

UNITED STATES OF AMERICA 124 FERC ¶ 62,127
FEDERAL ENERGY REGULATORY COMMISSION

Bear Swamp Power Company, LLC

Project No. 2669-061

ORDER AMENDING LICENSE AND APPROVING REVISED EXHIBIT A

(Issued August 13, 2008)

On March 31, 2008, Bear Swamp Power Company, LLC (BSPC), licensee for the Bear Swamp Hydroelectric Project, FERC No. 2669, filed an application to increase its authorized generating capacity at its Bear Swamp Pump Storage Development. The total installed capacity of the project will increase by 66 megawatts (MW) and the hydraulic capacity will increase by 770 cubic feet per second (cfs). The filing was supplemented on July 3, and 7, 2008. The project is located on the Deerfield River, in Franklin and Berkshire counties, Massachusetts.

BACKGROUND

An original license was issued on April 28, 1970.¹ The project consists of the Bear Swamp (a.k.a. Cockwell) Pump Storage Development and Fife Brook Development. The project is located immediately downstream of Deerfield No. 5 Development and immediately upstream of Deerfield No. 4 Development (both developments under FERC Project No. 2323), which are owned and operated by TransCanada Hydro Northeast Inc. (TransCanada).

The Bear Swamp Project consists of a pumped storage facility that includes an impounded upper reservoir, an underground powerhouse containing two generating units, an impounded lower reservoir attached to a dam, and a powerhouse containing a single generating unit.

The Bear Swamp Pumped Storage Development consists of an upper reservoir retained by four impervious-core rock-fill dikes, with a composite length of about 5,280 feet. The upper reservoir has a useable storage capacity of 5,260 acre-feet with 44.5 of drawdown from normal maximum water surface elevation 1,600 feet NGVD.

The lower reservoir is formed by the Fife Brook Development dam structure. The

¹ See, *New England Power Company*, Order Issuing Major License, 43 F.P.C. 568 (1970).

lower reservoir impounds the Deerfield River for a length of about 2.5 miles. It provides 4,900 acre-feet of useable storage capacity with 40 feet of drawdown from its maximal full elevation of 870 feet NGVD.

The powerhouse is located underground and contains two reversible Francis-type pump turbine units and motor-generator units, each rated at 300 MW. The Fife Brook Powerhouse consists of a single Francis-type turbine and generator unit rated at 11.25 MW.

In an order issued April 4, 1997,² the Commission approved the terms and conditions as set forth in the October 6, 1994 Offer of Settlement Agreement related to the relicensing of the Deerfield River projects. The Agreement was negotiated by New England Power Company (former licensee for the Deerfield River Project and Bear Swamp Project) and twelve parties, including federal and state resource agencies and various environmental and recreational citizen groups. In an order issued March 11, 2005, the Commission authorized the transfer of the Bear Swamp Project to BSPC.³

PROPOSED AMENDMENT

In its application, BSPC proposes to rehabilitate the two 38-year-old pump turbine units currently operating at the Bear Swamp Pumped Storage Development. Therefore, BSPC is proposing to upgrade the installed capacity of the existing powerhouse as follows:

1. Replace both existing pump-turbine runners with new ones. Each unit would have a turbine output of 338 MW.
2. Overhaul and rewind the existing motor-generators for each of the two pump-turbines. The new generator nameplates for both units will be 333 MW; and
3. Complete associated modifications, including the replacement of: turbine runner seals, wicket gates and bushings, stay vane and stay ring, and turbine shaft seal.

BSPC proposes to replace one turbine runner in 2011 and replace the second turbine runner in 2012. While the first runner is being replaced, BSPC will continue to operate the development using the second unit. BSPC states in the application, that during the construction period, the project will maintain its pumped storage mode of

² See, *New England Power Company*, Order Amending License, 79 FERC ¶ 61,009 (1997).

