

154 FERC ¶ 62,123
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Green Mountain Power Corporation

Project No. 2090-003

ORDER ISSUING NEW LICENSE

(Issued February 19, 2016)

INTRODUCTION

1. On August 31, 1999, Green Mountain Power Corporation (Green Mountain or licensee) filed, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),¹ an application for a new license to continue operation and maintenance of the Waterbury Hydroelectric Project No. 2090 (Waterbury Project).² The project's authorized capacity being licensed is 5.52 megawatts (MW).

2. The project is located at Waterbury dam on the Little River, in the town of Waterbury, Washington County, Vermont.³ Waterbury dam and reservoir were built by the United States in 1938, but are owned by the State of Vermont and operated by Green Mountain.⁴ Waterbury dam was constructed to reduce flooding in the Winooski Valley. The project does not occupy federal land.⁵

¹ 16 U.S.C. §§ 797(e) and 808 (2012).

² Green Mountain revised its application by filings of March 6 and June 8, 15, and 22, 2015.

³ Waterbury dam is considered a government dam pursuant to section 3(10) of the FPA, 16 U.S.C. § 796 (2012). *See* 13 F.P.C. 1211 (1954). Because the project uses the power potential of a government dam, the project is required to be licensed by section 23(b)(1) of the FPA, 16 U.S.C. 817(1) (2012).

⁴ *See* Green Mountain filing of July 22, 1992. Operation and maintenance of the Waterbury dam and reservoir was delegated to the State of Vermont pursuant to a 1935 agreement between the United States and the State of Vermont. *Id.*, attachment 2. In 1937, the State of Vermont deeded the right to operate the Waterbury dam to Green Mountain. *Id.*

⁵ The Waterbury dam is located on land owned by the State of Vermont. *Green Mountain Power Corp.*, 53 FERC ¶ 61,091 (1990).

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3. As discussed below, this order issues a new license for the project.

BACKGROUND

4. The Commission issued the original license for the project in 1954, and the license expired on August 31, 2001.⁶ Since then, Green Mountain has operated the project under annual licenses pending the disposition of its license application.

5. On February 18, 2000, the Commission issued a public notice that was published in the *Federal Register* accepting the application for filing and setting April 18, 2000, as the deadline for filing motions to intervene and protests.⁷ American Whitewater; Champlain Valley Canoe and Kayak Series; Trout Unlimited and Central Vermont Chapter of Trout Unlimited (filing jointly); Umiak, LTD. and Friends of Little River (filing jointly); Vermont Natural Resources Council; and Vermont Paddlers Club filed timely motions to intervene.⁸ The U.S. Department of the Interior (Interior) filed a late motion to intervene, which was granted.⁹

6. On September 26, 2002, the Commission issued a public notice that was published in the *Federal Register* indicating the application was ready for environmental analysis and setting November 25, 2002, as the deadline for filing motions to intervene, comments, recommendations, terms and conditions, and fishway prescriptions.¹⁰ The Vermont Agency of Natural Resources (Vermont ANR) filed a timely motion to intervene. American Whitewater and New England Flow (filing jointly), the U.S. Fish and Wildlife Service (FWS), Vermont ANR, and Vermont Natural Resources Council, filed comments and recommendations. Green Mountain filed reply comments on January 9, 2003.

⁶ 13 F.P.C. 1211 (1954). The original license was made effective September 1, 1951, for a period of 50 years.

⁷ 65 *Fed. Reg.* 10,074 (February 25, 2000).

⁸ Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(c) (2015).

⁹ See Secretary's notice issued May 5, 2000 (unpublished).

¹⁰ 67 *Fed. Reg.* 61,876 (October 2, 2002).

7. A draft Environmental Assessment (draft EA) analyzing the impacts of the proposed project and alternatives to it was prepared by Commission staff and issued for comment on August 20, 2004. Gomez and Sullivan Engineers on behalf of Green Mountain, FWS, Winooski One Partnership, American Whitewater, Friends of Little River, Vermont ANR, Vermont Natural Resources Council, Vermont Paddlers Club, and the U.S. Army Corps of Engineers (Corps) filed comments on the draft EA.¹¹ A final EA was prepared by Commission staff and issued on August 15, 2005.

8. The interventions, comments, recommendations, and conditions have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

A. Project Area

9. The Waterbury Project is located on the Little River in the town of Waterbury, Washington County, Vermont. From the project area, the Little River flows in a southerly direction for about 2.5 miles before joining the Winooski River. From its confluence with the Little River, the Winooski River flows about 90 miles in a northwesterly direction to Lake Champlain which is located on the border of New York and Vermont.

B. Waterbury Dam

10. Waterbury dam consists of a 1,845-foot-long, 187-foot-high rolled earth embankment and a 261-foot-long spillway. The spillway includes a 161-foot-long ungated concrete ogee weir with a crest elevation of 617.5 feet mean sea level (msl) and a 100-foot-long section that includes three taintor gates with a crest elevation of 592.0 feet msl. Waterbury dam impounds the 890-acre Waterbury reservoir that has a usable storage capacity of 22,800 acre-feet at a normal maximum water surface elevation of 592.0 feet msl.

11. Federal oversight of Waterbury dam is continuing and significant. The United States (through the Corps) dictates dam operations for flood control purposes. In addition, the Corps inspects the dam twice a year (once jointly with the state) and, pursuant to those inspections, issues operational recommendations, including a dam and reservoir regulation manual for Waterbury dam, and has twice directed and funded

¹¹ See final EA at 83.

extensive remedial construction at the dam.¹² Consequently, Green Mountain does not have to pay annual charges for its use.¹³

12. Green Mountain operates Waterbury dam for flood control and power generation. The Corps controls reservoir water surface elevations above 592.0 feet msl for temporary detention of floodwaters. Water surface elevations between 500.0 feet and 592.0 feet msl are available for hydropower generation.

C. Project Facilities

13. Construction of the hydroelectric facilities for the Waterbury Project began in 1951 and was completed in 1953. Flow from Waterbury reservoir enters the project through a submerged gated intake structure and then passes into an 828-foot-long, 10.5-foot-high, 14-foot-wide horseshoe-shaped tunnel. Flow from the tunnel enters two 205-foot-long, 4.5-foot-diameter penstocks and then passes into a 25-foot-long, 6.7-foot-diameter penstock that leads to a single 5.52-MW turbine-generator unit located in a 58-foot-long, 35-foot-wide powerhouse. A 12-foot-long, 2-foot-diameter drain pipe with a valve connects to the 25-foot-long, 6.7-foot diameter penstock and can be used to drain the project's penstock. Project power is transmitted through a 50-foot-long, 33-kilovolt (kV) transmission line that connects the turbine-generator unit to a step-up transformer that is connected to the regional grid. A more detailed project description is contained in ordering paragraph (B)(2). There are no project recreation facilities.

D. Project Boundary

14. The existing project boundary encloses the project's hydroelectric generation-related facilities including the intake, tunnel, penstocks, powerhouse, and transmission line. Because, as explained above, Waterbury dam and reservoir are federal facilities, they are not included in the license.

¹² In 1956, the Corps pursuant to the Flood Control Act of 1944 (and with federal funds) modified the dam for safety reasons. In 1985, the Corps funded other safety repairs at the dam under the Federal Dam Safety Assurance Program. *See* Green Mountain filing of July 22, 1992, at 2.

¹³ *Green Mountain Power Corporation*, 53 FERC ¶ 61,091 (1990). The Commission determined that, although for licensing purposes Waterbury dam is a government dam, the licensee does not have to pay annual charges for its use, because section 10(e) of the FPA applies only to dams that are *owned* by the United States.

E. Current Project Operation

15. As discussed above, the Waterbury dam and reservoir are operated for flood control and power generation. As noted above, reservoir water surface elevations above 592.0 feet msl are reserved for flood control, and water surface elevations between 500.0 feet and 592.0 feet msl are available for hydropower generation.

16. Green Mountain operates the Waterbury Project in a daily peaking mode from Monday through Friday. The project typically does not produce power on weekends. When the project is not generating, Article 18 of the current license requires Green Mountain to release a minimum base flow of 3 cubic-feet-per-second (cfs) downstream of the Waterbury dam; however, due to leakage through the turbine wicket gate, the actual minimum flow is typically between 10 and 15 cfs.

