PACE UNIVERSITY

NEW YORK CITY • WESTCHESTER

SCHOOL OF LAW

CENTER FOR ENVIRONMENTAL LEGAL STUDIES

Victor Tafur
The Energy Project
Staff Attorney

78 North Broadway
White Plains, NY 10603
Phone: (914) 422-4063
Fax: (914) 422-4180
vtafur@law.pace.edu

VIA E-MAIL AND REGULAR MAIL

October 15, 2001

org-files
C 99-F-1164
Copies:
Fuel Distribution

Honorable Gerald L. Lynch
Presiding Examiner
Board on Generation Siting
and the Environment
3 Empire State Plaza
Albany, NY 12223

Honorable Kevin J. Casutto
Administrative Law Judge
NYSDEC - Office of Hearings
and Mediation Services
625 Broadway, 1st Floor
Albany, NY 12233

Re: Case 99-F-1164 - In the matter of the Application for a State Pollutant Discharge Elimination System permit pursuant to Environmental Conservation Law (ECL) Article 17 and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Parts 750 et seq., Air Pollution Control permits consisting of a Preconstruction permit and a Certificate to Operate, pursuant to ECL Article 19 and 6 NYCRR Parts 200 et seq.

DEC No. 3-3922-0003/00015 and SPDES No. NY0264342

Dear Examiners Lynch and Casutto:

Scenic Hudson hereby presents its reply brief in the above-captioned proceeding.

I hereby certify that I have this day caused a copy of this Brief to be served on all parties to this proceeding by e-mail and regular mail.

Respectfully submitted,

SCENIC HUDSON, INC.

Victor M Tafur

By: Victor Tafur
Pace Energy Project

c: Active Party List

NEW YORK STATE BOARD
ON ELECTRIC GENERATION
SITING AND THE ENVIRONMENT

IN THE MATTER

- of the -

Application for a State Pollutant Discharge Elimination System permit pursuant to Environmental Conservation Law (ECL) Article 17 and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Parts 750 et seq., Air Pollution Control permits consisting of a Preconstruction permit and a Certificate to Operate, pursuant to ECL Article 19 and 6 NYCRR Parts 200 et seq.

DEC No. 3-3922-0003/00015 and

SPDES No. NY0264342

Case 99-F-1164

REPLY BRIEF OF SCENIC HUDSON

October 15, 2001

PACE ENERGY PROJECT
Victor M. Tafur-Dominguez
Staff Attorney
78 North Broadway, White Plains
New York 10603

TABLE OF CONTENTS

I. A BTA DETERMINATION MAY INCLUDE ONLY LIMITED CONSIDERATION OF NON-AQUATIC IMPACTS

In our view a BTA determination is much narrower than the Applicant and DEC argue. As a threshold matter, we submit that this issue should be solved relying directly on Section 316 (b) of the Clean Water Act ("CWA"), EPA regulations on technology-based standards, the single DEC regulation implementing 316(b) and related case law. Less weight should be given to other interpretation devices such as EPA and DEC guidance documents and letters. Further, New York Public Service Law ("PSL"), which neither the Applicant nor DEC staff mentions, is essential to understand the interplay between the BTA determination and the Article X environmental impact review.

As a starting point, we agree with DEC Commissioner's Cahill's BTA approach in the Athens Generating Company case. *See* DEC No.: 4-1922-0005/00001, In re Application for a State Pollution Discharge Elimination System (SPDES) Permit Pursuant to ECL Article 17 and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York by Athens Generating Co., Interim Decision, issued June 2, 2000, hereafter "Athens Interim Decision." We argue the same approach should be taken in this case.

Another preliminary issue is to distinguish our position in this case from our position in the Athens case. In the Athens Interim Decision, DEC Commissioner Cahill stated that the issue of the BTA is narrower than deciding that dry cooling is the only acceptable BTA for cooling water intake structures. DEC Commissioner Cahill stated:

> "Given the site specific nature of BTA determinations, the veritable issue before me is whether the application of dry cooling technology for this project

at the proposed location satisfies BTA." *See* Athens Interim Decision, supra, at 11 (emphasis in the original). *See also* Hudson Riverkeeper Fund, Inc. v. Orange and Rockland Utilities, Inc., 835 F. Supp 160, 165 (S.D.N.Y. 1993).

Our position all along in this case has been, and our initial brief has shown that the dry cooling option for this project at the proposed location satisfies BTA. We have demonstrated that, the hybrid cooling alternative with a Gunderboom is not BTA for this project at the proposed location and that DEC Staff's BTA determination is unlawful.[1]

1. APPLICANTS POSITION

The Applicants starts by quoting the Athens Interim Decision on the factors to consider in a BTA determination:

> "Determining BTA for an individual facility is an "issue of fact", which turns on a variety of factors including, inter alia, cost, age of the facility, the number of fish killed, the additional energy, if any, needed to support improved technology, or other relevant concepts." *See* Athens interim Decision, supra, at 8 (footnote omitted)(emphasis added), citing Hudson Riverkeeper Fund, Inc. v. Orange and Rockland Utilities, Inc., 835 F. Supp. 160 (S.D.N.Y.1993).

However, the Applicant added concepts that are not mentioned in the Athens Interim Decision:

> "In this case, other relevant concepts include cost, additional energy usage required by alternate technology and issues such as impacts on other aspects of the environment, including land use and wetland impacts." Applicant's brief at 8 (emphasis added).

[1] Moreover, in our initial brief we indicated that we were not arguing hybrid cooling with a Gunderboom could never be BTA. Simply in this case: (1) the economic analysis favors dry cooling because its costs are not wholly disproportionate to the environmental benefits and (2) fish mortality and degradation of the aquatic environment in Bowline 3 would be minimized to a greater degree by using a dry-cooled condenser compared to the protection that could be achieved by a hybrid cooling system and a Gunderboom.

Indeed, "cost" and "additional energy usage" are relevant factors directly related to CWA 316(b). *See* Id. at 9, citing In re Brunswick Steam Electric Plant, Region 4, EPA (Nov. 7, 1977), and 40 CFR §125.3 (d). However, "land use" and "wetland impacts" are never mentioned in the Athens Interim Decision, EPA regulations or DEC regulation implementing CWA § 316(b). These are miscellaneous issues, remotely related to CWA 316(b), and thus, if considered, their weight should be *de minimus* in a BTA determination.

The Applicant further relies on the Development Document for Best Technology Available for the Location, Design, Construction and Capacity of Cooling Water Intake Structures for Minimizing Adverse Environmental Impact, USEPA, April, 1976 (hereafter "EPA Development Document") and a DEC internal memorandum (Exh. 144 JMC-2, hereafter "DEC memorandum"). Neither of the two documents mentions "land use" and "wetland impacts". Moreover, they do not discuss "non-water impacts". They serve as interpretative documents and guidance but they are not legal authority to add factors to the BTA determination.

2. DEC'S POSITION

DEC Staff offered what they call a "comprehensive interpretation" of the CWA §316(b) BTA requirement. *See* DEC Initial Brief at 4. Although DEC's Initial Brief indicated they relied on "Federal court decisions, EPA administrative decisions, EPA General Counsel decisions, and DEC Commissioner Cahill's decision in the Athens Generating Company decision" it relied mostly on the EPA Development Document and the DEC memorandum, which are not authority here. *See* DEC Initial Brief at 3-5, 7-8 and 11-14. Moreover, DEC Staff in its Initial brief ignored EPA's regulations indicating the factors

to consider when imposing technology-based treatment BTA requirements in permits, in 40 CFR Part 125, as we indicate infra. In addition, the DEC Staff unnecessarily complicated the discussion arguing that:

> "If DEC staff were to only consider adverse environmental impacts associated with aquatic resources when making a SPDES permit and BTA decision, it would be a violation of SEQRA, Article X, and the EPA DEC SPDES delegation agreement, and furthermore, could result in conflicting requirements imposed upon the facility related to each individual environmental discipline. *See* Section 168 of Article X of the Public Service law." DEC's Initial Brief at 8.

It is inappropriate to talk about a SEQRA violation when Article X has replaced SEQRA in these matters. In fact, DEC did not mention that PSL § 172(1) unambiguously directs DEC to follow the Article X "procedures" for environmental review "to the extent that they are consistent with federally delegated or approved environmental permitting authority" PSL § 172(1). This mandate provides the basis for DEC's environmental review but does not alter the nature or adds any factors to a BTA determination. Arguably, this consideration of environmental impacts of the proposed facility may be analogous to a SEQRA finding pursuant to 6 NYCRR § 617.11(d)(2), which requires the agency to "weigh and balance relevant environmental impacts with social, economic and other considerations" prior to making a final SPDES permit decision. But PSL § 168 and § 172 are specific provisions independent of SEQRA, and thereby the proper authority.

