FEDERAL ENERGY REGULATORY COMMISSION LICENSING FOR MICROHYDROPOWER UTILIZING MINE DRAINAGE

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Outline

- Project Overview
- Site Description
- Hydroelectric Basics
- Permits/Licenses/etc.
- FERC (off-grid)
- Construction
- Electric Generation
- FERC (grid-tied)
- Final Remarks
- Acknowledgements
Babb Creek Watershed Association (BCWA) awarded an Energy Harvest Grant

Goals: reduce annual operating costs and generate revenue

BioMost, Inc. selected for design-build

Design Focus
- utilize as much of the flow as possible
- eliminate electric bill
- grid-tied
- generate & sell excess power
Pre-Existing Treatment Plant

Antrim Acid Mine Drainage Treatment Plant

A cooperative project of
Pa. Department of Environmental Protection
and
Babb Creek Watershed Association Inc.

Improving water quality of Babb Creek and Pine Creek
to benefit all citizens of Pennsylvania

Phone: 570-353-2632
Hydroelectric Basics

- **Terminology**
  - **Forebay** – pond or basin of sufficient size to stabilize and control the flow of water to the penstock
  - **Penstock** – pipe to convey water, under pressure, from the forebay to the turbine
  - **Powerhouse** – an electricity generating station, location of turbine
  - **Tailrace** – channel to convey the water from the turbine to the discharge point
Permits/Licenses/etc.

- **Local** – Building Permit (shed)
- **State** – GP4 (discharge point)
- **Federal** – Federal Energy Regulatory Commission (FERC)

Note:
<1 acre proposed to be disturbed
To license or not license?

“Behind the Meter”
– Net Energy Metering Rider (NEMR)

License/Waiver
a.) navigable waters
b.) occupy U.S. lands
c.) U.S. government dam
d.) “jurisdictional waterway, and the project affects the interests of interstate or foreign commerce”
05/21/10 – DI submitted to determine FERC jurisdiction to be grid-tied
(1) US navigable water
(2) US public lands or reservations
(3) surplus water or waterpower from govt. dam
(4) Congressional Commerce Clause jurisdiction waterway, constructed/modified after 8/26/1935, and affects interests of interstate or foreign commerce

08/16/10 – FERC found license required as project to be constructed after 8/26/1935 on Commerce Clause waterway, to be connected to interstate grid

09/10/10 – DI submitted to determine FERC jurisdiction to be off-grid
11/18/10 – FERC finding that license not required
07/18/12
Antrim Microhydropower Project Dedication

PA DEP Secretary  Michael Krancer
Timothy P. Danehy, QEP, Project Designer
Stage 1:
Step 1: Initial Consultation Document
05/22/13 - ICD with newspaper for upcoming public meeting submitted to FERC & 79 stakeholders
Step 2: Joint Meeting and Site Visit
06/11/13 - Joint Agency/Public Meeting
Step 3: Develop Requested Study Plans
NA - no requests

Stage 2:
Step 1: Conduct Requested Study(ies)
NA - no requests
Step 2: Draft Exemption Application
NA - no requests
Step 3: Exempt. App. Comment Solicitation
NA - no requests

Stage 3:
Step 1: Final Exemption Application
07/08/13 - submitted to FERC
08/30/13 - FERC denies exemption with option to file for license “Your project would utilize the flow of a natural spring (i.e., drainage from old mines) that is collected in a pond, passes through a treatment plant, enters a forebay and then travels through 872 feet of penstock before reaching the powerhouse. As you describe your project, it would neither be located at the site of an existing dam nor use the flows from a natural water feature to generate power. Therefore, your project does not qualify for a 5-MW exemption.”
INTRODUCTION
On December 12, 2013, Antrim Treatment Trust (Antrim Trust) filed, pursuant to Part I of the Federal Power Act (FPA), an application for an original license to construct, operate, and maintain its proposed Antrim Micro-Hydropower Project No. 14537 (Antrim Project or project). The proposed 40-kilowatt (kW) project will be located on an unnamed tributary to Bridge Run in Duncan Township, Tioga County, Pennsylvania. The project will not occupy federal land. As discussed below, this order issues an original minor license for the project.
FERC Submission: Post-License Submissions

- Public Safety Plan
- Operation Compliance Monitoring Plan
- Contract Plans and Specifications
- Supporting Design Report
- Temporary Construction Emergency Action Plan
- Quality Control Inspection Program

- 02/02/15 – submitted Public Safety Plan to FERC
- 04/14/15 – FERC completed review - no comments
License/Declaration of Intent/NEMR

Off-Grid
- Declaration of Intent (DI)
  - ~1-2 months
  - (not under FERC jurisdiction)
- Exemption
- Conduit Exemption
  - <1 year
- 10 MW Exemption
  - ~ 1 year+

On-Grid
- Net Producer
  - License/Exemption
- Traditional Licensing Process (TLP)
  - <1-2 years+
- Alternative Licensing Process (ALP)
  - ~2 years+
- Integrated Licensing Process (ILP)
  - ~2 years+
- "Behind the Meter" NEMR
  - (not under FERC jurisdiction)

Appx. times do not include pre-application consultation, time to conduct studies, etc.
Antrim Power Overview

- 160’ Vertical Head
- <500 – 2,000+ gpm
- <11 – 40 kW

On-Grid Configuration

- 1,500 gpm average
- 280,000 kWh/Year
  - ~$13,000/Year Savings
  - ~$8,000/Year Revenue
  - Estimated 10-year payback
Concluding Remarks

First FERC-Issued Traditional Micro-Hydropower License using Mine Drainage
SEPTEMBER 3, 2014
148FERC¶62,173 - Project No. 14537-001

Opportunity for long-term sustainability for water treatment!!

Future generators to be made in America!!!
Acknowledgements

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- EPCAMR
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- ARIPPA