17. Through an agreement with the State of Vermont, Green Mountain maintains Waterbury reservoir between elevations 588.5 feet and 590.5 feet msl, with a target elevation of 589.5 feet msl, from Memorial Day to Labor Day.¹⁴ From Labor Day until early December, Green Mountain maintains Waterbury reservoir between elevations 585 and 592 msl. From December through February, Green Mountain draws the reservoir down to an average elevation of approximately 555 feet msl. From March through May, Waterbury reservoir captures spring run-off to refill to a target summer elevation of 589.5 feet msl by Memorial Day.

18. Water can also be released from Waterbury reservoir through a bypass penstock that was constructed in 1985 by the State of Vermont. The 60-foot-long, 4.0-foot-diameter bypass penstock connects to the project penstock upstream of the powerhouse and releases water into the project tailrace through a Howell-Bunger discharge valve. The bypass penstock provides a means for emergency reservoir drawdown in the event of a powerhouse shutdown or mechanical failure.

19. The project's average annual generation is approximately 17,562 megawatt-hours (MWh).

F. Proposed Operation and Environmental Measures

20. In its license application, Green Mountain proposed to: (1) continue its peaking mode of operation and its seasonal reservoir elevations; (2) increase the current minimum

¹⁴ See Green Mountain August 31, 1999 license application, Exhibit B at B-2.

flow from 3 cfs at all times to 65 cfs from April 1 through June 30, and 35 cfs from July 1 through March 31; (3) install a new automated valve to provide the minimum flow release when the project is not operating; (4) aerate or ventilate the existing turbine to meet state dissolved oxygen (DO) criteria; (5) implement a long-term turbidity monitoring program; (6) improve the existing Little River Boat Access¹⁵; (7) replace the existing Blush Hill gravel boat ramp¹⁶ with a concrete boat ramp; (8) resurface the parking area and replace the existing unnamed gravel boat ramp¹⁷ near the dam with concrete; (9) provide whitewater boating releases of 400 to 590 cfs on weekend days and weekday evenings from June 1 to September 15; (10) provide a flow notification system; and (11) develop a Cultural Resources Management Plan (CRMP) to protect cultural resources.

21. On December 11, 2014, the Vermont Department of Environmental Conservation (Vermont DEC) issued a water quality certification that requires Green Mountain to change project operation from peaking to a year-round run-of-river mode after a series of project and dam modifications occur, which as explained below, are to be implemented in three stages. The requirements of the water quality certification are described in more detail below.

22. In letters filed on March 6, 2015, and June 8, 2015, Green Mountain has modified its relicensing proposal to: (1) comply with the operational requirements of the water quality certification (e.g., run-of-river operation) instead of continuing existing operation and releasing the minimum flows proposed in its application; (2) replace the existing turbine runner with a new aerated runner, instead of aerating or ventilating the existing turbine;¹⁸ (3) instead of using the state-owned existing bypass penstock, install a new

¹⁵ The Little River Boat Access site is owned and operated by Vermont Department of Forests, Parks, and Recreation (Vermont Parks) and is located on the western side of the tailrace.

¹⁶ The Blush Hill Boat Ramp is owned and operated by the town of Waterbury and is located on the reservoir east of Waterbury dam.

¹⁷ The unnamed boat ramp is owned and operated by Vermont Parks and is located along the west shoreline of the reservoir immediately upstream from the dam.

¹⁸ The existing turbine generator unit has a minimum and maximum hydraulic capacity of 85 cfs and 670 cfs, respectively. However, Green Mountain does not generate at flows less than 300 cfs due to turbine blade cavitation. The new turbine runner will have a minimum and maximum hydraulic capacity of 49 cfs and 391 cfs, *(continued ...)*

automated bypass penstock (with a 4-foot-diameter butterfly valve and a 2-foot-diameter Howell-Bunger valve) that can release up to 125 cfs of aerated water into the project tailrace and provide a means for emergency reservoir drawdown in the event of a powerhouse shutdown or mechanical failure; (4) install a new 6.5-foot-diameter butterfly valve in the penstock that leads to the turbine-generator unit to be able to shut off water to the turbine during maintenance; and (5) conduct a 5-year DO monitoring program to assess the effectiveness of the new aerated runner and new automated bypass penstock.¹⁹ Green Mountain no longer proposes a turbidity monitoring program because any sediment and turbidity impacts due to the project's winter drawdown would be eliminated under the run-of-river mode of operation required by the certification. Green Mountain also proposes to develop a new recreation plan in consultation with the Vermont ANR, instead of implementing the specific recreational measures proposed in its application.

SUMMARY OF LICENSE REQUIREMENTS

23. As summarized below, this license, which authorizes 5.52 MW of renewable energy, requires a number of measures to protect fisheries resources, water quality, recreation, and cultural resources at the project.
24. To protect aquatic resources during construction of new project facilities, the license requires Green Mountain to prepare a soil erosion and sedimentation control plan.
25. To protect water quality and aquatic resources, the license requires Green Mountain to: (1) develop a DO monitoring plan; (2) release a minimum flow of 60 cfs or inflow, whichever is less, from March 16 through March 31; and (3) release a minimum flow of 108 cfs or inflow, whichever is less, from April 1 through May 15 through the powerhouse and/or the new automated bypass penstock. To determine the effectiveness of the new aerated runner required by the license, the license requires an aeration effectiveness monitoring plan.
26. To protect and enhance recreation opportunities at the project, the license requires Green Mountain to maintain a phone system and website with information on flows in the

respectively and operate throughout this flow range without cavitation.

¹⁹ Green Mountain filed revised Exhibits A, C, and D on June 8, 2015, revised Exhibit F drawings on June 10, 2015, and a revised Exhibit G on June 22, 2015. The revised exhibits include proposed changes to the project facilities and operation necessary to comply with the water quality certification conditions.

Little River downstream of the project, install warning signs on boating hazards on the Little River downstream of the project, and make one-time improvements to certain state- and town-owned and maintained recreation sites in the vicinity of the project.

27. To protect cultural resources, the license requires Green Mountain to implement a Programmatic Agreement (PA) that requires development of a Historic Properties Management Plan (HPMP).

WATER QUALITY CERTIFICATION

28. Under section 401(a)(1) of the Clean Water Act (CWA),²⁰ the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.²¹

29. On August 31, 1999, Green Mountain applied to the Vermont DEC for water quality certification for the Waterbury Project. Each year from June 29, 2000, through December 11, 2013, Green Mountain withdrew and refiled its water quality certification application.²² On December 11, 2014, the Vermont DEC issued a certification for the Waterbury Project that includes 16 conditions (conditions A through P), which are set forth in Appendix A of this order and incorporated into the license by ordering paragraph (D). Six of the conditions (conditions A, L, M, N, O, and P) are general or administrative and are not discussed.²³ The water quality conditions are consistent with the 2005 Revised Waterbury Dam and Reservoir Regulation Manual (Article 402).

²⁰ 33 U.S.C. § 1341(a)(1) (2012).

²¹ 33 U.S.C. § 1341(d) (2012).

²² In a letter filed on December 17, 2013, Vermont DEC stated it received Green Mountain's most recent water quality certification application dated December 11, 2013, on December 12, 2013.

²³ These general or administrative conditions state that: (1) the licensee shall operate and maintain the project consistent with the certification (condition A); (2) any proposed project maintenance or repair work that would have a significant effect on water quality must first be approved by Vermont DEC (condition J); (3) the licensee shall (*continued ...*)

Certification Conditions

30. Conditions B and C define reservoir elevation and project discharge limits that are intended to create more natural flows, reduce scour, reduce the effects of fluctuating flows on fish and macroinvertebrate habitat, and improve water quality in the Little River. Because some of these changes cannot occur until the project and dam are modified as described below, the changes to project operation required by conditions B and C will occur in three stages during the license term. Stage I operation will begin within 30 days of license issuance. Stage II operation will begin immediately after Green Mountain installs the new aerated runner and new automated bypass penstock but no later than January 1, 2018. Stage III operation will occur within 30 days after modifications are made to the Waterbury dam spillway and gates and Vermont DEC determines, in consultation with the federal government,²⁴ that stage III operation will be safe. The operational requirements of each stage are described below.

Stage I

31. During stage I, Green Mountain can fluctuate Waterbury reservoir between 588.5 feet and 590.5 feet msl from May 16 to December 31, which will maintain some of the project's hydropower peaking ability.²⁵ From January 1 to March 14 (winter drawdown),

allow Vermont DEC to inspect the project area at any time to monitor compliance (condition L); (4) the licensee shall post a copy of the certification in the powerhouse (condition M); (5) any change to the project that would have a significant or material effect on the conditions of the certification must first be approved by Vermont DEC (condition N); (6) Vermont DEC may request the Commission reopen the license to consider modifications (condition O); and (7) Vermont DEC retains jurisdiction over the project and may reopen the certification to assure compliance with the standards and respond to changes in classification or management objectives (condition P).

