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Valuation of Lake Winnipesaukee

PRESENTED TO LAKE WINNIPESAUKEE ASSOCIATION

Ms. Patricia Tarpey, Executive Director

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Lake Winnipesaukee is the largest lake in New Hampshire and an important landmark, providing significant benefits to New Hampshire's economy. Its presence benefits the tourism and recreation industries in New Hampshire, provides resources to nearby towns, and positively impacts real estate prices in the area. This valuation study was conducted to determine the net economic value that the lake brings to New Hampshire. This will better inform how resources should be devoted to preserving the health and long-term viability of Lake Winnipesaukee in the future.

Through quantitative analysis, this report systematically estimates the value of Lake Winnipesaukee. First, we identified real estate values, business revenues, and water supply as the main economic impacts of the lake. We then examined the total value that the lake brings to each of these sectors by examining grand lists, tax records, and existing data, as well as conducting interviews with business owners. We found that Lake Winnipesaukee contributes $16,457,417,397 in property values, $216,502,454 in property town tax value, $294,131,000 in tourism revenues, $109,266,944 in boating and fishing revenues, $42,704,856 in summer camp revenues, $1,532,410 in water supply revenues, and $42,209,472 from the Lakeport Dam. Based on these values, this report concludes that Lake Winnipesaukee is valued at approximately $17,163,764,533.

1 INTRODUCTION

Lake Winnipesaukee is the largest lake in New Hampshire and a source of significant value in the state. Throughout each year, Lake Winnipesaukee attracts visitors. In the summer months, visitors attend concerts at the Bank of New Hampshire Pavilion in Gilford, swim at Weirs Beach in Laconia, and eat lakeside in Meredith. In the winter months, visitors to the lake return, ice fishing, playing pond hockey, and even skiing at Gunstock Mountain Resorts in Gilford. Because of the prominent role Lake Winnipesaukee plays in New Hampshire, it contributes significantly to the state economy.

The goal of this paper is to evaluate precisely how much value Lake Winnipesaukee brings to the Granite State. To accomplish this, this report systematically quantifies the value generated in areas attributable to the lake. In this paper, there are three primary areas of value quantified: property value, business revenue value, and water supply value. Property values, broadly, detail the value embedded in land immediately surrounding Lake Winnipesaukee. Business revenue accounts for a separate, but related, source of value: the money generated on a given plot of land. Here, the report focuses specifically on business revenues linked to Lake Winnipesaukee by focusing on revenues generated from tourism, boating and fishing, and local summer camps. Lastly, while the property and business revenues describe the value of the land impacted by Lake Winnipesaukee, water supply value focuses on the value of Lake Winnipesaukee itself. Water supply value accounts for the value of the actual water in the lake.

In estimating the value of Lake Winnipesaukee, this report adopts a quantitative methodology modeled on that of PRS Policy Brief 1516-01, "*The Value of Lake Champlain*."[1] This methodology, like ours, quantifies the value of property around the lake, the value of tourism and recreation around the lake, and the value of Lake Champlain drinking water. Additionally, we use a similar quantitative strategy to compare the value of waterfront to non-waterfront property, which further explains the value added by Lake Winnipesaukee.

Every town surrounding Lake Winnipesaukee, in addition to the New Hampshire state government, has the authority to make policy decisions that affect the lake. With the valuation provided by this report, policymakers will better understand the mechanisms by which and the extent to which Lake Winnipesaukee benefits the state. This knowledge may guide future policymaking and contribute to further research into the value of Lake Winnipesaukee and other bodies of water throughout the region.

2 PROPERTY VALUES

In order to encapsulate the economic value brought to the region by property values, the property values of eight towns surrounding the lake were analyzed. These towns include Alton, Center Harbor, Gilford, Laconia, Meredith, Moultonborough, Tuftonboro, and Wolfeboro. These towns were chosen as they most directly contribute to the lake's economy due to their proximity to Lake Winnipesaukee. In order to determine property values for the surrounding towns, the Grand Lists, which provide assessed values of commercial and residential properties for each town, were analyzed. Some properties were excluded if they were in close proximity to another lake or too far from an economic hub of Lake Winnipesaukee such as a downtown area.

