



**VIA Electronic Filing**

September 15, 2016

Kimberly Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: Blenheim-Gilboa Pumped Storage Project, FERC Project No. 2685-026  
Filing of Updated Study Report for Recreation and Socioeconomics Studies**

Dear Secretary Bose:

The Power Authority of the State of New York (Power Authority) is relicensing the Blenheim-Gilboa Pumped Storage Project (FERC No. 2685) (Project) using the Federal Energy Regulatory Commission's (Commission) Integrated Licensing Process (ILP). By letter dated September 6, 2016, the Commission amended the ILP Process Plan and Schedule and revised the deadlines relating to the Updated Study Report (USR) for Study 4: Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use (Recreation Study) and Study 6: Socioeconomics Study. In the September 6 letter, the date for the Power Authority to file the USR for the Recreation and Socioeconomic Studies was revised from February 18, 2017 to September 15, 2016.

Pursuant to the Commission's September 6 letter, the Power Authority hereby submits the USR for the Recreation and Socioeconomic Studies.

Also in accordance with the Commission's September 6 letter, the Power Authority hereby notifies the Commission and licensing participants that the USR Meeting for the Recreation and Socioeconomic Studies will take place on September 29, 2016 at 9:00 am to noon, at the following location:

Howe Caverns  
255 Discovery Drive,  
Howes Cave, NY 12092

Following the USR meeting on September 29 for the Recreation and Socioeconomic Studies, the Power Authority will file a meeting summary by Monday, October 17, 2016. Licensing participants will then have until November 14, 2016 to file comments, disputes, and requests for modifications to the Recreation and Socioeconomics Studies.

The Power Authority is filing the USR for the Recreation and Socioeconomics Studies with the Commission electronically. Participants may access the USR on the Commission's website (<http://www.ferc.gov>) by going to the "eLibrary" link and entering the docket number, P-2685. The Power Authority is also making the USR available on the Project relicensing website ([www.bg.nypa.gov](http://www.bg.nypa.gov)).

The Power Authority appreciates the continued participation of Commission Staff and licensing participants in the ILP for this Project. If you have any questions regarding this matter, please direct them to me at (914) 681-6564 or [Rob.Daly@NYPA.gov](mailto:Rob.Daly@NYPA.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Rob Daly", written in a cursive style.

Robert Daly  
Manager, Licensing

# RECREATION USE/USER CONTACT STUDY AND ASSESSMENT OF EFFECTS THE PROJECT HAS ON RECREATION USE

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ENGINEERS

 **TRC**

September 2016

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

FERC NO. 2685



**NY Power  
Authority**

## **EXECUTIVE SUMMARY**

### *Background*

The Power Authority of the State of New York (Power Authority) is seeking a new license from the Federal Energy Regulatory Commission (FERC) for the continued operation of the Blenheim-Gilboa Pumped Storage Power Project (B-G Project) (FERC No. 2685). The B-G Project is on Schoharie Creek, a tributary of the Mohawk River, in the northern Catskill Mountains about 40 miles southwest of Albany, New York. The Power Authority is using the Commission's Integrated Licensing Process as outlined in 18 C.F.R. Part 5. The original license was issued on June 6, 1969, and expires on April 30, 2019. One of the studies that the Power Authority is conducting to support its application for a new license is this Recreation Use/User Study.

The overall goal of the recreation study is to evaluate recreational use at the B-G Project and to determine the adequacy of existing B-G Project recreation sites and facilities in meeting recreation demand at the B-G Project. As set forth in the Revised Study Plan, the Power Authority conducted background research, gathered data from the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), and conducted a field study that included a combination of spot counts, calibration counts, traffic counts, and user contact surveys

Project recreation sites included in the study are Lansing Manor Complex (Lansing Manor House Museum and Visitors Center), Mine Kill State Park (including Mine Kill Falls Overlook), Schoharie Creek Fishing Access, Upper Reservoir Access Area – North, Upper Reservoir Access Area Boat Launch, and the Upper Reservoir Access Area – South. These recreation sites offer a variety of amenities and recreation opportunities to the public including picnicking, hiking, walking, fishing, boating, interpretive centers, and pool swimming.

### *Recreation Use*

Total recreation use at recreation sites within the B-G Project boundary was estimated to be 124,489 recreation days for the period from March 2015 through February 2016. The majority of this use occurred in the summer with 59 percent of the recreation days. Fall was the second most popular recreation season with 24 percent of recreation days, followed by winter with 9 percent of recreation days and spring with 8 percent of recreation days. Popular recreation uses at B-G Project recreation sites were visiting interpretive centers (26%), followed by walking/hiking/running (18%) and picnicking (10%). The next most popular recreation uses of the B-G Project included swimming at the Mine Kill State Park Pool (9%), sightseeing (9%), and disc golf (8%). Mine Kill State Park received the majority of the visitors with 73,125 recreation days or approximately 59 percent of the recreation days. The Visitors Center had 28,331 recreation days (23%), followed by the Mine Kill Falls Overlook with 14,487 recreation days (12%). B-G Project recreation facilities are used at 50 percent capacity or less based on parking lot usage on an average summer weekend.

### *Recreation User Surveys*

A recreation use survey provided an opportunity to gather information about the types of recreation activities that users were participating in, user opinions on a number of aspects of the recreation opportunities offered

in connection with the B-G Project, and basic information about party size and length of stay. User surveys were collected from 160 respondents.

The survey results reveal that recreationists at the B-G Project overwhelmingly rate the facilities positively. Ninety-five percent (95%) of respondents said that they would return to the recreation site over the course of the next year. When asked if the recreation site/facility served their interests, 100 percent of the respondents answered yes. The survey asked recreationists to rate several aspects of the recreation sites, facilities and amenities provided at the Project on a scale of 1 (poor) to 5 (excellent). A strong majority of the respondents gave a rating of either Excellent (5) or Fair-Excellent (4) when asked about the availability of parking (91%), site condition (98%), the variety of facilities/amenities (88%), and the availability of access to B-G Project waters (83%).

When respondents were asked to provide their perception of the amount of use occurring at the site on a scale of 1 (not crowded) to 5 (extremely crowded), the majority of respondents' stated either Not Crowded (1) (69%) or Somewhat Crowded –Not Crowded (2) (14%). When asked about the number of available recreation facilities on a scale of 1 (not satisfied at all) to 5 (extremely satisfied), the majority of respondents were either Extremely Satisfied (5) (47%) or Moderately Satisfied (4) (24%). When asked whether they were aware of water levels, 70 percent stated that they were not. When asked how satisfied were they with water levels during their trip all of the survey respondents answered that they were Extremely Satisfied (32%) Moderately Satisfied (38%), or Satisfied (30%). Finally, when asked to rate the recreation site as a public recreation opportunity on a scale of 1 (no value at all) to 5 (Highly Valued) the majority of respondents stated Highly Valued (74%) or Some Value to Highly Valued (22%).

#### *Future Recreation Use*

The study projected future recreation demand at the existing B-G Project recreation sites. This was accomplished by combining regional population trends with predicted increases in recreation use/demand for various types of recreation activities to create estimated growth for recreation activity types. These growth projections were applied to existing recreation use to examine which of the existing recreation sites would be able to meet projected increases in use. For the period from 2015 through 2060, projected growth at B-G Project recreation sites averages 26 percent with a total of 156,435 projected recreation days for 2060. Based on summer weekend use of available parking spaces, B-G Project recreation sites will be used at less than 60 percent capacity in 2060, allowing room for future recreation use.

#### *Recreational Boating*

The Recreational Boating Desktop Feasibility Assessment found that limited boating occurs from the Lower Dam to Max V. Shaul State Park, which appears to be due to insufficient flow and corresponding low water depths throughout much of the boating season (April to October). For most of the year, except during the spring freshet months of April and May, runoff from 316 square miles of the watershed is diverted to the New York City water supply system. The hydraulic analysis confirmed that water depths in this reach of Schoharie Creek are often less than 1.5 to 2 feet at flows between 350 cfs and 1,000 cfs. These flows typically only occur during the spring freshet when water is spilled over Gilboa Dam and there is snowmelt runoff. The assessment also found that there are many recreational boating opportunities that are of higher difficulty elsewhere on Schoharie Creek and within 50 miles of the Project on other sources of water. The results of the recreation use counts and user surveys from the Recreation Use/User Contact Survey are consistent with the findings in the Recreational Boating Desktop Feasibility Assessment. Non-motorized

boating was participated in by less than 1 percent of the users or 388 recreation use days out of a total of 124,489 recreation user days. Of the 160 survey respondents who identified the recreational activity in which they reported participation, only 4 respondents identified non-motorized boating (canoeing and/or kayaking). None of the respondents' written comments addressed boating downstream of the Project dam or additional access points above and downstream of the Project dam.

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## List of Abbreviations

ADA	Americans with Disability Act
B-G Project	Blenheim-Gilboa Pumped Storage Power Project
FERC	Federal Energy Regulatory Commission
ft	feet or foot
ISR	Initial Study Report
NYSDEC	New York State Department of Environmental Conservation
NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation
PAD	Pre-Application Document
Power Authority	New York Power Authority
Project	Blenheim-Gilboa Pumped Storage Power Project
PSP	Proposed Study Plan
RSP	Revised Study Plan
SCORP	State Comprehensive Outdoor Recreation Plan
SPDL	Study Plan Determination Letter
USDA	United States Department of Agriculture

## 1 Introduction

### 1.1 Background

The Power Authority of the State of New York (the Power Authority) is licensed by the Federal Energy Regulatory Commission (FERC) to operate the Blenheim-Gilboa Pumped Storage Project (B-G Project or the Project), FERC No. 2685. The B-G Project is located on Schoharie Creek, a tributary of the Mohawk River, in the northern Catskill Mountains, about 40 miles southwest of Albany, New York.

The original license was issued on June 6, 1969, and expires on April 30, 2019. As required by law, the Power Authority will be applying for a new license for the B-G Project on or before April 30, 2017. In accordance with FERC's Integrated Licensing Process, the Power Authority filed a Proposed Study Plan (PSP) with FERC and relicensing stakeholders on September 22, 2014. The PSP included, among other plans, a study plan to conduct a Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use (Recreation Study). On January 20, 2015, the Power Authority filed its Revised Study Plan (RSP) with FERC, in which it responded to stakeholders' comments on the PSP.

In a letter dated February 19, 2015, FERC issued its Study Plan Determination Letter (SPDL), in which it approved with modifications the Power Authority's RSP for the Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use. Modifications recommended by FERC included revisions to questions on the user contact survey form, the hours and days during which certain field work should be conducted, and a recommendation to develop a Recreation Facilities Table and a Recreation Amenities Table in accordance with FERC's *Project Recreation Facilities and As-Built Site Plan Drawing Guidance* (June 2014) as part of the study report.

As part of its recommended modifications on the Recreation Study, FERC also recommended that the Power Authority conduct a desktop analysis of the feasibility of releasing recreational flows from the Lower Dam under a variety of operational scenarios (Desktop Boating Analysis). The Power Authority filed the report for the Desktop Boating Analysis in conjunction with its Initial Study Report (ISR) in February 2016. FERC issued a second SPDL on June 17, 2016, which recommended no modifications to the Recreation Study. The June 2016 SPD did state that it would defer a decision on requests made by American Whitewater (AW) to modify the Desktop Boating Analysis until after FERC has reviewed the Recreation Use/User Contact Study report.

### 1.2 Study Goals and Objectives

In accordance with the Study Plan, the overall goal of the study is to evaluate recreational use at the B-G Project and to determine the adequacy of existing B-G Project recreation sites and facilities in meeting recreation demand at the B-G Project. The information from this study will be used to assess the potential effect of continuing operation and maintenance of the B-G Project on recreation use and existing Project recreation sites and facilities.

As set forth in Section 2.4.3 of the RSP, the objectives of the study are to:

- Determine the amount and types of recreation use at the B-G Project;
- Interview the recreating public to determine users' perceptions with regard to their use of the B-G Project recreation sites and facilities;

- Evaluate recreational demand at the B-G Project and determine if the existing B-G Project recreation sites and facilities are meeting the current demand; and
- Evaluate the effects of the B-G Project operation and maintenance on recreation use at the B-G Project and the usability of B-G Project recreation sites and facilities, including the effects of debris accumulation on recreational access.

## 2 Project Description and Study Area

The Power Authority’s B-G Project is located on the Schoharie Creek in the towns of Blenheim and Gilboa, about 40 miles southwest of Albany in Schoharie County, NY. The principal features of the Project include a 399-acre Upper Reservoir and dike, a 412-acre Lower Reservoir and dam, conduits connecting the two reservoirs, an underground powerhouse, a spillway, and related facilities. Public recreational use and access is permitted on both the Upper and Lower Reservoirs.

In accordance with the RSP, the study area encompasses those lands and waters within the B-G Project boundary ([Figure 2-1](#)) that are available for public recreation. [Table 2-1](#) describes the following recreation sites which were included in the study:

- **Lower Reservoir Sites:** Lansing Manor Complex, which includes the Visitors Center; and Mine Kill State Park, which includes Mine Kill Falls Overlook;
- **Lower Reservoir Tailrace Site:** the Schoharie Creek fishing access; and
- **Upper Reservoir Sites:** Upper Reservoir Access Area – North, Upper Reservoir Access Area – Boat Launch, and Upper Reservoir Access Area - South.

The location of these recreation sites are shown on [Figure 2-1](#). In accordance with the Commission’s February 2015 SPDL, [Appendix A](#) contains proposed Recreation Facilities and Recreation Amenities tables, which follow the Commission’s June 2014 *Project Recreation Facilities and As-Built Site Drawing Guidance*.

**Table 2-1:  
Project Recreation Sites within the B-G Project Boundary**

Site Name	Amenities	Reservoir
Lansing Manor Complex	Visitors Center, Lansing Manor House Museum, parking, picnic area, trails, overlook, interpretive displays	Lower Reservoir
Mine Kill State Park	Overlooks, ballfields, basketball court, boat launch, swimming pool, playgrounds, picnic areas, disc golf, trails, interpretive displays, winter recreation	Lower Reservoir
Schoharie Creek Fishing Access	Parking, angler access	Lower Reservoir Tailrace
Upper Reservoir Access Area - North	Parking, angler access	Upper Reservoir
Upper Reservoir Access Area – Boat Launch	Parking, car-top boat launch	Upper Reservoir
Upper Reservoir Access Area - South	Parking, angler access	Upper Reservoir

These recreation sites were described in detail in the Pre-Application Document (PAD) submitted to FERC on April 10, 2014 ([NYPA, 2014](#)). This section includes a description of the Project recreation sites. While the descriptions are primarily based on the PAD, they have been updated to include changes observed at the sites during the 2015-2016 field work for the Recreation Use/User Survey.

## **2.1 Lansing Manor Complex (Lansing Manor House and Visitors Center)**

The Lansing Manor Complex (Complex) includes the Lansing Manor House, which is open to the public free of charge from May 1st to October 31st. The manor house is owned by the Power Authority, which operates it as a house museum in cooperation with the Schoharie County Historical Society. The manor house shares parking and restroom facilities with the Visitors Center, which is located in the complex's former barn. A lift provides Americans with Disability Act (ADA) access to the first floor of the manor house.

The Visitors Center is owned, operated, and maintained by the Power Authority. The admission-free center is open to the public year-round and has exhibits and interactive displays, which describe the Project, how electricity is made, and the local environment. The Visitors Center has restroom facilities and provides ADA access to the exhibits and interpretive displays. The Power Authority also provides a number of public programs at the Complex including but not limited to the annual Wildlife Festival; Antique Auto Show; movies; American Mountain Men weekends; seasonal hikes; an Earth Day weekend; and educational energy programming. All programming is free to the public.

There are numerous picnic tables, including ADA compliant tables, and benches on the grounds of the Complex, along with a picnic shelter. Interpretive displays are located around the property including several positioned along a wetland interpretive trail, located southwest of the Visitors Center within the Complex. The 2 ½ mile Bluebird trail travels between the Visitors Center and Mine Kill State Park. The large parking area provides three ADA parking spaces and 42 vehicle parking spaces. The spaces are delineated and lighting is provided. There is also a small weather station, solar panels and a windmill located at the site.

There have been no significant changes at the Lansing Manor Complex since publication of the PAD in 2014.

## **2.2 Mine Kill State Park**

Mine Kill State Park is owned by the Power Authority and is maintained/operated by the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). The Power Authority fully compensates NYSOPRHP for the operation and maintenance of Mine Kill State Park, paying over \$4.6 million in operations and \$2.1 million for capital projects since 2005.

The park offers a variety of amenities and activities to the public. The park has an Olympic-sized swimming pool, wading pool, diving pool, basketball court, horseshoe pits, playgrounds, soccer fields, volleyball net, hiking trails, picnic tables and picnic shelters, and mountain biking trails. There are approximately 6.5 miles of trails located within the park, including an approximately 3.5 mile section of the Long Path. In addition there are six other trails, which offer varying topography for different skill levels and range in length from 0.14 miles to 1.29 miles. These trails include the Nature Trail, the Old Long Path, the Orange Nature Trail, the Red Nature Trail, and the Yellow Trail. The park is also open in the winter for snowshoeing, snowmobiling, cross-country skiing, sledding, and ice-skating on a man-made rink.

A hard surface boat launch, which was constructed in 1973, provides public access to the Lower Reservoir. The Lower Reservoir is open to the public from April to September for fishing, boating (motorized and non-motorized), waterskiing, windsurfing, and tubing. The shoreline is also open to shoreline fishing. The park provides ADA-accessible parking, picnic tables, showers, changing rooms, and restroom facilities. There

are numerous parking lots available within the park, which provide parking for over 300 regular vehicles, eight ADA spaces, 49 vehicles with trailers, and 1 ADA vehicle with trailer.

Since the development of the PAD, NYSOPRHP has constructed an 18-hole disc golf course and replaced picnic tables and playground equipment. NYSOPRHP also completed general maintenance projects including new asphalt on the parking lot at the swimming pool. On August 20, 2015, NYSOPRHP also eliminated entrance and pool fees at Mine Kill State Park as part of an agreement between NYSOPRHP and Power Authority. The Power Authority compensates NYSOPRHP for the lost revenue. NYSOPRHP does charge a rental fee for use of the picnic shelters that are available around the Park.

In 2014, the Power Authority eliminated the application and permit procedure that was used for recreational boaters to gain entry to the Upper and Lower Reservoirs, which originally had been implemented shortly after September 11, 2001. Instead, boaters wishing to launch at Mine Kill are required to check in at Mine Kill State Park's office on the day they intend to use the reservoir.

Mine Kill Falls Overlook, which is a part of the Mine Kill State Park, is located just south of the main park area on Route 30 and offers views of Mine Kill Falls from a series of decks and stairs. Parking at the site can accommodate approximately 20 vehicles. The Long Path as well as two portions of the Old Long Path can be accessed from the overlook. Since development of the PAD, NYSOPRHP has completed general maintenance projects at the site such as refreshing paint on the stair railings. In addition, NYSOPRHP has installed new interpretive panels and a new kiosk at the site.

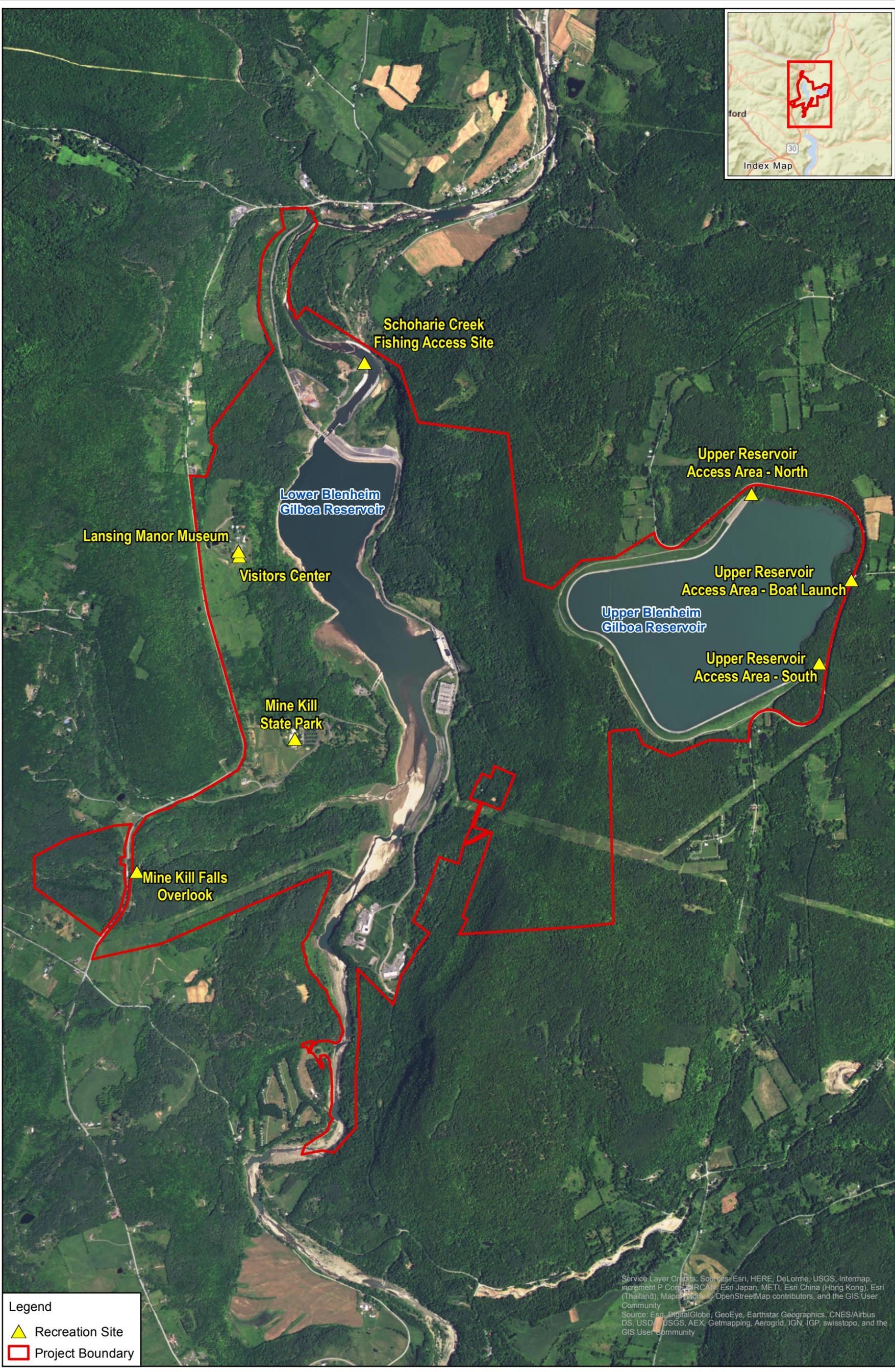
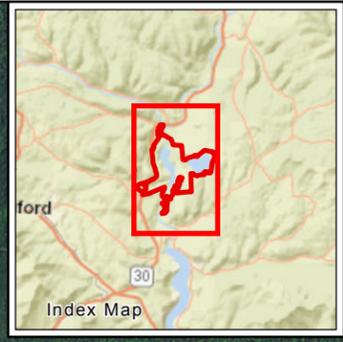
### **2.3 Schoharie Creek Fishing Access Site**

The Power Authority owns and operates an access area below the Lower Dam for anglers. At the time of the development of the PAD, this site had a gravel parking area that could hold approximately eight vehicles. Though there were no formal trails, individuals could access the downstream shoreline for fishing from the parking area or choose to drive further downstream to access the shore. Since the development of the PAD, the Power Authority has improved the road to allow individuals to drive further downstream to access the shore and has added a parking area for approximately six vehicles.

### **2.4 Upper Reservoir Recreational Facilities**

The Upper Reservoir is open to recreational craft, including rowboats and canoes, with or without electric-trolling motors, and fishing. Swimming, waterskiing, tubing, and windsurfing are not permitted on the Upper Reservoir. The Power Authority provides three access areas on the Upper Reservoir, which are open to the public free of charge. Individuals can access the service road that travels around the Upper Reservoir from two of the access areas (the northern and southern areas). There is room for parking approximately six vehicles at the southern access and three vehicles at the northern access along the access road. The boat launch access has a gate, which blocks access to the Upper Reservoir shoreline by vehicles. Individuals can arrange with the Power Authority to have the gate opened for launching or can walk to the shoreline around the gate. The boat launch access has room for approximately two vehicles outside of the gate.

There have been no changes to the three Upper Reservoir sites since the development of the PAD. As previously discussed, the Power Authority discontinued the application and permit procedure that was used for recreational boaters to gain entry to the Upper Reservoir. Boaters wishing to launch are required to check in at the Power Authority's south gate on the day they plan to use the Upper Reservoir.



**Legend**

- ▲ Recreation Site
- Project Boundary

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Blenheim-Gilboa Pumped Storage Power Project  
 FERC No. 2685  
**Recreation Use/User Contact Study  
 and Assessment of Effects  
 the Project has on Recreation Use**

0 0.25 0.5 1 Miles



**Figure 2-1**  
 Location of Project Recreation Sites

## 3 Methods

### 3.1 Background Research

As set forth in Section 2.4.7 of the RSP, the Power Authority conducted background research, including reviewing the B-G Project's Exhibit R, the 2015 FERC Form 80, and the Recreation Facilities Summary. This information was used to verify B-G Project recreation site locations, and to determine the survey routes for conducting spot and calibration counts, and locations for traffic counter placement. Traffic counter locations were further refined during the field work phase of the study.

The Power Authority also reached out to NYSOPRHP to determine available recreation use and facility data for Mine Kill State Park. In response, NYSOPRHP provided use records based on traffic count information for April 1, 2015 through December 28, 2015; pool use data for June 27, 2015 through September 7, 2015; and observation use estimates for January and February 2016.<sup>1</sup>

### 3.2 Field Data Collection

The Power Authority collected field data between March 8, 2015 and February 27, 2016. Data collection included a combination of spot counts, calibration counts, traffic counts, and user contact surveys. These methods are described in detail below. Details of the methods used to develop estimates of recreation use, activities, and utilization (percent capacity) are provided in [Section 3.4.2](#).

#### 3.2.1 Spot Counts

Spot counts were conducted at the B-G Project recreation sites to record a snapshot of use at each location. The counts were conducted at each site (*i.e.*, Schoharie Creek Fishing Access, Lansing Manor Complex, Mine Kill State Park, Mine Kill Falls Overlook, and the three sites on the Upper Reservoir) on one weekday and one weekend day a month, which were randomly selected, during the period March 8, 2015 through February 27, 2016. Staff typically visited each location twice during a spot count day to record the number of vehicles parked at each location and any observed recreation use. Spot counts were conducted at varying times throughout the recreation day between sunrise and sunset, or during a site's normal operating hours. Observed use including the number of cars, boats/trailers, and people at the site was recorded on a standardized form ([Appendix B](#)) and entered into an Excel spreadsheet. To the extent that it was obvious, staff also recorded the number of people observed participating in recreation activities. Staff also recorded obvious non-recreational vehicles such as a Power Authority vehicle. These vehicles were removed from the count so that the calculations could focus on recreation use. [Table 3.2.1-1](#) provides the survey dates for locations at which spot counts were conducted.

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<sup>1</sup> Actual use data was requested for March 2014 through February 2015 to correspond with field data collection dates.

**Table 3.2.1-1:  
Recreation Spot Count Survey Dates**

Month	Dates Surveyed
March 2015	15, 17
April 2015	4, 7
May 2015	19, 30
June 2015	26, 28
July 2015	20, 25
August 2015	8, 27
September 2015	6, 21
October 2015	15, 24
November 2015	16, 22
December 2015	8, 19
January 2016	17, 20
February 2016	1, 27

### **3.2.2 Calibration Counts**

Similar to spot counts, calibration counts were conducted on one randomly selected weekday and weekend day a month at the Project recreation sites. During the holiday weekends of Memorial Day, 4th of July, Labor Day, Columbus Day, Thanksgiving, New Year's Day, and President's Day, an additional calibration count was conducted.

In the SPDL, FERC recommended four additional calibration days be conducted during the peak summer season. Accordingly, a third calibration count was conducted in June and four calibration counts were conducted in July and August. [Table 3.2.2-1](#) provides the dates on which calibration counts were conducted for each recreation site. A standard form was utilized at each site for recording the number of people observed along with observed activities; the number of vehicles and trailers including time entering and leaving the site; and space for additional notes. Calibration counts were conducted on randomly selected days at varying times during the recreation day so that all portions of the day between sunrise and sunset were covered during the course of the study, with the exception of recreation sites that have set operating hours. The sites that have set operating hours are the Lansing Manor Complex, Mine Kill State Park, and Mine Kill Falls Overlook. Staff typically remained at a site for two hours. A copy of the blank form can be found in [Appendix B](#).

**Table 3.2.2-1:  
Recreation Site Calibration Count Survey Dates**

Month	Dates Surveyed at Each Recreation Site						
	Schoharie Creek Fishing Access	Lansing Manor Complex	Mine Kill State Park	Mine Kill Falls Overlook	Upper Reservoir North Access	Upper Reservoir Boat Launch	Upper Reservoir South Access
March 2015	8, 13	8, 13	8, 13	8, 13	11, 21	11, 21	11, 21
April 2015	18, 30	18, 30	18, 30	18, 30	23, 25	23, 25	23, 25
May 2015	5, 9, 25	5, 9, 25	5, 9, 23	6, 9, 25	6, 10, 23	6, 10, 23	6, 10, 23
June 2015	6, 7, 11	6, 7, 11	6, 7, 11	6, 7, 11	12, 20, 21	12, 20, 21	12, 20, 21
July 2015	4, 15, 18 30	4, 15, 18 30	4, 15, 18 30	4, 15, 18 30	5, 16, 26, 31	5, 16, 26, 31	5, 16, 26, 31
August 2015	1, 4, 13, 24	1, 4, 13, 24	1, 4, 13, 24	1, 4, 13, 24	2, 5, 14, 25	2, 5, 14, 25	2, 5, 14, 25
September 2015	5, 12, 24	5, 12, 24	5, 12, 24	5, 12, 24	7, 13, 25	7, 13, 25	7, 13, 25
October 2015	3, 12, 22	3, 12, 22	3, 12, 22	3, 12, 22	4, 11, 23	4, 11, 23	4, 11, 23
November 2015	7, 12, 28	7, 12, 28	7, 12, 28	7, 12, 28	8, 11, 29	8, 11, 29	8, 11, 29
December 2015	7, 12	7, 12	7, 12	7, 12	9, 13	9, 13	9, 13
January 2016	2, 23, 27	2, 23, 27	2, 23, 27	2, 23, 27	3, 24, 28	3, 24, 28	3, 24, 28
February 2016	10, 14, 20	10, 14, 20	10, 14, 20	10, 14, 20	11, 15, 21	11, 15, 21	11, 15, 21

### 3.2.3 Traffic Counters

On May 22, 2015, the Power Authority installed Diamond Traffic Products Traffic Tally® 6 tube counters at the Upper Reservoir Access—Boat Launch, the Schoharie Creek Fishing Access, and at the entrance to the Lansing Manor House/Visitors Center Complex. The Power Authority did not install traffic counters at the Upper Reservoir North and South Access sites. These two sites were not conducive to the recording of cars crossing the counters because there is no appropriate location for proper alignment with the road bed or room to place a counter prior to the first parking location.

The counters at Mine Kill State Park and Mine Kill Falls Overlook are owned and operated by NYSOPRHP, which granted permission to the Power Authority to record use at these counters. The NYSOPRHP counters were also tube type counters that ran continuously over the course of the study. Staff recorded traffic counter data at Mine Kill State Park and Mine Kill Falls Overlook during the same period that staff recorded traffic counter data for the Power Authority sites *i.e.*, between May 22, 2015 and October 30, 2015. Mine Kill State Park staff monitored counter data through December 28, 2015 for use in developing their attendance records.

Field staff visited the traffic counters two times a week, typically on Monday and Friday, to differentiate between weekday and weekend use. On weeks containing Memorial Day, July 4<sup>th</sup>, Labor Day, and Columbus Day, the weekend was expanded to include the observed holiday. The Power Authority removed the traffic counters on October 30, 2015 in accordance with the RSP.

### 3.2.4 Actual Use Records

Actual use records were collected for Lansing Manor House, the Visitors Center, and Mine Kill State Park. The Power Authority owns the Lansing Manor complex, which contains the Lansing Manor House Museum and a Visitors Center, which is housed in the complex's dairy barn. While the Power Authority is the operator of the Visitors Center, the museum is operated in cooperation with the Schoharie County Historical Society. Use numbers, based on staff observations, are maintained at both the Museum and the Visitors Center. Additional recreation use data available for the B-G Project included Power Authority issued hunting permits for bow hunting on B-G Project lands and reported boating use on the Upper Reservoir at the Upper Reservoir Access—Boat Launch.

NYSOPRHP, which operates Mine Kill State Park, tracks use of the main portion of the park, the swimming pool, motor boating launching on the Lower Reservoir, and the Mine Kill Falls Overlook. This use information is based on a combination of traffic counter data, entrance fee collection, and observed use. It should be noted that entrance fee collection was discontinued at the park on August 20, 2015, but, NYSOPRHP continued to track pool use through the end of the swim season on September 7, 2015. As noted earlier, NYSOPRHP provided the Power Authority with its daily use records, pool attendance records, and motor boating use on the Lower Reservoir.

### 3.2.5 Water Depth Data

To evaluate potential effects of Project operations on the Mine Kill State Park boat launch and at the Upper Reservoir boat launch, the Power Authority used bathymetric data for both the Upper and Lower Reservoirs. The Power Authority conducted a bathymetric and photogrammetric survey of the Lower Reservoir in 2011 ([TVGA, 2012](#)) and one of the Upper Reservoir in 2004 ([Sewall, 2004](#)). This information was compared to minimum operating limits for both reservoirs to determine the usability of the Mine Kill State Park boat launch and the Upper Reservoir boat launch during times of low water. A standard minimum launching depth of three feet was utilized when determining if an adequate amount of water was available for launching boats with motors ([SOBA, 2006](#)).

To evaluate the potential effects of debris accumulation on boating, a review of recreation user survey data from the User Contact Survey and photographs of the two boat launches was conducted. The following survey questions had the potential to provide information on debris accumulation:

- Question 18 – What did you like least about your recreation experience today?
- Question 20 - “What, if anything, detracted from your recreation experience today?” If you check any of the below, please explain.

Facility location \_\_\_\_\_ Facility condition \_\_\_\_\_ Lack of amenities \_\_\_\_\_ Accessibility \_\_\_\_\_

Trash/Sanitation \_\_\_\_\_ Debris on the water \_\_\_\_\_ Crowding \_\_\_\_\_ Noise \_\_\_\_\_ Other \_\_\_\_\_

- Question 24. Do you have any additional comments regarding recreation opportunities within the Blenheim-Gilboa Project?

### 3.3 User Contact Survey

A user contact survey was developed in consultation with NYSOPRHP and included in the RSP. As part of the SPDL, FERC recommended that the following changes be made to the user contact survey prior to utilization:

- Question 5 was 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)?”
- Question 7 was modified to read: “When did you arrive today and when do you plan to depart?”
- Question 8 language was changed to clarify that the question is referring to the site where the survey is being conducted.
- On questions 10 and 13 the scale was modified as requested by FERC.
- On question 11 the words “past year” were made bold.
- On question 22 the words “Mine Kill State Park Only” were made bold.

Administration of the user contact survey occurred during calibration counts to one member of each party of recreationists. A copy of the survey form that was used is included in [Appendix C](#). Dates on which the survey was administered are provided in [Table 3.2.2-1](#).

### 3.4 Data Entry and Statistical Analysis

#### 3.4.1 Data Entry and Quality Assurance/Quality Control

All field data were recorded onto the appropriate field form while on site, forms were then scanned, and the data entered into Excel spreadsheets. Once data entry for a given time period was complete, the forms and spreadsheets were sent to another staff member who reviewed the spreadsheets for accuracy.

#### 3.4.2 Data Analysis

##### 3.4.2.1 Project Recreation Use

Recreation use was evaluated for each site and for the Project, as a whole, on both a seasonal and annual basis. A project-wide estimate of recreation use at the B-G Project was derived from recreation site use estimates and calculations that were developed for each recreation site. Overall B-G Project use is presented in terms of the total number of recreation days spent at the B-G Project. Consistent with FERC’s definition, a recreation day was defined as each visit by a person to the B-G Project for recreational purposes during any portion of a 24-hour period.

##### 3.4.2.2 Recreation Site Use

###### 3.4.2.2.1 Lansing Manor House, Visitors Center, and Mine Kill State Park

Actual use records were used to calculate use for three recreation sites: Lansing Manor House, the Visitors Center, and Mine Kill State Park. The Power Authority maintains monthly counts of visitors to Lansing Manor House and the Visitors Center. These records were summed to develop seasonal use at each site.

Mine Kill State Park also maintains records on attendance at the park, using a combination of traffic counters (April 2015 through December 2015) and staff observations (January and February 2016) to develop daily estimates. NYSOPRHP was unable to provide the Power Authority with Mine Kill State Park data for March 2015. Based on the observed relationship between March 2015 and April 2015 spot counts at Mine Kill State Park, the level of use for April 2015 was determined to be an appropriate, if slightly higher, proxy for the March 2015 data. Therefore, for the purposes of this study, March 2015 recreation use at Mine Kill State Park is assumed to be the same level as April recreation use. Daily records provided by NYSOPRHP were summed to develop seasonal use at the park.

#### 3.4.2.2.2 Mine Kill Falls Overlook, Schoharie Creek Fishing Access, and Upper Reservoir Access Sites

Spot count, calibration data, and traffic counts were used to estimate use for Mine Kill Falls Overlook, Schoharie Creek Fishing Access, and the Upper Reservoir Access—Boat Launch.<sup>2</sup> Spot count and calibration data were used to estimate use at the Upper Reservoir – South Access and Upper Reservoir – North Access.<sup>3</sup> The count data included average persons per party by season, number of recreationists observed, number of vehicles observed, and any non-recreational use observed. For developing use estimates, key data utilized from the user surveys were the averages of the length of time at each site by season.

Use estimates, in terms of recreation days, were developed for each type of survey day (weekday and weekend day) during each season. When totaled, the weekday and weekend use figures provided a total use estimate for each season and for the 12-month period from March 2015 through February 2016. Seasonal use was calculated by multiplying each day type (for example, “summer weekday”) by the number of that type of day per season. Recreation seasons were defined as follows:

- Winter: March and December 2015 and January and February 2016;
- Spring: April 1 through May 22, 2015;
- Summer: Memorial Day weekend (May 23) through Labor Day weekend (September 7) 2015; and
- Fall: September 8 through November 30, 2015.

The following steps were taken to develop seasonal estimates of recreational use:

- Spot counts and calibration counts were sorted by type of day (either weekday or weekend) and season. If obvious non-recreational vehicles, such as Power Authority trucks, were noted at a site, these vehicles were removed from the count so that the calculations would provide a clear picture of recreational use.
- For spot counts, point-in-time use for each observation was calculated by multiplying the vehicle count by the average number of persons per vehicles (calculated for each site from calibration data), unless the total number of people observed was greater. The average point-in-time use was calculated for each recreation site for each day type (e.g., summer weekends).
- For calibration counts, the average number of persons observed entering the site during the calibration period was calculated for each recreation site for each day type (e.g., summer weekends).

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<sup>2</sup> Traffic count data were collected for the summer and fall recreation seasons in accordance with the RSP.

<sup>3</sup> As noted earlier, these two sites did not have an appropriate location to place traffic counters.

- The average daily use from the spot and calibration counts was calculated for each site and day type by multiplying the average persons per count by the site-specific turnover factor, calculated from user survey data.
- Seasonal use for each day type was estimated by multiplying the total number of days (e.g., 75 summer weekend days) by the estimated daily use. Seasonal use is the sum of the calculated weekday and weekend use.
- For the sites with seasonal traffic counters, the count data were calibrated to accurately reflect the number of vehicles crossing the counter. Data were also collected on the percentages of vehicles, such as Power Authority vehicles, crossing the counter for non-recreational activities. The calibrated counts of recreation-related crossings were combined with the estimated number of persons per party (as established in the calibrations) to provide another estimate of the recreational usage at the sites. Traffic counter data provided an estimate of the total number of vehicles (including both recreational and non-recreational) visiting Mine Kill Falls Overlook, Schoharie Creek Fishing Access, and the Upper Reservoir Access—Boat Launch during the summer and fall recreation season.
- The estimates developed from the spot counts, calibration counts, and traffic counter data (as available) were averaged to establish the seasonal recreational use estimates for each of the sites.

#### *3.4.2.3 Recreation Site Capacity*

Recreation site capacity and percent utilization was also estimated. Site capacity (percent use) for all the sites included in the study was determined on the basis of parking area utilization. Specifically, spot counts made on summer weekends were averaged to produce an average level of use at a site's parking area. This average parking area use was compared to the maximum vehicle capacity of the parking area, to determine an average percent utilization. Peak observed capacity use was also calculated based on the ratio of the highest level of use observed during spot counts to the capacity of the parking area.

#### *3.4.2.4 Recreation Activity Types*

Estimates of the types of activities that recreationists participated in at the B-G Project were made from direct observations of recreationists during spot counts and calibrations. The Power Authority maintained records on use at the interpretative centers (Lansing Manor House and the Visitors Center). Those use records provided the data on interpretive center activity type use levels. Boating use at the Upper Reservoir Access—Boat Launch was also recorded by the Power Authority with the records used to determine recreation activity type use levels at the launch. At Mine Kill State Park, pool use and motor boating data were also used in the development of the activity percentages.

#### *3.4.2.5 Summary of Data Collections and Data Use for Recreation Use, Activity Estimates, and Capacity*

[Table 3.4.2.5-1](#) summarizes the data that was collected at each of the recreation sites, and how that data was used to develop recreation site use estimates, activity estimates, and capacity.

**Table 3.4.2.5-1:  
Summary of Data Collections and Data Use for Recreation Use and Activity Types**

Recreation Site	Spot Counts	Calibration Counts	Traffic Counter	Actual Use Records	Summary of Data Used for Recreation Use
Lansing Manor House	Yes	Yes	Yes	Yes	Use: Power Authority's records Activity: Power Authority's records, spot counts, and calibrations Capacity: Spot counts
Visitors Center	Yes	Yes	Yes	Yes	Use: Power Authority's records Activity: Power Authority's records, spot counts, and calibrations Capacity: Spot counts
Schoharie Creek Fishing Access	Yes	Yes	Yes	No	Use: Spot counts, calibrations, traffic counters Activity: Spot counts, calibrations Capacity: Spot counts
Mine Kill State Park	Yes	Yes	Yes	Yes	Use: Park's records Activity: Power Authority's spot counts and calibrations and Park's records for pool use and motor boating Capacity: Spot counts
Mine Kill Falls Overlook	Yes	Yes	Yes	No	Use: Spot counts, calibrations, traffic counters Activity: Spot counts, calibrations Capacity: Spot counts
Upper Reservoir Access—South	Yes	Yes	No	No	Use: Spot counts, calibrations Activity: Spot counts, calibrations Capacity: Spot counts
Upper Reservoir Access—North	Yes	Yes	No	No	Use: Spot counts, calibrations Activity: Spot counts, calibrations Capacity: Spot counts
Upper Reservoir Access—Boat Launch	Yes	Yes	Yes	No	Use: Spot counts, calibrations, traffic counters Activity: Spot counts, calibrations, Power Authority's records for motor boating Capacity: Spot counts

**3.4.2.6 Recreation User Surveys**

The Recreation User Survey was designed to gather information about user characteristics, use patterns, and user preferences. A copy of the User Survey is provided in [Appendix C](#). User characteristic data that was collected included number of persons in the party, whether the recreationist was a return user, and home ZIP code. The survey also gathered information related to use patterns, such as length of time at the site. Finally, the surveys included questions designed to gather users' perceptions of the recreation opportunities, sites, and facilities provided at the Project.

For questions asking users to identify their level of participation in different recreation activities, percentages were calculated to show the relative use of various activities. Other survey questions asked the user to provide ratings, on a scale from 1 to 5, of various recreation sites, facilities, and amenities. For these

questions, the percentage of responses for each rating (e.g., a “5”) was calculated to provide information on the full range of responses received.

## 4 Results

### 4.1 Recreation Use

#### 4.1.1 Overall Recreation Use

Based on data collected between March 2015 and February 2016, the total annual recreation use of surveyed recreation sites was estimated to be 124,489 recreation days. [Table 4.1.1-1](#) provides a breakdown of use by season and by site. As shown, more than half of the recreation use occurred during the summer with 59 percent of recreation days. Approximately 24 percent of the use was in the fall. Recreation use was lowest in spring (8%) and winter (9%). Annual recreation use was greatest at Mine Kill State Park (73,125 users annually), followed by the Visitors Center (28,331), Mine Kill Falls Overlook (14,487), Lansing Manor House (3,619) and Schoharie Creek Fishing Access (2,685). Use at the three Upper Reservoir access sites was minimal, with less than 1,000 users estimated for each site, on an annual basis.

**Table 4.1.1-1**  
**Use at the B-G Project Recreation Sites;**  
**Annual and Seasonal Use for March 2015 through February 2016**

Recreation Site	Annual Use	Winter Use		Spring Use		Summer Use		Fall Use	
		Users	Percent	Users	Percent	Users	Percent	Users	Percent
Mine Kill State Park	73,125	6,394	9%	5,575	8%	47,879	65%	13,277	18%
Visitors Center	28,331	4,637	16%	2,438	9%	10,510	37%	10,746	38%
Mine Kill Falls Overlook	14,487	330	2%	729	5%	10,035	69%	3,393	23%
Lansing Manor House	3,619	-	0%	394	11%	1,857	51%	1,368	38%
Schoharie Creek Fishing Access	2,685	112	4%	262	10%	1,424	53%	887	33%
Upper Reservoir Access—North	836	42	5%	91	11%	594	71%	109	13%
Upper Reservoir Access—Boat Launch	713	-	0%	98	14%	515	72%	100	14%
Upper Reservoir Access—South	693	22	3%	109	16%	501	72%	61	9%
<b>Total</b>	<b>124,489</b>	<b>11,537</b>	<b>9%</b>	<b>9,696</b>	<b>8%</b>	<b>73,315</b>	<b>59%</b>	<b>29,941</b>	<b>24%</b>

Percentages shown may not sum to 100% due to rounding.