²⁴ While not explicitly stated in the certification, "consultation with the federal government" presumably means consultation with the U.S. Army Corps of Engineers, which is the federal agency that assists the State of Vermont in maintaining Waterbury dam.

²⁵ The certification specifies that Green Mountain will operate within 1 foot of the normal operating level and that Green Mountain may select a normal operating level between 588.5 and 589.5 feet msl. In a letter filed on March 6, 2015, Green Mountain indicated that its normal operating level will be 589.5 feet msl.

Green Mountain can draw the reservoir down to an elevation no lower than 550 feet msl; however, starting no later than March 15, Green Mountain must begin to refill the reservoir and reach elevation 589.5 feet msl by no later than May 15 (March 15 to May 15 is the spring refill period).

32. In regard to project discharge, the certification requires that when inflow to Waterbury reservoir is less than 300 cfs during winter drawdown, the maximum flow that can be released from the project is 300 cfs. When inflow to the reservoir is greater than 300 cfs during winter drawdown, the certification requires that the project release inflow.²⁶ At all times, when inflow to the reservoir is less than 85 cfs (the minimum hydraulic capacity of the turbine), the certification requires the maximum flow release from the project to be 300 cfs. From May 16 to December 31 when inflow is greater than 85 cfs, the certification requires that the project release inflow or 670 cfs (the maximum hydraulic capacity of the turbine), whichever is less.

Stage II

33. During stage II, the elevation of Waterbury reservoir will be regulated the same as stage I during the winter drawdown and spring refill. However, from May 16 to December 31, Green Mountain must maintain the reservoir at elevation 589.5 feet msl by operating the project in run-of-river mode, up to the hydraulic capacity of the new aerated turbine (i.e., 391 cfs). At inflows greater than 391 cfs, the additional inflow will be released through the new automated bypass valve (see below) or stored in the Waterbury reservoir until it reaches 592 feet msl and then flows will be released over the spillway.

34. During the winter drawdown, the project must release a minimum flow of 60 cfs and a maximum flow of 200 cfs or inflow, whichever is greater. During the spring refill, the project must release a minimum flow of 60 cfs or inflow, whichever is less, from March 16 to March 31 and a minimum flow of 108 cfs or inflow, whichever is less, from April 1 through May 15.

²⁶ Because the maximum hydraulic capacity of the project will be 670 cfs during stage I, the licensee will be unable to pass an inflow greater than 670 cfs through the project. Therefore, for the purpose of administering this license, the requirement will be interpreted to mean that when inflow to the reservoir is greater than 300 cfs during the winter operation period, the licensee must release inflow or 670 cfs, whichever is less.

35. To increase the DO levels of water released into the Little River from May 16 to December 31, Green Mountain must operate the new automated bypass penstock at its capacity when inflow to Waterbury reservoir exceeds 391 cfs.²⁷

36. During stage II, to reduce the potential for fish stranding in the Little River, Green Mountain must comply with condition B's ramping rates that limit changes in project discharge to no more than 60 cfs per 30 minutes when increasing flows and 30 cfs per 30 minutes when decreasing flows.

Stage III

37. During stage III, Green Mountain will operate the project in a run-of-river mode and maintain Waterbury reservoir at elevation 589.5 feet msl year round (see exception below). During run-of-river operation, Green Mountain will use the turbine-generator unit and/or new automated bypass penstock to match project outflow with inflow up to the maximum hydraulic capacity of the project.²⁸ When inflow to Waterbury reservoir exceeds project capacity, the project will operate at its maximum capacity and the elevation of Waterbury reservoir will exceed 589.5 feet msl. On these occasions, the certification requires that Green Mountain operate the project at its maximum capacity until inflows recede and the reservoir returns to elevation 589.5 feet msl. To reduce the potential for fish stranding, the certification requires Green Mountain to comply with the ramping rate as required for stage II.

38. Condition D requires Green Mountain to design the new automated bypass penstock to pass at least 125 cfs, and if feasible, up to 250 cfs.

39. Condition E requires Green Mountain to develop a reservoir and flow management plan that describes how the project will be operated to comply with the requirements of condition B.

40. Condition F requires Green Mountain to develop a plan to improve low DO conditions in the Little River downstream of the dam.²⁹ The plan will include equipment

²⁷ Condition B provides an exception, stating that "... except after June 15 use of the valve may be suspended when the reservoir level is below 592.0 feet and inflow is less than the maximum capacity of the turbine."

²⁸ After installation of the new aerated turbine (maximum capacity 391 cfs) and Howell-Bunger valve (125 cfs), maximum project capacity will be 516 cfs.

²⁹ See final EA at 68.

and/or structural or mechanical modifications, an implementation schedule, and any DO monitoring protocols.

41. Condition G requires Green Mountain to develop a plan to monitor DO and water temperature in the penstock and Little River downstream of the project to determine the effectiveness of DO enhancement measures.

42. Condition H reserves the right of Vermont Department of Fish and Wildlife (Vermont DFW) to require Green Mountain to provide upstream and downstream fish passage facilities or participate in a trap-and-transport facility to move migratory fish upstream of Waterbury dam.

43. Condition I requires Green Mountain to provide a turbine rating curve depicting flow/production relationship.

44. Condition K requires Green Mountain to develop a recreation plan for making improvements to existing recreation facilities in consultation with Vermont DEC, Vermont DFW, and Vermont Department of Forests, Parks, and Recreation (Vermont Parks).

45. The certification also requires Green Mountain to file various plans and reports with Vermont DEC, notify Vermont DEC of modifications to project operations, and implement unspecified long-term changes to project operations or facilities based on new information or results from studies or monitoring without Commission review or approval. Therefore, Article 401 of this license requires the licensee to file, for Commission approval, plans required by the certification conditions, file reports with the Commission, notify the Commission of planned and unplanned deviations from license requirements, and file amendment applications, as appropriate.

COASTAL ZONE MANAGEMENT ACT

46. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),³⁰ the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification. The State of Vermont does not have a Coastal Zone Management Program. Therefore, a CZMA consistency certification is not required.

³⁰ 16 U.S.C. § 1456(c)(3)(A) (2012).

SECTION 18 FISHWAY PRESCRIPTION

47. Section 18 of the FPA³¹ provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

48. By letter filed November 25, 2002, Interior requested that the Commission reserve authority to prescribe fishways. Consistent with Commission policy, Article 403 of the license reserves the Commission's authority to require fishways that may be prescribed by Interior for the Waterbury Project.

THREATENED AND ENDANGERED SPECIES

49. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)³² requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

50. In a letter dated August 30, 2000, the FWS stated that no federally listed threatened or endangered species or critical habitat are known to occur in the project area.³³ However, subsequent to the issuance of the final EA, FWS listed the northern long-eared bat as threatened under the ESA.³⁴ A review of FWS's *Information, Planning, and Conservation System* (IPaC) decision support system indicates that the federally threatened northern long-eared bat could occur in Washington County, Vermont.³⁵ However, because this species is not known to inhabit the project area,³⁶ and

³¹ 16 U.S.C. § 811 (2012).

³² 16 U.S.C. § 1536(a) (2012).

³³ The FWS's letter is attached to Green Mountain's *Response to Additional Information Request No. 2* filed on January 30, 2001.

³⁴ 80 *Fed. Reg.* 17,974-18,033 (April 2, 2015).

³⁵ See <http://ecos.fws.gov/ipac/>. The northern-long eared bat is the only federally listed species in Washington County, Vermont.

³⁶ In its water quality certification, Vermont ANR stated that the northern long-eared bat, a state-listed endangered species, is not known to be present at the project.

there are no measures included in this license that would affect northern long-eared bat habitat, licensing the project would have no effect on the threatened northern long-eared bat. Therefore, no further action under the ESA is required.

NATIONAL HISTORIC PRESERVATION ACT

51. Under section 106 of the National Historic Preservation Act (NHPA)³⁷ and its implementing regulations,³⁸ federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (National Register), defined as historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

52. The Waterbury Project, including the intake structure, penstock, and powerhouse, are potentially eligible for inclusion in the National Register because these facilities are more than 50 years old.³⁹ In the EA, staff concluded that relicensing the project could affect historic properties of the Waterbury dam and the associated hydroelectric facility, but that with the implementation of an HPMP, all potential adverse effects to historic properties would be avoided.⁴⁰

53. To protect potentially eligible historic properties, specifically the Waterbury dam and associated hydroelectric facilities that could be affected by project-related activities, the Commission executed a PA with the Vermont SHPO on October 19, 2004, and invited Green Mountain to concur with the stipulations of the PA. Green Mountain

³⁷ Section 106 of the National Historic Preservation Act of 1966, as amended, 54 U.S.C. § 306108, Pub. L. No. 113-287, 128 Stat. 3188 (2014). (The National Historic Preservation Act was recodified in Title 54 in December 2014.)