³ See, Order Approving Transfers of License, 110 FERC ¶ 62,245 (2005).

operation in compliance with all the terms of the current license, the 1994 settlement agreement, the 401 Water Quality Certificates issued for the project, and other approvals issued by the Commonwealth of Massachusetts. All construction activities will take place in the confines of the existing powerhouse.

CONSULTATION

In accordance with § 4.38(a) of the Commission's regulations, BSPC consulted with the appropriate resource agencies before filing the amendment application, including the Massachusetts Department of Environmental Protection (MDEP), U.S. Fish and Wildlife Service (USFWS), Massachusetts Division of Fisheries and Wildlife (MDFW), and Trout Unlimited (TU).

On May 7, 2008, the Commission issued a public notice of the amendment application. The notice set June 9, 2008, as the deadline for filing protests and motions to intervene. Timely motions to intervene were filed by: TU on June 6, 2008; and TransCanada on June 9, 2008. None of the interveners oppose the amendment.

In its June 6, 2008, motion to intervene TU stated that BSPC should provide additional information on intake velocities and fish entrainment during the pumping and generation cycles. In its June 9, 2008 motion to intervene TransCanada stated that the proposed modification should comply with the obligations for flow coordination and other conservation related flows as set forth in the 1994 Settlement Agreement. On June 9, 2008, the U.S. Department of the Interior (Interior) commented that BSPC should conduct studies to address current fisheries resources and to assess entrainment under the current and proposed operations to evaluate impact on the fisheries resource of the project by the proposed amendment.

In a letter dated May 23, 2008, the Commission requested that BSPC provide additional information on the proposed amendment application. In the supplemental filings of July 3, and 7, 2008, BSPC submitted revised Exhibits M and E, and responded to the comments filed by TU, TransCanada, and Interior. Staff prepared an environmental assessment (EA), which is attached to this order, that evaluates the environmental impacts that the proposed application would have on area resources, and to address the agency and organization concerns.

STATUTORY REQUIREMENTS

A. Water Quality Certification

In a letter dated February 20, 2008, the MDEP determined that no amendment to the existing Water Quality Certificates will be required for the Bear Swamp Project and

that it had received confirmation from the MDFW that there are no fisheries issues with the proposed upgrade.

B. Threatened and Endangered Species

No federally-listed threatened or endangered species are known to occur in the area of the proposed action (FERC 1996).

C. Cultural Resources

No known archeological landmarks occur in the region of the project and the nearest historic landmark noted in the National Register of Historic Places is Old Deerfield Village, located more than 20 miles away. Commission staff has also determined that no historic or cultural resources are present that would be affected by the proposed turbine replacement and generator maintenance.

OTHER ISSUES

Installed Capacity and Annual Charges

In its application, BSPC provided the existing and proposed installed and hydraulic capacities of the units, as shown in Table 1.

Table 1

Unit No	Auth Turbine Cap. (MW)	Auth Generator Cap. (MW)	Proposed Turbine Cap. (MW)	Proposed Generator Capacity (MW)	Auth. Hydraulic Cap. (cfs)	Proposed Hydraulic Cap. (cfs)
1	305	300	338	333	5,430	6,200
2	305	300	338	333		
Total	610	600	676	666	5,430	6,200

After the upgrade of both turbine runners in the existing powerhouse, the output of the turbines would increase from 305 MW to 338 MW, and the generator output would increase from 300 MW to 333 MW. The hydraulic capacity will increase from 5,430 cfs to 6,200 cfs. There are no proposed changes to the Fife Brook Powerhouse, which would remain at the authorized capacity of 11.25 MW, with an associated hydraulic capacity of 1,650 cfs. The total installed capacity of Bear Swamp Pump Storage Development will increase from 600 MW to 666 MW, or 11 percent and the total hydraulic capacity will increase from 5,430 cfs to 6,200 cfs, or 14 percent. The proposed changes will result in an additional 770 cfs going through the project turbines. This upgrade will increase the efficiency of the use of the existing water resources. However, the operational limitations associated with the use of water, such as

impoundment fluctuations and minimum flow limitations will remain unchanged. The current minimum flow release requirement of 125 cfs from the Fife Brook Dam will remain unchanged.

