



EPA Releases Final Standards for Cooling Water Intake Structures at Power Plants and Other Facilities

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Overview

On May 19, 2014, the Environmental Protection Agency (EPA) released its final rule to establish performance standards for the regulation of cooling water intake structures at existing power plants and other facilities pursuant to section 316(b) of the Clean Water Act (CWA). After a long delay needed to complete the biological opinion under the Endangered Species Act, the rule finalizes performance standards largely consistent with those proposed on April 20, 2011. The standards are intended to protect fish and other aquatic organisms by minimizing capture both in screens attached to intake structures (impingement mortality), and in the actual intake structures (entrainment mortality).

The rule will not require all existing plants to use closed-loop systems, otherwise known as cooling towers, and provides a broad range of compliance measures for meeting both impingement and entrainment mortality standards. However, the rule does include provisions that may require facilities to install closed-loop systems where there is a demonstrated environmental need for the use of cooling towers. The environmental groups, whose lawsuits prompted EPA to propose and finalize this section 316(b) rule, have already signaled their intent to challenge the rule over the agency's failure to require cooling water towers or other stringent control measures for all affected facilities.

Background

The rule represents EPA's third attempt to regulate intake structures at existing facilities under section 316(b) since the CWA was enacted in 1972. Section 316(b) of the CWA requires "that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact." The CWA does not define the phrases "best technology available" (BTA) or "minimizing adverse environmental impact."

In 1977, EPA's initial attempt at issuing section 316(b) regulations was reversed by an appellate court on procedural grounds in *Appalachian Power Corp. v. EPA*, 566 F.2d 451 (4th Cir. 1977). For almost twenty years afterwards, state authorities implemented the requirements of section 316(b) on a case-by-case basis for individual plants through CWA-permit proceedings. In 1995, however, EPA entered into a consent decree with environmental groups that ultimately led to the issuance of three sequential section 316(b) rulemakings. "Phase I," finalized in 2001, established standards for new electric generating units (EGUs) and certain other facilities using large amounts of cooling water; "Phase II," finalized in 2004, covered most existing EGUs; and "Phase III," finalized in 2006, covered all other facilities using cooling water that are subject to section 316(b) of the CWA.

These standards were challenged by both environmental organizations and industry, giving rise to several court decisions that precipitated this week's final rule. In particular, the United States Court of Appeals for the Second Circuit held in 2004 and 2007 that certain aspects of the Phase I and II regulations were inconsistent with the CWA, and remanded the rules to EPA. In the summer of 2010, the Fifth Circuit remanded a portion of the Phase III standard that addressed requirements for additional existing facilities not covered in Phase II. In 2011, the Second Circuit's 2007 decision was overturned by the U.S. Supreme Court after the Court found that Congress did not speak directly to whether or not a cost-benefit analysis could be used in environmental standards under the "best technology available" standard and upheld EPA's interpretation of the regulations as reasonable. The final standards issued

this week take into consideration the costs and benefits of the cooling water intake technology options, consistent with the Supreme Court's opinion.

Final Standards

Applicability. The standards for existing facilities will apply to affected facilities that meet all of the following criteria:

- The construction of the facility commenced before January 17, 2002;
- The facility withdraws from waters subject to EPA's jurisdiction under the CWA (EPA and the U.S. Army Corps of Engineers recently proposed a [rule redefining jurisdictional waters](#));
- The facility is subject to National Pollutant Discharge Elimination System (NPDES) permitting under the CWA;
- The facility is a point source that uses or proposes to use cooling water from one or more cooling water intake structures;
- The facility has a design intake flow for all of its cooling water intake structures of at least 2 million gallons per day; and
- At least 25% of the facility's actual water withdrawals are used exclusively for cooling purposes.

EPA estimates that these applicability criteria will apply to a total of 1065 existing facilities, of which 544 are electric generators and 521 are manufacturers.

The final rule also requires the appropriate state or federal permitting authority to set appropriate requirements on a case-by-case basis using best professional judgment for existing facilities that do not meet the above criteria. Therefore, smaller facilities or facilities that use water almost exclusively for non-cooling purposes may still be subject to standards but would not be required to meet the specific standards outlined below. In addition, offshore LNG terminals and existing offshore oil and gas facilities must meet case-by-case BTA standards for both impingement mortality and entrainment as established by the permitting authority.

Impingement Mortality Standards for Existing Facilities. According to the rule, impingement mortality means the death of an organism after the organism is trapped or pinned against the cooling water intake structure's screen. In the final rule, the EPA concluded that the BTA for minimizing impingement mortality was "modified traveling screens," (a term defined by the rule). Owners and operators of affected facilities will have considerable flexibility to meet their compliance requirements for impingement mortality under this performance standard. In particular, the final rule identifies seven technology options with equivalent or better performance than that provided by modified traveling screens. As a result, existing facilities may comply with the impingement mortality requirements by implementing any one of the following seven options:

- operate a closed-cycle recirculating system (e.g., cooling towers);
- operate a cooling water intake structure that has a maximum through-screen design intake velocity of 0.5 feet per second (fps);
- operate a cooling water intake structure that has a maximum through-screen intake velocity of 0.5 fps;
- operate an offshore velocity cap that is located at least 800 feet offshore and is installed before the effective date of the rule;

- operate a modified traveling screen that the state permitting authority determines meets certain listed criteria and that the permitting authority determines is the best technology available for impingement reduction;
- operate any other combination of technologies, management practices, and operational measures that the permitting authority determines is the best technology available for impingement reduction; or
- achieve the specified impingement mortality performance standard.

