Exelon Generation Company, LLC
Supplement to IITP Application
Eddystone Generating Station December 31, 2019

After reviewing the Draft Environmental Assessment published the in the Federal Register on December 2, 2019, Exelon Generation Company, LLC ("Exelon") noted that the Eddystone Generating Station Individual Incidental Take Permit ("IITP") Application dated June 2019 contains a transcription error in the proposed take limits for impingement. Proposed take limits for impingement, expressed in terms of numbers of sturgeon collected during impingement monitoring, were developed in Appendix C of the IITP Application. The proposed take limits from Appendix C were inserted into three paragraphs of the main body of the IITP Application. The correct proposed take limits for impingement (from Appendix C) are 2 Atlantic sturgeon and 2 shortnose sturgeon collected per year during impingement monitoring, corresponding to 7 Atlantic sturgeon and 7 shortnose sturgeon impinged per year. Due to the transcription error, the main body of the IITP lists the proposed take limits for impingement as 3 Atlantic sturgeon and 3 shortnose sturgeon collected per year during impingement monitoring, corresponding to 7 Atlantic sturgeon and 7 shortnose sturgeon impinged per year.

The correct statement of the proposed take limits for impingement is presented in Section IV of Appendix C.

Appendix C, Section IV. IMPINGEMENT ANNUAL TAKE LIMITS, page 7:

> "Based on these results, the annual take limits listed in Table 10 (i.e., a maximum of 2 sturgeon per year) are proposed for impingement of Atlantic sturgeon at Eddystone. The annual take limits listed in Table 10 are proposed for impingement of shortnose sturgeon at the Station as well. These annual take limits correspond to annual take estimates for the HCP of 7 Atlantic sturgeon and 7 shortnose sturgeon impinged per year."

The erroneous statements of the proposed take limits for impingement are listed in Sections V and VI of the main body of the IITP Application. The following are copies of the sentences containing the transcription errors. In each sentence, below, the transcription errors are struck through and replaced with the correct proposed take limits in bold and double underscored text.

IITP Application page 32.
V. POTENTIAL BIOLOGICAL IMPACTS OF THE PROPOSED ACTIVITIES AND TAKE ASSESSMENTS
A. Interactions with the Cooling Water Intake Structure
1. Atlantic Sturgeon
c. Proposed Take Limit
ii. Impingement

"As a take limit for an IITP cannot be zero, the annual take estimate was adjusted to 7 Atlantic sturgeon, which resulted in an estimate of 1 to ~~3~~ **2** young-of-the-

year or older Atlantic sturgeon collected in impingement sampling, depending on the number of days of operation for the CWPs and the number of sampling days (Appendix C). Therefore, Exelon is proposing an annual take limit of ~~3~~ **2** YOY or older Atlantic sturgeon in impingement sampling, commensurate with an annual take estimate of 7 YOY or older Atlantic sturgeon."

IITP Application, page 34.
V. POTENTIAL BIOLOGICAL IMPACTS OF THE PROPOSED ACTIVITIES AND TAKE ASSESSMENTS
A. Interactions with the Cooling Water Intake Structure
2. Shortnose Sturgeon
c. Proposed Take Limit

"As a take limit for an IITP cannot be zero, the annual take estimate was adjusted to 7 shortnose sturgeon, which resulted in an estimate of 1 to ~~3~~ **2** YOY or older shortnose sturgeon collected in impingement sampling (Appendix C). Therefore, Exelon is proposing an annual take limit of ~~3~~ **2** YOY or older shortnose sturgeon collected in impingement sampling, commensurate with an annual take estimate of 7 YOY or older shortnose sturgeon."

IITP Application page 45.
VI. HABITAT CONSERVATION PLAN
A. Analysis of Anticipated Impacts
1. Listed Species

"Exelon proposes an annual incidental take limit associated with the CWIS of 3 Atlantic sturgeon larvae in entrainment sampling and an annual take limit of ~~3~~ **2** Atlantic sturgeon and ~~3~~ **2** shortnose sturgeon in impingement sampling."