An issue indirectly related to CWA § 316 (b) is the visual impact of the water intake cooling structures. Visual impacts of the cooling intake structures are miscellaneous matters. *See* Athens Interim Decision, supra, at 15. Without Article X and PSL § 172(1), DEC's visual impact review should have been based on DEC's own internal visual

assessment guidance. *See* The New York State Department of Environmental Conservation, Assessing and Mitigating Visual Impacts, Policy Memorandum DEP-00-2, dated July 31, 2000. However, with Article X and PSL § 172(1) in effect, DEC's visual assessment should have followed the PSL provisions, particularly PSL §§ 168 and 172 and implementing regulations at 16 NYCRR Parts 1000 and 1001. DEC Staff witness Cianci recognized this situation when he testified as to visual impacts of the cooling technologies and he basically referred to the outcome of the Article X proceedings. *See* Direct testimony of John Cianci at 18-19. Therefore, at this stage, the recommended decision and the final determination by the Commissioner should take into account the visual assessment of the water cooling intake structures discussed under the related Article X proceedings. The same reasoning applies to all other non-aquatic impacts indirectly related to 316 (b).

The fact that the application relates to a "new source", does not change the BTA analysis. *See* DEC's Initial Brief at 10. CWA § 511 (c)(1) does not alter the BTA requirements or the BTA process. PSL § 172(1) directing DEC to follow the Article X procedures for environmental review is serving the function of CWA § 511 (c)(1). We also do not agree with DEC Staff distinguishing this case from the Athens case. *See* Id. A BTA determination is the same here as it was there. There is only one BTA determination pursuant to CWA § 316 (b). Thus, even if the historic procedure of the Athens decision is interesting, it adds nothing to this case. Moreover, EPA recognized that DEC's delegation of the federal NPDES program (implemented through the SPDES program) applied to Article X proceedings.

DEC staff erred, referring to the Athens case, stating that:

> " ...the entire scope of BTA related issues could not be adjudicated a second time in the DEC SPDES proceeding." DEC's Initial Brief at 10.

In fact, DEC Commissioner Cahill was not adjudicating the entire scope of BTA related issues for a second time. He was just following PSL § 172(1). Thus, it was incorrect to have concluded:

> "Since the Article X record addressed the other environmental impacts, the Commissioner's decision in Athens Generating only considered the aquatic impacts." Id.

As DEC's Initial Brief admits:

> "In fact, the Commissioner noted that there were additional environmental benefits associated with dry cooling towers, "namely the absence of any visible plumes." Since aesthetics was one of the most important issues and received the most attention throughout the Athens Article X hearing, the Commissioner's mention of dry cooling as reducing visual impacts at the Athens Generating site should not be dismissed." Id.

Therefore, DEC Commissioner Cahill was not adjudicating the visual issue for a second time, he was adjudicating a miscellaneous matter in the BTA analysis for the first time. Commissioner Cahill concluded that the BTA analysis finding that the visual impacts favored dry cooling over hybrid plumes because of 104 daylight hours of plumes could not be abated by the hybrid system. *See* Athens Interim Decision, supra, at 15. In addition, the Commissioner adjudicated other issues such as "Antidegradation", SEQRA "cumulative impact" and "Record of Compliance". Id. at 10-12.

In conclusion, DEC's review of non-aquatic impacts is appropriate only to a certain extent. Thus, DEC staff practice and policy of conducting BTA determinations, as reflected in Exhibit 144, is appropriate with certain limitations. Because these factors are indirectly

related to § 316 (b) there must be a sufficient connection to the cooling water intake structure to warrant its relevance. For example, it is clear that the proposal for a county park does not amount to a relevant factor in the BTA determination. Tr. 1743 and 1748. The discussion on a future county park has no connection whatsoever with the cooling intake structure for this site and should be disregarded. *See* Applicant's Initial Brief at 36. Other issues indirectly related to CWA § 316 (b) such as terrestrial impacts and visual impacts and other non-water impacts are miscellaneous matters; however, those issues should be decided upon a fully developed joint record for the Article X and the SPDES related issues.

Finally, DEC states that the Riverkeeper and Scenic Hudson:

> "... joint parties challenging the DEC draft SPDES permit BTA determination, presented no evidence that contradicts the DEC BTA determination." DEC Initial Brief at 13.
>
> "Unlike DEC witness Cianci, none of RK/SH's witnesses even conducted a BTA analysis or any studies or analyses to determine the impact of the proposed Bowline Unit 3 on the Hudson River fisheries and habitat and did not even make any personal field observations. TR. 2274, lines 13-16 and 19-22. These witnesses simply testified that only dry cooling could be BTA because it uses less water than the proposed hybrid cooling tower." Id.

Incredibly, DEC Staff forgets that the Applicant bears the burden of proof in a SPDES permit adjudicatory proceeding, 6 NYCRR 624.9(b)(1), and that DEC in charge of the BTA determination. Moreover, the Riverkeeper did challenge the BTA determination, with extensive testimony to rebut DEC's staff witnesses' BTA analysis, referring not just to the "capacity" issue of the water intake structure as DEC erroneously indicated. DEC staff also forgets Mr. Dougherty's testimony on the economics of dry cooling indicating that the cost of dry cooling is not wholly disproportionate to all the environmental benefit. And,

more crucial they forget cross-examinations of their witnesses on the BTA analysis where the record was developed showing that DEC's BTA determination was unlawful.

3. SCENIC HUDSON'S POSITION

A BTA determination for the water cooling intake structure of a power plant should be based primarily on issues directly related to §316(b). *See* generally, Athens Interim Decision, supra. Other issues indirectly related to §316(b) may be considered only to the extent authorized by federal law, and implementing regulations, as applied to SPDES permits. Section 316 (b) mandates technology-based standards for water cooling intake structures. Technology-based standards focus on the treatment required for water cooling intake structures or for water discharges. Technology-based treatment requirements are applied prior to or at the point of intake or discharge and cannot be satisfied through the use of "non-treatment" techniques. 40 CFR §§ 125.3 (e) and 125.3 (f)(1). In fact, the CWA mandates a specific level of control technology for water intake structures: BTA.

40 CFR §125.3 implements technology-based treatment requirements in permits. 40 CFR §125.3 (d)(3) specifies the factors to consider when imposing technology-based treatment BTA requirements in permits. The factors are: (i) The age of equipment and facilities involved; (ii) The process employed; (iii) The engineering aspects of the application of various types of control techniques; (iv) Process changes; (v) The cost of achieving such effluent reduction; and (vi) Non-water quality environmental impact (including energy requirements). These factors must be considered in all cases, regardless of whether the permit is being issued by EPA or an approved state like New York. *See also*

CWA § 402(a)(1)(B). All factors, except (vi), have a direct connection with the cooling technology proposed. These factors are directly related to the equipment and technology being utilized, and its cost. Thus, it seems reasonable to say the non-water quality environmental impacts (vi) must also be associated with the technology being used. Therefore, there is limited authorization in the EPA regulations for the permit writer to consider non-water quality environmental impact (including energy requirements). Consequently, DEC in issuing permits, shall follow the procedures established in the PSL, consistently with the federally delegated authority. PSL § 172(1). In a BTA determination, following CWA § 316(b) and EPA's implementing regulations. This is the approach we read in Athens. In Athens the Commissioner first considered issued directly related to §316(b) and then he look at ancillary issues, which had been discussed under parameters set for the PSL. *See* generally, Athens Interim Decision, supra.

II. DEC'S BTA DETERMINATION DOES NOT MEET THE STATUTORY REQUIREMENT UNDER THE CWA§ 316(b)

The Applicant and DEC Staff incorrectly argued that the Gunderboom technology, 2 mm wedge-wire screens and a cooling system that requires a maximum of 7.5 mgd of cooling water constitutes the best technology available to minimize adverse environmental impacts at the proposed Bowline Unit 3 and that the technology complies with the requirements of CWA § 316(b). The Applicant and DEC's BTA analysis fails on all the factors: (1) location, (2) capacity, (3) design, (4) non-water quality environmental impacts and (5) cost of the cooling water intake technology.

