

TOWN OF WOODSTOCK CLIMATE SMART TASK FORCE

Erin Moran, Coordinator
Kenneth Panza, Secretary

Application for 5 Points

PE4 Action: Renewable Energy Feasibility Studies

3 Points

4 Points

5 Points

Micro-Hydro Feasibility Study

The Town of Woodstock has investigated photovoltaic solar, a wind power ESCO, micro-hydro, and run of the river hydro. The town eventually subscribed to hydroelectric plants on the Wallkill and at Wappingers Falls for hydroelectric energy available through the Natural Power Group under the terms of Community Distributed Generation.

Bard College Micro-Hydro Project

Bard College was awarded government funding of \$1 million for a project to show how novel micro-hydro power generators can dramatically reduce greenhouse gas emissions. The project includes the launch of an online public information resource, "NY Micro Hydro," to help others install micro-hydro opportunities throughout the state.

Governor Andrew M. Cuomo announced the funding as part of part of the "Energy to Lead Competition." The competition was unveiled by the Governor in October 2015 and challenged student-led coalitions from New York colleges and universities across the state to develop plans for local clean energy projects on campus and in their communities.

The proposed Project is a micro-hydro project of 12 kW capacity, which would utilize three 6-foot diameter, 10-foot high Gravitational Vortex (GV) tanks, turbines and generators in parallel to generate 61,000 kWh on average annually. The project also proposes the installation of an eel ladder as well as upgrading the dam by removing the top of a 30-foot long section of the dam to create an auxiliary spillway. The Project would operate from a low flow of 6.6 cubic feet per second (cfs) and up to a high flow of 37 cfs with an interconnect via an underground cable to the single phase utility line running along the adjacent public road named River Road.

Public Stakeholder Meeting

As part of the permitting process, Bard hosted a public informational meeting and site visit on October 30, 2018 to obtain public comment.

Current Hydro had previously solicited comments from resource agencies and stakeholders in the publishing of an Initial Consultation Document (ICD), which was filed on 9/28/2018; in holding a Joint Agency/Public Meeting in Red Hook, New York on October 30, 2018; and in soliciting comments on the ICD, and sought requests for the Project by December 29, 2018.

The U.S. Fish and Wildlife Service (USFWS), the New York State Historic Preservation Office, the Town of Woodstock, NY, and the public participated in the Joint Agency/Public Meeting and/or

submitted written comments. The comments received have been addressed in the Project design updates and within the DA. No study requests or requests for additional information have been received.

Woodstock Evaluation

One stated goal for the project is to create a roadmap that allows replication of micro hydro projects statewide. Clearly the project is in its earliest phase and has not reached final conclusions, but as part of the process I submitted some opinions about how a municipality might view it. Attached is the document I submitted to the Bard project manager and others.



WOODSTOCK, N.Y.
COLONY OF THE ARTS

Kenneth S. Panza, Liaison
Town of Woodstock
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Woodstock, NY 12498
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November 4, 2018

Mrs. Laurie Husted, Chief Sustainability Officer
Bard College, 30 Campus Road
Annandale-on-Hudson, NY 12504-5000

NYSERDA REV Campus Challenge,
Energy to Lead Competition 2016

Public / Joint Agency Meeting and Site Visit
ANNANDALE MICRO HYDROPOWER PROJECT
Date: October 30, 2018

Some Comments about Small Scale Hydro Bard College Annandale Micro Hydroelectric Project¹ Public Joint Agency Meeting, October 30, 2018

Dear Ms. Husted;

Thank you for hosting the public information meeting to explain Bard's proposal to construct a low-impact, micro hydroelectric generator using the Annandale Dam located on the Saw Kill in Red Hook, NY.

There are two low-head dams located in Woodstock, and although the dams are owned by the Kingston Water Department, there has been continuing speculation by Woodstock governmental entities about the possibility of hydroelectric generation. This informational meeting offered the first chance to understand some of the issues to consider when discussing micro hydroelectric.

