83 FERC ¶ 61,037
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: James J. Hoecker, Chairman;
Vicky A. Bailey, William L. Massey,
Linda Breathitt, and Curt Hébert, Jr.

Bangor Hydro-Electric Company ) Project No. 2534-005

ORDER ISSUING NEW LICENSE

(Issued April 20, 1998)

On December 19, 1988, Bangor Hydro-Electric Company (Bangor Hydro) filed an application pursuant to Sections 4 and 15 of the Federal Power Act (FPA) for a new license for the Milford Project, located on the Penobscot and Stillwater Rivers in Penobscot County, Maine. 1/ The original license expired on December 31, 1990, and since then Bangor Hydro has operated the project under an annual license. The Penobscot and Stillwater Rivers are navigable waters of the United States. 1/ For the reasons stated below, we will issue a new license for the Milford Project.

BACKGROUND

Notice of the application was published on May 16, 1989. Timely motions to intervene were filed by the Maine Council of the Atlantic Salmon Federation, American Rivers, and the Atlantic Salmon Federation (collectively, Conservation Intervenors). Late-filed motions to intervene, which were subsequently granted, were filed by the Penobscot Indian Nation (Penobscot Nation), the U.S. Department of the Interior (Interior), and the Maine State Planning Office.

The Commission's staff issued a draft Environmental Impact Statement (draft EIS) for the three Lower Penobscot River Basin projects in November 1994. Numerous comments on the Draft EIS were filed, and all of these comments were considered in preparing the Final Environmental Impact Statement (EIS). We have fully considered the motions and comments received in determining whether, and under what conditions, to issue this license.

Concurrently with this order, we are issuing an Order on Applications for New and Original Licenses, which discusses issues common to three projects on the

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1/ 16 U.S.C. §§ 797, 808.

2/ See 33 FPC 278 (1965) and 1 FERC ¶ 61,104 (1977).

Penobscot and Stillwater Rivers. The discussion in that order is incorporated by reference herein.

PROJECT DESCRIPTION

The Milford Project consists of the 1,159-foot-long, 20-foot-high, concrete gravity Milford dam, topped with 4.5-foot-high flashboards, the 450-foot-long Gilman Falls dam, a 226-foot-long, 85-foot-wide, 78-foot high powerhouse containing four 1,600 kilowatt (kW) turbine/generator units with an installed capacity of 6.4 megawatts (MW), and a 235 acre reservoir with a gross storage of 2,250 acre-feet. Bangor Hydro proposed to install an additional 1,600 kW turbine/generator unit in an empty turbine pit in the powerhouse. This additional unit will increase the installed capacity of the project to 8.0 MW.

WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act, 1/ the Commission may not issue a license for a hydroelectric project unless the certifying agency has either 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 Clean Water Act provides that the state certification shall become a condition on any federal license or permit that is issued. 1/ On October 23, 1992, the Maine Department of Environmental Protection granted water quality certification for the project, subject to certain conditions. The water quality certification contains 11 conditions, which are attached in full as Appendix A to this order.

APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10(a)(2)(C) and 15(a) of the FPA, we have evaluated Bangor Hydro's record as a Licensee with respect to the following: (1) consumption improvement program; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need for power; (6) transmission services; (7) cost effectiveness of plans; and (8) actions affecting the public.

1. Consumption Improvement Program

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3/ 33 U.S.C. § 1341(a)(1).

4/ 33 U.S.C. § 1341(d).

Section 10(a)(2)(C) of the FPA, 16 U.S.C. § 803(a)(2)(C), requires the Commission, in acting on a license application, to consider the extent of electricity consumption efficiency improvement programs in the case of license applicants primarily engaged in the generation or sale of electric power. Bangor Hydro submitted a comprehensive and detailed report, entitled "1988 Annual Narrative - Energy Management Services," that covers programs designed to improve the consumption efficiency and reduce peak demands of metered customers.

We reviewed that report and conclude that Bangor Hydro has made a satisfactory effort in good faith to establish and maintain programs for improving efficiency and managing load that comply with Section 10 (a)(2)(c) of the FPA and support the objectives of the Electric Consumers Protection Act of 1986.

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

We reviewed Bangor Hydro's license application and its record of compliance with the existing license in an effort to judge its ability to comply with the articles, terms, and conditions of any license issued, and with other applicable provisions of this part of the FPA.

Based on our review of Bangor Hydro's compliance record, we find that Bangor Hydro has complied in good faith with all articles, terms, and conditions of its current license. As a result of our review of its compliance record and the license application, we believe Bangor Hydro that can satisfy the conditions of a new license.

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

Bangor Hydro ensures safe management, operation, and maintenance by holding periodic meetings for maintenance and management personnel to review and update safety procedures and maintain a comprehensive safety policy. This includes displaying warning signs and buoys and installing and maintaining safety equipment.

Although Milford is exempt from FERC's five-year inspections, Bangor Hydro retains an independent consultant to inspect the project facilities every five years. In addition, the facility is inspected annually, and remedial/monitoring programs are developed as necessary.

As a result of our review of Bangor Hydro's plans, we conclude that it will be able to manage, operate, and maintain the Milford Project in a safe manner.

4. Ability to Provide Efficient and Reliable Electric Service

We reviewed Bangor Hydro's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service.

The existing facilities have a hydraulic capacity of 5,630 cfs with an exceedance of 65 percent. Bangor Hydro conducted a study to determine if additional capacity is feasible to use more of the available flow. This study determined that installing an additional unit in two of the existing abandoned bays is feasible; therefore, Bangor Hydro proposes to add a fifth unit to increase capacity from 6.4 MW to 8.0 MW.

Based on our review of the information, we conclude that Bangor Hydro has been operating the project efficiently within the constraints of the existing license and that it will continue to provide efficient and reliable electric services in the future.

## 5. Need for Power

Bangor Hydro is an investor-owned electric utility serving more than 110,000 customers in the central and southern counties of Maine. As licensed herein, the Milford Project will generate an average of 59.3 gigawatt-hours (GWh) of energy annually for Bangor Hydro.

To assess the need for power, we reviewed not only Bangor Hydro's use and need for the project power, but also the needs in the operating region in which the project is located. The Milford Project is located in the New England Power Pool (NEPOOL) area of the Northeast Power Coordinating Council region of the North American Electric Reliability Council (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a ten-year period. NERC's most recent report 1/ on annual supply and demand projections indicates that, for the period 1995-2004, loads in the NEPOOL rear will grow faster than planned capacity additions. The project displaces nonrenewable fossil-fired generation and contributes to diversification of the generation mix in the NEPOOL area. We conclude that the project's power, its low cost, its displacement of nonrenewable fossil-fired generation, and its contribution to a diversified generation mix will help meet a need for power in the NEPOOL area.

## 6. Transmission Service

The increased generation of power will have no effect on the existing transmission system. The existing transmission system, which is part of the NEPOOL

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5/ NERC's Electricity Supply and Demand Database, Data set 1995-2004.

network, has more than adequate capacity to transmit the additional 1.6 MW proposed in project redevelopment.

7. Cost Effectiveness of Plans

Bangor Hydro proposes to increase the project capacity by adding a fifth unit, enhancing recreational areas, and installing fish passage. Bangor Hydro has no other plans, except for those periodically required to ensure the project's safety. Based on the license application and past practice, we conclude that Bangor Hydro's plans for constructing fish passage and recreation facilities, as well as its continued operation of the project, will be achieved in a cost-effective manner.

8. Actions Affecting the Public

Constructing fish passage facilities and additional recreational facilities will increase benefits to fisheries and recreation opportunities and, therefore, benefit the public.

FISH PASSAGE

Interior and Commerce both filed requests that the Commission include in the license a reservation of their authority to prescribe fishways. 1/ Interior subsequently submitted a fishway prescription on February 17, 1995, and revised the prescription on June 22, 1995, and May 20, 1997; and Commerce submitted a prescription on February 16, 1995. 1/ A request for a reservation of prescription authority is not itself a prescription. 1/ And since the request is that a reservation of authority be included in the license, the reservation request cannot be invoked before the license is issued, and thus cannot make an untimely pre-license prescription timely. 1/

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6/ The notice that the Veazie application was ready for environmental analysis set March 29, 1993, as the deadline for submitting Section 18 prescriptions.

7/ As discussed in the lead order issued today in this proceeding, 83 FERC ¶ 61,039 (1998), we decline to address Bangor's arguments with respect to whether Interior is authorized to prescribe a fishway for the fish species at issue in this proceeding.

8/ See Niagara Mohawk Power Corp., 83 FERC ¶ 61,036 (1998).

9/ This result is of limited import, as there remain the agencies' requests for reservation of their prescription authority, which

In any event, the agencies' late prescriptions were analyzed in the EIS as recommendations pursuant to FPA Section 10(a) and, as is described below, we adopt most of the agencies' fishway recommendations.

Article 406 requires Bangor Hydro to construct fish passage facilities for the design populations of the species specified by Interior and to provide personnel of the U.S. Fish and Wildlife Service access to the project site and pertinent project records for the purpose of inspecting the fishways to determine compliance with the fishway conditions of the license. 1/

Article 407 requires Bangor Hydro to construct, operate and maintain downstream fishways at the project. This article specifies the downstream facilities which must be constructed and the migration periods during which the downstream facilities must be operated. Article 407 also requires Bangor Hydro to file and implement fishway maintenance and operational plans and to modify the fishways if the effectiveness studies required by Article 409 indicate that modifications are needed.

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we grant, pursuant to our policy. See Niagara Mohawk, supra.

10/ We have not included Interior's recommendation that all fishways be operational within three years as a condition of the license. Construction schedules are an element which must be included in the final design plans which Bangor Hydro must file with the Commission. Bangor Hydro must consult with Interior in preparing the design plans; however, the authority to determine the timing of the construction of project works, including fishways, rests exclusively with the Commission. See Niagara Mohawk Power Corporation, 67 FERC ¶ 61,300 at p. 62,039 (1994).

Article 408 requires Bangor Hydro to construct, operate and maintain upstream fish passage facilities at the project. 1/ The article specifies the migrations periods during which the upstream fishways must be operated and requires Bangor Hydro to file and implement fishway maintenance and operational plans. The article also specifies the river flow level at which the fishways must be operational. Article 408 requires modification of the existing fishway at the powerhouse, specifies attraction flows, and requires installation of walkways and railings along fishways for inspection. 1/

Article 409 requires Bangor Hydro to file and implement a plan to study the effectiveness of the fishways required by Articles 407 and 408. If the study indicates that changes in the project's structures or operations, including flow releases, are necessary, Article 409 requires Bangor Hydro to file and implement a plan to improve the effectiveness of the fishways.

Article 411 contains a reservation of authority for the prescription of fishways under Section 18 of the Federal Power Act by the Secretary of the Interior or the Secretary of Commerce.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

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11/ We have not adopted Commerce's recommendation prohibiting trapping and trucking as a permanent means of fish passage. We have also not adopted Commerce's recommendation to prohibit the inclusion of fish pumps in fish passage design. Commerce's objections to these measures can be addressed during consultation, if they are proposed. We do not believe it is appropriate to categorically exclude either of these measures from consideration.

12/ Interior and Commerce recommended several alternative design types for a new fishway at the west end of the spillway. Interior and Commerce can address the need for and design of this fishway during the consultation required by Article 408 or through the exercise of their reservation of prescription authority contained in Article 410.

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

This license includes conditions consistent with the recommendations made by Interior that are within the scope of Section 10(j). Pursuant to Section 10(j), Interior recommended that the project be operated with a minimum flow of 3,800 cfs, or inflow, whichever is less, with a minimization of fluctuations of the impoundment levels. Interior recommended that at least 60 cfs of the minimum flow be released from the Gilman Falls Dam. Interior also recommended that Bangor Hydro obtain ownership of the existing Milford Denil fishway or obtain approval for structural modifications and prepare plans for monitoring minimum flow releases at the Milford and Gilman Falls Dams, fish passage facilities, and dissolved oxygen (DO). These recommendations are within the scope of Section 10(j), and Articles 403, 404, 405, 406, 407, 408, and 409, contain conditions consistent with the recommendations.

Interior submitted a recommendation for monitoring recreational and Penobscot Nation cultural use of the project. This recommendation is not within the scope of Section 10(j), because it is not a recommendation for a specific measure to protect fish and wildlife. The recommendation was considered under Section 10(a)(1). Article 414 of the license contains a condition which requires the licensee to monitor recreational and Penobscot Nation cultural use of the project area, pursuant to the FERC Form 80 Recreation Report.

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13/ 16 U.S.C. § 803(j)(1).

14/ 16 U.S.C. § 661 et seq.

15/ If the Commission believes that any such recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, Section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies. If the Commission then does not adopt a recommendation, it must explain how the recommendation is inconsistent with applicable law and how the conditions selected by the Commission adequately and equitably protect, mitigate damage to and enhance fish and wildlife.

Maine's recommendations pertaining to fish and wildlife, by executive order of the Governor, are contained in the conditions of the water quality certification. We addressed those conditions in our discussion, above, of the water quality certification.

## STATUS OF PENOBSCOT INDIAN LAND

When the project was constructed, its impoundment inundated part of certain islands in the Penobscot River that had long been occupied by the Penobscot Nation. Relying on this situation, the Interior and the Penobscot Nation aver that Interior has Section 4(e) conditioning power over this project. 1/ Additionally, they contend that the Commission is responsible for assessing annual charges under Section 10(e) of the FPA. 1/

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16/ Section 4(e) provides:

> That licenses shall be issued within any reservation only after a finding by the Commission that the license will not interfere or be inconsistent with the purpose for which such reservation was created or acquired, and shall be subject to and shall contain such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation.

17/ Section 10(e) states:

> That the licensee shall pay to the United States reasonable annual charges in an amount to be fixed by the Commission . . . recompensing it for the use, occupancy, and enjoyment of its lands or other property . . . .

There is a proviso applying to "tribal lands embraced within Indian reservations" that states that the Commission is to set charges, "subject to the approval of the Indian tribe having jurisdiction of such lands as provided in section 16 of the Act of June 18, 1934 (48 Stat. 984)."

Both provisions apply to "reservations," as defined in Section 3(2) of the FPA. That term covers, inter alia, "tribal lands embraced within Indian reservations." 1/ The major issue in this case is whether the lands flooded by the Milford Project fall within the parameters of that definition, as explored by the Supreme Court in Federal Power Commission v. Tuscarora Indian Nation, 362 U.S. 99 (1960).

In that case, the Court held that lands which the Tuscarora Indians owned in fee 1/ were not encompassed within the FPA's definition of "reservation." 1/ Since the land was not owned by the United States, Section 4(e) was inapplicable. Acknowledging that reservations can mean different things under different statutes, the Court reasoned that the FPA provision was designed as an exercise of Congress' power under the Property Clause of the Constitution. Consequently, only lands owned

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18/ Under Section 3(2):

> "[R]eservations" means national forest, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws . . . .

19/ The Federal government did not have a direct involvement in acquisition of the property. In 1804 the Tuscaroras acquired the land, located in New York, with the proceeds that the Federal government gave them from the sale of property from which the Federal government had removed them in North Carolina. 362 U.S. at 105-06.

20/ The Power Authority of the State of New York wanted to take property owned by the Tuscarora for use in a licensed project. The Tuscarora resisted, arguing: (1) that the Commission first had to conclude that the license would not interfere with or be inconsistent with the purpose for which the reservation was created or acquired, a requirement reflected in Section 4(e) of the FPA (see supra at n. 16); and (2) that the eminent domain provisions of Section 21 of the FPA did not authorize the taking of Indian lands. The first issue required a determination as to whether this land qualified as a reservation.

by the United States or in which the United States has a proprietary interest are covered by the term under the FPA. 1/

21/ 362 U.S. at 110-15.

In so ruling, the Supreme Court reversed a lower court decision 1/ that had held that the reference to Indian reservations in Section 3(2) reflected not only Congress' exercise of its power over lands belonging to the United States under Article 4, Section 3, Clause 2 of the Constitution, 1/ but also to an exercise of its authority under the Indian Commerce Clause, Article I, Section 8, clause 3, to act as guardian of Indian tribes. 1/ Where the federal interest in lands within Indian reservations is simply the national interest in the welfare and protection of Indians, the Court reasoned, that is not the sort of federal property interest that qualifies the land as a reservation under the FPA.

The issue in this case similarly rests on whether the lands in question are lands which the United States owns or in which it holds an ownership interest, or instead are lands in which the United States has an interest only by virtue of its more general role as a guardian of Indian interests. The Commission concludes that the requisite federal ownership interest has not been demonstrated in this instance.

A. Historical Background

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22/ Tuscarora Indian Nation v. Federal Power Commission, 265 F.2d 338, 343 (D.C. Cir. 1958).

23/ That term states:

> The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . . .

24/ 362 U.S. at 114-15. The Indian Commerce Clause is the federal Government's basic source of power over Indian matters. See Felix S. Cohen's Handbook of Federal Indian Law 207 (1982 Ed.) (Hereinafter cited as "Cohen").

The Milford project was originally built in 1906. The islands that were partly flooded by it had been recognized as Indian country since treaties between the state 1/ and the Nation were signed in the late 18th century. 1/ In the years since those 18th century treaties were signed, there had been essentially no federal involvement in Indian matters in the State of Maine. Regulation of Indian affairs was by the state, and when the Milford project was constructed, the developer sought and obtained from state or local officials an easement permitting the necessary flowage over the Indian islands. 1/

The project was federally licensed in 1969, 1/ licensing resting on the project's location on navigable waters. 1/ The Commission's order reflects that no federal lands were involved, and no issue concerning Section 4(e) was raised in that proceeding. 1/

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25/ The State involved at the time was Massachusetts, of which what is now Maine was then a part. In 1819, Maine was separated from Massachusetts, and in 1820 it was admitted into the Union.

26/ In treaties entered into in 1796 and 1818, the Penobscots ceded extensive lands to the State for modest compensation, expressly reserving the islands to themselves. There was an additional sale of four townships in 1833. H.R. Rep. No. 1353 [to accompany H.R. 7919], 96th Cong., 2d Sess. 11 (1980), reprinted in 1980 U.S. Code Cong. & Adm. News 3787 (hereinafter cited as "House Report"); S. Rep. No. 957 [to accompany S. 2829], 96th Cong., 2d Sess. 12 (1980) (hereinafter cited as "Senate Report").

27/ Second Amended Complaint in Rose M. Taylor, et al. v. Bangor Hydro-Electric Co., U.S. District Court Civil No. 1970 (D. Me.) at 3, 6. The details concerning this easement do not appear in the record of this case.

28/ Bangor Hydro-Electric Company, 42 FPC 1302 (1969). The license carried a 1941 effective date.

29/ Id. at 1303.

30/ Id. at 1302. In both the original licensing and this one, the project boundaries were drawn to exclude the Penobscot's islands except those segments that are flooded. However, the flooded parts are necessarily included.

Shortly after that, however, a series of events began which were to affect this case. The Supreme Court has long recognized that: 1/

> [T]he United States never held fee title to the Indian lands in the original States as it did in almost all the rest of the continental United States and that fee title to Indian lands, or the pre-emptive right to purchase from the Indians, was in the State . . . .

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31/ Oneida Indian Nation v. County of Oneida, 414 U.S. 661, 670 (1974), citing Fletcher v. Peck, 6 Cranch 86 (1810); Cherokee Nation v. Georgia, 5 Pet. 1, 38 (1831); Latimer v. Poeet, 39 U.S. 4 (1840); Seneca Nation v. Christy, 162 U.S. 283 (1896); Missouri v. Iowa, 7 How. 660 (1849) (The first cited case is hereinafter cited as "Oneida I").

On the other hand, pursuant to its Commerce Clause authority, in 1790 Congress had passed legislation that addressed trade and intercourse with Indians. Among the terms of that legislation was a provision that restricted alienation of Indian lands without the approval of the United States. 1/ Since that time, there has consistently been a federal law on the books, sometimes referred to as the Indian Nonintercourse Act, that continues such a restraint. The current version (dating from 1834) appears in 25 U.S.C. § 177. 1/

The Supreme Court explained the rational for such legislation in the Tuscarora case: 1/

> The obvious purpose of that statute is to prevent unfair, improvident or improper disposition by Indians of lands owned or possessed by them to other parties . . . without the consent of congress, and to enable the Government, acting as parens patriae for the Indians, to vacate any disposition of their lands made without its consent.

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32/ 1 Stat. 137 (1790).

33/ Section 177 provides:

> No purchase, grant, lease, or other conveyance of lands, or of any title or claim thereto, from any Indian nation or tribe of Indians, shall be of any validity in law or equity, unless the same be made by treaty or convention entered into pursuant to the Constitution. . . .

34/ 362 U.S. at 119. The legislation did not arise there in the context of Section 4(e), but rather in deciding whether property could be condemned under Section 21 of the FPA. See supra at n. 19. The statute was held not to be an impediment to alienation under Section 21, since 25 U.S.C. § 177 does not foreclose action by Congress (362 U.S. at 119).

During the 1960s and 1970s, native interests in claiming their aboriginal rights to land were on the rise, and 25 U.S.C. § 177 presented a major vehicle for accomplishing this. The principal Indian tribes in Maine, the Passamaquoddy and the Penobscots, had ceded most of their lands to the state many years ago, 1/ but no federal approval of the transfers had ever been obtained. In 1972, the Passamaquoddy tribe brought suit in federal district court seeking a declaratory judgment as to the applicability of the Nonintercourse Act to them. The ultimate purpose was to regain possession of the land and damages for trespass.

Later that year, a class action suit was instituted against Bangor Hydro on behalf of Penobscot Nation interests 1/ that likewise alleged a violation of 25 U.S.C. § 177. That particular complaint sought various relief involving those islands that had been reserved for the Penobscot Nation but then made subject to the easements in favor of Bangor Hydro. Again, the allegation was that the requisite federal approval had never been obtained. 1/

The Passamaquoddy eventually prevailed in their claim that 25 U.S.C. § 177 applied to the Indians of Maine. 1/ Over Interior's objection, 1/ the federal courts upheld the existence of a federal trust responsibility over Maine's Indians under that statute. The ruling threw into question the titles to as much as 60 percent of the total

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35/ The Passamaquoddy in the 1970s retained only about 17,000 acres. House Report at 12. The Penobscots retained 4,000-5,000 acres scattered on 100 islands. Settlement of Indian Land Claims in the State of Maine, Hearing on H.R. 7919 before the House committee on Interior and Insular Affairs, 96th Cong., 2d Sess. 159 (August 25, 1980) (hereinafter cited as "House Hearings").

36/ I.e., the owners of waterfront allotments on the Penobscot Indian Reservation and the Nation's Tribal Council.

37/ That case is cited supra at n. 27.

38/ Joint Tribal Council of the Passamaquoddy v. Morton, 529 F.2d 370 (1st Cir. 1975).

39/ Interior contended that the Maine tribes had never been federally recognized and so no trust relationship existed and the Nonintercourse Act did not apply.

land of Maine. 1/ The Passamaquoddy decision also threatened to disrupt long-established Indian-state relationships. 1/

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40/ House Report at 11; Senate Report at 11, 13.

41/ See also Bottomly v. Passamaquoddy Tribe, 599 F.2d 1061 (1st Cir. 1979); State of Maine v. Dana, 404 F.2d 551 (Me. 1979), cert. denied, 444 U.S. 1098 (1980).

All of this prompted government action at both the state and federal level. Following extensive discussions among the interested groups to resolve the situation, in 1980 two pieces of legislation were passed, the Maine Implementing Act (MIA), adopted by the state 1/ and the Maine Indian Claims Settlement Act (MICSA), enacted by the federal government. 1/ MIA is concerned largely with defining Indian-state relationships. 1/

It was primarily MICSA that addressed the land-related issues important to this case. Through MICSA, Congress ratified all prior transfers and extinguished any Indian title associated with those transfers. This eliminated any problems under 25 U.S.C. § 177 and cleared titles that had been clouded by the aboriginal claims. 1/ Congress also extinguished the claims that had previously arisen. 1/

At the same time, Congress established a Maine Indian Claim Settlement Fund, of which $13,500,000 would be held in trust by the Secretary of the Interior for the benefit of the Penobscot Nation. 1/ Similarly, Congress established a Maine Indian Claims Land Acquisition fund, of which $26,800,000 was to be held by the Secretary of the Interior in trust for the Penobscot Nation. 1/ That second fund was expected to be

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42/ 30 M.R.S. §§ 6201-14.

43/ 25 U.S.C. §§ 1721-35.

44/ Unlike many older Indian statues, MIA left considerable power with the state to deal with the Indians in the same manner as it did with citizens of the state. Congress ratified this approach. See 30 M.R.S. §§ 6204, 6206; 25 U.S.C. §§ 1721(b)(3) and (4), 1725; Proposed Settlement of Maine Indian land Claims on S. 2829 before the Senate Select Committee on Indian Affairs, 96th Cong., 2d Sess. 30 (July 1-2, 1980).

45/ 25 U.S.C. §§ 1723(a) and (b).

46/ 25 U.S.C. § 1723(c). According to a November 1, 1994 filing by Bangor, the Taylor v. Bangor lawsuit (supra at nn. 27, 37) was dismissed in 1981 following passage of MICSA.

47/ 25 U.S.C. § 1724(a). The Penobscots would get the income from it, and the principal would be held intact. A similar amount has set up for the Passamaquoddy Indians.

48/ 25 U.S.C. § 1724(c). A similar sum was established for the Passamaquoddy Indians and a small sum for another band of

sufficient to purchase about 150,000 acres of average quality forest land, to be used to provide an economic base for the Nation's members.

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Indians.

The existence of the Penobscot Indian Reservation (Reservation), long established under the state's regulation for the lands reserved in the early treaties, was now implicitly recognized in MICSA. 1/ In addition, land within designated areas that was purchased through the Land Acquisition Fund would be added to land in the Reservation to create a larger Penobscot Indian Territory (Territory).

Under MICSA, 25 U.S.C. § 177 would not be applicable to any lands held by or for the nation, but comparable protections were incorporated into MICSA itself. 1/ All land within the Territory is subject to restrictions against alienation.

All land transfers within the Territory are void ab initio, with certain exceptions. First, land can, under appropriate circumstances, be condemned for public purposes under either state or federal law. 1/ It can also be sold or exchanged at the Nation's request, as long as it is replaced with other comparable property, thereby maintaining the established land base. 1/

B. Discussion

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49/ 25 U.S.C. § 1722(I) (defining the Penobscot Indian Reservation, by incorporating MIA's definition of the term). MICSA then occasionally refers to the Reservation, generally in the context of distinguishing between aboriginal lands (which are part of the Reservation) and those acquired with funds provided under the settlement (which generally are not part of the Reservation). See 25 U.S.C. §§ 1724(d)(4)(B), 1724(I).

50/ 25 U.S.C. § 1724(g).

51/ 25 U.S.C. § 1724(g), (i), (j).

52/ 25 U.S.C. § 1724(g)(3).

A federal trust responsibility towards Indians, often expressed in terms of a guardian/ward relationship, pervades federal Indian law. The Supreme Court has alluded to that "unique trust relationship" in recent Indian cases, 1/ as well as in very old ones. 1/ It arises out of Commerce Clause authority, 1/ and is predicated on the dependent nature of the peoples involved. 1/

1. The Lessons of Tuscarora

In Tuscarora, the Supreme Court squarely rejected the contention that the existence of a federal trust relationship towards Indians is itself sufficient to establish a reservation for purposes of Section 3(2) of the FPA. 1/ According to the Court, the general trust relationship reflects "[t]he national 'paternal interest' in the welfare and protection of Indians." 1/ It does not reflect the requisite exercise of authority under the Property Clause that is necessary to establish the existence of a reservation for FPA purposes.