1. LOCATION

A. THE INTAKE STRUCTURE IS LOCATED IN A FISH AND WILDLIFE SIGNIFICANT HABITAT

The EPA Development Document indicates the location of the intake should minimize the impact of the intake on the critical aquatic organisms. *See* EPA Development Document at 24. Here the main issue is that he project is located in a DOS-DEC Significant Habitat Area. Because the Haverstraw Bay area of the Hudson River has been designated as a Significant Coastal Fish and Wildlife Habitat by the DEC and DOS, all agencies are mandated to consider the narrative for Haverstraw Bay when considering a project in this location. This is not just a consistency review to determine what actions should be prohibited. Moreover, pursuant to 19 NYCRR 600.5 (b), significant fish and wildlife habitats should be protected and preserved. Clearly, the Significant Habitat program favors the cooling intake structure minimizing impacts and water use. DEC has the duty to minimize water impacts and water use. It has been shown in this proceeding that dry cooling minimizes impacts to a greater extent than hybrid cooling and it should be preferred by DEC for this intake location.[2]

DEC Staff also mentioned the coastal policies arguing that the hybrid intake cooling structure for the project advances a number of coastal policies "including revitalization of deteriorated waterfront areas for commercial or industrial uses", and "facilitating siting of water-dependent uses on or adjacent to coastal waters." Citing Tr. 1755 and 2100. This is not true. Hybrid cooling for the site flatly does not facilitate revitalizing waterfront areas for

[2] The Applicant and DEC are misleading when they argue that Riverkeepers's witness Huddleston did not perform any studies or analyses to determine the impact of Bowline Unit 3 on the Hudson River habitat. *See* Applicant's Initial Brief at 81 and DEC Initial Brief at 15. The whole truth is that in further cross-examination of Mr. Huddleston

commercial or industrial uses. Moreover it is inconsistent with the CMP policies and guidelines 23, 24 and 25, because of plume impact. Also, DEC Staff incorrectly argues that energy generation is a water-dependent use. Executive Law, article 42.

In reviewing the Athens project's compliance with Coastal Management Program policy, the DOS review gauged the project's impact on fish and wildlife, water quality and scenic and historic resources.[3] The Athen's intake structure was not within a designated area, although it was nearby two areas designated in the CMP as Significant Coastal Habitats. *See* Case 97-F-1563, Athens Article X, Opinion and Order Granting Certificate of Environmental Compatibility and Public Need, issued June 15, 2000, hereafter "Athens Article X Decision", at 31. The Department of State's review cited several issues associated with the use of a wet/dry hybrid cooling process. Chief among these concerns was that the wet/dry hybrid cooling system would withdraw up to 7.5 million gallons of water from and discharge significant effluent into the Hudson River each day. This is the same water usage proposed by Bowline 3 and here the location is within a designated habitat. Thus, it is reasonable to assume DOS CMP favor dry cooling for this site.

In conclusion, the main issue is that the project is within this DOS-DEC designated area and the location of the water intake cooling structure is a critical factor in a BTA requirement. The location site for the Bowline 3 water cooling intake is in a biologically sensitive area indicating it is reasonable to minimize water use to the extent feasible. That is, dry cooling is the adequate cooling intake structure to ensure protection of this

---

revealed he had in fact produced the habitat impairment test and applied the DOS-DEC narrative on Haverstraw Bay. Tr.2305-2307.

[3] *See* http://www.dos.state.ny.us/pres/pr2000/cstl7_17.html (last visited 10.12.01).

designated area. Finally, because there are no other reasonable alternative locations that would minimize the environmental impacts due to the necessity to locate the intake in close proximity to the facility, it also makes sense select the cooling option minimizing water use.

2. CAPACITY

A. ONCE-THROUGH COOLING SHOULD HAVE NEVER BEEN CONSIDERED VIABLE AT THIS SITE.

The Applicant and DEC's once-through cooling analysis is inappropriate in this proceeding. *See* Applicant's Initial Brief at 29 and DEC Initial Brief at 17. In the Athens case under similar facts:

> "Once-through cooling, which withdraws 400 million gallons per day ("mgd"), with an average flow of 277,778 gallons per minute ("gpm") was appropriately never considered viable in this application." Athens Interim Decision at 8 (emphasis added).

Further, consideration of the displacement of existing once-through cooling facilities "which would result from the operation of Bowline Unit 3" is inadequate in a site specific BTA determination. *See* Hudson Riverkeeper Fund, Inc. v. Orange and Rockland Utilities, Inc., 835 F. Supp. 160, 165 (S.D.N.Y. 1933). *See* Applicant's brief at 29 and 82-83.

B. THE CONDITIONAL MORTALITY RATE ANALYSIS SHOULD BE REJECTED BECAUSE IT DOES NOT CONFORM TO THE CWA

The Applicant and DEC's analysis utilizing the Applicant's Conditional Mortality Rate ("CMR") comparing the entrainment mortality of the hybrid cooling system on

selected fish species, does not conform to the CWA. Section 316 (b) of the CWA imposes a technology-based cooling water intake requirement. Technology-based effluent limitations for thermal discharges require that cooling water "intake" structures reflect BTA. The criteria for this BTA determination is spelled-out in Section 316 (b).

Section 316(b) of the Clean Water Act provides that:

> Any standard established pursuant to section 1311 of this title or section 1316 of this title and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. (Emphasis added).

Similarly, 6 NYCRR § 704.5, states:

> The location, design, construction and capacity of cooling water intake structures, in connection with point source thermal discharges, shall reflect the best technology available (BTA) for minimizing adverse environmental impacts. (Emphasis added).

The BTA analysis should address the impacts of the proposed cooling intake structure as accurately as possible. Actually, the precise impact on representative fish species of the Applicant's hybrid-Gunderboom proposal and of the dry cooling alternative were included in the record by DEC Staff and they should be the basis for this decision. DEC staff provided precise calculations of the actual mortality estimates. These figures are:

Species	**Column E** Unit 3 Comb. Cycle: +WW+ hybrid cooling towers + Gunderboom @80% exclusion efficiency	**Column H** Unit 3 with Dry Condenser Cooling + 2mm WW Screen, 0.175 mgd Hudson R. Water {Col.D x (01.75 mgd ÷ 7.5 mgd)}
White Perch	8,958	672
Bay Anchovy	1,070,000	126,163
Herrings	24,910	1,506
Striped Bass	99,420	5,353

See Columns E and H in Table 1, Tr. 1736.

The difference between columns E and H shows dry cooling with an estimated water use of 0.175 mgd reduces mortality of White Perch by 93%, of Bay Anchovy by 88%, of Herring by 94% and of Striped Bass by 95%. The figure for the reduction for American Shad in the Table presented in the Applicant's Initial Brief is wrong. Mr. Cianci had an error in Table 1, Column H, line 10. Tr. 2027. Upon similar facts the Commissioner decided the Athens case: "I cannot discount the uncontroverted facts that application of dry cooling would use markedly less water and reduce the adverse effects of entrainment, thereby minimizing adverse environmental impacts to a greater degree than a hybrid

cooling system." *See* Athens Interim Decision, supra, at 8 (emphasis added).

The CMR calculations do not relate to technology-based issues of location, design, construction or capacity. "The calculation is a complex calculation that's based on the River-wide population ...". Tr. 2118. A simple definition of this complex calculation is found in the Application: "Entrainment conditional mortality rate is the probability of fish dying from the passage through the cooling water system of a power plant". Exh.1, Appendix 8A at 13 (emphasis added)(Please note the pages are not numbered. Our reference is found under "D. Quantitative Description of Entrainment Effects"). Moreover, the CMR approach is a fertility analysis of fish species in the Hudson River exposed to entrainment by power plants. *See* Applicant's Initial Brief at 30-31 and 77-78. In fact, DEC witness Cianci testified that the CMR-Fertility analysis is relevant only in the context of the Hudson River fish populations of each species. Tr. 2028. Those estimates should not be considered in this technology determination where we have DEC's undisputed precise calculations on mortality by the two cooling options at stake in this proceeding. Essentially, DEC staff witness Cianci is corrupting the BTA analysis when he testified that what is more important than simply looking at the numbers is "to look at the CMR as to what's really going on in the River." Tr. 2115. He did, however, cautioned that the numbers "must be interpreted carefully." Tr. 1774.

As indicated above, technology-based standards do not focus on the qualities of the qualities of the receiving water but on the treatment required for intake or discharge. In fact, technology-based standards mandate specific levels of control technology. For cooling water intake structures BTA is imposed. 40 CFR §125.3 implements technology-based treatment

requirements. Technology-based treatment requirements are applied prior to or at the point of intake or discharge and cannot be satisfied through the use of "non-treatment" techniques. 40 CFR §§ 125.3 (e) and 125.3 (f)(1). Section125.3 (d) specifies the factors to consider when imposing technology-based treatment BTA requirements in permits. These factors, which were listed supra, must be considered, regardless of whether the permit is being issued by EPA or an approved state such as New York. Under these technology-oriented factors a CMR-Fertility analysis is improper.

The Applicant further argues that the CMR-Fertility analysis demonstrates that the entrainment of ichthyoplankton with hybrid or dry cooling is approximately equivalent. We have cautioned the use of an "approximately equivalent" test in our initial brief. We also demonstrated that dry cooling would minimize adverse environmental impacts to a "greater degree" than a hybrid cooling system. *See* Athens Interim Decision, supra, at 8. *See also* Scenic Hudson's Initial Brief at 25-29. Moreover, the applicant incorrectly states that "Mr. Cianci testified that dry cooling is not more likely than the Applicant's proposal to reduce adverse environmental impacts." Applicant's Initial Brief at 76. This statement is unsupported in violation of the rule requiring specific references to portions of the record, whether transcript and it should be stricken. 6 NYCRRR § 626.8(6).

