

SUBMITTED TO:

Mid-Maine Chamber of Commerce
50 Elm Street
Waterville, ME 04901

ECONOMIC AND FISCAL IMPACT ANALYSIS

KENNEBEC RIVER DAMS

SEPTEMBER 2022

PREPARED BY:



PO Box 3547
Saratoga Springs, NY 12866
518.899.2608
www.camoinassociates.com

ABOUT CAMOIN ASSOCIATES

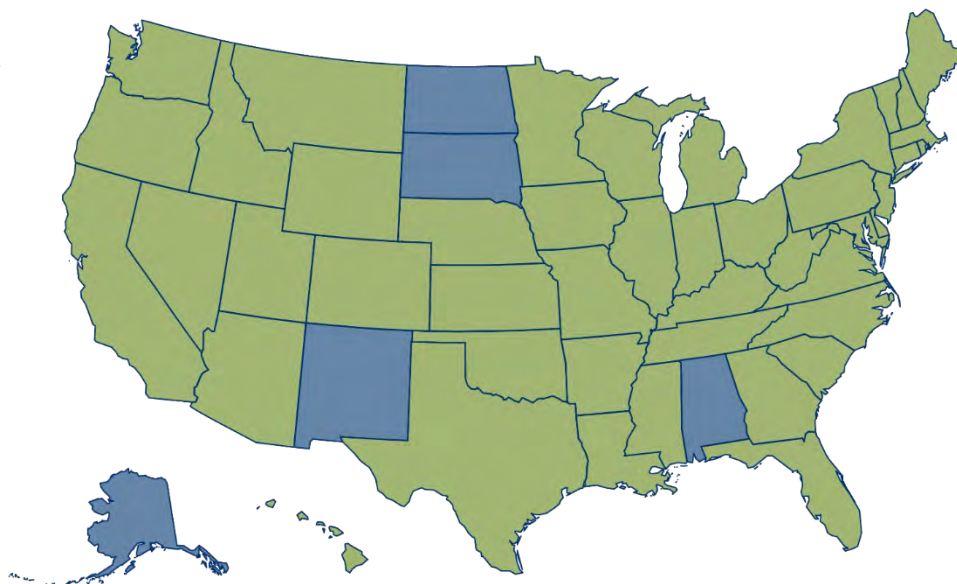
Camoin Associates has provided economic development consulting services to municipalities, economic development agencies, and private enterprises since 1999. Through the services offered, Camoin Associates has served EDOs and local and state governments from Maine to California; corporations and organizations that include Amazon, Lowes Home Improvement, FedEx, Volvo (Nova Bus) and the New York Islanders; as well as private developers proposing projects in excess of \$6 billion. Our reputation for detailed, place-specific, and accurate analysis has led to over 1,500 projects in 45 states and garnered attention from national media outlets including *Marketplace* (NPR), *Crain's New York Business*, *Forbes* magazine, *The New York Times*, and *The Wall Street Journal*. Additionally, our marketing strategies have helped our clients gain both national and local media coverage for their projects in order to build public support and leverage additional funding. We are based in Saratoga Springs, NY, with regional offices in Richmond, VA; Portland, ME; Boston, MA; and Brattleboro, VT. To learn more about our experience and projects in all of our service lines, please visit our website at www.camoinassociates.com. You can also find us on Twitter @camoinassociate and on Facebook.

THE PROJECT TEAM

Jim Damicis
Project Principal

Jessica Tagliafierro
Project Manager

John Downen
Project Analyst



CONTENTS

Executive Summary 1

Introduction 3

Impact of Current Operations..... 5

Attachment A: What is Economic Impact Analysis? 8

This page intentionally left blank.

EXECUTIVE SUMMARY

Brookfield Renewable owns and operates several dams throughout the State of Maine. Four of these dams (Weston, Shawmut, Hydro Kennebec, and Lockwood) are located on the lower section of Maine’s Kennebec River, between Skowhegan and Waterville. These dams provide critical support for paper mills and related facilities within the region, including several key employers and drivers of the industry for the state.

