

ORIGINAL
Case No. DE 14-288
F-A

ATTACHMENT WHS-1

DESCRIPTION

OF

NH GENERATION ASSETS

TO BE DIVESTED

1 **1. Thermal Facilities**

2 **a. Merrimack Station**

3 Merrimack Station is located along the Merrimack River in Bow, New Hampshire.

4 **Merrimack Station Generating Facility**

Unit	Load role	Fuel	Seasonal claimed capability (winter) (MW)	Year installed
Unit 1	Base/ Intermediate	Coal	108.1	1960
Unit 2	Base/ Intermediate	Coal	330.5	1968
CT-1	Peaking	Jet	21.7	1968
CT-2	Peaking	Jet	21.3	1969
Total			481.6	

5 Merrimack Station has a combined generating capacity from the two coal-fired, steam
6 units and two jet fuel-fired Combustion Turbine units of 481.6 net MW and is
7 PSNH's highest energy producer. The two coal-fired units are operated by personnel
8 onsite 24 hours a day, seven days a week. The units are designed to operate 24
9 hours/7 days a week during high-priced market periods; and are reduced in output or
10 placed in reserve status during lower-priced market periods. With this capability,
11 these units can provide capacity, energy and reserve products transacted through the
12 ISO New England power markets.

13 The two combustion turbine units mainly serve a peaking role, operating during
14 periods of highest seasonal peak demand or when generation is needed quickly to
15 maintain electrical system stability. These units typically serve the capacity and
16 reserve markets, and not the energy market. In addition to these units, the Merrimack
17 site includes numerous outbuildings, including the Coal Unloading System and Coal

1 Crusher House, office and storage facilities, a wet Scrubber, as well as a fly ash
2 disposal area.

3 **b. Newington Station**

4 Newington Station is located on a site along the banks of the Piscataqua River in
5 Newington, New Hampshire. Newington and Schiller Station are within a quarter
6 mile of each other, separated by a public road that ends at the Schiller plant. The
7 marine terminal and the bulk fuel oil storage, and oil transfer lines for Newington
8 Station are located on the Schiller site.

9 **Newington Station Generating Facility**

Unit	Load role	Fuel	Seasonal claimed capability (winter) (MW)	Year installed
Unit 1	Intermediate /peaking	Oil and gas	400.2	1974

10 Newington Station is operated as required by the ISO to meet base, intermediate or
11 peaking demand requirements. It is the largest single unit in the fossil/hydro system
12 with capability of 400.2 net MW.

13 Newington Station is a dual fuel unit capable of burning oil and/or natural gas making
14 it adaptable to changing fuel markets.

15 **c. Schiller Station**

16 Schiller Station is located east of Newington Station on the shore of the Piscataqua
17 River in Portsmouth, New Hampshire. All of the No. 6 oil and coal for Schiller
18 Station, all of the No. 6 oil for Newington Station, and ocean transported coal for
19 Merrimack Station are received by ship or barge at the main dock at Schiller Station.

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Schiller Station Generating Facility

Unit	Load role	Fuel	Seasonal claimed capability (winter) (MW)	Year installed
Unit 4	Base/intermediate	Coal or oil	48.0	1952
Unit 5	Base	Wood	43.0	1955/2006
Unit 6	Base/intermediate	Coal or oil	48.6	1957
CT-1	Peaking	Jet or gas	18.5	1970
Total			158.1	

2 Schiller's steam units have historically served a base load or intermediate load role
3 for the ISO. The units have the capability of starting up and shutting down daily if
4 needed, and can also effectively serve in the base load role during high-priced market
5 periods. Schiller's deep water docks make it an attractive site for generation.

6 Completed in 1949, Schiller Station is PSNH's third largest generating plant. The
7 four generating units combine for a total output of 158.1 net MW. Units 4 and 5 were
8 originally designed to burn coal, and did so for the first six months of their operation.
9 Both were then converted to burn oil as the primary fuel in the 1950's. Unit 6 was
10 designed to burn coal but burned oil initially.

11 In 1984, Units 4, 5 and 6 were converted to burn lower-priced coal allowing all three
12 units to burn coal and/or oil as boiler fuel, and making them adaptable to changing
13 fuel markets.

14 In 2006, Unit 5 was changed to 100% wood firing. The unit began commercial
15 operation December 1, finalizing a multi-year repowering project which replaced the
16 original boiler to a new state-of-the-art fluidized bed design

17 In addition to the steam units, Schiller also has a separate combustion turbine (CT-1)
18 capable of producing 18.5 net MW. CT-1 is an aero-derivative jet engine capable of
19 burning either A V Jet Kero II or natural gas.

