Cargo Market Analysis and Strategy for the Lower Mississippi River Ports

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Table of Contents

I. Overview of the Lower Mississippi River Marine Cargo System

Martin Associates was retained by World Trade Center New Orleans (WTCNO) on behalf of the five Lower Mississippi River ports to assess the marine cargo market in which the Lower Mississippi River ports compete, and identify strategic directions for future market growth and expansion of the cargo markets handled along the Lower Mississippi River. The Lower Mississippi River (LMR) ports under study are the Port of Greater Baton Rouge; the Port of South Louisiana; the Port of New Orleans; the St. Bernard Port; Harbor and Terminal District; and Plaquemines Port. It is important to emphasize that the report is the result of the five port districts coming together to engage Martin Associates to conduct a "regional cargo study". These five Ports contracted with the WTCNO to serve as the contract administrator.

This Lower Mississippi River region has numerous logistical advantages to serve not only the state of Louisiana and the region, but also key shippers/consignees located throughout the midwestern United States as served by the Mississippi River system and the nation's six Class I railroads. Exhibit I-1 provides a map of the gateway advantage of the LMR to the central and upper midwestern states via the Mississippi River System. The access to the central and midwestern regions of the U.S. via the Mississippi River System provides low cost, environmentally friendly transportation infrastructure to shippers/consignees located in the region and served by the LMR ports. In addition, the ability to use the River System provides an alternative to rail service, and further results in competitive pressure on rail rates offered by the six Class I railroads serving the LMR port region, as shown in Exhibit I-2.

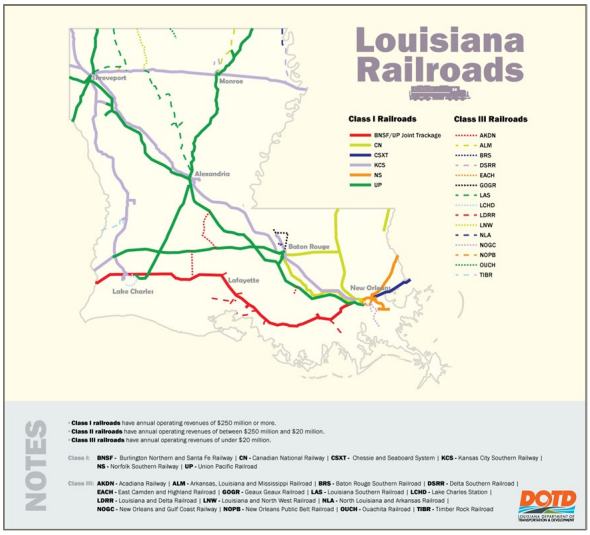
LMR REGION KEY LOGISTICAL ADVANTAGES

- ACCESS TO MISSISSIPPI RIVER SYSTEM – ENERGY EFFICIENT, LOW-COST TRANSPORTATION SYSTEM CONNECTING THE REGION TO THE CENTRAL AND MIDWESTERN U.S.
- SERVED BY 6 CLASS I RAIROADS
- FIVE PORT DISTRICTS CONNECTING THE WORLD TO THE REGION
- SERVED BY MAJOR NORTH-SOUTH AND EAST-WEST INTERSTATE HIGHWAY SYSTEM
- REGION SERVED BY WELL DEVELOPED PIPELINE SYSTEM, AS WELL AS REFINERIES, PETROCHEMICAL PLANTS, AND LNG EXPORT FACILITIES
- STATE-WIDE FOCUS ON FUTURE ENERGY PROJECT DEVELOPMENT

Exhibit I-1: Mississippi River Transportation System

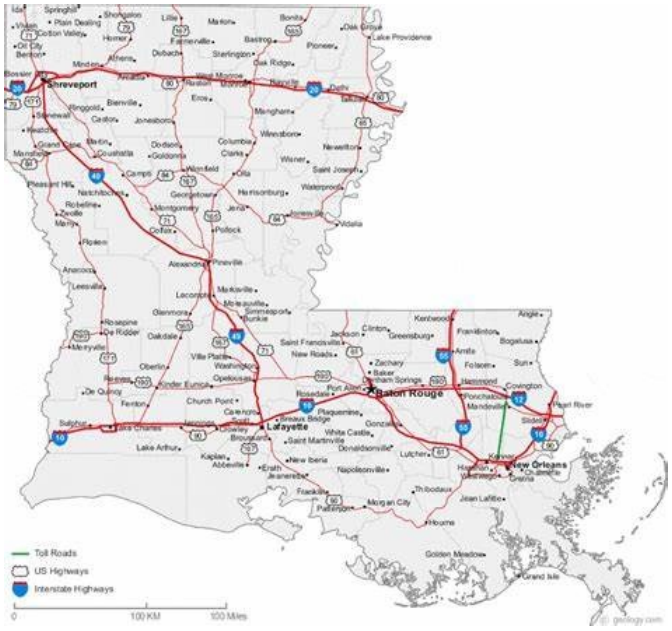
The six Class I railroads provide access to the East and West Coasts of the United States, Canada and Mexico, providing the LMR ports with an unparalleled access to these regions compared to other Gulf Coast ports. This rail service provides a true competitive advantage to serve inland markets via the LMR port region.

Exhibit I-2: Six Class I Railroads Serving the LMR Port Region



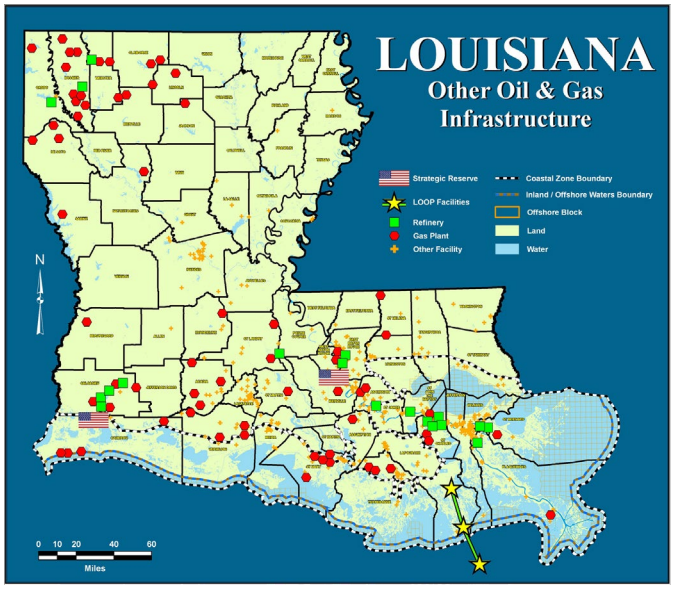
The LMR ports are also served by major north-south and east-west interstate highways which provide excellent infrastructure for truck service to and from the LMR port region (Exhibit I-3).

Exhibit I-3: Interstate Highways Serving the LMR Port Region



In addition to the marine cargo transportation infrastructure by all modes serving the LMR port region, the area is also served by a well-developed pipeline system to serve the region's petroleum, gas and petrochemical industry, as shown in Exhibit I-4. This pipeline system, as well as the refineries, petrochemical plants and hydrogen production facilities also provide a strong base for both domestic and international liquid bulk (petroleum products, chemicals) and dry bulk (i.e., petroleum coke) waterborne shipments via the LMR ports. This industrial base provides a strong market for the export of containerized plastic resins, as well. Because of the well-established energy sector and its supporting infrastructure, the state and region have been increasingly focused on the development of a future energy sector, which will further support additional cargo activity via the LMR ports.

Exhibit I-4: Location of Oil and Gas Facilities



Source: Louisiana Department of Energy and Natural Resources

While the region has many key advantages to support and grow maritime trade, there are disadvantages to the use of the LMR ports. The ports are located from 6 to 18 hours from the mouth of the passes at the Gulf of Mexico, adding up to nearly two days of additional sailing time for an ocean carrier compared to a call at Mobile or Houston.[1] This additional transit time adds additional costs to call the LMR ports, along with the method by which certain charges are assessed. For example, for a vessel of 35,000 gross registered tons (GRT) the total port cost to call a terminal in New Orleans is about $100,000 compared to $86,000 for a similar vessel to call at the Port of Mobile. This difference includes pilotage, tugs, dockage, harbor fees, etc.

LMR REGION LIMITING FACTORS FOR PORT USAGE

- SAILING DISTANCE FROM MOUTH OF PASSES TO MARINE TERMINALS ALONG THE LMR
- LIMITED MARKET SIZE OF REGION COMPARED TO HOUSTON – 2.2 MILLION IN NEW ORLEANS AND BATON ROUGE MSA COMPARED TO 7.5 MILLION IN HOUSTON MSA
- LIMITED WAREHOUSE CAPACITY AT MARINE TERMINALS ALONG THE LMR
- IMBALANCE OF EXPORTS TO IMPORTS FOR CONTAINERIZED CARGO AND HIGH COST OF REPOSTIONING EMPTY CONTAINERS
- UNCERTAINTY AS TO RIVER LEVELS
- AIR DRAFT OF THE CRESCENT CITY BRIDGE

Secondly, the local market served by the LMR ports is relatively small. For example, the Houston Metropolitan

[1] Based on interviews with ship captains calling the LMR ports, the sail to Plaquemines Port ranges between 6 and 8 hours; 10 to 15 hours to the terminals located in the New Orleans and St. Bernard port districts, and 17 to 24 hours to the terminals at the Port of Greater Baton Rouge. The sailing times vary based on river stage and current and sailing speed of the vessel – usually 10 knots up river and 14 plus knots downriver.

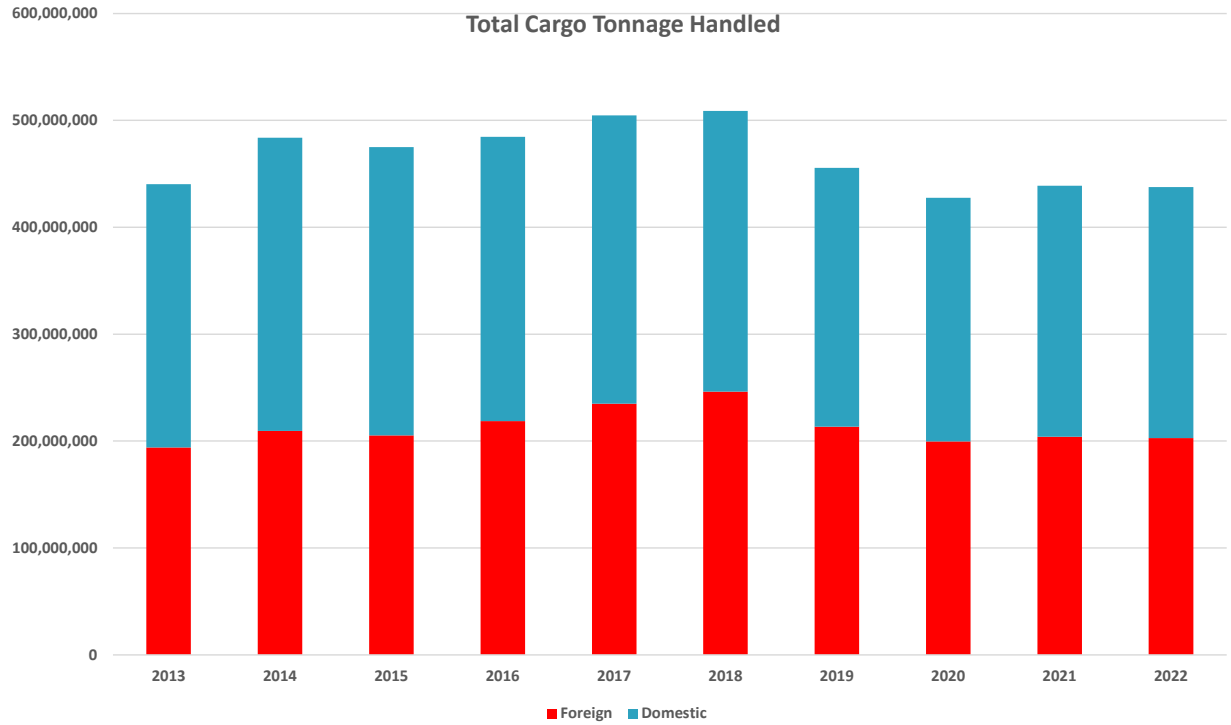
Statistical Area (MSA) area has a population of about 7.5 million compared to the combined 2.2 million population of New Orleans MSA, Baton Rouge MSA, St. Tammany, and Tangipahoa. The entire state of Louisiana has a population of 4.7 million persons.

The uncertainty as to river levels also impact the use of the LMR river ports when the inland river system is being used as a delivery system, as delays can occur, in turn driving up inventory carrying costs. Finally, the air draft of the Crescent City Bridge limits the size of vessels, particularly container vessels, that can call the Port of New Orleans container terminal located at the Napolean Avenue Container Terminal Complex, further reducing the advantages of the LMR port system for containerized cargo.

The LMR ports are a gateway for domestic cargo moving to and from the central and upper Midwest via the Mississippi River system and the LMR port facilities, as well as international cargo moving to and from worldwide destinations from the local markets as well as the nation's central and midwestern states. In many cases imported international cargo is received at the LMR ports and then transported by barge to the country's interior points and international export cargo such as grain originating in the central and upper Midwest moves to elevators at the LMR ports for export internationally. Other domestic cargo, such as petroleum products not only move on the Mississippi River System, but also via the Gulf Intercoastal Waterway to other domestic locations along the Gulf and Atlantic coasts of the U.S.

Since 2013, total tonnage moving to and from ports on the Lower Mississippi River between Baton Rouge and the mouth of the passes on the Gulf of Mexico has remained relatively flat, ranging between 400 million and 500 million tons annually (Exhibit I-5).

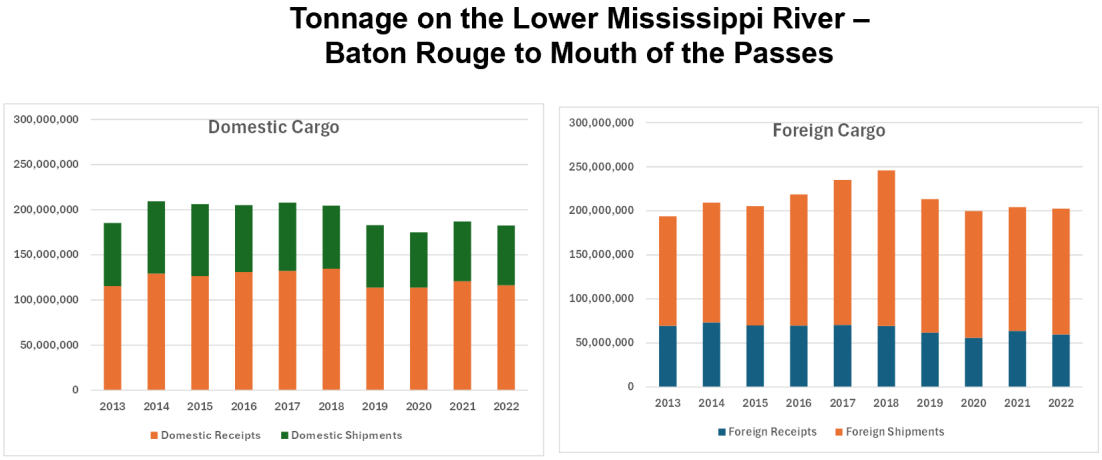
Exhibit I-5: Foreign and Domestic Tonnage Handled at Port Facilities Between Baton Rouge and the Mouth of the Passes



Source; U.S. Army Corps of Engineers, Waterborne Commerce Statistics, 2024

As shown in Exhibit I-6, domestic receipts are greater than domestic shipments at the LMR ports, while foreign shipments (exports) outweigh foreign receipts (imports) at these ports.