#### 4.1.2 Recreation Use by Activity

[Table 4.1.2-1](#) summarizes the estimated or calculated use for each activity type Project-wide. As shown, the most popular recreation activity type at the B-G Project was visiting an interpretative center (either Lansing Manor House or the Visitors Center) at 26 percent. Based on Power Authority records, 31,950 recreation days at the B-G Project were spent participating in visiting interpretative centers.

Walking/hiking/running accounted for the second most frequent recreational use, accounting for an estimated 22,409 recreation days, or 18 percent of the total number of recreation days at the B-G Project. This activity was primarily observed at Mine Kill Falls Overlook and Mine Kill State Park. The next most

popular recreation uses of the B-G Project include picnicking (10%), sightseeing (9%), pool swimming (9%), and disc golf (8%).

**Table 4.1.2-1:  
Recreation Use by Activity Type based on Spot Counts, Calibration Counts, and Use Records, March 2015 through February 2016**

Recreation Activity	Use (Recreation Days)	Percent (%) of Recreation Use
Interpretative Center	31,950	26%
Walk/Hike/Running	22,409	18%
Picnic	12,842	10%
Sightseeing	10,914	9%
Pool Swimming	10,649	9%
Disc Golf	10,576	8%
Playground	5,256	4%
Soccer Camp	3,090	2%
Fishing	2,526	2%
Photography	1,441	1%
Ride Bikes	751	1%
Motor Boat	667	1%
Non Motor Boat	388	0%
Cross country Skiing	291	0%
Hunt*	77	0%
Snowmobile	-	0%
Other Use**	10,662	9%
<b>Total</b>	<b>124,489</b>	

\*A total of 89 hunting permits were issued. Hunters with permits are assigned specific areas of the B-G Project and were typically not observed hunting or parking in the recreation sites included in the spot or calibration counts. Based on observations, an estimated 27 hunters utilized parking spaces at the Upper Reservoir recreation sites. The remaining 62 are estimated to have used other locations for parking.

\*\*Other Use includes special events, meetings, geocaching, and general relaxation. Other Use also includes use that was unidentified, which may include both recreation-related and non-recreation use.

### 4.1.3 Recreation Use by Site

Recreation use for each site for the year, and by season, is summarized in [Table 4.1.1-1](#). The breakdown of recreation use by activity at each site is summarized in [Table 4.1.3-1](#). [Table 4.1.3-2](#) presents the average summer weekend and peak observed capacity use by site.

#### *Mine Kill State Park*

Recreation use for the period from March 2015 through February 2016 at Mine Kill State Park was 73,125 recreation days, based on Park records. Use was highest in the summer, at 65 percent of annual use (47,879). Fall use at the state park was 13,277 recreation days (18%). Winter use totaled 6,394 recreation days (9%). Use was lowest in the spring, with 5,575 recreation days (8%).

Popular activities at Mine Kill State Park include picnicking (17%), walking/running/hiking (16%), pool swimming (15%), and disc golf (14%). Sightseeing (8%), playground use (7%), summer soccer camps

(4%), photography (2%), motor boating (1%), bike riding (1%), non-motor boating (less than 1%), and cross country skiing (less than 1%) were also observed.

“Other use” accounted for 14 percent of the observed use at the park. Festival attendance was the most frequently observed “other” use at Mine Kill State Park. “Other use” also includes unidentified use which may be recreational or non-recreational in nature.

Based on use of the parking lot on summer weekends, Mine Kill State Park was utilized at 11 percent capacity. At Mine Kill State Park, the peak use observed was at 41 percent capacity on the Sunday of Labor Day weekend (September 6, 2015).

#### *Visitors Center*

Actual use records for the Visitors Center indicate that total annual recreation use was 28,331 recreation days for the period from March 2015 through February 2016. Use was highest in the fall, with 10,746 recreation days (38%) and in the summer, with 10,510 recreation days (37%). Winter use was 4,637 visitors (16%). Spring had the lowest level of use (2,438 recreation days or 9%). All recreation activity at the Visitors Center is classified as “visiting interpretative center;” although during their visit, recreationists may be participating in additional activities, such as picnicking and walking along trails.

The Visitors Center was utilized at 11 percent of capacity, based on the average summer weekend usage of the combined parking lot that serves the Visitors Center and Lansing Manor House. Peak observed capacity at the combined lot was 29 percent on the Sunday of Labor Day weekend (September 6, 2015).

#### *Mine Kill Falls Overlook*

The total number of recreation days during the 12-month period from March 2015 through February 2016 at Mine Kill Falls Overlook was estimated to be 14,487 recreation days. The majority of the use (69% or 10,035 recreation days) occurred in the summer. Fall usage was 3,393 recreation days (23%), with spring usage at 729 recreation days (5%). Usage was lowest in the winter with 330 recreation days (2% of total annual use).

The majority of the recreation use (66%) at Mine Kill Falls Overlook was walking/hiking/running. Sightseeing was also frequently observed, with 28 percent of total use. “Other use” (3%), fishing (2%), and photography (1%) were also observed occurring at the site. “Other use” included geocaching, as well as unidentified use that may include recreation or non-recreation use.

Based on parking area utilization, Mine Kill Falls Overlook was utilized at 17 percent, on average, during summer weekends. Peak observed capacity use at the Mine Kill Falls Overlook was 78 percent on the Sunday of Labor Day weekend (September 6, 2015).

#### *Lansing Manor House*

The total number of recreation days at the Lansing Manor House during the study period was 3,619, based on Power Authority records of use. The majority of use (51%) occurred during the summer, with 1,857 recreation days. Fall use accounted for 1,368 recreation days (38%), with 394 recreation days in the spring

(11%).<sup>4</sup> Lansing Manor House is closed during the winter. All recreation activity at Lansing Manor House is classified as “visiting interpretative center.” As with the Visitors Center, recreationists at Lansing Manor House may participate in additional activities, such as picnicking and walking along the trails.

Lansing Manor House shares a parking lot with the Visitors Center. The average observed summer weekend parking lot usage for the combined lot was 11 percent of capacity and peak observed capacity use for the combined lot was 29 percent on the Sunday of Labor Day weekend (September 6, 2015).

#### *Schoharie Creek Fishing Access*

For the study period, total recreation use at the Schoharie Creek Fishing Access was estimated to be 2,685 recreation days. Use was highest in the summer (1,424 recreation days or 53% of use for the 12-month period). Fall was also popular with 33 percent (887 recreation days) of use. Spring usage was 262 recreation days (10%). Usage was lowest in the winter, with 112 recreation days (4%).

Fishing was the most popular activity at the Schoharie Creek Fishing Access with 49 percent of recreation days spent participating in the activity. Sightseeing was also popular with 36 percent of use. Picnicking (8%), bike riding (5%), and walking/hiking/running (2%) were also observed. No “other use” was observed at the Schoharie Creek Fishing Access.

Based on observed parking area usage, the Schoharie Creek Fishing Access was utilized at 13 percent capacity, on average, during summer weekends. Peak observed capacity use was 25 percent, which was observed on four different summer weekends.

#### *Upper Reservoir Access—North*

The total number of recreation days at the Upper Reservoir Access—North was estimated to be 836 from March 2015 through February 2016. Usage peaked in the summer with 594 recreation days (71%). Fall usage was 109 recreation days (13%), with spring usage at 91 recreation days (11%). Winter usage was the lowest with 42 recreation days (5%).

Walking/running/hiking (47%) and fishing (40%) comprised the majority of the recreation activity observed at the Upper Reservoir Access—North. Bike riding (6%), picnicking (4%) and hunting (3%) were also recorded at the site.<sup>5</sup> No “other use” was observed at the Upper Reservoir Access-North

Based on parking area utilization, the area was utilized at less than 33 percent, on average, during summer weekends, with fewer than one of the three parking spaces occupied on average. Peak observed capacity use was 33 percent, with one space occupied, which was observed on Saturday, May 30, 2015.

#### *Upper Reservoir Access—Boat Launch*

Annual recreation use of the boat launch was estimated to be 713 recreation days during the study period. The majority of the use occurred in the summer, with 515 recreation days (72%). Spring use at the site was

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<sup>4</sup> Lansing Manor House is open from May 1 through October 31.

<sup>5</sup> Hunting use at the Upper Reservoir Access—North is limited to use of the parking facilities.

98 recreation days (14%). Fall use was 100 recreation days (14%). No recreation use was observed during winter spot counts and calibrations.

The activity most frequently observed at the boat launch was fishing (39%). Walking/running/hiking (22%), motor boating (15%), non-motor boating (11%), picnicking (9%), sightseeing (4%) were also noted at the sites. No “other use” was observed.

Based on parking area usage, the site was utilized at 50 percent of capacity on average during summer weekends. Peak observed capacity use at the Upper Reservoir Access—Boat Launch was 100 percent, with both parking spaces occupied. This level of use was only observed once during the 47 spot counts at the site (Saturday, May 30, 2015).

#### *Upper Reservoir Access—South*

There were an estimated total of 693 recreation days spent at the Upper Reservoir Access—South during the study period. Usage was highest in the summer with 501 recreation days (72%). Recreation use was also observed during the spring (109 recreation days or 16%) and the fall (61 recreation days or 9%). Winter usage was 22 recreation days (3%).

At the Upper Reservoir Access—South, the primary activity observed was walking/running/hiking (42%), followed by fishing (31%). Photography (8%), “non-motor boating” (5%), riding bikes (2%), and sightseeing (2%) were also observed. “Other use” accounted for 8 percent of use. The type of “other use” was not readily identifiable and may include both recreation and non-recreation use.

Based on parking area utilization, the area was utilized at less than 17 percent, on average, during summer weekends, with fewer than one of the six parking spaces occupied on average. Peak observed capacity use was 17 percent, with one space occupied, which was observed on two different summer weekends.

**Table 4.1.3-1:  
Percent of Recreation Use by Activity at Each Recreation Site**

Recreation Site	Motor Boat	Non-motor boat	Disc Golf	Photography	Fish	Picnic	Walk/jog/hike	Hunt	Ride Bikes	Sight-seeing	Pool Swimming	XC Ski	Interpretive Center	Soccer Camp	Play-ground	Other Use*
Mine Kill State Park	1%	0%	14%	2%	0%	17%	16%	0%	1%	8%	15%	0%	0%	4%	7%	14%
Visitors Center	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Mine Kill Falls Overlook	0%	0%	0%	1%	2%	0%	66%	0%	0%	28%	0%	0%	0%	0%	0%	3%
Lansing Manor House	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Schoharie Creek Fishing Access	0%	0%	0%	0%	49%	8%	2%	0%	5%	36%	0%	0%	0%	0%	0%	0%
Upper Reservoir Access—North	0%	0%	0%	0%	40%	4%	47%	3%	6%	0%	0%	0%	0%	0%	0%	0%
Upper Reservoir Access—Boat Launch	15%	11%	0%	0%	39%	9%	22%	0%	0%	4%	0%	0%	0%	0%	0%	0%
Upper Reservoir Access—South	0%	5%	0%	8%	31%	2%	42%	0%	2%	2%	0%	0%	0%	0%	0%	8%
Total B-G Project	1%	0%	8%	1%	2%	10%	18%	0%	1%	9%	9%	0%	26%	2%	4%	9%

\*\*Other Use\* includes unidentified use which may be recreational or non-recreational in nature.  
Percentages shown may not sum to 100% due to rounding.

**Table 4.1.3-2:  
Average Summer Weekend and Peak Use by Site**

Recreation Site	Available Spaces	Average Summer Weekend		Peak Use Observed	
		Spaces in Use*	Percent Capacity	Spaces in Use	Percent Capacity
Mine Kill State Park	406	46	11%	166	41%
Lansing Manor House and Visitors Center	45	5	11%	13	29%
Mine Kill Falls Overlook	23	4	17%	18	78%
Schoharie Creek Fishing Access	8	1	13%	2	25%
Upper Reservoir Access—North	3	1	33%	1	33%
Upper Reservoir Access—Boat Launch	2	1	50%	2	100%
Upper Reservoir Access—South	6	1	17%	1	17%

\*The average number of spaces in use was rounded up to the nearest whole number.

## 4.2 Recreation User Survey

A survey of recreation users was administered during the study period March 2015 – February 2016, at all recreation sites. In total 160 completed surveys were collected. [Table 4.2-1](#) shows the number surveys collected at each site and in each season. Survey respondents did not necessarily respond to all questions; therefore, total responses to individual questions (n value) varies among questions.

**Table 4.2-1:  
Number of Recreation User Surveys Collected by Site and Season<sup>1</sup>**

Recreation Site	Spring	Summer	Fall	Winter	Total
Lansing Manor House/Visitors Center <sup>2</sup>	6	24	6	8	44
Schoharie Creek Fishing Access	1	1	2	0	4
Mine Kill State Park	4	25	5	9	43
Mine Kill Falls Overlook	4	24	13	5	46
Upper Reservoir Access—South	0	4	0	1	5
Upper Reservoir Access—North	1	5	2	1	9
Upper Reservoir Access—Boat Launch	1	6	2	0	9
Total	17	89	30	24	160

<sup>1</sup>Some recreationists either declined to participate or had previously participated in the survey and were not administered the survey again. They are not included in the counts presented.

<sup>2</sup>Recreation user surveys for Lansing Manor House and the Visitors Center were collected in the joint parking lot.

In the Recreation User Survey, recreationists were asked for some basic information about themselves and their visit to or use of the B-G Project. The survey also asked their opinions regarding a number of aspects of the recreational opportunities offered in connection with the B-G Project. Basic information and opinion questions included in the survey are summarized in [Table 4.2-2](#).

**Table 4.2-2:  
Informational and Opinion Questions Included in the Recreational User Survey**

Informational Questions	Opinion Questions
How many in your group, including yourself?	What is your perception of the amount of use occurring at this recreation site?
Which of the following best describes your group: Alone, family, friends, multiple families, family & friends, organized outing group, educational group, other?	Were you aware of changing water levels during your visit today?
How many vehicles did your group use to come here?	Overall, how satisfied were you with the water level during your trip?
Have you ever visited the B-G Project area before? If yes, how many times per year, over the last five years, did you typically visit the project area for recreation?	Overall, how satisfied were you with the available number of recreation facilities?
What is your U.S. zip code or country of residence?	Please rate the following for this location: availability of parking; site condition; variety of facilities/amenities; and amount of available access to Project waters?
When did you arrive today and when do you plan to depart?	How would you rate this recreation site as a public recreation opportunity on a scale of 1 to 5?
Indicate which of the following activities you participate or have participated in at the Blenheim-Gilboa Project by season over the past year.	Would you return to this recreation site over the course of the next year?
Of the activities listed above, which is your PRIMARY activity on this trip?	What did you like most about your recreational experience today?
Mine Kill State Park Only: Did you pay a fee for use of the recreational site/facility/equipment today? If yes, for what facility/equipment did you pay a fee? How much did you pay?	What did you like least about your recreational experience today?
	What, if anything, enhanced your recreational experience today?
	What, if anything, detracted from your recreational experience today? If you check any of the below, please explain. Facility location, Facility condition, Lack of amenities, Accessibility, Trash/Sanitation, Debris on the Water, Crowding, Noise, Other.
	What, if anything caused you to modify your recreation plans today?
	If you paid a fee at Mine Kill State Park, what would you consider the cost to be on a scale of 1 to 5?
	Does this recreational site/facility serve your interests? If not, why?
	Do you have any additional comments regarding recreation opportunities within the B-G Project?

#### 4.2.1 Informational Question Responses

Basic information on survey respondents was summarized from the survey results and is shown in [Table 4.2.1-1](#). The average size of the group visiting the B-G Project was 3.6 persons and the average number of vehicles used by the group to travel to the B-G Project was 1.4. Sixty-three percent (63%) of respondents had visited the B-G Project area before, and the average number of previous visits reported by the respondents was 12.4 per year. The average length of stay at the B-G Project was 1.6 hours. Based on their reported place of residence, the median distance recreationists traveled to the B-G Project was 32 miles.

Fifteen percent (15%) paid a fee for the use of the recreational site, facility, or equipment at Mine Kill State Park. The average amount paid was \$5.40. Respondents had the opportunity to rate the cost of the fee paid. Five recreationists responded and all rated the fee as Reasonable. As previously discussed in Section 2.1.2, fees at the park were eliminated in August 2015.

Respondents were asked if they were aware of changing water levels during their visits, to which 70 percent answered No and 30 percent responded Yes.

**Table 4.2.1-1:  
Summary of Responses to Recreational User Survey Informational Questions**

Informational Question	Number of Responses*	Response Summary
How many in your group, including yourself?	153	Average group size = 3.6
How many vehicles did your group use to come to the B-G Project?	157	Average number of vehicles = 1.4
Have you ever visited the B-G Project area before? If yes, how many times per year, over the last five years, did you typically visit the project area for recreation?	156  98	Yes = 63% No = 37%  Average number of times per year = 12.4
What is your zip code or country of residence? (Calculated travel distance based on zip code)	158	Median distance traveled to B-G Project recreation site = 32 miles
When did you arrive and plan to depart?	152	Average length of stay = 1.6 hours
Mine Kill State Park Only: Did you pay a fee for use of the recreational site/facility/equipment today? How much did you pay?	33	Yes = 15% No = 85% Average amount paid = \$5.40
Were you aware of changing water levels today?	158	Yes = 30% No = 70%

\*Not all those surveyed answered each question.

Recreationists were also asked to indicate what recreational activities they have participated in at the B-G Project, by season. The results of their responses are summarized in [Table 4.2.1-2](#). As shown, the most popular recreation activities reported across all sites were hiking, sightseeing and walking, followed by nature observation, dog walking, and swimming.<sup>6</sup>

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<sup>6</sup> All observed swimming at the B-G Project was at the swimming pool at Mine Kill State Park.

**Table 4.2.1-2:  
Total Number of Recreational Survey Respondents Who Indicated Participation in  
Certain Recreational Activities at the B-G Project.**

Activity	Primary Activity This Trip	Spring	Summer	Fall	Winter	Total Seasonal Participation <sup>1</sup>
Backpacking	2	1	0	0	0	1
Birding	2	4	4	3	2	13
Canoeing	0	1	2	1	1	5
Kayaking	0	2	2	0	0	4
Power Boating	0	0	0	0	0	0
Rowing	0	0	0	0	0	0
Sailing	0	0	0	0	0	0
Whitewater Boating	0	0	0	0	0	0
Camping	2	0	2	0	0	2
Disc Golf	6	4	7	3	0	14
Dog Walking	8	11	11	7	3	32
Driving for Pleasure	2	2	3	2	1	8
Educational Programs	8	2	2	1	1	6
Fishing from a Boat	3	1	4	1	0	6
Fishing from Shore	9	3	15	4	1	23
Hiking	33	15	35	12	8	70
Horseback Riding	0	1	2	1	1	5
Hunting	1	0	1	0	0	1
Ice Skating	0	0	0	0	1	1
Mountain Biking	2	1	3	1	1	6
Nature Observation	11	8	14	10	1	33
Orienteering	0	0	1	0	0	1
Painting	0	1	1	1	1	4
Photography	10	3	8	4	1	16
Picnicking	16	2	18	1	0	21
Road Bicycling	2	1	3	2	1	7
Running	2	2	2	2	1	7
Sightseeing	64	7	33	8	4	52
Skiing	0	1	2	0	2	5
Sledding	0	0	0	0	2	2
Snowmobiling	0	0	0	0	0	0
Snowshoeing	1	1	0	1	8	10
Swimming	8	2	25	1	0	28

Activity	Primary Activity This Trip	Spring	Summer	Fall	Winter	Total Seasonal Participation <sup>1</sup>
Walking	27	11	22	11	4	48
Waterskiing/Wakeboarding	0	0	1	0	0	1
Other	31 <sup>2</sup>	4 <sup>3</sup>	11 <sup>3</sup>	7 <sup>3</sup>	3 <sup>3</sup>	25
Total	531	130	336	150	78	457

<sup>1</sup>Totals shown include multiple responses from individual recreationists. That is, a single recreationist who reported participating in canoeing in the spring and summer would be included twice in the Total Seasonal Participation column.

<sup>2</sup>Nineteen of the 31 "other" responses for "Primary Activity This Visit" indicated the Visitors Center or one of its programs. Four were associated with the playground at Mine Kill State Park. Other activities mentioned include volunteering, an environmental study group, Trails Day, a family reunion, and seeing fall foliage.

<sup>3</sup>For the various seasons, the specified responses included the Visitors Center, the playground, and various special events (e.g., Santa, the Easter Bunny, soccer camp, and storytelling).

#### 4.2.2 Opinion Question Responses

##### *Responses to Opinion Questions to Rate Several Aspects of the Recreation Sites, Facilities, and Amenities*

As part of the survey, recreationists were asked if they would return to the recreation site over the course of the next year. Ninety-five percent of the respondents indicated that they would return. Of the eight individuals who indicated they would not return, seven provided a ZIP code, which showed that all but one lived further than 175 miles away. One hundred percent of respondents who responded to the question as to whether the B-G Project served their interests responded Yes. [Table 4.2.2-1](#) summarizes the responses to these two questions.

**Table 4.2.2-1:  
Responses to Yes/No Opinion Questions**

Opinion Question	Number of Responses*	Response Summary
Would you return to this recreation site over the course of the next year?	153	Yes = 95% No = 5%
Does the recreation site/facility serve your interests?	55	Yes = 100% No = 0%

\*Not all those surveyed answered each question.

Survey respondents were asked to rate various aspects of the recreational sites, facilities and amenities provided at the B-G Project on a scale of 1 (poor) to 5 (excellent). A summary of the ratings and the number of responses given for each facility or amenity is provided in [Table 4.2.2-2](#). Not all of those surveyed responded to each question.

**Table 4.2.2-2:  
Recreational User Ratings of Recreation Sites, Facilities and Amenities, Reported as  
Percent of Respondents \***

Site/Facility/Amenity	Number of Responses	5 Excellent	4	3 Fair	2	1 Poor
Availability of parking	157	79%	12%	8%	1%	0%
Site condition	157	89%	9%	3%	0%	0%
Variety of facilities/amenities	130	61%	27%	7%	2%	3%
Available access to Project waters	77	43%	40%	13%	4%	0%

\*Percentages shown may not sum to 100% due to rounding.

As shown in the table, the availability of parking was rated very well, with 79 percent of respondents rating parking as Excellent (5) and 12 percent rating parking as between Excellent and Fair (4). Eight percent (8%) gave the availability of parking a Fair (3) rating, while one percent (1%) of respondents considered the overall quality to be between Fair and Poor (2). There were no Poor ratings.

Site condition also rated very well. Eighty-nine percent (89%) of respondents rated the condition as Excellent (5), while 9 percent rated the condition between Excellent and Fair (4). Three percent (3%) rated the site conditions as Fair (3). None of the respondents gave site condition a rating below Fair.

Regarding the variety of facilities/amenities, 61 percent of respondents rated the existing variety as Excellent (5), while 27 percent rated the variety of facilities/amenities as between Excellent and Fair (4). 12 percent of respondents felt that the variety was Fair (3), Fair-Poor (2), or Poor (1).

With respect to the available access to B-G Project waters, survey respondents had positive perceptions, with 43 percent of respondents rating the access to be Excellent (5), 40 percent as between Excellent and Fair (4), and 13 percent Fair (3). Four percent rated the available access to B-G Project waters as between Fair and Poor (2). There were no Poor ratings.

Recreationists had an opportunity to provide an explanation of any low ratings associated with the responses provided in [Table 4.2.2-2](#). Of the 34 of surveys that had one or more low ratings (Fair to Poor *i.e.*, 3, 2, and 1 ratings), nine respondents took the opportunity to explain these ratings. 6 topics were mentioned. The most common response topic was the lack of amenities/facilities at the Upper Reservoir, which was mentioned by 3 respondents. Other mentioned topics were: “tight” parking (2 responses), which came from the Lansing Manor House/Visitors Center site; bathroom needed (1 response), which came from the Mine Kill Falls Overlook site; locked gates (1 response), which came from the Upper Reservoir Access—North site; regulations for boating and ease of use (1 response), which came from the Lansing Manor House/Visitors Center site; and the desire for a turn-around space at Upper Reservoir Access—South (1 response). The responses are summarized in [Table 4.2.2-3](#).

**Table 4.2.2-3:  
Summary of Responses to: “Please explain any low ratings”**

Response	Number of Responses	Location(s)
Lack of amenities/facilities	3	Upper Reservoir Access—North (2); Upper Reservoir Access—Boat Launch (1)
Tight Parking	2	Lansing Manor House/Visitors Center
Bathroom needed	1	Mine Kill Falls Overlook
Locked gates	1	Upper Reservoir Access—North
Regulations for boating and ease of use	1	Lansing Manor House/Visitors Center
No turn around space	1	Upper Reservoir Access—South
<b>Total</b>	9	

Recreationists were also asked to rate their perception of the level of use encountered at the site where they were interviewed on a scale of 1 (Not Crowded) to 5 (Extremely Crowded). Survey respondents were also asked to rate the number of facilities on a scale of 1 (Not Satisfied) to 5 (Extremely Satisfied). Additionally, respondents had the opportunity to rate river water levels on a scale of 1 (Not Satisfied) to 5 (Extremely Satisfied). Finally, recreationists were asked to rate the recreation site as a public recreation opportunity on a scale of 1 (No Value At All) to 5 (High Value). A summary of ratings and the number of responses given for each of these questions is provided in [Table 4.2.2-4](#). Not all of those surveyed responded to each question.

**Table 4.2.2-4:  
Recreational User Ratings of Number of the Facilities, Level of Use, and Water Levels,  
Reported as Percent of Respondents\***

Topic	Number of Responses	Respondents' Ratings				
		5 Extremely Crowded	4	3 Somewhat Crowded	2	1 Not Crowded
Level of Use	154	0%	6%	10%	14%	69%
		5 Extremely Satisfied	4 Moderately Satisfied	3 Satisfied	2 Slightly Satisfied	1 Not Satisfied at all
Number of Facilities	150	47%	24%	29%	1%	0%
		5 Extremely Satisfied	4 Moderately Satisfied	3 Satisfied	2 Slightly Satisfied	1 Not Satisfied at all
Water Levels	50	32%	38%	30%	0%	0%
		5 High Value	4	3 Some Value	2	1 No Value At All
Value of the recreation site as a public recreation opportunity	130	74%	22%	4%	1%	0%

\* Percentages shown may not sum to 100% due to rounding.

Regarding level of use, the majority of the recreationists perceived the amount of use at B-G Project recreation sites to be Not Crowded (69%), Not Crowded to Somewhat Crowded (14%), or Somewhat Crowded (10%). 6 percent of respondents perceived the use at the B-G Project sites to be Somewhat Crowded to Extremely Crowded. None of the respondents rated the use as Extremely Crowded (5).

Regarding their levels of satisfaction with the number of recreation facilities at the B-G Project, all but one of the 150 of recreationists who provided a rating were Extremely Satisfied (5), Moderately Satisfied (4), or Satisfied (3) with the number of recreation facilities at the B-G Project. Survey respondents were given the opportunity to provide an explanation of their response to this question. Only three individuals provided an explanation, all stating that there are no facilities on the Upper Reservoir. Two of the individuals who provided an explanation rated their level of satisfaction as Satisfied (3). The remaining respondent rated his or her satisfaction as a Slightly Satisfied (2).

The survey also asked recreationists to rate their overall satisfaction with water levels during their trip. In response to the question, all 50 respondents answered that they were Extremely Satisfied (32%), Moderately Satisfied (38%), or Satisfied (30%). Survey respondents were given the opportunity to provide comments related to water levels. Only three individuals responded, all of which were related to conditions being icy or frozen.

Finally, recreationists were asked to rate the value of the recreation site as a public recreation opportunity. The majority of recreationists responded that the recreation site has a High Value as a public recreation opportunity (74%) or has Some Value to High Value (22%). 4 percent of respondents rated the site as providing Some Value, and 1 percent gave a rating of 2 indicating Some Value to No Value. No respondents gave the recreation sites a rating of 1 indicating No Value.

#### *Responses to Open-Ended Opinion Questions*

Respondents also had the opportunity to respond to six general open-ended questions. In total, 281 comments were provided in response to the six open-ended questions, with some respondents giving multiple comments to a single question.

The first of the general open-ended questions on the survey asked: What did you like most about your recreational experience today? This question received the most comments with 150. Ten (10) different topics received two or more comments each, with an additional 10 topics being mentioned once. [Table 4.2.2-5](#) summarizes the comments received. As shown, the response received most frequently was scenery/beauty (44). Three other comment topics were mentioned 10 or more times: weather (35), family and friends (19), and educational experiences (16).

**Table 4.2.2-5:  
Summary of Open-ended Responses to the Survey Question: “What did you like most about your recreational experience today?”**

Response	Number of Comments
Scenery/beauty	44
Weather	35
Family and friends	19
Educational experiences	16
Being outdoors/exercise	6
Not crowded/quiet	6
Fishing	4
Location	4
Disc golf	3
People/helpful personnel	3
Access trails marked well	1
Affordable aka free!	1
Building a bridge	1
Diving Board	1
Everything	1
Great Swimming Lessons	1
New benches, restrooms	1
Park is fully open - trails are well groomed.	1
Picnicking	1
Rock Throwing	1
<b>Total</b>	150

In response to the question “What did you like least about your recreational experience today?” a total of 23 comments were received. The response received most frequently was weather (12). Three other comment topics were mentioned twice: lack of bathrooms/locked bathrooms, insects, and parking. Five other comments were mentioned one time. [Table 4.2.2-6](#) summarizes the comments received.

**Table 4.2.2-6:  
Summary of Open-ended Responses to: “What did you like least about your recreational experience today?”**

Response	Number of Comments
Weather	12
Lack of bathrooms/locked bathrooms	2
Insects	2
Parking	2
Carrying our chairs down	1
Lifting my boat into my truck	1
Manual labor	1
No eagles yet	1
Pool isn't open	1
Total	23

In response to the question “What, if anything, enhanced your recreational experience today?” a total of 70 comments were received. Weather was the response received most frequently, with 41 comments. Other comment topics mentioned frequently were: family and friends (8), people/helpful personnel (5), scenery/beauty (5), and events (3). Eight additional topics were mentioned once. A summary of the comments received are presented in [Table 4.2.2-7](#).

**Table 4.2.2-7:  
Summary of Open-ended Responses to: “What, if anything, enhanced your recreation experience today?”**

Response	Number of Responses
Weather	41
Family and friends	8
People/helpful personnel	5
Scenery/beauty	5
Events	3
Deciding to hike	1
Good the way it is, Children's Jungle Gym	1
It was all great	1
Lack of people	1
Location	1
Riding our bikes here	1
Taking the dog out	1
Trail Maps and Signage	1
Total	70

In response to the question “What, if anything, detracted from your recreational experience today?” only six comments were provided. The response most frequently received was lack of amenities (3). All three responses were received at Mine Kill Falls Overlook. One of the respondents citing a lack of amenities had mentioned the lack of bathrooms as what was liked least. The other two recreationists who identified a lack of amenities did not mention any specific facilities. A summary of the comments received are presented in [Table 4.2.2-8](#).

**Table 4.2.2-8:  
Summary of Open-ended Responses to: “What, if anything, detracted from your recreation experience today?”**

Response	Number of Responses
Lack of amenities	3
Lack of cell service	1
Some water services were off	1
Trash/sanitation	1
<b>Total</b>	<b>6</b>

Only nine comments were provided in response to the question “What, if anything, caused you to modify your recreation plans today?” The responses received most frequently were the weather (4) and time (2). A summary of the comments received are presented in [Table 4.2.2-9](#).

**Table 4.2.2-9:  
Summary of Open-ended Responses to: “What, if anything, caused you to modify your recreation plans today?”**

Response	Number of Responses
Weather	4
Time	2
Bugs	1
Ride	1
Use of restrooms	1
<b>Total</b>	<b>9</b>

A total of 23 comments were provided in response to the question “Do you have any additional comments?” The majority of the responses were positive. [Table 4.2.2-10](#) presents all of the comments received.

**Table 4.2.2-10:  
Summary of Open-ended Responses to: “Do you have any additional comments?”**

Response	Location
Excited for hiking, Frisbee golf	Mine Kill State Park
Great disc golf course	Mine Kill State Park
Love the setting and topography of the area. Enjoy the trails and overlook pass.	Mine Kill State Park
Love visiting in fall. Parents will come to photograph eagles.	Mine Kill State Park
Outstanding disc golf course!!	Mine Kill State Park
Swimming program here is wonderful, we have been coming for years now and my kids have moved up through the levels and I do not even need to watch them now, they are doing wonderful	Mine Kill State Park
The swim instructors are great	Mine Kill State Park
It is a nice place	Mine Kill Falls Overlook
Kids would be interested to come here	Mine Kill Falls Overlook
More Bathrooms!	Mine Kill Falls Overlook
Nice Place	Mine Kill Falls Overlook
We will be back, looking forward to fishing and hiking	Mine Kill Falls Overlook
Yes, we love this park	Mine Kill Falls Overlook
Would like benches around upper pool for elderly people to rest	Upper Reservoir Access—Boat Launch
Beautiful Spot	Upper Reservoir Access—North
Ease of access with small children	Lansing Manor House/Visitors Center
A lot of events planned for this summer - will plan on attending.	Lansing Manor House/Visitors Center
Beautiful site, great value to community. Enjoys birding, especially Bald Eagles.	Lansing Manor House/Visitors Center
Hands on A+	Lansing Manor House/Visitors Center
Just lovely	Lansing Manor House/Visitors Center
Looking forward to another outing here	Lansing Manor House/Visitors Center
Terrific Place	Lansing Manor House/Visitors Center
Thank you for sponsoring Quilt Show	Lansing Manor House/Visitors Center

### 4.3 Statewide Comprehensive Outdoor Recreation Plan

#### 4.3.1 New York Statewide Comprehensive Recreation Plan

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) is a strategic planning document prepared by each state every five years to determine eligibility for Land and Water Conservation Fund funding to help fulfill that state’s recreational needs. In addition NYSOPRHP utilizes the document to provide statewide policy direction and to fulfill the agency’s recreation and preservation mandate.

### *Supply of Outdoor Recreation*

NYSOPRHP and the New York State Department of Environmental Conservation (NYSDEC) are responsible for the majority of outdoor recreation opportunities in the state. According to the 2014 SCORP, NYSOPRHP oversees approximately 335,000 acres of public land, which includes state parks, historic sites, marine facilities, boat launches, parkways, beaches, swimming pools, golf courses, cabins, rental houses, campsites and over 1,500 miles of trails. The NYSDEC administers 4.3 million acres of land which includes forest preserves, state forests, wildlife management areas, conservation easements, campgrounds, day-use areas, fish hatcheries, boat launches and fishing access sites, along with approximately 4,000 miles of trails.

### *Need/Demand for Outdoor Recreation*

NYSOPRHP collected data from 3,187 New York residents (from a geographically stratified selection of households residing in New York State) on participation in outdoor activities. Walking for enjoyment (including running/day hiking) was the most popular recreation activity with 88% of those surveyed participating. This was followed by relaxing in the park (including picnicking, relaxing in the park and playground use), pool swimming, biking and boating. From the survey responses, NYSOPRHP developed a relative index of needs by county, utilizing a numerical scale where +10 indicates the highest level of need and +1 indicates the least. This index was based on a number of federal, state and county level data sources and did not include many of the privately and municipally owned/operated facilities. For Schoharie County, the SCORP estimated the highest level of need was a +7 for local winter activities such as ice skating, sledding, and hockey. This was followed by a +6 for downhill skiing/snowboarding, snowmobiling, fishing, camping, and walking.

### *Goals and Objectives*

The 2014 SCORP identified nine (9) statewide goals along with recommendations to aid in meeting each goal. The 2014 SCORP did not provide county or regional level goals. The statewide goals are listed below.

- Increase and deepen the visitor experience by reinventing and redesigning the state's parks and historic sites.
- Build a 21<sup>st</sup> century green and sustainable park system: fix and green the aging infrastructure of the state's parks and historic sites and open new facilities.
- Launch a statewide "Explore your outdoors" campaign in conjunction with Empire State Development Corporation and the "I Love NY" program.
- Continue to improve, repair, and expand outdoor recreation facilities to attract visitors.
- Reconnect children and adults with nature and recreation by improving access to outdoor recreation opportunities.
- Continue to develop a comprehensive, interconnected recreation-way, water trails, greenway and blueway trail system.
- Continue to protect natural connections between parks and open space.
- Engage park visitors through programming at parks and historic sites.
- Continue efforts to restore, conserve and protect the biodiversity of state lands.

**4.3.2 Project Recreation Opportunities Relative to SCORP Findings and Objectives**

Overall the recreational opportunities within the B-G Project and the findings of the recreation user survey and observations were consistent with NYSOPRHP’s SCORP findings. Among the more popular activities identified by the SCORP were walking, jogging, and day hiking; relaxing in the park, picnicking and playground use; and swimming. The SCORP also noted that there will be an increase in cultural activities such as visiting museums. This is generally consistent with the findings of this study, which found in [Table 4.1.2-1](#) that visiting the interpretive centers at the Visitors Center and Lansing Manor House were the most popular activity at the Project and the activities of walking/hiking/running were the second most popular recreation activity observed at the Project. This was followed by picnicking, sightseeing and swimming in order of popularity. Similarly, as shown in [Table 4.2.1-2](#), the top three activities that survey respondents participated in were hiking, sightseeing and walking.

The Project recreation sites include access to a variety of different walking, running and hiking opportunities. These opportunities can be accessed via the Upper Reservoir North access site, Upper Reservoir South access site, Mine Kill State Park, Mine Kill Falls Overlook and the Lansing Manor Complex. Picnic tables are available at Mine Kill State Park, Mine Kill Falls Overlook and the Lansing Manor Complex. Mine Kill State Park has a playground, swimming pool, and a boat launch with access to the Lower Reservoir, while the Upper Reservoir Boat Launch provides boating access to the Upper Reservoir.

**4.4 Project Area Population Trends and Projected Recreation Use**

**4.4.1 Projected Population Growth Using United States Census**

Consideration of future recreation demand relies on both expected population growth in the B-G Project region, and on expected changes in recreation participation. Population projections for the B-G Project region, which includes the following counties: Albany, Delaware, Greene, Montgomery, Otsego, Schoharie, and Schenectady, are provided in [Table 4.4.1-1](#).<sup>7</sup> Based on ZIP code data, 70 percent of the recreationists reside within one of the counties in the B-G region. As stated in Section 4.2.1, recreational users at the B-G Project came from a median distance of 32 miles, which would be encompassed by the counties in the B-G Project region. As shown, the population of the region is expected to grow by 18 percent over the period 2010-2060.

**Table 4.4.1-1:  
Population Projections for the B-G Project Region**

	Census 2010	Census Estimate 2014	Estimate 2015 (interpolated)	Projection 2020*	Projection 2060*
Population	701,359	700,927	702,898	712,834	828,228
Percentage change from previous period		-0.1%	0.3%	1.4%	16.2%
Cumulative percentage change		-0.1%	0.2%	1.6%	18.1%

\*Source: Regional Economic Modeling, Inc. (REMI) model results as reported in New York Power Authority 2016.

<sup>7</sup> The B-G region used for this study is the same as the B-G regional analyzed for the Socioeconomic Study being conducted as part of the B-G Project relicensing.

#### **4.4.2 Projection of Project Recreation Days**

To evaluate the ability of the facilities at the B-G Project to meet future recreation demands, projections of recreation days were made through 2060 by activity at each location. The projections are based in part on growth coefficients developed as part of *Outdoor Recreation Trends and Futures: A Technical Document Supporting the Forest Service 2010 RPA Assessment. Projections of Outdoor Recreation Participation to 2060*, published by the United States Department of Agriculture (USDA) Forestry Service ([Cordell 2012](#)). The projections use a combination of income, age, gender, and ethnicity to develop projected national participation rates (expressed as an index) for various recreational activities. Because these projections rely upon many different variables, the growth rates are more robust than simply using population projections to forecast growth in recreation demand. [Table 4.4.2-1](#) presents the USDA's growth rates for recreation participation for a scenario, which corresponds to mid-range population growth.<sup>8</sup>

The recreation participation growth factors forecast changes in individual participation rates for various recreation activities. To obtain a full understanding of how recreation use is expected to change, population growth factors must be combined with the participation growth factors. [Table 4.4.1-1](#) above shows the projected population growth for the B-G Project region.

The B-G Project region growth rate through 2060 is projected to be 18 percent. Therefore, the population growth factor of 1.18 was multiplied by the activity-specific growth rates shown in [Table 4.4.2-1](#). These growth factors are shown in [Table 4.4.2-1](#), which includes the calculated recreation days growth factors (participation rate growth factor multiplied by the population growth factor).

The recreation resource types included in [Table 4.4.2-1](#) are those activities observed at the B-G Project as set forth in [Table 4.1.2-1](#).

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<sup>8</sup> The USDA technical document provides 3 growth projection scenarios. For the purposes of this study, the mid-range population growth projection is used.

**Table 4.4.2-1:  
Recreation Participation Index, through 2060, United States**

Recreation Resource Type	2010 Baseline	2015 Indexed Participation Rate (interpolated)	2060 Indexed Participation Rate	Activity-specific Growth Rate (percent) 2015 to 2060
Cross country skiing	1.012	1.026	1.309	28%
Motor Boat	1.007	1.014	1.154	14%
Swim	1.004	1.010	1.109	10%
Walk/ Hike/ Jog	1.003	1.009	1.097	9%
Disc golf	1.003	1.009	1.097	9%
Ride Bikes	1.003	1.009	1.097	9%
Interpretative Center	1.004	1.008	1.089	8%
Photography	1.007	1.007	1.075	3%
Non motor boat*	0.997	1.003	1.031	3%
Sightseeing	1.002	1.003	1.035	3%
Picnic	1.001	1.002	1.026	2%
Playground (developed site use)	1.001	1.002	1.026	2%
Soccer Camps (developed site use)	1.001	1.002	1.026	2%
Fishing	1.000	0.997	0.97	-3%
Hunt	0.992	0.976	0.781	-20%

\*Non motor boat activity includes canoeing, kayaking, and rafting.  
Source for 2010 Baseline and 206 Indexed Participation Rate: Cordell 2012.

As shown in [Table 4.4.2-2](#), all of the recreation resource types, with the exception of hunting and fishing, are projected to increase faster than the population of the local area. The activities that are anticipated to have the greatest increases in demand are cross country skiing (50% growth), motor boating (34%), and swimming (29%).

**Table 4.4.2-2:  
Derivation of Recreation Projection Index, through 2060, Local Project Area**

Recreation Resource Type	Recreation Participation Growth Factor (RPGF) 2015 to 2060 (varies by activity)	Population Growth Factor (PGF) 2015 to 2060 (constant for all activities)	Recreation Days Growth Factor, 2015 to 2060 (RPGF x PGF)
Cross country skiing	1.28	1.18	1.50
Motor Boat	1.14	1.18	1.34
Swim	1.10	1.18	1.29
Walk/Hike/jog	1.09	1.18	1.28
Disc golf	1.09	1.18	1.28
Ride Bikes	1.09	1.18	1.28
Interpretative Center	1.08	1.18	1.27
Photography	1.03	1.18	1.22
Sightseeing	1.03	1.18	1.22
Non motor boat*	1.03	1.18	1.21
Picnic	1.02	1.18	1.21
Playground (developed site use)	1.03	1.18	1.21
Soccer Camps (developed site use)	1.03	1.18	1.21
Fishing	0.97	1.18	1.15
Hunt	0.80	1.18	0.94

\*Non motor boat activity includes canoeing, kayaking, and rafting.

These growth coefficients were used to project recreation activity through 2060. The growth rate for the “other use” category is calculated from the weighted average of the growth at each recreation site. The projections were made using as a baseline the number of recreation days by activity type presented previously. [Table 4.4.2-3](#) presents, for the year 2060, the projected number of recreation days by activity at the B-G Project, as compared to the 2015-2016 use estimated for this study.

**Table 4.4.2-3:  
Projected Recreation Use by Activity Type, 2060**

Recreation Activity	March 2015 – February 2016 Use (Recreation Days)	2060 Projected Use (Recreation Days)	Percent (%) of 2060 Recreation Use
Interpretative Center	31,950	40,666	26%
Walk/Hike/jog	22,409	28,708	18%
Picnic	12,842	15,494	10%
Sightseeing	10,914	13,267	8%
Pool Swimming	10,649	13,778	9%
Disc golf	10,576	13,549	9%
Playground	5,256	6,339	4%
Soccer Camp	3,090	3,726	2%
Fishing	2,526	2,895	2%
Photography	1,441	1,752	1%
Ride Bikes	751	962	1%
Motor Boat	667	895	1%
Non motor boat	388	469	0.3%
Cross Country Skiing	291	438	0.3%
Hunting	77	73	0.05%
Other Use*	10,662	13,424	9%
<b>B-G Project Total</b>	<b>124,489</b>	<b>156,435</b>	

\*"Other use" includes unidentified use which may be recreational or non-recreational in nature.

#### 4.4.3 Projection of Facility Demand and Capacity

The activity-specific growth rates are the basis for projecting future recreation days at each site, based on that facility's recreation mix. For example, there are five different recreation activities that were found to take place at the Schoharie Creek Fishing Access. The number of recreation days during the 12-month period from March 2015 through February 2016 associated with each of the five activities is projected to increase by the growth factor for 2060. To forecast site-wide recreation use, the projected use for each of the activities observed at the Schoharie Creek Fishing Access is summed. [Table 4.4.3-1](#) presents the number of recreation days projected for 2060 at each of the recreation sites in the B-G Project area.

The growth rates for each recreation site serve as the basis for projecting future parking lot demand figures, and, thereby, percent utilization of capacity, for average summer weekend use. [Table 4.4.3-2](#) provides the projected level of parking lot use (percent utilization) for 2060 at each of the recreation sites in the B-G Project area. As shown, it is projected that all of the recreation sites at the B-G Project will be under-capacity on an average summer weekend in 2060. At the majority of the sites, the parking lots will have less than half of their available capacity occupied.

