

# IV

## PERSPECTIVES ON FLORIDA'S UNIQUE TRANSPORTATION SUPPLY CHAIN



IN FLORIDA, LOGISTICS COSTS PRESENT A MUCH LARGER PROBLEM THAN ELSEWHERE BECAUSE OF THE STATE'S LENGTHY PENINSULA AND THE TRANSPORT IMBALANCES INHERENT IN OUR EXISTING TRADE PATTERNS. SEVERAL OCEAN CARRIERS WHO CONDUCT BUSINESS IN FLORIDA FIND THAT GOODS, SERVICES, AND TRANSPORTATION COST MORE HERE THAN ELSEWHERE. THESE TRANSPORTATION SYSTEM INEFFICIENCIES CAN NOT BE TOTALLY ELIMINATED, BUT THEY CAN BE MITIGATED BY UNDERTAKING INNOVATIVE MEASURES THAT LOWER TRANSPORTATION COSTS.

### AS TRANSPORTATION SYSTEM CONGESTION INCREASES, SO DOES THE COST OF MOVING FREIGHT IN INTERNATIONAL COMMERCE

**Florida's commercial freight carriers are spending increasingly more time in gridlock.**

This gridlock makes it more difficult for trucks and commercial delivery vehicles to meet vendor and supplier schedules, which in turn hinders the entire freight distribution system on which our economy depends. A typical freight delivery trip in urban areas during peak travel hours now averages 32 percent longer than a non-peak period trip. Unfortunately, in many urban areas – including those in South Florida and elsewhere in the state – "non-peak" periods are increasingly rare, with traffic heavy throughout much of the 24-hour day. The additional logistics costs of this congestion are initially absorbed by the commercial carriers and then passed on to consumers in the form of higher commodity prices.<sup>1</sup>

**Higher transportation costs directly affect the state's economic competitiveness when potential suitors compare Florida routes with those of alternative domestic or international supply chains.**

Urban traffic congestion costs the country a minimum of \$78 billion annually in wasted fuel and lost time. With people and commercial freight spending more time in "gridlock," the average cost per person of

congestion in the U.S. has reached \$625 annually – a 39 percent increase since 1990, when adjusted for inflation.<sup>2</sup>

### PUBLIC/PRIVATE SECTOR COOPERATION CAN INFLUENCE STRATEGIC POLICY OPTIONS FOR INTERMODAL FREIGHT TRANSPORTATION

**Florida's public and private sector transportation community has contributed to the construction and operation of freight intermodal facilities in several ways.**

In recent years, the public and private sectors of Florida's transportation community have come together to support strategic investments in the state's multimodal transportation infrastructure. In this new millennium, this progressive approach for continued economic development must evolve even further by requiring public involvement with greater private sector support to achieve least-cost transportation. Ways in which the public sector, in partnership with the private sector, can and have contributed to the construction and operation of freight intermodal facilities include:

- **Through direct financing of all or part of an intermodal project or providing the transportation system infrastructure to designated facilities.**
- **As a fiscal agent such as the Florida Ports Financing Commission that can use creditworthiness and tax-exempt status to secure loans for intermodal facility infrastructure.**
- **As a taxing agent to collect revenues that otherwise would not be available to develop and operate such facilities through the pricing of services.**
- **As an agent that coordinates the activities of various parties to bring joint projects to fruition.**
- **As an entity that conceivably exercises eminent domain to obtain strategic properties necessary for the efficient operation of joint use infrastructure.**<sup>3</sup>

## HOW, WHERE, AND WHY FREIGHT MOVES WITHIN AND ACROSS STATE BOUNDARIES: THREE HYPOTHETICAL EXAMPLES OF FREIGHT FLOWS IN FLORIDA

Florida's north/south geography and the location of the state's natural resources within its more than 300-mile-long peninsula create transportation logistics patterns that differ from region to region, depending on how far diverse commodities, both domestic and global, must travel.

