

145 FERC ¶ 61,157  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;  
Philip D. Moeller, John R. Norris,  
Cheryl A. LaFleur, and Tony Clark.

FirstLight Hydro Generating Company  
City of Norwich Department of Public Utilities

Project No. 2662-012  
Project No. 12968-001

ORDER ISSUING NEW LICENSE AND DENYING COMPETING LICENSE  
APPLICATION

(Issued November 21, 2013)

**Introduction**

1. On August 31, 2010, FirstLight Hydro Generating Company (FirstLight) filed, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),<sup>1</sup> an application for a new license to continue operation and maintenance of its Scotland Hydroelectric Project No. 2662 (Scotland Project). FirstLight is the current licensee for the project. The project's proposed capacity is 3.026 megawatts (MW). The Scotland Project is located on the Shetucket River, in Windham County, Connecticut.<sup>2</sup> The project does not occupy federal lands.

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<sup>1</sup> 16 U.S.C. §§ 797(e) and 808 (2012).

<sup>2</sup> The project was first constructed in 1909 with a total rated capacity of 1.200 MW. In 1936, the project was destroyed by flood and reconstruction was completed in September 1937, with a total rated capacity of 2.000 MW. Because the project is located on a stream over which Congress has jurisdiction under the Commerce Clause, affects interstate commerce through its connection to an interstate power grid, and was constructed after 1935 with an increase in capacity, it is required to be licensed pursuant to section 23(b) of the FPA. *See* 16 U.S.C. § 817 (2012).

2. On August 27, 2010, the City of Norwich Department of Public Utilities (Norwich Public Utilities) filed a competing application for a new license for the project, Project No. 12968. Norwich Public Utilities proposes a 5.08-MW project.
3. As discussed below, this order issues a new license to FirstLight for the Scotland Project and denies Norwich Public Utilities' competing application.

### **Background**

4. The Commission issued an original license for the project on October 5, 1982, with an effective date of May 1, 1965.<sup>3</sup> The license for the project expired on August 31, 2012, and, since then, FirstLight has operated the project under an annual license pending the disposition of the new license applications.
5. On July 15, 2011, the Commission issued a public notice accepting both FirstLight's and Norwich Public Utilities' applications for filing, soliciting motions to intervene and protests, indicating the applications were ready for environmental analysis, and soliciting comments, recommendations, terms and conditions, and prescriptions.<sup>4</sup> The notice set September 13, 2011, as the deadline for filing motions to intervene, comments, final recommendations, terms and conditions, and prescriptions. For FirstLight's license application, National Marine Fisheries Service (NMFS) and Norwich Public Utilities timely intervened. For Norwich Public Utilities' license application, NMFS and FirstLight timely intervened. First Light's motion to intervene opposed the application.<sup>5</sup> The Connecticut Department of Energy and Environmental Protection (Connecticut DEEP) and the U.S. Department of the Interior (Interior) each filed a late motion to intervene for each application. On December 21, 2011, the Commission issued a notice granting Connecticut DEEP's and Interior's motions.
6. A draft Environmental Assessment (EA) was prepared by Commission staff and issued on July 20, 2012, analyzing the impacts of the proposed projects and alternatives to them. Interior, NMFS, and Norwich Public Utilities filed comments on the draft EA.

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<sup>3</sup> *Connecticut Light and Power Co.*, 21 FERC ¶ 62,006 (1982). Pursuant to Commission policy, the license was backdated to 1965, because the project was operating but unlicensed, and backdating the license allowed the Commission to recoup a portion of the annual charges that the licensee should have been paying during the time that project was not, but should have been, licensed. *See id.* at 63,006.

<sup>4</sup> 76 Fed. Reg. 43,679 (July 21, 2011).

<sup>5</sup> Under Rule 214(a)(2) of the Commission's Rules of Practice and Procedure, NMFS, Norwich Public Utilities, and FirstLight became parties to the corresponding proceedings 15 days after they intervened, because no one opposed their intervention. 18 C.F.R. § 385.214(a)(2) (2013).

7. Commission staff issued a final EA on January 16, 2013. FirstLight filed comments on the final EA on January 24, 2013. Norwich Public Utilities filed comments on the final EA on January 31, 2013 and February 20, 2013.

8. The interventions, comments, and recommendations for FirstLight's and Norwich Public Utilities' license applications have been fully considered in determining whether, and under what conditions, to issue a new license for the Scotland Project to FirstLight or to Norwich Public Utilities.

## **Project Description**

### **A. Existing Facilities and Operation**

9. The Scotland Project consists of: (1) an existing approximately 480-foot-long structure consisting of an earthen dike, five Tainter gates,<sup>6</sup> an Ambursen-type dam section,<sup>7</sup> a gravity-type concrete spillway section, and a concrete powerhouse and intake section; (2) a 134-acre reservoir at elevation 126.27 feet U.S. Geological Survey (USGS) datum; (3) a single 2.0-MW turbine-generator; (4) a 90-foot-long, 40-foot-wide tailrace; (5) three 125-foot-long generator leads and a switchyard containing three 2.4/23-kilovolt step-up transformers; (6) an approximately 0.25-mile access road from Jerusalem Road to the project; and (7) appurtenant equipment. A more detailed description of these facilities is included in Ordering Paragraph C.

10. The Scotland Project operates as a peaking facility, with reservoir fluctuations between 124.97 feet and 126.97 feet USGS datum. During project operation, water is directed from the reservoir to the powerhouse through an intake chamber that is integral with the powerhouse.

11. After exiting the powerhouse, flows pass through the tailrace, which empties into the Shetucket River. When inflow to the reservoir is greater than the flow needed for generation, excess flows are routed downstream via the gated and ungated spillway sections of the dam. The licensee is required under the current license to discharge a continuous minimum flow of 84 cubic feet per second (cfs) or inflow to the reservoir, whichever is less, from the project dam to protect fish and wildlife resources downstream of the dam.

### **B. Proposed Facilities and Operation**

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<sup>6</sup> A Tainter gate is a type of radial arm floodgate used in dams and canal locks to control water flow.

<sup>7</sup> An Ambursen dam uses a concrete-slab-and-buttress design that requires less concrete than an equivalent traditional concrete gravity dam.

### FirstLight

12. FirstLight proposes to install a new 1.026-MW turbine-generator unit within the existing powerhouse, which would bring the project's total rated capacity to 3.026 MW. FirstLight proposes to change the operation of the project to an instantaneous run-of-river mode, whereby outflow from the project reservoir equals inflow on an instantaneous basis, and maintain a reservoir surface elevation of 126.02 feet ( $\pm 0.25$  foot) USGS datum.

13. To accommodate run-of-river operation, FirstLight would lower the existing flashboards to a height of 1.80 feet, making the elevation 126.27 feet USGS datum at the top of the boards. River flows less than the minimum hydraulic capacity of the proposed turbine (about 110 cfs) would be spilled over the flashboards or through a proposed 30-inch-diameter pipe that would be installed through the eastern portion of the powerhouse. At inflows of about 110 cfs, the proposed 1.026-MW turbine-generator would be started. The proposed turbine would be operated alone until inflows exceed its maximum hydraulic capacity (about 600 cfs). At that point, the proposed unit would generally be throttled down or taken off-line, and the existing 2.0-MW turbine-generator would be brought on-line.<sup>8</sup> When river flows exceed the total plant capacity (about 1,930 cfs), water would spill over the flashboards, and if necessary, released through the Tainter gates.

### Norwich Public Utilities

14. Norwich Public Utilities proposes to install a new 2.5-meter-diameter vertical Kaplan turbine coupled to a new 3.00-MW generator within the existing powerhouse and a new rotating cylinder fish lift capable of generating 0.08-MW,<sup>9</sup> for a total rated capacity of 5.08 MW. Norwich Public Utilities also proposes to replace the existing flashboards on the Ambursen dam section with pneumatically-operated steel crest gates with a maximum elevation of 126.97 feet USGS datum. Finally, Norwich Public Utilities proposes to excavate a new, 50-foot-wide by 100-foot-long tailrace, located adjacent to the existing tailrace, for the new 3.00-MW generator.

15. Norwich Public Utilities proposes to operate the Scotland Project in an instantaneous run-of-river mode, whereby outflow from the project reservoir equals inflow on an instantaneous basis, and to maintain a reservoir elevation of 126.97 feet

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<sup>8</sup> The licensee may, however, split flows above 600 cfs between the two turbine-generators to optimize the efficiencies of each unit.

<sup>9</sup> The rotating shaft of the fish lift would be used to drive an electric generator to produce electricity.

USGS datum. To accommodate this mode of operation, Norwich Public Utilities would synchronize the operation of the existing and proposed turbines, proposed pneumatic crest gates, and existing Tainter gates as follows.

- a. For river flows less than or equal to 2,840 cfs (the proposed maximum hydraulic capacity of the project), the existing and proposed turbines would utilize all flows, the crest gates would be fully raised, and the Tainter gates would be fully closed.<sup>10</sup>
- b. When river flows exceed 2,840 cfs, the crest gates would begin to open to maintain the target reservoir elevation of 126.97 feet.
- c. When river flows exceed 3,840 cfs (the maximum hydraulic capacity of the project turbines (2,840 cfs) plus the capacity of the crest gates (1,000 cfs)), the Tainter gates would begin to open to maintain the target reservoir elevation. The Tainter gates have the capacity to pass up to 19,960 cfs when they are fully opened.

### **C. Proposed Environmental Measures**

#### FirstLight

16. In addition to the proposed project facilities and operations described above, FirstLight proposes to: (1) develop and implement an erosion and sediment control plan; (2) implement an operation monitoring plan to verify run-of-river operation at the project; (3) implement an impoundment refill protocol in the event the Scotland reservoir is drawn down for maintenance or emergency purposes, and release specified minimum flows, or 90 percent of the inflow into the reservoir, whichever is less, while refilling the reservoir; (4) during the first “typical” summer following conversion of the project to run-of-river operation, continuously monitor dissolved oxygen and water temperatures at a site immediately upstream of the Scotland dam and at a site downstream of the project’s tailrace to assess the effects of run-of-river operation on water quality;<sup>11</sup> (5) provide upstream American eel passage at the Scotland dam by constructing temporary eelways that would be operated and maintained for two years to help inform the placement of a permanent eelway; (6) monitor upstream American eel passage through the temporary eelways and relocate any American eels collected to the Scotland reservoir; (7) construct,

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<sup>10</sup> Flows less than 50 cfs (the proposed minimum hydraulic capacity of the project) would be released downstream over the crest gates.

<sup>11</sup> FirstLight defines a “typical” summer as having both high air temperatures and low flows.

operate, and maintain a permanent eelway to provide for upstream American eel passage at the Scotland dam within three years of commencing operations of the temporary eelways; (8) once the annual passage of shad or river herring at the downstream Occum dam reaches 6,420 shad or 9,630 river herring,<sup>12</sup> construct, operate, and maintain a fish lift at the Scotland dam to provide for upstream fish passage of anadromous and resident fish species; (9) construct, operate, and maintain downstream fish passage facilities for anadromous and resident fish;<sup>13</sup> (10) minimize the entrainment and impingement of fish by installing and maintaining new trashracks with 1-inch clear bar spacing; (11) develop and implement a mussel relocation plan to protect mussels during project construction and scheduled or emergency reservoir drawdowns; (12) consult with Connecticut DEEP on relocating an existing informal fishing access area if the upstream fish lift is installed; (13) consult with Connecticut DEEP on unspecified “reasonable” improvements to the existing portage; and (14) implement the Historic Properties Management Plan (HPMP) filed on November 5, 2010.

#### Norwich Public Utilities

17. In addition to the proposed project facilities and operations described above, Norwich Public Utilities proposes to: (1) develop and implement an erosion and sediment control plan; (2) develop and implement a water quality monitoring plan; (3) provide for protection and passage (both upstream and downstream) of anadromous and resident fish species, including American eel, at the project by constructing, operating, and maintaining a Fish Safe Hydroelectric System; (4) develop and implement a recreation plan that would include: (a) improving the existing canoe portage at the project, (b) installing picnic tables and benches at the dam, (c) adding shoreline fishing and viewing points downstream of the project, (d) providing information to the public on recreation opportunities and flow information, (e) monitoring recreation use, and (f) providing parking and pedestrian access to the proposed shoreline fishing access site; and (5) implementing the HPMP filed on June 6, 2011.

#### **D. Project Boundary**

18. The existing project boundary encompasses a reach of the Shetucket River from about 900 feet downstream from the Scotland dam at the Windham/Scotland town line to about 3.5 miles upstream from the dam. The project boundary includes a parcel of land to the east of the dam containing the Scotland Project’s substation. The project boundary

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<sup>12</sup> The Occum dam is located on the Shetucket River at river mile 6.4, approximately 6.9 miles downstream from the Scotland dam.

