



**BLenheim-GILBOA PUMPED STORAGE  
POWER PROJECT RELICENSING**

FERC No. 2685

# **PROPOSED STUDY PLAN MEETING**

October 16, 2014

# Agenda

- Introductions
- Purpose of the Proposed Study Plan Meeting
- Relicensing Process
- Next Steps
- Study Report Presentations:
  - Historic Structures Survey
  - Phase 1A Archaeological Survey
  - Fish Entrainment/Protection Assessment Study
  - Recreation Use/User Contact Study And Assessment of Effects The Project Has On Recreation Use
  - Effect Of Project Operations On Downstream Flooding Study
  - Socioeconomics



# Purpose for Meeting

- Requirement under the FERC ILP (18 C.F.R. § 5.11)
- Meeting to discuss Proposed Study Plan (PSP) for Blenheim-Gilboa Pumped Storage Power Project (Project)
- This is the next step in refining information needs for the studies that inform the License Application.
- The PSP is a product of NYPA's PAD, FERC's SD1 and public comments;

Public comments were reviewed:

- Added two studies in response to the comments received
  - ✓ Downstream Flood Study
  - ✓ Socioeconomic Study

# Relicensing Process

- ✓ **April 10, 2014** – Power Authority filed Notice of Intent and Pre-Application Document
- ✓ **June 4, 2014** – FERC issued Scoping Document 1
- ✓ **July 7-9, 2014** – FERC held scoping meetings
- ✓ **August 8, 2014** – Public comments filed on PAD and SD1
- ✓ **September 18, 2014** – FERC issues Scoping Document 2
- ✓ **September 22, 2014** – Power Authority filed Proposed Study Plan

# Next Steps

Consider comments to produce the Revised Study Plan which will be available for comment. FERC will issue Study Plan Determination by mid-February.

- **December 21, 2014** – Comments on Proposed Study Plans due
- **January 20, 2015** – Power Authority will file Revised Study Plan
- **February 4, 2015** – Comments on Revised Study Plan due
- **February 19, 2015** – FERC Study Plan Determination

# Study Report Presentations:

- ❑ **Historic Structures Survey**
  - ❑ Phase 1A Archaeological Survey
  - ❑ Fish Entrainment/Protection Assessment Study
  - ❑ Recreation Use/User Contact Study And Assessment of Effects The Project Has On Recreation Use
  - ❑ Effect Of Project Operations On Downstream Flooding Study
  - ❑ Socioeconomics

# Study Goals and Objectives

- Meet requirements of Section 106 of National Historic Preservation Act of 1966 as amended (Section 106)
- Identify cultural and historic resources in Area of Potential Effect (APE) that may be eligible for the National Register of Historic Places (NRHP)
- Where historic resources are present, Power Authority will identify and assess any potential project effects to historic resources

# Project Nexus

- The proposed historic structures survey will produce a historic architectural survey report and NRHP evaluation of all structures surveyed within the Project's APE that may potentially be affected by the continued operation and maintenance of the Project.
- The survey has the following purposes:
  - Update the information for previously identified resources;
  - Conduct fieldwork and provide evaluations of NRHP eligibility for all surveyed resources, based on their historic significance and integrity; and
  - Provide assessments of existing and potential Project-related effects to NRHP listed and eligible historic resources.

# Methodology

## Five Tasks:

1. Consultation with New York State Historic Preservation Office (SHPO)
2. Background Research
3. Survey for historic architectural resources within the APE
4. Additional documentation of Lansing Manor
5. Study Report

# Proposed Schedule

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Meetings	March – May 2015
Task 2. Background Research	Spring and Summer 2015
Task 3. Field Work	Summer and Fall 2015
Task 4. Additional Documentation of Lansing Manor Complex	Summer and Fall 2015
Task 5. Initial Study Report	February 2016

# Study Report Presentations:

- ☒ Historic Structures Survey
- ☐ **Phase 1A Archaeological Survey**
- ☐ Fish Entrainment/Protection Assessment Study
- ☐ Recreation Use/User Contact Study And Assessment of Effects The Project Has On Recreation Use
- ☐ Effect Of Project Operations On Downstream Flooding Study
- ☐ Socioeconomics