2. The Contention That the United States Holds These Lands in Trust

Interior and the Penobscot Nation suggest that the United States does not simply have a general trust relationship to the Indians, but actually holds the land involved in this case in trust. 1/ However, it is clear that Congress did not provide for or intend

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53/ See County of Oneida v. Oneida Indian Nation, 470 U.S. 226, 247 (1985) (hereinafter referred to as "Oneida II"). See also id. at 253 and Passamaquoddy, 528 F.2d at 375.

54/ See Chief Justice Marshall's opinion in Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 178, 180-81 (1831).

55/ See Tuscarora, 265 F.2d at 339, 343; Tuscarora Nation of Indians v. Power Authority of New York, 257 F.2d 885, 891 (2d Cir. 1958) cert. denied, 358 U.S. 841 (1958).

56/ Cherokee Nation, 30 U.S. at 181; U.S. v. Candelaria, 271 U.S. 432, 439 (1926); Tuscarora, 265 F.2d at 339, 257 F.2d at 890.

57/ 362 U.S. at 114-15. Compare the Court of Appeal's decision, 265 F.2d at 339, 342-43.

58/ 362 U.S. at 115.

59/ Memorandum dated June 5, 1992, from Interior's Assistant Solicitor, Indian Affairs, to the Eastern Director, Bureau of

that the United States would hold title to the Nation's aboriginal islands in the Penobscot River in trust.

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Indian Affairs (hereinafter cited as Interior June 5, 1992 memo).

Both the House and Senate Committee Reports contain the following language (emphasis added): 1/

> The settlement envisions four categories of Indian land in Maine: individually-assigned existing reservation land, existing reservation land held in common, newly-acquired tribal land within "Indian Territory," and newly-acquired tribal lands outside "Indian Territory." Only newly-acquired land within Indian territory . . . will be held in trust by the United States. Existing land within the reservations, whether held by individuals pursuant to a use assignment or in common by the Tribe as a whole, will not be taken by the United States in trust. [1/] These lands will simply be subject to a federal restriction against alienation which will prevent their loss or transfer to a non-tribal member.

Consistent with this language, MICSA specifically states that certain newly-acquired lands will be held in trust. 1/ It nowhere provides, however, that the existing tribal lands are to be held in trust. Moreover, it was verified, during the hearings on the legislation, that they would not be held in trust. The House Committee's Special Counsel on Indian Affairs asked if the bill provided that the current lands of the tribes would be held in trust. 1/ Interior's Assistant Solicitor for Indian Affairs replied: 1/

> It does not. None of the parties propose that the status of the title of the land be changed in any way except that there is a provision . . . that would subject the lands to Federal restrictions against alienation, which in our view they always were under the Indian Nonintercourse Act.

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60/ House Report at 15; Senate Report at 15. The language represented by the ellipsis deals with the newly acquired tribal lands for another band of Indians.

61/ At one point in this proceeding, Interior suggests that what Congress meant was that tribal lands would be held in trust and that individual assignment lands would be held in restricted fee. Interior June 5, 1992 memo at p. 6. However, that is contrary to what the Committees said, and we must assume that they meant what they said.

62/ See, e.g., 25 U.S.C. § 1724(d) and (e).

63/ House Hearings at 42.

64/ House Hearings at 43 [testimony of Tim Vollman].

The position Interior took before the Commission in 1983 in connection with licensing another Bangor Hydro project on the Penobscot River is consistent with the position that no trust relationship exists. 1/ In that filing Interior stated, in response to the Commission's question concerning who owned the islands in question, that the fee title was held by the State of Maine in trust for the benefit of the Nation, which possesses the right of perpetual use and occupancy, adding that the property was subject to restrictions against alienation. Interior further stated that the status of the property had only changed insofar as the restriction against alienation was imposed under MICSA.

Now, in attempting to establish the existence of a trusteeship, Interior and the Nation cite a term of MICSA dealing with Reservation land taken under eminent domain. 1/ Under that provision, either comparable land must be provided by the entity taking the property or the proceeds must go into the Land Acquisition Fund to be reinvested in other land. Consistent with what the Committee Reports stated would be the treatment of newly-acquired lands, MICSA provides that newly-acquired land will be taken in trust if condemnation occurs under federal law. 1/ However, that does nothing to further the parties' argument that any existing lands are likewise held in trust. Congress' distinction between existing and newly-acquired lands is clearly stated in the Committee Reports.

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65/ See letter to the Commission from Lawrence Jensen, Associate Solicitor of Interior for Indian Affairs, dated May 17, 1983, regarding Project No. 2600.

66/ 25 U.S.C. §§ 1724(i) and (j). See Interior June 5, 1992 memo at 3.

67/ 25 U.S.C. §§ 1725(j), 1725(i)(2).

Interior also suggests that it would be unusual to have a statutory pattern of Indian ownership where some lands are held in restricted status, some are held in trust, and some are unrestricted. 1/ However, that would not derogate from the fact that this is what Congress provided in MICSA. Newly acquired land in the Territory is held in trust; 1/ newly acquired land outside the defined Territory is held in fee without any trust responsibility or restrictions on alienation; 1/ and Indian title to the original land will continue to be held subject to restrictions against alienation.

3. The Attempts to Restrict Tuscarora

Interior suggests that Tuscarora is actually very narrow. It avers that the Tuscarora ruling does not apply to "typical" restricted fee land, citing United States v. Candelaria, 271 U.S. 432 (1926), as representing the "typical" situation. 1/ That case involved the Pueblo Indians in New Mexico. Those Indians hold their tribal lands in fee, and Interior suggests that the Court in that case recognized a trust relationship. However, the findings there are inapplicable to this case, because different statutes are involved in the two cases.

The defendants in Candelaria, who were claiming title to lands held by the Pueblos, contended that 25 U.S.C. § 177 did not apply, because the Pueblos held the fee interest in their lands. The Supreme Court rejected that argument, on the grounds that the Nonintercourse Act rests in the United States' responsibility to protect dependant Indian tribes, and does not rest on who holds the land interest. The basis of that legislation is the general federal interest in protecting Indians, as embodied in the Indian Commerce Clause. 1/

In contrast, as already discussed, the FPA provision is grounded in the Property Clause. The focus in Tuscarora is on who owns the land, and other types of federal interests in Indians are unimportant. Since the instant case deals with the FPA, the focus in this instance must be on the ownership question, and Candaleria has no bearing on the issue.

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68/ Interior June 5, 1992 memo at 4.

69/ 25 U.S.C. §§ 1724(b) and (I).

70/ 25 U.S.C. § 1724. This was apparently done because the state wanted to restrict the area that would be considered Indian Territory, where the reach of state law has certain limits.

71/ Interior June 5, 1992 memo at p. 7.

72/ Id. at 439-40.

Interior tries to distinguish the situation where treaties and statutes of the United States are involved from situations where they are not. In this regard, the Nation points to two lower court cases that distinguish Tuscarora in the context of 19th century treaty provisions. 1/ However, neither decision is relevant to the issues here.

Both cases cited stand for the proposition that if specific rights have been conferred on a tribe under a treaty, federal statutes of general application are not sufficient to override the terms of that treaty. 1/ Abrogation of a treaty entered into between the United States and the Indians must be done by express Congressional action.

Whether or not a general term in the FPA is sufficient to override the terms of a United States treaty with the Indians is not in issue in this matter. Neither Interior nor the Nation cites any treaty that has been violated, or that would be violated if the Penobscot property at issue in this case is not found to belong to the United States.

While MICSA is not a treaty, if it had transferred title in the Indian property flooded by Bangor's power projects to the United States, the Commission would give effect to that term in applying Section 4(e) of the FPA. However, no such provision exists. There is no acknowledgment in MICSA or elsewhere that the federal government was purporting to itself take over the fee title to these lands. 1/

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73/ Penobscot filing of June 26, 1989, at p. 4. The cases cited are Donovan v. Navajo Forest Products Industries, 692 F.2d 709, 711 (10th Cir. 1982), and United States v. Winnebago Tribe, 542 F.2d 1002, 1005 (8th Cir. 1976).

74/ The Navajo case deals with the applicability of the Occupational Safety and Health Act (OSHA) to a tribal business conducted within an Indian reservation. The contention was that applying OSHA would violate the terms of an 1868 treaty recognizing the Navajo right of self government. The Winnebago case deals with whether the Army Corps of Engineers can exercise eminent domain without express Congressional authorization, when in an 1865 treaty the United States agreed to set aside the land for the Winnebagos "forever."

75/ See discussion at n. 86, where, during the Congressional hearings, Interior indicated to Congress that MICSA was not intended to effectuate any change in ownership of the fee interest.

4. Ownership of the Land in the Project Area

In a 1983 letter to the Commission, Interior indicated that the state held the residual fee. 1/ Interior 1/ and the Nation suggest that a federal District Court in New York recently found that New York (another of the original states) owns no interest in the Indian lands located in that state. 1/ That, of course, is not the critical issue in this case. The key issue here is whether the United States owns a property interest in the lands, and the District Judge in the New York case did not hold that the United States had title to the lands in issue.

The case they cited involved lands that the United States had reserved to the Cayuga Indians in a treaty signed in 1794, which recognized the Indians' right to permanently occupy and use the land. The facts generally paralleled those in the Oneida I and Oneida II cases cited previously, which were decided by the Supreme Court. 1/ Both Tribes (the Cayugas and the Oneidas) were parts of the Iroquois Nation in New York. Treaties were entered into between the United States and the Tribes in the late 18th century, and soon after that, the state entered into arrangements with the Indians for them to cede most of the lands to the state. Approval for the transfers had not been obtained from the federal government as required by law, and, as a result, the Indians were now seeking recovery.

In Oneida I, the Supreme Court held: 1/

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76/ See supra at n. 65.

77/ See Interior June 5, 1992 memo at pp. 1, 6.

78/ The case upon which they rely is Cayuga Indian Nation of New York v. Cuomo, 758 F.Supp. 107, 115-17 (N.D.N.Y. 1991). Neither party mentions the Supreme Court's decision in Oneida I.

79/ See supra nn. 31, 53.

80/ 414 U.S. at 670. The United States can also recognize the Indian title, granting the Indians permanent rights to possession, as it had done there. At that point, the tribe gains a property right which cannot be extinguished by the United States without compensation. See Tee-Hit-Ton Indians v. U.S., 348 U.S. 272,

> The rudimentary propositions that the Indian title is a matter of federal law and can be extinguished only with federal consent apply in all of the States, including the original 13. It is true that the United States never held fee title to the Indian lands in the original States as it did to almost all the rest of the United States and that fee title to Indian lands in these States, or the preemptive right to purchase from the Indians, was in the State [citation omitted]. But this reality did not alter the doctrine that federal laws, treaties, and statutes protected Indian occupancy and that its termination was exclusively the province of federal law. This was true even where the State held fee title.

In the Cayuga case, which followed a few years later, the Indians were seeking return of the land, as well as fair rental value for the 200 years since the land was taken over by New York. In defense, the state argued that the federal government could not have divested New York of its fee title (via treaty) without just compensation to the state for that divestiture.

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277 (1955).

The District Judge explained that the state's interest in the land represented: 1/

> [A] mere expectancy concerning the property, with no right vesting in such person until Congress acts to extinguish the Indian interest in the land. See e.g., F. Cohen, Handbook of Federal Indian Law (1982 ed.) at 514.

From that, he concluded that New York's interest in the property at the time did not reach the level of a compensable property interest. 1/

To further understand this, it is instructive to turn to the page cited from Cohen, the leading authority in the field of Indian law. The text quotes the passage from the Supreme Court's opinion in Oneida I, set out above. Cohen then goes on to explain that the underlying fee title and the right to occupancy are separate concepts. He also recognizes that fee title is of very limited significance unless the original Indian title has been extinguished: 1/

> Although this fee title can be conveyed subject to the Indian right of occupancy, the holder of the fee title, whether a state or a private party, takes no present possessory interests in the land and cannot validly extinguish Indian title.

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81/ 758 F.Supp. at 116.

82/ 758 F.Supp. at 115-16.

83/ Id.

This is a situation over which the state has no power: 1/

> Under this arrangement the federal government has complete discretion to determine when, if at all, the rights of the title fee holder will become possessory rights. Until Congress acts to extinguish the Indian interest, the holder of the underlying fee title or right of preemption has only an expectancy with no further rights in the land.

Obviously, this passage does not reflect the view that the state does not own fee title and, more significantly for purposes of this case, that the United States does hold the legal title. 1/

Indeed, Cohen then goes on to examine the source of the federal government's exclusive control over the extinguishment of Indian title and the restriction of alienation of Indian lands: 1/

> [They] constitute federal regulatory action under the Indian Commerce Clause; they do not result from either federal claims to an interest in land owned by tribes or the tenure by which tribal land is held.

In contrast, as already stressed, the key ingredient under the FPA is in fact the federal interest in the land. That interest has not been demonstrated to exist in this case.

5. The Contention that the Commission Has No Jurisdiction to Decide Matters of Federal Ownership

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84/ Id.

85/ See also the statement of Interior's Assistant Solicitor for Indian Affairs during the House Hearings (at 43):

> My understanding as to the title of those lands is that fee title is held by the state, but that the tribes have a right of exclusive use and occupancy of those lands.

He further explained that MICSA would not change that.

86/ Id. at 514-15.

Interior suggests that the Commission has no jurisdiction to decide the ownership of the lands in issue. The Commission is doing so only in a very limited context, that of deciding whether project lands qualify as reservations under FPA Section 3(2). 1/ It initially decided the issue fourteen years ago, when, after reviewing the legislative history of MICSA, it found that the United States did not own or have a proprietary interest in the Penobscot Nation's aboriginal lands. 1/ No basis has been established in this case for now finding that the property does belong to the United States.

Section 4(e) permits Interior to compel inclusion of conditions in a Commission license that the Commission deems inappropriate. That is, the Commission must include them even if it believes those conditions are inconsistent with the balancing of power and non-power interests that is the core of Commission decision-making under the FPA. 1/ The Commission determined that it would not include the 4(e) conditions in this case without assessing whether Interior is now claiming authority in excess of what Congress gave it under the FPA. The two cases that Interior cites where the Commission decided not to reach the ownership issue are distinguishable. 1/

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87/ If the United States does in fact own the land, it will continue to own it, notwithstanding any Commission ruling.

88/ Bangor Hydro-Electric Company, 27 FERC ¶ 61,467 at p. 61,875 (1984). The order involved the relicensing of a different project on the same river.

89/ Sections 4(e) and 10(a).

90/ In Seneca Nation of Indians, 6 FPC 1025 (1947), no claim of federal ownership was presented. The Seneca Nation asserted that it owned the waters being diverted for power purposes, as well as project lands. It sought compensation for use of its property or termination of the license, determination of the Nation's rights, and favorable consideration in any relicensing. When the Commission asked Interior for its views, Interior informed the Commission that there were no Indian tribal lands subject to Interior's jurisdiction involved. The Commission thereafter declined to rule on who had title to the lands in question.

Washington Water Power Company, 43 FERC ¶ 61,254 (1988), was the final in a series of Commission orders involving a very complex set of facts and claims of state ownership. The question was whether the federal government had retained

ownership in part of the bedlands of a navigable river or whether its interests had passed to Idaho at the time Idaho became a state. If ownership had not passed, then an Indian reservation was involved and annual charges would be imposed.

The Commission declined to decide the issue, citing a lack of jurisdiction. No annual charges would be collected unless and until Interior and the Indians obtained a judicial determination of their claim. The Tribe unsuccessfully litigated the matter. See Idaho v. Coeur d'Alene Tribe of Idaho, 117 S.Ct. 2028 (1997). The United States is still pursuing the claim for part of the land, however.

The legal issues presented in that instance were far more complicated than the relatively straight-forward matter now before the Commission regarding what Congress intended when it passed MICSA. As discussed later in this order, the Commission is not reaching some other property-related issues in this case.

6. Does the Licensee Have the Requisite Interest?

It is not necessary for the Commission to go further than to decide, as it has here, that the United States does not possess the requisite ownership in the island property long flooded by the project to qualify the land as a Section 3(2) reservation. The issue of where the fee and possessory interests do rest is not entirely without significance to this licensing proceeding, however.

Under the Commission's standard license articles, a licensee is required, within five years of license issuance, to "acquire title in fee of the right to use in perpetuity all lands, other than lands of the United States, necessary for the construction, maintenance, and operation of the project." 1/ Of course, no one has suggested that it is Bangor Hydro that currently holds fee title.

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91/ Article 5 of Form L-3, 54 FPC 1817, 1818 (1975).

The question of who currently holds the possessory (flowage) rights to this particular land is not an issue that the Commission is prepared or willing to consider. Complexities include the existence of the earlier right-of-way granted by the state, as well as the impact of MICSA, which grants federal approval of any prior transfers from, by, or on behalf of the Nation and extinguishes its aboriginal title with respect thereto, as well as associated claims. 1/

It is the licensee's responsibility to satisfy the Commission that Bangor Hydro possesses the necessary degree of control over the property to carry out its responsibilities under the license. If there should be a disagreement between Bangor Hydro, the Nation, and/or the State of Maine concerning what flowage rights Bangor Hydro holds on lands within the boundary of the Milford Project, then the company is directed to have the matter resolved by the courts. Of course, the provisions of Section 21 of the FPA are available to Bangor Hydro, if it proves necessary to use the right of eminent domain in order to acquire the rights needed under Article 5.

7. Other Considerations

Federal reservations are U.S. lands that have been set aside for specific purposes. What Congress contemplated under Section 4(e) was giving the cabinet secretaries responsible for such lands adequate authority to protect the federal resources involved. 1/ In this instance, however, not only are the lands not federally owned, but it was not the federal government that established the reservation. To be sure, the federal government gave modest recognition to its existence in 1980, but this particular reservation land had long been used for project purposes, with state approval.

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92/ See 25 U.S.C. § 1723 and discussion supra.

93/ Escondido Mutual Water Co. V. LaJolla Indians, 466 U.S. 765, 775 (1984).

Furthermore, MICSA expressly provides for taking lands needed for public uses pursuant to the laws of the United States. The idea that the land can be taken and diverted to another purpose is inconsistent with any intent that the original purpose of these particular lands must be protected and the lands maintained for use of the Indians. Instead, MICSA's general approach is that the funds received through condemnation will be expended to acquire other, nearby land. 1/ Similarly, the statutory approach under the FPA is to provide for condemnation of non-federal land, 1/ but not of land owned by the federal government. 1/ The fact that these lands are subject to condemnation lends additional support to the view that Congress did not intend that this be construed as federal land.

INTERIOR'S CONDITIONS

On July 16, 1996, Interior filed conditions pursuant to its claim of mandatory conditioning authority for the Milford Project under Section 4(e) of the FPA. On April 9, 1997, Interior subsequently revised or withdrew a number of the conditions filed in July 1996. For the reasons stated above, we have concluded that Interior does not have mandatory conditioning authority under Section 4(e) for the Milford Project. However, we have considered these proffered conditions as recommendations under the comprehensive planning and public interest standards of Section 10(a) and have included a number of these recommendations as conditions in the new license for the project.

Interior originally submitted eighteen recommendations in its July 1996 filing, withdrawing recommendations 1, 2, 3, 6, 8, and 17 in April 1997. Recommendations 4 and 5 relate to minimum flows and maintaining run-on river operations. These recommendations are similar to the requirements of the water quality certification and Interior's 10(j) recommendations, which are incorporated in Articles 402 and 403 of the license.

Recommendation 7 would require Bangor Hydro to conduct an assessment of the shoreline and prepare and implement a mitigation plan. The Commission has required licensees to control and mitigate erosion caused by project operation, but not erosion caused by natural phenomena associated with the presence of the project. 1/ The EIS states that Interior's documentation filed in support of its recommendation

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94/ See 25 U.S.C. §§ 1724(g), 1724(j).

95/ See, Tuscarora at p. 113.

96/ Id. at pp. 113-14.

97/ See Duke Power Company, 33 FERC ¶ 61,321 (1985).

attributes erosional losses to the existence of the impoundment rather than the manner in which the project is operated. 1/ In order to ensure that any erosion due to project operations is controlled and mitigated, we are requiring Bangor Hydro to prepare, in consultation with the Penobscot Nation, the Maine State Historical Preservation Officer (SHPO), and Maine Division of Inland Fisheries and Wildlife, and file for Commission approval a shoreline erosion control plan. This requirement is contained in Article 401 of the license.

98/ EIS at 5-53.

Recommendation 9 would require Bangor Hydro to study and implement measures to protect St. Anne's Church from water damage. St. Anne's Church has sustained water damage which has resulted from a combination of factors including: unfavorable site grading, lack of gutters and downspouts, the existing earthen-floored basement, the installation and subsequent removal of aluminum siding, impermeable soils, and operation of the project. 1/ The Programmatic Agreement for the Milford Project identifies a number of measures to mitigate water damage at St. Anne's Church and requires Bangor Hydro to provide $37,500 (one-half of the estimated cost of the mitigation measures) for implementation of those measures. Article 415 of the license requires Bangor Hydro to implement the terms of the Programmatic Agreement. The mitigation measures required in the Programmatic Agreement should prevent further water damage to St. Anne's Church.

Recommendations 10 and 11 would require the licensee to excavate two known historic sites and monitor cultural artifacts and protect them from ground disturbing activity, respectively. The Programmatic Agreement requires Bangor Hydro to prepare and implement a Cultural Resources Management Plan (CRMP) which would protect historic properties (such as the historic sites and cultural artifacts) from shoreline erosion, project-related ground-disturbing activities and vandalism, and to mitigate unavoidable adverse effects on historic properties. The provisions of the CRMP encompass these recommendations by Interior. Recommendation 13 would require Bangor Hydro to transfer all Native American artifacts excavated from lands owned by the licensee to the Penobscot Nation when the Penobscot Nation has established a facility for long-term curation and permanent preservation of the artifacts. The Programmatic Agreement requires Bangor Hydro to prepare procedures to effect this transfer and provide for temporary storage of these artifacts at the University of Maine in Orono until the curation and preservation facility is established.

99/ Programmatic Agreement, Appendix A, pp. 10-11.

Recommendation 12 would require Bangor Hydro to fund the construction a new curation facility or upgrade the existing facility on Indian Island and provide funding for one-fourth of the compensation for one staff position for the curation facility. Interior estimates that the cost of constructing or upgrading the curation facility would be $90-100,000 and that funding the staff position would cost about $12,000 per year. It is appropriate for Bangor Hydro to preserve the Native American artifacts that have been recovered from Bangor Hydro's property and transfer those artifacts to the Penobscot Nation when the Penobscot Nation has established a facility for the long-term curation and preservation of the artifacts. This is required by the Programmatic Agreement. 1/ However, requiring Bangor Hydro to fund the upgrading of the existing museum on Indian Island, or the construction of a new facility, far exceeds the requirements of Section 106 of the National Historic Preservation Act and, under our consideration of the recommendation under Section 10(a), the expense is not reasonable.

Interior recommends that Penobscot Nation representatives be included in all routine and emergency inspections of the project and that, upon notice to Bangor Hydro, be given free and unrestricted access to project lands and works in performance of their official duties. The purpose of the Penobscot Nation's visits is not clear. In the interests of efficiency and safety, the Commission does not routinely invite any party other than the licensee to accompany Commission staff on inspections. The Commission does occasionally invite participation by a specific interested party in safety inspections or compliance audits when the party is in a position to contribute useful information about a specific safety or compliance problem. Any entity may notify the Commission of any compliance or safety issue at any time and may obtain compliance and safety inspection reports, which are available to the public. Most project land would be generally accessible to the public and the Penobscot Nation. However, it is appropriate for the licensee to restrict access to project lands and works when required by safety considerations. Accordingly, we will not require the licensee to provide free and unrestricted access to all project lands and works to representatives of the Penobscot Nation in performance of their official duties.

Interior recommends that Interior and the Penobscot Nation be included in all consultations associated with post-license studies related to archaeological, cultural and historic resources, land and water resources, fisheries and wildlife, navigation, and recreation in the project area. We agree that it is appropriate for Interior and the

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100/ The Programmatic Agreement requires Bangor Hydro to store the artifacts at the University of Maine at Orono, which is a short distance from Indian Island, and to transfer the artifacts to the Penobscot Nation when a permanent curation and preservation facility has been established.

Penobscot Nation to be included in consultation in these areas and have included Interior and the Penobscot Nation among the parties to be consulted in license articles relating to these resource areas.

Interior has also recommended that Bangor Hydro provide funding to the Penobscot Nation for one full-time employee who would monitor project impacts and participate in post-licensing studies. The EIS found that funding this staff position for the Penobscot Nation would cost $50,000 per year over the term of the new license. It has not been the Commission's policy to require licensees to fund the licensing or post-licensing participation of groups or organizations. Interior has not provided either evidence or argument sufficient for us to change this policy in this case.

Interior also filed a recommendation for annual charges under Section 10(e) for use of reservation lands. Since we have concluded that the Milford Project does not occupy any reservation lands, as that term is defined in Section 3(2), there is no basis for imposing annual charges for such occupation under Section 10(e).

COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA 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. Under Section 10(a)(2), federal and state agencies filed a total of 18 plans. Of these we identified eight as relevant to the project. 1/ No conflicts were found.

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA require the Commission, in acting on applications for license, to give equal consideration to the power and development

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101/ Strategic Plan for Management of Atlantic Salmon in the State of Maine, 1984, Atlantic Sea-Run Salmon Commission; Maine Rivers Study, 1982, Maine Department of Conservation and National Park Service; State Comprehensive River Management Plan, 1987, Maine State Planning Office; State Comprehensive Outdoor Recreation Plan, 1988, Maine State Planning Office; Penobscot River Alewife and American Shad Restoration Plan, 1984, Maine Department of Marine Resources; Inland Fisheries River Management Plan, 1982, Maine Department of Inland Fisheries and Wildlife; Species Assessments and Strategic Plans, 1991, Maine Department of Inland Fisheries and Wildlife; Gulf of Maine Rivers Ecosystem Plan, 1994, U.S. Fish and Wildlife Service.

purposes and to the purposes of energy conservation, the protection, mitigation, and enhancement of fish and wildlife, the protection of recreation opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgement 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.

The EIS analyzed the effects associated with the issuance of the new license for the Milford Project. It recommends a number of measures to protect and enhance environmental resources, which we adopt, as discussed herein. These measures will provide improved fish passage at the dam, protect fish and wildlife resources by requiring run-of-river operation, enhance recreational resources in the project area and protect cultural resources affected by the project.

In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, pursuant to Section 10(a)(1) of the FPA, 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 Corporation, Publishing Paper Division, 1/ the Commission employs an analysis that 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 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. In making its decision, the Commission considers the project power benefits both with the applicant's proposed mitigation and enhancement measures and with the Commission's proposed modifications and additions to the applicant's proposal.

In addition, certain economic factors related to project decommissioning impinge on the decision to issue a new license that are not present in the licensing of new projects. If an existing project is not issued a new license, or if the Licensee declines to accept the new license, the project probably will have to be retired in one form or another. This could range from simply removing the

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102/ 72 FERC ¶ 61,027 (1995).

generator at the project to major environmental restoration varying from minor measures to dam removal.

As proposed by Bangor Hydro, the project would produce an average of 59.4 gigawatt-hours (Gwh) of energy annually at an annual cost of about $2,074,000 (34.9 mills/kWh). The current annual value of the project's power would be $1,491,900 (25.1 mills/kWh). We base this value on the cost of alternative resources, which in this case is the cost of a new combined cycle combustion turbine plant and the regional cost of natural gas. To determine whether the proposed project is currently economically beneficial, we subtract the project's cost from the value of the project's power. Thus, based on current costs, the project, as proposed by Bangor Hydro, would cost about $582,100 annually (about 9.8 mills/kWh) more than the current cost of alternative power.