To understand Florida's unique, but diversified, freight logistics chain and rate structures as well as its potential, one must understand and visualize how goods move to, from, and within the state, and why. To accomplish this, three mutually exclusive and independent examples follow, showing diverse commodity movements across Florida's intermodal transportation infrastructure. Each of these logistical cases has characteristics that affect Florida's transportation competitiveness with potential out-of-state routing choices for both domestic and international cargo.

For this discussion, the ten most common commodities, based on tonnage, were used to identify patterns of freight within the state and beyond.<sup>4</sup> These commodities comprise weighty bulk products of domestic origin as well as less heavy consumer goods imported or exported through Florida's seaports.

- 1 Food or kindred products
- 2 Lumber or wood products
- 3 Pulp, paper, or allied products
- 4 Chemicals or allied products
- 5 Clay, concrete, glass or stone products
- 6 Transportation equipment
- 7 Waste or scrap materials
- 8 Miscellaneous freight shipments
- 9 Containers, carriers or devices
- 10 Miscellaneous mixed shipments

## CASE ONE:

### A NORTH/SOUTH CONTAINER SHIPMENT FROM MARACAIBO, VENEZUELA VIA MIAMI TO ATLANTA, GEORGIA, OVER THE ATLANTIC COASTAL TRADE CORRIDOR.

#### Intermodal Components of the Corridor

This corridor contains a peninsula-long road and rail network comprising I-95 and I-75, two major interstates within Florida's Intrastate Highway System; and the Florida East Coast Railway (FEC), the only long-distance north-south railroad on Florida's Atlantic Coast.

The two interstates are among the most densely traveled and congested in the nation, carrying more than 5,000 commercial trucks per day. They transport over 78 percent (by value) of the freight moving to and from the region.

The Class II FEC serves some of the state's most densely populated areas and is the exclusive rail-service provider to the Port of Palm Beach, Port Everglades, and the Port of Miami as well as to Florida's Space Coast. The FEC moves over 25 million tons of freight to and from the South Florida region via Jacksonville.

Crushed limerock from South Florida, used in the state's road building industry, and international and domestic containers, moving in both northerly and southerly directions, comprise a majority of the railroad's revenue traffic. Except at Jacksonville, no freight connection exists in this corridor between the FEC and the CSX Transportation (CSXT), the other major railroad serving the state.

#### Strategic Issues

The length of Florida's peninsula and the state's historic import/export balance of trade with its primary trading partners in Latin America and the Caribbean combine to create a significant "transportation imbalance" from South Florida markets to points north in the continental United States.

Large population centers in Central Florida and South Florida demand equally large quantities of domestically and internationally produced consumer goods, thereby favoring a north-to-south freight logistics chain. The domestic trade, coupled with international exports destined to trading partners in the Caribbean Basin and Southern Hemisphere, have historically worsened transportation equipment utilization problems within the state.

Florida's growing consumer markets require carriers to serve them. They also then require those carriers to absorb costly equipment turnarounds, in many cases returning transportation equipment empty, or at best partially loaded, to the point of origin. For example, three times as many fully loaded international containers are shipped to South Florida destinations by rail from points outside and within the state as move in the opposite direction. Conversely, six times as many empty international containers move northward as are shipped to South Florida

destinations from points outside and within the state. This full-load-to-empty proportion creates an equipment utilization imbalance that increases the cost of transportation to and from the South Florida region.<sup>5</sup> The situation affects both railroad transport and motor carrier operations. Because of these market forces, rate structures in Florida tend to be somewhat higher than comparable 300-mile freight movements elsewhere in the country.

The rate charged for moving a container is directly correlated to the type and weight of the commodity, the number of interchanges between modes of transport, the distance moved, the return of the container and transport equipment to the point of origin (back-haul), whether loaded or empty, and the profit margins associated with the supply chain dictated by global market conditions.

