

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426
February 19, 2015

OFFICE OF ENERGY PROJECTS

Project No. 2685-026—New York
Blenheim-Gilboa Pumped Storage Project
New York Power Authority

Mr. Robert Daly
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601

Reference: Study Plan Determination for the Blenheim-Gilboa Pumped Storage Project

Dear Mr. Daly:

Pursuant to 18 C.F.R. § 5.13(c) of the Commission's regulations, this letter contains the study plan determination for the Blenheim-Gilboa Pumped Storage Project No. 2685 (Blenheim-Gilboa Project) located on Schoharie Creek in the towns of Blenheim and Gilboa, Schoharie County, New York. The determination is based on the study criteria set forth in section 5.9(b) of the Commission's regulations, applicable law, Commission policy and practice, and the record of information.

Background

On September 22, 2014, the New York Power Authority (NYPA) filed its proposed study plan for six studies covering downstream flooding, aquatic resources, recreation, cultural resources, and socioeconomics, in support of its intent to relicense the Blenheim-Gilboa Project.

NYPA held its study plan meeting on October 16, 2014. Comments on the proposed study plan were filed by Commission staff; the U.S. Fish and Wildlife Service (FWS); American Whitewater; the Town of Fulton, New York; Anne Mattice-Strauch; Melissa Graham; the Blenheim Long-Term Community Recovery Committee (Blenheim LTCRC); the Schoharie County Board of Supervisors; the Town of Blenheim, New York

(Town of Blenheim); the Town of Middleburgh, New York (Town of Middleburgh); and Schoharie County, New York (Schoharie County).¹

On January 20, 2015, NYPA filed a revised study plan that includes revisions to the six studies included in the proposed study plan. Comments on the revised study plan were filed by: American Whitewater on January 29, 2015; Blenheim LTCRC on February 3, 2015; Dam Concerned Citizens,² the Town of Blenheim, the Town of Fulton, New York (Town of Fulton), Gail S. Shaffer on behalf of herself and the Town of Blenheim (Gail Shaffer), and Schoharie County on February 4, 2015; and Robert W. Olsen on February 7, 2015.

General Comments

A number of the comments received do not address study plan issues.³ This determination does not address these comments, but rather addresses comments specific to the merits of the proposed studies submitted pursuant to section 5.13 of the Commission's regulations and comments received thereon.

Study Plan Determination

NYPA's revised study plan is approved, with the staff-recommended modifications discussed in Appendix B. As indicated in Appendix A, of the six studies proposed by NYPA, four studies are approved as filed and two studies are approved with modifications. No additional studies are being required. The specific modifications to the study plan and the bases for modifying or not adopting some requested studies are explained in Appendix B. Commission staff considered all study plan criteria in section 5.9 of the Commission's regulations; however, only the specific study criteria particularly relevant to the determination are referenced in Appendix B.

Nothing in this study plan determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies. In addition, NYPA may choose to conduct any study not specifically required herein that it feels would add pertinent information to the record.

¹ Both the Schoharie County Board of Supervisors and Schoharie County, New York (as submitted by Harris Beach PLLC) filed comments on NYPA's proposed study plan. It is not clear if these letters represent the comments of separate entities or the same entity. Therefore, we have attributed the comments we received to the Schoharie County Board of Supervisors and Schoharie County, separately.

² Dam Concerned Citizens filed its comments on February 3, 2015, and replaced them with a corrected version on February 4, 2015.

³ These include general comments or statements on the length of license term, requests for an environmental impact statement, and issues raised by stakeholders during scoping and addressed by Commission staff in Scoping Document 2 issued on September 18, 2014.

Within 60 days of the date of this letter, NYPA must file a schedule that includes the information specified in Appendix B. As a reminder, pursuant to section 5.15(c)(1) of the Commission's regulations, the initial study report for all studies approved herein must be filed by February 19, 2016.

If you have any questions, please contact Andy Bernick at (202) 502-8660.

Sincerely,

Jeff C. Wright
Director
Office of Energy Projects

Enclosures:

Appendix A -- Summary of determinations on proposed studies, requested study modifications, and additional requested studies

Appendix B -- Staff's recommendations on proposed studies, requested study modifications, and additional requested studies

cc: Mailing List
Public Files

Project Number 2685-026

APPENDIX A**SUMMARY OF DETERMINATIONS ON PROPOSED STUDIES, REQUESTED STUDY MODIFICATIONS, AND ADDITIONAL REQUESTED STUDIES**

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
1 -- Historic Structures Survey	NYPA	X		
2 -- Phase 1A Archaeological Survey	NYPA	X		
3 -- Fish Entrainment/Protection Assessment Study	NYPA	X		
4 -- Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use	NYPA		X	
5 -- Effect of Project Operations on Downstream Flooding Study	NYPA	X		
6 -- Socioeconomics Study	NYPA		X	
7 – Downstream Flow Releases and Aquatic Resources Study	Schoharie County Board of Supervisors, Schoharie County, Town of Blenheim Long-Term Community Recovery Committee, Town of Fulton			X
8 – Dam Safety Study	Schoharie County, Schoharie County Board of Supervisors			X

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APPENDIX B

STAFF'S RECOMMENDATIONS ON PROPOSED STUDIES, REQUESTED STUDY MODIFICATIONS, AND ADDITIONAL REQUESTED STUDIES

The following discusses staff's recommendations on studies proposed by NYPA, requests for study modifications, and additional studies not adopted by NYPA. We base our recommendations on the study criteria outlined in the Commission's regulations [18 C.F.R. section 5.9(b)(1)-(7)].

I. Requests for Study Modifications

Studies 1 and 2 – Historic Structures Survey and Phase 1A Archaeological Survey

Applicant's Proposed Study

NYPA proposes to conduct a Historic Structures Survey and a Phase 1A Archaeological Survey to identify and inventory cultural resources in the project's Area of Potential Effect (APE) and are either listed on the National Register of Historic Places (National Register) or eligible for listing. For both the Historic Structures Survey and the Phase 1A Archaeological Survey, NYPA defined the APE as the area enclosed within the Blenheim-Gilboa Project boundary. By letter dated January 2, 2015, and filed with the Commission in Appendix B of NYPA's Revised Study Plan, the New York State Historic Preservation Officer (New York SHPO) concurred with NYPA's APE.