As licensed by the Commission, the project will produce about 59.3 Gwh of energy annually at an annual cost of about $2,518,200 (42.5 mills/kWh). Thus we find the project as licensed by the Commission will cost $1,031,820 (about 17.4 mills/kWh) more than the current cost of alternative power.

As described above, our evaluation of the economics of the project shows that the power it generates costs more than alternative power. However, as explained in Mead, the economic analysis is by necessity inexact, and project economics is only one of many public interest factors considered in determining whether or not, and under what conditions, to issue a license. 1/ Bangor Hydro is ultimately responsible and best able to determine whether continued operation of the existing project, with the conditions adopted herein, is a reasonable decision in these circumstances.

Based on review of the agency and public comments, review of the environmental and economic effects of the project and its alternatives, and analysis pursuant to Sections 10(a)(1) of the FPA, we find that the Milford Project, with our protection and enhancement measures, will be best adapted to the comprehensive development of the Penobscot River for all beneficial uses.

LICENSE TERM

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103/ In analyzing public interest factors, we consider the fact that hydroelectric projects offer unique electric utility system operational benefits and that proposed projects may provide substantial benefits not directly related to utility operations, benefits that would be lost if a license were denied solely on economic grounds. See City of Augusta, et al., 72 FERC ¶ 61,114, at p. 61,599, n. 57 (1995).

Section 15 of the FPA specifies that any new license issued shall be for a term that we determine to be in the public interest, but the term may not be less than 30 years or more than 50 years. Our policy establishes 30-year terms for projects that propose little or no redevelopment, new construction, new capacity, or enhancement; 40-year terms for projects that propose moderate redevelopment, new construction, new capacity, or enhancement; and 50-year terms for projects that propose extensive redevelopment, new construction, new capacity, or enhancement.

Bangor Hydro proposes moderate increase in the project's capacity and we are including conditions in the new license which require moderate expenditures for environmental enhancements. Accordingly, we will issue a new license for a term of 40 years.

SUMMARY OF FINDINGS

The EIS includes background information, analysis of impacts, discussion of enhancement measures, and support for related license articles. The project will not result in any major, long-term adverse environmental impacts.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

We conclude that issuing a license for the Milford Project, with our required enhancement measures, will not conflict with any planned or authorized development, and will be best adapted to a comprehensive development of the waterway for beneficial public uses.

The Commission orders:

(A) This license is issued to Bangor Hydro-Electric Company (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 Milford Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Federal Power Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interest in those lands, enclosed by the project boundary shown by exhibit G:

| Exhibit | FERC Drawing No. | Description |
|---|---|---|
| G-1 | 2534-1001 | General Location Map |
| G-2 | 2534-1002 | General Project Area Map |
| G-3 | 2534-1003 | Project Boundary Map |
| G-4 | 2534-1004 | Project Boundary Map |
| G-5 | 2534-1005 | Project Boundary Map |

(2) Project works consisting of the Milford Development and the Gilman Falls dam:

The proposed development at the Milford Dam and powerhouse would consist of: (1) an existing 226-foot-long, 85-foot-wide, 78-foot-high brick powerhouse structure with masonry foundation; (2) existing powerhouse machinery consisting of three identical Kaplan turbines, one existing fixed blade propeller turbine, and one proposed turbine (either fixed blade or Francis type), coupled to generators with a rating of 1.6 megawatts (MW) each; (3) a concrete gravity spillway 397 feet long; (4) a concrete sluiceway and gate 25 feet wide; (5) a 1,159-foot-long concrete gravity dam with a maximum height of about 30 feet and 4.5 foot flashboards; and, (6) all appurtenant facilities.

The existing development at the Gilman Falls Dam consists of: (1) a 49-foot-wide nonoverflow section; (2) a 311-foot-long primary spillway with 4.4 foot high flashboards; (3) a 6-foot-wide sluice gate with a top at elevation 100.8 feet; and, (4) two taintor gates, one 30 feet wide and the other 20 feet wide.

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 December 29, 1988:

Pages A-1 through A-20, including Tables A-1 through A-4, describing the existing and proposed mechanical, electrical and transmission equipment.

| Exhibit | FERC Drawing No. | Description |
|---|---|---|
| F-1 | 2534-1006 | Milford Dam and Powerhouse General Plan and Dam Sections |
| F-2 | 2534-1007 | Milford Powerhouse General Plan |
| F-3 | 2534-1008 | Milford Powerhouse Plan and Sections |
| F-4 | 2534-1009 | Cutting Plans and Sector for Unit 2 |
| F-5 | 2534-1010 | Milford Fishway Plan Sections and Detail |
| F-6 | 2534-1011 | Gilman Falls Dam Plan, Profiles and Sections |

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

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

(D) This license is subject to the articles set forth in Form L-3, (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charges:

For the purposes of reimbursing the United States for the costs of administering Part 1 of the Federal Power Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 6,400 kilowatts. This annual charge shall be effective as of the first day of the month in which the license is issued.

In addition to the above charge a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized proposed additional capacity for that purpose is 8,000 kilowatts. This annual charge shall be effective as of the date of commencement of construction of the new capacity.

Article 202. Within 45 days of the date of issuance of the license, the licensee shall file an original set and two duplicate sets of aperture cards of the approved drawings. The set of originals must be reproduced on silver or gelatin 35mm microfilm. The duplicate sets are copies of the originals made on diazo-type microfilm. All microfilm must be mounted on type D (3-1/4 x 7-3/8") aperture cards.

Prior to microfilming, the FERC Drawing Number (2534-1001 through 2534-xxxx) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of this license must be typed on the upper left corner of each aperture card.

The original and one duplicate set of aperture cards must be filed with the Secretary of the Commission, ATTN: DPCA/ERB. The remaining duplicate set of aperture cards shall be filed with the Commission's New York Regional Office.

Article 203. Pursuant to Section 10(d) of the FPA, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project

for the establishment and maintenance of amortization reserves. The licensee shall 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 shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall 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 shall 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 shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 301. The licensee shall commence construction of project work within two years from the effective date of this order and shall complete construction of the project within four years from the effective date of the order.

Article 302. The licensee shall, at least 60 days prior to start of construction, submit one copy to the Commission's Regional Director and two copies to the Director, Division of Dam Safety and Inspections, of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouse, and water conveyance structures. The Director, Division of Dam Safety and Inspections, may require changes in the plans and specifications to ensure a safe and adequate project.

Article 303. The licensee shall, at least 60 days prior to start of construction, file for approval by the Director, Office

of Hydropower Licensing, revised Exhibit F drawings showing the final design of the powerhouse and fishway. A final supporting design report shall be filed simultaneously with the Exhibit F drawings. Construction shall not commence until the revised Exhibit F drawings are approved.

Article 304. The licensee shall, within 90 days of completion of construction, file for approval by the Commission, revised Exhibits A, F, and G, to describe and show the project as-built, including all facilities determined, by the Commission, to be necessary and convenient for transmission of all of the project power to the interconnected transmission system.

Article 305. The design and construction of those permanent and temporary facilities, including unit 2, the fishways, impounding cofferdams, and deep excavations, that would be an integral part of, or that could affect the structural integrity or operation of the project, shall be done in consultation with and subject to the review and approval of the Commission's New York Regional Office. Within 90 days from the effective date of the license, the licensee shall furnish the Commission's Regional Director, for his review, a schedule for submission of design documents and plans and specifications for the project. If the schedule does not afford sufficient review and approval time, the licensee, upon request of the Commission shall meet with the Commission staff to revise the schedule accordingly.

Article 306. 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 307. The licensee shall, within 60 days from the effective date of the license or the approval of the Fifth Safety Inspection Report, whichever is later, file for approval by the Director, Office of Hydropower Licensing, an engineering report which includes drawings, specifications, and supporting calculations necessary to ensure the stability of Gilman Falls Dam.

Article 401. At least 90 days before the start of any land-disturbing or land-clearing activities, the licensee shall file with the Commission, for approval, a plan to control erosion, to

control slope instability, and to minimize the quantity of sediment resulting from project construction (including fishways and recreational facilities) and operation. The licensee shall develop the plan in conjunction with Article 415 of this license.

The plan shall be based on actual-site geological, soil, and groundwater conditions and on project design, and shall include, at a minimum, the following four items:

(1) a description of the actual site conditions;

(2) measures proposed to control erosion, to prevent slope instability, to minimize the quantity of sediment resulting from project construction and operation, and to dispose of excavation spoils offsite;

(3) detailed descriptions, functional design drawings, and specific topographic locations of all control measures; and

(4) a specific implementation schedule and details for monitoring and maintenance programs for project construction and operation.

The licensee shall prepare the plan after consultation with the Natural Resources Conservation Service, the Maine Department of Inland Fisheries and Wildlife, the Maine State Historic Preservation Commission, the Penobscot Indian Nation, and the U.S. Department of the Interior. The licensee shall 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 shall 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 shall include the licensee's reasons, based on geological, soil, and groundwater conditions at the site.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin

until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 402. The licensee shall operate the Milford Project in a run-of-river mode for the protection of fisheries resources and recreational opportunities in the Penobscot and Stillwater Rivers.

The licensee shall at all times act to minimize the fluctuation of the reservoir surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project reservoir.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee and the Maine Department of Environmental Protection. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 403. The licensee shall release from the Milford Project a total minimum flow of 3,800 cfs or inflow, whichever is less, from the Milford Project, with the following distribution: 3,268 cfs from the Milford powerhouse, 60 cfs from Gilman Falls dam, and 472 cfs from the west channel, as measured at a location determined in consultation with the Maine Department of Environmental Protection, the U.S. Department of the Interior, the U.S. Geological Survey, and the Penobscot Indian Nation. These minimum flows are for the protection and enhancement of fish and wildlife resources, water quality, and recreation opportunities on the Penobscot River.

This flow may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee and the Maine Department of Environmental Protection. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 404. Except as temporarily modified by approved maintenance activities, inflows to the project area, or operating emergencies beyond the licensee's control, the Licensee shall maintain water levels in the Milford impoundment within one foot of normal full pond elevation of 101.7 feet NGVD while flashboards are in place.

The licensee shall at all times act to minimize the fluctuation of the reservoir surface elevations by maintaining a discharge from the development so that, at any point in time, flow, as measured immediately downstream from the tailrace of the development, approximates the inflow to the project reservoir.

The licensee shall, within one year of license issuance, submit plans to the Maine Department of Environmental Protection and the Commission, plans for providing and monitoring the water levels in Milford Impoundment. The Commission reserves the right to require changes to the water level monitoring plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 405. Within 180 days after the date of license issuance, the licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen of the Penobscot River downstream of the project. Monitoring should be conducted during the months of July and August, for at least on year before and one year following installation of new capacity and should be repeated every five years during the license term.

The purpose of this monitoring plan is to ensure that streamflows below the project, as measured immediately downstream of the project tailrace, maintain a dissolved oxygen content of no less than required by the State of Maine's water quality regulations.

The monitoring plan shall include a schedule for:

(1) implementation of the program;

(2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and

(3) filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, the Penobscot Indian Nation and the Maine Department of Environmental Protection.

The licensee shall 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 shall 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 shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Monitoring 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, including any changes required by the Commission.

Article 406. Fishways shall be constructed, operated, and maintained to provide effective (safe, timely, and convenient) passage for the Penobscot River design populations of Atlantic salmon, American shad, alewives, and unquantified numbers of blueback herring and American eels at the Licensee's expense. The quantified design populations for each target species is 12,000 Atlantic salmon, 250,000 American shad, and up to 2.1 million alewife.

The licensee shall provide personnel of the U.S. Fish and Wildlife Service, and other Service designated representatives, access to the project site and to pertinent project records for the purpose of inspecting the fishways to determine compliance with the fishway prescriptions.

Article 407. The licensee shall install and operate permanent downstream fish passage facilities at the Milford Project. Fishways shall be maintained and operated to maximize fish passage

effectiveness throughout fish migration period(s) as defined below. The downstream migration period shall be defined as April 1 to June 30 for Atlantic salmon, July 1 to December 31 for American shad and alewife, August to December 31 for blueback herring, and August 15 to November 15 (or other time periods determined when adequate information is available, and during any spring run that may occur) for American eel. Downstream facilities are to operate whenever generation occurs during the downstream migration period. The licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed in sufficient time before a migratory period such that fishways can be tested and inspected and will operate effectively prior to and during the migratory periods.

Fishway maintenance and operational plans (including schedules) for all fish passage facilities shall be developed by the licensee in consultation and cooperation with the U.S. Fish and Wildlife Service (FWS), the Penobscot Indian Nation (Penobscot Nation), and other fishery agencies (including the Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, and the National Marine Fisheries Service). Functional design and final design plans for all fishways shall be developed in consultation and cooperation with the FWS, Penobscot Nation, and other fishery agencies.

Downstream fishways shall consist of: (1) a downstream fishway as described in the licensee's filing dated January 12, 1990 (Response to FERC's Additional Information Request, Items 10 through 13); (2) outer trashracks with 1" clear bar spacing over the upper 12 feet of the rack (or 4" clear bar spacing on outer rack and 1" clear bar spacing on the inner trashracks with two additional entrance ports installed on the inner trashrack); (3) twin 4-foot-wide (8 feet total) weirs at the outer trashrack, capable of passing up to 280 cfs; the location of the weirs is to be west of the edge of the new generation unit (No. 2); (4) attraction flows to the downstream fishway of 280 cfs; (5) a gated bottom intake to the downstream migrant facilities for the downstream passage of American eels; and (6) a downstream migrant conduit designed so that the discharge jet does not impact on any vertical walls.

Within 180 days after the date of license issuance, the licensee shall file, for Commission approval, detailed design drawings of the licensee's proposed permanent downstream fish passage facilities. This filing shall include but not be limited to: (1) the location and design specifications of the passage facilities; (2) a schedule for installing the facilities; and (3) procedures for operating and maintaining the facilities.

The licensee shall include with the filing documentation of consultation, copies of agency and Penobscot Nation comments and recommendations on the drawings, plans, and schedule after they have been prepared and provided to the agencies and Penobscot Nation, and specific descriptions of how the agencies' and Penobscot Nation's comments are accommodated by the licensee's facilities. The licensee shall allow a minimum of 30 days for the agencies and Penobscot Nation to comment and to make recommendations before filing the drawings, plans, and schedule with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. No construction of downstream fish passage facilities shall begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the proposal, including any changes required by the Commission.

Article 408. The licensee shall install and operate permanent upstream fish passage facilities at the Milford Project. Fishways shall be maintained and operated to maximize fish passage effectiveness throughout fish migration period(s) as defined below. The upstream migration period shall be defined as April 15 to November 15 for Atlantic salmon, May 1 to June 30 for American shad and alewife, June 1 to July 31 for blueback herring, and April 1 to November 30 for American eel. Downstream facilities are to operate whenever generation occurs during the downstream migration period. The licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed in sufficient time before a migratory period such that fishways can be tested and inspected and will operate effectively prior to and during the migratory periods.

Fishway design, maintenance and operational plans (including schedules) for all fish passage facilities shall be developed by the licensee in consultation and cooperation with the U.S. Fish and Wildlife Service (FWS), the Penobscot Indian Nation (Penobscot Nation), and other fishery agencies (including the Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Marine Resources, and the National Marine Fisheries Service). Functional design and final design plans for all fishways shall be developed in consultation and cooperation with the FWS, Penobscot Nation, and other fishery agencies.

Upstream fishways shall consist of: (1) modification of the existing Denil fishway adjacent to the powerhouse as described in the licensee's filing dated January 12, 1990 (response to FERC's Additional Information Request, Items 10 through 13); (2) addition of a spillway entrance near the existing log sluice; (3) installation of additional timber baffles in the upstream end of the fishway to facilitate operation at high headpond levels;(4) fishways capable of operating at flows of up to 40,000 cfs as measured at the Eddington gaging station; (5) attraction flows for the fishways provided as follows: (a) for the existing powerhouse fishway, provide 210 cfs total for the two powerhouse entrances, and 100 cfs for the spillway entrance; (b) for the new spillway fishway, provide 100 cfs; and (6) a gated bottom intake to the downstream migrant facilities to provide for the downstream passage of American eels.

The following measures shall be incorporated into the fishway designs for the Milford project: (1) access walkways and railing along the entire length of the existing and future fishways for safety purposes; and (2) a side-mounted vertical fish counting window incorporated into the powerhouse and spillway fishways for enumerating fish runs.

The licensee shall obtain ownership of the existing Denil fishway at the Milford Project owned by the State of Maine or otherwise seek approval from the MDIFW and the Maine Atlantic Sea Run Salmon Commission prior to making any modifications to the existing fishway.

Within 180 days after the date of license issuance, the licensee shall file, for Commission approval, detailed design drawings for permanent upstream fish passage facilities. This filing shall

include but not be limited to: (1) the location and design specifications of the passage facilities; (2) a schedule for installing the facilities; and (3) procedures for operating and maintaining the facilities.

The licensee shall 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 shall 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 shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. No land-disturbing or land-clearing activities related to upstream fish passage shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the proposal, including any changes required by the Commission.

Article 409. Within 18 months after license issuance, the licensee shall file with the Commission, for approval, a plan to monitor the effectiveness of all the facilities and flows provided pursuant to Articles 407 and 408 of this license that will enable the efficient and safe passage of anadromous fish migrating upstream and downstream. The results of these monitoring studies shall be submitted to the agencies listed below and shall provide a basis for recommending future structural or operational changes at the project.

The monitoring plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the monitoring plan after consultation with the U.S. Fish and Wildlife Service, Maine Department of Marine Resources, the Maine Department of Environmental Protection, the Penobscot Indian Nation, and the National Marine Fisheries Service.

The licensee shall include with the plan documentation of agency consultation, copies of agency comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' comments are accommodated by the licensee's plan. The licensee shall 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 shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the licensee shall first consult with the agencies listed above to develop recommended measures for amelioration and then file its proposal with the Commission, for approval. The Commission reserves its authority to require the licensee to modify project structures or operations to protect and enhance aquatic resources.

Article 410. Within 18 months after license issuance, the licensee shall file with the Commission, for approval, a plan to identify and evaluate possible measures to mitigate for any unavoidable losses to Atlantic salmon due to fish passage inefficiencies.

The plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal and state agencies concerning the results of the plan; and (3) filing the results, agency comments, and licensee's response to agency comments with the Commission.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, Maine Department of Marine Resources, the Maine Department of Environmental Protection, the Penobscot Indian Nation (Penobscot Nation), and the National Marine Fisheries Service.

The licensee shall include with the plan documentation of agency consultation, copies of agency comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' comments are accommodated by the Licensee's plan. The licensee shall 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 shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

The licensee shall, within 1 year following completion of the fish passage study required by Article 409 of this license order, submit the results of the mitigation study, along with any recommendations for appropriate mitigation based on the results of the study to the Maine Department of Environmental Protection Bureau of Land Quality Control (BLQC), the Commission and to all consulting agencies. The Commission reserves the right after reviewing the comments and recommendations of the BLQC, the consulting fisheries agencies and the Penobscot Nation, to require such measures as may be necessary to mitigate for unavoidable losses of Atlantic salmon due to fish passage inefficiencies at the Milford Project.

Article 411. Authority is reserved by 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 prescribed by the Secretary of the Interior or the Secretary of Commerce under Section 18 of the Federal Power Act.

Article 412. Within 18 months of license issuance, , the licensee shall construct and provide for the operation and maintenance of the recreation facilities, as described in the licensee's August 7, 1989, Response to the FERC Additional Information Request, and the licensee's Exhibit E, pages E5-8 through E5-13, of the License Application. These facilities include:

(1) a canoe put-in area at the west side of Gilman Falls dam;

(2) continued maintenance of a canoe landing at Gilman Falls dam;

(3) improved access on the west side of Gilman Falls dam by widening and improving the existing portage trail, improved the parking area by adding gravel, adding a picnic area with a trash receptacle, and improving the concrete retaining wall to allow for safe public access over the wall;

(4) an attempt to acquire an easement from the landowner in order to provide for canoe portage on the east bank of Gilman Falls dam;

(5) an investigation of alternative access sites to the headpond on property that the Licensee owns;

(6) a canoe portage around the east end of the Milford dam and improve the existing path;

(7) at the North Fourth Street site, development of a parking area on city-owned land with about 10 spaces for vehicles with trailers and 18 spaces for vehicles without trailers;

(8) improvement of the existing parking lot at Burr's Store Site, to accommodate about 11 vehicles with trailers and 5 vehicle without trailers; and,

(9) installation and maintenance of directional signs to the above identified recreational sites.

The licensee shall construct these facilities after consultation with the Maine Department of Conservation, the Maine Department of Environmental Protection, the Penobscot Indian Nation, the U.S. Department of the Interior, and the Maine State Historic Preservation Commission. The design and construction of all proposed recreational facilities shall consider the needs of the disabled in accordance with the Americans with Disabilities Act. The facilities shall be shown on the as-built drawings filed pursuant to this license.

The licensee shall file a report with the as-built drawings, which shall include the entity responsible for operation and maintenance of the facilities, documentation of consultation, copies of comments and recommendations on the report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the report. The licensee shall allow a minimum of 30 days for the agencies to comment prior to filing the report with the Commission. If the licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

Article 413. To ensure safe recreational and navigational use of the Milford Project waters, within 180 days of license issuance, the licensee shall file with the Commission, for approval, a plan for the periodic removal of semi-buoyant logs within the Milford Project impoundment. The plan shall include, but not be limited to, the following:

(1) description of the removal and disposal methods;

(2) description of the use, if any, of the removed logs;

(3) identification of the location used for the disposal of any unused logs;

(4) an implementation schedule; and,

(5) the entity responsible for the removal of the semi-buoyant logs.

The licensee shall prepare the plan after consultation with the Penobscot Indian Nation, the Maine State Historic Preservation Commission, the Maine Department of Environmental Protection, and the Maine Department of Conservation. The licensee shall 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 and recommendations are accommodated by the plan. The licensee shall 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 shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 414. The licensee, after consultation with the City of Old Town ,the National Park Service, the Penobscot Indian Nation, the Maine Department of Environmental Protection, and the Maine Department of Conservation, shall monitor recreation and Indian cultural use of the project area to determine whether existing recreation facilities are meeting recreation and Indian cultural needs. Monitoring studies shall begin within six years of the issuance date of this license, and at a minimum, shall include the collection of annual recreation use data.

Every six years during the term of the license, the licensee shall file a report with the Commission on the monitoring results. This report shall include:

(1) annual recreation and Indian cultural use figures;

(2) a discussion of the adequacy of the licensee’s recreation facilities at the project site to meet recreation demand;

(3) a description of the methodology used to collect all study data;

(4) if there is need for additional facilities, the licensee's design of recreational facilities and how such design takes into account the national standards established by the Architectural and Transportation Barriers Compliance Board pursuant to the Americans with Disabilities Act of 1990;

(5) documentation of agency consultation and agency comments on the report after it has been prepared and provided to the agencies; and

(6) specific descriptions of how the agency comments are accommodated by the report.

The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the report with the Commission.

Article 415. The licensee shall implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the Maine State Historic Preservation Officer, for Managing Historic Properties That May Be Affected By A License Issuing To Bangor Hydro-Electric Company, To Continue Operating The Milford Hydroelectric Project In Maine", executed on April 3, 1998, including but not limited to the Cultural Resources Management Plan for the Project. In the event that the Programmatic Agreement is terminated, the licensee shall implement the provisions of its approved Cultural Resources Management Plan. The Commission reserves the authority to require changes to the Cultural Resources Management Plan at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the Cultural Resources Management Plan, the Licensee shall obtain Commission approval 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 effect.

Article 416. (a) In accordance with the provisions of this article, the licensee shall 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 shall 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 shall 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 water 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 watercraft 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 shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall 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 shall:

(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 reservoir 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 reservoir.

No later than January 31 of each year, the licensee shall 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 watercraft 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 Exhibit R or 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 submit a letter to the Director, Office of Hydropower Licensing, 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 or K 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 Director, 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 shall 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 shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or 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 shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the

grantee shall take all reasonable precautions to insure 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 shall 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 or K 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 shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

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

(E) The licensee shall 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.

(F) This order if final unless a request for rehearing by the Commission is filed within 30 days of the date of its issuance, as provided in Section 313 of the FPA. The filing of a request for

rehearing does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

By the Commission.

( S E A L )

Linwood A. Watson, Jr.,
Acting Secretary.

APPENDIX A

THEREFORE, the Department APPROVES the above noted application of BANGOR HYDROELECTRIC COMPANY to expand the generating capacity of the Milford Hydro Project, and GRANTS certification that there is a reasonable assurance that the continued operation of the Milford Hydro Project, as described above, will not violate applicable water quality standards, SUBJECT TO THE FOLLOWING CONDITIONS:

1. MINIMUM FLOWS

A. Except as temporarily modified by operating emergencies beyond the applicant's control, as defined below, the facility shall be operated as run-of-river (outflow equals inflow) while passing a total minimum flow of 3,800 cfs or inflow, whichever is less, from the Milford Project, with the following distribution: 3,268 cfs from the Milford powerhouse, 60 cfs from the Gilman Falls Dam, and 472 cfs from the west channel.

B. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure or other temporary abnormal operating conditions, generating unit operation or interruption under power supply emergencies, and orders from local, state, or federal law enforcement or public safety authorities.

C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit plans for providing and monitoring the minimum flow required by Part A of this condition. These plans shall be reviewed by and must receive approval of the DEP Bureau of Land Quality Control.

2. WATER LEVELS

A. Except as temporarily modified by normal maintenance activities or by inflows to the project area or by operating emergencies beyond the applicant's control, as defined below, water levels in the Milford impoundment shall be maintained within one foot of normal full pond elevation of 101.7 feet (NGVD) while flashboards are in place.

B. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure or other temporary abnormal operating conditions, generating unit operation or interruption under power supply emergencies, and orders from local, state, or federal law enforcement or public safety authorities.

C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit plans for providing and monitoring the water levels in the Milford impoundment as required in Part A of this condition. These plans shall be reviewed by and must be receive approval of the DEP Bureau of Land Quality Control.

3. UPSTREAM FISH PASSAGE: PHASE I

A. The applicant shall continue to operate the existing Denil fishway, with the following modifications, at a minimum: (1) improving the fishway entrance orientation to be in line with the tailrace flow; (2) increasing attraction flow to 210 cfs; (3) raising the walls in the existing fishway to make operative at flows in excess of 20,000 cfs; (4) installing a new exit trashrack; and (5) installing a new video camera counting/monitoring system.

B. The applicant shall continue to operate the existing Alaskan steeppass fishway, with the following modifications, at a minimum: (1) excavation of natural pools and/or pouring concrete weirs in the ledge outcrop; and (2) deepening an existing channel to the pool below the dam.

C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit functional design drawings, a construction schedule, and operating and maintenance plans for all fish passage modifications and facilities required by Parts A and B of this condition, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. These submittals shall be reviewed by and must receive approval of state and federal fisheries agencies,

FERC and the DEP Bureau of Land Quality Control prior to facilities construction.

4. UPSTREAM FISH PASSAGE: PHASE II

A. A replacement state-of-the-art upstream fish passage facility shall be installed and operational at the Milford Dam no later than 2 years after the passage at the Milford Dam of alewives and shad equaling the biomass capacity of the modified Denil fishway.