Shipping goods to and from South Florida may require several changes of transportation mode.

Exhibits IV.A and IV.B show a hypothetical but typical routing and modal transport structure for a 20-foot container moving from Maracaibo, Venezuela to Atlanta through the Port of Miami:

Exhibit IV.A portrays a most likely scenario with the container moving through the Port of Miami, trucked to a transfer yard some 15 miles away, railed or trucked from that location via the FEC and/or I-95 to Jacksonville and then, in many cases, transloaded once more for final delivery to the Greater Atlanta region.

Exhibit IV.B portrays an “enhanced” and potentially more cost-effective container movement scenario that eliminates at least two and potentially three transfers between modes as well as the added costs attributable to these operations.

This point is demonstrated in Exhibit IV.C by assuming a

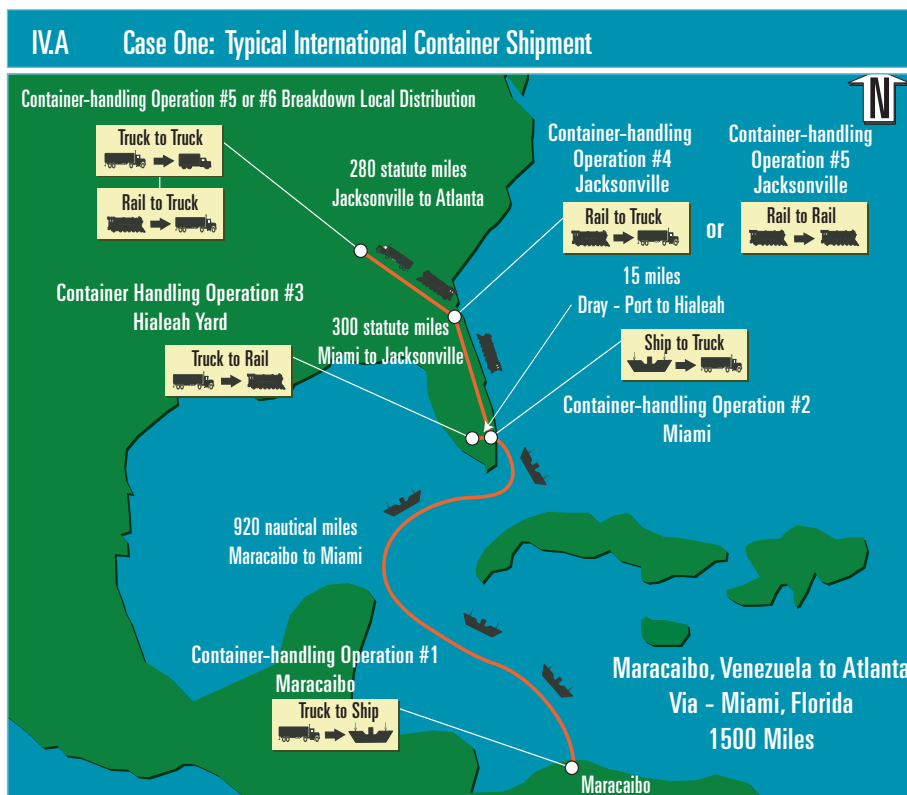
hypothetical cost of \$5,000 for transporting an international container from its point of origin (Point A) to its final destination (Point B). The physical one-way transport of the container covers approximately 1,500 miles, with four separate and redundant interchanges of the container between freight transportation modes:

- **Truck to ship in Maracaibo (Point A) for transport to the Port of Miami.**
- **Ship back to truck at the Port of Miami for transport to the nearest railhead or truck transloading facility. Truck back to rail or to third truck at the transloading yard for long-haul transport to Jacksonville.**
- **Rail (or truck) to another truck for short-haul transport from Jacksonville to Atlanta (Point B).**

The rough order-of-magnitude breakdown of the cost by category for a typical container move in Exhibit IV.C provides an idea of where some costs might be reduced to enhance transport efficiencies:<sup>6</sup>

As much as 50 percent of the total container transport costs, as represented by Exhibits IV.A and IV.B, can be attributed to trucking the container between the loading and unloading facilities, terminal operations/lift fees associated with transferring the container between modes of transportation, and container/chassis use charges.

