CAWA

THE COALITION OF ALABAMA WATERWAY ASSOCIATIONS

Economic Impact of Alabama's Inland Waterways

2024 REPORT

Conducted by:

MARTIN ASSOCIATES

CAWA

THE COALITION OF ALABAMA WATERWAY ASSOCIATIONS

Contents

Figures

Tennessee River Valley Association

I. INTRODUCTION AND SUMMARY

Martin Associates was retained by the Coalition of Alabama Waterway Associations to develop a state-wide economic impact study of Alabama's inland waterway segments. The Coalition of Alabama Waterway Associations (CAWA) comprises five inland river associations:

- Warrior Tombigbee Waterway Association
- Tennessee River Valley Association
- Tennessee-Tombigbee Waterway Development Authority
- Coosa Alabama River Improvement Association
- Tri-Rivers Waterway Development Association

In turn, these organizations represent the following Alabama rivers and waterway segments:

- Black Warrior River (including the Locust and Mulberry Forks)
- Tennessee River
- Tombigbee River
- Tenn-Tom Waterway
- Alabama-Coosa-Tallapoosa Rivers
- Chattahoochee River.

The economic impact categories representing the sphere of direct influence of cargo and recreational activity on Alabama's inland waterway segments include, but are not limited to terminal operators, inland transportation to and from the river terminals, shippers/consignees, government agencies, vessel operators, shipyards, recreational boating, and fishing tournaments. Impacts will be

Port of Florence/Florence-Lauderdale Port Authority on the Tennessee River.

presented in five sectors: maritime logistics and shipping, marinas and recreational boating, cruise passenger activity, fishing tournaments, and ship and boat building.

It is the purpose of this study to quantify the economic impacts generated by the marine cargo, recreational boating, fishing and passenger activity on the inland waterways. Total waterborne tonnage handled in the state of Alabama in 2022, per the Waterborne Commerce Statistics Center, was just over 65 million tons. Impacts for the Port of Mobile and Mobile Harbor were previously estimated by Martin Associates in September 2023.[1] As part of this current study, the Port of Mobile Economic Impact Model developed by Martin Associates was adjusted to exclude the impacts on the State that are generated by cargo moving to and from points in Alabama via the Alabama inland waterways. As a result, the adjusted Port

1 The Local and Regional Economic Impacts of the Port of Mobile, September 2023, Alabama Port Authority, Port of Mobile, by Martin Associates

of Mobile impacts on the State (excluding the impacts generated by the cargo moving on the Alabama waterways to and from points in Alabama and the Port of Mobile) can be combined with the impacts of the Alabama inland rivers estimated in this report to provide an overall estimate of the economic impacts generated by maritime activity on all of Alabama waterways, including the cargo activity on the Mobile River, Chickasaw Creek, Three Mile Creek, and Theodore Ship Channel.

This section provides a summary of the methodology used to estimate the economic impacts of activities on Alabama's inland waterways including the Port of Mobile adjusted to avoid double counting of tonnage and impacts. The methodology used in this analysis has been developed by Martin Associates and has been used to estimate the economic impacts of seaport activity at public and private marine terminals of more than 500 United States and Canadian port studies. It is to be emphasized that only measurable impacts are included in this study. Specific re-spending models have been developed to reflect the unique economic and consumer profiles of the regional economy. The resulting impacts reflect the uniqueness of Alabama's inland waterways, as well as the surrounding regional economy.

1. Impact Definitions

The impacts are measured in terms of:

- Employment
- Personal income
- Business revenue
- State and local taxes

Each impact measurement is described as follows:

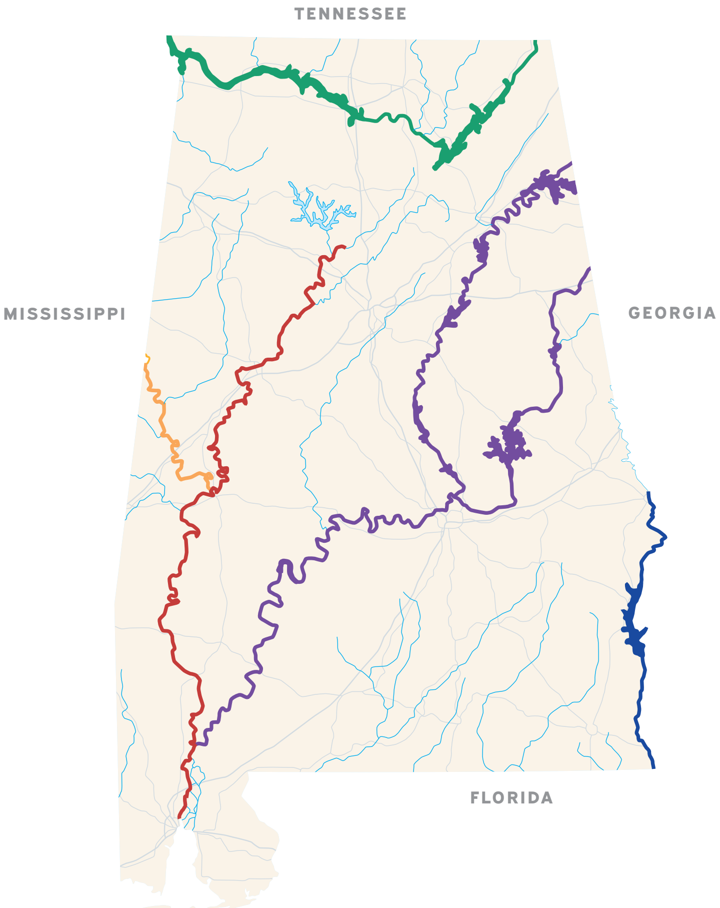
Employment Impact:

- **Direct jobs** are generated by firms that would not exist if cargo activity on the waterways were to cease. Direct jobs created by marine cargo activity at the river terminals are those with the firms directly providing cargo handling and barge services, including but not limited to trucking companies, rail companies, terminal operators, and barge operators. Additional direct jobs are generated by marinas, cruise passenger activity, and fishing tournaments.