³⁸ 36 C.F.R. Part 800 (2015).

³⁹ The term “eligible for inclusion in the National Register” includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria at 36 C.F.R. Part 60 (2015).

⁴⁰ See final EA at 46.

concluded. The PA requires Green Mountain to prepare an HPMP⁴¹ in consultation with the Vermont SHPO that will ensure that any adverse effects on known and unknown potential historic properties and archaeological resources are satisfactorily resolved over the term of any new license issued for the project. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 405 requires Green Mountain to implement the PA by preparing its HPMP in consultation with the Vermont SHPO, and filing it with the Commission for approval within one year of license issuance.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

54. Section 10(j)(1) of the FPA⁴² requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act⁴³ to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

55. In response to the September 26, 2002, public notice that the project was ready for environmental analysis, Interior and Vermont ANR each filed five recommendations under section 10(j).⁴⁴ Interior's five recommendations are within the scope of section 10(j). One recommendation filed by Vermont ANR is outside the scope of section 10(j) and is discussed in the next section.

56. In the final EA, staff recommended Interior's and Vermont ANR's measure to develop a reservoir elevation and flow release monitoring plan.⁴⁵ This plan is required in the license by certification condition E.

⁴¹ The required HPMP is essentially the same as Green Mountain's proposed CRMP.

⁴² 16 U.S.C. § 803(j)(1) (2012).

⁴³ 16 U.S.C. §§ 661 *et seq.* (2012).

⁴⁴ Interior and Vermont ANR filed the recommendations on November 25, 2002.

⁴⁵ *See* final EA at 76.

57. In the final EA, staff recommended Interior's measure for Green Mountain to install turbine aeration equipment to enhance downstream dissolved oxygen levels.⁴⁶ A plan to install equipment for enhancing DO, including the proposed new aerated turbine runner, is required in the license by certification condition F.

58. In the final EA, staff recommended Interior's and Vermont ANR's measure to develop a dissolved oxygen effectiveness monitoring plan.⁴⁷ This plan is required in the license by certification condition G.

59. In the draft EA, Commission staff made an initial determination that Interior's and Vermont ANR's remaining two recommendations may be inconsistent with the comprehensive planning standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA. Those recommendations are: (1) to operate the Waterbury Project such that instantaneous outflow equals instantaneous inflow to the reservoir at all times (i.e., run-of-river); and (2) to maintain the reservoir at a stable elevation at all times. Run-of-river operation and maintaining a stable reservoir elevation are included in the certification, which is mandatory.⁴⁸ Therefore, these measures are required in the license by certification conditions B and C.

SECTION 10(a)(1) OF THE FPA

60. Section 10(a)(1) of the FPA⁴⁹ requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

61. Measures considered under the broad public interest standard of section 10(a)(1) of the FPA are discussed below.

A. Interior's Recommendation

⁴⁶ See final EA at 68.

⁴⁷ See final EA at 77.

⁴⁸ See *American Rivers v. FERC*, 129 F.3d 99 (2nd Cir. 1997).

⁴⁹ 16 U.S.C. § 803(a)(1) (2012).

62. Interior recommends that the licensee be required to notify Interior if an amendment or appeal of any fish and wildlife-related license conditions, or extensions of time are filed with the Commission.

63. For significant amendments related to fish and wildlife resources, the Commission's regulations require licensees to consult with Interior while preparing an amendment application.⁵⁰ For other amendments, appeals, and requests for extensions of time, Interior can receive notification of any filings and issuances through the Commission's eSubscription service.⁵¹ Therefore, there is no need to adopt Interior's recommendation.

B. Recreation Facility Improvements

64. In its application, Green Mountain proposed to make improvements to three non-project recreation sites: the Little River Boat Access site located downstream of the dam (moving a gate closer to the powerhouse to keep the access road to the site open in the summer, harden and stabilize access trails to the water, and add four to six parking spaces); the Blush Hill boat ramp located on the reservoir (improve the gravel boat ramp with concrete); and the unnamed boat ramp located on the reservoir near the dam (improve the gravel boat ramp with concrete and resurface the parking area).

65. In the final EA,⁵² staff recommended these measures and that Green Mountain: (1) install sanitation facilities at the unnamed boat ramp near the dam; (2) stabilize and harden the canoe ramp and parking area at the Moscow Canoe Access site that is owned and operated by Vermont Parks and located at the upper reaches of the impoundment; (3) describe procedures for annually establishing whitewater a boating release schedule; (4) provide warning signage of boating hazards in the 2.5 mile stretch of the Little River downstream of the project; (5) provide a flow notification system; and (6) consider the needs of individuals with disabilities.

⁵⁰ If a licensee files a request to amend its license or to amend any fish and wildlife-related license condition, the licensee may need to consult with Interior pursuant to sections 4.38(a)(6) and 4.201(c) of the Commission's regulations. 18 CF.R. §§ 4.38(a)(6) and 4.201(c) (2015).

⁵¹ The Commission's eSubscription service can be accessed at <http://www.ferc.gov/docs-filing/esubscription.asp>.

⁵² See final EA at 68.

66. Condition K of the certification requires Green Mountain to develop a recreation plan to improve recreation in consultation with Vermont DEC, Vermont DFW, and Vermont Parks. In its comments filed on March 6, 2015, Green Mountain states that due to Condition K, it is no longer proposing any specific recreation measures and instead will work to develop a recreation plan as required by the certification.

67. To ensure that the recreation plan required by the certification enhances recreation facilities in the project vicinity consistent with the staff-recommended measures, Article 404 requires that the recreation plan include the measures recommended by staff, as well as a website, for providing information about flows in the Little River downstream of the project. Because the improvements to the Little River Boat Access site, Blush Hill boat ramp, Moscow Canoe Access site, and the unnamed boat ramp near the dam are one-time improvements to facilities that are maintained by governmental entities,⁵³ these sites do not need to become project facilities and the project boundary does not need to be modified to include these areas.⁵⁴

C. Whitewater Boating

68. In its license application, Green Mountain proposed to enhance boating opportunities in the Little River by providing a flow notification phone system and releasing whitewater boating flows of 400 to 590 cfs on weekend days and weekday evenings from June 1 to September 15.⁵⁵

69. During preparation of its license application, Green Mountain conducted a whitewater boating evaluation⁵⁶ and determined that the optimum flow for canoeists is

⁵³ The Little River Boat Access site, the Moscow Canoe Access site, and the unnamed boat ramp are owned and operated by Vermont Parks, and the Blush Hill Boat Ramp is owned and operated by the town of Waterbury.

⁵⁴ See the Commission's Policy Statement on Hydropower Licensing Settlements (116 FERC ¶ 61,207 (2006)) at paragraph 33.

⁵⁵ Depending on lake levels, the licensee would make whitewater boating releases from 4 p.m. to 8 p.m. on weekdays and from 11 a.m. to 3 p.m. on weekends.

⁵⁶ Green Mountain conducted the whitewater boating study on October 20, 2000. A group of nine boaters representing nonprofit and commercial boating groups boated four flows (65, 300, 415, and 525 cfs) over three sections of the Little River, and rated each in terms of suitability for different boating skill levels, safety, and quality of the *(continued ...)*

525 cfs, while kayakers prefer flows from 415 cfs to 525 cfs. Both kayakers and canoeists felt that a flow of at least 300 cfs was needed to provide whitewater opportunities on the Little River. In the final EA,⁵⁷ Commission staff recommended adopting Green Mountain's proposed releases.