B. The applicant shall, in consultation with state and federal fisheries agencies and the Penobscot Indian Nation, conduct a study to determine the biomass capacity of the modified Denil fishway to pass alewives and shad. The results of this study shall be submitted to the Department and the consulting agencies within 2 years following the completion of modifications to the existing Denil fishway.

C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit functional design drawings, a construction schedule, and operating and maintenance plans for the new fish passage facility required by Part A of this condition, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. This submittal shall be reviewed by and must receive approval of state and federal fisheries agencies, FERC and the DEP Bureau of Land Quality Control prior to facility construction.

5. DOWNSTREAM FISH PASSAGE

A. Permanent downstream fish passage facilities shall be installed and operated at the Milford Dam.

B. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit functional design drawings, a construction schedule, and operating and maintenance plans for the fish passage facility required by Part A of this condition, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. This submittal shall

be reviewed by and must receive approval of state and federal fisheries agencies, FERC and the DEP Bureau of Land Quality Control prior to facility construction.

6. FISH PASSAGE STUDIES

A. The applicant shall, in consultation with state and federal fisheries agencies and the Penobscot Indian Nation, conduct a study to monitor and evaluate the effectiveness of all fish passage modifications and facilities constructed pursuant to Conditions 3, 4 and 5 of this certification.

B. The applicant shall, within 1 year following the issuance of a new FERC license for the project, submit a fish passage study plan and schedule, prepared in consultation with state and federal fisheries agencies and the Penobscot Indian Nation. This plan and schedule shall be reviewed by and must receive approval of state and federal fisheries agencies, FERC, and the DEP Bureau of Land Quality Control.

C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit the results of the fish passage study, along with any recommendations for structural, operational changes, or additional fishways, based on the results of the study, to the DEP Bureau of Land Quality Control and to all consulting agencies. The Department reserves the right, after opportunity for hearing, and after reviewing the comments and recommendations for the consulting agencies and the Penobscot Indian Nation, to require reasonable structural and/or operational changes to the existing fish passage facilities, or require additional fishways, as may be necessary to effectively pass anadromous fish through the project area. Any such changes or new fishways must also be approved by FERC.

7. MITIGATION STUDY

A. The applicant shall, in consultation with state and federal fisheries agencies and the Penobscot Indian Nation, conduct a study to identify and evaluate possible measures

to mitigate for any unavoidable losses to Atlantic salmon due to fish passage inefficiencies.

B. The applicant shall, within 1 year following completion of the fish passage study required by Condition 6 of this Order, submit the results of the mitigation study, along with any recommendations for appropriate mitigation based on the results of the study, to the DEP Bureau of Land Quality Control and to all consulting agencies. The Department reserves the right, after notice and opportunity for hearing, and after reviewing the comments and recommendations for the consulting fisheries agencies and the Penobscot Indian Nation, to require such measures as may be necessary to mitigate for unavoidable losses to Atlantic salmon due to fish passage inefficiencies at the Milford Hydro project.

8. RECREATIONAL FACILITIES AND ACCESS

A. The applicant shall continue to maintain its canoe landing at the Gilman Falls Dam and shall continue to investigate alternative access sites to the headpond on property owned by the applicant for the purposes of ensuring adequate public access to recreational areas.

B. The applicant shall, in consultation with the Penobscot Indian Nation and other agencies interested in safe recreational and navigational use of the project waters, develop a plan for periodic removal of semi-buoyant logs within the project impoundment.

C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit a schedule for implementing Parts A and B of this condition. This schedule shall be reviewed by the Department of Conservation, the Penobscot Indian Nation and the DEP Bureau of Land Quality Control and must receive approval of the DEP Bureau of Land Quality Control.

9. LIMITS OF APPROVAL

This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted

and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Board or Department prior to implementation.

10. COMPLIANCE WITH ALL APPLICABLE LAWS

The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the project.

12. EFFECTIVE DATE

This water quality certification shall be effective on the date of issuance of a new hydropower project license by the Federal Energy Regulatory Commission (FERC) and shall expire with the expiration of this FERC license.

# STANDARD SMALL GENERATOR INTERCONNECTION AGREEMENT (SGIA)

**BY AND AMONG**

**ISO NEW ENGLAND INC.**

**AND**

**BLACK BEAR HYDRO PARTNERS, LLC**

**AND**

**BANGOR HYDRO ELECTRIC COMPANY**

**Contains Critical Energy Infrastructure Information – Do Not Release**

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**THIS STANDARD SMALL GENERATOR INTERCONNECTION AGREEMENT** ("Agreement") is made and entered into this ___6th_____ day of _____October_____, 2011, by and between Black Bear Hydro Partners, LLC , a limited liability company organized and existing under the laws of the State of Delaware ("Interconnection Customer" with a Small Generating Facility), ISO New England Inc., a non-stock corporation organized and existing under the laws of the State of Delaware ("System Operator"), and Bangor Hydro Electric Company, a company organized and existing under the laws of the State of Maine ("Interconnecting Transmission Owner"). Under this Agreement the Interconnection Customer, System Operator, and Interconnecting Transmission Owner each may be referred to as a "Party" or collectively as the "Parties."

**System Operator Information**

System Operator: ISO New England Inc.
Attention: Generation Interconnection, Transmission Planning Department
Address: One Sullivan Road
City: Holyoke State: MA Zip: 01040-2841
Phone: (413) 540-4220 Fax: (413) 540-4203

**Interconnecting Transmission Owner Information**

Interconnecting Transmission Owner: Bangor Hydro Electric Company
Attention: Gerard Chasse
Address: 970 Illinois Avenue
City: Bangor State: ME Zip: 04401-2722
Phone: (207) 973-2653 Fax: (207) 941-6645

**Interconnection Customer Information**

Interconnection Customer: Black Bear Hydro Partners, LLC
Attention: Jonathan W. Chadbourne
Address: c/o ArcLight Capital Partners, LLC
200 Clarendon Street, 55th Floor
City: Boston State: MA Zip: 02117
Phone: (617) 531-6397 Fax: (617) 867-4698

Interconnection Customer Application No: QP 358.1

In consideration of the mutual covenants set forth herein, the Parties agree as follows

## Article 1. Scope and Limitations of Agreement

1.1 Applicability:

This Agreement shall be used for all Interconnection Requests submitted under the Small Generator Interconnection Procedures (SGIP) except for those submitted under the 10 kW Inverter Process contained in SGIP Attachment 5.

1.2 Purpose

This Agreement governs the terms and conditions under which the Interconnection Customer's Small Generating Facility will interconnect with, and operate in parallel with, the Interconnecting Transmission Owner's facilities that are part of the Administered Transmission System.

1.3 No Agreement to Purchase or Deliver Power

This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power. The purchase or delivery of power and other services that the Interconnection Customer may require will be covered under separate agreements, if any. The Interconnection Customer will be responsible for separately making all necessary arrangements (including scheduling) for delivery of electricity with the applicable Party.

1.4 Limitations

Nothing in this Agreement is intended to affect any other agreement between the Parties.

1.5 Responsibilities of the Parties

1.5.1 The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.

1.5.2 The Interconnection Customer shall construct, interconnect, operate and maintain its Small Generating Facility and construct, operate, and maintain its Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, and in accordance with this Agreement, and with Good Utility Practice.

1.5.3 The Interconnecting Transmission Owner shall construct, operate, and maintain its transmission facilities and Interconnection Facilities in accordance with this Agreement, and with Good Utility Practice.

1.5.4 The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed those provided by

the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory, and Operating Requirements in effect at the time of construction and other applicable national and state codes and standards. The Interconnection Customer agrees to design, install, maintain, and operate its Small Generating Facility so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the system or equipment of the Interconnecting Transmission Owner, the New England Transmission System and any Affected Systems.

1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of change of ownership. The Interconnecting Transmission Owner and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the New England Transmission System [or Interconnecting Transmission Owner's transmission facilities], personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Attachments to this Agreement.

1.5.6 The System Operator, with input from the Interconnecting Transmission Owner, shall coordinate with all Affected Systems to support the interconnection.

1.6 Parallel Operation Obligations

Once the Small Generating Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Small Generating Facility in the applicable control area,including, but not limited to the ISO New England Operating Documents, and the Operating Requirements set forth in Attachment 5 of this Agreement.

1.7 Metering

The Interconnection Customer shall be responsible for the Interconnecting Transmission Owner's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Attachment 2 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements.

1.8 Reactive Power

1.8.1 The Interconnection Customer shall design its Small Generating Facility to maintain a composite power delivery at continuous rated power output at the

Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging, unless the System Operator or Interconnecting Transmission Owner has established different requirements that apply to all similarly situated generators on a comparable basis and in accordance with Operating Requirements. The requirements of this paragraph shall not apply to wind generators.

1.8.2 Interconnection Customers shall be compensated for reactive power service in accordance with Schedule 2 of the Tariff.

1.9 Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 or the body of this Agreement. Capitalized terms in Schedule 23 that are not defined in the Glossary of Terms shall have the meanings specified in Sections I.2.2. of the Tariff.

1.10 Scope of Service

1.01.1 Interconnection Product Options. Interconnection Customer has selected the following (checked) type of Interconnection Service:

_____ NR for NR Interconnection Service (NR Capability Only)
__X__ CNR for CNR Interconnection Service (NR Capability and CNR Capability)

1.10.1.1 Capacity Network Resource Interconnection Service (CNR Interconnection Service

(a) The Product. The System Operator and Interconnecting Transmission Owner must conduct the necessary studies and the Interconnecting Transmission Owner and Affected Parties must construct the Network Upgrades needed to interconnect the Small Generating Facility in a manner comparable to that in which all other CNRs are interconnected under the CC Interconnection Standard. CNR Interconnection Service allows the Interconnection Customer's Small Generating Facility to be designated as a CNR to participate in the New England Markets, in accordance with Market Rule 1, Section III of the Tariff, up to the net CNR Capability, or as otherwise provided in Market Rule 1, Section III of the Tariff, on the same basis as all other existing Capacity Network Resources, and to be studied as a Capacity Network Resource on the assumption that such a designation will occur.

1.10.1.2 Network Resource Interconnection Service (NR Interconnection Service).

(a) The Product. The System Operator and Interconnecting Transmission Owner must conduct the necessary studies and Interconnecting Transmission Owner and Affected Parties must construct the Network

Upgrades needed to interconnect the Small Generating Facility in a manner comparable to that in which all other Network Resources are interconnected under the NC Interconnection Standard.

NR Interconnection Service allows the Interconnection Customer's Small Generating Facility to participate in the New England Markets, in accordance with Market Rule, Section III of the Tariff, up to the gross and net NR Capability or as otherwise provided in Market Rule 1, Section III of the Tariff. Notwithstanding the above, the portion of a Small Generating Facility that has been designated as a Network Resource interconnected under the NC Interconnection Standard cannot be a capacity resource under Section III.13 of the Tariff, except pursuant to a new Interconnection Request for CNR Interconnection Service.

1.10.1.3 Provision of Service. System Operator and Interconnecting Transmission Owner shall provide Interconnection Service for the Small Generating Facility at the Point of Interconnection.

1.10.1.4 Performance Standards. Each Party shall perform all of its obligations under this SGIA in accordance with Applicable Laws and Regulations, the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents, and Good Utility Practice, and to the extent a Party is required or prevented or limited in taking any action by such requirements and standards, such Party shall not be deemed to be in Breach of this SGIA for its compliance therewith. If such Party is the Interconnecting Transmission Owner, then that Party shall amend the SGIA and System Operator, in conjunction with the Interconnecting Transmission Owner, shall submit the amendment to the Commission for approval.

1.10.1.5 No Transmission Service Delivery. The execution of this SGIA does not constitute a request for, nor the provision of, any service except for Interconnection Service, including, but not limited to, transmission delivery service, local delivery service, distribution service, capacity service, energy service, or Ancillary Services under any applicable tariff, and does not convey any right to deliver electricity to any specific customer or Point of Delivery.

1.10.1.6 Transmission Delivery Service Implications. CNR Interconnection Service and NR Interconnection Service allow the Interconnection Customer's Small Generating Facility to be designated by any Network Customer under the Tariff on the New England Transmission System as a Capacity Network Resource or Network Resource, up to the net CNR Capability or NR Capability, respectively, on the same basis as all other existing Capacity Network Resources and Network

Resources interconnected to the New England Transmission System, and to be studied as a Capacity Network Resource or a Network Resource on the assumption that such a designation will occur. Although CNR Interconnection Service and NR Interconnection Service do not convey a reservation of transmission service, any Network Customer can utilize its network service under the Tariff to obtain delivery of capability from the Interconnection Customer's Small Generating Facility in the same manner as it accesses Capacity Network Resources and Network Resources. A Small Generating Facility receiving CNR Interconnection Service or NR Interconnection Service may also be used to provide Ancillary Services, in accordance with the Tariff and Market Rule 1, after technical studies and/or periodic analyses are performed with respect to the Small Generating Facility's ability to provide any applicable Ancillary Services, provided that such studies and analyses have been or would be required in connection with the provision of such Ancillary Services by any existing Capacity Network Resource or Network Resource. However, if an Interconnection Customer's Small Generating Facility has not been designated as a Capacity Network Resource or as a Network Resource by any load, it cannot be required to provide Ancillary Services except to the extent such requirements extend to all Generating Facilities that are similarly situated.

CNR Network Interconnection Service and NR Interconenction Service do not necessarily provide the Interconnection Customer with the capability to physically deliver the output of its Small Generating Facility to any particular load on the New England Transmission System without incurring congestion costs. In the event of transmission constraints on the New England Transmission System, the Interconnection Customer's Small Generating Facility shall be subject to the applicable congestion management procedures for the New England Transmission System in the same manner as other Capacity Network Resources or Network Resources.

There is no requirement either at the time of study or interconnection, or at any point in the future, that the Interconnection Customer's Small Generating Facility be designated as a Capacity Network Resource or as a Network Resource by a Network Customer under the Tariff or that the Interconnection Customer identify a specific buyer (or sink). To the extent a Network Customer does designate the Small Generating Facility as either a Capacity Network Resource or a Network Resource, it must do so pursuant to the Tariff.

Once an Interconnection Customer satisfies the requirements for obtaining CNR interconenction Service or NR Interconnection Service, as long as the Small Generating Facility has not been deemed

to be retired, any future transmission service request for delivery from the Small Generating Facility on the New England Transmission System of any amount of capacity capability and/or energy capability will not require that any additional studies be performed or that any further upgrades associated with such Small Generating Facility be undertaken, regardless of whether or not such Small Generating Facility is ever designated by a Network Customer as a Capacity Network Resource or Network Resource and regardless of changes in ownership of the Small Generating Facility. To the extent the Interconnection Customer enters into an arrangement for long-term transmission service for deliveries from the Small Generating Facility outside the New England Transmission System, or if the unit has been deemed to be retired, such request may require additional studies and upgrades in order for Interconnecting Transmission Owner to grant such request.

**Article 2. Inspection, Testing, Authorization, and Right of Access**

2.1 Equipment Testing and Inspection

2.1.1. The Interconnection Customer shall test and inspect its Small Generating Facility and Interconnection Facilities prior to interconnection. The Interconnection Customer shall notify the System Operator and the Interconnecting Transmission Owner of such activities no fewer than five Business Days (or as may be agreed to by the Parties) prior to such testing and inspection. Testing and inspection shall occur on a Business Day. The Interconnecting Transmission Owner may, at its own expense, send qualified personnel to the Small Generating Facility site to inspect the interconnection and observe the testing. The Interconnection Customer shall provide the Interconnecting Transmission Owner a written test report when such testing and inspection is completed.

2.1.2 The Interconnecting Transmission Owner shall provide the Interconnection Customer and the System Operator written acknowledgment that it has received the Interconnection Customer's written test report. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Interconnecting Transmission Owner of the safety, durability, suitability, or reliability of the Small Generating Facility or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the Small Generating Facility.

2.2 Authorization Required Prior to Parallel Operation

2.2.1 The Interconnecting Transmission Owner [and System Operator] shall use Reasonable Efforts to list applicable parallel operation requirements in Attachment 5 of this Agreement. Additionally, the Interconnecting Transmission Owner shall notify the

Interconnection Customer of any changes to these requirements as soon as they are known. The Interconnecting Transmission Owner shall make Reasonable Efforts to cooperate with the Interconnection Customer in meeting requirements necessary for the Interconnection Customer to commence parallel operations by the in-service date.

2.2.2 The Interconnection Customer shall not operate its Small Generating Facility in parallel with the New England Transmission System [or Interconnecting Transmission Owner's transmission facilities] without prior written authorization of the Interconnecting Transmission Owner. The Transmission Provider will provide such authorization once the Transmission Provider receives notification that the Interconnection Customer has complied with all applicable parallel operation requirements. Such authorization shall not be unreasonably withheld, conditioned, or delayed.

2.3 Right of Access

2.3.1 Upon reasonable notice, the Interconnecting Transmission Owner may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Small Generating Facility first produces energy to inspect the interconnection, and observe the commissioning of the Small Generating Facility (including any required testing), startup, and operation for a period of up to three Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Interconnecting Transmission Owner at least five Business Days prior to conducting any on-site verification testing of the Small Generating Facility.

2.3.2 Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Interconnecting Transmission Owner shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.

2.3.3 Each Party shall be responsible for its own costs associated with following this article.

## Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date

This Agreement shall become effective upon execution by the Parties subject to acceptance by the Commission (if applicable), or if filed unexecuted, upon the date specified by the FERC. System Operator and Interconnecting Transmission Owner shall promptly file this Agreement with the Commission upon execution, if required.

3.2 Term of Agreement

This Agreement shall become effective on the Effective Date and by mutual agreement of the Parties shall remain in effect until May 27, 2029, and shall be automatically renewed

for each successive one-year period thereafter, unless terminated earlier in accordance with article 3.3 of this Agreement.

3.3 Termination

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination, including the filing with the Commission of a notice of termination of this Agreement (if required), which notice has been accepted for filing by the Commission.

3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving the System Operator and Interconnecting Transmission Owner 20 Business Days written notice.

3.3.2 Each Party may terminate this Agreement after Default pursuant to article 7.6.

3.3.3 Upon termination of this Agreement, the Small Generating Facility will be disconnected from the Interconnecting Transmission Owner's Interconnection Facilities. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this SGIA or such non-terminating Party otherwise is responsible for these costs under this SGIA.

3.3.4 The termination of this Agreement shall not relieve any Party of its liabilities and obligations, owed or continuing at the time of the termination.

3.3.5 The provisions of this article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection

Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.

3.4.1 Emergency Conditions --

"Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is likely to endanger life or property; or (2) that, in the case of the Interconnecting Transmission Owner, is likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the New England Transmission System, the Interconnecting Transmission Owner's Interconnection Facilities or any Affected System to which the New England Transmission System is directly connected; or (3) that, in the case of the Interconnection Customer, is likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Small Generating Facility or the Interconnection Customer's

Interconnection Facilities. The System Operator and the Interconnecting Transmission Owner may immediately suspend interconnection service and temporarily disconnect the Small Generating Facility in accordance with applicable provisions of the Operating Requirements. The System Operator and Interconnecting Transmission Owner shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Small Generating Facility. The Interconnection Customer shall notify the System Operator and Interconnecting Transmission Owner promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the New England Transmission System or any Affected Systems. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of the Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair

3.4.2.1 Outage Authority and Coordination. The System Operator shall have the authority to coordinate facility outages in accordance with the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents. Each Party may in accordance with the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents, in coordination with the other Party(ies), remove from service any of its respective Interconnection Facilities or Network Upgrades that may impact the other Party's(ies') facilities as necessary to perform maintenance or testing or to install or replace equipment, subject to the oversight of System Operator in accordance with the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents.

3.4.2.2 Outage Schedules. Outage scheduling, and any related compensation, shall be in accordance with the applicable provisions of the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents.

3.4.2.3 Interruption of Service. In accordance with the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents, the System Operator or Interconnecting Transmission Owner may require Interconnection Customer to interrupt or reduce deliveries of electricity if such delivery of electricity could adversely affect System Operator's or Interconnecting Transmission Owner's ability to perform such activities as are necessary to safely and reliably operate and maintain the New England Transmission System.

3.4.3 Forced Outages

During any forced outage, the Interconnecting Transmission Owner [and the System Operator] may suspend interconnection service to effect immediate repairs on the New England Transmission System. The Interconnecting Transmission Owner shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Interconnecting Transmission Owner shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

3.4.4 Adverse Operating Effects

The Interconnecting Transmission Owner shall notify the Interconnection Customer and the System Operator as soon as practicable if, based on Good Utility Practice, operation of the Small Generating Facility may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Small Generating Facility could cause damage to the New England Transmission System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Interconnecting Transmission Owner may disconnect the Small Generating Facility. The Interconnecting Transmission Owner shall provide the Interconnection Customer and the System Operator with five Business Day notice of such disconnection, unless the provisions of article 3.4.1 apply.

3.4.5 Modification of the Small Generating Facility

The Interconnection Customer must receive written authorization from: (1) the Interconnecting Transmission Owner before making any change to the Small Generating Facility that may have a material impact on the safety or reliability of the Interconnecting Transmission Owner's Interconnection Facilities; and (2) the System Operator before making any change to the Small Generating Facility that may have a material impact on the safety or reliability of the New England Transmission System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without the System Operator's or the Interconnecting Transmission Owner's, as appropriate, prior written authorization, the latter shall have the right to temporarily disconnect the Small Generating Facility.

3.4.6 Reconnection

The Parties shall cooperate with each other to restore the Small Generating Facility, Interconnection Facilities, and the New England Transmission System to

their normal operating state as soon as reasonably practicable following a temporary disconnection.

## Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Attachment 2 of this Agreement. The Interconnecting Transmission Owner shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Interconnecting Transmission Owner.

4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Interconnecting Transmission Owner's Interconnection Facilities.

4.2 Distribution Upgrades

The Interconnecting Transmission Owner shall design, procure, construct, install, and own the Distribution Upgrades described in Attachment 6 of this Agreement. If the Interconnecting Transmission Owner and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer. The Interconnection Customer shall be responsible for its share of all reasonable expenses, associated with operating, maintaining, repairing, and replacing such Distribution Upgrades, except to the extent that a retail tariff of, or an agreement with, the Interconnecting Transmission Owner or its distribution company affiliate, if appropriate, provides otherwise.

## Article 5. Cost Responsibility for Network Upgrades

5.1 Applicability

No portion of this article 5 shall apply unless the interconnection of the Small Generating Facility requires Network Upgrades, including Stand Alone Network Upgrades.

5.2 Network Upgrades

The Interconnecting Transmission Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment 6 of this Agreement. If the

Interconnecting Transmission Owner and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Interconnecting Transmission Owner elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, shall be borne by the Interconnection Customer.

5.2.1.1 Cost Allocation. Cost allocation of Generator Interconnection Related Upgrades shall be in accordance with Schedule 11 of Section II of the Tariff.

5.2.1.2 Compensation. Any compensation due to the Interconnection Customer for increases in transfer capability to the PTF resulting from its Generator Interconnection Related Upgrade shall be determined in accordance with Sections II and III of the Tariff.

5.3 Special Provisions for Affected Systems

The Interconnection Customer shall enter into separate related facilities agreements to address any upgrades to the Affected System(s) that are necessary for safe and reliable interconnection of the Interconnection Customer's Small Generating Facility.

5.4 Rights Under Other Agreements

Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades.

## Article 6. Billing, Payment, Milestones, and Financial Security

6.1 Billing and Payment Procedures and Final Accounting

6.1.1 The Interconnecting Transmission Owner shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of Interconnection Facilities and Upgrades contemplated by this Agreement on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within 30 calendar days of receipt, or as otherwise agreed to by the Parties.

6.1.2 Within three months of completing the construction and installation of the Interconnecting Transmission Owner's Interconnection Facilities and/or Upgrades described in the Attachments to this Agreement, the Transmission Provider shall provide the Interconnection Customer with a final accounting report of any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such facilities or Upgrades, and (2) the Interconnection Customer's

previous aggregate payments to the Interconnecting Transmission Owner for such facilities or Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Interconnecting Transmission Owner shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Interconnecting Transmission Owner within 30 calendar days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Interconnecting Transmission Owner shall refund to the Interconnection Customer an amount equal to the difference within 30 calendar days of the final accounting report.

6.2 Milestones

The Parties shall agree on milestones for which each Party is responsible and list them in Attachment 4 of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event, it shall immediately notify the other Party(ies) of the reason(s) for not meeting the milestone and (1) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (2) requesting appropriate amendments to Attachment 4. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless it will suffer significant uncompensated economic or operational harm from the delay, (2) attainment of the same milestone has previously been delayed, or (3) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

6.3 Financial Security Arrangements

At least 20 Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of the Interconnecting Transmission Owner’s Interconnection Facilities and Upgrades, the Interconnection Customer shall provide the Interconnecting Transmission Owner a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the Interconnecting Transmission Owner in accordance with Section 7 of Schedule 11 of the Tariff. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Interconnecting Transmission Owner’s Interconnection Facilities and Upgrades. In addition:

6.3.1 The guarantee must be made by an entity that meets the creditworthiness requirements of the Interconnecting Transmission Owner, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.

1.3.2 The letter of credit or surety bond must be issued by a financial institution or insurer reasonably acceptable to the Interconnecting Transmission Owner and must specify a reasonable expiration date.

## Article 7. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default

Notwithstanding any other provision of this Agreement, the liability, indemnification and insurance provisions of the Transmission Operating Agreement ("TOA") or other applicable operating agreements shall apply to the relationship between the System Operator and the Interconnection Transmission Owner and the liability, indemnification and insurance provisions of the Tariff apply to the relationship between the System Operator and the Interconnection Customer and between the Interconnecting Transmission Owner and the Interconnection Customer.

7.1 Assignment

This Agreement may be assigned by a Party upon 15 Business Days prior written notice and opportunity to object by the other Parties; provided that:

7.1.1 The Parties may assign this Agreement without the consent of the other Parties to any affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement, provided that the Interconnection Customer promptly notifies the other Parties of any such assignment.

7.1.2 The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Interconnecting Transmission Owner or the System Operator, for collateral security purposes to aid in providing financing for the Small Generating Facility, provided that the Interconnection Customer will promptly notify the Interconnecting Transmission Owner and the System Operator of any such assignment.

7.1.3 Any attempted assignment that violates this article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same financial, credit, and insurance obligations as the Interconnection Customer. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

7.2 Limitation of Liability

Each Party's liability to the other Party(ies) for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall a Party be liable to another Party for any indirect, special, consequential, or punitive damages, except as authorized by this Agreement.

7.3 Indemnity

7.3.1 This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in article 7.2.

7.3.2 Each Party shall at all times indemnify, defend, and hold the other Parties harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's(ies') action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

7.3.3 If an indemnified person is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

7.3.4 If an indemnifying Party is obligated to indemnify and hold any indemnified person harmless under this article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.

7.3.5 Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this article may apply, the indemnified person shall notify the indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Party.

7.4 Consequential Damages

Other than as expressly provided for in this Agreement, in no event shall a Party be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to another Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

7.5 Force Majeure

7.5.1 As used in this article, a Force Majeure Event shall mean "any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing."

7.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party(ies), either in writing or via the telephone, of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party(ies) informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance as soon as possible.

7.6 Default

7.6.1 No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement or the result of an act or omission of the other Party(ies). Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in article 7.6.2, the defaulting Party shall have 60 calendar days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within 60 calendar days, the defaulting Party shall commence such cure within 20 calendar days after notice and continuously and diligently complete such cure within six months from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.