- **Induced jobs** are jobs created by the purchase of goods and services by the individuals directly employed by each of the waterways' lines of business. These jobs are based on the local purchase patterns of Alabama residents. The induced jobs are jobs with grocery stores, restaurants, health care providers, retail stores, local housing/construction industry, and transportation services, as well as with wholesalers providing goods to the retailers.

- **Indirect jobs** are created throughout the state of Alabama as the result of purchases for goods and services by the firms directly impacted by inland waterway activity. The indirect jobs are measured based on actual local purchase patterns of the directly dependent firms, and occur with such industries as utilities, office supplies, contract service providers, maintenance and repair, and construction.

- **Related user jobs** are jobs with shippers and consignees using the river terminals for the shipment and receipt of cargo. Shippers and consignees hail from various industries such as coal mining, steel manufacturing and fabrication, and agriculture. It is to be emphasized that these user impacts are considered related in that they represent the users of the inland waterways and the Port of Mobile at a given



Alabama's Inland Waterways

- **Apalachicola Chattahoochee Flint Rivers**
  Tri Rivers Waterway Development Assn.
- **Tennessee River**
  Tennessee River Valley Assn.
- **Tennessee-Tombigbee Waterway**
  Tennessee-Tombigbee Waterway Development Council
- **Black Warrior-Tombigbee Waterway**
  Warrior Tombigbee Waterway Assn.
- **Alabama River**
  Coosa-Alabama River Improvement Assn.

point in time. The users of the inland waterways can and do use other modes of transportation and in the short term could possibly use truck or rail to transport their cargo, albeit at a higher logistics cost. Similarly, the users of the Port of Mobile include importers and exporters that can and likely do use other ports. The user impacts measure the sphere of influence of the inland waterways and the Port of Mobile at a given point in time and are thus classified as users supported, not generated, by the port and river terminals. It is the final demand for the products produced by the users that generates the jobs, income, revenue and taxes.

Personal income impact consists of wages and salaries received by those directly employed by waterway activity and includes a re-spending impact which measures the personal consumption activity in the State of Alabama as a result of the river activity. Indirect personal income measures the wages and salaries received by those indirectly employed.

Business revenue consists of the sale of goods and services generated by waterway activity.[2] Local purchases for goods and services made by the directly impacted firms are also measured. These local purchases by the dependent firms create the indirect impacts.

State and local taxes include taxes paid by firms and by individuals whose jobs are directly dependent upon and supported by Alabama inland waterway activity.

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2 Business revenue earned by the dependent shippers/consignees is not included in the impacts since this revenue is driven by the sales of the products produced by the industries using the port facilities and reported at the headquarters level. Only the local impacts of direct, induced, and indirect jobs, personal income, local purchases and state and local taxes are included in the impacts.

2. Methodology

The impacts of Alabama's inland waterways were estimated based on approximately 150 interviews with firms in the state as identified by CAWA members, Army Corps of Engineers navigational charts, and local Port Authorities. The direct impacts are measured at the firm level of detail and aggregated to develop the impacts for each line of business. The firms surveyed were asked about employment levels (both full time and part time), annual payroll, local purchases, and the residence of where the employees reside.

The induced impacts are based on the current expenditure profile of residents in the state of Alabama, as estimated by the U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey". This survey indicates the distribution of consumer expenditures over key consumption categories for Alabama residents. The consumption categories are:

- Housing
- Food at Restaurants
- Food at Home
- Entertainment
- Health Care
- Home Furnishings
- Transportation Equipment and Services

The estimated consumption expenditure generated as a result of the respending impact is distributed across these consumption categories. Associated with each consumption category is the relevant retail and wholesale industry. Jobs to sales ratios in each industry are then computed, and induced jobs are estimated for the relevant consumption categories. It is to be emphasized that induced jobs are only estimated at the retail and wholesale level, since these jobs are most likely generated at the local level. Further levels of induced jobs are not estimated since it is not possible to defensibly identify geographically where the subsequent rounds of purchasing occur.

The "Consumer Expenditure Survey" does not include information to estimate the job impact with supporting business services, legal, social services, state and local governments, and educational services. To estimate this induced impact, a ratio of state of Alabama employment in these key service industries to total state of Alabama employment is developed. This ratio is then used with the direct and induced consumption jobs to estimate induced jobs with business/financial services, legal, educational, governmental, and other social services.

The indirect impacts are estimated based on the local purchases by the directly dependent firms, combined with indirect job, income, and revenue coefficients for the supplying industries in the state of Alabama as developed for Martin Associates by the U.S. Bureau of Economic Analysis, Regional Input/Output Modeling System for Alabama.

3. Economic Impact Model

The impacts are measured for calendar year 2022, and a computer model has been developed to test the sensitivity of the impacts to changes in economic conditions and facility utilization. It is to be emphasized that this study is designed to provide a framework which CAWA can use in formulating and guiding future development.

The cargo impact model is designed to test the sensitivity of impacts to changes in such factors as waterway tonnage levels or new river facilities development. The cargo impact model can also be used to assess the economic benefits of increased waterway activity due to infrastructure

Economic Impact of Alabama's Inland Waterways

91,096
total jobs

- 5,564 Direct Jobs
- 5,572 Induced Jobs
- 3,104 Indirect Jobs
- 76,856 Related User Jobs

$6.5B
personal income / local consumption

- $370.9M Direct Personal Income
- $741.1M Re-spending and Local Consumption
- $182.3M Indirect Personal Income
- $5.25B Related User Income

$18B
total economic value

- $718.9M Direct Business Revenue
- $741.1M Re-spending and Local Consumption
- $16.6B Related User Output

development and the opportunity cost of not undertaking specific maritime investments such as dredging. The fishing model can be used to estimate the impacts of specific tournaments, and the marina model can be used to estimate the impacts of new boat registrations or moorings at waterway marinas. Finally, the passenger model can be used to estimate the impacts of additional river cruises based on the number of passengers and annual sailings.

4. Summary of Results Statewide Impacts of Alabama Maritime Industry, Including Port of Mobile

The economic impacts generated by the overall maritime industry in Alabama are summarized in Exhibit I-1 on the next page. This exhibit summarizes the combined results of the economic impact analysis of Alabama's inland waterways and the Port of Mobile impacts excluding the cargo moving to and from the Port of Mobile via the Alabama inland waterways. The Warrior-Tombigbee, Tennessee River, and Tenn-Tom Waterway are currently navigable to commercial traffic year-round, and the Alabama River is seasonally navigable. The impacts of fishing and recreational boating activity occur on all the waterway segments and are included in the inland waterway impacts.

