

**Draft Application for New License for Major Water Power
Project – Existing Dam**

Northfield Project

Northfield Mountain Pumped Storage Project (FERC Project Number 2485)
Turners Falls Hydroelectric Project (FERC Project Number 1889)

**EXHIBIT H- PLANS AND ABILITY OF APPLICANT TO OPERATE THE
PROJECT**

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EXHIBIT H – PLAN AND ABILITY OF APPLICANT TO OPERATE THE PROJECT

The following excerpt from the Code of Federal Regulations (CFR) at 18 CFR § 4.51 (e) describes the required content of this Exhibit.

The following excerpt from the Code of Federal Regulations (CFR) at 18 CFR § 5.18(c) describes the required content of this Exhibit.

(i) Information to be supplied by all applicants. All Applicants for a new license under this part must file the following information with the Commission:

(A) A discussion of the plans and ability of the applicant to operate and maintain the project in a manner most likely to provide efficient and reliable electric service, including efforts and plans to:

- (1) Increase capacity or generation at the project;*
- (2) Coordinate the operation of the project with any upstream or downstream water resource projects; and*
- (3) Coordinate the operation of the project with the applicant's or other electrical systems to minimize the cost of production.*

(B) A discussion of the need of the applicant over the short and long term for the electricity generated by the project, including:

- (1) The reasonable costs and reasonable availability of alternative sources of power that would be needed by the applicant or its customers, including wholesale customers, if the applicant is not granted a license for the project;*
- (2) A discussion of the increase in fuel, capital, and any other costs that would be incurred by the applicant or its customers to purchase or generate power necessary to replace the output of the licensed project, if the applicant is not granted a license for the project;*
- (3) The effect of each alternative source of power on:
 - (i) The applicant's customers, including wholesale customers;*
 - (ii) The applicant's operating and load characteristics; and*
 - (iii) The communities served or to be served, including any reallocation of costs associated with the transfer of a license from the existing licensee.**

(C) The following data showing need and the reasonable cost and availability of alternative sources of power:

- (1) The average annual cost of the power produced by the project, including the basis for that calculation;*
- (2) The projected resources required by the applicant to meet the applicant's capacity and energy requirements over the short and long term including:
 - (i) Energy and capacity resources, including the contributions from the applicant's generation, purchases, and load modification measures (such as conservation, if considered as a resource), as separate components of the total resources required;*
 - (ii) A resource analysis, including a statement of system reserve margins to be maintained for energy and capacity;*
 - (iii) If load management measures are not viewed as resources, the effects of such measures on the projected capacity and energy requirements indicated separately;*
 - (iv) For alternative sources of power, including generation of additional power at existing facilities, restarting deactivated units, the purchase of power off-system, the construction or purchase and operation of a new power plant, and load management measures such as conservation: The total annual cost of each alternative source of power to replace project power; the basis for the determination of projected annual cost; and a discussion of the relative merits of each alternative, including the issues of the period of availability and dependability**

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- of purchased power, average life of alternatives, relative equivalent availability of generating alternatives, and relative impacts on the applicant's power system reliability and other system operating characteristics; and the effect on the direct providers (and their immediate customers) of alternate sources of power.*
- (D) If an applicant uses power for its own industrial facility and related operations, the effect of obtaining or losing electricity from the project on the operation and efficiency of such facility or related operations, its workers, and the relate community.*
- (E) If an applicant is an Indian tribe applying for a license for a project located on the tribal reservation, a statement of the need of such Indian tribe for electricity generated by the project to foster the purposes of the reservation.*
- (F) A comparison of the impact on the operations and planning of the applicant's transmission system of receiving or not receiving the project license, including:*
- (1) An analysis of the effects of any resulting redistribution of power flows on line loading (with respect to applicable thermal, voltage, or stability limits), line losses, and necessary new construction of transmission facilities or upgrading of existing facilities, together with the cost impact of these effects;*
 - (2) An analysis of the advantages that the applicant's transmission system would provide in the distribution of the project's power; and*
 - (3) Detailed single-line diagrams, including existing system facilities identified by name and circuit number, that show system transmission elements in relation to the project and other principal interconnected system elements. Power flow and loss data that represent system operating conditions may be appended if applicants believe such data would be useful to show that the operating impacts described would be beneficial.*
- (G) If the applicant has plans to modify existing project facilities or operations, a statement of the need for, or usefulness of, the modifications, including at least a reconnaissance-level study of the effect and projected costs of the proposed plans and any alternate plans, which in conjunction with other developments in the area would conform with a comprehensive plan for improving or developing the waterway and for other beneficial public uses as defined in Section 10(a)(1) of the Federal Power Act.*
- (H) If the applicant has no plans to modify existing project facilities or operations, at least a reconnaissance level study to show that the project facilities or operations in conjunction with other developments in the area would conform with a comprehensive plan for improving or developing the waterway and for other beneficial public uses as defined in Section 10(a)(1) of the Federal Power Act.*
- (I) A statement describing the applicant's financial and personnel resources to meet its obligations under a new license, including specific information to demonstrate that the applicant's personnel are adequate in number and training to operate and maintain the project in accordance with the provisions of the license.*
- (J) If an applicant proposes to expand the project to encompass additional lands, a statement that the applicant has notified, by certified mail, property owners on the additional lands to be encompassed by the project and governmental agencies and subdivisions likely to be interested in or affected by the proposed expansion.*
- (K) The applicant's electricity consumption efficiency improvement program, as defined under Section 10(a)(2)(C) of the Federal Power Act, including:*
- (1) A statement of the applicant's record of encouraging or assisting its customers to conserve electricity and a description of its plans and capabilities for promoting electricity conservation by its customers; and*
 - (2) A statement describing the compliance of the applicant's energy conservation programs with any applicable regulatory requirements.*
- (L) The names and mailing addresses of every Indian tribe with land on which any part of the proposed project would be located or which the applicant reasonably believes would otherwise be affected by the proposed project.*
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(ii) Information to be provided by an applicant licensee. An existing licensee that applies for a new license must provide:

(A) The information specified in paragraph (c)(1) of this section.