A potential saving of 25 percent of the total transport cost might be realized by eliminating two or three transfer operations and using new technologies.



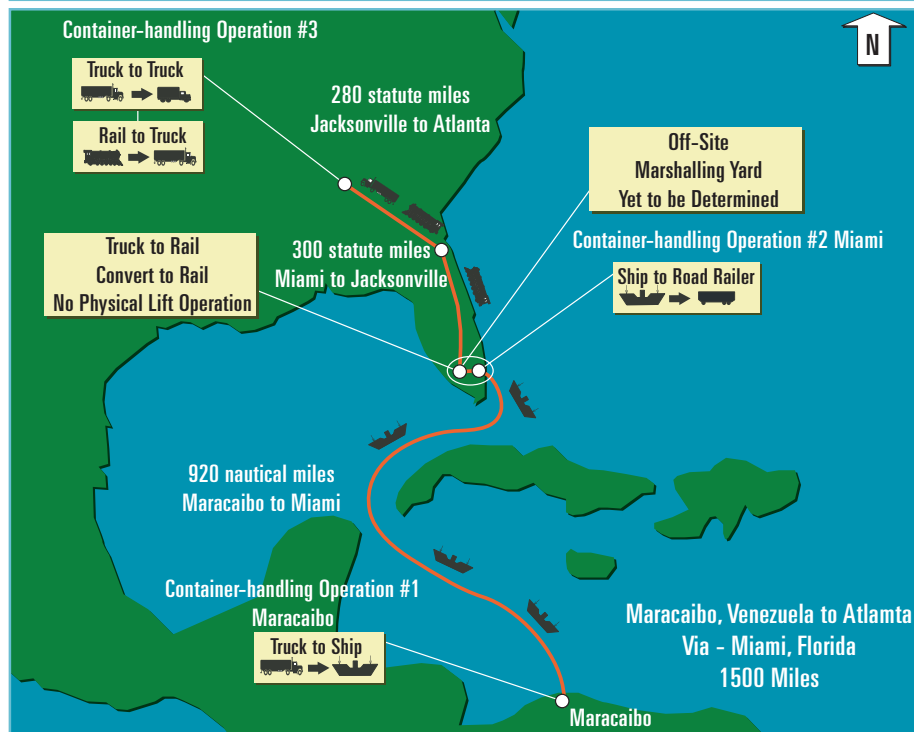
Such a cost reduction offers effective measures for increasing transport efficiencies and increasing profitability in all components of the transport supply chain. Savings would be attributable to the cost of trucking the container between facilities, handling and transferring it, and equipment leasing in Florida's transportation market. Costs and rates can also be affected either positively or negatively by back-haul charges. If the container can transport goods on the trip back to its point of origin, then revenue can be generated to offset the backhaul cost.

Transportation and economic benefits to Florida, in addition to the potential cost saving to the shipper from the scenario shown in Exhibit IV.B, include the mitigation of roadway congestion in the Miami-Dade and Broward County region and along the Atlantic Coastal Corridor by exploring new technologies such as an innovative road-to-rail dual chassis. In addition, by effecting a partial modal shift from road to rail, a significant number of trucks now moving by road, both statewide and locally, could be eliminated, minimizing wear and tear on the existing roadway infrastructure. Coastal waterway transport might also provide a cost-efficient alternative.

### Recommended Actions

- Encourage a partial shift in the mode of transportation for some goods. Opportunities exist in this region to shift some goods movements from road to rail, rail to road, or even road to air or water where cost effective and operationally feasible.