In addition, the Applicant argues that the Riverkeeper did not perform a CMR-Fertility analysis or refuted Mr. Cianci's because they neither sponsored a CMR-Fertility analysis of their own or provided any evidence pertaining to the Applicant's CMR modeling. *See* Applicant's Initial Brief at 75-76. This is not surprising since the CMR-Fertility analysis is irrelevant in this proceeding. As we indicated earlier the Applicant tends

to forget it bears the burden of proof in a SPDES permit adjudicatory proceeding. DEC regulations require the Applicant to sustain the burden of proof by the preponderance of the evidence. 6 NYCRR 624.9(b)(1). Moreover, intervenors have limited funds and cannot replicate every study provided in the Application for contested issues.

Therefore, the Applicant and DEC's CMR Gunderboom exclusion efficiencies analysis of 80 percent, 90 percent and 99 percent should be rejected (Table 1, Column G and Exhibit 29, Tables A and B). Moreover, it is inappropriate to characterize the entrainment number for the proposed hybrid cooling tower with Gunderboom and wedge-wire screens (Column E) and the entrainment number for dry cooling (Column H) as "approximately equivalent". The CMR-Fertility approach cannot discount the uncontroverted fact that application of dry cooling would use markedly less water and reduce the adverse effects of entrainment, thereby minimizing adverse environmental impacts to a greater degree than a hybrid cooling system." *See* Athens Interim Decision, supra, at 8.

For its part, DEC staff argues that:

> "[T]he difference in entrainment between dry cooling and hybrid towers, 2 mm wedge wire screens is approximately 1%. With the addition of a Gunderboom (a technology that has reduced entrainment by approximately 80% even during its developmental stage) to the hybrid towers and 2 mm screens the 1% is further reduced by at least 80%. TR. 1734 - 1738, line 15. The final level of aquati[c] protection is essentially equal." DEC's Initial Brief at 18.

How does DEC staff reach a 1% difference between columns E and H? It is never explained in the brief. It is unsupported and, therefore, should be disregarded. 6 NYCRRR § 626.8(6).

DEC added:

> "The record reflects that if the Conditional Mortality Rate (CMR) values were calculated with dry cooling entrainment numbers there would be no difference in overall impact. Therefore, reducing the capacity, or amount of water used by Bowline Unit 3, does not result in a reduction of entrainment impacts in this case." Id.

This argument (as well as those at 38) is without merit because as we indicated *supra* the Applicant's CMR-Fertility approach is irrelevant in this BTA determination.

DEC staff concluded:

> "The capacity of the proposed Bowline Unit 3 will meet the BTA test in this case because the application of 2 mm wedge wire screens and a Gunderboom system surrounding those screens reduces entrainment impacts to the same levels as dry cooling towers and at a substantially lower economic and environmental cost." Id.

This statement simply ignores the difference between columns E and H and seems to rely on the CMR-Fertility analysis, which is unacceptable in this proceeding. Finally, DEC's discussion on "capacity" of the intake structure is flawed for the reasons stated above. *See* DEC Staff's Initial Brief at 37-39.

3. DESIGN

DEC's analysis of the design factor is flawed. The design factor of a water intake cooling structure should relate to technical features. DEC, however, instead of focusing on the Gunderboom, which was the design feature receiving most attention, considered that

"land use" and "aesthetics" were the "design" issues of the BTA determination for Bowline 3. DEC staff's approach is inconsistent with CWA 316 (b), the EPA Development Document and the Athens Interim Decision, supra. In the Athens decision "land use" issues are not mentioned at all, while aesthetics were miscellaneous issues of the BTA determination. *See* Athens Interim Decision, supra, at 15.

4. NON-WATER QUALITY ENVIRONMENTAL IMPACTS

As indicated above, the permit writers may consider non-water quality environmental impacts to a limited extent. We stated there must be some nexus or connection with technology issues. The DEC Commissioner may then consider terrestrial impacts as miscellaneous matters. These issues where dealt with by DEC staff under the "design" factor of the water cooling intake structure. *See* DEC Initial Brief at 19-20. We reject his approach. DEC and the Applicant have extensively referred to these ancillary matters in their Initial Briefs, indicating that the non-water impacts have been heavily weighted in the BTA determination. *See* DEC Initial Brief Section II. A., B, and C; Applicants Initial Brief Points I and II. Hereby we reply, demonstrating that in this case dry cooling has less impacts than hybrid cooling and a Gunderboom on terrestrial, wildlife and visual impacts. To reply we have to refer to criteria set forth in Article X of the PSL, pursuant to PSL § 172(1) directing DEC to follow the Article X procedures for environmental review.

A. TERRESTRIAL IMPACTS OF THE WATER COOLING INTAKE STRUCTURES

Both the Applicant and DEC Staff focus on the dimensions of footprints of the cooling options. Applicant's Initial Brief at 37-38; DEC Staff Initial Brief at 19. The correct approach under PSL § 168 and § 172 is to look at the impacts of the cooling intake structures. The impact of the cooling alternatives on terrestrial habitats must be conducted according to DOS documents on Haverstraw Bay as a significant coastal fish and wildlife habitat. DEC Staff witness Cianci testified that the DOS designation applies "not only a water -- a section of a water body but also to a portion of land associated with that water body." Tr. 2087 at lines 9-12. He also testified he had applied the DOS habitat impairment test to the water body and the terrestrial portions affected by the project (at that stage hybrid cooling in alternative # 1). Tr. 2091. And that "Existing areas [of natural vegetation] yes, they should be -- they should be maintained as much as possible..." Tr. 2088. *See also* Tr. 2094. The specific habitat impairment test that must be met in Haverstraw Bay is as follow: "In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would: destroy the habitat; or, significantly impair the viability of a habitat." (emphasis added). *See* DOS Coastal Zone Designation of Haverstraw Bay as a significant Fish and Wildlife Habitat area.

Here, there would be habitat destruction (PFO, SSH and SOF in Exh. 157) from the construction and clearing required for both water cooling intake technologies. *See* Rebuttal Testimony of Scott Heim at 2 at 10-19 and Exh.157. But the area for the hybrid cooling intake structure would destroy habitats in proximity to the Hudson River, while the dry-cooled condenser is proposed adjacent to the generation building. Habitat destruction is defined as "the loss of fish or wildlife use though direct physical alteration, disturbance, or

pollution of a designated area or through the indirect effects of these actions on a designated area." *See* DOS Coastal Zone Designation of Haverstraw Bay as a significant Fish and Wildlife Habitat area. Taking into account the language in DOS Coastal Zone Designation of Haverstraw Bay as a significant Fish and Wildlife Habitat, the dry cooling option is far more consistent with the following statement: "EXISTING AREAS OF NATURAL VEGETATION BORDERING HAVERSTRAW BAY SHOULD BE MAINTAINED TO PROVIDE SOIL STABILIZATION AND BUFFER AREAS". Id.

DEC Staff argues "[t]he location of the hybrid tower minimizes impacts to vegetation and wetlands as much of the area is presently open field. TR. 1741." DEC's Initial Brief at 19. This is incorrect. A comparison of the habitat impacts of both technologies favors dry cooling. Exhibit 157 shows dry cooling would require filling 1.49 acres of wetland ("PFO"), would impact of 0.86 acres of open field ("SOF") and 1.23 acres of hardwoods ("SSH") for a total of 3.58 acres of habitat impacted. The hybrid cooling alternative would destroy 1.21 acres of SOF and 2.07 acres of SSH for a total impact of 3.28 acres. *See* Exh.157. The difference is small: 0.30 acres. However, Exh. 157 has the caveat that some areas of that PFO that are supposed to be forested wetland in Exh.157 are not an accurately represented, as was confirmed during the site visits. As stated by the Examiners

> "there was a swath approximately 50-60 feet wide, oriented in a North-South direction for the width of the dry cooling tower, which appeared significantly different in comparison with the habitat on both sides of the swath. Specifically, one could *See* clearly through the area of the swath while this was not possible on either side of it. This difference in appearance is not apparent when examining this exhibit [157]".[4]

[4] The official copy of the exhibit will bear the following annotation: "At the second site visit held on 9/20/01, the habitat types that would be affected by the construction and operation of dry cooling towers were observed by the undersigned by looking North from a point just South of the southernmost bank of the Minisceongo Creek and just

Accordingly, the actual habitat impact from the dry cooled condenser should be reduced by that amount in Exh.157. Thus, the habitat impact of dry cooling could be less than the habitat impact of hybrid cooling structure in alternative 2.