(B) A statement of measures taken or planned by the licensee to ensure safe management, operation, and maintenance of the project, including:

(1) A description of existing and planned operation of the project during flood conditions;

(2) A discussion of any warning devices used to ensure downstream public safety;

(3) A discussion of any proposed changes to the operation of the project or downstream development that might affect the existing Emergency Action Plan, as described in subpart C of part 12 of this chapter, on file with the Commission;

(4) A description of existing and planned monitoring devices to detect structural movement or stress, seepage, uplift, equipment failure, or water conduit failure, including a description of the maintenance and monitoring programs used or planned in conjunction with the devices; and

(5) A discussion of the project's employee safety and public safety record, including the number of lost-time accidents involving employees and the record of injury or death to the public within the project boundary.

(C) A description of the current operation of the project, including any constraints that might affect the manner in which the project is operated.

(D) A discussion of the history of the project and record of programs to upgrade the operation and maintenance of the project.

(E) A summary of any generation lost at the project over the last five years because of unscheduled outages, including the cause, duration, and corrective action taken.

(F) A discussion of the licensee's record of compliance with the terms and conditions of the existing license, including a list of all incidents of noncompliance, their disposition, and any documentation relating to each incident.

(G) A discussion of any actions taken by the existing licensee related to the project which affects the public.

(H) A summary of the ownership and operating expenses that would be reduced if the project license were transferred from the existing licensee.

(I) A statement of annual fees paid under part I of the Federal Power Act for the use of any Federal or Indian lands included within the project boundary.

1 INFORMATION TO BE SUPPLIED BY ALL APPLICANTS

The Federal Power Act (FPA) requires applicants for a new license to provide certain information, including information about the applicant's record as the current licensee of the Project. Pursuant to 18 C.F.R. Section 5.18(c), this information is provided in this Exhibit. 18 C.F.R. Section 16.10(a) requires all applicants for a new license to provide certain information such as the need for Project power and the examination of alternative sources; plans to modify an existing Project; an applicant's ability to operate and maintain the Project; and the applicant's electrical efficiency programs. This information is included in Section 1.0 of this Exhibit. Pursuant to 18 C.F.R. Section 16.10(b) 5.18(c)(1)(ii), Section 2.0 contains information to be provided by an applicant who is the existing licensee for a Project and discusses FirstLight's safe management, operation, and maintenance of the Turners Falls Project (now Development) and Northfield Mountain Pumped Storage Project (now Development); operational history and programs to upgrade Project operation and maintenance; compliance with the current licenses; and actions related to the Project that affect the public.

The Turners Falls Development and Northfield Mountain Pumped Storage Development are collectively referenced herein as the Project.

1.1 Efficient and Reliable Electric Service

1.1.1 Increase in Capacity or Generation

At the Northfield Mountain Pumped Storage Development, there are four pump-turbines. Units 2, 3, and 4 underwent efficiency improvements with the replacement of the turbine runner, and rewind of the motor generator¹. A new runner was installed in Unit 1 in 2004, and the rewind is scheduled to commence in August 2015 and end in February 2016. No further modifications are proposed. At the Turners Falls Development, the six Cabot units underwent modifications in the early-to-mid 2000's.

FirstLight currently has no plans to increase capacity of the Project. FirstLight expects to maintain the efficient use of the water to maximize the generation output and provide the region a reliable and sound source of generation.

1.1.2 Coordination with any Upstream or Downstream Water Resource Projects

Headwater Benefits- Connecticut River Mainstem Storage Reservoirs

Inflows to the Turners Falls Impoundment (TFI) are largely controlled by operations at several upstream dams on the Connecticut River. More specifically, five upstream dams operate as seasonal storage reservoirs, where water elevations are typically lowered in the fall and winter, and refilled with the spring freshet. The seasonal operation and re-regulation of discharges from these dams provide benefits to downstream hydropower facilities by curtailing high flows in the spring and increasing low flows in the summer. These dams and storage volumes, in upstream to downstream order, include the following:

- First Connecticut Lake, 3.33 billion ft³
- Second Connecticut Lake, 506 million ft³
- Lake Francis, 4.326 billion ft³
- Moore Reservoir, and 4.97 billion ft³
- Comerford Reservoir. 1.279 billion ft³

¹ On August 17, 2011, and supplemented on January 17, 2012, February 14, 2012, and February 24, 2012, FirstLight filed an amendment application to revise the authorized installed capacity of Northfield Mountain. FERC issued an order amending the license and revising annual changes on March 23, 2012.

Pursuant to a 1993 Headwater Benefit Agreement among predecessor companies and TransCanada, FirstLight pays an annual headwater benefit fee to TransCanada for the seasonal operation of its storage reservoirs (primarily driven by Moore Reservoir), which provides an incremental increase in generation at the Turners Falls Development. The Northfield Mountain Pumped Storage Development does not receive any benefit as its operation is independent of river flows.