Comments on the Study

Several commenters state that both the Historic Structures Survey and the Phase 1A Archaeological Survey are flawed because the APE is too narrowly defined. Gail Shaffer, the Town of Middleburgh, and the Blenheim LTCRC state that the impacts of the Blenheim-Gilboa Project extend far beyond the boundaries of the NYPA property because of the possibility of dam failure and flooding from future weather events. Blenheim LTCRC claims that any failure of the dam in a storm-related event or even during normal operation would potentially inundate cultural resources "further removed from the Schoharie Creek and, potentially, even outside the existing and documented flood plain(s) of not only the host communities, but along the entire reach of the Schoharie Creek throughout the county of Schoharie." The Town of Middleburgh requests that the APE be expanded to include the floodway of Schoharie Creek. The Blenheim LTCRC suggests that the APE for the Historic Structures Survey be expanded to "include all such structures within one mile of the Schoharie Creek and the associated flood plain" and the APE for the Phase 1A Archaeological Survey be "expanded to include all towns located along the Schoharie Creek and its designated flood plains." Schoharie County states that "NYPA's proposed APE is inconsistent with the federal

regulations as it fails to take into consideration indirect impacts that project operations have had and will have in the future on historic properties outside the study area.”

Several of the commenters also request that NYPA explore the past and ongoing potential effects of the Blenheim-Gilboa Project operation on the old Blenheim Bridge, a National Historic Landmark that was lost during flooding from Hurricane Irene in 2011.

NYPA states that it appropriately defined the APE because the Commission’s undertaking under section 106 of the National Historic Preservation Act (NHPA) is the project’s relicensing. As such, the Commission is required to evaluate the effects, if any, on the continued operation and maintenance of the project on historic properties. As NYPA is not proposing any operational changes, NYPA states that it appropriately confined the APE to existing project-related effects. NYPA goes on to state that the site of the Blenheim Bridge is not within the APE because it is located downstream of the project and is not affected by project operation or maintenance.

Discussion and Staff Recommendation

As defined in the NHPA (36 CFR 800.16(d)), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes, whether beneficial or adverse, to the character or use of historic properties, if any such properties exist. In determining the APE, the Commission considers all reasonable and foreseeable project-related effects. As the Blenheim-Gilboa Project is an existing project and NYPA is not proposing any operational changes, the undertaking is the project’s proposed relicensing and the Commission will evaluate the effects of the project’s continued operation and maintenance. No effects resulting from the project’s continued operation and maintenance have been documented outside the project boundary. While many commenters state that the APE needs to be expanded because of the potential for dam failure, we note that dam failure at any project is extremely rare; therefore, we do not consider it a reasonable and foreseeable project-related effect. The commenters also requested that the APE be expanded to address effects from flooding caused by heavy rains. Heavy rains, however, are a natural event and the effects from these events are not considered project-related. As such, we do not recommend extending the APE to address these scenarios, nor do we recommend extending the APE to address the loss of the old Blenheim Bridge due to heavy rains.

At this time, we do not recommend any modifications to the APE for either the Historic Structures Survey or the Phase 1A Archaeological Survey; however, if the results of Study 5 – Effect of Project Operations on Downstream Flooding Study determine that operations do have an effect on flooding in the project area, or if recreational flow releases are determined feasible as part of Study 4 – Recreation Use/User Contact Study, as modified, then the need to expand the APE for the Historic Structures Survey and the Phase 1A Archaeological Survey could be evaluated in the second study season.

Study 3 – Fish Entrainment/Protection Assessment Study

Applicant's Proposed Study

NYPA proposes to conduct a literature-based assessment of fish entrainment and turbine passage survival at the project. The study would characterize the physical and operational characteristics of the project's pump-turbines and intake structures; summarize the fish species present in the upper and lower reservoirs based on existing data; evaluate water quality conditions at the intake locations; qualitatively evaluate which fish species and life stages have the potential to be entrained; review entrainment studies conducted at similar pumped-storage or large hydroelectric projects for relevance to potential entrainment and turbine passage survival at the project; and develop an estimate of turbine passage survival based on available information. The study would be supplemented with field data collected on velocity and depth in the area of the intake structures.

Comments on the Study

Interior states that because of the wide spacing of the project's trash racks, fish impingement should not be a critical issue. Interior states that there are very few fish in the upper or lower reservoirs large enough to be susceptible to impingement. Based on Interior's comments, NYPA did not include an impingement analysis in its revised study plan.⁴

Schoharie County requests that the study evaluate the feasibility of mitigating or eliminating fish mortality through the implementation of alternative methods of fish screening, and include a field study to evaluate potential screening technologies. In response, NYPA states that any study to mitigate fish mortality is premature because the potential impacts of the project would not be known until the proposed study is completed.

Stakeholders filed several comments pertaining to habitat, biota, and water quality downstream of the project. We address these comments in our discussion of the Schoharie County Board of Supervisors' request for a study of downstream flows and aquatic resources.

Discussion and Staff Recommendation

NYPA's proposed Fish Entrainment/Protection Assessment Study is primarily a desktop study designed to provide a qualitative analysis of fish entrainment and mortality at the project. The proposed methodology is consistent with generally accepted practice

⁴ In its revised study plan, NYPA states, citing personal communication, that the New York State Department of Environmental Conservation agrees with this approach.

and is similar to a number of such studies performed in support of hydroelectric project relicensing proceedings. The collection of field data on fish habitat (e.g., water velocity) in the area of the intakes is an important study component that will provide information on the likelihood of fish presence in the area of the intakes and on the ability of fish to avoid entrainment. This information will also help to identify similar hydroelectric projects at which field entrainment studies have been conducted to help ensure transferability of results.

Regarding the Schoharie County request that the study be modified to include an assessment, including a field study, of potential measures to mitigate entrainment at the project Schoharie County did not suggest a methodology for this assessment, nor provide any information concerning the need for the study or study costs (section 5.9(b)(4), (6), and (7)). In the absence of information concerning the need for mitigation, such a study modification is unwarranted at this time and should not be required.