## IV.B Case One: Enhanced International Container Shipment



- Explore new technologies such as direct container/chassis conversion from truck to rail and vice versa.
- Construct a railroad connection between the FEC and the CSXT in Palm Beach County.

Transportation cost constraints, revenue opportunities, and continued trade growth on Florida's peninsula in the future depend

on joint stakeholder planning, cooperation, and financing to remain competitive.

Partial modal shifts from truck to rail or vice versa could be influenced by joint public /private policies. Implementing the recommended actions will require direct involvement of the public and private sectors, both fiscally and institutionally.

## IV.C Container Movement Costs

CATEGORY OF TRANSPORT ACTIVITY	COST	PERCENTAGE OF TOTAL
Pickup and delivery (drayage)	\$1,250	25
Terminal Operations (Lift Fees/Lease Charges)	\$1,000	20
Line-haul Modal Costs	\$1,750	35
Container/Chassis Use Charges	\$ 250	5
Administrative Costs (Carriers/Forwarders/Shippers)	\$ 500	10
Other	\$ 250	5
<b>TOTAL COSTS/PERCENT</b>	<b>\$5,000</b>	<b>100</b>

Source: Intermodal Association of North America

## CASE TWO:

### LONG-DISTANCE DOMESTIC AND INTERNATIONAL FREIGHT MOVEMENTS BETWEEN EAST AND WEST BY TRUCK AND RAIL FROM JACKSONVILLE TO PENSACOLA AND BEYOND, OVER THE NORTH FLORIDA EAST-WEST TRADE CORRIDOR.

#### Intermodal Components of the Corridor

This corridor, which encompasses the intrastate portion of I-10 and the CSXT railroad, is of strategic importance to Florida and to the nation in that it connects state markets and the Atlantic seaboard with western domestic hinterlands, and with the road and rail land bridges linking the West Coast megaports with trade routes to Asia. At present, the corridor is perhaps the least congested and has the most available freight capacity of any trade and transportation corridor in the state.

Within the last ten years, however, the average annual daily truck traffic within this corridor has increased from approximately 5 percent of the total traffic to over 15 percent. Continued strong growth is anticipated along this corridor with concomitant increases in the movement of diverse commodities, including automobiles and other consumer goods.

Of the total tonnage moved by Florida's fourteen Class I, II and Terminal railroads in 1999, CSXT accounted for 78 percent of the total transported or approximately 131 million tons.<sup>7</sup>

Included in this strategic east/west corridor is the 368-mile CSXT railroad mainline from Jacksonville to New Orleans via Pensacola. Rail tonnage moved in this corridor represents between 10 to 13 percent of Florida's total annual railroad tonnage and includes primarily bulk products such as nonmetallic minerals, food, lumber and lumber products, chemicals, automobiles, and some containerized mixed shipments. CSXT is the largest railroad carrier in Florida in terms of both its physical plant and its volume.

#### Strategic Issues

This is primarily a "transshipment" corridor with relatively little origination or termination of products due to a lack of major consumption/population centers along its length, such as those evidenced in Central and South Florida.

