impingement effects are not significant, or that any mitigation attempted to date has been as effective as the BAT for industrial scale operations, namely, closed-cycle cooling. This calls into question any progress claimed to have been made in implementing the HRSA in part because it gives the appearance that the various Indian Point operators did not follow through completely on their commitments under the HRSA. Moreover, it appears the operators are content to continue under the *status quo* without demonstrating that their mitigation to date has been functionally equivalent to best available technology as required under CWA §316(b).

NRCs Evaluation of Impacts on Aquatic Resources from Operation of the Cooling Water Intake:

The *intake* impacts for once-through cooling systems largely surround physical habitat loss associated with construction of the intakes themselves as well as the inability of aquatic species from being successfully able to use habitat within the volumes of water withdrawn from the source supply. These impacts may include changing particular ecological features such as local hydrological patterns as suggested in the foregoing section, but the preponderance of the impacts usually are associated with organism impingement and entrainment.

Impingement impacts tend to accrue to larger species and life stages that cannot pass through the impingement screens nor avoid the intake current, but become trapped on cooling water screens and sometimes cannot escape before suffering exhaustion, injury or even mortality. For the subject re-licensing proposal, we note that the most recent study results reported in the dGEIS and EFH assessment are decades old, with the most recent information collected in 1990. This fact concerns us on two counts: 1) the data may not accurately depict contemporary habitat usage of the mid-Hudson region by fishes, invertebrates, and other aquatic life, and 2) the project proponents have not evaluated the effectiveness of adaptive measures that have been implemented since the original HRSA was put into place. For instance, installation of the modified Ristroph traveling screens as a means of addressing some of the impacts associated with impingement injury and mortality was predicated on assumptions made in a limited pilot study. The review materials suggest that the actual performance of this gear has not been demonstrated *in situ*. This is an important consideration because gear does not always perform the same in the field as it does in a laboratory setting and its effectiveness can vary based upon the living aquatic resource assemblages it encounters in different geographic settings. Thus, we are left without empirical data to estimate the effectiveness of installing the modified screens and other mitigation measures against closed-cycle cooling. While the new gear may or may not have improved a less than ideal situation, neither NRC nor Entergy can definitively state how effectively the new screen designs are performing as a means of justifying an additional license renewal that permits continued use of once-through cooling in a potential license renewal.

Unlike impingement impacts, which tend to exhibit some selective characteristics in that they largely accrue to larger taxa or more mature life stages, entrainment of organisms into the cooling water source stream are relatively indiscriminate and may adversely affect *any* organism that fits through the screens and cannot counter the suction force of the intake. While the review material indicate that the IP2 and IP3 cooling systems have been retrofitted with dual-speed and variable-flow pumps in order that intake flows can be regulated to some degree to provide some level of mitigation or protection, we note that the dGEIS also indicates that using planned seasonal outages or maximum pump speeds does not eliminate the losses of fishes and other organisms to entrainment.

Regarding these collective intake impact matters, NMFS disagrees with the NRCs approach to presenting and analyzing the impingement and entrainment data. We particularly dispute the NRCs decision to attempt correlating overall *population level* trends with operation of the Indian Point nuclear generating facilities. First of all, analyzing the data over the entire range of a species instead of a more meaningful population segment does not follow the spirit of the National Environmental Policy Act nor the implementing regulations for EFH in the MSA because it ignores real and obvious impacts that could adversely affect a local stock. It is rare for the preponderance of a particular species be extirpated unless it already is endangered or threatened, but it certainly is quite plausible that a more local segment of an otherwise healthy population could be effectively decimated in an acute event or after years of suffering chronic or cumulative impacts. Thus, when considering the impacts of cooling water withdrawal on more local stock contributions emanating from the Hudson River and potentially recruiting to a greatly dispersed coastal fishery, the effects of cooling withdrawal even from a limited portion of the total available habitat (as it is construed in the dGEIS) could be quite profound. Finally, we are critical of this type of data transformation because it also has great potential for creating undesirable artifacts because it assumes all fishery habitats, regardless of their geographic location, size, and ecological condition, are equally valuable to the living resources that they support. The scientific literature is replete with studies that organisms do not use habitats uniformly over their ranges, and this observation is borne out in our

own status and trends data that have been used to select closed areas or to make similar resource management decisions for certain federally managed fishery resources.

In concluding Section 4.1.5 of the dGEIS, upon which the NRC relies to support its overall EFH conclusions, the NRC posits that "impingement and entrainment from the operation of IP2 and IP3 are likely to have an adverse effect on aquatic ecosystems in the lower Hudson River during the period of extended operation", and goes so far as to name several potential mitigation options, but neither arrives at the specific conclusions that the units should be retrofitted with closed-cycle cooling systems, nor selects particular alternatives that they would recommend in lieu of closed-cycle cooling.