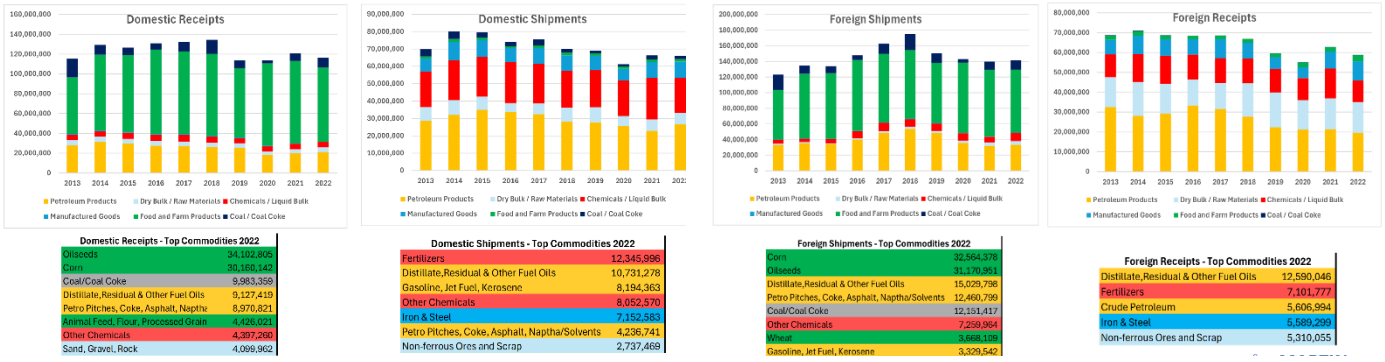
Exhibit I-6: Foreign and Domestic Tonnage by Direction at the Lower Mississippi River Ports



Source: U.S. Army Corps of Engineers, Waterborne Commerce Statistics, 2024

Overall, the domestic receipts are driven by the receipt of grains at the LMR export elevators, which is then loaded onto vessels for export, as well as used in regional biofuel production. Domestic upriver shipments from the LMR ports have been driven by petroleum and chemical products. From a tonnage perspective, imported liquid bulk cargoes including petroleum products and chemicals have driven imported tonnage levels over time, but have shown a declining trend.

Exhibit I-7: Domestic and Foreign Shipments and Receipts (Tonnage) at Lower Mississippi River Ports by Major Commodity Gorup



Domestic Receipts - Top Commodities 2022

Oilseeds	34,102,805
Corn	30,168,142
Coal/Coal Coke	9,983,359
Distillate,Residual & Other Fuel Oils	9,127,419
Petro Pitches, Coke, Asphalt, Naptha	8,970,821
Animal Feed, Flour, Processed Grain	4,426,021
Other Chemicals	4,397,260
Sand, Gravel, Rock	4,099,962

Domestic Shipments - Top Commodities 2022

Fertilizers	12,345,996
Distillate,Residual & Other Fuel Oils	10,731,278
Gasoline, Jet Fuel, Kerosene	8,194,363
Other Chemicals	8,052,570
Iron & Steel	7,152,583
Petro Pitches, Coke, Asphalt, Naptha/Solvents	4,236,741
Non-ferrous Ores and Scrap	2,737,469

Foreign Shipments - Top Commodities 2022

Corn	32,564,378
Oilseeds	31,170,951
Distillate,Residual & Other Fuel Oils	15,029,798
Petro Pitches, Coke, Asphalt, Naptha/Solvents	12,460,799
Coal/Coal Coke	12,191,417
Other Chemicals	7,259,964
Wheat	3,868,199
Gasoline, Jet Fuel, Kerosene	3,329,542

Foreign Receipts - Top Commodities 2022

Distillate,Residual & Other Fuel Oils	12,590,046
Fertilizers	7,101,777
Crude Petroleum	5,606,994
Iron & Steel	5,589,299
Non-ferrous Ores and Scrap	5,310,055

Source: U.S. Army Corps of Engineers, Waterborne Commerce Statistics, 2024

LIMITED CARGO GROWTH AT THE LMR PORTS, BOTH DOMESTIC AND INTERNATIONAL CARGO SINCE 2015

- DOMESTIC RECEIPTS HAVE BEEN DRIVEN BY GRAIN – DEPENDENT ON CROP PRODUCTION AND WORLD DEMAND
- DOMESTIC SHIPMENTS ON THE RIVER DRIVEN BY PETROLUEM AND PETRO CHEMICAL PRODUCTS – DEPENDENT ON PRODUCTION LEVELS AT THE REGIONAL REFINERIES AND PETROCHEMICAL PLANTS
- FOCUS ON INTERNATIONAL BREAK BULK AND CONTAINERIZED CARGO – INCREASE BUSINESS AT LMR PORTS BY COMPETING WITH OTHER GULF COAST PORTS
- EXPANDING BULK MARKET WILL RELY ON FUTURE ENERGY SECTOR GROWTH IN LOUSIANA

The LMR ports, because of their location, have and will continue to have a unique position with respect to the river tonnage moving to and from these port facilities and the central and upper midwestern states. The volume of these cargoes, driven by grains and petrochemicals/liquid bulk cargoes, are literally captive to the region and are dependent upon the worldwide demand for grain exports, climate factors affecting river levels and harvest production, varying river levels resulting from U.S. Army Corps of Engineers water release programs from river dams, and production levels of the petrochemical plants in the region. In contrast, the international market has a much greater level of competition with other ports in the Gulf region, particularly with respect to break bulk cargoes and containerized cargo, that are less dependent upon using the inland river system, but rely to a greater extent on local and regional markets, as well as out of region markets served by truck and rail.

The balance of the report focuses on the international import and export market in which the LMR ports compete. It is this market that

represents the potential for the LMR ports to increase cargo volumes by competing with other Gulf Coast ports for export and import cargo for which these five ports can provide a competitive advantage. The historical and current markets are evaluated, and then potential markets are identified based on cargo previously handled at the LMR ports; cargo handled at other ports in the Gulf Coast Region but not at the LMR ports; new markets with a focus on the future energy sector including carbon sequestration and hydrogen production. In addition, the LMR access to state and federal funding is addressed. A set of market recommendations is then provided.

II. Liquid and Dry Bulk International Markets and Potential

The international liquid bulk market consists of petroleum and petroleum products, hydrocarbons, as well as chemicals, biofuels, and other miscellaneous liquid bulk cargoes. The international dry bulk market consists of grains, minerals, fertilizers, cement and aggregates. The historical activity of these markets at the Gulf Coast regional level and at the LMR ports are described in this section, with a focus of identifying current and potential for greater participation by the LMR ports.

1. Liquid Bulk Market

The liquid bulk market consists of petroleum and petroleum products including hydrocarbon gasses such as LNG, as well as other liquid bulk cargoes including chemicals and biodiesel fuels. Exhibit II-1 shows the tonnage of petroleum and petroleum products imported via the ports located in the Gulf Coastal region, from Port Manatee to the Port of Brownsville, and the volume of these petroleum-based cargoes handled at the LMR ports. As shown in Exhibit II-1, imported petroleum and petroleum products have experienced a sharp decline driven by the loss of imported crude between 2014 and 2023. This decline was recorded across the entire Gulf Coast region, as well as at the LMR ports.

LIQUID BULK OPPORTUNITIES

- STRONG GROWTH OPPORTUNITIES IN EXPORT OF BIOFUELS, INCLUDING EHTANOL, METHANOL, AND LNG
- CONSISTENT WITH FUTURE ENERGY PROJECTS AND FOCUS WITHIN THE REGION AS WELL AS IN THE STATE

Exhibit II-1: Imported Crude and Petroleum Products – Gulf Coast Region and LMR Ports

Imported Crude and Product Tonnage at Gulf Coast Ports

Petroleum/Gas/Products	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
2709 Crude Oil From Petroleum And Bituminous Minerals	189,442,375	169,937,445	179,059,479	160,640,810	128,534,108	83,842,463	76,308,346	63,682,584	64,445,366	69,348,941	-10.57%
2710 Oil (not Crude) From Petrol & Bitum Mineral Etc.	33,106,603	35,578,703	39,077,463	36,783,206	38,492,529	38,198,293	36,662,364	38,614,425	36,617,092	30,919,302	-0.76%
2707 Oils Etc From High Temp Coal Tar; Sim Aromatic Etc	553,061	742,494	682,397	579,862	697,344	513,659	363,781	617,090	1,527,011	1,231,044	9.30%
2706 Mineral Tars, Including Reconstituted Tars	0	17,804	0	0	9,047	36,123	28,908	25,297	6,210	37,488	NA
2712 Petroleum Jelly; Mineral Waxes & Similar Products	41,244	51,216	53,610	75,169	83,797	101,733	74,736	86,411	77,951	22,213	-6.64%
2708 Pitch & Pitch Coke From Coal Tar Or Other Min Tars	14,330	17,131	13,236	1,655	3,478	121	7,947	2,622	1,468	1,821	-20.48%
2711 Petroleum Gases & Other Gaseous Hydrocarbons	473,976	447,068	101,119	209,967	193,285	148,781	51,565	28,374	15,719	765	-51.04%

Imported Crude and Product Tonnage at LMR Ports

Petroleum/Gas/Products	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
2710 Oil (not Crude) From Petrol & Bitum Mineral Etc.	14,615,371	12,876,609	14,979,095	15,312,353	14,992,937	14,110,754	12,685,124	13,945,855	12,370,198	10,197,374	-3.92%
2709 Crude Oil From Petroleum And Bituminous Minerals	12,736,981	15,713,733	17,690,681	15,368,400	10,852,150	7,282,935	7,468,515	6,063,534	5,369,060	6,936,580	-6.53%
2707 Oils Etc From High Temp Coal Tar; Sim Aromatic Etc	183,650	374,296	360,820	284,168	230,857	163,280	177,850	130,056	251,939	126,344	-4.07%
2706 Mineral Tars, Including Reconstituted Tars		17,804		0	9,047	36,123	28,893	25,297	6,210	37,488	NA
2711 Petroleum Gases & Other Gaseous Hydrocarbons	20,593	6,571	4,960				0	0			NA
2712 Petroleum Jelly; Mineral Waxes & Similar Products	8,782	13,021	20,935	31,144	18,844	18,161	20,017	34,933	15,861	0	NA

Source: USA Trade OnLine

In contrast to the decline in imports of petroleum and petroleum products, the export of these products increased at both the regional level as well as for the LMR ports, as shown in Exhibit II-2.

At the regional level the increase was most prominent for crude petroleum exports and hydrocarbon cases (LNG). For the LMR ports, oil products declined, while crude oil exports increased.

Exhibit II-2: Exported Crude and Petroleum Products – Gulf Coast Region and LMR Ports

Exported Crude, Gas and Product Tonnage at Gulf Coast Ports

Petroleum/Gas/Products	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
2709 Crude Oil From Petroleum And Bituminous Minerals	12,118,340	18,158,899	15,894,804	48,612,599	94,445,104	144,827,329	153,034,884	146,707,348	181,943,640	209,347,765	37.24%
2711 Petroleum Gases & Other Gaseous Hydrocarbons	14,241,858	20,338,152	29,105,113	45,487,266	53,665,829	71,062,138	89,710,889	119,688,990	126,748,352	139,624,938	28.87%
2710 Oil (not Crude) From Petrol & Bitum Mineral Etc.	100,570,073	114,532,549	114,120,904	124,687,236	130,418,041	119,997,689	102,726,322	102,641,337	113,591,034	106,472,530	0.64%
2707 Oils Etc From High Temp Coal Tar; Sim Aromatic Etc	1,663,533	2,145,088	2,339,194	2,382,567	2,468,105	1,866,775	2,026,489	2,667,906	2,596,655	2,340,873	3.87%
2714 Bitumen & Asphalt, Natural; Shale & Tar Sands Etc.	2,791	18,946	41,840	110,971	247,496	150,107	219,418	218,237	126,479	9,437	14.50%
2715 Bit Mix Fr Nat Asph, Nat Bit,pet Bit,min Tar Or Pt	188	86	13,024	235	52	8,486	67	46	3,651	677	15.28%
2702 Lignite, Agglomerated Or Not, Excluding Jet	596	2,073	102	268	561	1,109	1,220	47	1,011	540	-1.10%
2712 Petroleum Jelly; Mineral Waxes & Similar Products	19,491	7,682	10,324	11,191	3,958	8,662	28,248	11,248	2,985	239	-38.66%

Exported Crude, Gas and Product Tonnage at LMR Ports

Petroleum/Gas/Products	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
2710 Oil (not Crude) From Petrol & Bitum Mineral Etc.	26,739,164	24,648,675	27,588,986	32,735,073	33,576,745	31,872,849	22,676,818	18,359,499	22,150,384	17,817,238	-4.41%
2709 Crude Oil From Petroleum And Bituminous Minerals	1,307,052	2,015,594	3,007,015	7,760,865	9,662,089	4,641,209	3,284,340	3,372,919	4,994,894	7,181,793	20.84%
2707 Oils Etc From High Temp Coal Tar; Sim Aromatic Etc	687,787	938,591	1,050,738	1,287,908	1,114,726	1,036,810	1,180,515	2,076,430	2,007,283	1,872,181	11.77%
2711 Petroleum Gases & Other Gaseous Hydrocarbons	109	370	45,597	181,021	299,412	362,089	425,342	448,894	588,823	512,528	155.78%
2714 Bitumen & Asphalt, Natural; Shale & Tar Sands Etc.			17,949	72,200	188,679	96,470	204,415	206,039	126,104	1,857	NA

Source: USA Trade OnLine

With respect to other liquid bulk cargoes imported via the Gulf Coast region and the LMR ports, imports of animal and vegetable oils posted the strongest gains, as shown in Exhibit II-3. These oils are used in food processing as well as in soaps, perfumes and personal care products, and include oils such as palm oil.

