Riverkeeper, Inc. v. United States Environmental Protection Agency: Applying the Clean Water Act's Best Technology Available Standard to Existing Cooling Systems

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Recommended Citation

Link to publisher version (DOI)
http://dx.doi.org/https://doi.org/10.15779/Z38TZ7T
**Riverkeeper, Inc. v. United States**  
**Environmental Protection Agency: Applying the Clean Water Act’s Best Technology Available Standard to Existing Cooling Systems**

In *Riverkeeper, Inc. v. EPA (Riverkeeper II)*, the Second Circuit considered the validity of regulations recently promulgated by the Environmental Protection Agency (EPA) under the Clean Water Act (CWA or “the Act”) to protect aquatic wildlife from power plant cooling systems.\(^1\) The court held that the EPA cannot use cost-benefit analysis to determine which technologies are the best available to the industry under the CWA’s “best technology available” (BTA) standard.\(^2\) Unable to determine whether the EPA had impermissibly relied upon cost-benefit analysis in drafting the rule, the court remanded the regulations to the agency for reconsideration and fuller explanation.\(^3\) By prohibiting cost-benefit analysis in determining BTA, the court has effectuated Congress’s intent for the Clean Water Act.

**BACKGROUND**

Many power plants use cooling systems that rely on water withdrawn from rivers, lakes, and other waterways.\(^4\) These withdrawals have substantial environmental impacts, including two kinds of harm to aquatic organisms. Large aquatic organisms are trapped against the screens that cover the intake structures (“impinged”), while small organisms are drawn into the cooling mechanism (“entrained”).\(^5\) In order to deal with this problem, Congress included section 316(b) among its 1972 amendments to the CWA, requiring that “the location, design, construction, and capacity of cooling water intake

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1. 475 F.3d 83, 91 (2d Cir. 2007).
2. *Id.* at 89.
3. *Id.*
5. *Id.* In a single year, a power plant may impinge a billion adult fish and entrain three to four billion smaller fish and shellfish, disturbing the surrounding ecosystem.
structures reflect the best technology available for minimizing adverse environmental impact.\textsuperscript{6}

Today, three basic kinds of water-cooling systems are available. First, dry cooling systems use air drafts to transfer heat and thus virtually eliminate the need for water.\textsuperscript{7} Second, closed-cycle cooling systems recirculate water, adding water to the system only to replace what is lost through evaporation.\textsuperscript{8} Both dry cooling and closed-cycle cooling use less water, and have less environmental impact, than the third type of cooling system, once-through cooling.\textsuperscript{9} Once-through systems take water in, use it to absorb heat, and return the water to its source at a higher temperature.\textsuperscript{10}

More than thirty years after the passage of the CWA amendments, the EPA still has not determined which of these technologies constitutes the BTA for purposes of section 316(b). The agency has been making this determination in multiple stages as a consequence of previous litigation. In 1977, the Fourth Circuit remanded the EPA’s first attempt to regulate under section 316(b) on procedural grounds.\textsuperscript{11} Through 1995, the EPA had still not promulgated regulations under this section, leading a group of environmental advocates to sue.\textsuperscript{12} Pursuant to the consent decree issued in that case, the EPA established a timetable to issue cooling system rules in three phases.\textsuperscript{13} Phase I (issued in 2001, addressed in Riverkeeper I) governs new facilities; Phase II (addressed in Riverkeeper II) governs large, existing power plants; and Phase III will regulate existing power plants not governed by Phase II, as well as other industrial facilities.\textsuperscript{14}

