



# **Braddock Locks & Dam Hydropower Project**

(FERC Project No. 13739)

March 7, 2012 Joint Agency/Public Meetings

# Meeting Agenda

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- Introductions and Meeting Logistics
- Agenda and Meeting Times/Site Visit
- Meeting Objectives
- Project Location
- About Hydro Green Energy
- Project Overview
- FERC Licensing Process
- Major Licensing Milestones
- Pre-Application Document (PAD)
- Proposed Study Activities
- Questions and Comments

# Today's Agenda

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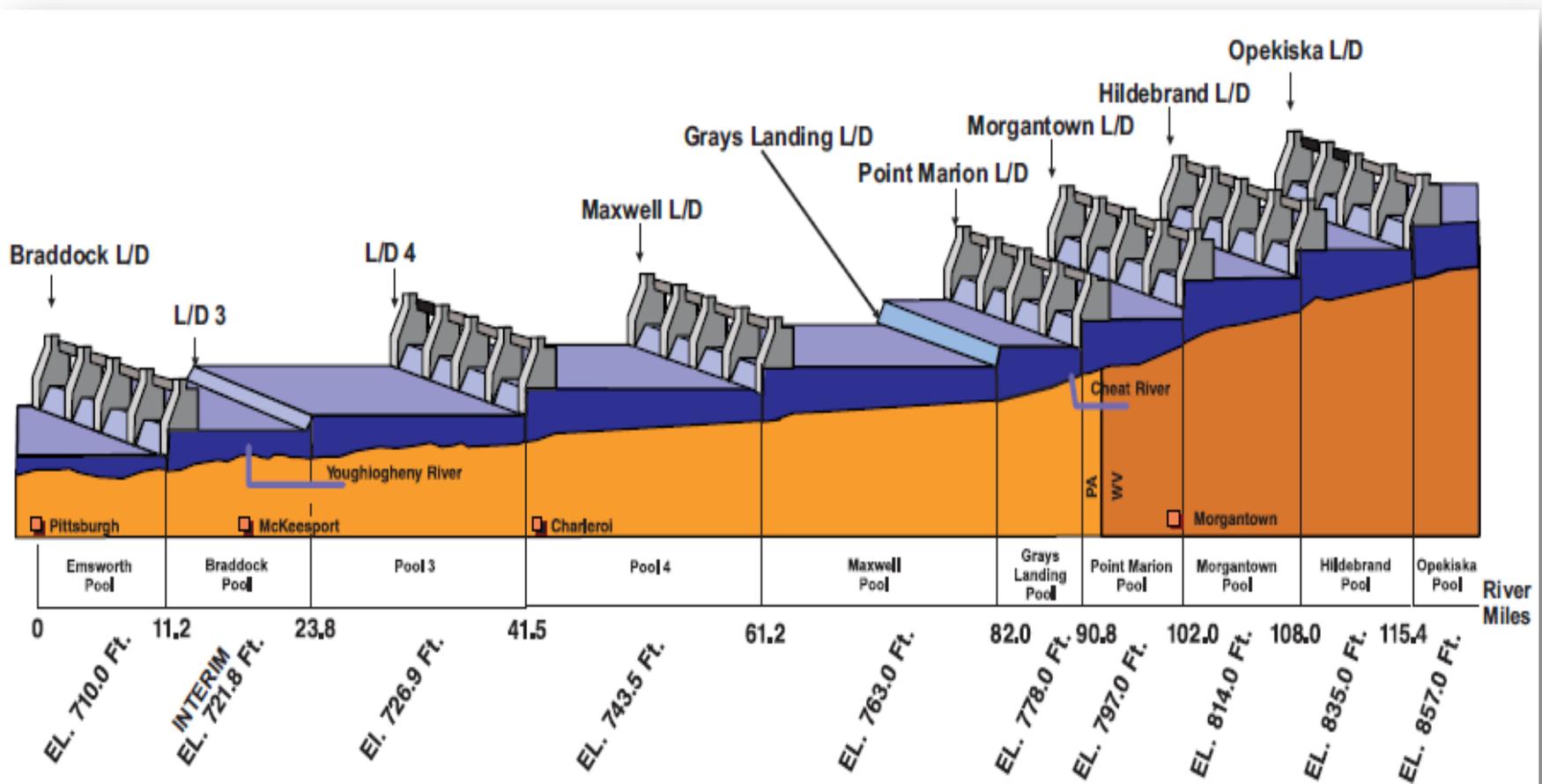
- 9:30 AM – Joint Agency/Public Meeting
- 12:30 PM – Site Visit of Braddock Locks and Dam
- 6:00 PM – Joint Agency/Public Meeting