2.1 ORGANIZED BY TOWN

The value of property is determined largely by location. In the region around Lake Winnipesaukee, this is particularly true. From second homes located in Alton, NH to public beaches in Laconia, NH, Lake Winnipesaukee imbues significant value in the properties surrounding it. In order to calculate the value that Lake Winnipesaukee contributes to land, the total value of all property—except property bordering other water bodies—was calculated in the eight towns bordering the lake. The total assessed property value was determined to be $16,457,417,397 and the total town tax value was determined to be $216,502,454 yielding a total for the property category of $16,673,919,851**.**

2.1.1 TOWN OF ALTON

The town of Alton is located in Belknap County, New Hampshire on the south eastern shores of Lake Winnipesaukee. Alton is a popular lakefront town, east of Gilford and south of Wolfeboro, that borders Alton Bay, a popular bay in the southeast corner of Lake Winnipesaukee. Unlike most other towns bordering Lake Winnipesaukee, Alton borders no other major bodies of water. Accordingly, the research team included all properties in this total value calculation.

To calculate the total value of property in Alton, including both residential and business property, the Alton Assessor's Office provided a list of all assessed properties in the town. In this list, the 2020 assessed value of every property in the town on which property taxes are paid annually is provided. Laconia's total property value is the sum of 2020 assessed values, labeled "Total Assessed Value," rather than market prices. After adding all assessed values, the calculated total value of property in Alton, New Hampshire was found to be $1,863,859,604.[2]

In order to get more clarity as to how this value leads to revenue for the town, the research team converted this total assessed value into property tax revenue. The millage rate in Alton is listed online as 13.95 mils, or 13.95 dollars of revenue per 1,000 dollars of assessed value.[3] This yielded $26,000,841 in town tax revenue for Alton.

2.1.2 TOWN OF CENTER HARBOR

The town of Center Harbor is located in Belknap County between Lake Winnipesaukee and Squam Lake. It borders Meredith to the north and Moultonborough to the south. Although it has a smaller population than most other towns bordering the lake, a substantial stretch of property borders Lake Winnipesaukee.

Unlike when calculating property values for Alton, property values in Center Harbor were identified using information from the town's website rather than by using a list of all assessed property values in the town. The Center Harbor town website yielded a total value of $437,423,679 for all property. This total is based on 2020 assessed values. In order to get more clarity as to how this value leads to revenue for the town, the millage rate of $15.33, which is the amount per $1,000

of assessed value that is levied in taxes, was taken, divided by 1,000 and then multiplied by the total assessed value yielding $6,705,705 in town tax revenue for Center Harbor.[4]

2.1.3 TOWN OF GILFORD

The town of Gilford is located in Belknap County, New Hampshire on the south western shores of Lake Winnipesaukee. The town borders Laconia on its western side and Alton on its eastern side. The town is well known for being home to Gunstock, a popular ski resort in the area and Governors Island which is one of the six bridged islands on Lake Winnipesaukee.

No properties in Gilford were excluded from this analysis as the town occupies a geographic area not close to another lake. In order to determine the value of both residential and commercial properties, Gilford's Grand list was utilized which lists the New Assessed Value of each property in the town. Property values were added up for a grand total of $2,303,578,320. In order to get more clarity as to how this value leads to revenue for the town, the millage rate, which is the amount per $1,000 of assessed value that is levied in taxes, was taken, divided by 1000 and then multiplied by the total assessed value yielding $34,622,782 in town tax revenue for Gilford.[5]

2.1.4 CITY OF LACONIA

The city of Laconia is located in Belknap County, New Hampshire on the southern shores of Lake Winnipesaukee. The city is situated between two bodies of water: Lake Winnipesaukee and Lake Winnisquam, which is located on the city's southern border. In order to calculate the total assessed value of property in Laconia, the research team used information compiled by the Laconia Office of the Assessor.

Because Laconia is situated between Lake Winnipesaukee and Lake Winnisquam, the research team systematically excluded properties that likely derived their value from their location on Lake Winnisquam. The property value information compiled by the Laconia Office of the Assessor uses codes to identify waterfront properties. In the compiled list, WS1 represents waterfront property on Lake Winnisquam North and WS2 represents waterfront property on Lake Winnisquam South. After removing all properties with these codes, the list yielded a total of $2,619,412,597.[6]

In order to get more clarity as to how this value leads to revenue for the city, the research team converted this total assessed value into property tax revenue. The millage rate in Laconia is listed online as 19.72 mils, or 19.72 dollars of revenue per 1,000 dollars of assessed value.[7] This yielded $51,654,816 in city tax revenue for Laconia.

2.1.5 TOWN OF MEREDITH

The town of Meredith is located in Belknap County, New Hampshire on the western shores of Lake Winnipesaukee. The town has an area of 54.2 square miles. On the town's southeastern boundary is Lake Winnisquam. In the center of the town is Meredith Center which is accessible by Meredith Center Road. As one moves north toward Winoa, the town directly north of Meredith, the road becomes Corliss Hill Road and then Hatch Corner Road. Because Lake Winnisquam is

located in close proximity with both the town of Meredith and Lake Winnipesaukee, in order to capture the value of the properties surrounding Lake Winnipesaukee, the town of Meredith was split into two parts; properties to the north east of the aforementioned road that runs through Meredith Center and properties to the south west of the road that runs through Meredith Center Road.

