



## **BACKGROUND**

2. In 1994, pursuant to a settlement agreement among Consumers, Michigan Department of Natural Resources (Michigan DNR), and others,<sup>2</sup> the Commission issued Consumers eleven new licenses for the continued operation of its hydroelectric projects, all of which are located in Michigan on the AuSable, Manistee, and Muskegon Rivers. The eleven licenses require Consumers to provide annual funds for a variety of specified activities. On October 1 of each year, Consumers submits for Commission approval its proposed contributions for the ensuing fiscal year. Payment of the approved amounts is due one year later.

3. One such funding provision is Article 409 of each license. Article 409 requires Consumers to make specified annual contributions to a Habitat Improvement Account for fisheries (fisheries account). Each project's contribution to the fisheries account has been calculated based on fish entrainment and mortality studies conducted by Consumers in 1991 in connection with its relicense applications for the eleven projects. Article 409 provides procedures for reducing such annual contributions commensurate with the reduction of turbine entrainment mortality achieved by Consumers' implementation, pursuant to Article 408 of each license, of fish protection measures or devices.

4. Consumers filed an overall Fish Protection Installation Plan and Schedule (Protection Plan) for fish protection devices for the eleven projects, which the Commission approved in 1996.<sup>3</sup> In 1999, pursuant to the Protection Plan, Consumers conducted a study at the Foote Project No. 2436 to determine the effectiveness of fish screens in reducing turbine mortality. In 2001, the Commission accepted the study's finding that, with or without fish screens, entrainment mortality at the Foote Project is much lower than Consumers' 1991 studies had indicated. Accordingly, the Commission reduced the Foote Project's annual Article 409 contribution to the fishery account from \$210,180 to \$3,100 (in year 2000 dollars), and determined that fish screens at the project would not be cost-effective.<sup>4</sup> The Commission required Consumers to continue to pay

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<sup>2</sup>Other signatories to the Settlement Agreement were the U.S. Forest Service, U.S. Fish and Wildlife Service, and Michigan Hydropower Reform Coalition.

<sup>3</sup> Consumers Power Company, 77 FERC ¶ 62,115.

<sup>4</sup> Consumers Energy Company, 95 FERC ¶ 62,048 at 64,069, order on rehearing, 95 FERC ¶ 61,394 (2001). Article 409 of each license reserved the Commission's authority to modify or terminate the funding requirement, after notice and opportunity for a hearing.

the amounts specified in Article 409 of the ten other projects until such time it applied for, and the Commission approved, similar amendments of those licenses.<sup>5</sup>

5. On April 30, 2002, Consumers filed applications to amend the above-referenced licenses to reduce Article 409 contributions, based on extrapolations from mortality analyses for other projects, and to obtain a determination that Consumers has completed all its obligations with respect to the Article 408 Protection Plan.<sup>6</sup> Accompanying the applications is “Consumers’ Desktop Evaluation of Entrainment at 10 Hydroelectric Projects on the AuSable, Manistee, and Muskegon Rivers (Entrainment Evaluation).”

6. Notice of the applications was issued on June 7, 2002, and timely motions to intervene in opposition were filed by Michigan DNR, the U.S. Department of the Interior, and the Michigan Hydro Relicensing Coalition (Coalition). In addition, the U.S. Forest Service and, jointly, Michigan DNR, Forest Service, the U.S. Fish and Wildlife Service, and the Coalition filed comments in opposition.

## **DISCUSSION**

7. Consumers’ Entrainment Evaluation examined fish entrainment data from 17 representative hydroelectric projects in the Midwest, and modeled it with the physical characteristics of Consumers’ 10 projects. We conclude that there are a number of flaws regarding the representative data used in the model that invalidate the application of the results.<sup>7</sup>

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<sup>5</sup>See, e.g., 98 FERC ¶ 61,150 (2002).

<sup>6</sup>On October 1, 2002, as supplemented November 14, 2002, Consumers filed for Commission approval of its proposed expenditures for FY 2003, including Article 409 payments to the fishery account. Claiming uncertainty as to the level of contributions for the above-referenced 10 projects (in light of the April 30, 2002 amendment applications), Consumers requested an extension of time to submit the Article 409 portion of its proposed FY 2003 expenditures for the ten projects until 30 days after the Commission issues orders on Consumers' pending amendment requests. The March 11, 2003 order approved the proposed funding payments and granted the requested extension.

