

AMENDMENT OF LICENSE;
MAJOR LICENSE;
LICENSE TERM;
REDEVELOPMENT OF PROJECT.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Charles B. Curtis, Chairman;
Matthew Holden, Jr., and George R. Hall.

Central Maine Power Company) Project Nos. 2284 and 2834

ORDER AMENDING LICENSE AND
ISSUING NEW MAJOR LICENSE
(Issued: February 9, 1979)

Central Maine Power Company (CMP) has filed two related applications affecting the existing Brunswick-Topsham Project No. 2284. 1/ One application seeks to amend the license for Project No. 2284 by accelerating its expiration date. The other application seeks relicensing of the project, after extensive redevelopment. 2/ In view of the extensive redevelopment proposed, the applicant has requested a new 50-year license for the project. CMP proposes that the expiration date of the current license for Project No. 2284 be advanced to coincide with shutdown of the existing powerhouse, approximately five months after the start of redevelopment.

No protests or petitions to intervene in this proceeding have been filed.

Background

In late 1973 a 150-foot wood crib section of the dam at the Topsham development of Project No. 2284 washed out. Subsequently, this development could generate only during periods of high river flows. The applicant studied what could be done to rehabilitate or redevelop the project and determined that the most comprehensive use of the site could be accomplished by eliminating the lower development (Brunswick),

1/ Project No. 2284 is located on the Androscoggin River, a navigable waterway, in the towns of Brunswick (Cumberland County) and Topsham (Sagadahoc County), Maine. See, New Hampshire Water Resources Board, Docket No. E-6807, 20 F.P.C. 99 (1958) for a determination of navigability.

2/ The application for license has been processed as Project No. 2834. Because we are relicensing an existing project, however, even though extensively redeveloped, we will retain the designation of Project No. 2284 for this licensed project, rather than renumber it.

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FROM: DEP

eliminating both existing powerhouses, and constructing a single new dam and new powerhouse with an installed capacity of 12 MW. This redevelopment would be a significant increase over the installed capacities of the Brunswick and Topsham developments as licensed, which are 1,473 kW and 900 kW respectively. The applicant was reluctant, however, to undertake investment in this extensive redevelopment ^{3/} considering the shortness of the remaining term of the existing license. That license has an expiration date of December 31, 1993 ^{4/} and the proposed redevelopment is not scheduled to be completed until 1981.

The Proposed Redevelopment

The existing project includes two dams and two powerhouses. One powerhouse is located adjacent to the upper (Topsham) dam, on the left bank of the river (facing downstream). Approximately 500 feet downstream lies the lower (Brunswick) dam, which has two sections, divided by an island (Shad Island), with the second powerhouse on the righthand side of the island (facing downstream).

Under the proposed redevelopment plan, CMP would build a new dam at the approximate location of the old Topsham dam. A new powerhouse would be constructed adjacent to the new dam to replace both the Topsham and Brunswick powerhouses. The old powerhouses would be removed. CMP would also remove the section of the Brunswick dam on the right side of Shad Island. The section of the dam on the left side of the island would be lowered to serve as a fish barrier. A fishway would be built adjacent to the new powerhouse, and an additional fish barrier would be built between the new dam and Shad Island.

The reservoir impounded by the new dam would be approximately 4.5 miles in length, be contained within the present river banks, and have a surface area of approximately 300 acres. This is essentially the same size as the reservoir that existed prior to the breach of the old Topsham dam.

Safety and Adequacy

Our staff reports that the new project structures were checked for stability under various assumed conditions, including combinations of normal reservoir water surface

^{3/} CMP estimates that redevelopment will cost \$17 million.

^{4/} Order Issuing License (Major), 28 F.P.C. 302 (1962).

elevation, ice, earthquake, and flood conditions. The new powerhouse was found to be safe against sliding and overturning under all loading conditions.

The proposed uncontrolled main spillway structure, however, would begin to develop tension at the heel when overtopped by about five feet of water. The staff states that the spillway structures would be marginally safe with the reservoir surcharged 14 feet above the spillway crest, but the higher reservoir levels would produce increased instability and possible structural failure. A 14-foot surcharge would occur with a flood of 143,000 cfs, which would be expected to occur once every 180 years.