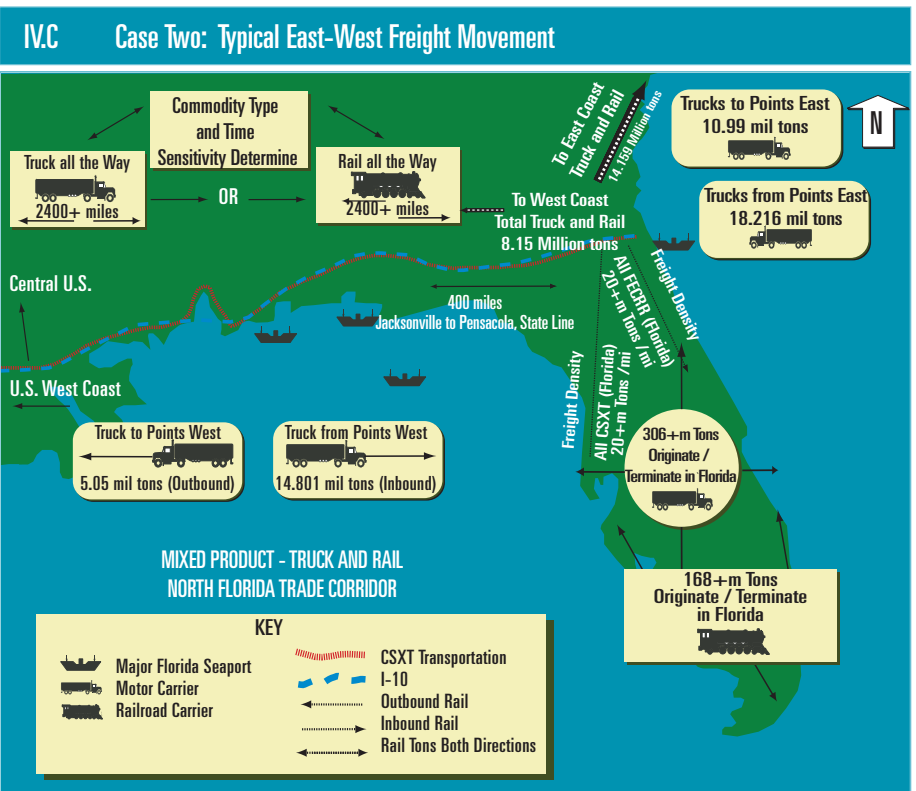
Transportation economics and logistics for the North Florida East-West Trade Corridor differ significantly from those for the Atlantic Coastal Trade Corridor. Goods that do originate or terminate from intrastate corridor operations do so primarily at Jacksonville's Baldwin Yard, in Tallahassee, or in Pensacola. This is primarily due to the strategic location of the Port of Jacksonville,

one of the largest deepwater seaports in Florida by commodity volume and value.

Eighty percent of truck transport in the I-10 corridor represents long-haul origins or destinations of more than 300 miles, while 90 percent of railroad transport is similarly long distance in nature.

This is a "long-haul" corridor by definition due to the I-10 federal interstate and CSXT east-west mainline land-bridge to western markets.

Exhibit IV.C shows typical truck and railroad movements across the corridor, from points west of Florida's borders to Jacksonville and vice versa. The more than 400-mile distances in Florida and the more than 2,400-mile distances to and from points west beyond Florida's border are beyond the break-even point economically as to whether rail or truck would be the preferred transport mode. More often than not, the commodity,



volume of product to be moved, and time sensitivity for delivery dictate this choice.

Since drayage and transloading are not significant factors for products currently transported in this Florida region, rate structures and transportation costs are affected more by externalities to Florida such as fuel costs, crew wages (operational costs), volume of product and global market conditions than by “cost added” features imposed within Florida, such as congestion, bottlenecks, or geography. As a result of these circumstances, Florida transportation industry stakeholders’ ability to influence the transportation cost structure in this corridor will probably be much less than in the Atlantic Coastal Trade Corridor. Many of the products transported in this corridor move in substantial volumes under contract-negotiated rates determined by the manufacturer, freight forwarder, consignee and/or carrier; they either terminate for transloading to seaborne transport for global markets (at the Port of Jacksonville) or move directly to points north beyond Florida’s borders or south to population centers and consumption points in the peninsula.

### **Recommended Action**

- **Consider future public/private development of a “Trade and Transportation Development Zone” within this corridor for freight marshalling and staging, including possible transloading operations.**

Implementing such an action would provide regional job opportunities and avoid the urban congestion experienced in other parts of the state where commercial and local traffic share crowded roads.