\textit{RIVERKEEPER I}

In its 2004 decision in Riverkeeper v. EPA (Riverkeeper I), the Second Circuit upheld the EPA’s Phase I regulations, which set closed-cycle cooling systems as BTA for new power plant cooling facilities.\textsuperscript{15} The environmental group plaintiffs argued that dry cooling systems were the best technology

\begin{itemize}
\item[6.] 33 U.S.C. § 1326(b). Because this brief provision is included in a section governing thermal pollution, the court has called Congress’s regulation of cooling structures “something of an afterthought.” Consequently, the EPA has pursued the task of regulating power plant cooling structures without much specific congressional guidance. Riverkeeper I, 358 F.3d at 90.
\item[7.] Riverkeeper I, 358 F.3d at 182 n.5, 194.
\item[8.] Id. at 182 n.5.
\item[9.] Id. at 194 n.21. There are significant differences in the costs of dry cooling and close-cycle cooling, as well as in their impacts on wildlife. Dry cooling systems cost three times more to build and ten times more to operate than closed-cycle systems. Where a hypothetical closed cycle cooling system would entrain about 180,000 organisms per year, dry cooling would entrain only 6,570.
\item[10.] Id. at 194 n. 22. A similarly situated once-through cooling system would entrain about 3.65 million organisms.
\item[12.] Riverkeeper II, 475 F.3d 83, 90 (2d Cir. 2007).
\item[13.] Id.
\item[14.] Riverkeeper I, 358 F.3d 174, 194 (2d Cir. 2004).
\end{itemize}
available, and that the cost considerations upon which the EPA relied in selecting closed-cycle cooling systems were impermissible because section 316(b) does not mention costs. However, the court held that the EPA may consider cost in regulating new power plants because the Phase I regulations were also promulgated pursuant to section 306 of the CWA, which names cost as a factor in setting new source performance standards. Because section 316(b) cross-references section 306, the court held that it was permissible for the EPA to seek guidance in that section’s “best available demonstrated control technology” (BAT) standard, including costs.

After deciding that the EPA may consider cost in setting the performance standards for new facilities, the court deferred to the agency with regard to how cost should be weighed against other factors. That is, although the court declared that cost may play some role in agency decisions, there is no discussion of whether the EPA may rely on cost-benefit analysis, in which regulations are only promulgated when the cost of compliance is outweighed by the regulations’ benefit. Although the court noted in the introductory passages of the decision that the Act demands cost be given decreasing weight “as facilities have time to plan ahead to meet tougher restrictions,” this idea did not limit the court’s deference to the EPA. Rather, the one caveat the court mentioned in its analysis of the performance standards is that costs must not exceed what can be “reasonably borne by the industry.” Thus, the court deferred to the EPA’s Phase I BAT standard, holding that the EPA was best able to weigh the environmental impacts of the alternative types of cooling system.

PHASE II REGULATIONS

After the Riverkeeper I litigation, the EPA began Phase II, promulgating standards for existing power plants. The EPA determined that BAT for large existing facilities could be satisfied by three compliance alternatives. First, a facility may meet a fixed standard for water intake velocity, ensuring that the environmental impact is commensurate with closed-cycle cooling. Alternatively, a facility may reduce impingement and entrainment by a

16. Id. at 194–95.
17. Id. at 195.
18. Id.
20. Riverkeeper I, 358 F.3d 174, 185, 195 (2d Cir. 2004).
21. Id. at 195 (citing Chem. Mfrs. Ass’n v. EPA, 870 F.2d 177, 262 (5th Cir. 1989)).
22. Id. at 196 (citing Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971)).
23. 40 C.F.R. § 125.94(a).
24. Id. § 125.94(a)(1)(ii). A facility may meet the performance standard for impingement by reducing its intake velocity to 0.5 ft/s or less, but will still need to meet separate entrainment standards based on national performance standards.
specified proportion of historical levels for that site. These standards are defined by broad ranges rather than narrow targets. To comply with the performance standards, a facility will install or have plans to install a mechanism from an approved "suite" of technologies, including mesh wire screens, nets, aquatic filter systems, fish return systems, and other modifications which reduce environmental impact. Finally, a facility may seek a site-specific solution if its compliance costs "would be significantly greater than the costs considered by the Administrator" or "significantly greater than the benefits of complying."