This order will approve the changes proposed by BSPC, and revise the authorized installed capacity of the Bear Swamp Project from 610 MW to 676 MW. This order requires the licensee to start construction of the unit upgrades within two years and complete construction within five years from the date of this order, as directed in paragraph (B) of this order. This order requires the licensee to notify the Commission, within 90 days from the start of construction, of the date each unit fabrication began. We will use the commencement date to further revise the annual charges under Article 42 of the license for the costs of administration of Part I of the Federal Power Act. As such, we are requiring the licensee to report the date of commencement of construction of the proposed units, within 30 days of such date, as directed in paragraph (C) of this order.

Revised Exhibit M

In our review of the project, staff found that the project description was last amended in an order issued on November 29, 1976.⁴ The order was based upon original project design plans. Therefore, in the May 23, 2008 letter, the Commission requested BSPC to file a revised Exhibit M and E describing the as-built project features, including physical composition, dimensions and general configuration of the dams, spillways, penstocks, powerhouses, and environmental resources that would be affected by the proposal. In the July 3, 2008 filing, BSPC submitted a revised Exhibit M including the current conditions of the project, and the proposed changes at the Bear Swamp Development. Our review of the revised Exhibit M found that it contains minor changes in the description of some features, such as reservoir storage capacity, dam length, tunnel configuration, etc., that should be noted in the authorized project description. The revised Exhibit M conforms to the Commission's rules and regulations and is approved by this order. This order will revise the project description in the license to reflect the proposed changes to the project.

Environmental Analysis

The EA evaluates the environmental effects of the proposed runner replacement and generator rewinds and identifies environmental issues in relation to aquatic resources, recreation, and cultural resources.

The proposed action would allow the licensee to enhance the efficiency of the project, while increasing the installed capacity by 66 MW, at the least cost to area

⁴ See, *New England Power Company*, Order Approving Revised Exhibits and Amending License, 56 F.P.C. 3310 (1976).

environmental resources. Most area resources will not be affected by the proposed action, although there has been concern for an attendant increase in entrainment of impoundment fishes. We have concluded that any increased entrainment of rainbow and brown trout would not be significant and recommend the proposed action be approved. Therefore, we conclude that issuance of this order does not constitute a major federal action significantly affecting the quality of the human environment.

The Director orders:

(A) Bear Swamp Power Company, LLC's application to amend the license to increase the project's installed capacity and hydraulic capacity, as filed on March 31, 2008, and supplemented on July 3, 2008, for the Bear Swamp Hydroelectric Project No. 2669, is approved by this order, effective the first day of the month in which this order is issued.

(B) The licensee shall start refurbishing the two turbine-generator units and associated equipment within two years from the date of this order and complete construction within five years from the date of this order.

(C) Within 90 days after the start of construction, the licensee shall notify the Commission of the date each unit fabrication began. The filing should include written documentation and photographs of all work performed since the start of construction. The date of commencement of construction will be used to amend license Article 42 pursuant to the assessment of annual charges.

(D) The Exhibit M, entitled General Project Description, filed with the application on March 31, 2008 and supplemented on July 3, 2008, is approved and made part of the license.

(E) Ordering paragraph C(ii) of the license is revised, in part, as follows:

Bear Swamp Pumped Storage Development consists of : (1) a 118-acre upper reservoir containing approximately 5,260 acre-feet of useable storage with typical drawdown of 44.5 feet under normal operations from a normal maximum water surface elevation 1,600 feet m.s.l, or 50 feet under emergency operations; (2) four impervious-core rock-fill dams impounding the upper reservoir, with a composite length of about 5,280 feet; (3) a 740-foot-long by 25-foot-diameter concrete-lined vertical shaft and horizontal tunnel; (4) two 17.5-foot-diameter, 350-foot-long, concrete-lined penstocks leading to the powerhouse; (5) an underground powerhouse containing two reversible pump-generating units, each rated at 333 MW; (6) two 504-foot-long, concrete lined tailrace draft tube tunnels, terminating at an intake outlet structure located on the lower reservoir; (7) two 230-kV single-circuit tap lines, each of which is about one mile long, connecting the Bear Swamp transformer portal with the 230-kV portion of the Bear Swamp switchyard; and (8)

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appurtenant facilities.