70. However, condition B of the water quality certification will eliminate Green Mountain's ability to provide scheduled whitewater releases from June 1 to September 15 by specifying flow releases of 300 cfs or inflow, whichever is greater, during stage I and requiring run-of-river operation during stages II and III. Without the ability to release scheduled whitewater flows, boatable flows will only occur when natural inflow to the impoundment is in the boatable flow range. Pre-project streamflow data from the Little River suggests that boatable flows released as generation and/or spillflow (i.e., flows greater than 300 cfs) will occur approximately 24 percent of the time or 88 days per year during run-of-river operation. Flows in the range of historic scheduled whitewater releases (i.e., 400 to 590 cfs) will occur approximately 4 percent of the time or 14 days per year.⁵⁸

71. In a letter filed on January 9, 2015, American Whitewater, New England Flow, and the Vermont Paddlers Club (whitewater groups), state that because Green Mountain's recreational flow release proposal is inconsistent with the requirements of the certification, Green Mountain should be required to: (1) establish a fund to be used for off-site mitigation measures to benefit whitewater boating within the Winooski watershed; (2) pay the United States Geological Survey for the maintenance of the existing stream gage downstream of Waterbury dam; and (3) construct and maintain public river access areas on the affected reaches of the Little and Winooski Rivers. The whitewater groups suggest that the offsite funding could be used to fund a whitewater park in Montpelier or on other efforts to enhance whitewater boating opportunities in the region. They suggest that the maintenance of the gage downstream of the dam would ensure accurate readings of river flows to allow boaters to determine flows in the Little River. Finally, they suggest that additional public access areas on the affected reaches of the Little and Winooski rivers is needed to improve access and increase recreational use of the rivers.

boating experience.

⁵⁷ See final EA at 70.

⁵⁸ Staff estimated the average annual number of days of boatable flows from the 1939 to 1952 flow duration curve on page B-7 of the application.

72. In a response to the whitewater groups filed on April 21, 2015, Vermont DEC states that under the Clean Water Act, it is mandated to issue a certification with conditions that assure project operation meets state water quality standards, and it is not required to strike a balance between social benefits and environmental impacts. Vermont DEC also states that the certification conditions support all designated uses including whitewater recreation when flows are naturally high, while supporting other designated uses required under state water quality standards.

73. Although the license does not require specific whitewater boating flow releases, Article 404 requires several non-operational measures that will benefit whitewater recreation in the project vicinity. Improvements to the Little River Boat Access area just downstream of the dam will improve access for whitewater boaters. Additionally, the required flow notification phone system and website will provide timely and accurate flow information for boaters. Finally, installation of new signage on the Little River will warn boaters of in-river hazards and improve boating safety.

ADMINISTRATIVE PROVISIONS

A. Annual Charges

74. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA.

B. Exhibit F and G Drawings

75. The Exhibit F drawings filed on June 10, 2015, are approved and made part of the license (ordering paragraph (C)). The Commission requires licensees to file sets of approved project drawings in electronic file format. Article 202 requires the filing of these drawings.

76. The Exhibit G drawing filed on June 22, 2015, is not stamped by a registered land surveyor; therefore, it is not approved and is not made part of the license. Article 203 requires the licensee to file a revised Exhibit G drawing that is stamped by a registered land surveyor.

C. Amortization Reserve

77. The Commission requires that for new major licenses, non-municipal licensees set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

D. Headwater Benefits

78. Some projects directly benefit from headwater improvements that were constructed by other licensees, the United States, or permittees. Article 205 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

E. Use and Occupancy of Project Lands and Waters

79. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 406 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape plantings or other non-project uses. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

F. As-Built Exhibits

80. Where new construction or modifications to the project are involved, the Commission requires licensees to file revised exhibits of project features as-built. Article 206 provides for the filing of these exhibits.

G. Start of Construction

81. Article 301 requires the licensee to commence construction of the project works within two years from the issuance date of the license and complete construction of the project within five years from the issuance date of the license, or the dates set by the water quality certification, whichever occurs first.

H. Review of Final Plans and Specifications

82. Article 302 requires the licensee to provide the Commission's Division of Dam Safety and Inspection New York Regional Office (D2SI-NYRO) with final contract drawings and specifications— together with a quality control and inspection program, a temporary construction emergency action plan, and an erosion and sediment control plan consistent with the Commission's engineering guidelines.

83. Article 303 requires the licensee to provide the Commission's Division of Dam Safety and Inspection New York Regional Office (D2SI-NYRO) with cofferdam construction drawings if cofferdams will be used for the construction activities authorized or required by this license.

84. Article 304 requires the licensee to provide the Commission's D2SI-NYRO with proposed project modifications resulting from environmental requirements.

STATE AND FEDERAL COMPREHENSIVE PLANS

85. Section 10(a)(2)(A) of the FPA,⁵⁹ requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.⁶⁰ Under section 10(a)(2)(A), federal and state agencies filed 39 comprehensive plans that address various resources in Vermont. Of these, the staff identified and reviewed 11 comprehensive plans that are relevant to this project.⁶¹ No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

86. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,⁶² Commission staff evaluated Green Mountain's record as a licensee for these areas: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. This order adopts staff's findings in each of the areas.

A. Conservation Efforts

87. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. All power generated by the Waterbury Project is transmitted to the regional grid for sales to industrial, municipalities, and residential end users.

88. Green Mountain's filing under section 16.10 of the Commission's regulations and other publicly available information indicates that Green Mountain supports a variety of energy conservation measures including posting energy savings tips on its website and

⁵⁹ 16 U.S.C. § 803(a)(2)(A) (2012).

⁶⁰ Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2015).

⁶¹ The list of applicable plans can be found in section IX of the final EA and has not changed since issuance of the final EA.

⁶² 16 U.S.C. §§ 803(a)(2)(C) and 808(a) (2012).

offering a home renovation program to help people save money and reduce fossil fuel use. Green Mountain is making a reasonable effort in encouraging energy conservation.

B. Compliance History and Ability to Comply with the New License

89. Based on a review of Green Mountain's compliance with the terms and conditions of the existing license, Green Mountain's overall record of making timely filings and complying with its license is satisfactory. Therefore, Green Mountain can satisfy the conditions of a new license.

C. Safe Management, Operation, and Maintenance of the Project

90. Green Mountain's record of management, operation, and maintenance of the Waterbury Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports demonstrate that the project works are safe, and that there is no reason to believe that Green Mountain cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

91. Staff has reviewed Green Mountain's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that Green Mountain regularly inspects the project turbine-generator unit to ensure it continues to perform in an optimal manner, schedules maintenance to minimize effects on energy production, and since the project has been in operation, has undertaken several initiatives to ensure the project is able to operate reliably into the future. Therefore, Green Mountain is capable of operating the project to provide efficient and reliable electric service to the region.

E. Need for Power

92. To assess the need for power, staff looked at Green Mountain's present and anticipated future use of project power, together with the need for power in the operating region in which the project is located. The Waterbury Project has generated an average of 17,562 MWh annually; however, as licensed herein, the average annual generation will be reduced to 14,767 MWh. Electricity generated from the Waterbury Project will help supply the power needs in northern Vermont.

93. Further, the project is located in the New England sub-region of the Northeast Power Coordinating Council, Inc. region of the North American Electric Reliability Corporation (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a 10-year period. NERC's most recent report on annual supply

and demand projections indicates that there has been no substantial change in the forecast since last year. For the period 2014-2023, summer peak demand in the region is expected to increase at an average rate of 0.84 percent per year. Therefore, the project's power will help meet the regional need for power.

F. Transmission Services

94. The project includes a 50-foot-long transmission line that connects the generator in the project powerhouse to the adjacent substation that is interconnected with the regional grid. Green Mountain is proposing no changes that would affect its own or other transmission services in the region. The project and its transmission line are important elements in providing power and voltage control to the regional grid.

G. Cost Effectiveness of Plans

95. Green Mountain plans to make a number of operational and project facility modifications to enhance environmental resources affected by the project. Based on Green Mountain's record as an existing licensee, these plans are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

96. Green Mountain provided extensive opportunity for public involvement in the development of its application for a new license for the Waterbury Project. During the previous license period Green Mountain operated the project in a manner that supported recreation activities, including boating and fishing in the Little River downstream of the project. Green Mountain also uses the project to help meet local power needs.

PROJECT ECONOMICS

97. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,⁶³ the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of

⁶³ 72 FERC ¶ 61,027 (1995).

reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

98. In applying this analysis to the Waterbury Project, staff considered three options: no-action alternative, Green Mountain's proposal, and the project as licensed herein. Under the no-action alternative, the project would continue to operate as it does now. The project has an installed capacity of 5.52 MW, and generates an average of 17,562 MWh of electricity annually. The average annual project cost is about \$333,345, or \$18.98/MWh. When an estimate of average generation is multiplied by the alternative power cost of \$44.12/MWh,⁶⁴ the total value of the project's power is \$774,835 in 2015 dollars. To determine whether the proposed project is currently economically beneficial, the project's cost is subtracted from the value of the project's power. Therefore, the project costs \$441,490, or \$25.14/MWh, less to produce power than the likely alternative cost of power.⁶⁵

99. As proposed by Green Mountain, the levelized annual cost of operating the Waterbury Project is \$711,304, or \$48.17/MWh. The proposed project would generate an average of 14,767 MWh of energy annually. The estimate of average generation is multiplied by the alternative power cost of \$44.12/MWh, a total value of the project's power is \$651,520, in 2015 dollars. Therefore, in the first year of operation, the project would cost \$59,784, or \$4.05/MWh, more than the likely alternative cost of power.

