



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
NORTHEAST REGION  
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MAR - 4 2014

Dara Gray  
Entergy Nuclear Operations, Inc.  
Indian Point Energy Center  
450 Broadway, Suite 1  
Buchanan, New York 10511

Dear Ms. Gray,

We have reviewed the “Proposed Draft Monitoring Plan for Indian Point Energy Center Take of Atlantic and Shortnose Sturgeons by Impingement at Cooling Water Intakes, Revision 1” dated December 5, 2013. You submitted this revision in response to comments provided by us (October 23, 2013) on the previous version dated March 29, 2013. Submittal of the draft monitoring plan is required by the Reasonable and Prudent Measures (RPMs) and Terms and Conditions of the January 30, 2013, Biological Opinion issued by us to the Nuclear Regulatory Commission (NRC) regarding the continued operations of Indian Point Units 2 and 3, pursuant to existing licenses and proposed extended operating licenses.

Our comments below are organized along the structure of the submitted revised draft monitoring plan. There are several areas where additional information or clarification must be provided before we can determine if the revised draft monitoring plan (MP) meets the requirements of the Incidental Take Statement (ITS). The ITS identifies detailed components of an adequate plan, including the requirement that the monitoring plan must be designed and implemented to allow for the detection and observation of all shortnose and Atlantic sturgeon that are impinged anywhere at each of the Unit’s intakes, including on the trash bars, or that are impinged at the screens or captured in the fish buckets, or conveyed into the debris sluice.

## **2.0 Monitoring Program**

### *2.1.1 IP2 and IP3 Trash Racks*

On page 6 of the draft MP you speculate on a number of different issues related to impingement on the trash racks, including that “closure of the shad and sturgeon fisheries in the Hudson River has eliminated the fisheries by-catch mortality that was the likely source of many previously observed sturgeon impingements at IPEC.” As noted in our October 2013 letter on the previous draft of the MP, there has never been any monitoring of impingement of sturgeon at the trash racks; therefore, we do not have direct evidence of the condition, or the factors that might contribute to impairment, of any sturgeon impinged at the trash racks. Since there is no data to support your statement, it should be removed from the MP. As explained in the Biological Opinion on page 67, impingement on the trash bars, at a minimum, would be capture or



collection under the ESA’s definition of “take” due to the operation of Indian Point. Again, we recommend that the draft MP focus solely on the methodology for monitoring the various types of take that are expected to occur at Indian Point and refrain from speculation on other possible sources of sturgeon interactions.

You have now determined that access can be provided to the IP2 and IP3 trash racks and you are proposing to conduct a one-year pilot study with low-light underwater cameras. It appears that you are no longer pursuing your previous proposal to use an ARIS system, combined with a long-handled dip net deployed from a boat, to carry out once-weekly monitoring for a two-year period.

### *2.1.2 Pilot Study at IP2 and IP3*

You are proposing to conduct a pilot study using low-light underwater cameras to detect and determine degradation rates and retention times of dead sturgeon on the trash racks at IP2 and IP3. Our concerns regarding the feasibility of the underwater camera system are discussed below. You are proposing to purchase frozen white sturgeon (*Acipenser transmontanus*), place them in a mesh bag and tie them to the trash racks. We have several concerns regarding this approach. We assume that you are interested in degradation and retention times so you can determine how long an impinged sturgeon would stay impinged on the rack. We understand you intend to use this information to support a sampling regime that would allow for intermittent sampling. However, degradation rates of frozen fish are likely to be different than those of fresh fish that die in the river. Similarly, if the fish are tied to the rack there is no way to determine how long a fish that is not restrained to the rack would stay there. Factors that could affect retention rate are water currents, scavengers, and the size and condition of the fish. Further, it appears that use of the cameras alone, if it can successfully monitor the trash rack, would provide information on retention. The proposed study with frozen white sturgeon appears to be unnecessary and inappropriate to further the goals of the monitoring program. Additionally, any introduction of non-native species (even dead) into the river would need to be supported by documentation demonstrating that the individuals were disease free and would not pose any risk to native species in the river.

### *2.1.3 Routine Trash Rack Monitoring at IP2 and IP3*

You are proposing to monitor impingement of sturgeon at the IP2 and IP3 trash racks with a pole-mounted camera system. You propose to use the cameras to scan the racks for sturgeon; if detected, you will remove them with a long handled net. If underwater cameras can document the presence of impinged individuals at the rack, you must provide justification for why a continuous video monitoring system cannot be installed in these locations. Without information on retention rates of sturgeon on the racks, it is unclear how a two-consecutive day per week schedule will be sufficient to detect all impinged sturgeon. As noted above, we do not expect the proposed pilot study using frozen fish tied to the rack will provide the information needed to determine retention times. To establish a baseline, monitoring more frequent than two scans per week will be necessary. Further, before we can approve a monitoring plan that relies on underwater cameras, you must demonstrate the feasibility of using the proposed underwater cameras in the low light and turbid conditions likely to be present near the racks. Your previous draft monitoring plan proposed using an ARIS system; you appear to have abandoned that proposal in favor of the cameras. However, based on our understanding, the ARIS system may

have fewer limitations related to light and turbidity conditions. It is our position that the ARIS system seemed to have a greater potential to be effective in a wider range of conditions. A feasibility study should explore and compare both methods under a variety of conditions.