7.6.2 If a Default is not cured as provided in this article, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party(ies) shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not those Parties terminate this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is

entitled at law or in equity. The provisions of this article will survive termination of this Agreement.

## Article 8. Insurance Requirements

8.1 General Liability

The Interconnection Customer shall, at its own expense, maintain in force general liability insurance without any exclusion for liabilities related to the interconnection undertaken pursuant to this Agreement. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. The Interconnection Customer shall obtain additional insurance only if necessary as a function of owning and operating a generating facility. Such insurance shall be obtained from an insurance provider authorized to do business in the State where the interconnection is located. Certification that such insurance is in effect shall be provided upon request of the Interconnecting Transmission Owner, except that the Interconnection Customer shall show proof of insurance to the Interconnecting Transmission Owner no later than ten Business Days prior to the anticipated commercial operation date. An Interconnection Customer of sufficient credit-worthiness may propose to self-insure for such liabilities, and such a proposal shall not be unreasonably rejected.

8.2 Insurer Requirements and Endorsements

All required insurance shall be carried by reputable insurers qualified to underwrite insurance in the state where the interconnection is located having a Best Rating of "A-". In addition, all insurance shall, (a) include Interconnecting Transmission Owner and System Operator as additional insureds; (b) contain a severability of interest clause or cross-liability clause; (c) provide that Interconnecting Transmission Owner and System Operator shall not incur liability to the insurance carrier for payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to Interconnecting Transmission Owner and System Operator prior to cancellation, termination, or material change of such insurance; provided that to the extent the Interconnection Customer is satisfying the requirements of subpart (d) of this paragraph by means of a presently existing insurance policy, the Interconnection Customer shall only be required to make good faith efforts to satisfy that requirement and will assume the responsibility for notifying the Interconnecting Transmission Owner and System Operator as required above.

If the requirement of clause (a) in the paragraph above prevents Interconnection Customer from obtaining the insurance required without added cost or due to written refusal by the insurance carrier, then upon Interconnection Customer's written notice to Interconnecting Transmission Owner and System Operator, the requirements of clause (a) shall be waived.

8.3 Evidence of Insurance

Evidence of the insurance required shall state that coverage provided is primary and is not in excess to or contributing with any insurance or self-insurance maintained by Interconnection Customer.

The Interconnection Customer is responsible for providing the Interconnecting Transmission Owner and the System Operator with evidence of insurance in compliance with this Tariff on an annual basis.

Prior to the Interconnecting Transmission Owner commencing work on Interconnection Facilities, Network Upgrades and Distribution Upgrades, the Interconnection Customer shall have its insurer furnish to the Interconnecting Transmission Owner and the System Operator certificates of insurance evidencing the insurance coverage required above. The Interconnection Customer shall notify and send to the Interconnecting Transmission Owner and the System Operator a certificate of insurance for any policy written on a "claims-made" basis. The Interconnecting Transmission Owner and the System Operator may at their discretion require the Interconnection Customer to maintain tail coverage for three years on all policies written on a "claims-made" basis.

8.4 Self Insurance

If Interconnection Customer is a company with a self-insurance program established in accordance with commercially acceptable risk management practices, Interconnection Customer may comply with the following in lieu of the above requirements as reasonably approved by the Interconnecting Transmission Owner and the System Operator:

- Interconnection Customer shall provide to Interconnecting Transmission Owner and System Operator, at least thirty (30) calendar days prior to the Date of Initial Operation, evidence of such program to self-insure to a level of coverage equivalent to that required.
- If Interconnection Customer ceases to self-insure to the standards required hereunder, or if Interconnection Customer is unable to provide continuing evidence of Interconnection Customer's financial ability to self-insure, Interconnection Customer agrees to promptly obtain the coverage required under Article 8.1.

8.5

The Interconnecting Transmission Owner agrees to maintain general liability insurance or self-insurance consistent with the Interconnecting Transmission Owner's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Interconnecting Transmission Owner's liabilities undertaken pursuant to this Agreement.

**Article 9. Confidentiality**

9.1 Confidential Information shall include without limitation, all information governed by the ISO New England Information Policy, all information obtained from third parties under

confidentiality agreements, and any confidential and/or proprietary information provided by a Party to the another Party that is clearly marked or otherwise designated "Confidential." For purposes of this Agreement all design, operating specifications, and metering data provided by the Interconnection Customer shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such.

9.2 Confidential Information does not include information previously in the public domain, required to be publicly submitted or divulged by Governmental Authorities (after notice to the other Party(ies) and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce this Agreement. Each Party receiving Confidential Information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the Party providing that information, except to fulfill obligations under this Agreement, or to fulfill legal or regulatory requirements.

9.2.1 Each Party shall employ at least the same standard of care to protect Confidential Information obtained from the other Party(ies) as it employs to protect its own Confidential Information.

9.2.2 Each Party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of Confidential Information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

9.3 Notwithstanding anything in this article to the contrary, and pursuant to 18 CFR § 1b.20, if the Commission, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Agreement, the Party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the Party may, consistent with 18 CFR § 388.112, request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other Party(ies) to this Agreement prior to the release of the Confidential Information to the Commission. The Party shall notify the other Party(ies) to this Agreement when it is notified by the Commission that a request to release Confidential Information has been received by the Commission, at which time either of the Parties may respond before such information would be made public, pursuant to 18 CFR § 388.112. Requests from a state regulatory body conducting a confidential investigation shall be treated in a similar manner if consistent with the applicable state rules and regulations.

## Article 10. Disputes

10.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this article.

10.2 In the event of a dispute, a Party shall provide the other Party(ies) with a written Notice of Dispute. Such Notice shall describe in detail the nature of the dispute.

10.3 If the dispute has not been resolved within two Business Days after receipt of the Notice, any Party may contact the Commission's Dispute Resolution Service (DRS) for assistance in resolving the dispute.

10.4 The DRS will assist the Parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the Parties in resolving their dispute. DRS can be reached at 1-877-337-2237 or via the internet at http://www.ferc.gov/legal/adr.asp.

10.5 Each Party agrees to conduct all negotiations in good faith and will be responsible for its pro-rata share of any costs paid to neutral third-parties.

10.6 If no Party elects to seek assistance from the DRS, or if the attempted dispute resolution fails, then each Party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of this Agreement.

**Article 11. Taxes**

11.1 The Parties agree to follow all applicable tax laws and regulations, consistent with Commission policy and Internal Revenue Service requirements.

11.2 Each Party shall cooperate with the other to maintain the other Party's(ies') tax status. Nothing in this Agreement is intended to adversely affect the Interconnecting Transmission Owner's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

**Article 12. Miscellaneous**

12.1 Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the state of Maine (where the Point of Interconnection is located), without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12.2 Amendment

The Parties may amend this Agreement by a written instrument duly executed by the Parties, or under article 12.12 of this Agreement.

12.3 No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

12.4 Waiver

The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

12.4.1 Any waiver at any time by a Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Interconnecting Transmission Owner. Any waiver of this Agreement shall, if requested, be provided in writing.

12.5 Entire Agreement

Except for the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents, this Agreement, including all Attachments, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. Except for the ISO New England Operating Documents, Applicable Reliability Standards, or successor documents, there are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

12.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

12.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon any Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.

12.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

12.9 Security Arrangements

Infrastructure security of the New England Transmission System equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects the System Operator, Interconnecting Transmission Owners, market participants, and Interconnection Customers interconnected to the New England Transmission System to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and, eventually, best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for system infrastructure and operational security, including physical, operational, and cyber-security practices.

12.10 Environmental Releases

Each Party shall notify the other Party(ies), first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Small Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party(ies). The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party(ies) copies of any publicly available reports filed with any governmental authorities addressing such events.

12.11 Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party(ies) for the performance of such subcontractor.

12.11.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party(ies) for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Interconnecting Transmission Owner be liable

for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

12.11.2 The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

12.12 Reservation of Rights

Consistent with Section 4.8 of Schedule 23, the Interconnecting Transmission Owner and the System Operator shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, classifications of service, rule or regulation under section 205 or any other applicable provision of the Federal Power Act and the Commission's rules and regulations thereunder, and the Interconnection Customer shall have the right to make a unilateral filing with the Commission to modify this Agreement under any applicable provision of the Federal Power Act and the Commission's rules and regulations; provided that each Party shall have the right to protest any such filing by the other Party(ies) and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of the Commission under sections 205 or 206 of the Federal Power Act and the Commission's rules and regulations, except to the extent that the Parties otherwise agree as provided herein.

**Article 13. Notices**

13.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national currier service, or sent by first class mail, postage prepaid, to the person specified below:

If to the Interconnection Customer:

Interconnection Customer: Black Bear Hydro Partners, LLC
Attention: Jonathan W. Chadbourne
Address: c/o ArcLight Capital Partners, LLC
200 Clarendon Street, 55th Floor
City: Boston State: MA Zip: 02117
Phone: (617) 531-6397 Fax: (617) 867-4698

If to the Interconnecting Transmission Owner:

Interconnecting Transmission Owner: Bangor Hydro Electric Company
Attention: Gerard Chasse

Address: 970 Illinois Avenue
City: Bangor State: ME Zip: 04401-2722
Phone: (207) 973-2653 Fax: (207) 941-6645

If to the System Operator:
System Operator: ISO New England Inc.
Attention: Generation Interconnection, Transmission Planning Department
Address: One Sullivan Road
City: Holyoke State: MA Zip: 01040-2841
Phone: (413) 540-4220 Fax: (413)-540-4203

With a copy to:
Billing Department
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841

13.2 Billing and Payment

Billings and payments shall be sent to the addresses set out below:

Interconnection Customer: Black Bear Hydro Partners, LLC
Attention: Jonathan W. Chadbourne
Address: c/o ArcLight Capital Partners, LLC
200 Clarendon Street, 55th Floor
City: Boston State: MA Zip: 02117
Phone: (617) 531-6397 Fax: (617) 867-4698

Interconnecting Transmission Owner: Bangor Hydro Electric Company
Attention: Gerard Chasse
Address: 970 Illinois Avenue
City: Bangor State: ME Zip: 04401-2722
Phone: (207) 973-2653 Fax: (207) 941-6645

System Operator: ISO New England Inc.
Attention: Generation Interconnection, Transmission Planning Department
Address: One Sullivan Road
City: Holyoke State: MA Zip: 01040-2841
Phone: (413) 540-4220 Fax: (413) 540-4203

With a copy to:
Billing Department
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841

13.3 Alternative Forms of Notice

Any notice or request required or permitted to be given by a Party to the other Party(ies) and not required by this Agreement to be given in writing may be so given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out below:

If to the Interconnection Customer:

Interconnection Customer: Black Bear Hydro Partners, LLC
Attention: Jonathan W. Chadbourne
Address: c/o ArcLight Capital Partners, LLC
200 Clarendon Street, 55th Floor
City: Boston State: MA Zip: 02117
Phone: (617) 531-6397 Fax: (617) 867-4698
E-mail: jchadbourne@arclightcapital.com

If to the Interconnecting Transmission Owner:

Interconnecting Transmission Owner: Bangor Hydro Electric Company
Attention: Gerard Chasse
Address: 970 Illinois Avenue
City: Bangor State: ME Zip: 04401-2722
Phone: (207) 973-2653 Fax: (207) 941-6645
E-mail: gchasse@bhe.com

If to the System Operator:

System Operator: ISO New England Inc.
Attention: Generation Interconnection, Transmission Planning Department
Address: One Sullivan Road
City: Holyoke State: MA Zip: 01040-2841
Phone: 413-540-4220 Fax: 413-540-4203
E-mail: geninterconn@iso-ne.com

With a copy to:

Billing Department
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841
Facsimile: (413) 535-4024
E-mail: billingdept@iso-ne.com

13.4 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:

Interconnection Customer: Black Bear Hydro Partners, LLC
Attention: Jonathan W. Chadbourne
Address: c/o ArcLight Capital Partners, LLC
200 Clarendon Street, 55th Floor
City: Boston State: MA Zip: 02117
Phone: (617) 531-6397 Fax: (617) 867-4698
E-mail: jchadbourne@arclightcapital.com

Interconnecting Transmission Owner's Operating Representative:

Interconnecting Transmission Owner: Bangor Hydro Electric Company
Attention: Gerard Chasse
Address: 970 Illinois Avenue
City: Bangor State: ME Zip: 04401-2722
Phone: (207) 973-2653 Fax: (207) 941-6645
E-mail: gchasse@bhe.com

DUNS numbers:
Interconnection Customer - 83-144-7128
Interconnecting Transmission Owner – 006949002

System Operator's Operating Representative:

System Operator: ISO New England Inc.
Attention: Generation Interconnection, Transmission Planning Department
Address: One Sullivan Road
City: Holyoke State: MA Zip: 01040-2841
Phone: (413) 540-4220 Fax: (413) 540-4203

13.5 Changes to the Notice Information

A Party may change this information by giving five Business Days written notice prior to the effective date of the change.

**Article 14. Signatures**

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

Interconnecting Transmission Owner

Name: _____
Kimberly M. Wadleigh

Title: Vice President, Transmission & Distribution

Date: 10/6/11

Interconnection Customer

Name: _____
Daniel R. Revers

Title: President

Date: _____

ISO New England Inc (System Operator)

Name: _____
Stephen J. Rourke

Title: Vice President, System Planning

Date: _____

**Article 14. Signatures**

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

Interconnecting Transmission Owner

Name: _____
Gerard Chasse

Title: President and COO

Date: _____

Interconnection Customer

Name: X _____
Daniel R. Revers

Title: President

Date: 10/5/11

ISO New England Inc (System Operator)

Name: _____
Stephen J. Rourke

Title: Vice President, System Planning

Date: _____

**Article 14. Signatures**

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

Interconnecting Transmission Owner

Name: _____
Gerard Chasse

Title: President and COO

Date: _____

Interconnection Customer

Name: _____
Daniel R. Revers

Title: President

Date: _____

ISO New England Inc (System Operator)

Name: _____
Stephen J. Rourke

Title: Vice President, System Planning

Date: 9/23/2011

## ATTACHMENTS TO SGIA

| | |
|---|---|
| Attachment 1 | Glossary of Terms |
| Attachment 2 | Description and Costs of the Small Generating Facility, Interconnection Facilities, and Metering Equipment |
| Attachment 3 | One-line Diagram Depicting the Small Generating Facility, Interconnection Facilities, Metering Equipment and Upgrades |
| Attachment 4 | Milestones |
| Attachment 5 | Additional Operating Requirements for the New England Transmission System and Affected Systems Needed to Support the Interconnection Customer's Needs |
| Attachment 6 | Interconnecting Transmission Owner's Description of its Upgrades, and Best Estimates of Upgrade Costs |
| Attachment 7 | Commercial Operation Date |

**Attachment 1**

## Glossary of Terms

**Administered Transmission System** – The PTF, the Non-PTF, and distribution facilities that are subject to the Tariff.

**Affected Party** or **Parties** – The entity that owns, operates or controls an Affected System, or any other entity that otherwise may be a necessary party to the interconnection process.

**Affected System –** Any electric system that is within the Control Area, including, but not limited to, generator owned transmission facilities, or any other electric system that is not within the Control Area that may be affected by the proposed interconnection.

**Affiliate** – With respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity.

**Applicable Laws and Regulations** – All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

**Applicable Reliability Standards** – The requirements and guidelines of NERC, NPCC and the New England Control Area, including publicly available local reliability requirements of Interconnecting Transmission Owners or other Affected Systems.

**Base Cases –** Base power flow, short circuit and stability databases, including all underlying assumptions, and contingency lists provided by System Operator, Interconnecting Transmission Owner, and any Affected Party as deemed appropriate by the System Operator in accordance with applicable codes of conduct and confidentiality requirements; such databases and lists shall include all generation projects and transmission projects, including merchant transmission projects that are proposed for the New England Transmission System for which a transmission

expansion plan has been submitted and approved by the applicable authority. Base Cases also include data provided by the Interconnection Customer, where applicable, to the Interconnecting Transmission Owner and System Operator to facilitate required Interconnection Studies.

**Business Day –** Monday through Friday, excluding Federal Holidays.

**Capacity Capability Interconnection Standard ("CC Interconnection Standard")** – The criteria required to permit the Interconnection Customer to interconnect in a manner that avoids any significant adverse effect on the reliability, stability, and operability of the New England Transmission System, including protecting against the degradation of transfer capability for interfaces affected by the Generating Facility, and in a manner that ensures intra-zonal deliverability by avoidance of the redispatch of other Capacity Network Resources, as detailed in the ISO New England Planning Procedures.

**Capacity Network Resource ("CNR")** – That portion of a Generating Facility that is interconnected to the Administered Transmission System under the Capacity Capability Interconnection Standard.

**Capacity Network Resource Capability ("CNR Capability")** -- (i) In the case of a Generating Facility that is a New Generating Capacity Resource pursuant to Section III.13.1 of the Tariff or an Existing Generating Capacity Resource that is increasing its capability pursuant to Section III.13.1.2.2.5 of the Tariff, the highest megawatt amount of the Capacity Supply Obligation obtained by the Generating Facility in accordance with Section III.13 of the Tariff, and, if applicable, as specified in a filing by the System Operator with the Commission in accordance with Section III.13.8.2 of the Tariff, or (ii) in the case of a Generating Facility that meets the criteria under Section 1.6.4.3 of the Small Generator Interconnection Procedures ("SGIP"), the total megawatt amount determined pursuant to the hierarchy established in Section 1.6.4.3. The CNR Capability shall not exceed the maximum net megawatt electrical output of the Generating Facility at the Point of Interconnection at an ambient temperature at or above 90 F. degrees for Summer and at or above 20 degrees F. for Winter. Where the Generating Facility includes multiple production devices, the CNR Capability shall not exceed the aggregate maximum net

megawatt electrical output of the Generating Facility at the Point of Interconnection at an ambient temperature at or above 90 degrees F. for Summer and at or above 20 degrees F. for Winter.

**Capacity Network Resource Group Study ("CNR Group Study")** – The study performed by the System Operator under Section III.13.1.1.2.3 of the Tariff to determine which resources qualify to participate in a Forward Capacity Auction.

**Capacity Network Resource Interconnection Service ("CNR Interconnection Service")** -- The Interconnection Service selected by the Interconnection Customer to interconnect its Large Generating Facility with the Administered Transmission System in accordance with the Capacity Capability Interconnection Standard. An Interconnection Customer's CNR Interconnection Service shall be for the megawatt amount of CNR Capability. CNR Interconnection Service does not in and of itself convey transmission service.

**Commercial Operation** – The status of a Generating Facility that has commenced generating electricity for sale, excluding electricity generated during Trial Operation.

**Commercial Operation Date** – The date on which the Generating Facility commences Commercial Operation as agreed to by the Parties pursuant to Attachment 3 to the Standard Small Generator Interconnection Agreement.

**Conditional Qualified New Generating Capacity Resource** – As defined in Section III.13.1.1.2.3(f) of the Tariff.

**Default** – The failure of a breaching Party to cure its breach under the Small Generator Interconnection Agreement.

**Distribution System** – The Interconnecting Transmission Owner's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk

power over longer distances. The voltage levels at which Distribution Systems operate differ among areas.

**Distribution Upgrades** – The additions, modifications, and upgrades to the Interconnecting Transmission Owner's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Small Generating Facility and render the transmission service necessary to effect the Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

**Generating Facility** – The Interconnection Customer's device for the production of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

**Good Utility Practice** – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

**Governmental Authority** – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Interconnection Provider, or any Affiliate thereof.

**Initial Synchronization Date –** The date upon which the Generating Facility is initially synchronized and upon which Trial Operation begins.

**In-Service Date –** The date upon which the Interconnection Customer reasonably expects it will be ready to begin use of the Interconnecting Transmission Owner's Interconnection Facilities to obtain back feed power.

**Interconnecting Transmission Owner** – A Transmission Owner that owns, leases or otherwise possesses an interest in the portion of the Administered Transmission System at the Point of Interconnection and shall be a Party to the Standard Small Generator Interconnection Agreement. The term Interconnecting Transmission Owner shall not be read to include the System Operator.

**Interconnection Customer** – Any entity, including a transmission owner or its Affiliates or subsidiaries, that proposes to interconnect its Small Generating Facility with the Administered Transmission System.

**Interconnection Facilities** – The Interconnecting Transmission Owner's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Small Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Small Generating Facility to the Administered Transmission System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades.

**Interconnection Facilities Study –** A study conducted by the System Operator, Interconnecting Transmission Owner, or a third party consultant for the Interconnection Customer to determine a list of facilities (including Interconnecting Transmission Owner's Interconnection Facilities and Network Upgrades as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with the Administered Transmission System. The scope of the study is defined in Section 3.5 of the Standard Small Generator Interconnection Procedures.

**Interconnection Facilities Study Agreement –** The form of agreement contained in Appendix 8 of the Standard Small Generator Interconnection Procedures for conducting the Interconnection Facilities Study.

**Interconnection Feasibility Study –** A preliminary evaluation of the system impact and cost of interconnecting the Generating Facility to the Administered Transmission System, the scope of which is described in Section 3.3 of the Standard Small Generator Interconnection Procedures. The Interconnection Customer has the option to request either that the Interconnection Feasibility Study be completed as a separate and distinct study, or as part of the Interconnection System Impact Study. If the Interconnection Customer requests that the Interconnection Feasibility Study be completed as part of the Interconnection System Impact Study, Section 3.3 shall be performed as the first step of the Interconnection System Impact Study, and shall be regarded as part of the Interconnection System Impact Study. When the requirements of Section 3.3 are performed as part of the Interconnection System Impact Study, the Interconnection Customer shall be responsible only for the deposit requirements of the Interconnection System Impact Study, and there shall be only one final report, which will include the results of both Section 3.3 and Section 3.4.

**Interconnection Feasibility Study Agreement –** The form of agreement contained in Appendix 6 of the Standard Small Generator Interconnection Procedures for conducting the Interconnection Feasibility Study.

**Interconnection Request** – The Interconnection Request (a) shall mean an Interconnection Customer's request, in accordance with the Tariff, to: (i) interconnect a new Generating Facility to the Administered Transmission System as either a CNR or a NR; (ii) increase the energy capability or capacity capability of an existing Generating Facility; (iii) make a modification to the operating characteristics of an existing Generating Facility, including its Interconnection Facilities, that is interconnected to the Administered Transmission System; (iv) commence participation in the wholesale markets by an existing Generating Facility that is interconnected with the Administered Transmission System; or (v) change from NR Interconnection Service to

CNR Interconnection Service for all or part of a Generating Facility's capability. Interconnection Request shall not include: (i) a retail customer interconnecting a new Generating Facility that will produce electric energy to be consumed only on the retail customer's site; (ii) a request to interconnect a new Generating Facility to a distribution facility that is subject to the Tariff if the Generating Facility will not be used to make wholesale sales of electricity in interstate commerce; or (iii) a request to interconnect a Qualifying Facility (as defined by the Public Utility Regulatory Policies Act, as amended by the Energy Policy Act of 2005 and the regulations thereto), where the Qualifying Facility's owner intent is to sell 100% of the Qualifying Facility's output to its interconnected electric utility.

**Interconnection Service** – The service provided by the System Operator and the Interconnecting Transmission Owner, associated with interconnecting the Interconnection Customer's Generating Facility to the Administered Transmission System and enabling the receipt of electric energy capability and/or capacity capability from the Generating Facility at the Point of Interconnection, pursuant to the terms of the Standard Small Generator Interconnection Agreement and, if applicable, the Tariff.

**Interconnection Study** – Any of the following studies: the Interconnection Feasibility Study, the Interconnection System Impact Study, and the Interconnection Facilities Study described in the Standard Small Generator Interconnection Procedures. Interconnection Study shall not include a CNR Group Study.

**Interconnection System Impact Study** – An engineering study that evaluates the impact of the proposed interconnection on the safety and reliability of the Administered Transmission System and any other Affected System. The study shall identify and detail the system impacts that would result if the Generating Facility were interconnected without project modifications or system modifications, focusing on Adverse System Impacts, or to study potential impacts, including but not limited to those identified in the Scoping Meeting as described in the Standard Small Generator Interconnection Procedures. If the Interconnection Customer requests that the Interconnection Feasibility Study be completed as part of the Interconnection System Impact Study, Section 3.3 shall be performed as the first step of the Interconnection System Impact

Study, and shall be regarded as part of the Interconnection System Impact Study. When the requirements of Section 3.3 are performed as part of the Interconnection System Impact Study, the Interconnection Customer shall be responsible only for the deposit requirements of the Interconnection System Impact Study, and there shall be only one final report, which will include the results of both Section 3.3 and 3.4.

**Interconnection System Impact Study Agreement** -- The form of agreement contained in Appendix 7 of the Standard Small Generator Interconnection Procedures for conducting the Interconnection System Impact Study.

**NERC –** The North American Electric Reliability Corporation or its successor organization.

**Network Capability Interconnection Standard ("NC Interconnection Standard"**)– The minimum criteria required to permit the Interconnection Customer to interconnect in a manner that avoids any significant adverse effect on the reliability, stability, and operability of the New England Transmission System, including protecting against the degradation of transfer capability for interfaces affected by the Generating Facility, as detailed in the ISO New England Planning Procedures.

**Network Resource ("NR")** – The portion of a Generating Facility that is interconnected to the Administered Transmission System under the Network Capability Interconnection Standard.

**Network Resource Capability ("NR Capability") –** The maximum gross and net megawatt electrical output of the Generating Facility at the Point of Interconnection at an ambient temperature at or above 50 degrees F. for Summer and at or above 0 degrees F. for Winter. Where the Generating Facility includes multiple energy production devices, the NR Capability shall be the aggregate maximum gross and net megawatt electrical output of the Generating Facility at the Point of Interconnection at an ambient temperature at or above 50 degrees F. for Summer and at or above 0 degrees F. for Winter. The NR Capability shall be equal to or greater than the CNR Capability. In the case of a Generating Facility that meets the criteria under

Section 1.6.4.4 of this SGIP, the NR Capability shall equal the total megawatt amount determined pursuant to Section 1.6.4.4.

**Network Resource Interconnection Service ("NR Interconnection Service") –** The Interconnection Service selected by the Interconnection Customer to interconnect its Generating Facility to the Administered Transmission System in accordance with the Network Capability Interconnection Standard. An Interconnection Customer's NR Interconnection Service shall be solely for the megawatt amount of the NR Capability. NR Interconnection Service in and of itself does not convey transmission service.

**Network Upgrades** – Additions, modifications, and upgrades to the New England Transmission System required at or beyond the point at which the Small Generating Facility interconnects with the Administered Transmission System to accommodate the interconnection of the Small Generating Facility with the Administered Transmission System. Network Upgrades do not include Distribution Upgrades.

**Notice of Dispute** – A written notice of a dispute or claim that arises out of or in connection with the Standard Small Generator Interconnection Agreement or its performance.

**Operating Requirements** – Any operating and technical requirements that may be applicable due to System Operator or the Interconnecting Transmission Owner's requirements, including those set forth in the Small Generator Interconnection Agreement, ISO New England Operating Documents, Applicable Reliability Standards, or successor documents.

**Party or Parties** – The System Operator, Interconnecting Transmission Owner, Interconnection Customer or any combination of the above.

**Point of Interconnection** – The point where the Interconnection Facilities connect with the Administered Transmission System.

**Queue Position** -- The order of a valid request in the New England Control Area, relative to all other pending requests in the New England Control Area, that is established based upon the date and time of receipt of such request by the System Operator. Requests are comprised of Interconnection Requests, requests for Elective Transmission Upgrades, requests for transmission service and notification of requests for interconnection to other electric systems, as notified by the other electric systems, that impact the Administered Transmission System. For purposes of the SGIP, references to a "higher-queued" Interconnection Request shall mean one that has been received by System Operator (and placed in queue order) earlier than another Interconnection Request, which is referred to as "lower-queued."