1 **2. Hydro Facilities**

2 **a. Smith Station**

3 Smith Station is located on the Androscoggin River in Berlin, Coos County, New
4 Hampshire near the confluence of the Dead River and the Androscoggin River. The
5 Station operates one unit with a rated capacity of 17.6 MW.

6 **Smith Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year unit installed
Smith	Run-of-river	17.6	1	1948

7 The project operates in a run-of-river mode. High capacity factors are achieved at
8 Smith Station due to large upstream reservoirs which maintain consistent water flows
9 to the station throughout the year. Pond level is maintained within a narrow band by
10 using a float control mechanism to control generator output. The station has a
11 concrete dam and a steel penstock conveying water from the dam reservoir to the
12 unit.

13 **b. Gorham Station**

14 Gorham Station is located on the Androscoggin River in the Town of Gorham, Coos
15 County, New Hampshire, near the confluence of the Peabody River and the
16 Androscoggin River. The unmanned Station operates four units with an aggregate
17 rated capacity of 2.1 MW.

18 **Gorham Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year last unit installed
Gorham	Run-of-river	2.1	4	1923

1 This run-of-river plant operates automatically as a base load station generating power
2 from any combination of its units to match river flows. Gorham benefits from the
3 same reservoir system that supplies water to the upstream Smith Station. Gorham
4 Station consists of a wooden crib dam and adjacent canal gatehouse, a power canal
5 and a four-unit powerhouse. Limited ponding capability exists. Gorham Station
6 employs an automatic pond level control system to maximize generator output and
7 maintain pond level within a narrow band.

8 **c. Androscoggin Reservoir Company (ARCO)**

9 Smith and Gorham Stations on the Androscoggin River receive headwater benefits
10 pursuant to the Headwater Benefits Agreement by FERC Order No. H22-92-2 (June
11 30, 1992) and ARCO. PSNH owns a 12.5 percent of the outstanding shares of
12 ARCO, a Maine S Corporation. The majority of ARCO's shareholdings are
13 ultimately controlled by Brookfield Renewable Energy Partners L.P. By contractual
14 commitment, PSNH must offer its 12.5% ownership interest in the Androscoggin
15 Reservoir Company (ARCO) to the other current joint owners of the project, prior to
16 offering it for sale to other non-owners.

17 ARCO was created in order to develop an additional storage reservoir for the
18 Androscoggin Reservoir system, the Aziscohos Lake in Maine. A subsidiary of
19 Brookfield Renewable Energy Partners L.P. serves as operator for ARCO as well as
20 the water storage sites, managing river flows to maximize utilization of the water for
21 electrical generation downstream.

22 Through this managed operation of headwater, PSNH facilities at Smith and Gorham
23 are targeted to receive a minimum flow of 1,550 cfs throughout the year, except in
24 rare circumstances during exceptionally dry weather.

25 **d. Canaan Station**

26 Canaan Station is located on the northern Connecticut River in the towns of Canaan,
27 Vermont and Stewartstown (West Stewartstown Village) New Hampshire. It is

1 located 10 miles below the large Murphy Dam at Lake Francis and 82 miles above
 2 Moore Dam, at river mile 370. The plant was built in 1927 and operates one unit
 3 with a rated capacity of 1.1 MW.

4 **Canaan Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year unit installed
Canaan	Run-of-river	1.1	1	1927

5 The unmanned Station is operated as a run-of-river plant and is operated
 6 automatically as a base load unit. The original unit is still in service; however, the
 7 penstock has recently been replaced. Pond level is maintained within a narrow band
 8 by using a float control mechanism to control flows and resultant generation.

9 **e. Ayers Island Station**

10 Ayers Island Station is located on the Pemigewasset River approximately 12 miles
 11 upstream from the U.S. Army Corps of Engineers' Franklin Falls Flood Control Dam
 12 in the Towns of Bristol, Bridgewater, Ashland and New Hampton, New Hampshire.
 13 Small land rights associated with the station are in the towns of Ashland and
 14 Bridgewater. The station operates three units with an aggregate rated capacity of 9.08
 15 MW. The plant was originally constructed in 1924 and redeveloped in 1931.

16 **Ayers Island Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year last unit installed
Ayers Island	Run-of-river	9.1	3	1931

17 Ayers Island Station operates as a run-of-river facility with a daily ponding
 18 capability. Pond level is maintained within a narrow band by using a float control
 19 mechanism to control generator output, automatically. The main dam was recently
 20 refurbished for stability purposes to withstand earthquake damage.

1 **f. Eastman Falls Station**

2 Eastman Falls Station is on the Pemigewasset River in Franklin, New Hampshire.
3 The station operates two units with an aggregate rated capacity of 6.5 MW. The
4 project was originally constructed in 1901 and redeveloped in 1937 and 1983.