Entrainment Standards for Existing Facilities. Entrainment mortality is the death of an organism caused by the cooling water intake structure itself. Unlike for impingement, in the final rule EPA determined that there is no single nationally available technology basis that is BTA for entrainment at existing facilities. The best entrainment reduction method depends on site-specific geographical and biological conditions as well as the operations of the facility. EPA determined that an established *process* for making site-specific determinations of entrainment mitigation constitutes BTA. In outlining that site-specific process, EPA has established five factors that must be accounted for by the relevant permitting authority. The permitting authority may conclude that, based on these site-specific factors, BTA includes some combination of variable speed pumps, water reuse, fine mesh screens, closed-cycle recirculation, or other technologies, or, for some facilities, may not even require the use of any additional mitigation technology.

The five factors in determining the site-specific entrainment mitigation BTA outlined in the final rule are:

- Numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of Federally-listed, threatened and endangered species, and designated critical habitat;
- Extent of the energy penalty and amount of increased air emissions that may result from the use of particular entrainment technologies;
- Land availability, inasmuch as it relates to the feasibility of entrainment technology;
- Remaining useful life of the plant; and
- Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.

In order to facilitate the determination of BTA based on the above factors, large facilities (those that withdraw more than 125 million gallons per day) must develop and submit an Entrainment Characterization Study (ECS), which includes a technical and cost analysis of various entrainment mitigation technologies. Certain aspects of the ECS require peer review. Facilities that withdraw 125 million gallons per day or less are not required to develop and submit a full-blown ECS but must still provide specified information in their permit applications.

Closed-Cycle Cooling Requirements for New Units at Existing Facilities. A facility that constructs new units that add electric generation capacity at an existing facility must achieve one of two compliance alternatives for both impingement and entrainment mortality that employ essentially the same standard as closed-loop cooling technology or its equivalent.

The EPA found that new construction can adequately design and plan for the use of closed loop cooling, or an equivalent technology, and therefore can provide a higher level of protection for aquatic life than is possible with retrofits of existing facilities.

Compliance Timelines. In a change from the 2011 proposed rule, EPA will now require facilities to comply with entrainment standards on a timeline that will be determined by the relevant authority during the

NPDES permit process. As a general matter, the final rule directs that the permitting authority require compliance with the impingement and entrainment standards “as soon as practicable.”

Exempt Facilities. Facilities that rely on water from a public water system that uses reclaimed water from: wastewater treatment plants; desalination plants; or that recycle effluent wastewater are not subject to the rule’s standards.

Interior’s Biological Opinion

Section 7 of the Endangered Species Act (ESA) requires the U.S. Department of Interior (Interior)’s U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) to consult with a federal action agency on the potential effects of a discretionary federal action on endangered and threatened species or designated critical habitat. In the case of the current rulemaking, USFWS and NMFS have released a joint, programmatic Biological Opinion (BO) which concludes that, overall, the rule “is not likely to jeopardize the continued existence of ESA-listed species... and is not likely to destroy or adversely modify designated critical habitat....” However, this conclusion is narrowly limited to EPA’s issuance of the final rule. Further, USFWS and NMFS base their no jeopardy/no adverse modification conclusion on a series of assumptions regarding further review of individual NPDES permit applications involving a section 316(b)-regulated facility, including the potential adoption of further “control measures, monitoring, and reporting recommendations” provided by USFWS or NMFS.

Next Steps

The rule becomes effective 60 days after it is published in the *Federal Register*. Using a 3 percent discount rate, the agency estimates the total annualized costs of this rule to be \$275 million; however, this estimate does not include the costs for installing new technology to meet the site-specific entrainment standard. EPA estimates that total monetized benefits using a 3 percent discount rate to be \$33 million annually, including approximately \$12 million of greenhouse gas reduction benefits. EPA notes, however, that accounting only for monetized benefits significantly underestimates total benefits of the final rule. EPA describes a number of unquantified benefits such as existence values of threatened and endangered species, secondary and tertiary ecosystem impacts, shellfish impacts, and impacts from reducing thermal discharges which would come from the rule but which the agency was not able to monetize. Based on the consideration of these additional unquantified benefits along with the monetized benefits, EPA therefore concludes that the benefits of this rule justify the costs.

For More Information

Van Ness Feldman closely monitors and counsels clients on water, air, and other environmental regulatory developments. If you would like more information about the final section 316(b) standards or assistance with assessing the specific implications of the final rule with regard to your operations, please contact [Stephen Fotis](#), [Kyle Danish](#), [Britt Fleming](#), or any member of the firm’s [Environmental](#) Practice in Washington, D.C. at (202) 298-1800 or in Seattle, WA at (206) 623-9372.

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