Therefore, we recommend that NYPA's revised Fish Entrainment/Protection Assessment Study be approved as filed.

Study 4 – Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use

Applicant's Proposed Study

NYPA proposes a Recreation Use/User Contact Study to assess project effects on recreation. NYPA proposes to collect recreation use information through user counts at project recreation sites using traffic counters, calibration counts, spot counts, and registration of attendance records. NYPA also proposes to conduct a user survey to determine visitors' use of the project for recreation and their perception of the available recreation opportunities, project recreation sites, and facilities. In addition, NYPA will evaluate the adequacy of existing recreation facilities in meeting recreation needs and demand at the project. NYPA proposes to include the following five project recreation sites in the study: Lansing Manor Complex (including the Blenheim-Gilboa Visitors Center), Minekill State Park, a downstream fishing access area (below the lower dam), and three access areas on the upper reservoir.

User Contact Survey

As part of *Task 3 – User Contact Survey*, NYPA developed a user survey in consultation with the New York Office of Parks, Recreation, and Historic Properties (New York Parks). The goal of the survey is to determine users' perceptions about project recreation and existing recreation sites and facilities. NYPA filed the survey as part of the Recreation Use/User Contact Study in its revised study plan.

Comments on the Study

There were no comments filed on the survey.

Discussion and Staff Recommendation

While the survey questions should be adequate to determine user perceptions, we recommend the following modifications to clarify the survey and provide more robust survey results.

- 1.) Question 5 should be modified to read: “If yes, how many times per year, over the last five years, did you typically visit the project area for recreation (please use a number)?”
- 2.) Question 7 should be modified to read: “When did you arrive today and when do you plan to depart?”
- 3.) Please clarify whether the site to which question 8 is referring is the project site where the survey is being conducted, or the project reservoir as a whole.
- 4.) For questions 10 and 13, the scale given is not balanced. Please modify the scale as follows: 1 – Not satisfied at all, 2 – dissatisfied, 3 – neither satisfied, nor dissatisfied, 4 – moderately satisfied, 5 – extremely satisfied.
- 5.) For question 11, please underline or bold the words “past year” so it is clear to the respondent that the question only applies to activities participated in over the previous year.
- 6.) For question 22, please underline or bold the words “Minekill State Park Only” so it is clear to the respondent that the question only applies to surveys conducted at Minekill State Park.

Non-User Surveys

NYPA does not propose to conduct a survey of non-users.

Comments on the Study

American Whitewater requests that NYPA study “the extent to which the inadequacy of its recreational facilities deters recreational use” and whether improvements to these facilities might provide opportunities for additional recreational use, including whitewater boating. American Whitewater requests that NYPA survey the community and engage with conservation and recreation organizations in the area that can reach out to their respective members as part of this assessment. American Whitewater also suggests that NYPA work with local, regional, and national boating

organizations, including American Whitewater, Appalachian Mountain Club, the Kayak and Canoe Club of New York, and the Adirondack Mountain Club to design a survey that reaches these groups to better assess demand for recreation in the project boundary and downstream.

In its response comments, NYPA states that conducting a survey of “non-users” regarding their reasons for not using the recreational opportunities associated with the project would not lead to information useful in informing future licensing conditions.

Discussion and Staff Recommendation

Surveying the community about its perception of project recreation can be informative in certain cases; however, it can be expensive. American Whitewater did not describe considerations of level of effort and cost associated with surveying non-users (section 5.9(b)(7)), nor did it discuss a proposed study methodology for surveying non-users (section 5.9(b)(6)). Regarding American Whitewater’s suggestion that NYPA work with local, regional, and national boating organizations to design user contact surveys and reach out to their respective members to better assess demand for recreation in the project boundary and downstream, we note that this could bias the results.

We expect the information that will be gathered from NYPA’s proposed user contact survey will be sufficient to inform our analysis of the recreation use and needs at the Blenheim-Gilboa Project. As such, we do not recommend that NYPA develop a “non-user” survey.

Calibration Counts

Applicant’s Proposed Study

As part of *Task 2 – Field Work*, NYPA proposes to conduct calibration counts at six project recreation sites (Minekill State Park, three public access points on the upper reservoir, the Lansing Manor Complex, and the fishing access downstream of the lower dam). The purpose of these counts is to verify the data collected by traffic counters at each of the six sites. During these calibration counts, field staff also will administer the user contact survey developed in *Task 3 – User Contact Survey* of the study. NYPA proposes to conduct the counts on one weekday and one weekend day a month between March 2015 and February 2016. In the months containing the following holidays (Memorial Day, 4th of July, Labor Day, Columbus Day, Thanksgiving, New Year’s Day, and President’s Day), an additional calibration count will be conducted during the holiday or holiday weekend. Based on this schedule, NYPA states that it will conduct 31 calibration counts at each of the project recreation sites. NYPA proposes that the counts last 2 hours per site on each calibration day. NYPA also states that all sampling days will be randomly selected and survey routes will be completed on a rotating basis

and at different times of day to account for time-of-day use patterns and eliminate sampling bias.

Comments on the Study

There were no comments filed on this issue.

Discussion and Staff Recommendation

NYPA's general approach for conducting the calibration counts and user surveys appears reasonable; however, gathering additional information from users during the peak summer recreation season (Memorial Day through Labor Day) would provide more robust study results. NYPA does not include the times that the field staff will start and end its calibration counts. We recommend that during the peak recreation season, field staff begin the calibration counts at sunrise and complete the calibration counts by sunset. Furthermore, while NYPA proposes to conduct 31 calibration counts at each site, this occurs over the course of a full year. Months without a holiday, including peak summer recreation months, would only be counted twice. In order to get a more complete picture of users' perceptions during the peak summer recreation season, an additional 4 days of calibration counts should be conducted during the peak summer season. NYPA should schedule these additional 4 days randomly, but two of the calibration count days should occur in the peak summer recreation months without holidays (June and August).

Recreational Boating Flows

NYPA does not propose to study the need for recreational boating flows.