<sup>13</sup> FirstLight proposes to commence construction of its downstream fish passage facilities concurrent with the construction of its proposed fish lift.

follows the topographic elevation of 127 feet USGS datum. FirstLight and Norwich Public Utilities do not propose any changes to the exiting project boundary.

### **Evaluation of Competing Applications**

19. Section 15(a)(2) of the FPA<sup>14</sup> requires the Commission, in considering competing proposals for a new license, to issue the license “to the applicant having the final proposal which the Commission determines is best adapted to serve the public interest. . . .” Section 15(a)(2) provides that the Commission must, in addition to the requirements of FPA section 10,<sup>15</sup> consider: (A) the applicants’ plans and abilities to comply with the license; (B) the applicants’ plans to manage, operate, and maintain the project safely; (C) the applicants’ plans and abilities to operate the project in a manner most likely to provide efficient and reliable electric service; (D) the applicants’ need for project power to serve its customers; (E) the applicants’ existing and planned transmission service; (F) whether the applicants’ plans will be achieved, to the greatest extent possible, in a cost-effective manner; and (G) such other factors as the Commission may deem relevant, except that the applicants’ plans concerning fish and wildlife shall not be compared. The section further provides that “insignificant differences with regard to [these factors] shall not result in the transfer of a project [from the incumbent licensee].”<sup>16</sup> Accordingly, section 15 establishes what has been characterized as a “marginal” preference for incumbent licensees.<sup>17</sup>

20. In addition, FPA section 10(a)(2)(C)<sup>18</sup> requires the Commission to consider the electricity consumption efficiency program of each applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve energy cost-effectively.

21. By filings of September 13, 2011, FirstLight and Norwich Public Utilities each filed a statement (referred to as a better-adapted statement) explaining how its proposal is superior to the plans of its competitor. The applicants filed responses to each other’s better-adapted statement on October 13, 2011, and Norwich Public Utilities filed a reply to FirstLight’s response on October 28, 2011.

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<sup>14</sup> 16 U.S.C. §808(a)(2)(2012).

<sup>15</sup> 16 U.S.C. §803(a)(1) (2012). *See* discussion below beginning at P 72.

<sup>16</sup> With regard to existing licensees, the Commission is also to consider the licensee’s compliance record and actions taken by the licensee which affect the public.

<sup>17</sup> *See Oconto Falls, WI v. FERC*, 41 F.3d 671, 675 at n.7 (D.C. Cir. 1994); *Kamargo Corp. v. FERC*, 852 F.2d 1392, 1394 (D.C. Cir. 1988).

<sup>18</sup> 16 U.S.C. §803(a)(2)(C) (2012).

22. Below, we compare FirstLight's and Norwich Public Utilities' proposals with respect to the criteria set forth in section 15(a)(2) and 10(a)(2)(C).

**A. Conservation Efforts (Section 10(a)(2)(C))**

23. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. FirstLight sells all of the project's energy to its affiliate, Select Energy, Inc., which in turn markets it to customers. Accordingly, FirstLight has little, if any, ability to encourage or assist customers to conserve electricity cost-effectively.

24. Norwich Public Utilities maintains a comprehensive efficiency and renewable energy program for commercial and residential customers. Incentives are available for high efficiency lighting, HVAC, drives, motors, and building management systems for commercial customers. With regard to residential customers, Norwich Public Utilities conducts in-home energy efficiency assessments and upgrades and offers incentives on lighting. Additionally, Norwich Public Utilities has installed several pilot renewable energy projects, including solar photovoltaic, wind, and co-generation, and owns and operates several hydroelectric generation plants.<sup>19</sup>

**B. Plans and Abilities to Comply with the New License (Section 15(a)(2)(A))**

25. Both FirstLight and Norwich Public Utilities are experienced hydroelectric project operators. FirstLight has operated the Scotland Project since 2000 and is the licensee for three other projects.<sup>20</sup> Similarly, Norwich Public Utilities is licensee for two projects downstream of the Scotland Project.<sup>21</sup> Both applicants have a history of complying with the conditions of their respective licenses. According, we conclude that both applicants would be able to comply with the terms and conditions of a new license, and that there is no difference between their plans in this regard.<sup>22</sup>

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<sup>19</sup> See Norwich Public Utilities' license application, Exhibit H, at 100.

<sup>20</sup> See FirstLight's Better-Adapted Statement at 5-6.

<sup>21</sup> See Norwich Public Utilities' Better-Adapted Statement at 3.

<sup>22</sup> See final EA at pp. 18-19, discussing compliance history of the Scotland Project. Norwich Public Utilities states that it has safely operated its projects (*see* Better-Adapted Statement at 3) and the public record does not indicate any compliance problems at these projects.

26. FirstLight suggests that Norwich Public Utilities simply intends to review FirstLight's operations monitoring plan and propose any appropriate modifications. FirstLight also suggests that the utility's record at its existing projects may be immaterial because it might have a consultant operate the Scotland Project.<sup>23</sup> For its part, Norwich Public Utilities alleges that it has been more successful in operating fish passage facilities than FirstLight and that its status as a local business gives it greater incentive to comply with environmental conditions.<sup>24</sup> We do not find that these assertions demonstrate a significant distinction between the two proposals.

**C. Safe Management, Operation, and Maintenance of the Project (Section 15(a)(2)(B))**

27. We have reviewed FirstLight's and Norwich Public Utilities' management, operation, and maintenance of the projects for which they are licensees, giving consideration to the requirements of 18 C.F.R. Part 12 and to the Commission's Engineering Guidelines. We have also considered FirstLight's and Norwich Public Utilities' plans for operating the Scotland project safely and in compliance with the license. Both applicants have filed documents providing details for safe operations, pursuant to FPA section 15(a)(2)(B); while these plans differ in certain respects, the differences are not significant.<sup>25</sup> In addition, both applicants appear to have adequate financial resources to ensure compliance with a new license for the project.

28. We conclude that the Scotland Dam and other project works meet the Commission's Engineering Guidelines and criteria, and that there is no reason to believe either that FirstLight could not continue to or Norwich Public Utilities would not safely manage, operate, and maintain these facilities under a new license or that there is any significant difference between their plans in this regard.

29. In its better-adapted statement, Norwich Public Utilities discusses its plan to install video security cameras, its proposal to fully automate project operation and install pneumatically-operated gates, and the close proximity of its headquarters to the project.<sup>26</sup> Given that nothing in the record suggests that there are security issues at the Scotland Project or that the current manual operation and use of flashboards have not enabled FirstLight to comply with the terms of its license, we find that the enhancements

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<sup>23</sup> See FirstLight's Better-Adapted Statement at 8-9.

<sup>24</sup> Norwich Public Utilities' Better-Adapted Statement at 3-5.

<sup>25</sup> See FirstLight's License Application, Exhibit E, pp. E14-16; Norwich Public Utilities' License Application, Appendix 1, PME No. 6.

<sup>26</sup> Norwich Public Utilities' Better-Adapted Statement at 5-6.

proposed by Norwich Public Utilities do not demonstrate a significant distinction between the two proposals.<sup>27</sup>

**D. Efficient and Reliable Electric Service (Section 15(a)(2)(C))**

30. Staff has reviewed FirstLight's and Norwich Public Utilities' plans and ability to operate and maintain the Scotland Project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that FirstLight regularly inspects the project turbine generator units to ensure they continue to perform in an optimal manner, schedules maintenance to minimize effects on energy production, and since the project has been in operation, has undertaken several initiatives to ensure the project is able to operate reliably into the future. Norwich Public Utilities has performed similar actions with regard to its projects. We, therefore, conclude that both FirstLight and Norwich Public Utilities are capable of operating the project to provide efficient and reliable electric service in the future and that there is no difference between their plans and capabilities in this regard.

31. Norwich Public Utilities maintains that FirstLight's proposal to lower the height of the project flashboards will increase the frequency of flashboard overtopping and the need for flashboard maintenance and impoundment drawdown. It also contends that its proposed manner of headpond control and addition of generating units will result in more efficient generation of electricity and improve the range of flows that can be used for generation.<sup>28</sup>

32. Norwich Public Utilities' claims regarding the continued use of flashboards are speculative, as flashboards are used successfully and safely at many licensed projects. We address Norwich Public Utilities' contentions that its more efficient use of flows would result in greater plant capacity and therefore a better use of a public resource in our discussion of the cost effectiveness of the plans in this section of the order.

**E. Need for Power (Section 15(a)(2)(D))**

33. To assess the need for power, we looked at the needs in the operating region in which the project is located. The Scotland Project is located within the jurisdiction of the New England System Independent Operator (ISO-NE), which is a sub-region of the Northeast Power Coordinating Council Inc., a region of the North American Electric Reliability Council (NERC). The ISO-NE is responsible for the reliable operation of the bulk power system, wholesale electricity markets, and planning processes for the six-state

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<sup>27</sup> We do not find the fact that Norwich Public Utilities is located closer to the project site to be relevant. A licensee is responsible for compliance with the terms of its licenses regardless of where its headquarters may be.

<sup>28</sup> Norwich Public Utilities' Better-Adapted Statement at 6-8.

New England region. The ISO-NE is a summer-peaking system, and the winter peaks are normally less than those experienced in the summer. According to NERC's 2011 forecast, summer peak demand requirements for the ISO-NE region are projected to grow at a compound annual growth rate of 1.4 percent from 2011 through 2020. The capacity margins are forecasted to decrease from about 18.9 percent in 2011 to about 14.2 percent in 2020.<sup>29</sup> FirstLight's project would have an installed capacity of 3.026 MW and would generate an average of 9,600 MWh annually. Norwich Public Utilities' project would have an installed capacity of 5.08 MW and would generate an average of 11,059 MWh annually. The fact that Norwich Public Utilities' project would generate only 15.2 percent more than FirstLight's demonstrates that the difference in capacity between the two projects is not significant. We conclude that either project's contribution to the region's diversified generation mix would help meet the need for power in the region.

34. FirstLight is a merchant generator, which would sell all of the power from the project into the New England wholesale power market.<sup>30</sup> If FirstLight does not receive the new license for this project, FirstLight states it would not purchase replacement power, but would simply have one less generating asset with which to sell power into the New England market.<sup>31</sup>

35. Norwich Public Utilities is a municipal utility serving retail customers.<sup>32</sup> If Norwich Public Utilities does not receive the new license for this project, it can continue to purchase its power requirements, less the power supplied by its existing hydroelectric plants, from the Connecticut Municipal Electric Energy Cooperative.<sup>33</sup>

36. Both proposals will result in the continued production of energy from renewable resources that will not contribute to atmospheric pollution.

#### **F. Transmission Services (Section 15(a)(2)(E))**

37. The Scotland Project is an existing facility that is already integrated into FirstLight's electrical system. Project generators are connected via generator leads to the Scotland Project Substation located on the north bank of the river adjacent to the powerhouse and are within the project boundary. As a merchant generator, FirstLight

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<sup>29</sup> See NERC 2011 Long-Term Reliability Assessment, November 2011.

<sup>30</sup> See FirstLight's Better-Adapted Statement at 11.

<sup>31</sup> *Id.* at 15.

<sup>32</sup> See Norwich Public Utilities' Better-Adapted Statement at 8.

<sup>33</sup> See Norwich Public Utilities' Response to Deficiency of Application and Request for Additional Information, Section 6B, at 15, filed on December 27, 2010.

operates no transmission lines. The project is currently connected to Connecticut Light and Power Company's (Connecticut Light) distribution system at its Scotland Substation. FirstLight proposes no changes or additions to the existing transmission facilities. If the license is awarded to Norwich Public Utilities, the project would continue to be connected to Connecticut Light at the Scotland Project Substation. Norwich Public Utilities would incur costs to upgrade the substation to accommodate its larger generating capacity.<sup>34</sup> We, therefore, find no significant difference between the two applicants' projects with respect to transmission service.

**G. Cost Effectiveness of Plans (Section 15(a)(2)(F))**

38. Both FirstLight and Norwich Public Utilities propose to make facility and operational modifications to increase project generating capacity and enhance environmental resources affected by the project.

39. Under the policy established in *Mead Corp.*,<sup>35</sup> we make no attempt to estimate possible future energy prices over the term of a license. Rather, we provide a general estimate of the potential power benefits and the costs of a project. We do not deny a license application on the basis of our economic analysis, but leave it to the licensee to decide whether to proceed with the project as licensed. However, in a relicensing proceeding where there are competing applications, we are required by the FPA to consider the relative cost-effectiveness of each applicant's plan.<sup>36</sup> We therefore examine the two proposals here to see if there is a significant difference in their cost-effectiveness.