Headwater Benefits- United States Army Corps of Engineer Storage Projects in Connecticut River Basin

In 1998, FERC issued its order on Headwater Benefits in the Connecticut River Basin. The order notes that because of energy gains at the Turners Falls Hydroelectric Development due to seasonal operation of the United States Corps of Engineers' Union Village, North Hartland, North Springfield, Ball Mountain, Townsend, Otter Brook, Surry Mountain, Tully and Birch Hill headwater storage projects, FirstLight pays an annual headwater benefit fee.

Headwater Benefits- Mascoma River Basin Storage Reservoirs

Pursuant to a 1990 Agreement among predecessor companies and the New Hampshire Water Resources Council, FirstLight pays headwater benefits for the seasonal operation of storage reservoirs located in the Mascoma River Watershed, which provides an incremental increase in generation at the Turners Falls Development. The Mascoma River empties into the Connecticut River near Lebanon, NH.

Other

In addition to the seasonal storage reservoirs, the next three projects (operated by TransCanada) above Turners Falls Dam - namely Vernon, Bellows Falls, and Wilder² - operate as peaking hydropower facilities, whereby flows can fluctuate on an hourly basis. Like Turners Falls Dam, the minimum flow required at Vernon Dam is equivalent to 0.2 cfs per square mile of drainage area or 1,250 cfs. The Vernon Hydroelectric Project has a station hydraulic capacity of 17,130 cfs³ and when operating at full capacity, it exceeds the full hydraulic capacity of the Turners Falls Development of 15,938 cfs, not accounting for incremental inflow from the 897 mi² between the two dams. The magnitude and timing of discharges from the Vernon Hydroelectric Project are critical to the operation of the Turners Falls Development and Northfield Mountain Pumped Storage Development.

Article 304⁴ of the Vernon Hydroelectric Project FERC license requires TransCanada to coordinate project operations with FirstLight. A letter Agreement amending the original 1993 Headwater Benefit Agreement was filed with FERC on June 20, 2003. The Agreement requires TransCanada to provide FirstLight by 8:00 am each day, with its estimate of total discharge (cfs-hours) expected the next day at the Vernon Hydroelectric Project. When TransCanada receives the hourly dispatch schedule for the next day from the ISO-New England (ISO-NE), it faxes or emails the schedule for Vernon discharges to FirstLight between 1:30 pm and 2:00 pm. There is no current requirement, however, for TransCanada to provide an hourly dispatch schedule the day ahead. If any subsequent dispatch schedules are received during the day showing changes in the projected hourly release schedules, the revised schedule for Vernon is faxed or emailed to FirstLight. Not having reliable and timely estimates of Vernon's hourly release schedule the day ahead

² The Vernon Hydroelectric Project (FERC No. 1904), Bellows Hydroelectric Project (FERC No. 1855) and Wilder Hydroelectric Project (FERC No. 1892) are owned and operated by TransCanada.

³ FERC Order Amending License and Revising Annual Charges, Project No. 1904-042, July 28, 2006.

⁴ Article 304 was added to the license in 1992 (59 FERC ¶62,267) and generally requires the Licensee of Project No. 1904 (Vernon Hydroelectric Project) to develop and file with the Commission a coordination agreement with the licensee of certain downstream facilities in the event that the regional central dispatch system was ever discontinued. The dispatching of these hydropower projects under that system was discontinued several years ago in connection with the restructuring of the New England power markets.

prevents FirstLight from the most efficient management of the Turners Falls Impoundment for power production.

1.1.3 Coordination of Operations with Electrical Systems

FirstLight coordinates operation of the Project with other electrical systems through its participation in the markets operated by ISO-NE.

1.2 Need for Project Electricity

1.2.1 Cost and Availability of Alternative Sources of Power

FirstLight is not a utility with retail load obligations. If power from the Project were not available for sale into the markets operated by ISO-NE, the services the Turners Falls Development and Northfield Mountain Pumped Storage Development provide to the grid including peaking generation, capacity, reserve, ancillary services, locational forward reserve market and real-time reserves and regulation would need to be provided from other, existing generation sources or from new generation sources to the system operator.

1.2.2 Increase in Costs if FirstLight is not Granted a License

Costs to the market of replacing services that the Project provides would include reduced efficiency of other generation sources as they would need to modify operations to meet peak daily demand, operating reserve requirements and system ramp needs. Because of the grid stability provided by peaking hydroelectric production, true costs associated with not relicensing the Project are not easily determined.

1.2.3 Effects of Alternative Sources of Power

Effects on Customers

The primary purpose of the Project is to supply energy, capacity, regulation and other ancillary services to the ISO-NE, a regional transmission organization that coordinates the movement of wholesale electricity in Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island. The Turners Falls Development generally provides a small amount of electricity from minimum flow releases when power demand is low.

The Northfield Mountain Pumped Storage Development provides important energy, operating reserves and operational flexibility to ISO-New England (ISO-NE) system operation. The fact that ISO-NE, as part of its daily operational planning processes, can rely on the Northfield Mountain Pumped Storage Development to supply these operational flexibilities from a certain fuel supply is of high value to ISO-NE and the New England region. In many periods, this significant supply of operational flexibility has avoided the commitment of many other less flexible resources to provide for a more efficient system dispatch. This peak load ability provides rapid response power resources to the grid to assure reliable operation and prevent regional blackouts.