Comments on the Study

Gail Shaffer and the Blenheim LTCRC state that NYPA too narrowly defines the Recreation Use/User Contact Survey study area because Schoharie Creek, downstream of the Blenheim-Gilboa Project, could be a viable venue for canoeing and kayaking. They state that NYPA should consider activities that could be impacted or enhanced by project operation. The Town of Middleburgh and the Schoharie County Board of Supervisors also suggest that recreational water releases could enhance recreational opportunities downstream of the project.

American Whitewater also is interested in recreational flow releases at the project. American Whitewater originally requested that NYPA conduct a whitewater boating study downstream of the lower dam. In response to this request, NYPA states that the project does not control the quantity of water in Schoharie Creek and releases from the lower reservoir are dictated by the upstream Gilboa Dam (owned and operated by New York City Department of Environmental Protection [New York City DEP]). NYPA also states that because the lower reservoir has no appreciable storage capacity, there is little ability for NYPA to time and shape flows to accommodate whitewater boating.

American Whitewater disagrees with NYPA's statement that the project has no appreciable storage capacity and notes that the pre-application document (PAD) states that the lower reservoir has a total storage capacity of 16,167 acre-feet, American Whitewater claims that providing a 6-hour release of 1,000 cubic feet per second (cfs) above inflows would result in the loss of 495.6 acre-feet, or approximately 3 percent of the total storage capacity of the lower reservoir. American Whitewater also notes that the upper reservoir provides an additional 2,627 acre-feet of storage that could be utilized. As a result, American Whitewater requests that NYPA conduct a desktop analysis in order to study the feasibility of whitewater boating below the lower dam under various scenarios. If the desktop analysis demonstrates that sufficient flows could be made available to provide scheduled releases from the lower dam under a different mode of operation, American Whitewater requests that NYPA conduct a full whitewater boating study in a phased manner following the accepted practices outlined by Whittaker et al.⁵

Discussion and Staff Recommendation

NYPA claims that it is unable to provide recreational releases because of constraints related to its operational agreements. Project relicensing, however, provides the opportunity for a new look at project operation. Agreements made under the old license are subject to change based on new information obtained through relicensing studies. As a result, flows not currently available for recreational releases may be available under new operational requirements. In addition, the PAD contains little existing information regarding Schoharie Creek below the project (section 5.9(b)(4)). Conducting a desktop analysis to determine if it is feasible for the project to provide additional flow-related recreational boating opportunities could inform the development of protection, enhancement, and mitigation measures later in the relicensing process (section 5.9(b)(5)). As such, we recommend that NYPA conduct a desktop analysis of the feasibility of releasing recreation flows from the lower dam under a variety of operational scenarios

The analysis should follow the desktop analysis (phase 1) method set forth by Whittaker et al. (2005), which is consistent with generally accepted practices in the scientific community (section 5.9(b)(6)). The analysis should include an assessment of existing river recreation information, the physical attributes of Schoharie Creek, hydrology, and operational constraints, taking into account current conditions, but also considering that changes to existing flows may occur with operational changes. NYPA should gather all readily available, existing information on river boating (i.e., canoe, kayak, and raft) and other recreational activities (e.g. public access locations, and constraints to public access) at the project and downstream of the lower dam. The analysis should focus primarily on desktop methods that rely on existing information

⁵ Whittaker, Shelby, and Gangemi (2005). *Flows and Recreation: A Guide to Studies for River Professionals*.

and/or limited interview methods that gather flow and recreation opportunity information from people familiar with the river/reach. NYPA also should create a gradient profile for the Schoharie Creek below the lower dam, and identify any other flow-related information that may be pertinent to recreation in the reach. Finally, NYPA should include information on informal and formal put-ins and take-outs, and a description of other recreational boating opportunities in the project area. The results of this desktop analysis should be filed as part of *Task 4 – Study Report* of the Recreation Use/User Contact Study and would inform a decision on whether additional recreational flow information is needed.

Recreation Tables

As part of *Task 4 – Study Report*, NYPA proposes to develop a technical report that contains the information collected during the Recreation Use/User Contact Study.

Comments on the Study

There were no comments provided on this issue.

Discussion and Staff Recommendation

The Commission's Division of Hydropower Administration and Compliance is currently undertaking an effort to assist licensees in clearly identifying project recreation facilities to distinguish them from other recreation facilities located within the project boundary. To accomplish this, Commission staff developed a set of Commission-approved recreation tables that provide a concise way to document the Commission-approved recreation facilities. As NYPA is already conducting an in-depth analysis of recreation facilities, it would be beneficial to provide the results of the facility assessment in the format of the Commission-approved Recreation Facilities Table and the Recreation Amenities Table. Therefore, we recommend that NYPA develop both a Commission-approved Recreation Facilities Table and a Recreation Amenities Table as part of the study report. Please refer to the Commission's June 2014 *Project Recreation Facilities and As-Built Site Plan Drawing Guidance*, found on the Commission's website at <https://www.ferc.gov/industries/hydropower/gen-info/guidelines/as-built-site-plan.pdf>.

Study 5 – Effect of Project Operations on Downstream Flooding Study

Applicant's Proposed Study

NYPA proposes to conduct a downstream flooding study to investigate the effects, if any, of the project on Schoharie Creek flooding downstream of the lower reservoir dam during high-flow events using hydrologic, reservoir operation, and hydraulic modeling programs. Specifically, NYPA would use the U.S. Army Corps of Engineers' (Corps') existing Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) computer program (hydrologic model) to estimate inflows to the project's lower

reservoir, and U.S. Geological Survey (USGS) regression equations (StreamStats) to estimate streamflows downstream of the lower dam. Using the HEC-HMS generated inflows, NYPA would use the Corps' existing Hydrologic Engineering Center's Reservoir System Simulation (HEC-ResSim) computer program to evaluate various upper and lower reservoir operation scenarios (operations model) to estimate the outflow hydrograph from the Blenheim-Gilboa Project. The flow hydrographs generated from the HEC-ResSim operations model, and the USGS gage regression analysis (downstream tributary inflow) for different storm events and scenarios will be routed downstream using the Corps' existing HEC-RAS hydraulic model. The HEC-RAS output estimates water surface elevations and the extent of flooding in Schoharie Creek between the Blenheim-Gilboa lower reservoir dam and the confluence of the Mohawk River, including the downstream communities in Schoharie County. NYPA plans to update the existing out-of-bank geometry with 2014 USGS LiDAR data and calibrate the hydraulic model using the two largest floods of record along Schoharie Creek (Tropical Storm Irene and a January 1996 flood event).

