# The Future of the Louisiana Waterways Transport System: A System Analysis and Plan to Move Commerce by Water

## INTRODUCTION

Moving commerce by water represents 25 percent of all goods movements within Louisiana and is a critical component of the multi-modal transportation system in the state. To be best positioned for future development and investment, the Louisiana Department of Transportation and Development's (DOTD) Office of Multimodal Commerce (OMC) needed to develop a comprehensive, statewide waterways transportation system plan. The plan would be capable of dovetailing into, and be a complement for, the Louisiana Statewide Transportation Plan. In doing so, it will provide the OMC the ability to identify potential choke-points in the multimodal commerce network and ultimately assist in the development of strategies and capital investment programs to relieve these choke-points through running "what-if" scenarios of the impacts of potential modal shifts on localized congestion.

## OBJECTIVE

To be able to develop this plan with a capability of providing a level of planning and forecasting guidance, it is necessary to identify the type and value of waterborne commerce, thereby providing the focus for the analysis and documentation of the impact and importance of waterborne commerce on the state of Louisiana, its transportation system, and, as such, identify the regional and national level of returns on investment in the network. By implementing the Louisiana Waterways Analysis Tool Evaluating Regional Systems (LA WATERS) technical support platform, OMC is provided the basis for present and future analysis in support of identifying opportunities for alleviating multimodal bottlenecks relative to waterways. Finally, the compilation of research, analysis, and technical deliverables provide the basis for the draft Waterways Transportation Plan that can be streamlined into the Louisiana Statewide Transportation Plan.

## SCOPE

### Analyze and Document the Economic Impact and Importance of Waterborne Commerce

Economic Impact Methodology:
- Quantification of indirect and induced economic impacts.
- Statewide and national economic impacts estimated using a standard regional economic model.
- Statewide results allocated to smaller geographic areas based on QCEW and CBP base data.

### Opportunities and Challenges for the Waterway System

In focusing on the opportunities and challenges for the waterway system, the study included the following:
- Identify the improvements needed to achieve greater utilization of the Louisiana waterways.
- Identify opportunities for relieving multimodal bottlenecks to waterways.
- Analyze data of the Louisiana's intracoastal and inland waterways, including port-by-port available economic surveys.

### Data Management Tools

Through the collection of information, historical precedent, statistics, conditions, assessments, and extensive available data, the develop the Louisiana Waterways Analysis Tool Evaluating Regional Systems (LA WATERS) platform required for applying specific information in determining effective waterway infrastructure solutions and assisting in operational decision-making. Furthermore, this platform serves as the basis for developing and applying systematic, transparent, and consistent protocols and processes in the assessment of the waterway systems and application of available resources.

## METHODOLOGY

In establishing a depiction of Louisiana's current state of waterborne transportation, this study identifies the type and value of waterborne commerce as well as analyzes and documents the impact and importance of waterborne commerce. The output of these tasks provides an assessment of Louisiana's waterborne commerce by commodity and industry at a regional level.

In addition, businesses and port terminals that depend on Louisiana's navigable waterway system are identified by industry type, company name, and product.

The type and value of waterborne commerce is documented by using domestic freight flows of imports and exports from the Freight Analysis Framework. These data capture trade flows between locations in the United States and four zones within Louisiana. To further disaggregate those data to smaller geographies aligned with each Louisiana port, industry, and employment, data from the QCEW and CBP were used.

Automatic Identification System (AIS) data was transformed into a temporal spatial data set of vessels and their movements. The Commercially Navigable Waterway V5 data set published by the U.S. Department of Transportation and the Pipeline and Hazardous Materials Safety Administration is a network suitable for network analysis of the navigable waterways. Boundary geometries were created to represent the water's surface, which could be used to capture vessels that entered a waterway segment. The comparison of waterway traffic through specific years demonstrates potential delays that can be targeted for further analysis, potential solutions, and project selection analysis.

## CONCLUSIONS
Louisiana's intracoastal and inland waterway system is well established, with nearly 2,820 miles of navigable waterways, ranking it second in the nation. Louisiana is highly dependent upon trucks for the movement of most of its freight, despite 2,820 miles of inland waterways throughout the state. Marine transportation is an essential component in the transportation system and is currently underutilized. Louisiana requires a transportation paradigm shift through the implementation of appropriate planning and management in order to seize upon this competitive advantage of an abundance of navigable waterways and, in doing so, the development of the increased utility of these waterways. The intracoastal and inland waterways are a source of economic activity, development, vitality, and growth for the parishes and areas that they serve. Freight forecasts suggest total water tonnage will increase at an annual growth of 0.7 percent per year through 2040. These waterways contribute socio-economic benefits that are measured in value by business activity, personal income, employment, recreational opportunities, environmental appreciation, and many other aspects important to the parishes and areas that these inland waterways serve.

Waterborne commerce generates 52,400 direct jobs that are associated with $5.5 billion in labor income, $22.2 billion in value added to Louisiana's economy, and $83.2 billion in new output (or sales) across Louisiana. The total economic impact of the waterborne commerce labor market is equivalent to more than $14.4 billion in labor income, $40.7 billion in value added, and $125.5 billion in output (or sales) due to waterborne commerce.

As per the individual port consultation surveys, economic surveys, and data analysis, the Louisiana's intracoastal and inland waterways are not optimized "as a reliable means of transporting goods." The connectivity of the inland shallow draft network provides significant opportunity for transshipment to shallow draft for further distribution and deeper penetration into the Louisiana Inland Waterways system. As such, the waterways should at a minimum be predictably maintained at as advertised depths levels as they do provide numerous economic and recreational opportunities to the local and regional economy.

## RECOMMENDATIONS
The DOTD OMC should continue to be the lead agency for monitoring waterway systems and serve as the lead agency in Waterborne Commerce related data management. This will help facilitate DOTD in improving integration of the waterborne commerce system with the Louisiana Statewide Transportation Plan and the state's overall transportation system.

Expanded shallow-draft operations, and improved integration with the Louisiana Statewide Transportation Plan, is a key strategic approach to reduce road/rail congestions, reduce carbon emissions, and reduce the burden on the land transportation system. Shallow-draft transportation is fundamentally a more efficient mode of goods movement that can reduce road congestion and fuel costs, which is significant, given the continued increase in fuel prices.

Maintain an up-to-date database of Louisiana's intracoastal and inland waterway system. To maintain and manage Louisiana's waterways, an extensive record of all commercial waterways should be compiled in a dedicated database. Establish a standardized data reporting protocol for goods, commerce, and economic reporting data.

Continue to build the data sources and analysis methodologies through the LA WATERS platform in assessing the ability of recommended operational strategies and individual projects in mitigating the dynamic challenges of the waterways. Record and track inputs from stakeholders through the LA WATERS platform for establishing historical baseline data, benchmarks, and trend analysis.

Provide higher level resolution economic impact analyses, and benefit cost analyses of proposed projects, evaluated both individually and as a portfolio of projects implemented together. Apply the Least Cost Market Analysis (LCMA) framework to define, identify, and target remedial actions and required resources when moving forward with programmed projects.

Recommend comprehensive training in the implementation of the LA WATERS platform and analysis tools. The wide spectrum of economic, engineering, and planning information available for the management of the waterway systems requires training in the application of these tools and developing both user and manager skill levels to fully realize the benefit of this centralized data repository. The platform is dynamic in its evolution and will require continued regular maintenance and update to keep up with the ability to quantify micro and macroeconomic impacts to the Louisiana waterways system.