(F) This order constitutes final agency action. Requests for a rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

William Guey-Lee
Chief, Engineering and Jurisdiction Branch
Division of Hydropower Administration
and Compliance

ENVIRONMENTAL ASSESSMENT

Non-Capacity Amendment of License

Bear Swamp Project, FERC No. 2669-061

Massachusetts



**Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, N.E.
Washington, D.C. 20426**

August 2008

ENVIRONMENTAL ASSESSMENT
FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF ENERGY PROJECTS
DIVISION OF HYDROPOWER ADMINISTRATION AND COMPLIANCE

Project Name: Bear Swamp Project

FERC No.: 2669-061

1.0 APPLICATION

- 1.1 Application Type:** Non-capacity amendment of license
- 1.2 Date Filed:** March 31, 2008
- 1.3 Applicant:** Bear Swamp Power Company LLC
- 1.4 Water body:** Deerfield River
- 1.5 County and State:** Berkshire and Franklin, Massachusetts

2.0 PURPOSE AND NEED FOR ACTION

Bear Swamp Power Company LLC (licensee) filed with the Federal Energy Regulatory Commission (FERC or Commission) an application on March 31, 2008, for a non-capacity amendment for the Bear Swamp (a.k.a. Cockwell) Pumped Storage Development (PSD) of its Bear Swamp Project. The licensee proposes to replace both existing pumped-turbine runners with new runners and to overhaul and rewind the existing motor-generators as a necessary maintenance upgrade. The licensee offers that the two runners currently operating are original to the project and are near the end of their useful life. In addition, replacement of the runners and rewinding the generators will result in an incremental increase of 66 megawatts (MW), which will allow the licensee to provide additional generation capacity to the New England market. The licensee supplemented its March filing on July 3 and 7, 2008.

This Environmental Assessment (EA) considers the environmental effects of the proposed runner replacements and generator rewinds as they will affect the surrounding environs of the project.⁵

⁵ Unless otherwise noted, descriptions of the existing project, its operation, and surrounding environment are extracted from the Application for Non-capacity Amendment of License, Bear Swamp Hydroelectric Project, FERC No. 2669, filed with the Commission on March 31, 2008, and supplemented on July 3 and 7, 2008.

3.0 BEAR SWAMP PROJECT DESCRIPTION AND OPERATION

The Bear Swamp Project consists of the Bear Swamp PSD and the Fife Brook Development, and is located on the Deerfield River between the upstream Deerfield No. 5 Development and the downstream Deerfield No. 4 Development of the Deerfield River Project (FERC Project No. 2323). The Bear Swamp PSD consists of a 118-acre man made upper reservoir, a 740-foot-long by 25-foot-diameter concrete-lined vertical shaft and horizontal tunnel, two 350-foot-long by 17.5-foot diameter steel-lined horizontal penstocks, and an underground powerhouse containing two 300 MW units. Water is pumped into the reservoir from a 152-acre lower reservoir on the Deerfield River, which is the headpond for the Fife Brook Development. The upper reservoir is contained by four rock-fill dikes with glacial till cores. The dikes range from 350 to 2880 feet in length and 23 to 155 feet in height. The water conveyance tunnels, penstocks and powerhouse are constructed within the bedrock mountain.

The upper reservoir contains 5,260 acre-feet of usable storage with typical drawdown of 44.5 feet under normal operations from a normal maximum water surface elevation of 1600 feet NGVD, or 50 feet under emergency operations. The lower reservoir contains 4,900 acre-feet of usable storage and provides for 40 feet of drawdown from a normal maximum water surface elevation of 870 feet NGVD.