NYPA's downstream flooding study in its revised study plan addressed the majority of the stakeholder comments provided in response to the proposed study plan. However, a few issues remain and we discuss these below.

Probable Maximum Precipitation (PMP) and Probable Maximum Flood (PMF) estimates

In section 2.5.5 of its revised study plan, NYPA states that it developed a calibrated hydrologic model, using the Corps' HEC-HMS computer program, as part of a site-specific Probable Maximum Precipitation/Probable Maximum Flood Study (RJ Associates, 2009) it conducted to comply with the Commission's Part 12 regulations regarding dam safety. NYPA proposes to use the HEC-HMS model to predict runoff and streamflows as a component of its downstream flooding study.

Comments on the Study

Dam Concerned Citizens, the Schoharie County Board of Supervisors, the Towns of Blenheim and Fulton, and the Blenheim LTCRC state that the PMP/ PMF analysis prepared in 2009 by RJ Associates for the Blenheim-Gilboa Project needs to be re-examined because the PMF estimate calculated for the Blenheim-Gilboa Project is about 40 percent lower than New York City DEP's PMF calculation for Gilboa Dam, located approximately 5 miles upstream.

NYPA states that its PMF analysis used reasonable assumptions for routing streamflows, such as using the normal maximum pool elevations for the three reservoirs—Schoharie Reservoir (1,130 feet), the project's lower reservoir (900 feet), and the project's upper reservoir (2,003 feet)—to represent starting pool levels for the simulations. NYPA further states that the current site-specific PMP and PMF analyses

were: completed in 2009 by a qualified engineer pre-approved by the Commission; facilitated by a Board of Consultants that consisted of three independent experts in the fields of meteorology, hydrology, and hydraulics approved by the Commission; and overseen and approved by the Commission under its Part 12 regulations. NYPA also explains that the reason the PMF estimates differ significantly between the Blenheim-Gilboa Project (174,099 cfs) and Gilboa Dam (312,000 cfs) is that the hydrologic models developed by NYPA and New York City DEP likely used different methodologies to determine the PMP, and that the models may have had different sub-basin delineations, different methodologies for runoff and routing, and different storms for calibration and verification.⁶

Discussion and Staff Recommendation

A major factor that can contribute to differences in PMF values is the methodology used to determine the PMP. In its revised study plan, NYPA references generalized PMP maps of the Schoharie Creek drainage basin as presented in the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Army Corps of Engineers (Corps) report entitled “Probable Maximum Precipitation Estimates, United States East of the 105th Meridian” (Hydrometeorological Report No. 51, published June 1978).⁷ In this report, the Schoharie Creek drainage basin exists in a region where “...the generalized PMP estimates might be deficient because detailed terrain effects have not been evaluated” (page 3). The Corps published a subsequent manual for the HMR-52 model program entitled “HMR 52: Probable Maximum Storm (Eastern United States) User Manual” (published March 1984, revised April 1987)⁸ where it stated that major projects within regions identified as having potentially deficient PMP estimates due to terrain effects “...should be considered on a case-by-case basis and expert hydrometeorological guidance should be sought.” The PMP estimate that NYPA produced for the Blenheim-Gilboa Project resulted from a site-specific analysis following the same procedures used to develop HMR-51, and also included updated storm information, advanced computer-based technologies, and accounted for any terrain or orographic⁹ influences. It is not clear to staff whether a site-specific analysis was used to

⁶ See Chapter 8 “Determination of the Probable Maximum Flood” of the Commission’s Engineering Guidelines for the Evaluation of Hydropower Projects, available at: <https://www.ferc.gov/industries/hydropower/safety/guidelines/eng-guide/chap8.pdf>

⁷ http://www.nws.noaa.gov/oh/hdsc/PMP_documents/HMR51.pdf

⁸

http://www.hec.usace.army.mil/publications/ComputerProgramDocumentation/HMR52_UsersManual_%28CPD-46%29.pdf

⁹ Associated with mountainous topography.

develop the PMP estimate for the Gilboa Dam, and if New York City DEP's analysis corrected for orographic influences within the Schoharie Creek drainage basin.¹⁰

PMP and PMF are important considerations for dam design and safety. A rather large array of variables and calculation techniques, many of which have rather high degrees of uncertainty, derive PMP estimates. The Commission has an established process that requires the oversight of site-specific PMP/PMF analyses by a Board of Consultants consisting of subject matter experts. The Commission accepted the site-specific PMP/PMF estimate for the Blenheim-Gilboa Project, consistent with the Commission's Part 12 regulations. The requesters have not substantiated the need for revised PMP and PMF estimates beyond what has been accepted under the Commission's Part 12 program, and did not provide a specific study methodology that would be more appropriate than NYPA's approach as explained in its revised study plan (section 5.9(b)(4) and (6)).

For the reasons discussed above, we do not recommend that NYPA be required to revise its PMP and PMF estimates.

Operational Scenarios

In section 2.5.3 of its revised study plan, NYPA proposes to identify a range of "reasonable, credible and prudent" operational measures that could reduce downstream flooding during high-flow events taking into account certain caveats such as the project's purpose as a pumped-storage facility, its value to the transmission grid in terms of black start capability, and its need to maintain clear and consistent operating protocols, among other considerations.

¹⁰ In New York City DEP's 2008 Gilboa Dam Reconstruction environmental assessment, it states that it "...developed an updated hydrologic model based on current information and analysis techniques to analyze the hydrology of the Schoharie Watershed and to predict the flows anticipated at Gilboa Dam for a variety of flood events in order to determine an updated set of flow parameters for the reconstructed Dam. Historical and current watershed data from various sources were used as input into the model and calibrated using recorded precipitation and streamflow data gauges located within the Watershed. This data was then used to establish updated flow parameters through the watercourses of the basin for floods with return periods ranging from 2 to 500 years, and also to establish an updated ½PMF and PMF, with peak outflow of 311,400 cfs (which is approximately 6 times larger than the original [spillway design flood]) and a maximum Spillway head of 17.4 prototype feet." See page 16 in http://www.nyc.gov/html/dep/pdf/gilboa/gilboa_proj_desc.pdf.