100. As licensed herein with mandatory conditions and staff measures, the levelized annual cost of operating the Waterbury Project is \$711,735, or \$48.20/MWh. The proposed project would generate an average of 14,767 MWh of energy annually. The estimate of average generation is multiplied by the alternative power cost of \$44.12/MWh, a total value of the project's power is \$651,520, in 2015 dollars. Therefore, in the first year of operation, the project would cost \$60,215, or \$4.08/MWh, more than the likely alternative cost of power.

101. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the

⁶⁴ The alternative power cost of \$44.12 per MWh is based on the New England Independent Operating System real time cost for Vermont.

⁶⁵ The economic data in this order differs from the final EA because it includes updated estimates of annual generation and costs to construct new project facilities.

stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load; and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil-fuel based generating stations and put them back on line.

102. Although staff's analysis shows that the project as licensed herein would cost more to operate than the estimated cost of alternative power, it is the applicant who must decide whether to accept this license and any financial risk that entails.

103. Although staff does not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is relatively insensitive to inflation compared to fossil fueled generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many public interest factors the Commission considers in determining whether or not, and under what conditions, to issue a license.

COMPREHENSIVE DEVELOPMENT

104. Sections 4(e) and 10(a)(1) of the FPA⁶⁶ require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

105. The final EA for the project contains background information, analysis of effects, and support for related license articles. Based on the record of this proceeding, including the final EA and the comments thereon, licensing the Waterbury Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of this license.

106. Based on an independent review and evaluation of the Waterbury Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the final EA, the proposed Waterbury Project, with the

⁶⁶ 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

staff-recommended measures, is best adapted to a comprehensive plan for improving or developing the Little River.

107. This alternative was selected because: (1) issuance of a new license will serve to maintain a beneficial, and dependable source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, and historic properties; and (3) the 5.52 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

LICENSE TERM

108. Section 15(e) of the FPA⁶⁷ provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.⁶⁸ This license authorizes no new capacity, a moderate amount of new construction including a new turbine runner and bypass penstock, and a moderate amount of new environmental mitigation measures including run-of-river operation and increased downstream minimum flows. Consequently, a 40-year license term for the Waterbury Project is appropriate.

The Director Orders:

(A) This license is issued to Green Mountain Power Corporation (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to operate and maintain the Waterbury Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

⁶⁷ 16 U.S.C. § 808(e) (2012).

⁶⁸ See *Consumers Power Co.*, 68 FERC ¶ 61,077 at 61,383-84 (1994).

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(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in these lands, described in the project description and the project boundary discussion of this order.

(2) Project works consisting of: (a) an existing concrete intake structure and broom gate; (b) an existing 825-foot-long, 10.5-foot-high, 14-foot-wide horseshoe-shaped reinforced concrete tunnel; (c) two existing 205-foot-long, 4.5-foot-diameter penstocks; (d) an existing 25-foot-long, 6.7-foot-diameter penstock with a new 6.5-foot-diameter butterfly valve; (e) an existing 58-foot-long, 35-foot-wide powerhouse containing a 5.52-megawatt turbine-generator unit with a new turbine runner with a maximum and minimum hydraulic capacity of 49 cubic feet per second (cfs) and 391 cfs; (f) an existing 12-foot-long, 2.0-foot-diameter penstock drain pipe and valve; (g) a new 60-foot-long, 4.0-foot-diameter bypass penstock with a 4.0-foot-diameter butterfly valve connected to a 2.0-foot-diameter Howell-Bunger valve; (h) an existing 50-foot-long, 33 kilovolt transmission line from the powerhouse to the substation; and (i) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F shown below:

Exhibit A: The following sections of Exhibit A filed on June 5, 2015:

Pages A-1 through A-6 entitled "Project Description."

Exhibit F: The following Exhibit F drawing numbers 1001 and 1006 filed on June 10, 2015:

<u>Exhibit F Drawing</u>	<u>FERC P-2090-</u>	<u>Description</u>
F-1	1001	Existing Conditions – Plan View
F-2	1002	Existing Conditions – Profile View
F-3	1003	Existing Conditions – Profile View Inside
F-4	1004	Bypass Alt 1 – Plan View
F-5	1005	Bypass Alt 1 – Profile View
F-6	1006	Bypass Aft 1 – Profile View Inside

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the

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project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A and F described above are approved and made part of the license.

(D) This license is subject to the conditions submitted by the Vermont Department of Environmental Conservation under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1) (2012), as those conditions are set forth in Appendix A to this order.

(E) This license is also subject to the articles set forth in Form L-10, (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Interests of Interstate or Foreign Commerce" (*see* 54 F.P.C. 1792 *et seq.*), as reproduced at the end of this order, and the following additional articles:

Article 201. Administrative Annual Charges. The licensee must pay the United States annual charges, effective the first day of the month in which this license is issued, and as determined in accordance with provisions of the Commission's regulations in effect from time to time, to reimburse the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 5.52 megawatts.

Article 202. Exhibit F Drawings. Within 45 days of the date of issuance of this license, the licensee must file the approved exhibit drawings in electronic file format on compact disks (CD).

Digital images of the approved exhibit drawings must be prepared in electronic format. Prior to preparing each digital image, the FERC Project-Drawing Number (i.e., P-2090-1001 through P-2090-1006) must be shown in the margin below the title block of the approved drawing. The licensee must file two sets of exhibit drawings in electronic format on CD with the Secretary of the Commission, ATTN: OEP/DHAC.

Exhibit F drawings must be identified as Critical Energy Infrastructure Information (CEII) under 18 C.F.R. § 388.113(c). Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and a file extension in the following format [P-2090-1001, F-1, Description, MM-DD-YYYY.TIF]. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY – black & white raster file

FILE TYPE – Tagged Image File Format (TIFF), CCITT Group 4 (also known as T.6 coding scheme)

RESOLUTION – 300 dots per inch (dpi) desired (200 dpi minimum)

DRAWING SIZE FORMAT – 22” X 34” (minimum), 24” X 36” (maximum)

FILE SIZE – less than 1 megabyte desired

Article 203. Exhibit G Drawings. Within 90 days of the issuance date of the license, the licensee must file, for Commission approval, a revised Exhibit G drawing that has been stamped by a registered land surveyor. The Exhibit G drawing must comply with sections 4.39 and 4.41 of the Commission’s regulations.

Article 204. Amortization Reserve. Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project must be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee must set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee must deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee must set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee must maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves must be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensee’s long-term debt and proprietary capital accounts as listed in the Commission’s Uniform System of Accounts. The cost rate for such ratios must be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity must 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 205. Headwater Benefits. If the licensee’s project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the prior license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee must reimburse the owner of the headwater improvement for

those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 206. *As-built Exhibits.* Within 90 days of completion of construction of the facilities authorized by this license, including the new aerated turbine runner, 6.5-foot diameter butterfly valve, and automated bypass penstock with a 4.0-foot-diameter butterfly valve and a 2.0-foot-diameter Howell-Bunger valve, the licensee must file for Commission approval, revised Exhibits A, F, and G, as applicable, to describe and show those project facilities as built.

Article 301. *Start of Construction.* The licensee must commence construction of the project works within two years from the issuance date of the license and must complete construction of the project within 5 years from the issuance date of the license, or the dates set by the water quality certification, whichever occurs first.

Article 302. *Contract Plans and Specifications.* At least 60 days prior to start of construction, the licensee must submit one copy of its final contract plans and specifications and supporting design report to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer, and two copies to the Commission. The submittal must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the D2SI – New York Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Article 303. *Cofferdam and Deep Excavation Construction Drawings.* Should construction require cofferdams or deep excavations, the licensee must: (1) have a Professional Engineer who is independent from the construction contractor, review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction; and (2) ensure that construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of any cofferdams or deep excavations, the licensee must submit one copy to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer and two copies to the Commission of the approved cofferdam and deep excavation construction drawings and specifications, and the letters of approval.

