Gateway Choice Is a Total Cost and Reliability Decision

Implications for Inland U.S. Supply Chains from Asian Imports

Companion Report to Georgia Tech SCL Analysis (Jan 5, 2026)

Introduction

This paper, developed by the Georgia Tech Supply Chain and Logistics Institute (SCL), presents a data-driven analysis of Asian import flows through Los Angeles/Long Beach (LA/LB) and Savannah, with a focus on inland destinations including Atlanta, Memphis, and Nashville.

For many years, gateway selection for Asian imports has been treated primarily as an ocean freight decision. Rates from Asia to the West Coast versus the East Coast are visible, negotiated frequently, and often used as the primary lens for routing decisions. The work summarized here suggests that this approach is incomplete and, in many cases, misleading for inland supply chains. The findings point to an important conclusion: total landed cost and arrival reliability are driven far more by inland transportation and port dynamics than by ocean transit time or ocean rates.

This has practical implications for how shippers design networks, allocate volume across gateways, and manage service risk.

Rethinking the Decision

The analysis takes a full end-to-end view of the supply chain, incorporating ocean transit, port dwell and transfer, inland transportation, and final delivery timing. Importantly, results are presented in terms of planning-relevant arrival outcomes rather than best-case averages.

This distinction matters. In practice, supply chains are managed not by average performance, but by variability and the risk of delay. While ocean transit times are relatively stable and predictable, the inland portion of the journey introduces meaningful variability through dwell time, transloading, rail staging, and multiple handoffs.

What emerges is a shift in perspective. The ocean leg, which has traditionally dominated decision-making, is not the primary driver of performance for inland markets. Instead, inland cost structure and time variability determine both total landed cost and service reliability.

What the Data Shows

Across Nashville, Memphis, and Atlanta, a consistent pattern appears. Shipments routed through Savannah typically experience longer ocean transit times, but this is offset by faster and more predictable port transfer and inland movement.

For Nashville, Savannah arrivals occur later on average, yet the arrival window is tighter and more predictable. At the same time, inland transportation costs are significantly lower than those associated with LA/LB routing. The net result is a lower total landed cost, approximately $1,000 per 40-foot container (FEU) across modeled scenarios, with variation depending on lane conditions, combined with improved predictability.

Memphis shows a similar version of this tradeoff. While Savannah routing introduces additional ocean time, LA/LB routes exhibit materially wider variability due to rail dwell and transfer complexity. Inland cost differences again dominate, leading to a consistent cost advantage for Savannah of approximately $1,000 per FEU across modeled scenarios, with variation depending on lane conditions, along with reduced service risk.

Atlanta, as a large and balanced inland market, provides a useful reference point. Here, total transit times are broadly comparable between gateways, with Savannah occasionally arriving slightly later. However, Savannah shipments show tighter arrival windows and a sustained cost advantage of approximately $1,000 per FEU across modeled scenarios.

Taken together, these markets reinforce a common theme: the modest increase in ocean transit time associated with East Coast routing is more than offset by improvements in inland cost and reliability, with a consistent and material per-container cost benefit.

Figure 1 illustrates how these recurring patterns can be presented in a framework for choosing gateways.

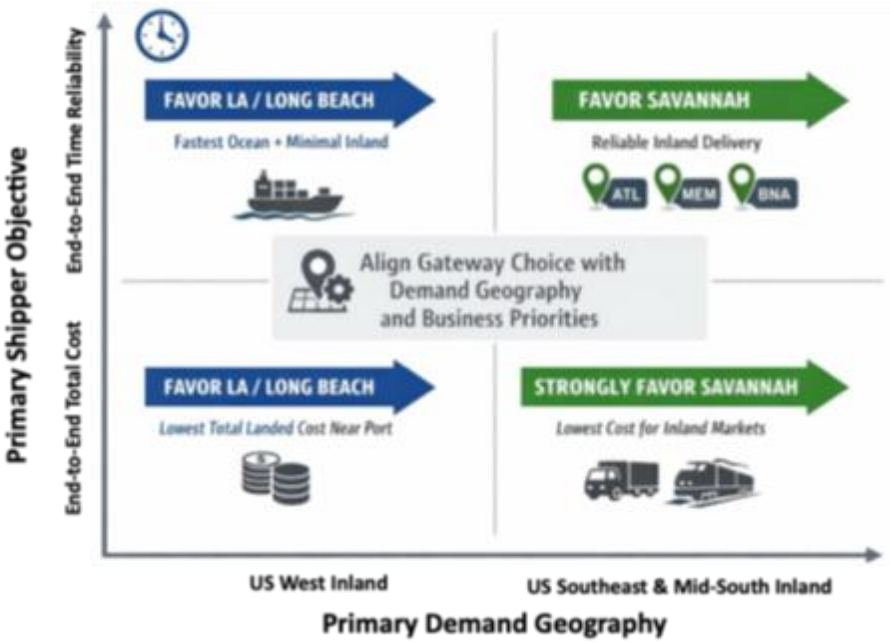

Figure 1: Gateway selection framework highlighting the tradeoff between ocean transit advantages (LA/Long Beach) and inland cost and reliability advantages (Savannah), emphasizing alignment with demand geography and business priorities.

Understanding the Drivers

The drivers behind these results are operational and structural rather than situational.

First, port and transfer dynamics differ significantly between gateways. At LA/LB, inland-bound freight frequently requires transloading into domestic containers and/or off-terminal rail loading. Each step introduces cost and variability. Dwell times fluctuate based on congestion, equipment availability, and rail scheduling.