NRCs Evaluation of Impacts on Aquatic Resources from Operation of the Cooling Water Discharge:

As disclosed in the dGEIS, the *discharge* of heated water into the Hudson River can manifest a variety of lethal and sublethal effects on aquatic life, influence local ecological conditions, and create barriers to fish migrations. Direct effects tend to be thought of as mortalities that occur when an individual is exposed to conditions beyond their upper thermal tolerance limits. Indirect effects can result in changes to reproductive behaviors, changes in growth rate or survival of young, blocking migratory movements, altered predator-prey relationships, and similar community level disruptions. Oversight of these matters is regulated under a SPDES permit, which imposes effluent limitations, monitoring requirements, and other conditions to ensure that all discharges are in compliance with New York state code and the CWA. The most recent SPDES permit sets a maximum discharge temperature of 110⁰F, and limits daily average discharge temperatures not to exceed 93.2⁰F for a set number of days from mid-April through June. These terms have changed over a series of four consent orders since the original SPDES was let.

The NRC bases its evaluation of thermal effects on the status of the SPDES permits for Indian Point. According to the applicant's assessment, IP2 and IP3 are in compliance with terms of a SPDES permit issued by the State of New York as well as further mitigation required under the fourth HRSA consent order. The New York State Department of Environmental Conservation (NYSDEC), which maintains regulatory oversight over this arrangement, concludes that under certain circumstances, modeling demonstrates that discharges from the operating units at Indian Point allow greater than the four degree (F.) over ambient temperature limit, or a maximum of 83⁰F, whichever is less, in certain estuary cross sections specified under New York State regulations. These matters have been, and remain, in dispute among the plant operators and the NYSDEC, culminating in the state denying a water quality certificate in April, 2010. An ongoing proceeding with the DEC has not resolved the problem, and the NRC notes in the dGEIS that the matter may not be concluded before the NRC issues its final SEIS.

The lack of a thermal study proposed by the NYSDEC or an alternative proposed by the applicant leaves the NRC in the position of having to use existing information to determine the appropriate thermal impact. This resulted in their finding that continued operations with once-through cooling and various mitigation measures would have a small to moderate effect, depending on the extent or magnitude of the plume, the sensitivity of aquatic life stages that were present, and related criteria. In addition to thermal discharges, the NRC considered the potential for plant operations resulting in other impacts to aquatic resources, and concluded that impingement and entrainment are likely to have adverse effects. The significance and extent of these impacts remain in dispute among the involved parties. The project proponents hold that existing operations adequately mitigate impingement and entrainment effects because dual- and variable-speed pumps as well as modified Ristroph were installed at IP2 and IP3, but the efficacy of these and related measures has not been verified by studies. The NYSDEC disagrees with their position, and has concluded that closed cycle cooling is the BAT to address the Hudson River utilities' impacts to aquatic resources. The NRC considered several additional mitigation options and determined that wedgewire screening systems are not feasible; and marine life exclusion systems and/or behavioral deterrents potentially would require further study.

We realize that the ongoing dispute between the plant operator and the State have hampered the NRC's ability to present a full analysis of additional mitigation options available for the existing cooling system, and its potential utility for conserving or protecting EFH functions and values. Nevertheless, we maintain that our analysis of the severity of the project impacts on NOAA trust resources is compelling, and that our conservation recommendations are necessary and appropriate to address the project impacts.

Essential Fish Habitat Comments:

Eight federally managed species with EFH designations within the mixing zone of the Hudson River estuary were identified in the NRCs EFH assessment. Of these, according to NRCs assessment, "there may be adverse individual or cumulative impacts on EFH in the project area for red hake larvae, winter flounder larvae, windowpane juveniles and adults, bluefish juveniles, and Atlantic butterfish juveniles and adults". However, the NRC went on to say in its preliminary EFH determination that they were of the opinion that none of these impacts would rise to a level of concern because "the proportion of EFH affected by IP2 and IP3 is small compared to EFH for the total managed stock". The NRC also proposed that continued operations of the open-cycle cooling systems for these units could continue in a renewed license scenario provided that appropriate mitigation measures were implemented to reduce thermal effluent as well as entrainment and impingement effects.

While the review materials include examples of measures that have been (or could be) implemented to reduce mortalities, it neither advocates a *particular* approach nor evaluates the effectiveness of those measures for protecting and conserving designated EFH or other fishery resource uses. We also note that because the EFH evaluation relies on comparing the immediate project waterfront against the total EFH designated coastally for selected species and life stages, it does not give adequate consideration to the fact that occupation and use of EFH is not uniform. The EFH designations are made on the basis of habitat that is supporting particular species and generic life stages, but does not currently discriminate more finely as to how that habitat is used within a designation. As an example, early juvenile life stages tend to focus on occupation of inshore nurseries and later [but still juvenile] fishes may be using coastal and offshore EFH that better meet their needs. Thus, we do not consider it appropriate to suggest that EFH for a one or two year old juvenile fish is equally suitable for supporting current young of the year juveniles.