Storage provides other important reliability benefits to the system. These include helping to manage light load, or excess generation conditions during off peak periods and the ability to respond very quickly to energy and operating reserve activation needs on the power system during any time of the day or year. The value of the Northfield Mountain Project was demonstrated following the August 14, 2003 major blackout in the New York ISO (NY-ISO) grid. On August 15, ISO-NE parted all electrical ties to the New York electrical system to prevent the blackout from spreading further. When it was time to rejoin the two power grids, ISO-NE requested the connection be made at the Northfield Mountain Project. This facility was selected because:

- it is located at the junction of three 345 kV lines;

- it has a major tie line with the NY-ISO;
- the transmission company switchyard located at Northfield Mountain had the equipment necessary to synchronize the two electric grids, and
- the Northfield Mountain Project generators were large enough to make changes in both frequency and voltage.

Once the lines were energized, final adjustments were made by having the Northfield Mountain Project reduce generation to allow for a smooth synchronization of the two systems. The interconnection of the two systems allowed NY-ISO to begin restoration of the north portion of the NY power grid.

The Project provides an important source of electricity during times of peak demand and fast start and fast ramping capability to manage system ramping needs. In order to replace this important service, ISO-NE would need to modify its management of energy production. Alternative sources of power may need to throttle their production levels, which could reduce their overall efficiency.

Effects on the Applicant's Operating and Load Characteristics

Replacing the Turners Falls Development or Northfield Mountain Pumped Storage Development with an alternative facility would result in a change of the system load characteristics by reducing the available offline fast start reserve, peak generation and generation ramping and price responsive demand (pumps). The Turners Falls Development provides ISO-NE with peaking energy, capacity, reserve and ancillary services. The Northfield Mountain Pumped Storage Development provides ISO-NE with peaking energy, capacity, locational forward reserves and real-time reserves, ancillary and regulation services. The above services are beneficial to the reliability and efficiency of the ISO-NE electric grid. Both developments also provide ISO-NE with the ability to bring units to the electric grid quickly in support of a grid disturbance such as a loss of a major unit or other change of load occurrence.

Effects on Communities Served

If FirstLight were not to receive a new license and the Project was taken over by the Federal Government or decommissioned, there would be a significant loss of tax revenues. In 2014, the Project contributed approximately \$26.7 million in federal, state and local taxes. The governmental entities affected by this loss in revenue would ultimately have to seek a reduction in expenses or an increase in other sources of revenue.

Additionally, loss of the license may result in a less reliable and efficient energy grid with the absence of the Project. Also, it is likely that many of the Project's recreation facilities would no longer be available to the community.

1.3 Need for Project Power, Reasonable Cost and Availability of Alternative Sources of Power

1.3.1 Average Annual Cost of Power

The average annual cost of the power produced by the Project includes capital costs, operating costs, and costs associated with Project relicensing, including proposed Protection Mitigation and Enhancement (PM&E) measures. As described in Exhibit D, FirstLight has performed an analysis of the costs of producing Project power.

1.3.2 Projected Resources Required to Meet Capacity and Energy Requirements

The Turners Falls Development provides ISO-NE with peaking energy, capacity, reserve and ancillary services. The Northfield Mountain Pumped Storage Development provides ISO-NE with peaking energy, capacity, locational forward reserve market and real-time reserves, ancillary and regulation services.

1.3.3 Resource Analysis and System Reserve Margins

Both the Turners Falls Development and Northfield Mountain Pumped Storage Development operate to produce to peak power and thus are well-suited to meet energy demands as both developments typical operation dictates that it produces power during periods of high demand or periods of high energy ramping needs.

1.3.4 Load Management Measures

Load management is conducted by the ISO-NE, wherein the energy needs on short-term basis are coordinated.

1.4 Use of Power for Applicant-Owned Industrial Facility

FirstLight does not directly use power generated by the Project to operate its own industrial facilities.

1.5 Need for Power if Applicant is an Indian Tribe

FirstLight is not an Indian tribe applying for a project on a tribal reservation; therefore, this section is not applicable.

1.6 Effect of Operations and Planning of the Applicant's Transmission System of Receiving or not Receiving the License

1.6.1 Effects of Power Flow Redistribution

The Applicant does not own or operate a transmission system. However, if FirstLight were not to receive a new license for the Project, ISO-NE would lose a resource that is valuable to its system. For example, on September 2, 2010 ISO-NE was unable to recover a source loss and restore balance over the AC electrical ties with New York within the fifteen minutes required by North American Electric Reliability Corporation reliability standards following a system disturbance. With Northfield available,⁵ this likely would not have occurred.⁶

1.6.2 Advantages of the Applicant's Transmission System

The Applicant does not own or operate a transmission system.

1.6.3 Project Single-Line Diagram

Single-line diagrams for Station No. 1 and Cabot which comprise the Turners Falls Development are shown in [Figure 1.6.3-1](#) and [1.6.3-2](#), respectively. The single-line diagram for the Northfield Mountain Pumped Storage Development is shown in [Figure 1.6.3-3](#).

⁵ The Northfield Mountain Project was out of operation from May 1 to November 17, 2010.

⁶ This event was reported at the November 17, 2010 NEPOOL Reliability Committee. ISO New England, Inc., September 2, 2010 DCS Event (Nov. 17, 2010), available at http://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/relblty_comm/relblty/mtrls/2010/nov172010/090210_dcs_event.ppt.

1.7 Plans to Modify Existing Project Facilities

At this time, FirstLight has no plans to modify the generation facilities associated with the Project.

1.8 Conformance with a Comprehensive Plan for the Waterway

The Project will be operated under the terms and conditions of a license issued by the Commission, which will be based on the Commission's determination of the license terms and conditions which are best suited to comprehensive development of the waterway. The cumulative environmental impacts of the Project in the context of the Connecticut River Basin are addressed in Exhibit E.

1.9 Financial and Personnel Resources

1.9.1 Financial Resources

FirstLight's parent company, GDF Suez, is one of the world's largest electric utilities. Thus, it has the financial resources to operate the Project during the term of the new license.