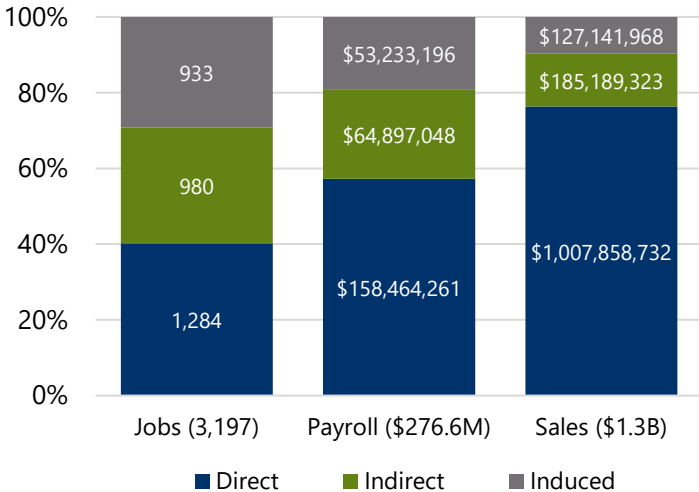
To better understand the current contribution of these dams to the regional and statewide economies, Camoin Associates was retained by the Mid-Maine Chamber of Commerce to conduct a third-party assessment of the collective economic impact of the Weston, Shawmut, Hydro Kennebec, and Lockwood dams on the region and state. Impacts are calculated based on the operations of the dams themselves and the key businesses that they support.

IMPACT ANALYSIS RESULTS

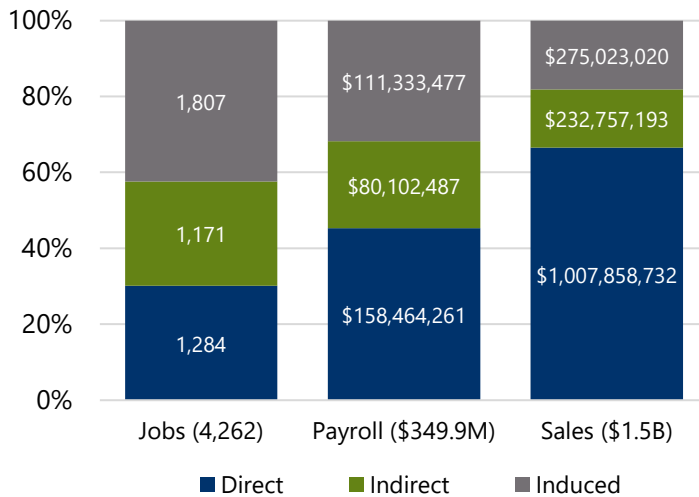
In total, the dams and regional paper mills that rely on the dams annually provide a combined 1,284 jobs with an associated almost \$158.5 million in employee earnings to the regional and state economies (direct impacts). The dams support 40% of the state’s remaining paper mill industry, and average earnings per job more than double that of average earnings per job across all industries in the counties. This economic activity multiplies throughout the economy. In total, current operations of the dams and mills support approximately 3,200 jobs (4% of total jobs in the counties), \$276.6 million in employee earnings, and over \$1.3 billion in sales in Kennebec and Somerset counties. This grows to roughly 4,300 jobs, almost \$350.0 million in employee earnings, and over \$1.5 billion in sales in the State of Maine (see Figure 1).

Figure 1

Economic Impact of Kennebec River Dams on Kennebec & Somerset Counties



Economic Impact of Kennebec River Dams on State of Maine

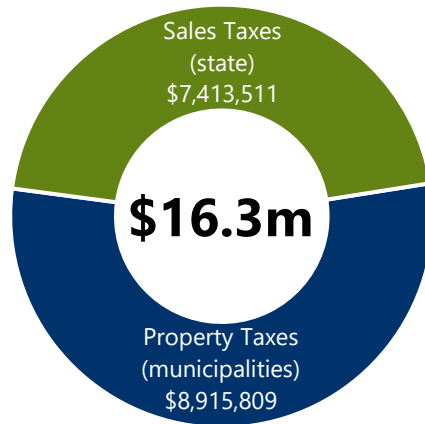


Source: Lightcast (formerly Emsi)