Comments on the Study

Dam Concerned Citizens states that NYPA undercuts its proposal to evaluate alternative upper and lower reservoir operations scenarios in anticipation of a flood event by including “qualifying conditions” in its description of the range of operational measures it would investigate. Further, Dam Concerned Citizens requests that NYPA include an operational scenario of pumping 10,000 cfs of water from the lower reservoir during 10-, 50-, 100-, and 500-year recurrence interval floods, for a period of 6 hours, in its downstream flooding study. In addition, Dam Concerned Citizens requests that the study include water elevations at the Blenheim-Gilboa Project with an inflow of 312,000 cfs (New York City DEP’s PMF estimate). The Town of Middleburgh also discusses the potential operational scenario of pumping 10,000 cfs to the upper reservoir if a major melt or precipitation event is likely.

Discussion and Staff Recommendation

Although NYPA does not state the specific operation scenarios it would investigate in its downstream flooding study, we expect that it would include a reasonable range of operational scenarios, including scenarios specifically requested by stakeholders. We also expect that NYPA would present the full range of scenarios it investigated, and not only a subset of ranges consistent with its caveats as described in bullet 3 of section 2.5.3 of the revised study plan. However, for the reasons noted under the PMP/PMF estimate discussion above, NYPA should not be required to evaluate operation scenarios based on an inflow similar to the PMF for the Gilboa Dam (312,000 cfs).

Study 6 – Socioeconomics Study

Applicant’s Proposed Study

NYPA proposes to conduct a socioeconomic study to evaluate the socioeconomic effects of the Blenheim-Gilboa Project on the local and neighboring communities, as well as on the region and State of New York. The study would include: a demographic and economic profile of current conditions in local and neighboring communities, including the socioeconomic character of those communities; evaluation of potential socioeconomic effects on the communities resulting from the project’s operation and NYPA’s tax-exempt status using the REMI model;¹¹ and evaluation of potential economic effects associated with the local and neighboring communities providing first responder services.

¹¹ REMI is an economic Input-Output model developed by Regional Economic Models, Inc., and it uses various equations and variables to forecast the impact that an economic/policy change has upon an economy.

Geographic Scope

NYPA proposes to conduct the socioeconomic study at multiple geographic levels, i.e., state, regional, and local-level. NYPA proposes to include in its local-level analysis (i.e., locality-specific analysis) the Town of Blenheim, Town of Gilboa, Gilboa-Conesville School District, and Schoharie County because project lands are located within these taxing entities. NYPA also proposes to include the Town of Conesville, Hamlet of Grand Gorge (located in the Town of Roxbury), Town of Jefferson, and Town of Middleburgh in the local-level analysis because these taxing entities provide first responder support to the project.

Comments on the Study

Schoharie County comments that the study should include the Towns of Fulton, Schoharie, Esperance, and Broome, regardless of whether these communities provide first responder services or not. The Town of Middleburgh comments that the study needs to include neighboring towns, but does not specify the name of the towns. The Town of Fulton comments that the study should include the towns of Fulton, Schoharie, Esperance, Richmondville, Summit, and Broome. It also notes that NYPA has property in Richmondville, and that the West Fulton Fire Department should be included in NYPA's neighboring communities, as it is the second closest fire department to the Blenheim-Gilboa Project.

Discussion and Staff Recommendation

The commenters request that a number of towns be included in the study, but do not specify what level of analysis should be conducted for these entities. NYPA states in its revised study plan that those entities do not have a connection to the project either in terms of first responder support or real estate/property tax impacts, and any impacts to these communities would be included in the county-level analysis for Schoharie County. NYPA also states that both direct (in the form of tax revenues) and indirect impacts (as measured by the REMI model) to Schoharie County would be addressed in the study. We find this a reasonable approach and, therefore, do not recommend any changes to the geographic scope of the study.

The Town of Fulton states that NYPA owns property in Richmondville, but did not specify how the property is related to the Blenheim-Gilboa Project relicensing (section 5.9(b)(5)). NYPA may own lands that are not part of the project and thus outside of the scope of this relicensing proceeding. Nevertheless, NYPA will consider effects on Richmondville within the context of its county-level analysis for Schoharie County. To address the Town of Fulton's request to include the West Fulton Fire Department as a neighboring community, NYPA states in Task 4 of its study plan that it will identify neighboring communities that provide first responder services to the Blenheim-Gilboa

Project. We expect this would include any communities with first responders that may provide services to the project in the event of an emergency.

Tax-Exempt Status of NYPA

In its revised study plan, NYPA states that it will analyze the potential effects of its tax-exempt status on local communities by examining current developmental values of the project lands assuming that the land would have been developed in a manner consistent with local development patterns.

Comments on the Study

Several stakeholders, including the Blenheim LTCRC, the Town of Blenheim, Town of Fulton, Town of Middleburgh, Anne Mattice-Strauch, Melissa Graham, and Robert W. Olsen comment that the analysis of NYPA's tax exempt status should not be based on the value of project lands as unimproved or "vacant land." Anne Mattice-Strauch and Melissa Graham comment that the land was not vacant prior to the construction of the project. The Blenheim LTCRC and the Town of Fulton comment that the analysis should be based on the project as it exists today. The Blenheim LTCRC also comments that an independent accounting firm should conduct the study and the Schoharie County NYPA Relicensing Committee should approve the selection of the firm. In its response to the revised study plan, the Town of Blenheim expresses its opposition to NYPA's proposed approach of evaluating the project, and states that the study should be conducted using "the real value" of its project. By responding to the revised study plan, the Blenheim LTCRC reiterates its earlier requests that the project be evaluated based on what exists today, and states that the study and research process should be as unbiased as possible. Schoharie County and Gail Shaffer also express opposition to NYPA's proposed approach of evaluating the project in the revised study plan, and made comments similar to the other entities.