The maximum flood of record at the project site is estimated at 139,000 cfs. The new Brunswick dam could pass this flow with the reservoir surcharged to elevation 55.0 feet m.s.l., 15.6 feet above normal headwater. The applicant's engineering consultant, however, has calculated a probable maximum flood (PMF) of the Androscoggin River at the new Brunswick Dam with a peak discharge of about 225,000 cfs. The PMF would surcharge the reservoir to elevation 59.0 m.s.l. 19.6 feet above normal headwater. The application states that the project is designed to withstand a PMF. During a PMF, the flow of water at the abutments, where bedrock occurs at shallow depths, would cause some localized erosion. Our staff's analysis also indicates that the spillway structures would be subject to failure during a PMF. For these reasons, the staff has recommended that the dam be redesigned to be made safe from sliding and overturning during a PMF.

CMP has been notified of the deficiencies in the spillway design. It has informed us that these project works will be redesigned for structural integrity as well as stability.

Accordingly, we are approving Exhibit L, which shows the dam elevations and sections, only to the extent that it shows the general layout of the project. Article 33 of the license requires CMP to file a revised Exhibit L for approval prior to construction of the dam.

Transmission Facilities

The application shows that power from the proposed 12-MW unit would be transmitted by 12-kV underground generator leads to a 12/34.5-kV step-up transformer located in a

substation near the new powerhouse. Exhibits K and L show two lines emanating from the 12/34.5-kV Brunswick substation: a one-quarter mile long 34.5-kV line to the existing Topsham substation, and a 12-kV distribution line. The Applicant would not include either of these power lines as part of the project.

Our staff reports that the 12-kV distribution line would serve a local distribution load of 5 MW. Staff therefore agrees with CMP that this line is not a primary transmission line. The 34.5-kV line, however, would carry the remaining 7 MW of project generation to the Topsham substation, the point of junction with CMP's interconnected system. Staff therefore believes the 34.5-kV line is a primary transmission line within the meaning of Section 3(11) of the Federal Power Act, which should be included within the license as a project work.

We agree with staff's analysis and will include the 34.5-kV line as a project work. Since this line was not included in Exhibit M of the application, Article 37 below provides for the filing of an "as built" Exhibit M including it.

Navigation and Flood Control

The Corps of Engineers (Corps) reviewed the application and concluded that the proposed project would not conflict with any existing or proposed flood control, navigation, or other program within their jurisdiction. The Corps also approved the plans for the project works, in accordance with Section 4(e) of the Act.

Historical and Archeological Preservation

The Maine State Historical Preservation Office informed the applicant that the proposed construction would have no effect upon any structure or site of historic, architectural, or archeological significance. It is possible, however, that archeological or historic sites or artifacts may be unearthed during construction. Article 29 of this license will assure the protection of any cultural resources discovered.

Recreation

There are no recreational facilities at the existing project, although there are a number of recreational facilities

in the two adjacent towns. Lands adjoining the project have already been developed for residential, industrial, and commercial purposes. CMP owns only two small parcels of land that are suitable for recreation there. These lands are located near the existing powerhouse, and have been designated for future development as picnic areas. The Department of the Interior (Interior) stated that the Exhibit R is adequate. Our staff states that the Exhibit R generally complies with our regulations. Accordingly, the Exhibit R will be approved and made a part of the license. Article 17 of the license provides for future recreational development at the project when needed.

Fish and Wildlife Resources and Minimum Flows

The Exhibit S contains plans for a vertical slot fish ladder that would be built by CMP and operated by the Maine Department of Marine Resources (DMR). This fishway is the first step in the restoration of anadromous fish to the Androscoggin River. CMP does not propose to maintain a continuous minimum flow at the project, except through the fishway during periods of anadromous fish migrations. A flow of 30 cfs will be maintained when the generating station is shut down, and a flow of 100 cfs will be maintained when it is operating. Our staff reports that a continuous minimum flow is not necessary at this time. The relatively small storage capacity of the reservoir (about 250 acre-feet) will not allow for extended periods of shut down except during extremely low flow conditions. The tailrace and river below the proposed project are tidal, with a fluctuation of up to five feet immediately below the project. It is therefore unlikely that the tailrace or river downstream would ever become dry. License Article 12 provides for modification of the project operation for the maintenance of minimum flows in the future, if it should become necessary.