In addition to the economic effects, property and sales tax revenues are attributed to the Kennebec River dams. Annually, over \$7.4 million in sales tax revenue is generated for the state, while over \$8.9 million in property tax revenue is generated for various taxing jurisdictions as a result of this economic activity. The total fiscal benefit to all jurisdictions of the four dams is over \$16.3 million. Figure 2 displays these amounts.

Figure 2

Tax Revenue



In total, current operations of Brookfield Renewable’s four Kennebec River dams and the two paper mills that rely on the dams support approximately 3,200 jobs, \$276.6 million in annual employee earnings, and over \$1.3 billion in annual sales in Kennebec and Somerset counties, and roughly 4,300 jobs, almost \$350.0 million in payroll, and over \$1.5 billion in sales in the State of Maine. This activity generates over \$7.4 million in sales tax revenue for the state and over \$8.9 million in property tax revenue for local taxing jurisdictions each year.

INTRODUCTION

Brookfield Renewable owns and operates several dams throughout the State of Maine. Four of these dams (Weston, Shawmut, Hydro Kennebec, and Lockwood) are located on the lower section of Maine's Kennebec River, between Skowhegan and Waterville. These dams provide critical support for paper mills and related facilities within the region, including several key employers and drivers of the industry for the state.

To better understand the current contribution of these dams to the regional and statewide economies, Camoin Associates was retained by the Mid-Maine Chamber of Commerce to conduct a third-party assessment of the collective economic impact of the Weston, Shawmut, Hydro Kennebec, and Lockwood dams on the region and state. Impacts are calculated based on the operations of the dams themselves and the key businesses that they support.

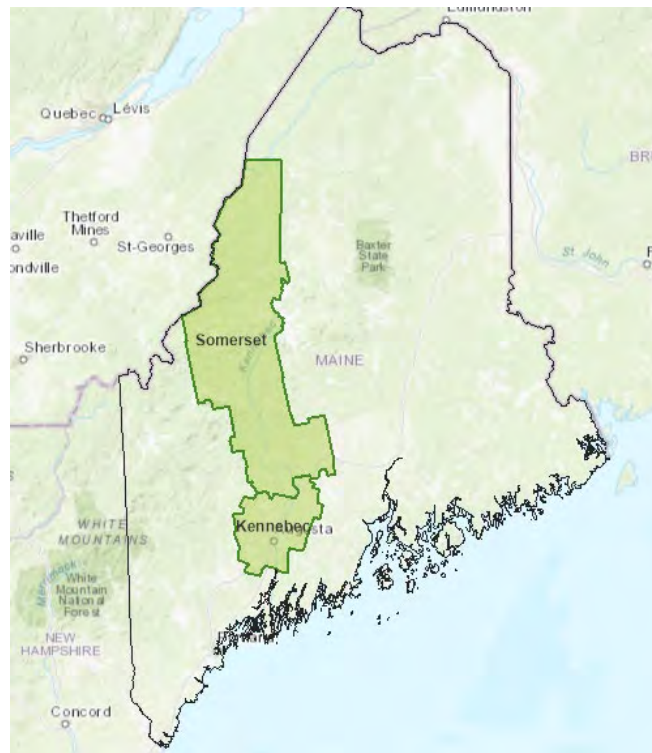
METHODOLOGY

STUDY AREA

The four dams examined in the analysis are located in Maine's Kennebec and Somerset counties. Brookfield, the dam operator, and regional paper mills have facilities in Benton, Clinton, Fairfield, Norridgewock, Skowhegan, Waterville, and Winslow.

The analysis looks at the impacts of dam operations on the two-county region and on the entire State of Maine.