This calculation does not include the stream ("APS") because it can be rerouted as indicated by DPS Staff witness de waal and DEC Staff witness Cianci. *See* Testimony by James J. de waal Malefyt at 3, lines 13-18. *See also* Exhibits 159 and 160; *See* Direct testimony of John Cianci at 16, line 4. DPS Staff witness de waal stated:

> "A reroute of Minisceongo Creek along the northern and eastern roadway around the air cooled condenser would eliminate these ecological impacts and minimize the ecological impacts of the dry cooling system if it were authorized (Exhibit JM-1)." *See* Testimony by James J. de waal Malefyt at 3, lines 13-18. *See also* Exh.159 and 160.

DEC staff witness Cianci also assumed that the Minisceongo Creek would be relocated in part, thereby avoiding the impact on that environment. *See* Direct Testimony of John Cianci at 16, line 4. And, he confirmed for the record during cross examination that:

> "[i]n the Article X Application they talk about relocation. First I've heard of culverting Minisceongo Creek was in the Applicant's brief." Tr. 2068 and 2069. And, testified: "Relocation would be preferable to covering – or culverting the facility." Tr. 2069.

In addition, DEC counsel pointed out that in Appendix 16A of the Application (Exh.1) there is "an item in there that allocates a million dollars for revision of the creek, or

---

North of the northernmost wall of the proposed generation building for Unit #3. From that vantage point, it was clear that there was a swath approximately 50-60 feet wide oriented in a North-South direction for the width of the dry cooling tower, which appeared significantly different in comparison with the habitat on both sides of the swath. Specifically, one could *See* clearly through the area of the swath while this was not possible on either side of it. This difference in appearance is not apparent when examining this exhibit".

movement of the creek and site preparation;...". Mr. Heim and applicant's counsel admitted to it subject to checking. Tr. 2535. Finally, DEC's Initial Brief pointed out:

> "Minisceongo Creek would be relocated if dry towers are constructed, as per the Application. TR. 1743. However, Heim subsequently stated this creek would be culverted if dry towers were constructed (TR. 2526) and 0.8 acres of artificial creek would be lost. DEC witness Cianci stated that relocation (of this stream) would be preferable to culverting the facility (TR 2069), thus we are in agreement with DPS witness Malefyt (TR. 2603). Which recommends diversion, not culverting, to eliminate ecological impacts, if this alternative were authorized." DEC staff Initial Brief at 19 and 20.

This last-minute culverting proposal should be rejected. Mr. Heim admitted that the idea of rerouting the stream had been shelved in favor of culverting. Tr.2535. His testimony was that culverting is now the recommendation. Tr. 2536. Thus, not only did the applicant change the location of the hybrid cooling tower after Article X hearing was over but it has also changed the construction proposal for the dry-cooled condenser at the September 20, 2001 hearing. Furthermore, the environmental consultant for the project, who did the environmental assessment on wetlands, waterways and wildlife, admitted "I did not study the alternative of rerouting the stream and effects it would have on the adjacent wetlands". Fortunately, DPS Staff and DEC Staff have addressed these mitigation impacts and they are incorporated into the record. We ask the Examiner to reject this last-minute change in position. Thus, any consideration and portions thereof of the Applicant's Initial Brief relating to the culverting of the stream should be stricken and disregarded.

These calculations also do not take into account Mr. de waal's recommendation that "wetlands should be created for every acre of wetland filled (2:1 ratio)." *See* Id. at 6, lines 1-3. This is the usual condition in these cases. With new wetlands created, even at 1:1 ratio,

habitat destruction would be less from dry cooling than from hybrid cooling in alternative # 2. A total 2.09 acres (1.23 of SSH, and 0.86 acres of SOF) would be impacted by the dry cooled condenser compared to 3.28 (1.21 acres of SOF and 2.07 acres of SSH); a difference of 1.19 acres.

DEC Staff's position was that these wetlands were not state regulated as they were too small to meet regulatory thresholds. *See* DEC's Initial Brief at 19. The Wetland Jurisdictional Determination Report ("WJDR")(October 2000) for Bowline 3 prepared by Mr. Heim stated:

> "The plants communities within the assessment area are those characteristic of extremely disturbed habitats". Exh. 41 at 5. He added: "Each of the wetlands identified and delineated within the Assessment Area represents communities that have developed within an extensively disturbed (i.e., filled) area. The wetlands represent perched systems that are underlain by dense and relatively impermeable fill material. These wetlands are present within shallow depressions that are supported hydrologically by runoff from adjacent areas of upland that are underlain by dense fill material". Id. at 8.

A perched system (explained at Tr. 2569) affects the function of the wetland. Tr. 2570. Thus, it is reasonable to say that these are not irreplaceable wetlands. In fact, the WJDR describes wetland JJ as a "small" wetland in the WJDR. Id. at 12. Now the Applicant changed the story and claims: "This wetland is the largest wetland area delineated in the Project Site." Applicant's Initial Brief at 38.

The Applicant's Initial Brief also attempts to underscore impact of the water cooling intake structures on wildlife. *See* Applicant's Initial Brief at 39-41. DEC's Initial Brief does not mention impacts on non-aquatic organisms, however, by discussing vegetation and wildlife it indirectly relates to the wildlife impact. We consider the wildlife impacts of the

water intake cooling structures to be even less connected to the CWA 316(b), nonetheless herein we reply to the Applicant arguments on this matter.

The impacts on wildlife resulting from the water cooling intake structures are not as clear as the Applicant indicates. First of all, it is clear that both water cooling intake structures considered for Bowline 3 would have some impact on wildlife. However, because these areas have been heavily disturbed in the past this is difficult to solve. DEC staff witness Cianci pointed out that "the entire area where construction could occur can be best described as successional, as it was apparently seriously disturbed during construction of Units 1 & 2 and associated facilities". *See* Direct testimony of John Cianci at 16 at lines 16-18. Thus, habitat impacts at Bowline 3 from the cooling technologies are very difficult to ascertain.

One way to approach this issue is to review wildlife present (or potential) at the site as reflected in Appendix 9C in Exhibit 1. According to Appendix 9C most species are present in the Old field ("SOF"), the Southern Hardwoods ("SSH") and the Forested Wetlands ("PFO"). The actual impact of dry cooling would be 2.09 acres (SOF and SSH because the PFO should be replaced and the APS rerouted) and the actual impact of the hybrid cooling in alternative # 2 would be 3.28 acres. Then, it is fair to say that dry cooling has less impact than hybrid cooling on wildlife at Bowline 3.

The Applicant's Initial Brief indicates Mr. Heim's testified that no long-term effects to wildlife are expected to result from the construction of a hybrid cooling tower. Applicant's Initial Brief at 38. In cross-examination he restated that "[t]here will be no permanent impact to wildlife that use those wetlands and waterway habitats". Tr. 2547. Mr.

Heim avoided addressing the impacts of wildlife that use, not the wetlands or the waterway habitats, but the SOF (1.21 acres) and the SSH (2.07 acres) habitats (total 3.28) that would be affected by the hybrid cooling in alternative # 2. Indeed, Mr. Heim wanted to avoid contradicting himself. Mr. Heim had previously testified about his concerns on wildlife impacts of the wet evaporative system in the same location as the hybrid cooling in alternative # 1. As he indicated at the hearing,"[i]mpacts to wildlife from hybrid cooling tower alternative one is discussed in -- on page 27 of my Article X testimony". Tr. 2548 (emphasis added).

Mr. Heim had stated in his Article X testimony and in the application that due to the proximity of the project to the Hudson River, the forested areas present are expected to be readily used by migrating songbirds (e.g. warblers) during periods of spring and fall migration. Exh.1 at 9-50 and Direct Testimony of a Panel Consisting of Scott Heim and Bruce Burn at 26, lines 7-9. Tr. 2572.

He added:

> "Migrating birds are often found near large rivers and streams in order to exploit abundant insects populations produced by these aquatic habitats." Id. *See also* Direct Testimony of a Panel Consisting of Scott Heim and Bruce Burn at 26, lines 9-11.

And he concluded:

> "THIS HABITAT FUNCTION IS LIKELY TO BE THE MOST SIGNIFICANT FEATURE PROVIDED BY THE PROJECT SITE". Exh. 1. at 9-50. (emphasis added). *See also* Direct Testimony of a Panel Consisting of Scott Heim and Bruce Burn at 26, lines 11-12.

Mr. Heim also noted:

> "Numerous warblers were noted on the Project Site (particularly within wooded

areas located in close proximity to the Hudson River and Minisceongo Creek) during both the spring and fall site inspections concluded by Southern Energy's consultants." Exh.1 at 9-50.