In total, 431,627 jobs were generated in the maritime industry in Alabama. Alabama's inland waterways account for 91,096 of these jobs.

- Of the 431,627 total jobs, 22,250 were direct jobs, of which 5,564 jobs were directly generated by the inland waterways. In addition, 20,541 induced and 11,673 indirect jobs were generated by maritime industry in Alabama, of which 5,572 induced 3,104 indirect jobs were generated by the inland waterways. The cargo moving via the Port of Mobile and the Alabama inland waterways supports 377,162 jobs with

Exhibit I-1: Economic Impact of Alabama's Inland Waterways and the Port of Mobile 2022

	PORT OF MOBILE	INLAND WATERWAYS	TOTAL ALABAMA
JOBS			
Direct	16,686	5,564	22,250
Induced	14,969	5,572	20,541
Indirect	8,569	3,104	11,673
Related User Jobs	300,306	76,856	377,162
TOTAL JOBS	**340,531**	**91,096**	**431,627**
PERSONAL INCOME (1,000)			
Direct	$994,062	$370,956	$1,365,018
Re-spending/Local Consumption	$2,068,743	$741,171	$2,809,915
Indirect	$556,135	$182,382	$738,517
User Income	$17,874,434	$5,255,501	$23,129,936
TOTAL INCOME (1,000)	**$21,493,375**	**$6,550,011**	**$28,043,385**
TOTAL ECONOMIC VALUE (1,000)			
Direct Revenue	$3,615,640	$718,996	$4,334,636
Re-spending/Local Consumption	$2,068,743	$741,171	$2,809,915
Value of Related Output	$90,090,392	$16,619,626	$106,710,018
TOTAL ECONOMIC VALUE (1,000)	**$95,774,775**	**$18,079,793**	**$113,854,568**
STATE AND LOCAL TAXES (1,000)			
Direct, Induced, and Indirect	$382,162	$129,021	$511,183
Related User State and Local Taxes	$1,887,550	$517,736	$2,405,286
TOTAL STATE AND LOCAL TAXES (1,000)	**$2,269,712**	**$646,757**	**$2,916,469**

The inland waterways figures in this table represent the combination of cargo and recreational impacts (marinas and recreational boating, cruise passenger activity, and fishing tournaments).

shippers and consignees located throughout the state of Alabama. Of these user jobs, 76,856 jobs are with users of the Alabama inland waterways.

Over $28.0 billion of personal income and consumption expenditures were related to maritime activities in Alabama, of which Alabama inland waterways accounted for $6.6 billion.

- The 22,250 direct jobs received $1.4 billion of direct wage and salary income, for an average earning of $61,348 per direct employee. The 5,564 direct jobs generated by the inland waterways received $371 million indirect wages and salaries, for an average salary of $66,680.
- As the result of local purchases with this $1.4 billion of direct wages and salaries in, an additional $2.8 billion of income and local consumption expenditures were created in the state of Alabama. It is this re-spending impact that supported the 20,541 induced jobs.[3] With respect to the inland waterways, the $371 million of direct wages and salaries resulted in an additional $741.2 million of re-spending impact, which in turn supported the 5,572 induced jobs.
- The indirect jobs holders received over $738.5 million in wages and salaries, of which the 3,104 indirect job holders generated by the inland waterways received $182.4 million of wages and salaries.
- The 377,162 related user jobs received $23.1 billion in wages and salaries. The76,856 related users of the inland waterways received $5.3 billion in wages and salaries.

Local businesses received $4.3 billion of sales revenue from providing services to the maritime industry sectors in Alabama. The cargo activity on the Alabama inland waterways generated $719 million of direct business revenue in support of the marine activity on the inland waterways.

As a result of the maritime activity in Alabama, nearly $2.9 billion of state and local tax revenue was supported in the State, of which the inland waterways supported $646.8 million.

The total economic value of the maritime activity in Alabama is estimated at over $113.8 billion, of which the Alabama inland waterways account for $18.1 billion. The total economic value of the maritime activity in Alabama consists of the direct business revenue, the re-spending of income and local consumption expenditures, and the value of output associated with the users of the Port of Mobile and the inland waterways by shippers and consignees. These categories can be combined since each measures a specific impact that does not include double counting. For example, the direct and indirect income impacts and tax impacts are paid from the direct business revenue and thus cannot be included as this would result in double counting. The three categories, direct business revenue, the re-spending of the income and local consumption and the value of user output are independent and can be combined to estimate the total economic value of the maritime sector in Alabama.

With respect to the total economic value of maritime activity in Alabama, $113.8 billion, $4.3 billion million is the direct revenue at the Port of Mobile (less revenue associated with the Alabama river cargo

3 The induced income impact also includes local consumption expenditures and should not be divided by induced jobs to estimate the average salary per induced job. This would overstate the average salary for induced jobs.