Properties to the south west of the road were excluded from the analysis and properties to the north east of the road were included in the analysis. In order to determine the value of both residential and commercial properties, Meredith's Grand list was utilized which lists the New Assessed Value of each property in the town. Meredith's Grand list is organized by map / lot and thus properties were included or excluded based on which map / lot group they fell into. Maps / lots to the south west of the road which touched the road were included in this analysis and maps / lots to the south west of the road which did not touch the road were excluded from the analysis. Map / lot R10 through R38 were excluded from analysis as well as W01 through W06 as they do not fall under the aforementioned reasons to exclude.

After removing properties that fell on the Lake Winnisquam side of the town, the remaining property values were added up totaling $2,042,095,051. In order to get more clarity as to how this value leads to revenue for the town, the millage rate, which is the amount per $1,000 of assessed value that is levied in taxes, was taken, divided by 1000 and then multiplied by the total assessed value yielding $28,630,172 in town tax revenue for Meredith.[8]

2.1.6 TOWN OF MOULTONBOROUGH

Moultonborough is located in Carroll County, New Hampshire on the western shores of Lake Winnipesaukee. Moultonborough is also situated between two lakes: Lake Winnipesaukee and Squam Lake. Squam Lake borders Moultonborough to the south west, whereas Lake Winnipesaukee borders Moultonborough to the east. Here, we assume that all properties in Moultonborough represent the overall value of Lake Winnipesaukee, excluding properties bordering Squam Lake.

The research team engaged in a similar process as used in the valuation of other towns to calculate the total property value in Moultonborough. Using a list compiled by the Moultonborough Tax Assessor's Office, properties coded as "Waterfront" or "Waterfront Access" to Squam Lake were subtracted from the town total assessed value. However, because the list provided by the Tax Assessor did not indicate whether a property coded as "Waterfront" or 'Waterfront Access" was located on Squam Lake or Lake Winnipesaukee, the research team assumed lake access by street name.

In Moultonborough, Bean Road runs parallel to all of Squam Lake. It is assumed, therefore, that all properties coded as "Waterfront" or "Waterfront Access" with an address on or on a street off of Bean Road were located on Squam Lake. After excluding these properties from the analysis, the total assessed property value in Moultonborough was calculated as $3,480,008,889.[9]

The millage rate in Moultonborough is listed online as 7.13 mils, or 7.13 dollars of revenue per 1,000 dollars of assessed value.[10] This yielded $24,812,463 in town tax revenue for Moultonborough.

2.1.7 TOWN OF TUFTONBORO

The town of Tuftonboro is located in Carroll County on the shores of Lake Winnipesaukee. Twenty-seven of Lake Winnipesaukee's 274 habitable islands lay under the jurisdiction of Tuftonboro. Tuftonboro borders Moultonborough to the Northwest, Ossipee to the East, and Wolfeboro to the Southeast. Its town also contains various ponds, including Lower Beech Pond, Dan Hole Pond, Copps Pond, and Mirror Lake.

Unlike the other towns, which were analyzed using their Grand Lists, the information for Tuftonboro was derived exclusively from its website which means no properties were excluded. The millage rate for Tuftonboro is $9.56 per thousand dollars of assessed valuation. The assessed value was recorded as $1,210,587,908 and the town tax value was recorded as $11,544,803.[11]

2.1.8 TOWN OF WOLFEBORO

The town of Wolfeboro is located in Carroll County, New Hampshire on the eastern shores of Lake Winnipesaukee. Wolfeboro is the last of the eight key towns surrounding the lake. In addition to being a tourist destination due to its proximity to Lake Winnipesaukee, Wolfeboro is also a popular retirement destination for people in the United States. Often referred to as the "Oldest Summer Resort in America,"[12] Wolfeboro is known for its scenic beauty and small-town feel.

In order to calculate the total property value in Wolfeboro, we acquired the town Grand List. The Grand List includes the estimated value of both residential and commercial properties in Wolfeboro. Moreover, in order to solely capture the value of Lake Winnipesaukee, we removed all properties on streets that extend past Route 109 (Governor Wentworth Highway). Most streets past Route 9 are over 20 miles away from the Lake.