1.9.2 Personnel Resources

FirstLight employs approximately 65 full-time people that provide the support needed to operate and maintain the Turners Falls Development and Northfield Mountain Pumped Storage Development. On-site staff are fully qualified to handle all aspects of the operation and maintenance of the Project. Each development is fully equipped to allow staff to perform virtually all routine maintenance functions. All personnel receiving training commensurate with their responsibilities in an ongoing effort to improve their ability to operate the Project in the safest and most efficient manner possible.

In addition to FirstLight employees, FirstLight also contracts with local outside entities to provide maintenance support for the Project.

1.10 Project Expansion Notification

FirstLight currently has no plans to expand the Project to encompass additional lands; therefore notification is not applicable. As described in Exhibit B, FirstLight proposes to increase the useable storage of the Upper Reservoir from 1004.5 feet to 920 feet year-round, for an 84.5 foot drawdown. FirstLight expects to maintain the efficient use of the water to maximize the generation output and provide the region a reliable and sound source of generation.

1.11 Electricity Consumption Efficiency Improvement Program

1.11.1 Customer Energy Efficiency Program

Not applicable. FirstLight does not have load asset customers except wholesale entities.

1.11.2 Compliance of Energy Conservation Programs with Regulatory Requirements

Not applicable.

1.12 Indian Names and Mailing Address

There are no Indian Tribes with lands occupied by the Project or which would otherwise be affected by the relicensing. Nevertheless, FirstLight has included the Narragansett Indian Tribe, Stockbridge-Munsee

Community, Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head, and the Nolumbeka Inc. in the distribution of this license application.

2 INFORMATION TO BE SUPPLIED BY APPLICANTS THAT ARE EXISTING LICENSEES

2.1 Measures Planned to Ensure Safe Management, Operation and Maintenance of the Project

2.1.1 Existing and Planned Operation of the Project during Flooding

This information is detailed in Exhibit B of this License Application.

2.1.2 Downstream Warning Devices

FirstLight is in compliance with all Emergency Action Plan (EAP) requirements and has systems in place to notify emergency response teams and homeowners downstream in the unlikely event of a dam breach scenario. The Turners Falls and Northfield Mountain Pumped Storage Developments are monitored from the Northfield Control Room, which is staffed with full-time operators 24 hours/day 365 days/year.

2.1.3 Operational Changes that Might Affect the Emergency Action Plan

No operational changes are proposed that might affect the existing EAP at the Turners Falls and Northfield Mountain Pumped Storage Developments. Each development's EAP is reviewed and tested annually, and updated as required. There are no known or planned changes to either developments' plant operations that would affect the EAP.

FirstLight has sought and received temporary amendments from FERC to utilize more of the Upper Reservoir Storage Capacity by increasing its operating limits from 1000.5 to 938 feet, msl to 1004.5 to 920 ft, msl. As part of this process, FirstLight completed revised Dam Breach Analyses using the as-built condition to store water to elevation 1004.5 msl. The dam breach analysis and inundation mapping were filed and approved by FERC to permit use of the additional storage capacity.

2.1.4 Existing and Planned Monitoring Devices

Both the Turners Falls Hydroelectric Development and the Northfield Mountain Pumped Storage Development (Project) have Surveillance and Monitoring Plans (SMP) filed with FERC. The purpose of the SMP is to describe the existing Surveillance and Monitoring Program for the Project, relate the instrumentation and monitoring to the Potential Failure Mode Analysis (and any identified Potential Failure Modes), and relate the instrumentation and monitoring to design assumptions for the project structures. A separate Dam Safety Surveillance and Monitoring Report (DSSMR) is prepared annually to present data and interpretation for observations and measurements recorded to date, and recommend improvements or changes to the program as appropriate. Since both Developments are subject to 5-year inspections under Part 12D of the FERC regulations, updates to the SMP will be prepared and submitted as needed to the FERC. The SMP is reviewed with the FERC engineer during the annual operation inspection of the Project and reviewed by the Independent Consultant during the 5-year inspection.

2.1.5 Employee Safety and Public Safety Record

FirstLight manages the developments consistent with its long-standing commitment to employee safety. This commitment begins with compliance with applicable local, state, and Federal regulations regarding the safe operation of industrial and electrical facilities. As FirstLight operates the Project's generation facilities, this commitment is implemented primarily through a rigorous safety program adopted by FirstLight. Detailed inspection and maintenance programs ensure employee safety relative to operating

equipment and facilities. The safety program involves employee training sessions, as well as making safety information available to employees. For the 2011 thru 2015 period, there were no lost time incidents at either Development involving FirstLight employees.

FirstLight places a high priority on public safety at both Developments. FirstLight maintains public safety measures (lighting, signage, markers, audible warnings, fencing, etc.) consistent with plans filed with the FERC's New York Regional Office (NYRO). In accordance with 18 CFR 12.10, FirstLight files public safety incident reports with the NYRO.

2.2 Current Operations

Operation of the Project is described in Exhibit B.

2.3 Project History

A complete Project history can be found in Exhibit C of this License Application

2.4 Generation Losses over Previous Five Years

There have been several unscheduled outages at the Turners Falls and Northfield Mountain Pumped Storage Developments during the five-year period of time from 2010-2014 ([Table 2.4-1](#)). The table includes outages lasting 24 hours or more at Cabot, Station No. 1 and Northfield.

