REQUEST FOR QUALIFICATIONS
BartonVillage (Town of Barton), Vermont
(October 25, 2014)

Project Description: **MPG* Small Hydro Project Analysis**

Primary Task: Produce an Economic Feasibility Study of Developing Small Hydro Production at Crystal Lake Falls in Barton Vt.
Secondary work task: (can be included as one project) Determine the feasibility of producing off-the-grid micro-hydro as an emergency and/or supplemental electric power supply for emergencies or electric cost saving. This operation would be near the stream power source and parallel to the small hydro subject of the economic feasibility study.

Submission Requirements:
Please provide 6 copies of the following items. Please do not submit any more than four pages.
1. A short letter of interest.
2. Statement on consultant qualifications. If more than one person is involved, describe working relationship.
3. Summaries of relevant projects, including the names and telephone numbers of references
4. Description of hourly rates for personnel.
Submissions are due at the Barton Village Office (17 Village Square, Barton Vt. 05822) by November 4, 2014, by 4:00 pm. Please address envelope to Village of Barton, 17 Village Square, Barton Vt. 05822 ; Attention: Hydro MPG Administrator. Electronic submissions are acceptable and should be addressed to ed_helm@Bartonhydro.org and lgaboriault@bartonvt.com. They are also due by 4:00 pm.

Selection Process
Consultant qualifications will be reviewed and ranked by the MPG Hydro Administrator. A short-list of consultants will be selected for interviews or requested to provide additional information and references. Those selected for interviews may be requested to prepare more specific hydro feasibility study proposals in response to the work plan. The Administrator reserves the right to reject any and all proposals in the event that the responses aren't deemed sufficient to fulfill the requirements of the MPG.
Selection Criteria

Barton Village desires that the consultant include, or be in a team of consultants that includes, an engineer (PE) with significant experience in producing hdyro feasibility studies. Since the consultant will be required to present his or her findings and summarize her or his report at a public meeting in Barton Village, in addition to a written report, a consultant is sought who is able to explain the report and findings in understandable (plain) terms to citizens of the Village as well as Village leadership.

Qualifications required for selection include:
- Experience with compiling, reviewing and analyzing hydro resources and potential, including updating previous reports, data, information leading to a written economic feasibility study and public presentation.
- Ability to provide an economic analysis with recommendations and determination of economic feasibility of a small hydro project.
- Knowledge of hydro permitting and licensing (Federally and in Vermont) and engineering and financial considerations critical to making determinations regarding hydro development projects. Knowledge sufficient to address the adviseabilty and interactions between micro hydro and small hydro in same stream bed and creation of a microgrid and off-grid emergency system for micro hydro.
-Understanding of best practices in small hydro technological and political development projects. Understanding of the strengths and weaknesses of various approaches to development of small hydro projects (e.g. differences when a developer entity would be a muni-electric company, co-op of citizens in a village, or a local non-profit or private developer).
-Proven ability to work with committees and conduct public workshops.

- Availability to begin work immediately.
Schedule:
- Qualifications due by November 4, 2014.
- Interviews by November 7, 2014.
- Consultant selection by November 10, 2014
- Work to begin November 15, 2014.
- Complete project by March 15, 2015

Funding:
A total of $12,500 is available for consultant services from the State of Vermont Municipal Planning Grant Program for a small hydro feasibility study.
Additonal funds of $1800 under the MPG are available for an additional micro-hydro, off the grid, capability, study and report.
Information:

Call Ed Helm, at 802 525-3740 or e-mail at ed_helm@Bartonhydro.org, Administrator of the MPG.

WORK PLAN

Name of Project: Barton Village Small (and Micro) Hydro Examination at Crystal Lake Falls, Barton Vt.

Studying, updating, and developing a community consensus regarding the feasibility, cost and benefits of developing a small hydro project at Crystal Lake Falls in Barton and deciding whether or not it is feasible; and if feasible, advising the on strengths and weaknesses of various developers for such a small hydro project.

At www.Bartonhydro.org are posted (and thus hereby made available to consulants) two significant Studies of hydro done in 1984 and 1985 (in "resources"section of website). These include reviewing site history, legal review, pre-feasibility, electrical systems review, environmental review, and landscape planning study. Both studies reflect significant water flow over the four dams at Crystal Lake Falls and 89 feet of gross head power fed by a 23.9 sq. mile watershed area. (Initial Headwater Elevation of 945; Initial Tailwater Elevation of 856. Median flow of 30.3; proposed minimum bypass flow of 10 cfs. ) A recent update in the flow duration curve done at Lyndon State College by members in the Sustainability Studies Dept. indicates even better flow figures. Such data and the '84 and '85 Studies will be made available to the selected consutant(s).) (Also posted at www.Bartonhydro.org is the MPG Application which was subsequently awarded.)