Exelon Generation®

300 Exelon Way
Kennett Square, PA 19348

March 20, 2020

Ms. Celeste Stout
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, MD 20910

Re: Eddystone Generating Station
Supplemental Information
Individual Incidental Take Permit

Dear Ms. Stout:

Exelon Generation Company, LLC ("Exelon") is providing supplemental information requested by the National Marine Fisheries Service ("NMFS") via conference calls with Maureen V. Heimbuch of AKRF, Inc. ("AKRF") on February 28, 2020 and with AKRF and Exelon on March 5, 2020. This requested information is in support of Exelon's Individual Incidental Take Permit ("IITP") application for Atlantic sturgeon (*Ascipenser oxyrinchus*) and shortnose sturgeons (*A. brevirostrum*) under Section 10 of the Endangered Species Act for Eddystone Generating Station ("Eddystone"). Enclosed with this letter is a Supplemental Information document providing actual intake flows for 2018 and 2019, the proportionate reduction in take based on the proportionate reduction in flow, the impact on the population from the take of a larvae compared to the take of a reproducing adult, and vessel trips during 2018 and 2019.

Please feel free to contact Amy M. Hetherington (267-533-1149 or amy.hetherington@exeloncorp.com), Maureen V. Heimbuch of AKRF, Inc. (443-569-9573 or mheimbuch@arkf.com), or me (610-765-5514 or robert.matty@exeloncorp.com) if you have any questions or require additional information.

Respectfully submitted,

Robert M. Matty MH

Robert M. Matty
Manager – Environmental Programs

Encl. (1)

cc:
J. M. Dick, Exelon (with enclosure)
J. A. Gutekunst, Exelon (w/o enclosure)
A. M. Hetherington, Exelon (with enclosure)
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M. V. Heimbuch, AKRF (with enclosure)

I. INTRODUCTION

Exelon Generation Company, LLC's ("Exelon") Eddystone Generating Station ("Eddystone" or "Station") is providing supplemental information, in support of its application for an Individual Incidental Take Permit ("IITP") for Atlantic and shortnose sturgeon. The National Marine Fisheries Service ("NMFS") requested this information during conference calls with AKRF, Inc. and Exelon in February and March 2020. Exelon submitted a complete application for an IITP in June 2019, in part, as a result of the collection of a single Atlantic sturgeon larva during a period when the circulating water pumps ("CWP") were operating solely to collect entrainment monitoring required by the Pennsylvania Department of Environmental Protection ("PADEP").[1] In Exelon's application, all estimates of the potential take were based on the flow data from the years 2013 through 2017.

NMFS has requested information on: (1) actual intake flow ("AIF") data for 2018 and 2019; (2) the reduction in anticipated take of sturgeon based on the proportionate reduction in flows after Exelon implemented the procedures for reducing AIF outlined in Section VI.B.2 of its IITP application to minimize the potential for an incidental take of sturgeon[2] as compared to 2013 through 2017; the procedures were implemented in December 2018 and are continuing to date; (3) why the take of a larva has a different potential to impact the population as a whole as compared to the take of a reproducing adult; and (4) the number of vessel deliveries in 2018 and 2019. Each of these items is addressed below.

II. UPDATED ACTUAL INTAKE FLOW

Exelon's IITP application included a table presenting actual intake flows by month for January 2013 through December 2017. An updated table containing January 2013 through February 2020 is included in Table 1.

III. PROPORTIONATE REDUCTION IN TAKE

Beginning in December of 2018, Exelon implemented several measures, described in Section VI.B.2 of the IITP application, to avoid and minimize take of sturgeon:

- limiting operation of Eddystone's CWPs (1) to periods when the Station is generating electricity, which includes a 2-day ramp-up period (with an additional 36 hours to address contingencies) and a 10-day ramp-down period; (2) to periods during

[1] PADEP required Exelon to implement a two year entrainment monitoring program and to run the CWPs to address the United States Environmental Protection Agency's regulations governing cooling water intake structures.