2.5 Compliance with Terms and Conditions of Existing License

FirstLight has never been found to be in non-compliance with the terms and conditions of the current licenses. Over the term of the current licenses, the Developments have been subject to FERC's standard operational and environmental inspections. Any compliance-related issues noted during the inspections have been promptly addressed by FirstLight.

2.6 Action Affecting the Public

As a major presence in the region, FirstLight plays a prominent role in ensuring the efficient, productive use of water for hydroelectric generation and recreation. The Project also provides electricity that contributes to the stability of the regional power system. This alone significantly affects the general public by providing a low-cost and renewable-energy source to FirstLight's wholesale customers and contributing to the balance of regional power supply and demand.

In addition to operating the Project for hydroelectric generation, FirstLight also manages the Project to provide additional benefits to the local community, natural resources, recreation and the region at large.

Visitors frequent the Project year-round to enjoy the many recreational opportunities available, including boating, fishing, hiking, hunting, and camping. The Project also supports other day-use and overnight-use activities such as wildlife viewing and picnicking. In addition to the benefits that FirstLight provides to the area's natural resources and the recreating public, the Project contributes to the public benefit through the employment of fulltime and seasonal staff.

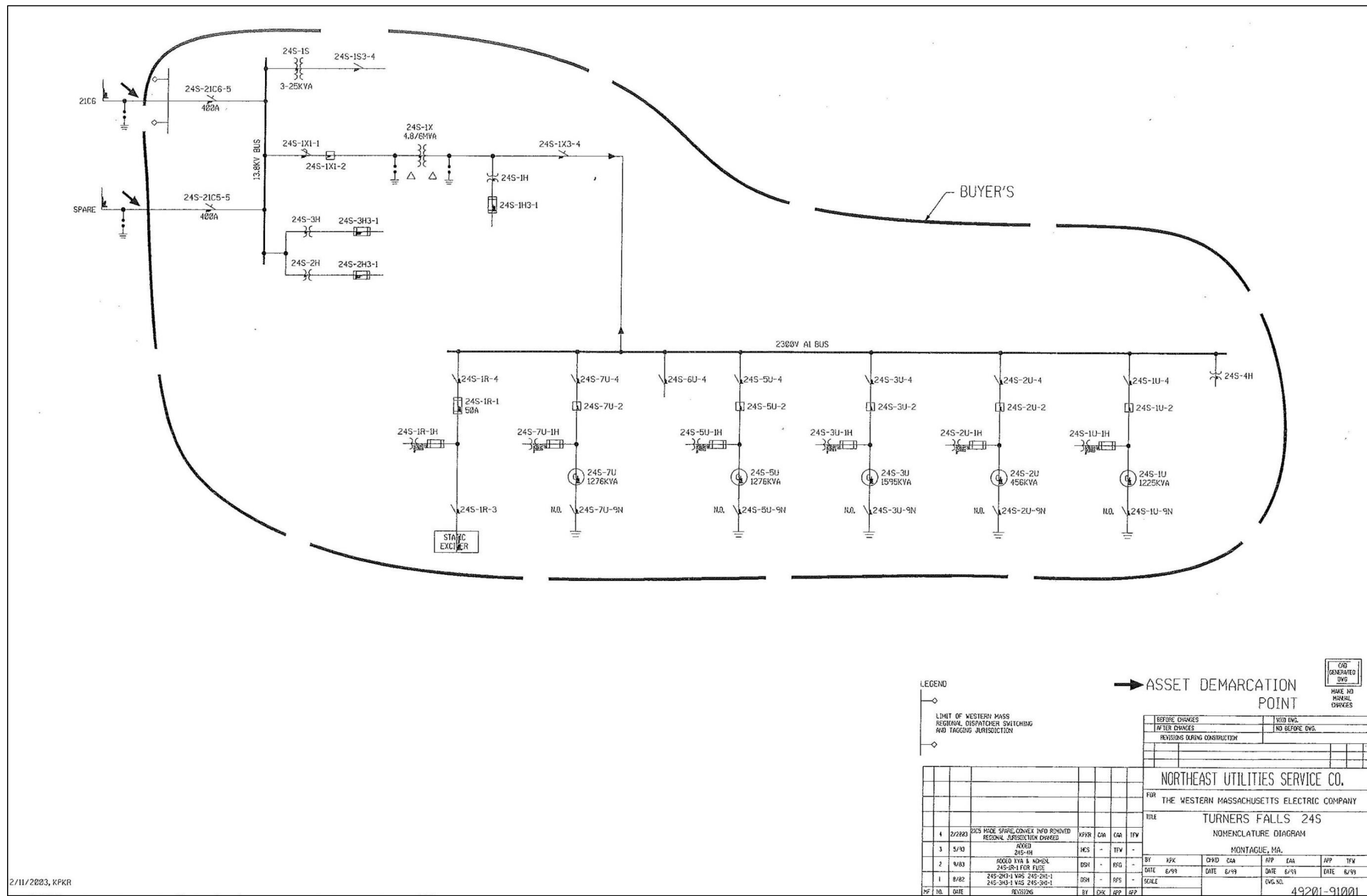
2.7 Ownership and Operating Expense Reductions if the Project License was Transferred

If the Project license were transferred to another entity, FirstLight's cost of operating and maintaining the Project (see Exhibit D) would be eliminated.

2.8 Annual Fees for Federal or Indian Lands

FirstLight does not pay annual charges for Federal or Indian tribal reservation lands.

