

ZONING BOARD OF APPEALS -  
VILLAGE OF BUCHANAN, NEW YORK

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In the Matter

of

the Application of CONSOLIDATED EDISON  
COMPANY OF NEW YORK, INC., for Variances  
to Enable the Construction of a Closed-  
Cycle Cooling Tower and Cooling System  
for Indian Point Plant No. 2.

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D E C I S I O N

Consolidated Edison Company of New York, Inc. (hereafter  
Con Edison) seeks variances from the height limitations and certain  
use restrictions of the Zoning Ordinance of the Village of Buchanan.  
Its appeal to this Board is from the Building Inspector's denial  
of a building permit for the concrete tower of a proposed closed-  
cycle cooling system at Nuclear Unit No. 2 of the Indian Point plant.  
A public hearing was held on the variance application at the High  
School on May 6, 1975.

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The cooling systems herein referred to have to do with the  
steam released into a chamber when the turbines are driven in the  
process of converting high-pressure steam energy into electrical  
energy, in that the steam must be condensed by cooling and return

to the boilers in the form of water. The present method of cooling such steam at Unit No. 2 is known as a "once-through system": large quantities of Hudson River water are drawn in to reduce the temperature of the chamber by coming in contact with it and the water, raised in temperature by its contact with the hot surface, is returned to the Hudson River.

A "closed-cycle system" of cooling consists of recirculating the water used for the cooling and, in the process of recirculation, cooling the River water for constant re-use in cooling the steam chamber again. This involves a greatly reduced demand for intake of Hudson River water, in that what is required is only a replacement of the water lost by evaporation in the process of cooling-and-being-cooled.

There are "mechanical" systems of closed-cycle cooling, involving the use of fans and the radiation of heat to the atmosphere in cooling the water, but the system proposed by Con Edison (on the assumption that it will be compelled to install any closed-cycle system) is known as a "natural draft" cooling system. This calls for the pumping of heated River water to the top of an extremely high tower, whence the water cascades or filters downward through filtration material and is cooled by the time it reaches collection

tanks at the bottom of the tower for recirculation back through the turbines.

A natural updraft in the tower produces blowoffs of vaporized water at the top in the form of white vapor plumes or clouds of varying size and stability, depending on atmospheric conditions. In the case of an Indian Point installation, such plumes would soar at times and, at others, stay fairly stable in place over the Buchanan-Peekskill area. Due to the variable strong-to-weak salinity of the recirculated Hudson River water, the vapor blown out at the top of such a tower at Indian Point must contain salt droplets which will drift and fall to the ground substantially throughout Buchanan -- in varying concentrations at various times of the year, and with greater or lesser effect on vegetation in periods of dryness or regular rain.

The heart of the natural draft, closed-cycle installation set forth in Con Edison's application for a building permit, and now for variances, is a massive cooling tower. The tower projected is a cylindrical, concrete structure 562 feet high with a base diameter of 462 feet tapering to a top diameter of 310 feet. No building permit can be issued for Con Ed's stated purpose unless the variances are granted: the height far exceeds the maximum of

40 feet permitted in Con Edison's M-D zone, or any other zone of Buchanan (See schedule of heights and areas, Zoning Map No. 1 to Zoning Ordinance -- Ch. 54, "Zoning", Code of the Village of Buchanan); (and) the use requirements of industrial operation in the M-D zone forbid uses which project such a vapor plume as described beyond the Con Edison property (Zoning Ordinance, §54-22 (A) (1)), or which disperse the described salt deposits on vegetation and elsewhere (§54-22 (A) (2) and (4)).

The stated basis of Con Edison's appeal for the variances, to enable its obtaining a building permit now, is that it will otherwise face "serious practical difficulties". The practical difficulties said to be anticipated are that Con Edison will be unable to operate its nuclear generating plant if a closed-cycle cooling system has not been installed by May 1, 1979.