[2] These measures were also developed to comply with the United States Environmental Protection Agency's regulations at 40 CFR 125.94 requiring permit holders to identify best technology available for reducing impingement mortality and entrainment at cooling water intake structures.

maintenance or testing (typically once per month) (i.e., "Essential Station Operations"); or (3) as required by a governmental agency or other entity with jurisdiction to require operations;

- operating with one CWP per unit when possible, depending on Station generation and ambient water temperatures; and
- using the river water pumps to provide cooling water for other critical Station operations outside of Essential Station Operations.

The implementation of these measures has resulted in a substantial reduction in AIF at Eddystone's cooling water intake structure. Specifically, the average daily AIF declined from an average of 262.6 million gallons per day ("MGD") over the 2013 through 2017 time period to 57.3 MGD in 2019, a 78.2% reduction. During the period of April through July, when Atlantic sturgeon larvae would potentially be present near Eddystone, the average daily AIF declined from an average of 287.9 MGD over that same five-year period to 89.5 MGD in 2019, a 68.9% reduction.

Eddystone operations in 2019 provide an example of how implementation of the operational measures identified in Section VI.B.2 and VI.D.1.a of the IITP application can minimize take. Exelon is committed to continue with these operational measures under the IITP. However, it is important to note that Exelon is obligated to operate Eddystone in response to the PJM Interconnection, LLC's ("PJM") need for energy. If PJM were to direct Exelon to operate Eddystone at an increased frequency, the AIF for the Station would also increase.

A. Impingement

No Atlantic or shortnose sturgeon have been collected during impingement monitoring at Eddystone. Therefore, as detailed in Appendix B of the IITP application, the annual number of Atlantic and shortnose sturgeon that could be impinged at Eddystone was estimated using a likelihood function analysis and a Bayesian analysis. The analyses were based on impingement monitoring conducted from 1987 through 1992 and 2005 through 2006 and water withdrawal volumes observed at Eddystone over the entirety of each year from 2013 through 2017. Based on the results of these analyses, the estimated take of each sturgeon species is 1 young-of-year[3] ("YOY") or older sturgeon per year, which would translate to 10 YOY or older sturgeon over Eddystone's proposed 10-year permit term. Factoring in the 78.2% reduction in AIF in 2019 that resulted from the measures Exelon implemented at Eddystone, the estimated take of each sturgeon species would be approximately 2 YOY or older sturgeon over the 10-year permit term.

[3] Young-of-year refers to a fish that has not yet reached 1 year of age. Young-of-year sturgeon that are too large to become entrained (e.g., juveniles) may instead become impinged on the traveling screens at Eddystone.

B. Entrainment

As detailed in Appendix A of the IITP application, the annual number of Atlantic sturgeon that would be entrained at Eddystone was estimated based on seasonal (April through July) water withdrawal volumes from 2013 through 2017. Although Atlantic sturgeon are only vulnerable to entrainment at the larval stage, estimated entrainment numbers were expressed in terms of age-1 equivalents (i.e., the equivalent number of entrained larvae that would survive to reach one year of age) in order to facilitate comparison to other forms of take. The average annual number of entrained Atlantic sturgeon from 2013 through 2017 was estimated to be 0.3 age-1 equivalents per year, which translates to 3 age-1 equivalents over Eddystone's proposed 10-year permit term. Assuming an entrainment level corresponding to the estimated annual average and factoring in a 68.9% reduction in AIF from April through July, as described above, the operation of Eddystone would result in the entrainment of approximately 0.1 age-1 equivalents per year, which translates to 1 age-1 equivalent over Eddystone's 10-year permit term.