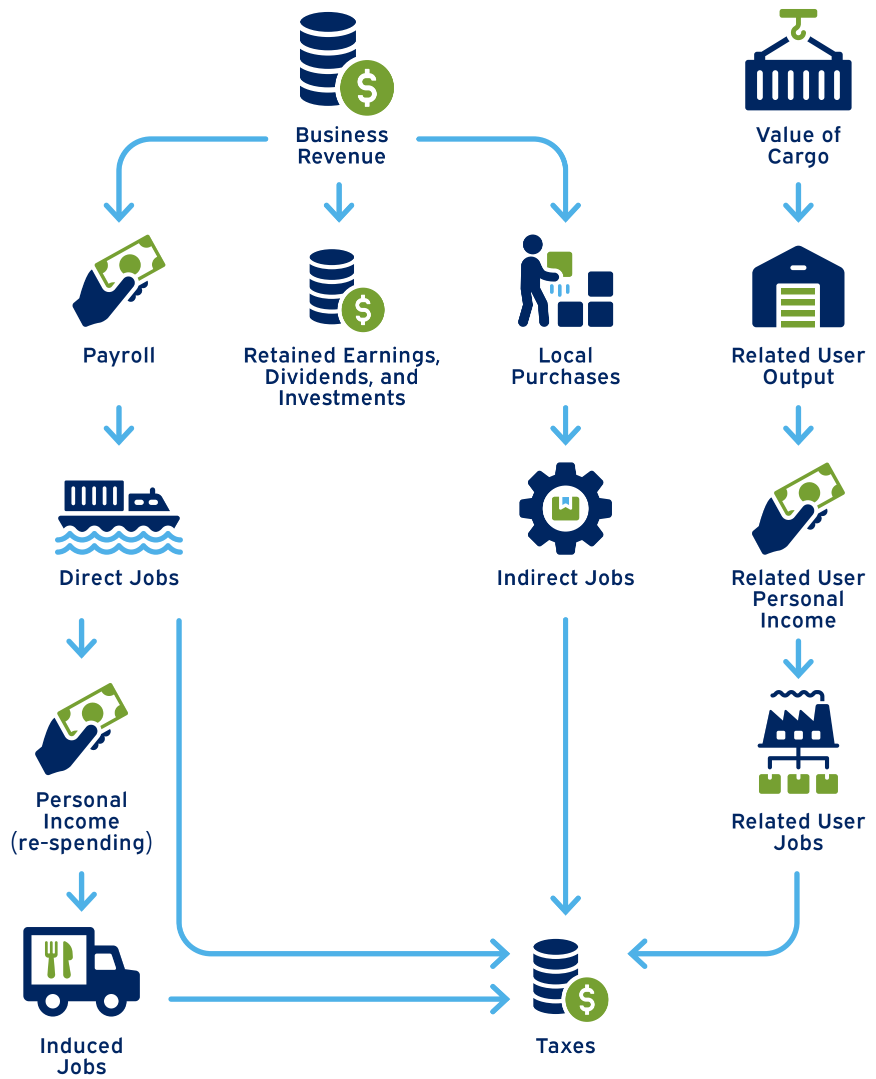
handled at the Port of Mobile) plus the direct revenue generated on the inland waterways. The $2.8 billion is the total respending and local consumption impact consisting of the $2.1 billion impact at the Port of Mobile plus the $741.2 respending and local consumption impact generated by the inland waterway activity. The $106.7 billion value of related output consists of the value of output with the shippers and consignees using the Port of Mobile, $90.1 billion, plus $16.6 billion of related users output with the cargo users of the inland waterways.

The balance of the report focuses only on the economic impacts generated within the state of Alabama by cargo activity, recreational boating, fishing tournaments, cruise and passenger activity, and boat building and repair sectors of the Alabama inland waterways.

II. ECONOMIC IMPACTS OF ALABAMA'S INLAND WATERWAYS

The various waterway industry segments generate economic impacts and business revenue within Alabama by providing services and selling goods to support maritime activity. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit II-1 shows how the impacts flow through the waterway industries. As this exhibit indicates, the economic impact of the maritime industry cluster in Alabama is measured in terms of employment impact, revenue impact, personal income impact, and tax impact. These impacts are non-additive. For example, the income impact is a part of the revenue impact, and adding these impacts together would result in double counting. Exhibit II-1 shows graphically how the inland waterways create economic impact within Alabama.

Exhibit II-1: Flow of Economic Impacts Generated by Inland Waterway Activity



Drax pellet plant on the Tenn-Tom Waterway in Aliceville.

Economic impacts are created throughout various business sectors of the state and local economies. Specifically, several distinct economic sectors are impacted because of activity on the inland waterways. These are:

- Maritime Logistics and Shipping
- Marinas and Recreational Boating
- Cruise Passenger Activity
- Fishing Tournaments
- Ship and Boat Building

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the economic impact sectors is provided below, including a description of the major participants in each sector.

1. Maritime Logistics and Shipping

The Maritime Logistics and Shipping sector focuses on the impact of cargo moving on the inland waterways and includes the following categories:

- **Surface transportation –** This category includes firms such as railroad and trucking companies that are responsible for moving the various cargoes between the river terminals and the inland origins and destinations.

- **Maritime services:**
    - Barge operators and towing firms - provide and guide the barges between river terminals such as Parker Towing, Cooper T. Smith, and Tennessee Valley Towing.

    - Cargo handling and terminal operators - this category involves the physical handling of the cargo at the river terminals between the land and the barges such as Watco, Parker Towing, and many private terminals.

- **Government agencies –** This service sector involves Federal, state, and local government agencies that perform services related to cargo handling and operations on the inland waterways. This includes the Army Corps of Engineers, the Coast Guard, and the port authorities on the waterways.

- **Dependent shippers –** Dependent shippers and consignees are those importers and exporters that have located near or at the river terminals to utilize the terminals for the receipt of raw and intermediate products and the shipment of raw, intermediate or finished products. Products include steel/steel products, coal, and biomass pellets. The dependent shippers/consignees differ from related users (described in the following

CAWA THE COALITION OF ALABAMA WATERWAY ASSOCIATIONS section) since the location of the dependent shippers/consignees was driven by river access, and the river facilities are integral in the production and logistics operations of the dependent shippers/consignees. The dependent shippers are included with the river terminal impacts.

- **Related –** Related job impacts consist of jobs with related shippers/consignees shipping and receiving cargo through the river terminals located on the inland waterways. Most of these users are with the state's coal mining, steel manufacturing, and agriculture industries (including support industries). Only the user industry activity that can be linked to the movement of cargo (either raw materials or finished products) through the river terminals is considered in this related user impact.

It is important to emphasize that the related user impact only provides a snapshot of the influence of the inland waterways at a given point of time, as these shippers and consignees can and do use other ports and modes of transportation for the shipment and receipt of cargo. The degree of dependency on the river terminals separates the related users from the dependent shippers/consignees who are directly dependent on the use of the river terminals.

1.1. Inland Waterway Cargo Employment Impacts

Exhibit II-2 on the next page summarizes the economic impacts of the cargo transported on each navigable waterway segment.