Map 1: Study Area



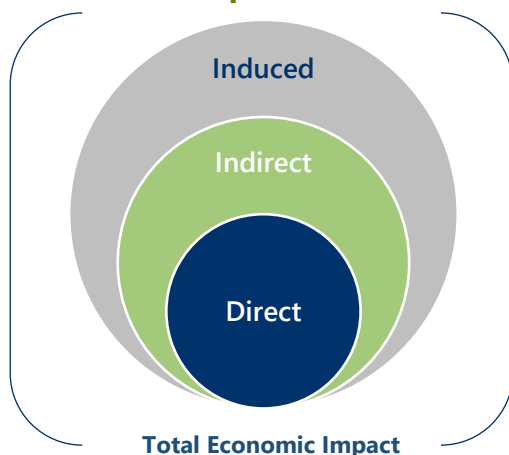
MODELING PROCESS

An economic impact analysis of current operations of the four dams was conducted to quantify their impact on the regional and state economy. The economic impact includes not only the “direct” economic impacts, such as on-site jobs, but also the secondary economic impacts that are generated throughout the economy through the economic “multiplier” effect. The three specific types of impacts considered in the analysis include:

- **Direct:** The most immediate impacts, which include the on-site jobs and local spending on goods and services.
- **Indirect:** Indirect effects occur at businesses within Kennebec and Somerset counties, or within the State of Maine, that supply goods and services to the dams and the regional paper mills and re-spend a portion of that revenue within the region. In other words, for every dollar spent at a local supplier, a portion of that dollar will again be spent on goods and services at other businesses in the two counties or the state. This is considered the indirect impact.
- **Induced:** Another “multiplier” effect that occurs is when workers at both the dams and paper mills and indirectly impacted businesses spend a portion of their wages at businesses within the region and state for things such as retail goods and services. The portion of the spending by new businesses that are paid to workers and re-spent in the regional or state economy is considered the induced impact.

The sum of the direct, indirect, and induced impacts equals the total economic impact. The Lightcast input-output model is used to calculate the total economic impact, including the three different types of impacts.

Measuring the Total Economic “Multiplier Effect”



Modeling Software

Lightcast (formerly Emsi) designed the input-output model used in this analysis. The Lightcast model allows the analyst to input the amount of new direct economic activity (spending, earnings, or jobs) occurring within the region and uses the direct inputs to estimate the spillover effects that the net new spending, earnings, or jobs have as these new dollars circulate throughout the economy. This is captured in the indirect and induced impacts and is commonly referred to as the “multiplier effect.” See Appendix A for more information on economic impact analysis.

What does “Net New” Mean?

When looking at the economic impacts of an industry, it’s important to look only at the economic changes that would not happen in the dams’ absence. These effects are the “net new” effect: purchases made only as a result of the company or project in question.

Definition of a “Job”

A “job” is equal to one person employed for some amount of time (part-time, full-time, or temporary) during the study period.

IMPACT OF CURRENT OPERATIONS

ECONOMIC IMPACT

ASSUMPTIONS

Annual on-site jobs and employee earnings at the dams and at businesses directly supported by the dams were used as the direct inputs in the economic impact model. Businesses directly supported by the dams include two regional paper mills, which rely on the dams for their current operations.

Based on information provided by Brookfield Renewable and supplemented with data from Demandbase and Lightcast, a total of 1,284 jobs and nearly \$158.5 million in employee earnings per year are directly supported by the four dams and two mills. These are the direct inputs used in the Lightcast model.

Table 1

Direct Economic Activity Supported by the Dams

	Jobs	Earnings
On-Site at Dams and Businesses Directly Supported by Dams	1,284	\$158,464,261

Source: Brookfield, Demandbase, Lightcast (formerly Emsi)

The operation of these dams supports two of the five remaining paper mills in the state, which equals approximately 40% of Maine's paper mill industry activity. Additionally, these jobs are well paying, offering strong compensation and retirement benefits. Average earnings per direct jobs (Table 1) are approximately twice as high as the average earnings for all jobs in Kennebec and Somerset counties.