# Meeting Objectives

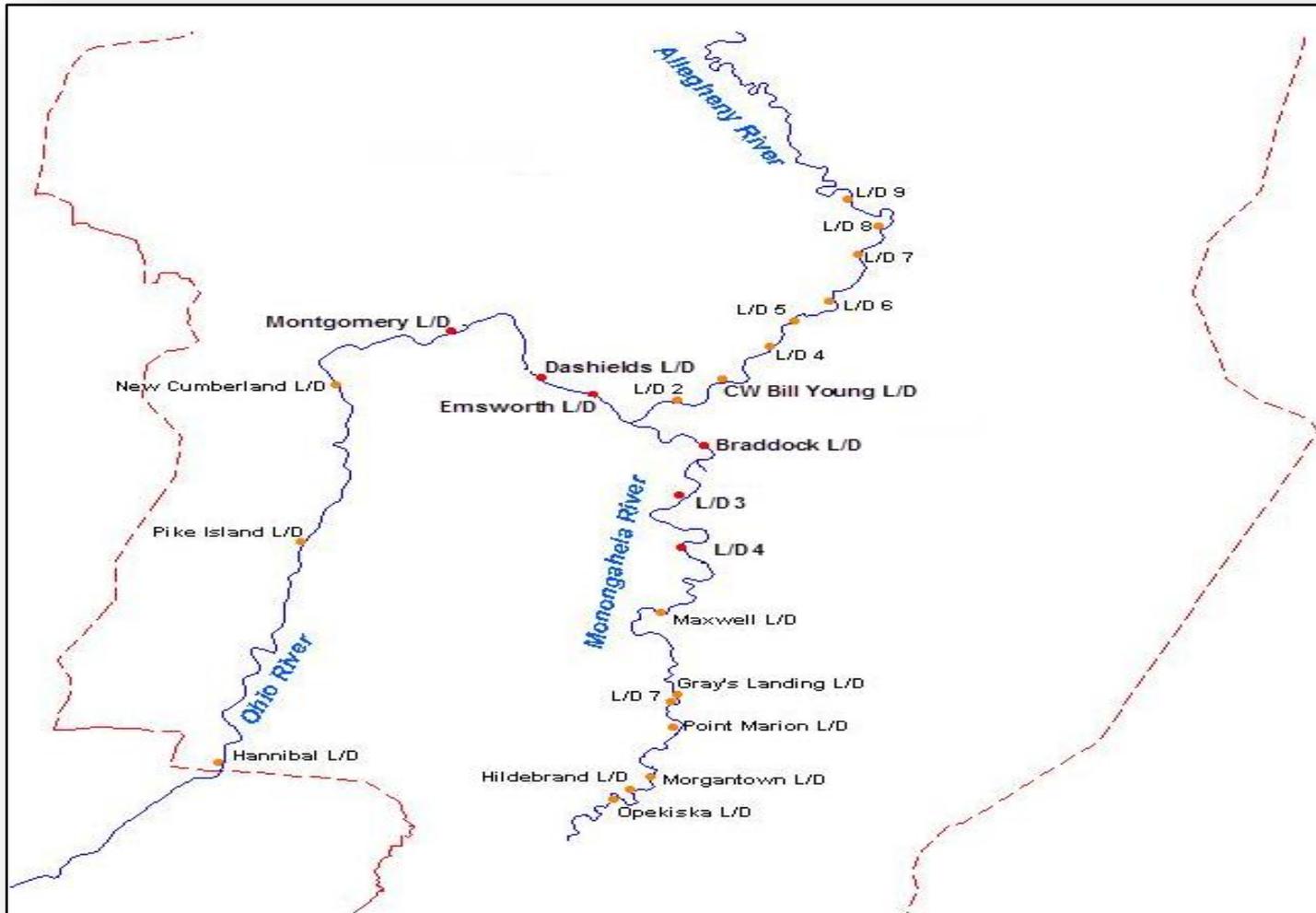
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- Initiate the licensing process
- Provide an overview of the power and non-power resources associated with the Braddock Locks & Dam Hydropower Project
- Solicit public and agency comments for inclusion in the record supporting the application to license the Project
- Identify issues and stakeholders to facilitate efficient dialogue in the licensing process
- Provide an opportunity for a site visit