40. Norwich Public Utilities' proposed project would have greater capacity than FirstLight's proposal (i.e., 5.08 MW versus 3.026 MW). However, Norwich Public Utilities' larger generating capacity would be achieved at higher costs than FirstLight's proposal. In order to compare the cost-effectiveness of both proposals, Commission staff used the levelized cost of generating electricity of each proposed project. Staff's evaluation of the economics of the two proposals indicates that both cost more than

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<sup>34</sup> See Norwich Public Utilities' License Application, Section A4, at 14, filed on August 27, 2010.

<sup>35</sup> 72 FERC ¶ 61,027 (1995).

<sup>36</sup> See *Holyoke Water Power Co.*, 88 FERC ¶ 61,186, at 61,605 (1999). FirstLight argues that Norwich Public Utilities has understated the cost of acquiring the Scotland Project and that its cost of power will be exorbitant. FirstLight's Better-Adapted Statement at 14-16. We base our decision here on the economic analysis in Commission staff's EA, not solely on the information provided by the applicants, and believe that staff's analysis is accurate.

currently available alternative power. As discussed below,<sup>37</sup> FirstLight's proposal, with mandatory agency conditions and measures recommended by Commission staff, would produce about 9,624 megawatt-hours (MWh) of electricity annually, at a cost of \$893,107, or about \$57.67/MWh more than the likely alternative cost of power.<sup>38</sup> Norwich Public Utilities' proposal, with mandatory agency conditions and measures recommended by Commission staff, would produce about 11,059 MWh annually, at a cost of \$1,033,685, or about \$58.34/MWh more than the likely alternative cost of power.<sup>39</sup> Although FirstLight's proposal is more cost effective than Norwich Public Utilities' proposal, we conclude that the difference is not significant.<sup>40</sup>

41. Norwich Public Utilities claims that as a small, integrated utility it is more adaptable and better able to achieve economies of scale. It repeats that it is a local entity that is answerable to its ratepayers for keeping rates reasonable, and that it will generate more power than will FirstLight.<sup>41</sup> To the extent that we have not already considered these assertions, they do not establish a significant distinction between the two proposals.

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<sup>37</sup> See Comprehensive Development section of this order.

<sup>38</sup> The estimated annual cost of alternative power is \$35.13/MWh.

<sup>39</sup> In the analogous context of comparing two proposals for original licenses, the Commission concluded that a difference of 20 percent or more in net benefits would be significant. See *City of Augusta, Ky.*, 72 FERC ¶ 61,114 at 61,599-600, n.58 (1995). Norwich Public Utilities' cost has been revised to include a staff estimated operational and maintenance cost of \$3,000 for a mandated agency environmental measure. This cost was not included in staff's economic analysis in the final EA.

<sup>40</sup> Due to the proposed increases in generation, both FirstLight's and Norwich Public Utilities' proposed projects appear to be oversized for the available flow in the Shetucket River, with the cost of producing the additional energy under both proposals being greater than the value of the additional energy in today's market. Generally, run-of-river hydropower projects are designed to operate at maximum capacity between 15 and 30 percent of the time (See U.S. Army Corps of Engineers, Engineering and Design Hydropower, Engineering Manual No. 1110-2-1701 (1985)). Based on the historical flow record of the Shetucket River at the project (U.S. Geological Survey gage number 01122500 from October 10, 1928 to June 15, 2007), FirstLight's proposed project would operate at maximum capacity only 8 percent of the time and Norwich Public Utilities' proposed project would operate at maximum capacity only 5 percent of the time.

<sup>41</sup> Norwich Public Utilities' Better-Adapted Statement at 8-11.

## **H. Other Actions Affecting the Public (Section 15(a)(2)(G))**

42. Both FirstLight and Norwich Public Utilities provided opportunities for public involvement in the development of their applications for a new license for the Scotland Project. During the previous license period, FirstLight provided facilities to enhance the public use of project lands, and operated the project with consideration for the protection of downstream use of the Shetucket River. Norwich Public Utilities undertook similar activities at its licensed projects. We find no distinction between the two applicants in this regard.

43. While Norwich Public Utilities admits that Congress specifically precluded the Commission from considering impacts on fish and wildlife in comparing competing relicense proposals, it nonetheless touts the benefits of its fish passage plans.<sup>42</sup> Given that we cannot consider these matters, this matter is irrelevant. In any event, the water quality certifications issued to both applicants contain requirements for the construction and operation of upstream and downstream fish passage and protection facilities that are consistent with Commission staff recommendations contained in the final EA.<sup>43</sup>

44. Norwich Public Utilities argues that its proposal with regard to recreation enhancements is better than FirstLight's. Norwich Public Utilities proposes to add viewing and bird watching points, shoreline fishing, an improved canoe/kayak portage, and a picnic area.<sup>44</sup> FirstLight, on the other hand, proposes to continue maintaining the existing canoe portage and does not propose any new recreation facilities. FirstLight argues that its proposal is consistent with the facts that the existing facilities are underused and that there are many other outdoor recreation opportunities in the project vicinity.<sup>45</sup> FirstLight states that it does not object to providing any of the amenities proposed by Norwich Public Utilities if the Commission concludes they are appropriate.

45. Although Norwich Public Utilities' proposal includes more measures than FirstLight's, its proposed enhancements are relatively minor and will not provide significant, new recreational opportunities, given the facilities that already exist in the area.<sup>46</sup> We therefore conclude that any differences between the proposals as they relate to recreation enhancements at the project are insignificant.

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<sup>42</sup> Norwich Public Utilities' Better-Adapted Statement at 11-13.

<sup>43</sup> See final EA at 176-79, 180-81, and 195-97.

<sup>44</sup> Norwich Public Utilities' Better-Adapted Statement at 14.

<sup>45</sup> FirstLight's Better-Adapted Statement at 18-19.

<sup>46</sup> See final EA at 113-15

46. Norwich Public Utilities claims that it proposes significant cultural resource protection measures, while FirstLight proposes none.<sup>47</sup> In fact, FirstLight proposes to develop an HPMP. As discussed below, we are requiring the licensee to implement a programmatic agreement with the Connecticut State Historic Preservation Officer (Connecticut SHPO) and to prepare and implement an HPMP (requirements we would impose on whichever of the applicants was awarded the license). Accordingly, there is no significant distinction between the proposals with respect to cultural resources.

### **I. Conclusion**

47. We have compared the applicants' proposals and find that there are no significant distinctions between the proposals. Given that conclusion, the marginal incumbent preference established by section 15<sup>48</sup> dictates that if we issue a new license, it should be awarded to FirstLight. Accordingly, the remainder of this order will deal with FirstLight's new license.

### **Summary of License Requirements**

48. As summarized below, the license, which authorizes 3.026 MW of renewable energy, requires FirstLight to implement a number of measures to protect and enhance water quality, aquatic habitat, fisheries, terrestrial, cultural, and recreation resources at the project.

49. To protect water quality and aquatic habitat in the Shetucket River, the license requires FirstLight to: (1) develop and implement a plan to control erosion and sedimentation during ground-disturbing activities related to project construction; (2) develop and implement a water quality monitoring plan that would contain FirstLight's proposed water quality monitoring provisions described above and additional staff-recommended provisions for monitoring turbidity during project construction and monitoring water quality (i.e., water temperatures and dissolved oxygen concentrations) for three years after the new turbine-generator unit becomes operational; (3) operate the project in a run-of-river mode and maintain the Scotland reservoir at a target elevation of 126.27 feet ( $\pm$  0.25 foot) USGS datum; (4) implement an impoundment refill procedure where no more than 10 percent of reservoir inflow would be used to refill the reservoir after it is drawn down, while the remaining 90 percent of reservoir inflow would be released downstream of the Scotland dam; and (5) develop and implement an operation compliance monitoring plan to ensure compliance with the operational provisions of this license.

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<sup>47</sup> Norwich Public Utilities' Better-Adapted Statement at 14.

<sup>48</sup> See *Kamargo Corp. v. FERC*, 852 F.2d 1392, 1394 (D.C. Cir. 1988).

50. To protect and enhance fisheries in the Shetucket River, the license requires FirstLight to: (1) design, construct, operate, and maintain upstream anadromous fish passage facilities; (2) design, construct, operate, and maintain downstream fish passage and protection facilities; (3) design, construct, operate, and maintain temporary and permanent American eel passage facilities at the project; (4) develop and implement an anadromous fish tagging study to inform decisions as to when commencement of upstream fish passage facilities would begin; (5) develop and implement a fish passage facilities effectiveness plan; and (6) develop and implement a fishway operation and maintenance plan.

51. To protect freshwater mussels in the Shetucket River, the license requires FirstLight to develop and implement a freshwater mussel relocation plan that would contain provisions for relocating mussels prior to in-water construction activities and immediately after planned and unplanned Scotland reservoir drawdowns.

52. To protect and enhance terrestrial resources, the license requires FirstLight to: (1) develop and implement an invasive species management plan; and (2) develop and implement a terrestrial resource protection plan to ensure that terrestrial areas are properly restored and that wildlife species are protected during construction and installation of new project facilities.

53. To protect and enhance recreation, the license requires FirstLight to develop and implement a recreation management plan that includes provisions to improve the canoe portage and install a tailrace fishing access area downstream of the dam.

54. To protect cultural resources, the license requires FirstLight to implement the programmatic agreement (PA) that requires the development of an HPMP.

### **WATER QUALITY CERTIFICATION**

55. Under section 401(a)(1) of the Clean Water Act (CWA),<sup>49</sup> the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification (certification) for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.<sup>50</sup>

56. On September 7, 2011, FirstLight applied to Connecticut DEEP for certification for the Scotland Project, which Connecticut DEEP received on September 7, 2011. On

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<sup>49</sup> 33 U.S.C. § 1341(a)(1) (2012).

<sup>50</sup> 33 U.S.C. § 1341(d) (2012).

July 30, 2012, Connecticut DEEP issued a certification for the project that includes 18 conditions, which are set forth in Appendix A of this order and incorporated into the license by Ordering Paragraph E. Of the 18 certification conditions, 8 are general or administrative and, as such, are not discussed further.<sup>51</sup>

57. The remaining conditions include requirements to: (1) operate the project in a run-of-river mode and maintain a reservoir elevation of 126.27 feet ( $\pm$  0.25 foot); (2) develop a plan that outlines how FirstLight will manage and monitor run-of-river operation and an impoundment refill procedure whereby 90 percent of the inflow to the impoundment would be instantaneously released downstream of the project in the event reservoir levels are drawn below 126.27 feet; (3) implement during the months of June 1 through September 30 a water quality monitoring survey that includes provisions to monitor dissolved oxygen concentrations and water temperature immediately upstream and downstream of the project, beginning the first summer after the new turbine-generator unit commences operation and continuing for a period of three years; (4) develop a mussel relocation plan that details procedures that would be implemented to ensure mussels residing in the Scotland reservoir are protected during scheduled maintenance drawdowns; (5) construct, contingent upon the results of a required fish tagging study, and maintain upstream anadromous fish passage facilities at the project (i.e., a fish lift) that operate annually from April 1 through June 30 and October 1 through November 15 (certification condition 5);<sup>52</sup> (6) develop and annually implement, beginning the first spring following any new license issued for the project, an anadromous fish tagging study using wild sea-return anadromous fish to document whether tagged fish migrate upstream to the base of Scotland dam; (7) construct, maintain, and evaluate permanent upstream passage facilities for American eel at the project that would be operational the third passage season following the effective date of this license and operate annually thereafter from April 1 through November 15; (8) construct, maintain, and evaluate a downstream fish passage and protection system at

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<sup>51</sup> The general terms and conditions include: (1) clarification that the certification does not convey or derogate property rights; (2) the term of the certification to be consistent with the term of the license; (3) compliance directives regarding the terms and conditions of the certification; (4) restrictions on transferring the certification without written consent; (5) the need to modify the certification if information in the 401 application proves to be false, deceptive, incomplete, or inaccurate; (6) the use of best management practices; (7) the need to certify any documents submitted to the Connecticut DEEP; and (8) procedures for submitting documents to the Connecticut DEEP.

<sup>52</sup> Certification condition 5 further specifies that once anadromous fish species are documented to be present at the base of Scotland dam, construction of the upstream fish passage facilities would commence the following year and be completed within two calendar years.

the project that would be operational within three years of any new license issued for the project and operate annually thereafter from June 1 through June 15 and September 1 through November 15; (9) develop effectiveness study plans for each of the required fishways; and (10) develop a fishway passage operations and maintenance plan for each of the fishways.