**Table 4.4.3-1:  
Projected 2060 Recreation Days by Site**

Site	Estimated Recreation Days March 2015 – February 2016	2060 Projected Recreation Days	Percent Growth, 2015 to 2060
Mine Kill State Park	73,125	91,643	25%
Visitors Center	28,331	36,059	27%
Mine Kill Falls Overlook	14,487	18,210	26%
Lansing Manor House	3,619	4,606	27%
Schoharie Creek Fishing Access	2,685	3,184	19%
Upper Reservoir Access—North	836	1,014	21%
Upper Reservoir Access—Boat Launch	713	870	22%
Upper Reservoir Access—South	694	849	22%
<b>Annual Total</b>	<b>124,489</b>	<b>156,435</b>	<b>26%</b>

**Table 4.4.3-2:  
Projected 2060 Average Summer Weekend Use by Site**

Site	Available Spaces	2060 Projected Spaces in Use, Summer Weekend	Percent Capacity
Mine Kill State Park	406	58	14%
Lansing Manor House and Visitors Center	45	6	14%
Mine Kill Falls Overlook	23	5	22%
Schoharie Creek Fishing Access	8	1	15%
Upper Reservoir Access—North	3	1	41%
Upper Reservoir Access—Boat Launch	2	1	60%
Upper Reservoir Access—South	6	1	20%
<b>Total</b>	<b>493</b>		

## 4.5 Effects of Project Operation and Maintenance on Recreation

One of the objectives of the recreation use study was to evaluate the effects of B-G Project operations and maintenance on recreation use at the Project and the usability of Project recreation sites and facilities, including the effects of debris accumulation on recreational access. Observations conducted during this study found that the recreation sites are in good, functional operating condition due to regular maintenance by the Power Authority and NYSORHP.

With respect to the effect of Project operations, the evaluation focused on the Project recreation sites and facilities that provide direct access to Project waters ([Table 4.5-1](#)).

**Table 4.5-1:  
Summary of Evaluation of Project Operations on Recreation Site/Facility Use/Usability**

Recreation Site	Waters Accessed from Site	Facilities and/or Use Assessed	Assessment Made
Mine Kill State Park	Lower Reservoir	Boat Launch	Effect of reservoir water levels on boat launch use/usability
Upper Reservoir Access Area – Boat Launch	Upper Reservoir	Boat Launch	Effect of reservoir water levels on boat launch use/usability
Upper Reservoir Access Area – North	Upper Reservoir	Shoreline Fishing Access	Effect of water levels on accessibility
Upper Reservoir Access Area – South	Upper Reservoir	Shoreline Fishing Access	Effect of water levels on accessibility
Schoharie Creek Fishing Access	Tailrace/Schoharie Creek	Shoreline Fishing Access	Effect of water levels on accessibility

#### 4.5.1 Lower Reservoir

Public recreation access to the Lower Reservoir is provided at Mine Kill State Park, which includes a hard surface boat launch that was built during the construction of the B-G Project and is maintained by the NYSOPRHP. The effect of Project operations and the resulting changes in Lower Reservoir water surface elevation on the usability of the boat launch were evaluated by examining the as-built drawings for the launch when it was constructed in 1973 and more recent reservoir bathymetric contour data collected in 2011. [Figure 4.5.1-1](#) illustrates the 2011 bathymetric contours in the vicinity of the boat launch. For this analysis, it was assumed that nearly all watercraft could be successfully launched in 3 feet of water ([SOBA, 2006](#)).

The Lower Reservoir operates between a maximum and minimum water surface elevation of 900 ft and 860 ft, respectively ([NYPA, 2014](#)). A review of both the as-built drawings and the reservoir contour data in the vicinity of the boat launch indicates water depth at the end of the boat launch is 3 feet when the water surface elevation of the Lower Reservoir is at 860 feet. This means that the Mine Kill State Park boat launch remains operational and useable, with at least 3 feet of water depth at the end of the ramp over the full range of Lower Reservoir operating water levels.

Twelve recreationists at Mine Kill State Park responded to the survey question regarding their overall satisfaction with water levels during their trip. All respondents stated that they were Extremely Satisfied (3 respondents), Moderately Satisfied (5 respondents), or Satisfied (4 respondents). This is further indication that changing water levels at the Mine Kill State Park do not impact the ability of the facility to provide boating access to the Lower Reservoir.

With respect to whether debris in the water impacted a recreationist’s boating experience on the Lower Reservoir, question 20 of the Recreation User Survey asked “What, if anything, detracted from your recreation experience today?” and provided a list of choices including debris on the water. Of the 160 surveys collected, no one identified debris on the water as a response to question 20. Similarly, responses to open ended questions such as “What did you like least about your recreational experience today?” and “Do you have any additional comments regarding recreation opportunities within the Blenheim-Gilboa Project?” did not identify debris in the Lower Reservoir as an issue or concern.

A review of 22 photographs taken of the Lower Reservoir in June 2012 and in May 2015 was conducted to determine if floating debris could be seen. None of the pictures reviewed showed floating debris downstream of the boat barrier, which is placed near the transmission line crossing of Schoharie Creek upstream of the Mine Kill State Park boat launch.

While there is a sign at the boat launch that alerts boaters to beware of floating debris in the reservoir and comments during study scoping for the B-G relicensing identified floating debris in the Lower Reservoir as a concern, this study did not identify floating debris as an issue that impacted recreationists' boating experiences on the Lower Reservoir.



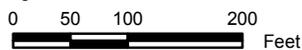
**Legend**

- Contour 10 ft (2011)
- - - Contour 2 ft (2011)
- County
- City or Town
- Village

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community  
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomatics, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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

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



**Figure 4.5.1-1  
 Mine Kill State Park  
 Boat Launch Bathymetry**

#### **4.5.2 Upper Reservoir**

Public recreation access to the Upper Reservoir is provided at three sites: the North Access, the South Access, and Upper Reservoir Boat Launch. The Upper Reservoir is open to recreational craft, including rowboats and canoes, with or without electric-trolling motors. [Figure 4.5.2-1](#) illustrates the bathymetric contours in the vicinity of the three sites.

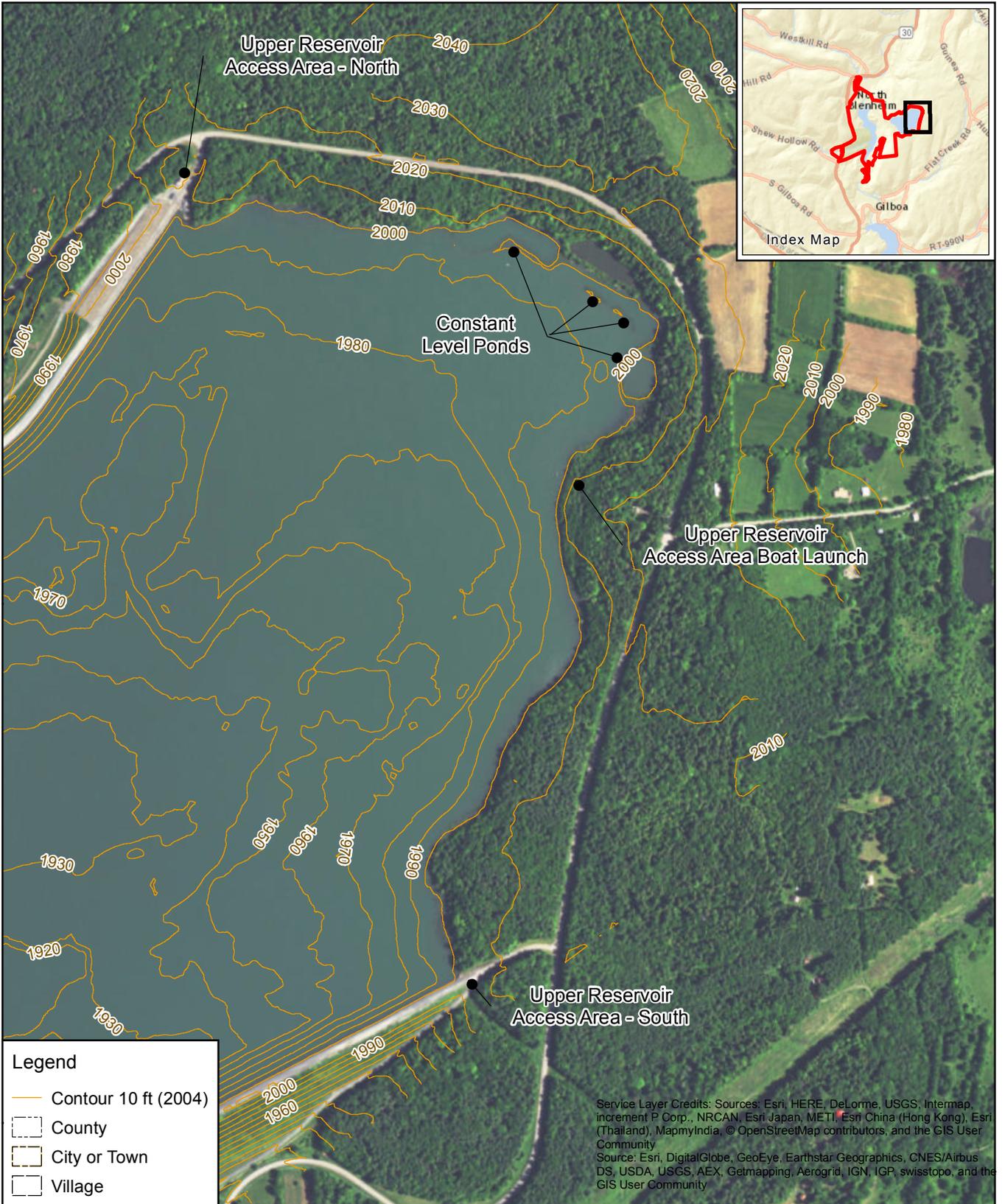
As noted in [Section 2.1.4](#), individuals can access the service road that travels around the Upper Reservoir from two of the access areas (the northern and southern areas). There is room for parking approximately six vehicles at the southern access and three vehicles at the northern access along the access road. There are no improved recreational facilities associated with the North and South access areas. Individuals utilize these sites to access the Upper Reservoir for fishing and are able to do so regardless of water levels.

The Upper Reservoir boat launch is a gravel carry-in launch area, which utilizes the bottom of the reservoir to provide launching opportunities at varying water surface elevations. The slope of the launch area is 5 percent depending on water level elevations.

The B-G Project Upper Reservoir operates between the levels of 1,955 ft and 2,003 ft. Slopes between a water surface elevation of 1,955 ft and 2,003 ft vary between 2 percent slope and 15 percent slope. Given the bathymetry of the boat launch area, as well as the slope and the fact that launch is a carry-in launch, boaters are able to launch from this facility over the full range of reservoir elevations.

There are also four constant-level ponds located in the northeast portion of the Upper Reservoir. While they were originally constructed to provide permanent spawning and rearing habitat for warmwater, nest-building species, they also provide fishing opportunities at the Upper Reservoir. They were designed with an overtoppable dike so that the ponds are periodically inundated when Upper Reservoir levels are high, but were constructed such that they maintain water levels when the reservoir is drawn down ([NYPA, 2014](#)). These ponds provide fishing opportunities under the full range of Upper Reservoir water levels.

Several recreationists on the Upper Reservoir responded to the survey question regarding their overall satisfaction with water levels during their trip. Eight recreationists surveyed at the Upper Reservoir Access—Boat Launch responded that they were Extremely Satisfied (4 respondents), Moderately Satisfied (3 respondents) or Satisfied (1 respondent). Two recreationists at the Upper Reservoir Access – South responded that they were Moderately Satisfied. Six recreationists at the Upper Reservoir Access—North responded that they were Moderately Satisfied (2 respondents) or Satisfied (4 respondents). This is further indication that water levels do not impact the ability of the access sites to provide access for the Upper Reservoir for fishing and boating.



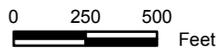
Blenheim-Gilboa Pumped Storage Power Project  
 FERC No. 2685



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



Figure 4.5.2-1  
 Upper Reservoir  
 Boat Launch Bathymetry



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#### **4.5.3 Schoharie Creek Fishing Access**

The Schoharie Creek Fishing Access consists of two formal parking areas, which provide recreationists with dispersed access to the shoreline. There are no formal fishing facilities at this site, so there are no facilities that might be affected by changing flows or water levels. Moreover, the current FERC license dictates that releases from the Lower Reservoir to Schoharie Creek equal inflows from Schoharie Creek upstream of the Project ([NYPA, 2014](#)). Because the Lower Dam generally passes inflow, operations of the Project are unlikely to affect the ability to fish from the shoreline. The three recreationists at this access who responded to the survey question regarding their overall satisfaction with water levels during their trip responded that they were Moderately Satisfied with the water levels.

#### **4.6 Recreational (Non-Motorized) Boating on the Lower Reservoir and Downstream of the Lower Dam**

The Power Authority conducted the Recreational Boating Desktop Feasibility Assessment as recommended by the Commission in its SPDL of February 19, 2015. The Study utilized a desktop analysis (Phase I) which included: a literature review, hydrology and hydraulic assessments, and structured interviews. The Recreational Boating Desktop Feasibility Assessment report was filed with FERC in February 2016 as part of the Power Authority's Initial Study Report ([NYPA, 2016a](#)). As a result of that filing, stakeholders requested that the Recreational Boating Desktop Feasibility Assessment be modified to include a controlled flow study and an assessment of feasibility of portage around the Lower Dam. In its June 16, 2016 SPDL, FERC stated that it was premature to make a determination on these requests until the Recreation/Use/User Contact Study was complete and it had a better understanding of the demand for recreational boating at the Project.

##### **4.6.1 Summary of Findings of the Recreational Boating Desktop Feasibility Assessment**

The literature review produced only limited information regarding recreational boating conditions in the primary study area of Schoharie Creek (Lower Dam to Max V. Shaul State Park). The primary study area is defined as the 9.2 mile reach of Schoharie Creek downstream of the Lower Dam to Max V. Shaul State Park. The Adirondack Mountain Club (ADK) Canoe and Kayak Guide, now out of print, was the only recreational boating guide found that described part of the primary study area (i.e., North Blenheim Route 30 bridge to the Max V. Shaul State Park). The ADK guide rated this section as Class I to I+ normally runnable in April and early May, or after a storm that causes water to be spilled from Schoharie Reservoir, however, this was written before Tropical Storm Irene. The structured interviews noted that this portion of Schoharie Creek has changed significantly since Tropical Storm Irene.

Within the primary study area, four public recreational boating access points were identified in the literature. Of the four total access sites in the primary study area, two were identified as formal public recreational boating access points ([Figure 4.6-1](#)). One of the recreational boating access points is managed by OPRHP at Max V. Shaul State Park. This facility is a carry-in launch with no trailer capacity. There are no parking facilities immediately adjacent to this launch, and the launch is accessible via an approximately 1,500-foot-long trail.

The second formal public access point for recreational boating within the primary study area is located approximately 2.2 miles downstream of the North Blenheim Route 30 bridge and is managed by the NYSDEC. The facility is a carry-in launch accessible via a trail. Parking for the site is accessible from New

York State Route 30 and offers accommodations for six cars. The distance between the parking area and Schoharie Creek is approximately 330 feet.

The 2005 ADK guide mentions three informal access points ([Figure 4.6-1](#)), each associated with Route 30 bridge crossings of Schoharie Creek. The first is at the North Blenheim Route 30 bridge, used as a put-in for trips downstream. The second is at the Breakabeen Route 30 bridge, approximately one river mile upstream of the Max V. Shaul State Park. The third informal site mentioned in the guide is now the formal site at Max V. Shaul State Park mentioned above. The ADK guide was published in 2005, before the site was formalized in 2011. Finally, two additional informal access sites at Bear Ladder Road and Bielfield Road were identified through the structured interviews for a total of six formal and informal access points that could be used for recreational boating in the 9.2 mile reach between Lower Dam and Max V. Shaul State Park.

In addition, the literature review identified numerous boating opportunities, including Class II and III waters, outside of the primary study area, on Schoharie Creek, and within 50 miles of the Project.

Stream flows throughout the primary study area are significantly influenced by the NYCDEP water supply withdrawal by Schoharie Reservoir. This diversion essentially removes all runoff from 316 square miles of the watershed, which except during the spring freshet months of April and May significantly reduces downstream flows for most of the year. Flow duration curves for the B-G Project showed the prevalence of low flows during the months of June through October; median flows during these months are between 8 and 23 cfs. The hydrologic analysis also found that diverting water from available Project storage would adversely impact the ability of the Project to replenish storage lost through evaporation and seepage, and to meet its regulatory obligation to continue to provide downstream flows comparable to those that would have occurred if the B-G Project had not been built.

The hydraulic analysis modeled maximum depths at 54 locations for flows ranging from 10 to 1,000 cfs over the 9.2 mile length of the primary study area. At flows of 350 to 1,000 cfs the percentage of locations with less than 1.5 feet of depth ranged from 81% to 5%. The ADK guide states that depths of 1.5 feet are “too shallow” for boating. For the same flows, the percentage of locations with less than 2.0 feet of water ranged from 83% to 39%. Flows of 350 to 1,000 cfs in the primary study area of Schoharie Creek typically occur only during the spring freshet (April and May) when water is spilled over Gilboa Dam and there is snowmelt/runoff. Flows sufficient to provide water depths of 2.0 feet or even 1.5 feet during the remaining months of the boating season (June – October) are limited to significant storm events.

The Power Authority reached out to thirty-two individuals affiliated with, or representing state parks, municipalities, organized events, paddling organizations, and paddlers regarding boating conditions and their experiences on Schoharie Creek in the primary study area. Fourteen completed surveys were received. Based on the survey results, it appears that the primary study area is boated relatively infrequently, with most trips taking place in the spring during periods of high flow. A major reason for limited paddling in the primary study area appears to be insufficient water depths throughout much of the boating season. Several survey respondents and other interviewees commented on the lack of water in the Creek during much of the boating season. Respondents typically rated the primary study area as Class I-II depending on flow, and commented that areas of whitewater in the primary study area were limited.

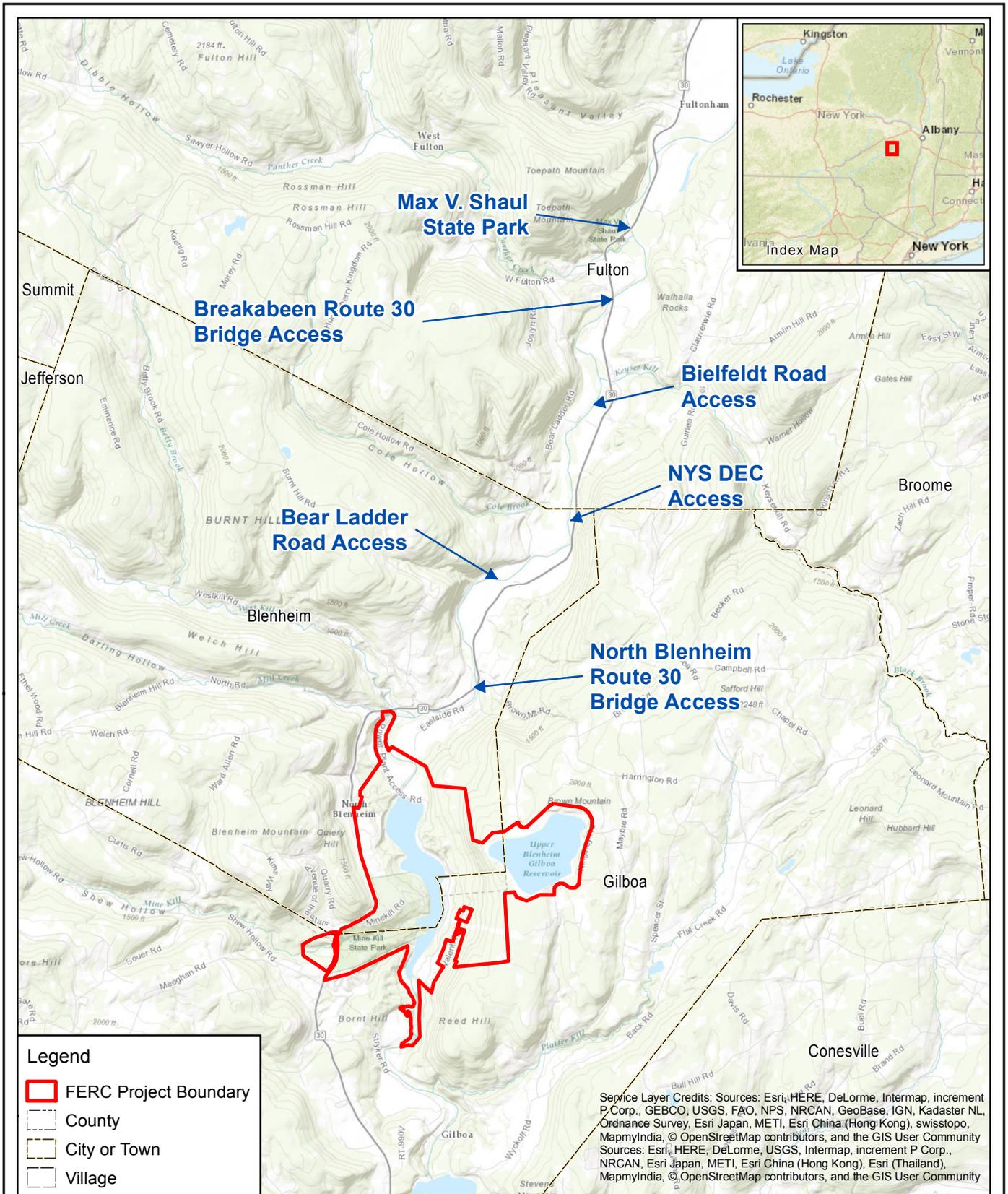
#### **4.6.2 Demand for Recreational Boating**

The results of the recreation use counts and user surveys from the Recreation Use/User Contact Survey support the findings in the Recreational Boating Desktop Feasibility Assessment. As shown in [Table 4.1.2-1](#), non-motorized boating was participated in by less than 1 percent of the users or 388 recreation use days out of a total of 124,489 recreation user days.

As shown in [Table 4.2.1-2](#), recreationists were also asked to indicate what recreational activities they have participated in at the B-G Project, by season. Of the 160 recreationists who indicated the recreational activity in which they reported participation, one respondent indicated canoeing, two respondents indicated kayaking, and one respondent indicated both canoeing and kayaking, although these recreationists were not participating in non-motorized boating at the time of the survey. Three of these recreationists indicated participating in canoeing and/or kayaking in multiple seasons. None of the written comments provided by the recreationists who reported having participated in canoeing and/or kayaking addressed boating.

Recreationists were given the opportunity to rate the variety of facilities at the B-G Project and the availability of access to Project waters. Recreationists were also given the opportunity to provide an explanation regarding any low ratings. As set forth in [Table 4.2.2-3](#), explanations for low ratings did not include any comments regarding boating flows or access points for canoe portage.

Recreationists also had the opportunity to provide comments regarding boating flows or access points for canoe portage in response to the open-ended questions “What, if anything, detracted from your recreational experience today? If you check any of the below, please explain. Facility location; Facility condition; Lack of amenities; Accessibility; Trash/Sanitation; Debris on the Water; Crowding; Noise; Other” and “Do you have any additional comments regarding recreation opportunities within the B-G Project.” As set forth in [Tables 4.2.2-8](#) and [4.2.2-10](#), there were no responses addressing a desire for additional boating opportunities or additional access points to waters above and below the Project Lower Dam.



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

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



**Figure 4.6-1:  
Schoharie Creek  
Access Sites**



## 5 Discussion

The results of the recreation use study provide a solid assessment of recreation use at the B-G Project. A combination of user counts, user surveys and actual use information provided the basis for determining the amount and types of use that occur at the B-G Project. A total of 288 spot counts and 210 calibration counts occurred at recreation sites within the B-G Project over the course of the study, while 160 recreation user surveys were completed. These surveys were utilized to gather information on what types of recreation activities people were participating in, their perceptions of the amount of use occurring at the recreation sites, and their perceptions of the variety and quality of the recreation sites. In addition, the Recreational Boating Desktop Feasibility Assessment Report included a literature review of recreational boating conditions and boating access sites downstream of the Lower Dam and of boating opportunities within the B-G Project area. Structured interviews of recreationists who had boated portions of Schoharie Creek were also conducted. In conjunction with the recreation user surveys, the information from the Recreational Boating Desktop Feasibility Assessment was utilized to try to gain an understanding of the demand for recreational boating at the B-G Project.

### 5.1 Recreation Use

Based on a combination of spot counts, calibration counts, traffic counter data, and actual use records for certain sites, total recreation use at recreation sites within the B-G Project boundary was estimated to be 124,489 recreation days for the period from March 2015 through February 2016. The majority of this use occurred in the summer with 59 percent of the recreation days. Fall was the second most popular recreation season with 24 percent of recreation days, followed by winter with 9 percent of recreation days and spring with 8 percent of recreation days.

Popular recreation uses at B-G Project recreation sites were visiting interpretive centers (26%), followed by walking/hiking/running (18%), and picnicking (10%). The next most popular recreation uses of the B-G Project included pool swimming at the Mine Kill State Park Pool (9%), sightseeing (9%), and disc golf (8%).

Mine Kill State Park received the majority of the visitors with 73,125 recreation days or approximately 59 percent of the recreation days. The Visitors Center had 28,331 recreation days (23%), followed by the Mine Kill Falls Overlook with 14,487 recreation days (12%).

During the course of the study, recreation sites within the B-G Project were found to be utilized well below the design capacity. The highest average summer weekend utilization of a site based on parking area capacity was the Upper Reservoir Boat Launch with 50 percent capacity. The Upper Reservoir Access – North site was utilized at less than 33 percent capacity while the remaining sites were utilized at less than 20 percent of the available parking. Recreation use and capacity results show that while some of the recreation sites within the B-G Project are well used, all sites are utilized well below their parking capacity allowing for growth of supported activities within the existing Project recreation sites.

The most popular recreation activity at the Project was visiting an interpretive center, which is supported by both the Lansing Manor and Visitors Center. Although these facilities share parking, current parking capacity is at 11 percent allowing room for growth of this popular activity. Walking/hiking/running were the second most popular activity at the recreation sites within the B-G Project. Mine Kill State Park, the Visitors Center, the Upper Reservoir Access – North, and the Upper Reservoir Access – South all provide access

to trails for walking or running, while Mine Kill State Park and the Visitors Center provide access to hiking trails.

## **5.2 Recreation Use Survey**

The recreation use survey provided an opportunity to gather information about the types of recreation activities that users were participating in, their opinions on a number of aspects of the recreation opportunities offered in connection with the B-G Project, and basic information about party size and length of stay. While information on party size and length of stay was utilized to develop recreational use numbers for the study, other questions provided recreationists' opinions of B-G Project recreation sites.

The median distance traveled to reach project recreation sites was 32 miles. 95 percent of respondents said that they would return to the recreation site over the course of the next year. When asked if the recreation site/facility served their interests, 100 percent of the respondents answered yes.

The survey asked recreationists to rate several aspects of the recreation sites, facilities and amenities provided at the Project on a scale of 1 (poor) to 5 (excellent). The majority of the respondents gave a rating of Excellent (5) or Fair-Excellent (4) when asked about the availability of parking (91%), site condition (98%), variety of facilities/amenities (88%), and the availability of access to B-G Project waters (83%).

When respondents were asked to provide their perception of the amount of use occurring at the site on a scale of 1 (not crowded) to 5 (extremely crowded), the majority of respondents' stated either Not Crowded (1) (69%) or Somewhat Crowded –Not Crowded (2) (14%). When asked about the number of available recreation facilities on a scale of 1 (not satisfied at all) to 5 (extremely satisfied), the majority of respondents were either Extremely Satisfied (5) (47%) or Moderately Satisfied (4) (24%).

When asked whether they were aware of water levels, 70 percent stated that they were not. When asked how satisfied they were with water levels during their trip, all of the survey respondents answered that they were Extremely Satisfied (32%) Moderately Satisfied (38%), or Satisfied (30%). Finally when asked to rate the recreation site as a public recreation opportunity on a scale of 1 (no value at all) to 5 (Highly Valued) the majority of respondents stated Highly Valued (74%) or Some Value to Highly Valued (22%).

Recreationists were given the opportunity to provide additional feedback through six open-ended questions. In total 281 comments were provided in response to these open-ended questions. Two hundred and twenty (220) respondents answered the question what did you like most about or what enhanced your recreation experience today, while only 29 respondents answered the question what did you like least or detracted from your recreation experience, with 9 answering the question what caused you to modify your recreation plans. Finally, only 23 respondents of the 160 surveys administered took the opportunity to provide additional comments regarding recreational opportunities at the Project and only two of these comments requested additional amenities.

## **5.3 Statewide Comprehensive Outdoor Recreation Plan**

In addition to examining current recreational use at the Project, this study also considered the ability of the Project recreation sites to meet projected demand through 2060. The SCORP was utilized to provide insight into what New York State sees for future recreation needs in the area of the B-G Project. These needs were determined on a county level. As discussed in [Section 4.3](#) it was determined that the highest level of need

in Schoharie County was for local winter activities such as ice skating, sledding, and hockey. This was followed by downhill skiing/snowboarding, snowmobiling, fishing, camping, and walking.

Many of these activities are similar to opportunities provided by the Power Authority and NYSOPRHP within the B-G Project area. Mine Kill State Park offers ice skating, sledding, and snowmobiling opportunities in the winter along with fishing and walking opportunities in the summer. The three access sites on the Upper Reservoir provide both fishing and walking opportunities to the public. Mine Kill Falls Overlook provides recreationists with an opportunity to access the Mine Kill State Park hiking trails, as well as the Long Path. Finally, the Visitors Center also offers walking opportunities via a hiking trail or interpretive paths around the wetland.

## **5.4 Projected Recreation Demand**

Results of the user surveys suggest that most recreationists who utilize the B-G Project's recreation sites are residents of the B-G Project region. As discussed in [Section 4.4.1](#), the population of the region within which the Project is located is expected to grow 18 percent between 2010 and 2060. This information in combination with growth coefficients developed by the USDA Forestry Service were utilized to obtain an understanding of how recreation use is expected to change between 2010 and 2060. With the exception of hunting which is expected to decline between 2010 and 2060, the level of participation for all recreation activities observed during the 2015- 2016 survey is expected to increase. The highest levels of growth are expected in ice skating, cross country skiing, snowmobiling, and to a lesser extent motor boating and riding horses ([Table 4.4.2-2](#)).

Mine Kill State Park offers room for growth to recreationists participating in a variety of activities such as ice skating, walking, hiking, running, cross country skiing, snowmobiling, and motor boating. Projected 2060 average summer weekend use at Mine Kill State Park is 91,643 recreation days for the Park and 18,211 recreation days for Mine Kill Falls Overlook. Parking at both of these sites is situated to accommodate greater than the anticipated amount of use for 2060. Parking percent of capacity at Mine Kill State Park is projected to be 14 percent of capacity in 2060 while Mine Kill Falls Overlook is anticipated to be at 22 percent in 2060.

Use at the Lansing Manor Complex, which includes the Lansing Manor House and the Visitors Center, is anticipated to grow by 27 percent between 2015 and 2060. Based on projected average summer weekend use, shared parking at the complex will be used at 14% allowing room for recreation growth at the two facilities.

The Upper Reservoir access sites provide opportunities for walking, shoreline fishing, and boating, which are expected to grow approximately 18 percent, 2 percent, and 1 percent respectively between 2010 and 2060. As shown in [Table 4.4.3-1](#) recreation use at the Upper Reservoir access sites is projected to grow between 21 percent and 22 percent between 2015 and 2060. It is anticipated that the Upper Reservoir access sites will be able to accommodate the increased use on average summer weekends.

Schoharie Creek Fishing Access is anticipated to be used at 15 percent capacity on an average summer weekend in 2060. This is based on an anticipated 19 percent growth between 2015 and 2060, allowing for increased participation in activities such as shoreline fishing.

## **5.5 Effects of Project Operation and Maintenance on Recreation**

### **5.5.1 Lower Reservoir**

The Lower Reservoir, which operates at a maximum and minimum level of 900 ft and 860 ft, respectively, (NYPA, 2014) provides launching opportunities under the full range of Project operations. This was shown in section 4.5.1 and was based on a review of bathymetry collected in 2011 and the approved as-built drawing for the boat launch.

### **5.5.2 Upper Reservoir**

As stated in Section 4.5.2, a gravel carry-in launch area, which utilizes the bottom of the reservoir provides launching opportunities over the full range of reservoir elevations. As such, the availability of the launch area and fishing opportunities in the Upper Reservoir are not affected by Project operations. In addition, four constant level ponds are located in the Upper Reservoir, which also provide fishing opportunities on the Upper Reservoir. Recreation use at the Upper Reservoir access sites is projected to grow between 21 percent and 22 percent between 2015 and 2060. The three access sites at the Upper Reservoir are available for fishing and boating under a full range of Project operations.

### **5.5.3 Schoharie Creek Fishing Access**

The Schoharie Creek Fishing Access provides dispersed access to the shoreline for fishing. The Lower Dam is required to release from the Lower Reservoir flows into Schoharie Creek that are generally equal to inflow from upstream of the Project. These flows do not affect the ability to use the fishing access for dispersed fishing from the shoreline.

## **5.6 Consideration of the Findings of the Recreational Boating Desktop Feasibility Analysis**

The Recreational Boating Desktop Feasibility Analysis consisted of a literature review, hydrologic and hydraulic assessments, and structured interviews to assess recreational boating in Schoharie Creek from Lower Dam to Max V. Shaul State Park. A portion of this study area is located within the B-G Project boundary. The literature review and structured interviews determined that while there are available access points, only a limited amount of recreational boating occurs in this 9.2 mile stretch of Schoharie Creek due to water depths that are insufficient for boating for most of the boating season. In contrast, the literature review and structured interviews found that there are numerous recreational boating opportunities in the region that are more attractive than Schoharie Creek because of higher difficulty. All of these other opportunities are located within 50 miles of the B-G Project and some of these opportunities occur on Schoharie Creek both upstream and downstream of the B-G Project.

The conclusions from the Recreational Boating Desktop Feasibility Analysis are consistent with the results from recreation use counts and user surveys conducted as part of this study. Non-motorized boating was participated in by less than 1 percent of the users. Of the 160 surveys completed, only four respondents identified that they had participated in kayaking and/or canoeing at the Project, although at the time of the survey these respondents were not participating in canoeing or kayaking. Of the 23 respondents who took the opportunity to provide additional comments regarding recreational opportunities at the Project, only two of these comments requested additional amenities. Neither comment requested additional access to Project waters. Finally, when given the opportunity to provide additional comments about recreational

opportunities at the Project, there were no survey responses that identified inadequate access to waters above and below the Project dam or addressed flows for non-motorized boating downstream of the Project dam.

While there are a number of access points that provide boating opportunities within the B-G Project boundary and downstream of the Lower Dam, there is little non-motorized boating use at the Project. Results of the Recreation Use/User Contact study did not identify any information that suggests results contrary to those in the Recreational Boating Desktop Feasibility Analysis.

## 6 Conclusions

Total recreation use at the B-G Project recreation sites was estimated to be 124,489 recreation days between March 2015 and February 2016. The majority of this use occurred during the summer, followed by the fall, winter and finally spring. Visiting interpretive centers was the most popular recreation use at the B-G Project, followed by walking/hiking/running and picnicking. The majority of visitors to the B-G project were utilizing Mine Kill State Park, the Lansing Manor Complex and Mine Kill Falls Overlook. Recreation sites within the B-G Project were found to be utilized well below design capacity based on parking lot usage. For the period from 2015 through 2060, projected growth at B-G Project recreation sites averages 26 percent with a total of 156,435 projected recreation days for 2060. Based on summer weekend use of available parking spaces, recreation sites will be used at less than 60 percent capacity in 2060, allowing room for future recreation use.

The recreation use survey asked recreationists to rate several aspects of the recreation sites, facilities, and amenities provided within the B-G Project. The majority of the respondents gave a rating of Excellent or Fair-Excellent when asked about the availability of parking, site condition, variety of facilities/amenities, and the availability of access to the B-G Project waters. Recreation users visiting the B-G Project were also satisfied with the type, number, and quality of available recreation facilities. The boat launches within the Lower Reservoir and Upper Reservoir provide launching opportunities under the full range of B-G Project operations. The fishing accesses at the Upper Reservoir are also available under the full range of project operations.

The Recreational Boating Desktop Feasibility Assessment found that limited boating occurs from Lower Dam to Max V. Shaul State Park. The results of the recreation use counts and user surveys from the Recreation Use/User Contact Survey are consistent with the findings in the Recreational Boating Desktop Feasibility Assessment. Non-motorized boating was participated in by less than 1 percent of the users or 388 recreation use days out of a total of 124,489 recreation user days. Of the 160 recreationists who indicated on the User Survey the recreational activity in which they reported participation, only four respondents indicated canoeing and/or kayaking, although canoeing and kayaking were not their recreation activity at the time of the survey. In response to the open-ended survey questions, no respondent commented on the need or desire for boating flows or boating access points, which indicates a lack of demand for boating flows or for additional access points to Project waters among those who utilize the Project for recreational purposes.

## 7 References

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# **APPENDIX A – RECREATION FACILITIES AND RECREATION AMENITIES TABLES**

**Table A-1:  
Commission Approved Recreation Facilities at the Blenheim-Gilboa Pumped Storage Power Project  
(FERC No. 2685)**

Recreation Site Name	Recreation Facilities
Mine Kill State Park	Overlooks, ballfields, boat launch area (~49 vehicle with trailer parking spaces; 1 ADA), basketball court, playgrounds, swimming pool, bathhouse (ADA), picnic areas (~200 tables; ~7 ADA), trails, disc golf, winter recreation, interpretive displays, restrooms (ADA), approximately 350 vehicle parking spaces (~11 ADA), picnic shelter
Lansing Manor Complex	Visitor Centers, approximately 42 vehicle parking spaces (3 ADA), picnic area (~10 tables; 2 ADA), picnic shelter overlook, trails, interpretive signs and displays, restrooms (ADA), accessible routes
Upper Reservoir Access Area - North	~3 vehicle parking spaces, informal angler access
Upper Reservoir Access Area – Boat Launch	~2 vehicle parking spaces, car-top boat launch
Upper Reservoir Access Area - South	~6 vehicle parking spaces, informal angler access
Schoharie Creek Fishing Access	Approximately 14 vehicle parking spaces, angler access point
Cooperative Archery Hunting Area	1,240 acres of hunting area

**Table A-2:  
Approved Recreation Amenities for Blenheim-Gilboa Pumped Storage Power Project  
(FERC No. 2685)**

Project No.	Recreation Amenity Name	Recreation Amenity Type	Amenity Status	Latitude	Longitude	FERC Citation & Date	Notes
P-2685	Mine Kill State Park Picnic Area	Picnic Area	Constructed	42.437939	-74.459499	73 FERC 62,138 11/30/1995	Approximately 101 tables
P-2685	Mine Kill State Park Swimming Pool	Swim Area	Constructed	42.437241	-74.459162	73 FERC 62,138 11/30/1995	ADA Accessible Pool

*Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)  
Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use*

Project No.	Recreation Amenity Name	Recreation Amenity Type	Amenity Status	Latitude	Longitude	FERC Citation & Date	Notes
P-2685	Mine Kill State Park	Winter Area	Constructed	42.4366663	-74.458659	73 FERC 62,138 11/30/1995	Winter activities utilize existing trails and open areas.
P-2685	Mine Kill State Park Old Long Path	Trail	Constructed	42.428525	-74.472133	73 FERC 62,138 11/30/1995	Start
P-2685	Mine Kill State Park Old Long Path	Trail	Constructed	42.42935	-74.466928	73 FERC 62,138 11/30/1995	End
P-2685	Mine Kill State Park Orange Trail	Trail	Constructed	42.434764	-74.460308	73 FERC 62,138 11/30/1995	Loop Trail
P-2685	Mine Kill State Park Yellow Trail	Trail	Constructed	42.43515	-74.454228	73 FERC 62,138 11/30/1995	Start
P-2685	Mine Kill State Park Yellow Trail	Trail	Constructed	42.43515	-74.461656	73 FERC 62,138 11/30/1995	End
P-2685	Mine Kill State Park Red Trail	Trail	Constructed	42.437175	-74.456869	73 FERC 62,138 11/30/1995	Start
P-2685	Mine Kill State Park Red Trail	Trail	Constructed	42.439811	-74.454114	73 FERC 62,138 11/30/1995	End
P-2685	Mine Kill State Park Blue Trail (Blue Bird Trail)	Trail	Constructed	42.437653	-74.454319	73 FERC 62,138 11/30/1995	End

*Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)  
Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use*

Project No.	Recreation Amenity Name	Recreation Amenity Type	Amenity Status	Latitude	Longitude	FERC Citation & Date	Notes
P-2685	Mine Kill State Park Green Trail	Trail	Constructed	42.444017	-74.464075	73 FERC 62,138 11/30/1995	Start
P-2685	Mine Kill State Park Green Trail	Trail	Constructed	42.442761	-74.461306	73 FERC 62,138 11/30/1995	End
P-2685	Mine Kill State Park	Active Recreation Areas			-74.458659	73 FERC 62,138 11/30/1995	Playgrounds, ballfields, interpretive displays
P-2685	Mine Kill State Park Overlook	Overlook	Constructed	42.43731	-74.454528	73 FERC 62,138 11/30/1995	View of Lower Reservoir
P-2685	Mine Kill State Park Picnic Area	Picnic Area	Constructed	42.440438	-74.454338	73 FERC 62,138 11/30/1995	Approximately 38 tables
P-2685	Mine Kill State Park Boat Launch	Boat Launch Area	Constructed	42.440168	-74.453678	73 FERC 62,138 11/30/1995	2 lane launch
P-2685	Mine Kill State Park Picnic Area	Picnic Area	Constructed	42.427206	-74.472282	73 FERC 62,138 11/30/1995	Approximately 10 Tables
P-2685	Mine Kill State Park Falls Overlook	Overlook	Constructed	42.42915	-74.471765	73 FERC 62,138 11/30/1995	View of Mine Kill Falls
P-2685	Visitors Center Picnic Area	Picnic Area	Constructed	42.447692	-74.464667	73 FERC 62,138 11/30/1995	Approximately 10 tables

*Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)  
Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use*

Project No.	Recreation Amenity Name	Recreation Amenity Type	Amenity Status	Latitude	Longitude	FERC Citation & Date	Notes
P-2685	Visitors Center Overlook	Overlook	Constructed	42.448831	-74.464014	73 FERC 62,138 11/30/1995	
P-2685	Visitors Center Blue Bird Trail	Trail	Constructed	42.448172	-74.464833	73 FERC 62,138 11/30/1995	Start
P-2685	Visitors Center Interpretive Trail	Trail	Constructed	42.447825	-74.464869	73 FERC 62,138 11/30/1995	Loop
P-2685	Visitors Center	Visitor Center	Constructed	42.448801	-74.464506	73 FERC 62,138 11/30/1995	Project history information and interpretive displays
P-2685	Lansing Manor House	Visitor Center	Constructed	42.449432	-74.464794	73 FERC 62,138 11/30/1995	Historical Information and Museum
P-2685	Upper Reservoir Access Area – Boat Launch	Boat Launch	Constructed	42.447076	-74.417356	73 FERC 62,138 11/30/1995	1 lane gravel launch
P-2685	Upper Reservoir Access Area North	Informal Use Area	Constructed	42.4528	-74.424003	73 FERC 62,138 11/30/1995	
P-2685	Upper Reservoir Access Area South	Informal Use Area	Constructed	42.442471	-74.41858	73 FERC 62,138 11/30/1995	
P-2685	Schoharie Creek Fishing Access	Access Point	Constructed	42.457739	-74.456536	73 FERC 62,138 11/30/1995	

# **APPENDIX B – EXAMPLE DATA SHEETS FOR SPOT AND CALIBRATION COUNTS**





# **APPENDIX C – EXAMPLE RECREATION USER SURVEY**

## Blenheim-Gilboa Pumped Storage Power Project

### Recreation User Survey

Interviewer: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Site Location: \_\_\_\_\_

Weather: \_\_\_\_\_ Air Temp: \_\_\_\_\_ Declined Survey: \_\_\_\_\_

To be determined Post Survey: Pond Elevation: \_\_\_\_\_ Flow (cfs): \_\_\_\_\_

Good Afternoon. My name is \_\_\_\_\_ and I am conducting a recreation use survey of visitors to the Blenheim-Gilboa Pumped Storage Power Project area for the New York Power Authority (Show location map). Collected information will assist the Power Authority in understanding more about land and water based recreation in this area of Schoharie Creek. Responses from the survey will remain anonymous. Would you mind responding to the survey?

1. Have you participated in this survey effort before?

Yes\_\_\_\_\_ Thank you for your time. We are only interviewing each person once with this survey.