In contrast, Savannah benefits from more direct inland connectivity, particularly for Southeast markets. Port transfer times are shorter, and the number of required handoffs is reduced. This leads not only to faster progression through the port but, more importantly, to more consistent outcomes.

Second, inland transportation costs are the dominant factor in total landed cost for these markets. While ocean freight to Savannah carries a premium, inland costs from LA/LB to the Southeast and Mid-South are substantially higher — consistently outweighing the ocean rate differential and producing a net cost advantage for Savannah across all three markets studied.

Finally, variability plays a central role. LA/LB routings exhibit wider arrival distributions due to dwell time and rail transfer uncertainty. Savannah routings, while longer in ocean transit, produce tighter and more predictable arrival windows. For supply chain planners, this reduction in variability translates directly into improved service levels, reduced safety stock requirements, and fewer expedited shipments.

Strategic Implications

The findings suggest that gateway strategy should be aligned more closely with demand geography and business objectives. For inland Southeast and Mid-South markets, Savannah provides a structurally advantaged option in both cost and reliability for the scenarios we developed. For West Coast consumption or short inland hauls, LA/LB remains an effective and often preferred gateway.

Rather than viewing these gateways as substitutes, the data supports a portfolio approach. Shippers can reduce both cost exposure and service risk by aligning gateway selection with where demand is consumed and by actively managing the mix of volume across ports over time.

This represents a shift from a static routing strategy to a more dynamic and deliberate allocation of volume based on network performance.

Conclusion

The core insight from this work is clear. Gateway choice should not be driven by ocean rates alone. For inland markets, total landed cost and arrival reliability are determined primarily by inland transportation and port dynamics.

Shippers that continue to optimize for ocean cost alone risk higher total cost, greater variability, and increased service challenges. Those that adopt a broader, end-to-end perspective grounded in how supply chains actually perform are better positioned to improve both efficiency and resilience.

Appendix: Methodology Overview

This analysis is based on a structured, end-to-end modeling approach developed by Georgia Tech's Supply Chain and Logistics Institute. The objective was to reflect how supply chains perform under real operating conditions, rather than relying on simplified averages or isolated benchmarks.

The study tracks container movements from ten major Asian origin ports to U.S. gateways, using AIS (Automatic Identification System) vessel tracking data to measure ocean transit times with high accuracy. Berthing and unloading times are derived from port call data, with unloading estimated as a portion of total berth time to ensure consistent comparisons across ports. Inland movement is modeled as a sequence of operational steps, including port dwell, transfer, rail or truck transport, and final delivery.

To reflect real-world uncertainty, each segment of the journey is modeled using statistical distributions selected based on observed data patterns. Monte Carlo simulation is then used to generate thousands of end-to-end scenarios, producing a range of possible outcomes rather than a single average. Results are reported using planning-relevant percentiles to capture both expected performance and variability.

Cost Modeling Approach

The cost component of the analysis was developed using a bottom-up, activity-based framework designed to mirror how logistics costs are actually incurred and evaluated in practice.

Rather than relying on a single benchmark rate, total landed cost is constructed by summing the individual cost elements associated with each leg of the journey. These elements include ocean freight, port drayage, transloading (where applicable), rail or truck transportation, and final delivery. Each component is modeled separately and then combined to produce a full door-to-door cost view for each routing scenario.

Ocean freight assumptions are grounded in widely referenced market indices and industry benchmarks, reflecting both spot and contract conditions for Asia–West Coast and Asia–East Coast lanes. The analysis captures the consistent premium associated with East Coast routing, which is driven by longer sailing distances and canal routing considerations.

Inland transportation costs are where the analysis becomes more differentiated. For LA/LB routings, the model explicitly includes the cost of transloading from 40-foot international containers to 53-foot domestic containers, along with associated handling, labor, and facility charges. This step is required for a portion of rail moves to inland destinations and represents a meaningful cost component that is often overlooked in high-level comparisons.

Following transloading, inland movement from LA/LB is modeled using both truckload and intermodal rail options. Truckload rates are based on current market benchmarks and load board data, while intermodal pricing is derived from observed relationships between truck and rail rates, supported by broker inputs and historical ratios. This reflects the reality that intermodal pricing is less transparent but still follows consistent structural relationships.

For Savannah routings, inland costs are modeled using a combination of direct drayage and on-dock rail options. Because Savannah is geographically closer to the Southeast and Mid-South markets, these moves are shorter, involve fewer handling steps, and avoid the need for transloading. Cost inputs are based on regional drayage quotes, intermodal benchmarks, and publicly available port-related cost structures. All costs have been vetted with large scale shippers and logistics providers involved in these trade lanes.

Across all scenarios, cost ranges are developed using a combination of index data, broker quotes, online freight tools, and direct industry inputs. The intent is not to capture a single “market rate,” but to establish a credible and representative range that reflects what a knowledgeable shipper would expect to pay under current conditions.

Linking Cost and Service

An important aspect of the methodology is that cost and service are evaluated together rather than in isolation. Each simulated shipment includes both a total cost outcome and a corresponding arrival time outcome, allowing for direct comparison of cost–service tradeoffs across routing options.

This integrated approach highlights a key insight from the analysis: lower ocean rates do not necessarily translate into lower total landed cost, and faster average transit times do not necessarily produce better service outcomes. The interaction between cost structure and variability is what ultimately determines supply chain performance.

Intended Use

The results are designed to support strategic decision-making rather than tactical procurement. The model provides a consistent, data-driven way to compare routing options and understand tradeoffs, but it is not intended to replace lane-specific rate negotiations or real-time execution data.

The strength of the approach lies in its ability to capture the structural differences between gateway options and to translate those differences into decision-relevant insights for network design, inventory planning, and risk management.