

Barton Village, Inc. Special Village Meeting [Informational Hearing]

Purpose: *To discuss the Barton Village Hydro Facility Upgrades, Cost and Financing*

Informational Hearing:
Barton Memorial Building
Monday, September 9, 2024
6:00 PM



Australian Ballot Vote:
Friday, September 20, 2024
Barton Memorial Building
Polls Open 10:00 am – 7:00 pm

Barton Village Hydro Facility General Information

Location: On the Clyde River in West Charleston, Vermont

FERC License: 7725-000-Vermont Expires 10/01/2043

Turbine# 1: Constructed and placed in service in 1930, rebuilt in 2008

Turbine #2: Constructed and placed in service in 1948, rebuilt in 2009

Hydro Unit #1 Nameplate Rating – 700 (KW)

Hydro Unit #2 Nameplate Rating – 600 (KW)

Existing Headgate and Supporting Structures – dated 1895 and manually operated

Penstock: Three Components:

1. Downstream of the intake structure is 665 feet of 7-foot nominal diameter welded steel penstock installed in 1941.

This portion of the penstock was replaced in 1991.

At this point the penstock bifurcates into two penstocks. **Original facility installed in early 1940's.**

2. Penstock #1 is comprised of a 5-foot 6-inch diameter welded steel penstock feeding Unit No. 1

This portion of the penstock was replaced in 1974 (approximately).

3. Penstock #2 is comprised of a 5-foot 9-inch diameter welded and riveted steel penstock feeding Unit No. 2

Penstocks and Saddles were inspected by Dubois & King June 27, 2022 and March 5, 2024

Per D&K report dated 10/14/2022

Penstock #1 – Overall in satisfactory condition with estimated remaining life of approximately 20 years.

Penstock #2 - Exterior and saddles in poor condition – experiencing accelerated deterioration and **at the end of its useful life**

Barton Village Hydro Facility Generation

Over the last ten years, the hydro facility has produced approximately 21%-38% of Barton's annual resource requirements.

Year	Hydro Gen [kwh]	BVI Load [kwh]	Hydro % of Total
2023	6,339,699	16,712,625	38%
2022	5,293,771	16,693,486	32%
2021	4,109,156	16,303,830	25%
2020	5,135,569	16,152,540	32%
2019	4,118,764	15,573,781	26%
2018	3,371,743	15,972,877	21%
2017	4,025,485	15,774,211	26%
2016	4,091,374	16,133,833	25%
2015	4,330,701	16,324,834	27%
2014	3,411,541	16,394,177	21%
2013	4,061,110	16,532,570	25%

Barton Village Hydro Facility Financial Considerations

Project Components and Cost:

Unit #2 Penstock	\$ 1,219,244
1895 Headgates & Support Structure	\$ 699,205
Penstock Valve	\$ 47,669
Recloser, Transformer, Containment	\$ 432,833
Standby Generator	\$ 75,000
Engineering	\$ 260,995
Direct Labor/Benefits	\$ 15,840
Consultants	\$ 30,200
Legal	\$ 36,000
Permitting	\$ 105,000
Total	\$2,921,986

Vermont Bond Bank Project Financing

Rate: 3.95% (as of 04/17/2024)
 Amount Financed: \$3 Million
 Total Cost: \$4,484,254
 Term: 20 years

Estimated
 Rate
 Impact =
 7-11%

OR

Vermont Public Power Supply Authority

Power Supply Estimate (cost to
 replace loss of hydro production
 over 20-year period)
 \$7,925,411
 Average Annual: \$396,271

Estimated
 Rate
 Impact =
 12.4%

This only reflects the estimated impact of replacing the power required.
 If the facility were to cease operations, there would be decommissioning
 costs that are not reflected in this number.

Barton Village Hydro Facility Project Components – Unit #2 Penstock

Existing Penstock and saddles are deteriorated, pitted with holes, leaking and at risk of full failure.

Alternative #1: Carbon Fiber Reinforced Polymer Liner (CFRP) – layers of unidirectional CFRP fabric bonded together with epoxy resin. Reinforce exiting penstock with CFRP and replace the existing concrete saddles and thrust blocks.

Estimated lifespan is 50 years.

Estimated Construction Cost: \$2,023,350

Alternative #2 [**RECOMMENDED**]: New Steel Penstock – Demolish the existing penstock and saddles, replace the penstock with a 5/16-inch thick rolled ASTM A36 steel plate penstock and replace the existing saddles with new reinforced concrete saddles and thrust blocks.

Estimated lifespan is 80 years.

Estimated Construction Cost: \$1,219,244



Barton Village Hydro Facility Project Components – 1895 Headgate

- Existing Headgate is dated 1895.
- Existing structure is deteriorated and no longer functional.
- Significant safety hazard.
- Replaces existing timber headgates and steel support structure with new steel headgates and support structure.
- New structure operated with electric actuators.



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Project Components – Unit #2 Penstock Gate Valve



- Includes installing an electric motor and operator to replace the existing manual operator at the Unit #2 gate valve, using the existing gate valve support frame.
- Replaces aged equipment and allows for electronic monitoring and operation (off-site).

Barton Village Hydro Facility

Project Components – Transformer, Containment, Recloser



- Replaces the existing (old) transformers with identical size/capacity.
- Adds containment area for environmental concerns and safety.
- Adds recloser on distribution system, protecting the hydro facility and the remaining distribution customers in the event of faults.

Barton Village Hydro Facility Project Components – Standby Generator

- Facility currently has no generator and cannot generate in the event of power failure.
- Borrowed equipment is used to keep equipment from freezing during power outages.
- Installation of standby generator prevents equipment damage and enables continued operations during outages.

Barton Village Hydro Facility

Additional Information

- Special Village Meeting: Monday, September 9, 2024 6:00pm at Barton Memorial Building
- Australian Ballot Voting: Friday, September 20, 2024
 - Barton Memorial Building
 - Polls open 10:00am – 7:00pm
 - Ballots available in advance at the Village Office and/or Town Clerk's Office

For more information call:

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