#### Anadromous Fish Tagging and Monitoring Plan

58. Certification condition 6 requires FirstLight to develop, in consultation with Connecticut DEEP, a fish tagging and monitoring study to be conducted during the first spring (i.e., first fish migration season) after any new license is issued for the project. Certification condition 6 further requires that wild sea-return anadromous fish captured at the downstream Greenville dam fish lift be tagged with radio tags and trucked and released upstream of the Occum dam so that stationary radio receivers around the Scotland dam could document the presence of tagged fish below the dam.<sup>53</sup> In the final EA,<sup>54</sup> staff recommended that FirstLight develop a fish tagging and monitoring plan so that data collected could help inform decisions related to the need for upstream fish passage facilities at the project. However, staff did not recommend that the study be implemented during the first spring after license issuance. Rather, staff recommended that a fish tagging and monitoring plan be developed once successful upstream fish passage is provided at all facilities located downstream of the project.<sup>55</sup> Staff concluded that implementing a fish tagging and monitoring plan prior to anadromous fish being able to access the Scotland tailrace would be premature. However, the implementation of the fish tagging and monitoring study during the first spring after license issuance is required by the certification and is therefore made part of the license. In addition, Article 407 requires FirstLight to file, as an administrative matter, an anadromous fish tagging and monitoring plan for Commission approval that includes provisions for implementing the requirements of certification condition 6.

#### Coastal Zone Management Act

59. Under section 307(c)(3)(A) of the Coastal Management Zone Act (CZMA),<sup>56</sup> the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively

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<sup>53</sup> The Greenville dam is located on the Shetucket River at river mile 2.0.

<sup>54</sup> See final EA at 179-80.

<sup>55</sup> See final EA at 205-06.

<sup>56</sup> 16 U.S.C. §1456(c)(3)(A) (2012).

presumed by its failure to act within 6 months of the receipt of the applicant's certification.

60. By letter of October 26, 2010, Connecticut DEEP notified FirstLight that although the project is not within Connecticut's coastal area, it is conceivable that activities at the project could affect coastal resources if the Shetucket River was free-flowing from the project downstream to tidal waters. However, Connecticut DEEP concluded that the presence of three downstream dams effectively precludes the potential for project effects on coastal resources resulting from the Scotland Project, and therefore no federal coastal consistency review is necessary.

### **Section 18 Fishway Prescription**

61. Section 18 of the FPA<sup>57</sup> provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

62. By letters filed September 9, 2011 and September 12, 2011, the Secretaries of Commerce and Interior, respectively, requested that the Commission reserve their authority to prescribe fishways. Consistent with Commission policy, Article 413 of this license reserves the Commission's authority to require fishways that may be prescribed by Commerce or Interior for the Scotland Project.

### **Threatened and Endangered Species**

63. Section 7(a)(2) of the Endangered Species Act of 1973<sup>58</sup> requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

64. By letter filed on September 12, 2011, the FWS stated that no federally listed or proposed endangered or threatened species under its jurisdiction occur within the project impact area. In the final EA,<sup>59</sup> Commission staff determined that because no federally listed species are known to occur in the vicinity of the Scotland Project issuing a new license for the project would have no effect on listed species. Therefore, no further action under the Endangered Species Act is required.

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<sup>57</sup> 16 U.S.C. § 811 (2012).

<sup>58</sup> 16 U.S.C. § 1536(a) (2012).

<sup>59</sup> See final EA at 11.

### **National Historic Preservation Act**

65. Under section 106 of the National Historic Preservation Act (NHPA)<sup>60</sup> and its implementing regulations,<sup>61</sup> federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (defined as historic properties) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the state historic preservation officer to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

66. To satisfy these responsibilities, the Commission executed a PA with the Connecticut SHPO and invited the Mashantucket (Western) Pequot Tribe and FirstLight to concur with the stipulations of the PA. Both parties concurred. The PA requires the licensee to prepare and implement an HPMP for the term of any new license issued for this project. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 417 requires the licensee to implement the PA and to file its HPMP with the Commission within one year of license issuance.

### **Recommendations of State and Federal Fish and Wildlife Agencies Pursuant to Section 10(j) of the FPA**

67. Section 10(j)(1) of the FPA<sup>62</sup> requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,<sup>63</sup> to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

68. In response to the July 15, 2011 public notice that the application was ready for environmental analysis and soliciting comments, final recommendations, terms and conditions, and prescriptions, Interior and Commerce filed a total of 13 different recommendations pursuant to section 10(j).<sup>64</sup>

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<sup>60</sup> 16 U.S.C. § 470 *et seq.* (2012).

<sup>61</sup> 36 C.F.R. Part 800 (2013).

<sup>62</sup> 16 U.S.C. § 803(j)(1) (2012).

<sup>63</sup> 16 U.S.C. §§ 661 *et seq.* (2012).

<sup>64</sup> Interior filed 12 recommendations on September 9, 2011 and Commerce filed 3 recommendations on September 12, 2011. Two of the recommendations filed by both agencies were identical.

69. Two of the recommendations filed, one each from Interior and Commerce, were determined to be outside the scope of section 10(j) and are discussed in the next section.

70. This license includes conditions consistent with the remaining 11 recommendations. These recommendations include: (1) Interior's and Commerce's recommendations to operate the project in a run-of-river mode (certification condition 1 and Article 402); (2) Interior's recommendation to maintain the Scotland reservoir at an elevation of 126.27 feet ( $\pm$  0.25 foot) USGS datum (certification condition 1); (3) Interior's recommendation to monitor water quality (certification condition 3 and Article 405); (4) Interior's recommendation to develop and implement a plan that contains provisions for maintaining and monitoring run-of-river operation and flow releases from the project and recording and maintaining data related to project operations (certification condition 2 and Article 404); (5) Interior's recommendation to implement an impoundment refill procedure (certification condition 2 and Article 403); (6) Interior's recommendation to develop and implement a mussel relocation plan (certification condition 4 and Article 412); (7) Interior's recommendations to operate, maintain and evaluate upstream anadromous fish passage facilities at the Scotland dam (certification condition 5 and Article 406), and implement an anadromous fish radiotelemetry study to help inform decisions as to when construction of upstream fish passage facilities at the project should begin (certification condition 6 and Article 407); (8) Interior's recommendation to design, construct, operate, maintain, and evaluate temporary and permanent upstream passage facilities for American eel at the Scotland dam (certification condition 7 and Article 408); (9) Interior's recommendation to design, construct, operate, maintain, and evaluate a downstream fish passage and protection system at Scotland dam (certification condition 8 and Article 409); (10) Interior's and Commerce's recommendations for a fish passage facilities and effectiveness plan (certification condition 9 and Article 410); and (11) Interior's recommendation for a fish passage facilities operations and maintenance plan (certification condition 10 and Article 411).

### **Section 10(a)(1) of the FPA**

71. Section 10(a)(1) of the FPA<sup>65</sup> requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

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<sup>65</sup> 16 U.S.C. § 803(a)(1) (2012).

**A. Measures Recommended by Interior and Commerce**

72. Interior and Commerce filed two recommendations under section 10(j) that are not specific measures to protect, mitigate damages to, or enhance fish and wildlife. Consequently, these recommendations are considered under the broad public-interest standard of section 10(a)(1).<sup>66</sup>

*Invasive Species Control*

73. Interior recommends that FirstLight prepare and file for Commission approval, an invasive species control plan. Interior recommends that the plan include a schedule for regularly monitoring for invasive plants within the project area, and identify methods that would be used to control select species. In the final EA,<sup>67</sup> Commission staff concluded that the invasive species control plan recommended by Interior was general in nature and lacked specificity. However, Commission staff further concluded that an effective invasive species management plan, one that outlines clear management priorities and monitoring and control methods, if needed, would ensure the protection of terrestrial habitat along the project reservoir from the continued spread of invasive plants, and protect the littoral and riparian zone for native plant and wildlife species. Therefore, Article 414 requires FirstLight to develop and implement an invasive species management plan that is consistent with Interior's recommendation.

*Consultation on Fishways*

74. Commerce recommends that FirstLight include copies of agency comments and recommendations with filings associated with the plans for final fishway designs, fishway maintenance and operation, and fishway effectiveness studies. Articles 406, 408, 409, 410, and 411 of the license are consistent with Commerce's recommendation regarding consultation with the agencies during the development of all plans related to designing, constructing, operating, maintaining, and evaluating fish passage facilities at the project.

**B. Aquatics***Operation Compliance Monitoring and Reservoir Refill Protocol*

75. Certification condition 2 requires FirstLight to develop a plan that outlines how it will manage and monitor run-of-river operation and an impoundment refill procedure, whereby 90 percent of the inflow to the impoundment would be instantaneously released downstream of the project in the event reservoir levels are drawn below 126.27 feet.

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<sup>66</sup> *Id.*

<sup>67</sup> *See* final EA at 112.

76. In the final EA,<sup>68</sup> Commission staff recommended that FirstLight develop and implement an operation compliance monitoring plan that would include the requirements specified in certification condition 2, and additional provisions for: (1) providing a description of the exact location of all gages and/or measuring devices, or techniques that would be used to monitor compliance; (2) specifying procedures for maintaining and calibrating monitoring equipment; (3) providing the frequency of recording for each gage and/or measuring device; (4) describing reporting requirements; and (5) maintaining a log of project operations.

77. Article 404 requires FirstLight to file an operation compliance monitoring plan that contains provisions for implementing the additional staff-recommended measures. Article 403 specifies that the reservoir refill protocol required by certification condition 2 may be temporarily modified if required by operating emergencies beyond the control of the licensee, or for short periods upon mutual agreement among the Connecticut Department of Energy and Environmental Protection, U.S. Fish and Wildlife Service, and National Marine Fisheries Service.

#### *Water Quality Monitoring Plan*

78. Certification condition 3 requires FirstLight to conduct a post-license water quality monitoring survey to collect continuous dissolved oxygen and water temperature measurements from a site in the reservoir and a site near the tailrace for the period of June 1 to September 30. The certification requires that the water quality monitoring be initiated the first summer after the new minimum flow turbine unit becomes operational and continue for the following three years. FirstLight proposes to continuously monitor dissolved oxygen concentrations and water temperatures at a site immediately upstream of the Scotland dam and at a site downstream of the project's tailrace, from June 1 to September 30, during the first "typical" summer following conversion of the project to run-of-river operation to assess the effects of converting the project to a run-of-river operation on water quality.<sup>69</sup>

79. In the final EA,<sup>70</sup> Commission staff recommended that FirstLight develop and implement a water quality monitoring plan that would include the requirements specified in certification condition 3 with additional provisions for: (1) continuous turbidity monitoring during project construction and for the first three years (June 1 through September 30) after the new minimum flow unit becomes operational to allow for any

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<sup>68</sup> See final EA at 176, A-9, and A-10.

<sup>69</sup> A "typical" summer is defined as a summer with high air temperatures and low flows.

<sup>70</sup> See final EA at 174, 175, A-8, and A-9.

construction and/or operations-related increases in turbidity to be identified; (2) continuous dissolved oxygen and water temperature monitoring during the first “typical” summer (June 1 through September 30) after converting the project to a run-of-river mode; (3) implementation of corrective actions, if necessary, to minimize any adverse effects on water quality; (4) a description of the methods, equipment, maintenance and calibration procedures, and specific locations that would be used to conduct the water quality monitoring; (5) a description of reporting requirements; and (6) an implementation schedule. Article 405 requires FirstLight to file a water quality monitoring plan that contains provisions for implementing the additional staff recommended measures pertaining to monitoring water quality in the project area.

#### *Freshwater Mussel Relocation*

80. Certification condition 4 requires FirstLight to develop a mussel relocation plan that details procedures that FirstLight will follow to ensure that mussels residing in the reservoir are protected during any scheduled maintenance drawdowns.

81. In the final EA,<sup>71</sup> Commission staff recommended that FirstLight develop and implement a mussel relocation plan that would include the requirements specified in certification condition 4 with additional provisions for: (1) surveying all exposed areas of the Scotland reservoir for mussels upon each reservoir drawdown and relocating dewatered mussels to a watered location within the project reservoir; and (2) conducting a one-time, pre-construction mussel survey (and mussel relocation event) of the area(s) that would be excavated or potentially affected by proposed project construction activities. Article 412 requires FirstLight to file a mussel relocation plan that contains provisions for implementing the additional staff-recommended measures for protecting mussels in the project area.