The total estimated value of the relevant properties is $2,500,451,349. On these properties, the town of Wolfeboro has a tax rate of $13.01 per thousand of assessed valuation.[13] Thus, the town brings in $32,530,872 in property tax revenue.

2.2 VALUE ADDED ANALYSIS

In addition to the total property value in the eight towns bordering Lake Winnipesaukee, it is useful to better understand the extent to which the lake influences property values. To illustrate this impact—referred to as the "value added" impact—the research team ran a simple ordinary-least squares regression on housing prices and location.

For this first analysis, the research team compared housing prices in cities that border Lake Winnipesaukee and those that do not. To do this, we used Zillow's Home Value database. Zillow uses an index that reflects the typical value for homes in the 35th to 65th percentile range, reflecting the typical home value for the region. This report uses the latest available data on this index,

collected on February 28, 2021 as the metric for the typical property value in different towns. Laconia, Meredith, Center Harbor, Wolfeboro, Alton, Glendale, Gilford, and Moultonborough are used as lakeside municipalities, which are compared to the neighboring municipalities of Gilmanton, New Durham, Coburn, Middleton, Wakefield, Ossipee, Sandwich, Ashland, and New Hampton. Upon running an ordinary-least squares regression with this data, it was found that the average home value for homes in lakeside municipalities is $92,502 more than homes in neighboring municipalities. This number may, in reality, be even higher because the effect of the lake on property values is likely more concentrated on homes closest to the lake in lakeside municipalities, but this analysis could not differentiate between these homes. This analysis is significant at the five percent confidence level. The results of the regression are included in Appendix A.

The research team conducted a similar analysis at the zip-code level, using data from the Federal Housing Finance Agency's House Price Index Dataset. This data measures the changes in housing prices over time. The zip codes of 03253, 03246, 03249, 03810, 03894, 03853, 03850, and 03254 were used to represent lakeside homes, while 03816, 03864, 03855, 03837, 03256, and 03226 represented homes in neighboring areas. Running an ordinary-least squares regression, the results indicate that homes located in lakeside zip codes are 81.97 units higher than homes in their adjacent counterparts, which is significant at the five percent level. This suggests that prices of homes in lakeside zip codes have risen higher relative to homes in adjacent zip codes. The results of this regression are included in Appendix B.

As of 2010, there were 9,879 housing units in Laconia,[14] 4,728 units in Meredith,[15] 795 units in Center Harbor, and 4,443 units in Wolfeboro,[16] 4,281 units in Alton, and 4,940 units in Moultonborough.[17] There was no available data on the number of housing units in Glendale. Assuming there are no units in Glendale, there are a total of 29,066 housing units in lakeside municipalities. If the average value of a typical house is valued at $97,926 more than those of neighboring municipalities, then proximity to Lake Winnipesaukee adds an estimated $2,846,317,116 added from property values. This equates to about $54 million in property tax revenue.

3 BUSINESS REVENUES

The second major component to this valuation of Lake Winnipesaukee was the money generated on the properties valued in Section 2. This money is captured in regional business revenues. After initial analysis of business revenues at and around Lake Winnipesaukee, the research team identified primary sources of revenue: tourism, fishing and boating, and summer camps. These categories encapsulate the variety of money generating activities at the lake, from the tourist spending during the annual summer Bike Week to resident spending on boat slips at local marinas. Due to time constraints, collecting primary source revenue data from each business was infeasible. Accordingly, this section systematically extrapolates total revenues from available data, providing a reliable estimation of business revenues associated with Lake Winnipesaukee.

3.1 TOURISM REVENUE

A primary factor in the overall value of Lake Winnipesaukee is the revenue generated through business activity. The research team considered two methods to estimate overall business revenues that can be attributed to Lake Winnipesaukee: a total value approach or a tourism-derived value approach.[18] This report estimated business revenues using a tourism-derived approach for the three reasons. The first reason is that these findings may inform future policymaking and yield real-world consequences. The research team aimed, therefore, to conservatively estimate value. Spending from tourism on or around Lake Winnipesaukee will undoubtedly be less than total spending, which also includes the spending of those in the region who are not there because of the lake. The second reason is that accurately approximating total business revenue required localized taxation data, which we were unable to access. After contacting the New Hampshire Department of Revenue Administration and submitting two Right-To-Know requests, the research team was informed that data on business taxes—specifically the Business Enterprise Tax, Business Profits Tax, and the Meals and Rooms Tax—cannot be provided by county, municipality, or zip code.[19] The third, and perhaps important, reason is that this report analyzes tourism spending rather than total spending because the purpose of this report is to value Lake Winnipesaukee. By analyzing tourism spending, this report more precisely targets the spending of those who are in the region specifically *because of* Lake Winnipesaukee.