Interior stated that the Exhibit S adequately addresses its concerns pertaining to fish and wildlife. DMR supported CMP's proposals in the Exhibit S and noted the cooperation CMP had already shown in developing plans for the fishway. The United States Fish and Wildlife Service, the Maine Department of Inland Fisheries and Wildlife, and the Maine Atlantic Sea-Run Salmon Commission also participated in the planning of the proposed fishway. On the basis of staff's analysis and comments from other agencies, the Exhibit S will be approved and made a part of the license. Article 30 provides for the filing of "as built" Exhibit S drawings showing the fish passage facilities within six months after completion

of construction. It also provides for the submittal of annual reports for the purpose of monitoring the operation of the fishway.

Other Environmental Impact

Our staff reports that the construction and operation of the redeveloped Brunswick project will not cause any significant adverse impact on recreation, fish and wildlife resources of the lower Androscoggin River. Adverse impact would be limited to short-term increases in turbidity during construction, and possibly a minor loss of terrestrial habitat for small birds and mammals. The proposed fish ladder will have a beneficial effect by contributing to the restoration of anadromous fish runs to the river. For these reasons, we conclude that our action here is not a major federal action significantly affecting the quality of the human environment.

Need, Economic Feasibility, and Energy Conservation

Our staff estimates that, based on CMP's current annual rate of load increase and a 19 percent reserve, CMP will need an additional 117,000 kW of installed capacity to meet its load requirements in 1980 and 1981. The increased capacity of Project No. 2284 will meet a part of that demand. The value of the project's 90,200,000 kWh average annual generation has been estimated on the basis of the estimated annual cost of providing an equivalent amount of energy from a 355-MW fossil fuel (coal) steam-electric plant which CMP plans to add to the existing W. F. Wyman Steam Plant. The estimated annual cost of equivalent steam-electric energy would be \$4,193,000. In contrast, the estimated annual cost of producing that energy by the Brunswick Hydroelectric Plant is \$3,005,000. We conclude that redevelopment of the Brunswick Project is economically justified.

The redeveloped project, with its average annual generation of 90,200,000 kWh, will utilize a renewable resource that will save the equivalent of approximately 148,000 barrels of oil, or 47,000 tons of coal, annually.

Comprehensive Development

Our staff's analysis shows that the redeveloped project will utilize all the available head between tidewater and an upstream industrial project of the Pejeboscot Paper Company and will make efficient use of the available streamflow.

By redevelopment, the project's hydraulic capacity would increase from 2,150 cfs (which river flows exceed about 80 percent of the time) to more than 5,800 cfs (which river flows exceed only 30 percent of the time). Average annual energy generation for the project would increase from 17,800,000 kWh to 90,200,000 kWh through the proposed redevelopment.

The staff has also reviewed the Androscoggin River Basin Planning Status Report and states that the redeveloped project is not in conflict with any proposed or potential water power projects. We find that the redeveloped Brunswick Project will make efficient use of the flow and fall of the Androscoggin River and, as conditioned in the license issued here, be best adapted to the comprehensive development of the Androscoggin River Basin.

Federal Takeover

Section 14 of the Act, 17 U.S.C. §807(a), reserves to the United States the right to take over a nonpublicly owned project upon the expiration of the license. No commenting agency has recommended federal takeover or redevelopment of the project, nor has our staff. We know of no reason which would support federal takeover or redevelopment, and conclude that the project should not be taken over or redeveloped by the United States.

Terms of Licenses

Project redevelopment is scheduled to begin before actual shutdown of the existing Brunswick powerhouse, since that development will be able to continue to generate during the initial period of new construction (CMP estimates about five months). To accommodate temporary operation of the existing generation, CMP requested in its applications that the amended expiration date of the existing license and the effective date of the new license be tied to the date the existing powerhouse is shut down.