Apparently the October 30, 2018 meeting was intended to satisfy FERC's permitting process for a public stakeholder meeting, but one stated goal for the project is to create a roadmap that allows replication of micro hydro projects statewide. Clearly the project is in its earliest phase and has not reached final conclusions, and perhaps as part of the process I can offer

¹ Bard College Press Release, *Bard College Wins \$1 Million New York State Clean Energy Competition*, May 16, 2016, <http://www.bard.edu/news/releases/pr/fstory.php?id=2806>

some opinions about how a municipality might view it. These comments are more appropriately submitted to NYSERDA for its consideration.

It's meaningful to see research that matches smart and enthusiastic students guided by dedicated faculty with a real-world project that considers unanswered questions about renewable energy and habitat impacts. Spending a million dollars is clearly justified as an educational and research endeavor, but as you might expect, municipal governments have different values and responsibilities and might ask different questions.

Power Capacity

Many municipalities would question the cost and effort needed to generate the modest amount of power available from the project. It was noted that the Annandale dam hydro project will generate about 61,000 kWh/year. The Bard Climate Action Plan² reports that Bard uses about 20 million kWh a year with associated net Greenhouse Gas emissions (GHG) of about 3,600 metric tons. The generation from the Annandale dam will account for only about one-third of one percent of Bard's electrical requirements with a reduction in GHG emissions of approximately 10 metric tons. Assuming demand metering, i.e. non-residential, the volumetric value of 61,000 kWh is about \$4,600.

Bard College can justify these numbers in support of the education and research value of having an operating environment of electrical generation and consumption available as a renewable energy teaching laboratory, but municipalities constrained by the tax cap would find it hard to justify a similar project.

FERC Permit

Another requirement that might be questioned by municipalities is the need for a FERC permit. As explained, this meeting was held as part of an elaborate process to apply for a FERC License Exemption for the proposed 12 kW peak capacity generator at the Annandale Dam.

The State of New York's permitting process for generators kicks in at 25 MW, a significantly larger capacity than the proposed Annandale dam project. Approvals for projects of less than 25 MW are granted by local authorities consistent with zoning, land use, and SEQR regulations. It might be difficult to explain why the federal government needs to be involved.

FERC, according to its website, "Regulates the transmission and wholesale sales of electricity in interstate commerce." Since the Annandale hydro project is not proposing wholesale sale of electricity, the need for a FERC permit should be challenged. The complex and expensive process described during the stakeholders meeting would discourage many municipalities from considering hydro-electric for existing dams.

Habitat Studies

No municipality would question the need for engineering studies of a dam's structural integrity and its potential for hydro-electric generation, but the comprehensive habitat studies included in a project plan might discourage further consideration. The Annandale dam has

² Smith, Daniel & Husted, Laurie, *Bard Climate Action Plan*, July 2017, http://bos.bard.edu/files/2017/11/Bard-College-CAP_ver-July-2017_FINAL_10-30-17.pdf

been in place for over a hundred years allowing habitats to evolve both behind the dam and downstream. The document submitted by Bard to FERC was over 180 pages and included complete descriptions of the project, an analysis of water quality and flow, the biological components of habitats, etc.

The study appears thorough and complete, but few municipalities would undertake such a study only for potential energy generation. A comprehensive study of this type could be justified in the context of a complete watershed restoration and renewal project.

Summary

I'm looking forward to watching the Annandale dam project evolve, but I think the FERC permit requirements and the need for extensive environmental evaluation and hydrological studies will present formidable obstacles for extending micro-hydro statewide. A desirable conclusion would be how to minimize the cost of complexity of these requirements.

Although the financial benefits were not discussed during the October 30th meeting, the cost-benefit of the project based on avoidable electricity purchases is unclear.

There are others much better qualified than I to offer opinions about municipal acceptance of small scale hydro power. Steve Noble, Mayor of Kingston, recently hosted a roundtable with the mayors and supervisors of Red Hook, Rhinebeck, and New Paltz to discuss the challenges presented by climate change to their communities. They offered astute and insightful explanations of the problems and the obstacles they faced. You might consider seeking their opinions. I'm sure any of them can offer better advice than I.