#### *Upstream Fish Passage*

82. Certification 5 requires FirstLight to construct, contingent upon the results of the required fish tagging study, maintain, and evaluate upstream anadromous fish passage facilities at the project (i.e., a fish lift) that operate annually from April 1 through June 30 and October 1 through November 15

83. In the final EA,<sup>72</sup> Commission staff recommended that FirstLight develop and implement an upstream fish passage plan that would include the requirements specified in certification condition 5 with additional provisions for: (1) detailed design drawings of the facilities; (2) a quantification of the flows required to operate the facilities; (3) a detailed description of the criteria that would be utilized to inform decisions as to when

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<sup>71</sup> See final EA at 184, 185, and A-15.

<sup>72</sup> See final EA at 178, 179, A-11, and A-12.

construction of the facilities would commence; (4) reporting procedures; and (5) a construction schedule. Article 406 requires FirstLight to file an upstream fish passage plan that contains provisions for implementing the additional staff-recommended measures.

#### *Upstream American Eel Passage*

84. Certification condition 7 requires FirstLight to construct, maintain, and evaluate permanent upstream passage facilities for American eel at the project that would be operational the third passage season following the effective date of this license and operate annually thereafter from April 1 through November 15. FirstLight proposes to construct temporary eelways at Scotland dam and operate and maintain them for the first two years after any new license is issued for the project. FirstLight also proposes to monitor their effectiveness to help inform decisions on the placement of the permanent eel passage facility required by certification condition 7.

85. In the final EA,<sup>73</sup> Commission staff concluded that constructing, operating, maintaining, and evaluating the effectiveness of temporary eelways at the project for the first two seasons after any new license is issued would ensure that permanent eelways are constructed in the best possible location, thereby providing the greatest benefit to American eels seeking upstream passage at the project. Commission staff recommended that FirstLight develop and implement an upstream eel passage plan that would include the requirements for permanent eelways specified in certification condition 7 with additional provisions for: (1) the construction of temporary eelways and operation and maintenance of them for the first two years (from April 1 to November 15) after any new license is issued to help inform the placement of a permanent eelway; (2) effectiveness monitoring of the temporary eelways while in operation; (3) a description of the temporary eelway effectiveness monitoring; (4) the release of any eels collected during effectiveness monitoring of the temporary eelway into the Scotland reservoir; (5) consultation requirements; (6) reporting requirements; (7) detailed design drawings and other design criteria of the permanent eelway; (8) a quantification of the flows required to operate the temporary and permanent eelways; and (9) a schedule for implementing the provisions of the plan.<sup>74</sup> Article 408 requires FirstLight to file an upstream eel passage plan that contains provisions for implementing the additional staff-recommended measures.

#### *Downstream Fish Passage and Protection*

86. Certification condition 8 requires FirstLight to construct, maintain, and evaluate a downstream fish passage and protection system at the project that would be operational

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<sup>73</sup> See final EA at 180, 181.

<sup>74</sup> See final EA at A-10, A-11.

within three years of any new license issued for the project and operate annually thereafter from June 1 through June 15 and September 1 through November 15. FirstLight proposes to construct, operate, and maintain downstream fish passage facilities that would consist of using an existing trash boom and four-foot skirt to guide fish migrating downstream to a modified spillway gate, which FirstLight states would act as a bypass around project turbines for resident and anadromous fish, including American eel. FirstLight also proposes to minimize fish entrainment by installing new trashracks with one-inch clear bar spacing at the project's intake, concurrent with the construction of its proposed fish lift, or sooner, depending on whether the existing trashracks need replacing.

87. In the final EA,<sup>75</sup> Commission staff concluded that there was not sufficient evidence to show that FirstLight's proposal would meet the physical specifications and environmental cues necessary to effectively and safely move diadromous fish species,<sup>76</sup> including American eel, downstream of the Scotland dam. Therefore, staff recommended that FirstLight develop and implement a downstream fish passage and protection plan that would include the requirements specified in certification condition 8 with additional provisions for: (1) detailed design drawings; (2) a quantification of the flows required to operate the downstream fish passage facilities; (3) reporting requirements; and (4) a schedule for installing the facilities.<sup>77</sup> Article 409 requires FirstLight to file a downstream fish passage and protection plan that contains provisions for implementing the additional staff-recommended measures.

#### *Fish Passage Effectiveness Evaluation Plan*

88. Certification condition 9 requires FirstLight to prepare effectiveness study plans for the required upstream and downstream fish passage facilities and the required upstream eel passage facilities within 18 months of license issuance.

89. In the final EA,<sup>78</sup> Commission staff recommended that FirstLight develop and implement a fish passage effectiveness evaluation plan that would include the requirements specified in certification condition 9 with additional provisions for: (1) a description of the specific methods that would be used to evaluate fish passage efficiency; (2) a description of how any fish used for effectiveness testing would be procured, tagged, and released; (3) effectiveness monitoring of each fish passage facility

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<sup>75</sup> See final EA at 176-79.

<sup>76</sup> Diadromous fish species are those which migrate, in either direction, between sea water and fresh water.

<sup>77</sup> See final EA at A-12.

<sup>78</sup> See final EA at 181,182.

for a minimum of 3 years after operations commence at each respective facility; (4) the release of any eels collected during effectiveness monitoring of the permanent eelway into the Scotland reservoir; (5) reporting requirements; and (6) an implementation schedule.<sup>79</sup> Article 410 requires FirstLight to file a fish passage effectiveness evaluation plan that contains provisions for implementing the additional staff-recommended measures.

#### *Fish Passage Facilities Operations and Maintenance Plan*

90. Certification condition 10 requires FirstLight to prepare a fishway passage operations and maintenance plan within three years of the effective date of any new license issued for the project. In the final EA,<sup>80</sup> Commission staff recommended that FirstLight develop and implement a fish passage facilities operation and maintenance plan that would include the requirements specified in certification condition 10 with additional provisions for: (1) a description of the regular maintenance activities that would be needed for the fishways and eelways both during and outside their respective periods of operation; (2) a description of when regular maintenance activities would be conducted; (3) the conduct of any major fishway and eelway maintenance activities during periods when the fishways and eelways are not in operation, to the extent possible; and (4) a description of what mitigation measures would be implemented to ensure any maintenance activities conducted during the operating period of the fishways and eelways would have minimal effects on migrating fish and American eels.<sup>81</sup> Article 411 requires FirstLight to file a fish passage facilities operation and maintenance plan that contains provisions for implementing the additional staff-recommended measures.

#### **C. Sediment and Erosion**

91. The certification requires FirstLight to implement erosion and sediment control measures, including the use of silt fences to separate staging areas, stabilization of disturbed soils, and adherence to the “Connecticut Guidelines for Soil Erosion and Sediment Control” as revised. Article 302 requires FirstLight to develop and implement a sediment and erosion control plan consistent with the certification requirements 60 days prior to the start of construction.

#### **D. Terrestrial Resources**

92. Construction activity related to excavation and turbine installation has the potential to temporarily displace wildlife, disturb riparian and littoral habitat, and

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<sup>79</sup> See final EA at A-13, A-14.

<sup>80</sup> See final EA at 182, 183.

<sup>81</sup> See final EA at A-14.

promote the spread of invasive plants. In the final EA,<sup>82</sup> Commission staff recommended that FirstLight develop and implement a plan to minimize these effects. Article 415 requires FirstLight to develop and implement a terrestrial resource protection plan that includes measures to revegetate disturbed areas, protect wildlife species, and avoid areas with invasive plants during construction.

#### **E. Recreation Enhancements**

93. Construction activity, which could last up to four years, will affect nearby downstream recreation opportunities by temporarily restricting public use of the river and the shoreline. Also, operation of the fishways will permanently displace anglers from a popular downstream bedrock outcropping area used for fishing near the tailrace. Construction activities will temporarily limit boating near the project, but the change in project operation to a run-of-river mode will improve boating downstream. FirstLight proposes to consult with Connecticut DEEP to relocate the existing informal bedrock outcropping fishing access area and make “reasonable” improvements to the existing canoe portage.

94. In the final EA,<sup>83</sup> Commission staff recommended that FirstLight develop and implement a recreation management plan that contains measures to construct a tailrace fishing access area to mitigate for the loss of fishing access near the tailrace, upgrade the portage, and provide for public safety during construction and installation of project facilities. Article 416 requires FirstLight to develop and implement a recreation management plan that contains such measures.

#### **Other Issues**

##### **A. FirstLight’s Comments on Economic Analysis**

95. In its comments on the final EA, FirstLight notes that staff’s economic analysis double counted the \$340,000 cost of the proposed portable cofferdam. FirstLight is correct and the double-counting has been corrected in the *Project Economics* section of this license order.

96. FirstLight states that the book value of the Scotland Project, estimated by FirstLight to be \$443,000 (2010 dollars), was not included in the economic analysis of Norwich Public Utilities’ proposal. FirstLight states that if Norwich Public Utilities would acquire the project from FirstLight, Norwich Public Utilities would be required by sections 14 and 15 of the Federal Power Act to pay FirstLight for its net investment in the project, not to exceed fair value, plus severance damages. FirstLight’s plant remaining

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<sup>82</sup> See final EA at 185.

<sup>83</sup> See final EA at 187, 188.

book value of \$443,000 (2010 dollars) is an appropriate value to use for this purpose. However, staff's review of the economic analysis for Norwich Public Utilities' proposed project indicates that the Final EA included a Scotland Project value of \$443,000 (2010 dollars), which was converted to \$456,983 (2011 dollars).

97. FirstLight states that table 15 of the final EA appears to have a double entry for the implementation of a reservoir refill protocol. Table 15 of the final EA reflects two separate reservoir refill protocol measures that Commission staff considered in assessing the environmental effects of FirstLight's project proposal. The first reservoir refill protocol measure listed in the table is FirstLight's proposed reservoir refill protocol measure and was used to develop the cost of FirstLight's proposal.<sup>84</sup> The second reservoir refill protocol measure listed in the table, which differs from FirstLight's proposed measure, was recommended by Interior, the Connecticut DEEP, and Commission staff,<sup>85</sup> and was used to develop the cost of the staff alternative.<sup>86</sup>

#### **B. Norwich Public Utilities' Comments on Economic Analysis**

98. On January 31, 2013 and February 20, 2013, Norwich Public Utilities filed comments that the final EA's economic analysis for Norwich Public Utilities' proposed project noting an apparent number of double- and triple-counting errors that artificially inflated the estimated cost of its proposal. According to Norwich Public Utilities, the final EA double-counted the capital costs for water quality monitoring and permanent eelway construction, and triple-counted the capital costs for a recreation management plan and an HPMP. In addition, Norwich Public Utilities states that the final EA double-counted the annual operation and maintenance costs for insurance and water quality monitoring, and triple-counted the annual operation and maintenance costs of a recreation management plan and an HPMP. Norwich Public Utilities states that the multiple entries of similar measures in table 16 of the final EA are evidence of double- and triple-counting.<sup>87</sup> Further, Norwich Public Utilities states that the costs associated with these measures are included in the capital and the operation and maintenance costs provided in its license application, filed on August 27, 2010. Thus, Norwich Public Utilities states that the inclusion of the above referenced double- and triple-counting errors in the final EA's economic analysis of its proposal artificially inflates the estimated capital and operating cost of their project.

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<sup>84</sup> See final EA at 139.

<sup>85</sup> See final EA at 140.

<sup>86</sup> See final EA at 183 and 184 for a discussion as to why Commission staff did not recommend the reservoir refill protocol proposed by FirstLight.

<sup>87</sup> See final EA at 145-51.

99. Table 16 of the final EA lists the cost of environmental mitigation and enhancement measures considered in assessing the environmental effects of Norwich Public Utilities' proposal. While certain environmental measures are listed more than once in the table, it is important to note that each measure is tied to a particular entity or group of entities that have either proposed and/or recommended the measure. Table 16 is not an indication that costs associated with similarly proposed measures are used more than once in Commission staff's economic analysis of project alternatives. In addition, some measures may appear similar but actually differ because they include modifications or other revisions to Norwich Public Utilities' proposed measures, and hence may have different associated costs. For example, table 16 lists Norwich Public Utilities' proposal to implement an HPMP for a capital cost of \$26,000, which is different from the capital cost associated with Commission staff's recommended measure to develop and implement an HPMP. In this case, Commission staff recommended that Norwich Public Utilities revise its proposed measure, resulting in a total cost of \$32,000, which includes an additional \$6,000 beyond the cost of the Norwich Public Utilities' proposal. However, the total cost for each alternative only includes one value for the cost of each measure included in that alternative.<sup>88</sup>

100. Regarding Norwich Public Utilities' claim of double-counting the insurance cost in the final EA's economic analysis, Commission staff relied on information contained in Exhibit D4.4 of Norwich Public Utilities' license application, which contains the costs associated with operation and maintenance expenses for Norwich Public Utilities' proposed project which did not include insurance or otherwise identify the costs of insurance. Further, Norwich Public Utilities did not provide a cost of insurance in its comments on the draft or final EA. Therefore, Commission staff assumed the cost of insurance to be equal to 0.25 percent of the total gross investment for the project.<sup>89</sup>

### **Administrative Provisions**

#### **A. Annual Charges**

101. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA and use and occupancy of United States lands.