# Study Goals and Objectives

- Meet requirements of Section 106 of National Historic Preservation Act of 1966 as amended (Section 106)
- Identify known archaeological resources listed in, or potentially eligible resources for listing in, the National Registry Historic Places (NRHP) within the Project's Area of Potential Effect (APE)
- Review archaeological data that are pertinent to the formulation of a sensitivity model to determine where archaeological resources may be located in the APE
- Offer a field strategy for archaeological testing to determine whether archaeological resources are present in the Project's APE

# Project Nexus

- The proposed Phase IA cultural resources technical report will contain information on known archaeological sites and areas where there is a high potential for archaeological sites to exist within the Project's APE.
- The report will provide guidance on whether additional archaeological studies are required to identify and assess existing archaeological resources for potential inclusion in the NRHP. If such resources are identified, then potential effects to these resources from the continued operation and maintenance of the Project will be identified.
- If potential effects are expected for any resource that is listed or eligible for listing in the NRHP, then that information will be used in preparing a Historic Properties Management Plan (HPMP).

# Methodology

## Five Tasks:

1. Meet with the New York State Historic Preservation Office
2. Background Research
3. Development of a Sensitivity Model
4. Field Reconnaissance
5. Study Report Development

# Proposed Schedule

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Meeting with NY SHPO	March – May 2015
Task 2. Background Research	Spring and Summer 2015
Task 3. Development of Sensitivity Model	Summer and Fall 2015
Task 4. Field Reconnaissance	Summer and Fall 2015
Task 5. Initial Study Report	February 2016

# Study Report Presentations:

- ☒ Historic Structures Survey
- ☒ Phase 1A Archaeological Survey
- ☐ **Fish Entrainment/Protection Assessment Study**
- ☐ Recreation Use/User Contact Study And Assessment of Effects The Project Has On Recreation Use
- ☐ Effect Of Project Operations On Downstream Flooding Study
- ☐ Socioeconomics

# Study Goals and Objectives

## ▪ Goal:

- Conduct qualitative analysis of potential fish entrainment and impingement at the Project

## ▪ Objectives:

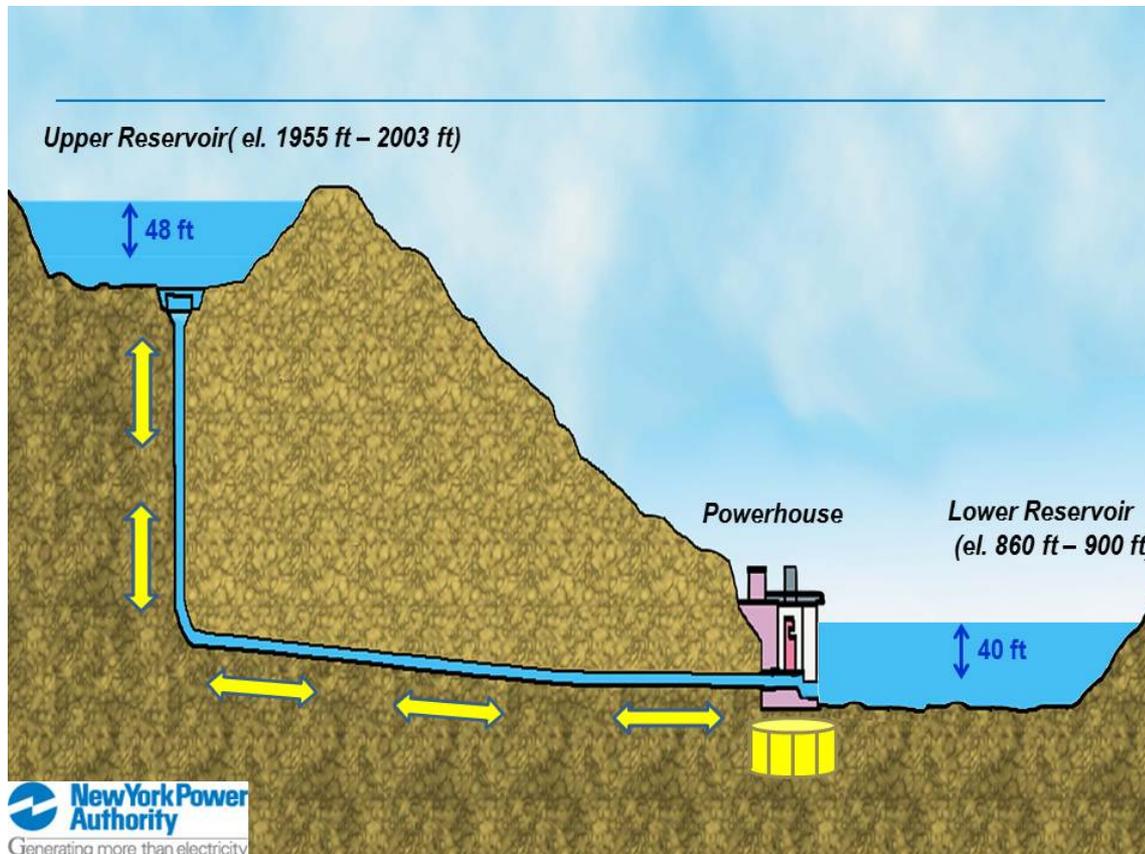
- Describe Project characteristics
- Describe the fish community
- Water quality influences
- Evaluate potential for entrainment and impingement
- Review related studies
- Estimate turbine passage survival