A renewed review of this hydro potential has been ongoing, proposed March 2013 at Village Meeting and formally begun in June of 2013 when the Barton Village Trustees entertained a resolution which established a Committee tasked to:

- Examine and assemble past considerations and analysis of technical and planning studies for utilizing the waters of Crystal Lake Falls as an electrical power community resource;
- Utilize volunteer expert help such as that offered for this project by Dr. Ben Luce, Physics Professor in Sustainable Studies Program at Lyndon State College, and by Little Green Hydro of Corinth, Vt.;
- Identify the opportunities and constraints that bear influence on developing a hydro electric power system including the methods for financing, increasing electric power security for the Village, projected avoided costs for purchasing future energy, and payback period for such a system.

- Co-Chairs for pursuing a Hydro Re-Examination Committee were specified as the Village Administrator and Ed Helm, Barton Vt. citizen, who now serves as Administrator of a MPG awarded December 2013.

Additionally, we provide information which we intend will help shape the work of a successful applicant and best fulfill the MPG. These are two additional sources of noteworthy information and include advice of the need to 1. retain or include a skilled and experienced hydro PE (see comments in Attachment A, by Anne Margolis, Vt. Renewable Energy Development Manager), as well as 2. Attachment B, by Robert Desrochers, Fairbanks Mills Contracting, the author of the 1984 and '85 Reports about necessary elements for updating those Reports):

## Attachment A

On Oct 14, 2013, Anne Margolis wrote:

Thank you for reaching out to involve the Public Service Department, Agency of Commerce and Community Development, and Agency of Natural Resources in your hydropower planning efforts, and for inviting us to visit Barton for the recent Crystal Lake Falls site visit and discussion. Our three agencies have discussed the project and attempted to develop some recommendations for your Committee and for the Trustees. Below are summarized some of the areas of consideration that we can identify at first blush, which we hope will be helpful as you contemplate next steps.****

The primary issue hindering our more detailed review and feedback is the absence of a specific proposal and site plan. While the 1985 study contains some specifics about the site, it is essentially conceptual in scope and does not contain a proposed plan with all components identified. The next apparent step for you would be to develop a specific feasibility study and project plan with the assistance of a licensed professional engineer with hydropower experience. There are many items that need further investigation, including (but not limited to) ownership of lands affected by the project, use of the state-owned dam and property for the project, Land and Water Conservation Fund easements on some properties, safety of existing structures, and effects of the project on aquatic habitat and water quality in the bypass. A revised study and plan would account for changes in standards, equipment, economics, and site-specific constraints that have arisen in the last 28 years. A solid feasibility study will help you determine the economic viability of the project.****

In addition, all or most of the area ostensibly under consideration for hydroelectric re-development was listed on the National Register of Historic Places in 1994 as the Crystal Lake Falls Historic District. In the absence of any specific site plan, it is difficult to accurately determine

the degree of documentation that may be required to address archaeological and standing structure concerns resulting from the re-development. At a minimum, identification and mitigation of any adverse effect to the historic properties, including archaeological resources, will be required within the area of potential effect in order to comply with the National Historic Preservation Act. This could potentially have a significant impact on the feasibility of the project from a cost perspective. A better understanding of the project's effect on historic resources and next steps can be determined once more specific project plans are developed.****

You had asked about potential sources of funding to pursue further development of a project. At this time, the Clean Energy Development Fund offers limited hydropower production incentives for small systems that have obtained their necessary FERC license or exemption. The Agency of Commerce & Community Development offers Municipal Planning Grants, and it appears from your recent communication that you have submitted an application for obtaining these funds. At this time, we are not aware of additional funding resources, but we will keep an eye out for anything relevant that might come along.****

We regard the feasibility and project plan items above as essential to your ability to make an informed decision regarding the costs and benefits of pursuing your project at Crystal Lake, and are willing to help you to the extent possible. However, the true value of the interagency MOU around hydropower lies beyond the study phase. Once you have completed the necessary studies and plans, and if you have made a decision to proceed, we can help with the federal permitting process, which can be complicated, but which itself will be greatly facilitated by the work you will have done up front. We wish you luck as you proceed.****

## Attachment B

From: Robert Desrochers
To: Barton Village MPG
Subject: Crystal Lake Falls

To [future]Barton MPG Administrator--
…Re: upgrade the 1985 study of the feasibility of developing the hydro power potential of the Crystal Lake Falls.

The scope of the [needed] work would encompass the following:

1. Reassess existing site conditions. Instrument survey to confirm gross head. Review condition of the dam, site features, penstock routing, powerhouse siting options.
2. Update streamflow hydrology with discussion of expected turbine flows, probable bypass flow requirements, and flooding impacts.
3. Confirm and /or update concept hydropower development plan.
4. Obtain new turbine / generator / controls vendor equipment sizing and pricing.
5. Update project costs for engineering, permitting, civil, mechanical, electrical systems.
6. Review / update regulatory and permitting issues, concerns, and recommendations.
7. Identify possible power sales scenarios, output projections, and revenue expectations.
8. Identify possible sources of project financial assistance such as USDA grants, sale of REC credits, etc.
9. Prepare a written report of the updated hydropower investigation.
10. Attend one meeting for the presentation and discussion of the report findings.

Barton Village welcomes responses to this Request for Qualifications.

*The assisted project is funded by a Municipal Planning Grant awarded by the Department of Housing & Community Development.