The Fife Brook Development consists of the Bear Swamp lower reservoir, impounded by the Fife Brook Dam, an earth and rockfill structure with a concrete intake and powerhouse with a single 11.25 MW turbine/generator unit, and a two-bay, tainter-gated spillway structure at the right abutment.

Operational requirements of the project license, issued February 11, 1970,⁶ and the subsequent Order Amending License,⁷ issued April 4, 1997, include a minimum flow release from Fife Brook Dam into the Deerfield River of 125 cubic feet per second (cfs) and the release of whitewater boating flows for 50 weekend days and 56 weekdays from April 1 to October 31 annually as agreed to in the October 6, 1994 Offer of Settlement in the Deerfield River Project No. 2323 relicensing proceeding.

4.0 PROPOSED ACTION AND ALTERNATIVES

4.1 Description of the Proposed Action

The licensee proposes, as a necessary maintenance upgrade of the Bear Swamp PSD, to replace both existing pumped-turbine runners with new runners, each rated at

⁶ 43 FPC 575

⁷ 79 FERC ¶ 61, 009 (1997)

338 MW, and to overhaul and rewind the existing motor-generators. Consequently, the project's total authorized installed capacity would increase from 610 MW to 677.25 MW and the hydraulic capacity would increase from 5,430 cfs to 6,200 cfs.

In conjunction with the runner replacement, work will also include replacement of the runner seals, replacement of the wicket gates and bushings for both turbine units, stay vane and stay ring modifications, and completion of turbine shaft seal modifications.

The proposed amendment will result in an increase in the maximum turbine discharge by approximately 14 percent and in the maximum pumping rate by 13 percent. This will result in a shortened daily pump cycle period (while pump cycle flow rates will be higher, the overall time these flows are occurring will be reduced compared to existing conditions.). The rate of pump/storage cycles will not materially change.

The licensee proposes to replace one pumped-turbine runner in 2011 and the second in 2012. While the first runner is being replaced, the licensee will continue to operate the development using the second unit. The licensee states that during the construction period, the project will maintain its pumped storage mode of operation in compliance with all the terms of the current license, the 1994 settlement agreement, the 401 Water Quality Certificates,⁸ and other approvals issued by the Commonwealth of Massachusetts. All construction activities will take place in the confines of the existing powerhouse.

4.2 Action Alternatives

No alternative actions have been identified.

4.3 No-Action Alternative

Under the No-Action Alternative, the Commission would deny the licensee's application. Denial of the application would prevent the licensee from completing necessary maintenance, with the attendant increases in reliability, efficiency, and 66 MW in generation capacity.

⁸ The Bear Swamp Project has received five Water Quality Certifications for various construction and operation elements of the project, dated June 2, 1970, February 24, 1971, March 8, 1971, April 12, 1977, and April 25, 1977 (Letter dated February 20, 2008, from the Massachusetts Department of Environmental Protection to the licensee).

5.0 AFFECTED ENVIRONMENT

5.1 General Area Description

The Deerfield River has its headwaters in the Green Mountains in the southern part of Vermont, and flows approximately 73 miles through northwestern Massachusetts to its confluence with the Connecticut River in Greenfield, Massachusetts. The river basin area is 665 square miles. Most of the upper basin is in the Green mountains where land is primarily forest land consisting of a combination of deciduous and evergreen tree species. Agriculture land is concentrated primarily on the western border of the river basin, but is also scattered throughout the area where topography is level. The majority of the urban areas is located in valleys and consists of small towns (FERC 1996).

The land cover in the lower Deerfield River basin also consists of deciduous and evergreen tree species. Agricultural and open lands consist primarily of crops and pastures and are centralized along the river and its major tributaries. The only major urbanized region in the lower basin is Greenfield, Massachusetts (FERC 1996).