Mr. Heim also indicated the PSS area in the eastern potion of the site was the more structural diverse habitat. Exh.1 at 9-52. *See also* Direct Testimony of a Panel Consisting of Scott Heim and Bruce Burn p.12-13. He concluded:

> "Wildlife inhabiting areas of the old field and southern successional hardwood upland forest communities that will be impacted by the Project (Section 9.1.3) also will be affected adversely by the direct loss of available habitat. However, a large portion of these cover types will remain unaltered by the proposed development. Therefore, species which utilize these cover types will continue to have a significant amount of suitable habitat available on the site. Overall, the placement of the Project within the more disturbed (and least vegetatively diverse) habitats on the Bowline Generating Station Property is expected to limit direct impacts on wildlife." Exh. 1 at 9-52. *See also* Direct Testimony of a Panel Consisting of Scott Heim and Bruce Burn at 27.

Therefore, there is extensive testimony on the value of the habitat closer to the Hudson River. More so than on wetland JJ that would be filled. Moreover, any wetlands affected can be and should be replaced in adjacent areas. DEC Staff witness Cianci also indicated that a "significant habitat is important because we get birds, various kinds of birds, that populate in the area or visit an area for a period of time, and other types of primarily terrestrial organisms". Tr. 1979.

B. VISUAL IMPACTS OF THE COOLING INTAKE STRUCTURES

We refute the following portions of the DEC Staff brief relating to visual impacts of the cooling technologies:

> "Any cooling towers for a facility of this size will have some level of visual and land use/wetlands impacts. Wet and hybrid towers will occasionally produce a visual

plume. Analyses presented by the Applicant and DPS have concluded that this impact is minimal and the Department concurs. To make this decision, staff depended upon agency professionals who reviewed viewshed analysis, as well as internal guidance concerning this topic (TR). DEC witness Cianci testified that visible plumes will only occur for 138 hours per year (11.5 days), and then not from all locations within the viewshed, thus this impact was minimal, and thus, not significant in an existing industrial area.

The greater height of the dry towers at 123 feet, vs. 54 feet for the hybrid tower (Heim test, p. 3) results in a permanent visual impact from many more areas; a visibility that will last as long as this facility exists (possibly 30 years. TR. 1996). This is a very significant impact on visibility, as well as land use, and plays an important role in the BTA determination. (Note that this figure was changed in cross-examination of Mr. Cianci to 125 hours per year. TR. 2147)." *See* DEC Initial Brief at 20.

An initial challenge is that first paragraph is unsupported in violation of the rule requiring specific references to portions of the record. 6 NYCRRR § 626.8(6). Thus, it should be stricken from the brief. Moreover, there in no evidence in the record supporting any viewshed analysis done by DEC staff.

Secondly, DEC Staff affirms the plume impact of the hybrid cooling proposal would be "minimal". This statement should be discarded because it is not provided in the context of a comparison of two feasible alternatives. The essence of the environmental impact analysis, be it under Article X, SEQRA, or NEPA is to analyze alternatives. Thus, here minimal impact or minimization of impact can only be a consequence of comparing at least two feasible alternatives. Comparing dry cooling and hybrid cooling it is inconceivable to conclude that hybrid cooling minimizes impacts, when dry cooling has no visible plumes. DPS staff witness Davis had also testified that hybrid cooling tower "minimizes" impacts but without any comparison of alternative.

Pursuant to PSL § 172(1), directing DEC to follow the Article X procedures for

environmental review, the visual impact of the cooling technologies would lead us to the criteria set forth in PSL § 168. As indicated, visual issues are a miscellaneous consideration in a BTA determination, however, they received a great deal of attention in this case. Contrary to DEC's statements we argue that dry cooling minimizes visual impacts. PSL §168 (2)(c)(i), Article 42 of the New York State Executive Law, implementing regulations in 19 NYCRR Part 600 and the Coastal Management Policies 7, 23, 24 and 25.

To compare the visual impacts of the two water cooling intake structures considered the following criteria was developed in the Athens Article X case: (1) Wooded buffers and vegetative screening of the water cooling structures; (2) Overall aesthetics consideration of the water intake structures; (3) Plume analysis of the water cooling intake structures, (3) Visual impact on scenic resources of statewide significance of the water cooling intake structures; and (4) Visual impact on natural and man-made resources which are not identified as being of statewide significance but which contribute to the scenic quality of the coastal areas of the water cooling intake structures. *See* generally, Athens Article X Decision.

1.) WOODED BUFFERS AND VEGETATIVE SCREENING

Vegetation in the project site would provide significant screening for two of the cooling alternatives at stake here: the dry-cooled condenser, located immediately to the north of the generating building in the western portion of the site, and the hybrid cooling tower in alternative location # 2, located in the eastern portion of the project site in proximity of the Hudson River. Hybrid cooling in alternative location # 1, even closer to the Hudson River, would not have sufficient vegetative screening. *See* Exh.121 Figures 2

through 7. Dry cooling would be located in a lower elevation terrain surrounded by successional hardwoods ("SSH"). Exh. 157. Hardwoods surrounding the air-cooled condenser alternative would serve to screen it from outside views. Id. Photosimulations show that the vegetation surrounding the dry-cooled condenser location would screened it from most viewpoints. *See* Exh. 121 Figures 2 through 7. The dry cooling building would only be 10 feet higher that the turbine generation building. *See* Exh. 1 at 16-7. Dr. Smardon testified that although the dry cooling building is wider and taller (but has less depth) than the hybrid cooling tower alternatives, "for most views not significantly more visible". *See* Direct Testimony of Richard Smardon at 15.

DPS Staff witness Davis also testified that a dry cooling tower would be slightly/somewhat less visible from the Hudson River and the foreground views. Tr. 1026. Dry cooling is, therefore, the optimal alternative to minimize visibility of the cooling technology from the Hudson River (viewpoint R-1 east)(Exh. 121, Figure 2), Haverstraw Marina (viewpoint R-10 north)(Exh. 121, Figure 3) Bowline Point Park (viewpoint R-11 south east) (Exh. 121, Figure 4), High Tor State Park (viewpoints S-8 and S-9 south west)(*See* Exh. 6 Figure 10-4g, Figure 10-4h and Exh. 53 Figure 9-1 B), from the Cortland Yatch Club (viewpoint R-22 north east) (Exh. 121, figure 6) and from Senasqua Park (viewpoint R-24 east) (Exh. 121, Figure 7).

The hybrid cooling tower in alternative # 2 would be located to the west and north of alternative # 1 (the original siting proposal). Evidence in the record up until September 20, 2001 indicated the hybrid cooling tower alternative 2 would be located in an area of southern successional hardwoods ("SSH"). *See* Exh. 1., Figure 9-1 and Exh. 53 Figure 9-

1B, 9-1C, 9-1D. Evidence introduced on September 20, 2001 shows the hybrid cooling alternative 2 would be located in an successional old field ("SOF") about the same length and width of the proposed hybrid cooling cells. Exh. 157. Anyway, still 2.07 acres of hardwoods ("SSH") would have to be cleared away for the hybrid cooling system in alternative # 2. In addition, 1.21 acres of successional old field ("SOF") would be covered by the footprint of the hybrid cells in alternative # 2 (total 3.28 acres). The hardwoods remaining around the footprint and clearing line would seem to provide somewhat of a vegetative buffer to the 54-foot high hybrid cooling cells alternative 2. Still, there would be views of the tops of those cooling cells, as we discuss infra.

Dr. Smardon's simulations demonstrate that hybrid cooling in alternative # 1 would have a significantly greater impact than the dry cooling alternative for four of the six viewpoints. *See* Direct Testimony of Richard Smardon at15. *See also* Exh. 121, Figures 2 through 7. In addition, DPS Staff witness Davis testified that there would be visibility of the tops of the hybrid tower alternative 1 from he foreground views in the immediate areas around the plant on the river. Tr. 1026-1027. Based on this evidence we can reasonably say that hybrid cooling alternative 2 provides a better vegetative screening than hybrid cooling alternative 1 but there would still be visibility of the tops of the hybrid tower alternative 2 from the foreground views in the immediate areas around the plant. Tr. 2565.

Based on the foregoing, it is reasonable to conclude that both dry cooling and hybrid cooling in alternative # 2 would be screened to a large extent by existing vegetation. No sufficient screening would result if hybrid cooling is approved to be located in alternative site # 1. In addition to testimony and photosimulations, this conclusion is supported on the

applicant's own visual assessment of the cooling options in response to discovery requests. On dry cooling the applicant stated:

> "From the Hudson River, the air-cooled condenser would be slightly less visible than the mechanical draft cooling or the hybrid cooling tower [alternative1] because the air-cooled condenser would be further removed from the shoreline than the other cooling towers. As shown in Figure 10-6c, the greater height of the air cooled condenser is counterbalanced by the increased screening provided by the vegetation that exists between the shoreline and the air-cooled condenser. However, the overall visual impact rating of the Facility with an air-cooled condenser would be moderate from the Hudson River vantage point (R-1)" (emphasis added). *See* Exh. 19 at 4.