Exhibit II-3: Imported Chemicals/Other Liquid Bulk – Gulf Coast Region and LMR Ports

Imported Chemicals and Other Liquid Bulk Tonnage at Gulf Coast Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
29 Organic Chemicals	8,451,737	7,044,879	5,661,214	5,539,548	5,499,378	4,952,202	4,238,554	4,388,755	4,240,606	4,565,698	-6.61%
15 Animal, Vegetable Or Microbial Fats And Oils Etc	895,341	911,546	845,180	910,972	944,580	954,880	940,980	1,138,461	1,848,055	3,099,230	14.79%
28 Inorg Chem; Prec & Rare-earth Met & Radioact Compd	4,865,445	4,873,676	4,155,504	3,387,274	3,350,775	3,032,293	3,271,753	3,312,676	3,760,394	2,813,015	-5.91%
38 Miscellaneous Chemical Products	385,499	598,796	1,346,082	642,711	371,398	289,257	302,627	320,567	473,695	731,707	7.38%
22 Beverages, Spirits And Vinegar	462,345	599,431	529,558	561,480	563,442	373,881	320,693	143,390	153,764	221,233	-7.86%

Imported Chemicals and Other Liquid Bulk Tonnage at LMR Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
15 Animal, Vegetable Or Microbial Fats And Oils Etc	798,704	824,412	800,211	864,092	928,872	941,882	938,388	1,092,532	1,723,480	2,919,522	15.49%
28 Inorg Chem; Prec & Rare-earth Met & Radioact Compd	1,454,167	1,667,612	1,245,727	932,103	1,405,133	1,665,514	1,676,673	1,901,304	1,934,053	1,325,336	-1.03%
29 Organic Chemicals	2,414,447	1,955,378	2,036,114	2,160,220	1,903,544	1,784,337	1,703,810	1,672,542	949,032	691,449	-12.97%
38 Miscellaneous Chemical Products	127,234	161,505	199,832	161,038	127,141	93,839	128,030	144,973	165,374	144,525	1.43%

Source: USA Trade OnLine

Exhibit II-4: Exported Chemicals and Other Liquid Bulk – Gulf Coast Region and LMR Ports

Exported Chemicals and Other Liquid Bulk Tonnage at Gulf Coast Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
29 Organic Chemicals	13,907,585	13,969,297	16,794,110	16,887,718	20,873,726	24,739,533	25,209,559	25,857,907	29,903,791	36,404,416	10.70%
28 Inorg Chem; Prec & Rare-earth Met & Radioact Compd	7,052,929	6,861,254	7,864,442	8,588,408	6,874,194	7,496,450	6,721,689	7,083,693	7,359,917	7,250,436	4.20%
22 Beverages, Spirits And Vinegar	1,501,007	1,722,339	2,377,399	3,231,659	4,066,316	3,425,883	2,648,803	2,306,338	2,498,172	2,560,329	6.97%
38 Miscellaneous Chemical Products	602,788	482,034	571,819	565,076	494,163	442,254	523,606	633,425	760,240	793,778	5.38%

Exported Chemicals and Other Liquid Bulk Tonnage at LMR Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
29 Organic Chemicals	1,119,034	1,673,274	2,870,296	2,692,006	2,573,857	2,690,834	3,267,454	2,909,855	3,356,854	3,205,950	12.41%
28 Inorg Chem; Prec & Rare-earth Met & Radioact Compd	628,203	832,543	1,032,501	1,992,106	959,623	1,606,945	1,658,786	1,427,522	1,608,488	1,827,625	12.60%
15 Animal, Vegetable Or Microbial Fats And Oils Etc	992,234	1,158,606	1,062,115	1,134,867	1,110,864	980,550	1,283,806	735,041	538,917	172,631	-17.66%
22 Beverages, Spirits And Vinegar	234,978	442,314	928,546	1,033,699	1,204,626	701,300	601,747	647,260	838,802	767,894	14.06%
38 Miscellaneous Chemical Products	157,462	184,033	207,725	268,469	157,262	214,028	236,296	229,216	317,539	327,957	8.49%

Source: USA Trade OnLine

Exhibit II-4 shows organic and inorganic chemicals posted export growth at both the Gulf Coast regional level and at the LMR ports. The strong growth in the export of beverages, spirits and vinegar actually reflects the growth in the export of ethanol and biofuels, which are included in the overall U.S. Census Classification Category of "beverages, spirits and vinegar". This growth in ethanol/biofuels exports reflects the increasing demand for the development of new biofuels production facilities in the LMR region, including soybean crushing operations utilizing local soybean crop production as well as soybeans moving on the Mississippi River System. It also includes sustainable aviation fuels, as well as carbon capture projects and the production of green and blue methanol. These future energy production facilities are the subject of a later chapter on strategic investments in future energy to stimulate cargo activity at the LMR ports.

In summary, with respect to the liquid bulk market at the LMR ports, the overall petroleum and petroleum product imports have fallen at the Gulf Coast region as well as at the LMR ports. Exports have grown in the Gulf and at the Lower Mississippi River ports, driven by crude oil exports as well as hydrocarbons/LNG, which represent a growing export market. The growth in this export market will be driven by refinery capacity and new LNG operations, and as such the petroleum/petroleum products market is not a discretionary cargo market, but instead driven by plant capacity development. The growth in the LNG export capacity is the subject of discussion in the later chapter on strategic investments in future energy.

With respect to the non-petroleum liquid bulk market, chemical imports have fallen over time, both at the regional level as well as at the LMR Ports. Growth in imports of animal and vegetable oils has occurred, and this includes growth in palm oil for food processing and other vegetable oils for personal care, (cosmetics/soaps/perfumes, etc.). There has also been growth in exports of organic and inorganic chemicals at the regional Gulf Coast level as well as at the LMR ports, representing growth in the regional and local chemical industry. Ethanol and biofuels have shown strong growth reflecting the growth in future energy solutions. Moodys.com projects a 1.82% compound annual

growth rate for the chemicals and plastics industry in Louisiana over the next 30 years.[2] The production of green and blue methanol from the carbon capture operations at the LMR ports (discussed under future energy section of this report, along with similar developments in the Red River Region) will also result in growth in exports of blue and green methanol fuel stock via the LMR ports.

2. Dry Bulk Market

The international dry bulk market includes grain, fertilizers, ores, salt, cement, petroleum coke, etc. With respect to imported dry bulk cargoes, Exhibit II-5 shows that the import of salt/cement/stone/lime followed by ores/slag and ash dominate the imported dry bulk market at all Gulf Coast ports, while fertilizers, ores/slag/ash and salt/cement/stone/lime are the key commodities imported via the LMR ports. The importance of fertilizer imports at LMR ports reflects the distribution of imported fertilizer received at the LMR ports and then loaded onto barge for consumption in the central and upper midwestern states farmland. With the exception of cement/slag imports at the Gulf Coast ports regional level, none of the imported dry bulk cargoes either at the regional level or at the LMR ports, have shown strong growth since 2014, indicating a relatively stable international cargo market segment.

DRY BULK MARKET OPPORTUNITIES

- EXPORT DRY BULK MARKET HAS HAD CONSISTENT GROWTH OVER PAST 10 YEARS – GRAIN EXPORTS – STORAGE CAPACITY IS CRITICAL FOR EXPORT AS WELL AS BIOFUEL PRODUCITON
- EXPORT OF WOOD PELLETS TO EUROPE WITH INCREASED FOCUS ON JAPAN
- OPPORTUNITIES FOR CEMENT IMPORTS AND DEVELOPMENT OF FERTILIZER MANUFACTURING OPERATIONS FOR DOMESTIC AND INTERNATIONAL MARKETS

[2] Moodys.com projections of Constant dollar (2017$) Output of Chemicals, Energy, Plastics and Rubber Manufacturing in the state of Louisiana.

Exhibit II-5: Imported Dry Bulk – Gulf Coast Region and LMR Ports

Imported Dry Bulk Tonnage at Gulf Coast Ports

Dry Bulk Commodity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
25 Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	21,726,466	23,544,349	19,905,663	20,857,669	23,597,417	26,415,583	23,057,974	24,357,235	24,339,749	24,871,749	1.51%
26 Ores, Slag And Ash	17,903,675	16,409,107	10,242,578	12,657,760	12,164,171	13,693,462	11,369,003	11,378,821	10,906,979	10,538,605	-5.72%
31 Fertilizers	10,707,539	10,842,620	9,693,840	9,847,322	10,400,087	10,099,495	8,620,552	12,024,288	8,338,428	9,600,476	-1.21%
2701 Coal; Briquettes, Ovoids Etc. Mfr From Coal	3,273,801	3,489,425	2,863,914	1,886,756	2,568,887	2,914,726	2,020,576	2,003,332	2,533,592	1,745,954	-6.75%
2713 Petroleum Coke, Petroleum Bitumen & Other Residues	659,545	609,716	301,603	769,569	799,528	415,416	684,493	818,599	816,580	689,989	0.50%
2704 Coke Etc Of Coal, Lignite Or Peat; Retort Carbon	10,544	16,976	8,003	18,650	15,989	11,415	11,072	15,653	13,932	27,912	11.42%

Imported Dry Bulk Tonnage at LMR Ports

Dry Bulk Commodity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
31 Fertilizers	8,807,841	8,939,078	8,265,761	8,497,880	8,687,120	8,336,355	7,157,574	10,479,752	7,364,632	8,135,906	-0.88%
26 Ores, Slag And Ash	7,689,507	7,216,594	7,272,214	7,825,037	7,916,846	8,959,962	7,147,363	7,857,019	7,183,598	7,188,207	-0.75%
25 Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	6,524,494	5,503,128	4,063,721	4,859,660	6,625,156	6,343,539	4,691,031	5,146,377	7,794,620	6,541,773	0.03%
2713 Petroleum Coke, Petroleum Bitumen & Other Residues	282,719	288,280	148,339	488,326	534,874	249,346	413,027	629,675	560,959	470,109	5.81%
2701 Coal; Briquettes, Ovoids Etc. Mfr From Coal	144,199	77,875	5,069	9,242	55,533	78,567	101,366	220,221	198,644	206,195	4.05%
12 Oil Seeds Etc.; Misc Grain, Seed, Fruit, Plant Etc	327,662	15,819	40,196	78,702	117,785	64,073	141,564	147,474	172,064	152,512	-8.15%
10 Cereals	199,811	159,970	78,026	123,103	25,968	189,514	133,688	133,379	147,849	134,815	-4.28%
11 Milling Products; Malt; Starch; Inulin; Wht Gluten	0	0	14,850	0	40,859	6,628	0	18,654	84,096	38,871	NA
2704 Coke Etc Of Coal, Lignite Or Peat; Retort Carbon	10,544	16,976	8,003	18,650	15,989	11,415	11,072	15,653	13,932	27,912	11.42%
2708 Pitch & Pitch Coke From Coal Tar Or Other Min Tars	14,330	17,131	13,236	1,655	3,478	121	7,947	2,622	1,468	1,821	-20.48%

Source: USA Trade OnLine

Exhibit II-6 shows that grain exports dominate the dry bulk international export market both at the Gulf Coast regional level as well as the LMR ports. The export dry bulk market has shown consistent growth since 2014, at the Gulf Coast regional level as well as at the LMR ports. Grain exports (consisting of cereals and oilseeds) lead the dry bulk exports from both regions. Grains exported via the LMR ports consist primarily of corn and soybeans. The corn moves via river to export elevators at LMR ports, while soybeans are more local and a high percentage arrive via truck. The long-term projections by USDA Economic Research Service, project corn exports from the U.S. are estimated to grow at a 3.7% CAGR (compound annual growth rate) through 2033-34. Soybean exports are projected to grow at 0.63% CAGR through 2033-34, as domestic consumption of soybeans increase as inputs into biodiesel fuels production and domestic feed use.

Exhibit II-6: Exported Dry Bulk – Gulf Coast Region and LMR Ports

Exported Dry Bulk Tonnage at Gulf Coast Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
10 Cereals	57,104,132	51,519,954	54,214,049	52,356,806	51,939,878	39,529,073	49,519,672	61,176,325	48,675,882	37,652,707	2.70%
2713 Petroleum Coke, Petroleum Bitumen & Other Residues	28,892,718	28,946,740	31,713,264	31,698,183	31,392,451	27,297,729	24,533,825	27,229,320	31,618,612	32,416,043	4.59%
12 Oil Seeds Etc.; Misc Grain, Seed, Fruit, Plant Etc	33,058,043	33,449,421	39,013,115	37,104,627	31,086,720	33,772,168	43,361,591	31,355,096	34,532,126	30,699,378	3.80%
2701 Coal; Briquettes, Ovoids Etc. Mfr From Coal	25,382,090	19,874,474	13,074,735	23,101,257	32,229,670	21,799,453	13,496,916	21,034,318	22,714,747	24,519,031	3.95%
23 Food Industry Residues & Waste; Prep Animal Feed	10,043,199	12,936,927	10,803,614	12,309,859	12,289,465	10,545,894	11,182,548	11,555,445	10,917,777	11,527,392	4.69%
31 Fertilizers	6,225,525	5,860,452	6,619,008	7,073,697	6,401,690	5,799,979	5,289,580	3,715,012	6,503,011	6,098,066	4.00%
44 Wood And Articles Of Wood; Wood Charcoal	2,397,399	2,895,388	2,897,334	2,568,500	3,719,332	3,745,887	3,599,609	3,806,188	5,051,800	5,696,149	9.71%
26 Ores, Slag And Ash	1,393,142	521,438	442,449	306,386	425,051	600,472	696,833	2,297,377	2,134,711	1,577,981	4.63%
25 Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	1,576,200	1,384,761	1,351,941	1,376,328	1,257,293	768,107	536,749	473,028	1,057,679	1,119,610	2.90%
2704 Coke Etc Of Coal, Lignite Or Peat; Retort Carbon	72,784	62,543	0	94,526	174,389	35,984	64,271	597,743	775,962	292,511	16.43%

Exported Dry Bulk Tonnage at LMR Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
10 Cereals	43,347,727	38,961,689	40,723,641	39,786,782	44,071,413	30,669,951	38,491,038	50,059,737	41,087,727	31,320,425	-3.55%
12 Oil Seeds Etc.; Misc Grain, Seed, Fruit, Plant Etc	31,463,839	31,784,742	36,893,804	36,003,505	30,576,791	33,489,462	40,728,130	29,501,390	33,369,947	30,214,534	-0.45%
2701 Coal; Briquettes, Ovoids Etc. Mfr From Coal	10,405,739	8,888,559	5,855,014	12,505,399	19,947,060	10,979,432	4,098,357	11,263,846	12,249,023	12,842,509	2.37%
23 Food Industry Residues & Waste; Prep Animal Feed	9,836,658	12,854,330	10,670,816	12,184,743	12,145,710	10,539,039	11,165,814	11,537,233	10,891,057	11,464,885	1.72%
2713 Petroleum Coke, Petroleum Bitumen & Other Residues	6,848,867	6,679,077	9,574,637	9,159,923	9,290,310	8,504,756	8,665,173	9,594,866	10,237,793	11,302,961	5.72%
31 Fertilizers	471,068	653,578	1,246,276	1,987,276	1,974,854	1,303,511	1,126,361	529,912	3,068,759	2,485,850	20.30%
44 Wood And Articles Of Wood; Wood Charcoal	173,904	302,748	640,664	871,598	1,755,247	1,617,786	1,592,765	1,734,103	2,130,272	2,164,799	32.34%
26 Ores, Slag And Ash	1,044,911	501,819	428,899	275,744	404,127	405,204	564,209	2,044,852	1,945,997	1,569,238	4.62%
2704 Coke Etc Of Coal, Lignite Or Peat; Retort Carbon	69,111	62,543	0	60,652	143,835	35,984	30,314	597,743	748,328	292,511	17.39%

Source: USA Trade OnLine

Petroleum coke exports are the next largest dry bulk export commodity group at the Gulf Coast regional level, while the export of coal to China is the next largest dry bulk export via the LMR ports. The export of grains and coal via the LMR ports reflects the use of the Mississippi River System in moving these products from the interior U.S. to export ports along the lower Mississippi River, while the export of petroleum coke at the Gulf Coast regional level reflects the export of this product from the concentration of refineries located at many of the Gulf Coast ports located in Texas and Louisiana. Petroleum coke is also a key export dry bulk cargo from the refineries located within the LMR port region. The strong growth in fertilizer exports from the LMR ports reflect the growth in fertilizer production along the Mississippi River, as well as the replacement of fertilizer exports from the Tampa region where the phosphate reserves are being depleted. The ports of New Orleans and Baton Rouge have increased fertilizer exports significantly, as shown in Exhibit II-7, and increased fertilizer production facilities along the LMR appear as a potential development focus.