**RIVERKEEPER II**

While both environmental and industrial petitioners presented numerous arguments, an important question before the court was which methodology the EPA may use in determining the "best technology available" for reducing the impingement and entrainment of wildlife. Two of the environmental petitioners' arguments raised this issue: first, the EPA inappropriately chose closed-cycle cooling as BTA rather than a suite of alternative technologies, and second, that any performance standards in the regulations should be set at precise limits, rather than "wide and indeterminate ranges."

As a preliminary issue, the Second Circuit held that the EPA could not base its determination of BTA on cost-benefit analysis. Section 316(b) does not make clear whether cost-benefit analysis is permissible. Unable to discern the proper role of costs from section 316(b), the court looked to the Act's evolution into a stringently technology-forcing law and prior interpretations of the BAT standard for effluent emissions. The 1989 amendments to the Act established the BAT standard, shifting away from the less stringent "best practicable control technology" standard. The Second Circuit held that by adopting the more stringent BAT standard, Congress limited cost-benefit analysis in the adoption of performance targets. The court decided to restrict considerations of cost under section 316(b) in the same manner as in

25. *Id.* § 125.94(b). The "national performance standards" require a facility to "reduce impingement mortality for all life stage of fish and shellfish by 80 to 95 percent from the calculation baseline" and 60 to 90 percent below the entrainment baseline. The calculation baseline is "an estimate of impingement mortality and entrainment that would occur" at a specific site involving several quantitative assumptions and perhaps taking historical impingement and entrainment data into account. *Id.* § 125.93.

26. *Id.*


28. 40 C.F.R. § 125.94(a)(5)(i)–(ii).

29. *See Riverkeeper II*, 475 F.3d 83, 96 (2d Cir. 2007).

30. *Id.* at 96, 105.

31. *Id.* at 101.

32. *Id.* at 102.

33. *Id.*
determinations of BAT, given that “best available technology” and “best technology available” are very linguistically similar and that Congress intended the CWA to be a technology-forcing statute. Accordingly, the court held that section 316(b) prohibits the agency from conducting cost-benefit analysis in determining BAT. The EPA’s determinations of the best attainable environmental impact under section 316(b) may only consider cost in the context of whether an effluent-control technology could be reasonably borne by industry.\textsuperscript{34} Once a performance target is set, the agency may still use cost-effectiveness analysis to determine the most economical means of achieving the fixed goal.\textsuperscript{35}

Applying this interpretation of the CWA, the court found that it was “unclear whether the Agency improperly weighed the benefits and the costs of requiring closed-cycle cooling.”\textsuperscript{36} The court pointed to several places in the record that suggested that cost-benefit analysis might have played a role in the EPA’s decision. For instance, a brief EPA memorandum indicated that setting standards commensurate with closed-cycle cooling would cost three times as much as the standards it promulgated while only reducing entrainment by 1.3 times.\textsuperscript{37} At the same time, there was little evidence that the EPA investigated whether industry could bear the burden of the stricter standard.\textsuperscript{38} Although the EPA did claim that the suite of technologies in its regulations “‘approach[es]’ the performance of closed-cycle cooling,” the court stated that the EPA did not explain this crucial conclusion.\textsuperscript{39} Indeed, the court’s own examination of the record found significant advantages to closed-cycle cooling.\textsuperscript{40} The court complained that the “EPA’s failure to explain its decision frustrates effective judicial review,” noting that it is especially difficult for judges to evaluate the propriety of agency decisions in a highly technical area without explanation.\textsuperscript{41} The court remanded to the EPA for clarification of its decision-making and possible reassessment of BTA.\textsuperscript{42}

Next, the court addressed the question of whether the agency can set performance standards as ranges. It held that agencies may use ranges to deal with the uncertainty surrounding the environmental impact of a planned water intake system.\textsuperscript{43} However, the statutory command to utilize the “best” technology available will not be met by second-best results; facilities should