Figure 1.6.3-1: Station No. 1 Single Line Electrical Diagram



2/11/2003, KFKR

LEGEND

- ◇ LIMIT OF WESTERN MASS REGIONAL DISPATCHER SWITCHING AND TAGGING JURISDICTION
- ASSET DEMARCATION POINT

C/D GENERATED DWG
 MAKE NO MANUAL CHANGES

BEFORE CHANGES	NOI DWG.
AFTER CHANGES	NO BEFORE DWG.
REVISIONS DURING CONSTRUCTION	

NORTHEAST UTILITIES SERVICE CO.
 FOR THE WESTERN MASSACHUSETTS ELECTRIC COMPANY
 TITLE: **TURNERS FALLS 24S NOMENCLATURE DIAGRAM**
 MONTAGUE, MA.

REV	NO.	DATE	REVISIONS	BY	CHK	APP	APP
1	1	8/82	24S-2H3-1 WAS 24S-2H1-1 24S-3H3-1 WAS 24S-3H1-1	DSH	-	RFS	-
2	2	4/83	ADDED KVA & NOMENCL 24S-1R-1 FOR FUSE	DSH	-	RFG	-
3	3	5/93	ADDED 24S-1H	HCS	-	TFW	-
4	4	2/22/03	24S HAD SPARE, CONVEY INFO REMOVED REGIONAL JURISDICTION CHANGED	KFKR	CA	CA	TFW

BY	KFK	CHKD	CA	APP	CA	APP	TFW
DATE	6/99	DATE	6/99	DATE	6/99	DATE	6/99
SCALE						DWG. NO. 49201-91001	

Figure 1.6.3-2: Cabot Station Single Line Electrical Diagram

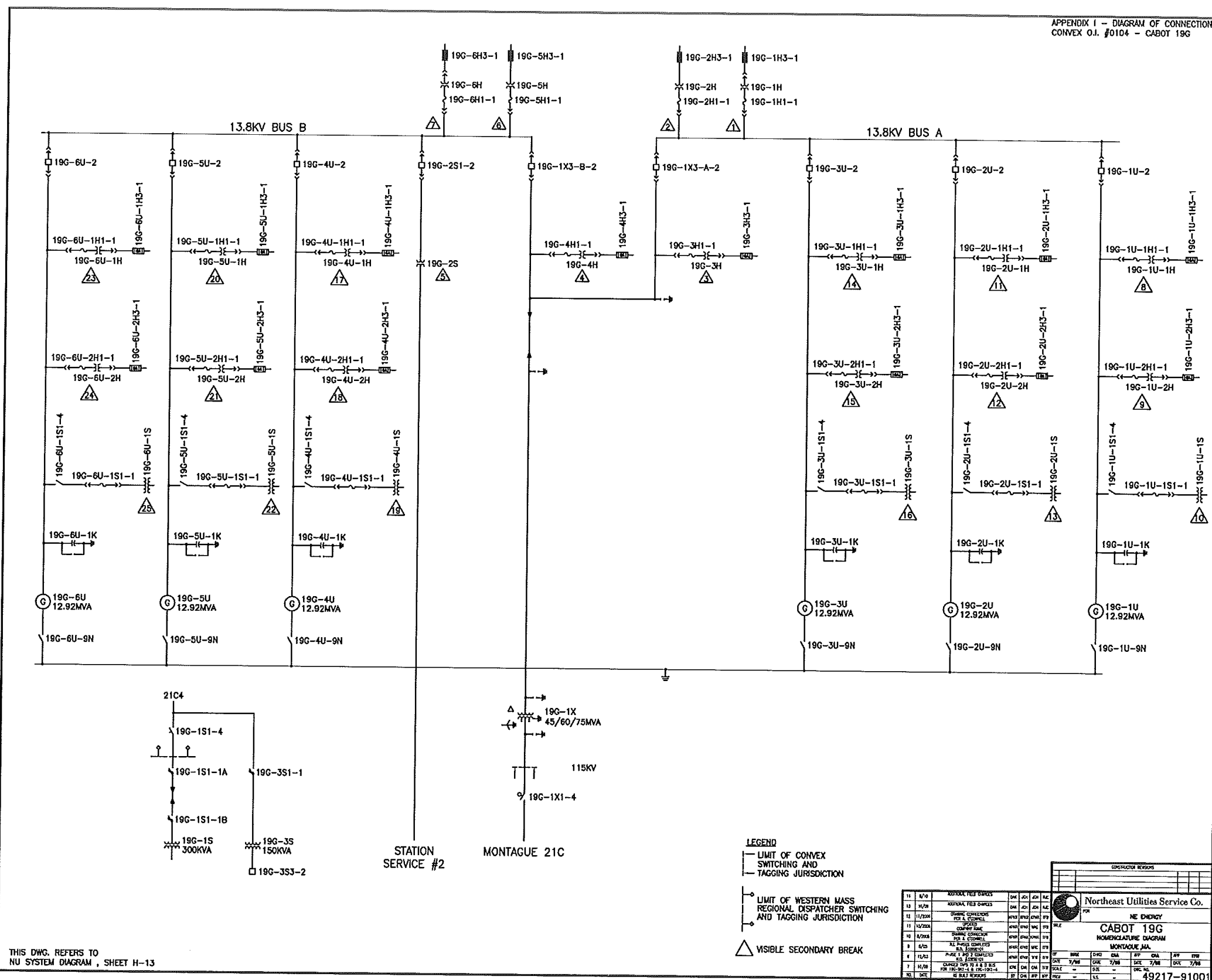


Figure 1.6.3-3: Northfield Mountain Pumped Storage Development Single Line Electrical Diagram