The total tourism revenues identified by this report rely on an analysis conducted by Dean Runyan Associates, an independent economic analysis firm contracted by New Hampshire Tourism. The data used to estimate business revenues focuses on the spending of "visitors" (used synonymously with "travelers") to the lake.[20] Any "visitor" to a New Hampshire destination—including both state residents and non-residents—is included. Dean Runyan Associates classifies "visitors" by accommodation type. They used the following six categorizations:[21]

1. Commercial Accommodations: Visitors in this category stay in commercial accommodations, such as hotels, bed and breakfasts establishments, motels, resorts, and similar establishments where the Meals and Rooms (Rentals) tax is collected.
2. Private Campground: Visitors in this category stay in privately owned, commercial campgrounds. At Winnipesaukee, this includes major campgrounds such as:
3. Public Campground: Visitors in this category stay in publicly managed campgrounds, including those managed by the U.S. Forest Service and the New Hampshire Division of Parks and Recreation.
4. Private Home: Visitors in this category stay in private homes other than their own, such as the homes of friends and relatives.
5. Vacation Home: Visitors in this category stay in their own vacation homes or timeshares. Additionally, this category of visitors includes those who rent or borrow a vacation home in which lodging taxes are not collected.
6. Day Visitors: Visitors in this category travel to destinations in New Hampshire but do not include an overnight stay at their destination.

One substantial limitation of this approach is that it does not include those who live full-time in a non-vacation home around Lake Winnipesaukee for a reason that can be attributed to the lake itself. Although many likely live full-time in the towns surrounding the lake, few are likely to live there for reasons linked directly to Lake Winnipesaukee. Thus, by limiting its analysis to the six

categories used by Dean Runyan Associates, this report ensures that revenue calculations are a result of Lake Winnipesaukee itself.

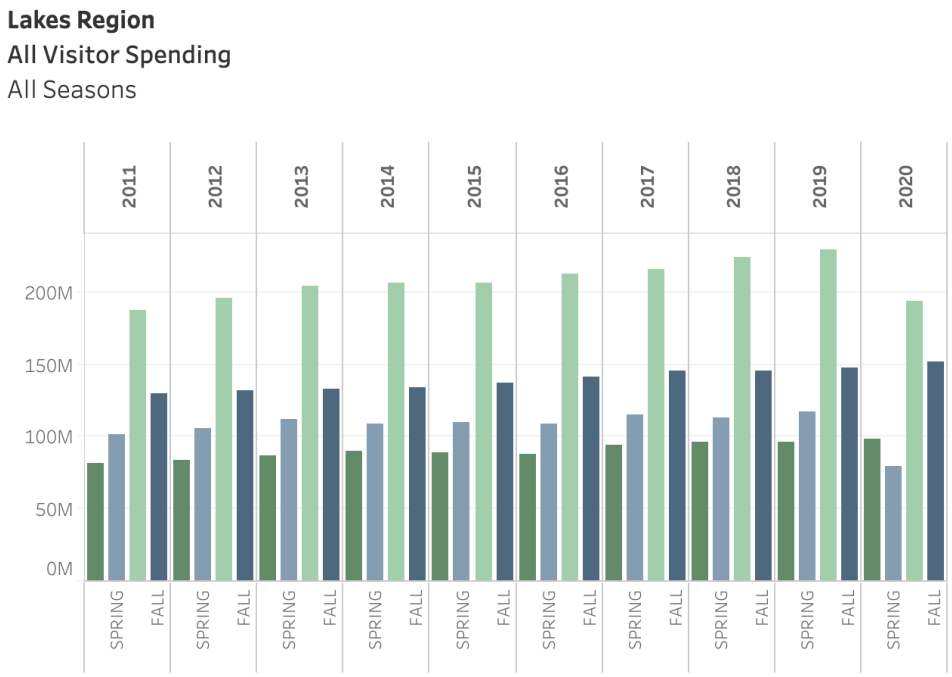
Dean Runyan Associates is employed throughout the United States to accurately measure tourism spending using a proprietary model referred to as the Regional Travel Impact Model. At its base, this model calculates total spending by multiplying estimated total visitor volume by the estimated commodities and accommodations purchased.[22] For each of these components, this model uses a combination of publicly-accessible revenue data and privately-administered spending survey data. To estimate total visitor volume, the Regional Travel Impact Model uses visitor surveys, population data, inventory and use of campsites and second homes, airport arrivals, and demand for rooms. To estimate the commodities and accommodations purchased, the Regional Travel Impact Model uses accommodation sales, additional visitor surveys, and airfares.[23] Due to time and resource constraints, this body of data was more extensive and reliable than data the research team could independently gather on business revenues overall. This report does, however, later specify additional revenue values calculated with independently collected data.