Under the terms of Con Edison's operating license for Unit No. 2 from the Atomic Energy Commission (License No. DPR-26, Amendment No. 6, May 6, 1974), operating with a once-through cooling system is permitted on an interim basis, it being stated that the reasonable termination date for the interim period "now appears to be May 1, 1979", and that such interim operation shall be permitted only to the extent that requirements of protecting fish and other

river life of the Hudson River (referred to in all proceedings under the all-inclusive description of "aquatic biota") are satisfied and mitigating measures, including possible advancement of the May, 1979 date or any other remedy thereafter directed by the Atomic Energy Commission, are promptly taken. Con Edison is required to act with due diligence in obtaining "all governmental approvals" for the construction of a closed-cycle system by December 1, 1975 and the May 1, 1979 date may be advanced if all such approvals are earlier obtained but, on the other hand, the 1979 date may be postponed if Con Edison has acted diligently in seeking such approvals but has not obtained them by December 1, 1975. Elaborate design, operational and reporting requirements are set forth in the license for Con Edison to minimize detrimental effects on aquatic biota during the continuance of operations with the once-through cooling system. As explained by Con Edison at the public hearing herein, and publicly stated by the utility at various times, a most elaborate and costly empirical study of the entire ecological impact of the present Indian Point plant on the Hudson River, which it is now causing to be carried on for a definitive evaluation of the once-through cooling system, among other things, is authorized by the terms of paragraph 1(c) of the 1974 license Amendment No. 6:

"(c) If the applicant believes that the empirical data collected during this interim period justifies an extension of the interim operation period or such other relief as may be appropriate, it may make timely application to the Atomic Energy Commission. The filing of such application in and of itself shall not warrant an extension of the interim operation period".

The steps which Con Edison is now taking, through application to this Board and otherwise, toward eventual replacement of its once-through cooling system are the result of lengthy adversary proceedings between the utility and the Hudson River Fisherman's Association (hereafter HRFA) before the Atomic Energy Commission and its successor, the Nuclear Regulatory Commission. The adversary relationship continues in the Federal administrative forum and may be expected to continue until such time as all the factual and policy issues between these parties have been finally determined, without reservation and without leave for further consideration or recommendation.

For some years HRFA has been a strong advocate, before the Atomic Energy Commission and now before the Nuclear Regulatory Commission, for the position that the once-through cooling system at Indian Point, in and of itself, is unreasonably and incurably destructive of vast quantities of aquatic biota of the Hudson River. With particular reference to statistics on striped bass spawning in

the Hudson River and migration in a wide range thereafter, HRFA has insisted and insists that grave economic consequences, extending far beyond the gratification or disappointment of sport fishermen, follow upon the unwarranted killing of striped bass in their early stages; that something on the order of 25-30% of each year's production of striped bass in the Hudson is killed at Indian Point; and that the figure for fish of all sorts killed at Indian Point annually approaches 600,000.

It may be said that, on the basis of testimony and arguments presented in prior administrative proceedings, the HRFA point of view has prevailed to this point in the Nuclear Regulatory Commission and has been adopted by the staff of that Commission in stating adversary positions of its own (as shown in submissions of HRFA to the Board in this proceeding). Thus the existing license of Con Edison for Unit No. 2, as stated above, provides for the continued operation with a once-through system only on an interim basis, under carefully stated controls for the protection of aquatic biota, the reporting of all empirical data collected in the interim period, and the imposition of any further appropriate interim controls (Atomic Energy Commission License No. DPR-26, Amendment No. 6, May 6, 1974).

Con Edison has consistently fought every application before the Federal regulatory agency for the substitution of a closed-cycle

system at Indian Point. At all such hearings, it has contested the validity of HRFA's claims, statistics, projections and assertions of causal relationship. Despite the tenor of its present variance application, Con Edison considered it appropriate, at the public hearing of May 6, 1975, to contest sharply and greatly minimize the HRFA assertions as to present fish kills at the Indian Point plant.

Con Edison's prior adversary position against HRFA, i.e., apart from the present proceeding wherein both parties appeared and spoke in favor of the variance application, has gone far beyond its protest that the natural draft, closed-cycle system will unjustifiably increase the cost of producing electricity and distributing it to its customers in the New York City-Westchester area: due to a construction cost of \$88,000,000 for the cooling tower of Unit No. 2 and an annual operational cost thereafter of \$35,000,000 per year. Con Edison's principal contention, aside from the hearing before this Board, has been and still is that the existing once-through cooling system is adequate and satisfactory in all respects, and not unacceptably destructive of Hudson River biota.