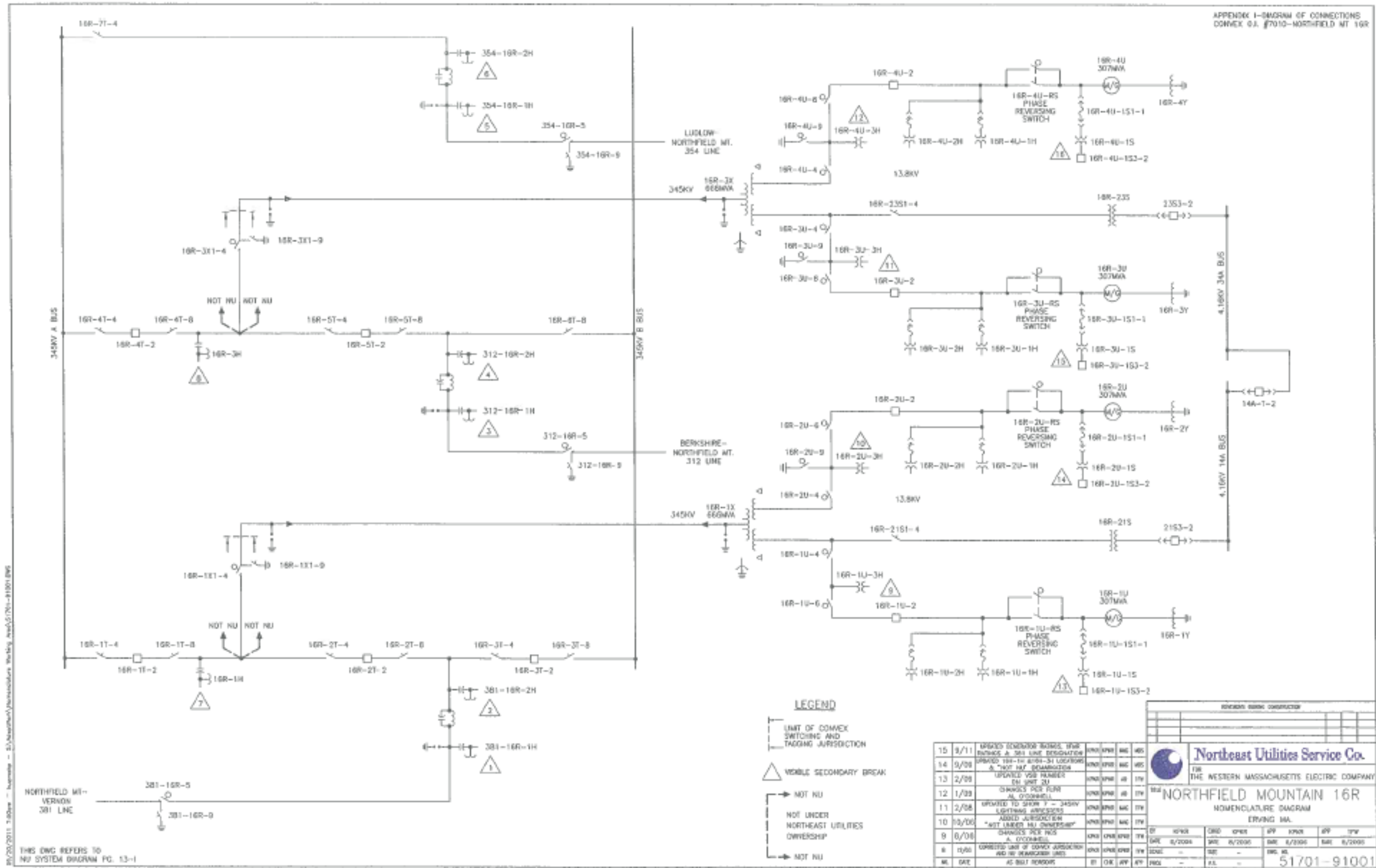


Table 2.4-1: Unscheduled Outages at the Turners Falls Development and Northfield Mountain Pumped Storage Development 2010-2014

Turners Falls Development: Cabot

Date	Description
6/10/2011	Cabot Unit 1: Exciter breaker issue
8/28/2011	Cabot Unit 4, and 6: Excessive Vibration due to High Tailwater (Hurricane Irene)
10/30/2011	Cabot Unit 1: Base excitor breaker issue
10/4/2014	Cabot Unit 1: Governor Problem
10/4/2014	Cabot Unit 3: Penstock Gunite Repair

Turners Falls Development: Station No. 1

Date	Description
1/1/2010	Station No. 1 Unit 2: Loss of excitation relay- moved to Unit 7
7/22/2011	Station No. 1 Unit 2: Governor issue
9/18/2011	Station No. 1 Unit 2: Governor pumping unit issue
10/31/2011	Station No. 1 Unit 2: Used RPM meter on Unit 1
10/31/2011	Station No. 1 Unit 1: Bad RPM meter
8/17/2012	Station No. 1 Unit 2: Loss of field relay failed
8/24/2012	Station No. 1 Unit 1: Inspection of Draft Tubes
2/8/2013	Station No. 1 Unit 7: Batteries bad on governor
9/11/2013	Station No. 1 Units 1, 2, 3, 5, 7 : High humidity caused condensation build up on the stator and rotor, grounding unit

Northfield Mountain Pumped Storage Development

Year	Description
5/23/2010	Northfield Unit 1, 2, 3, 4: Upper Reservoir Unwatering
12/6/2010	Northfield Unit 2: Gate seal inspection
1/7/2012	Northfield Unit 4: Check on depression air issue
5/3/2012	Northfield Unit 1: Unit tripped due to overheated turbine bearing
8/27/2012	Northfield Unit 3: Upper guide heat exchanger leaking water