We agree with this assessment. The applicant concluded:

> "Additional planting along the Hudson River shoreline are not warranted to screen the air-cooled condenser from this vantage point". *See* Id (emphasis added).

From all vantage points existing, buildings or vegetation would screen the air-cooled condenser (*See* Exh. 121, Figures 2-7) except views from higher elevations such as High Tor Park (*See* Exh. 19, Figure 10-6a) and Peck Pond Park (*See* Exh. 19 figures 10-6d and 10-6e). "The air cooled condenser would be most visible from Pecks Pond Park (R-14) and the surrounding residential areas west of the Project Site". *See* Exh. 19 at 6. However, the Applicant admitted that "additional plantings along the fence line at Pecks Pond Park would soften the visual appearance of the air cooled condenser as viewed from this vantage point". Id. Finally, the applicant stated: "Due to the distance and elevated perspective provided by High Tor and Little Tor, additional plantings are not warranted and would not provide any discernable mitigation for the air-cooled condenser alternative". *See* Id. at 7. We agree.

With respect to the hybrid cooling tower alternative 1, the applicant stated:

"From the Hudson River (R-1), the hybrid cooling tower will be readily visible in the foreground of Bowline Unit 1 and 2 (*See* Exh. 53, Figure 10-5c)." *See also* Exh. 19, at 4.

"... it will extend above and beyond the existing vegetation that provides partial screening of the mechanical draft cooling tower along the Hudson River shoreline. The hybrid cooling tower will be somewhat more visible than the mechanical draft". Id

The applicant concluded that the hybrid cooling alternative 1 "would create a moderate visual impact from the Hudson River vantage point." *See* Exh.19, at 4.

Taking into account that "[t]he height of the vegetation along the bank of the Hudson River in the above-noted photos [Figures 10-3a and 10-4a - in Exh. 1] ranges from 40 to 60 feet, with the majority of the vegetation being between 40 to 50 feet in height" (Exh. 19) and that the cooling towers would be 54 feet high (Exh. 53, at.4-5), it is reasonable to conclude that there would still be views of the top 10-15 feet of the cooling cells for hybrid cooling alternative 2. In addition, the hybrid cooling alternative 2 (as hybrid alternative 1) would be visible from higher elevations regardless of additional plantings. Due to the distance and elevation provided by High Tor and Little Tor, additional plantings would not screen the tops of the hybrid cooling cell in alternative # 2 but they could provide discernable mitigation for the western and southern portions of the hybrid cooling tower in alternative # 2.

Dr. Smardon also concluded that there are no significant differences in the impact areas in terms of acres for the cooling alternatives. *See* Direct Testimony of Richard Smardon at 15. Because the footprint of hybrid cooling alternatives 1 and 2 are the same, Dr. Smardon's testimony is valid for both alternative locations for the hybrid cooling tower.

In conclusion, there are no significant differences in the minimization of impacts in terms of vegetative screening and acres impacted for the dry cooling option and the hybrid cooling tower sited in alternative # 2. Thus, the decision turns to other visual factors and criteria.

2.) OVERALL AESTHETIC CONSIDERATIONS OF THE WATER COOLING INTAKE STRUCTURE ALTERNATIVES

Overall aesthetic considerations favor dry cooling over hybrid cooling because the cooling technology is located next to the generating building and will be perceived as an extension of the Bowline facility. "From the vantage points provided by High Tor and Little Tor, the air-cooled condenser will be viewed as an extension of the Bowline Facility...", has admitted the applicant. *See* Exh. 19 and Figures 10-6a and 10-6b. In contrast, the hybrid cooling tower alternative 2 would be a new element in the eastern portion of the project site. Thus, dry cooling minimizes impacts considering overall aesthetic considerations.

3.) PLUME ANALYSIS OF THE WATER INTAKE STRUCTURE COOLINGALTERNATIVES

The main facts are undisputed in the plume analysis for the water intake structures. Dry cooling would not have a visible plume. Exh. 1 at 16-8. *See also* Direct Testimony of Richard Smardon at 14. Hybrid cooling would have visible plumes for 138 average hours per year at an average length height of 457 meters, and 138 average hours per year at an average height of 148 meters. *See* Direct Testimony of Richard Smardon at 15-16. The Applicant calculated 125 average-hours visibility for the hybrid alternative. *See* Applicants

Article X Initial Brief at 50. The plumes produced by the hybrid system will extend to distances greater than the length of the tower and higher than the existing stacks. Tr. 956. This figure can be reduced to days, as has done DEC staff but the fact remains that there are plumes from the hybrid cooling system under certain weather conditions, which are expected during the colder periods of the year.

The legal question here is whether minimization of adverse environmental impacts considering the state of available technology and the interest of the state with respect to aesthetics warrants the no-plume alternative or the 138 hour-plume alternative. The applicant and DPS position is that 138 hours of visible plume is not significant and thus the no-plume alternative is not warranted. But we ask isn't the purpose of §168 (2)(C)(i), the whole Article X process and the SPDES process to seek minimization of impacts? Dry cooling is feasible here. It provides absolute minimization of plumes. The state's interests warrant requiring the best option feasible. Our position is that there are no downsides to dry cooling, there is a difference of $14 million difference between no-plumes and 138 hours-plumes. However, neither the Applicant, DEC or DPS have shown that this $14 million additional cost is disproportionate compared to all the benefits it achieves.

Furthermore, plume impact in New York's coastal areas is subject to stringent review. New York's coastal policies are enforceable through the Waterfront Act (Executive Law Article 42) and other existing state laws. The consistency review process for State actions, outlined in 19 NYCRR Part 600.3 and 600.4, requires that if the action will substantially hinder the achievement of any policy, the agency shall certify that the following requirements are satisfied: 1) no reasonable alternative exists which would permit

the action to be taken in a manner which would not substantially hinder the achievement of any policy; 2) the action taken will minimize all adverse effects on such policies to the maximum extent practicable; 3) the action will advance one or more of other coastal policies; and 4) the action will result in an overriding regional or statewide public benefit. 19 NYCRR Part 600.4. As applied to this case, this legal framework implies, first, that the agencies should make these determinations for the siting location and plumes of the hybrid cooling proposal. And, to find if dry cooling is a reasonable alternative to solve the siting and plume inconsistencies from hybrid cooling. As we discussed supra, the CMP requirements favor dry cooling as the "reasonable alternative", which would permit the agencies to authorize the construction of the water cooling intake structure in a manner which would not substantially hinder the achievement of any policy. Further, dry cooling for this site will minimize all adverse effects on such policies to the maximum extent practicable. Dry cooling at this facility will advance other coastal policies and will result in an overriding regional or statewide public benefit. Furthermore, we do not know how NYSDOS will decide consistency of the project with CMP triggered by the applicant's CWA § 404 permit request. But it is reasonable to assume that NYSDOS will restate their position in the Athens case that an amount of plumes of about 120-hours average is inconsistent with New York's coastal rules, regulations and programs at sensitive sites. *See* http://www.dos.state.ny.us/pres/pr2000/cstl7_17.html (last visited 10/12/01)

4.) VISUAL IMPACT OF THE COOLING TECHNOLOGIES ON SCENIC RESOURCES OF STATEWIDE SIGNIFICANCE PURSUANT TO 19 NYCRR SECTION 600.5 (d)(1)

Another required approach to compare the impact of both water cooling intake structures on aesthetics is the visual impact on scenic resources of statewide significance. The hybrid cooling in alternative # 1 would have plume impact on the SASS. *See* Exh. 118 and Exh. 119. It is reasonable to assume the same impacts are valid for the hybrid cooling in alternative # 2.

The two factors to evaluate impacts on SASS areas are: (1) siting and (2) SASS plume analysis. Siting is important because most SASS views to the project site are from higher elevations. Here again, that the siting of dry-cooled condenser in proximity to the generation building (on the western portion of the project site) is favored over the siting of the hybrid cooling tower (on the eastern portion of the Project site across the Minisceongo Creek) in proximity to the Hudson River. As indicated supra, overall aesthetic considerations favor dry cooling over hybrid cooling because the cooling technology is located next to the generating building and will be perceived as an extension of the Bowline facility. The hybrid cooling tower alternative 2 would be a new element in the eastern portion of the project site. Thus, dry cooling minimizes impacts, considering "siting" impacts on SASS.

SASS plume impact is eliminated by the use of a dry-cooled condenser. SASS plume impact by the hybrid cooling in both locations is 138 average hours of visible plumes per year at an average length height of 457 meters, and 138 average hours per year at an average height of 148 meters. *See* Direct Testimony of Richard Smardon at 15-16. The impact on SASS is evident (Exh. 118) because plumes produced by the hybrid system will

extend to distances greater than the length of the tower and higher than the existing stacks. Tr. 956. Thus, preventing impairment of SASS resources pursuant to 19 NYCRR section 600.5 (d)(1) favors dry cooling over hybrid.