IV. INFLUENCE OF LIFESTAGE ON IMPACT OF TAKE ON POPULATION

The ability of the Atlantic sturgeon population to sustain itself over generations depends largely on the annual number of eggs produced by that population. Atlantic sturgeon are long lived and become fully reproductive by age 21 (Figure 84 of ASMFC 2017). There is a very small likelihood that an Atlantic sturgeon egg will survive to become a fully reproductive sturgeon because most of the eggs, as well as larval and juvenile sturgeon are consumed as food by larger fish after hatching. In the mid-Atlantic, only one in approximately 14,000 Atlantic sturgeon larvae is expected survive to become an age-1 sturgeon (Table 3 of Appendix A to IITP application). Further, only one in approximately six age-1 Atlantic sturgeon are expected to survive to reach the fully reproductive age of 21 years old (Table 7 of ASMFC 2017). In terms of egg production, each fully mature Atlantic sturgeon is equivalent to roughly 84,000 larvae (i.e., 14,000 x 6). Therefore, the take of a larval sturgeon would have a much smaller impact on the sturgeon population as a whole compared to the take of a reproductively mature adult.

V. UPDATED VESSEL DELIVERIES

The IITP application also included information on fuel oil deliveries for 2013 through 2017. Over this period of time, there was a total of 12 roundtrips. In 2018, there was one roundtrip vessel delivery on January 31, 2018. 2019 was an anomalous year because Eddystone's oil tank was taken out of service for a tank inspection; a total of five vessel roundtrips occurred: two on March 5, 2019 and March 10, 2019 associated with emptying the oil tank to allow for the "out of service" tank inspection; and three on May 21, 2019, June 14, 2019, and September 10, 2019 to refill the tank after the inspection. As "out of service" tank inspections occur very infrequently, approximately every 20 years, the next out of service tank inspection is not due until 2039. Furthermore, only two of the seven vessel trips in 2018 and 2019 occurred within the

March 15-July 15 vessel activity avoidance period, and these two trips were associated with the out of service inspection event.

VI. REFERENCES

Atlantic States Marine Fisheries Commission (ASMFC). 2017. 2017 Atlantic sturgeon benchmark stock assessment and peer review report. October 2017.

Table 1
Monthly Average Cooling Water Flow Rate (MGD) for Units 3 and 4, 2013-2019

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
2013	208.8	213.5	208.8	214.0	244.4	279.8	347.5	457.2	438.3	261.6	208.8	86.6	**264.1**
2014	469.5	42.0	53.5	103.2	110.7	152.7	377.0	97.0	192.4	10.8	41.0	217.7	**155.6**
2015	21.6	349.9	87.1	10.8	10.8	263.8	484.6	790.3	621.4	399.1	92.5	205.4	**278.1**
2016	213.2	114.0	169.7	200.2	438.1	423.6	658.3	720.1	553.7	224.1	157.5	333.1	**350.5**
2017	203.1	189.9	173.2	100.4	259.4	380.3	486.4	310.4	462.2	186.0	200.8	224.4	**264.7**
Avg (2013-2017)	**223.2**	**181.9**	**138.5**	**125.7**	**212.7**	**300.0**	**470.8**	**475.0**	**453.6**	**216.3**	**140.1**	**213.5**	**262.6**
2018	217.9	20.6	17.3	51.8	240.8	352.7	454.0	414.1	363.4	170.0	82.4	21.7	**200.6**
2019	21.6	21.6	14.1	83.4	65.3	34.0	173.1	34.3	99.6	64.6	33.9	41.7	**57.3**
2020	23.2	23.0	-	-	-	-	-	-	-	-	-	-	-

Exelon Generation

300 Exelon Way
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May 26, 2020

Ms. Celeste Stout
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, MD 20910

Re: Eddystone Generating Station
Third Supplemental Submittal
Individual Incidental Take Permit

Dear Ms. Stout:

Exelon Generation Company, LLC ("Exelon") is providing its third supplemental submission providing information requested by the National Marine Fisheries Service ("NMFS") via recent conference calls among Exelon, NMFS and AKRF, Inc. This requested information is in support of Exelon's Individual Incidental Take Permit ("IITP") application for Atlantic sturgeon *(Ascipenser oxyrinchus)* and shortnose sturgeon *(A. brevirostrum)* under Section 10 of the Endangered Species Act for Eddystone Generating Station ("Eddystone").