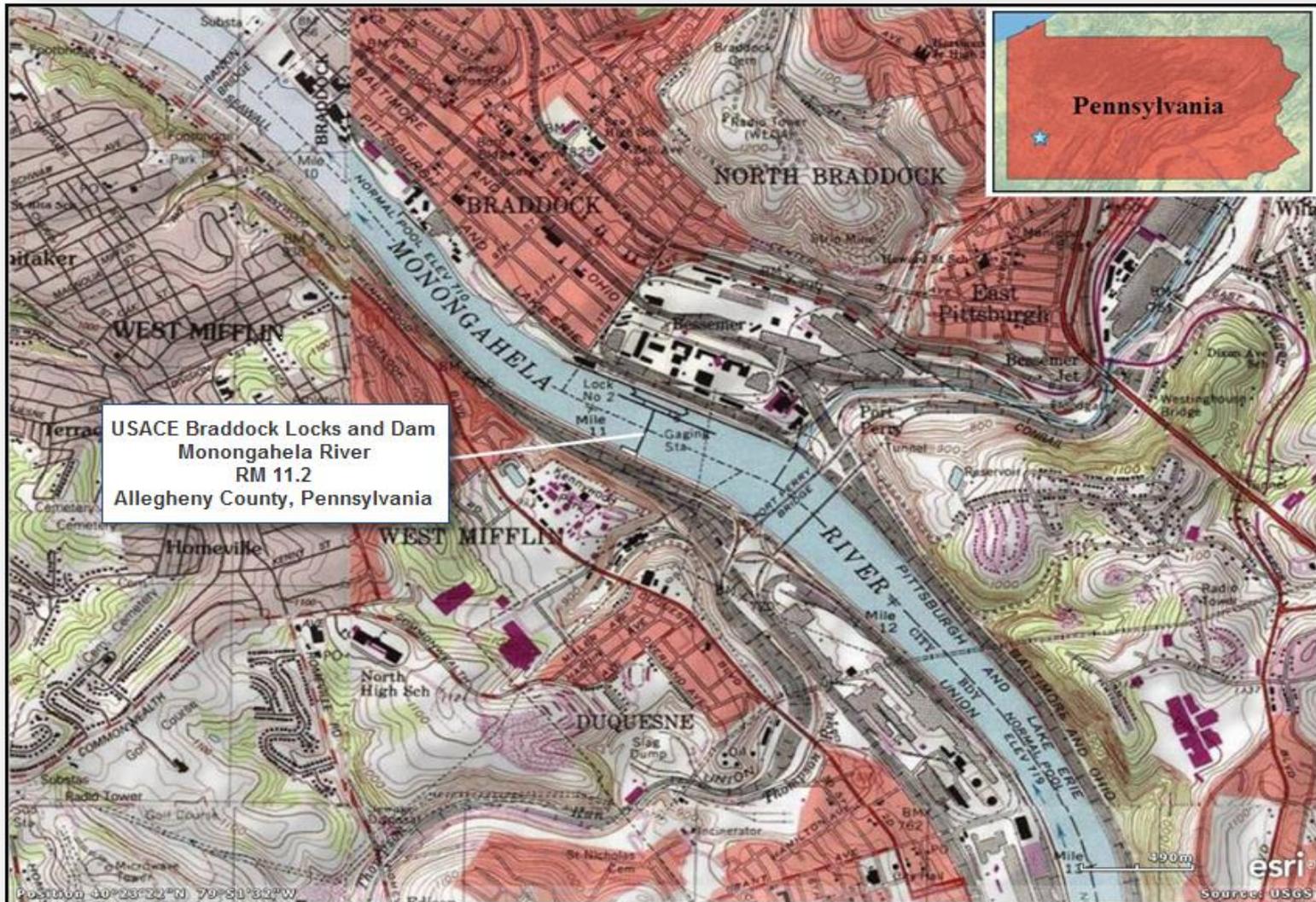
# Project Location



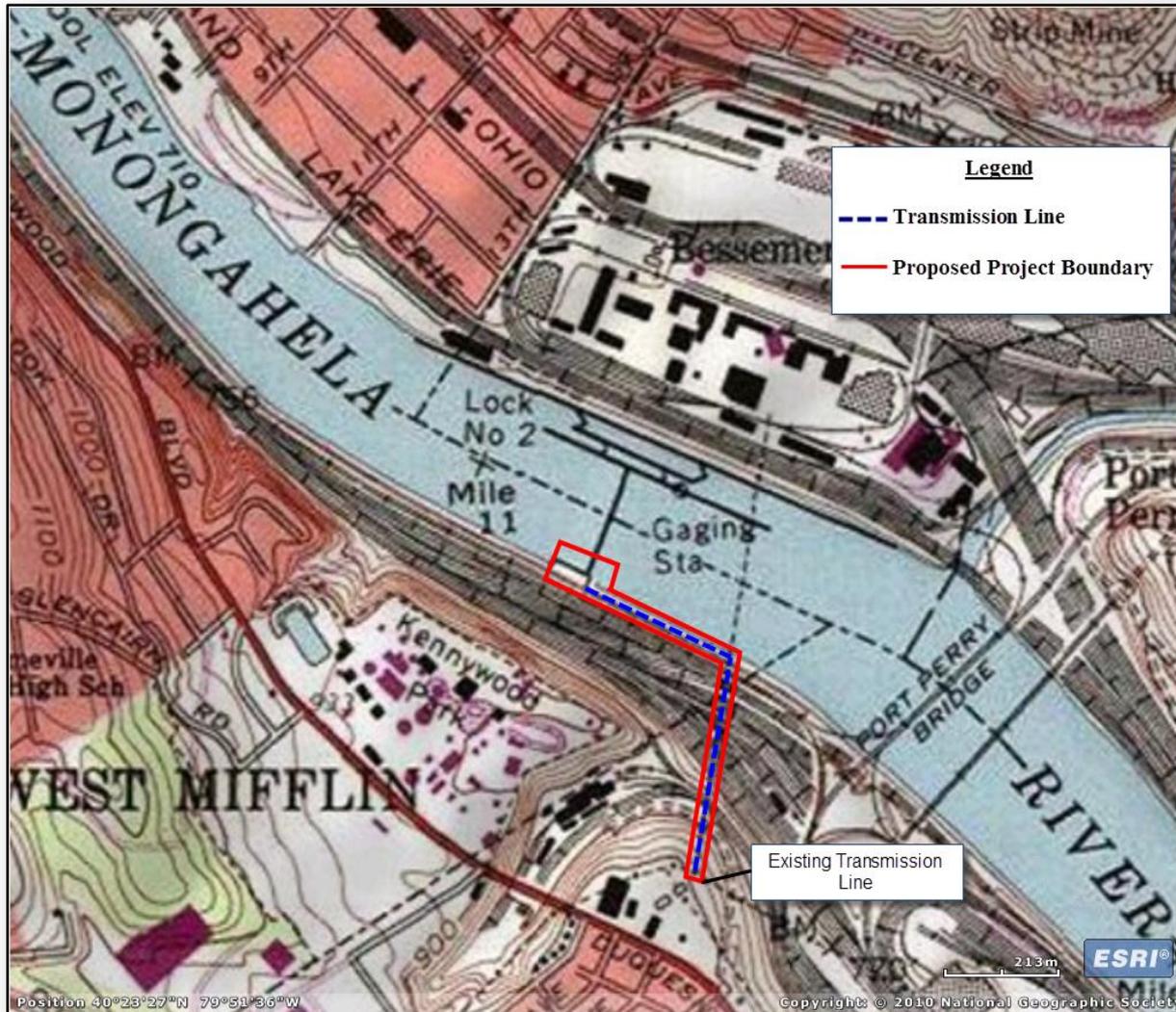
# Project Location



# Project Location



# Project Boundary



# Project Site



# Braddock L&D Facts

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- Dam built in 2004; part of Lower Mon Project
- Located at river mile 11.2 in Allegheny County
- Maintains the pool to L&D No. 3 at Elizabeth, PA
- Emsworth L&D creates the downstream pool
- 721-foot gated dam
- Two locks
  - 720-foot long x 110-foot wide
  - 360-foot long x 56-foot wide
- Upstream water elevation 718.7-feet msl
- Downstream water elevation 710-feet msl
- L&D is accessed from 11th Street in Braddock

# About Hydro Green Energy (HGE)

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- Renewable energy development company with proprietary hydropower technology
- Based in Westmont, IL
- Focus on building new, low-impact hydropower capacity at non-powered dams
- Pursuing 34 projects in 15 states (400 MW in total) – 12 projects in some stage of FERC hydropower licensing process
- Braddock Project is expected to be the first low-head hydropower project for HGE
- Hydro Friends Fund XLII (HFF) – official license Applicant – is a wholly-owned project development subsidiary of HGE

# Braddock Locks & Dam Project

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- Low-head, low-impact, small hydropower facility
- Five 750 kW turbines
- Nameplate capacity is 3.75 MW
- Expected capacity factor of 75 percent – will generate more electricity on an annual basis than a 15 MW solar project or 10 MW wind project
- Will provide enough annual power for approximately 2,200 homes
- HGE will operate in “run-of-release” mode
- Deployed entirely in USACE security zone where no public access or recreation takes place

# Braddock Locks & Dam Project

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- Will use ~5,000 cfs for maximum power output (river flow averages ~13,000 cfs)
- System flexibility – can operate one to five turbines depending on flows, USACE needs
- Project footprint is ~1,700 square feet
- U.S. Department of Energy grant – demonstration of new, low-impact hydropower technology at non-powered dam (must use funds in 2012/2013)
- Must be on-line by 12/31/2013 to qualify for federal renewable energy tax credit (Section 45 PTC), which is expiring