In total, 88,856 jobs were supported by the cargo moving on the three navigable waterways included in the analysis. Of these 88,856 jobs, 4,543 jobs are directly created by the cargo activity, while another 4,980 induced jobs are supported by the local purchases made by these direct job holders. In addition, there are 2,478 indirect jobs supported as the result of $677.5 million of local purchases by the directly dependent firms providing services on the waterways. The cargo moving via the inland waterways supports 76,856 jobs with shippers and consignees located throughout the state of Alabama.

With respect to the 4,543 direct jobs generated by the cargo moving on the waterways, the majority, 2,483, are with terminal operators and associated direct shippers/consignees, 962 jobs are with tug and barge companies moving the cargo on the river system as well as engaged in fleeting and barge cleaning operations, 705 jobs are with the trucking industry moving the river cargo to and from the river terminals, and 318 jobs are involved in marine terminal infrastructure and maintenance operations. There are approximately 3,500 jobs with ship and boat repair operations, but these impacts are included in the Port of Mobile Economic impacts (adjusted to control for the exclusion of the cargo moving on the rivers to and from the Port and points in Alabama). It is not possible to accurately allocate the ship and boat building and repair operations to only the Alabama inland waterway activity.

1.2 Inland Waterway Cargo Direct Revenue and Economic Output

More than 21 million tons of cargo shipped or received by inland waterway terminals included in the study generated revenue for firms providing services to moving the cargo on the inland waterways. For example, revenue is received by the railroads and the trucking companies within the surface transportation sector as a result of moving and distributing cargo to and from the river terminals; the terminal operators handling the cargo at the river terminals; barge towing, fleeting and cleaning; truck and rail transportation to and from the river terminals; and terminal and infrastructure investments and maintenance.

Exhibit II-2: Summary of Economic Impacts Generated by Inland Waterway Cargo Activity

	WARRIOR-TOMBIGBEE WATERWAY	TENNESSEE RIVER	TENN.-TOMBIGBEE WATERWAY	TOTAL INLAND WATERWAYS
JOBS				
Direct	1,616	2,573	354	4,543
Induced	1,771	2,836	374	4,980
Indirect	881	1,404	193	2,478
Related User Jobs	45,662	24,044	7,149	76,856
TOTAL JOBS	**49,930**	**30,857**	**8,070**	**88,856**
PERSONAL INCOME (1,000)				
Direct	$115,063	$184,560	$24,008	$323,631
Re-spending/Local Consumption	$240,885	$386,377	$50,260	$677,521
Indirect	$53,851	$85,762	$11,791	$151,404
User Income	$4,048,694	$945,270	$261,537	$5,255,501
TOTAL INCOME (1,000)	**$4,458,493**	**$1,601,969**	**$347,595**	**$6,408,057**
TOTAL ECONOMIC VALUE (1,000)				
Direct Revenue	$241,379	$241,237	$49,637	$532,253
Re-spending/Local Consumption	$240,885	$386,377	$50,260	$677,521
Value of Related Output	$9,312,000	$5,658,032	$1,649,594	$16,619,62
TOTAL ECONOMIC VALUE (1,000)	**$9,794,264**	**$6,285,645**	**$1,749,492**	**$17,829,400**
STATE AND LOCAL TAXES (1,000)				
Direct, Induced, and Indirect	$40,526	$63,457	$8,560	$112,542
Related User State and Local Taxes	$400,381	$91,342	$26,013	$517,736
TOTAL STATE AND LOCAL TAXES (1,000)	**$440,907**	**$154,799**	**$34,572**	**$630,278**

This table represents cargo impacts only, excluding the recreational impacts (marinas and recreational boating, cruise passenger activity, and fishing tournaments) included in Exhibit I-1.

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In addition to the direct revenue generated in support of moving the cargo on the inland waterways, value of output is supported by in-state shippers/consignees using the waterways to move cargo. This value of output is based on the actual value of the cargo moving on the waterways (that originates or is destined for a river terminal on the waterways) and the value of output that is generated by the production and consumption of the specific products moving on the waterways. For example, value of output is generated by producing the steel products moving on the waterways as is the output of the industries using the steel products moving on the waterways. Similarly, the coal mined in Alabama and then moved on the waterways generates revenue and output with the mines as well as industries supporting the coal mining activity to produce the tonnage moving on the Alabama waterways. For each of the various products moving on the Alabama waterways output, employment and income coefficient metrics were developed from the U.S. Bureau of Economic Analysis, RIMS for the state of Alabama for each consuming and producing industry associated with the cargo. These metrics were used to convert the tonnage of each product moving on the waterways into jobs and income supported with those Alabama industries using the cargo moved on the waterways. These impacts are classified as related user impacts, and it is the value of the output created by the specific cargo tonnage moving on the inland waterways that comprises the output.

In 2022, inland waterway activity generated $18.0 billion of total economic value to the State. Of the $18.0 billion, cargo activity on the inland waterways supported $17.8 billion of total economic activity. Of the $17.8 billion, $532.3 million is the direct business revenue received by the firms directly dependent upon the cargo moving via the three inland waterways. These firms provide maritime services and inland transportation services to the cargo handled at the river terminals and the barges calling the terminals. As a result of the re-spending of the personal income and the local consumption expenditures another $677.5 million of income and local expenditures are generated. The remaining $16.6 billion represents the value of the output to the users within the state of Alabama that is created due to the cargo moving via the river terminals. This includes the value added at each stage of producing the cargo, as well as the value added at each stage of production for the firms using the raw materials and intermediate products that flow via the inland waterways and are consumed and produced by industries within the state.

1.3 Personal Income Impact of Cargo Activity on Inland Waterways

The income impact is estimated by multiplying the average annual earnings (excluding benefits) of each cargo participant, i.e. truckers, towing firm employees, etc. by the corresponding number of direct jobs in each category. The individual earnings in each category multiplied by the corresponding job impact resulted in nearly $324 million in personal wage and salary earnings for the 4,543 direct employees. It is important to emphasize that the average annual earnings of a river-dependent job are about $71,237. These relatively high paying jobs will have a much greater economic impact in the local economy through stimulating induced jobs than will a job paying lower wages.