Article 304. *Project Modification Resulting From Environmental Requirements.* If environmental requirements under this license require modification that may affect the project works or operations, the licensee must be consult with the Commission's Division

Dam Safety and Inspections – New York Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Article 401. Commission Approval, Notification, and Filing of Amendments.

(a) Requirement to File Plans for Commission Approval.

Various conditions of this license found in the Vermont Department of Environmental Conservation's (Vermont DEC) water quality certification (certification) conditions (Appendix A) require the licensee to prepare plans in consultation with other entities and for approval by the Vermont DEC, and implement specific measures without prior Commission approval. The following table indicates the deadline for filing the plans with the Commission for approval. The plans are listed below.

Vermont DEC Certification Condition No.	Plan Name	Date Due
C	Construction Plan	Within 6 months of license issuance
E	Reservoir and Flow Management Plan	Within 6 months of license issuance
F	Tailrace Dissolved Oxygen Plan	Within 6 months of license issuance
G	Dissolved Oxygen Effectiveness Monitoring Plan	Within 6 months of license issuance

The licensee must file each plan with the Commission for approval. Each filing must include documentation that the licensee developed the plan in consultation with and has received approval from the Vermont DEC. The Commission reserves the right to make changes to any plan filed. The licensee must not implement the plan prior to Commission approval. Upon Commission approval, the plan becomes a requirement of the license, and the licensee must implement the plan or changes in project operations or facilities, including any changes required by the Commission.

(b) Requirement to File Reports.

Certain conditions of the Vermont DEC's certification conditions require the licensee to file reports with other entities. These reports document compliance with requirements of this license and may have a bearing on future actions. Each such report must also be filed to the Commission. These reports are listed in the following table:

Vermont DEC Certification Condition No.	Description	Date Due
E and F	Reservoir and Flow Monitoring Report ⁶⁹	By March 1 following each year of monitoring
G	Dissolved Oxygen Effectiveness Monitoring Report	By January 1 following each year of monitoring

The licensee must file with the Commission documentation of any consultation with Vermont DEC regarding the report, and copies of any comments and recommendations made by the agency. The Commission reserves the right to require changes to project operations or facilities based on the information contained in the reports and any other available information.

(c) Requirement to File Amendment Applications.

Some of the conditions in Appendix A contemplate the Vermont DEC requiring unspecified, long-term changes to project operation or facilities based on new information or results of monitoring or studies required by the certification, but do not appear to require Commission approval for such changes (e.g., modification of project operation to address water quality). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

Article 402. Project Operation. The licensee must operate the project, insofar as the interests of flood control are concerned, as set forth at 33 C.F.R. § 208.11 (2015), consistent with the United States Army Corps of Engineers (Corps) September 2005 Revised Waterbury Dam and Reservoir Regulation Manual. The licensee must comply with any future regulations prescribed by the Corps in the interests of flood control.

Article 403. Reservation of Authority to Prescribe Fishways. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be

⁶⁹ The report must include the results of any routine dissolved oxygen monitoring contemplated by condition F.

prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 404. Recreation Plan. Within 6 months of license issuance, the licensee must file a Recreation Plan as required by condition K of the Vermont Department of Conservation's (Vermont DEC) water quality certification attached in Appendix A. At a minimum, the plan must include:

- (a) a provision for a phone system and website that provides information on flows in the Little River downstream of the project;
- (b) signage proposed (including posting locations) for warning boaters of instream hazards and take-out areas in the Little River downstream of the project;
- (c) descriptions and conceptual drawings showing plans for one-time improvements to:
 - (1) develop a parking area for approximately four to six vehicles, stabilize and harden existing trails, and remove the existing gate at the Little River Boat Access site located on the west shoreline immediately downstream of the project,
 - (2) replace the existing gravel boat ramp with a concrete ramp at the Blush Hill Boat Ramp that is owned and operated by the town of Waterbury and located on the reservoir east of Waterbury dam,
 - (3) harden and stabilize the existing canoe ramp and adjacent parking lot at the Moscow Canoe Access that is owned and operated by Vermont Forests, Parks, and Recreation (Vermont Parks) and located at the upper reaches of the reservoir, and
 - (4) resurface the parking area, install sanitation facilities, and replace the existing gravel boat ramp with a concrete ramp at the boat ramp that is owned and operated by Vermont Parks and located the west shoreline of the reservoir,
- (d) a description of how the needs of individuals with disabilities have been considered during development of the plan, and
- (e) an implementation schedule.

The licensee must prepare the plan after consultation with the United States Fish and Wildlife Service, Vermont DEC, Vermont Parks, and the town of Waterbury. The

licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan according to the approved schedule, including any changes required by the Commission.

Article 405. Programmatic Agreement and Historic Properties Management Plan. The licensee must implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the State of Vermont, State Historic Preservation Officer (Vermont SHPO), for Managing Historic Properties that May be Affected by a License Issuing to Green Mountain Power Corporation for the Continued Operation of the Waterbury Hydropower Project in Washington County, Vermont (FERC No. 2090)," executed on October 19, 2004. Pursuant to the requirements of this Programmatic Agreement, the licensee must file, for Commission approval, an HPMP within one year of issuance of this order. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee must obtain approvals from the Commission and the Vermont SHPO, before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effects.

Article 406. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under

the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee must require multiple use and occupancy of facilities for access to project lands or waters. The licensee must also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee must file three copies of a report briefly describing for each conveyance made under this

paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article must not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee must serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

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(G) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 8257 (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2015). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing must constitute acceptance of this order.

Ann F. Miles
Director
Office of Energy Projects

FEDERAL ENERGY REGULATORY COMMISSION**TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING THE INTERESTS OF
INTERSTATE OR FOREIGN COMMERCE**

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 area and project works shall be 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.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not

conducted upon lands of the United States, 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 such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration 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 submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. 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 or 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 stage 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 location 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 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 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 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 Commission may prescribe for the 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 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 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. 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. 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 22. 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 23. 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.

APPENDIX A

Vermont Department of Environmental Conservation
Water Quality Certification Conditions
Issued December 11, 2014

A. Compliance with Conditions. The applicant shall operate and maintain this project consistent with the findings and conditions of this certification, where those findings and conditions relate to protection of water quality and support of designated and existing uses under Vermont Water Quality Standards and other appropriate requirements of state law.

B. Reservoir and Outflow Management. The applicant shall operate the station in a true run-of-river mode using the turbine and/or bypass flow pipe to match instantaneous inflow up to the hydraulic capacity of the system (Stage III). When inflows exceed the system capacity, the system shall continue to release water at its maximum capacity until inflows recede and the reservoir begins to approach the normal operating level (NOL) at which point the system will be ramped down to match inflow while avoiding a sudden drop in releases. The system shall be operated for smooth transitions in outflows, such as when the turbine is brought on line.

The NOL shall be elevation 588.5 feet, elevation 589.5 feet, or an elevation in between, as selected by the applicant. The applicant shall indicate what its selected NOL is in the flow management plan (Condition E below). [In a letter filed on March 6, 2015, Green Mountain indicated that its normal operating level will be 589.5 feet msl.]

Interim operations: There are two stages of operation before the taintor gates are replaced and the Project can be converted to Stage III (year round run-of-river operation): Stage I (existing conditions) and Stage II (automated valve installed on 24-inch bypass pipe and new turbine installed).

During **Stage I**, the applicant shall increase conservation flows at the project if the Department determines it is feasible based on a construction and engineering assessment of the applicant's existing infrastructure at the Project. The applicant shall also maintain reservoir levels within 1.0 foot of the NOL from the date the seasonal reservoir refill is completed through January 1, or the commencement of the seasonal drawdown, if later. When reservoir inflows are lower than the hydraulic range of the turbine, the maximum generation release shall be 300 cfs.

During **Stage I**, the reservoir shall be drawn seasonally beginning no earlier than January 1 to an elevation no lower than 550 feet. Spring refill shall commence no later than

March 15 with reservoir levels rising or stable at all times until the NOL is reached by no later than May 15. During the seasonal drawdown, the maximum instantaneous outflow shall be 300 cfs, or inflow if greater.

During **Stage I**, except when the reservoir is undergoing the seasonal drawdown and refill, operation shall either match inflow if inflow is within the hydraulic range of the turbine or be at full turbine capacity if inflow exceeds turbine capacity. This constitutes the Stage I run-of-river component of operations.