# Project Nexus

- Continued operation of the Blenheim-Gilboa Project could potentially affect fish species that utilize the aquatic habitat within the Project area.
- The results of this study will provide insight on the effects of continued Project operation on the fisheries resources within the Project's reservoirs.

# Geographic Scope

- Lower and Upper Reservoir intakes.



# Intake Locations

## Depth and Habitat:

- Upper Reservoir
  - 36.5 ft (min), 84.5 ft (max)
  - No natural shoreline near intake
  - Counter sunk with steep sides
  - Sand, silt, bedrock substrate
- Lower Reservoir
  - Intake openings are 66 ft high
  - Excavated channel with steep sides
  - Sand, silt substrate
  - Lack of littoral zone near intake



# Factors that Affect Entrainment and Survival

## ■ Ecological

- Environmental preferences (habitat)
- Behavior (foraging, avoidance)

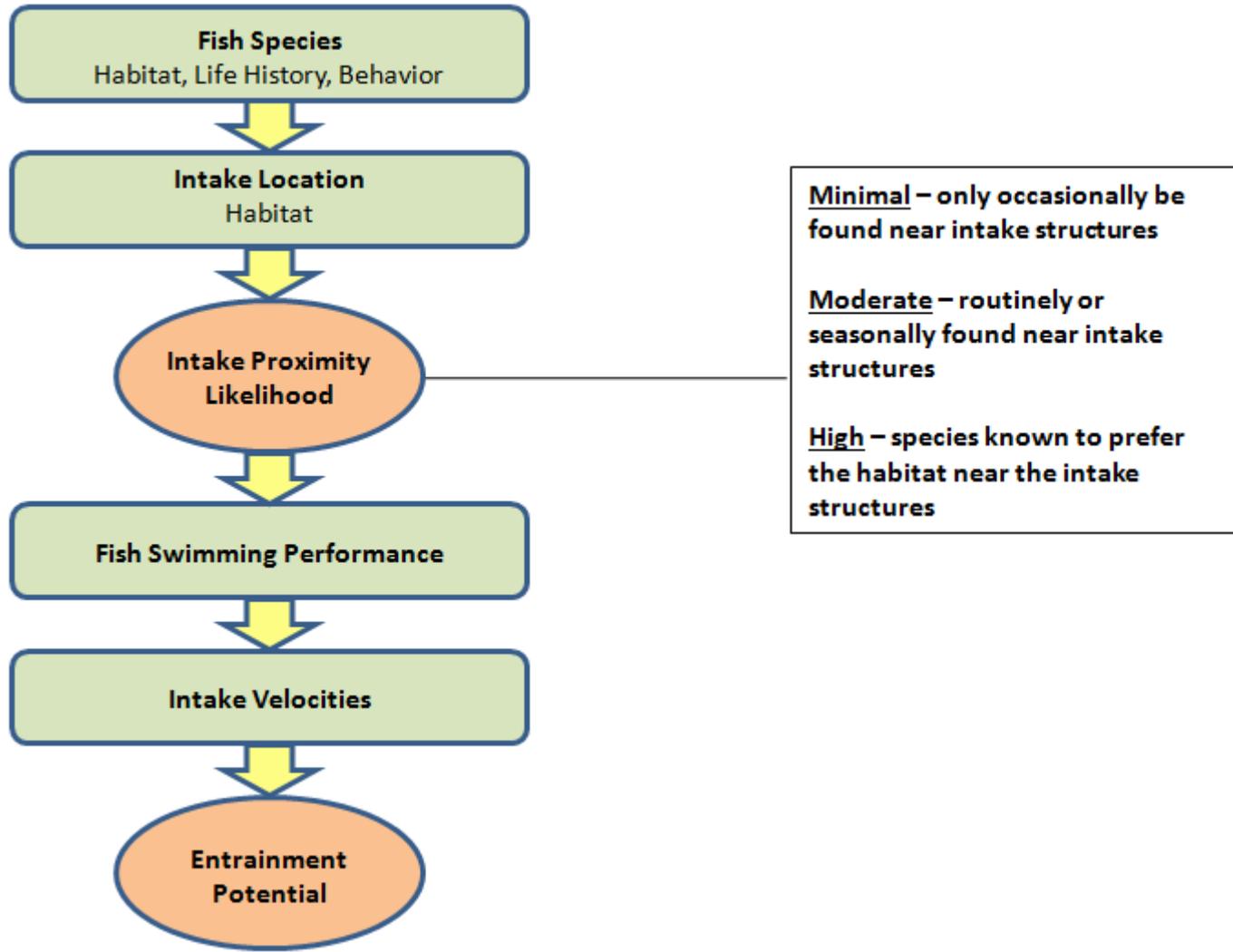
## ■ Biological

- Morphology (size/swimming performance)
- Physiology (swim bladder)
- Life History (migratory habits)

## ■ Engineering

- Size, location of intake, trashrack spacing
- Intake velocity
- Turbine type, number of blades, rotational speed, hydraulic capacity
- Change in water pressure
- Operations (water levels)

# Entrainment Assessment Framework



# Methodology

## Seven Tasks:

1. Describe Intake and Turbine Configurations
2. Field Collection of Intake Velocities
3. Water Level and Water Quality Data Analysis
4. Entrainment Analysis
  - Fish species
    - Evaluate biological and ecological factors
    - Habitat preference, size, swim speed, movements
    - Determine likelihood to occur near the intakes
  - Literature review of field studies

# Methodology (cont.)

5. Impingement Analysis
6. Assessment of Turbine Passage Survival
  - Estimated from similar hydroelectric projects
  - Blade strike model
  - Pressure calculations