**Reasonable Efforts** – With respect to an action required to be attempted or taken by a Party under the Small Generator Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

**Small Generating Facility** – A Generating Facility having a maximum gross capability at or above zero degrees F. of 20 MW or less.

**Stand Alone Network Upgrades** – Network Upgrades that an Interconnection Customer may construct without affecting day-to-day operations of the New England Transmission System during their construction. The System Operator, Interconnection Customer, Interconnecting Transmission Owner, and any Affected Party as deemed appropriate by the System Operator in accordance with applicable codes of conduct and confidentiality requirements, must agree as to what constitutes Stand Alone Network Upgrades and identify them in Attachment 2 to the Standard Small Generator Interconnection Agreement.

**System Operator** – ISO New England Inc. or a successor organization.

**Tariff** – The System Operator's or Affected System's Tariff through which open access transmission service and Interconnection Service are offered, as filed with the Commission, and as amended or supplemented from time to time, or any successor tariff.

**Upgrades** – The required additions and modifications to the Administered Transmission System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

**Attachment 2**

**Description and Costs of the Small Generating Facility, Interconnection Facilities, and Metering Equipment**

I. DESCRIPTION OF MAJOR COMPONENTS

A. Small Generating Facility

(1) Description of Small Generating Facility.

The Small Generating Facility (known as Milford hydroelectric) is comprised of a 900' (+) dam and brick/masonry powerhouse constructed in 1906 and four existing hydroelectric generating Units 3 – 6 (installed in 1956, 1946, 1941, and 1942, respectively, to replace originally installed 25-HZ generating units) and two new hydroelectric generating Units 1 & 2 being installed in 2011 to replace the former Unit 1 & 2 one-megawatt Nordberg peaking diesel generators retired and removed from service in 1990. The four existing 3-phase hydroelectric generating Units 3 – 6 are each rated at 2000 kVA, .8 pf, 4160 volts, and 278 amps. The two new 3-phase hydroelectric generating Units 1 & 2 are each rated at 833 kVA, .9 pf, 4160 volts, and 115.61 amps. The two new Units 1 & 2 generators are manufactured by Hyundai Ideal and supplied by Canadian Hydro Components, manufacturer and supplier of the hydro-turbine equipment.

(2) The Small Generating Facility shall receive:

___ Network Resource Interconnection Service for the NR Capability at a level not to exceed: See below.

X Capacity Network Resource Interconnection Service for: (i) the NR Capability at a level not to exceed 9 gross MW and 8.9 net MW for Summer and for Winter; and (ii) the CNR Capability at 6.422 MW for Summer and 6.643 MW for Winter, which shall not exceed 8.9 net MW electrical output of the Generating Facility at an ambient temperature at or above 90 F degrees for summer and at or above 20 degrees F for winter. The CNR Capability shall be the amount of the Capacity Supply Obligation obtained by the Generating Facility in accordance with Section III.13 of the Tariff and, if applicable, as specified in filings by the System Operator with the Commission pursuant to Section III.13 of the Tariff.

(3) Detailed Description of Small Generating Facility and Generator Step-Up Transformer, if applicable:

| **Generator Data** | |
|---|---|
| Number of Generators | Unit 1 |
| Manufacturer | Canadian Hydro Components |
| Model | 1700 mm |
| Designation of Generator(s) | Synchronous |
| Excitation System Manufacturer | Basler |
| Excitation System Model | AC8B |
| Voltage Regulator Manufacturer | |
| Voltage Regulator Model | |
| **Generator Ratings** | |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 90 Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 50 Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 20 Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above zero Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Station Service Load For Each Unit | 16.67 KW |
| Overexcited Reactive Power at Rated MVA and Rated Power Factor | 362 kVAR @ 0.95 pf |
| Underexcited Reactive Power at Rated MVA and Rated Power Factor | 362 kVAR @ 0.95 pf |
| **Generator Short Circuit Data** | |
| Generator MVA rating | .833 MVA |
| Subtransient Resistance | 0.0238 |
| Subtransient Reactance (saturated) | 0.247 |
| Transient Resistance | 0.0238 |
| Transient Reactance (saturated) | 0.384 |
| Negative sequence resistance | 0.0687 |

| | |
|---|---|
| Negative sequence reactance | 0.312 |
| **Generator Data** | |
| Number of Generators | Unit 2 |
| Manufacturer | Canadian Hydro Components |
| Model | 1700 mm |
| Designation of Generator(s) | Synchronous |
| Excitation System Manufacturer | Basler |
| Excitation System Model | AC8B |
| Voltage Regulator Manufacturer | |
| Voltage Regulator Model | |
| **Generator Ratings** | |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 90 Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 50 Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 20 Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above zero Degrees F | 791 KW @ .95 pf – Gross Output<br>775 KW @ .95 pf – Net Output |
| Station Service Load For Each Unit | 16.67 KW |
| Overexcited Reactive Power at Rated MVA and Rated Power Factor | 362 kVAR @ 0.95 pf |
| Underexcited Reactive Power at Rated MVA and Rated Power Factor | 362 kVAR @ 0.95 pf |
| **Generator Short Circuit Data** | |
| Generator MVA rating | .833 MVA |
| Subtransient Resistance | 0.0238 |
| Subtransient Reactance (saturated) | 0.247 |
| Transient Resistance | 0.0238 |
| Transient Reactance (saturated) | 0.384 |

| | |
|---|---|
| Negative sequence resistance | 0.0687 |
| Negative sequence reactance | 0.312 |
| **Generator Data** | |
| Number of Generators | Unit 3 |
| Manufacturer | General Electric |
| Model | Type ATI |
| Designation of Generator(s) | Synchronous |
| Excitation System Manufacturer | General Electric |
| Excitation System Model | DC Generator Type EV |
| Voltage Regulator Manufacturer | General Electric |
| Voltage Regulator Model | |
| **Generator Ratings** | |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 90 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 50 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 20 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above zero Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Station Service Load For Each Unit | 16.67 KW |
| Overexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| Underexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| **Generator Short Circuit Data** | |
| Generator MVA rating | 2 MVA Contin. @ 60° C. |
| Subtransient Resistance | |

| | |
|---|---|
| Subtransient Reactance (saturated) | 0.025 |
| Transient Resistance | |
| Transient Reactance (saturated) | 0.025 |
| Negative sequence resistance | |
| Negative sequence reactance | 0.029 |
| **Generator Data** | |
| Number of Generators | Unit 4 |
| Manufacturer | General Electric |
| Model | Type ATI |
| Designation of Generator(s) | Synchronous |
| Excitation System Manufacturer | General Electric |
| Excitation System Model | DC Generator Type EV |
| Voltage Regulator Manufacturer | General Electric |
| Voltage Regulator Model | |
| **Generator Ratings** | |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 90 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 50 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 20 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above zero Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.) Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Station Service Load For Each Unit | 16.67 KW |
| Overexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |

| | |
|---|---|
| Underexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| **Generator Short Circuit Data** | |
| Generator MVA rating | 2 MVA Contin. @ 60° C. |
| Subtransient Resistance | |
| Subtransient Reactance (saturated) | 0.025 |
| Transient Resistance | |
| Transient Reactance (saturated) | 0.025 |
| Negative sequence resistance | |
| Negative sequence reactance | 0.029 |
| **Generator Data** | |
| Number of Generators | Unit 5 |
| Manufacturer | General Electric |
| Model | Type ATI |
| Designation of Generator(s) | Synchronous |
| Excitation System Manufacturer | General Electric |
| Excitation System Model | DC Generator Type EV |
| Voltage Regulator Manufacturer | General Electric |
| Voltage Regulator Model | |
| **Generator Ratings** | |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 90 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 50 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 20 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output | (Nameplate: 2000 kVA Contin. @ 60° C.) |

| | |
|---|---|
| at Ambient Temperature at or above zero Degrees F | Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Station Service Load For Each Unit | 16.67 KW |
| Overexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| Underexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| **Generator Short Circuit Data** | |
| Generator MVA rating | 2 MVA Contin. @ 60° C. |
| Subtransient Resistance | |
| Subtransient Reactance (saturated) | 0.025 |
| Transient Resistance | |
| Transient Reactance (saturated) | 0.025 |
| Negative sequence resistance | |
| Negative sequence reactance | 0.029 |
| **Generator Data** | |
| Number of Generators | Unit 6 |
| Manufacturer | General Electric |
| Model | Type ATI |
| Designation of Generator(s) | Synchronous |
| Excitation System Manufacturer | General Electric |
| Excitation System Model | DC Generator Type EV |
| Voltage Regulator Manufacturer | General Electric |
| Voltage Regulator Model | |
| **Generator Ratings** | |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 90 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 50 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf |

| | |
|---|---|
| | Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above 20 Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Greatest Unit Gross and Net MW Output at Ambient Temperature at or above zero Degrees F | (Nameplate: 2000 kVA Contin. @ 60° C.)<br>Gross: 1,900 KW @ .95 pf / Net: 1,883KW @ .95 pf<br>Gross: 1,600 KW @ .80 pf / Net: 1,583 KW @ .80 pf |
| Station Service Load For Each Unit | 16.67 KW |
| Overexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| Underexcited Reactive Power at Rated MVA and Rated Power Factor | 624 kVAR @ 0.95 pf |
| **Generator Short Circuit Data** | |
| Generator MVA rating | 2 MVA Contin @ 60° C. |
| Subtransient Resistance | |
| Subtransient Reactance (saturated) | 0.025 |
| Transient Resistance | |
| Transient Reactance (saturated) | 0.025 |
| Negative sequence resistance | |
| Negative sequence reactance | 0.029 |
| **Transformer Data** | |
| Number of units | One 3-phase GSU for 6-unit plant |
| Self Cooled | 7,500 kVA |
| Maximum Rating | 9,375 kVA |
| Winding Connection (LV/HV) | 4.26 kV / 43.8 kV |
| Fixed Taps | 46.2* - 45 – 43.8 – 42.6 – 41.4 |
| Z1 primary to secondary at self cooled rating | 4.6% |

| | |
|---|---|
| Positive Sequence X/R ratio primary to secondary | 10 |
| Z0 primary to secondary at self cooled rating | infinite |

B. Interconnection Facilities

The existing Interconnecting Customer's Interconnection Facilities connecting Units 3, 4, 5 and 6 consist of two underground circuits linking the 4.16kVgenerator bus to the 4.16kV bus at the generator step-up ("GSU") transformer. The 46kV side of the GSU transformer continues through the Interconnecting Transmission Owner's metering equipment to the Interconnection Customer's T1H circuit breaker.

In order to interconnect Units 1 and 2, the Interconnecting Customer will replace the existing GSU transformer with a 9.375 MVA top nameplate rated transformer.

The existing Interconnecting Transmission Owner's Interconnection Facilities consist of the T1HA switch between the Interconnecting Customer's T1H circuit breaker and the Interconnecting Transmission Owner's 46kV transmission bus at Milford Substation.

No additions, modifications or upgrades are necessary to the Interconnecting Transmission Owner's Interconnection Facilities for the addition of Units 1 and 2.

C. Metering Equipment

Existing metering equipment includes revenue-grade metering transformers and a bi-directional revenue meter. These are located on the generator side of the Interconnection Customer's T1H circuit breaker. No additional equipment required for the addition of Units 1 and 2.

D. Other Components

None

II. INTERCONNECTION EQUIPMENT OWNERSHIP, OPERATION AND MAINTENANCE

A. Point of Change of Ownership; Point of Interconnection

The Point of Interconnection is the 46kV bus at Interconnecting Transmission Owner's Milford Substation in Milford, Maine. The Point of Change of Ownership is the connection to the T1HA switch as shown on Diagram 3-1 (Attachment 3).

B. Description of Responsibilities

See Attachment 5

III. PRICING ESTIMATES

A. Interconnection Facilities

None, to the extent covered by separate local transmission service agreement

B. Metering Equipment

None, to the extent covered by separate local transmission service agreement

C. Operation and Maintenance

None, to the extent covered by separate local transmission service agreement

**Attachment 3**

**One-line Diagram Depicting the Small Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades**

~~**Contains Critical Energy Infrastructure Information**~~

(REDACTED)

**Attachment 4**

## Milestones

1. **Milestones for all Small Generating Facilities:** The description and entries listed in the following table establish the required Milestones in accordance with the provisions of the SGIP and this SGIA. **None**

2. **Milestones Applicable If Facilities Study Has Been Waived by Interconnection Customer:**

| Item No. | Milestone Description | Responsible Party | Date | SGIP/SGIA Reference |
|---|---|---|---|---|
| 1 | Siting approval for the Generating Facility and Interconnection Facilities | Interconnection Customer | Not Applicable | SGIP § 3.4.5(i) |
| 2 | Engineering of Interconnection Facilities approved by Interconnecting Transmission Owner | Interconnection Customer | Not Applicable | SGIP § 3.4.5(ii) |
| 3 | Ordering of long lead time material for Interconnection Facilities and system upgrades | Interconnection Customer | Not Applicable | SGIP § 3.4.5(iii) |
| 4 | Initial Synchronization Date | Interconnection Customer | 11/01/2011 | SGIP § 3.4.5(iv) |
| 5 | Commercial Operation Date | Interconnection Customer | 11/04/2011 | SGIP § 3.4.5(v) |
| 6 | In-Service Date | Interconnection Customer | Complete | |

3. **Milestones Applicable Solely for CNR Interconnection Service.** In addition to the Milestones above, the following Milestones apply to Interconnection Customers requesting CNR Interconnection Service:

| Item # | Milestone | Responsible Party | Date | SGIP/SGIA Reference |
|---|---|---|---|---|
| 1 | Submit necessary requests for participation in the Forward Capacity Auction associated with the Generating Facility's requested Commercial Operation Date, in accordance with Section III.13 of the Tariff | Interconnection Customer | Complete for FCA 5 and FCA 6 | 1.7.1.3(i) |
| 2 | Participate in a CNR Group Study | Interconnection Customer; System Operator | To be completed for FCA 6 | 1.7.1.3(ii) |
| 3 | Qualify and receive a Capacity Supply Obligation in accordance with Section III.13 of the Tariff | Interconnection Customer | To be completed for FCA 6 | 1.7.1.3(iii) |

| | | | | |
|---|---|---|---|---|
| 4 | Complete a re-study of the applicable Interconnection Study to determine the cost responsibility for facilities and upgrades necessary to accommodate the Interconnection Request based on the results of the Forward Capacity Auction, Reconfiguration Auction or bilateral transaction through which the Interconnection Customer received a Capacity Supply Obligation | System Operator | To be completed for FCA 6 | 1.7.1.3(iv) |

**Agreed to by:**

**For the System Operator:** _____ **Date:** 9/23/2011

**For the Interconnecting Transmission Owner:** _____

**Date:** _____

**For the Interconnection Customer:** _____

**Date:** _____

| | | | | |
|---|---|---|---|---|
| | III.13 of the Tariff | | | |
| 4 | Complete a re-study of the applicable Interconnection Study to determine the cost responsibility for facilities and upgrades necessary to accommodate the Interconnection Request based on the results of the Forward Capacity Auction, Reconfiguration Auction or bilateral transaction through which the Interconnection Customer received a Capacity Supply Obligation | System Operator | To be completed for FCA 6 | 1.7.1.3(iv) |

**Agreed to by:**

**For the System Operator:**_____ **Date:**_____

**For the Interconnecting Transmission Owner:** Kimberly Wadsh

**Date:** 10/6/11

**For the Interconnection Customer:**_____

**Date:**_____

| | | | | |
|---|---|---|---|---|
| 4 | Complete a re-study of the applicable Interconnection Study to determine the cost responsibility for facilities and upgrades necessary to accommodate the Interconnection Request based on the results of the Forward Capacity Auction, Reconfiguration Auction or bilateral transaction through which the Interconnection Customer received a Capacity Supply Obligation | System Operator | To be completed for FCA 6 | 1.7.1.3(iv) |

**Agreed to by:**

**For the System Operator:**_____ **Date:**_____

**For the Interconnecting Transmission Owner:**_____

**Date:**_____

**For the Interconnection Customer:** X _____

**Date:** 10/5/11

**Attachment 5**

## Additional Operating Requirements for the New England Transmission System and Affected Systems Needed to Support the Interconnection Customer's Needs

I. OPERATING REQUIREMENTS

Prior to the Effective Date of this Agreement, the Small Generating Facility (Milford hydroelectric generating facility) was owned by the Interconnecting Transmission Owner and interconnected to the Administered Transmission System. In summary, as part of a comprehensive Asset Purchase Agreement dated as of September 25, 1998 (the "Asset Purchase Agreement"), PPL Maine purchased, among other assets, Interconnecting Transmission Owner's interest in the Ellsworth, Howland, Medway, Milford, Orono, Stillwater, and Veazie hydroelectric generating facilities (referred to as the "Former BHE Facilities"). Interconnecting Transmission Owner retained certain assets, easements, and other rights and obligations with respect to the Former BHE Facilities, as further set forth in the Asset Purchase Agreement and in the Separation Document dated May 27, 1999 between PPL Maine and Interconnecting Transmission Owner (the "Separation Document"), in the Quitclaim Deeds with respect to each Former BHE Facilities dated May 26, 1999 (each a "Deed" and collectively the "Deeds") and an Interconnection Agreement between Interconnecting Transmission Owner and Penobscot Hydro, LLC. Interconnection Customer is the successor to PPL Maine and Penobscot Hydro, LLC dated May 27, 1999, and designated as Bangor Hydro-Electric Company Rate Schedule FERC No. 73 (the "1999 Interconnection Agreement").

On March 4, 2011, Interconnection Customer submitted an Interconnection Request to the System Operator to add two generators to be designated as Units 1 and 2. This Interconnection Request warranted a new three-party *pro forma* Standard Large Generator Interconnection Agreement as set forth in Schedule 23 to Section II of the Tariff. Accordingly, the Parties have agreed to enter into this Agreement for the interconnection of the Small Generating Facility, and the Interconnection Customer and Interconnecting Transmission Owner have agreed to amend the 1999 Interconnection Agreement to remove the Milford hydroelectric generating facility from that agreement to become effective concurrent with the Effective Date of this Agreement.

**Interconnecting Transmission Owner's Specific Operating Requirements**

**1. Purpose**

The purpose of the Interconnecting Transmission Owner's Specific Operating Requirements ("ITO Operating Requirements") is to allow safe operation of Interconnection Customer's Generating Facility in parallel with the Interconnecting Transmission Owner's power system. These requirements are in addition to all other requirements defined in the Small Generator Interconnection Agreement (the "Agreement") and the ISO New England Inc. Operating Procedures. ***In the event of any conflict between the ITO Operating Requirements and the Agreement (as defined in the Preamble), the Agreement shall govern.***

**2. Notification**

Interconnection Customer must notify Interconnecting Transmission Owner and the System Operator prior to operating any component of the Small Generating Facility in parallel with the Interconnecting Transmission Owner's system. Interconnecting Transmission Owner and Interconnection Customer will also work together to keep the other party and the System Operator informed of any switching or events that could impact the other party or the System Operator. The following contact information is to be used for operating coordination.

Contact for Interconnecting Transmission Owner's Operators:

Contact: System Operator - Switcher
Dept. Head: Mark Phair, Chief System Operator
Phone: (207) 992-9801
FAX: (207) 990-6962

Contact for Interconnection Customer Operators:

Contact: Roving Operator, 24-Hour Contact
Phone: (207) 461.3619
FAX: (207) 827.4102

For less time sensitive communication:

Contact: Richard Fennelly, Vice President Generating Assets

Phone: (207) 827-5106
Fax: (207) 827-4102

Any revisions to the contact information provided above should be communicated directly to the other party in a timely manner.

**3. Tagging**

Interconnecting Transmission Owner and Interconnection Customer will work together to ensure that the correct locking out and tagging procedures are followed during any work on the electrical system.

For work on the Interconnecting Transmission Owner's system that requires a Red Tag (deenergized equipment) on Line 7, the transmission circuit that is feeding the Interconnection Customer's Small Generating Facility, the Generating Facility will be switched to an alternate source, Line 80, if possible. Interconnecting Transmission Owner's Operators will notify the Interconnection Customer prior to switching.

Interconnecting Transmission Owner's Operators will also work with Interconnection Customer's Operators to ensure that appropriate tagging takes place for work on the Interconnection Customer's electrical system that could affect the Interconnecting Transmission Owner's system.

Locking Out and Tagging procedures specific to the work being performed will be shared and reviewed by both parties prior to the work being done with as much notice as is reasonable.

**4. Remote Tripping**

Interconnecting Transmission Owner has installed a Remote Terminal Unit (RTU) on the Interconnection Customer's premises to allow remote tripping and status of Interconnection Customer's circuit breaker T1H by Interconnecting Transmission Owner's Operators. Interconnecting Transmission Owner's Operator will only use this trip capability in an Emergency Condition. All other instances requiring tripping of this breaker will be coordinated through the appropriate Interconnection Customer contact.

**Attachment 6**

**Interconnecting Transmission Owner's**
**Description of its Upgrades**
**and Best Estimate of Upgrade Costs**

I. DESCRIPTION OF UPGRADES

A. Distribution Upgrades

None

B. Network Upgrades

None

(1) Stand-Alone Network Upgrades

None

(2) Other Network Upgrades

None

C. Affected System Upgrades

None

D. Contingency Upgrades

(1) Long Lead Facility-Related Upgrades. The Interconnection Customer's Small Generating Facility is associated with a Long Lead Facility, in accordance with Section 3.2.3 of the LGIP. Pursuant to Section 4.1 of the LGIP, the Interconnection Customer shall be responsible for the following upgrades in the event that the Long Lead Facility achieves Commercial Operation and obtains a Capacity Supply Obligation in accordance with Section III.13.1 of the Tariff:

None

If the Interconnection Customer fails to cause these upgrades to be in-service prior to the commencement of the Long Lead Facility's Capacity Commitment Period, the Interconnection Customer shall be deemed to be in Breach of this SGIA in accordance with Article 7, and the System Operator will initiate all necessary steps to terminate this SGIA, in accordance with Article 3.

(2) Other Contingency Upgrades.

None

E. Post-Forward Capacity Auction Re-study Upgrade Obligations.

To be determined

**Attachment 7**

## Commercial Operation Date

This Attachment 7 is a part of the SGIA between System Operator, Interconnecting Transmission Owner and Interconnection Customer.

[*Date*]

Bangor Hydro Electric Company
Attention: Legal Notices
970 Illinois Avenue
Bangor, ME 04401-2722

Generator Interconnections
Transmission Planning Department
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841

Re: _____ Small Generating Facility

Dear _____:

On [Date] Black Bear Hydro Partners, LLC has completed Trial Operation of Unit No. ___. This letter confirms that Black Bear Hydro Partners, LLC commenced commercial operation of Unit No. ___ at the Small Generating Facility, effective as of September 16, 2011.
Thank you.

[*Signature*]

[*Interconnection Customer Representative*]

Kleinschmidt
Energy & Water Resource Consultants

***Contains Critical Energy Infrastructure Information***
***- Do Not Release -***
( REDACTED )

December 27, 2011

**VIA ELECTRONIC MAIL**

Mr. Scott Hall
Manager Environmental Services
Black Bear Hydro Partners, LLC
P.O. Box 276
Milford, ME 04461-0276

Final Construction Report - Milford Hydroelectric Plant No. 1 and No. 2 Turbine Installation
Milford Hydroelectric Project (FERC No. 2534) (1732005.01)

Dear Mr. Hall:

Contained within is Kleinschmidt Associates' (KA) final construction report for the Milford Hydroelectric Plant No.1 and No.2 Turbine Installation. The Project is located in Milford Maine and is owned and operated by Black Bear Hydro Partners, LLC (BBHP) under FERC license No. 2534-ME. This report compiles the total activity for the project.

## 1.0 GENERAL

The Milford Project is an existing project located on the Penobscot River, in the Town of Milford, Penobscot County, Maine. The Project is owned and operated by Black Bear Hydro Partners, LLC under FERC license No. 2534-ME. Additional details of the work performed were presented in the licensee's 30 September 2010 submittal to FERC's New York Regional Office.

The existing Milford Station contains four hydroelectric units, one fixed blade unit and three Kaplan units. The existing station flow capacity is 5,630 cfs with an installed capacity of 6.4 MW. The circa 1906's powerhouse, with upgraded units 2-6 installed in the 1940's, had four consecutive empty wheelpits at 16 feet each on the west end of the building.

Two new Canadian Hydro Components (CHC) units were installed in two of the empty wheelpits of the existing powerhouse. The CHC units are 1700 mm diameter single regulated vertical axial flow units. The two new units have a combined flow capacity of 1,100 cfs, resulting in a combined total power station flow of approximately 6,730 cfs. The total station capacity is about 7.8 MW. The runner elevation of the new units is at Elevation 80.13 ft and normal pond is at Elevation 101.7 ft.

The attached Record Drawings 1 thru 10, depict the details of the new turbine installations.

The work for this contract consisted of the following for each unit:

- Installation of tailrace stoplogs
- Installation of new headgates
- Demolition in the existing wheel pit floor area, between the powerhouse walls
- Demolition of concrete and ledge for new draft tube extension
- Demolition for the new draft tube elbow
- Install draft tube extension and elbow
- Place concrete around draft tube
- Place concrete headwall
- Install anti-vortex hood
- Place concrete within the existing structure to receive new generator frame
- Install turbine, shaft, generator and mechanical equipment
- Perform final alignments
- Place concrete around generator frame
- Install new wheel pit covers

The general contract was awarded to Bancroft Contracting of South Paris, Maine and work commenced after mobilization on 17 January 2011. The turbine, shaft, Hyundai generator, and mechanical equipment were provided by Canadian Hydro Components Ltd., Almonte, Ontario, Canada. Eaton Electrical of Winthrop Maine was responsible for the unit control, switchgear, and electrical interconnections. There was no drawdown of the reservoir as the work commenced behind the new headgate. Representative photos of the work performed are included in Appendix A of this report.

## 2.0 FOUNDATIONS

The existing powerhouse foundation was modified by demolition of the existing concrete structure between existing wheel pit walls. Ledge was removed below the existing wheel pit floor to provide room to set the draft tube and forms. The entire draft tube was then backfilled with reinforced concrete.

## 3.0 EMBANKMENTS

There were no embankments involved in this project.

## 4.0 CONCRETE WORK

The concrete work consisted of the concrete around the draft tubes, a new wheel pit downstream headwall, concrete around the generator frame, and other miscellaneous concrete work. The structural concrete as well as the fill concrete consisted of 4,000 psi air entrained concrete supplied by Owen J. Folsom Inc of Old Town Maine, concrete compressive strength reports attached in Appendix C. All test results were reported to have exceeded the minimum design strength. All of the 28 day breaks exceeded 5,000 psi with the average being 5818 psi.

## 5.0 ANCHORS

No anchors were used on this project.

## 6.0 INSTRUMENTATION

No instrumentation is associated with this project.

## 7.0 DRAWINGS

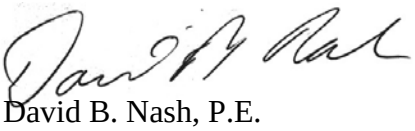
Attached in Appendix B are Record Drawings showing the completed work. The drawings represent the as-built condition as noted on the Record Drawings provided by the contractor with additional revisions provided by BBHP's site representative Mr. Richard Fennelly.