<sup>7</sup>The full analysis of Consumers’ Evaluation is in Review and Evaluation of Consumers Energy Company’s “Desktop Evaluation of Entrainment at 10 Hydroelectric Projects on the AuSable, Manistee, and Muskegon Rivers,” Oak Ridge National Laboratory (February 20, 2003) (Staff Review), filed in the record of these proceedings on October 27, 2003.

8. The turbine capacities for the 17 representative projects are generally smaller (416 to 3,994 cubic feet per second (cfs)) than for Consumers' 10 projects (2,400 to 5,800 cfs), and the volume of intake over a period of time influences the possible number of fish entrained. Also the location of the intake for each turbine plays a role in entrainment. Turbines near shore may entrain larger numbers of smaller fish than intakes located more centrally in the reservoir. Further, the representative project reservoirs were generally smaller (375 to 13,987 acre-feet) than those at Consumers' projects (3,420 to 134,970 acre-feet). Smaller reservoirs will support smaller fish populations, which in turn should result in lower entrainment numbers (number of fish entrained/year). Consequently, using the mean annual entrainment from the representative projects will likely underestimate the numbers of fish entrained at the Consumers' projects.

9. Two of Consumers' facilities are re-regulating projects, i.e., they are operated to reduce fluctuations downstream of a peaking project. None of the representative projects operates in this mode. There may be higher entrainment numbers at re-regulating projects, due to their daily reservoir fluctuation and the transport of small fish that live near the shoreline. Thus, fish movement and distribution patterns in a re-regulating reservoir will not be comparable to such patterns in a smaller, run-of-river project reservoir.

10. Consumers makes the unsupported assumption that the species composition of entrained fish is the same as the fish collected during reservoir samplings. Consequently, the information presented in Tables 2-2 to 2-12 of the Entrainment Evaluation<sup>8</sup> may not accurately reflect the relative composition of fish species in the reservoirs, much less the species composition of entrained fish. For example, the observation (in Table 3) that 1.0 percent of the total fish collected in Consumers' and Michigan DNR's sampling in Hardy Pond between 1984 and 1990 were bluegill sunfish is not a good basis for the model's assumption that 1.0 percent of the fish being entrained at Hardy are bluegill sunfish. Even if the data provided in Tables 2-2 to 2-12 were true population estimates, it cannot be concluded that fish would be entrained in the same proportions. Depending on the areas of the reservoirs inhabited by particular species (e.g., open-water areas near the intake or shallow, littoral areas at the head of the reservoir), species may have substantially different susceptibilities to entrainment.

11. Nor does the Evaluation account for any changes in the fish community that may have occurred over the decade since the surveys were taken. It assumes that samples taken in the early 1990's continue to reflect the fish community. Different pressures on

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<sup>8</sup> The evaluation was prepared by Kleinschmidt Associates (November 2001).

the natural environment may however have influenced the size class and species composition, causing relatively greater or lesser proportions of each species to be entrained.

12. In combination, the differences in the variables under examination equate to a potential disparity in the results obtained. The use of selective fish survey techniques in the project reservoirs to estimate the species composition of entrained fish could lead to an underestimate for some species and an overestimate for others. For some potential biases, even the direction of the bias cannot be predicted without the development of further information. It is difficult to say whether entrainment rate variability among the 17 representative projects, or unknown differences in the size-frequency distribution of entrained fish between Foote and the other projects, would lead to an underestimate or overestimate of the value of fish lost at the other 10 Consumers projects.

13. Unless uncertainties about the input data and assumptions are resolved, re-running the desktop model with different hypothetical values will not improve confidence in the results. Such data as the size distributions and numbers of fish in each of the project reservoirs (i.e., data that define the “entrainable” population of fish) are not available; site-specific studies would be needed to provide this information for use in the Evaluation. The most accurate assessment of turbine-passage-related fish losses would be derived from site-specific studies at each of the projects. Alternatively, Consumers could conduct sufficient site-specific studies in the appropriate river reaches to improve the data used in the desktop model.

The Commission orders:

(A) The applications filed on April 30, 2002, by Consumers Energy Company to amend the licenses of Project Nos. 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2468, 2580, and 2599 are denied.

(B) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the Federal Power Act.

By the Commission.

( S E A L )

Linda Mitry,  
Acting Secretary.