Exhibit II-7: Export of Fertilizer Tonnage from Gulf Coast Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Tampa, FL (Port)	5,021,912	4,699,059	4,857,258	4,615,623	4,053,775	4,094,284	3,764,826	2,856,773	2,968,284	3,097,283	-5.23%
Baton Rouge, LA (Port)	330,568	554,059	1,080,863	1,544,796	1,678,263	909,011	735,297	507,782	1,676,871	1,851,651	21.10%
New Orleans, LA (Port)	33,926	23,017	75,174	339,084	296,590	341,510	391,064	22,130	1,355,473	619,364	38.09%
Galveston, TX (Port)	320,070	325,416	231,700	281,943	166,586	252,552	244,045	173,529	380,699	432,573	3.40%
Others	519,049	258,901	374,012	292,251	206,474	202,622	154,347	154,798	121,685	97,195	-16.98%
Total	***6,225,525***	***5,860,452***	***6,619,008***	***7,073,697***	***6,401,690***	***5,799,979***	***5,289,580***	***3,715,012***	***6,503,011***	***6,098,066***	***-0.23%***

Source: USA Trade OnLine

The growth in the export of wood and articles of wood is driven by the growth in wood pellet exports from the LMR ports to both Europe and the growing Japanese market. As noted in Exhibit II-8, pellet exports from the LMR Port of Baton Rouge have grown significantly. The major destination of these pellet exports is northern Europe (primarily the United Kingdom). A growing market for the wood pellet export market is Japan/Korea, and this market is now served by the Enviva[3] operation at the Port of Pascagoula. The Japanese market is served by larger lot sized export shipments, and requires whip mend in vessels carrying in excess of 60,000 tons of export. The Japanese/Korean market appears to be strong growth market that could provide additional demand for the wood pellets exported via the Drax facility at Baton Rouge. Exhibit II-8 summarizes the wood pellet exports from the Gulf Coast ports by port and trade lane.

Exhibit II-8: Wood Pellet Export Tonnage by Gulf Coast Port and Trade Lane

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Baton Rouge, LA (Port)		**273,734**	**616,606**	**850,716**	**1,741,999**	**1,306,879**	**1,337,238**	**1,732,953**	**2,128,470**	**2,163,857**	25.82%
North Europe		273,734	616,606	850,716	1,741,999	1,306,879	1,337,238	1,732,953	2,066,204	2,163,857	25.82%
Japan/Korea									62,267		NA
Panama City, FL (Port)	**743,590**	**740,111**	**768,226**	**766,699**	**818,554**	**957,167**	**707,630**	**903,074**	**848,770**	**838,090**	1.39%
North Europe	743,590	740,111	768,226	766,699	807,043	957,167	678,193	890,772	702,580	672,299	-1.06%
Japan/Korea							29,437		133,270	165,791	NA
Caribbean					11,511			12,303	12,919		NA
Mobile, AL (Port)	**538,442**	**685,673**	**495,827**	**164,327**	**368,904**	**529,357**	**626,005**	**636,711**	**918,586**	**956,799**	3.77%
North Europe	531,692	685,673	495,827	164,327	344,339	504,785	589,395	585,937	889,320	868,407	2.66%
Caribbean					24,565	24,571	36,610	50,774	12,125		NA
Mediterranean	6,749									49,604	NA
Japan/Korea									17,141	34,654	NA
Africa										4,134	NA
Port Arthur, TX (Port)	**329,405**	**515,279**	**443,739**	**185,853**		**187,512**	**342,994**	**118,284**	**349,977**	**355,116**	-4.05%
North Europe	329,405	515,279	443,739	185,853		187,512	342,994	118,284	349,977	355,116	-4.05%
Pascagoula, MS (Port)			**30,406**						**298,515**	**645,383**	NA
Japan/Korea									213,706	450,944	NA
North Europe			30,406						35,330	194,439	NA
Caribbean									49,479		NA
New Orleans, LA (Port)	**9**				**0**	**303,102**	**249,560**		**0**	**0**	NA
North Europe	9				0	303,102	249,560		0	0	NA
Japan/Korea										0	NA
Mediterranean					0	0			0		NA

Source: USA Trade OnLine

With respect to other potential dry bulk export markets, the Port of Mobile is the only port in the Gulf Coast region with a major wood chip export operation, primarily destined for the Mediterranean region. Chip exports from Mobile have grown from 80,000 tons in 2022 to nearly 325,000 tons in 2023. The export wood chip market may represent a potential export product for the LMR region, focusing on the forest resources in Louisiana.

Imported cement has grown steadily in the Gulf Coast region, and as shown in Exhibit II-9, cement/slag imports at Houston, Tampa and Gramercy posted strong growth in this market. Due to the need for close location to construction sites, the import cement market appears to offer a potential area for further investigation by the LMR ports to support infrastructure development induced by the LNG facilities construction in Plaquemines Parish, as well as road, highway and housing construction in the LMR region. Exhibit II-9 highlights the cement import operations at the Gulf Coast ports.

[3] Enviva has filed for bankruptcy, and has been delisted from the New York Stock Exchange

Exhibit II-9: Cement Imports at Gulf Coast Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Houston, TX	3,814,023	4,427,018	3,138,028	3,042,356	3,770,074	5,107,158	4,014,542	4,809,873	4,495,337	4,495,100	1.84%
Tampa, FL	2,452,884	2,611,959	2,844,591	2,793,152	3,411,956	3,491,788	3,687,391	4,066,045	3,592,587	4,176,444	6.09%
Gramercy, LA	451,343	98,999	30,162	264,796	453,436	778,770	551,373	356,649	1,379,570	1,520,777	14.45%
Corpus Christi, TX	849,868	1,512,243	1,290,494	708,279	889,803	1,522,651	1,424,665	1,559,589	1,189,143	1,348,548	5.26%
Port Manatee, FL	372,990	317,617	426,295	627,061	574,298	927,618	825,227	1,036,758	1,160,522	948,054	10.92%
New Orleans, LA	544,621	497,271	624,156	380,593	495,596	488,224	417,175	522,691	1,634,585	936,381	6.21%
Mobile, AL	661,000	1,004,844	532,475	1,176,173	695,980	818,808	1,021,295	1,053,330	727,017	760,260	1.57%
Lake Charles, LA	1,118,100	2,346,048	2,402,597	1,812,328	1,205,372	874,576	954,413	841,783	473,003	451,741	-9.58%
Brownsville, TX	376,881	686,690	521,793	386,924	313,760	573,785	524,145	731,372	364,503	411,302	0.98%
Beaumont, TX				109,316				63,526	116,152	405,454	NA
Pensacola, FL	59,019	68,948	68,940	101,010	33,854	72,801	64,180	197,295	359,581	321,944	20.74%
Port Arthur, TX	899,947	739,253	1,159,326	758,938	1,320,335	1,749,723	1,824,114	1,060,087	469,069	243,346	-13.53%
Freeport, TX	1,170,564	1,510,361	1,095,982	778,389	804,956	760,510	504,784	311,642	214,651	161,589	-19.75%
Panama City, FL	94,224	72,970		36,114	79,712	114,684	112,047	75,737	113,657	141,858	4.65%
Sabine, TX								145,234	2,097	80,204	NA
Baton Rouge, LA	339,079	210,491	294,435	179,040				50,000	47,000	3,650	-39.56%
Morgan City, LA				293	286			47,931	8,501		NA
Galveston, TX						2,879					NA
Gulfport, MS	28,833	61,270	149,422	140,864	26,761						NA
Pascagoula, MS	36,875										NA
Port Lavaca, TX											NA
Grand Total	***13,270,253***	***16,165,981***	***14,578,696***	***13,295,625***	***14,076,179***	***17,283,974***	***15,925,350***	***16,929,543***	***16,346,977***	***16,406,654***	***2.39%***

Source: USA Trade OnLine

3. Developments in the Red River Valley/Port of Caddo-Bossier Region

Several future energy projects in the Red River Valley/Port of Caddo-Bossier Region could have impacts on the use of the Lower Mississippi River Ports in terms of export activity. For example, Bia Energy Operating Company is planning significant upgrades to its facility at the Port of Caddo-Bossier industrial multimodal facility which is designed to reduce carbon emissions by over 90% compared to traditional methanol production by capturing CO^2 and utilizing the hydrogen as both fuel and feedstock. The upgrades are designed to produce 550,000 metric tons of blue and bio-methanol annually. This low carbon methanol represents a potential export product via the Lower Mississippi river ports, and further may provide a significant feedstock for bunkering methanol powered ocean-going vessels calling at the Lower Mississippi River ports.

OPPORTUNITIES TO LEVERAGE FUTURE ENERGY DEVELOPMENTS IN RED RIVER REGION FOR USE OF LMR PORTS

- CARBON CAPTURE AND SEQUESTRATION PROJECTS IN RED RIVER REGION AND CENTRAL LOUISIANA PRESENT POTENTIAL MARKETS FOR LMR PORTS
- PRODUCTION OF GREEN/BLUE METHANOL FROM GREEN HYDROEN USED FOR EXPORT AS WELL AS BUNKERING OF OCEAN VESSELS AT LMR PORTS
- MAJOR FUTURE ENERGY PROJECTS IN THIS REGION WILL LIKELY STIMULATE INCREASED STEEL IMPORTS VIA LMR PORTS AS WELL AS PROJECT CARGO FOR USE IN PROJECT CONSTRUCTION

A second green methanol manufacturing facility by SunGas Renewables (Beaver Lake Renewable Energy) located in Rapides Parish is planned for completion in 2027. This facility will provide about 400,000 tons of green methanol annually to SunGas

customers worldwide, and will also serve as bunkers for methanal powered ocean vessels. AP Moeller has signed a letter of intent with SunGas to purchase fuel for its methanol powered container vessels, which could be an attractive asset to serve container vessels, as well as other methanol powered vessels calling the Lower Mississippi River ports.

In addition to providing a potential source of methanol export as well as bunkering fuel for ocean going vessels at the Lower Mississippi River ports, these developments along with two carbon capture projects at the Port of Caddo-Bossier will increase the demand for project cargo potentially imported via the Lower Mississippi River ports as well as imported specialty steel used in the construction of the carbon capture facilities. The key carbon capture facilities are the Heirloom Carbon Technologies decarbonization project which will create one of the largest Direct Air Capture hubs in Louisiana and the CLECO Power carbon capture and sequestration facility which will remove and compress more than 95% of the CO^2 emitted by the utilities largest electric generation unit in Louisiana.

III. International Break Bulk Markets and Potential

Break bulk cargo typically consists of cargoes that move via pallets or bags not in containers, and are not fungible such as bulk cargoes like grains, liquid bulk cargoes, coal, and coke. Furthermore, the break bulk cargoes are typically not consumed directly at the port by large production facilities such as refineries, but move to and from inland locations and the ports by the most cost-effective logistics supply chain. To identify potential break bulk cargoes for which the LMR ports could possibly increase volume throughput, this section focuses on a review of the key break bulk cargoes currently handled at the LMR ports as well as those break bulk cargoes for which the LMR ports have lost significant volume and market share to competing neighboring ports. In addition, new possible markets are evaluated including auto and roll-on/roll-off cargo, project cargo, and perishable cargoes.

BREAK BULK CARGO OPPORTUNITIES

- STRONG OPPORTUNITIES IN FOREST PRODUCTS IMPORT MARKET– PULP AND PACKAGING PAPER:
  - COMPETITIVE LOGISTICS COSTS TO MILLS
  - WAREHOUSE CAPACITY REQUIRED
- PRECIOUS METALS (COPPER, LEAD, ZINC) REPRESENT STRONG POTENTIAL MARKET AND USED IN:
  - PIPELINE CONSTRUCITON
  - PETROCHEMICAL INDUSTRY
  - OFF-SHORE DRILLING
  - BATTERY PRODUCTION
  - EV PRODUCTION AND CHARGIN STATIONS
- ALUMINUM IMPORT OPPORTUNITIES:
  - TRADTIONAL AND EV AUTO MANUFACTURING
  - AEORSPACE
- IRON AND STEEL IMPORT OPPORTUNITIES:
  - LMR PORTS AND RIVER TRANSPORTATION PROVIDE KEY LOW-COST LOGISTICS LINKAGE TO CENTRAL AND UPPER MIDWEST AUTO MANUFACTURING
  - LNG FACILTIIES CONSTRUCTION AS WELL AS CARBON CAPTURE PROJECTS KEY DRIVERS
- LMR TERMINALS HANDLE LARGE MARKET SHARE OF BREAK BULK RUBBER IMPORTS:
  - USED IN TIRE MANUFACRUTING WITHIN THE STATE AS WELL AS IN THE CENTRAL AND MIDWEST U.S.
  - COVERED STORAGE NECESSARY

A review of break bulk cargoes moving via the Gulf Coast ports, particularly from Mobile to Galveston, identified the following break bulk cargo markets for further analysis:

- Forest Products
- Precious Metals
- Aluminum
- Iron and Steel Products
- Rubber

1. Forest Products

The forest products market consists of:

- **Wood pulp:**

- Wood fiber reduced chemically or mechanically to pulp and used in the manufacturing of paper, consumer disposables such as paper towels, tissues, toilet paper – typically imported from South America
- Pulp fluff type of chemical pulp used as material in the absorbent core of personal care products such as diapers, feminine hygiene products – typically exported

- **Paper:**

- Rolled paper used for magazine production – typically imported

  - Linerboard used in packaging especially perishables - typically exported
  - Folding boxboard – typically imported
  - Packaging paper used for product packaging (replacing plastics) - typically imported
- **Plywood –** Typically imported and required imported storage
- **Lumber –** Typically imported and requires both inside (non-treated) and outside storage.

1.1 Pulp Market

Overall, the pulp import market has shown steady growth since 2014, with ports on the Gulf Coast leading the import port pulp volume, but the South Atlantic ports, such as Jacksonville, and Savannah have experienced significant growth in this market, as shown in Exhibit III-1. The conversion of Ocean Terminals from a break bulk terminal to a container terminal at Savannah will result in the demand for warehouse space elsewhere for the displaced breakbulk cargo. Most likely this break bulk cargo will be moved to the Port of Brunswick, GA, also owned by the Georgia Port Authority.

