EXHIBIT C

SLBI Response to Response to Public Comment Document

DRAFT

Issues Remaining Regarding the EPA OCS CAA Permit Issuance to the Atlantic Shores South Offshore Wind Project,Permit # OCS-EP-R2 NJ 02.

The response to comment document did not address the issue that the current Regional Haze State Implementation Plan (SIP) is not adequate because it does not address OCS air pollutant emissions. *By approving this permit and allowing a significant adverse impact on the visibility in the Brigantine Wilderness Class 1 area from a source that was not included in the SIP, the EPA has invalidated the rate of progress measures and the SIP goals. This air permit should not have been granted pending revisions to the SIP to assure that additional offsetting emission reductions can be achieved so that the stated haze objectives can be met.* Therefore, that problem remains and any consideration of delegated authority of OCS permitting and enforcement to the State should be placed on hold pending a SIP revision because the State has no Plan to implement and enforce.

The response to comments in the final permit issuance clarified that compliance with the Prevention of Significant Deterioration (PSD) 24-hour PM 2.5 increment standards are determined from the 2nd highest concentration value for a given year. However, the issue remains of what emissions were modeled over the 24-hour period and how they relate to the maximum energy needed for the pile being driven, neither of which is disclosed.

The 98th percentile 3-year averaging is used for for the annual and 24-hour NAAQS and for the annual increment standards. In those cases there is still uncertainty over construction schedules and whether what was modeled was representative of real world construction or conservative.

The air permit has not accounted for major turbine component repair and replacement activities during the operational phase, or of decommissioning activities, either of which which could result in violations of the 24-hour PM 2.5 increment. This should have been addressed.

Other problems remain regarding the lack of Fish and Wildlife Service concurrence on the permit approval, the lack of an alternative site, size and process analysis, the lack of liability assurance, and with the consistency of the project with NJ Coastal Zone Management Act rules.

This air permit should not have been issued pending resolution of these issues.

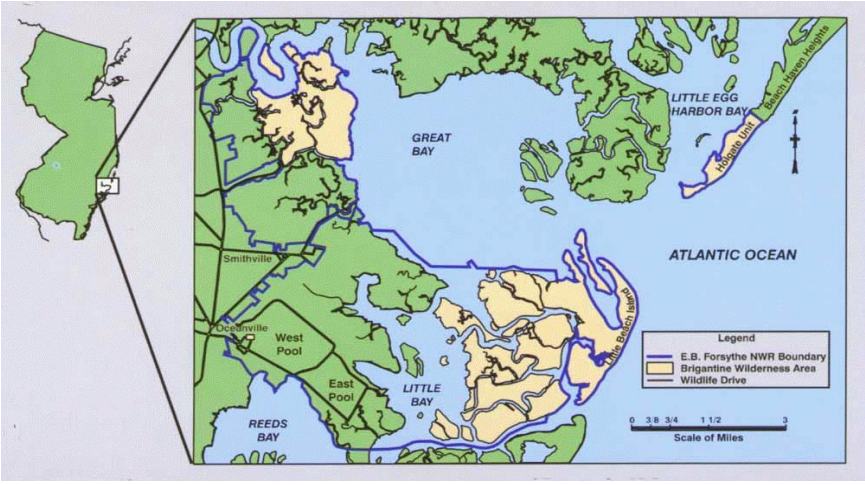
More detailed explanation of these problems follows.

Regional Haze SIP.

Class 1 areas, including wilderness areas, require more stringent protections to protect against visibility degradation. A source inclusive regional haze SIP is necessary to demonstrate compliance with the more stringent protections afforded to the more sensitive Class 1 area with respect to visibility and air quality related values.

The Brigantine Wilderness Class 1 Area is shown below. This unique and valuable resource is the home and stop-over point for migratory birds and water fowl along the eastern coast of our

country. Over 290 different species of birds have been observed within the wilderness area. At the peak season for bird migration in early November, concentrations of over 100,000 ducks and geese have been seen in the saltwater marshes of the refuge. The refuge itself attracts over 300,000 visitors per year who come to watch the birds or enjoy the scenic views of the Atlantic Ocean, Great Bay, Little Bay, Reeds Bay, and Little Egg Harbor area.