The Deerfield River is considered a working river in that it has been used for hydroelectric generation for decades. There are 8 dams on the river associated with the Deerfield River Project (FERC No. 2323) at river mile (RM) 66.0, 60.3, 48.5, 42.0, 41.2, 20.0, 17.0, and 13.2. The Gardner Falls Project (FERC No. 2334) is located at RM 15.7. The Bear Swamp PSD is located at approximate river RM 39, between the upstream Deerfield No. 5 Development (RM 41.2) and the downstream Deerfield No. 4 Development (RM 20). The lower reservoir of the Bear Swamp PSD is impounded by the Fife Brook Dam at RM 37 (FERC 1996).

5.2 Water Quality and Quantity

Deerfield River flow into the Bear Swamp Project is regulated by the Somerset storage reservoir and four upstream hydroelectric projects. Releases from upstream reservoirs and hydroelectric developments cause fluctuations in Deerfield River flow. The reservoirs and impoundments also aid in controlling floods and providing additional flow during low flow periods (Deerfield River Watershed Association 2008).

Deerfield River water quality in the Bear Swamp Project area is rated Class B, designated as “habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation.” Class B waters are also suitable as a source of water supply with appropriate treatment, for irrigation, and for compatible industrial cooling and process use.

The Bear Swamp Project license requires a minimum flow release of 125 cfs to be released from the Fife Brook Dam. Water quality sampling below the dam has found

dissolved oxygen values ranging from 8.5 to 9.8 mg/l, and a maximum temperature of 16.0°C (62.6°F), pH values of 5.8 to 6.5, alkalinity ranging from 4 to 5 mg/l, and turbidity values from 1.3 to 2.4 nephelometric turbidity units. Fecal coliform counts have been measured at 7 to 10 colonies/100 milliliters.

5.3 Fisheries and Wildlife Resources

The licensee reports that the fish community of the Deerfield River is a relatively constant assemblage of stocked or resident salmonid species, and a variety of introduced and native warmwater fishes. The Massachusetts Division of Fisheries and Wildlife (MDFW) fisheries management objectives vary from supporting a self-sustaining brown trout fishery in the upper Massachusetts reaches of the river to maintaining a put and take trout fishery in reaches downstream of Fife Brook Dam. While no fish surveys have been completed recently for the Bear Swamp PSD lower reservoir, the licensee reports that a reasonable species list would likely include brown, brook and rainbow trout, smallmouth bass, rock bass, pumpkinseed, white sucker, fallfish, spottail shiner, and longnose and blacknose dace. The project impoundment is not managed by the MDFW for any species.

Diadromous species that have access to the Deerfield River include Atlantic salmon, American shad, sea lamprey, blueback herring, and American eel. However, there are no requirements currently for passage or plans for upstream passage beyond the Deerfield River Project development at RM 13.2. Downstream passage facilities are in place at all hydroelectric developments upstream to the Deerfield River Project development at RM 20.0 to accommodate Atlantic salmon fry plantings in tributaries above this development.

5.4 Threatened and Endangered Species

No federally listed threatened or endangered species are known to occur in the area of the proposed action (FERC 1996).

5.5 Recreation

The Deerfield River provides a wide variety of recreational opportunities. Most of the property within the river basin that are owned and managed by the hydroelectric project licensees is open to the public, providing access for both water- and land-based recreation opportunities such as hunting, hiking, skiing, fishing, and boating (FERC 1996).

With respect to water based recreation, the Bear Swamp PSD licensee maintains fencing, sirens, strobe lights, surveillance cameras and signs to warn and protect the public from the hazards of project operations and to restrict the public from project

structures because of safety concerns with the daily fluctuations in the reservoirs. The upper reservoir and the lower reservoir are fenced and gated with “No Trespassing” signs to prohibit access (FERC 2006). Most recreation therefore takes place above and below the Bear Swamp Project waters. Below Fife Brook Dam, the river is managed as a catch and release fishery that is stocked by the state annually with brown and rainbow trout. In addition and as noted earlier, whitewater boating flows are released from the Fife Brook Dam for 50 weekend days and 56 weekdays from April 1 to October 31 annually as agreed to in the October 6, 1994 Offer of Settlement in the Deerfield River Project No. 2323 relicensing proceeding.

