Hydro Green Energy®
Hydro Green Energy, LLC • P.O. Box 43796 • Birmingham, AL 35243
www.hgenergy.com

September 2019 Project Summary for the Braddock Locks and Dam Low Environmental Impact Hydroelectric Project

Project Introduction

The Project is located at the US Army Corps of Engineers (USACE) Braddock Locks and Dam on the Monongahela River approximately 11 river miles east of downtown Pittsburgh at the left abutment. The Project will consist of seven turbines that will produce 750 kW each for a name plate of 5.25 MW and will generate approximately 32,000,000 kWh per year of zero carbon electricity in the Commonwealth.

Work to Date

Below is a list of all of the Licenses, Permits, FERC Articles and commercial accomplishments that Hydro Green Energy (HGE) has been issued and completed to date:

FERC Environmental Analysis (EA) – finding of no significant impact
FERC License – Original 50 Year License
All FERC non-construction, post-License Articles (with all stakeholders) including –

- Article 306 – Dam Safety Plan
- Article 309 – Facility Design and Construction
- Article 311 – Access and Construction Activities Memorandum of Agreement
- Article 403 – Water Quality Monitoring Plan
- Article 404 – Recreational Enhancements
- Article A20 – Reservoir Clearing Plan

FERC Start of Construction Extension Order
US Army Corps of Engineers (USACE) Real Estate Access Agreement
State of Pennsylvania 401 Water Quality Certificate
State of Pennsylvania Limited Power Permit
State of Pennsylvania Submerged Land Permit
Duquesne County Sediment and Erosion Control Permit
Original Power Purchase Agreement (PPA) Term Sheet with industrial customer May 2015
New PPA Term Sheet with commercial customer November 2018
Second PPA Term Sheet with commercial customer April 2019 (still being negotiated)
Construction Debt Term Sheet
Construction Debt/Permanent Debt Term Sheet

HGE has completed our geotechnical drilling program at the dam including laboratory analysis of rock strength.

Lastly, HGE has made significant progress on PPA's, construction debt and in finding a Project investor, all of which are discussed in more detail below. The names of the investor, PPA customers and banks are

confidential at this time since HGE has expended significant time and effort on finding them. HGE believes that they give the Project a competitive advantage.

Investment

The new investor and HGE executed the Membership Interests Purchase Agreement (MIPA) on December 21, 2018. Their investment thesis is water infrastructure and the water-energy nexus and includes water rights, hydropower and desalinization plants.

PPA

HGE has signed a PPA term sheet with a new customer. The full PPA is drafted and is being red-lined now. Additionally, HGE has entered into negotiations on a second term sheet with one of the local Universities. Those negotiations continue. Lastly, Allegheny County issued an RFP for run of river hydropower specifically. HGE placed a bid into that RFP and has been shortlisted. Discussions with the county are on-going.

Construction Debt

HGE now has two construction debt term sheets from banks to finance construction of the project – Although the terms are quite different, both term sheets provide 100% of the construction debt required for the project. HGE is also talking to multiple additional banks to see what the best combination of debt, equity, terms, fees and rates HGE can find in the market place.

The term sheets result in a capital stack looking approximately like this depending on the construction debt provider selected:

Equity (including grant)	$8.6 million
Debt	$14.1 million
Total	$22.7 million

Importance of the Grant

The financial need for the grant is critical for the following reasons:

1. The grant helps to level the playing field with other renewables (primarily wind and solar) that receive incentives such as the Investment Tax Credit (ITC). The ITC equals 30% of construction costs and real property costs. For this project the ITC would be worth approximately **$6.8 million**. Without the grant, the project is not economically viable. Solar and wind are not economically viable without their ITC.

2. Without the grant, the investor will not invest in the project. No investor will invest in the project.

Future Work – Near Term (1-12 months After Grant Extension)

HGE is completing the final engineering design and HGE will be wrap up our PPA's with our new customers. As mentioned previously the project only requires the final permit from the USACE (the 404/408 Permit) to be ready to go to financial close and start construction at that point.

Future Work – Longer Term (12-24 months) After Grant Extension)

The construction period is estimated to be 12-15 months depending on what time of the year construction starts and weather conditions during construction.

Based on this, HGE believes that the updated timeline looks like this;

	Start Date	Finish Date
USACE 404/408 and agreement	July 2019	June 2020
Financial Close of Construction Loan	July 2020	
Construction	August 2020	December 2021
Start-up	December 2021	February 2022
Commercial Operation Date	March 2022	