Visual monitoring carried out on two consecutive days per week will not be sufficient to detect, remove and assess all sturgeon impinged at the trash bars, which is the requirement of this part of the monitoring plan. We expect that impinged fish will be preyed on by scavengers and will also be displaced from the trash bars by tides or currents, particularly if intake flows vary. The monitoring plan must be revised to include more frequent monitoring to establish a baseline. Once a baseline is obtained, we can discuss whether the information provided in the baseline supports consideration of scaling back the monitoring frequency in the future. If the intent of the Pilot Study is to provide this baseline, it is not clear how this will be accomplished. Further information on the proposal to use the underwater video system and long-handled net is necessary before we can determine if it will meet the requirements of the ITS. Specifically, a revised MP will need to:

- Demonstrate the feasibility of the underwater cameras to provide a view of the trash racks clear enough to document impinged fish;
- Include a plan for verifying that the pole mounted cameras with LED lighting will provide a clear view of the trash racks such that sturgeon can be observed in all lighting and turbidity conditions expected to occur in the river. Explain why the revised proposed frequency of deployment is sufficient to document all sturgeon impinged at the intake. You must explain why it is reasonable to expect that an impinged sturgeon would remain impinged on the trash racks for at least that period of time, including in light of any changes in not only the flow of the river, but also the flow of water into the intake system (e.g., due to pump speed, flow direction, water levels, etc.). Field verification should include testing of the residency time of impinged fish; the use of frozen fish tied to the rack is not sufficient to determine how long a sturgeon would remain impinged on the rack and,
- Provide clarification of conditions in which deploying the system will not be possible due to weather and what alternate measures will be used during those times.

#### *2.1.4 Pilot Study and Routine Trash Rack Monitoring at IP1*

Since the submittal of the previous draft monitoring plan, you have determined that there are no intact trash racks at IP1. However, you have not provided any documentation of the condition of the trash racks. We expect that you will provide photographic evidence of the condition of the racks. Without information on the racks that are present, we can not determine what type of monitoring is necessary. If there are no trash racks in front of the IP1 intakes, we need to consider if this is new information that would cause effects to shortnose or Atlantic sturgeon not considered in our Biological Opinion.

#### *2.1.5 Trash Rack Monitoring Implementation Schedule, Modifications, and Permits*

In our comment letter on the previous draft we requested you provide a schedule for implementation of all monitoring components. You note in the December draft that you will implement the pilot study within 270 days. It is unclear if that means you will begin the study in

that period or if you will complete it within 270 days. It is also unclear when you propose to begin routine trash rack monitoring at IP2 and IP3. A schedule for when all components of the plan will be initiated and completed must be included in the MP.

## 2.2 *Forebays*

You have proposed using an underwater camera system to observe sturgeon in the forebay. The cameras will be connected to a video recorder system. Video will be processed with specialized software. Before we can determine if this proposed monitoring will meet the requirements of the ITS, you must provide the following information:

- Verification that the proposed camera and lighting system will achieve sufficient visibility in the full range of turbidity conditions expected in the river. This feasibility testing should document the range for each camera and the size of the targets that can be readily distinguished with the cameras.
- Detailed QA/QC plan for the use of image processing software including information on how you will groundtruth detections.

Please provide additional information on the schedule for implementing the forebay video camera system; while you state that it will be implemented within 270 days, a detailed schedule for implementation of the plan must be provided to us.

You have stated that the forebay area is difficult to access without major structural modifications. However, it does not appear that the removal of concrete and replacement with removable standard 1 inch by 4 inch galvanized steel grating would constitute a major structural modification. We request that you continue to pursue the potential for modifications that would make access to this area possible.

### 2.3.1 *Traveling Screens at IP1, IP2 and IP3*

You have proposed collecting all fish that are washed off the traveling screens into the fish return and debris sluices for three 24-hour periods per week. You will continuously staff and monitor collections during the 24-hour period. We appreciate that you have increased the proposed monitoring schedule from one day to three days per week and recognize that three days per week is considered to be an industry standard for fish sampling. However, the revised MP must contain an explanation of how you will use data collected during the three sampling days per week to extrapolate to a total number of sturgeon collected on an annual basis and how you will extrapolate condition of these fish (e.g., dead, alive, injured, etc.). As noted in our comments on the previous draft MP, any proposal for less than 100% monitoring must include an analysis demonstrating that the monitoring can reasonably be expected to produce an accurate and precise determination of the total number of shortnose and Atlantic sturgeon impinged annually and the condition of these fish.