Constraining the analysis of impacts to the immediate Indian Point reach and comparing that information against the habitat available to support the entire population and not the stocks originating from the Hudson River, erroneously creates the setting for not being able to find any impacts to EFH. A more appropriate analysis extends the view of entrainment, impingement and thermal discharge impacts to include the mortalities and reduced productivity of forage species, diadromous species, and resident fishes; to assess their impacts on coastal fisheries including species for which EFH is designated downstream; and to discuss how the lost productivity out of the mid-Hudson represents a net reduction in forage opportunities for offshore and downstream resources. This latter class of impacts is quite relevant in this situation and is not analyzed by the NRCs review materials. Nonetheless, the NRCs EFH assessment concluded that there may be adverse individual or cumulative effects of the proposed action on red hake larvae, winter flounder larvae, windowpane juveniles and adults; bluefish juveniles, and Atlantic butterfish juveniles and adults. However, in making this judgment, the NRC did not specify particular impacts of concern in the EFH assessment itself. Extrapolating from the dGEIS, NMFS notes that the primary impacts of concern regarding fishery resources and their habitat generally, and for EFH in particular, that would be associated with continued operations using an open-ended cooling system would be organism loss and habitat degradation. We could not enumerate these impacts based upon the materials provided for our review, but note that at over 2 billion gallons of water consumed per day, the amount of prey available to fishes in particular would be significantly diminished through entrainment alone.

While we recognize the impediments associated with lack of newer studies and related information, NMFS does not agree with some of the methods that the NRC used or assumptions that it made in performing its fish impact evaluations. According to the review materials provided, operating IP2 and IP3 as they currently are leads to direct impacts to EFH species and their prey in the mid-Hudson region. We also note that the EFH assessment and associated analyses were configured too narrowly to capture the breadth and implications that continued operations would have on living aquatic resources and their habitats both in the mid-Hudson and to coastal fisheries. As noted above, we are particularly concerned with the potential for Indian Point operations leading to reduced production or availability of prey, which constitutes an indirect or cumulative adverse effect that diminishes the quality of designated EFH as defined in the MSFCMA. Similarly, it is our opinion that a proper cumulative effects analysis for this situation should have included the adverse effects associated with operations at all of the mid-Hudson power plants that rely on Hudson River water to feed once-through cooling systems. We are not alone in this conviction. According to the NYDECs Final Draft Fact Sheet NY-0004472, dated November, 2003, regarding Indian Point's Surface Water Renewal Permit Action, "Pursuant to Section 316(b) of the CWA, and 6 NYCRR Section 704.5, the Department has determined that the site-specific best technology available (BTA) to minimize adverse environmental impact of the Indian Point Units 1, 2 and 3 cooling water intake structures is closed-cycle cooling." NMFS agrees with New York that a closed-cycle cooling system would significantly limit the amount of intake flow and thereby reduce impacts associated with especially impingement and entrainment. It is our opinion that implementing this measure is in the best interest of fishery resources and also is the most appropriate option for meeting our mutual EFH mandates while allowing continued electric generation at IP2 and IP3 in an otherwise sensitive ecological area.

Essential Fish Habitat Recommendations:

To minimize the impacts on EFH, pursuant to Section 305(b)(4)(A) of the MDFCMA, NMFS recommends that the following conservation recommendations be adopted in conjunction with the proposed federal action:

Implement the best available practicable technology to mitigate impingement, entrainment, and thermal impacts. The BAT for Indian Point would be reconfiguring the facilities by replacing the once-through cooling system with a state-of-the-art, closed-cycle design. A closed cycle cooling system would minimize water intake rates and return little to no heated water back into the Hudson River. The reduced water withdrawals and greatly diminished, perhaps even non-existent, plume associated with a closed-cycle cooling system would avoid and minimize what NMFS considers to be highly significant mortalities of billions of aquatic organisms and their attendant impacts to coastal fisheries.

Please note that Section 305(b)(4)(B) of the MSFCMA requires that the NRC provide NMFS with a detailed written response to the EFH conservation recommendation, including a description of the measures adopted by the NRC for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with NMFS' recommendation(s), Section 305(b)(4)(B) of the MSFCMA also indicates that the NRC must explain its reasons for not following the recommendation(s). Included in such reasoning would be the scientific justification for any disagreements with NMFS over the anticipated effect of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects pursuant to 50 CFR 600.920(k).

Please note that a distinct and further EFH consultation must be re-initiated pursuant to 50 CFR 600.920(1), if new information becomes available or the project is revised in such a manner that it affects the basis for the above EFH conservation recommendation.

Endangered Species Act:

The federally listed, endangered SNS and the candidate species for listing Atlantic sturgeon may be present in the project area. The NRC is currently in consultation with NMFS NEROs Protected Resources Division pursuant to Section 7 of the ESA and the NRC will conclude the ESA consultation with our

colleagues in this Division of NMFS. The contents of the above EFH and FWCA coordination does not replace or supersede any negotiations that you may have conducted or will conduct with our PR division, and only pertains to our mutual obligations under the FWCA and MSFCMA.

Should you have any question regarding these comments or need additional information, please contact Diane Rusanowsky at diane.rusanowsky@noaa.gov; 203-882-6504

Sincerely,



Peter D. Colosi, Jr.
Assistant Regional Administrator
For Habitat Conservation

References:

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