Our concern about the State Regional Haze Implementation Plan not being valid because it did not consider offshore particulate emissions was not addressed. Neither the EPA or the State addressed the issue that the NJ Regional Haze SIP needed to be revised because it does not account for the significant visibility impairments from OCS wind construction and from decommissioning in meeting the State's haze goals.

By approving this permit and allowing a significant adverse impact on the visibility in the Brigantine Wilderness Class 1 area from a source that was not included in the SIP, the EPA has invalidated the rate of progress measures and the SIP goals. This air permit should not have been granted pending revisions to the SIP to assure that additional offsetting emission reductions can be achieved so that the stated haze objectives can be met.

The current SIP addresses visibility at the Brigantine Wilderness Area (BWA), but only includes emissions from land sources, including those from other states. It does not include any sources from Outer Continental Shelf (OCS) wind energy development. Pursuant to the Regional Haze Program requirements of NJAC §51.308, the State must identify all anthropogenic sources of visibility impairment considered by the State in developing its long-term strategy. The State should consider major and minor stationary sources, mobile sources, and area sources.

In Table 2–3, the current SIP shows the need for a uniform rate of improvement of 0.28 deciviews per year for the 20 percent most visibility impaired days in order to meet visibility goals in 2064.

The air permit application for construction contains an Appendix C with a visibility report dated February 29th, 2024 done by Ramboll America's Engineering Solutions. It shows in Table 4 that the Atlantic Shores project alone causes visibility degradation at the BWA for about 30 days per

year exceeding 0.5 deciviews. As shown above in the Executive Summary and in Section 2 below that degradation is expected to last for at least three years.

The 30 days constitutes about 8 percent of the worst visibility days so there is not a direct comparison between the Ramboll Report and the 20 percent in the SIP, but it's fair to assume from the Ramboll Report that for the 20 worst days the increase in deciviews from the project would be comparable to the yearly rate of progress needed in the SIP.

The SIP speaks to an annual goal of improving visibility of 0.28 deciviews per year. The final EIS Appendix F Table 3.4.1–13 shows an adverse deciview change of 0.61 in 2019, 0.87 in 2018 and 0.96 in 2020.

Therefore the project has a major adverse impact on the SIP rate of progress needed. The SIP needs to be redone to include those projected OCS sources from all wind projects planned and provide new measures to offset their effect.

In addition, as discussed below, decommissioning actions are within the time frame addressed in the current SIP, and therefore they also need to be addressed in a SIP revision.

By approving this OCS source air permit and allowing a new source not included in the SIP to adversely impact a Class 1 area, the EPA has invalidated the current NJ Regional Haze SIP. This permit approval should be rescinded pending a SIP revision.

New Jersey has also taken steps to receive delegated authority to issue and enforce OCS air permits. The delegation of such authority under the Clean Air Act requires the State to have an approved SIP which is the formal plan for how the state intends to comply with federal air quality standards. Such a delegation here would not be appropriate as the current SIP is not valid.

Accuracy and Conservatism of the 24-hour PM 2.5 Increment Modeling.

There still remains the issue of what emission levels and over what time periods were modeled during the 24-hour period and whether they were realistic for the piles to be driven here and conservative.

The permit materials provided and the response to comment (RTC) document make general statements that emissions from construction activities, including pile driving, were modeled simultaneously and continuously over the 24-hour period to be conservative. Therefore it says it is not necessary to know the pile driving time or other particulars. The material also speaks to how the peak emission levels were calculated for each of the vessels, devices and engines used in the modeling.

But in fact, it is very important to know some specifics. First we need to know what type and size pile foundation is being modeled, what the maximum energy needed is to drive it, and how that compares with the numbers used by NOAA for underwater noise modeling. Next we need a clear statement that the peak emission levels from all the various devices, vessels and engines were added to get a conservative overall emission rate that was used for the full 24 hours, and finally what energy that represents to see if the sources modeled -along with the modeled hourly emission rate- provides for the energy level needed.