7. Study Report

# Proposed Schedule

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Tasks 1, 3-6. Desktop Analyses	March – September 2015
Task 2. Collection of Field Velocity Data	May – June 2015
Task 7. Initial Study Report	February 2016

# Study Report Presentations:

- ⊗ Historic Structures Survey
- ⊗ Phase 1A Archaeological Survey
- ⊗ Fish Entrainment/Protection Assessment Study
- **Recreation Use/User Contact Study  
And Assessment of Effects The  
Project Has On Recreation Use**
- Effect Of Project Operations On Downstream  
Flooding Study
- Socioeconomics

# Study Goals and Objectives

## Goals:

- Evaluate recreational use at the Project.
- Determine the adequacy of existing Project recreation sites/facilities in meeting recreation needs and demand at the Project.

## Objectives:

- Determine the amount and types of recreation use at the Project;
- Interview the recreating public to determine users' perceptions with regard to their use of Project recreation sites and facilities;
- Evaluate recreational demand at the Project and determine if existing recreation sites and facilities are meeting the current demand; and
- Evaluate the effects of Project operation and maintenance on the recreation use at the Project and the usability of Project recreation sites and facilities.

# Project Nexus

- FERC regulations require that the license application include a statement of the existing recreation measures or facilities to be continued or maintained and the new measures or facilities proposed by the applicant for the purpose of creating, preserving, or enhancing recreational opportunities at the Project and in its vicinity, and for the purpose of ensuring the safety of the public in its use of Project lands and waters.
- Recreation is a recognized project purpose at FERC-licensed projects under section 10(a) of the Federal Power Act (FPA).