No\_\_\_\_\_ Continue with survey

2. How many in your group, including yourself? \_\_\_\_\_

3. Which of the following best describes your group? (Check One)

- |                                  |  |   |
|----------------------------------|--|---|
| <input type="checkbox"/> Alone   | <input type="checkbox"/> Multiple Families | <input type="checkbox"/> Organized Outing Group |
| <input type="checkbox"/> Family  | <input type="checkbox"/> Family & Friends  | <input type="checkbox"/> Educational Group      |
| <input type="checkbox"/> Friends |  | <input type="checkbox"/> Other_____             |

4. How many vehicles did your group use to come here? \_\_\_\_\_

5. Have you ever visited the Blenheim-Gilboa Project area before? Yes\_\_ No\_\_

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)? \_\_\_\_\_

6. What is your U.S. Zip Code? \_\_\_\_\_ or Country of Residency? \_\_\_\_\_

7. When did you arrive today and when do you plan to depart?

Arrived: Date: \_\_\_\_\_ Time: \_\_\_\_\_ AM PM

Estimated Depart: Date: \_\_\_\_\_ Time: \_\_\_\_\_ AM PM

8. During your visit today what is your perception of the amount of use occurring at this recreation site?

1	2	3	4	5
Not Crowded		Somewhat Crowded		Extremely Crowded

9. Were you aware of changing water levels during your visit today? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, please circle the response that applies:

**Upper Reservoir**                      Rising Water    Stable Water    Dropping Water

**Lower Reservoir**                      Rising Water    Stable Water    Dropping Water

10. Overall, how satisfied were you with the water level during your trip? (circle number) N/A\_\_\_\_\_

1	2	3	4	5
Not Satisfied at all	Dissatisfied	Neither Satisfied nor Dissatisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why? \_\_\_\_\_

11. Please indicate which of the following activities you participate or have participated in at the Blenheim-Gilboa Project by season over the **past year**. (Mark all that apply)

Activity	This Trip	Spring (Mar. 1 – May 31)	Summer (June 1 – Aug. 31)	Fall (Sept. 1 - Nov. 30)	Winter (Dec. 1 – Feb. 28)
Backpacking					
Birding					
Boating					
Canoeing					
Kayaking					
Power Boating					
Rowing					
Sailing					
Whitewater Boating					
Camping					
Disc Golf					
Dog Walking					
Driving for Pleasure					
Educational Programs					
Fishing from a Boat					
Fishing from Shore					
Hiking					
Horseback Riding					
Hunting					
Ice Skating					
Mountain Biking					
Nature Observation					
Orienteering					
Painting					
Photography					
Picnicking					
Road Bicycling					
Running					
Sightseeing					
Skiing					
Sledding					
Snowmobiling					
Snowshoeing					
Swimming					
Walking					
Waterskiing/Wakeboarding					
Other: _____					

12. Of the activities listed above, which is your **PRIMARY** activity on this trip? \_\_\_\_\_

13. Overall, how satisfied were you with the available number of recreation facilities? (circle number)

1	2	3	4	5
Not Satisfied at all	Dissatisfied	Neither Satisfied nor Dissatisfied	Moderately Satisfied	Extremely Satisfied

If less than satisfied could you explain why? \_\_\_\_\_

14. Please rate the following for this location:

	Poor		Fair		Excellent	
Availability of Parking	1	2	3	4	5	
Site Condition	1	2	3	4	5	
Variety of Facilities/Amenities	1	2	3	4	5	
Amount of Available Access to Project Waters	1	2	3	4	5	

Please explain any poor ratings. \_\_\_\_\_

15. How would you rate this recreation site as a public recreation opportunity on a scale of 1 to 5?

1	2	3	4	5
No Value At All		Some Value		Highly Value

16. Would you return to this recreation site over the course of the next year? Yes \_\_\_\_\_ No \_\_\_\_\_

17. What did you like most about your recreational experience today? \_\_\_\_\_

18. What did you like least about your recreational experience today? \_\_\_\_\_

19. What, if anything, enhanced your recreation experience today? \_\_\_\_\_

20. What, if anything, detracted from your recreation experience today? If you check any of the below, please explain.

Facility location \_\_\_ Facility condition \_\_\_ Lack of amenities \_\_\_ Accessibility \_\_\_

Trash/Sanitation \_\_\_ Debris on the Water \_\_\_ Crowding \_\_\_ Noise \_\_\_ Other \_\_\_\_\_

21. What, if anything caused you to modify your recreation plans today? \_\_\_\_\_

22. **Mine Kill State Park Only:** Did you pay a fee for use of the recreational site/facility/equipment today? Yes \_\_\_ No \_\_\_

If yes, for what facility/equipment did you pay a fee? \_\_\_\_\_

How much did you pay? \_\_\_\_\_

If yes, what would you consider the cost to be on a scale of 1 to 5? (circle number)

1	2	3	4	5
Too Low		Reasonable		Too High

23. Does this recreation site/facility serve your interests? Yes \_\_\_ No \_\_\_

If not why? \_\_\_\_\_

\_\_\_\_\_

24. Do you have any additional comments regarding recreation opportunities within the Blenheim-Gilboa Project?

\_\_\_\_\_

Thank you for your time and input.

## Socioeconomic Study Report

Prepared by: ***Kleinschmidt***



September 2016

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**NY Power  
Authority**

## EXECUTIVE SUMMARY

The Power Authority of the State of New York (Power Authority) is seeking a new license from the Federal Energy Regulatory Commission (FERC or Commission) for the continued operation of the Blenheim-Gilboa Pumped Storage Power Project (B-G Project) (FERC No. 2685). The B-G Project is on Schoharie Creek, a tributary of the Mohawk River, in the northern Catskill Mountains about 40 miles southwest of Albany, New York. The Power Authority is using the Commission's Integrated Licensing Process as outlined in 18 C.F.R. Part 5. The original license was issued on June 6, 1969, and expires on April 30, 2019. One of the studies that the Power Authority is conducting to support its application for a new license is this Socioeconomics Study.

The overall objective of the socioeconomic study is to evaluate the socioeconomic effects of the B-G Project on local and neighboring communities, the region, and the state. The region includes Schoharie County and its six adjacent counties. The local communities are the taxing entities in which the B-G Project is located including the towns of Blenheim and Gilboa, the Gilboa-Conesville Central School District (CSD) and Schoharie County. The neighboring communities are those that provide first responder services (Conesville, Roxbury, Jefferson, and Middleburgh).<sup>1</sup>

The evaluation of potential socioeconomic effects was accomplished by using the industry-accepted regional economic impact model known as Regional Economic Modeling, Inc. (REMI<sup>®</sup>) to model the overall socioeconomic effects of the B-G Project, including effects of the B-G Project on the New York electricity market and the direct effects of B-G Project on the economies of the state, region, and neighboring and local communities. In addition, the study evaluated the effects of the B-G Project's tax-exempt status on tax rates and the economies of the local communities.

The evaluation of the economic effect of the B-G Project on the New York electricity market estimates the effect on the market costs that consumers will pay for energy projects through 2060. These estimates represent the value the B-G Project provides to New York consumers in terms of savings to customers, not actual proceeds to be expected from power produced. The analysis shows that the continued operation of the Project will result in an estimated savings to New York consumers of \$493 million a year between 2019 and 2060 for the continued operation of the B-G Project, or a net present value of \$6.6 billion. The analysis additionally shows that continued operation of the B-G Project (as compared to a hypothetical scenario in which there is no Project) through 2060 will result in a net present value of \$12.28 million of anticipated total savings on retail electric bills to electric consumers within Schoharie County.

The socioeconomic study also evaluated the direct effects of the B-G Project on the local economies. In 2014, the B-G Project contributed about \$17.7 million in total direct expenditures to the local economies, mostly for labor and related expenditures. Employment at the B-G Project is 150 people including the power plant and the adjacent Visitors Center. Fifty-seven percent (57 percent) of the employees live in Schoharie County, with ZIP Codes 12157 and 12076 being the most frequent places of residence.

Expenditures at the B-G Project also include payments that the Power Authority makes to assist First Responder Organizations (FROs) in providing services to the B-G Project. Total expected FRO payments for the year 2016 (as adjusted for inflation through 2060) were also included in the evaluation of the effects of the B-G Project on the local economies.

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<sup>1</sup> The local community of Blenheim also provides first responder services.

Throughout the study period, the economies of the state, region, county, and local and neighboring communities will experience a greater number of jobs, additional income, increased Gross Regional Product (GRP), and increased number of residents with the B-G Project in operation than if the B-G Project were to cease operation.<sup>2</sup> The evaluation shows that the B-G Project will support approximately 423 jobs in Schoharie County in 2020 and 682 jobs in 2060. Further, the evaluation shows that the B-G Project is expected to generate economic activity that results in additional disposable income to Schoharie County between \$29 million annually in 2020 and \$166 million annually in 2060. For the towns of Blenheim and Gilboa, the B-G Project is expected to generate total additional disposable income of between \$3 million and \$16 million per year for the period 2020 to 2060. Project-supported disposable income in the Gilboa-Conesville CSD is projected to increase from approximately \$2 million annually in 2020 to nearly \$11 million annually in 2060. For the neighboring communities (Conesville, Roxbury, Jefferson, and Middleburgh), the B-G Project is expected to generate a total annual increase in disposable income of about \$4 million in 2020. As in the other jurisdictions, income gains in the neighboring communities are projected to continue to rise throughout the modeled period, culminating in about \$25 million in total annual gains in 2060.

In accordance with the FERC-approved study plan, the Power Authority assessed the potential effects on property tax rates if taxes were paid on the B-G Project. Under New York State law, the Power Authority is exempt from county, municipal, and school-district property taxes. In its Study Plan Determination letter dated June 17, 2016, FERC confirmed that it has no authority to adjudicate claims for, or to require a licensee, through license requirements or any other means, to establish payments in lieu of taxes. The tax-exempt status of the Power Authority is a matter of state law, and FERC confirmed that this status is beyond the Commission's jurisdiction. Nonetheless, this study presents results of hypothetical tax payments based on the project as it is today and provides tax estimates based on the land if it remained unchanged.

The B-G Project lands constitute about 75 percent of the total tax-exempt acreage in the town of Gilboa and about 59 percent of the total tax-exempt acreage in the town of Blenheim. According to the Schoharie County Real Property Tax Services Office's valuation of lands (Value) for the B-G Project, the bulk of the Project's Value lies within the town of Blenheim (\$100,641,875).<sup>3,4</sup> The Value of the B-G Project lands within Gilboa is \$1,077,680.<sup>5</sup> The study shows that the addition of the B-G Project lands to the local communities' tax rolls, while maintaining revenue neutrality, would result in lower property tax rates in each jurisdiction. Using the Schoharie County tax data valuation approach, taxes on the B-G Project hypothetically would generate approximately \$2.3 million in 2020 and \$6.2 million in 2060. These hypothetical tax payments associated with the B-G Project are assumed to be passed on to consumers via higher wholesale electric rates. Other economic effects of hypothetical tax payments could include higher employment, and increases in income, Gross Regional Product, and population in the B-G Region, with decreases in all four categories outside the B-G Region, as the result of increases in electricity prices. Using an average undeveloped land valuation approach, the addition of the B-G Project to the local communities' tax rolls would generate a total of approximately \$155,000 in 2020 and \$285,000 in 2060.

In sum, the B-G Project's continued operation over the term of a new license is expected to provide significant socioeconomic benefits to Schoharie County, including providing more benefits to the economies

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<sup>2</sup>The Gross Regional Product (GRP) is the dollar value of additional goods and services produced in the region.

<sup>3</sup> All Values presented are from the Schoharie County Real Property Tax Services Office

<sup>4</sup> Project facilities in the town of Blenheim include Lansing Manor, B-G Visitors Center, powerhouse, the Lower Reservoir, the Lower Reservoir dam, security building, warehouse and office complex, and a small portion of the Upper Reservoir.

<sup>5</sup> Project facilities in the town of Gilboa include maintenance buildings, a former real estate office building, and the majority of the Upper Reservoir.

of the local and neighboring communities and keeping electric prices lower than if the B-G Project did not continue operating.

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## LIST OF ABBREVIATIONS

ACS	American Community Survey
B-G Project	Blenheim-Gilboa Pumped Storage Power Project
BLS	Bureau of Labor Statistics
Btu	British Thermal Unit
CO <sub>2</sub>	Carbon Dioxide
CPP	Clean Power Plan
CSD	Central School District
EMS	Emergency Medical Service
EMSI	Economic Modeling Specialists International
EPA	U.S. Environmental Protection Agency
FERC or Commission	Federal Energy Regulatory Commission
FRO	First Responder Organization
GRP	Gross Regional Product
I/O	Input/Output
ICF	ICF Resources, LLC
IPM	Integrated Planning Model
JEDI	Jobs and Economic Development Model
kW	Kilowatt
kWh	Kilowatt Hour
LAUS	Local Area Unemployment Statistics
MERT	Medical Emergency Response Team
MEVAC	Middleburgh Emergency Volunteer Ambulance Corps
MMBtu	One Million British Thermal Unit
MW	Megawatt
MWh	Megawatt Hour
NAICS	North American Industry Classification System
NO <sub>x</sub>	Nitrogen Oxide
NPV	Net Present Value
NYISO	New York Independent System Operator
NYCA	New York Control Area
OOM	Out-of-market
PAD	Pre-Application Document
Power Authority	New York Power Authority
PSP	Proposed Study Plan
REMI	Regional Economic Models, Inc.
RGGI	Regional Greenhouse Gas Initiative
RSP	Revised Study Plan
SUNY	State University of New York
U.S.	United States
Value	Schoharie County Real Property Tax Services Office's valuation of Project lands

## 1 Introduction

The Power Authority of the State of New York (Power Authority) is seeking a new license from the Federal Energy Regulatory Commission (FERC or Commission) for the continued operation of the Blenheim-Gilboa Pumped Storage Power Project (B-G Project) (FERC No. 2685). The B-G Project is on Schoharie Creek, a tributary of the Mohawk River, in the northern Catskill Mountains about 40 miles southwest of Albany, New York. The Power Authority is using the Commission's Integrated Licensing Process as outlined in 18 C.F.R. Part 5. The original license was issued on June 6, 1969, and expires on April 30, 2019.

In accordance with 18 C.F.R. §§ 5.5 and 5.6, the Power Authority filed its Notice of Intent and Pre-Application Document (PAD) on April 10, 2014; the PAD included the Power Authority's preliminary study plans for the B-G Project ([New York Power Authority 2014](#)). FERC issued its Scoping Document 1 on June 4, 2014, and held scoping meetings on July 7, 2014, at the Gilboa-Conesville Central School in Gilboa, New York, and on July 9, 2014, at the Best Western Inn in Cobleskill, New York. During these meetings the agencies, stakeholders, and the public identified potential issues. Following the scoping meetings, FERC issued its Scoping Document 2 on September 18, 2014.

Subsequently, the Power Authority received comments on the PAD and the study plans and requests for additional studies. The Power Authority reviewed these comments and study requests and developed a proposed study plan (PSP) to address all comments and requests. The Power Authority filed the PSP with FERC on September 22, 2014. The Power Authority held a PSP Meeting on October 16, 2014. On or before December 21, 2014, stakeholders filed written comments on the PSP. The Power Authority filed a revised study plan (RSP) on January 20, 2015, addressing stakeholders' comments on the PSP, which included requests that the Power Authority conduct a socioeconomic study ([New York Power Authority 2015a](#)). The Power Authority included its proposed socioeconomic study in the RSP.

On February 19, 2015, FERC issued its study plan determination (SPD). FERC approved the proposed socioeconomic study with modification. FERC recommended that the Power Authority analyze the potential effects of its tax-exempt status on the local communities based on the Project as it exists ([Federal Energy Regulatory Commission 2015](#)). The recommendation was incorporated into the study.

The overall objective of the socioeconomic study is to evaluate the socioeconomic effects of the B-G Project on local and neighboring communities, the region, and the state.<sup>6</sup> The specific objectives are to:

- develop a demographic and economic profile of the current conditions of the local and neighboring communities and to describe the socioeconomic character of those communities;
- evaluate potential socioeconomic effects on the local and neighboring communities from operations of the B-G Project and from the Power Authority's tax-exempt status;
- evaluate potential economic effects associated with the local and neighboring communities providing first responder services; and
- evaluate potential socioeconomic effects on the local and neighboring communities, the region, and the state resulting from the operation of the B-G Project.

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<sup>6</sup> [Section 2](#) defines the specific local and neighboring communities included in the study area.

## 2 Study Area

The geographic scope of this study includes the state of New York, Schoharie County, the taxing entities in which the B-G Project is located, and certain additional communities. The taxing entities in which the project is located are the towns of Blenheim and Gilboa, the Gilboa-Conesville Central School District (CSD), and Schoharie County.<sup>7</sup> The jurisdictions of the CSD and the county overlap with those of the towns. For the purposes of this study, the taxing entities are considered the local communities.

The socioeconomic effect of the B-G Project, however, extends beyond the local communities to those communities that provide support to the project via first responder services. For the purposes of this study, the taxing entities that provide first responder services to the B-G Project are considered the neighboring communities and are included within the geographic scope of the socioeconomic study. As part of an effort unrelated to the relicensing of the B-G Project, for several years, the Power Authority has been engaged in an exercise to assess the current utilization and capabilities of existing First Responder Organizations (FROs) that provide emergency services to its three Northern Generating Facilities (Niagara, St. Lawrence, and Blenheim-Gilboa hydropower projects) and the Clark Energy Center. The exercise included on-site interviews with members of the Power Authority's staff and the FROs supporting the B-G Project and reviewing existing documentation related to prior payments and donations to FROs. The Power Authority identified the taxing entities of the towns of Conesville, Roxbury, Jefferson, and Middleburgh as supporting the B-G Project by providing first responder services through fire departments, rescue squads, and emergency ambulance corps.<sup>8</sup>

In addition, Schoharie County and the six counties adjacent to Schoharie County are examined as part of the B-G Region. These six adjacent counties are Albany, Delaware, Greene, Montgomery, Otsego, and Schenectady.

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<sup>7</sup> The Gilboa-Conesville CSD includes portions of the following towns: Blenheim, Broome, Conesville, and Gilboa.

<sup>8</sup> The Blenheim Hose Company in the local community of Blenheim also provides first responder services to the B-G Project.

## 3 Methods

### 3.1 Background Research

The Power Authority described the socioeconomic characteristics of Schoharie County and the towns of Blenheim and Gilboa in Section 4.11 of its PAD for relicensing the B-G Project. For this socioeconomic study, the Power Authority has expanded upon the information presented in the PAD by studying data from the United States Census Bureau (Census Bureau), the United States Bureau of Labor Statistics (BLS), and other sources to understand the socioeconomic characteristics of the B-G Project area and the socioeconomic resources associated with the B-G Project.

Data from the Census Bureau are derived from three distinct programs: the Decennial Census, the American Community Survey (ACS), and the Population Estimates Program. The Decennial Census program, which conducts a count of the population every 10 years, historically has been the primary means of gathering, synthesizing, and disseminating demographic and housing information. Although the Decennial Census still provides official population counts, the program was redesigned for the 2010 Census to eliminate much of the traditional data collection. For the purposes of this study, historical population counts were gathered from Decennial Census data.

The ACS program is presently the vehicle for collecting more detailed socioeconomic information ([U.S. Census Bureau 2013b](#)). The ACS collects and produces information on demographic, social, economic, and housing characteristics each year. For the ACS, the Census Bureau contacts more than 3.5 million households across the country annually. As a result, the ACS program provides more current data than are available from the Decennial Census; therefore, for this study, demographic and housing information are from the ACS. Although ACS collects data annually, it publishes town-level data from an average of the previous 5 years; thus, the 2014 ACS data presented in this socioeconomic study are 5-year averages covering the period from 2010 through 2014.

Although the historical population counts presented in this study are from the Decennial Census, the 2014 population estimates are from the Population Estimates Program, which produces intercensal estimates of the population for the United States, its states, counties, cities, and towns. All information obtained from the Census Bureau's programs and presented here is publically available via the Census Bureau's website.

The BLS, which is part of the U.S. Department of Labor, is the principal federal agency responsible for measuring labor market activity, working conditions, and price changes in the economy ([U.S. Bureau of Labor Statistics 2008](#)). As such, the BLS provides key economic indicators, such as the labor force and the unemployment rate. The BLS uses the Current Population Survey, which is a household survey, to gather data for use in developing official measures of the labor force. Labor statistics cited in this study are from the Current Population Survey. The unemployment rate and labor force information at the state and county levels are from the Local Area Unemployment Statistics (LAUS) program. The LAUS program is a federal-state cooperative effort that prepares monthly estimates of total employment and unemployment. Outside of New England, the LAUS program develops estimates only for cities and towns with populations greater than 25,000 persons. The ACS, however, provides 5-year data on the labor force that is presented for the local and neighboring communities, all of which have populations of fewer than 25,000 persons. More current data on labor market activity are available at the state and county levels only.

[Table 3.1-1](#) identifies the data sources for the various socioeconomic characteristics of the United States, state, region, and local and neighboring communities.

**Table 3.1-1: Summary of Data Sources for Socioeconomic Characteristics**

Variable	Data Source Used to Model REMI's Regional Results
Historical Population	U.S. Census Bureau's Decennial Census
Education, Race, Ethnicity, Housing, Industry, Employment	U.S. Census Bureau's ACS Five-Year Estimates (2014 vintage)
2014 Population	U.S. Census Bureau's Population Estimates Program
Labor Statistics	U.S. Bureau of Labor Statistics

### 3.2 Economic Desktop Analyses

The RSP proposed to analyze the effects of the B-G Project at the state, regional, and local levels and to analyze the potential effects of the Power Authority's tax-exempt status on the local communities by using the industry-accepted regional economic impact model known as Regional Economic Modeling, Inc. (REMI®). The Power Authority retained ICF Resources, LLC to conduct the REMI modeling for this study. Founded in 1969, ICF is a global professional services firm that specializes in modeling the economic effects of policies and programs using an array of regional economic impact models such as REMI.

[Figure 3.2-1](#) is a summary of the methods used to determine the socioeconomic effects of the B-G Project and its tax-exempt status. Inputs for the REMI modeling were derived from a variety of sources.

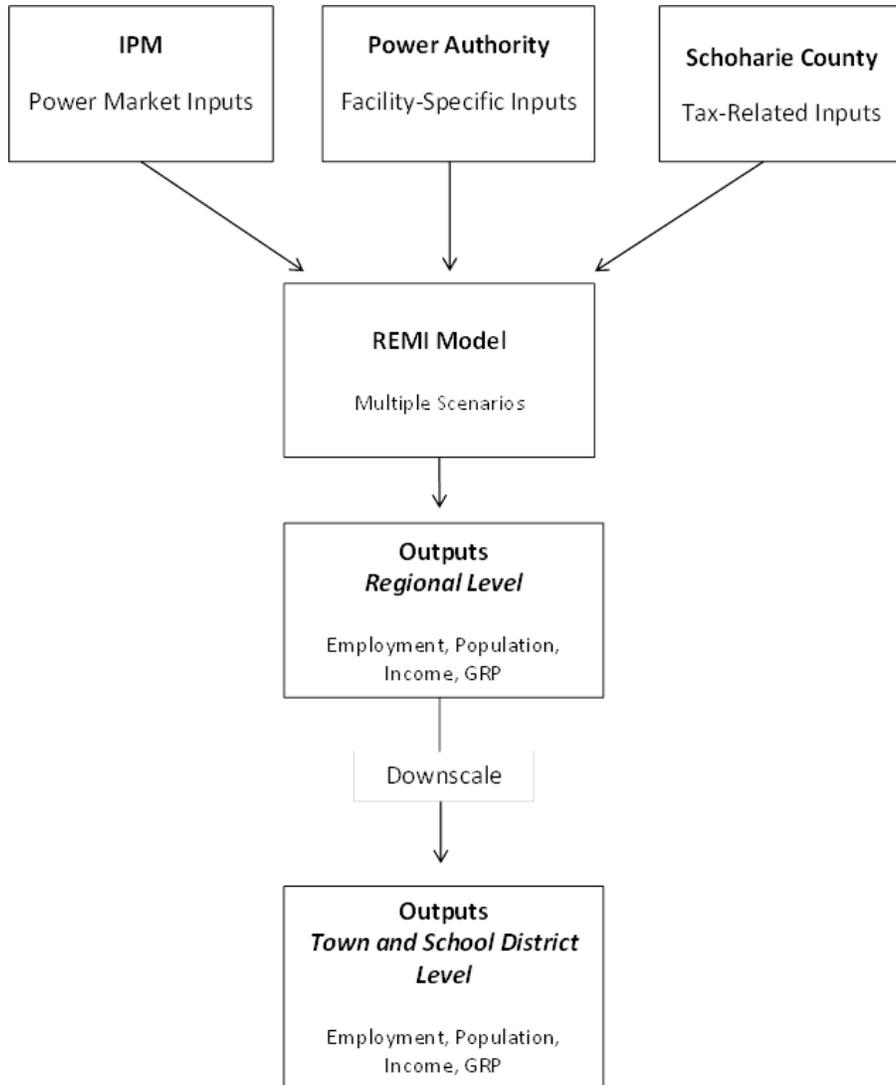
1. The first step in the modeling involved using ICF's Integrated Planning Model (IPM®) to capture the effects of the B-G Project by modeling the effects on the New York electricity market through 2060 both with the B-G Project and in a hypothetical scenario without the B-G Project (i.e., the No Project scenario). This allowed ICF to identify the effects of the B-G Project on the state electricity market and the changes that would occur under the hypothetical No Project scenario (e.g., changes in electricity prices and capacity requirements).
2. In addition to affecting the electricity market, the B-G Project also contributes to the local economies by supporting local jobs and associated economic activities. Data on these facility-specific effects were obtained from the Power Authority and were used in addition to the IPM inputs.
3. Finally, Schoharie County's tax-related inputs were incorporated into an alternative REMI scenario that used the Power Authority's facility-specific data to assess the socioeconomic effects of the B-G Project's tax-exempt status on the local and neighboring communities, the B-G Region, and New York State.

The top portion of [Figure 3.2-1](#) represents these three sets of inputs used in the REMI model. [Section 3.2.1](#) provides more detail about the IPM inputs; and, [Section 3.2.2](#) provides details for the facility-specific inputs. [Section 3.2.3](#) discusses the steps involved in estimating the raw REMI results; with [Section 3.2.4](#) providing detail for the inputs required for the alternative scenario for modeling the economic effects of the facility's tax-exempt status. REMI results on different economic measures, such as employment, population, gross regional product (GRP), and income, were then obtained at the level of the county or combination of counties. Additional modeling apportioned the original REMI results to the smaller geographies of the towns and school district.<sup>9</sup> The lower portion of [Figure 3.2-1](#) presents these steps. [Section 3.2.5](#) provides

<sup>9</sup>The original REMI model could not be configured to these smaller regions because the towns, the school district, the county, and the B-G Region have overlapping boundaries; therefore, additional modeling was required.

additional details on the data used to model the town and school district results. Detailed information on REMI's data sources and estimated procedures is included as [Appendix A](#).

Figure 3.2-1: Overall Socioeconomic Modeling Method



### 3.2.1 Modeling the Effects of the B-G Project on the New York Electricity Market

This section describes the modeling of the New York electricity market using the IPM model, as shown in the first box in [Figure 3.2-1](#). The analysis quantifies the potential effects of the B-G Project on electric markets in New York through 2060 using IPM. The IPM simulates the operation of the electricity market by accounting for both the need for generating electrical energy for customers and the need to maintain adequate generation capacity to ensure the reliability of the power market in times of greater demand or to address outages. Federal agencies and the private sector use IPM widely to forecast both regulatory effects and prices. The model projects wholesale market power prices, power plant dispatch (operation), fuel consumption and fuel prices, inter-regional transmission flows (flow of electricity on the transmission system into, out of, and throughout New York), retirements of existing power plants, construction of new power plants, and environmental emissions and associated costs. Key assumptions used in the IPM analysis are presented in [Appendix B](#).

The IPM was used to prepare a market study of the New York Independent System Operator (NYISO) wholesale electric market through 2060 to evaluate the effect of the B-G Project on the New York electricity costs. The NYISO is the entity responsible for transmission planning, security, reliability, and electricity market operations. The NYISO maintains the day-to-day grid security and reliability and the supply of electricity in the New York Control Area (NYCA).<sup>10</sup> The NYISO also performs planning functions for the New York power markets. This analysis quantifies the potential effects of the B-G Project on the electric market overall and specifically within NYISO's capital load zone, which encompasses the B-G Project. The two scenarios considered in the model are:

- Project scenario — continued operation of the B-G Project through 2060; and
- No Project scenario — hypothetical scenario in which the B-G Project would cease to operate in 2019, removing the power contribution to electrical markets, the employment and expenditures at the project, and the payments to first responders, and in which replacement power would need to be developed.

The effects of the B-G Project through 2060 can be estimated by comparing the results of the two models.

### 3.2.2 Modeling the Direct Effects of B-G Project on the Local Economies

In addition to its contributions to the power market, the B-G Project also affects the local region through its employment of 150 people at the project and the adjacent Visitors Center. Fifty-seven percent (57 percent) of these employees reside in Schoharie County and, therefore, are contributing to the local economies through their spending in the region. Expenditures for salaries, contractors, and materials were obtained from the Power Authority. Expenditures at the B-G Project also include the Power Authority's payments to assist FROs to provide services to the B-G Project. The Power Authority's data on these direct effects of the B-G Project were used as inputs to REMI for modeling the overall economic effects of the B-G Project. [Section 5.2](#) presents more details on these direct effects.

### 3.2.3 Modeling the Overall Socioeconomic Effects of the B-G Project

The REMI model was used to determine the overall socioeconomic effect of the B-G Project.<sup>11</sup> The REMI model, which has been in use since 1980, relies on four major modeling approaches: input/output, general

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<sup>10</sup> An electric control area is a large segment of the electric grid that is operated (controlled) by a single entity. The NYCA encompasses the electric system within the entire state of New York, does not extend outside of New York, and is controlled by the NYISO. The NYCA comprises 11 separate zones within the state.

<sup>11</sup> The actual REMI model used for this study is called Policy Insight Plus (PI+).

equilibrium, econometric, and economic geography ([Regional Economic Models, Inc. 2016](#)). The REMI model has been extensively peer-reviewed and has been the industry standard for regional economic modeling in the United States for several decades. The model is based on the most comprehensive, widely accepted data available from federal agencies, such as the Bureau of Economic Analysis, BLS, and the Census Bureau. The historical data used in the REMI model are the most up-to-date available; the current model version uses data from 2013 for most of the relevant variables. [Appendix A](#) provides a comprehensive summary of all data sources used in REMI, including the latest history year for specific data sources.

The REMI model customized for this study incorporates the B-G Project's employment, expenditures, 2016 payments to FROs, and effects on electricity rates. The model uses these inputs (commonly referred to as the direct effects) to estimate the indirect and multiplier effects, which capture the influence of the direct effects and the subsequent rounds of economic activity. For example, the B-G Project salary expenditures result in an indirect effect on the economy as workers spend their earnings on goods and services (e.g., dining at local restaurants), which consequently supports jobs in sectors that contribute to other industries. Changes in supply, demand, and prices are entered into the REMI model to identify the iterative economic and demographic effects of these changes. Input/output (I/O) relationships among different industries form the core of the REMI model. For instance, the REMI model shows how expenditures related to the B-G Project may affect demand for other industries. Effects of electricity pricing, as modeled by IPM, are also captured through the REMI model. In addition, the I/O model traces the effects that result from changes in the incomes of workers at the B-G Project.

The REMI model, however, goes well beyond the standard I/O relationships to incorporate other important feedback effects. The model includes demographic components because the change in population of an area over time depends in part on the available economic opportunities. Changes in population in turn have feedback effects on the local economy, affecting the demand for housing and other goods. Other feedback effects include changes in wages as the result of changes in economic activity. If employment increases, for example, wages will tend to rise, affecting the competitive position of the region relative to other areas. The model predicts the total economic effects of the changes modeled, including effects on jobs or employment, economic output in the region, labor income, and prices.

The specific configuration of REMI model used in this study is a 70-sector model that roughly corresponds to the 3-digit level of the North American Industry Classification System (NAICS). Geographically, the model uses three non-overlapping New York regions: Schoharie County, the B-G Region (excluding Schoharie County), and the rest of New York. The B-G Region includes the six counties adjacent to Schoharie County: Albany, Delaware, Greene, Montgomery, Otsego, and Schenectady. The modeling period for this analysis was from 2016 to 2060, which is the maximum forecast period currently supported by REMI. As described in [Section 3.2.5](#), additional modeling was completed to identify potential socioeconomic effects at the town and school district levels.

REMI's default reference case was customized to reflect the B-G Project. The model was tailored based on the number of employees at the B-G Project, the 2016 payments to FROs, and the projected growth rate in the retail price of electricity. The projected electricity rates, the direct employment at the B-G Project, and the Power Authority's payments to FROs were converted into REMI inputs to determine the B-G Project's effect on the economy. [Section 5](#) discusses the Project's effects on the economy as modeled in REMI.

### 3.2.4 Modeling the Effects of the B-G Project's Tax-exempt Status on Tax Revenues and Rates

Under Section 1012 of the New York State Public Authorities Law and other provisions of law, the Power Authority is exempt from state and local taxation. As a result, the Power Authority does not pay New York State sales tax or local property taxes to the municipalities, county, and school districts in which it is located; however, it does pay payroll taxes such as unemployment, Social Security, and Medicare.

In accordance with FERC's recommended modifications of the RSP, the economic effects of the tax-exempt status of the B-G Project were modeled assuming hypothetical tax payments for the improved property as it exists today. The socioeconomic effects of the B-G Project's tax-exempt status were analyzed by first identifying the parcels associated with the project lands and then determining the Value of those parcels using Schoharie County Real Property Tax Services Office 2015 tax rolls for the towns of Blenheim and Gilboa, the most recent year for which complete tax information was available to accommodate the modelling schedule. The Power Authority owns five land parcels that encompass the B-G Project. The tax rates for the towns of Blenheim and Gilboa, Schoharie County, and the Gilboa-Conesville CSD were used to estimate the hypothetical taxes associated with each parcel owned by the Power Authority, assuming that property taxes were paid on B-G Project lands.

### 3.2.5 Estimating Economic Impacts for Local and Neighboring Communities

The three regions named in [Section 3.2.3](#) were chosen for this study to avoid overlapping modeling regions in REMI. Additional modeling was required to analyze the socioeconomic effects for the smaller geographies of the individual local and neighboring communities and school district because some of these regions have overlapping boundaries (such as Blenheim and Gilboa with the Gilboa-Conesville CSD) that precluded creating mutually exclusive regions in REMI, which is a necessary condition for these types of economic modeling. Thus, the REMI results needed to be allocated to estimate effects for these smaller geographies. Effects were estimated for the following local and neighboring communities:

- Blenheim, Schoharie County, New York;
- Gilboa, Schoharie County, New York;
- Gilboa-Conesville CSD, New York.
- Conesville, Schoharie County, New York;
- Jefferson, Schoharie County, New York;
- Middleburgh, Schoharie County, New York;
- Roxbury, Delaware County, New York; and

The Census Bureau's 2013 ACS 5-year estimate data from Table DP05, "ACS Demographic and Housing Estimates: 2009-2013 American Community Survey 5-Year Estimates," provides the population estimates for each of the five towns in Schoharie County and one town in Delaware County that were evaluated for this study ([U.S. Census Bureau 2014a](#)). Each town's percentage share of the total county population was estimated as the proportion of the town's population compared to the county's population. The percentages were then applied to REMI's results for population to model the effects at the town and school district levels.

The percentage share of employment in each town compared to the county was estimated based on the town-level data from the Census Bureau's 2013 ACS 5-year estimate data in Table S2403, "Industry by Sex and Median Earnings in the Past 12 Months (in 2013 Inflation-Adjusted Dollars) for the Civilian

Employed Population 16 Years and Over” ([U.S. Census Bureau 2014b](#)) The shares were then used to calculate the B-G Project’s potential effects on employment at the town and school district levels.

Industry sales and earnings from the 2013 Economic Modeling Specialists International (EMSI) data for three-digit NAICS codes provided at the ZIP code level were used to model the REMI results on GRP and income ([Economic Modeling Specialists International 2013](#)). The ZIP code boundaries, however, do not align with the town boundaries; therefore, the percentage of each ZIP code that was within each town’s boundary and the overall percentage of ZIP code-level industry sales and earnings in each town were determined first. Then each town’s share of regional-level industry sales and earnings were measured and applied to the regional-level REMI results to model the results for GRP and income.

The 2013 Census ACS data on employment and earnings for the Gilboa-Conesville CSD were used to establish the school district’s share of county employment, income, and GRP ([U.S. Census Bureau 2014b](#)). The shares were then used to downscale the REMI results. The school district’s share of county population was based on the Census Bureau’s 2012 ACS data on population, which was then used to downscale the REMI results ([U.S. Census Bureau 2013a](#)).<sup>12</sup>

[Table 3.2.5-1](#) summarizes the data sources used for this step in estimating the economic effects for local towns and school district.

**Table 3.2.5-1: Summary of Data Sources Used for Downscaling**

Variable	Data Source Used to Model REMI’s Regional Results
<i>REMI outputs modeled to the town-level</i>	
Population	Census Bureau’s ACS 5-Year Estimates Table DP05: “ACS Demographic and housing estimates: 2009-2013 American Community Survey 5-Year Estimates”
Employment	Census Bureau’s ACS 5-Year Estimates Table S2403: “Industry by Sex and Median Earnings in the Past 12 Months (in 2013 Inflation-Adjusted Dollars) for the Civilian Employed Population 16 Years and Over”
Gross Regional Product	EMSI Industry Sales and Earnings Data for 2013
Income	EMSI Industry sales and Earnings Data for 2013
<i>REMI outputs modeled to the school district level</i>	
Population	Census Bureau’s ACS 5-Year Estimates Table DP05: “ACS Demographic and Housing Estimates: 2008-2012 American Community Survey 5-Year Estimates”
Employment	Census Bureau’s ACS 5-Year Estimates Table S2403: “Industry by Sex and Median Earnings in the Past 12 Months (in 2013 Inflation-Adjusted Dollars) for the Civilian Employed Population 16 Years and Over”
Gross Regional Product	
Income	

This approach to estimate effects for local and neighboring communities was used on the raw REMI results for the two main scenarios, the B-G Project scenario and the hypothetical No Project scenario.

<sup>12</sup> The Census Bureau’s 2012 ACS data was the latest data available to estimate the school district’s population share at the time of the analysis. The study assumes that the percentage share in 2013 was the same as in 2012.

## 4 Demographic, Housing, and Economic Profile of the B-G Study Area

### 4.1 Demographics

#### 4.1.1 Population

The population in New York State grew by approximately 8 percent between 1970 and 2014, from 18.2 million to about 19.7 million. In comparison, the population of the United States as a whole grew by 57 percent from 203.3 million to 318.9 million people. Between 1970 and 2014, the B-G Region's total population grew by 6 percent from 662,488 to 700,927.

**Error! Reference source not found.** From 1970 to 2014, the Schoharie County's population grew by 28 percent. The majority of that growth took place during the 1970s, when the population increased by 20 percent. Since its 1990 level of 31,840, the county's population has fluctuated somewhat, declining slightly to its current level of 31,566. [Table 4.1.1-1](#) presents the population and percentage change in population for the local and neighboring communities, the B-G Region, and New York State.

Table 4.1.1-1: Population, 1970-2014

Place	1970	1980	1990	2000	2010	2014
United States (thousands)	203,302	226,542	248,718	281,422	308,746	318,857
<i>Percentage change</i>		11%	10%	13%	10%	3%
New York State (thousands)	18,237	17,558	17,990	18,976	19,378	19,746
<i>Percentage change</i>		-4%	2%	5%	2%	2%
B-G Region	662,488	665,764	678,399	680,336	701,359	700,927
<i>Percentage change</i>		0%	2%	0%	3%	0%
<i>Local Communities</i>						
Blenheim	260	292	375	330	377	371
<i>Percentage change</i>		12%	28%	-12%	14%	-2%
Gilboa	854	1,078	1,270	1,215	1,307	1,277
<i>Percentage change</i>		26%	18%	-4%	8%	-2%
Gilboa-Conesville CSD	NA	NA	NA	NA	2,703	N/A
<i>Percentage change</i>						
Schoharie County	24,750	29,710	31,840	31,582	32,749	31,566
<i>Percentage change</i>		20%	7%	-1%	4%	-4%
<i>Neighboring Communities</i>						
Conesville	489	681	684	726	734	710
<i>Percentage change</i>		39%	0%	6%	1%	-3%
Jefferson	840	1,108	1,190	1,285	1,410	1,377
<i>Percentage change</i>		32%	7%	8%	10%	-2%
Middleburgh	2,486	2,980	3,290	3,515	3,746	3,607
<i>Percentage change</i>		20%	10%	7%	7%	-4%
Roxbury	2,252	2,291	2,388	2,509	2,502	2,427
<i>Percentage change</i>		2%	4%	5%	0%	-3%

Source: [U.S. Census Bureau 2016](#)

Note: Annexations may have affected the population counts of some of the local and neighboring communities.

Population density provides an objective measure of an area’s level of development and is calculated as the population divided by the land area in square miles. The United States has a population density of 90.3 persons per square mile. In contrast, New York State has a population density of 419 persons per square mile. The state’s density is heavily influenced by that of New York City, which has a population density of 27,013 persons per square mile. The B-G Region’s population density is 166 persons per square mile. The local and neighboring communities have lower population densities. Schoharie County’s population density is 50.8 persons per square mile. Blenheim is the least densely populated of the communities with 10.9 people per square mile. Middleburgh is the most densely populated with 73.4 people per square mile. [Table 4.1.1-2](#) summarizes population densities.

**Table 4.1.1-2: Population Density, 2014**

Place	Land Area in Square Miles <sup>1</sup>	2014 Density (persons per square mile) <sup>2</sup>
United States.	3,532,292	90.3
New York State	47,126	419.0
B-G Region	4,222	166.0
<i>Local Communities</i>		
Blenheim	33.93	10.93
Gilboa	57.77	22.10
Gilboa-Conesville CSD	127.97	N/A
Schoharie County	621.82	50.76
<i>Neighboring Communities</i>		
Conesville	39.49	17.98
Jefferson	43.25	31.84
Middleburgh	49.11	73.44
Roxbury	87.11	27.86

Sources:

<sup>1</sup>[U.S. Census Bureau 2012](#)

<sup>2</sup>Calculated.

REMI forecasts that the population of New York State will grow by 28 percent from 2020 to 2060. Over this same time period, the population of the B-G Region is expected to grow by 16 percent. Schoharie County, overall, is anticipated to see a population increase, similar to that of the entire state, at about 30 percent. [Table 4.1.1-3](#) presents the projected populations of the study area and the state through 2060.

**Table 4.1.1-3: Population Projections, 2020-2060**

Place	2020	2030	2040	2050	2060
New York State (thousands)	20,714	22,297	23,696	25,049	26,599
<i>Percentage change</i>		7.6%	6.3%	5.7%	6.2%
B-G Region	712,834	753,251	782,678	797,281	828,228
<i>Percentage change</i>		5.7%	3.9%	1.9%	3.9%
<b>Local Communities</b>					
Blenheim	377	412	438	467	490
<i>Percentage change</i>		9.3%	6.3%	6.6%	4.9%
Gilboa	1,364	1,492	1,586	1,690	1,774
<i>Percentage change</i>		9.4%	6.3%	6.6%	5.0%
Gilboa-Conesville CSD	2,633	2,881	3,063	3,262	3,426
<i>Percentage change</i>		9.4%	6.3%	6.5%	5.0%
Schoharie County	32,135	35,159	37,387	39,818	41,817
<i>Percentage change</i>		9.4%	6.3%	6.5%	5.0%
<b>Neighboring Communities</b>					
Conesville	716	783	833	887	932
<i>Percentage change</i>		9.4%	6.4%	6.5%	5.1%
Jefferson	1,568	1,715	1,824	1,943	2,040
<i>Percentage change</i>		9.4%	6.4%	6.5%	5.0%
Middleburgh	3,681	4,028	4,283	4,561	4,790
<i>Percentage change</i>		9.4%	6.3%	6.5%	5.0%
Roxbury	2,524	2,663	2,763	2,809	2,916
<i>Percentage change</i>		5.5%	3.8%	1.7%	3.8%

Historical population data, especially those from the recent past, are likely to reflect the effect of the Great Recession during the late 2000s. Thus, the population in Schoharie County, which had been increasing in earlier decades (see 1970, 1980 and 1990 population estimates in [Table 4.1.1-1](#)), started to decline in the last decade or so. Future projections of population, however, are typically based on long-term trends in the economy. Given the uncertainty inherent in the timing of business cycle fluctuations, predicting when the next recession might affect future population growth is difficult. Long-term population projections, such as the one developed by REMI and presented in this study, are typically unable to account for short-term fluctuations resulting from specific recessionary events. All data from sources such as the Census Bureau and BLS and models based on those data (e.g., REMI), therefore, predict population growth rates that may be inconsistent with the experiences of the recent past. Although there may be short-term fluctuations in the population data due to specific events, the historical data also show that the population of Schoharie County has grown from 24,750 to 32,749, or a growth rate of about 32 percent from 1970 to 2010. Taking such a long-term view, the growth rate in the last 40 years is thus comparable to the growth of 30 percent predicted in the next 4 decades (2020 to 2060).

#### 4.1.2 Age Distribution

[Table 4.1.2-1](#) presents the age distribution for the study area. Blenheim has the largest percentage of the population over age 65 (27.2 percent) among the local and neighboring communities. This proportion is approximately twice as large as that of the United States as a whole. Within the study area, Gilboa and Jefferson have the largest percentages of the population under 18 years old, at 21.4 percent. Blenheim’s population has the smallest percentage of persons between the ages of 18 and 64 (55.8 percent).

**Table 4.1.2-1: Population by Age (Percent), 2014\***

Place	Under 18	18 to 64	65 and Over	Median Age
United States	23.5%	62.8%	13.7%	37.4
New York State	21.8%	64.1%	14.1%	38.1
B-G Region	20.0%	64.1%	15.9%	N/A
<i>Local Communities</i>				
Blenheim	17.0%	55.8%	27.2%	49.3
Gilboa	21.4%	61.0%	17.6%	47.1
Gilboa-Conesville CSD	17.2%	60.9%	21.9%	48.4
Schoharie County	19.3%	63.5%	17.2%	43.4
<i>Neighboring Communities</i>				
Conesville	16.8%	57.5%	25.7%	49.0
Jefferson	21.4%	59.8%	18.8%	43.5
Middleburgh	20.5%	61.8%	17.7%	42.2
Roxbury	18.8%	58.2%	23.0%	45.5

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015f](#)

### 4.1.3 Race and Ethnicity

The populations of the local and neighboring communities predominately identify as white; less than 5 percent of the population identifies as minorities. In contrast, more than one-third of the state of New York as a whole identifies as a minority race. [Table 4.1.3-1](#) presents the racial profile of the study area.

Table 4.1.3-1: Race (Percent), 2014\*

Place	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other	Two or More Races
U.S.	73.8%	12.6%	0.8%	5.0%	0.2%	4.7%	2.9%
New York State	65.0%	15.6%	0.4%	7.8%	0.0%	8.4%	2.8%
B-G Region	83.3%	8.8%	0.2%	3.6%	0.0%	1.8%	2.6%
<i>Local Communities</i>							
Blenheim	95.8%	3.1%	0.0%	0.0%	0.0%	0.0%	1.0%
Gilboa	97.4%	0.4%	0.0%	0.5%	0.0%	0.4%	1.3%
Gilboa-Conesville CSD	98.4%	0.4%	0.0%	0.0%	0.0%	0.2%	1.0%
Schoharie County	95.7%	1.5%	0.1%	0.7%	0.0%	0.6%	1.2%
<i>Neighboring Communities</i>							
Conesville	96.3%	0.8%	0.0%	0.0%	0.0%	0.8%	2.2%
Jefferson	97.0%	0.4%	0.5%	0.5%	0.0%	0.0%	1.5%
Middleburgh	98.9%	0.4%	0.2%	0.2%	0.0%	0.1%	0.2%
Roxbury	94.0%	3.5%	0.9%	0.3%	0.0%	0.0%	1.2%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015f](#)

The Census Bureau also collects information on the Hispanic or Latino ethnicity of the population. Overall, 18.2 of the population of New York State is percent Hispanic, and 5.6 percent of the population of the B-G Region is Hispanic. In the local and neighboring communities, less than 5 percent of the population identifies as Hispanic. [Table 4.1.3-2](#) presents the distribution of the population by ethnicity.