Exhibit III-1: Pulp Import Tonnage (Container and Non-Container) by U.S. Port Range

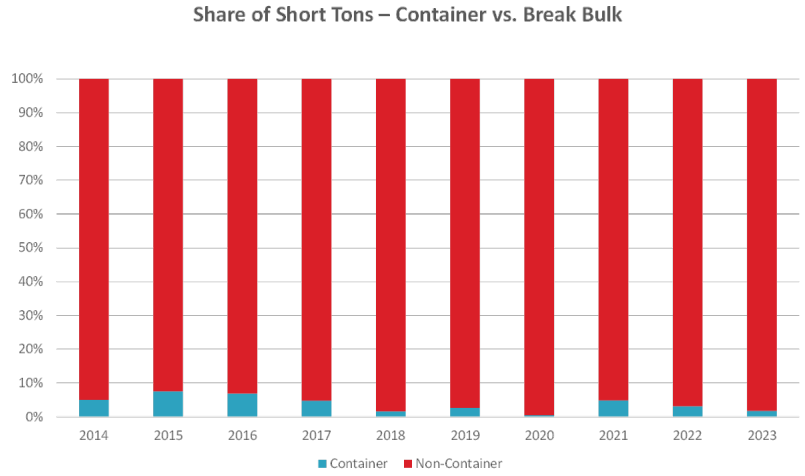
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Gulf	1,093,593	1,082,295	1,079,086	1,083,972	1,143,299	1,169,425	1,336,933	1,365,369	1,560,898	1,622,075	4.48%
South Atlantic	426,863	502,233	551,511	585,943	605,829	692,062	765,301	826,194	1,021,266	1,061,061	10.65%
North Atlantic	756,222	852,559	887,434	905,830	942,320	832,077	912,726	963,271	1,008,976	941,353	2.46%
PNW	145,550	63,353	48,837	63,055	62,376	61,289	70,950	40,428	65,051	43,082	-12.65%
PSW	6,036	7,294	2,515	897	1,192	17,313	7,523	23,951	17,324	12,600	8.52%
Grand Total	**2,428,265**	**2,507,736**	**2,569,383**	**2,639,696**	**2,755,016**	**2,772,165**	**3,093,433**	**3,219,213**	**3,673,515**	**3,680,170**	4.73%

Source: USA Trade OnLine

The vast majority of pulp imports into the Gulf Coast ports moves in break bulk, as shown in Exhibit III-2. Mobile is the leading pulp import port on the Gulf Coast (Exhibit III-3), with imports growing at Beaumont, Port Arthur and Port Manatee. The growth in pulp imports at Beaumont and Port Arthur reflect availability of warehouse capacity as well as proximity to mills, while the pulp imported at Port Manatee arrives at the port from South America in break bulk, and then a portion of the pulp is transloaded into containers for export to Mexico on World Direct, reflecting the backhaul cargo to Mexico. The balance moves to domestic mills. World Direct has had strong growth at Port Manatee in handling imported fruit and vegetables from Mexico, as well as most recently, appliances destined for distribution centers within the Southeastern U.S. The pulp serves as the backhaul cargo and moves in empty containers. Due to a lack of warehouse space at several of the Mexican ports (Tuxpan and Tampico), the container acts as a floating storage unit for the pulp until it moves inland to Mexican destinations.

Furthermore, as shown in Exhibit III-3, the East Coast of South America, Brazil, is the source of the majority of the break bulk pulp imported into the Gulf Coast ports.

Exhibit III-2: Share of Pulp Imports at Gulf Coast Ports Moving via Break Bulk vs. Container



Source: USA Trade OnLine

Exhibit III-3: Break Bulk Pulp Imports by Gulf Coast Port and Trade Lane of Origin

Mobile and Port Arthur Lead Gulf Coast Ports in Pulp Imports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Mobile, AL	589,914	458,280	477,029	535,213	505,267	560,692	558,765	530,348	541,673	557,260	-0.6%
Port Arthur, TX	292,319	285,540	290,699	311,764	265,483	223,357	375,974	527,859	433,183	462,368	5.2%
Beaumont, TX	100,687	201,928	182,622	103,831	262,124	296,747	358,086	74,296	174,141	283,783	12.2%
Port Manatee, FL	56,116	51,369	18,243	61,754	78,206	46,105	37,973	159,950	259,277	189,187	14.5%
New Orleans, LA	0	0	0	67	0	0	0	6,349	103,650	90,599	NA
Others	***0***	***3,856***	***36,266***	***19,712***	***14,138***	***11,968***	***0***	***87***	***0***	***11,023***	***NA***
Total	***1,039,037***	***1,000,973***	***1,004,859***	***1,032,341***	***1,125,217***	***1,138,868***	***1,330,797***	***1,298,888***	***1,511,923***	***1,594,220***	***4.9%***

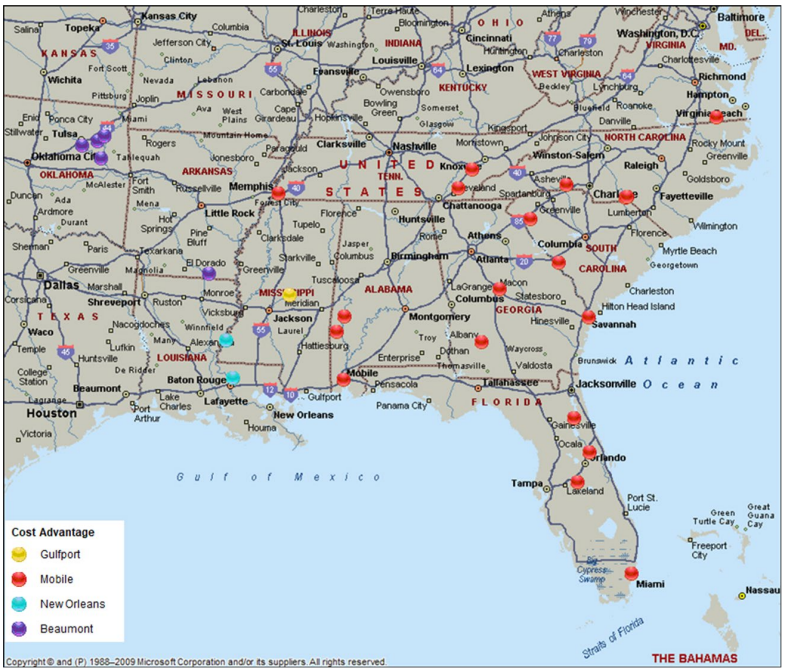
East Coast South America is the Source of Pulp Imports on the South Atlantic

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
South America EC	1,032,867	1,000,973	1,004,859	1,032,274	1,125,217	1,138,797	1,330,246	1,298,888	1,495,757	1,527,931	4.4%
North Europe	0	0	0	67	0	72	551	0	16,166	65,463	NA
Central America	0									827	NA
Caribbean	2,205	0									-100.0%
Canada							0				NA
SE Asia	3,966							0			-100.0%
South America WC	0	0									NA
Mediterranean		0	0	0	0	0	0	0	0	0	NA
Africa		0		0	0	0	0	0	0	0	NA
China	0	0								0	NA
Total	***1,039,037***	***1,000,973***	***1,004,859***	***1,032,341***	***1,125,217***	***1,138,868***	***1,330,797***	***1,298,888***	***1,511,923***	***1,594,220***	***4.9%***

Source: USA Trade OnLine

Exhibit III-4 shows the location of the key mills importing pulp via Gulf and South Atlantic Coast ports.

Exhibit III-4: Location of Mills Importing Pulp via Gulf Coast and South Atlantic Ports



Source: Interview Results

Interviews conducted by Martin Associates with shippers, carriers and terminal operators indicate that the key advantages of the use of the LMR port region is the rail access to key mills, the ability to barge to specific mills with a river location, as well as the truck cost advantage to several key mills importing pulp. The results of the interviews also indicated that the uncertainty as to river levels was a deterrent to use barge transportation to serve inland mills and the lack of clear span warehouse with a minimum floor strength of 1,000 pounds per square foot (PSF) was also crucial in the consideration of the LMR ports for break bulk pulp imports. One possibility identified by those interviewed was the development of a 200,000-300,000 SF plus warehouse that could be used as a storage site for imported pulp that would provide access to the mills via barge when river levels were adequate to avoid delays, and the flexibility to use truck or rail to serve the mills as an alternative when river levels fluctuated.

1.2 Imported Paper

Imported paper products (excluding kraft linerboard) have not experienced the same growth as pulp imports, and the majority of the imported paper, both containerized and non-containerized, is handled at the North Atlantic ports, particularly Baltimore and Philadelphia. To date, the Gulf Coast ports have not been a major player in the imported paper products market, and as shown in Exhibit III-5, as this range ranks third amongst U.S. port ranges in handling containerized and non-containerized paper import tonnage.

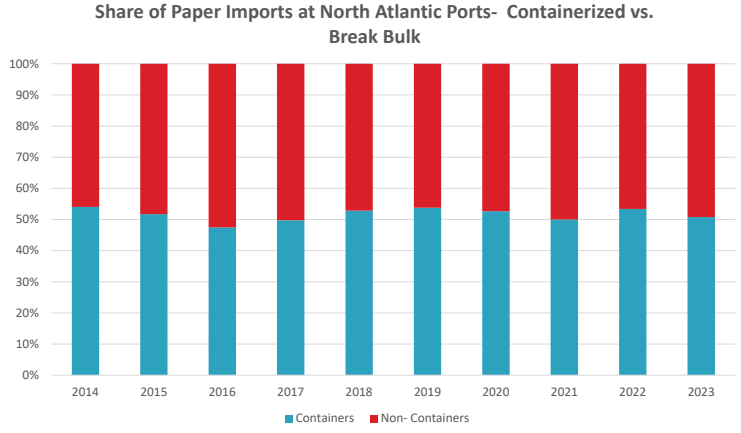
Exhibit III-5: Imported Paper by Commodity Type by Port Range (Containerized and non-Containerized Tonnage)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
North Atlantic	**1,910,185**	**1,879,840**	**1,890,150**	**1,847,255**	**1,927,535**	**1,830,688**	**1,503,912**	**1,784,470**	**2,141,227**	**1,393,658**
4810 Paper & Paperboard, Coated With Kaolin Etc, Rl Etc	841,711	914,905	969,532	978,779	1,118,174	1,060,709	980,370	1,146,452	1,419,333	957,739
4802 Paper, Uncoat, For Writing Etc, Rolls; Hndmd Paper	750,457	659,958	627,655	529,033	501,321	524,804	336,807	416,704	512,865	270,840
4811 Paper, Paperboard, Wad Etc, Coat Etc Nesoi, Rl Etc	67,609	83,933	100,225	115,192	118,809	101,407	91,571	117,246	140,392	112,805
4805 Paper & Paperboard, Uncoat, Nesoi, Rolls Or Sheets	57,757	55,521	54,006	74,649	82,230	82,910	66,989	102,231	65,847	48,979
4801 Newsprint, In Rolls Or Sheets	192,649	165,524	138,732	149,601	107,001	60,858	28,174	1,837	2,789	3,295
South Atlantic	**849,058**	**820,962**	**902,422**	**971,224**	**1,062,408**	**965,988**	**735,190**	**868,276**	**923,940**	**594,897**
4810 Paper & Paperboard, Coated With Kaolin Etc, Rl Etc	385,058	393,943	435,126	483,938	551,436	481,130	359,619	395,619	480,265	339,840
4802 Paper, Uncoat, For Writing Etc, Rolls; Hndmd Paper	314,448	257,873	274,170	248,281	284,507	250,977	181,336	258,751	236,239	117,243
4811 Paper, Paperboard, Wad Etc, Coat Etc Nesoi, Rl Etc	111,419	134,695	128,199	131,098	123,222	120,426	111,960	113,579	122,975	81,809
4805 Paper & Paperboard, Uncoat, Nesoi, Rolls Or Sheets	33,226	33,893	34,121	50,516	39,832	40,722	42,950	61,717	52,771	37,765
4801 Newsprint, In Rolls Or Sheets	4,907	558	30,806	57,391	63,412	72,732	39,325	38,610	31,691	18,242
PSW	**699,336**	**635,605**	**594,513**	**583,313**	**635,013**	**578,251**	**414,554**	**386,570**	**449,421**	**324,547**
4810 Paper & Paperboard, Coated With Kaolin Etc, Rl Etc	303,345	294,751	263,034	268,418	289,702	237,151	162,806	155,350	223,112	122,824
4805 Paper & Paperboard, Uncoat, Nesoi, Rolls Or Sheets	61,515	99,548	136,006	125,168	159,291	144,344	114,145	95,474	67,799	82,128
4811 Paper, Paperboard, Wad Etc, Coat Etc Nesoi, Rl Etc	91,342	85,467	82,682	85,245	95,216	91,801	73,549	72,624	75,395	60,885
4802 Paper, Uncoat, For Writing Etc, Rolls; Hndmd Paper	243,131	155,834	112,528	104,259	90,551	101,763	62,960	62,477	82,794	58,386
4801 Newsprint, In Rolls Or Sheets	3	4	262	223	254	3,191	1,095	643	321	324
Gulf	**160,798**	**184,651**	**218,426**	**233,282**	**217,817**	**244,525**	**196,006**	**230,256**	**258,262**	**196,227**
4811 Paper, Paperboard, Wad Etc, Coat Etc Nesoi, Rl Etc	52,137	67,828	76,722	55,009	61,305	71,060	62,850	69,662	73,993	65,491
4802 Paper, Uncoat, For Writing Etc, Rolls; Hndmd Paper	71,304	68,629	72,455	53,839	63,216	82,507	63,311	74,612	80,540	55,700
4810 Paper & Paperboard, Coated With Kaolin Etc, Rl Etc	31,820	45,059	58,129	62,960	72,925	72,638	53,328	55,541	81,506	53,356
4801 Newsprint, In Rolls Or Sheets	3,118	1,385	2,481	4,378	3,427	5,975	5,848	12,045	13,734	14,220
4805 Paper & Paperboard, Uncoat, Nesoi, Rolls Or Sheets	2,419	1,751	8,638	57,096	16,944	12,345	10,669	18,396	8,490	7,460
PNW	**187,496**	**157,432**	**91,026**	**80,921**	**75,065**	**94,960**	**52,838**	**56,967**	**65,845**	**55,066**
4810 Paper & Paperboard, Coated With Kaolin Etc, Rl Etc	61,883	73,417	57,347	45,998	39,337	31,475	26,735	31,592	48,207	31,160
4802 Paper, Uncoat, For Writing Etc, Rolls; Hndmd Paper	42,475	21,256	8,766	9,360	14,056	42,375	9,654	9,916	7,185	9,239
4811 Paper, Paperboard, Wad Etc, Coat Etc Nesoi, Rl Etc	13,439	14,851	12,865	12,769	12,916	12,209	9,263	9,461	8,551	8,928
4805 Paper & Paperboard, Uncoat, Nesoi, Rolls Or Sheets	845	1,123	1,411	2,825	716	1,977	6,100	5,997	1,902	5,740
4801 Newsprint, In Rolls Or Sheets	68,854	46,785	10,637	9,969	8,040	6,924	1,086			
NOCAL	**98,002**	**77,788**	**80,149**	**63,269**	**78,677**	**79,753**	**63,289**	**51,204**	**50,457**	**27,749**
4810 Paper & Paperboard, Coated With Kaolin Etc, Rl Etc	43,510	42,254	49,387	39,421	44,885	42,457	37,990	32,492	31,478	15,785
4811 Paper, Paperboard, Wad Etc, Coat Etc Nesoi, Rl Etc	9,060	8,143	7,200	8,438	11,605	8,055	12,042	9,616	6,764	6,464
4802 Paper, Uncoat, For Writing Etc, Rolls; Hndmd Paper	45,396	23,982	18,388	13,158	18,566	20,333	5,368	5,402	7,192	4,992
4805 Paper & Paperboard, Uncoat, Nesoi, Rolls Or Sheets	36	3,402	5,150	2,252	3,286	8,886	7,870	3,664	5,024	508
4801 Newsprint, In Rolls Or Sheets		8	24		334	21	20	30		
Grand Total	**3,904,875**	**3,756,278**	**3,776,686**	**3,779,263**	**3,996,514**	**3,794,164**	**2,965,789**	**3,377,743**	**3,889,152**	**2,592,145**

Source: USA Trade OnLine

Typically, the paper imported into the Gulf Coast ports moves via containerized cargo, as shown in Exhibit III-6, while only about 50% of the paper imports into the North Atlantic ports move in containers.