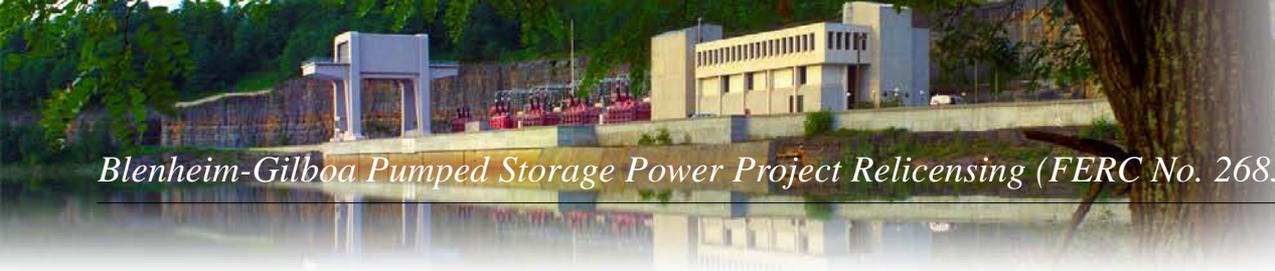
# Methodology

## Four Tasks:

1. Background Research (including review of previous inventory)
2. Field Work: Spot counts, Calibration counts, Traffic counters
3. User Contact Survey
4. Study Report

# Proposed Schedule

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Background Research	January 2015-March 2015
Task 2. Field Work	March 2015-February 2016
Task 3. User Contact Survey	March 2015-February 2016
Task 4. Initial Study Report	February 2016



*Blenheim-Gilboa Pumped Storage Power Project Relicensing (FERC No. 2685)*

# **Background Information: FERC Dam Safety Part 12 Program**

# FERC Part 12 Dam Safety Program

- Administered by Division of Dam Safety and Inspections
- Continuous and comprehensive
- Annual inspection by FERC
- Independent Consultant inspection every 5 years
- Surveillance and Monitoring Program of Project embankments and powerhouse
- Annual Testing of Spillway Tainter Gates
- Power Authority files safety reports with FERC
- Emergency Action Plan

# Part 12 Independent Consultant

- Licensed Professional Engineer with at least 10 years of experience in dam design and construction
- Inspecting Engineer must be approved by FERC
- Reviews engineering design based on current FERC engineering design practices and site conditions (i.e. can the project works withstand an earthquake or pass the Inflow Design Flood)
- Makes recommendations to improve dam safety
- Conducts Physical Field Inspection
- Reviews relevant Project data
- Conducts a Potential Failure Mode Analysis

# Emergency Action Plan (EAP)

- Prepared in case of dam failure, accident or flooding
- Procedures to follow during emergency conditions and for warning 24/7 emergency managers
- Notification Flowchart
- Inundation maps for different dambreak scenarios
- Annual Project Coordination Meeting with EAP holders to review and revise contents
- Annual test of the EAP by Project Personnel
- Periodic Tabletop, Functional and Full-Scale Exercises including State and local Emergency Managers

# Study Report Presentations:

- ⊗ Historic Structures Survey
- ⊗ Phase 1A Archaeological Survey
- ⊗ Fish Entrainment/Protection Assessment Study
- ⊗ Recreation Use/User Contact Study And Assessment of Effects The Project Has On Recreation Use
- **Effect Of Project Operations On Downstream Flooding Study**
- Socioeconomics

# Study Objectives and Scope

## ▪ Objectives:

- Estimate streamflows and water surface elevations downstream of the Project under various precipitation events for two scenarios (i.e. with and without the Lower Dam)
- Identify the impact of the Project, if any, on downstream water surface elevations and depths