Table 4.1.3-2: Ethnicity (Percent), 2014\*

Place	Hispanic or Latino (any race)	Not Hispanic or Latino
U.S.	16.9%	83.1%
New York State	18.2%	81.8%
B-G Region	5.6%	94.4%
<i>Local Communities</i>		
Blenheim	2.4%	97.6%
Gilboa	1.5%	98.5%
Gilboa-Conesville CSD	2.5%	97.5%
Schoharie County	2.9%	97.1%
<i>Neighboring Communities</i>		
Conesville	4.5%	95.5%
Jefferson	2.0%	98.0%
Middleburgh	2.8%	97.2%
Roxbury	2.5%	97.5%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015f](#)

#### 4.1.4 Education

Schoharie County and the B-G Region have numerous educational institutions. Schoharie County is home to six school districts, a career and technical school serving both high school and adult students, and the State University of New York (SUNY) Cobleskill. Founded in 1911, SUNY Cobleskill currently enrolls 2,448 undergraduate students. [Table 4.1.4-1](#) presents the education level of the population of the United States, New York State, the B-G Region, and the local and neighboring communities.

Table 4.1.4-1: Highest Level of Education Attained, Population Aged 25 to 64 (Percent), 2014\*

Place	Less than high school graduate	High school graduate or equivalency	Some college or associate's degree	Bachelor's degree or higher
United States	12.0%	26.5%	30.6%	30.9%
New York State	12.5%	25.1%	26.4%	36.1%
B-G Region	8.3%	28.3%	30.7%	32.7%
<i>Local Communities</i>				
Blenheim	14.1%	44.3%	25.4%	16.2%
Gilboa	8.6%	39.7%	35.0%	16.7%
Gilboa-Conesville CSD	10.1%	47.7%	28.6%	13.6%
Schoharie County	9.6%	36.6%	33.4%	20.5%
<i>Neighboring Communities</i>				
Conesville	11.9%	46.0%	30.4%	11.6%
Jefferson	15.5%	27.5%	36.2%	20.8%
Middleburgh	14.3%	32.7%	36.7%	16.3%
Roxbury	13.3%	33.8%	30.2%	22.8%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015a](#)

## 4.2 Housing

The housing units<sup>13</sup> of the local and neighboring communities typically were built in the 1970s; Conesville and the Gilboa-Conesville CSD have slightly newer housing units. The housing units are similar in age to those in the United States as a whole. The area's housing, however, is younger than New York State's housing as a whole, which has a median year built of 1956. Housing units in the local and neighboring communities tend to be owner-occupied, rather than renter-occupied, at a higher rate than those in the B-G Region, New York State, or the United States. [Table 4.2-1](#) presents the general housing characteristics of the B-G Project area.

Table 4.2-1: Housing Characteristics, 2014\*

Place	Housing Units <sup>1</sup>	Median Year House Built <sup>2</sup>	Occupied Housing <sup>1</sup>	Percent Owner-Occupied <sup>1</sup>
U.S.	132,741,033	1976	116,211,092	64%
New York State	8,153,309	1956	7,255,528	54%
B-G Region	337,598	N/A	274,455	65%
<i>Local Communities</i>				
Blenheim	353	1975	155	85%
Gilboa	1,023	1978	506	87%
Gilboa-Conesville CSD	2,378	1980	1,092	86%
Schoharie County	17,239	1972	12,739	76%
<i>Neighboring Communities</i>				
Conesville	779	1983	329	89%
Jefferson	985	1978	635	83%
Middleburgh	1,871	1972	1,499	79%
Roxbury	2,197	1973	1,002	73%

\* Vintage 2014 data covering the period from 2010 through 2014.

Sources:

<sup>1</sup> [U.S. Census Bureau 2015e](#)

<sup>2</sup> [U.S. Census Bureau 2015c](#)

<sup>13</sup> A housing unit is a house, an apartment, a mobile home or trailer, a group of rooms, or a single room that is occupied or, if vacant, is intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live separately from any other persons in the building and which have direct access from the outside of the building or through a common hall.

Blenheim, Gilboa, the Gilboa-Conesville CSD, Conesville, and Roxbury all have occupancy rates of less than 50 percent. Although the occupancy rates of Schoharie County and the towns of Jefferson and Middleburgh are greater than those of the other locations in the study area, they are still lower than that of the B-G Region, the state, and the United States. [Table 4.2-2](#) provides the vacancy rates for the study area, New York State, and the United States.

**Table 4.2-2: Vacancy Rates, 2014\***

Place	Percent Occupied	Percent Vacant
United States	88%	12%
New York State	89%	11%
B-G Region	81%	19%
<i>Local Communities</i>		
Blenheim	44%	56%
Gilboa	49%	51%
Gilboa-Conesville CSD	46%	54%
Schoharie County	74%	26%
<i>Neighboring Communities</i>		
Conesville	42%	58%
Jefferson	64%	36%
Middleburgh	80%	20%
Roxbury	46%	54%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015e](#)

The majority of the vacant housing units in the local and neighboring communities are vacant because they are used seasonally or for recreation. These uses account for 88 to 91 percent of the vacant housing in Blenheim, Gilboa, the Gilboa-Conesville CSD, Conesville, Jefferson, and Roxbury. Middleburgh, which has a smaller overall vacancy rate, has 41 percent of its vacant housing in seasonal or recreational use. [Table 4.2-3](#) presents the reasons for vacancy.

**Table 4.2-3: Reason for Vacancy, 2014\***

<b>Place</b>	<b>Percent Vacant-Seasonal</b>	<b>Percent Vacant-For Sale/For Rent</b>	<b>Percent Vacant-All Other</b>
United States.	32%	28%	40%
New York State	35%	22%	44%
B-G Region	44%	16%	41%
<i>Local Communities</i>			
Blenheim	88%	4%	9%
Gilboa	88%	1%	12%
Gilboa-Conesville CSD	89%	1%	9%
Schoharie County	67%	7%	26%
<i>Neighboring Communities</i>			
Conesville	91%	0%	9%
Jefferson	91%	0%	9%
Middleburgh	41%	18%	41%
Roxbury	91%	6%	3%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015b](#)

The median value of owner-occupied housing in New York State was more than \$30,000 greater than for the nation for the period from 2010 through 2014. Median housing values in the local and neighboring communities, however, are less than the national median value. Among the local and neighboring communities, Middleburgh had the lowest median value of housing at \$126,300, while Jefferson had the greatest at \$162,500.

For the 2010 through 2014 period, median gross rent in the United States as a whole was \$920 a month. Although rental rates in New York State as a whole exceeded the U.S. rental rates by almost \$200 a month, rents in the local and neighboring communities were generally lower than the median for the United States. Within the study area, median rent was highest in Blenheim at \$983 a month. Jefferson had the lowest median monthly rent at \$582 a month. [Table 4.2-4](#) reports the financial characteristics of the housing units in the study area.

Table 4.2-4: Financial Characteristics of Housing, 2014\*

Place	Median Value, Owner-occupied Housing	Median Gross Monthly Rent, Renter-occupied Housing
United States	\$175,700	\$920
New York State	\$208,600	\$1,117
B-G Region	N/A	N/A
<i>Local Communities</i>		
Blenheim	\$133,300	\$983
Gilboa	\$157,000	\$840
Gilboa-Conesville CSD	\$129,700	\$673
Schoharie County	\$146,200	\$729
<i>Neighboring Communities</i>		
Conesville	\$126,800	\$665
Jefferson	\$162,500	\$582
Middleburgh	\$126,300	\$736
Roxbury	\$152,600	\$647

\* Vintage 2014 data covering the period from 2010 through 2014.

Source: [U.S. Census Bureau 2015e](#)

The New York State Department of Taxation and Finance compiles data on residential real estate transactions and provides the number of annual sales and the median sale price on the county level. For a sale to be included in the compilation, it must be an arm's length residential sale, coded non-condominium.<sup>14</sup> Furthermore, the sale price must be greater than \$10, and the number of days between the sale date and the contract date must be less than 365 or indeterminate. Within the B-G Region, Schoharie County had the fewest number of residential real estate sales, with 268 transactions. These transactions had a median sale price of \$115,000. Albany County had the highest median sale price at \$200,000, and Montgomery recorded the lowest at \$78,475. [Table 4.2-5](#) presents the 2014 data on residential real estate transactions.

**Table 4.2-5: Residential Real Estate Transactions, 2014**

County	Number of Sales	Median Sale Price
Albany County	2,543	\$200,000
Delaware County	340	\$123,202
Montgomery County	324	\$78,475
Otsego County	495	\$120,000
Schenectady County	1,215	\$153,000
Schoharie County	268	\$115,000

Source: [New York State Department of Taxation and Finance 2016](#)

## 4.3 Economics

### 4.3.1 Labor Force and Employment

The BLS compiles labor force data at various geographic levels. A member of the labor force is one who is either employed or is actively seeking work. For the B-G Project area, the county is the smallest unit of geography for which BLS data are available. In February 2016, Schoharie County had a labor force of 15,070 persons, which is less than 5 percent of the B-G Region's labor force; 14,106 of those in the labor force were employed, leaving 6.4 percent unemployed. Schoharie County's unemployment rate in February 2016 was higher than that of New York State and of the United States. [Table 4.3.1-1](#) shows the labor forces, employment levels, and unemployment rates for Schoharie County, the B-G Region, New York State, and the United States for February 2016.

**Table 4.3.1-1: BLS Labor Force, Employment, and Unemployment Rate, February 2016**

Place*	Civilian Labor Force	Total Employed	Unemployment Rate
United States	158,279,000	150,060,000	5.2%
New York State	9,748,023	9,225,397	5.4%
B-G Region	313,866	298,652	4.8%
Schoharie County	15,070	14,106	6.4%

\*The BLS does not publish employment data at the town level.

Source: [U.S. Bureau of Labor Statistics 2016](#)

<sup>14</sup> In an arm's length transaction both parties in the deal are acting in their own self-interest and are not subject to any pressure or duress from the other party.

Although the BLS does not collect town-level labor force data, the Census Bureau does so as part of its ACS program and reports the data as 5-year averages. The ACS data provide a picture of the overall health of the labor force of the local and neighboring communities over a 5-year period. As is clear when comparing [Table 4.3.1-2](#) with [Table 4.3.1-1](#), the unemployment rate in February 2016 was much lower than the 5-year unemployment rate. However, the BLS and ACS unemployment rates are not directly comparable. The ACS data are based on self-reported labor force participation and employment status. The BLS criteria remove those who have been unemployed for an extended period from the labor force. Some people who have been unemployed for longer than the period recorded by the BLS probably report being unemployed in the ACS. The BLS counts those who are underemployed as employed, but they may self-report as being unemployed for the ACS.

**Table 4.3.1-2: ACS Labor Force, Employment, and Unemployment Rate, 2014\***

Place	Civilian Labor Force	Total Employed	Unemployment Rate
United States	157,940,014	143,435,233	9.2%
New York State	10,030,632	9,137,540	8.9%
B-G Region	361,090	331,904	8.1%
<i>Local Communities</i>			
Blenheim	161	140	13.0%
Gilboa	687	593	13.7%
Gilboa-Conesville CSD	1,183	1,061	10.3%
Schoharie County	16,375	14,469	11.6%
<i>Neighboring Communities</i>			
Conesville	340	311	8.5%
Jefferson	804	736	8.5%
Middleburgh	1,931	1,605	16.9%
Roxbury	916	749	18.2%

\* Vintage 2014 data covering the period from 2010 through 2014.

Source: [U.S. Census Bureau 2015d](#)

### 4.3.2 Employment by Occupation and Industry

The ACS collects data on the stated occupation of employed workers. Those surveyed in each of the geographies in the study area cited the category *management, business, science, and arts* most frequently, except in Conesville, where *sales and office occupations* was named most frequently. *Sales and office occupations* was the second most often mentioned occupation in most local and neighboring communities. In Conesville and Gilboa, however, *production, transportation, and material moving* was identified the second most often. *Natural resources, construction, and maintenance* occupations are found more frequently within the local and neighboring communities than in the B-G Region, the state, or the country. [Table 4.3.2-1](#) summarizes the occupations of employed workers within the United States, New York State, the B-G Region, and the local and neighboring communities.

**Table 4.3.2-1: Occupation of Employed Worker (Percent), 2014\***

Place	Management, business, science, and arts	Service occupations	Sales and office occupations	Natural resources, construction, & maintenance	Production, transportation, & material moving
United States	36.20%	18.10%	24.60%	9.10%	12.00%
New York State	38.70%	20.00%	24.40%	7.40%	9.50%
B-G Region	32.1%	17.0%	24.6%	12.7%	13.5%
<i>Local Communities</i>					
Blenheim	29.9%	18.2%	24.8%	17.5%	9.5%
Gilboa	34.4%	17.5%	18.1%	9.3%	20.7%
Gilboa-Conesville CSD	21.1%	21.4%	23.6%	17.2%	16.7%
Schoharie County	32.2%	16.7%	25.1%	12.6%	13.4%
<i>Neighboring Communities</i>					
Conesville	18.2%	14.0%	27.6%	15.7%	24.5%
Jefferson	30.8%	16.4%	22.2%	14.1%	16.6%
Middleburgh	27.8%	19.0%	26.3%	12.9%	13.9%
Roxbury	36.6%	20.9%	17.3%	13.5%	11.7%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015d](#)

The ACS also collects data on the industry of employed workers. Workers in the study area are most frequently employed in the *educational services, and health care and social assistance* industry. The percentage of workers employed in this industry ranges from 14.7 percent in Conesville to 30.3 percent in Gilboa. The *retail trade* industry is also a common industry of employment within the study area, as is *manufacturing and construction*. [Table 4.3.2-2](#) summarizes the industries of employed workers within the United States, New York State, the B-G Region, and the local and neighboring communities.

Table 4.3.2-2: Industry of Employed Worker (Percent), 2014\*

Place	Agriculture, forestry, fishing and hunting, and mining	Construction	Manufacturing	Wholesale trade	Retail trade	Transportation and warehousing, and utilities	Information	Finance and insurance, and real estate and rental and leasing	Professional, scientific, and management, and administrative and waste management services	Educational services, and health care and social assistance	Arts, entertainment, and recreation, and accommodation and food services	Other services, except public administration	Public administration
United States	1.9%	6.2%	10.5%	2.8%	11.6%	4.9%	2.2%	6.7%	10.8%	23.2%	9.3%	5.0%	5.0%
New York State	0.6%	5.6%	6.7%	2.5%	10.8%	5.1%	2.9%	8.2%	11.1%	27.4%	9.0%	5.1%	4.8%
B-G Region	1.1%	5.5%	6.6%	2.0%	11.9%	4.2%	2.0%	6.5%	8.9%	28.0%	8.9%	4.4%	10.0%
<i>Local Communities</i>													
Blenheim	0.7%	12.4%	11.7%	8.0%	13.1%	5.1%	0.0%	4.4%	5.1%	23.4%	7.3%	5.8%	2.9%
Gilboa	3.9%	13.9%	8.8%	3.9%	8.3%	6.2%	0.0%	5.9%	5.7%	30.3%	4.2%	5.2%	3.6%
Gilboa-Conesville CSD	3.1%	18.7%	9.4%	2.5%	12.1%	6.8%	0.0%	6.0%	5.1%	18.8%	8.9%	3.7%	4.9%
Schoharie County	3.9%	8.0%	6.9%	2.4%	15.5%	5.0%	1.1%	5.6%	6.6%	26.8%	7.2%	4.5%	6.4%
<i>Neighboring Communities</i>													
Conesville	2.4%	14.7%	11.5%	3.8%	17.8%	10.1%	0.3%	2.8%	3.1%	14.7%	7.3%	4.9%	6.3%
Jefferson	3.4%	7.3%	16.6%	0.4%	9.5%	6.3%	2.3%	5.8%	5.7%	23.0%	3.3%	6.9%	9.4%
Middleburgh	2.8%	7.9%	6.0%	1.6%	12.0%	5.5%	2.5%	7.1%	7.7%	26.2%	8.2%	5.4%	7.2%
Roxbury	6.7%	12.1%	4.7%	4.4%	12.4%	0.8%	3.2%	1.9%	5.1%	26.9%	13.5%	2.2%	6.1%

\* Vintage 2014 data covering the period from 2010 through 2014; percentages shown may not sum to 100% because of rounding.

Source: [U.S. Census Bureau 2015d](#)

### 4.3.3 Large Employers

According to the Gilboa-Conesville CSD, the B-G Project is the largest single employer in the school district. Other employers include the school district and the New York City Department of Environmental Protection, which supervises the Gilboa Dam and Schoharie Reservoir. Within the school district, much of the employment is seasonal work in the logging, skiing, and recreational industries ([Gilboa-Conesville CSD 2016](#)).

The New York State Department of Labor compiles information on the 10 largest employers in each labor market region from the BLS's Quarterly Census of Employment and Wages but does not present such information at the county or town levels. Schoharie County is considered to be in the Mohawk Valley Region, which includes the counties of Fulton, Herkimer, Montgomery, Oneida, Otsego, and Schoharie. Montgomery, Otsego, and Schoharie are considered to be in the B-G Region. The neighboring Capital Region includes the counties of Albany, Columbia, Greene, Rensselaer, Saratoga, Schenectady, Warren, and Washington. The remaining three B-G Region counties of Albany, Greene, and Schenectady are in the Capital Region. [Table 4.3.3-1](#) presents the 10 largest employers in each region in alphabetical order.

**Table 4.3.3-1: 10 Largest Private Sector Employers, 2014\***

<b>10 Largest Private Sector Employers in the Mohawk Valley Labor Region (includes Montgomery, Otsego, and Schoharie counties)</b>	<b>10 Largest Private Sector Employers in the Capital Labor Region (includes Albany, Greene, and Schenectady counties)</b>
Bassett Healthcare Network	Albany Medical Center Hospital
Faxton St. Luke's Healthcare	Bechtel Marine Propulsion Corp.
Hamilton College	Ellis Hospital
Lexington Center (Fulton Co. Chapter, NYSARC**)	General Electric Co.
Price Chopper	Glens Falls Hospital
Resource Center For Independent Living	Hannaford Supermarkets
St. Elizabeth Medical Center	Price Chopper
St. Mary's Hospital	Rensselaer Polytechnic Institute
Upstate Cerebral Palsy	St. Peter's Hospital
Walmart	Walmart

*\*Employers are presented in alphabetical order. Firm-specific employee counts are confidential under New York State labor law.*

Source: [New York State Department of Labor 2016](#)

#### 4.3.4 Income Levels and Poverty Rates

According to the ACS, the median family income for 2010 to 2014 was \$65,443 in the United States and \$71,419 in New York State; per capita incomes were \$28,555 and \$32,829, respectively. For both geographies and the B-G Region, 15.6 percent of the population was below the poverty level.<sup>15</sup> Gilboa had the highest median and per capita incomes of the local and neighboring communities, exceeding the medians for both the United States and New York State. The town also had the fewest people living below the poverty level (9.3 percent). Roxbury had the lowest median and per capita incomes but did not have the lowest poverty rate. Both Conesville and Middleburgh had poverty levels that exceeded the national, state, and regional poverty levels. [Table 4.3.4-1](#) summarizes income and poverty for the study area.

Table 4.3.4-1: Income and Poverty, 2014\*

Place	Median Family Income	Per Capita Income	Persons below Poverty Level
United States	\$65,443	\$28,555	15.6%
New York State	\$71,419	\$32,829	15.6%
B-G Region	N/A	\$29,035	15.6%
<i>Local Communities</i>			
Blenheim	\$59,231	\$23,543	13.2%
Gilboa	\$72,426	\$28,398	9.3%
Gilboa-Conesville CSD	\$58,958	\$25,144	14.7%
Schoharie County	\$66,272	\$26,097	12.9%
<i>Neighboring Communities</i>			
Conesville	\$60,000	\$25,180	17.5%
Jefferson	\$60,800	\$26,037	13.1%
Middleburgh	\$62,668	\$25,596	17.8%
Roxbury	\$55,042	\$22,318	15.6%

\* Vintage 2014 data covering the period from 2010 through 2014

Source: [U.S. Census Bureau 2015d](#)

<sup>15</sup> The Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using Consumer Price Index (CPI-U). The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps). For 2014, the poverty level for a family with 2 adults and 2 children was \$24,008.

## 5 Economic Effects of the B-G Project

The B-G Project is the sixth largest pumped storage facility in the United States and has four generating units that have a combined generating capacity of 1,160 megawatts (MW) ([U.S. Energy Information Administration 2015a](#)). The B-G Project is part of the New York electric grid and provides installed generating capacity, produces electrical energy and energy storage, and provides several ancillary services that help keep the power grid operating reliably.<sup>16</sup>

### 5.1 Direct Effects on the New York Electric Markets

#### 5.1.1 New York's Energy Market

The New York electric grid is an electric system comprising high-voltage transmission lines and hundreds of electric generating plants. The New York grid has more than 11,000 miles of transmission lines and more than 500 electric power generators providing more than 39,000 MW of electrical generation. In 2015, the New York electric system's peak demand was roughly 31,000 MW with an energy consumption of 162 million megawatt-hours (MWh) ([New York Independent System Operator 2016](#)).

The NYISO, an independent non-profit entity established in 1999, is responsible for managing the day-to-day operation of the electric generation and transmission facilities in the state. It also performs transmission planning, oversees grid security and reliability, and administers several wholesale electricity markets in the state. The NYISO is governed by a board of directors and regulated by FERC. The primary responsibilities of NYISO are to maintain day-to-day grid reliability and to ensure the supply of electricity in the New York electric grid. In addition, NYISO operates wholesale electricity markets for energy, capacity, and ancillary services. NYISO administers and enforces utility industry standards and obligations set by regulators so that the electric system can meet the electric needs of all consumers and can withstand sudden and unanticipated shut-down of generation or transmission facilities.

The NYISO has recognized the value of integrating energy storage resources into the state's electric system, and both the New York Public Service Commission and FERC see important roles for storage in a modern grid.

#### 5.1.2 The Role of Pumped Storage in New York's Energy Market

A pumped storage hydropower generating facility stores water during off-peak hours (typically nights and weekends) for use later when demand is greater (i.e., during hours of peak usage, typically daytime and weekdays). These facilities consist of a hydroelectric power plant served by two reservoirs at different elevations. The power plant draws electricity from the grid to pump water from a lower reservoir to an upper reservoir, where it is stored until it is needed to generate power. When the time comes to generate, the water is allowed to flow downhill, spinning turbines that generate electricity.

Within New York State, pumped storage accounted for 3 percent of generating capacity and 1 percent of all electrical generation output in kilowatt-hours in 2014 ([New York Independent System Operator 2016](#)). Pumped storage facilities provide both economic and reliability value to the New York power market. Economic value accrues when the cost of pumping is less than the price differential between on-peak and off-peak energy. Pumped storage facilities can generate economical electricity by purchasing power during

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<sup>16</sup> The NYISO defines ancillary services as "...services necessary to support the transmission of capacity and energy from generation resources to consumers, while maintaining the reliable operation of New York's transmission system. These services include Regulation and Operating Reserve, Energy Imbalance (using market-based pricing), and the cost-based services of Scheduling, System Control and Dispatch, Voltage Control, and Black Start." For further information see NYISO.com: [http://www.nyiso.com/public/markets\\_operations/market\\_data/ancillary/index.jsp](http://www.nyiso.com/public/markets_operations/market_data/ancillary/index.jsp)

off-peak times and generating power during on-peak times. Reliability value is derived from a pumped storage facility's ability to deliver power when it is needed most. The B-G Project is typically operated to serve these two purposes: to provide power at times of high consumer use and to be available in a *reserve* mode to respond to an unanticipated loss of elements of the electric system. That is, if a generating plant suddenly and unexpectedly experiences an equipment failure and stops generating, the B-G Project is capable of starting up quickly and generating sufficient power to support the grid.

The New York electric grid is expected to require greater flexibility in the future to operate reliably given expected changes. Such future changes may include increasing variability and uncertainty associated with larger installations of wind and solar generation and with potential modifications in operations of the existing electric generating plants in New York required to comply with programs such as the Environmental Protection Agency's (EPA) Clean Power Plan (CPP). Pumped storage facilities such as the B-G Project have the technical capabilities that closely match the power system's growing need for flexibility. The ability of pumped storage to accommodate a variable supply from renewable generators such as wind and solar, which generate intermittently depending upon when wind or sunshine is available, is another benefit. The B-G Project can be used effectively to serve some of the electricity storage needed to provide a consistent and reliable grid based increasingly on renewable sources.

Another significant contribution of pumped storage facilities is the ability to contribute to the more efficient use of the fossil-fueled and nuclear generation fleets. Traditional power plants such as coal-fired and nuclear plants operate more efficiently when they are maintained at a steady level of electrical output and are not subject to adjustments for constantly changing loads (i.e., cycling). Pumped storage facilities are capable of significant flexibility in operations, such that they can be used to increase load in the off-peak hours by drawing electricity for pumping water to the upper reservoir when thermal units might otherwise need to reduce generation or be shut off. Reducing the need for thermal plant cycling results in much more efficient operations, which lowers overall emissions from fuel consumption.

The B-G Project's capability to support grid flexibility in enabling intermittent resources combined with its contribution to greater operating efficiency of the New York power grid and the overall "greening" of the system provide significant value.

### 5.1.3 Effects on the New York Power Markets

In addition to providing energy to the New York bulk power electric market, the B-G Project provides capacity and ancillary services including voltage support, operating reserves, and black start service.<sup>17</sup> ICF used its IPM production cost and capacity expansion tools to quantify the direct benefit of the B-G Project for reducing energy and capacity prices in New York through 2060. The benefit of reducing operating reserve costs was determined through statistical analysis. The benefits were quantified by comparing two scenarios: one considering the B-G Project's continued operation between 2019 and 2060, and one hypothetically assuming its absence (i.e., the No Project scenario).

[Table 5.1.3-1](#) shows the differences between these two scenarios as the effect on the market costs that consumers will pay for energy products in the future. These projections represent the value that the B-G Project provides to New York consumers. That is, the amounts represent savings to the customer, not actual proceeds to be expected from power produced during the period. The B-G Project is projected to

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<sup>17</sup>A generator with black start capability can start up and generate power to re-energize the electric grid after a shutdown of the transmission system, allowing other generators to start up and generate. Most power plants on the grid do not have such capability and are not required to. Generators with black start capability are compensated through the New York electricity markets.

reduce total electric energy costs in the wholesale markets by \$62 million on a present-value basis from 2019 through 2060. Furthermore, if the B-G Project remains available for the period, the capacity costs to New York consumers (and consequently overall electric energy costs) are projected to be \$6.5 billion dollars less on a present-value basis for the 2019 to 2060 time period than they would be if the project were not operating during that time. The B-G Project also benefits the ancillary markets. Only operating reserves were considered to evaluate the effect on the ancillary markets, even though the facility also provides voltage support and black start services. The operating reserve costs for 2019 to 2060 are projected to be reduced by \$33 million on a present-value basis. Overall, the net present value (NPV) of the B-G Project in terms of expected benefits to consumers through reduction in the wholesale market electricity, capacity, and ancillary markets is \$6.6 billion dollars (i.e., \$493 million a year between 2019 and 2060) for the continued operation of the B-G Project. Again, these estimates, which are summarized in [Table 5.1.3-1](#), represent the value of the services provided by the B-G Project, not specific revenue to be derived from future operations. Additional detail on the B-G Project's effect on the New York electricity market is included in [Appendix C](#).

Table 5.1.3-1: Summary of the B-G's Project Value to Consumers in the New York Power Market

Market Type	NPV of Effect on Power Market Costs, 2019 – 2060*
Wholesale Energy	-\$61,979,000
Capacity	-\$6,534,434,000
Ancillary Services	-\$33,246,000
<b>Total</b>	<b>-\$6,629,659,000</b>
<b>Total Annualized Basis</b>	<b>-\$492,822,000</b>

\*NPV= net present value; assumes a 7 percent discount rate.

#### 5.1.4 Effects on Retail Electric Rates

In addition to affecting the wholesale markets (i.e., energy, capacity, and ancillary services), the B-G Project also affects retail rates for electricity. Retail rates are driven not only by wholesale power prices, but also by the cost of the transmission and distribution system and other utility expenses. For the purpose of the REMI analysis, electricity bills were apportioned between the industrial, commercial, and residential sectors by 36 percent, 54 percent, and 10 percent respectively. The percent shares are based on the U.S. Energy Information Administration’s data on average electricity sales in New York between 2010 and 2014 ([U.S. Energy Information Administration 2015b](#)). As shown in [Table 5.1.4-1](#), the continued operation of the B-G Project is projected to reduce annual costs to typical residential customers (assuming an average monthly consumption of 1,000 kilowatt-hours) by an average of \$65 per household in year 2020. Overall, the project is estimated to account for a value to customers of \$809 million in 2020. Savings under the B-G Project are high until 2030 because the hypothetical No Project scenario assumes that new power projects would be constructed during this time frame to replace the generation of the B-G Project. The cost of the new projects would be passed onto customers in the form of higher electricity bills. On the other hand, the continued operation of the B-G Project would not require such investments, and are thus savings to the customers. Beyond 2030, there are no new power plants in the No Project scenario, but the residual effect of the new capacity results in a comparatively lower savings under the B-G Project scenario. Thus, the B-G Project produces savings of \$22.63 million in 2060 for all customer classes. [Table 5.1.4-1](#) provides detail on the effect of reduced retail electric rates statewide as the result of the B-G Project’s continued operation.

**Table 5.1.4-1: Estimated Annual Savings on Electricity Bills by Customer Class for New York State with the B-G Project’s Continued Operation**

	2020	2030	2040	2050	2060
Average Annual Typical Residential Bill Savings (\$ per year)	\$64.53	\$36.26	\$13.32	\$0.53	\$1.86
Total Savings, All Residential Customers (\$ million)	\$291.29	\$163.99	\$59.57	\$2.33	\$8.15
Total Savings, All Commercial Customers (\$ million)	\$436.93	\$245.99	\$89.36	\$3.49	\$12.22
Total Savings, All Industrial Customers (\$ million)	\$80.91	\$45.55	\$16.55	\$0.65	\$2.26
Total Savings, All Customers (\$ million)	\$809.13	\$455.53	\$165.48	\$6.46	\$22.63

Changes in electricity bills, as presented in [Table 5.1.4-2](#), were used as REMI inputs to represent the effect of the B-G Project on electricity prices, and subsequently on sectors that purchase that electricity. Annual savings in Schoharie County are projected to peak at \$1.5 million in 2020 and decline over time thereafter. Statewide, the B-G Project is projected to save electric customers \$809 million in 2020. No data are available for projecting savings at the levels of the towns or school.

**Table 5.1.4-2: Estimated Annual Savings on Electricity Bills by Region with the B-G Project's Continued Operation (\$ Million)**

	NPV*	2020	2030	2040	2050	2060
Schoharie County	\$12.28	\$1.52	\$0.94	\$1.55	\$0.01	\$0.04
B-G Region	\$267.18	\$30.84	\$17.48	\$6.30	\$0.19	\$0.78
Rest of New York	\$6,362.48	\$776.77	\$437.12	\$157.62	\$6.26	\$21.81
Total State of New York	\$6,629.66	\$809.13	\$455.53	\$165.48	\$6.46	\$22.63

\*NPV = net present value; provided for information only

### 5.1.5 Effects on Needed Capacity

The B-G Project provides needed capacity and electric generation. ICF's IPM analysis for the hypothetical No Project scenario (i.e., assuming the absence of the B-G Project after 2019) indicates that three new natural gas-fired power plants would need to be built during the period 2024 through 2030 to replace the capacity of the B-G Project. The capacities and on-line years presented in [Table 5.1.5-1](#) reflect the results of the IPM modeling of the hypothetical No Project scenario.

**Table 5.1.5-1: Incremental New Gas Capacity (MW) Necessary without the B-G Project**

	2024	2029	2030
Schoharie County	0	0	0
B-G Region, excluding Schoharie County	0	0	0
Rest of New York	200	400	550

Several industries are involved in the construction of natural gas power plants. Thus, to measure the impact to all the sectors, ICF apportioned the capital investment for each gas unit between six sectors based on estimates from the National Renewable Energy Laboratory's Jobs and Economic Development Impact (JEDI) Model ([National Renewable Energy Laboratory 2014](#)) as shown in [Table 5.1.5-2](#).

**Table 5.1.5-2: Capital Costs of New Gas Capacity by REMI Sectors**

REMI Sectors	Percentage Breakdown of Capital Cost
Utilities	40%
Construction	25%
Machinery Manufacturing	15%
Fabricated Metal Product Manufacturing	10%
Professional, Scientific, and Technical Services	3%
Real Estate	7%
<b>Total</b>	<b>100%</b>

#### 5.1.6 The B-G Project's Annual Expenditures and Revenues

[Table 5.1.6-1](#) presents the B-G Project's expenditures and revenues from 2007 to 2015. Operating expenditures include the costs of purchased power and related expenses, fuel consumed, operation and maintenance, and administrative expenses. Operating revenues include revenues from wholesale customers and market-based power sales and the provision of ancillary services to the New York electricity market. In 2015, the B-G Project's operating revenue was \$75.5 million, and the operating expenditure was \$69.3 million, which resulted in a net income of \$7.9 million. Net income varied significantly over the 9-year time period, primarily due to fluctuations in operating revenues. The B-G Project had its largest net income of \$35.2 million in 2014. Operating revenues in earlier years were smaller, which was the primary reason for income losses from 2010 to 2012.

**Table 5.1.6-1: The B-G Project's Annual Expenditure and Revenue (\$ Millions)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Operating Revenue	\$107.7	\$103.4	\$53.2	\$53.5	\$36.5	\$44.3	\$83.8	\$112.5	\$75.5
Operating Expenditure	\$94.1	\$91.9	\$49.1	\$61.4	\$55.9	\$56.6	\$63.2	\$78.0	\$69.3
Net Operating Income	\$13.6	\$11.5	\$4.0	-\$7.8	-\$19.5	-\$12.3	\$20.6	\$34.4	\$6.3
Net Income*	\$14.7	\$12.4	\$5.1	-\$7.4	-\$19.3	-\$12.1	\$20.9	\$35.2	\$7.9

\*Net Operating Income including 'Investment and Other Income' and 'Interest and Other Expense.'

## 5.2 Direct Effects on Local Economies

### 5.2.1 Employment

The B-G Project affects the state, the B-G Region, and the local and neighboring communities through its employment of 150 people at the project and at the adjacent Visitors Center. [Table 5.2.1-1](#) shows the B-G Project's 2014 employment, by ZIP code.<sup>18</sup> Fifty-seven percent (57 percent) of employees reside in Schoharie County, and the ZIP codes 12157 and 12076 are the most frequent places of residence, with more than nine out of ten employees residing in the B-G Region ([New York Power Authority 2015b](#)). To model secondary effects of direct employment, the B-G Project's employment was assumed to remain constant at its end-of-2014 level.

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<sup>18</sup> No town-level data on employees are available.

Table 5.2.1-1: B-G Project Employment by ZIP Code

County	ZIP Code	Number of Employees
<b>Schoharie</b>		
	12157	17
	12076	16
	12157	12
	12167*	10
	12093	10
	12043	8
	12194	3
	12066	2
	12149	2
	Other	6
<i>Schoharie County Total</i>		86
<b>Greene</b>		
	12468	3
	12496	3
	12423	2
	12436	2
	Other	7
<i>Greene County Total</i>		17
<b>Albany</b>		
	12210	4
	12193	2
	Other	6
<i>Albany County Total</i>		12
<b>Delaware</b>		
	13788	2
	Other	8
<i>Delaware County Total</i>		10
<b>Otsego</b>		
	12197	6
	Other	2
<i>Otsego County Total</i>		8
<b>Schenectady</b>	Other	6
<b>Montgomery</b>	Other	2
<b>All Others Combined</b>	Other	9
<b>Total</b>		<b>150</b>

\*Part of ZIP code 12167 is in Delaware County.

Source: [New York Power Authority 2015c](#)

### 5.2.2 Expenditures

The B-G Project also affects the state, the B-G Region, and the local and neighboring communities through its expenditures, which include salaries to employees, and operation and maintenance costs (e.g., hiring, contractors, and purchasing materials). The B-G Project contributed about \$17.7 million in total direct expenditures to the local economies in 2014. Labor and benefits, including overtime and training, for employees was the largest category, representing more than 77 percent of spending. Materials were the next largest expenditure at 8.6 percent of spending in 2014 ([New York Power Authority 2016](#)). [Table 5.2.2-1](#) summarizes B-G Project Expenditures for 2014.

**Table 5.2.2-1: B-G Project Expenditures, 2014**

Recurring Operations and Maintenance Costs	Actual Expenditures	Percentage*
Labor & benefits	\$13,626,000	77.2%
Contractors	\$1,392,701	7.9%
Materials	\$1,516,285	8.6%
Fees	\$1,123,722	6.4%
Billing	-\$1,649	-0.0%
<b>Total</b>	<b>\$17,657,059</b>	

\*Percentages shown may not sum to 100% because of rounding.  
Source: [New York Power Authority 2016](#)

As shown in [Table 5.2.2-2](#), the B-G Project had a total payroll in 2014 of \$12,395,819. More than half of the payroll (55.3 percent or \$6,858,788) was to employees who reside in Schoharie County. Employees in the B-G Region accounted for 93 percent (\$11,539,694) of the total payroll, and 6.9 percent (\$856,125) was earned by those who live outside the region.

**Table 5.2.2-2: B-G Payroll by Area, 2014**

Area*	Payroll	Percentage
Schoharie County	\$6,858,788	55.3%
B-G Region	\$11,539,694	93.1%
Outside of B-G Region	\$856,125	6.9%
<b>Total Payroll</b>	<b>\$12,395,819</b>	

\*Data are not provided at the ZIP code level to maintain employees' anonymity  
Source: [New York Power Authority 2015b](#)

In August 2015, the Power Authority and the Office of Parks, Recreation and Historic Preservation agreed to eliminate parking and swimming fees at Mine Kill State Park, which is adjacent to the B-G Project's Visitors Center, saving park visitors over \$20,000 annually. The Power Authority fully compensates State Parks for the operation and maintenance of Mine Kill State Park, paying over \$4.6 million in operations and \$2.1 million for capital projects since 2005.

### 5.2.3 Payments to First Responder Organizations

Expenditures at the B-G Project also include payments that the Power Authority makes to support FROs in providing first responder services to the B-G Project. [Table 5.2.3-1](#) presents the Power Authority's payments to FROs during the 5-year period from 2009 through 2013. During the period 2009 – 2011 and 2013, total payments ranged from a low of \$10,000 in 2011 to a high of \$18,000 in 2010. Payments in 2012 were \$182,526 and reflect the assistance the Power Authority provided to the local and neighboring communities to support recovery efforts from the effects of Hurricane Irene.

**Table 5.2.3-1: Power Authority Payments to FROs, 2009-2013\***

FRO	2009	2010	2011	2012*	2013
Blenheim Hose Company	\$4,000	\$4,000	\$0	\$23,000	\$0
Conesville Fire/EMS	\$4,000	\$4,000	\$4,000	\$64,526	\$5,000
Grand Gorge Fire/EMS (Town of Roxbury)	\$0	\$6,000	\$0	\$55,000	\$5,000
Jefferson Fire/EMS	\$0	\$4,000	\$4,000	\$4,000	\$0
Middleburgh Fire/MEVAC	\$4,000	\$0	\$2,000	\$36,000	\$5,000
<b>Total</b>	<b>\$12,000</b>	<b>\$18,000</b>	<b>\$10,000</b>	<b>\$182,526</b>	<b>\$15,000</b>

*\*Payments in 2012 were in support of recovery efforts from the effects of Hurricane Irene.*

## 6 Socioeconomic Effects of the B-G Project

### 6.1 Effects of Operations

Using the direct effects described in [Section 5](#), including the contributions of the B-G Project to the New York power market, ICF used the REMI model to forecast the number of jobs that the B-G Project will support in the economy through 2060. ICF compared the forecasted number of jobs with the B-G Project in operation to the forecasted number of jobs under a hypothetical No Project scenario in which the B-G Project ceases to operate in 2019. The total number of jobs was modeled for each year from 2019 through 2060 for the Project and No Project scenarios for each geographic level of interest. The numerical difference between the two scenarios is considered the effect of the B-G Project. The REMI model indicates that throughout the study period (2019 through 2060) the economies of the state, region, county, and local and neighboring communities will experience a greater number of jobs with the B-G Project in operation than if the B-G Project were to cease operation. The “project-supported” jobs, income, GRP, and population are related to the direct effects of employment and spending at the project, as well as the indirect (business to business spending) and induced effects (spending related to changes in consumer income) that occur as a result of the B-G Project’s operation.

#### 6.1.1 Employment

[Table 6.1.1-1](#) provides a detailed analysis of the annual effect of the B-G Project on employment within various geographic areas. Results are presented for New York State and are subdivided into the B-G Region (i.e., Schoharie, Albany, Delaware, Greene, Montgomery, Otsego, and Schenectady counties), and the rest of New York. The jobs in the B-G Region and rest of New York are mutually exclusive and sum to the state total. Results also are provided for the local communities, including Schoharie County. Finally, the table presents results for the neighboring communities that provide first responder support to the B-G Project.

Town-level and school district results are based on the shares of the relevant metrics; therefore, the effect of the B-G Project is expected to be smaller in towns that are relatively small. Results for the towns are mutually exclusive; however, the results shown for the towns of Blenheim and Gilboa overlap partially with the Gilboa-Conesville CSD and are included in the Schoharie County total.<sup>19</sup> The Gilboa-Conesville CSD also includes portions of the towns of Conesville and Broome. The B-G Project is expected to support 22 jobs in the towns of Blenheim and Gilboa in 2020 (4 in Blenheim and 18 in Gilboa). The B-G Project is expected to support 31 jobs in 2020 in the Gilboa-Conesville CSD, which covers a larger area but includes portions of Blenheim and Gilboa.<sup>20</sup>

The neighboring communities also benefit from the presence of the B-G Project in the area because of its contribution to the economic base of the region by providing economic opportunities for the local labor force, whose income and spending generate subsequent economic activities in the wider region (i.e., secondary effects). For example, the B-G Project is forecast to support 50 jobs in Middleburgh in 2020. Although the B-G Project may directly employ few people from Middleburgh, the town is likely to benefit from the secondary effects of the B-G Project. The B-G Project also is forecast to support jobs in Jefferson, Conesville, and Roxbury; however, these effects are projected to be smaller than those for Middleburgh.

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<sup>19</sup> Portions of the town of Blenheim are within the Gilboa-Conesville CSD, the Jefferson CSD, the Middleburgh CSD, and the Summit CSD. Portions of Gilboa are within Gilboa-Conesville CSD, the Jefferson CSD, the Roxbury CSD, and the Summit CSD.

<sup>20</sup> A portion of the 22 jobs in the towns of Blenheim and Gilboa are included in the total figure of 31 jobs in the Gilboa-Conesville CSD.

Total jobs supported by the B-G Project are forecast to be 423 in 2020 within Schoharie County. The B-G Project also results in positive secondary effects in the B-G Region and the rest of the state. The majority of the jobs supported outside of Schoharie County are the result of the B-G Project's contributions to the energy market, which results in lower electricity prices.

**Table 6.1.1-1: Effect of Operation of the B-G Project on Annual Employment**

	2020	2030	2040	2050	2060
New York State	5,620	4,220	3,138	1,816	2,053
B-G Region	903	1,030	996	1,086	1,222
Rest of New York	4,717	3,190	2,142	730	831
<i>Local Communities</i>					
Blenheim	4	5	5	6	6
Gilboa	18	22	22	26	28
Gilboa-Conesville CSD*	31	38	38	46	50
Schoharie County	423	516	516	622	682
<i>Neighboring Communities</i>					
Conesville	8	10	10	12	13
Jefferson	21	25	25	31	34
Middleburgh	50	61	61	73	80
Roxbury	1	1	1	1	2

\*The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

The contributions of the B-G Project to the electricity markets ensure a stable supply of electricity in times of peak demand, thereby, avoiding price spikes. As a result, the state as a whole is projected to benefit from between 2,000 to 5,500 jobs annually over the modeled period. In contrast to the projected effect in the local and neighboring communities, most of the benefit in the rest of New York is projected to occur in the early years of the modeled period; about 85 percent of the jobs are projected to be available in the rest of the state in 2020, and the remaining 15 percent in the B-G Region. Thereafter, the relative benefits to the rest of New York are projected to decrease. The relative benefit of the jobs is projected to shift towards the immediate B-G Region, such that more than 60 percent of the jobs accrue to the B-G Region in 2060, and the remaining 40 percent to the rest of the state. This results from the fact that, over time, the positive effect of B-G Project on electricity rates throughout the state declines as other factors, such as the need for new capacity to meet demand, have a larger effect on retail rates throughout the state ([Table 5.1.4-2](#)).

[Table 6.1.1-2](#) presents detailed job effects by sector for the larger modeled regions, focusing on the 10 out of 70 REMI sectors with the largest projected absolute effects. For the state as a whole, the job benefits are distributed fairly evenly across sectors, such as construction, retail trade, health care, and professional and technical services. Most of the gains projected across the state are because of the value that the B-G Project provides in the electricity market by lowering power prices (i.e., secondary effects), thereby, allowing residents to spend less on their electricity bills and more on other goods and services.