After understanding the Regional Travel Impact Model, the research team then identified a total spending value. The total spending of visitors because of Lake Winnipesaukee was calculated by first finding the total spending of visitors in the Lakes Region, one of the five major regions of New Hampshire and the region in which Lake Winnipesaukee is situated. Dean Runyan Associates estimates that visitors to the Lakes Region spent a total of $392,175,000 in 2020.[24]

Next, this value was reduced to the value of spending directly attributable to Lake Winnipesaukee. The Lakes Region, located in central New Hampshire, contains many lakes and other visitor attractions. But, because Lake Winnipesaukee is the largest lake in the state, we assume that the majority of this tourism spending is because of Lake Winnipesaukee. According to Pat Tarpey, the executive director of the Lake Winnipesaukee Association, 75 percent of spending in the Lakes Region can be directly attributed to Lake Winnipesaukee.[25] As a result, the Dean Runyan Associates value was then multiplied by 0.75 to find the total visitor, or tourist, spending at Lake Winnipesaukee in the 2020 calendar year. Visitors to the lake spent an estimated total of $294,131,000 in 2020.

To better contextualize this value, the research team further investigated how tourism spending has changed over time. Since 2011, the Travel and Tourism Development Division of the New Hampshire Department of Business and Economic Affairs has conducted an analysis of tourism spending in conjunction with Dean Runyan Associates.[26] This data shown in Figure 1 indicates that spending in the Lakes Region has steadily increased, especially in the summer and fall, represented by the light green and dark blue bars, respectively. One notable exception to this trend was 2020, which likely saw lower spending due to the negative impact of COVID-19 on tourism and travel.

Figure 1: Lakes Region, NH Tourism Spending (2011 - 2020)[27]



3.2 BOATING AND FISHING REVENUE

In addition to the larger tourism spending, the research team also analyzed spending relating to boating and fishing in Lake Winnipesaukee.

3.2.1 BOATING REVENUES

As the largest lake in the state of New Hampshire, Lake Winnipesaukee is a popular destination for both boating and fishing. Boat rentals from local marinas are a large source of revenue on the lake, by both tourists and locals. The Lakes Region Chamber identifies six main marinas on Lake Winnipesaukee: Irwin Marine (3 locations), Meredith Marina, East Coast Flightcraft of New England, Meredith Bay, Fay's Boat Yard, and Thurston's Marina. In addition to these marinas, we identified four other boat rental businesses on Lake Winnipesaukee: Ekal Activity Center, Anchor Marine, Melvin Village Marina, and Trexler's Marina. All of these marinas fall within the eight-town radius we identified as being part of the Lake Region.

Irwin Marine (all locations), Fay's Boat Yard, and Ekal Activity Center provided us with estimates of their annual revenue as well as number of boats rented per season and average season length. While most other marinas did not share data, we estimated their average annual revenue based on the number/type of boats rented and season length. Marinas were categorized as either small, medium, or large. As we were able to acquire revenue data from one marina of each size, we used those revenue numbers as an estimate of all other marinas in the category. See below for the revenue numbers and estimates by marina.

Table 1: Marina Size

Marina	**Size Category**
Irwin Marine	Large
East Coast Flightcraft of New England (includes Goodhue marinas)	Large
Fay's Boat Yard	Medium
Anchor Marine	Medium
Thurston's Marina	Medium
Meredith Marina	Medium
Trexler's Marina	Medium
Ekal Activity Center	Small
Meredith Bay	Small
Melvin Village Marina	Small

Table 2: Marina Revenues

Marina	**Average Yearly Revenue**
Irwin Marine (Laconia)	$11,666,666
Irwin Marine (Alton Bay)	$11,666,666
Irwin Marine (Hudson)	$11,666,666
Ekal Activity Center	$212,500
Fay's Boat Yard	$6,200,000
East Coast Flightcraft of New England (all)	$35,000,000*
Anchor Marine	$6,200,000*
Meredith Marina	$6,200,000*
Meredith Bay	$212,500*
Thurston's Marina	$6,200,000*
Melvin Village Marina	$6,200,000*
Trexler's Marina	$6,200,000*
Total	**$107,625,000**

**Marina did not provide estimate, estimation based on marina size and comparable marinas*

3.2.2 FISHING REVENUES

In 2018, 156,481 fishing licenses were sold in New Hampshire—the last year with license data recorded from the New Hampshire Fish and Game Department[28]. These licenses were purchased by a combination of residents and tourists—32 percent of them by tourists, and 68 percent by residents of the state.[29] It is likely that a significant portion of these licenses were bought for the purpose of fishing on Lake Winnipesaukee, as it is the biggest lake in the state. More specifically,

Lake Winnipesaukee accounts for around 35 percent of the ~130,000 acres of lake water in the state of New Hampshire. As a result, in our analysis we estimate that 35 percent of the total fishing license revenue can be attributed to Lake Winnipesaukee. Thus, we estimated that 54,768 licenses were sold for fishing on Lake Winnipesaukee each year.