Rather than leave the periods of the initial and new licenses for Project No. 2284 contingent, for the purpose of effective and efficient administration we are amending the existing license to terminate on the last day of the month in which this order is issued, and are making the first day of the following month the effective date of the new license.

*Feb 22 1979 Termination of
Mar 1 1979 New License - expires Mar 31 2027*

As CMP has requested and in accordance with our established policy for relicensing involving extensive project redevelopment, 5/ we are making the new license effective for a period of 50 years.

Conclusion

The Commission concludes that it is in the public interest and consistent with the provisions of the Federal Power Act to amend the license for Project No. 2284 by advancing its expiration date as described above and to issue a new license for the project, to be redeveloped in accordance with the provisions of the new license. 6/

The Commission orders:

(A) The current license for the Brunswick-Topsham Project No. 2284 is amended by changing its expiration date from December 31, 1993, to the last day of the month in which this order is issued.

(B) A new license is issued to Central Maine Power Company, under Part I of the Federal Power Act (Act), for a term of fifty years, commencing the first day of the month following the month in which it is issued, for the redevelopment and operation of the Brunswick Project FERC No. 2284, located on the Androscoggin River, a navigable water of the United States, in the towns of Brunswick and Topsham, the counties of Cumberland and Sagadahoc, Maine. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the rules and regulations the

5/ The Montana Power Co., Project No. 2301, FPC ,
Order Issuing License (Major) (issued Oct. 5, 1976)

6/ CMP's application for new license states that its application for amendment of license is "contingent upon receipt of a satisfactory [new] license." The application for amendment has already been processed despite this statement that it was contingent. In view of the lack of competing applications for license, recommendations for federal takeover, or any opposition to the proposed redevelopment, and our conclusion that the amendment and new license we are authorizing here are in the public interest, we need not reach the question of whether we should entertain such contingent applications for amendment. Our action here should not be construed as an indication of any position on that question, which we expressly reserve for future disposition in a suitable proceeding.

Commission issues under the provisions of the Act.

(C) The Brunswick Project No. 2284 consists of:
 (1) all lands to the extent of the Licensee's interests in those lands, constituting the project area and enclosed by the project boundary, the project boundary being shown and described by certain exhibits which form part of the application for license and are designated and described as:

<u>Exhibit</u>	<u>FERC Drawing No. 2284 -</u>	<u>Titled</u>
J-1	11	General Map, Flowage, Dams and Power Plant Areas
J-2	12	General Map, Transmission System
K-1	13	Detail Map, Dam and Powerhouse Area

(2) project works consisting of: (a) a wood crib fish barrier, located between Shad Island and Topsham, with a crest at elevation 14.2 feet m.s.l., (b) a 3-foot-high, 20-foot-long concrete fish barrier weir across Granny Hole Stream; (c) a concrete dam, 40 feet high and 605 feet long; (d) a reservoir having a surface area of 300 acres at a normal water surface elevation of 39.4 feet m.s.l. and extending 4.5 miles upstream; (e) a powerhouse and intake structure integral with the dam, located adjacent to the Brunswick shoreline, containing a single turbine and generator having an installed capacity of 12 MW; (f) a fishway adjacent to the new powerhouse; (g) a 21-foot high fish barrier wall between the dam and Shad Island; (h) the 12-kV generator leads, the 12/34.5-kV Brunswick switchyard, and the 34.5-kV transmission line from the Brunswick switchyard to the Topsham substation; and (i) appurtenant facilities.

The location, nature, and character of these project works are generally shown and described by the exhibits cited above and specifically shown and described by certain other exhibits which also form a part of the application for license and which are designated as:

<u>Exhibit</u>	<u>FERC Drawing No. 2284 -</u>	<u>Titled</u>
L-1	14	General Plan
L-2	15	Elevations, Section and Hydraulic Charts
L-3	16	Powerhouse

Exhibit M

"General Descriptions of Mechanical, Electrical, and Transmission Equipment and Appurtenances," consisting of one page.