During **Stage II**, the applicant shall modify run-of-river component of operations consistent with the new hydraulic capabilities provided by the automated valve and the new turbine with the reservoir level maintained at NOL except during high inflows and the Stage I two-foot cycling no longer applying.⁷⁰ When the applicant is drawing down the reservoir during the winter period, 60 cfs conservation flow shall be a fixed minimum flow (i.e. "or inflow if less" will not apply) until the maximum drawdown level is reached at which time outflows shall match inflows. The applicant shall maintain a conservation flow of 60 cfs or inflows if less from March 16 through March 31, and 108 cfs or inflows if less from April 1 through May 15.

Outside of the seasonal drawdown/refill period, the applicant shall use the valve up to its full capacity when inflows exceed the turbine capacity, except after June 15 use of the valve may be suspended if the reservoir level is below elevation 592.0 feet and inflow is less than the maximum capacity of the turbine.

With respect to the seasonal drawdown/refill during Stage II, the timing and maximum drawdown shall be the same as prescribed for Stage I, however, the maximum instantaneous outflow during the seasonal drawdown in Stage II shall be 200 cfs, or inflow if greater.

The applicant shall use ramping procedures when necessary to address flow transitions during conditions when the station is not being operated in a manner that matches inflow during **both stages**. This would include, for example: 1) the transition back to a true run-

⁷⁰ During Stage II (new turbine and automated bypass penstock with valves), run of river will be possible up to a lower maximum flow as the new unit is expected to have a lower hydraulic capacity compared to the existing unit. The applicant will have to address hydraulic capacities in its flow management plan (Condition D) for reservoir levels lower than the current normal summer pool.

of-river mode after the reservoir rises above the NOL following a high-inflow event; 2) changing from run-of-river operation to an outflow higher than inflow for the purposes of the seasonal drawdown; 3) stabilizing the pool at the low winter drawdown level at the conclusion of the winter drawdown; and 4) the limited cycling during Stage I. The ramping procedures shall provide for incremental changes in flow that do not exceed 60 cfs per 30-minute period for ramping up and 30 cfs per 30-minute period for ramping down during Stage II. In cases of operator error or unanticipated problems, a greater ramping rate may be used if necessary to avoid drawdowns below the NOL during Stage II and III.

C. The applicant shall begin Stage I operations within 30 days upon receiving license renewal from the Federal Energy Regulatory Commission. The applicant shall begin consultation and file a construction plan with the Department within 30 days of issuance of the license. If the license is issued before July 1, 2015, the applicant shall complete the construction of the pipes, valves, and runner replacement no later than December 31, 2016. If the applicant receives the license after July 1, 2015, the applicant shall complete the construction of the pipes, valves, and runner replacement no later than December 31, 2017.

The applicant shall begin Stage II operations immediately upon completion of the infrastructure improvements and rewatering the power conduit, but in any case no later than January 1, 2017 if the license issued by July 1, 2015 or January 1, 2018 if the license is issued after July 1, 2015.

The applicant shall begin Stage III operations within 30 days after the spillway is replaced, including gate repairs, and the Department determines, after consultation with the federal government, that the Stage III operational phase may be safely implemented.

D. Bypass Flow Pipe. The applicant shall automate the valved 48-inch-diameter bypass pipe to enable the turbine/bypass flow pipe system to match normal inflows. The pipe and valve shall be design to pass a flow of 125 cfs. If the Department determines it is feasible based on a construction and engineering assessment with the applicant during consultation the bypass flow pipe shall be designed up to a capacity 250 cfs.

E. Reservoir and Flow Management and Monitoring Plan. The applicant shall develop a reservoir and flow management plan detailing how the project will be operated to comply with the flow and water level limitations described above.

The plan shall include a detailed description of ramping procedures. The Department considers operator error or unanticipated problems that necessitate ramping rates that

exceed 60 cfs per 30-minute period as deviations from the prescribed operating conditions reportable to the Department as described below.

The plan shall be developed in consultation with the Department and the U.S. Fish and Wildlife Service, and the plan shall be submitted to the Department for review within 60 days of the issuance of a federal license. The plan shall be subject to Department approval. The Department reserves the right of review and approval of any material changes made to the plan at any time and the right to request revisions to the plan if necessary to assure compliance. Compliance records shall be kept permanently and provided to the Department on request in a format specified by the Department.

The plan shall include provisions for monitoring and reporting to the Department compliance with the flow and water level requirements set forth in this certification. At a minimum, the reports shall include hourly turbine flows, hourly bypass pipe flows, hourly 48-inch-diameter bypass pipe flows (if used), hourly reservoir elevations, and taintor gate status.

The plan shall include procedures for reporting to the Department deviations from prescribed operating conditions and continuation of funding for the operation of the USGS gages associated with the Project (USGS gages nos. 04288500 and 04289000). In reporting deviations, the applicant shall include an explanation of the cause; propose steps to be taken to prevent a recurrence; and revise the flow management plan if requested to do so by the Department.

If necessary in order to assure stable reservoir levels and consistent downstream flows, the applicant shall install an upstream gage on the Little River to enable accurate estimation of instantaneous inflows.

F. Tailrace Dissolved Oxygen. The applicant shall develop a plan for measures to meet dissolved oxygen standards in the river directly downstream of the power station. The plan shall include a proposal for equipment and/or structural or mechanical modifications to address the dissolved oxygen deficiency, a schedule for implementation, and any dissolved oxygen monitoring protocols necessary to determine when turbine venting or other measures will be initiated. The plan shall be developed in consultation with the Department, and the applicant shall submit the plan to the Department for review within 90 days of the issuance of a federal license. The plan shall be subject to Department approval. If violations of dissolved oxygen standards persist after implementation of the plan, the applicant shall revise the plan to include additional or alternate measures to meet dissolved oxygen standards. Any revised plan shall be subject to approval by the Department prior to implementation. The Department's preference is for a passive

reaeration system. Routine dissolved oxygen monitoring data shall be included with the reservoir and flow management monitoring records.

G. Dissolved Oxygen Effectiveness Monitoring. The applicant shall develop a plan for monitoring dissolved oxygen and temperature in the penstock and the river directly downstream of the power station during periods of reservoir stratification and verifying the effectiveness of the dissolved oxygen enhancement measures. The plan shall be developed in consultation with the Department, and the plan shall be submitted to the Department for review within 90 days of the issuance of a federal license. The plan shall be subject to Department approval. Following approval of the monitoring plan, the applicant shall measure dissolved oxygen and temperature and file records of these results annually with the Department by the end of the same calendar year. The filing shall include graphs comparing the penstock dissolved oxygen concentration and percent saturation to the downstream dissolved oxygen concentration and percent saturation, showing whether flows are being routed through the turbine or the bypass pipe, and, if through the turbine, showing whether the reaeration mechanism is being used at the time. Following the initial five year monitoring period, the Department will review the data and may suspend this requirement, all or in part.

H. Fish Passage. Upon a request of the Department of Fish and Wildlife, the Department may require the applicant to provide upstream or downstream fish passage facilities or participate in a trap-and-transport facility that moves migratory fish upstream of Waterbury Dam.

I. Turbine Rating Curves. The applicant shall provide the Department with a copy of the turbine rating curve, accurately depicting the flow/production relationship, for the record within one year of the issuance of a federal license.

J. Maintenance and Repair Work. Any proposals for project maintenance or repair work shall be filed with the Department for prior review and approval, if said work may have a material adverse effect on water quality or cause less-than-full support of an existing use or a beneficial value or use of State waters.

K. Recreation Plan. Recreational facility improvements shall be constructed consistent with a Department-approved recreation plan. The plan shall include an implementation schedule and, where appropriate, details on erosion prevention and sediment control. The plan shall be developed in consultation with the departments of Environmental Conservation, Fish and Wildlife, and Forests, Parks, and Recreation and filed with the Department within six months of license issuance for approval.

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L. Compliance Inspection by Department. The applicant shall allow the Department to inspect the project area at any time to monitor compliance with certification conditions.

M. Posting of Certification. A copy of this certification shall be prominently posted within the project powerhouse.

N. Approval of Project Changes. Any change to the project that would have a significant or material effect on the findings, conclusions or conditions of this certification, including project operation, must be submitted to the Department for prior review and written approval where appropriate and authorized by law and only as related to the change proposed.

O. Reopening of License. The Department may request, at any time, that FERC reopen the license to consider modifications to the license as necessary to assure compliance with Vermont Water Quality Standards.

P. Continuing Jurisdiction. By condition of this certification, the Department retains continuing jurisdiction over the Project and may reopen this certification to assure compliance with the Standards and to respond to any changes in classification or management objectives for waters affected by the Project.

Document Content(s)

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