5.6 Cultural Resources

When the Bear Swamp Project was licensed in 1970, the Commission noted that there are no known archeological landmarks in the region of the project and that the nearest historic landmark noted in the National Register of Historic Places (National Register) is Old Deerfield Village, located more than 20 miles away. Commission staff reviewed the licensee’s application and determined that, based on available information, no historic or cultural resources are present that would be affected by the proposed turbine replacement and generator maintenance.

6.0 CONSULTATION AND COMMENTS

Prior to filing the application, the licensee consulted with federal, state, and local government agencies and entities concerning the Proposed Action. On May 7, 2008, the Commission issued a public notice of the licensee’s application for license amendment with a commenting deadline ending on June 9, 2008.

6.1 Commenting Entities and Dates of Comments

Prefiling Consultation

<u>Entity</u>	<u>Date of Comments</u>
Massachusetts Department of Environmental Protection	February 20, 2008
U.S. Fish and Wildlife Service	March 13, 2008
Massachusetts Division of Fisheries and Wildlife Trout Unlimited	March 20, 2008
2008	March 20,

The licensee responded to the March 13, 2008 U.S. Fish and Wildlife Service (FWS) letter by letter dated April 24, 2008, and the Trout Unlimited (TU) letter of March 20, 2008, by letter dated March 28, 2008.

Responses to Public Notice

<u>Entity</u>	<u>Date of Comments</u>
Trout Unlimited	June 6, 2008
U.S. Department of the Interior	June 9, 2008
TransCanada Hydro Northeast Inc.	June 9, 2008

TU and TransCanada Hydro Northeast Inc. (TransCanada)⁹ also filed motions to intervene in this proceeding along with their comments pursuant to the Commission's public notice.

The Commission staff requested additional information from the licensee via letter dated May 23, 2008. In letters dated July 3 and 7, 2008, the licensee responded to the Commission staff's additional information request and to comments submitted by TU, the U.S. Department of the Interior (Interior), and TransCanada, pursuant to the Commission's public notice.

By letter dated May 12, 2008, the Commission staff informed the Massachusetts State Historic Preservation Officer (SHPO) that the project area does not contain any historic properties, that approval of the proposed action would not constitute an undertaking pursuant to Section 106 of the National Preservation Act, and requested SHPO comments on this determination. No response has been received.

The primary environmental concern of the commenting entities is fish entrainment during the pumping mode.

7.0 ENVIRONMENTAL IMPACTS

⁹ TransCanada is the licensee for the Deerfield River Project (FERC No. 2323).

7.1 Proposed Action

The proposed action involves replacing both existing pumped-turbine runners with new runners and overhauling and rewinding the existing motor-generators. All work will be completed in the Bear Swamp PSD powerhouse. There will be no ground disturbing activities associated with the upgrade. At most, occasional short term and minor increases in area traffic and exhaust emissions from transporting of new equipment to the powerhouse would occur during the construction phase.

The proposed runner upgrade will result in increases in turbine discharge and pumping rates during project operation by a maximum of 14 percent and 13 percent, respectively. There will, however, be no changes to operational limitations with respect to impoundment fluctuations or minimal flows below Fife Brook Dam. There will be no changes or physical modifications to the upper or lower reservoirs. The project will continue to operate within the parameters and requirements of the project license, the 1994 settlement agreement, and the 1997 Order Amending License. As such, approval of the proposed action would have no effect on cultural resources, recreation, Deerfield River hydrology upstream and downstream of the project, Atlantic salmon restoration efforts in the Connecticut River basin, wildlife and botanical resources, area land use, and, because no federally threatened or endangered species have been identified in the proposed project area, federally threatened or endangered species. In addition, by letter dated February 20, 2008, the Massachusetts Department of Environmental Protection has determined that no amendment to the existing Water Quality Certificates will be required for the Bear Swamp Project and that it had received confirmation from the Massachusetts Division of Fisheries and Wildlife that there are no fisheries issues with the proposed upgrade. In addition, the Commission has received no reports of any significant adverse effects of the project on fisheries above and below the project.