Moreover, under CMP Policy 24 if there is any visibility from an area of SASS any potential "impairment" should be prevented or minimized in accordance with guidelines provided therewith. We conclude the visual impact of the plume resulting from the Bowline 3 hybrid cooling on SASS areas is inconsistent with CMP Policy 24. Therefore, SASS plume elimination for Bowline 3 is warranted by New York's CMP, rules and regulations.

5.) VISUAL IMPACTS OF THE COOLING OPTIONS ON NATURAL AND MAN-MADE RESOURCES WHICH ARE NOT IDENTIFIED AS BEING OF STATEWIDE SIGNIFICANCE BUT WHICH CONTRIBUTE TO THE SCENIC QUALITY OF THE COASTAL AREAS PURSUANT TO 19 NYCRR SECTION 600.5 (d)(2)

The impact of both water cooling intake structures on natural and man-made resources which are not identified as being of statewide significance but which contribute to the scenic quality of the coastal areas turns on the same two issues: (1) siting and (2) plumes analysis. Siting is important to protect and enhance natural and man-made resources with views to the plant from higher elevations such has High Tor Park (Exh. 19 and Figures 10-6a, 10-6b) and the Central Presbyterian Church (Exh. 1, Figure 10-2a photo1) in Haverstraw pursuant to 19 NYCRR 600.5 (d)(2). The comparison of the visual impact of the two cooling alternatives from higher elevations is showed on the photosimulations of the cooling alternatives from High Tor Park.

Plume analysis on natural and man-made resources which are not identified as being of statewide significance but which contribute to the scenic quality of the coastal areas favors dry cooling for the same reasons stated above. Under CMP Policy 25 visual impact on natural and man-made resources which are not identified as being of statewide significance but which contribute to the scenic quality of the coastal areas should be prevented or minimized in accordance with guidelines provided therewith (the same as for CMP Policy 24). The visual impact of the plume resulting from the hybrid cooling on natural and man-made resources which are not identified as being of statewide significance but which contribute to the scenic quality of the coastal areas is inconsistent with CMP Policy 25. Therefore, plume elimination on natural and man-made resources which are not identified as being of statewide significance but which contribute to the scenic quality of the coastal areas is warranted by New York's CMP, rules and regulations.

6.) DRY COOLING MINIMIZES ADVERSE ENVIRONMENTAL VISUAL IMPACTS CONSIDERING THE STATE OF AVAILABLE TECHNOLOGY AND THE INTEREST OF THE STATE WITH RESPECT TO PRESERVATION OF HISTORIC SITES, FORESTS AND PARKS

Historic preservation law requires that State agencies "fully explore all feasible and prudent alternative", which avoid or mitigate adverse impacts on such properties. Parks, Recreation and Historic Preservation Law ("PRHPL") §14.09. Further, here these historic sites are located within New York's coastal area (Exh. 118 and 119), thereby warranting the interest of the state in protecting its views, to be consistent with CMP Policy 23. *See also* 19 NYCRR § 600.5(f)(3). Therefore, dry cooling is a better alternative because it eliminates plumes, removes construction of the hybrid cooling cells from the coastline and prevents the

removal of matured trees in the eastern portion of the project site adjacent to the Hudson River consistent with CMP 23 and CMP 24. Therefore, overall we conclude that the dry cooling structure at the proposed facility minimizes adverse visual environmental impacts, considering the state of available technology and the interest of the state with respect to aesthetics, preservation of historic sites, forests and parks. PSL §168 (2)(c)(i).

C. ENERGY USE OF THE COOLING INTAKE STRUCURES

In accordance with the Athens Interim Decision, one of the factors in the BTA determination is the additional energy needed to support dry cooling. *See* Applicant's Initial Brief at 41-42 citing Tr. 1731. *See also* Athens Interim Decision, supra, at 8. *See also* 40 CFR §125.3 (d)(3). The Applicant's Initial Brief states that if Bowline Unit 3 were to utilize dry cooling, there would be a slight loss of generation capacity as ambient air temperature increases. While DEC's Initial Brief mentions "reduced efficiencies" it does not explain the concept. DEC Staff Initial Brief at 26.

Mr. Dougherty explained the efficiency losses of dry cooling in warm weather. His conclusion, was that "[t]he use of dry cooling systems generally results in an average efficiency loss between 1% and 2% relative to the use of a wet cooling system. This means an increase in fuel usage by an equivalent amount. Using this extra fuel would increase the cost of generation slightly." *See* Direct testimony of William Dougherty at 7, lines 10-15.

In its brief the Applicant included the following table with the net power output loss due to an air-cooled condenser at Bowline Unit 3. We have added the decrease as percentage of total output:

Temperature	Decrease = % of 750 MW
40° F	6.6 MW = 0.88%
59° F	10.1 MW = 1.34%
87° F	18.2 MW = 2.42%

This table shows dry cooling decreases are in the parameters Mr. Dougherty indicated in his testimony. Thus, the input losses are "*de minimus*". Id.

D. COST

Notorious in the Applicant and DEC Staff briefs were the weak arguments to address the "wholly disproportionate test" of the BTA determination for Bowline 3. The Applicant tried to shift the burden of production by indication Mr. Dougherty's testimony did not address the cost of hybrid cooling vs. dry cooling for Bowline Unit 3 simply because he did not mention Bowline 3 in his testimony. This is misleading. In fact, Mr. Dougherty testified he reviewed all the application and additional discovery documents pertaining to the costs of the cooling technologies to give his testimony. Tr. 2492-2493. Indeed he did not conduct a specific economic study of the cooling intake structures at Bowline 3 because of the limitations in intervenor funds but we honored our commitment of Mr. Dougherty's testimony on the economics of dry cooling as it applied to Bowline 3. Thus, it is misleading to say he "did not perform any studies or analyses of the costs of different technologies at Bowline Unit 3". Applicant's Initial Brief at 82. As indicated in our prior brief, "[t]his more rigorous standard [the "wholly disproportionate test"] gives presumptive weight to the value of environmental benefits and places the burden on a permit applicant to demonstrate that

the relative costs are unreasonable." *See* Athens Interim Decision, supra, at 9 (emphasis added).

The applicant also misleads with the statement that "Mr. Cianci testified that the costs of dry cooling are wholly disproportionate to the environmental benefits of dry cooling at Bowline Unit 3.".Applicant's Initial Brief at 44. This is untrue. Not the passage mentioned in the Applicant's brief (Tr. 2049 – 2050) or any other portion of the record supports Mr. Cianci ever answered directly if the costs of dry cooling are wholly disproportionate in relation to the environmental benefits. There is no evidence whatsoever that he conducted the economic analysis required in a BTA analysis. The portion of the record copied in the Applicant's brief precisely shows Mr. Cianci was giving evasive answers related to his own personal conclusions. This was not the economic analysis required pursuant to case law and guidelines. This was discussed at large in our initial brief at sections B. 6. and C. 1. b.

For its part, DEC Staff's brief considered costs in the context of the Gunderboom system. *See* DEC Staff Initial Brief at 21. They stated:

> "The additional cost for dry cooling to achieve essentially the same level of protection to aquatic resources from entrainment impacts as is achieved by hybrid and Gunderboom, also considering the additional impacts to visual/aesthetics and land use/wetlands caused by dry cooling towers at this site, results in a cost that is wholly disproportionate to the benefits to be gained for this proposal at the Bowline Unit 3 site. " *See* DEC Staff Initial Brief at 21.

We are not clear what this means, but it certainly does not mean that an economic analysis was done showing the costs of dry cooling are wholly disproportionate to all the environmental gains. In fact, at the end of the case we are still left with the DEC initial

position in this case:

> " ... the fact sheet attached to the draft SPDES permit clearly states that cost does not -- or that the Department does not believe that the cost of dry cooling is wholly disproportionate in this case. However, upon consideration of other environmental impacts that I listed earlier and the fact that the Gunderboom is the Department's position is an appropriate mitigation technology that dry cooling is not appropriate". Tr. 228.

III. CONCLUSION

Closing briefs in this proceeding help to demonstrate that DEC Staff's BTA determination for Bowline 3 relied heavily on non- aquatic factors. This leads to improper BTA analysis. The water-related BTA was also improperly conducted and is therefore unlawful. In addition, the cost factor of the cooling intake structures was misapplied. Scenic Hudson's straightforward BTA analysis showed dry cooling is BTA for Bowline 3. We also conclude the Athens Interim Decision gives the right approach to a BTA analysis, but DEC staff is deviating from the Athens case and EPA regulations