5 **Eastman Falls Stations Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year last unit installed
Eastman Falls	Run-of-river	6.5	2	1983

6 Eastman Falls Station is operated as an unmanned run-of-the-river plant. Eastman
7 Falls is presently in the FERC relicensing process, with a final license expected to be
8 issued in mid-2017. Pond level is maintained within a narrow band by using a float
9 control mechanism to control generator output.

10 **g. Amoskeag Station**

11 Amoskeag Station is the southernmost of the three sites comprising the Merrimack
12 River Project. The station is located on the Merrimack River in Manchester, New
13 Hampshire, downstream from Hooksett Station. Amoskeag operates three units with
14 an aggregate rated capacity of 17.5 MW.

15 **Amoskeag Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year last unit installed
Amoskeag	Run-of-river	17.5	3	1924

16 Amoskeag Station is operated as a run-of-the river plant in times of higher water flow
17 and as a daily peaking facility at other times. Pond level is maintained automatically
18 within a narrow band by using a float control mechanism to control generator output.

1 **h. Hooksett Station**

2 Hooksett Station is part of the Merrimack River Project and is located on the east side
3 of the Merrimack River in Hooksett, New Hampshire, downstream from the Garvins
4 Falls Station and Merrimack Station, and upstream from Amoskeag Station. The
5 Station operates one unit with a rated capacity of 1.9 MW.

6 **Hooksett Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year unit installed
Hooksett	Run-of-river	1.9	1	1927

7 The Hooksett Station is an automated site and is operated as a run-of-the-river
8 facility. In addition to providing power to the New England transmission grid,
9 Hooksett provides a reservoir from which water is taken for condenser cooling at
10 Merrimack Station located a few miles upstream.

11 **i. Garvins Falls Station**

12 Garvins Falls is part of the Merrimack River Project and is located on the Merrimack
13 River in Bow, New Hampshire. The Station operates four units with an aggregate
14 rated capacity of 12.9 MW.

15 **Garvins Falls Station Generating Facility**

Station	Load role	Network Resource Capability (MW)	Units	Year last unit installed
Garvins Falls	Run-of-river	12.9	4	1981

16 The discharge capability of the headgate structure is sufficient to operate all four units
17 at full load. For high flows, the units are operated so as to utilize as much of the
18 available water as possible. During times of moderate and low flows, operation is
19 scheduled to obtain the maximum on-peak energy based on available head and
20 relative overall unit efficiency. The newly installed Units 1 and 2 are operated for as

1 long as possible to take advantage of their greater efficiency, while Units 3 and 4 are
2 operated at times of higher flow.

3 **j. Jackman Station**

4 Jackman Station consists of a dam, located on Franklin Pierce Lake, and a penstock,
5 surge tank and powerhouse, located in Hillsborough, New Hampshire. The lake and
6 project are fed from the North Branch of the Contoocook River. The facility
7 discharges to the receiving water named Beards Brook, a Class B water. This project
8 is not subject to FERC jurisdiction because it is not classified as a navigable
9 waterway. The Station was constructed in 1926 and operates one turbine with a rated
10 capacity of 3.6 MW.

11 **Jackman Station Generating Facility**

Station	Load role	Network Resource Capability (winter) (MW)	Units	Year unit installed
Jackman	Run-of-river	3.6	1	1926

12 Jackman Station is operated in an essentially run-of-river mode, automatically by a
13 float or pond level control mechanism at the dam. The Station operates as a base load
14 unit whenever adequate water flows are available.

15 **3. Remote Combustion Turbines:**

16 **a. Lost Nation Combustion Turbine**

17 The Lost Nation Combustion Turbine is located in the town of Groveton, in northern
18 New Hampshire. Lost Nation serves primarily as a peaking unit, operating during the
19 periods of highest seasonal peak demand. Additionally this unit is called upon when
20 a quick response is needed for additional generation to maintain electrical system
21 stability. While capable of providing several ISO-NE Market products, the unit
22 typically serves the capacity and reserve markets, but not the energy market.

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Lost Nation CT Generating Facility

Station	Load role	Fuel	Seasonal claimed capability (winter) (MW)	Units	Year installed
Lost Nation	Peaking	No.2 Oil	18.0	1	1969

2 **b. White Lake Combustion Turbine**

3 The White Lake Combustion Turbine is located in the town of Tamworth, in northern
 4 New Hampshire. White Lake serves primarily as a peaking unit, operating during the
 5 periods of highest seasonal peak demand. Additionally this unit is called upon when
 6 a quick response is needed for additional generation to maintain electrical system
 7 stability. While capable of providing several ISO-NE Market products, the unit
 8 typically serves the capacity and reserve markets, but not the energy market.

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White Lake CT Generating Facility

Station	Load role	Fuel	Seasonal claimed capability (winter) (MW)	Units	Year installed
White Lake	Peaking	Jet	22.4	1	1969