Based on data developed by the U.S. Bureau of Economic Analysis, it is estimated that for every one dollar earned by inland waterway area residents because of jobs directly generated by activity at the river terminals, an additional $2.08 of income would be created from respending the income for purchase of regionally produced goods and services. This respending generated an additional $677.5 million of local personal income and consumption expenditures with local business and service providers. This additional respending of the direct income generates the induced job impact, 4,981 jobs. It is to be emphasized that the $677.5 million of respending and consumption impact includes consumption expenditures by those directly employed. Therefore the $677.5 million of respending and consumption impact cannot be divided by the 4,981 induced job holders to estimate an average induced salary, as this would result in an overestimation of induced wages and average salary income per induced job.

The 2,478 indirect job holders earned $151.4 million in indirect wages and salaries. The 76,856 related shippers/consignees of the cargo moving via the inland waterways received over $5.3 billion of personal income. Therefore, the total personal income impact and consumption impact related to the cargo activity on inland waterways is estimated at $6.4 billion.

1.4 State and Local Tax Impact of Cargo Activity on Inland Waterways

State and local tax impacts are based on per employee tax burdens which are developed at the county, local, and state jurisdictional levels. These tax per employee burdens are essentially tax indices that are used to allocate total taxes at each level of government to economic activity generated by the river terminals. To estimate the per employee tax indices, total taxes received at each governmental level in Alabama were developed for the Tax Foundation, which reports total state and local taxes from all sources as a percent of total personal income. State and local tax revenue metrics were also developed from the U.S. Bureau of Census, State and Local Government Finances.

Cargo activity on the inland waterways generated over $630 million of state and local taxes. Activity at the river terminals accounted for over $112.5 million of these taxes and economic activity created by the related shipper/consignees generated an additional $517.7 million of state and local taxes.

2. Economic Impacts of Cargo Activity by Navigable Waterways

A discussion of the impacts on each navigable waterway follows.

2.1. Warrior Tombigbee Waterway

Spanning over 400 miles of Marine Highway 65, from the conflux with the Mobile River, North through Birmingham and including the Locust and Mulberry Forks, the Warrior Tombigbee Waterway handled over 15.1 million tons of cargo in 2022. The value of commodities handled on the Warrior Tombigbee Waterway is $25.86 billion.[4] It is estimated that this volume generated 49,930 jobs in the region. Of these jobs:

- 1,616 jobs are directly generated by activities at the river terminals and if such activities should cease, these jobs would be discontinued over the short term. Of these 1,616 direct jobs, 784 jobs are with the river terminals and associated dependent shippers/consignees, 539 jobs are with the tug and barge operations including fleeting and cleaning, 147 jobs are with trucking moving the cargo to and from the river terminals, and 146 jobs are with marine construction and maintenance of infrastructure.

4 Calculated using commodity-specific valuations from the U.S. Census Bureau, USA Trade Online

- 1,771 jobs (induced jobs) are supported by the local purchases of the 1,616 individuals directly employed at the river terminals. An additional 881 indirect jobs were supported by nearly $241 million of purchases in the local and regional economy by firms providing direct cargo handling and barge services.

- 45,662 jobs are related to cargo shipped and received via the Warrior Tombigbee Waterway. These jobs are with related shippers/consignees using the river terminals and are mostly concentrated with jobs in steel, petroleum, and coal industries.

Demopolis Lock and Dam. Source: Port of Mobile

2.2. Tennessee River

The USACE reported Tennessee River tonnage for 2022 at nearly 28.7 million tons. The value of the commodities handled on the Tennessee River is $45.27 billion.[5] This tonnage also includes cargo in the states of Tennessee and Kentucky in addition to Alabama. Based on interviews with the terminal facilities in Guntersville, the Florence Lauderdale County Port Authority, and the Decatur Morgan County Port Authority regarding the cargo they handle, Alabama tonnage is estimated between 25-30% of the total reported Tennessee River amount.

Based on this amount, 30,857 jobs are influenced by Alabama cargo on the Tennessee River. Of these jobs:

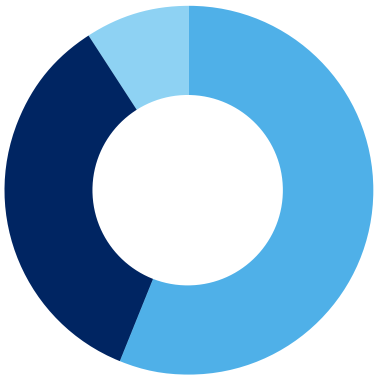
- 2,573 jobs are directly generated by activities at the river terminals and if such activities should cease, these jobs would be discontinued over the short term. Of the 2,573 direct jobs, 1,606 jobs are with the river terminals and the associated shippers/consignees using the terminals, 396 jobs with trucking, 75 jobs with rail operations moving the cargo to and from the river terminals, 330 jobs with tug and barge operations including fleeting and cleaning, and 165 jobs with maintenance and infrastructure investment.

- 2,836 jobs (induced jobs) are supported by the local purchases of the 2,573 individuals directly generated by port activity at the marine terminals. An additional 1,404 indirect jobs were supported by the $386 million of purchases in the local and regional economy by firms providing direct cargo handling and barge services.

- 24,044 jobs are related to cargo shipped and received via the Tennessee River terminals. These jobs are primarily with related shippers/consignees involved in agriculture, liquid bulks such as chemicals and petroleum, dry bulk commodities, and steel manufacturing and fabrication.

5 Calculated using commodity-specific valuations from the U.S. Census Bureau, USA Trade Online

Jobs Generated by Cargo Activity on Navigable Waterways

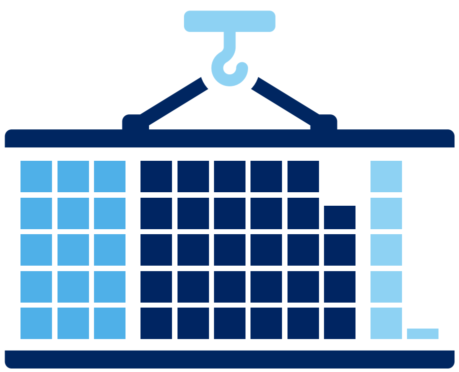


Warrior-Tombigbee:
49,930

Tennessee:
30,857

Tennessee-Tombigbee:
8,070

Cargo Tonnage on Navigable Waterways



Warrior-Tombigbee:
15.1M, worth $25.86B

Tennessee:
28.7M, worth $45.27B

Tennessee-Tombigbee:
5.3M, worth $20.04B

2.3. Tennessee Tombigbee Waterway

The Tennessee Tombigbee Waterway handled almost 5.3 million tons of cargo in 2022, and the value of commodities handled on the Tenn-Tom is $21.04 billion.[6] Shipments and receipts on the Alabama segment of the Tenn-Tom support 8,070 jobs. Of these jobs:

- 354 jobs are directly generated by activities at the river facilities and if such activities should cease, these jobs would be discontinued over the short term. Of these direct jobs, 162 are with trucking moving cargo to and from the river terminals, 93 jobs with river terminals and associated shippers/consignees, 92 jobs with tug and barge operations, and 6 jobs with marine construction and maintenance.