We also note that you are now proposing to monitor both the fish return and debris sluices. This is an improvement over the previous version of the plan which proposed to only monitor the fish return sluices.

In your March 2013 draft plan, you proposed to divert fish to a holding tank. While we objected to only processing and documenting these fish after the 24-hour collection period, we were not

opposed to the diversion of fish to a holding tank, provided that fish were processed at least once per hour. You appear to have abandoned the plan for construction and operation of holding tanks and are now proposing to use a netting system to retain fish in the sluices. You state that as soon as a sturgeon is observed it will be removed from the sluice sampling net and placed in a holding tank located adjacent to the sampler. Before we can determine if this plan is sufficient to meet the goals and objectives of the ITS, we will need additional information. Please provide the following:

- Detailed implementation plan for the collection procedures including handling plans for shortnose and Atlantic sturgeon. The implementation plan must also include information on how you will determine which three days per week sampling will occur and whether those days will be consecutive or not.
- The draft MP notes that sturgeon will be removed from the collection nets within one hour. As the water levels in the sluice where the nets will be placed are relatively shallow and there is the potential for many fish to be retained by the net in a one-hour span, you must provide a detailed description of how the nets will be monitored (i.e., the number of staff, how often the net will be checked and cleared).
- You must provide an analysis of the impacts to sturgeon (i.e., potential for stress, entanglement, injury) due to remaining in the nets in relatively shallow water with other fish during that time period.

You propose to carry out this plan for one year and then determine if modifications are necessary for a second year. In compliance with the RPMs and Terms and Conditions, you are obligated to carry out any monitoring plan approved by NMFS until and unless we approve a revised monitoring plan which may or may not include a reduced sampling frequency.

We have reviewed your proposal to document collection efficiency. Consistent with the language in the RPMs and Terms and Conditions, the goal of a collection efficiency study is to demonstrate what percentage of fish that are impinged or collected at the traveling screens are subsequently captured in the sampling nets. Because you are now proposing to monitor the fish and debris return sluices as well as inspect the entire sluice system and water boxes, our focus is on any fish that may escape detection at the sampling nets. Please revise the monitoring plan to demonstrate how you will determine what percentage of fish that become impinged on, or collected at, the traveling screens are subsequently captured in the sampling nets.

We have several concerns regarding the ability of your proposed study to document collection efficiency (as defined above). First, by releasing dead white sturgeon into the forebays, some may drift outside of the forebay (through the trash rack into the river). We do not expect frozen, dead fish to behave the same way that live fish would. We expect frozen dead fish would behave like debris. Therefore, it does not appear that the proposed study would provide useful information on the percentage of fish that are present in the forebay that end up in the collection nets. In addition, we have significant concerns regarding the release of non-native fish into the Hudson River that would need to be addressed before we could approve such a plan (i.e., you would need to provide documentation certifying the fish were disease and contaminant free and demonstrate how you would retrieve these fish from the river).

In our previous comments on the draft MP, we noted that the MP must also include monitoring of fish that are residing/delayed in the fish return sluice. It appears that you have addressed this request by proposing to inspect the entire sluice system and water boxes at each intake structure daily. This proposal is adequate.

### *2.3.2 Traveling Screen Monitoring Implementation Schedule, Modifications, and Permitting*

We acknowledge that you have listed the steps necessary to implement the traveling screen monitoring plan. While you state that you will implement the monitoring within 270 days of obtaining necessary approvals from NYDEC and NRC, you have provided no indication of how long it is expected to take to obtain those approvals. We also note that you proposed to implement the previous plan for monitoring the screens (with construction of holding tanks) within 120 days. Please provide an explanation of why the netting proposal, which does not require extensive engineering or construction, would take longer to implement.

### *2.4 Fish Handling Procedures*

It appears that the revised monitoring plan addresses the comments raised by us on handling of live and dead fish and taking genetic samples. However, in section 2.4.2, you state that dead sturgeon will be frozen and transported for necropsy on an annual basis. If you are proposing to hold fish for up to a year, information must be provided to support that carrying out a necropsy up to a year after a fish was collected at the facility is appropriate and that no information will be lost.