The work was monitored on a regular basis by supervisory staff from BBHP. The Quality Control Manager for this project was Mr. Richard Fennelly. Mr. Fennelly reported that the project was constructed in accordance with the plans and specifications. Mr. David Nash, P.E. of KA was the project manager for the project assisted by Ms. Leslie Corrow, P.E. of KA, the design engineer. KA conducted site visits during construction to monitor key components of the project and to respond to construction related questions. Mr. Fennelly and Mr. Nash were in regular communication throughout the entire construction activities. Services provided by KA in the capacity of Design Engineer were performed in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances. Based on our review and the results of the on-site inspection and testing program, it is concluded that the complete project adequately reflects the project plans, specifications, and the design intent. No further action is required.

Kleinschmidt Associates appreciates having the opportunity to work with BBHP in the successful completion and startup of this project. If you have any questions please call me.

Sincerely,

**KLEINSCHMIDT ASSOCIATES**



David B. Nash, P.E.
Project Manager

DBN/LLC:KLJ
Attachments: Appendix A - Photos
Appendix B - Record Drawings
Appendix C - Concrete Compressive Strength Results
cc: R. Fennelly - BBH

# APPENDIX A

# PHOTOS

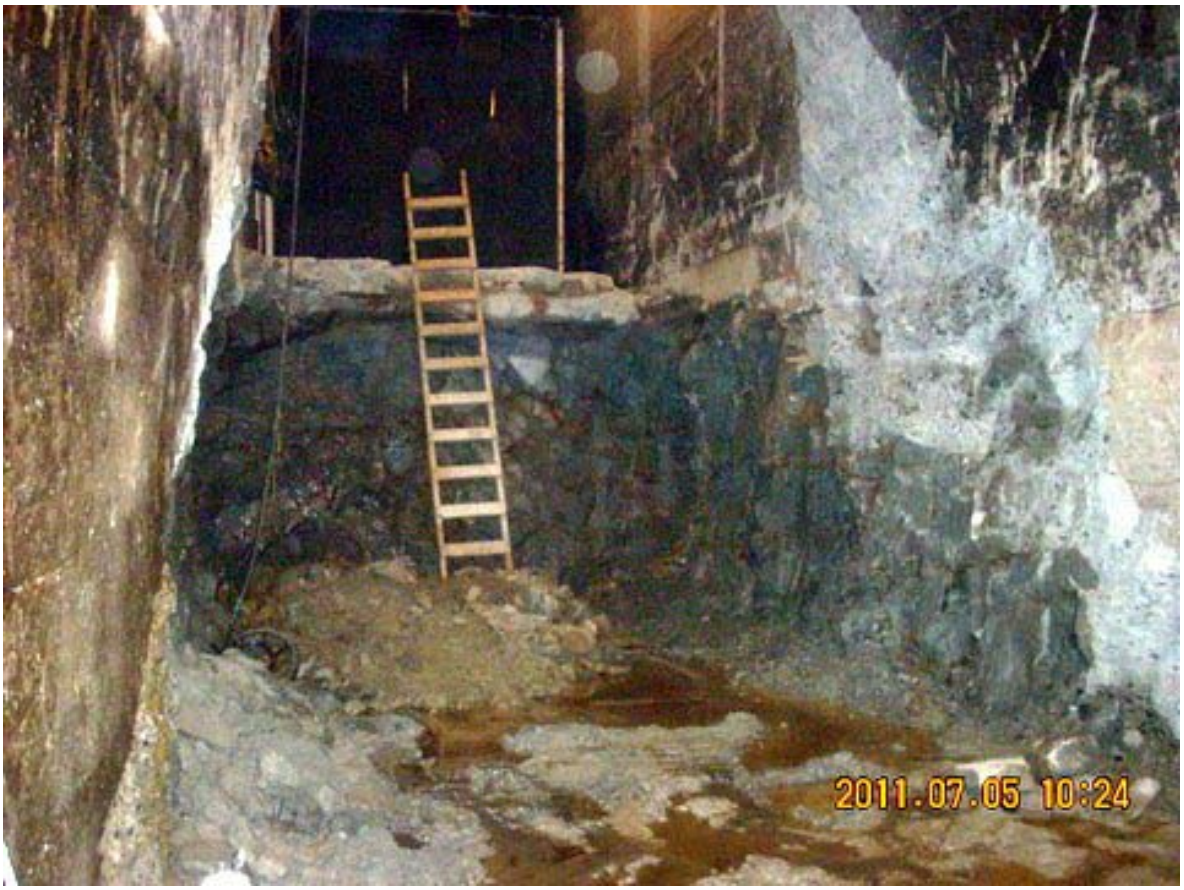


Photo 1 – Demolition work for Unit 1 draft tube, within 2 weeks of completion. Taken July 5, 2011.

Photo 2 – Unit 2 Draft Tube elbow discharge roof formed and prepped for concrete. Taken July 5, 2011, concrete was placed the next day and two concrete placements are left in this wheelpit.


Photo 3 – One of two new CHC waterwheel assemblies being delivered for storage.
Taken June 2, 2011.


Photo 4 – Unit 1 demolition work complete and draft tube elbow set in place.
Taken August 10, 2011.

Photo 5 – Unit 2 concrete placement complete. Looking upstream from draft tube elbow discharge. Taken August 12, 2011.

Photo 6 – Unit 2 main operating floor looking upstream at opening demolished in floor to install generator baseplate. Taken August 11, 2011.

Photo 7 – Unit1 concrete placement around draft tube elbow. Taken August 19, 2011.

Photo 8 – Unit1 concrete floor demolished for generator baseplate installation. Taken September 13, 2011.

Photo 9 – Unit 2 main operating floor looking upstream at Unit 2 generator baseplate installed. Taken September 13, 2011.

Photo 10 – Unit 1 concrete placement at wheelpit access floor opening at main generator level. Taken October 14, 2011.

Photo 11 – Unit 1 waterwheel installed on draft tube spool piece in wheelpit, view looking downstream. Taken October 14, 2011.

Photo 12 – Unit 2 generator installed, concrete floor placed, and wiring connections in progress. Taken October 14, 2011.

Photo 13 – Units 1 & 2 hydraulic pumping units installed for wicket gate shaft operation.
Taken October 14, 2011.

Photo 14 – Generator Units 1 & 2 control panels installed.
Taken October 14, 2011.

# APPENDIX B

# REPRESENTATIVE RECORD DRAWINGS

(REDACTED)

# APPENDIX C

# CONCRETE STRENGTH TESTS RESULTS

S.W.COLE
ENGINEERING, INC.

| | | | |
|---|---|---|---|
| Project Name | Milford ME - Black Bear Hydro - Materials Testing | | |
| Project Number | 11-0466 | Project Manager | Russell Bragg |
| Client | Bancroft Contracting Corporation | Date | 8/3/2011 |

Bancroft Contracting Corporation
Allan Howe Email
23 Phillips Road
South Paris, ME 04281-6405

Results Being Reported

CONCRETE CYLINDER COMPRESSION TEST - ASTM C39/AASHTO T22

Copy To:

O.J. Folsom Inc. - Jason Folsom - E-Mail

**Remarks:**

**S. W. COLE ENGINEERING, INC.**

**BY:** Thomas J. Higgins

S.W.COLE ENGINEERING, INC.

# Report of Concrete Compressive Strength

ASTM C-31 & C-39

**Project Name:** Milford ME - Black Bear Hydro - Materials Testing

**Project Number:** 11-0466

**Client:** Bancroft Contracting Corporation

**Client Contract Number:**

**General Contractor:**

**Concrete Supplier:** O.J. FOLSOM

## PLACEMENT INFORMATION

**Date Cast:** 7/6/2011 **Time Cast:** 8:50

**Date Received:** 7/8/2011

**Placement Location:** Draft Tube Roof

**Placement Method:** Pump Truck

**Cylinders Made By:** MICHAEL CZOK

**Placement Vol. (yd³):** 25

**Aggregate Size (in):** 3/4

## INITIAL CURING CONDITIONS

**Temperatures**

**Minimum (°F)** 71 **Maximum (°F)** 77

## DELIVERY INFORMATION

**Admixtures:** Darex II, Adva 140

## TEST RESULTS

**Slump (in) (C-143):**

**Slump WR:** 6 3/4

**Air Content (%) (C-231):**

**Air WR:** 6.7

**Air Temp (°F):** 69

**Conc. Temp (°F) (C-1064):** 81

**Load Number:** 2

**Mixer Number:** 50

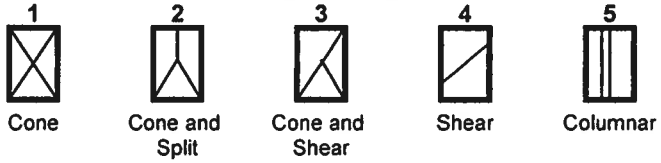
**Ticket Number:** 119302

**Cubic Yards:** 9.5

**Design (psi):** **4000**

| Cylinder Designation | Cylinder Weight (lbs) | Cylinder Diameter (in) | Cross Sectional Area(In)² | Date Of Test | Cure Type | **Age (days)** | Fracture Type | Load (kips) | **Strength (psi)** |
|---|---|---|---|---|---|---|---|---|---|
| 161-4A | | 4.00 | 12.57 | 7/13/2011 | Lab | **7** | 4 | 61.3 | **4880** |
| 161-4B | | 4.00 | 12.57 | 8/3/2011 | Lab | **28** | 4 | 79.5 | **6330** |
| 161-4C | | 4.00 | 12.59 | 8/3/2011 | Lab | **28** | 4 | 75.4 | **5990** |
| 161-4D | | | | Hold | Lab | | | | |

Fracture Types




Remarks:

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S.W.COLE
ENGINEERING, INC.

| | | | |
|---|---|---|---|
| Project Name | Milford ME - Black Bear Hydro - Materials Testing | | |
| Project Number | 11-0466 | Project Manager | Russell Bragg |
| Client | Bancroft Contracting Corporation | Date | 9/14/2011 |

Bancroft Contracting Corporation
Allan Howe Email
23 Phillips Road
South Paris, ME 04281-6405

Results Being Reported

CONCRETE CYLINDER COMPRESSION TEST - ASTM C39/AASHTO T22

Copy To:

O.J. Folsom Inc. - Jason Folsom - E-Mail

**Remarks:**

**S. W. COLE ENGINEERING, INC.**

**BY:** Thomas J. Higgins

S.W.COLE ENGINEERING, INC.

# Report of Concrete Compressive Strength

ASTM C-31 & C-39

**Project Name:** Milford ME - Black Bear Hydro - Materials Testing

**Project Number:** 11-0466

**Client:** Bancroft Contracting Corporation

**Client Contract Number:**

**General Contractor:**

**Concrete Supplier:** O.J. FOLSOM

## PLACEMENT INFORMATION

**Date Cast:** 8/17/2011 **Time Cast:** 10:23 **Date Received:** 8/18/2011

**Placement Location:** Draft Tube #2

**Placement Method:** Pump

**Cylinders Made By:** LAMONT DUTRA

**Placement Vol. (yd³):** 45

**Aggregate Size (in):** 3/4

## INITIAL CURING CONDITIONS

**Temperatures**

**Minimum (°F)** 74 **Maximum (°F)** 84

## DELIVERY INFORMATION

**Admixtures:** Adva 140, Air

## TEST RESULTS

**Slump (in) (C-143):** **Slump WR:** 8 1/4

**Air Content (%) (C-231):** **Air WR:** 6.8

**Air Temp (°F):** 68

**Conc. Temp (°F) (C-1064):** 76

**Load Number:** 3

**Mixer Number:** 50

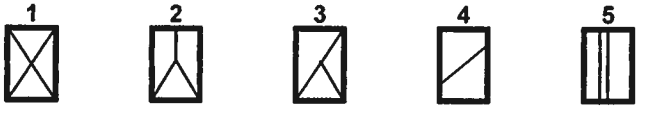
**Ticket Number** 119650

**Cubic Yards:** 10

**Design (psi):** **4000**

| Cylinder Designation | Cylinder Weight (lbs) | Cylinder Diameter (in) | Cross Sectional Area(In)² | Date Of Test | Cure Type | **Age (days)** | Fracture Type | Load (kips) | **Strength (psi)** |
|---|---|---|---|---|---|---|---|---|---|
| 161-8A | | 4.01 | 12.61 | 8/24/2011 | Lab | **7** | 4 | 60.9 | **4830** |
| 161-8B | | 4.00 | 12.56 | 9/14/2011 | Lab | **28** | 4 | 72.1 | **5740** |
| 161-8C | | 4.00 | 12.57 | 9/14/2011 | Lab | **28** | 4 | 70.9 | **5640** |
| 161-8D | | | | Hold | Lab | | | | |

Fracture Types




1 Cone; 2 Cone and Split; 3 Cone and Shear; 4 Shear; 5 Columnar

Remarks:

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S.W.COLE ENGINEERING, INC.

# Report of Concrete Compressive Strength

ASTM C-31 & C-39

**Project Name:** Milford ME - Black Bear Hydro - Materials Testing

**Project Number:** 11-0466

**Client:** Bancroft Contracting Corporation

**Client Contract Number:**

**General Contractor:**

**Concrete Supplier:** O.J. FOLSOM

## PLACEMENT INFORMATION

**Date Cast:** 9/7/2011 **Time Cast:** 10:10 **Date Received:** 9/8/2011

**Placement Location:** Turbin #1 Draft Tube Walls

**Placement Method:** Pump

**Cylinders Made By:** LAMONT DUTRA

**Placement Vol. (yd³):** 10

**Aggregate Size (in):** 3/4

## INITIAL CURING CONDITIONS

**Temperatures**

**Minimum (°F)** 60 **Maximum (°F)** 68

## DELIVERY INFORMATION

**Admixtures:** Adva 140, Darex II

## TEST RESULTS

**Slump (in) (C-143):**

**Slump WR:** 8 1/2

**Air Content (%) (C-231):**

**Air WR:** 6.8

**Air Temp (°F):** 64

**Conc. Temp (°F) (C-1064):** 73

**Load Number:** 1

**Mixer Number:** 55

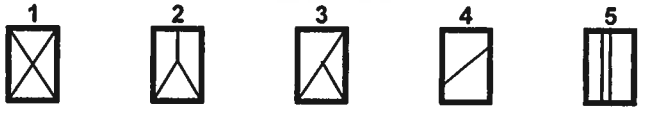
**Ticket Number** 119779

**Cubic Yards:** 10

**Design (psi):** **4000**

| Cylinder Designation | Cylinder Weight (lbs) | Cylinder Diameter (in) | Cross Sectional Area(In)² | Date Of Test | Cure Type | **Age (days)** | Fracture Type | Load (kips) | **Strength (psi)** |
|---|---|---|---|---|---|---|---|---|---|
| 161-10A | | 4.00 | 12.57 | 9/14/2011 | Lab | **7** | 4 | 59.8 | **4750** |
| 161-10B | | | | 10/5/2011 | Lab | **28** | | | |
| 161-10C | | | | 10/5/2011 | Lab | **28** | | | |
| 161-10D | | | | Hold | Lab | | | | |

Fracture Types

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S.W.COLE
ENGINEERING, INC.

| | | | |
|---|---|---|---|
| Project Name | Milford ME - Black Bear Hydro - Materials Testing | | |
| Project Number | 11-0466 | Project Manager | Russell Bragg |
| Client | Bancroft Contracting Corporation | Date | 9/6/2011 |

Bancroft Contracting Corporation
Allan Howe Email
23 Phillips Road
South Paris, ME 04281-6405

Results Being Reported

CONCRETE CYLINDER COMPRESSION TEST - ASTM C39/AASHTO T22

Copy To:

O.J. Folsom Inc. - Jason Folsom - E-Mail

**Remarks:**

**S. W. COLE ENGINEERING, INC.**

**BY:** Thomas J. Dugan

S.W.COLE ENGINEERING, INC.

# Report of Concrete Compressive Strength

ASTM C-31 & C-39

**Project Name:** Milford ME - Black Bear Hydro - Materials Testing

**Project Number:** 11-0466

**Client:** Bancroft Contracting Corporation

**Client Contract Number:**

**General Contractor:**

**Concrete Supplier:** O.J. FOLSOM

## PLACEMENT INFORMATION

**Date Cast:** 8/25/2011 **Time Cast:** 9:48

**Date Received:** 8/26/2011

**Placement Location:** Draft Tube, Unit #1

**Placement Method:** Pump

**Cylinders Made By:** LAMONT DUTRA

**Placement Vol. (yd³):** 25

**Aggregate Size (in):** 3/4

## INITIAL CURING CONDITIONS

**Temperatures**

**Minimum (°F)** 67 **Maximum (°F)** 79

## DELIVERY INFORMATION

**Admixtures:** Adva 140, Darex II

## TEST RESULTS

**Slump (in) (C-143):**

**Slump WR:** 8 3/4

**Air Content (%) (C-231):**

**Air WR:** 5.5

**Air Temp (°F):** 74

**Conc. Temp (°F) (C-1064):** 75

**Load Number:** 2

**Mixer Number:** 50

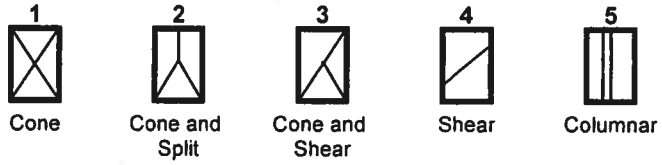
**Ticket Number:** 119713

**Cubic Yards:** 10

**Design (psi):** **4000**

| Cylinder Designation | Cylinder Weight (lbs) | Cylinder Diameter (in) | Cross Sectional Area(In)² | Date Of Test | Cure Type | **Age (days)** | Fracture Type | Load (kips) | **Strength (psi)** |
|---|---|---|---|---|---|---|---|---|---|
| 161-9A | | 4.00 | 12.54 | 9/1/2011 | Lab | **7** | 4 | 59.1 | **4720** |
| 161-9B | | | | 9/22/2011 | Lab | **28** | | | |
| 161-9C | | | | 9/22/2011 | Lab | **28** | | | |
| 161-9D | | | | Hold | Lab | | | | |

Fracture Types




Remarks:

S.W.COLE ENGINEERING, INC.

# Report of Concrete Compressive Strength

ASTM C-31 & C-39

**Project Name:** Milford ME - Black Bear Hydro - Materials Testing

**Project Number:** 11-0466

**Client Contract Number:**

**Client:** Bancroft Contracting Corporation

**General Contractor:**

**Concrete Supplier:** O.J. FOLSOM

## PLACEMENT INFORMATION

**Date Cast:** 6/3/2011 **Time Cast:** 10:58 **Date Received:** 6/4/2011

**Placement Location:** Unit #2 Placement #1

**Placement Method:** Pump Truck - Northeast

**Placement Vol. (yd³):** 30

**Cylinders Made By:** LAMONT DUTRA

**Aggregate Size (in):** 3/4

## INITIAL CURING CONDITIONS

**Temperatures**

**Minimum (°F)** 65 **Maximum (°F)** 69

## DELIVERY INFORMATION

**Admixtures:** Adva 140, Air

## TEST RESULTS

**Slump (in) (C-143):** **Slump WR:** 7

**Air Content (%) (C-231):** **Air WR:** 5.5

**Air Temp (°F):** 64

**Conc. Temp (°F) (C-1064):** 69

**Load Number:** 3

**Mixer Number:** 57

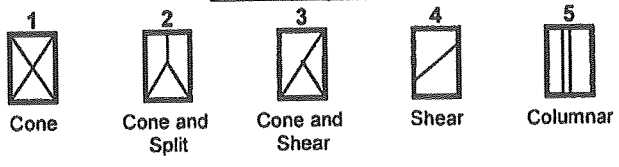
**Ticket Number:** 119055

**Cubic Yards:** 10

**Design (psi):** 4000

| Cylinder Designation | Cylinder Weight (lbs) | Cylinder Diameter (in) | Cross Sectional Area(In)² | Date Of Test | Cure Type | Age (days) | Fracture Type | Load (kips) | Strength (psi) |
|---|---|---|---|---|---|---|---|---|---|
| 161-1A | | 4.00 | 12.58 | 6/10/2011 | Lab | 7 | 4 | 62.2 | 4900 |
| 161-1B | | 4.00 | 12.53 | 7/1/2011 | Lab | 28 | 4 | 75.1 | 5990 |
| 161-1C | | 4.00 | 12.59 | 7/1/2011 | Lab | 28 | 4 | 74.1 | 5890 |
| 161-1D | | | | Hold | Lab | | | | |

Fracture Types




Remarks:

S.W.COLE ENGINEERING, INC.

# Report of Concrete Compressive Strength

ASTM C-31 & C-39

**Project Name:** Milford ME - Black Bear Hydro - Materials Testing

**Project Number:** 11-0466

**Client Contract Number:**

**Client:** Bancroft Contracting Corporation

**General Contractor:**

**Concrete Supplier:** O.J. FOLSOM

## PLACEMENT INFORMATION

**Date Cast:** 6/8/2011 **Time Cast:** 9:55 **Date Received:** 6/9/2011

**Placement Location:** #2 Low Slab Unit 2

**Placement Method:** Pump

**Placement Vol. (yd³):** 25

**Cylinders Made By:** JORDAN POWERS

**Aggregate Size (in):** 3/4

## INITIAL CURING CONDITIONS

**Temperatures**

**Minimum (°F)** 70.0 **Maximum (°F)** 83.0

## DELIVERY INFORMATION

**Admixtures:** Adva 140

## TEST RESULTS

**Slump (in) (C-143):**

**Slump WR:** 6

**Air Content (%) (C-231):**

**Air WR:** 5.2

**Air Temp (°F):** 68

**Conc. Temp (°F) (C-1064):** 76

**Load Number:** 3

**Mixer Number:** 57

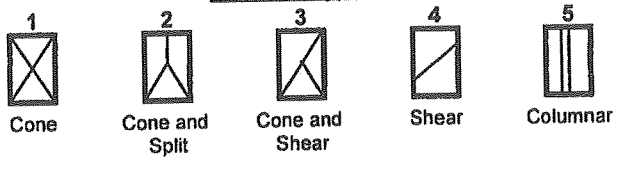
**Ticket Number:** 119099

**Cubic Yards:** 10

**Design (psi):** 4000

| Cylinder Designation | Cylinder Weight (lbs) | Cylinder Diameter (in) | Cross Sectional Area(In)² | Date Of Test | Cure Type | Age (days) | Fracture Type | Load (kips) | Strength (psi) |
|---|---|---|---|---|---|---|---|---|---|
| 161-2A | | 4.01 | 12.63 | 6/15/2011 | Lab | 7 | 4 | 58.0 | 4600 |
| 161-2B | | 4.00 | 12.58 | 7/6/2011 | Lab | 28 | 4 | 68.4 | 5440 |
| 161-2C | | 4.00 | 12.58 | 7/6/2011 | Lab | 28 | 4 | 69.4 | 5520 |
| 161-2D | | | | Hold | Lab | | | | |

Fracture Types




Remarks:

Kleinschmidt
Energy & Water Resource Consultants

**VIA E-MAIL**

January 16, 2012

Mr. Scott Hall
Vice President - Environmental & Business Services
Black Bear Hydro Partners, LLC
Davenport Street, PO Box 276
Milford, ME 04461

Black Bear Hydro Partners, LLC
Certification of Incremental Hydropower Production for ARRA Section 1603 Grant Program
Milford Hydroelectric Project FERC No. 2534

Dear Mr. Hall:

This Independent Engineer's Report was prepared to support Black Bear Hydro Partners, LLC's (BBHP's) Application for Payment by the United States Department of the Treasury under Section 1603 of the American Recovery and Reinvestment Tax Act of 2009. A prerequisite to the application under the Section 1603 program is certification by the Federal Energy Regulatory Commission of the baseline and incremental increase in energy production for incremental hydropower production. The eligible property consists of a single operable run of river hydroelectric generating facility that has undergone improvements resulting in an incremental increase in hydropower production.

The facility is known as the Milford Hydroelectric Project and is located on the Penobscot River in the Town of Milford, Penobscot County, Maine. The project encompasses two dams; the Milford Development which is located at river mile 12.3 on the main stem of the Penobscot River, approximately 1.6 miles upstream from the Great Works Project (FERC No. 2312) and the Gilman Falls Dam which is located on the Stillwater Branch of the Penobscot River approximately 5.5 miles upstream from the downstream confluence of the Stillwater Branch and the Penobscot River. The project impoundment (headpond) extends upstream from the Milford and Gilman Falls Dams a distance of approximately 3 miles and comprises approximately 235 acres.

The dams and the powerhouse were originally constructed during 1905-1906. The Milford Development was built by the Bodwell Water Power Company. The Gilman Falls Dam was constructed to control water from flowing from the main stem of the Penobscot River down the Stillwater Branch.

## DESCRIPTION OF FACILITIES

The Milford Hydroelectric plant is licensed as FERC License No. 2534. A FERC Order granting license was issued on April 20, 1998 and a FERC Order modifying and approving amendment of license on April 18, 2005.

The Milford Project consists of: the Milford and Gilman Falls dams, a brick powerhouse containing six turbine/generator units, tailrace, a single sluice gate, an upstream and downstream fish passage facility, and an impoundment as described below.

### MILFORD DAM

The dam is a concrete gravity dam approximately 1,159 feet long with an average height of approximately 20 feet exclusive of flashboards. The permanent concrete crest elevation of the dam is 97.2 feet.[1] The spillway section which is 968 feet in total length is fitted with 4.5-foot high steel hinged flashboards on the western spillway and 4.0-foot high Obermeyer inflatable flashboards on the eastern spillway. Normal headpond elevation is 101.7 feet. The dam consists of the following sections:

1. A Denil fishway

2. A concrete sluiceway

3. The eastern portion of the spillway (380 feet) is equipped with an Obermeyer inflatable flashboard system and a permanent concrete crest at elevation 97.2 feet, and a steel hinge beam with a top elevation of 98.23 feet which controls the flow release. The western spillway section is 588 feet long with 572 feet of steel-hinged flashboards and a permanent concrete crest at elevation 97.2 feet and a steel hinge beam with a top elevation of 98.23 feet which controls the flow release.

4. An Eel Weir

5. A concrete abutment 145-feet-long and approximately 15-feet-high with a maximum elevation of 106 feet

### GILMAN FALLS DAM

The Gilman Falls Dam is a concrete gravity structure located entirely in the Town of Old Town on the Stillwater Branch, which bypasses the main river channel on the western side of Marsh Island. The Gilman Falls Dam regulates flow in the Stillwater Branch and has no power generation facilities. The dam is composed of the following sections:

1. A non-overflow section, 49 feet in width, with a maximum deck elevation of 107.5 feet.

[1] All elevations are referenced to the National Geodetic Vertical Datum which is equivalent to the 1929 Mean Sea Level Datum (MSL) unless otherwise noted.

2. The east abutment wall which is 3.5 feet wide, with a maximum elevation of 102.5 feet.

3. The spillway, which has 4.4-foot-high flashboards and is 311-feet-long, including a center abutment 25-feet-wide, and has a permanent crest at elevation 97.3 feet. The center abutment has a maximum elevation of 102.3 feet.

4. The west abutment wall, which is two-feet-wide, has a maximum elevation of 102.1 feet.

5. A gate structure 86-feet-wide with a maximum elevation of 110.3 feet. This structure houses a sluice gate 6 feet wide with the top at 100.8 feet, two Tainter gates, one 30-feet-wide, a second which is 20-feet-wide, and a spare bay with a stop log opening which is 15-feet-wide with a permanent crest elevation of 100.6 feet. Each gate has a maximum elevation of 102.3 feet and is separated by piers which are three feet wide.