Most of the job gains in Schoharie County are benefits that the B-G Project provides to the local economies through secondary effects associated with its existence and continued operations. Projected gains in the construction sector, for example, are unlikely to be related to any construction projects directly related to the B-G Project's continued operation, but rather are more likely to be related to the secondary jobs in areas such as residential housing. Projected job gains for the utility sector in Schoharie County are more

significant than for the entire state at about 10 to 20 percent for the total county jobs, compared to about 2 to 8 percent for the state-level jobs. The utility sector jobs in Schoharie County include the directly employed workers at the B-G Project that reside in the county, which increases this sector's contributions to the projected job effects for the county. The retail sector in Schoharie County is projected to experience relatively large gains, and about 8 to 12 percent of the county-level jobs are estimated for this sector. The projected distribution of jobs for the entire B-G Region shows trends similar to those for Schoharie County, and the construction, utility, and retail trade sectors are projected to be the three largest beneficiaries of continued operations of the B-G Project.

Town-level effects cannot be accurately forecast by sector because employees frequently work in one town, but live in an adjacent one.

Table 6.1.1-2: Effect of Operation of the B-G Project on Employment by Sector (Number of Jobs)

	2020	2030	2040	2050	2060
<i>New York State</i>					
Construction	772	424	413	11	245
Utilities	163	92	155	152	152
Retail Trade	796	529	353	230	216
Health Care and Social Assistance	858	600	417	289	352
Professional, Scientific, and Technical Services	281	295	372	317	293
Accommodation and Food Services	369	317	183	90	81
Other Services, except Public Administration	459	221	113	50	60
Manufacturing	169	142	79	35	26
Finance and Insurance	253	173	73	26	25
Real Estate and Rental and Leasing	173	106	80	40	51
Other	1,327	1,321	900	576	552
<i>B-G Region</i>					
Construction	248	210	170	198	221
Utilities	143	142	142	142	142
Retail Trade	91	107	110	119	128
Health Care and Social Assistance	61	61	69	88	125
Professional, Scientific, and Technical Services	35	70	96	121	149
Accommodation and Food Services	30	37	34	34	38
Other Services, except Public Administration	27	16	13	11	14
Manufacturing	12	10	9	8	8
Finance and Insurance	12	7	6	6	8
Real Estate and Rental and Leasing	10	9	9	10	12
Other	234	361	338	349	377
<i>Schoharie County</i>					
Construction	159	143	117	152	162
Utilities	82	82	82	82	82
Retail Trade	33	54	62	76	81
Health Care and Social Assistance	13	20	30	48	68
Professional, Scientific, and Technical Services	6	13	20	26	31
Accommodation and Food Services	7	12	15	20	23
Other Services, except Public Administration*	--	--	--	--	--
Manufacturing*	--	--	--	--	--
Finance and Insurance*	--	--	--	--	--
Real Estate and Rental and Leasing*	--	--	--	--	--
Other	123	192	190	218	235

\*Sectors without employment results had estimated effects close to zero.

### 6.1.2 Income

[Table 6.1.2-1](#) presents the annual effect of the B-G Project on disposable income. Results are presented for New York State and subdivided for the B-G Region and the rest of New York. Results also are presented for the local and neighboring communities.

For Schoharie County, the B-G Project is expected to generate economic activity that results in additional annual income between about \$29 million in 2020 and about \$166 million in 2060. These figures translate to roughly a 2 percent increase in income in 2020, and a 7 percent increase in income in 2060.

For the towns of Blenheim and Gilboa, the B-G Project is expected to generate total additional disposable income of between \$3 million and \$16 million annually for the period 2020 to 2060. Disposable income in the Gilboa-Conesville CSD is projected to increase by approximately \$2 million per year in 2020 as a result of the B-G Project. The residents of the school district benefit from increasing income throughout the modeling period, similar to other jurisdictions; projected income gains in 2060 are nearly \$11 million per year.

For the neighboring communities, the B-G Project is expected to generate a total annual increase in disposable income of about \$4 million in 2020. As in the other jurisdictions, income gains in the neighboring communities are projected to continue to rise throughout the modeled period, culminating in about \$25 million in total annual gains in 2060; almost \$13.5 million of that annual total is expected to be in Middleburgh.

The B-G Project has a positive secondary effect on disposable income in other regions of New York. The income effects observed outside of the B-G Region are generally related to lower electricity bills that result from the B-G Project. The projected annual income benefits for the wider regions of the state are close to one-half billion dollars in 2020 (\$446 million in 2020 for rest of New York) and about \$160 million in 2060.

**Table 6.1.2-1: Effect of Operation of the B-G Project on Annual Income (\$ Million)**

	2020	2030	2040	2050	2060
New York State	\$502.90	\$482.57	\$372.36	\$274.99	\$354.17
B-G Region	\$56.71	\$93.09	\$107.00	\$143.38	\$195.81
Rest of New York	\$446.19	\$389.48	\$265.36	\$131.61	\$158.36
<i>Local Communities</i>					
Blenheim	\$1.08	\$2.41	\$2.93	\$4.66	\$6.22
Gilboa	\$1.66	\$3.68	\$4.48	\$7.12	\$9.51
Gilboa-Conesville CSD*	\$1.87	\$4.15	\$5.05	\$8.02	\$10.72
Schoharie County	\$28.89	\$64.20	\$78.11	\$124.12	\$165.85
<i>Neighboring Communities</i>					
Conesville	\$0.70	\$1.55	\$1.89	\$3.00	\$4.01
Jefferson	\$1.20	\$2.67	\$3.25	\$5.16	\$6.89
Middleburgh	\$2.34	\$5.21	\$6.34	\$10.07	\$13.46
Roxbury	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01

\*The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

### 6.1.3 Gross Regional Product

[Table 6.1.3-1](#) presents the annual effect of the B-G Project on GRP or economic output. All results represent the effect of continued operations of the B-G Project for the 40-year period from 2019 to 2060 based on a comparison of the modeled Project and hypothetical No Project scenarios.

For Schoharie County, the B-G Project is expected to support increasing annual GRP ranging from \$76 million in 2020 to more than \$156 million in 2060. These increases in GRP are quite significant in relative terms because they translate to about 8 to 9 percent of the county's current economic output. These projected increases are larger than those projected for income, which suggests that the jobs supported by continued operations of B-G Project (both direct jobs and secondary effects) are likely to have higher outputs (or GRP) than the average jobs in the county.

[Table 6.1.3-1](#) also presents the effect of the Project on the annual GRP for the local and neighboring communities. In the early years, continued operations of the B-G Project are anticipated to provide two types of benefits to Schoharie County residents: lower electricity bills and higher economic activity. These benefits produce GRP effects that are fairly substantial. In 2020, the towns of Blenheim and Gilboa are forecasted to account for about \$3.7 million and about \$5.4 million, respectively, of the increase in annual GRP supported by the B-G Project. The Gilboa-Conesville CSD is anticipated to account for about \$5.6 million of the total effect on GRP in 2020, increasing up to approximately \$11.5 million per year in 2060.

Among the neighboring communities, Middleburgh with its large economic base, is expected to account for about \$14.6 million of the annual GRP supported by the B-G Project in 2020. This amount is projected to more than double by 2060 to just over \$40 million annually. Other neighboring communities also gain in GRP. Jefferson and Conesville are anticipated to experience about \$3.3 million and about \$3 million, respectively, of annual GRP supported by the B-G Project in 2020. Roxbury in Delaware County is projected to have GRP gains ranging from \$0.03 million in 2020 to about \$0.07 million in 2060.

The B-G Project also has positive secondary effects on GRP in other regions of New York. The GRP that the B-G Project supports outside of Schoharie County is largely tied to the savings in electricity costs made possible by the project.

**Table 6.1.3-1: Effect of Operation of the B-G Project on Annual GRP (\$ Million)**

	2020	2030	2040	2050	2060
New York State	\$676.24	\$635.58	\$612.04	\$463.31	\$561.75
B-G Region	\$158.36	\$212.93	\$245.03	\$300.67	\$380.92
Rest of New York	\$517.88	\$422.65	\$367.01	\$162.64	\$180.83
<i>Local Communities</i>					
Blenheim	\$3.66	\$4.69	\$5.21	\$6.34	\$7.53
Gilboa	\$5.44	\$6.97	\$7.73	\$9.42	\$11.18
Gilboa-Conesville CSD*	\$5.57	\$7.14	\$7.92	\$9.65	\$11.45
Schoharie County	\$75.97	\$97.37	\$108.07	\$131.61	\$156.22
<i>Neighboring Communities</i>					
Conesville	\$2.95	\$3.78	\$4.19	\$5.10	\$6.06
Jefferson	\$3.33	\$4.26	\$4.73	\$5.76	\$6.84
Middleburgh	\$14.63	\$18.76	\$20.82	\$25.35	\$30.09
Roxbury	\$0.03	\$0.04	\$0.05	\$0.06	\$0.07

\*The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

#### 6.1.4 Population

[Table 6.1.4-1](#) summarizes the annual effect of the B-G Project on population, by the state, the region, and local and neighboring communities. Continued operation of the B-G Project supports population increases, as the local economies continue to grow and benefit from the project's contributions to the local and neighboring communities and B-G Region. The B-G Project is projected to support increases in the number of residents in the B-G Region in all the modeled years. For example, the B-G Project is expected to support 323 additional residents in Schoharie County in 2020, an additional 2,716 residents in 2050, and an additional 3,215 residents in 2060. Similarly, the B-G Project is expected to support population increases for the entire B-G Region of about 500 residents in 2020, growing to approximately 3,600 in 2060.

**Table 6.1.4-1: Effect of Operation of the B-G Project on Annual Population**

	2020	2030	2040	2050	2060
New York State	2,648	9,179	7,447	5,321	4,620
B-G Region	496	2,077	2,386	3,148	3,630
Rest of New York	2,152	7,102	5,061	2,173	990
<i>Local Communities</i>					
Blenheim	4	17	21	32	38
Gilboa	14	63	77	115	136
Gilboa-Conesville CSD*	26	121	148	223	263
Schoharie County	323	1,478	1,810	2,716	3,215
<i>Neighboring Communities</i>					
Conesville	7	33	40	61	72
Jefferson	16	72	88	133	157
Middleburgh	37	169	207	311	368
Roxbury	1	2	2	2	2

\*The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

Although the projected increases in population attributable to continued operation of the B-G Project, particularly in the long run, may appear to be inconsistent with the demographic trends in this region in the recent past due to the recession, they are consistent with the other economic metrics discussed here. Although population may fluctuate in the short term in response to specific events, such as a recession, long-range regional economic models such as REMI provide predictions that are based on long-term trends in the economy that are likely to lead to overall population growth, even after accounting for brief recessionary periods.

## 6.2 Summary

Comparing the B-G Project's continued operations against the hypothetical No Project scenario shows that the B-G Project has a significant positive effect on the economy in terms of jobs, income, GRP, and population. The positive effects are a result of the employment, expenditures, and FRO payments, and of the electricity bill savings to the state's customers attributable to the B-G Project. The B-G Project provides significant socioeconomic benefits not only to residents of the local and neighboring communities in the B-G Region, but also to all state residents because it contributes to maintaining a reliable grid and to ensuring that electricity prices remain affordable for all residents.

In the B-G Region, the project's continued operations are expected to support more than a thousand jobs annually. Considering the direct employment of 150 workers at the facility itself, the contributions of the B-G Project to the region are significantly greater than its direct effect on jobs. This is expected given that the facility provides vital support to the electricity grid in times of peak demand and thereby helps to maintain a reliable, affordable power supply for all residents. The B-G Project's continued operation is expected to provide annual economic output (GRP) between \$160 million in 2020 and \$380 million in 2060 in the B-G Region; roughly 40 to 50 percent of that output is expected to benefit the residents of Schoharie County directly, and the remaining benefit is scattered across the surrounding six counties. The socioeconomic benefits of the B-G Project to Schoharie County are expected to be fairly significant, in both the support it will provide to local economic activities and the electricity market benefits it will provide by keeping rates lower than would be feasible otherwise. Additional information on the socioeconomic effects of the B-G Project is included in [Appendix D](#).

## 7 Effects of the Power Authority’s Tax-Exempt Status on the Local Communities

### 7.1 Economic Effects

#### 7.1.1 Project Property by Taxing Jurisdiction

The B-G Project lies in the towns of Blenheim and Gilboa, in Schoharie County; approximately half of the project lands are in each town. The B-G Project lands are also part of the Gilboa-Conesville CSD, which overlaps with the other taxing jurisdictions. [Table 7.1.1-1](#) lists the acreage in each taxing entity.

**Table 7.1.1-1: Project Acreage by Taxing Jurisdiction**

Taxing Jurisdiction	Project Land Holdings (Acres)	Share of Total Project Holdings (%)
Blenheim	1,474.4 <sup>1</sup>	50.14%
Gilboa	1,465.8 <sup>2</sup>	49.85%
Gilboa-Conesville CSD*	2,940.2	100%
<b>Total Schoharie County</b>	<b>2,940.2</b>	<b>100%</b>

\*The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

Sources:

<sup>1</sup>[Schoharie County Real Property Tax Services Office 2014a](#)

<sup>2</sup>[Schoharie County Real Property Tax Services Office 2014b](#)

Under Section 1012 of the New York State Public Authorities Law and other provisions of law, the Power Authority is exempt from county, municipal, and school-district property taxes. As shown in [Table 7.1.1-2](#), B-G Project lands constitute about 75 percent of the acreage exempt from town and school district taxes in Gilboa and about 59 percent in Blenheim. B-G Project lands constitute approximately 18 percent of the total acreage exempt from county property taxes in Blenheim and 41 percent in Gilboa. The tax-exempt parcels in Blenheim and Gilboa that are not part of the B-G Project consist of school property, religious land, buildings owned by government entities, cultural facilities, recreational facilities, and cemeteries.

**Table 7.1.1-2: Project Acreage and Tax-Exempt Parcels**

Taxing Jurisdiction	Project Acreage	Total Town Acreage	Total Acreage Exempt from Town and CSD Tax	Total Acreage Exempt from County Tax
Town of Blenheim	1,474.4 <sup>1</sup>	21,974 <sup>2</sup>	2,480 <sup>3</sup>	8,344.71 <sup>3</sup>
Project Share of Acreage		6.7%	59%	18%
Town of Gilboa	1,465.8 <sup>1</sup>	38,101 <sup>2</sup>	1,951 <sup>4</sup>	3,560.7 <sup>4</sup>
Project Share of Acreage		3.8%	75%	41%

Sources:

<sup>1</sup>[Schoharie County Real Property Tax Services Office 2015](#)

<sup>2</sup>[Schoharie County Real Property Tax Services Office 2016](#)

<sup>3</sup>[Schoharie County Real Property Tax Services Office 2014a](#)

<sup>4</sup>[Schoharie County Real Property Tax Services Office 2014b](#)

### 7.1.2 Effect on Property Tax Rates

Taxes for very large industrial properties are often negotiated with the local taxing jurisdictions; consequently, the amount of property taxes the B-G Project would be required to pay in each jurisdiction if the Power Authority’s exemption did not apply cannot be calculated with certainty. Moreover, the actual effect of removing the Power Authority’s tax exemption would depend on both the outcome of negotiations between the Power Authority and the taxing authorities and policy decisions by those elected officials regarding the tax rates applied to other local property owners and associated expenditures on local services.

Two conditions were assumed to estimate the change in municipal, county, and school district tax rates: (1) current B-G Project lands are subject to property taxes, and (2) total levies collected by each taxing jurisdiction are held constant. The valuation of the B-G Project was derived using two different approaches. The first uses the Values provided by the Schoharie County Real Property Tax Services Office. The alternative approach uses the Value of undeveloped land in Blenheim and Gilboa to identify hypothetical tax payments that might be realized by the taxing jurisdictions in the absence of the B-G Project. The following section discusses the methods used to calculate the hypothetical tax payment if the Power Authority were not exempt from taxes under state law and the hypothetical change in tax rates using the Schoharie County tax data valuation approach to perform a similar analysis using the average undeveloped land valuation approach.

#### 7.1.2.1 Schoharie County Tax Data Valuation Approach

[Table 7.1.2.1-1](#) presents the valuation of the B-G Project provided by the Schoharie County Real Property Tax Services Office and the equalization rates from the New York State Office of Real Property Tax Services.

**Table 7.1.2.1-1: B-G Project Valuation**

Parcel ID <sup>1</sup>	Taxing Jurisdiction	Assessed Value <sup>1</sup>	Equalization Rate <sup>2</sup>	Value <sup>1</sup>	Tax Rate per \$1000 Value
171.-6-12.2	Blenheim	\$13,500	80%	\$16,875	\$7.40
181.-2-1		\$500,000		\$625,000	
181.-3-1		\$80,000,000		\$100,000,000	
182.-3-3	Gilboa	\$19,006	1.81%	\$1,050,055	\$2.94
192.-2-10		\$500		\$27,624	
All B-G Project Parcels	Gilboa-Conesville CSD	N/A	N/A	\$101,719,554	\$10.79
All B-G Project Parcels*	Schoharie County	N/A	N/A	\$101,719,554	\$8.78

\*Refers to the three B-G Project parcels in Blenheim and two B-G Project parcels in Gilboa.

Sources:

<sup>1</sup> [Schoharie County Real Property Tax Services Office 2015](#)

<sup>2</sup> [New York State Office of Real Property Tax Services 2014](#)

If the Power Authority were a tax-paying entity, the addition of tax payments for the B-G Project would have a significant effect on the Blenheim property tax base. According to the Schoharie County Real Property Tax Office, the bulk of the Project’s Value lies within the town of Blenheim (\$100,641,875). The addition of the B-G Project would increase the town of Blenheim’s taxable Value from \$37.7 million to \$138.3 million.

The Value of the B-G Project lands within Gilboa is \$1,077,680, which represents 0.3 percent of the tax base of Gilboa with the inclusion of B-G Project lands. The addition of the B-G Project's Value of \$101,719,555 would represent 15.2 percent of the Value of the school district's tax base with the inclusion of the B-G Project. For Schoharie County, with the inclusion of the B-G Project lands, the project would represent 4.3 percent of the total Value of property. [Table 7.1.2.1-2](#) summarizes the 2015 tax base in each of the taxing jurisdictions.

**Table 7.1.2.1-2: Total Tax Base by Taxing Jurisdiction**

	<b>Blenheim</b>	<b>Gilboa</b>	<b>Gilboa-Conesville CSD*</b>	<b>Schoharie County</b>
Total Assessed Value <sup>1</sup>	\$30,158,396	\$7,087,020	\$565,634,128	\$2,280,721,289
Total Equalization Rate <sup>2</sup>	80%	1.81%	Not applicable	Not applicable
Total Value of Tax Base <sup>1</sup>	\$37,697,995	\$391,548,066	\$565,634,128	\$2,280,721,289
Value of B-G Project Lands <sup>3</sup>	\$100,641,875	\$1,077,680	\$101,719,555	\$101,719,555
Value of Tax Base with B-G Project Lands	\$138,339,870	\$392,625,746	\$667,353,683	\$2,382,440,844
Project Lands as Percentage of Tax Base	72.7%	0.3%	15.2%	4.3%

\*The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

Sources:

<sup>1</sup>[Schoharie County Budget Office 2015](#)

<sup>2</sup>[New York State Office of Real Property Tax Services 2014](#)

<sup>3</sup>[Table 7.1.2.1-1](#)

Holding tax revenues in each taxing jurisdiction constant, the addition of the B-G Project to the property tax rolls would result in a decrease in the rates levied on all property owners. The extent of this effect differs across tax jurisdictions because the B-G Project's Value varies in comparison to each jurisdiction's total Value. Hypothetical tax rates were calculated based on each jurisdiction's historical rates with the inclusion of the B-G Project lands in the tax base.

According to the Schoharie County Real Property Tax Services Office, \$100.6 million worth of the B-G Project lies within Blenheim, which would represent 72.7 percent of the total municipal Value. Slightly more than \$1 million worth of the B-G Project lies within the Gilboa taxing jurisdiction. In 2015, the town had a total taxable Value of nearly \$400 million, meaning that the B-G Project would represent less than 0.3 percent of the total municipal Value. The Value of the B-G Project (\$101.7 million) within the Gilboa-Conesville CSD represents 15.2 percent of the total Value in of property in the CSD. In Schoharie County the addition of the B-G Project's Value raises the county's total Value by 4.3 percent. [Table 7.1.2.1-3](#) shows the estimated changes in tax rates if the Power Authority were a tax-paying entity.

Table 7.1.2.1-3: Hypothetical Change in Tax Rates on Value of Local Communities  
(per \$1,000 Value)

	2015 Rates	Hypothetical Rates With Tax Payments on the Value of B-G*	Change in Tax Rate*
Blenheim municipal tax rate	\$7.40	\$2.02	-72.70%
Gilboa municipal tax rate	\$2.94	\$2.93	-0.34%
Schoharie County tax rate	\$8.78	\$8.40	-4.33%
Gilboa-Conesville CSD tax rate	\$10.79	\$9.15	-15.20%

\*ICF calculations: Rates expressed for each \$1,000 of Value as identified on the towns' tax rolls; calculations account for municipalities' equalization rates.

The addition of the B-G Project lands to the local communities' tax rolls while maintaining revenue neutrality would result in lower property tax rates in each jurisdiction. Table 7.1.2.1-3 shows how these rates would change. ICF used REMI to model the effect of the B-G Project's tax-exempt status on employment and population in the study area. Taxes on the B-G Project hypothetically would generate approximately \$2.3 million in 2020 and \$6.2 million in 2060 if the Power Authority were to pay property taxes on B-G Project lands, and property tax rates in each jurisdiction were adjusted to achieve revenue neutrality. For this analysis, ICF assumed that each municipality's equalization rates would remain constant with 2015 equalization rates. [Table 7.1.2.1-4](#) lists the B-G Project's estimated tax burden, by municipality, across the modeling timeframe.

To model the effect of the Power Authority's tax-exempt status in REMI, ICF used the total tax bills of Blenheim, Gilboa, Schoharie County, and the Gilboa-Conesville CSD. Revenue neutrality was maintained for modeling purposes; therefore, if the Power Authority were to pay property taxes on B-G Project lands, the property tax bills for the surrounding communities would decrease. This approach is consistent with prior socioeconomic studies conducted for similar facilities. On the other hand, the hypothetical tax payments associated with the B-G Project are treated as a higher cost of doing business for the Power Authority and are assumed to be passed on to the B-G Project's customers via higher wholesale rates.

Table 7.1.2.1-4: Hypothetical Tax Payments on B-G Project Lands

	2020	2030	2040	2050	2060
Blenheim municipal tax bill	\$235,454	\$301,400	\$385,818	\$493,880	\$632,208
Gilboa municipal tax bill	\$4,035	\$5,165	\$6,612	\$8,463	\$10,834
Schoharie County tax bill	\$991,480	\$1,269,178	\$1,624,655	\$2,079,696	\$2,662,186
Gilboa-Conesville CSD tax bill	\$1,078,819	\$1,380,980	\$1,767,771	\$2,262,896	\$2,896,698
Total bill	<b>\$2,309,787</b>	<b>\$2,956,723</b>	<b>\$3,784,855</b>	<b>\$4,844,935</b>	<b>\$6,201,926</b>

### 7.1.2.2 Average Undeveloped Land Valuation Approach

ICF calculated the B-G Project’s tax burden, effect on local tax rates, and projected tax payments using an alternative valuation approach that relied on the average Value of all undeveloped land in Blenheim and Gilboa. This approach is termed the undeveloped land valuation approach. First, ICF calculated the value of the B-G Project land and the levy to be collected. [Table 7.1.2.2-1](#) presents the valuation of the B-G Project based on the weighted average land Value of all undeveloped land in Blenheim and Gilboa. The weighted average was calculated using all undeveloped land use types in Blenheim and Gilboa based on data provided by the Schoharie County Real Property Tax Office.

**Table 7.1.2.2-1: B-G Project Valuation, Undeveloped Land Valuation Approach**

Taxing Jurisdiction	Average Undeveloped Land Value per acre	Project Acreage	Project Value
Blenheim	\$1,806	1,474	\$2,661,877
Gilboa		1,466	\$2,646,440
Schoharie County		2,940	\$5,308,316
Gilboa-Conesville CSD		2,940	\$5,308,316

*Sources: Average undeveloped land Value per acre was calculated by ICF based on data from the Blenheim Tax Roll ([Schoharie County Real Property Tax Services Office 2014a](#)) and the Gilboa Tax Roll ([Schoharie County Real Property Tax Services Office 2014b](#))*

[Table 7.1.2.2-2](#) lists the B-G Project’s estimated tax burden by municipality across the modeled timeframe, if the Power Authority were a tax-paying entity and the B-G Project land was assessed using this undeveloped land valuation approach.

**Table 7.1.2.2-2: Hypothetical Tax Payments on B-G Project Lands, Undeveloped Land Valuation Approach**

	2020	2030	2040	2050	2060
Blenheim municipal tax bill	\$22,287	\$26,930	\$31,573	\$36,216	\$40,859
Gilboa municipal tax bill	\$9,267	\$11,198	\$13,128	\$15,059	\$16,990
Schoharie County tax bill	\$55,789	\$67,412	\$79,035	\$90,658	\$102,281
Gilboa-Conesville CSD tax bill	\$68,079	\$82,262	\$96,445	\$110,628	\$124,811
<b>Total bill</b>	<b>\$155,422</b>	<b>\$187,801</b>	<b>\$220,181</b>	<b>\$252,561</b>	<b>\$284,940</b>

Table 7.1.2.2-3 shows that the largest effect is on Blenheim’s municipal tax rate, although it would decrease less than 6 percent as a result of adding the B-G Project land, excluding the Power Authority facilities, to the town’s taxable property base. For Gilboa, Schoharie County, and the Gilboa-Conesville CSD, tax rates would decline less than 1 percent.

Table 7.1.2.2-3: Hypothetical Change in Tax Rates on Value of Local Communities (per \$1,000 Value), Undeveloped Land Valuation Approach

	2015 Rates*	Hypothetical Rates With Tax Payments on the Value of B-G	Change in Tax Rate
Blenheim municipal tax rate	\$7.40	\$6.98	-5.71%
Gilboa municipal tax rate	\$2.94	\$2.92	-0.75%
Schoharie County tax rate	\$8.78	\$8.76	-0.25%
Gilboa-Conesville CSD tax rate	\$10.79	\$10.69	-0.95%

\*Accounts for municipalities’ equalization rates.

## 7.2 Socioeconomic Effects

Results of the REMI-modeled effects of the Power Authority’s tax-exempt status presented here show the incremental effects of the Power Authority’s tax-exempt status when considering the B-G Project as it exists today. This analysis presents the effect of the B-G Project in the context of economic metrics and demographics. In addition to discussing employment effects, the effects on income and industry activity as measured by GRP were analyzed for the state, the B-G Region, and the local and neighboring communities.

### 7.2.1 Employment

[Table 7.2.1-1](#) shows the annual effect of hypothetical tax payments on B-G Project lands on employment, by state, the B-G Region, and the local and neighboring communities. The payment of taxes on the B-G Project would have a positive effect on employment within the B-G Region. The employment effects would be negative for the rest of New York, which would experience job losses associated with higher costs for electricity resulting from the payment of taxes.

**Table 7.2.1-1: Effect of Hypothetical Tax Payments on B-G Project Lands on Annual Employment (Number of Jobs)**

	2020	2030	2040	2050	2060
New York State	8	34	57	106	149
B-G Region	19	50	72	114	149
Rest of New York	-11	-16	-16	-8	0
<i>Local Communities</i>					
Blenheim	3	7	10	17	21
Gilboa	6	16	23	38	47
Gilboa-Conesville CSD*	10	27	40	65	81
Schoharie County	22	59	86	139	173
<i>Neighboring Communities</i>					
Conesville	2	5	7	12	15
Jefferson	0	1	2	3	4
Middleburgh	1	3	4	7	9
Roxbury**	0	1	1	2	2

\* The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

\*\*A small portion of the town of Roxbury is located within the Gilboa-Conesville CSD; therefore, the town would experience positive effects from property taxes being paid on B-G Project lands.

For Schoharie County, employment would increase by about 22 jobs in 2020 and by about 173 jobs at the end of the modeled period (2060). Consequently, the payment of property taxes on the B-G Project land would also have a small positive effect on employment in the local and neighboring communities because these property tax payments would result in lower effective property tax rates in each jurisdiction. Lower property tax rates generally increase the relative attractiveness of a region, thereby making the region more desirable for other businesses, leading to small increases in employment in the region. The job gains projected for Schoharie County are usually less than 1 percent of total jobs in Schoharie, except in 2060, when the projected gain is 1.13 percent. Similar small gains are projected in the local and neighboring communities.

For the rest of New York, however, no benefits are projected to accrue from lower effective property tax rates. Instead, the rest of New York would experience higher costs associated with higher electricity rates

because the Power Authority’s hypothetical tax payments would result in an increase in rates for customers. This slight increase in electricity bills would lead to relatively small job losses in the rest of New York, on the order of 10 to 20 jobs annually. As the rate effects diminish over time, the job losses associated with those rate effects also would diminish gradually to the point of no effect by 2060. The overall positive employment effects on the entire state are very small in the early years, at less than 10. Beyond 2050, these overall job gains are slightly more than 100 and register as a thousandth of a percent increase for the state as a whole.

### 7.2.2 Income

[Table 7.2.2-1](#) shows the annual effect of hypothetical tax payments on B-G Project lands on income by state, the B-G Region, and the local and neighboring communities. The projected effects of tax payments being made on the B-G Project lands on income are similar to the effects on employment. In 2020, household income in Schoharie County is estimated to increase by about \$2.8 million per year. The effect on income is projected to increase over the modeled period. By 2060, the effect of the payment of property taxes on B-G Project lands on household income in Schoharie County is more than \$56 million per year. Consequently, all of the local and neighboring communities also are projected to experience small increases in income. Incomes in Blenheim and Gilboa would increase by about \$7 million to \$15 million annually by 2060. Increases in the neighboring communities would be smaller; Conesville would have the largest increase at just more than \$5 million annually by 2060. Again, the Power Authority’s hypothetical tax payments would reduce effective tax rates on other businesses in the region, thereby making the region more attractive for all businesses. This leads to higher socioeconomic activities in the region, leading to slightly higher income for all jurisdictions.

**Table 7.2.2-1: Effect of Hypothetical Tax Payments on B-G Project Lands on Annual Income (\$ Million)**

	2020	2030	2040	2050	2060
New York State	\$0.12	\$3.47	\$7.32	\$18.67	\$31.55
B-G Region	\$1.77	\$6.60	\$11.47	\$24.26	\$38.05
Rest of New York	-\$1.65	-\$3.14	-\$4.15	-\$5.59	-\$6.49
<i>Local Communities</i>					
Blenheim	\$0.34	\$1.23	\$2.18	\$4.58	\$6.78
Gilboa	\$0.76	\$2.79	\$4.93	\$10.37	\$15.35
Gilboa-Conesville CSD*	\$1.30	\$4.78	\$8.44	\$17.75	\$26.27
Schoharie County	\$2.79	\$10.24	\$18.06	\$38.01	\$56.24
<i>Neighboring Communities</i>					
Conesville	\$0.25	\$0.91	\$1.61	\$3.38	\$5.01
Jefferson	\$0.05	\$0.18	\$0.32	\$0.68	\$1.00
Middleburgh	\$0.10	\$0.36	\$0.63	\$1.32	\$1.96
Roxbury**	\$0.03	\$0.13	\$0.22	\$0.46	\$0.69

\* The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

\*\*A small portion of the town of Roxbury is located within the Gilboa-Conesville CSD; therefore, the town would experience positive effects from property taxes being paid on B-G Project lands.

Outside of Schoharie County, the effect on income of the Power Authority paying taxes on the B-G Project land would be negative because higher taxes would lead to increases in electricity rates, which would dampen economic activity.

### 7.2.3 Gross Regional Product

Table 7.2.3-1 shows the annual effects of hypothetical tax payments on B-G Project lands on GRP by state, the B-G Region, and the local and neighboring communities. As a result of the increase in employment and disposable income in Schoharie County, the GRP growth also is projected to be positive over the modeled timeframe. Increases in annual GRP related to hypothetical property tax payments are estimated to be close to \$1.5 million in 2020 and about \$16 million in 2060 in Schoharie County. All of the local and neighboring communities also would experience higher GRP due to these tax payments; the largest increases are projected in 2060 in Gilboa and the CSD. The rest of the state's GRP is estimated to decrease if the Power Authority's tax exemption goes away, although the decreases in GRP amounts are small and would diminish over time because the rest of the state would experience higher costs associated with higher electricity rates as the Power Authority passes its tax payments on to electricity customers across the state. A slight decrease in GRP is projected in the rest of state, which would not benefit from lower effective property tax rates, as the immediate B-G Region would. The net effect of these two changes in the B-G Region and the rest of the state is that overall the state's GRP would be expected to increase due to the larger increases in GRP in the B-G Region, even after the offsetting effects of the GRP decreases in the rest of the state.

**Table 7.2.3-1: Effect of Hypothetical Tax Payments on B-G Project Lands on Annual GRP (\$ Million)**

	2020	2030	2040	2050	2060
New York State	-\$0.02	\$1.26	\$2.88	\$7.74	\$12.70
B-G Region	\$1.16	\$3.49	\$5.34	\$9.32	\$13.35
Rest of New York	-\$1.18	-\$2.23	-\$2.46	-\$1.58	-\$0.65
<i>Local Communities</i>					
Blenheim	\$0.17	\$0.51	\$0.80	\$1.45	\$1.92
Gilboa	\$0.39	\$1.17	\$1.82	\$3.28	\$4.35
Gilboa-Conesville CSD*	\$0.66	\$1.99	\$3.11	\$5.61	\$7.44
Schoharie County	\$1.42	\$4.27	\$6.67	\$12.02	\$15.93
<i>Neighboring Communities</i>					
Conesville	\$0.14	\$0.41	\$0.64	\$1.15	\$1.52
Jefferson	\$0.03	\$0.08	\$0.13	\$0.23	\$0.30
Middleburgh	\$0.12	\$0.35	\$0.55	\$0.99	\$1.32
Roxbury**	\$0.02	\$0.05	\$0.08	\$0.15	\$0.20

\* The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

\*\*A small portion of the town of Roxbury is located within the Gilboa-Conesville CSD; therefore, the town would experience positive effects from property taxes being paid on B-G Project lands.

## 7.2.4 Population

Table 7.2.4-1 shows the annual effects of hypothetical tax payments on B-G Project lands on population by state, region, and the local and neighboring communities. ICF apportioned population results from the REMI modeling regions based on the population data at the town level from the Census Bureau's ACS 5-year estimates. If property taxes were to be paid, populations in the local and neighboring communities would increase slightly, and Schoharie County's population would increase by 82 persons in 2020 and by 1,385 persons by 2060.

**Table 7.2.4-1: Effect of Hypothetical Tax Payments on B-G Project Lands on Annual Population**

	2020	2030	2040	2050	2060
New York State	71	299	491	918	1,219
B-G Region	78	328	526	956	1,246
Rest of New York	-8	-29	-35	-37	-27
<i>Local Communities</i>					
Blenheim	10	43	69	128	167
Gilboa	22	97	156	290	378
Gilboa-Conesville CSD*	38	166	267	496	647
Schoharie County	82	355	572	1,062	1,385
<i>Neighboring Communities</i>					
Conesville	7	31	51	94	122
Jefferson	2	7	12	22	29
Middleburgh	4	17	28	52	68
Roxbury**	1	4	7	13	17

\* The Gilboa-Conesville CSD includes portions of the towns of Blenheim and Gilboa.

\*\*A small portion of the town of Roxbury is located within the Gilboa-Conesville CSD; therefore, the town would experience positive effects from property taxes being paid on B-G Project lands.

Among the local communities, population in Blenheim is projected to increase by about 10 in the near term (2020) but more significantly over time, to increases of about 170 persons by the end of the modeled period in 2060. For Gilboa, the corresponding increases are more than double that of Blenheim, at about 22 persons in 2020, rising to about 380 additional persons in 2060. Population increases in the neighboring communities are not as significant; the largest population influx of about 120 persons in 2060 is projected in Conesville. Reductions in effective tax rates due to the Power Authority's hypothetical tax payments would increase the region's attractiveness for other businesses, leading to some increase in population due to increased business activity in the region. Slight decreases in population are projected in the rest of New York; however, the increases in the population of the B-G Region outweigh the decreases in the rest of the state, leading to an overall increase in population for the state as a whole. Overall changes in population for the state are relatively small; the projected 1,219-person increase in 2060 translates to about a 0.005 percent increase of the baseline population projections for New York State.

## 8 Effects Related to Providing First Responder Services to the B-G Project

In 2015, in an exercise unrelated to the relicensing of the B-G Project, the Power Authority reviewed the emergency services that volunteer FROs have provided to the Power Authority’s Northern Generating Facilities, including the B-G Project. These services typically are funded by villages, towns, donations, and other agreements, but the Power Authority has provided financial payments to support local FROs for many years in recognition of the services they provide to the B-G Project.

### 8.1 FROs Supporting the B-G Project

The B-G Project receives support from five fire departments and four emergency medical services (EMS) organizations. Among the FROs that provide services to the B-G Project, 192 firefighters operate under a mutual aid agreement.<sup>21</sup> [Table 8.1-1](#) lists the communities with FROs that support the B-G Project.

In addition to receiving external support from FROs, the B-G Project has a medical emergency response team (MERT). The MERT comprises members of the B-G Project staff who are experienced first responders and are also active with volunteer fire companies. The MERT is not equipped or intended to supplant the FROs.

**Table 8.1-1: FROs Supporting the B-G Project**

Entity	Fire Services	EMS
Town of Blenheim	X	
Town of Conesville	X	X
Grand Gorge Hamlet (part of Roxbury)	X	X
Town of Jefferson	X	X
Town of Middleburgh	X	X

<sup>21</sup> A mutual aid agreement is a local agreement among the fire companies assigning coverage to emergency events.

## 8.2 Historical Call Volume of FROs

The total number of community-wide calls that each FRO handles each year varies widely from organization to organization. The Blenheim Hose Company responded to an average of approximately 15 community-wide calls a year from 2009 through 2014. Middleburgh Fire/MEVAC, however, responded to an average of 635 community-wide calls a year. On average, the FROs that support the B-G Project handle an aggregate total of 1,175 emergency calls a year within their communities. Over the 6-year period from 2009 through 2014, first responders were dispatched to 19 calls at the B-G Project. This call load represents less than 1% percent of the total calls to the five FROs that support the B-G Project. [Table 8.2-1](#) summarizes the first responder calls by organization.

**Table 8.2-1: Average Annual Number of First Responder Calls, 2009-2014**

FRO	Average Annual Number of Total Calls	2009-2014 Total Calls to B-G Project
Blenheim Hose Company	15	19
Conesville Fire/EMS	150	
Grand Gorge Fire/EMS	70	
Jefferson Fire/EMS	305	
Middleburgh Fire/MEVAC	635	
<b>Total</b>	<b>1,175</b>	

## 8.3 Financial Characteristics of FROs

The Blenheim Hose Company, the primary FRO serving the B-G Project, has eight members and, therefore, Schoharie County 911's practice is always to dispatch another fire department with the Blenheim Hose Company. The Blenheim Hose Company has a \$12,000 annual budget derived completely from fundraising. The level of tax support for the other FROs ranges from 80 percent for Conesville Fire/EMS and Middleburgh Fire/Middleburgh Emergency Volunteer Ambulance Corps (MEVAC) to 97 percent for Grand Gore Fire/EMS (in the town of Roxbury) and Jefferson Fire/EMS. [Table 8.3-1](#) summarizes the budgets and level of tax support the FROs receive.

**Table 8.3-1: FRO Budgets**

FRO	Combined Fire & EMS Budget	Tax Support	Percent Supported by Taxes
Blenheim Hose Company*	\$12,000	\$0	0%
Conesville Fire/EMS	\$200,000	\$160,000	80%
Grand Gorge Fire/EMS (part of Roxbury)	\$150,000	\$145,000	97%
Jefferson Fire/EMS	\$238,000	\$232,000	97%
Middleburgh Fire	\$135,000	\$108,000	80%
<b>Total</b>	<b>\$735,000</b>	<b>\$645,000</b>	<b>88%</b>

\*The town of Blenheim provides fuel to the Blenheim Hose Company.

For 2009 through 2011 and 2013, the total payments to the five FROs supporting the Project were \$55,000 and the average annual payment to a FRO that served the B-G Project was \$2,750. [Table 8.3-2](#) summarizes the Power Authority’s payments to FROs from 2009 through 2011 and 2013. In addition to the payments shown, the Power Authority contributed a total of \$19,800 towards Schoharie County’s emergency siren system from 2010 through 2012. The Power Authority also made more significant payments in 2012 in the amount of \$182,526 to support the communities’ recovery efforts due to the effects of Hurricanes Irene and Lee.

Based on historical budgets and call loads, the Power Authority calculated that the per-call burden for first responders is approximately \$295. The estimate is based on a formula that considers the B-G Project’s share of land in the call area, FRO fixed costs, apparatus costs, a hazard factor, a technical rescue factor, and the per-call average cost. The Power Authority estimated the average value of first responder services provided to the B-G Project by the five FROs to be \$7,344 annually.

**Table 8.3-2: Power Authority Payments to FROs, 2009-2011 and 2013**

FRO	Power Authority Total Payments 2009-2011, and 2013
Blenheim Hose Company	\$8,000
Conesville Fire/EMS	\$17,000
Grand Gorge Fire/EMS	\$11,000
Jefferson Fire/EMS	\$8,000
Middleburgh Fire/MEVAC	\$11,000
<b>Total</b>	<b>\$55,000</b>

For the purposes of the REMI analysis, FRO payments were modeled based on the total anticipated 2016 payments to FROs in the amount of \$7,344. The Power Authority’s anticipated 2016 payments to FROs through 2060 were projected by adjusting for inflation.

The Power Authority has identified opportunities that would strengthen relationships and build preparedness with local FROs. Based on interviews with FROs, the Power Authority will conduct in person training and/or drills and exercises based on the needs agreed upon by NYPA and FRO leadership. These joint trainings and/or drills are to be paid for wholly by the Power Authority. The Power Authority also will offer non-financial support including the use of B-G facilities (in accordance with NYPA policies and procedures), Power Authority-sponsored instructors (where feasible), and member recruitment.

## 9 Conclusions

The Power Authority evaluated the socioeconomic effects of the B-G Project on local and neighboring communities, the region, and the state. The study included the development of a demographic and economic profile of the current conditions of the local and neighboring communities. The Power Authority modeled the potential socioeconomic effects resulting from the continued operation of the B-G Project on the local and neighboring communities, the region, and the state, including the effect on the New York electric power market, and modeled the potential socioeconomic effect on the local communities resulting from the Power Authority's tax exempt status, which is a matter of state law.

The net present value (NPV) of the continued operation of the B-G Project, based on the reduction in costs to the wholesale electricity markets, is \$6.6 billion dollars (i.e., \$493 million a year between 2019 and 2060). These estimates represent the value of the services provided to the electricity markets by the B-G Project, not specific revenue to be derived from future operations. Statewide, the continued operation of the B-G Project is projected to reduce annual costs to typical residential customers (assuming an average monthly consumption of 1,000 kilowatt-hours) by an average of \$65 in year 2020. Statewide, the B-G Project is projected to save electric customers \$809 million in 2020. In addition to these savings, the B-G Project provides significant value in support of the New York power grid, offering flexibility in enabling intermittent resources combined with a contribution to greater operating efficiency of the grid and the overall "greening" of the system. The B-G Project provides capacity and electric generation needed in New York. The analysis indicates that three new natural gas-fired power plants, totaling 1,160 MW of generating capacity, would need to be built in New York State during the period 2024 through 2030 without the continued operation of the B-G Project.

The B-G Project contributed about \$17.7 million in total direct expenditures to the local economies in 2014, mostly for labor and related expenditures. Employment at the B-G Project is 150 people including the power plant and the adjacent Visitors Center. Ninety-three percent (\$11,539,694) of the total payroll is paid to employees who live in B-G Region, with more than half of the employment and payroll at the Project associated with residents of Schoharie County.

Analysis of the B-G Project's continued operation shows that the B-G Project has a significant positive effect on the economy in terms of jobs, income, GRP, and population. The positive effects are primarily a result of the employment, expenditures, and electricity bill savings to the state's customers attributable to the B-G Project. Throughout the study period (2019 through 2060) the economies of the state, region, and local and neighboring communities will experience a greater number of jobs, additional income, increased GRP, and increased number of residents with the B-G Project in operation than if the B-G Project were to cease operation.

In the B-G Region, the project's continued operations are expected to support more than a thousand jobs annually, due to direct effects of employment and spending at the B-G Project, as well as the indirect (business to business spending) and induced effects (spending related to changes in consumer income) that occur as a result of the B-G Project's operation. The B-G Project provides significant socioeconomic benefits not only to residents of the local and neighboring communities in the B-G Region, but also to all state residents because it contributes to maintaining a reliable grid and to ensuring that electricity prices remain affordable for all residents.

Taxes for very large industrial properties are often negotiated with the local taxing jurisdictions; consequently, the amount of property taxes the B-G Project would be required to pay in each jurisdiction if the Power Authority's exemption did not apply cannot be calculated with certainty. Nonetheless, the Power Authority calculated hypothetical tax payments based on the valuations established by the Schoharie County Real Property Tax Services Office. Using those valuations, taxes on the B-G Project hypothetically would total approximately \$2.3 million in 2020. The total \$2.3 million would result in annual payments of approximately \$235,000 to the town of Blenheim, and roughly \$1 million each to Schoharie County and the school district. Town of Gilboa annual payments would be an estimated \$4,000. Within the B-G Region, the economic effects of hypothetical tax payments include higher employment and increases in income, GRP, and population. On the other hand, the hypothetical tax payments would likely be passed on to the B-G Project's customers via higher wholesale electric rates. As a result of increases in wholesale electricity prices, outside of the B-G Region, the state of New York would experience decreases in employment, income, GRP, and population.

The Power Authority makes payments to assist FROs providing services to the B-G Project. Five communities provide fire services, with four of these also providing EMS support. Total call volume associated with the Project was 19 during the 2009 through 2013 period, representing less than 1 percent of calls to the FROs.

The B-G Project's continued operation is expected to provide economic output (GRP) between \$160 million in 2020 and \$380 million in 2060 in the B-G Region. Roughly 40 to 50 percent of that output is expected to benefit the residents of Schoharie County directly, with the remaining benefit spread across the surrounding six counties. For the rest of New York State, GRP totaling an additional \$520 million in 2020 and \$180 million in 2060 is associated with the continued operation of the B-G Project. The B-G Project's continued operation is expected to provide significant socioeconomic benefits to Schoharie County as well as to the surrounding counties and to the state.