### *2.5.2 Water Velocity*

We disagree with your characterization of the purpose of water velocity monitoring. The purpose of water velocity monitoring is to verify the information provided to NMFS that we used in the development of the Biological Opinion and to verify assumptions and conclusions made by NMFS in determining the likelihood of impingement. However, we agree that, as you note, velocity will differ over the face of both the bar racks and the trash racks in Item Number 7 of your list on page 15 of the revised MP. This is part of the reasoning for the study requirement. Although you have submitted the average water velocities through the structures, it is possible that there are “hotspots” that far exceed the average velocities and/or a wide range of overall velocities that produce the average.

You are proposing to use a CFD model to calculate approach and through rack velocities. While we do not object to you carrying out the CFD model, it does not achieve the goals of verifying all reported velocities relied on in the Biological Opinion. This includes: all data collected including approach and through rack velocity at the trash racks, velocity in the intake forebays and approach and through-screen velocity at the traveling screens for all three units. It is our position that the data from the ADCP is too far away from the racks to result in valid results. As we stated in our October 2013 letter on the previous version of the MP, it is our position that the best way to obtain the necessary information is for you to carry out in-field monitoring. This monitoring must occur over the range of tidal and weather conditions and pump operations so that it can be considered to represent all expected scenarios. This monitoring should be done over a proposed point grid across the face of the structures in order to properly identify any “hotspots” that may exist. We propose a 2ft horizontal by 2ft vertical point grid across the

structure. Approach velocity measurements should be taken as close to the structures as possible, but not more than 1 foot away; preferably within 3 to 6 inches. Through velocities can be calculated based upon the measured approach velocities. We recommend using a Hach type electromagnetic probe mounted on a linearly scaled pole, or, if velocities and forces are too high to hold the pole, mounted on a Columbus type sounding weight.

### **Additional Comments**

As noted in our previous comments on the draft plan, we note that the draft MP contains unnecessary commentary and speculation (e.g., discussion of bycatch of sturgeon in the shad fishery), with which we disagree or do not find supported by evidence. We recommend you revise the document to ensure it is consistent with the Biological Opinion and to focus on the plan for monitoring. We understand that Entergy's draft MP focuses on a 2-year period. While scaling back monitoring after an initial intensive monitoring period may be appropriate in the future, any MP must clearly document the decision points and process, including approval from NMFS, for determining whether changes in the MP are appropriate. Any proposed reduction in monitoring frequency for the future can only occur if sufficient data has been collected that allows a reduced frequency design to be implemented that still allows for documenting the total number of shortnose and Atlantic sturgeon collected annually and the condition of these fish. It is our understanding that you are proposing a shorter-term (i.e., 1 to 2 year) monitoring protocol to establish a baseline from which reductions in the frequency and/or intensity of monitoring could be scaled back from in the future. The MP must also include protocols for this long-term monitoring or, at least protocols for how long-term monitoring plans will be developed. As noted above, to remain in compliance with the RPMs and Terms and Conditions, you must continue to implement any MP approved by NMFS until we approve a revised plan.

The MP is being developed to satisfy the requirement of our Biological Opinion and ITS and therefore focuses on collecting data on interactions between the IP facilities and shortnose and Atlantic sturgeon. As noted in our previous comments, we strongly encourage Entergy to consider including procedures for documenting the number and condition of all fish captured during impingement monitoring. You state that this request is outside of NMFS' jurisdiction and that collecting information on other fish species will be addressed directly with NYSDEC. However, we reiterate our position that valuable insights on the effects of IP operations on sturgeons' ecosystem and the success of the traveling screens and fish return system can be gained by recording information on all fish collected during impingement monitoring. Such information would be particularly valuable as no impingement monitoring has occurred since the current screening system became fully operational. Information on the number and condition of other species collected during impingement sampling may be useful in understanding more about the impingement of shortnose and Atlantic sturgeon. We request that you reconsider your position and encourage you to consider recording at least basic data on the other species that are being collected including the number and condition of these fish.

### **Conclusions**

My staff is available to discuss these comments. Please contact Julie Crocker ([Julie.Crocker@noaa.gov](mailto:Julie.Crocker@noaa.gov) or 978-282-8480) to schedule a conference call. We will provide a copy of this letter to the NRC and to the New York Department of Environmental Conservation to keep them informed of the status of our review of the monitoring plan. Please note that while

we continue to coordinate with NYDEC staff regarding the implementation of a monitoring plan at Indian Point, these comments are solely NMFS and are not reflective of any NYDEC position on this matter. Please provide a revised monitoring plan to us within 45 days of your receipt of this letter. We look forward to continuing to work with Entergy and your consultants to develop a monitoring plan that meets the requirements of the ITS provided with our January 30, 2013 Biological Opinion.

Sincerely,

  
John K. Bullard  
Regional Administrator

EC: Colligan, Crocker, Dow -F/NER3  
Williams – GCNE  
Nieder – NYDEC  
Grange, Logan, Moser – NRC

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