- 374 jobs (induced jobs) are generated by the local purchases of the 354 individuals directly generated by cargo activity at the river terminals. An additional 193 indirect jobs were generated by the $50 million of purchases in the local and regional economy by firms providing direct cargo handling and barge services.

- 7,149 jobs are related to cargo shipped and received via the Tenn-Tom Waterway. These jobs are primarily with related shippers/consignees involved in dry bulk commodities and steel manufacturing and fabrication.

Impacts on the Tennessee Tombigbee Waterway will increase once construction of the Enviva pellet plant in Epes is complete.

6 Calculated using commodity-specific valuations from the U.S. Census Bureau, USA Trade Online

3. Marinas and Recreational Boating

The marina and recreational boating sector includes all activities related to marinas along CAWA's five inland waterway segments, the vessels moored and/or stored at these marinas, and transient recreational boating activities. This sector also includes all recreational boat/watercraft dealerships, and amenities located at the marinas.

Marinas on each of the waterway segments range in size from a simple handful of slips next to a campground or RV park such as Sunset Cove on Logan Martin Lake, to a hundred or more slips and providing a variety of amenities including fueling, boat launch, bait and tackle, storage, restaurant/bar facilities, lodging, maintenance and concierge services. Southern Harbor Marina on the Chattahoochee River is one such facility offering fueling, a marina store, boat rentals, and lodging options.

Recreational usage was calculated by identifying the number of moored boats at the marinas, the number of power boat registrations in the state, and recreational lock usage from the Corps Locks report. An estimated 3,926 boats were identified as being moored at the marinas based on the number of slips available. 35,028 additional trailered boats were identified based on boat registrations through the Alabama Department of Conservation and Natural Resources and recreational statistics from the Corps Locks report. Average expenses for moored and trailered power boats and jobs to sales ratios for boat yards were used to estimate direct jobs and also applied to the induced and indirect models. Martin Associates maintains a proprietary expense profile for moored and trailered power boats, which includes costs associated with haul out, painting, storage, engine repair, electronics, ship stores, insurance, bank loans, etc. This data was corroborated with published estimated costs associated with boat ownership and maintenance as published in Marine Depot Direct (www.marinedepotdirect.com).

Exhibit II-3: Summary of Economic Impacts Generated by Marina and Recreational Boating Activity

JOBS	
Direct	660
Induced	460
Indirect	537
TOTAL JOBS	**1,657**
PERSONAL INCOME (1,000)	
Direct	$38,490
Re-spending/Local Consumption	$55,456
Indirect	$27,564
TOTAL INCOME (1,000)	**$121,509**
TOTAL ECONOMIC VALUE (1,000)	
Direct Revenue	$152,637
Re-spending/Local Consumption	$55,456
TOTAL ECONOMIC VALUE (1,000)	**$208,093**
STATE AND LOCAL TAXES (1,000)	**$14,143**

Since it is not possible to identify where the non-moored boats are located by river segment, as well as the time on each river segment, the impacts generated by the recreational boating cannot be isolated to a specific waterway and are estimated for the total waterways under study.

Exhibit II-3 on the previous page presents the economic impact results of marina and recreational boating activity in Alabama. Marinas and recreational boating generated 660 direct jobs on the inland waterways. Of these direct jobs, about 220 jobs are with suppliers of boat electronics, engine repairs, equipment; 27 jobs with haul out and painting, 43 jobs with suppliers of ship stores (food and beverages); 26 with bunkering; 180 jobs with insurance and banking; and 164 jobs with marina operations including food and retail sales, local repairs and direct employees of the marinas.

As the result of local purchases by those 660 individuals holding direct jobs in the marina and recreational boating sector, an additional 460 induced jobs are supported in Alabama. In addition, there are 537 indirect jobs generated through the $55 million of local purchases by businesses in the marina and recreational boating sector.

4. Cruise and Passenger Activity

Though cruise passenger impacts are not separated by inland waterway segment, most of the activity is dependent on the Tennessee River. American Cruise Line operates three river cruise ships which sail the Tennessee River and call on the ports of Decatur and Florence. Each eight-night cruise carries 180 passengers and offers various excursions in music history and Native American history, golf outings, and culinary experiences. Passengers are also able to visit the Huntsville Space and Rocket Center or just spend the day shopping. Local guides and buses are also employed. Expenditure profiles were created based on information provided by the Florence Lauderdale Tourism Board and summarized in Exhibit II-4.

Harriott II on the Alabama River.

Exhibit II-4: Average Expenditure per American Cruise Line Passenger

Food/Beverage	$30.00
Retail	$10.00
Entertainment/Sightseeing	$120.00
TOTAL	**$160.00**

Scenic and dinner cruises also generate jobs for boat operators and suppliers. Cruises are offered on Wheeler Lake and Pickwick Lake, accessed by the Tennessee River, and additional cruises operate on the Alabama River. The Harriott II, for example, is available for hire for private events but also offers two-hour dinner cruises on the Alabama River for between 20-50 passengers. An expense profile was created for the expenses incurred by the boat operators based on estimated passengers.

These expenditures were then used with the number of passengers using the various cruise and passenger excursions on the Alabama waterways. Jobs to sales ratios for each expenditure category were multiplied by the expenditures to estimate the direct jobs in Alabama supported by the cruise and passenger activity. Educational cruises sail the Chattahoochee River but are operated from the Georgia side of the river, so they are not included in this analysis.