There are several different types of fishing licenses sold in New Hampshire. The table below details the price and length of each option.

Table 3: Fishing License Prices

License Duration	Price- Non-Resident	Price- Resident
1 day	$15.00	$10.00
3 days	$28.00	N/A
7 days	$35.00	N/A
1 year	$63.00	$45.00

As we were unable to obtain data by type of license sold, we estimate that each non-resident license brings in an average of $35.25 (the mean fishing license price across all types for non-residents) and each resident license brings in an average of $27.50 (the mean fishing license price across all types for residents). Using these price numbers and maintaining the 32 percent to 68 percent resident/non-resident license breakdown for Lake Winnipesaukee, we estimate that fishing licenses bring in $1,641,944 in revenue for the state of New Hampshire.

3.3 SUMMER CAMP REVENUE

Summer camps that operate in the Lake Winnipesaukee area and surrounding towns also contribute to the value the lake brings to the region both in terms of finances and in terms of the community they help build. Around a dozen camps operate in the Lake Winnipesaukee region serving both children and families. Most of these camps operate from the end of June until August for around eight-to-nine weeks with “change over days” between sessions. These “change over days” involve more visitors to the region who in turn will spend money at local businesses as parents of campers come up to either visit their child between sessions, or pick up their child from camp, or drop off their child at the start of the new session. Two camps in particular, Camp Belknap, located in Wolfeboro, and Camp Kabeyun, located in Alton, provide insightful case studies of how camps contribute to the financial health of the region.

Camp Kabeyun is a 501(c)(3) nonprofit organization serving around 200 campers each year and employs 60 to 64 staff with tuition revenue totaling around $1 million. Other revenue streams

include fundraising which generates between $80,000 and $200,000 in annual revenue, their family camp segment which generates between $50,000 and $60,000 annually, and property rentals to outside groups which generate between $20,000 and $30,000 annually. Camp Kabeyun pays around $95,000 a year in property taxes to the town.[30]

Camp Belknap, one of the largest camps in the area, is also a 501(c)(3) nonprofit organization serving around 1,300 campers for nine weeks from the end of June to August. Camp Belknap prides itself on their financial transparency and publishes an annual report and an IRS 990 which can be found on their website. Their total revenue for 2019 was $5,323,834 with $2,800,482 derived from contributions and grants and $2,350,329 from programs and services.[31]

In determining a total value that summer camps bring to the region, a total of twelve summer camps were estimated to operate in the region. Revenue per camper from Camp Kabeyun was approximately $5,000 and for Camp Belknap was $4,095. Thus $4,547 was utilized as a revenue number in estimating the total annual revenue for each of the other ten camps. Two were categorized as small camps serving around 200 campers, thus bringing in a revenue of $909,525 annually. Five were categorized as medium sized camps estimated to serve around 800 campers thus bringing in a revenue of $3,638,102. Three were categorized as large camps estimated to serve around 1,200 campers generating $5,457,154 annually.

In total the revenues generated from summer camp revenue amount to $42,704,856. This number does not include the revenue that camps bring to other businesses in the region nor the lifetime value that being a part of the summer camp community generates for Lake Winnipesaukee as many former campers go on to purchase vacation homes in the region.

4 WATER SUPPLY

One of the biggest sources of monetary value is the water from Lake Winnipesaukee itself. In order to encapsulate this dimension of the analysis, the revenues that the water supply to the individual towns generates was assessed as well as the revenues from the Lakeport Dam which operates in Laconia.

Another piece of the water supply is the unused water in Lake Winnipesaukee. In conducting this study, a value was determined for the untapped water supply, however, this value was ultimately not added to the analysis as it was the only component of analysis in which the water was not utilized and it is difficult to place a monetary value on this unused supply.[*] Should this water eventually be monetized, a dollar value can be placed on the used water.