<u>Pile Driving Energy.</u>

The energy required *and the associated emissions* for pile driving are highly dependent upon the type of pile, the size of the pile, the depth embedded to, and perhaps most importantly the stage of the pile driving.

The permit materials as far as we could tell, do not even state the type or size of the pile simulated or the depth embedded to. We would assume that it would have simulated the 15-meter diameter monopile foundation to the 60-meter depth referenced in the underwater Jasco Noise Exposure Modeling Reports as that requires the highest energies and associated air emissions to embed it.

Within a pile driving cycle, the energy required and the associated air emissions increase significantly from the start of the pile driving operation to the end. For example, the pile driving energy for a 15-meter diameter monopile foundation as shown in Table 1 of the Jasco Applied Science August 10th Noise Exposure Modeling Report varies from 480 joules at the start to 4,400 joules at the completion of the cycle. That cycle is said to require 15,387 strikes over a period of 8.56 hours.

So the difference in energy and air emissions varies by a factor of 10. Given this very large variability in energy and associated emissions over a pile driving cycle it is essential to know what point of that cycle was represented by the equipment and associated emissions that were modeled.

The RTC does show on page 51 the vessels, engines and compressors that were used to model foundation installation. But there is no clear statement that the peak emission rates from all of these sources were added to attain an aggregated conservative hourly emission level. Additionally, there is no statement indicating what hammer energy level was achieved from the individual sources that were modeled, and how that energy level compares with the energies shown as required in the Jasco reports, and more specifically whether it is comparable to the 4,400 joule energy level that Jasco indicates is needed to complete the installation of a 15-meter diameter pile (to a 45-meter depth).

<u>Day versus Night</u>

The response to comments says that pile driving activity was modeled continuously throughout the 24 hour period and that therefore it is not necessary to know the duration of the pile driving cycle. But as shown above, the pile driving activity is not a constant thing but varies significantly in energy and associated air emissions from start to finish.

So it is important to know exactly what pile driving activity and energy was simulated at night because that is the time when atmosphere conditions would be most conducive to better pollutant transport and higher levels at the shore. For example, if a cycle of 14.67 hours used in the annual modeling was used and pile driving starts in the day which it must, then the pile would have to continue at night and would involve the higher energy levels and higher emission levels during the worst atmospheric conditions. So again, detail is needed to know more precisely what energy and emissions profile was modeled throughout the entire 24 hour period.

<u>Comparison to Biological Opinion Assumptions.</u>

The energy versus time profile of the pile driving operation assumed for the air quality modeling should have been shown and compared to the Jasco numbers to see if the pile driving cycle used for air quality modeling and for underwater noise are consistent. Both cycles should be

supported by engineering documents showing why these energies over time are sufficient to place the foundation.

Also, during the 24 hour period there should be a definition of what other construction activities are taking place and what their associated admissions were.

Conclusions Regarding the PM 2.5 24-hour PSD Increment Modeling.

The RTC document says that pile driving activities are modeled over the full 24 hour period. It lists the engines and compressors that are used for pile driving foundation installation. It shows a formula for calculating the peak emissions for each of those devices.

It suggests but doesn't clearly state that those peak emission values for every device were added together to get a conservative hourly emission rate for pile driving. It does not say what type and size foundation was modeled. It does not say what energies are needed to do the pile driving for that foundation. It does not say how much pile driving energy is created by the equipment scenario it modeled and compare that to the highest energy level needed to complete the pile driving. It does not compare the energy created by the air dispersion scenario modeled to the energies required in the Jasco Applied Sciences Noise Exposure Modeling Reports supporting the Biological Opinion for the project.