Exhibit III-6: Share of Paper Imports Moving into the Gulf Coast and North Atlantic Ports – Containerized vs. Non-Containerized



Source: USA Trade OnLine

Interviews with the key paper importers indicated that there is a growing demand for packaging paper to replace plastic packaging, and this market is anticipated to grow, and move via break bulk. Gulf Coast paper imports are driven by packaging paper demand. This expected growth in packaging paper is underscored by a current solicitation by one importer indicating nearly 800,000 tons of packing paper board is targeted for the U.S. market over the next 5 years, and the majority of this will move via break bulk. This volume will require about 1.2 million SF of warehouse space. Due to the absence of warehouse space at the LMR ports, the imported paper market does not appear to offer a strong potential. However, should warehouse capacity become available, this market could be targeted along with pulp.

1.3 Kraft Liner Board Export Market

Overall, the kraft liner board (KLB) market has been gradually declining since 2014, reflecting the closing of several KLB operations throughout the South Atlantic and Gulf Coast region.

Exhibit III-7: Exports of Kraft Liner Board (container and Non-Container) by Port Region

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
South Atlantic	2,249,176	2,225,347	2,421,324	2,606,274	2,773,455	2,274,153	2,493,904	1,764,811	1,946,137	1,702,004	-3.05%
Gulf	1,168,846	1,162,342	924,259	965,395	1,034,747	833,487	823,512	787,989	847,027	809,745	-4.00%
North Atlantic	405,199	376,453	288,802	304,356	291,883	337,009	367,363	269,463	280,088	366,057	-1.12%
PNW	452,452	381,931	383,737	360,783	359,206	321,577	391,544	288,218	256,650	218,481	-7.77%
PSW	35,187	30,903	49,242	60,508	76,580	48,303	40,567	25,872	20,309	10,918	-12.19%
NOCAL	1,577	960	865	598	1,152	1,572	1,180	772	3,236	1,997	2.66%
Grand Total	***4,312,437***	***4,177,937***	***4,068,227***	***4,297,915***	***4,537,025***	***3,816,100***	***4,118,070***	***3,137,125***	***3,353,446***	***3,109,202***	***-3.57%***

Source: USA Trade OnLine

Exhibit III-8 shows that Panama City was the leading export port in the Gulf for KLB, but due to the closing of the local KLB mill at Panama City, it is likely that tonnage will be significantly less in the future. Houston increased its KLB export activity in 2022-2023, receiving KLB from local mills in Texas and Western Louisiana.

Exhibit III-8: Non-Containerized KLB Exports by Gulf Coast Port and Trade Lane of Destination

Panama City and Mobile Lead Gulf Coast Ports In KLB Exports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Panama City, FL	122,591	126,494	115,796	114,552	107,124	116,810	117,604	144,648	193,111	140,588	1.5%
Mobile, AL	121,911	160,668	175,235	117,323	129,452	106,118	103,722	109,241	136,951	134,518	1.1%
Port Arthur, TX	82,257	93,456	69,388	41,856	50,135	35,902	39,315	42,296	36,911	33,082	-9.6%
Houston, TX	755	17,560	17,319	15,940	13,608	5,346	1,659	2,416	10,114	28,059	49.4%
Gulfport, MS	46,324	7,861	18,736	26,156	11,513	6,293	1,352	6,603	10,252	4,378	-23.1%
New Orleans, LA	35,647	84,307	30,956	4,757	3,904	14,477	20,355	10,496	15,974	1,523	-29.6%
Other	174,794	124,943	44,696	33,303	43,860	2,619	2,332	3,085	2,236	0	-77.6%
Total	***584,280***	***615,288***	***472,126***	***353,886***	***359,596***	***287,566***	***286,339***	***318,786***	***405,548***	***342,149***	***-5.8%***

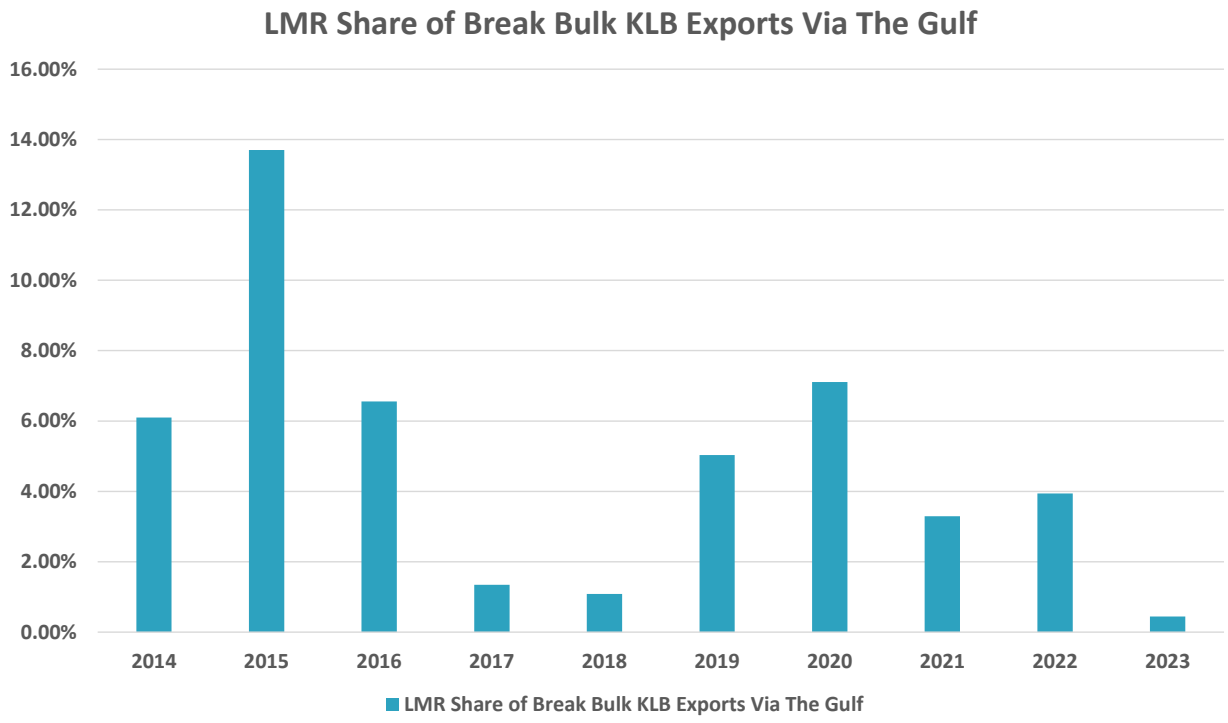
Central America and MED Are Key KLB Export Destinations for Gulf (China, MED and West Coast of South America Lead South Atlantic Ports Destinations)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Central America	205,505	224,121	175,492	149,665	147,109	120,631	129,602	186,136	199,488	224,585	1.0%
Mediterranean	128,694	161,410	176,507	121,700	112,305	96,864	101,976	70,526	75,986	74,292	-5.9%
Caribbean	47,410	47,868	58,775	38,568	34,691	36,617	33,266	35,704	38,551	18,261	-10.1%
Africa	21,301	21,469	15,573	13,184	20,442	13,095	9,336	19,013	18,064	14,917	-3.9%
China	210	632	2,238	6,810	14,224	3,558	10,780	1,824	3,679	9,696	53.1%
Japan/Korea	418	1,212	4,931	984	1,140	16	241	2,735	23	179	-9.0%
South America WC	152,438	131,888	19,071	3,293	759	333	52	2,843	44,797	110	-55.2%
South America EC	12,141	9,906	1,796	147	310	0	148	0	23,169	103	-41.1%
North Europe	14,744	16,549	17,497	19,288	28,260	16,452	912	4	1,653	5	-59.1%
Middle East	352	43	0	0	169	0	26	0	0	0	-100.0%
Canada	807	66		17							-100.0%
SW Asia	70	49	87	152	133	0	0	0	137	0	-100.0%
SE Asia	190	0	55	26	0	0	0	0	0	0	-100.0%
Australia/NZ	0	77	104	52	53		0		0	0	NA
Total	***584,280***	***615,288***	***472,126***	***353,886***	***359,596***	***287,566***	***286,339***	***318,786***	***405,548***	***342,149***	***-5.8%***

Source: USA Trade OnLine

Exhibit III-9 shows that the LMR ports have participated in the KLB export market historically, and in 2015 handled about 14 percent of break bulk KLB exports from Gulf Coast ports from Mobile to Galveston. By 2023 the LMR ports handled less than 1 percent of the regional KLB exports, as terminals in Houston have handled this lost KLB export tonnage from mills in Western Louisiana. Also, several of the mills supplying the LMR ports with KLB have closed since 2014.

Exhibit III-9: LMR Ports' Share of Gulf Coast KLB Export Market



Source: USA Trade OnLine

1.4 Plywood

Imported plywood tonnage experienced a surge in volume during COVID, particularly plywood moving in break bulk. Warehouse space was at a premium at most Atlantic and Gulf Coast ports during this time, and those ports where warehouse capacity was available were able to attract the plywood imports. However, as shown in Exhibit III-10, the plywood import volumes plummeted in 2023, and those ports that handled plywood during COVID were left with plywood experiencing long-dwell times. Exhibit III-10 shows the growth in plywood imports (containerized and break bulk) peaking in 2023. The contraction in plywood imports was most pronounced at Gulf Coast ports, where plywood import volume fell by 700,000 tons from 2022 levels.

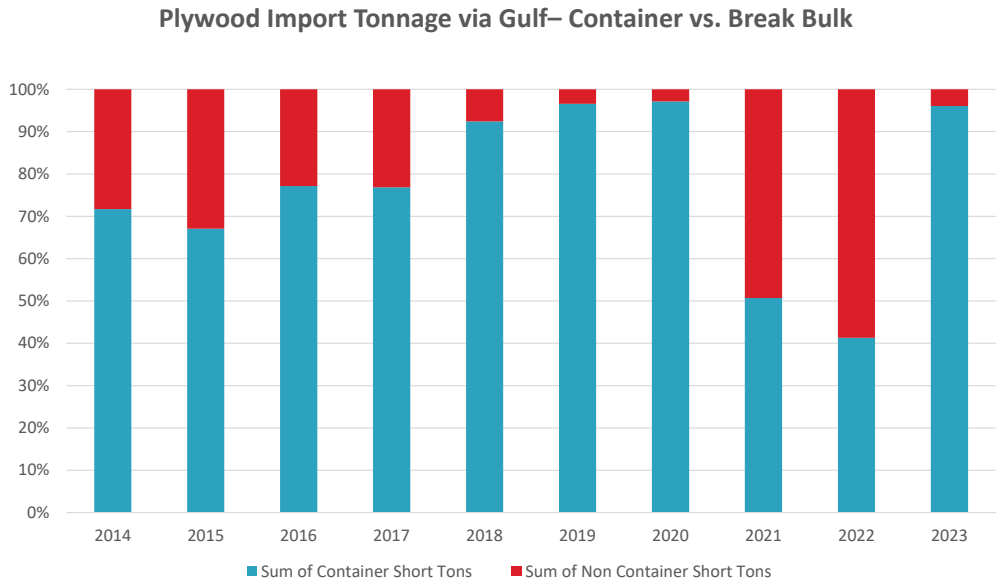
Exhibit III-10: Total Plywood Imports by Port Range (Containerized and Break Bulk)

Port Range	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
North Atlantic	603,345	756,536	924,462	1,049,935	1,107,275	985,114	1,075,611	1,354,979	1,110,985	917,449	4.77%
South Atlantic	283,469	348,044	487,399	500,974	552,939	566,473	625,103	628,764	598,345	470,117	5.78%
Gulf	206,587	262,196	329,445	350,858	363,838	336,202	396,612	718,721	1,065,135	379,783	7.00%
PSW	436,536	481,868	432,395	445,070	507,436	335,192	364,678	418,703	318,456	241,317	-6.37%
PNW	165,758	186,030	190,143	148,464	209,774	128,325	146,074	136,202	84,934	67,436	-9.51%
NOCAL	43,296	48,962	55,662	60,433	63,161	59,351	67,608	65,554	76,354	60,651	3.82%
Grand Total	***1,738,992***	***2,083,637***	***2,419,506***	***2,555,735***	***2,804,422***	***2,410,657***	***2,675,685***	***3,322,923***	***3,254,209***	***2,136,753***	***2.32%***

Source: USA Trade OnLine

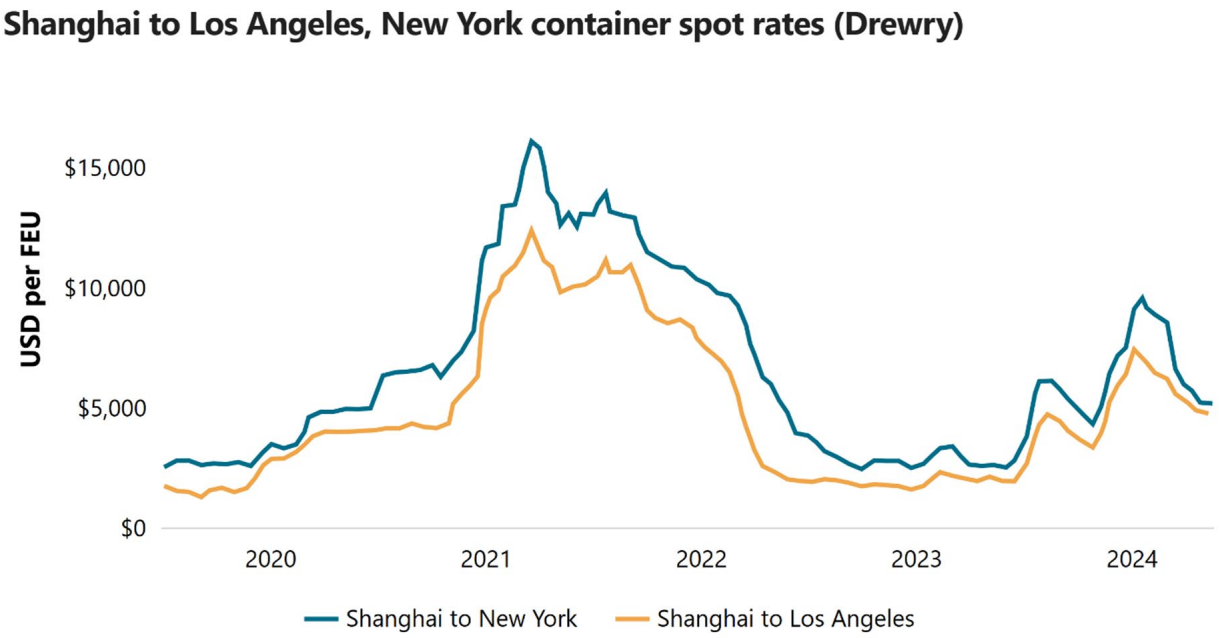
It is important to note that the degree of plywood moving via container vs. break bulk is highly sensitive to container rates. Exhibit III-11 shows how the share of container vs., non-containerized plywood imported tonnage changed as the container rates peaked during COVID (2021 and 2022) as the share of plywood moving in containers fell to a 9-year low. As container rates (shown in Exhibit III-12) fell between 2022 and 2023, the share of plywood moving in containers in 2023 again increased. This demonstrates the high degree of price sensitivity of plywood imports to container rates, but also to warehouse storage rates and port costs. Essentially plywood imports move via the lowest cost path, and is not a long-term stable revenue source for a port.