4.1 LACONIA WATER SUPPLY

In terms of the water supply, the only town that draws water directly from the lake is Laconia. Each of the other seven towns included in this paper draws their water from wells and not from

[*] When this value was calculated, it generated trillions of dollars for the region as there are approximately 625 billion gallons of water in the lake.

Lake Winnipesaukee and thus these towns were excluded from the water supply part of the analysis.

Laconia's water system serves an estimated 16,500 people and consists of 6,600 service connections. In 2020 the average daily demand for water in the town of Laconia was 1,336,430 gallons per day which translates to 1,786.54 hundred cubic feet (HCF) of water each day. The town charges $2.35 per HCF and thus generates $4,198 in revenue each day, or $1,532,410 annually from their water supply.[32]

4.2 LAKEPORT DAM

The second aspect of water supply revenue comes from the Lakeport Dam located in Laconia. The dam is owned by Eagle Creek Renewable Energy—an owner, operator, and developer of hydroelectric power projects. The company owns and operates 85 hydroelectric facilities in the United States. The Lakeport Dam specifically produces 2.4 million kilowatt-hours of clean energy per year.[33]

The methodology to determine the revenues generated from the Lakeport Dam largely derive from the 2017 PRS Brief 1617-11, "*Valuation of the Connecticut River: A Cost-Benefit Analysis of Joint-State Clean Water Spending"* which was prepared for the Connecticut River Joint Commissions. In the 2017 study, the nine hydroelectric dams on the Connecticut River were assessed in terms of the value of their annual electricity, assessed value, and annual taxes. This methodology was applied to the Lakeport Dam, generating a total value of $42,209,472 for the Lakeport Dam.

In determining the value of the Lakeport Dam's annual electricity, the average retail price of electricity, $17.15, was multiplied by the dams output yielding $41,160,000 for the value of annual electricity.[34] In order to determine the assessed value of the dam a ratio was created from the Canaan Dam which operates on the border of Canaan, VT and Stewartstown, NH and produces an output of 7.3Gwh of electricity and has an assessed value of $3,123,400 on the New Hampshire side of the dam. After running this analysis, the assessed value of the Lakeport Dam was determined to be $1,026,871.

The Canaan Dam was also used as a benchmark to determine the value of annual taxes that the Lakeport Dam generates. For reference the Canaan Dam generates $68,746 on the New Hampshire side of the dam. After running this analysis, the annual taxes of the Lakeport Dam is determined to be $22,601.

5 CONCLUSION

As the largest lake in New Hampshire, Lake Winnipesaukee contributes significantly to the economy of the state. Tourists flock to Lake Winnipesaukee and its surrounding towns every year to boat, fish, or swim. For locals, the lake is also an important source of water and energy in the area.

In this paper, we aimed to understand the value of the lake to the state of New Hampshire. To do this, we estimated the value of real estate, business revenue, and water supply for the eight towns surrounding Lake Winnipesaukee: Alton, Center Harbor, Gilford, Laconia, Meredith, Moultonborough, Tuftonboro, and Wolfeboro. Real estate included the estimated value of properties, both residential and commercial, directly around Lake Winnipesaukee. Business revenue accounted for the money generated at local marinas, restaurants, hotels, bars, and summer camps. Lastly, the water supply included the value of the drinking water produced by the lake.

Adding together these categories, we found that Lake Winnipesaukee has a value of $17,163,764,533. The breakdown for this was $16,457,417,397 in property values, $216,502,454 in town tax revenues, $294,131,000 in tourism business revenues, $109,266,944 in boating/fishing business revenues, $42,704,856 in summer camp business revenues, $1,532,410 in its contributions to Laconia's water supply, and $42,209,472 contributions from the Lakeport Dam.

By understanding the value of Lake Winnipesaukee and the extent to which the lake benefits the local economy, the State of New Hampshire can make informed policy decisions regarding the lake. Given the significant value that the lake contributes, our report suggests that it is important that the state invests in the upkeep and health of Lake Winnipesaukee—so that it continues to be a popular tourist destination and source of water for locals. We hope that this analysis guides future policymaking, in addition to contributing to further research into the value of the lake.

6 APPENDIX

6.1 Value Added by Town

The table below shows the regressions obtained for the property-value added by Lake Winnipesaukee's presence by town.

VARIABLES	(1) Home Values
lakeside	97,926**
	(34,829)
Constant	284,709***
	(15,298)
Observations	13
R-squared	0.469

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6.2 Value Added by Zip Code

The table below shows the regressions obtained for the property-value added by Lake Winnipesaukee's presence by zip code.

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VARIABLES	(1) HPI
lakeside	81.97**
	(32.46)
Constant	149.8***
	(12.84)
Observations	12
R-squared	0.389

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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