Absent these data and comparisons, it is still unclear what pile and energies are actually being simulated in the air dispersion modeling. There is therefore no assurance that the emissions modeled during the 24-hour period were conservative. There is no assurance that the modeling was comparable to, for example, the energy versus pile driving time cycle for the 15-meter diameter foundations for the project described in the Jasco reports.

Given the factor of 10 variation in pile driving energy over a cycle, the 24 -hour PM 2.5 concentration of 0.66406 micrograms per cubic meter (ug/m3) at the BWA on page 45 of the RTC could increase multi-fold and violate the PSD increment of 2.0 ug/m3, depending upon what pile driving energy and associated emissions were selected for the 24-hour air dispersion modeling.

The apparent reluctance to provide this information is puzzling, and this permit should not have been issued without clear explanations of precisely what pile driving is actually being simulated by the air dispersion modeling and how the purported conservative hourly emission rates were calculated.

Operations and Maintenance Emissions.

The RTC document did not address the issue that the air emissions associated with major turbine component failures and repair and replacement activities were not considered in the assessment of longer term operations and maintenance activities.

Even without consideration of these major repair and replacement activities, the modeled PM 2.5. 24-hour concentration as shown in Table 5-12 of the application is 0.44 micrograms per cubic meter (ug/m3), almost a quarter of the allowed increment. For certain major repair or replacement activities, it appears that the increment could be easily exceeded. Therefore those major repair or replacement activities that produce the greatest emissions should have been considered.

It just says that the turbines are designed to meet certain IEC and IECRE standards implying that there is no need to address these activities. The RTC does not reference any studies that would support this contention.

Our understanding of the standards is that they are very general and do not require that the turbines meet specific numerical failure rate criteria. In addition, they were designed more for European conditions which may not account for the more extreme hurricane and storm conditions encountered along the East Coast of the US. If there are specific numerical criteria in those standards, they should have be presented along with analysis and wind tunnel test results showing how they are met.

The implication that turbine component failures do not need to be considered flies in the face of real world experience. Actual failure rates for smaller turbines, from 2 to 4 megawatts were tabulated in a paper by James Carroll titled Failure Rate, Repair Time and Unscheduled O&M Cost Analysis of Offshore Wind Turbines of August ,2015. Those results show the need for 1.1 major repairs per turbine per year and 0.3 major replacements per turbine per year. For a 200 turbine wind complex this would mean that a major repair or a replacement would be required almost 280 days out of the year. The failure rates for these larger turbines are expected to be greater because of the additional loads and stresses placed upon them. The RTC also does not address the recent experience with the structural blade failure in the Vineyard Wind project off Nantucket, Massachusetts at an early phase in the project.

The air permit materials have not provided any assessment of the frequency of failures and what activities would be required to address them, along with their associated air emissions.. Those emissions will likely dominate the long-term assessment of air quality, not normal maintenance activities. Therefore the permit has not addressed the issue of longer-term air emissions and it should not have been issued without a failure rate and remediation assessment.

Decommissioning

We do not believe it is appropriate for EPA under the CAA to simply say that decommissioning is outside the scope of this permit and defer the issue to the BOEM and its OCS regulations. While standard air quality analysis typically looks up to 5 years into the future, the actual period should depend on factors like pollutant type, NAAQS requirements, and special area protections. For areas of special environmental significance, like Class I areas (national parks, wilderness areas), a more detailed analysis of potential impacts, including visibility degradation and ecosystem health requires looking further into the future**.** That would involve in this case evaluating PM 2.5 emissions and its visibility and regional haze impacts out to the year 2064 to be consistent with the current NJ Regional Haze SIP time frames. This would encompass the expected time period for decommissioning. In addition, EPA has larger environmental oversight responsibilities here, including those under the National Environmental Policy Act to avoid irreversible environmental damage.

It also seems rather arbitrary that the permit and supporting documents can project and consider operations and maintenance emissions out to the alleged 30 year lifetime of the project, but then has to stop at the next several years for decommissioning, which would involve much more air quality impact.

Regarding the decommissioning impact we assume that the EPA is aware that the OCS decommissioning rules do not require turbine removal. So the impacts evaluation here has two scenarios.