To this end, as publicly stated heretofore and brought out at the hearing, Con Edison has engaged experts to conduct a



most extensive study of the ecological effect of the Indian Point plant in the Hudson River in every ascertainable respect, and has done so with the specific permission of the Nuclear Regulatory Commission and its predecessor. As brought out at the hearing, the cost of this study will approximate \$15,000,000 and the estimated date of a final report, presenting all the empirical data and the conclusions available therefrom, is January 1, 1977. While it is clear that Con Edison is undertaking all this on the conviction that the end result will be a convincing demonstration that the once-through system is ecologically justifiable and a closed-cycle system unnecessary, it is proceeding with the application for a building permit under the requirements of its license, and in order to have municipal authority to proceed with construction of a closed cycle system when and if it is required.

At the public hearing before this Board, HRFA took the position, in effect, that there were no substantial issues of fact remaining from the prior controversy between it and Con Edison. HRFA's spokesmen maintained generally that the disastrous slaughter of aquatic biota, in the magnitude and of the effect stated, and clearly connected with the present cooling system, was proven to and conclusively determined by the agency having jurisdiction; that

a closed-cycle system had been ordered into operation and would necessarily be carried out due to the firm support of the HRFA position by the Nuclear Regulatory Commission "staff"; and that the unfortunate detriments of visual insult by the enormous tower and operational pollution by vapor plumes and salt dispersion were burdens that would have to be accepted by the citizenry of Buchanan as the necessary consequences of a public policy decision, on ecological grounds, at a higher level of government.

Con Edison's position at the public hearing was that it intended to press forward with its ecological study in an effort to demonstrate the validity and reasonableness, all things considered, of its once-through system, but that it might be caught between conflicting governmental commands if this Board refused to vary the height limitations and use restrictions of the ordinance, at least to the extent of enabling it to have a building permit presently on hand. It therefore presented the facts as to the Federal regulatory proceedings to date, showed the details of its projected closed-cycle system, and briefly discussed its choice of a natural draft system as ecologically preferable to other closed-cycle systems.

The predictable reaction of the public generally at the hearing of May 6, 1975 was one of strong opposition to the entire

idea of the massive cooling tower, and complaints as to the side effects of the vapor blowoffs in the cooling process. Of considerably more significance, for purposes of this Board's determination herein, was the presentation of fact and opinion by an expert engaged by the Board of Trustees of the Village.

On the basis of the expert's presentation, it appears clear enough now, if it had not been before, that the unacceptability of a once-through cooling system on ecological grounds is not the clear-cut, factually established proposition depicted by the HRFA, in that the facts and hypotheses underlying the condemnation of the system are open to question, to say the very least; that there is room for wide differences of opinion on technical and ecological grounds as to the supposed deficiencies of a once-through system and the benefits and burdens of a closed-cycle system; that the obvious and overpowering visual effect of a 565-foot structure must remain as a permanent eyesore once the decision is made that a closed-cycle system is otherwise desirable; and that the effects of vapor plumes and salt deposits are not to be considered trivial and necessary consequences of an overriding ecological decision as to aquatic biota, in that the consequences of the particular installation proposed for Buchanan

are unusual and deserve more serious examination than appears to have been given.

All of the foregoing summary is stated to pose the issue which is presented to this Board upon the application and the hearing: has Con Edison shown such practical difficulties in adhering to the requirements of the Zoning Ordinance that the Board should now vary the application of the height limitations and use restrictions in the M-D zone (under the standards of Village Law §7-712, Subd. 2(c) as to observing the spirit of the ordinance, securing public welfare and safety, and doing substantial justice) and direct the issuance of a building permit which may or may not be necessary, depending on the ultimate outcome of Con Edison's litigated proceedings before the Nuclear Regulatory Commission?

On all the facts brought out at the hearing and the materials submitted to the Board, it appears that Con Edison is presently in full compliance with all requirements of the Zoning Ordinance. In the operation of Unit No. 2 at Indian Point with its once-through cooling system, it is in full compliance, as far as can be determined here, with the requirements of the Federal agency having jurisdiction. It has further carried out the requirements of its license as to making and submitting its evaluation of

a preferred system of closed-cycle cooling to the Nuclear Regulatory Commission (License No. DPR-26, Amendment No. 6, Par. 2.E(2), May 6, 1974) and has satisfied the requirements of Par. 2.E(1) (b) of the license by acting diligently and in good faith in prosecuting the present application for a building permit and variances.