Please feel free to contact Amy M. Hetherington (267-533-1 149 or amy.hetherington@exeloncorp.com), Maureen V. Heimbuch of AKRF, Inc. (443-569-9573 or mheimbuch@arkf.com), or me (610-247-8703 or robert.matty@exeloncorp.com) if you have any questions or require additional information.

Respectfully submitted,

Robert M. Matty, Jr.

Manager — Environmental Programs

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cc: J. M. Dick, Exelon (with enclosure)
J. A. Gutekunst, Exelon (w/o enclosure)
A. M. Hetherington, Exelon (with enclosure)
J. M. Kuklinski, Exelon (with enclosure)
D. P. Lannon, Exelon (w/o enclosure)
M. V. Heimbuch, AKRF (with enclosure)

I. Introduction

Exelon Generation Company, LLC ("Exelon") submitted an Individual Incidental Take Permit ("IITP") Application to the National Marine Fisheries Service ("NMFS") for Eddystone Generating Station ("Eddystone") on June 21, 2019. As a result of NMFS' review of Exelon's IITP Application, Exelon has responded to requests for additional information ("Supplemental Submissions") and/or clarifications on the application or Supplemental Submissions. Section II of this third Supplemental Submission summarizes information presented to NMFS by Exelon and its consultant, AKRF, Inc., during a conference call on May 4, 2020. The information addressed the proposed take limits for Atlantic sturgeon due to entrainment or impingement and the proposed take limits for impingement of shortnose sturgeon. Section III provides information in response to a follow-up request from NMFS that Exelon express the proposed annual take limit for entrainment of Atlantic sturgeon in terms of numbers of Atlantic sturgeon yolk-sac larvae as well as in terms of the number of age-1 equivalents.

II. Summary of May 4, 2020 Conference Call

1. Exelon's IITP Application included proposed annual take limits for sturgeon:

Species	Mode of Take	Habitat Conservation Plan		Collected During Monitoring	
		Number	Life Stage	Number	Life Stage
Atlantic sturgeon	Entrainment	3	age-1 equivalents	3	yolk-sac larvae
Atlantic sturgeon	impingement	7	young-of-year and older	2*	young-of-year and older
shortnose sturgeon	impingement	7	young-of-year and older	2*	young-of-year and older

* Text of the IITP Application contains a typographical error listing the proposed take of Atlantic or shortnose sturgeon during impingement sampling as 3, rather than 2.

2. On December 2, 2019 NMFS published a notice that a Draft Environmental Assessment ("EA") was available for review on the effects of issuing Eddystone's ITP. The Draft EA concluded that the estimated number of incidental takes that would be authorized by the issuance of an ITP to Exelon, would not result in "adverse impacts to either of these sturgeon species or populations." The Draft EA further concluded that "...based on the considerations identified in this EA regarding potential impacts to shortnose and Atlantic sturgeon, we preliminarily determined that Alternative 2 [Exelon's preferred Alternative] would not have significant direct, indirect or cumulative impacts to shortnose and Atlantic sturgeon." (Draft EA p. 28). The IITP would allow for the following takes:

Species	Mode of Take	Habitat Conservation Plan		Collected During Monitoring	
		Number	Life Stage	Number	Life Stage
Atlantic sturgeon	entrainment	3	age-1 equivalents	3	yolk-sac larvae
Atlantic sturgeon	impingement	7	young-of-year and older	2	young-of-year and older
shortnose sturgeon	impingement	7	young-of-year and older	2	young-of-year and older

3. In March 2020, NMFS requested supplemental information on actual intake flow ("AIF") data for 2019, and the anticipated reduction in take of sturgeon based on the proportionate reduction in AIF after Exelon implemented the procedures for reducing AIF outlined in Section VI.B.2 of its IITP application to minimize the potential for an incidental take of sturgeon as compared to 2013 through 2017.