Exhibit R

Consisting of two pages of text and one drawing (FERC No. 2284-17).

Exhibit S

Consisting of 54 pages of text and two drawings (FERC Nos. 2284-18 and -19).

(3) all of the structures, fixtures, equipment, or facilities which may be employed in connection with the project, including portable property, whether located within or outside the project boundary, as approved by the Commission, and all riparian or other rights necessary or appropriate for the operation or maintenance of the project.

(D) (1) Exhibits J, K, R, and S, designated in ordering paragraph (C) above, are approved and made a part of the license. -

(2) Exhibit L, designated and described in ordering paragraph (C) above, is approved only to the extent that it shows the general location and layout of the project and its works.

(3) Exhibit M, designated and described in ordering paragraph (C) above, is approved except to the extent that it fails to show the 34.5-kV transmission line from the Brunswick switchyard to the Topsham substation.


(E) The Licensee may continue to operate and maintain the existing project works until they must be shut down, altered, or removed in accordance with the redevelopment of the project under the license issued here.

(F) This license is also subject to the terms and conditions designated Articles 1-19 and 21-28 in Form L-4 (revised October 1975) entitled "Terms and Conditions of License for Unconstructed Major Project Affecting Navigable Waters of the United States," attached to and made a part of this license. This license is also subject to the following special conditions set forth as additional articles:

Article 29. If any previously unrecorded archeological or historic sites are discovered during the course of construction or development of any project works or other facilities at the project, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the Licensee shall consult with the State Historic Preservation Officer (SHPO) to develop a mitigation plan for the protection of significant archeological or historic resources. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historic work related to the project, the Commission reserves the right to require the Licensee to conduct, at its own expense, any such work found necessary.

Article 30. Within six months from the date of the completion of construction of fish passage facilities, the Licensee shall file with the Commission "as built" drawings. The Licensee shall also submit annual reports to the Commission on results of fish passage facilities operation, including the numbers and species of fish counted and an assessment of the effectiveness of the facilities.

Article 31. The Licensee shall, to the satisfaction of the Commission's authorized representative, install and operate any signs, lights, sirens, or other safety devices that may reasonably be needed to warn the public of fluctuations in flow from the project and protect the public in its recreational use of project lands and waters.

*  Article 32. In the interest of protecting and enhancing the scenic, recreational, and other environmental values of the project, Licensee shall (1) supervise and control the use and occupancy of project lands and waters; (2) shall prohibit, without further Commission approval, the further use and occupancy of project lands and waters other than specifically authorized by this license; (3) may authorize without further Commission approval, the use and occupancy of project lands and waters for landscape plantings and the construction, operation, and maintenance of access roads, power and telephone distribution lines, piers, landings, boat docks, or similar structures and facilities, and embankments, bulkheads, retaining walls, or other similar structures for erosion control to protect the existing shoreline; (4) shall require, where feasible and desirable, the multiple use and occupancy of facilities for access to project lands and waters; and (5) shall ensure to the

satisfaction of the Commission's authorized representative that all authorized uses and occupancies of project lands and waters (a) are consistent with shoreline aesthetic values, (b) are maintained in a good state of repair, and (c) comply with State and local health and safety regulations. Under item (3) of this Article, Licensee may, among other things, institute a program for issuing permits to a reasonable extent for the authorized types of use and occupancy of project lands and waters. Under appropriate circumstances, permits may be subject to the payment of a fee in a reasonable amount. Before authorizing construction of bulkheads or retaining walls, Licensee shall: (a) inspect the site of the proposed construction, (b) determine that the proposed construction is needed, and (c) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site. If an authorized use or occupancy fails to comply with the conditions of this Article, or with any reasonable conditions imposed by the Licensee for the protection of the environmental quality of project lands and waters, the Licensee shall take appropriate action to correct the violations, including, if necessary cancellation of the authorization and removal of any non-complying structures or facilities. The Licensee's consent to an authorized use or occupancy of project lands and waters shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain any associated facilities.