On the present Con Edison application, we do not find practical difficulties in enforcing the ordinance according to its terms because the application is contingent, i.e., for the purported erection of a structure which may or may not ever be erected, depending on future events, and pro forma, i.e., made because an agency having jurisdiction over Con Edison has directed it to make the application, but involving no present intent, commitment or direction to begin excavation, construction or any other activity on the premises for which a building permit would be required by the Village of Buchanan.

In the view of this Board, there is nothing now before it which indicates any legal or factual compulsion upon the Board to accept a tower standing 525 feet higher than the legal maximum as a necessary evil, on a theory of superior governmental requirement or a theory of practical difficulties to the applicant. Indeed, no

practical difficulty to Con Edison is apparent upon the very denial of its application: its license is in effect, it has made the application directed, and the refusal to grant the "governmental approval" is entirely attributable to this municipal agency, not to any deficiency on Con Edison's part.

A very different situation might be presented some two years hence, or earlier if Con Edison's \$15,000,000 ecological study were completed and any application based on it were finally determined by the Nuclear Regulatory Commission before January 1, 1977. On the other hand, no proposal for a closed-cycle system or for variances may ever be presented again. The situation which may or may not occur is not before the Board on the present application and there appears to be no basis for anything more than speculation as to whether a closed-cycle system will or will not be required in 1977, in the absence of any inkling as to what facts will be revealed by the present and ongoing study.

If we were not denying the variances for the reasons stated, we would deny them on the ground that Con Edison has not shown that the variances requested are the minimal variances from the ordinance which must be granted in order to preserve the spirit

of the ordinance while protecting the public interest under Village Law §7-712, Subd. 2(c). On that basis, practical difficulties calling for the requested variances have not been established.

The appeal to this Board asks for a 525-foot height variance, and for other variances, on the theory that a closed-cycle cooling system requires a 565-foot tower. This is not so, as shown at the hearing and in the material submitted. The requirement of a 565-foot tower is that of a natural draft, closed-cycle system.

Based on its own judgment of ecological effects, Con Edison has decided for itself and recommended to the Nuclear Regulatory Commission that a natural draft system is superior to any version of a mechanical cooling system and should be installed if a closed-cycle system is to be used. Con Edison has weighed the increase of noise, fogging and salt dispersion associated with a mechanical closed-cycle system and decided that the ecological effects of noise, fog and salt would be unacceptable to the surrounding area. This apparently overlooks the fact that the surrounding area is the Village of Buchanan and that a judgment of what is acceptable, unacceptable or inevitable, in terms of variances as to noise, destruction of vegetation and air pollution, is a function of this Board of Appeals.

The judgmental nature of what is a minor and what is a major departure for the standards of an ordinance, and what sort of variances should or should not be granted in a given situation, is made crystal clear in this context of ruling out a mechanical system. For all its stated disadvantages in other respects, such a system would not impose a 565-foot eyesore on the surrounding area: a mechanical system is served by two cooling "towers", each extending 520 feet in length and 75 feet in width, but only 68 feet high.

Without indicating that this Board or any successor Board would have any preference for one sort of closed-cycle system or another, or that the question was in any way before it for decision on this application, it is evident that considerations of height, noise, fogging, salt dispersion and other effects would be before a Zoning Board of Appeals on any application for a building permit for imminent construction of "towers" for a closed-cycle cooling system. The very concept of the granting of variances in keeping with the spirit of an ordinance calls for the granting of only the minimal variances which will solve an applicant's hardship or practical difficulties. Therefore, the weighing of the interests of applicant and Village and the severity of burdens acceptable to the Village in



granting necessary variances seem clearly to fall within the province of the Board, and not that of the applicant.

The present application precluded any consideration of alternatives, including any variations of the usual mechanical systems or any modification of towers and adaptability of the technology of one system to the other to eliminate objectionable features. It called for the acceptance, as a postulate of the proceeding, of a natural draft system and a 565-foot tower as indispensable consequences of any closed-cycle system. On that ground alone, the application would appear to be defective and the proof insufficient to establish practical difficulties and a request for only the minimum necessary variances.

The application of Con Edison for the requested variances and the issue of a building permit is unanimously denied. Gerald Marallo, a member of the Board, did not attend the public hearing or participate in this decision.

Dated: Buchanan, New York  
June 19, 1975.

SI  
WALTER HOFFMAN, Chairman

SI  
JOHN MORAITIS

SI  
WILLIAM MURRAY

SI  
JOHN KORTEROWSKI