Sincerely yours,



Kenneth S. Panza,
Supervisor's Liaison to the
Ulster County Climate Smart Committee

CC:

Alicia Barton, President and CEO, NYSERDA
Joel Herm, Current Hydro, LLC
Manna Jo Greene, Environmental Director, Sloop Clearwater
Woodstock Town Board
Woodstock Environmental Commission
Woodstock Land Conservancy
Vernon Benjamin, Special Operations Coordinator, Town of Saugerties



Current Hydro, LLC.
P.O. Box 224,
Rhinebeck, New York 12572

April 24, 2019

RE: Annandale Micro Hydropower Project (FERC Docket No. D117-1)

Dear Stakeholder,

Current Hydro, LLC is submitting the attached Draft Application Document (DA) for the Annandale Micro Hydropower Project in New York State.

The Project is located at an existing dam owned by Bard College on the Saw Kill, a tributary to the Hudson River in Dutchess County, NY.

The proposed Project is a microhydro project of 12 kW capacity, which would utilize three 6-foot diameter, 10-foot high Gravitational Vortex (GV) tanks, turbines and generators in parallel to generate 61,000 kWh on average annually. The project also proposes the installation of an eel ladder as well as upgrading the dam by removing the top of a 30-foot long section of the dam to create an auxiliary spillway. The Project would operate from a low flow of 6.6 cubic feet per second (cfs) and up to a high flow of 37 cfs with an interconnect via an underground cable to the single phase utility line running along the adjacent public road named River Road.

As part of the FERC licensing process, Current Hydro had previously solicited comments from resource agencies and stakeholders in the publishing of an Initial Consultation Document (ICD), which was filed on 9/28/2018; in holding a Joint Agency/Public Meeting in Red Hook, New York on October 30, 2018; and in soliciting comments on the ICD, and sought requests for the Project by December 29, 2018.

The U.S. Fish and Wildlife Service (USFWS), the New York State Historic Preservation Office, the Town of Woodstock, NY, and the public participated in the Joint Agency/Public Meeting and/or submitted written comments. The comments received have been addressed in the Project design updates and within the DA. No study requests or requests for additional information have been received.

The goal of this DA is to provide stakeholders with updated materials and an opportunity to offer additional comments and feedback on the project design proposed in

association with the exemption application of the above captioned proposed hydroelectric project (the Project).

A copy of this DA is available on the FERC Website as a part of the Public Record. Go to the FERC E-Library at <https://elibrary.ferc.gov/> and search for Docket for DI17-1. This will bring up the Annandale Micro Hydropower Project FERC Docket Record and an electronic copy of this DA may be downloaded from there.

We also provide a download via:

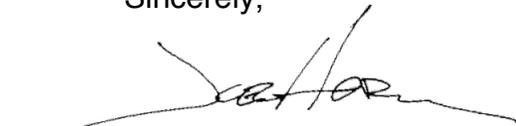
<https://www.currenthydro.com/annandale-da>

Current Hydro is distributing this Notice of Draft Application on April 24, 2019 and are asking stakeholders to kindly review and provide any additional comments on our proposed Project by July 22, 2019, the end of 90-day comment period.

Current Hydro extends its appreciation to the resource agencies and stakeholders for their review and consideration of the DA, and requests that any resource agency or stakeholder that may have additional comments on the proposed Project described in the DA notify Current Hydro within the time period set forth herein.

Please do not hesitate to contact me at joel@currenthydro.com or by phone at (917)-244-3607. Current Hydro is very interested in hearing all stakeholder feedback including concerns, excitement, interest/non-interest as well as requests for even more detail about the Annandale Micro Hydropower Project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joel Herm', with a long horizontal line extending to the left.

Joel Herm, CEO
Current Hydro, LLC.
Rhinebeck, New York