6. Approximately 75 feet of the dam channel has a steel paneled inflatable rubber flashboard crest control system attached to a pre-existing concrete sill.

**MILFORD POWERHOUSE**

A powerhouse, built in 1906, is located on the eastern end of the Milford Dam in the Town of Milford, Maine. It is a steel-framed brick structure with a masonry foundation and measures approximately 226-feet-long, 85-feet-wide, and 78-feet-high.

**SLUICE GATE**

A concrete sluiceway (log sluice) and gate 25-feet-wide, with two 4-foot-wide abutments.

**UPSTREAM AND DOWNSTREAM FISH PASSAGE FACILITIES**

A Denil fishway with an entrance adjacent to the tailrace and an exit adjacent to the forebay trashracks and a 4-foot-wide eel weir.

**TURBINES AND GENERATORS**

The powerhouse was originally designed and constructed to house twelve 25-cycle units. During the period between 1941 and 1956 the 25-cycle units were replaced by four larger 60-cycle units with a combined nameplate rating of 6.4 MW, leaving four wheel pits vacant. In 2011, two new Canadian Hydro Components (CHC) units were installed in the empty bays. This addition increased the installed capacity of the powerhouse by 1.4 MW to 7.8 MW. Table 1 shows the generation equipment at the Milford Project

**TABLE 1. MILFORD PROJECT GENERATION EQUIPMENT DATA**

| **GENERATING UNIT 3** | |
|---|---|
| TURBINE TYPE: | S MORGAN SMITH, FIXED BLADE PROPELLER |
| CAPACITY (HP) | 2,400 |

| | |
|---|---|
| HYDRAULIC CAPACITY (CFS) | 1,370 |
| RATED GROSS HEAD (FT) | 20 |
| TURBINE RATED EFFICIENCY (%) | 81.5 |
| NORMAL SPEED (RPM) | 120 |
| RUNNER DIAMETER (IN) | 109 |
| GENERATOR MANUFACTURER | GENERAL ELECTRIC |
| GENERATOR RATING (KW) | 1,600 |
| POWER FACTOR | 0.8 |
| VOLTAGE (KV) | 4,160 |
| CYCLES (HZ) | 60 |
| **GENERATING UNITS 4,5,6** | |
| TURBINE TYPE: | S MORGAN SMITH, KAPLAN |
| CAPACITY (HP) | 2,600 |
| HYDRAULIC CAPACITY (CFS) | 1,420 |
| RATED GROSS HEAD (FT) | 20 |
| TURBINE RATED EFFICIENCY (%) | 83.5 |
| NORMAL SPEED (RPM) | 120 |
| RUNNER DIAMETER (IN) | 109 |
| GENERATOR MANUFACTURER | GENERAL ELECTRIC |
| GENERATOR RATING (KW) | 1,600 |
| POWER FACTOR | 0.8 |
| VOLTAGE (KV) | 4,160 |
| CYCLES (HZ) | 60 |
| **GENERATING UNITS 1 AND 2** | |
| TURBINE TYPE: | CHC, 1700 MM AXIAL FLOW VERTICAL PROPELLER, 992 HP |
| CAPACITY (HP) | 700 KW |
| HYDRAULIC CAPACITY (CFS) | 550 |
| RATED GROSS HEAD (FT) | 18.0 |
| TURBINE RATED EFFICIENCY (%) | 85% |
| NORMAL SPEED (RPM) | 257 |
| RUNNER DIAMETER (IN) | 66.9 |
| GENERATOR MANUFACTURER | HYUNDAI IDEAL |
| GENERATOR RATING (KW) | 700 |
| POWER FACTOR | 0.9 |
| VOLTAGE (KV) | 4160 |
| CYCLES (HZ) | 60 |

## IMPOUNDMENT

The impoundment created by the Milford Dam and the Gilman Falls Dam has a surface area of approximately 235 acres and extends approximately 3 miles upstream from the Milford Dam. The impoundment has a normal surface elevation of 101.7 feet. The gross impoundment storage capacity is approximately 2,250 acre-feet. The Milford project is operated as a run-of-river facility. Usable storage capacity is zero acre-feet.

## OPERATION OF PROJECT

The Milford Project is manually controlled by on site operators. BBHP maintains headpond transducers to monitor the elevation of the head pond. Pond levels are manually controlled by operations staff. Under most conditions, the headpond levels are maintained to plus or minus 1 ft, except under higher flow conditions.

Under normal operating conditions (i.e. conditions other than sudden changes in precipitation or temperature, repairs to the project, floods, ice jams, emergencies and special requests), the Milford Project powerhouse will be operated to generate the most power possible by varying flow through the various units and spillway sections.

## UPGRADES AND REPOWERING

Qualifying plant upgrades include the installation of two new Canadian Hydro Components (CHC) 1700 mm diameter vertical axial flow turbine-generating units each having a nameplate capacity of 700 kW in the vacant four wheel pits.

## TURBINE UNIT SIZE OPTIMIZATION

The turbine selection for the vacant Milford Project Powerhouse wheel pits were evaluated using an Excel based energy model. The existing units were modeled, as well as multiple new turbine scenarios for the project.

The incremental gain in generation of the plant will be realized through increase in generation efficiency and an increased hydraulic capacity of the station.

An assessment of annual energy generation for the proposed Milford Station additional unit(s) located on the Penobscot River was conducted. Using the available, calculated and assumed information, the estimated annual generating potential was derived.

## INCREMENTAL AVERAGE ANNUAL ENERGY PRODUCTION

The average annual energy production from the facility prior to the upgrade was determined from historic data. A mathematical model based on this data and assumed equipment performance characteristics for the plant was used to simulate daily energy production. A detailed description of the provided data and assumptions pertinent to the mathematical model are as follows:

### SITE FLOW

The Milford Station site is located after the split of the Penobscot River and the Stillwater Branch and will continue to operate in a "run of river" mode. Flow in the Penobscot River at the Milford Station has been prorated from the West Enfield gage USGS Gage No. 01034500, and is split between the Stillwater Branch and the Penobscot River according to the 2010 flow allocations settlement agreement. Based on the proposed agreement and the prorated flows, average annual daily flows were derived based on daily flow data from 1980 to 2010 and used

for this analysis. An annual flow duration curve for the Penobscot River at the Milford Station was derived based upon the new settlement agreement as shown in Attachment A. Also based on historical generation information it was determined that river flows above 28,500 cfs increase the tail water enough such that generation is limited.

## MINIMUM FLOW REQUIREMENTS

There is currently a 320 cubic feet per second minimum downstream fish passage flow required from April 1 through December 31. This flow is not available for generation.

## UNIT PRIORITIES

Unit priorities for all models are set by the Settlement Agreement and are as follows: Unit 6, Unit 5, Unit 4, Unit 3, Unit 2A (new), Unit 2B (new). This priority is set so that the units closer to the new proposed fishway have priority.

## HEADPOND AND TAILWATER ELEVATIONS

The headwater pond levels were calculated based on prorated stream flow at the project site with normal pond at elevation 101.63 feet. Tailwater levels were used as reported by BBHP. Attachment B shows the calculated and reported headpond and tailwater information as used in the model.

## HEAD LOSSES

Head losses were determined at station/unit capacity using appropriate coefficients for: angled rack losses, trash rack losses, entrance losses, frictional losses, and exit losses. For the existing units the total headloss was estimated to be approximately 1.60 feet with the new units having a headloss of approximately 1.44 feet, respectively.

All other headlosses have been assumed to be negligible and have not been modeled.

## UNIT EFFICIENCIES

Efficiencies for the existing units were based upon provided information from BBHP. Efficiency information for the new units was provided by CHC. This information was used to vary the overall unit efficiencies based upon dispatch unit flow as shown in Attachment C.

## UNIT FLOW

All units are modeled to capacity when the flow is available in the priority noted above. Minimum and maximum hydraulic capacities of the existing units are based upon the reported information as provided by BBHP. The hydraulic capacity of the project for the upgraded condition will be 6,730 cfs, an increase of 1,100 cfs over the historical condition.

## SUMMARY OF BASELINE AND INCREMENTAL PRODUCTION

The Milford Station will realize generation gains from the installation of two new CHC turbine/generator units. The gains are attributable to increased efficiency and increasing the hydraulic capacity of the station.

The existing plant was modeled and compared to an average of actual generation for the period of 1986 to 2005. The average historical generation for this period was 46,375 MWh (See Attachment D) and the modeled generation was 46,390 MWh. This is a difference of approximately 0.03% therefore; this small difference validates the baseline model.

Using the information as presented above, the average annual generation for the future condition is 53,370 MWh when considering the licensing requirements and utilizing average daily flow as described above. As a result of the installation of two new CHC units, the Milford Station will gain 6,980 MWh of generation. This modeling scenario is termed the "Future Base Case". This represents a 15.0% increase in generation.

**The qualifying upgrade and associated incremental generation increase associated with the Section 1603 Grant Application is 6,980 MWh, a 15.0% increase in generation.**

The in-service date for the installation of two new CHC units was October 31, 2011 for Unit No. 1 and November 1, 2011 for Unit No. 2.

The above incremental energy increases were determined using accepted industry practices and are based in part upon information provided to us by others which is assumed to be accurate and reliable.

Prepared by,

**KLEINSCHMIDT ASSOCIATES**

Ryan Berg, P.E.

RDB:KLJ
Attachments:

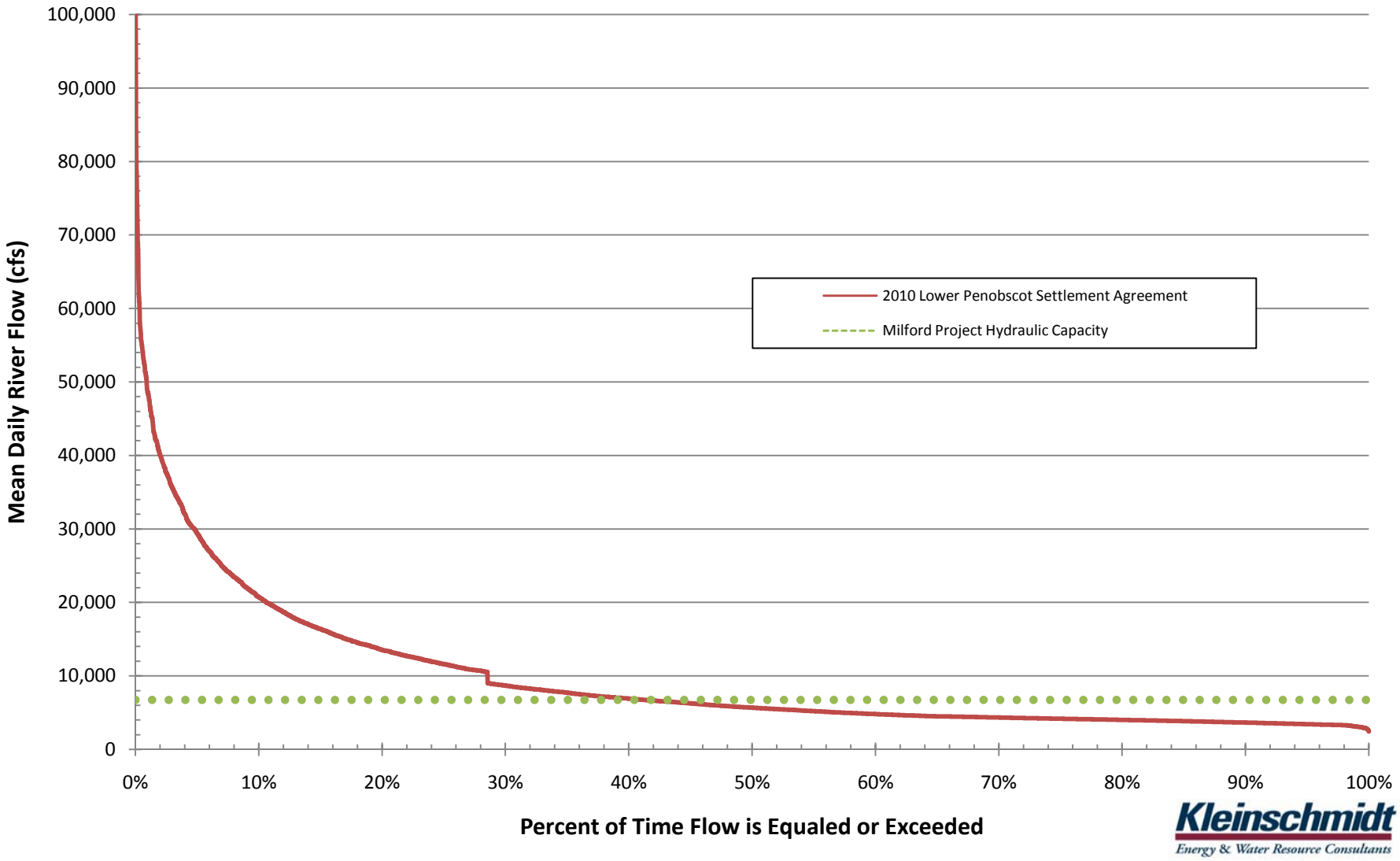
| | | |
|---|---|---|
| | Attachment A | Annual Flow Duration Curve |
| | Attachment B | Headpond and Tailwater Information |
| | Attachment C | Unit Efficiency Data |
| | Attachment D | Historic Annual Generation |
| cc: | File | |

# ATTACHMENT A

# MEAN MONTHLY FLOW DATA

# Penobscot River at Milford, ME
# Annual Flow Duration Curve

**(Pro-Rated from USGS West Enfield Gage # 01034500, Period of Record 1/1/1980-05/02/2010)**




Kleinschmidt
Energy & Water Resource Consultants

# ATTACHMENT B

# HEADPOND AND TAILWATER INFORMATION

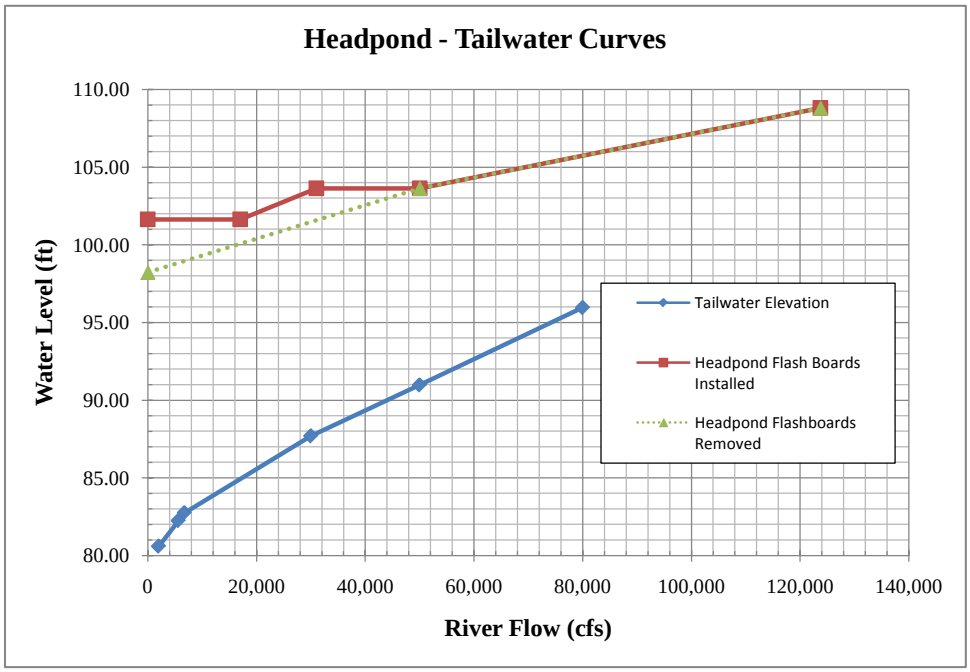
# Attachment B: Milford Hydroelectric Station FERC No. 2534
# Headpond Elevation and Station Discharge Tailwater Levels

| Flow (cfs) | Headpond Elevation (ft) |
|---|---|
| 0 | 101.63 |
| 17000 | 101.63 |
| 31000 | 103.63 |
| 50000 | 103.63 |
| 123700 | 108.80 |

| Flow (cfs) | Headpond Elevation (ft) |
|---|---|
| 0 | 98.23 |
| 50000 | 103.63 |
| 123700 | 108.80 |

| Flow (cfs) | Tailwater Elevation (ft) |
|---|---|
| 2000 | 80.60 |
| 5630 | 82.25 |
| 6730 | 82.75 |
| 30000 | 87.70 |
| 50000 | 90.98 |
| 80000 | 95.96 |

Information as provided by BBH tailwater gage



# ATTACHMENT C

# UNIT EFFICIENCY DATA

# Attachment C: Milford Hydroelectric Station FERC No. 2534
# Unit No. 3 Unit Efficiencies

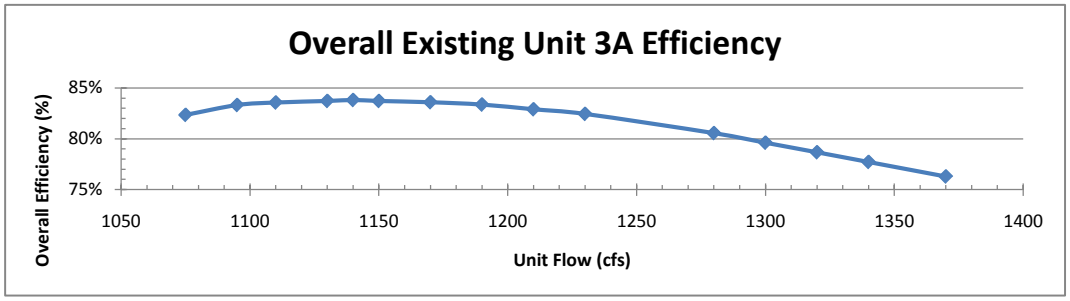
Type: Fixed Blade
Rated Net Head (ft) = 18 feet

Maximum Permissible Flow (cfs) = 1370 cfs
Single Runner Configuration

Information from flow/eff chart and tables as provided by BBH

| Flow (cfs) | Turbine Efficiency (%) | Overall Efficiency (%) |
|---|---|---|
| 1075 | 88.0% | 82.33% |
| 1095 | 89.0% | 83.30% |
| 1110 | 89.3% | 83.55% |
| 1130 | 89.4% | 83.70% |
| 1140 | 89.5% | 83.79% |
| 1150 | 89.4% | 83.70% |
| 1170 | 89.3% | 83.58% |
| 1190 | 89.0% | 83.35% |
| 1210 | 88.5% | 82.88% |
| 1230 | 88.0% | 82.43% |
| 1280 | 86.0% | 80.55% |
| 1300 | 85.0% | 79.60% |
| 1320 | 84.0% | 78.66% |
| 1340 | 83.0% | 77.71% |
| 1370 | 81.5% | 76.28% |

| % Load | Flow (cfs) | Generator Efficiency (%) |
|---|---|---|
| 50.00% | 685 | 92.40% |
| 52.00% | 712 | 92.53% |
| 54.00% | 740 | 92.68% |
| 56.00% | 767 | 92.83% |
| 58.00% | 795 | 92.93% |
| 60.00% | 822 | 93.03% |
| 62.00% | 849 | 93.10% |
| 64.00% | 877 | 93.18% |
| 66.00% | 904 | 93.25% |
| 68.00% | 932 | 93.33% |
| 70.00% | 959 | 93.38% |
| 72.00% | 986 | 93.43% |
| 74.00% | 1014 | 93.48% |
| 76.00% | 1041 | 93.53% |
| 78.00% | 1069 | 93.55% |
| 80.00% | 1096 | 93.60% |
| 82.00% | 1123 | 93.63% |
| 84.00% | 1151 | 93.63% |
| 86.00% | 1178 | 93.65% |
| 88.00% | 1206 | 93.65% |
| 90.00% | 1233 | 93.68% |
| 92.00% | 1260 | 93.68% |
| 94.00% | 1288 | 93.65% |
| 96.00% | 1315 | 93.65% |
| 98.00% | 1343 | 93.63% |
| 100.00% | 1370 | 93.60% |



# Attachment C: Milford Hydroelectric Station FERC No. 2534
# Unit No.4, 5 and 6 Unit Efficiencies

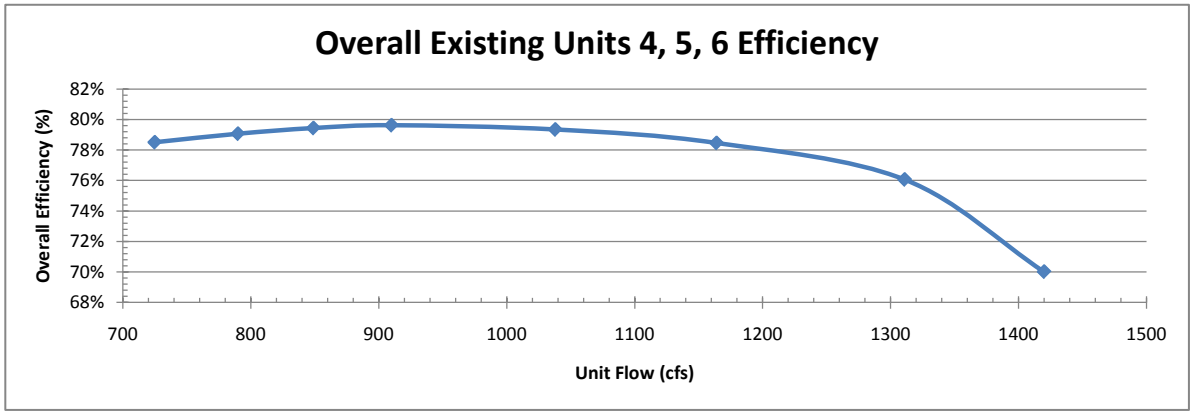
Type: Kaplan, Fully regulated
Rated Net Head (ft) = 18 feet

Maximum Permissible Flow (cfs) = 1420 cfs
Single Runner Configuration

Information from flow/eff chart and tables as provided by BBH

| Flow (cfs) | Turbine Efficiency (%) | Overall Efficiency (%) |
|---|---|---|
| 725 | 84.90% | 78.50% |
| 790 | 85.20% | 79.06% |
| 849 | 85.40% | 79.43% |
| 910 | 85.45% | 79.62% |
| 1038 | 84.90% | 79.34% |
| 1164 | 83.80% | 78.46% |
| 1311 | 81.20% | 76.06% |
| 1420 | 74.80% | 70.01% |

| % Load | Flow (cfs) | Generator Efficiency (%) |
|---|---|---|
| 50.00% | 710 | 92.40% |
| 52.00% | 738 | 92.53% |
| 54.00% | 767 | 92.68% |
| 56.00% | 795 | 92.83% |
| 58.00% | 824 | 92.93% |
| 60.00% | 852 | 93.03% |
| 62.00% | 880 | 93.10% |
| 64.00% | 909 | 93.18% |
| 66.00% | 937 | 93.25% |
| 68.00% | 966 | 93.33% |
| 70.00% | 994 | 93.38% |
| 72.00% | 1022 | 93.43% |
| 74.00% | 1051 | 93.48% |
| 76.00% | 1079 | 93.53% |
| 78.00% | 1108 | 93.55% |
| 80.00% | 1136 | 93.60% |
| 82.00% | 1164 | 93.63% |
| 84.00% | 1193 | 93.63% |
| 86.00% | 1221 | 93.65% |
| 88.00% | 1250 | 93.65% |
| 90.00% | 1278 | 93.68% |
| 92.00% | 1306 | 93.68% |
| 94.00% | 1335 | 93.65% |
| 96.00% | 1363 | 93.65% |
| 98.00% | 1392 | 93.63% |
| 100.00% | 1420 | 93.60% |



# Attachment C: Milford Hydroelectric Station FERC No. 2534
# CHC 1700 mm Unit Efficiencies

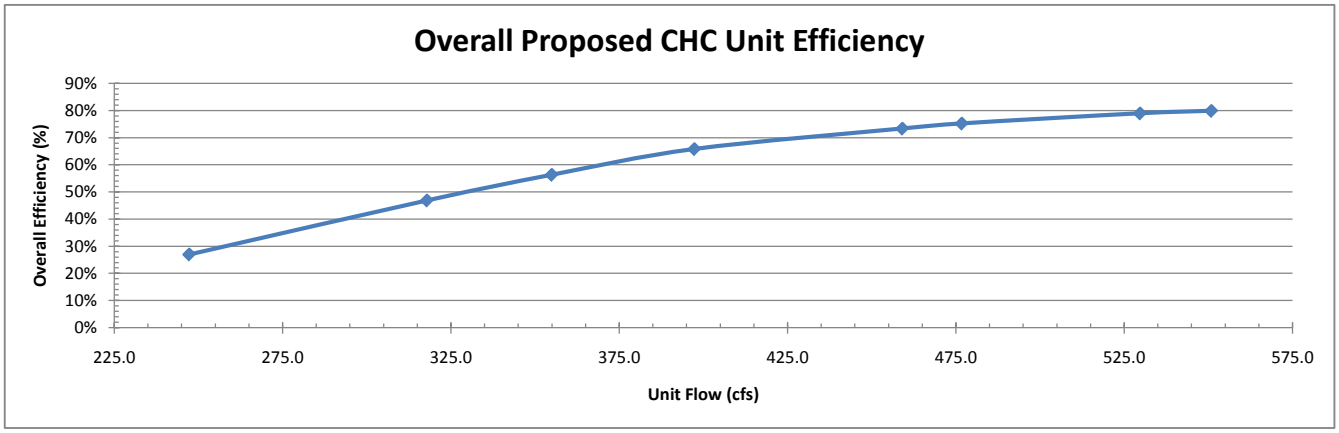
Type: CHC Vertical Axis
Size: 1700 mm Unit
Rated Net Head (ft) = 18 feet

Maximum Permissible Flow (cfs) = 550 cfs
Single Runner Configuration

Information from flow/eff chart provided by CHC
August Submittal

| Flow (cms) | Flow (cfs) | Single Regulated Turbine Efficiency (%) | Overall Efficiency (%) |
|---|---|---|---|
| 7 | 247.2 | 29.0% | 26.97% |
| 9 | 317.8 | 50.0% | 46.88% |
| 10.05 | 354.9 | 60.0% | 56.33% |
| 11.25 | 397.3 | 70.0% | 65.83% |
| 13 | 459.1 | 78.0% | 73.37% |
| 13.5 | 476.7 | 80.0% | 75.24% |
| 15 | 529.7 | 84.0% | 78.97% |
| 15.6 | 550.9 | 85.0% | 79.90% |

| % Load | Flow (cfs) | Generator Efficiency (%) |
|---|---|---|
| 25% | 138 | 90.7% |
| 50% | 275 | 93.6% |
| 75% | 413 | 94.1% |
| 100% | 550 | 94.0% |



# ATTACHMENT D

# HISTORIC ANNUAL GENERATION

# Attachment D: Milford Hydroelectric Station FERC No. 2534
# Historical Annual Generation 1986-2005

| Year | Total Generation (MWh) |
|---|---|
| 1986 | 45,988 |
| 1987 | 46,433 |
| 1988 | 47,454 |
| 1989 | 49,688 |
| 1990 | 52,731 |
| 1991 | 41,938 |
| 1992 | 49,488 |
| 1993 | 40,412 |
| 1994 | 45,240 |
| 1995 | 41,590 |
| 1996 | 48,843 |
| 1997 | 42,631 |
| 1998 | 49,890 |
| 1999 | 47,678 |
| 2000 | 46,664 |
| 2001 | 36,964 |
| 2002 | 45,596 |
| 2003 | 45,301 |
| 2004 | 51,186 |
| 2005 | 51,791 |

**Average (1986-2009) (MWh):** **46,375**