\textsuperscript{34} Id. at 102.
\textsuperscript{35} Id.
\textsuperscript{36} Id.
\textsuperscript{37} Id. at 103.
\textsuperscript{38} Id.
\textsuperscript{39} Id.
\textsuperscript{40} Id. at 104 n.16. Closed-cycle cooling would reduce impingement and entrainment by 96 to 98 percent at facilities that use fresh water and by 70 to 96 percent at saltwater facilities.
\textsuperscript{41} Id. at 104.
\textsuperscript{42} Id. at 130–31.
\textsuperscript{43} Id. at 107.
not be considered in compliance if they could do better. According to the court, the EPA should address these concerns on remand if it chooses to retain the performance ranges.

ANALYSIS

The court was much more critical of the EPA's actions in Riverkeeper II than in Riverkeeper I, largely due to the Second Circuit's new emphasis on prohibiting cost-benefit considerations under the BTA standard. The Riverkeeper II court's stance on cost-benefit analysis is faithful to Congress' intent in passing the Clean Water Act. Still, questions remain over how the BTA standard will be applied in the future. Most notably, it is unclear whether regulations will allow industry to comply with the standard by choosing among a suite of technologies.

In both Riverkeeper decisions, the CWA's heavily-litigated, far-reaching BAT standard guided the court's interpretation of the obscure BTA standard; the important differences between the rulings lie in the aspects of the BAT standard that influenced the decisions. Even though the EPA may not use cost-benefit analysis to determine BAT, Riverkeeper I failed to infer such a prohibition into the BTA standard. By prohibiting cost-benefit analysis in promulgating regulations under the BTA standard, Riverkeeper II has developed and clarified the standard in an important way.

While the court's methodology for evaluating claims under the Act has shifted dramatically in three years, the outcomes of the two Riverkeeper cases are still consistent. Riverkeeper I never explicitly endorsed cost-benefit analysis, so Riverkeeper II's strong denunciation of such analysis does not necessarily conflict with the previous holding. Further, section 316(b) does not demand that BTA for new and existing facilities be identical. Thus, the court's willingness to accept different standards for existing facilities than those Riverkeeper I upheld for new facilities does not impugn the earlier decision. Indeed, since the BTA standard requires facilities to adopt the most effective technology whose cost the industry can reasonably bear, the divergent circumstances of the two kinds of facilities might entail different costs, and therefore make different standards appropriate.

The court's understanding of the "best technology available" standard as being substantially similar to the "best available technology" standard may impose on the EPA an unwelcome degree of oversight, but it is in accord with congressional intent. The peculiar difference in the way the two standards are phrased alone should not suggest a different level of regulatory strictness. Thus, the court acted under the most reasonable interpretation of congressional intent by reading the "best available technology" standard to demand stringent,

44. Id.
45. Id.
46. See id. at 101.
technology-forcing regulation, as demanded by the "best technology available" standard.

Riverkeeper II also raises the question of whether regulations that allow industry to choose from suites of technologies are, in principle, prohibited by the CWA. While it may be difficult in practice to select a suite of technologies that perform at the same level, Riverkeeper II explicitly prohibits such a set of compliance options. Rather, the opinion focuses on the distinct environmental impacts produced by the various options that the Phase II regulations provided to industry.

CONCLUSION

Though courts invariably struggle to find the proper balance of agency oversight and deference, Riverkeeper II appropriately limits judicial deference. In this case, the Second Circuit held that the BTA standard, like the BAT standard, prohibits cost-benefit analysis and remanded the Phase II regulations to the EPA to verify that its determinations were not improperly influenced by cost-benefit considerations. In reviewing future EPA regulations promulgated under ambiguous sections of the Clean Water Act, courts should continue to demand that the agency meet the congressional technology-forcing intent.

—Sara Gersen