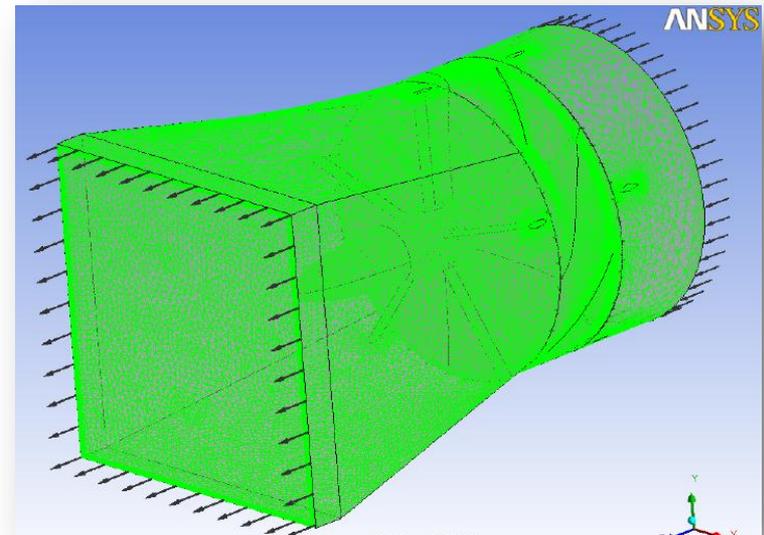
# HGE Hydropower System

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- Patented modular steel frame design
- Roots in offshore systems, other proven industrial systems
- Modular technology proven at HGE's Hastings Project – first FERC-licensed, grid connected hydrokinetic power project in U.S. history
- Eliminates need for traditional concrete powerhouse, disruptive installation work and long development timeframes
- Integrated into cellular portion of USACE dam away from navigational locks
- Draft tubes deployed, no penstock
- No need for riverbed excavation

# HGE Turbine

- Horizontal axis bulb turbine
- Nearly identical design to 1st generation HGE turbine