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<sup>88</sup> For example, the EA's analysis of Norwich Public Utilities' proposal includes \$26,000 for the cost of the HPMP, while the analysis of Staff's recommended proposal includes \$32,000 for the HPMP. The latter analysis does not, however, double-count those costs, which would have resulted in an estimate of \$58,000 for the HPMP.

<sup>89</sup> U.S. Department of Energy: Hydroelectric Power Evaluation, August 1979.

**B. Exhibit F and G Drawings**

102. The Commission requires licensees to file sets of approved project drawings on microfilm and in electronic file format. Article 202 requires the filing of these drawings.

103. The Exhibit G drawings filed with the license application do not enclose and show all the project works and facilities necessary for operation and maintenance of the project, because they excluded the access road from Jerusalem Road to the project. Therefore, the project boundary drawings are not approved. Article 203 requires FirstLight to file revised Exhibit G drawings that enclose these features.

**C. Amortization Reserve**

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

**D. Headwater Benefits**

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

**E. Project Land Rights Progress Report**

106. Standard Article 5 set forth in Form L-4 requires the licensee to acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project, within five years. In order to monitor compliance with Article 5, Article 206 requires the licensee to file no later than four years after license issuance, a report detailing its progress on acquiring title in fee or the necessary rights to all lands within the project boundary as shown on approved Exhibit G drawings. The report must include specific documentation on the status of the rights that have been acquired as of the filing date of the progress report, and a plan and schedule to acquire all remaining land prior to the five-year deadline.

**F. Use and Occupancy of Project Lands and Waters**

107. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 418 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

**G. Start of Construction**

108. Article 301 requires the licensee to commence construction of the new project works within two years from the issuance date of the license and complete construction within five years from the issuance date of the license.

**H. Review of Final Plans and Specifications**

109. Article 302 requires the licensee to provide the Commission's Division of Dam Safety and Inspection New York Regional Office (D2SI-NYRO) with final contract drawings and specifications, together with a supporting design report consistent with the Commission's engineering guidelines. The submittal shall include a temporary construction emergency action plan and a quality control and inspection program.

110. Article 303 requires the licensee to provide the Commission's D2SI-NYRO with cofferdam construction drawings and deep excavation construction drawings.

111. Where new construction or modifications to the project are involved, the Commission requires licensees to file revised drawings of project features as-built. Article 304 provides for the filing of these drawings.

112. Where project modifications are proposed, as a result of environmental requirements, the Commission requires licensees to file a plan and schedule of any proposed modification to project operation or to the water retaining and/or conveyance features of the project. Article 305 provides for the filing of this plan and schedule.

**I. Filing of Amendment Applications**

113. In Appendix A there are certain certification conditions that contemplate unspecified long-term changes to project operations or facilities for the purpose of mitigating environmental impacts. Therefore, Article 401 requires the licensee to file amendment applications, as appropriate.

**State and Federal Comprehensive Plans**

114. Section 10(a)(2)(A) of the FPA<sup>90</sup> 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.<sup>91</sup> Under section 10(a)(2)(A), federal and state agencies filed 19 comprehensive plans that address

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<sup>90</sup> 16 U.S.C. § 803(a)(2)(A) (2012).

<sup>91</sup> Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2013).

various resources in Connecticut. Of these, the staff identified and reviewed nine comprehensive plans that are relevant to this project.<sup>92</sup> No conflicts were found.

### **Project Economics**

115. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,<sup>93</sup> the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of 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.

116. In applying this analysis to the Scotland Project, Commission staff considered the no action alternative and the proposed project as licensed herein. Under the no action alternative, the project would continue to operate as it does now. The project has an installed capacity of 2.0 MW and generates an average of 7,314 MWh of electricity annually. The average annual project cost is \$193,090 or \$26.40/MWh. When staff multiplied its estimate of average generation by the alternative power cost of \$35.13/MWh, staff got a total value of the project's power of \$256,941 in 2011 dollars. To determine whether the proposed project is currently economically beneficial, staff subtracted the project's cost from the value of the project's power.<sup>94</sup> Therefore, the project costs \$63,851, or \$8.73/MWh, less to produce power than the likely alternative cost of power.

117. As licensed herein, the levelized annual cost of operating the proposed project (as modified by staff and including mandatory conditions) would be about \$893,107 or about \$92.80/MWh. The proposed project would generate an estimated average of 9,624 MWh of energy annually. When staff multiplied its estimate of average generation by the alternative power cost of \$35.13/MWh, staff got a total value of the project's power of \$338,091 in 2011 dollars. To determine whether the proposed project is economically beneficial, staff subtracted the proposed project's cost from the total value of the

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<sup>92</sup> The list of applicable plans can be found in section 5.4 of the final EA for the project.

<sup>93</sup> 72 FERC ¶ 61,027 (1995).

<sup>94</sup> Details of staff's economic analysis for the project as licensed herein and for various alternatives are included in the final EA at 135.

alternative power. Therefore, in the first year of operation, project power would cost \$555,016 or \$57.67/MWh more than the likely alternative cost of power.

118. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load, and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil-fuel based generating stations and put them back on line.

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

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

### **Comprehensive Development**

121. Sections 4(e) and 10(a)(1) of the FPA<sup>95</sup> require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to relicense this project, and the terms and conditions included herein, reflect such consideration.

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

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<sup>95</sup> 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

123. Based on staff's independent review and evaluation of FirstLight's proposed Scotland Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the final EA, we have selected FirstLight's proposed Scotland Project, with the staff-recommended measures and agency mandatory conditions, and find that it is best adapted to a comprehensive plan for improving or developing the Shetucket River.

124. We selected this alternative because: (1) issuance of a new license will serve to maintain a beneficial and dependable source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties; and (3) the combined 3.026 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

### **License Term**

125. Section 15(e) of the FPA<sup>96</sup> provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.<sup>97</sup>

126. This license authorizes a moderate amount of new construction that includes: (1) installing a new turbine-generator unit; (2) constructing temporary eelways for upstream American eel passage; (3) constructing a permanent eelway for upstream eel passage; (4) constructing a fish lift when needed or when appropriate; and (5) constructing downstream fish passage facilities for anadromous and resident fish. Consequently, a 40-year license for the Scotland Project is appropriate.

### **The Commission orders:**

(A) This license is issued to FirstLight Hydro Generating 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 Scotland Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

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<sup>96</sup> 16 U.S.C. § 808(e) (2012).

<sup>97</sup> See *Consumers Power Co.*, 68 FERC ¶ 61,077, at 61,383-84 (1994).

(B) The application for a license for the Scotland Hydroelectric Project No. 12968, filed on August 27, 2010, by the City of Norwich Department of Public Utilities, is denied.

(C) The project consists of:

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

(2) Project works consisting of the following facilities: (1) a 134-acre reservoir at elevation 126.27 feet U.S. Geological Survey (USGS) datum with a usable storage capacity of 268 acre-feet; (2) an approximately 480-foot-long, composite structure consisting of: (a) a 183-foot-long, 32.5-foot-high earthen dike with a top elevation of 139.09 feet USGS datum and a 12-inch reinforced concrete corewall with a top elevation of 138.59 feet USGS datum, (b) a 119-foot-long, 24-foot-high Tainter gate section with a sill elevation at 113.09 feet USGS datum containing a 3-foot-wide west abutment section, five 20-foot-wide bays, and four 4-foot-wide gate piers, (c) an 89-foot-long, 31-foot-high Ambursen-type ungated spillway section with a crest length of 80 feet and a crest elevation of 124.47 feet USGS datum having 30-inch-high wooden pin-type flashboards installed along the crest, (d) an 18.83-foot-long gravity-type ungated spillway section with a crest elevation of 124.47 feet USGS datum and 30-inch-high wooden pin-type flashboards installed along 16.33 feet of the crest; and (e) a 70-foot-long powerhouse and intake section; (3) a 2.0- megawatt (MW) turbine-generator and a 1.036-MW turbine-generator for a total rated capacity of 3.026 MW; (4) a 90-foot-long, 40-foot-wide tailrace; (5) three 125-foot-long generator leads; (6) a switchyard containing three 2.4/23-kilovolt step-up transformers; (7) an approximately 0.25-mile access road from Jerusalem Road to the project; and (8) appurtenant facilities.

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

Exhibit A: The following sections of Exhibit A filed on August 31, 2010:

Pages A-1 through A-4 of Exhibit A, entitled "Project Description and Proposed Mode of Operation," and table A-1 entitled "Existing and Proposed Project Features – Scotland Hydroelectric Project," describing the mechanical, electrical and transmission equipment within the application for the license.

Exhibit F: The following exhibit F drawings filed on August 31, 2010:

Exhibit F Drawing	FERC No. 2662-	Description
F-1	1	Plan and Section
F-2	2	Dam Sections
F-3	3	Powerhouse
F-4	4	One Line Diagram
F-5	5	Discharge Curves

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

(D) The Exhibits A and F described above are approved and made part of this license. The Exhibit G drawings filed on August 31, 2010, as part of the application for license, do not conform to Commission regulations and are not approved.

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

(F) This license is also subject to the articles set forth in Form L-10 (Oct. 1975), entitled “Terms And Conditions of License for Constructed Major Project Affecting the Interests of Interstate or Foreign Commerce,” (*see* 54 F.P.C. 1799 et seq.), as reproduced at the end of this order, and the following additional articles:

Article 201. Administrative Annual Charges. The licensees shall pay the United States annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with provisions of the Commission’s regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 2.0 megawatts (MW), until the date of commencement of construction of the new capacity authorized by this license, after which time the authorized installed capacity is 3.026 MW.

Article 202. Exhibit F Drawings. Within 45 days of the effective date of this license, the licensee shall file the approved Exhibit F drawings in aperture card and electronic file formats.

(a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number (e.g., P-2662-1001 through 1010) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections (D2SI) New York Regional Office.

(b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the D2SI-New York Regional Office. Exhibit F drawings must be identified as Critical Energy Infrastructure Information (CEII) material under 18 C.F.R. § 388.113(c) (2013). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-2662-1001, F-1, Drawing Title, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY - black & white raster file  
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4  
RESOLUTION – 300 dpi desired, (200 dpi min)  
DRAWING SIZE FORMAT – 24” X 36” (min), 28” X 40” (max)  
FILE SIZE – less than 1 MB desired

Article 203. Exhibit G Drawings. Within 90 days of the effective date of this license, the licensee shall file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary all project works and facilities necessary for operation and maintenance of the project, including the access road from Jerusalem Road to the project. The Exhibit G drawings shall comply with sections 4.39 and 4.41 of the Commission's regulations, 18 C.F.R §§ 4.39 and 4.41.

Article 204. Amortization Reserve. Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project 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 205. *Headwater Benefits.* If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 206. *Project Land Rights Progress Report.* No later than 4 years after license issuance, the licensee shall file a report with the Commission describing the status of acquiring title in fee or the rights for all the lands within the project boundary. The report must provide an overview map of each parcel and summary table identifying the licensee's rights over each parcel within the project boundary. The report shall also include specific supporting documentation showing the status of the land rights on all parcels of land within the project boundary that: (1) have been acquired up to the date of filing of the report, including pertinent deeds, lease agreements, and/or bill of sale information that specifically verify the licensee's rights; and (2) the licensee's plan and schedule for acquiring all remaining project lands prior to the 5-year deadline including a history of actions taken, current owner information, the type of ownership to be acquired whether in fee or by easement, and the timeline for completing property acquisition.

Article 301. *Start of Construction.* The licensee shall commence construction of the project works within 2 years from the issuance date of the license and shall complete construction of the project works within 5 years from the issuance date of the license.

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

Article 303. *Cofferdam Construction Drawings and Deep Excavations.* Before starting construction, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, D2SI), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 304. *As-Built Drawings.* Within 90 days of completion of all construction activities authorized by this license, the licensee shall file for Commission approval, revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy shall be filed with the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer; the Director, D2SI; and the Director, Division of Hydropower Administration and Compliance.