## **CASE THREE:**

### **LONG-DISTANCE COMMODITY MOVEMENTS AND SHORT-DISTANCE DISTRIBUTION FROM FLORIDA'S GREATER TAMPA BAY REGION ALONG THE CENTRAL FLORIDA TRADE CORRIDOR VIA JACKSONVILLE AND THEN TO POINTS BEYOND FLORIDA'S BORDERS.**

#### **Intermodal Components of the Corridor**

**Transport for both international and domestic freight occurs primarily within the Central Florida North-South Trade Corridor along I-75 and I-275 to and from Jacksonville, Tampa, Fort Myers, and Naples to Miami; and the Jacksonville-to-Tampa corridor that includes US-301 and CSXT’s “S” Line via Lakeland.**

Approximately 16 million tons of freight moves annually to, from and within this region, which encompasses Pinellas, Hillsborough and Polk Counties.

#### **Strategic Issues**

**Combinations of short-haul and longer-haul moves occur to, from and within this region.**

Trade and freight transport patterns in the Greater Tampa Bay region differ significantly from those in the two previously described corridors. Population and consumption centers in this region require long-haul freight delivery services for commercial customers, but also require an extensive network of “localized” and regional distribution for consumers residing in these urban areas.

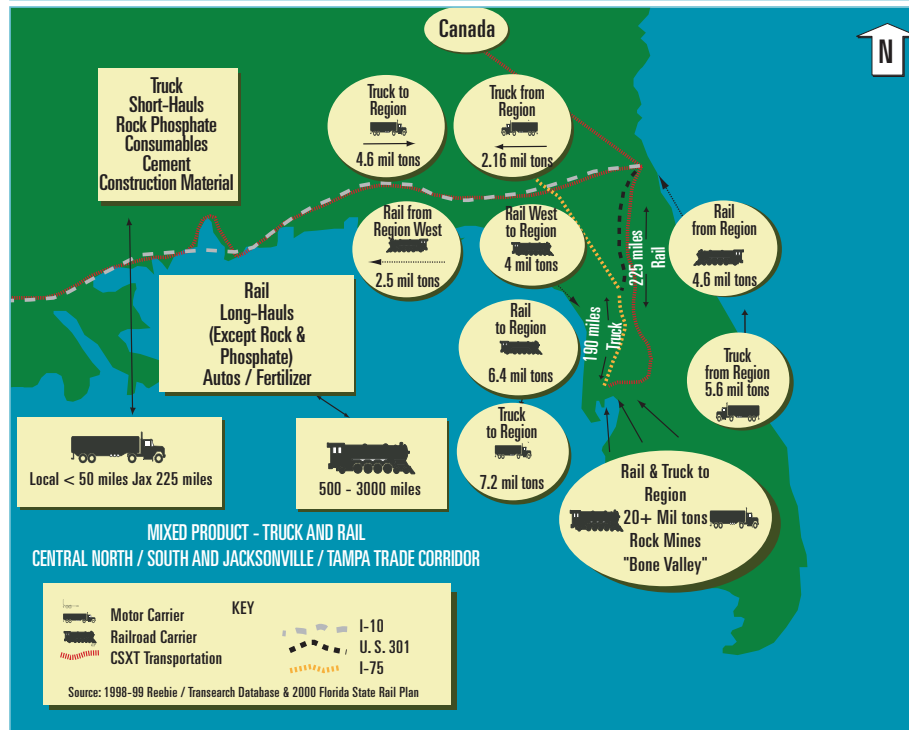
Exhibit IV.D shows transportation patterns for bulk shipment of railroad product, primarily lime rock, phosphates and sulphur; intermodal freight; auto racks; and coal for the region. About two-thirds of the total freight moving in this Greater Tampa Bay region in the late 1990s was transported by rail; because of the phosphate orientation of these operations, nearly all of this tonnage originated and terminated within the region. The balance, or 5.5 million

tons, of the freight moving in the region was transported by truck. Of this 5.5 million tons, 44 percent was containerized products and perishables. The remainder – various bulk commodities – also originates and terminates totally within the region, with short-haul distribution by truck. The phosphate-related commodities move to and from the Port of Tampa by both truck and rail, primarily for foreign export. Railroad transport of processed fertilizers moving northward over the “S” Line to Jacksonville destined for Canada and liquid bulk such as liquid sulphur used in fertilizer processing and production moving southward from those destinations is also significant.