- 7.7 feet in diameter
- ~108 RPM
- Four blades
- ~1,000 cfs/unit
- Fish survival for fish that enter system is expected to be in the 91-94% range
- No expected impact on water temperature, D.O. or turbidity (primarily due to low-head nature of site)



# First Project – Proof of Modular Concept

- USACE Lock & Dam No. 2 (MN)
- Installed modular, vertically stackable 100 kW system in 2008/2009
- Generated power at an existing dam
- Worked closely with USACE, FERC
- Received FERC license in 8 months after filing application – 4 months of pre-filing activities



# First Project – Proof of Modular Concept



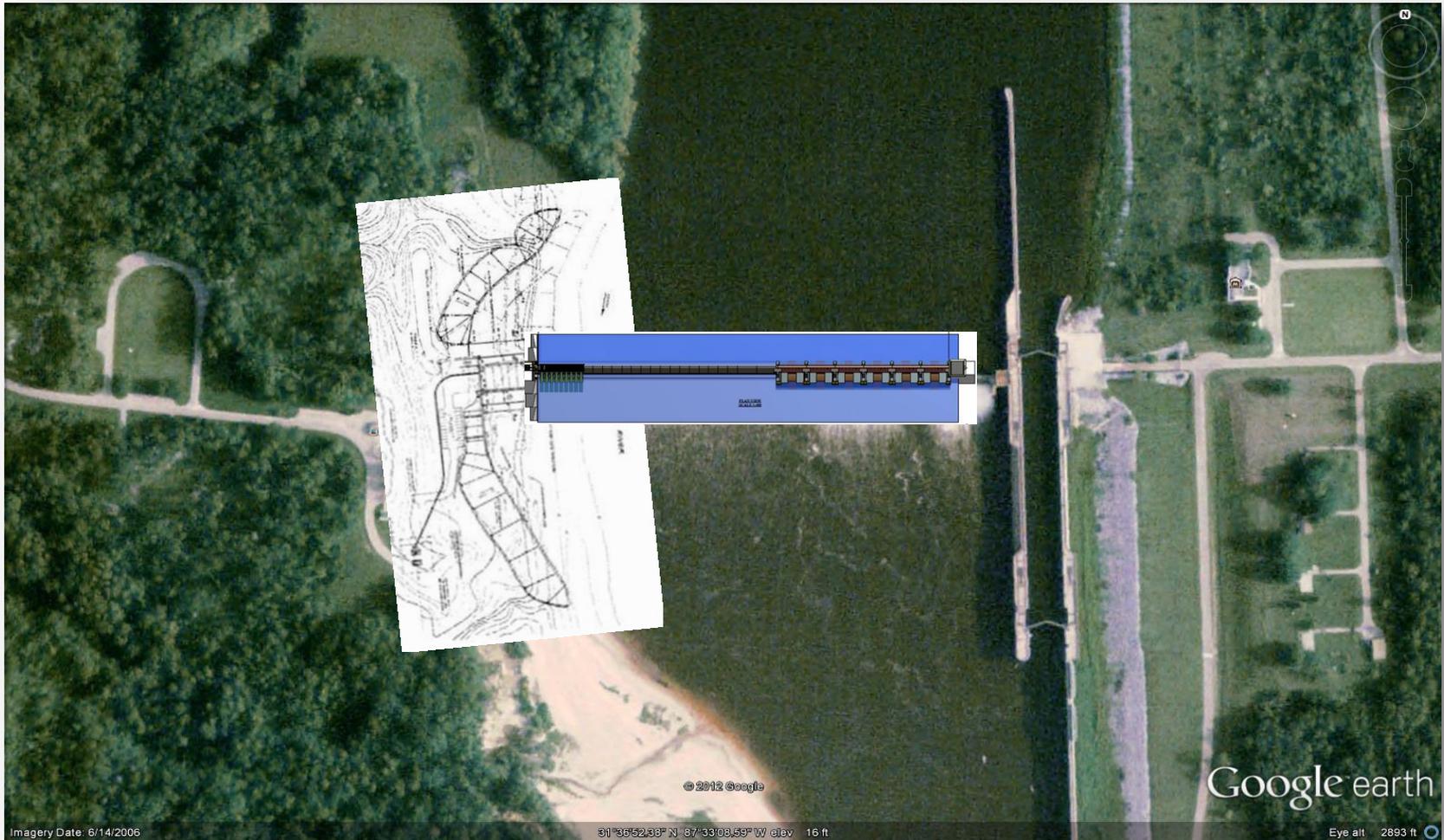
# Hydro at Non-Hydro Dam in Pittsburgh Area