If the turbines are not removed then by approving this permit EPA is authorizing the placement of hundreds of thousands of tons of steel and concrete structures into the seabed and extending far above the sea surface. Over very long periods of time these structures will decay into the ocean with debris washing up on shores similar to what has already occurred from the Vineyard wind project off of Nantucket. This would have obvious long-term irreversible impacts on the marine environment. The EPA should then in this case exercise its NEPA oversight role to require that the BOEM include this a revised environmental impact statement.

If it is feasible to do so and the turbines are eventually to be removed, that would necessitate substantial offshore cutting activities, and the creation of substantial new onshore industrial infrastructure to dismember the foundation sections, towers and blades into sections that could be transported by rail or truck for reprocessing or disposal. Both of these activities could have a significant impact on air quality, visibility degradation and ecosystem health at the BWA..

Therefore this permit should have included an analysis of whether it is technically or economically feasible to remove these large turbines, bring them to shore and dismember them for disposal or recycling, and if it is found to be feasible, what those air emissions and impacts would be on the BWA.

U.S. Fish and Wildlife Confirmation.

The EPA, in its letter of December 1, 2022, indicated that the application would not be complete pending confirmation from the Fish and Wildlife Service (FWS) that it is satisfied with the impact analysis for the air quality related values at the Brigantine Wildlife Area. We have not seen such confirmation, again raising questions as to why the application was deemed complete and released for public comment. The FWS position on this application should have been disclosed with the permit issuance.

Alternative Sites, Sizes and Processes.

The application stated in Section 3.9.3 that per New Jersey Annotated Code 7.27–18.3 (c)2 an analysis was required of alternative sites within New Jersey and of alternative sizes, production processes, including pollution prevention measures, and environmental control techniques, demonstrating that the benefits of the newly constructed, reconstructed or modified equipment significantly outweigh the environmental and social costs imposed as a result of the location, construction reconstruction, or modification and operation of such equipment.

Not with standing the discussion following that paragraph no such alternative analysis for the proposed project has been conducted.

The process by which the New Jersey wind energy area was identified did not include any analysis of alternative sites or energy production options within New Jersey. it only considered limited offshore renewable energy areas that were circumscribed by the charge to the NJ Renewable Energy Task Force that conducted the site area selection process.

The process of awarding subsidies to the wind energy projects by the NJ Board of Public utilities under the Offshore Wind Economic Development Act at no point considered alternative energy sources within New Jersey.

Finally, at no point in the BOEM National Environmental Policy Act review process has analysis of alternative energy sites or energy production processes within NJ been included in any environmental assessments or impact statements, nor for that matter any alternative offshore areas other then the Task Force selected area.

Regarding the alternative site, size and production process analysis the response to comment document states on page 93 that the BOEM has satisfied that requirement by citing its area selection process. But the fact remains that are no point in that process has any other site been presented as an alternative to the selected area. The reference to the 21 project alternatives in the FEIS is irrelevant because that was all done within the selected area, not withstanding that they are not true alternatives in the NEPA sense because their environmental impact was the same, but rather are just minor variations on the proposal itself.

With respect to alternative production processes, the RTC erroneously states that onshore facilities cannot meet the size and scope of the proposed project. This is not correct as the delivered electricity from the offshore wind project can easily be matched by onshore nuclear natural gas, solar and wind projects.

The RTC does not address the issue of alternate size projects, which has also not been conducted.

Therefore, this section of the New Jersey Code has not been complied with and the permit should not have been issued.

Liability

The Atlantic Shores projects 1 and 2 have taken ownership of the air permit from its corporate sponsors, EDF Renewables and Shell New Energy. It is not clear that the project itself has sufficient financial resources or backing to pay for the environmental damages that might occur at the BWA from its activities. These projects are structured as limited liability single purpose entities with their only assets being the turbines, undersea cables and related equipment.