Discussion and Staff Recommendation

NYPA proposes to analyze the potential effects of its tax-exempt status on the local communities by examining current developmental values of the project lands assuming that the land would have been developed in a manner consistent with the local development patterns. NYPA states that a property tax scenario based on the existing hydropower facilities is not appropriate for the Blenheim-Gilboa Project because there is no indication that a developer other than itself proposed to develop the project and had the means to do so.

However, the proposed action for the relicensing proceeding and conducting our environmental analysis is the existing condition. Therefore, existing conditions, rather than a hypothetical developmental scenario, would serve as the baseline for considering any socioeconomic effects. In addition, other proposed socioeconomic effects analyses

(e.g., effects of the project on local employment, etc.) would be based on the existing condition. Therefore, we recommend that NYPA analyze the potential effects of its tax-exempt status on the local communities based on the project as it exists. This analysis could be done within NYPA's cost estimates provided in the revised study plan for the socioeconomic study. However, we do not recommend that an independent firm conduct the study, or that the Schoharie County NYPA Relicensing Committee approve selection of the firm, because the Commission typically allows the applicant or its own consultants to conduct studies, with all stakeholders having the opportunity to comment on the studies when they are filed with the Commission. Moreover, the Blenheim LTCRC did not provide any justification for its request that the study be conducted by an independent firm, other than just stating that the study should be as unbiased as possible, as required by section 5.9(b)(6) of the Commission's regulations.

Allocation of Low Cost Hydropower

NYPA does not propose to provide an allocation of low cost power to the community nor study what effect this would have on the local economy.

Comments on the Study

The Town of Fulton comments that an allocation of low cost power to Schoharie County would be a boost to the local economy, and requests that the socioeconomic study include an analysis of effects of an allocation of low cost power on the local economy.

Discussion and Staff Recommendation

In its revised study plan, NYPA states that such an allocation is beyond the scope of FERC's relicensing of the project, and therefore, would not inform the development of the application. We agree that a study to analyze the effects of an allocation of low cost power on the local economy is outside the scope of this proceeding and would not inform the development of the license requirements (section 5.9 (b)(1) and(5)). Therefore, we do not recommend this study.

Effects on Roads and Bridges

Comments on the Study

The Town of Blenheim comments that the socioeconomic study should include a thorough analysis of impacts on local roads and bridges from project operation, including increased traffic, movement of heavy loads, and wear and tear on roads and bridges related to operation and maintenance of the Blenheim-Gilboa Project.

Discussion and Staff Recommendation

NYPA responds in its revised study plan that ongoing impacts are consistent with those of other commercial and industrial businesses and any impacts attributable to the project would be indistinguishable from impacts from general traffic.

NYPA's proposed REMI methodology would determine project effects on demographics, employment, income, and gross regional product (a measure of the value added in production by the labor and capital located in the region). While we recognize that the use of vehicles related to project operation may have some effects on local roads and bridges, we think distinguishing such an effect from all other transport vehicles in the area would require an extremely costly study, and would not be worth the cost. Moreover, the Town of Blenheim did not propose a methodology that would enable such an assessment (section 5.9(b)(1) and (6)). We, therefore, do not recommend that NYPA be required to conduct this requested study.

II. Studies Requested but not Adopted by NYPA

In this section, we discuss additional studies requested by stakeholders that were not adopted by NYPA. We base our findings on the study criteria outlined in the Commission's regulations [18 C.F.R. section 5.9(b)(1)-(7)].

Study 7 – Downstream Flow Releases and Aquatic Resources Study

Study Request

The Schoharie County Board of Supervisors, in its August 8, 2014 comments on Commission staff's Scoping Document 1, states that a study should be conducted to determine benefits that would accrue to water quantity and quality downstream of the project by the additional discharge of water equal to the amount lost annually from the surface of the project's upper and lower reservoirs due to evaporation. The proposed study would include: (1) estimating evaporative losses at the project and expressing that quantity in terms of cfs on a daily basis; (2) determining the percent increase in streamflow that would result from the discharge of the additional water; (3) compiling an inventory of fish and benthic macroinvertebrates below the project; and (4) compiling an inventory of ichthyoplankton and zooplankton below the project. The Schoharie County Board of Supervisors states that a qualitative and quantitative analysis of this reach would demonstrate the environmental benefits from enhanced stream flow during the drier summer months. The Schoharie County Board of Supervisors reiterated its request in its comments on NYPA's proposed study plan.

The Blenheim LTCRC states that such a study should include an assessment of water quality (temperature and dissolved oxygen) in Schoharie Creek downstream of the project. Schoharie County states that the Commission should require NYPA to conduct a

study of the feasibility of conservation releases and to conduct field studies to assess the results of prior protection, mitigation, and enhancement measures on the vitality of the downstream fishery. Schoharie County also requests a study of the effects of the project on the natural functions of Schoharie Creek, including the buildup of material in the bed and along the banks. The Town of Fulton comments that a study should take into account how a proper conservation release would benefit fish, agriculture, and recreation downstream of the project. Although these “study requests” did not follow the requirements of section 5.9(b), we consider them within the context of the Schoharie County Board of Supervisors’ requested study.

Comments on the Study

NYPA responds to the Schoharie County Board of Supervisors by stating that it already operates the project to compensate for evaporative losses during times of low flow, as required by the Commission’s July 30, 1975 Order Approving Settlement Agreement with the Towns of Fulton and Blenheim. NYPA states that during low-flow periods (i.e., no inflow from Schoharie Reservoir) it operates the project to account for evaporative losses and releases water from storage to result in downstream flows comparable to those that would have occurred if the project had not been built. NYPA states that at other times, project outflows essentially equal project inflows.

With respect to the requested study of water quality, and fish, macroinvertebrate, and plankton populations downstream of the project, NYPA states that the project does not control the quantity of water in Schoharie Creek as it is operated so that outflow to Schoharie Creek from the project equals inflow to the project. It further states that the project does not have the ability to sustainably pass more water below the project than what is received as inflow from upstream and neither NYPA nor the Commission has control over the quantity of flow being released from the Gilboa Dam at the City of New York’s Schoharie Reservoir located upstream of the project. NYPA states that for those reasons it is not proposing to study the feasibility of low-flow releases as they relate to downstream aquatic resources.