Article 33. Before beginning construction of the project, the Licensee shall submit and obtain approval from the Director, Office of Electric Power Regulation, of revised Exhibit L drawings conforming to the Commission's regulations and showing the final design to the project dam. The dam shall be designed to be stable, structurally sound, and safe under probable maximum flood conditions.

Article 34. Pursuant to Section 10(d) of the Act, the rate as computed below shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One-half of the project surplus earnings, if any, accumulated under the license, in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year, with the exception that, if there is a deficiency of project earnings below that specified rate of return per annum for any fiscal year under the license, the amount

of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any, thus cumulatively computed, shall be set aside in the project amortization reserve account; the amounts thus established in the project amortization reserve account shall be maintained until further order of the Commission. The annual specified reasonable rate of return shall be the sum of the weighted cost components of long-term debt, preferred stock, and the cost of common equity, as defined below. The weighted cost component for each element of the reasonable rate of return is the product of its capital ratios and cost rate. The current capital ratios for each of the above elements of the rate of return shall be calculated annually based on an average of 13 monthly balances of amounts properly includable in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rates for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 35. For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, the Licensee shall pay the United States a reasonable annual charge, effective the first day of the month following the month in which this license is issued, as determined by the Commission in accordance with the provisions of its regulations in effect from time to time. The authorized installed capacity for that purpose is 16,000 horsepower.

Article 36. Licensee shall file with the Commission, implement, and modify when appropriate, an emergency action plan designed to provide an early warning to upstream and downstream inhabitants and property owners if there should be an impending or actual sudden release of water caused by an accident to, or failure of, project structures. That plan shall be submitted within one year of the date of issuance of this license, and shall include: instructions to be provided on a continuing basis to operators and attendants for actions they are to take in the event of an emergency; detailed and documented plans for notifying law enforcement agents, appropriate federal, state, and local agencies, operators of water-related facilities, and those residents and owners of properties that could be endangered; actions

that would be taken to reduce the inflow to the reservoir, if possible, by limiting the outflow from upstream dams or control structures; and actions to reduce downstream flows by controlling the outflow from dams located on tributaries to the stream on which the project is located. Licensee shall also submit a summary of the study used as a basis for determining the areas that may be affected by an emergency, including criteria and assumptions used. Licensee shall monitor any changes in upstream or downstream conditions which may influence possible flows or affect areas susceptible to damage, and shall promptly make and file with the Commission appropriate changes in such emergency action plan. The Commission reserves the right to require modifications to the plan.

Article 37. Within five years following the effective date of this license the Licensee shall file a revised Exhibit F and, for Commission approval, an "as built" Exhibit K to show the project as finally constructed and located, and an "as built" Exhibit M revised to include the 34.5-kV transmission line between the Brunswick switchyard and the Topsham substation.

Article 38. The Licensee shall commence construction of the project works within one year of the effective date of this license, and, in good faith and with due diligence, shall prosecute and complete the project works within four years of commencing construction.

Article 39. The Licensee shall clear and keep clear to an adequate width all lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which result from maintenance, operation, or alteration of the project works. In addition, all trees along the periphery of the project reservoir which die during operation of the project shall be removed. All clearing of lands and disposal of unnecessary material shall be done with due diligence to the satisfaction of the authorized representative of the Commission and in accordance with appropriate federal, state, and local statutes and regulations.

(G) This order shall become final 30 days from the date of issuance unless application for rehearing is filed as provided in Section 313(a) of the Act. Failure of the Licensee to file such an application shall constitute acceptance of this amendment and license. In acknowledgment of the acceptance of this amendment and license, it shall

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be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

By the Commission.

Kenneth F. Plumb,
Secretary.

FEDERAL ENERGY REGULATORY COMMISSION

**TERMS AND CONDITIONS OF LICENSE FOR
UNCONSTRUCTED MAJOR PROJECT AFFECTING
NAVIGABLE WATERS OF THE UNITED STATES**

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any features or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties

shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the state and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character and locations of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the

rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project

reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal Agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall

clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 27. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 28. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.