It should have been stated in the permit conditions that the Atlantic Shores projects have I. such resources, or liability coverage in the form of insurance policies, surety bonds, letters of credit or other mechanisms. This should have been confirmed before any permit approval, and provisions for that included in the permit.

The RTC document states that this issue is outside the scope of the OCS CAA Permit. However, by accepting the application from the companies in this segmented form, the EPA is creating the liability issue. This needs to be addressed further.

Uncertainty in Construction Schedules

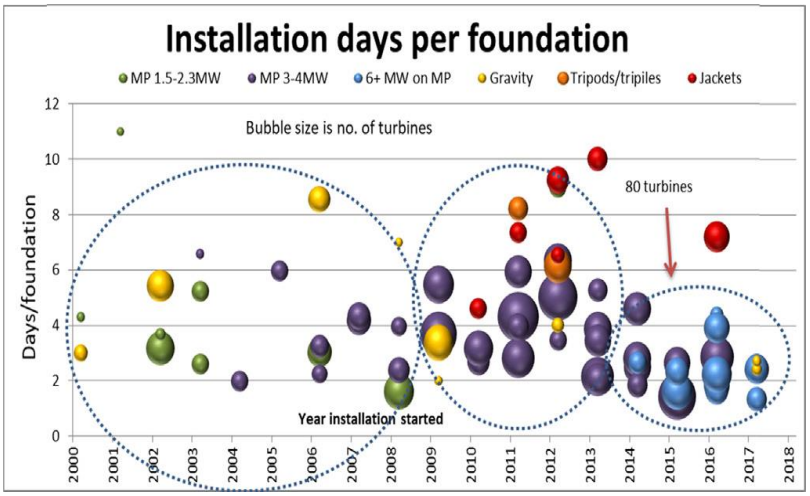
The uncertainty over construction schedules remains. While we understand that the modeling for the short term PSD increments is not averaged over three years, the construction schedules are still relevant for the annual NAAQS and annual increment values and for the underwater noise impacts presented in the NOAA Biological Opinion and the BOEM Environmental Impact

Statement.

The change in installation schedule offered in the RTC was quite dramatic. It went from the Epsilon Associates estimate of 2.6 days per foundation installation, and “another” 1.5 days for wind turbine generator (WTG) installation to the reverse in the Atlantic Shores modeling memo of March 7, 2023 of 1.5 days for foundation installation and 2.6 days for WTG installation. In addition, the “another” was lost in favor of arguments that these activities can be conducted in parallel.

The latter estimates do not appear realistic. It logically takes more time to install the foundation than the WTG. The estimate of 1.5 days is not consistent with the real world data we provided in item 2 of our detailed comments and shown below for smaller 6 megawatt (MW) turbines. That data points to at least two days required per foundation installation for those turbines. That would be greater for the thicker shell foundations here for the 15 MW turbines as described in our comments.

Figure 1



Overall picture of the time taken to install one foundation (without the turbine) for each OWF that has finished foundations installation.

Source: Offshore wind installation: Analysing the evidence behind improvements in installation time, Roberto Lacal-Arántegui,*, José M. Yustab, José Antonio Domínguez-Navarrob a Joint Research Centre, European Commission, Petten, The Netherlands Department of Electrical Engineering, Universidad de Zaragoza, Spain.

The Epsilon Associates estimate of 2.6 days for foundation installation for the larger turbines here is therefore supported by real world experience with installation times as shown above for smaller turbines, and more realistic.

The data presented for the Coastal Virginia Offshore Wind project of 1.65 foundations per day is not relevant because those were for 9.5 meter diameter foundations as opposed to the thicker shell 15 meter diameter foundations here.

The statements provided on page 39 of the RTC suggest that the foundation and WTG installations can proceed in parallel. It appears from Appendix B of the application that the presence of 3 heavy lift installation vessels was assumed in the modeling. If those refer to the large wind turbine installation vessels (WTIV's), that may not be a valid assumption because those are expected to be in short supply with only one expected to be used per project. Therefore foundation and WTG installation may need to proceed sequentially. This should be explained as fewer vessels would affect the construction schedule, the hours of operation assumed for the various individual sources and the annual calculations.