Article 305. *Project Modification Resulting from Environmental Requirements.* The planning and design of any permanent or temporary modification which affects the project works or operation resulting from environmental requirements shall be coordinated as early as feasible with the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer. This includes those modifications resulting from license environmental requirements. The licensee shall notify the D2SI - New York Regional Engineer of the proposed modifications at the beginning of the planning and design phase. The schedule is to allow sufficient review time for the Commission to insure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Article 401. *Requirement to File Amendment Applications.* To the extent that any of the water quality certification conditions in Appendix A contemplate the Connecticut

Department of Energy and Environmental Protection ordering unspecified long-term modifications to the project operations or facilities based on new information or results of studies or monitoring required by the certification, but do not require prior Commission approval for such changes, such modifications may not be implemented without prior Commission authorization, granted after the filing of an application to amend the license.

Article 402. *Run-of-River Operation and Reservoir Levels.* The run-of-river operation and the Scotland reservoir elevations required by Appendix A, condition 1, may be temporarily modified if required by operating emergencies beyond the control of the licensee, for scheduled project maintenance activities, or for short periods upon mutual agreement among the Connecticut Department of Energy and Environmental Protection, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. If project operations are so modified, the licensee shall notify the Commission as soon as possible, but not later than 10 days after each such incident, and shall provide a reason for the change in project operations.

Article 403. *Scotland Reservoir Refill Procedure.* The reservoir refill procedure required by Appendix A, condition 2 may be temporarily modified if required by operating emergencies beyond the control of the licensee, or for short periods upon mutual agreement among the Connecticut Department of Energy and Environmental Protection, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. If the refill provisions are so modified, the licensee shall notify the Commission as soon as possible, but not later than 10 days after each such incident, and shall provide a reason for the change.

Article 404. *Operation Compliance Monitoring Plan.* The operation compliance monitoring plan required by Appendix A, condition 2, shall be filed with the Commission within 1 year of license issuance. The plan shall describe how the licensee will comply with the operational requirements of this license. The plan shall also include, but not necessarily be limited to, the requirements specified by Appendix A, condition 2, and the following: (1) a description of the exact location of all gages and/or measuring devices, or techniques that would be used to monitor compliance; (2) the procedures for maintaining and calibrating monitoring equipment; (3) the frequency of recording for each gage and/or measuring device; (4) the protocols or methods to be used for reporting the monitoring data to the Commission; and (5) a provision to maintain a log of project operations.

The licensee shall prepare the plan after consultation with Connecticut Department of Energy and Environmental Protection, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. 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. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 405. Water Quality Monitoring Plan. Within 6 months of license issuance, the licensee shall file for Commission approval, a water quality monitoring plan. The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 3, and the following additional provisions: (1) a provision to continuously monitor turbidity during project construction of the new 1.026-MW turbine generator and upstream fish passage facilities, and during the first three consecutive summers (June 1 through September 30) after commencing operation of the new turbine-generator unit; (2) a provision to continuously monitor dissolved oxygen concentrations and water temperature at a location immediately upstream and downstream of the Scotland dam for the first "typical" summer (June 1 to September 30) after converting the project to a run-of-river mode, whereby "typical" is defined as a summer with high air temperatures and low flows; (3) a description of the methods, equipment, maintenance and calibration procedures, and specific locations that would be used to conduct the water quality monitoring; (4) a description of the protocol for annually reporting water quality monitoring data to the Commission, Connecticut Department of Energy and Environmental Protection (Connecticut DEEP), U.S. Fish and Wildlife Service (FWS), and National Marine Fisheries Service (NMFS), including any recommendations for modifications to project operations or facilities, and any other enhancement measures that are proposed by the licensee if the water quality constituents monitored in project-affected waters fall below state water quality standards; and (5) an implementation schedule.

The licensee shall prepare the plan after consultation with Connecticut DEEP, FWS, and NMFS. 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. Land-disturbing or land-clearing activities 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.

If the results of the water quality monitoring indicate that changes in project facilities or operations are necessary to protect water quality, the Commission may direct the licensee to modify such project facilities or operations.

Article 406. Upstream Fish Passage Plan. Within 18 months of license issuance, the licensee shall file for Commission approval, an upstream fish passage plan that provides for the installation, operation, and maintenance of fish passage facilities (i.e., a Hopper-style fish lift) at the Scotland dam. The purpose of the plan is to provide safe, timely, and effective upstream fish passage at the Scotland Hydroelectric Project for anadromous fish species.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 5, and the following additional provisions: (1) detailed design drawings of the upstream fish passage facilities to be constructed at the Scotland dam; (2) quantification of the flows required to operate the upstream fish passage facilities; (3) a detailed description of the criteria that would be utilized by the licensee and the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP), U.S. Fish and Wildlife Service (FWS), and National Marine Fisheries Service (NMFS) to inform decisions as to when construction of the upstream fish passage facilities would commence, including, but not limited to, results of the fish tagging and monitoring plan required by Appendix A, condition 6, and Article 407; (4) a detailed description of the procedures for reporting to the Commission: (a) any proposal to commence construction of the fish lift based on meeting the defined criteria to be developed as part of item (3) above, including agency comments and licensee's response to agency comments, and (b) any difficulties during operation of the upstream fish passage facilities; and (5) a construction schedule.

The licensee shall prepare the plan after consultation with Connecticut DEEP, FWS, and NMFS. 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. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

As-built drawings of the upstream fish passage facilities shall be filed in accordance with the requirements of Article 304.

Article 407. Fish Tagging and Monitoring Plan. Within 3 months of license issuance, the licensee shall file for Commission approval, a fish tagging and monitoring plan. The purpose of the plan is to assess whether anadromous fish are seeking passage upstream of the Scotland dam by monitoring anadromous fish movement within the Occum impoundment.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 6, and the following additional provisions: (1) a detailed description of the study methodology; (2) a provision to provide the Commission, U.S. Fish and Wildlife Service (FWS), and National Marine Fisheries Service (NMFS) with annual reports detailing study results by October 1 of each year; and (3) an implementation schedule.

The licensee shall prepare the plan after consultation with the Connecticut Department of Energy and Environmental Protection, FWS, and NMFS. 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 and schedule. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

Article 408. Upstream Eel Passage Plan. Within 6 months of license issuance, the licensee shall file for Commission approval, a plan to install, operate, and maintain temporary and permanent eelways at the Scotland dam. The purpose of the plan is to facilitate upstream American eel passage, which would help to restore American eel populations within the Shetucket River.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 7 for permanent eelways, and the following additional provisions: (1) a provision to construct temporary eelways for upstream American eel passage at the Scotland dam that adhere to U.S. Fish and Wildlife Service's (FWS) design criteria and would be operated and maintained for 2 years (from April 1 to

November 15) to help inform the placement of a permanent eelway; (2) a provision to monitor the effectiveness of the temporary eelways while in operation; (3) a description of the temporary eelway effectiveness monitoring that would be implemented, including methodology and monitoring locations; (4) a provision to release any eels collected during effectiveness monitoring of the temporary eelway into the Scotland reservoir; (5) a provision to quantify the flows needed to operate the temporary eelways; (6) a provisions to consult with the appropriate federal and state agencies concerning the results of the temporary eelway monitoring and proposed location of the permanent eelway; (7) a provision to file annual monitoring reports with the Commission and the resource agencies identified below by December 31 of each year during the deployment of the temporary eelways, which would include: (a) a description of the number of eels passed by the temporary eelways on a monthly basis, (b) any recommended facility or operational changes to the temporary eelways, and (c) agency comments on any recommended changes to the temporary eelways and the licensee's response to agency comments; (8) a provision to include within the second annual monitoring report: (a) the proposed location of the permanent eelway, to be determined in consultation with the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP), FWS, and National Marine Fisheries Service (NMFS), (b) detailed design drawings and other design criteria for the permanent eelway, and (c) quantification of the flows required to operate the temporary and permanent eelways; and (9) a schedule for implementing the provisions of this plan.

The licensee shall prepare the plan after consultation with Connecticut DEEP, FWS, and NMFS. 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 and schedule. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan and schedule are approved. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

As-built drawings of the permanent upstream eelways shall be filed in accordance with the requirements of Article 304.

Article 409. *Downstream Fish Passage and Protection Plan.* Within 18 months of license issuance, the licensee shall file for Commission approval, a downstream fish passage and protection plan that provides for the installation, operation, and maintenance

of downstream fish passage and protection facilities at the Scotland dam. The purpose of the plan is to provide safe, timely, and effective downstream fish passage at the Scotland Hydroelectric Project for diadromous fish species.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 8, and the following additional provisions: (1) detailed design drawings of the downstream fish passage and protection facilities; (2) quantification of the flows required to operate the downstream fish passage facilities; (3) a detailed description of the procedures for reporting to the Commission any difficulties during operation of the downstream fish passage and protection facilities; and (4) a schedule for installing the facilities such that the facilities are operational concurrent with the commencement of operations of the new turbine-generator unit, or within 3 years of license issuance, as required by Appendix A, condition 8, whichever comes sooner.

The licensee shall prepare the plan after consultation with Connecticut Department of Energy and Environmental Protection, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. 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. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

As-built drawings of the downstream fish passage facilities shall be filed in accordance with the requirements of Article 304.

Article 410. *Fish Passage Effectiveness Evaluation Plan.* Within 18 months of license issuance, the licensee shall file with the Commission for approval, a fish passage effectiveness evaluation plan. The purpose of the plan is to help identify any problems with the fish passage facilities and allow for Commission consideration of any needed modifications to the fish passage facilities to ensure they continue to provide safe, timely, and effective upstream and downstream passage of diadromous fish species.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 9, and the following additional provisions: (1) a description of the specific methods that would be used to evaluate fish passage efficiency through the fish lift and the downstream fish passage and protection facilities, and permanent eelway

using scientifically accepted practices (e.g., radiotelemetry, PIT tags, etc.); (2) a description of how any fish used for effectiveness testing would be procured, tagged, and released; (3) a provision to monitor the effectiveness of each fish passage facility for a minimum of 3 years after operations commence at each respective facility; (4) a provision to release any eels collected during effectiveness monitoring of the permanent eelway into the Scotland reservoir; (5) a provision for annual reports to be filed with the Commission and the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP), U.S. Fish and Wildlife Service (FWS), and National Marine Fisheries Service (NMFS), which would include: (a) a detailed description of the total number of fish (by species) passed through each fishway and permanent eelway facility on a weekly basis, and (b) a description of any proposed modifications to fishway and permanent eelway facilities or their operations determined to be necessary as a result of the effectiveness testing, including agency comments and the licensee's response to agency comments; and (6) an implementation schedule.

The licensee shall prepare the plan after consultation with the Connecticut DEEP, FWS, and NMFS. 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 and schedule. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

If the results of the monitoring indicate that changes in project structures or operations are necessary to facilitate fish passage, the Commission may direct the licensee to make such reasonable changes in the design of the facilities and/or operations, as necessary.

Article 411. *Fish Passage Facilities Operation and Maintenance Plan.* Within 18 months of license issuance, the licensee shall file for Commission approval, a fish passage facilities operation and maintenance plan to establish the operation schedule of the fishways and eelways (temporary and permanent), minimize the occurrence of maintenance activities during the operation of the fishways and eelways, and ensure any maintenance activities cause minimal disturbances to fish or American eels migrating through the fishways and eelways.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 10, and the following additional provisions: (1) a description of the regular maintenance activities that would be needed for the fishways and eelways both during and outside their respective periods of operation; (2) a description of when regular maintenance activities would be conducted; (3) a provision to conduct any major fishway and eelway maintenance activities during periods when the fishways and eelways are not in operation, to the extent possible; and (4) a description of what mitigation measures would be implemented to ensure any maintenance activities conducted during the operating period of the fishways and eelways would have minimal effects on migrating fish and American eels.

The licensee shall prepare the plan after consultation with Connecticut Department of Energy and Environmental Protection, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. 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 and schedule. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

Article 412. Freshwater Mussel Relocation Plan. Within 6 months of license issuance, the licensee shall file for Commission approval, a freshwater mussel relocation plan to protect freshwater mussels with the Scotland reservoir and in the reach of the Shetucket River immediately downstream of the Scotland dam during planned and unplanned Scotland reservoir drawdowns.

The plan shall include, but not necessarily be limited to, the requirements specified by Appendix A, condition 4, and the following additional provisions: (1) a provision for a qualified biologist to survey all exposed areas of the Scotland reservoir upon reservoir drawdowns related to project emergencies or scheduled project maintenance activities and collect any exposed mussels; (2) a provision to conduct a mussel survey of the area that would be excavated or potentially affected by the construction of the new 1.026-MW turbine generator and upstream fish passage facilities, prior to commencing these in-water activities; (3) a description of the surveying methodologies, equipment to be used, and locations to be surveyed; (4) a provision to consult with the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP), and U.S. Fish and Wildlife Service (FWS) to decide where collected mussels would be relocated to within the

Scotland impoundment or other reaches of the Shetucket River; (5) a provision for recording the location, numbers, and species of mussels collected, and the locations of where any collected mussels are relocated to; (6) a provision for filing mussel survey reports with the Commission, Connecticut DEEP, and FWS upon conducting any mussel survey; (7) identification of the personnel that would conduct the mussels surveys and the qualifications of those individuals; and (8) an implementation schedule.