4. On March 20, 2020, Exelon submitted the requested supplemental AIF data to NMFS:

Season of Potential Entrainment (April through July)	
Year	**Average MGD**
2013	271.4
2014	185.9
2015	192.5
2016	430.1
2017	306.6
2019	89.0*
2013-2017 Average	277.9**
Flow in 2019 as proportion of 2013-2017 average	0.32

*The number 89.0 is a simple average of the month-specific flows listed in Table 1 of the March 2020 submission. The number 89.5 listed in the March 2020 submission was a weighted average of the month-specific flows where the weighting factors were the number of days per month.
**The number 287.9 reported in the March submission was a transcription error.

A 68%[1] (1 - 0.32) reduction in entrainment take would be anticipated based on the reduction in AIF from the 2013-2017 average to the AIF in 2019.

[1] The March 2020 submission listed a 68.9% reduction, which was calculated using an incorrect 2013-2017 average value of 287.9.

Season of potential impingement (January through December)	
Year	**Average MGD**
2013	264.1
2014	155.6
2015	278.1
2016	350.5
2017	264.7
2019	57.3
2013-2017 Average	262.6
Flow in 2019 as proportion of 2013-2017 average	0.22

A 78% (1 – 0.22) reduction in impingement take would be anticipated based on the reduction in AIF from the 2013-2017 average to the AIF in 2019.

In the March 2020 submittal of the supplemental AIF data, Exelon provided context for these reductions:

> "Eddystone operations in 2019 provide an example of how implementation of the operational measures identified in Section VI.B.2 and VI.D.1.a of the IITP application can minimize take. Exelon is committed to continue with these operational measures under the IITP; this is referred to as Alternative 2 in the Draft EA. However, it is important to note that Exelon is obligated to operate Eddystone in response to the PJM Interconnection, LLC's ("PJM") need for energy. If PJM were to direct Exelon to operate Eddystone at an increased frequency, the AIF for the Station would also increase."

5. During the May 4, 2020 conference call Exelon provided additional background on the relationship between Eddystone operations and PJM, the Regional Transmission Organization. Dispatch of Eddystone Units 3 and 4 is determined by PJM based on power system energy needs as well as the cost of generation. PJM operates the electric generation system based on price, with the least cost units being called to generate first, and then additional units are called to operate based on their prices, with the higher-cost, generally older units like Eddystone being called to run less frequently. Eddystone Units 3 and 4 also participate in PJM's capacity market and therefore must be available for dispatch whenever called upon by PJM. PJM's capacity market ensures long-term grid reliability by securing generation to meet future energy demand. In recent years, Eddystone has typically generated power on days with high demand, such as during the hottest summer days or coldest winter days, or during times when there are issues with the stability of the grid due to transmission line access, lower cost units being off-line, or disruptions in the fuel supply. When PJM notifies Exelon that power from Eddystone is required, Exelon only has 12.5 hours to bring the systems and pieces of equipment necessary for the generation of electricity from cold stand-by to full operation (4 hours if the units are in hot stand-by). Given the number of variables that can impact stable operations of the grid, it is impractical to accurately predict whether Eddystone operations will increase, decrease or stay the same based on the previous year of operation. If PJM were to direct Exelon to operate the Eddystone units at an increased frequency in future years, the actual intake flow for the Station would also increase.

6. In April 2020, NMFS notified Exelon that NMFS was considering reducing the proposed take limits in proportion to the calculated reductions in flow provided by Exelon on March 20, 2020.