Exhibit II-5 presents the economic impact results of the Cruise Passenger Activity sector.

5. Fishing Tournaments

The Alabama Bass Trail, the Alabama Bass Federation, and Bassmaster host multiple events each year at various lakes throughout the state. Expenditure data provided by the Alabama Bass Trail was applied to the identifiable tournaments in categories for lodging, length of stay, food, fuel, and bait/tackle and other retail purchases[7] and applied

7 Alabama Bass Trail Economic Impact, September 2023 by Jacksonville State University

Exhibit II-5: Summary of Economic Impacts Generated by Cruise Passenger Activity

JOBS	
Direct	241
Induced	89
Indirect	6
TOTAL JOBS	**336**
PERSONAL INCOME (1,000)	
Direct	$5,114
Re-spending/Local Consumption	$5,673
Indirect	$166
TOTAL INCOME (1,000)	**$10,953**
TOTAL ECONOMIC VALUE (1,000)	
Direct Revenue	$18,627
Re-spending/Local Consumption	$5,673
TOTAL ECONOMIC VALUE (1,000)	**$24,301**
STATE AND LOCAL TAXES (1,000)	**$1,067**

Exhibit II-6: Average Expenditures per Person per Day for Fishing Tournaments on the Alabama Waterways

Lodging	$152.30
Food/Beverage	$90.89
Fuel/Oil	$115.20
Retail	$62.63
Fish Supply	$75.33
TOTAL	**$496.35**

to an estimated 12,000 participants.[8] Additional smaller tournament schedules are published by the Alabama Department of Conservation and Natural Resources but lacked information regarding the number of participants and expenditures. Exhibit II-6 summarizes the average spending per person per day for the major fishing tournaments. These expenditures are then combined with the jobs to sales ratios and income metrics in the appropriate associated industry sectors using data from the U.S. Bureau of Census, for Alabama.

Exhibit II-7 on the next page summarizes these economic impact results. Additional smaller tournament schedules are published by the Alabama Department of Conservation and Natural Resources but lacked information regarding the number of participants and expenditures and are not included.

8 Economic Analysis of Impact and Activity of Guntersville Lake, December 2021by Jacksonville State University estimated 11,940 participants for 135 fishing events on Guntersville Lake in 2019.

Alabama Bass Trail
Tournament Series: Lake Martin.
Source: Alabama Bass Trail

6. Ship and Boat Building

The ship and boat building sector includes all activities associated with the building of commercial and recreational vessels as well as maintenance and repair of existing vessels. Shipyards provide repairs to vessels, either emergency or scheduled service. Commercial vessels include cargo and cruise ships, tugs, barges, and any other vessel that is operated with a documented crew. Recreational vessels include all yachts, sailboats and privately operated vessels.

Large firms such as Austal and Alabama Shipyards as well as smaller repair companies in Bayou La Batre, the Coden area, and elsewhere are captured as part of Port of Mobile economic impact. Based on interviews with the ship and boat repair yards it is not possible to accurately isolate yard business isolated only to the Alabama inland waterways. Based on these interviews, about 3,500 jobs are with the ship and boat yards located in Alabama.

III. CONCLUSION

It is to be emphasized that this analysis is based on a snapshot in time using 2022 tonnage. As recently as 2014, tonnage in Alabama exceeded 80 million tons. While volume is currently down in comparison, it has been impacted by multiple force majeure events. Most recently, the Demopolis lock and dam breach in January 2024 highlights the importance of Alabama's inland waterway system. During the five-month shutdown, shippers were forced to reroute cargo, sometimes adding up to two additional weeks and 1,500 miles to their transit. Others were forced to use alternate modes of transportation, shifting jobs and revenue away from the inland waterways.

Exhibit II-7: Summary of Economic Impacts Generated by Fishing Tournaments

JOBS	
Direct	121
Induced	43
Indirect	84
TOTAL JOBS	**247**
PERSONAL INCOME (1,000)	
Direct	$3,721
Re-spending/Local Consumption	$2,521
Indirect	$3,249
TOTAL INCOME (1,000)	**$9,491**
TOTAL ECONOMIC VALUE (1,000)	
Direct Revenue	$15,478
Re-spending/Local Consumption	$2,521
TOTAL ECONOMIC VALUE (1,000)	**$17,999**
STATE AND LOCAL TAXES (1,000)	**$1,268**

Additionally, a flood in 2019 shut down the Tenn-Tom for three months and the COVID pandemic in 2020 impacted the entire supply chain and its staffing. Even scheduled maintenance and repair of the locks and dams impact the inland waterway system and the volume able to be handled.

Cruise ship calling on the Port of Florence.

Thus, aging infrastructure and lack of funding for dredging and other improvements hinders Alabama from fully utilizing the inland waterways, contributing to an overall decline in tonnage handled. The Alabama Coosa Tallapoosa and the Apalachicola Chattahoochee Flint Rivers have no reported commercial cargo since 2010 and 2005 respectively, rendering the state docks at Columbia, Eufaula, Selma, and Montgomery inaccessible to barge traffic. Proposed investments in pellet mills and fuel terminals along these waterways would create river-dependent jobs if the rivers are dredged to a navigable level. The potential impact of this possible tonnage increase is calculated in a separate paper.

Aside from those examples, the Statewide Freight Plan published by the Alabama Department of Transportation in 2022 projects commodities shipped via inland waterways to be slightly higher than current levels by 2050 with increased demand in base metals, basic chemicals, and machinery. Meeting any increase in demand will necessitate continuous infrastructure improvements and funding for all inland waterways.

Deficient waterway maintenance doesn't just impact cargo activity; it also affects recreational boating. Debris, sandbars, and other obscured obstacles can be dangerous for anyone trying to navigate the waterways.

Despite these challenges, overall, Alabama's inland waterways are a strong economic force for the state, accounting for the direct, induced, and indirect jobs created by Alabama's maritime industries. Additionally, the volume of cargo transported via barges on the inland waterways reduced the number of trucks on Alabama roads by over 850 thousand, assuming 25 tons per truck.

CAWA

THE COALITION OF ALABAMA WATERWAY ASSOCIATIONS

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Cover Image: Black Warrior River.
Source: Wikimedia Commons