The licensee shall prepare the plan after consultation with Connecticut DEEP and FWS. 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 and schedule. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

Article 413. *Reservation of Authority to Prescribe Fishways.* Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for construction, operation, and maintenance of such fishways as may be prescribed by the Secretaries of the Interior and Commerce pursuant to section 18 of the Federal Power Act.

Article 414. *Invasive Species Management Plan.* Within 6 months of license issuance, the licensee shall file with the Commission for approval, an Invasive Species Management Plan.

The plan shall include, but not be limited to: (1) a provision to conduct an invasive plant survey, after consultation with the U.S. Fish and Wildlife Service (FWS) and the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP), in June, July, and August after the first full year following license issuance, using the same survey parameters as those utilized in the Wetlands, Riparian and Littoral Habitat Inventory study (wetlands inventory study), filed January 13, 2009; (2) a discussion of the survey results that include: (a) the presence/absence of invasive plants, (b) quantification of the land or aquatic area covered by each invasive plant species, and (c) a discussion of the distribution of the invasive plant species present as compared to the results of the wetland inventory study; (3) a detailed plan and schedule for continued invasive plant monitoring for the first 5 summers (June, July, and August) after issuance of the license; (4) identification of priority sites, and species that would be the focus of

future monitoring; (5) provisions to train project staff in the identification of priority invasive species and how to avoid their spread during project facilities construction and maintenance; (6) provisions to provide educational materials (e.g. signage) to inform recreation users about invasive species and how to prevent their spread; (7) a schedule for filing monitoring reports with the FWS, Connecticut DEEP, and the Commission; and (8) a provision for a report to be filed after the 5-year period that identifies any additional monitoring and/or control measures that may be necessary. The licensee shall include with this report, copies of the comments and recommendations on the completed report 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 plan shall be prepared after consultation with the FWS and Connecticut DEEP. 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. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

If at any time during the term of the license, the Connecticut DEEP and FWS demonstrate invasive species are significantly affecting fish and wildlife populations at the project and that control measures are needed, and the Commission agrees with those determinations, the Commission reserves authority to require the licensee to cooperate with the Connecticut DEEP and FWS to undertake reasonable measures to control or eliminate the invasive species in project area.

Article 415. Terrestrial Resource Protection Plan. Within 1 year of license issuance, the licensee shall file for Commission approval, a Terrestrial Resource Protection Plan to ensure the protection of terrestrial resources during construction and installation of new project facilities.

The plan shall include, at a minimum: (1) a description and a map of project lands that would be disturbed during project construction (e.g., removal of vegetation, areas used for staging, areas used to store equipment), including the type of habitat being

disturbed (e.g., riparian, vegetated, developed, denuded); (2) mitigation measures for revegetating or otherwise restoring disturbed areas, including a timeline for completing these measures; (3) provisions for protecting wildlife species during construction, including, but not limited to: (a) avoiding or limiting loud noises during the breeding/nesting season of migratory birds, (b) ensuring that staging areas and heavy equipment are located away from wildlife habitat areas, and (c) consulting with the U.S. Fish and Wildlife Service (FWS) and the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP) in the development of the project construction schedule; (4) provisions to prevent the spread of invasive species during construction; and (5) an implementation schedule.

The plan shall be prepared after consultation with the FWS and Connecticut DEEP. 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. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 416. Recreation Management Plan. Within 1 year of license issuance, the licensee shall file for Commission approval, a Recreation Management Plan. The plan shall include, but not necessarily be limited to, the following: (1) conceptual drawings and/or specifications for the addition of geotextile fabric and crushed stone at the portage on the west bank of the river; (2) a schedule for constructing the canoe portage improvements, as identified in item 1; (3) a schedule to install or construct the following features: (a) a tailrace fishing access area on the east bank of the river outside of a 250-foot exclusion zone from the fish lift, and appropriate signage, (b) an access path from the powerhouse to the fishing access area, and (c) two benches at the fishing access area; (4) conceptual drawings showing the type and location of the fishing access area, benches, signage, and access path; (5) a schedule when public use at the tailrace would be restricted during construction; (6) a provision for signage to inform the public when recreation use restrictions near the dam and tailrace would occur, and to notify the public of construction activities; (7) provisions to ensure recreationists' safety during construction; (8) provisions to operate and maintain the facilities over the term of the license; and (9) a discussion of how the needs of the disabled were considered in the planning and design of the facilities.

The licensee shall prepare the plan after consultation with the Connecticut Department of Energy and Environmental Protection (Connecticut DEEP). 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 Connecticut DEEP, and specific descriptions of how the Connecticut DEEP's comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the Connecticut DEEP 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. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan according to the approved schedule, including any changes required by the Commission.

The fishing access area, benches, signage, and access path, built in accordance with this plan, shall be shown on the as-built drawings filed pursuant to Article 304.

Article 417. *Programmatic Agreement and Historic Properties Management Plan.* The licensee shall implement the “*Programmatic Agreement Between the Federal Energy Regulatory Commission and the Connecticut Historic Preservation Officer for Managing Historic Properties that May be Affected by Issuing a New License to FirstLight Hydro Generating Company for the Continued Operation of the Scotland Hydroelectric Project in Windham County, Connecticut (FERC No. 2662-012),*” executed on April 18, 2013, and including but not limited to the Historic Properties Management Plan (HPMP) for the project. Pursuant to the requirements of this Programmatic Agreement, the licensee shall file, for Commission approval, an HPMP within 1 year of issuance of this order. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee shall obtain approval from the Commission and the Connecticut State Historic Preservation Officer, before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effects.

Article 418. *Use and Occupancy.* (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 waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee 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 impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day

from a project impoundment. No later than January 31 of each year, the licensee 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 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

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

(1) Before conveying the interest, the licensee 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 report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed 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 ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee 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 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 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.

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

(H) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 8251 (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2013). The filing of a request for

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

By the Commission.

( S E A L )

Nathaniel J. Davis, Sr.,  
Deputy Secretary.

**Form L-10**  
(October, 1975)

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

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

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

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

**Article 4.** The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the

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

**Article 5.** The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

**Article 6.** In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance

and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, that the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

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

**Article 8.** The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

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

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

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

**Article 12.** The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

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

**Article 14.** In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other

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

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

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

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

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

portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

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

**Article 20.** The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

**Article 21.** If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

**Article 22.** The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

**Article 23.** The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

**APPENDIX A**

**Connecticut Department of Energy and Environmental Protection  
Clean Water Act Section 401 Water Quality Certification Conditions for FirstLight  
Hydro Generating Company (Project No. 2662-012)  
Issued and Filed with the Commission on July 30, 2012**

**GENERAL TERMS AND CONDITIONS**

**Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.

**Expiration of Certificate.** This certificate shall expire upon the expiration of the Federal Energy Regulatory Commission permit nos. P-12968 or P-2662 for the same activity.

**Compliance with Certificate.** All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Any regulated activities carried out at the site, including but not limited to, construction of any structure, excavation, fill, obstruction, or encroachment, that are not specifically identified and authorized herein shall constitute a violation of this certificate and may result in its modification, suspension, or revocation. In carrying out the certified discharge(s) authorized herein, the permittee shall not store equipment or construction material, or discharge any material including without limitation, fill, construction materials or debris in any wetland or watercourse on or off site unless specifically authorized by this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this certificate.

**Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner.

**Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, incomplete or inaccurate, this certificate may be modified, suspended or revoked.

**Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:

- a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;
- b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24 hours) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;
- c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;
- d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;
- e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;
- f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.
- g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such

elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.

h. Immediately informing the Commissioner's Inland Water Resources Division at (860) 424-3019 of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the following information:

- (i) the provision(s) of this certificate that has been violated;
- (ii) the date and time the violation(s) was first observed and by whom;
- (iii) the cause of the violation(s), if known;
- (iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
- (v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
- (vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
- (vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with section 7 of this certificate.

For information and technical assistance, contact the Inland Water Resources Division at (860) 424-3019.

**Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

**Submission of Documents.** The date of submission to the Commissioner of any

document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

Director  
Department of Energy and Environmental Protection  
Office of the Commissioner  
Planning & Program Development  
79 Elm Street, Third Floor  
Hartford, Connecticut 06106-5127

### **SPECIAL CONDITIONS**

1. The permittee shall operate the project in an instantaneous run-of-river mode, maintaining the headpond at elevation 126.27 feet USGS datum ( $\pm 0.25$  foot).
2. The permittee shall, within six (6) months from the effective date of the Federal Energy Regulatory Commission ("FERC") license no. P-2662, prepare a plan that outlines how it will manage and monitor such run-of-river operation including an Impoundment Refill Procedure (in cases where the impoundment must be drawn below 126.27 feet elevation) that includes the instantaneous downstream conveyance of 90% of the impoundment inflow.
3. The permittee shall conduct a post-license water quality monitoring survey. The survey protocol generally will consist of collecting continuous dissolved oxygen and water temperature measurements from a site in the headpond and a site near the tailrace for the period June 1 to September 30. Monitoring will be initiated the first summer after the new minimum flow turbine unit becomes operational, and will continue for the following three years.
4. The permittee shall, within six (6) months from the effective date of the FERC license no. P-2662, prepare and file for the Commissioner's approval, a Mussel Relocation Plan. The plan shall detail the procedure the licensee will follow to ensure mussels residing in the headpond are protected during any scheduled maintenance drawdowns.
5. The permittee shall be responsible for constructing, operating, maintaining and evaluating upstream anadromous fish passage facilities at this project. The facilities shall

consist generally of an entrance chamber, including a V-trap and crowder, a hopper-style fish lift, an attraction water system, and an exit channel. The fish lift system shall strictly adhere to U.S. Fish and Wildlife Service design criteria. Upstream passage facility designs shall be developed in consultation with, and require approval by, the Commissioner. Seasonal operation of the lift shall be from April 1 through June 30 and from October 1 through November 15 for the passage of resident species (subject to modification based upon results of post-operational studies). Final design plans for the upstream fish passage facilities shall be completed within eighteen (18) months from the effective date of the FERC license No. P-2662. The timing of construction of upstream fish passage facilities shall be contingent upon the results of a fish tagging study referenced in special condition number six below. When anadromous fish species are documented at the base of the Scotland Dam, construction shall commence the following year and be completed within two calendar years.

6. During the first spring following the effective date of the FERC license No. P-2662, the permittee shall initiate an anadromous fish tagging study using wild sea-return anadromous fish captured at the downstream Greeneville Dam Fishlift. The study will focus on American shad, but anadromous river herring could also be used. The fish shall be tagged with radio tags and trucked and released upstream of the Occum Dam. Stationary radio receivers around the Scotland Dam will document the subsequent presence of tagged fish below the dam. The study design shall be developed in consultation with, and require approval by, the Commissioner. An annual report on the study shall be submitted to the Commissioner prior to October 1 of each year.

7. The permittee shall be responsible for constructing, operating, maintaining and evaluating permanent upstream passage facilities for American eel at this project. Permanent eelways shall adhere to U.S. Fish and Wildlife Service design criteria. Upstream eel passage designs shall be developed in consultation with, and require approval by, the Commissioner. Permanent eelways shall be operational the third passage season following the effective date of the FERC license No. P-2662. Seasonal operation shall be from April 1 through November 15, subject to subsequent truncation based upon the results of a post-operational evaluation study.

8. The permittee shall be responsible for constructing, operating, maintaining and evaluating a downstream fish passage and protection system at this project. The downstream passage system shall strictly adhere to U.S. Fish and Wildlife Service design criteria and shall be developed in consultation with, and require approval by, the Commissioner. The downstream passage and protection system shall be operational within three (3) years of license issuance. Seasonal operation shall be from June 1 through July 15 and September 1 through November 15.

9. The permittee shall prepare Effectiveness Study Plans (evaluations) for each of the fishways described above in condition numbers 5, 7, and 8 within 18 months of licensee

issuance. Such plans shall be developed in consultation with, and require approval by, the Commissioner.

10. The permittee shall prepare a Fishway Passage Operations and Maintenance Plan (or Plans, if developed separately for each facility) within three years of the effective date of the FERC license No. P-2662. Such plans shall be developed in consultation with, and require approval by, the Commissioner.