ECONOMIC IMPACT

The jobs and earnings (payroll) were used as the direct inputs in the economic impact model. The total economic impact of current operations on both geographies is outlined in Table 2. Total jobs associated with the dams represent nearly 4% of all jobs in Kennebec and Somerset counties.

Table 2

Economic Impact of Kennebec River Dams

Kennebec & Somerset Counties

	Jobs	Earnings	Sales
Direct	1,284	\$158,464,261	\$1,007,858,732
Indirect	980	\$64,897,048	\$185,189,323
Induced	933	\$53,233,196	\$127,141,968
Total	3,197	\$276,594,504	\$1,320,190,023

State of Maine

	Jobs	Earnings	Sales
Direct	1,284	\$158,464,261	\$1,007,858,732
Indirect	1,171	\$80,102,487	\$232,757,193
Induced	1,807	\$111,333,477	\$275,023,020
Total	4,262	\$349,900,224	\$1,515,638,945

Source: Lightcast (formerly Emsi)

FISCAL IMPACT

In addition to the economic impacts of current operations, the dams' and mills' current operations directly or indirectly contribute annual tax revenues to municipalities in Kennebec and Somerset counties and the state, in the form of property and sales taxes.

PROPERTY TAX REVENUE

Brookfield and the paper mills it supports paid almost \$8.9 million in property taxes to municipalities in Kennebec and Somerset counties in 2021. The largest recipients were Skowhegan with nearly \$6.8 million and Waterville with over \$792,000 (see Table 3). An additional \$31,068 in property taxes was paid to the State of Maine, for a total of over \$8,915,000 paid in 2021.

Table 3

Property Tax Revenue, 2021

Municipality	Personal Property	Real Estate	Total
Benton		\$97,113	\$97,113
Clinton		\$794	\$794
Fairfield	\$163,469	\$390,014	\$553,483
Norridgewock		\$1,378	\$1,378
Skowhegan	\$4,481,002	\$2,309,588	\$6,790,590
Waterville	\$415,025	\$377,079	\$792,104
Winslow	\$228,704	\$420,576	\$649,281
Maine Revenue Services		\$31,068	\$31,068
Total	\$5,288,201	\$3,627,609	\$8,915,809

Note: Consists of taxes paid by Brookfield, Huhtamaki, and Sappi.

Source: Brookfield, compiled from public records

SALES TAX REVENUE

Sales tax revenue is calculated by estimating the portion of earnings that will be spent on taxable items. Maine collects a 5.5% tax on general sales, an 8% tax on prepared food sales, and a 6% tax on certain services.

EMPLOYEE EARNINGS

Of the total earnings generated, calculated in the Economic Impact section, it is assumed that 75% will be spent within the State of Maine.¹ The Bureau of Economic Analysis' 2020 Personal Consumption Expenditure data for Maine was used to estimate the portion of earnings that will be spent in taxable categories.² It is estimated that 35% of in-state spending will be on general taxable sales, 6% on prepared food, and 7% on taxable services. In total, \$7.4 million in total sales tax revenue is estimated to be attributed to the economic activity supported by the Kennebec River dams. The calculation and sales tax revenue generated is outlined in Table 4.

¹ Based on an analysis of available goods and services in the region (Lightcast).

² Based on a breakdown of typical personal consumption expenditures for Maine (BEA).

Table 4

Sales Tax Revenue

Tax Source	Maine
Total Earnings	\$349,900,224
Amount Spent in Maine (75%)	\$262,425,168
Amount Spent on Taxable General Sales (35%)	\$91,848,809
Sales Tax Rate	5.5%
General Sales Tax Revenue	\$5,051,684
Amount Spent on Taxable Prepared Food Sales (6%)	\$15,745,510
Sales Tax Rate	8.0%
Prepared Food Sales Tax Revenue	\$1,259,641
Amount Spent on Taxable Services (7%)	\$18,369,762
Sales Tax Rate	6.0%
Services Sales Tax Revenue	\$1,102,186
Sales Tax Revenue Attributable to Kennebec River Dams and Paper Mills	\$7,413,511

Source: Camoin Associates, Maine Revenue Services, U.S. Bureau of Economic Analysis Personal Consumption Expenditures data

TOTAL TAX REVENUE

The total annual tax revenue attributed to the Kennebec River dams' current operations is outlined in Table 5.