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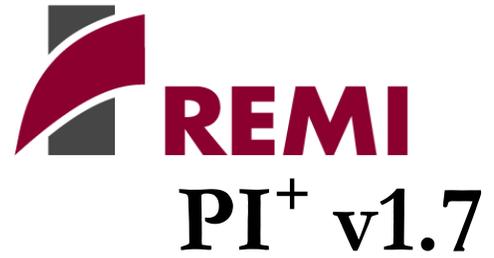
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## Appendix A: Descriptions of Data Sources Used in the REMI Model

This Appendix presents detailed descriptions of all data sources used in the current version of the REMI model used for this study. This Appendix has been extracted from REMI's documentation and is copyrighted by Regional Economic Models, Inc. ([Regional Economic Models, Inc. 2015](#)). The section numbering included in this Appendix has been added for the purposes of this report.



## Data Sources and Estimation Procedures

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## A.1 Primary Historical Data

### BEA

The primary national, state, and county data source for REMI PI+ is the Bureau of Economic Analysis (BEA) State Personal Income (SPI) and Local Area Personal Income (LAPI) series (which also include employment and total population at both the state and county level). This data is available for the nation and states at the summary level (94 industries) beginning in 1998 (a previously series is used for 1990-1997), and for counties at the sector level (24 industries) beginning in 2001.

The Bureau of Economic Analysis prepares annual and quarterly estimates of state personal income and annual estimates of state disposable personal income and employment. The state personal income accounts are detailed, timely, and comprehensive economic time series that provide comparisons among states and among industries within a state. Estimates of compensation (wages and salaries plus supplements to wages) and earnings (compensation plus proprietors' income) by place of work indicate economic activity of establishments within the state. Estimates of personal income by place of residence provide a measure of fiscal capacity. State disposable personal income provides a measure of income available for consumption and saving. Annual estimates of per capita personal income are an indicator of economic well-being of the residents of a state. State personal income is the income that is received by, or on behalf of, the residents of that state.

The Bureau of Economic Analysis also prepares annual estimates of personal income for local areas (counties, metropolitan areas, and the Bureau's BEA economic areas). Local area personal income is the only detailed, broadly inclusive economic time series for local areas that is available annually. For both the national and regional accounts, personal income is defined as the sum of wages and salaries, supplements to wages and salaries, proprietors' income with inventory and capital consumption adjustments, rental income of persons with capital consumption adjustments, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance. Disposable personal income is defined as personal income less personal current taxes.

The industry level estimates for 2001-2006 are based on the 2002 North American Industry Classification System (NAICS). The estimates for 2007-2010 are based on the 2007 NAICS. The estimates for 2011 forward are based on the 2012 NAICS.

### Employment

The BEA employment series for states and local areas comprises estimates of the number of jobs, full-time plus part-time, by place of work. Full-time and part-time jobs are counted at equal weight. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are not included.

Employment can be measured either as a count of workers or as a count of jobs. In the former case, an employed worker is counted only once; in the latter case, all jobs held by the worker are counted. The state employment estimates are a count of the number of jobs, so that, as with the earnings estimates, a worker's activity in each industry and location of employment is reflected in the measure.

Proprietor's employment consists of the number of sole proprietorships and the number of partners in partnerships. The description "by place of work" applies to the wage and salary portion of the series and, with relatively little error, to the entire series. The proprietors employment portion of the series, however, is more nearly by place of residence because, for nonfarm sole proprietorships, the estimates are based on IRS tax data that reflect the address from which the proprietor's individual tax return is filed, which is usually

the proprietor's residence. The nonfarm partnership portion of the proprietor's employment series reflects the tax-filing address of the partnership, which may be either the residence of one of the partners or the business address of the partnership.

The employment estimates are designed to be consistent with the estimates of wages and salaries and proprietors' income that are part of the personal income series. The employment estimates are based on the same sets of source data as the corresponding earnings estimates and are prepared with parallel methodologies. Two forms of proprietors' income—the income of limited partnerships and the income of tax-exempt cooperatives—have no corresponding employment estimates.

### **Employment in industries covered by the UI programs**

The estimates of about 95 percent of wage and salary employment are derived from tabulations by the state employment security agencies (ESAs) from their state employment security reports (form ES-202). These tabulations summarize the data from the quarterly UI contribution reports filed with a state ESA by the employers subject to that state's UI laws. Employers usually submit reports for each operating establishment, classified by county and industry. However, in some cases, an employer may group very small establishments in a single "statewide" report without county designation. Each quarter, the various state ESAs submit the ES-202 tabulations to the Bureau of Labor Statistics (BLS), which provides the data to BEA as the Quarterly Census of Employment and Wages (QCEW). The tabulations present monthly employment and quarterly wages for each county in Standard Industrial Classification (SIC) four-digit detail up through 2000. Data for 2001 and later are provided in North American Industry Classification System (NAICS) four-digit and five-digit industry detail.

BEA adds several million administrative records received from the states and the District of Columbia to its database annually. The records are checked for major errors by several computerized edit routines. One edit routine analyzes the current quarter county data for invalid SIC four-digit codes or invalid NAICS codes, duplicate records, and records that contain no data. Another edit routine calculates expected county-level average employment and average wage estimates on a quarterly basis at the three-digit SIC level or NAICS industry group, based on percentage changes for that quarter in the previous two years. If the difference between the actual numbers and the estimated numbers exceeds established limits, the record is identified for further review. Anomalies that remain unreconciled after reviewing comments and other supporting data are referred back to BLS for further investigation.

The basic procedure for preparing the local area estimates of wage and salary employment for each UI-covered industry is to average the 12 monthly QCEW employment observations and to allocate the higher level geographic total in proportion to the averaged series. However, QCEW employment does not precisely meet the statistical and conceptual requirements for BEA's employment estimates. Consequently, the data must be adjusted to meet the requirements more closely. The necessary adjustments affect both the industrial and geographic patterns of county employment.

### **Employment not covered by the UI programs**

- **Railroads**—The railroad industry is covered by its own unemployment insurance program, which is administered by the Railroad Retirement Board (RRB), rather than by the state UI system. Data suitable for estimating local area employment of railroads are available from the RRB only on a place-of-residence basis. Because BEA's employment estimates are designed to conform conceptually and statistically with the place-of-work earnings estimates, the RRB data are adjusted to a place-of-work basis by using Journey-to-work data from the 1990 Census of Population. The national totals for all railroad companies combined are allocated to counties in proportion to the adjusted RRB series.

- Private households-For this largely noncovered industry-mainly domestic servants the national employment estimates are allocated to counties in proportion to place-of-work private household employment from the 1990 Census journey-to-work data.
- Farm labor contractors-This industry is classified in agricultural services rather than in farms.

The UI coverage in Arizona and California is complete enough to permit the use of the Quarterly Census of Employment and Wages (QCEW) data for both the state and county estimates, but most state UI programs only partially cover this industry. For these states, the county estimates of farm labor contractor employment are based on the geographic distribution of expenditures for contract labor reported in the Census of Agriculture.

- Private elementary and secondary schools.-Private elementary and secondary schools are treated as a noncovered industry because religiously affiliated elementary and secondary schools, which account for most of the employment in this industry, remain largely outside the scope of the UI program. The state estimates of private elementary and secondary school employment are primarily based on the employment reported annually by the Census Bureau's *County Business Patterns* (CBP). The CBP data are tabulated from the administrative records of the social security program - old-age, survivors, disability, and hospital insurance - and are more complete for elementary and secondary schools than the data prepared under the UI program. The social security program, although exempting nonprofit religious organizations-including schools-from mandatory coverage, has elective coverage provisions that have resulted in broad participation among religiously affiliated elementary and secondary schools.

In about half of the states, the UI coverage of elementary and secondary schools is complete enough to permit the use of QCEW data as the basis for the county employment estimates. For the other states, the county estimates are based on the best available series of private elementary and secondary school employment chosen from data published by state departments of education, data from the U.S. Department of Education's 1998 survey of private elementary and secondary schools, or data from CBP, which cannot be used more generally because they are frequently suppressed at the county level to prevent disclosures.

- Religious membership organizations-The Federal Unemployment Tax Act permits the states to exclude religious membership organizations from mandatory UI coverage. Although most state UI laws do have some provisions for elective coverage, less than 10 percent of the national total employment of religious membership organizations is covered by UI. Therefore, the county estimates of the employment of religious membership organizations are based on CBP data. The CBP data are adjusted by allocation to sum to the BEA national employment totals for this industry.
- Military-County military employment is measured as the number of military personnel assigned to active duty units that are stationed in the area plus the number of military reserve unit members. The estimates of active duty employment for the Army, Air Force, Navy, Marine Corps, and Coast Guard are based on the annual averages of 12 monthly observations, for a given year, from reports received from each branch of service. Navy personnel assigned to ships and other mobile units and Marines assigned to Fleet Marine Force units are measured according to the units' home ports rather than their actual locations as of the reporting date.

The measure of the employment of the military Reserves-including the National Guard-is confined to members of reserve units that meet regularly for training. The state estimates are based on fiscal year-ending September 30-tabulations of military reserve pay provided by the Army, Air Force, Navy, Marine Corps, and Coast Guard.

For consistency with the BEA estimates of military reserve wages, the state totals of military reserve employment are allocated to counties in proportion to civilian population.

- **"Other"**-In the local area employment series, this category consists of the number of U.S. residents employed in the United States by international organizations and by foreign embassies and consulates. The category differs from "rest-of-the-world"--the corresponding category in the national employment estimates--in that "rest-of-the-world" also includes the net flow of international border workers--i.e., U.S. residents working across the border in Canada and foreign residents working in the United States. The border workers are not reflected in the county employment estimates.

The county estimates of "other" employment are made by allocating the national totals for all years to counties in proportion to estimated 1968 administrative expenses of international and foreign organizations operating in the United States. The administrative expenses series was prepared by the BEA.

### **Wages and Salaries**

Wages and salaries consists of the monetary remuneration of employees, including corporate officers' salaries and bonuses, commissions, pay-in-kind, incentive payments, and tips. It reflects the amount of payments disbursed, but not necessarily earned during the year.

Wages and salaries is measured before deductions, such as social security contributions and union dues.

In recent years, stock options have become a point of discussion. Wages and salaries includes stock options of nonqualified plans at the time that they have been exercised by the individual. Stock options are reported in wages and salaries. The value that is included in wages is the difference between the exercise price and the price that the stock options were granted.

All state and local area dollar estimates are in current dollars (not adjusted for inflation).

### **Wages and salaries for the military services**

The estimates of wages and salaries for the military services consist of the estimates of cash wages (including allowances) of full-time personnel of the armed services (including the Coast Guard), the estimates of cash wages of the members of the Reserves including the National Guard, and the estimates of pay-in-kind received by the full-time and reserve enlisted personnel of the armed services.

### **Compensation of employees**

Compensation of employees, is the sum of Wages and Salaries and Supplements to Wages and Salaries.

### **Personal income**

Personal Income is the income that is received by all persons from all sources. It is calculated as the sum of wages and salaries, supplements to wages and salaries, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance.

The personal income of an area is the income that is received by, or on behalf of, all the individuals who live in the area; therefore, the estimates of personal income are presented by the place of residence of the income recipients.

### **Supplements to wages and salaries**

This component of personal income consists of employer contributions for employee pension and insurance funds and of employer contributions for government social insurance.

### **Employer contributions for employee pension and insurance funds**

This component of personal income consists of employer payments to private and government employee retirement plans, private group health and life insurance plans, privately administered workers' compensation plans, and supplemental unemployment benefit plans.

### **Employer contributions for government social insurance**

These contributions, which are subtracted in the calculation of personal income as part of contributions for government social insurance, consist of employer payments under the following Federal and state and local government programs: Social Security; hospital insurance (HI); unemployment insurance; railroad retirement; government employee retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military employee programs (veterans' life and military medical insurance); and temporary disability insurance.

The contributions are excluded from personal income by definition, but, as part of supplements to wages and salaries, are included in earnings by place of work.

### **Proprietors' income**

This component of personal income is the current-production income (including income in kind) of sole proprietorships and partnerships and of tax-exempt cooperatives. Corporate directors' fees are included in proprietors' income, but the imputed net rental income of owner-occupants of all dwellings is included in rental income of persons. Proprietors' income excludes dividends and monetary interest received by non-financial business and rental incomes received by persons not primarily engaged in the real estate business; these incomes are included in dividends, net interest, and rental income of persons, respectively.

### **Rental income of persons with capital consumption adjustment**

Rental income is the net income of persons from the rental of real property except for the income of persons primarily engaged in the real estate business; the imputed net rental income of the owner-occupants of non-farm dwellings; and the royalties received from patents, copyrights, and rights to natural resources.

The Capital Consumption Adjustment is the difference between private consumption of fixed capital (CFC) and private capital consumption allowances. Private CFC is a charge for the using up of private fixed capital. It is based on studies of prices of used equipment and structures in resale markets. Private capital consumption allowances consist of tax-return-based depreciation charges for corporations and nonfarm proprietorships and of historical-cost depreciation, calculated by BEA, for farm proprietorships, rental income of persons, and nonprofit institutions.

### **Personal dividend income**

This component of personal income is the dividend income of persons. It consists of the payments in cash or other assets, excluding the corporation's own stock, made by corporations located in the United States or abroad to persons who are U.S. residents. It excludes that portion of dividends paid by regulated investment companies (mutual funds) related to capital gains distributions.

### **Personal interest income**

This component of personal income is the interest income (monetary and imputed) of persons from all sources.

### **Personal current transfer receipts**

This component of personal income is payments to persons for which no current services are performed. It consists of payments to individuals and to nonprofit institutions by Federal, state, and local governments and by businesses.

Government payments to individuals include retirement and disability insurance benefits, medical payments (mainly Medicare and Medicaid), income maintenance benefits, unemployment insurance compensation, veterans' benefits, and Federal education and training assistance. Government payments to nonprofit institutions exclude payments by the Federal Government for work under research and development contracts. Business payments to persons consist primarily of liability payments for personal injury and of corporate gifts to nonprofit institutions.

### **Employee and self-employed contributions for government social insurance**

These contributions, which are subtracted in the calculation of personal income, consist of the contributions, or payments, by employees, by the self-employed, and by other individuals who participate in the following government programs: Old-age, survivors, and disability insurance (social security); hospital insurance; supplementary medical insurance; unemployment insurance; railroad retirement; veterans life insurance; and temporary disability insurance.

These contributions are excluded from personal income by definition, but the components of personal income upon which these contributions are based – mainly wages and salaries and proprietors' income – are presented gross of the contributions.

### **Adjustment for residence**

The adjustment for residence is the net flow of the net labor earnings of interarea commuters. The state and county estimates of personal income are presented by the state and county of residence of the income recipients. However, the source data for most of the components of wages and salaries, supplements to wages and salaries, and contributions for government social insurance are on a place-of-work basis. Consequently, a residence adjustment is made to convert the estimates based on these source data to a place-of-residence basis.

The method of calculating place-of-residence income requires several data files, all currently provided by the Bureau of Economic Analysis (BEA). The first file includes the net Residence Adjustment (RA) as a component of Personal Income. A Resident Adjustment value for County X is simply the total outflow of workers' dollars minus the total inflow of workers' dollars for that county, where outflow dollars are wages earned in County X by residents of another county and inflow dollars are wages earned in another county by residents of County X. The second file is gross flow of earnings data. In addition to the net flow of earnings (adjustment for residence) associated with each county, this data set also provides the gross inflows of earnings and outflows of earnings. Both of these data sets are available as a time series over the entire historical period. The BEA also provides Census Journey to Work data that has been reconciled with the gross flow of earnings data. The total number of workers commuting between counties of residence and counties of work for 1990 and 2000, and the commuting patterns between counties of work and counties of residence by major industry for 2000, are both used to estimate the commuter flows from each county to every other county, by year.

While the Residence Adjustment calculation provides net dollar flows for each county, it does not tell us how much of a county's RA goes to and comes from specific counties. The JTW data provides these ratios and

allows us to build models with more accurate regional dollar flows. The decennial dollar flows in the JTW matrix are normalized to annual Residence Adjustment values to keep the flows current. With this county-level data, we can then calculate intra-regional dollar flows.

### **Population**

BEA uses the Census Bureau's midyear (July 1) population estimates.

### **Disclosure avoidance procedures**

Like other statistical agencies, the Bureau of Economic Analysis (BEA) is legally required to safeguard the confidentiality of the information that it receives. In addition, like other agencies, it must balance its responsibility to avoid disclosing confidential information with its responsibility to release and to publish as much information as possible. It balances these responsibilities by presenting the estimates for regions, states, and local areas only at the North American Industry Classification System (NAICS) subsector level, even though it receives source data at the NAICS four- and five-digit industry levels.

Most of the data series that BEA receives from other agencies are not confidential. The agencies summarize this data to aggregate totals by program and by state or county, so that each record, or data cell, contains data for enough individuals or establishments to preclude the identification of the data for a specific individual or establishment and, therefore, to preclude the disclosure of confidential information.

However, the Quarterly Census of Employment and Wages (QCEW) tabulations that BEA receives from the Bureau of Labor Statistics (BLS) include records that would disclose confidential information. The confidential information on wages and salaries for some business firms is identifiable from the state and county estimates of wages and salaries at the NAICS subsector level that are derived from the QCEW data.

To prevent either the direct or the indirect disclosure of the confidential information, BEA uses the BLS state and county nondisclosure file.

BEA uses as many BLS nondisclosure cells as possible, but cannot use some of them for various reasons. The most important reasons are that the industry structure published by BEA does not exactly match NAICS subsector detail provided by BLS and that BEA does not use QCEW data for the farm sector. When BEA drops BLS nondisclosure cells, other cells must be selected to prevent the disclosure of confidential information. In order to determine which estimates should be suppressed, the total wages and salaries file and the wages-and-salaries-nondisclosure file are used to prepare a multidimensional matrix. This matrix is tested, and the estimates that should be suppressed are selected.

### **BLS**

The second major source of historical data used by REMI is from the Bureau of Labor Statistics (BLS). These data pertain to workers covered by State unemployment insurance (UI) laws and Federal civilian workers covered by the Unemployment Compensation for Federal Employees (UCFE) program. The data for both private sector and public sector workers are reported to the BLS by the employment security agencies of the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands as part of the Quarterly Census of Employment and Wages (QCEW) program. The QCEW, also called ES-202, was formerly known as the Covered Employment and Wages (CEW). REMI uses their annual average employment and total annual wages at the summary level for all counties and states.

The QCEW program derives its data from quarterly tax reports submitted to State Employment Security Agencies by over eight million employers subject to State unemployment insurance (UI) laws and from

Federal agencies subject to the Unemployment Compensation for Federal Employees (UCFE) program. This includes 99.7% of all wage and salary civilian employment. These reports provide information on the number of people employed and the wages paid to the employees each quarter. The program obtains information on the location and industrial activity of each reported establishment, and assigns location and standard industrial classification codes accordingly. This establishment level information is aggregated, by industry code, to the county level, and to higher aggregate levels.

### **Employment**

Employment data represent the number of workers on the payroll during the pay period including the 12th day of the month. The pay period varies in length from employer to employer; for most employers, it is a 7-day period but not necessarily a calendar week. An employer who pays on more than one basis (such as weekly for production employees and semimonthly for office employees) reports the sum of the number of workers on each type of payroll for the period.

The employment count includes all corporation officials, executives, supervisory personnel, clerical workers, wage earners, pieceworkers, and part-time workers. Workers are reported in the State and county of the physical location of their job. Persons on paid sick leave, paid holiday, paid vacation, and so forth are included, but those on leave without pay for the entire payroll period are excluded.

Persons on the payroll of more than one firm are counted in each firm. Workers are counted even though their wages may be nontaxable for UI purposes during that period (having reached the taxable limit for the year).

The employment count excludes employees who earned no wages during the entire applicable period because of work stoppages, temporary layoffs, illness, or unpaid vacations, and employees who earned wages during the month but not during the applicable pay period.

### **Total wages**

Total wages, for purposes of the quarterly UI reports submitted by employers in private industry in most States, include gross wages and salaries, bonuses, stock options, tips and other gratuities, and the value of meals and lodging, where supplied. In some of the States, employer contributions to certain deferred compensation plans, such as 401(k) plans, are included in total wages. Total wages, however, do not include employer contributions to Old-age, Survivors', and Disability Insurance (OASDI); health insurance; unemployment insurance; workers' compensation; and private pension and welfare funds.

In most States, firms report the total wages paid during the calendar quarter, regardless of the timing of the services performed. Under laws of a few States, however, the employers report total wages earned during the quarter (payable) rather than actual amounts paid.

For Federal workers, wages represent the gross amount of all payrolls for all pay periods paid within the quarter. This gross amount includes cash allowances and the cash equivalent of any type of remuneration. It includes all lump-sum payments for terminal leave, withholding taxes, and retirement deductions. Federal employee remuneration generally covers the same types of services as those for workers in private industry.

### **Disclosure restrictions**

BLS withholds publication of data when necessary to protect the identity and data of cooperating employers. Since QCEW gets reports from every employer in the United States, there are many cases where QCEW detailed data could consist of a single employer. These data are withheld or "suppressed" in QCEW

publications. Totals at the industry level for the States and the Nation include the non-disclosable data suppressed within the detailed tables. However, these totals cannot be used to reveal the suppressed data.

### **Imputed data**

To reduce the effect of the exclusion of data because of late reporting by covered private and government employers, State agencies impute employment and wages for such employers and include them in each quarterly report. Corrections to data that may be entered after a report is filed include replacement of imputations with reported data to the extent possible. Imputations are calculated at the individual establishment level, normally from historical data reported by the employer. Sometimes trends reported by employers in the same industry and information obtained from other sources also are used. If a report remains delinquent for more than one quarter and research shows that it is still active, the data for the establishment will again be imputed.

### **CBP**

The final source of employment and wage data is County Business Patterns (CBP). County Business Patterns is an annual series that provides subnational economic data by industry and covers most of the country's economic activity. The series excludes data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. This data is available at a very detailed level, and while it has many suppressions due to confidentiality requirements, its advantage is that when the data is suppressed, ranges for the establishments are supplied. This provides some basis from which to make a rough estimate of employees in that industry in the absence of any other information.

### **Establishments**

An establishment is a single physical location at which business is conducted or services or industrial operations are performed. It is not necessarily identical with a company or enterprise (firm), which may consist of one or more establishments. When two or more activities are carried on at a single location under a single ownership, all activities generally are grouped together as a single establishment. The entire establishment is classified on the basis of its major activity and all data are included in that classification.

Establishment-size designations are determined by paid employment in the mid-March pay period. The size group "1 to 4" includes establishments that did not report any paid employees in the mid-March pay period but paid wages to at least one employee at some time during the year.

Establishment counts represent the number of locations with paid employees any time during the year. This series excludes governmental establishments except for wholesale liquor establishments (NAICS 4228), retail liquor stores (NAICS 44531), Federally-chartered savings institutions (NAICS 522120), Federally-chartered credit unions (NAICS 522130), and hospitals (NAICS 622).

### **Payroll**

Total payroll includes all forms of compensation, such as salaries, wages, reported tips, commissions, bonuses, vacation allowances, sick-leave pay, employee contributions to qualified pension plans, and the value of taxable fringe benefits. For corporations, it includes amounts paid to officers and executives; for unincorporated businesses, it does not include profit or other compensation of proprietors or partners. Payroll is reported before deductions for Social Security, income tax, insurance, union dues, etc. First-quarter payroll consists of payroll during the January-to-March quarter.

### **Mid-March Employment**

Paid employment consists of full- and part-time employees, including salaried officers and executives of corporations, who are on the payroll in the pay period including March 12. Included are employees on paid sick leave, holidays, and vacations; not included are proprietors and partners of unincorporated businesses.

### **Data Withheld from Publication**

In accordance with U.S. Code, Title 13, Section 9, no data are published that would disclose the operations of an individual employer. The number of establishments in an industry classification and the distribution of these establishments by employment-size class are not considered to be disclosures, so this information may be released even though other information is withheld from publication.

### **Estimation of Summary-Level Data Suppressions in Major Regions and States**

There are four major data sets from the BEA State Personal Income (SPI) series that need to be unsuppressed: (1) SA05 – Personal income and detailed earnings by industry; (2) SA06 – Compensation by industry; (3) SA07 – Wages and salaries by industry; and (4) SA25 – Employment by industry. These data cover the U.S., 50 states, District of Columbia, and eight Major Regions. The NAICS-based industry data begins in 1998. (A previously published series is used for 1990-1997). We also use the BEA SA27 – Wage and salary employment by industry series to aid in estimating Employment.

The current solving methodology is to use iterative proportional fitting after generating estimates based on the best available information. In order to begin this process, we obtain minimums and maximums for each suppressed value. The minimum and maximum values are calculated based on all available data (i.e. industries add up to a known total, counties add up to a known state, states add up to a known major region, major regions add up to a known nation). The BEA suppression codes are also used in these calculations when a minimum or maximum value can be derived from the code used.

Estimates for missing state level data are then generated using the best of several available estimation methodologies. The methodologies include using data from a prior BEA release, historical data in the same time series, available information at a lower level of industry refinement, and existing data or estimates from a different concept along with a ratio of the two concepts (for example estimating employment from known compensation and compensation rate in that industry). The minimum and maximum values of each suppressed cell are used as bounds that give a range in which the estimates should fall. The best estimate that falls within the given range is chosen, and for a small handful of cases with either very tight bounds or no available estimates that fall within the bounds, the midpoint of bounds is used.

This set of estimates is then passed into an iterative bi-proportional fitting routine to further refine the values such that they sum to their appropriate totals. The particular RAS method we use in this step is also constrained and scaled based on the minimum and maximum value for each suppression.

### **Estimation of Summary-Level Data Suppressions in Counties**

There are three major data sets from the BEA Local Area Personal Income (REIS) series that need to be unsuppressed: (1) CA05 – Personal income and detailed earnings by industry; (2) CA06 – Compensation by industry; and (3) CA25 – Total Employment by industry. These data cover the more than 3000 counties within the U.S. The NAICS-based industry data begins in 2001.

As in the case of the state level data, the solving methodology is to use iterative proportional fitting after generating estimates based on the best available information. Minimum and maximum values are calculated

based on all available data (i.e. industries add up to a known total, counties add up to a known state). This takes into account our final estimates for the state level data, treating it as known data. The BEA suppression codes are also used in these calculations when a minimum or maximum value can be derived from the code used. Suppressed employment is also set to zero in cases where the matching compensation and personal income values are known or estimated to be zero.

The initial estimates are created based on client-supplied data in the case of Michigan and Nevada, but only if those values fall between the minimum and maximum possible for the suppressed cell.<sup>22</sup> For all other states, the same estimation methods as for the state level data are used for all suppressions that are not covered by the reuse of data from the previous BEA release. For the years 1990 – 2000, where only SIC county data is available, the unsuppressed values for 2001 are used as a starting estimate if they fall within the minimums and maximums.

As in the case of the state estimates, the county estimates are then passed into an iterative bi- proportional fitting routine to further refine the values such that they sum to state data and county level data in the latest release from the BEA. In order to reduce the problem size, iterative proportional fitting is run on the county level sector level data first and then the results of the state summary level and county sector level data are treated as known information when running a final iterative proportional fitting on the county summary level data.

In order to calculate the Wages and Salaries data at the summary level we use our final compensation estimates as starting values and run a simple RAS so that they match state summary- level and county totals for Wages and Salaries.

While our methodology yields the complete, detailed, and internally consistent data sets required by the model, one must keep in mind that there is always more than one possible solution, so, while we have generated “a” solution, it is not necessarily “the” solution. The government goes to great length to suppress data in such a way that the real values cannot be determined. Our solution is not perfect, but we believe for the most part that it is reasonable.

## A.2 Supplementary Historical Data

### Fuel Cost Data

State-specific relative fuel costs for three types of fuel (electricity, natural gas, residual fuel) are calculated for the industrial (all manufacturing) and commercial (all non-manufacturing) sectors of the model based on unit cost data obtained from the Energy Information Administration, State Price and Expenditure Report.

### Fuel Weight Data

Total energy expenditure estimates by sector (residential, commercial, industrial, transportation, and electric utilities), by type (total, electricity, natural gas), and by state are obtained for a recent year from the Energy Information Administration. Residual energy is calculated as total minus electricity and natural gas. Fuel weights are then calculated for each state by sector (the proportion of total fuel expenditures that are electricity, natural gas, and residual); the weights should add up to 1. The industrial sector fuel weights are applied to the manufacturing industries, transportation to transportation industries, electric utilities to utilities industries, and commercial to everything else. The residential sector is not used.

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<sup>22</sup> The initial industry estimates of employment and wages for the state and counties of Michigan and Nevada are provided by researchers at the University of Michigan.

### **Tax Data**

To calculate the cost of capital variable, the model requires both state-specific and national-average corporate profit and property tax rates. In the absence of a consistent and complete data source, the tax rates are estimated as follows.

State and U.S. corporate profit tax rates are defined as the amount of tax collections divided by the amount of corporate profits. The tax collections are found in the Government Finances (Revenue) publication and are converted from fiscal year to calendar year. Profits for states are constructed by sharing the national corporate profits to each state based on gross state product. The effective tax rate is simply the tax collections divided by the estimated profits. Corporate profits for the U.S. are taken from the *Survey of Current Business*.

State and U.S. property tax rates are defined as the amount of tax collections divided by the level of residential and nonresidential capital stock. Again, tax collections are taken from the Government Finances (Revenue) publication, and converted from fiscal to calendar year. Nonresidential capital stock is calculated by estimating the state's share of national nonresidential capital stock based on estimated profits (see above). Residential capital is estimated similarly, but disposable income is used as the weight. U.S. investment and capital stock data for residential and nonresidential structures are also found in the *Survey of Current Business*.

### **Cost of Capital Data**

In addition to the tax rates described above, exogenous variables for the cost of capital equation include Moody's AAA bond rates, investment tax credit rates, and the proportion of business capital financed by bonds and loans. The latter is estimated from the *Quarterly Financial Report for Manufacturing*, while all of the other variables are taken from the *Survey of Current Business*.

### **Housing Price Data**

National, state and county median values of owner-occupied housing units are obtained from the *Census of Housing* for the years 1990 and 2000. Values for the years between 1990 and 2000 are interpolated based on national and state single family housing prices indexes from the Federal Housing Finance Agency. National, state, and available county median values are obtained from the American Community Survey one year estimate beginning in 2005. Counties not available from ACS are assumed to change at the state rate. Values for the years between 2000 and 2005 are interpolated based on national and state single family housing price indexes from the FHFA.

## **A.3 National Forecast Data**

### **BLS Forecast Data**

The REMI model's baseline national forecast is primarily based on the [BLS Employment Outlook: 2012-2022](#), published in the November 2013 issue of the *Monthly Labor Review*. Input-output, final demand, and value added data are developed by the U.S. Bureau of Labor Statistics in the Office of Occupational Statistics and Employment Projections.

The BLS projections assume a labor market in equilibrium, i.e., one where labor supply meets labor demand except for some degree of frictional unemployment.

For the 2022 projections, input-output, final demand, and value added data were developed for the years 1993-2012 and projected year 2022. Historical tables are provided in both nominal (current) dollars and in 2005 chain-weighted real dollars. The projected tables are provided in real dollars only.

Dollar value matrices are expressed in millions of dollars rounded to three decimal places. Therefore, they may not add exactly to their totals due to rounding error. In the real tables, the data do not add up to published totals like gross domestic product because of chain weighting.

These data are based on the 2011 North American Industrial Classification System (NAICS) and derived from input-output data initially developed by the Bureau of Economic Analysis.

Input-output data shows the flow of commodities from production through intermediate use by industries and purchases by final users. This data is developed as a set of matrices or tables for each year.

The “USE” matrix contains the sales of commodities sold to intermediate consumers and final demand. In addition, it contains the intermediate inputs and value added factors of production to industries for the production of their product. Each column sums to its respective industry output. Each row sums to its respective commodity output.

The “MAKE” matrix details the production of commodities by industries. Each row sums to industry output and each column sums to commodity output.

The “FD” matrix is a detailed set of 190 final demand types. Each of the 190 columns is distributed across the 195 commodities identified in the input-output system. This matrix is the final demand “bridge” table, showing detailed purchases for 190 categories of expenditures for the year specified in the matrix name.

For the years 1993-2012 and 2022, REMI converts the industry-by-commodity USE matrix and the commodity-by-industry MAKE matrix into an industry-by-industry input-output table of flows, and subsequently a matrix of coefficients. The FD matrix is converted into a bridge matrix of coefficients.

For the non-benchmark years between 2012 and 2022, a linear interpolation method is used to estimate the coefficients. The 2022 coefficients are extrapolated forward to 2060 (see document *Methodology for the New National Forecast*).

The BLS includes as “special industries” noncomparable imports, scrap, and used and secondhand goods. For noncomparable imports and used and secondhand goods, there is no production in the United States, and thus no domestic commodity or industry output. For scrap, there is domestic production, although that production is not by a “scrap” industry, but by other industries as a part of the production of their output. For REMI purposes, we need to account for these values in our industry-by-industry matrix. For scrap and used and secondhand goods, the great majority of which are automobiles, we made the assumption that most of these goods would at some point pass through the wholesale industry, so we simply aggregated them with wholesale. For noncomparable imports, we added the values (which are negative) to the industry that “used” these imported goods (the commodity by industry diagonal in the USE table), and then balanced the table by subtracting them from the commodity by imports column in the demand table.

The Office of Occupational Statistics and Employment Projections (OOSEP) develops output, price, and employment data for use in the Bureau’s biennial economic and employment projections. The most recent set of projections were developed for the year 2022 with data for 195 detailed industries. The projections were published in the November 2013 issue of the *Monthly Labor Review*.

The output measures follow the definitions and conventions used by the Bureau of Economic Analysis (BEA) in its input-output tables, published every five years. These industry output measures are based on producer's value and include both primary and secondary products and services. The main data sources for compiling the output time series for manufacturing industries are the Census Bureau's *Annual Survey of Manufactures*. Data sources for nonmanufacturing industries are more varied. They include the Census Bureau's Service Annual Survey, the BEA's National Income and Product Accounts (NIPA) data on new construction and personal consumption expenditures, IRS data on business receipts, and many other sources. The constant dollar industry output estimates for the most recent years are based on BLS employment data and trend projections of productivity. The output series are benchmarked to the industry/commodity outputs from the unpublished revised BEA 2002 input-output tables, as published in April of 2008.

The annual price data are developed in a manner so as to conform to BEA's National Income and Product Accounts. For manufacturing, they are based on industry sector price index data collected by BLS, and are chain-weighted from the four-digit NAICS to OOSEP's detailed industry sectors. Nonmanufacturing prices, developed at the level of OOSEP's detailed industry sectors, use a variety of different sources, in many instances the BLS consumer price index data. In industries where such underlying price data have not yet been developed, imputations of price change are made from other data series. All aggregate series are chain-weighted from OOSEP's detailed industry sectors. This is necessitated by the benchmarking of the output series to the base year input-output tables.

The employment data are from the BLS Current Employment Survey (for wage and salary jobs and average weekly hours), the Current Population Survey (for self-employed and unpaid family worker jobs, agricultural employment, and private household employment, except logging), and ES- 202 Employment and Wages data collected from the unemployment insurance program (for industries unpublished in the CES).

Official BLS productivity measures are produced by the Office of Productivity and Technology. Although output per hour measures can be calculated from the OOSEP estimated constant dollar output and employment data, those calculations do not reflect the official BLS productivity measure. In developing the employment projections, OOSEP does not rely specifically on the output per hour implied by the output and employment data. Especially for the nonmanufacturing industries, development of constant dollar output is problematic. OOSEP discounts the reliability of the constant dollar output and the implied output per hour as an analytic basis for problem industries in favor of trend analysis of the employment data series, which is generally considered more reliable.

Between 2012 and 2022, REMI uses a labor-force-growth-trended forecast for GDP and its components (final demand). After 2022, the BLS-projected labor force participation rates and population projections estimated by REMI for the US (based on death rates, middle range birth rates, and international migration data from the Census) are used to forecast the labor force. An initial estimate of final demand is made, and then adjusted until the resulting growth in employment comes in line with the labor force. Once the BLS trended forecast is in place, and then extended to 2060, the U.S. Macroeconomic Values procedure of PI<sup>+</sup> is run using the latest short-term national forecast from the University of Michigan's Research Seminar in Quantitative Economics (RSQE). This updates the national forecast with the current national business cycle. Then the GDP growth rates from the CBO and OECD are applied for the longer term forecast.

### **RSQE Forecast Data**

RSQE is an economic modeling and forecasting unit which has been in operation at the University of Michigan since 1952. RSQE provides forecasts of the U.S. national economy on a seven-times-per-year basis and forecasts of the Michigan economy on a four-times-per-year basis.

### **BLS Occupation Data**

The National Industry-Occupation Employment Matrix is developed by the Bureau of Labor Statistics as part of its ongoing Occupational Employment Projections Program. These data, derived from the 2012-2022 National Employment Matrix, underlie information on occupational employment growth presented in the 2012-13 edition of the Occupational Outlook Handbook.

### **Occupational classification**

The occupations covered reflect the occupational classification used in the Occupational Employment Statistics (OES) survey, the source used to generate data to develop the 2012 National Employment Matrix. The OES survey data are consistent with the 2012 Standard Occupational Classification (SOC) system. Data on the self-employed, the unemployment rate, and the percentage working part-time are based on Current Population Survey (CPS) data for equivalent occupations. A crosswalk was used to distribute CPS data to occupations in the National Employment Matrix.

### **Industry classification**

Industries covered in the national employment matrix reflect the 2011 North American Industrial Classification System (NAICS). Self-employed, unpaid family workers and workers who have a second job in agriculture production, forestry, fishing, or private households are listed separately in order to derive total employment.

### **Data suppression**

Occupation and industry cells with less than 50 workers are not displayed in the search results.

### **Projections methodology**

The Bureau of Labor Statistics projections of industrial and occupational employment are developed in a series of six interrelated steps, each of which is based on a different procedure or model and related assumptions: labor force, aggregate economy, final demand (GDP) by consuming sector and product, industrial activity, employment by industry, and employment by occupation. The results produced by each step are key inputs to the following steps, and the sequence may be repeated multiple times to allow feedback and to insure consistency.

REMI aggregates the detailed industries to 160, 70, or 23, as applicable, and the detailed occupations to 95 or 18. The fixed proportion of occupational employment is calculated by summing the employment across an industry, and then dividing each occupation by the industry total. The rates of occupational change between 2012 and 2022 are calculated by linear interpolation, then extended back historically at the same rate of change, and extended forward at one-half the rate of change.

Table A-1: Data Sources behind REMI's County Model

Concept	Source	Last Available Historical Year	Notes
<b>ECONOMIC</b>			
<b>Employment</b>	BEA-LAPI BLS QCEW CBP	2001 – 2013 1990 – 2013 2012	
<b>Wages</b>	BLS QCEW CBP	2001 – 2013 2012	
<b>Personal Income</b>	BEA-LAPI	2001 – 2013	
<b>Compensation</b>	BEA-LAPI	2001 – 2013	
<b>Commuter Flows</b>	BEA Net flow of earnings BEA Gross flow of earnings BEA Journey to Work	1990 – 2013 1990 – 2013 1990, 2000	
<b>Unit Electricity Cost</b>	State-level data used: Energy Information Administration	1990 – 2012	
<b>Unit Natural Gas Cost</b>	State-level data used: Energy Information Administration	1990 – 2012	
<b>Unit Residual Fuel Cost</b>	State-level data used: Energy Information Administration	1990 – 2012	
<b>Purchased Fuel Weights</b>	State-level data used: Energy Information Administration	2012	
<b>Corporate Profit Tax Rate</b>	Calculated State rate used: (collections/profits)		
<b>Collections</b>	www.census.gov (current), Government Finances (historical)	1990 – 2013	Corporate Net Income & Corporations in General
<b>Estimated Profits</b>	BLS technical coefficients matrix and REMI estimated output	1990 – 2013	
<b>Property Tax Rate</b>	Calculated; state rates used: (collections/cap. stock) see next two rows		This rate reflects both residential & non-residential capital
<b>Collections</b>	www.census.gov (current), Government Finances (historical)	1990 – 2012	
<b>Estimated Stock</b>	Allocation of U.S. non-residential and residential stock by the state's profit and real disp. income weights	1990 – 2012	
<b>Personal Income Taxes</b>	BEA State Rates	1990 – 2013	
<b>Investment Tax Credit Rate</b>	U.S. rate - Survey of Current Business	1990 – 2013	
<b>Housing Prices (Median Sales Price of existing Single-Family Homes)</b>	Census of Housing ACS FHFA	1990; 2000 2005 – 2013 1990 – 2004	Counties, States, Nation Some Counties, States, Nation States, Nation

Table A-1: Data Sources behind REMI's County Model, continued

Concept	Source	Last Available Historical Year	Notes
<b>DEMOGRAPHIC</b>			
<b>Population</b>	BEA Census: decennial (1 yr cohort), intercensal (5 yr cohort)	1990 – 2013 2010 1990 – 2013	Reconciled to BEA for consistency
<b>Births, Deaths, Net International Migrants</b>	Census	1990 – 2013	Net international migrants reconciled with national totals
<b>Natality Rates</b>	Center for Disease Control and Prevention, National Center for Health Statistics	1990 – 2010	State rate used
<b>Survival Rates</b>	Census: Population Projections of the United States by Age, Sex, Race, Hispanic Origin, and nativity: 1999-2100	1999 – 2100	National survival rates adjusted to fit regional deaths observed in history
<b>Retired Migrants</b>	Census 2000 Migration Data on DVD	2000	Age-specific retired migration rates are calculated using 2000 census data
<b>Military Population</b>	Census Department of Defense	2000; 2010 1994 – 2009	Personnel by Location from DoD starting in 1994. Data by Race and Sex for 2000 and 2010 only.
<b>Military Dependents</b>	Department of Defense	1990-2005	National totals only; dependents are assigned to regions based on size of Military population.
<b>College Population</b>	Census	2000; 2010	Data by Race and Sex for 2000 and 2010 only
<b>Prisoner Population</b>	Census	1990; 2000; 2010	Data by Race and Sex for 2000 and 2010 only
	Bureau of Justice Statistics Bureau of Prisons	1990-2013 2005-2013	50 largest jail jurisdictions mapped to counties Facilities mapped to counties
<b>Labor Force</b>	Census Bureau of Labor Statistics	2000; 2010 1990-2013	Data by Race and Sex for 2000 and 2010 only

Table A-2: Data Sources behind REMI's State Model

Concept	Source	Last Available Historical Year	Notes
<b>ECONOMIC</b>			
<b>Employment</b>	BEA	1990 – 2013	Total Employment series
<b>Wages</b>	BEA	1990 – 2013	
<b>Personal Income</b>	BEA	1990 – 2013	
<b>Compensation</b>	BEA	1990 – 2013	
<b>Commuter Flows</b>	BEA Net flow of earnings BEA Gross flow of earnings BEA Journey to Work	1990 – 2013 1990 – 2013 1990, 2000	
<b>Unit Electricity Cost</b>	Energy Information Administration	1990 – 2012	
<b>Unit Natural Gas Cost</b>	Energy Information Administration	1990 – 2012	
<b>Unit Residual Fuel Cost</b>	Energy Information Administration	1990 – 2012	
<b>Purchased Fuel Weights</b>	Energy Information Administration	2012	
<b>Corporate Profit Tax Rate</b>	Calculated (collections/profits) see next two rows		
<b>Collections</b>	www.census.gov (current), Government Finances (historical)	1990 – 2013	Corporate Net Income & Corporations in General
<b>Estimated Profits</b>	BLS technical coefficient matrix and REMI estimated output	1990 – 2013	Estimated series is normalized for bottom-up consistency to reported U.S. profits.
<b>Property Tax Rate</b>	Calculated (collections/capital stock) see next two rows		This rate reflects both residential and non-residential capital
<b>Collections</b>	www.census.gov (current), Government Finances (historical)	1990 – 2012	
<b>Estimated Stock</b>	Allocation of U.S. non-residential and residential stock based on the state's profit and real disp. income weights.	1990 – 2012	
<b>Personal Income Taxes</b>	BEA	1990 – 2013	Includes federal, state & local collections
<b>Investment Tax Credit Rate</b>	U.S. rate - Survey of Current Business	1990 – 2013	
<b>Housing Prices (Median Sales Price of existing Single-Family Homes)</b>	Census of Housing ACS FHFA	1990; 2000 2005 – 2013 1990 – 2004	Counties, States, Nation Some Counties, States, Nation States, Nation

Table A-2: Data Sources behind REMI's State Model, continued

Concept	Source	Last Available Historical Year	Notes
<b>DEMOGRAPHIC</b>			
<b>Population</b>	BEA Census: decennial (1 year cohort), intercensal (5 year cohort)	1990 – 2013 2010 1990 – 2013	Reconciled to BEA for consistency
<b>Births, Deaths, Net International Migrants</b>	Census	1990 – 2013	Net international migrants reconciled with national totals
<b>Natality Rates</b>	Center for Disease Control and Prevention, National Center for Health Statistics	1990 - 2010	
<b>Survival Rates</b>	Census: Population Projections of the United States by Age, Sex, Race, Hispanic Origin, and nativity: 1999-2100	1999 – 2100	National survival rates adjusted to fit regional deaths observed in history
<b>Retired Migrants</b>	Census 2000 Migration Data on DVD	2000	Age specific retired migration rates are calculated using 2000 census data
<b>Military Population</b>	Census Department of Defense	2000; 2010 1994 – 2009	Personnel by Location data from DoD starting in 1994. Data by Race and Sex for 2000 and 2010 only.
<b>Military Dependents</b>	Department of Defense	1990 – 2005	National totals only; dependents are assigned to regions based on size of Military population.
<b>College Population</b>	Census	2000; 2010	Data by Race and Sex for 2000 and 2010 only
<b>Prisoner Population</b>	Census	1990; 2000; 2010	Data by Race and Sex for 2000 and 2010 only
	Bureau of Justice Statistics Bureau of Prisons	1990 – 2013 2005 – 2013	50 largest jail jurisdictions mapped to counties Facilities mapped to counties
<b>Labor Force</b>	Census Bureau of Labor Statistics	2000; 2010 1990 – 2013	Data by Race and Sex for 2000 and 2010 only

Table A-3: Data Sources behind REMI's U.S. Model

Concept	Source	Last Available Historical Year	Notes
<b>ECONOMIC</b>			
Employment	BEA	1990 – 2013	Total Employment series
Wages	BEA	1990 – 2013	
Personal Income	BEA	1990 – 2013	
Compensation	BEA	1990 – 2013	
Occupational Matrix	BLS	2012; 2022	Details 94 occupations, linearly interpolated
Productivity	BLS	1993 - 2012; 2022	Calculated from detailed E & Q data
Technology Matrix	BLS	1993 - 2012; 2022	Make & Use matrices converted to industry-by-industry matrices. Interpolated for in-between years.
Industry Deflators	BLS	1993 – 2012	Nominal & real Q to calculate deflators
Final Demand	BLS	1993 - 2012; 2022	Interpolated by growth in labor force for in-between years.
Commodity Prices	Survey of Current Business: NIPA	1990 – 2013	
Unit Electricity Cost	Energy Information Administration	1990 – 2012	
Unit Natural Gas Cost	Energy Information Administration	1990 – 2012	
Unit Residual Fuel Cost	Energy Information Administration	1990 – 2012	
Purchased Fuel Weights	Energy Information Administration	2012	
Corporate Profit Tax Rate	Calculated (collections/profits) see next two rows		
Collections	<a href="http://www.census.gov">www.census.gov</a> (current), Government Finances (historical)	1990 – 2013	Corporate Net Income & Corporations in General
Profits	Survey of Current Business	1990 – 2013	Moving average to convert from fiscal year to calendar year.
Property Tax Rate	Calculated (collections/capital stock) see next 2 rows		This rate reflects both residential & non-residential capital
Collections	<a href="http://www.census.gov">www.census.gov</a> (current), Government Finances (historical)	1990 – 2012	
Estimated Stock	Survey of Current Business	1990 – 2012	
Personal Income Taxes	BEA	1990 – 2013	Includes federal, state & local collections
Investment Tax Credit Rate	Survey of Current Business	1990 – 2013	

Table A-3: Data Sources behind REMI's U.S. Model, continued

Concept	Source	Last Available Historical Year	Notes
<b>DEMOGRAPHIC</b>			
<b>Business Cycle</b>	RSQE	2014 – 2017	
<b>Housing Prices (Median Sales Price of existing Single-family homes)</b>	Census of Housing ACS FHFA	1990; 2000 2005 – 2013 1990 – 2004	Counties, States, Nation Some Counties, States, Nation States, Nation
<b>Population</b>	BEA Census: (1 yr. cohort)	1990 – 2013 1990 – 2013	Reconciled to BEA for consistency
<b>Births, Deaths, Net International Migration</b>	Census	1990 – 2013	
<b>Natality Rate, Survival Rate, Net International Migration Forecasts</b>	Census: Population projections of the United States by Age, Sex, Race, Hispanic Origin, and Nativity	1999 – 2100	
<b>Labor Force</b>	BLS	1990 – 2013	
<b>Labor Force Participation Rates Forecast</b>	BLS	1990 – 2050	
<b>Military Population</b>	Census; Department of Defense	2010; 1990 – 2013	
<b>Military Dependents</b>	Department of Defense	1990 – 2005	
<b>College Population</b>	Department of Education; National Center for Education Statistics	1990 – 2010	
<b>Prisoner Population</b>	Census; Bureau of Justice Statistics Bureau of Prisons	1990; 2000; 2010 1990 – 2013 2005 – 2013	50 largest jail jurisdictions mapped to counties Facilities mapped to counties

## Appendix B: Summary of Key Assumptions of IPM

## B.1 Modeling Assumptions

Table B1-1 below summarizes key components of the modeling assumptions.