# Hydro at Non-Hydro Dam in Pittsburgh Area



# Project Comparison – HGE Approach versus Conventional Approach



# Braddock Locks & Dam Pre-Installation



# The Licensing Process

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- FERC licenses the construction and operation of non-federal hydroelectric projects under the Federal Power Act (FPA).
- FERC administers the licensing process according to Title 18 of the Code of Federal Regulations (CFR), other applicable Federal laws and Acts, and State law and permit requirements.
- Between now and December 2012 (at the latest), HGE will cooperatively develop potential protection, mitigation, and enhancement (PM&E) measures, perform studies, review results and develop a license application.
- On December 23, 2011, Hydro Green Energy requested use of the Traditional Licensing Process (TLP) in support of pursuing a license for the Project.
- On January 30, 2012, FERC granted Hydro Green Energy authorization to use the TLP.

# Major Licensing Milestones

Timeframe	Activity
October 11, 2011	Distribution of Pre-Application Document (PAD) Questionnaire
December 23, 2011	Filing and distribution of PAD, Notice of Intent, and Request to use Traditional Licensing Process (TLP)
January 30, 2012	FERC grants request to use TLP
February 10, 2012	FERC notices Notice of Intent and PAD
February 20, 2012	HGE notice of Joint Agency/Public Meeting
<b>March 7, 2012</b>	<b>Joint Agency/Public Meeting and Site Visit</b>
May 6, 2012	File comments on PAD and potential study requests

# Major Licensing Milestones

Timeframe	Activity
February 2012 – June 2012	Conduct studies
June 30, 2012	Issue study report(s) to Stakeholders
<b>July 2012</b>	<b>Issue Draft License Application to Stakeholders</b>
<b>September 2012</b>	<b>File comments on Draft License Application</b>
October 2012	File Final License Application with FERC and distribute to Stakeholders

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Throughout the licensing process, Hydro Green Energy will conduct consultation meetings and exchanges of information with interested parties to address reasonable study needs, review study results and to develop mutually agreeable, cost-effective resource enhancement measures

# **Pre-Application Document (PAD)**

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The PAD prepared and filed by Hydro Green Energy provides a comprehensive overview of the existing information available relative to the power and non-power resources of the proposed Project