## ▪ Scope:

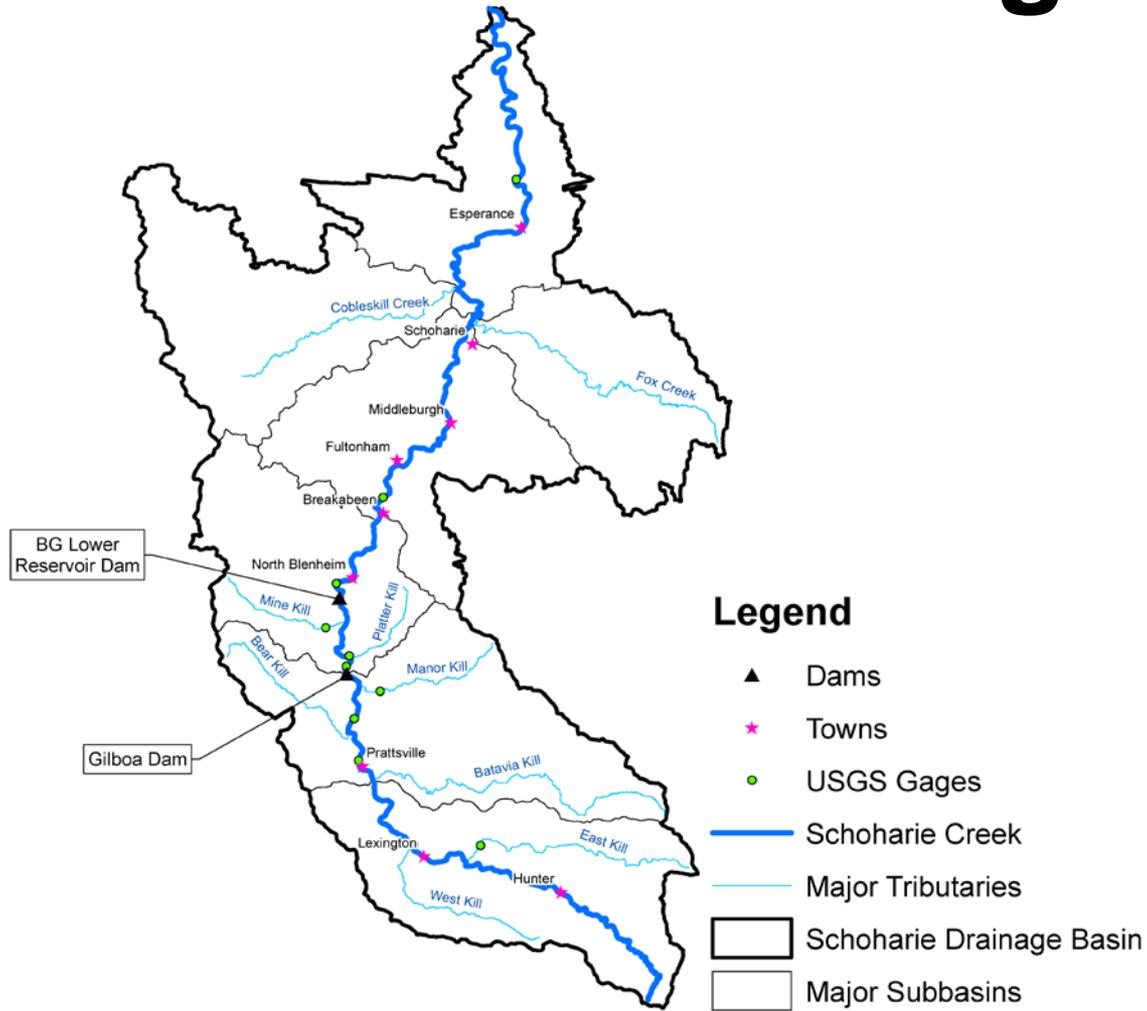
- Utilize current Project operations
- Schoharie Creek

# Project Nexus

- Pursuant to current license requirements, the Project must operate so that releases equal inflows into the Project from Schoharie Creek upstream of the Project.
- The Project was not designed, nor licensed, as a flood control facility and has no flood control capability.
- This study will provide insight on the effects of the Project on downstream flooding, if any.



# Schoharie Creek Drainage Basin



# Methodology

## Four Tasks

1. Hydrologic Model:
  - Develop inflow hydrographs to Lower Reservoir
    - Utilize existing HEC-HMS model
      - Calibrated to the September 1999 (Hurricane Floyd) and September 2004 (Hurricane Ivan) storm events
      - Reviewed and approved by the FERC and an Independent Board of Consultants on November 30, 2009
    - Utilize hypothetical precipitation events (i.e. 10-year, 50-year, 100-year, and 500-year)
  - Develop hydrographs downstream of Lower Dam
    - Perform regression analysis of USGS gage data

# Methodology (cont.)

2. Update Hydraulic Model:
  - Existing HEC-RAS model
    - Developed to create inundation mapping for the Blenheim-Gilboa Emergency Action Plan
      - Utilized Reservoir bathymetry and photogrammetry, circa 2011 after Tropical Storm Irene
    - Reviewed and approved by the FERC in June 2014
  - Update model with newly available topographic data
    - USGS Light Detection and Ranging (LiDAR), circa 2014
    - NYSCC bridge survey, circa 2014