Exelon interpreted this to mean that the proposed entrainment annual take limit of 3 would be reduced by 68% to 0.96 (rounded up to 1 per year), and the proposed impingement annual take limit of 7 (per species) would be reduced by 78% to 1.54 (rounded up to 2 per year).

7. When Exelon submitted the information on AIF in March 2020, Exelon was not aware that NMFS intended to use the supplemental information to develop revised take estimates. Based on the intended use of the information, Exelon is providing additional detail relevant to adjusting the proposed take limits to reflect the effects of the newly implemented standard operating procedures ("SOPs") at Eddystone.

The observed reduction in flows from the 2013-2017 average to 2019 were due to two factors: inter-annual variability in PJM's requirements for energy, and Eddystone's new SOPs. The following tables separate these two factors. Days of generation are determined by PJM energy needs and are not under Exelon's control.

Season of potential entrainment (April through July)			
Year	**Days of Generation**	**Average MGD**	**Average MGD per Day of Generation**
2013	16	271.4	17.0
2014	18	185.9	10.3
2015	17	192.5	11.3
2016	27	430.1	15.9
2017	15	306.6	20.4
2019	10	89.0	8.9
2013-2017 Average	18.6	277.9	15.0
2019 as % of 2013-2017 Average Due to PJM Requirements	54%		
2019 as % of 2013-2017 Average Due to New SOPs at Eddystone			59%
2019 as % of 2013-2017 Average Due to Combination of PJM and New SOPs		32%	

Season of potential impingement (January through December)			
Year	**Days of Generation**	**Average MGD**	**Average MGD per Day of Generation**
2013	23	264.1	11.5
2014	38	155.6	4.1
2015	66	278.1	4.2
2016	59	350.5	5.9
2017	29	264.7	9.1
2019	12	57.3	4.8
2013-2017 Average	43.0	262.6	7.0
2019 as % of 2013-2017 Average Due to PJM Requirements	28%		
2019 as % of 2013-2017 Average Due to New SOPs at Eddystone			69%
2019 as % of 2013-2017 Average Due to Combination of PJM and New SOPs		22%	

In both seasons (potential entrainment and potential impingement), the days of generation in 2019 were far below the range for the 2013-2017 period. It was an anomalous year in terms of PJM requirements for Eddystone to operate. The requirements of PJM in the single year of 2019 do not provide a sound basis for establishing proposed take limits for a 10-year permit.

8. Based on the foregoing information, Exelon requests that NMFS consider basing reductions in proposed take limits on reductions in average *MGD per day of generation* (the factor that Exelon can affect through the new SOPs at Eddystone being implemented to minimize take), rather than on the observed reduction in average MGD (which was driven largely by PJM requirements in 2019). Using this approach, the proposed annual take limits would be revised as follows (fractional values were rounded up to the next larger integer):

Species	**Mode of Take**	**Habitat Conservation Plan**		**Collected During Monitoring**	
		Number	**Life Stage**	**Number**	**Life Stage**
Atlantic sturgeon	entrainment	2(1)	age-1 equivalents	2(1)	yolk-sac larvae
Atlantic sturgeon	impingement	5(2)	young-of-year and older	2(3)	young-of-year and older
shortnose sturgeon	impingement	5(2)	young-of-year and older	2(3)	young-of-year and older

(1) 3 x 0.59 = 1.77 rounded to 2
(2) 7 x 0.69 = 4.83 rounded to 5
(3) 2 x 0.69 = 1.38 rounded to 2

III. Response to Follow-Up Request from NMFS

The estimated survival fraction of Atlantic sturgeon from the mid-point of the yolk-sac larvae life stage to age 1 is 0.0000747 (IITP Application, Appendix C, page 5). Accordingly, the proposed annual entrainment take limit of 2 age-1 equivalent Atlantic sturgeon corresponds to an annual entrainment take limit of 27,000 yolk-sac larvae.