Table B1-1: Modeling Assumptions

Assumption	Description
Peak and Energy Demand	Relied on NYISO 2015 Load and Capacity Data Report (the “Gold Book”) projections (exclusive of solar projections) and extended forward. Overall NYCA’s net peak growth is at 0.29% and net energy growth is at -.05% annually from 2015 through 2060.
Natural Gas Prices	Forecasted to grow at 3% per year on average, in real terms from 2015 to 2035 (prices increase at a rate 3% higher than inflation); assumed flat real growth from 2035 through 2060 (prices rise at the same rate as inflation).
Environmental Assumptions	EPA recently-proposed a rule to control emissions of CO <sub>2</sub> from new and existing generation sources. As a part of CPP, a state-specific charge on carbon dioxide (CO <sub>2</sub> ) from the power sector was assumed beginning in 2020 along with mass-based goal for Regional Greenhouse Gas Initiative (RGGI) and non RGGI states. Vermont was excluded from RGGI-CPP standard since it does not have any fossil fuel-fired plant.
Renewable Goals	Assumes 3,000 megawatt goal for solar power by 2023 is met reflecting NY-Sun Initiative launched by Governor Andrew Cuomo in August 2014. Does not assume an enforceable goal of 50% renewables by 2050 as recently proposed.
Renewable Development Costs	Production tax credit is assumed to have expired; Wind turbine all-in costs decline at around 1.2% per year (real). Investment Tax Credit is assumed to reduce from 30% to 10% after 2016. Solar all-in costs for utility scale project assumed to decrease at 1.4% per year (real). <sup>23</sup>
Capacity Market price estimates	Assumes 2016/2017 cost parameters remain flat in real terms through the forecast horizon.

## B.2 Demand Levels and Demand Growth

Load growth (increases in consumer electric usage) is a key determinant of energy costs and the magnitude of requirements for new electrical generation to supply the consumer load. Higher load levels require the use of increasingly expensive generation units to meet consumer demand, thereby increasing energy costs.

The modeling assumes NYISO 2015 Load and Capacity Data Report (the “Gold Book”) load projections through 2025 and extends the forecasts forward thereafter. Post-2025, energy growth rates are generally consistent with the Gold Book forecasted rates. Between 2025 and 2044, net peak demand is assumed to grow at the average rate NYISO projects from 2015 to 2025.<sup>24</sup> Beyond 2044, peak demand growth is

<sup>23</sup> In December 2015, a production tax credit was re-established in the near-term and the investment tax credit 30% benefit for solar was extended.

<sup>24</sup> Peak demand is a measurement of the average total electric demand by consumers for a one-hour period.



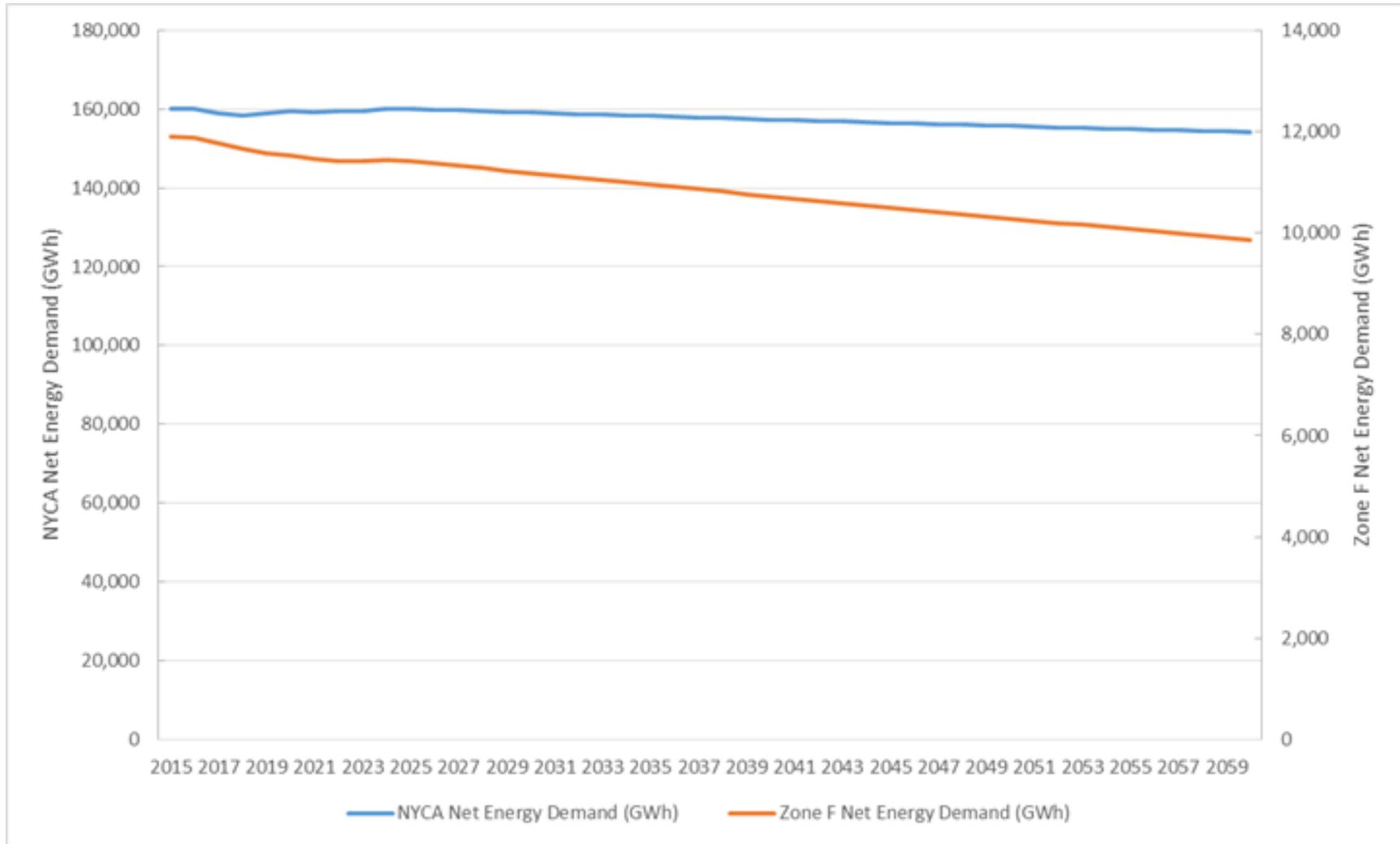


Figure B2-2: NYCA and Zone F Net Energy Demand

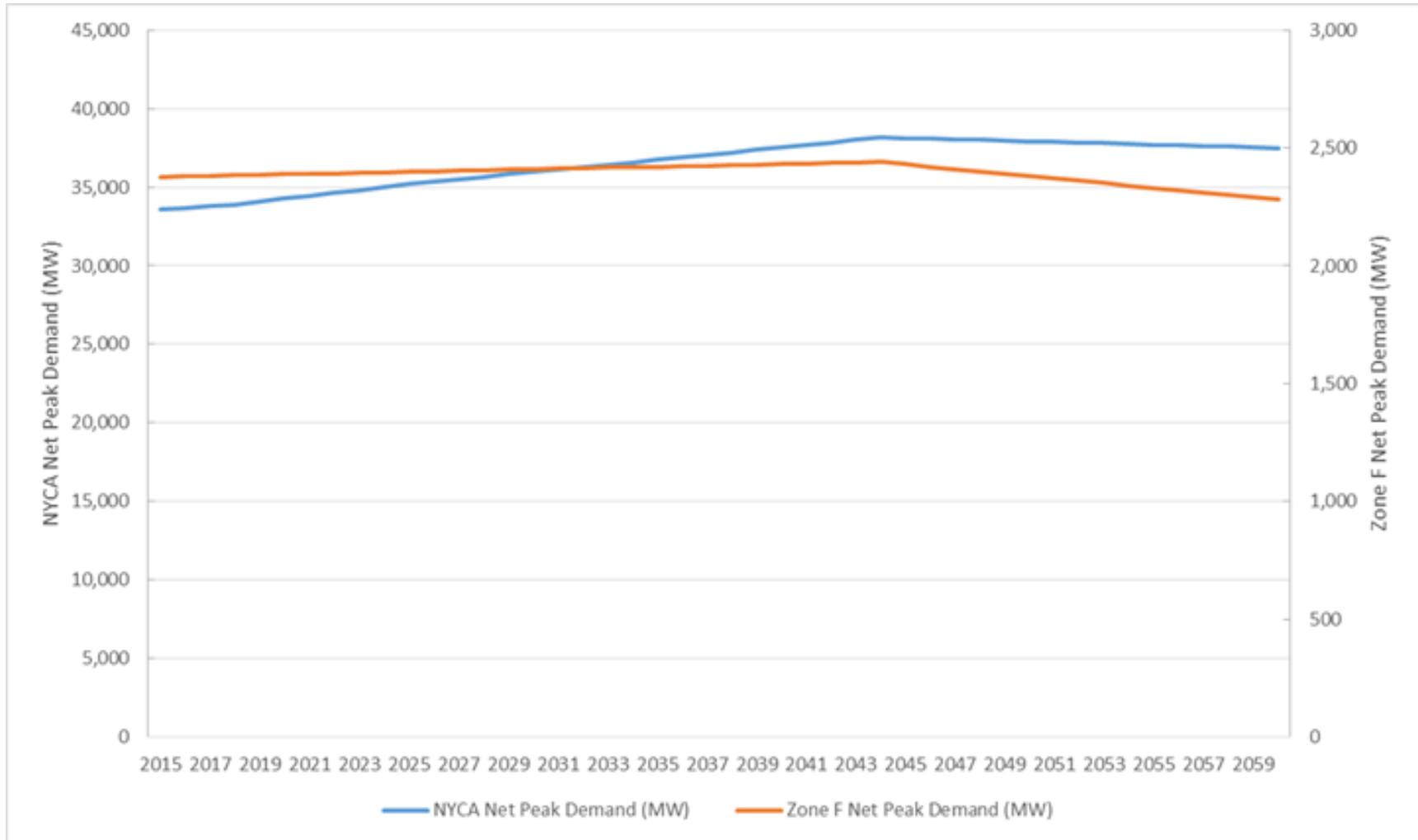


Figure B2-3: NYCA and Zone F Net Peak Demand

### B.3 Natural Gas Prices

Increased demand is assumed to push gas prices above \$4.50 per million British thermal unit (MMBtu) in Real 2012\$ by 2020. Prices from 2020 to 2035 are expected to range between \$5 and \$6.50 per MMBtu in Real 2012\$. However, long-term prices for 2035 and beyond are expected to range between \$6.30 and \$9.00 per MMBtu in Real 2012\$. [Figure B3-1](#) below illustrates projected natural gas prices.

Gas prices are assumed to remain higher in the winter months compared to summer months, particularly for Algonquin and New York City pricing points.<sup>25</sup> Summer prices are expected to trade at a discount to Henry Hub.<sup>26</sup> Gas delivery prices for upstate New York (Zones A, B, C, and E) are assumed to be reflective of pricing for natural gas delivered from pipeline at the Niagara Falls, New York delivery point. NYISO Zones D, F, G, H, and I are derived from Algonquin price projections. Lastly, New York City and Long Island assume pricing consistent with the higher of Transco Zone 6 NY or Iroquois Zone 2. In addition, the model also accounts for the additional costs for delivery (reflecting local natural gas distribution company costs) to reflect the cost of natural gas at the power plant. [Figure B3-2](#) presents monthly natural gas prices.

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<sup>25</sup> The Algonquin natural gas pipeline is commonly used to determine the price of natural gas delivered to the northeastern U.S., including New York State (includes the cost of the natural gas plus the pipeline transport (and other) costs to get it to New York).

<sup>26</sup> Henry Hub is a natural gas pipeline hub in Louisiana that is a commonly used pricing point for natural gas *before* it is delivered to other parts of the U.S.

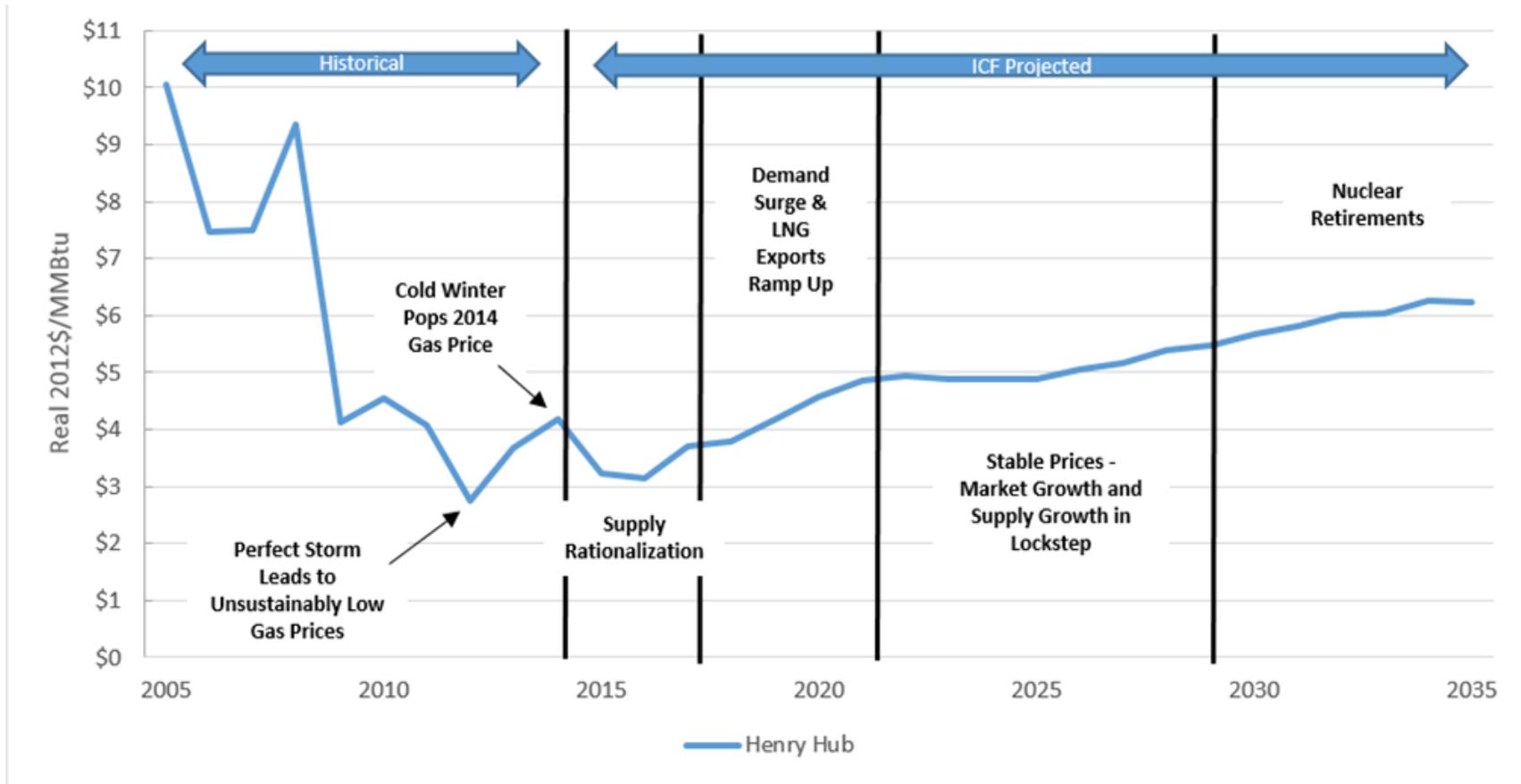


Figure B3-1: Annual Natural Gas Prices

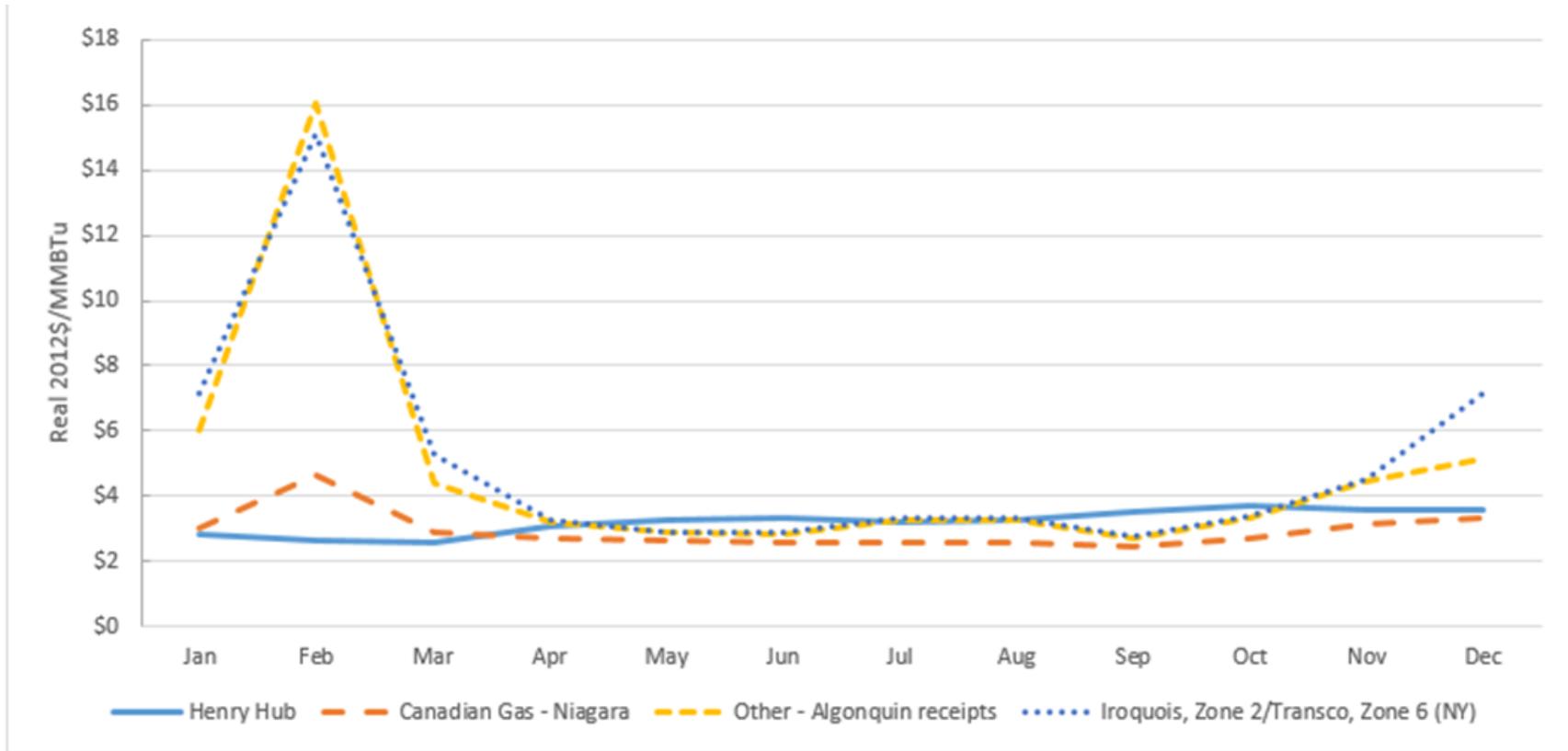


Figure B3-2: Monthly Natural Gas Prices

## B.4 Capital Costs

Long-term planning assumptions assume new generation plants must be built in the future to meet increasing demands on the electric grid. Increase in consumer load and retirement of existing power plants are two of the main reasons new generation will be needed. Characteristics of new generation affect both energy and capacity prices. Combustion turbines have the lowest capital and fixed operation and maintenance costs among all of the new power plant options. However, this advantage is offset by considerably higher operating costs associated mostly with fuel expense. Natural gas-fueled combined cycle plants have higher capital costs but lower costs to operate. Coal plants and nuclear plants have even higher capital costs and even lower operating costs (largely related to lower fuel costs for coal and uranium as compared to natural gas). However, environmental emission costs (particularly CO<sub>2</sub>) significantly increase the overall costs of electricity from coal plants. Additionally, general developments, uncertainty regarding environmental regulations, and possible new performance standards makes it unlikely that new coal plants will be built in New York.

NYISO's capital cost assumptions were used for combined cycle and combustion turbine units in this analysis. Boom and bust cycles are anticipated around capital costs for new power plants; however, the exact timing of these cycles cannot be predicted. A conservative assumption of a single flat real capital cost was used for combined cycle and combustion turbine technologies modeled in this study.

In general, capital costs are much lower in Upstate New York when compared to Downstate New York, New York City, and Long Island. Additionally, the modeling tool employed in this analysis (IPM) projects economic renewable energy units built to meet New York State Renewable Portfolio Standards.<sup>27</sup> In some scenarios, such as a high natural gas cost / high CO<sub>2</sub> price regime, wind units are economically viable and built regardless of Renewable Performance Standards. IPM accounts for limits on the amount of wind and solar generation that can be added to the New York grid because of technical challenges posed to grid operations by their intermittent nature (i.e., they can only generate when wind and sun is available). All renewable capital costs in IPM include the effect of the federal production and investment tax credit assumptions as stated in [Table B1-1](#).

A source of uncertainty with respect to new power plant characteristics is the financing structure for new generation. In the future, new electric generation projects will be pursued by investor-owned utilities or by independent merchants that negotiate a power purchase agreement with an investor-owned utility. However for the purpose of this market study, the capacity price projections in New York were determined based on NYISO's financing assumptions that govern the cost of new generating plants used by NYISO.

## B.5 New York State Environmental Regulations

The analysis considers air quality regulations affecting the power markets including the below:

### B.5-1 Reasonably Available Control Technology for Oxides of Nitrogen

Ozone concentrations in the downstate region of New York have exceeded national air quality standards. As a result, that region was classified by the EPA as being in non-attainment with those standards. In response to that classification, the state developed the nitrogen oxide (NO<sub>x</sub>) Reasonably Available Control Technology requirement to reduce emissions of NO<sub>x</sub> and volatile organic compounds, precursors to the development of ozone. The NO<sub>x</sub> requirement, as modified by the state in 2010, limits emissions from fossil-

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<sup>27</sup> <http://www.nyscrda.ny.gov/About/Renewable-Portfolio-Standard>

fueled power plants by establishing emission rate standards for each type of fossil fueled generator and fuel used.

#### **B.5-2 Best Available Retrofit Technology for Regional Haze**

Under the Clean Air Act, states are required to develop plans to reduce sulfur dioxide, NO<sub>x</sub> and other compounds that react in the atmosphere to form fine particulate matter, as part of the Regional Haze Rule. The plans to reduce these regional haze pollutants are reviewed and must be approved by EPA. Best Available Retrofit Technology determinations are based on the remaining useful life and current control status of each unit, as well as the cost and performance of available retrofit technologies. The Regional Haze Rule does include exemptions for units in states that participate in sulfur dioxide and NO<sub>x</sub> trading programs such as the Clean Air Interstate Rule as long as it can be demonstrated that the reductions under the trading program are “better than Best Available Retrofit Technology.”

#### **B.5-3 Mercury Reduction Program for Coal-fired Electric Utility Steam Generating Units**

In 2007, New York implemented a rule to reduce mercury emissions at coal-fired generating stations. The rule was originally based on EPA’s proposed Clean Air Mercury Rule, which was later vacated by court order in 2008. The rule requires compliance in two phases. The first phase imposed a facility-level emission limit for the years 2010 to 2014. Trading of emissions was not allowed across facilities in the first phase. The second phase of the program began in 2015 and imposes unit-level requirements equivalent to 0.6 lb. of mercury per trillion Btu of fuel consumed.

#### **B.5-4 Regional Greenhouse Gas Initiative**

New York is part of the Regional Greenhouse Gas Initiative (RGGI), a multi-state emission allowance cap and trade program to reduce CO<sub>2</sub> emissions from electric generating units. The program covers New York, Maryland, Delaware, and the six states in New England. Under the program, generation units greater than 25 MW in size must purchase sufficient RGGI emission allowances, at a rate of one allowance for each ton of CO<sub>2</sub> emitted, to cover all of their emissions over a 3-year control period. They must also hold 50 percent of their compliance obligations in the first 2 years, known as the Interim Control Period, of each 3-year control period. The first budget period covered emissions from January 1, 2009, to December 31, 2011. The second control period extended from January 1, 2012, through December 31, 2014. The program is currently in the third control period, which extends through 2017. Affected sources may purchase allowances from the member states through a quarterly auction or by trading with other affected sources.

Following a comprehensive program review, the member states agreed to lower the RGGI tonnage cap by 45 percent starting in 2014. The change was necessary to address the large surplus of allowances available under the original cap, implemented in 2009. The new cap started at 91 million tons in 2014 and declines at 2.5 percent per year through 2020, prior to adjustments made to address banked allowances. RGGI accounted for banked allowances carried into 2014 from earlier years by reducing the caps between 2015 and 2020 further by the number of allowances banked into the new cap. The revised program also includes a cost containment reserve, consisting of a fixed 10 million (5 million in 2014) additional allowances that are available for sale at a specified price threshold in each year. The threshold is \$8 per ton in 2016, and \$10 in 2017, thereafter rising by 2.5 percent each year to account for inflation. The cost containment reserve is not a price ceiling. If market demand drives the price higher, even after accounting for the additional allowances, the RGGI price may climb above the specified thresholds.

## **Appendix C: The B-G Project's Effect on the New York Electricity Market**

## C.1 Results of the B-G Project’s Effects on the New York Electricity Market

Overall, the focus of the IPM analysis is on the effect on wholesale energy, capacity, and operating reserve markets under the No Project operating scenarios for the B-G Project. Although the B-G Project has historically provided voltage and black start ancillary products, these are not specifically addressed, as the products are not market-based.<sup>28</sup> The results discussed herein are focused on the effect the Project has on these markets beginning in 2019 when the new license should begin.

Overall, the market effect is expected to be most significant in the period immediately following 2019 between the Project and No Project scenarios. The Project scenario assumes the B-G Project’s continued operation, while the No Project scenario removes the effect of the Project on electrical markets and allows for the development of replacement power. This near-term effect is largely the result of the limited ability of the market to fully replace the services supplied by the B-G Project. Over time, the power market is assumed to respond such that differences would become less significant. [Table C1-1](#) provides a summary of the Project’s effects in terms of a Net Present Value (NPV) basis. Overall, the expected savings on an NPV basis is \$6.6 billion dollars for the continued operation of the Project, or on an annualized basis, \$493 million per year. A discussion of the results for each of the market products is provided below.

**Table C1-1: Summary of the expected savings due to the B-G Project’s Effect on the New York Power Market**

Market Type	NPV of Power Market Cost Effect, 2019 - 2060
Energy	\$61,979,000
Capacity	\$6,534,434,000
Ancillary	\$33,246,000
Total	\$6,629,659,000
Total, Annualized Basis	\$492,822,000

*Note: The costs assume a 7% discount rate.*

## C.2 Energy Market Effect

In the wholesale energy markets, the benefit of electric energy production from the B-G Project is largely felt in the on-peak hours (generally day-time hours during the week) when operation of the Project is able to reduce otherwise high costs of on-peak generation. This difference between on-peak and off-peak hours (nights and weekends) is illustrated in [Figure C2-1](#) (note: not New York State data).

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<sup>28</sup> For further information see NYISO.com: [http://www.nyiso.com/public/markets\\_operations/market\\_data/ancillary/index.jsp](http://www.nyiso.com/public/markets_operations/market_data/ancillary/index.jsp)

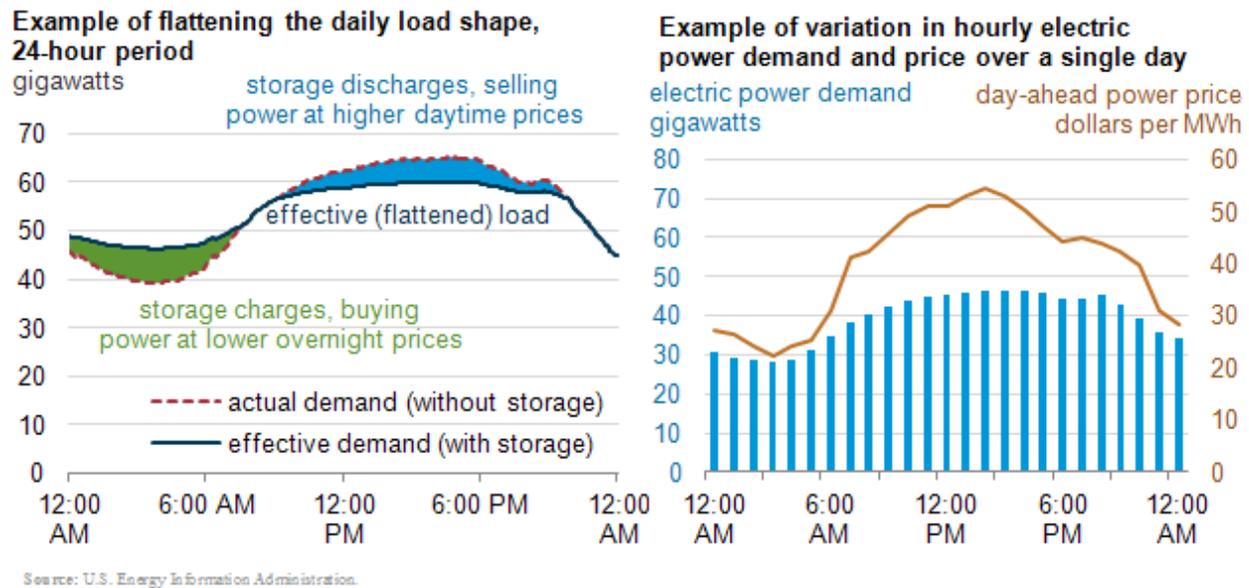


Figure C2-1: Electric Energy Production in the On-Peak and Off-Peak Hours

### C.3 Capacity Market Effect

The effective variance between the Project and No Project scenarios on energy prices is reflective of the concept of load shifting seen on the left of [Figure C2-1](#), where in the Project scenario load at the highest priced hours is reduced, while load in the lowest price hours is increased relative to the No Project scenario. The IPM model simulated the actual operations of the New York electric grid under each scenario, resulting in a projected price difference. The overall effect in 2019 in New York is anticipated to be a \$0.19/MWh benefit because of the Project and the net effect is positive for the full study period.

The effect on the capacity market as captured by the difference between the Project and the No Project scenarios were also considered. Prices for the capacity market are determined based on the quantity of available supply of generation. The B-G Project’s installed capacity represents roughly 3 to 4 percent of the total peak demand in New York and reflects a sizable contribution to the peak capabilities in the upstate area. Based on the current NYISO capacity market demand curve and existing generating capacity in NYISO, a change of 1,160MW (the generating capacity of the Project) today in 2016 would increase the monthly capacity price about \$2.50/kW (unforced capacity) or approximately \$30 per kW per year (unforced capacity), a significant increase in capacity market prices.<sup>29</sup>

For simplicity and consistency across scenarios, it was assumed that the criteria for adequate generating capacity established by the NYISO and New York State Reliability Council in the form of statewide and local reserve requirements were maintained at minimum levels over the period of this study. Under this assumption, new generating capacity additions were included in the analysis to ensure adequate supply regardless of the ability of such generation to pay for its investment. As such, incremental costs required for new capacity additions were considered to satisfy earning requirements for new generating plants over and above the capacity market prices. In cases where the cost of new generation was not fully paid for by the revenue from the combined energy and capacity market payments, the incremental revenue

<sup>29</sup> Unforced capacity is the generating capacity of a power plant adjusted for how well or poorly it performs

requirements were considered as out-of-market (OOM) capacity payments.<sup>30</sup> In total, the capacity costs for each scenario reflected the combined capacity market payments and the OOM payments. The largest direct effect of the Project is seen in the NYCA capacity price, as [Figure C3-1](#) below shows with the effect on the spot capacity price between the scenarios. In the short-term, the capacity price effect is the most significant because of the reduced supply. Over time, new capacity comes online to satisfy requirements for generation to serve demand, and prices begin to converge between the two scenarios.

The cumulative effect of the change in capacity prices and OOM costs result in an NPV of \$6.5 billion dollars for the period between 2019 and 2060. As with the energy market effect, this is concentrated in the near-term; however, as new capacity construction tends to lag immediate need, the effect is somewhat extended over time.

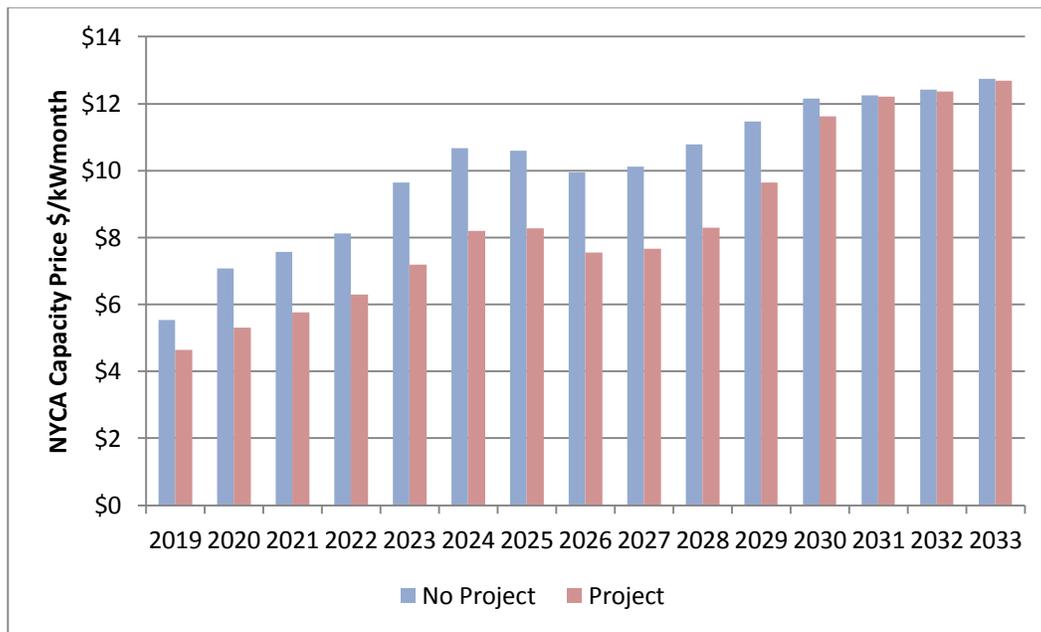


Figure C3-1: Annual Capacity Costs Project and No Project Scenarios

### C.4 Ancillary Services

The B-G pumped storage project, given its operational flexibility, provides various benefits to the New York electricity markets (in the ancillary services markets).<sup>31</sup> Overall, the B-G Project’s effect on ancillary services is forecasted to be \$33 million on an NPV basis between 2019 and 2060.

### C.5 Green Power Value

Another significant advantage that the pumped storage facilities provides is the ability to contribute to the more efficient use of the fossil-fueled and nuclear generation fleet (“thermal units”).<sup>32</sup> Traditional power

<sup>30</sup> Out-Of-Market (OOM) payments are supplemental payments made to certain generating plants that would otherwise be uneconomical to operate. These payments ensure they will be ready to operate when needed by the electric grid. OOM Payments are in addition to, and are not part of, the Energy, Capacity or Ancillary Services markets.

<sup>31</sup>The NYISO defines Ancillary Services as “...services necessary to support the transmission of capacity and energy from generation resources to consumers, while maintaining the reliable operation of New York’s transmission system. These services include Regulation and Operating Reserve, Energy Imbalance (using market-based pricing), and the cost-based services of Scheduling, System Control and Dispatch, Voltage Control, and Black Start.” For further information see NYISO.com: [http://www.nyiso.com/public/markets\\_operations/market\\_data/ancillary/index.jsp](http://www.nyiso.com/public/markets_operations/market_data/ancillary/index.jsp)

<sup>32</sup> Such power plants consume fuel to boil water and the resulting steam spins turbines that in turn power the electric generators. Because of the heat involved in the process, these plants are commonly known as “thermal units”

plants such as coal and nuclear operate more efficiently when not subject to adjustments for constantly changing demand. Pumped storage facilities have significant flexibility in operations such that they can be used to respond to any increase in demand during peak hours and, in turn, increase load in the off-peak hours when thermal units might otherwise need to cycle (reduce power output or shut off entirely). Reducing the need for thermal unit cycling results in much more efficient operations, including more efficient burning of fossil fuel and hence lowers overall emissions from fossil-fueled units. This further benefits the system by helping to minimize operations and maintenance costs and increase the lifespan of equipment at thermal facilities.

### **C.6 Rate Effect**

The wholesale market effect (energy, capacity, and ancillary) was further considered for its effect on retail electric rates. Overall, the retail electric rates are driven by not only wholesale power, but also by transmission and distribution system costs and overall utility general and administrative expenses. No change was assumed in the No Project and Project scenarios outside of those derived from the wholesale power costs; hence, the full rate effect was assessed as the effect caused by the above-discussed energy, capacity, and ancillary service cost changes. Annual costs to typical residential customers (assuming usage of 1000 kWh per month) were found on average to increase as much as \$65 per year in the No Project scenario relative to the Project scenario. Overall, this accounted for an increase in electricity costs in New York of \$809 million in 2020, as shown in [Table C6-1](#) below.

**Table C6-1: Estimated Annual Effect of the B-G Project on Electricity Bills by Region  
(\$ Million)**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
Schoharie County	\$1.52	\$0.94	\$1.55	\$0.01	\$0.04
Neighboring Counties	\$30.84	\$17.48	\$6.30	\$0.19	\$0.78
Rest of New York	\$776.77	\$437.12	\$157.62	\$6.26	\$21.81
<b>Total State of New York</b>	<b>\$809.13</b>	<b>\$455.53</b>	<b>\$165.48</b>	<b>\$6.46</b>	<b>\$22.63</b>

## Appendix D: Socioeconomic Effects of the B-G Project

## D.1 Results of the Socioeconomic Effect of the B-G Project: Employment

[Table D1-1](#) below presents the total number of jobs in Schoharie County, the B-G Region, and New York State with the B-G Project operating and without the B-G Project (the No Project scenario). It also includes the effects on employment, which is the difference between the numbers of jobs with the B-G Project operating and without the B-G Project.

**Table D1-1: Comparison of Total Employment Levels, with and without B-G Project Effects**

	2020	2030	2040	2050	2060
<i>New York State</i>					
with B-G Project	12,351,454	12,327,558	12,962,437	13,654,786	14,429,961
without B-G Project	12,345,081	12,322,305	12,958,705	13,652,924	14,427,767
Effect on Employment	5,620	4,220	3,138	1,816	2,053
<i>B-G Region</i>					
with B-G Project	486,794	482,944	498,776	515,787	544,054
without B-G Project	485,891	481,914	497,780	514,701	542,832
Effect on Employment	903	1,030	996	1,086	1,222
<i>Schoharie County</i>					
with B-G Project	13,271	13,385	13,879	14,494	15,254
without B-G Project	12,848	12,869	13,363	13,872	14,572
Effect on Employment	423	516	516	622	682

## D.2 Results of the Socioeconomic Effect of the B-G Project in Levels: Disposable Income

[Table D2-1](#) below presents the total disposable income in Schoharie County, the B-G Region, and New York State with the B-G Project in operation, without the B-G Project (No Project Scenario), and the difference between the two scenarios.

Table D2-1: Comparison of Total Income Levels, with and without B-G Project Effects  
(\$ Million)

	2020	2030	2040	2050	2060
<i>New York State</i>					
with B-G Project	\$1,063,833	\$1,336,793	\$1,529,356	\$1,778,718	\$2,111,361
without B-G Project	\$1,063,330	\$1,336,310	\$1,528,984	\$1,778,443	\$2,111,007
Effect on Income	\$503	\$483	\$372	\$275	\$354
<i>B-G Region</i>					
with B-G Project	\$32,599	\$40,418	\$44,933	\$50,165	\$59,214
without B-G Project	\$32,542	\$40,325	\$44,826	\$50,021	\$59,018
Effect on Income	\$57	\$93	\$107	\$143	\$196
<i>Schoharie County</i>					
with B-G Project	\$1,301	\$1,640	\$1,831	\$2,095	\$2,476
without B-G Project	\$1,272	\$1,576	\$1,753	\$1,971	\$2,310
Effect on Income	\$29	\$64	\$78	\$124	\$166

### D.3 Results of the Socioeconomic Effect of the B-G Project: Gross Regional Product (GRP)

[Table D3-1](#) below presents the total GRP in Schoharie County, the B-G Region, and New York State with the B-G Project operating, without the Project, and the difference between the two scenarios.

Table D3-1: Comparison of Total GRP Levels, with and without B-G Project Effects  
(\$ Million)

	2020	2030	2040	2050	2060
<i>New York State</i>					
with B-G Project	\$1,459,299	\$1,760,788	\$2,062,523	\$2,428,670	\$2,865,335
without B-G Project	\$1,458,623	\$1,760,152	\$2,061,911	\$2,428,207	\$2,864,773
Effect on GRP	\$676	\$636	\$612	\$463	\$562
<i>B-G Region</i>					
with B-G Project	\$47,881	\$56,708	\$65,135	\$75,161	\$88,165
without B-G Project	\$47,723	\$56,495	\$64,890	\$74,860	\$87,784
Effect on GRP	\$158	\$213	\$245	\$301	\$381
<i>Schoharie County</i>					
with B-G Project	\$905	\$1,083	\$1,240	\$1,437	\$1,679
without B-G Project	\$829	\$985	\$1,132	\$1,305	\$1,523
Effect on GRP	\$76	\$97	\$108	\$132	\$156

## D.4 Results of the Socioeconomic Effect of the B-G Project: Population

[Table D4-1](#) below presents the total population in Schoharie County, the B-G Region, and New York State with the B-G Project operating and without the Project operating. The table also includes the effect on population which is the difference between the population with the B-G Project operating and without the project operating (the No Project scenario.)

**Table D4-1: Comparison of Total Population Levels, with and without B-G Project Effects**

	2020	2030	2040	2050	2060
<i>New York State</i>					
with B-G Project	20,713,619	22,297,191	23,695,965	25,049,109	26,598,675
without B-G Project	20,710,631	22,286,282	23,686,310	25,043,100	26,594,315
Effect on Population	2,988	10,909	9,655	6,010	4,360
<i>B-G Region</i>					
with B-G Project	712,834	753,251	782,678	797,281	828,228
without B-G Project	712,325	751,617	779,401	794,006	825,129
Effect on Population	509	1,634	3,277	3,275	3,099
<i>Schoharie County</i>					
with B-G Project	32,135	35,159	37,387	39,818	41,817
without B-G Project	31,811	34,166	34,990	37,134	39,317
Effect on Population	324	993	2,397	2,684	2,500