It is also not expected that the proposed action would have a material effect on water quality within the Fife Brook impoundment. The minor increase in discharge rate should not result in any additional scour and attendant increase in turbidity as the substrate within the area of influence consists of boulder and cobble, with minimal organic matter (letter dated February 20, 2008, from the Massachusetts Department of Environmental Protection).

During the pumping mode, intake velocities at the trashracks under high tailwater conditions will increase from 1.8 feet per second (fps) to 2.3 fps, and under low tailwater from 2.5 to 2.8 fps from the runner upgrade (Bear Swamp Power Company Inc. 2008). In front of the intake, the distances from the outfall structure where a flow rate of 2 fps and 1 fps are encountered are approximately 25 feet and 75 feet from the intake, respectively. The increased velocities from the upgrade will extend these distances 5 feet each to 30 feet for 2 fps and 80 feet for 1 fps (Bear Swamp Power Company Inc. 2008).

This increase in flow velocities during the pumping cycle could result in increased fish entrainment and any attendant mortality, a concern expressed by the FWS, Interior and TU in their comments on the proposed action, and analyzed by the licensee in its July 3, 2008 supplement to its amendment application.

The licensee compared swim speeds for rainbow and brown trout, species of recreational importance expected to be found in the impoundment, and determined that, since the intake velocities at the trashracks are within the sustained swimming speed¹⁰ and less than the burst speed¹¹ ranges for these species, any resulting increase in entrainment of these species is not anticipated to be significant (Bear Swamp Power Company Inc. 2008).

We also reviewed the swimming capabilities of rainbow and brown trout and find that the increase in velocities in front of and at the trashracks should be easily avoided. Prolonged speeds, speeds that can be maintained for up to 200 minutes, have been assessed for rainbow and brown trout at 2.95-5.9 fps and 2.29-6.23 fps, respectively (Ontario Ministry of Transportation 2006). Thus, these species have the capability to swim against the currents associated with the pumping mode and avoid entrainment. We therefore do not expect any significant increase in entrainment of impoundment fishes from approval of the proposed action.

7.2 No-Action Alternative

Under the No-Action Alternative, the licensee would continue to operate the project as it does currently. No additional impacts to area resources would accrue. However, eventually the licensee would need to complete a maintenance upgrade for the project.

8.0 CONCLUSIONS AND RECOMMENDATIONS

We conclude that approval of the proposed action would allow the licensee to enhance the efficiency of the project, while increasing the installed capacity by 66 MW, at the least cost to area environmental resources. Most area resources will not be affected by the proposed action, although there has been concern for an attendant increase in entrainment of impoundment fishes. We have concluded that any increased entrainment of rainbow and brown trout would not be significant and recommend the proposed action be approved.

¹⁰ Speed that can be maintained for minutes

¹¹ Speed that can be maintained for 10 seconds, a single effort, not sustainable

Based on the above assessment, we conclude that approval of the Proposed Action would not constitute a major Federal action significantly affecting the quality of the human environment.

9.0 REFERENCES and LITERATURE CITED

Bear Swamp Power Company Inc. 2008. Application for Non-capacity Amendment of License, Bear Swamp Hydroelectric Project, FERC No. 2669. Filed with the FERC March 31, 2008, and supplemented on July 3 and 7, 2008.

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FERC. 1996. Final Environmental Impact Statement: Deerfield River Projects - Vermont- Massachusetts (FERC Nos. 2323-12, 2669-02, & 2334-01). Office of Hydropower Licensing. August 1996.

FERC. 2006. Environmental Inspection Report – Bear Swamp Project No. 2669-MA. New York Regional Office. June 29, 2006. 16 pp.

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10.0 PREPARER

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Document Content(s)

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