# Methodology (cont.)

3. Hydraulic Model Runs:
  - Utilize hydrographs from Task 1 to run scenarios and predict streamflows and water surface elevations downstream of the Project
4. Study Report:
  - Present methodology, results, and conclusions in a report

# Proposed Schedule

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Hydrologic Model	June 2015
Task 2. Update Hydraulic Model	September 2015
Task 3. Hydraulic Model Runs	November 2015
Task 4. Initial Study Report	February 2016

# Study Report Presentations:

- ☒ Historic Structures Survey
- ☒ Phase 1A Archaeological Survey
- ☒ Fish Entrainment/Protection Assessment Study
- ☒ Recreation Use/User Contact Study And Assessment of Effects The Project Has On Recreation Use
- ☒ Effect Of Project Operations On Downstream Flooding Study
- ☐ **Socioeconomics**

# Study Goals and Objectives

- To develop a demographic and economic profile of the Local and Neighboring Communities.
- To evaluate potential impacts on the Local Communities from the Power Authority's tax-exempt status.
- To evaluate potential impacts from the Local and Neighboring Communities providing first responder services.
- To evaluate potential socioeconomic impacts resulting from the production of power by the Project.

# Geographic Scope

- **The State of New York**
- **Local Communities** - *those government entities in which the Power Authority owns Project Lands:*
  - Schoharie County
  - Town of Blenheim
  - Town of Gilboa
  - Gilboa-Conesville School District
- **Neighboring Communities** - *those government entities outside of the Project FERC-boundary that support the Project by providing first responder services:*
  - Town of Conesville
  - Town of Jefferson
  - Hamlet of Grand Gorge (located in the Town of Roxbury)
  - Town of Middleburgh

# Project Nexus

- The operation of the Blenheim-Gilboa Project has the potential to impact socioeconomic resources of the surrounding communities, as well as those communities that provide the Project with first responder support.
- The report will be the basis for understanding the Project's potential socioeconomic effects on the Local and Neighboring Communities, as well as on the region and State.

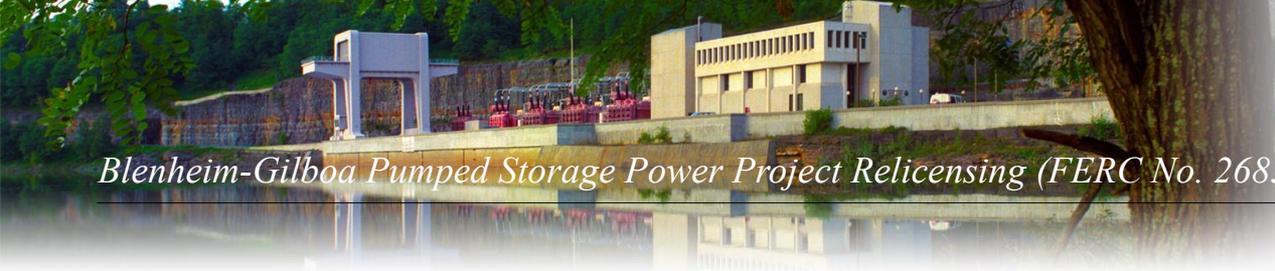
# Methodology

## Five Tasks:

1. Describe the economics of the Project
2. Establish the demographic baseline conditions
3. Analyze the potential impact of the Power Authority's tax-exempt status on the Local Communities
4. Evaluate the potential impact of the Local and Neighboring Communities providing first responder support to the Project
5. Prepare the Initial Socioeconomic Study Report

# Proposed Schedule

Task	Schedule
FERC Study Plan Determination	Anticipated to be February 19, 2015
Task 1. Describe Project Economics	Spring and Summer 2015
Task 2. Establish the Baseline	Spring and Summer 2015
Task 3. Analyze Potential Impacts from Tax-exempt Status	Summer and Fall 2015
Task 4. Describe the Impacts Related to Providing First Responders	Summer and Fall 2015
Task 5. Issue the Initial Study Report	February 2016



*Blenheim-Gilboa Pumped Storage Power Project Relicensing (FERC No. 2685)*



PROPOSED STUDY PLAN MEETING

# **BG Relicensing Web Page**

## **[www.bg.nypa.gov](http://www.bg.nypa.gov)**