**This region is categorized by “zone rate structures” for long-haul motor carriers which are high enough to cover back-haul cost imbalances from Central and South Florida.**

Rates charged are structured somewhat higher than they might otherwise be to cover empty back-hauls and the repositioning of equipment northward for transport of loads south. Freight movement by rail is more likely to take place under negotiated contract and by volume. Due to the unique phosphate and rock supply sources located in Southwest Florida, the volumes transported and turnaround frequency for railroad equipment make rail transport profitable in this unique short-haul – sometimes less than 100 miles – market. Again, as in the case of the Atlantic Coastal Trade Corridor, cost-mitigating, back-haul transport opportunities are limited by geography and consumption patterns as well as by the very short distances over which the region’s dry-bulk natural resources move.

## IV.D Case Three: Typical Jacksonville / Tampa Freight Movement



Regional interviews with both motor and railroad carriers indicate that transfer terminals for long-haul phosphate-related, liquid bulk, and construction-related products are located near the source of supply to minimize costs and maximize equipment utilization and turnaround. These locational decisions are a key factor in the economics of transport within the region. Likewise, break-bulk, construction-related, and local distribution facilities are located near points of consumer demand to minimize delivery costs. Full truckloads of consumer goods such as beer, food, and kindred products destined for tourist-related attractions originate from Jacksonville and move southward to the Greater Tampa Bay region.

### Recommended Actions

- **Construct additional capacity in the form of railroad passing tracks between Bradenton and Tampa.**
- **Consider reduction or removal of some tolls on select frequently used freight trade corridors.**

Several stakeholders in Florida's domestic and international trade in this region were asked to identify the one major institutional change or improvement that would most benefit commercial transport for their companies. A CSXT representative, responded "Construction of additional passing tracks somewhere between Bradenton and Tampa would assist the railroad and major rail shippers such as Tropicana that demand time-sensitive moves of citrus to Kearny, New Jersey and Cincinnati, Ohio. On-time delivery is paramount for this perishable and to meet production schedules..."

Confirming the importance of speed in getting the company's fresh juices to market, Tropicana's representative emphasized that improvements to the state's rail infrastructure, were among the highest priorities. Saving just two hours on the Florida portion of the journey to markets in the north and mid-west would open significant new opportunities.

From a more statewide perspective, CSXT's representative added, "The ability to transfer freight traffic between the FEC Railway and the CSXT near West Palm Beach would be most helpful..." When asked the same question, a Commercial Carrier Corporation representative said, "Remove tolls for commercial traffic on Florida's Turnpike; this would not only help lower transportation costs for motor carriers operating in the state and ultimately benefit consumers through lower rates, but would also open another underutilized major freight access route to South Florida markets."

The ability of Florida's shipping interests to influence profitability and to reduce transportation costs in this part of the state is more a function of cooperation among parties in enhancing "operational efficiencies" between modes and fostering innovative infrastructure and operational arrangements between stakeholders than one of just reducing individual modal costs. Examples of such cooperation include:

- **Public/private joint-use marshalling/staging facilities.**
- **Large regional transportation economic development zones (similar to free trade zones within seaports and airports).**
- **Use of road-use pricing tools (tolls or mitigation of tolls) to influence how, when and where freight moves within the region.**

Because natural resource production and large consumer markets are located in proximity to one another within the Greater Tampa Bay and Orlando megalopolis, opportunities exist for true "freight intermodalism" by creating unique logistical arrangements between short- and long-haul carriers where such synergies might not otherwise prove to be cost feasible.