# PAD Outline

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1. Introduction and Background
  2. Purpose of the Pre-Application Document
  - 3. Process Plan and Schedule**
  - 4. Project Location, Facilities, and Operations**
  - 5. Description of Existing Environment and Resource Impacts**
  - 6. Preliminary Issues and Potential Studies List**
  - 7. Comprehensive Plans Relevant to the Braddock Project**
  8. Summary of Contacts
  9. Summary of Relevant Existing Information
  10. Literature Cited
- Appendices

## Section 5 of the PAD

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1. Description of the Basin
2. Topography, Geology, and Soils
3. Water Resources
4. Fish and Aquatic Resources
5. Wildlife and Botanical Resources
6. Floodplains, Wetlands, Riparian, and Littoral Habitats
7. Rare, Threatened, and Endangered Species
8. Recreation and Land Use
9. Aesthetic Resources
10. Cultural Resources
11. Socioeconomic Resources
12. Tribal Resources

# Information to Date

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- Project is not located within the State's coastal zone.
- Only federally listed species is limited to the Indiana Bat.
- Based on a review of information gathered from the Pennsylvania Natural Diversity Inventory (PNDI), it was determined that warmouth (*Chaenobryttus gluosus*) and lilliput (*Toxolasma parvus*) could potentially be found in the proposed Project vicinity. However, additional correspondence received from the Pennsylvania Department of Conservation and Natural Resources (PADCNR) on November 23, 2011, indicated that no impacts are likely and that no further coordination with the agency is needed for this project.

# Studies for Braddock Project

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- **Desktop entrainment/impingement study**
  - Desktop fish survival study – preliminary modeling already run
- **Desktop water quality study**
  - Post-installation water quality monitoring
- **Desktop hydraulic modeling study**
- **Cultural Resources**
- Engineering studies in support of USACE Section 408 approval for project installation
- Cost-effective recreational enhancements being explored

# Comprehensive Plans

- USFWS, Canadian Wildlife Service, North American Waterfowl Management Plan (1986)
- Fisheries USA: The Recreational Fisheries Policy of the USFWS (1989)
- Pennsylvania Department of Environmental Resources, Pennsylvania State Water Plan (1983)
- Pennsylvania Department of Environmental Resources, Pennsylvania's Recreation Plan (1986-1990)
- Pennsylvania Department of Environmental Resources, Pennsylvania 1988 Water Quality Assessment (1988)
- Pennsylvania Historical and Museum Commission, Honoring the Past, Planning for the Future: Pennsylvania's Historic Preservation Plan 2006-2011
- Pennsylvania Fish and Boat Commission, Three Rivers Management Plan - A Strategy for Managing Fisheries Resources of the Allegheny, Monongahela and Ohio Rivers (2011)

# Project Website

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Go to [www.hgenergy.com](http://www.hgenergy.com)

- Projects
- Licensing Activities
- Braddock Locks and Dam
  - Braddock Locks and Dam Notice of Intent (NOI)
  - Braddock Locks and Dam Preliminary Application Document (PAD)

# Project Website



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## » [Hydro Green Energy Projects](#)

[Braddock Locks & Dam Notice of Intent \(NOI\)](#)

[Braddock Locks & Dam Preliminary Application Document \(PAD\)](#)

Hydro Green Energy, through its wholly owned project development subsidiaries, is developing a number of low-head hydropower projects around the country, including a project at USACE Braddock Locks & Dam in Pennsylvania.

Please see the links to the left for licensing documents filed at the Federal Energy Regulatory Commission (FERC). Questions can be directed to Mark Stover, HGE's Vice President of Corporate Affairs, at [mark@hgenergy.com](mailto:mark@hgenergy.com)

Click here to access the Braddock PAD

Copyright © 2002 - 2011 Hydro Green Energy, LLC | [Site Map](#) | [Links](#)  
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# Contact Information/Questions

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