Exhibit III-11: Share of Plywood Imports Moving by Container Vs. Break Bulk at Gulf Coast Ports



Source: USA Trade OnLine

Exhibit III-12: Container Spot Rates



Source: Journal of Commerce

Exhibit III-13: Imported Break Bulk Plywood by Port and Trade Lane Origin

LMR Ports Handled Majority of Gulf Coast Plywood in Early Years, but Houston Outgained in 2022

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Houston, TX	20,010	32,649	32,888	45,327	11,884	3,359	5,050	221,765	376,074	6,310
Port Manatee, FL				1,107	6,057	1,758	2,889	38,654	14,162	3,862
Pascagoula, MS									12,040	2,362
Gulfport, MS									2,580	1,269
New Orleans, LA	37,544	52,687	40,802	34,841	9,581	5,611	1,313	71,183	158,507	676
Mobile, AL	0	0	0	0	25	0	22	403	6,420	326
Lake Charles, LA					0			7,131	35,536	47
Other	905	1,029	1,556	0	0	700	2,150	15,319	19,867	7
Total	***58,459***	***86,364***	***75,246***	***81,275***	***27,547***	***11,429***	***11,424***	***354,454***	***625,187***	***14,859***

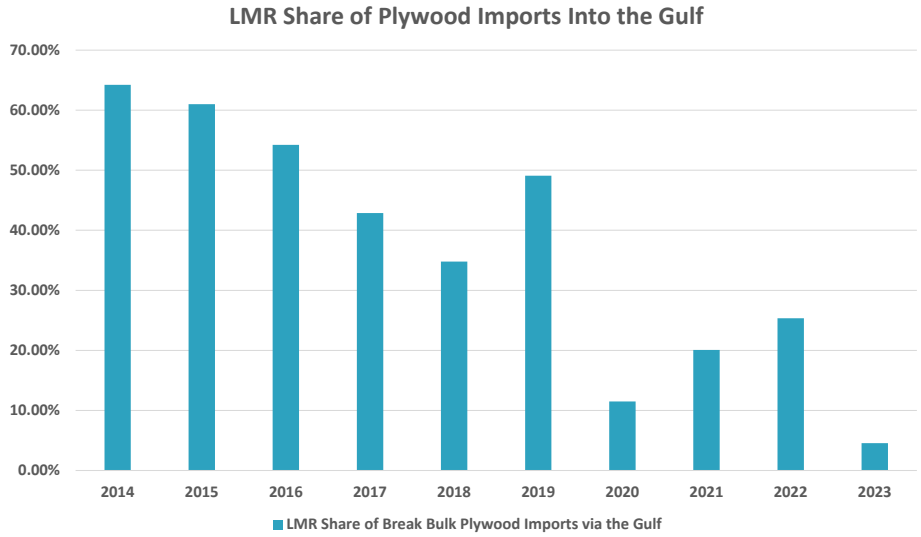
Vietnam Plywood was Key Driver of Break Bulk Plywood Handled in the Gulf

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
South America EC	0	0	0	1,498	6,057	2,468	5,042	37,310	21,737	10,362	NA
SE Asia	15,466	15,368	11,253	6,395	3,600	6,296	1,748	254,936	562,599	3,774	-14.5%
North Europe	37	173	476	28	116	47	17	1,242	3,508	417	30.8%
China	42,956	70,824	63,517	73,353	17,760	2,612	4,308	36,917	25,457	299	-42.4%
Central America	0	0	0	0	0	5	0	0	0	7	NA
All Other									0		NA
Caribbean							0				NA
Australia/NZ				0						0	NA
Africa		0	0	0	14	0	0	0	0	0	NA
SW Asia				0	0	0	0	22	576	0	NA
South America WC	0	0	0	0	0	0	308	23,976	11,310	0	NA
Mediterranean	0	0	0	0	0	0	0	51	0	0	NA
Japan/Korea							0	0	0	0	NA
Total	***58,459***	***86,364***	***75,246***	***81,275***	***27,547***	***11,429***	***11,424***	***354,454***	***625,187***	***14,859***	***-14.1%***

Source: USA Trade OnLine

As shown in Exhibit III-13, the LMR ports (included in the New Orleans Customs District) handled a majority of the Gulf Coast region plywood imports, but Houston experienced strong growth through 2022. Southeastern Asia has been the major source of the plywood imports into the Gulf Coast. In 2014, the LMR ports handled about 65 percent of the break bulk plywood imports into the Gulf Coast ports, and by 2023, this share had fallen to about 5 percent (Exhibit III-14).

Exhibit III-14: LMR Port's Share of Break Bulk Plywood Imports into the Gulf Coast Region



Source: USA Trade OnLine

The decline in plywood imports post-COVID combined with the increased share of containerized cargo has led to a very strong loss in break bulk plywood tonnage across the board. Because of the sensitivity of plywood imports to container rates, as well as the fact that plywood imports are driven by the lowest logistics routing including storage rates, the plywood market does not provide a strong recommended market opportunity for the LMR ports. To recapture this market, not only would demand for plywood imports have to reverse its loss, significant investment in warehouse capacity would be required at the LMR ports.

1.5 Lumber Imports

The imported lumber market has exhibited strong growth since 2014, posting a 13.54 % compound annual growth rate (CAGR) over the period for all ports and nearly 20% CAGR for Gulf Coast ports. (Exhibit III-15).

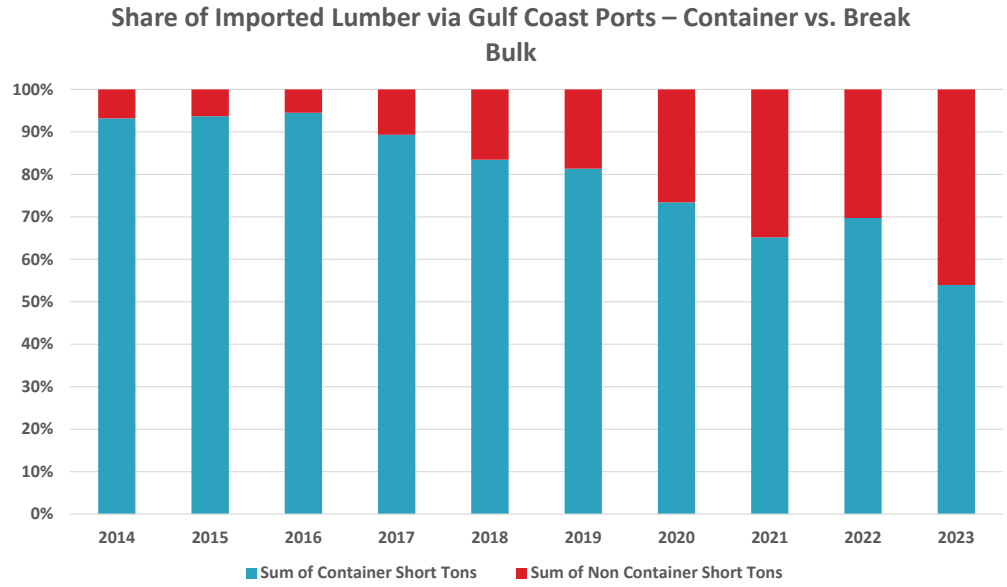
Exhibit III-15: Break Bulk and Containerized Lumber Tonnage by Port Range

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
North Atlantic	495,121	564,257	583,729	707,222	899,718	830,032	1,090,129	1,515,595	2,216,564	1,518,623	13.26%
South Atlantic	338,266	406,120	477,703	767,773	914,467	960,031	1,174,743	1,441,122	2,300,161	1,360,870	16.73%
Gulf	241,567	280,458	349,648	486,949	639,316	666,896	911,359	1,155,552	1,772,755	1,192,380	19.41%
PNW	92,282	101,929	98,762	110,587	125,320	114,448	114,106	105,231	87,926	89,942	-0.28%
PSW	108,755	112,441	112,706	121,374	135,717	121,384	124,588	134,607	134,674	82,505	-3.02%
NOCAL	98,941	87,433	67,365	66,441	93,995	75,623	78,100	96,474	153,809	68,679	-3.98%
Grand Total	***1,374,932***	***1,552,638***	***1,689,912***	***2,260,346***	***2,808,533***	***2,768,415***	***3,493,027***	***4,448,582***	***6,665,888***	***4,312,999***	***13.54%***

Source: USA Trade OnLine

Furthermore, the share of lumber moving in break bulk has been increasing, demanding new warehouse capacity at ports along the Gulf Coast (Exhibit III-16)

Exhibit III-16: Share of Lumber Imports Moving Break Bulk vs. Container at Gulf Coast Ports



Source: USA Trade OnLine

Houston has handled the largest volume of break bulk lumber tonnage, in the Gulf, while the largest growth in tonnage was recorded by Lake Charles, as the port delivered warehouse capacity to the market. The LMR ports had very limited participation in this market, as shown in Exhibit III-17. Northern Europe is the largest supplier of lumber into the U.S. followed by growth in lumber from the East Coast of South America and the Mediterranean.

Exhibit III-17: Imported Break Bulk Lumber by Gulf Coast Port and Trade Lane Source of Import

Lake Charles has Overtaken Houston in 2023 - LMR Ports
Very Low Volume

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Houston, TX	6,835	4,788	358	17,859	11,186	7,310	41,281	129,909	183,042	130,073	38.73%
Lake Charles, LA	2,142	3,457	3,134	3,687	3,841	6,749	50,610	71,534	123,919	151,710	60.54%
Port Arthur, TX				1,204	46,777	63,701	45,664	42,191	52,345	72,566	NA
Port Manatee, FL	6,557	8,016	10,772	17,195	23,957	29,551	31,990	27,756	14,369	34,233	20.16%
Mobile, AL	865	1,220	4,526	10,640	7,499	4,375	19,048	41,059	63,549	33,466	50.11%
Tampa, FL	0	49	0	0	0	0	42,504	56,451	36,029	50,286	NA
Panama City, FL	0	0	0	0	12,238	12,175	10,775	27,337	31,535	53,954	NA
Pascagoula, MS								439	22,344	5,587	NA
New Orleans, LA	45	106	314	867	342	541	239	4,201	880	14,756	90.33%
Gulfport, MS	0	0	0	0	0	40	136	263	8,578	2,274	NA
Other	1	0	0	522	0	0	0	1,057	6	0	NA
Total	***16,446***	***17,635***	***19,104***	***51,975***	***105,840***	***124,442***	***242,247***	***402,196***	***536,595***	***548,904***	***47.66%***

Northern Europe has been Key Supplier of Break Bulk
Lumber Tonnage but Brazil is Becoming a Player

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
North Europe	49,297	87,126	96,773	339,682	502,179	526,127	937,274	1,279,164	1,719,067	1,596,367	47.17%
South America EC	12,526	12,082	18,207	24,472	34,178	52,432	47,389	44,687	77,142	67,966	20.67%
Mediterranean	1,149	324	520	6,174	27,861	1,821	19,041	97,318	113,775	43,957	49.92%
SE Asia	65	55	251	632	189	243	307	8,254	10,821	4,385	59.69%
China	455	8,318	7,976	12,051	10,420	741	372	4,175	3,992	720	5.23%
South America WC	6,788	4,914	2	26	3	21	548	7,302	36,455	357	-27.92%
Africa	330	93	194	177	64	60	26	35	47	356	0.83%
Central America	11	374	17	17	53	57	157	569	140	145	33.66%
SW Asia	348	200	293	985	72	20	27	12	137	114	-11.69%
Australia/NZ	174	234	151	5	53	208	51	3,906	1,797	32	-17.27%
Canada	9,390	15,628	7,557	12,854	4,778	0	0	0	2,580		NA
Caribbean	22	352	0	0	0	17		0	0	0	NA
All Other	0	0	0	0	0	0	3	0	42	0	NA
Middle East			0	0	0	0	0	0	23	0	NA
Japan/Korea	84	0	153	19	23	0	0	0	299	0	NA
Grand Total	***80,638***	***129,699***	***132,094***	***397,095***	***579,871***	***581,747***	***1,005,196***	***1,445,422***	***1,966,316***	***1,714,398***	***40.45%***

Source: USA Trade OnLine

Based on interviews with the major lumber importers and terminal operators, the key factors driving the port choice for break bulk lumber imports are:

- Port costs including stevedoring and storage
- Warehouse availability to store lumber as an inventory control center for seasonal demand
- Local market:
    - Treated structural lumber (outside storage)
    - Home construction/remodel
    - Location of key distribution centers -- Home Depot, Lowes, etc.

The imported lumber market offers a strong potential for the LMR ports to support the local construction industry, and will require modern, clean clear span warehouse capacity.

2. Non-Ferrous/Precious Metals (Excluding Aluminum)

Precious metals consist of copper, lead, zinc, nickel, and tin. Overall, imports of these commodities have shown strong growth in the U.S., as shown in Exhibit III-18. with these commodities showing a more than 8% compound annual growth rate (CAGR) since 2014. Copper is the leading imported precious metal in terms of import tonnage, followed by lead and zinc. Exhibit III-19 shows that the Gulf Coast ports lead the country in the import of precious metals by a large margin.

Exhibit III-18: Imported Precious Metals Tonnage

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
74 Copper And Articles Thereof	308,548	339,864	336,730	488,454	452,497	426,219	421,335	589,582	514,103	611,354	7.89%
78 Lead And Articles Thereof	102,774	90,540	68,036	135,900	116,338	98,265	70,642	229,358	286,540	194,764	7.36%
79 Zinc And Articles Thereof	53,604	52,035	3,560	69,857	22,875	25,726	121,810	11,150	193,547	144,553	11.65%
75 Nickel And Articles Thereof	3,529	1,906	1,695	2,001	8,597	2,152	1,915	1,200	2,209	2,678	-3.02%
80 Tin And Articles Thereof	553	267	191	403	384	211	161	319	171	75	-19.86%
Grand Total	***469,008***	***484,612***	***410,213***	***696,615***	***600,691***	***552,573***	***615,864***	***831,608***	***996,570***	***953,424***	***8.20%***

Source: USA Trade OnLine

Exhibit III-19: Imported Precious Metals Tonnage by Port Region

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Gulf	350,242	383,235	336,818	555,047	461,092	366,420	499,705	589,093	721,831	752,321	8.87%
North Atlantic	108,199	93,086	63,530	133,892	128,283	178,643	91,242	230,104	263,901	195,933	6.82%
PSW	7,288	6,006	5,264	6,008	8,722	5,497	5,571	7,501	8,665	3,482	-7.88%
PNW	586	610	3,167	566	1,120	582	847	1,140	780	840	4.09%
South Atlantic	838	1,164	954	870	943	1,089	18,210	3,444	1,175	763	-1.04%
Great Lakes	1,653	186	331	87	74	52	49	36	133	43	-33.36%
NOCAL	202	325	149	144	456	289	240	290	85	41	-16.16%
Grand Total	***469,008***	***484,612***	***410,213***	***696,615***	***600,691***	***552,573***	***615,864***	***831,608***	***996,570***	***953,424***	***8.20%***

Source: USA Trade OnLine

With respect to precious metals by Gulf Coast port, Panama City has handled the majority of the copper imports into the Gulf, and this copper is currently consumed by two key copper wire manufacturers located in Pineville, AL and Carrollton, GA. Currently, the New Orleans port district handles the majority of the zinc and lead now imported into the Gulf Coast (Exhibit III-20).