In response to Schoharie County’s request that the Commission mandate a study on the effect that the project has had on natural functions of Schoharie Creek, including any buildup of material in the bed and along the banks of the Schoharie Creek and its tributaries, NYPA states that the buildup of material in a streambed during low-flow periods and subsequent scour during high-flow periods is normal. NYPA further states that the transport processes for these phenomena are affected by the timing, volume, and duration of flows, and that these processes in Schoharie Creek downstream of Gilboa Dam are altered by the diversion of 316 square miles (mi²) of drainage for the New York City water supply. NYPA concludes that because the project does not control the quantity of water in Schoharie Creek, the project does not contribute to the buildup or scour of material in Schoharie Creek. Accordingly, NYPA is not proposing a related study.

Discussion and Staff Recommendation

The Blenheim-Gilboa Project is a pumped-storage project located on Schoharie Creek, in Schoharie County, New York. The project generates electricity by passing water from its upper reservoir, through the powerhouse, to the lower reservoir during periods of peak electrical demand. When project electricity is not needed, water is pumped back to the upper reservoir where it is stored until project generation is again needed. In this “closed-loop” arrangement, project generation and pumping do not affect the quantity or timing of releases from the lower reservoir to Schoharie Creek.

Construction of a dam across Schoharie Creek created the project’s lower reservoir. Inflow to the lower reservoir originates in its 356-mi² watershed. However, 316 mi² of that watershed drain first into New York City’s Schoharie Reservoir, impounded by Gilboa Dam, the primary purpose of which is to provide drinking water to New York City; only 40 mi² of the Blenheim-Gilboa Project’s watershed flows unimpeded into the lower reservoir. In its present configuration, Gilboa Dam only releases water when the reservoir is full and water passes over the spillway. During dry periods, when consumptive water demands are high and inflows are low, Gilboa Dam does not release water into Schoharie Creek.

Under the current license, the Blenheim-Gilboa Project operates such that releases from the project approximate inflow to the project. During dry periods when Gilboa Dam is not releasing water, the project releases 5 cfs, approximately the quantity of water that would be passing the dam site in the absence of the project. The 5-cfs discharge is based on estimated inflow plus estimated evaporative losses from the project’s reservoirs.

At present, New York City is in the process of rehabilitating Gilboa Dam. In addition to dam safety modifications, the city is installing a low-level outlet that will allow releases from the reservoir during non-spill conditions. The low-level outlet will have valves that will allow “conservation releases” to be made from Schoharie Reservoir downstream into Schoharie Creek. The magnitude of these releases has not been finalized. These new conservation flows would enter the Blenheim-Gilboa’s lower reservoir and be passed downstream into Schoharie Creek from the project’s lower dam.

The Schoharie County Board of Supervisors’ study request to determine the benefits that would accrue to water quantity and quality downstream of the project by the additional discharge of water equal to the amount lost annually from the surface of the project’s upper and lower reservoirs due to evaporation would not inform the development of license conditions (section 5.9(b)(5)) because flows equivalent to evaporative losses are already being released at the project and NYPA is not proposing to change those releases. A study of water quality downstream of the lower dam does not appear to be needed because, as detailed in NYPA’s PAD for the project, several water quality studies have already recently been conducted there (section 5.9(b)(4)) by NYPA and others. Similarly, fish and macroinvertebrate studies have also been conducted.

Although ichthyoplankton or zooplankton studies have not been conducted downstream of the lower dam, any such plankton would have originated in upstream reservoirs, not in Schoharie Creek downstream of the dam; therefore, such a study is not consistent with generally accepted practice (section 5.9(b)(6)) and would not inform the development of license conditions (section 5.9(b)(5)). Finally, concerning the effect of the existing flow regime on sediments in the Schoharie Creek channel downstream of the lower dam, we note that channel maintenance occurs during high, bankfull flows and that these flows occur now during spill events, and would continue to occur under any new license issued for the project (section 5.9(b)(5)).

For the reasons discussed above, the Schoharie County Board of Supervisors' requested study concerning downstream flow releases and aquatic resources should not be required.

Study 8 – Dam Safety Study

Study Request

Schoharie County and the Schoharie County Board of Supervisors request an additional dam safety study for the Blenheim-Gilboa Project. Schoharie County requests a dam safety study that incorporates information from all agencies that possess data on extreme weather events and potential risks for dam failure to help identify areas of concern related to dam safety. Schoharie County Board of Supervisors requests a study to determine the ability of the project's three Tainter gates to pass safely a PMF event without compromising dam safety.¹²

Comments on the Study

NYPA does not propose to perform an additional analysis of the adequacy of the Tainter gates and spillway. NYPA states that Part 12 of the Commission's regulations set forth the Commission's dam safety program for evaluating all water-retaining project facilities, including structures, spillways, gates, and foundations.

Discussion and Staff Recommendation

In its August 8, 2014 study request, Schoharie County Board of Supervisors requests a dam safety study, but neither this entity nor the other requesting parties propose a study that would inform the development of license requirements or why its study methodology is preferable over the methodology required by the Commission's Part 12 regulations (section 5.9(b)(5) and (6)). The Commission's Part 12 regulations address issues related to dam safety as they arise, including changes in design criteria and

¹² We also received several requests from stakeholders regarding NYPA's PMF estimate, discussed above in Study 5.

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site conditions. It is not clear that an additional study would provide benefits above those afforded by the Commission's Part 12 program, which provides for annual project inspections of the Blenheim-Gilboa Project by the Commission's dam safety engineers, inspections every five years by an independent consultant, annual testing of the spillway Tainter gates, filing of regular project safety reports, and maintenance of an emergency action plan (EAP) that is reviewed during annual project coordination meetings and tested annually by NYPA staff.

For the reasons discussed above, we do not recommend that NYPA be required to develop the requested Dam Safety Study.

Document Content(s)

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