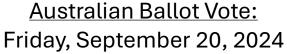
Barton Village, Inc. Special Village Meeting [Informational Hearing]

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

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



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:

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	<mark>32%</mark>
2021	4,109,156	16,303,830	<mark>25%</mark>
2020	5,135,569	16,152,540	<mark>32%</mark>
2019	4,118,764	15,573,781	<mark>26%</mark>
2018	3,371,743	15,972,877	<mark>21%</mark>
2017	4,025,485	15,774,211	<mark>26%</mark>
2016	4,091,374	16,133,833	<mark>25%</mark>
2015	4,330,701	16,324,834	<mark>27%</mark>
2014	3,411,541	16,394,177	<mark>21%</mark>
2013	4,061,110	16,532,570	<mark>25%</mark>

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

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.

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%

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.

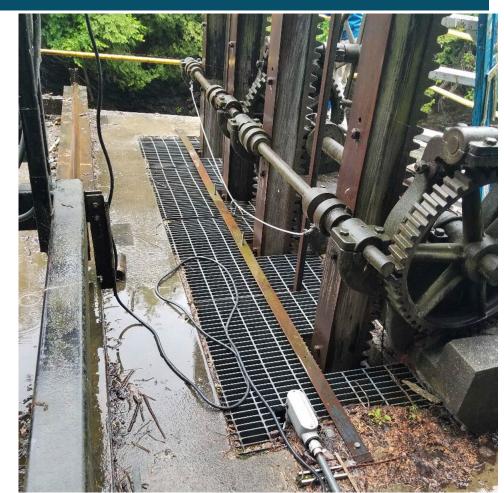
Estimated lifespan is 80 years.

Estimated Construction Cost: \$1,219,244

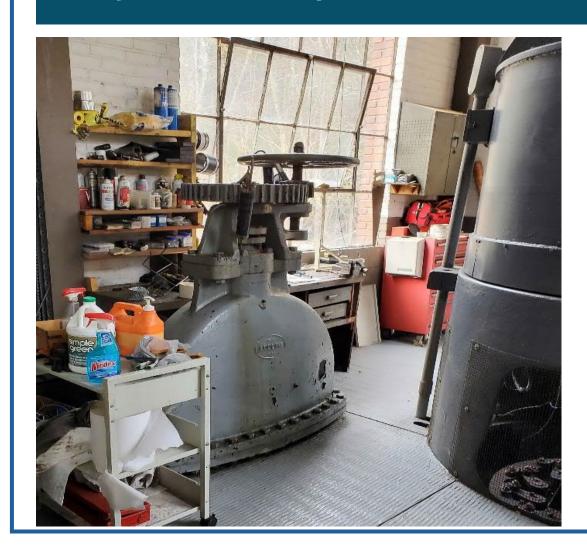


Barton Village Hydro Facility Project Components – 1895 Headgate

- 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.



Barton Village Hydro Facility 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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