Table 5

Total Tax Revenue to All Jurisdictions

Source	Total
Property Taxes (municipalities)	\$8,915,809
Sales Taxes (state)	\$7,413,511
Total	\$16,329,320

Source: Brookfield from public records, Maine Revenue Services, U.S. Bureau of Economic Analysis, Camoin Associates

ATTACHMENT A: WHAT IS ECONOMIC IMPACT ANALYSIS?

The purpose of conducting an economic impact study is to ascertain the total cumulative changes in employment, earnings and output in a given economy due to some initial “change in final demand”. To understand the meaning of “change in final demand”, consider the installation of a new widget manufacturer in Anytown, USA. The widget manufacturer sells \$1 million worth of its widgets per year exclusively to consumers in Canada. Therefore, the annual change in final demand in the United States is \$1 million because dollars are flowing in from outside the United States and are therefore “new” dollars in the economy.

This change in final demand translates into the first round of buying and selling that occurs in an economy. For example, the widget manufacturer must buy its inputs of production (electricity, steel, etc.), must lease or purchase property and pay its workers. This first round is commonly referred to as the “Direct Effects” of the change in final demand and is the basis of additional rounds of buying and selling described below.

To continue this example, the widget manufacturer’s vendors (the supplier of electricity and the supplier of steel) will enjoy additional output (i.e., sales) that will sustain their businesses and cause them to make additional purchases in the economy. The steel producer will need more pig iron and the electric company will purchase additional power from generation entities. In this second round, some of those additional purchases will be made in the US economy and some will “leak out”. What remains will cause a third round (with leakage) and a fourth (and so on) in ever-diminishing rounds of industry-to-industry purchases. Finally, the widget manufacturer has employees who will naturally spend their wages. Again, those wages spent will either be for local goods and services or will “leak” out of the economy. The purchases of local goods and services will then stimulate other local economic activity. Together, these effects are referred to as the “Indirect Effects” of the change in final demand.

Therefore, the total economic impact resulting from the new widget manufacturer is the initial \$1 million of new money (i.e., Direct Effects) flowing in the US economy, plus the Indirect Effects. The ratio of Total Effects to Direct Effects is called the “multiplier effect” and is often reported as a dollar-of-impact per dollar-of-change. Therefore, a multiplier of 2.4 means that for every dollar (\$1) of change in final demand, an additional \$1.40 of indirect economic activity occurs for a total of \$2.40.

Key information for the reader to retain is that this type of analysis requires rigorous and careful consideration of the geography selected (i.e., how the “local economy” is defined) and the implications of the geography on the computation of the change in final demand. If this analysis wanted to consider the impact of the widget manufacturer on the entire North American continent, it would have to conclude that the change in final demand is zero and therefore the economic impact is zero. This is because the \$1 million of widgets being purchased by Canadians is not causing total North American demand to increase by \$1 million. Presumably, those Canadian purchasers will have \$1 million less to spend on other items and the effects of additional widget production will be cancelled out by a commensurate reduction in the purchases of other goods and services.

Changes in final demand, and therefore Direct Effects, can occur in a number of circumstances. The above example is easiest to understand: the effect of a manufacturer producing locally but selling globally. If, however, 100% of domestic demand for a good is being met by foreign suppliers (say, DVD players being imported into the US from Korea and Japan), locating a manufacturer of DVD players in the US will cause a change in final demand because all of those dollars currently leaving the US economy will instead remain. A situation can be envisioned whereby a producer is serving both local and foreign demand, and an impact analysis would have to be careful in calculating how many “new” dollars the producer would be causing to occur domestically.

Leading action to grow your economy

Camoin Associates
PO Box 3547
Saratoga Springs, NY 12866
518.899.2608
www.camoinassociates.com
@camoinassociate