Therefore, the original estimates from Epsilon Associates appear to be more realistic involving a total time of 4.1 days per foundation and WTG installation. At best 2.6 days are required if those activities can proceed in parallel.

This also casts doubt on the construction schedule assumptions made for the Biological Opinion and the Environmental Impact Statement. Those schedules assume a maximum of 23 foundations per month closer to the 1.5 day estimate. The longer and more realistic estimate of 2.6 days per foundation installation would change the construction schedules used for the underwater noise modeling and the resulting take impact numbers.

We suggest that the EPA, BOEM, NOAA and Atlantic Shores get in the same room, draw up a Gant chart showing how long it takes to install one foundation and one WTG , showing what activities can proceed in parallel, and which cannot and make it public. This is crucial to the understanding of the impacts of this project, both on marine mammals, and on air quality. Ow.

Coastal Zone Management Act Consistency

The federal Coastal Zone Management Act (CZMA) was enacted by the United States Congress in 1972 (16 §§U.S. Code 1451-1464) and is intended to protect coastal resources with an established goal to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The conclusions reached in Appendix F regarding consistency of the project with the State's CZMA rules rely in many cases only on certain biased sources of information and are flawed. There are numerous provisions of the State's CZMA rules that are violated by this project. Some examples are provided below.

This project starting 9 miles offshore, with 1046 foot high turbines, closer than any other modern project in the entire world , clearly cannot comply with the visual resource protection provisions of Section 7.7-1.1(e)-1.i of the NJ CZMA rules. This is confirmed by simple geometry, and by the renditions in the EIS and the COP, which even depicting fewer turbines than will actually be seen, show that they are clearly visible from the shore even under overcast conditions.

The attempts by the agencies to dismiss this based on what was called the Rutgers Meteorological study are disingenuous. That study was of an undefined smaller object on land mostly around the Atlantic City airport. Meetings with Rutgers staff confirmed that those frequencies of visibility have nothing to do with the viewing of a 1046-foot high wind turbine off the open ocean.

The project clearly cannot comply with the 200 tourism job loss criteria of CZMA rule Section

7.7-15.4 (c) . Based on several public response survey studies, including the University of Delaware study sponsored by the BOEM, the tourism job losses will be in the thousands. Similarly, the project cannot comply with the net job gain criteria in any given year. The job gain from the project in the operational years will be less than 100 whereas the tourism jobs are in the thousands and will persist.

There are many other examples where the project cannot reasonably comply with the NJ CZMA criteria, that were provided to the NJDEP. We recognize that the State is responsible for the consistency finding. However, the USEPA cannot simply adopt a flawed finding without at a minimum, addressing the comments raised above.

Conclusions

By approving this permit and allowing a significant impact to the visibility in the Brigantine Wilderness Class 1 area from a source that was not included in the Regional Haze SIP, the EPA has invalidated the rate of progress measures and the SIP goals. This air permit should not have been granted pending revisions to the SIP to assure that additional offsetting emission reductions can be achieved so that the stated haze objectives can be met.

The air permit material lacks sufficient presentation of the pile driving characteristics simulated by the PSD 24 hour PM 2.5 modeling to determine whether that modeling accurately reflects the energies required to pile drive these large 15-meter diameter foundations into the seabed.

The air permit has not accounted for major turbine component repair and replacement activities during the operations and maintenance phase, or of decommissioning activity both off and onshore, which could result in violations of the 24-hour PM 2.5 increment. This should have been addressed.

The air permit response to comment document and the application lack sufficient clarity over the construction schedules used and their consistency with schedules used in other federal project approvals, which is relevant to the calculation of annual concentrations.

Other problems remain regarding the lack of Fish and Wildlife Service concurrence on the permit approval, the lack of an alternative site, size and process analysis, the lack of liability assurance, and the consistency of the project with NJ Coastal Zone Management Act rules.

This air permit should not have been issued pending resolution of these issues.