Exhibit III-20: Imported Precious Metals by Gulf Coast Port

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
74 Copper And Articles Thereof	**295,578**	**329,535**	**328,083**	**478,928**	**431,987**	**359,141**	**372,623**	**576,169**	**501,568**	**604,274**
Panama City, FL (Port)	232,733	271,667	256,069	333,204	301,184	267,816	259,431	397,330	324,082	359,047
New Orleans, LA (Port)	56,451	46,608	63,478	100,723	93,168	71,983	87,719	71,488	101,200	168,324
Houston, TX (Port)	6,388	11,240	8,535	45,000	25,773	19,341	25,473	107,343	76,283	76,903
Subtotal	295,572	329,516	328,083	478,927	420,125	359,140	372,623	576,162	501,565	604,274
Other	7	19	0	0	11,862	1	0	8	3	0
78 Lead And Articles Thereof	**3,042**	**3,307**	**5,513**	**8,702**	**6,356**	**4,889**	**5,452**	**6,859**	**123,596**	**83,801**
New Orleans, LA (Port)	3,039	3,307	5,513	8,688	6,341	4,856	5,452	6,844	123,574	83,790
Other	3	0	0	14	14	33	0	15	22	11
79 Zinc And Articles Thereof	**50,724**	**49,720**	**2,866**	**66,904**	**22,056**	**1,518**	**120,932**	**5,573**	**95,585**	**62,328**
New Orleans, LA (Port)	50,706	49,720	2,866	66,903	22,041	1,515	120,926	5,573	95,579	61,773
Other	18	0	0	1	15	3	6	0	6	554
75 Nickel And Articles Thereof	**898**	**673**	**356**	**514**	**693**	**872**	**698**	**488**	**1,082**	**1,918**
Houston, TX (Port)	593	660	297	460	692	820	685	466	1,029	1,873
Other	305	13	59	54	1	51	13	22	53	45
80 Tin And Articles Thereof	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	**0**	**0**
Tampa, FL (Port)		0	0	0			0	0	0	0
New Orleans, LA (Port)	0	0	0	0	0	0	0	0	0	0
Houston, TX (Port)	0	0	0	0	1	0	0	4	0	0
Mobile, AL (Port)	0	0	0		0	0	0		0	0
Grand Total	350,242	383,235	336,818	555,047	461,092	366,420	499,705	589,093	721,831	752,321

Source: USA Trade OnLine

With respect to the uses of precious metals, lead is a key input into[4]:

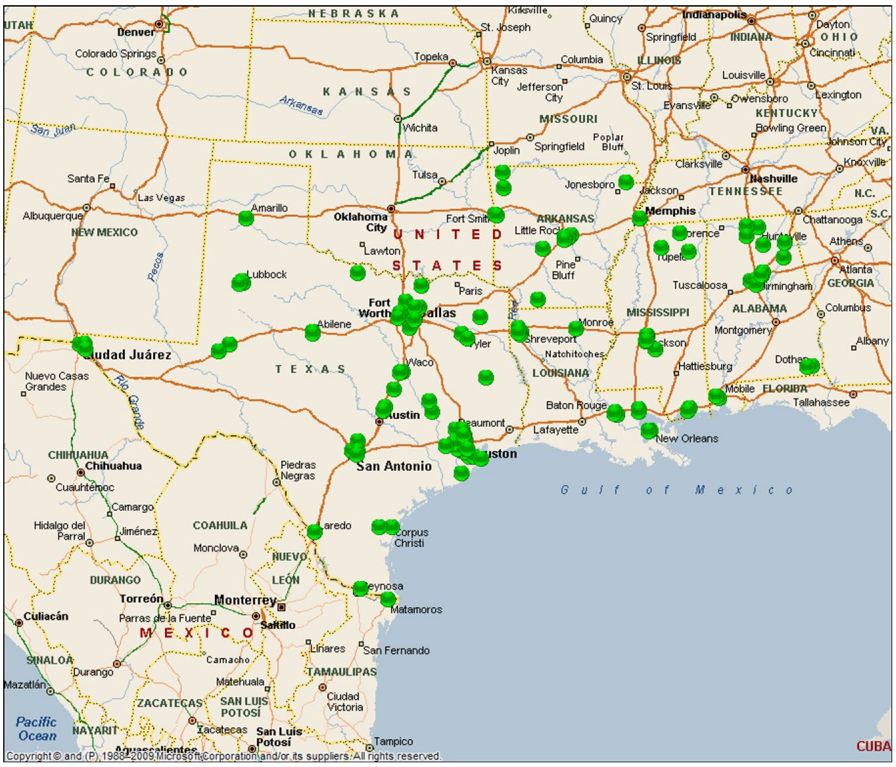
- Lead-acid batteries primarily used as starting-lighting-ignition (SLI) batteries for automobiles
- Industrial-type batteries for standby power for computer and telecommunications networks
- Motive power

Things to consider regarding lead:

- Growing competition from lithium-ion batteries and nickel-metal hydride (NiMH) batteries in EVs, but lead is infinitely recyclable and is critical in "green power"
- "Investing News Network" projects 3% annual growth in demand for lead over next 5 years with future limitations on mining capacity – however recycling will begin to supplement the undersupply of lead
- Lead batteries are key as storage units for solar and wind energy, and are being investigated for complimentary uses with EV charging stations. As part of the EV charging station infrastructure, lead batteries will help manage fluctuations in energy demand

[4] Lead's Vital Role in the Growing Electric Vehicle Industry | INN

Exhibit III-21: Key Battery Manufacturing Locations in the Southeastern U.S.



The key uses of copper are[5]:

- Construction
- Electronic products - wiring
- EV construction requires twice to 4 times as much copper as standard auto production
    - EV charging stations are also highly copper intensive
- Industrial machinery in petrochemical industry:
    - copper pipe systems, electrical motors, evaporators, condensers, heat exchangers, valves and containers for holding corrosive mediums
- Corrosion-resistant copper alloys are critical materials in the fabrication of undersea installations, such as desalination machinery and offshore oil and gas drilling platforms
- Raw material to manufacture windmill turbines and solar energy systems

Things to consider regarding copper:

- Inside storage of copper is often required for security.

Copper demand is anticipated to grow five-fold by 2030.

With respect to imported zinc, about three-fourths of zinc used in the U.S. is consumed as metal, mainly as a coating to protect iron and steel from corrosion (galvanized metal), as alloying metal

[5] 5 Major Copper Uses | INN

to make bronze and brass, as zinc-based die casting alloy, and as rolled zinc. The remaining one-fourth is consumed as zinc compounds mainly by the rubber, chemical, paint, and agricultural industries.[6]

The precious metals market represents a strong potential market for the LMR ports to grow. There exists a local market for copper imports to be used in the development of LNG capacity in Plaquemines Parish, as well as the use of copper in pipeline construction and off-shore oil and gas exploration in Louisiana. Also, the use of copper in EV charging stations as well as in wind and solar energy components is consistent with the region's focus on future energy development. Similarly, the import of lead for use in battery production in the auto industry as well as the production of batteries to support the renewable energy sectors of solar and wind energy are also consistent with the state's focus on future energy development. Finally, the lead battery is nearly 100% recyclable, making it a key element in the future energy sector development. There are currently three EV battery component manufacturing facilities within the state – UBE Corporation as made a $500 million investment in EV battery component manufacturing in Jefferson Parish; Capchem has invested $350 million in a similar EV manufacturing facility in Ascension Parish, and Koura has invested $400 million in an EV battery manufacturing facility in Ascension Parish.

3. Aluminum Market

In addition to the non-ferrous precious metals described in the previous section, imported aluminum also presents a potential opportunity for the LMR ports. Exhibit III-22 demonstrates the growth in aluminum imports nationwide, with the Gulf Coast ports leading the imported aluminum. Overall aluminum imported tonnage grew by a compound annual growth rate (CAGR) of nearly 8% since 2014, with strong growth posted at North Atlantic ports and Pacific Northwest ports as well.

Exhibit III-22: Imported Break Bulk Aluminum Tonnage by Port Range

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Gulf	378,947	473,595	1,036,127	1,409,816	601,881	607,488	538,547	863,207	1,124,610	691,379	6.9%
Great Lakes	173,856	266,749	271,381	320,394	196,820	317,651	236,371	322,656	316,390	337,224	7.6%
North Atlantic	98,514	189,562	294,906	474,781	454,617	323,131	321,595	337,383	538,571	312,865	13.7%
PSW	37,893	24,333	8,275	10,101	14,065	13,734	4,205	55,370	96,526	50,476	3.2%
PNW	3,011	7,852	5,376	7,455	4,841	3,594	3,692	51,150	72,467	45,667	35.3%
South Atlantic	38,549	30,577	36,234	65,280	36,786	24,821	7,584	37,355	40,944	7,680	-16.4%
NOCAL	399	425	496	406	371	444	475	402	2,378	611	4.8%
Total	**731,169**	**993,092**	**1,652,797**	**2,288,233**	**1,309,380**	**1,290,864**	**1,112,471**	**1,667,523**	**2,191,885**	**1,445,902**	**7.9%**

Source: USA Trade OnLine

The New Orleans Customs District has been the dominant port district handling aluminum at ports in the Gulf Coast region, (Exhibit III-23), while imported aluminum has been increasing at Brownsville and Port Mobile. The growth in aluminum imports at Brownsville reflects the growth in the Mexican auto industry and the development of auto parts manufacturers along the U.S. Mexican border (Maquiladoras), as well as the growth in shipbuilding activity (particularly off-shore wind installation vessels) at Brownsville, TX.

[6] Zinc Statistics and Information | U.S. Geological Survey

Exhibit III-23: Imported Break Bulk Aluminum Tonnage by Gulf Coast Port

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
New Orleans, LA	140,557	146,453	633,417	951,118	298,384	238,061	191,093	430,463	556,490	309,245	9.16%
Brownsville, TX	56,916	27,626	65,519	39	18,220	84,303	109,588	131,630	113,762	167,023	12.71%
Mobile, AL	35,994	74,356	34,875	76,347	49,628	51,390	54,109	22,966	46,151	72,089	8.02%
Port Manatee, FL	57,654	48,021	71,151	79,875	65,129	50,355	61,451	52,060	90,271	59,076	0.27%
Houston, TX	33,426	113,422	113,530	180,041	116,243	93,279	60,381	169,181	250,489	34,021	0.20%
Port Arthur, TX					0	53,671	36,487	37,713	42,564	32,110	NA
Tampa, FL	12,053	11,780	23,635	35,109	18,007	32,573	25,369	18,855	24,841	14,177	1.82%
Other	42,346	51,937	93,999	87,287	36,270	3,855	70	338	43	3,638	-23.87%
Total	***378,947***	***473,595***	***1,036,127***	***1,409,816***	***601,881***	***607,488***	***538,547***	***863,207***	***1,124,610***	***691,379***	***6.91%***

Source: USA Trade OnLine

Canada has been the leading source of aluminum imports into the Gulf Coast ports, particularly into the LMR ports (New Orleans Customs District). The Middle East (primarily the Arab Emirates) has been a growing source for aluminum imports into the New Orleans Customs District, while the East Coast of South America (Argentina) has been the leading source of aluminum imports into the Mobile Customs District. (Exhibit III-24)

Exhibit III-24: Sources of Break Bulk Aluminum Import Tonnage into the Key Gulf Coast Ports

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
New Orleans, LA	**140,557**	**146,453**	**633,417**	**951,118**	**298,384**	**238,061**	**191,093**	**430,463**	**556,490**	**309,245**
Canada		19,262	92,184	233,159	82,944	97,511	110,493	227,629	183,549	194,021
Middle East	0	0	83,503	158,235	14,634	41	0	69,011	120,845	66,913
Australia/NZ		0	6,608	68,685	4,643	2,598	316	25,714	76,677	29,469
North Europe	95,192	50,845	428,504	342,152	97,228	104,951	27,141	101,405	149,054	18,828
China	28,686	42,661	145	1,767	105	0	0	4	0	10
Mediterranean	0	10,711	0	0	0	2	0	2	0	4
Central America	0	0	0	0	0	0	0	128	88	0
SW Asia	3	16,573	0	75,567	13,120	25,376	46,581	3,257	23,844	0
SE Asia	0	0	4,968	0	11,036	0	0	0	1,079	0
South America EC	14,357	6,401	14,159	20,257	10,099	0	0	0	1,343	0
South America WC	0	0	0	0	0	0	0	0	0	0
Caribbean	0	0	0	0	0	0	0	0	11	0
Africa	2,319		3,346	51,295	64,575	7,582	6,562	3,315	0	0
Japan/Korea			0	0		0	0	0	0	0
Brownsville, TX	**56,916**	**27,626**	**65,519**	**39**	**18,220**	**84,303**	**109,588**	**131,630**	**113,762**	**167,023**
Africa	28,571		41,075	7	18,220	67,640	99,707	108,660	86,949	161,954
South America EC										5,069
North Europe		27,626	24,410	1		16,534	9,569	5,613		
Australia/NZ								1,870		
Middle East								7,814		
Canada	28,345									
SE Asia					0	0	0			
China		0	2	1	0	129	311	28		
SW Asia			32	30				6,874	26,813	
Japan/Korea								771		
Mediterranean						0		0		0
Mobile, AL	**35,994**	**74,356**	**34,875**	**76,347**	**49,628**	**51,390**	**54,109**	**22,966**	**46,151**	**72,089**
South America EC	21,581	25,423	23,852	76,347	49,609	51,357	54,109	22,769	46,141	72,080
China	0	0	16	0	0	28	0	0	9	8
North Europe	86	15,419	0	0	10	5	0	3	0	0
Mediterranean	0	0	0	0	0	0	0	0	0	0
SE Asia	0	0		0	0	0	0	0	0	0
South America WC		0	0	0	0	0	0	0	0	0
Caribbean	0	0								0
Canada	14,327	33,513	11,007							0
Middle East		0			0	0		0	0	0
Central America		0	0		0			194	0	0
All Other								0		
SW Asia					9	0	0	0	0	0
Australia/NZ				0	0			0		
Africa									0	
Japan/Korea	0	0	0	0	0	0	0	0	0	0

Source: USA Trade OnLine

The key uses of Aluminum are:

- Construction:
  - Siding, doors, gutters
- Automobile production - the most cost-effective way to improve performance, increase fuel economy, cut emissions, and improve safety. The vehicle can become lighter and more flexible without compromising strength or durability.
- Railway cars - aluminum alloys are used in these high-speed railway cars because they have a lower density, but they are strong and corrosion-resistant.
- Aerospace allows for larger cargo and payload capacity while also improving fuel efficiency. Aluminum has great corrosion resistance that contributes to the safety of the airplane
- Boat manufacturing

The LMR ports are well positioned to continue to serve and grow the imported aluminum market to serve several key locations of aerospace manufacturing and auto/auto parts manufacturing locations, as shown in Exhibits III-25 and III-26.

Exhibit III-25: Location of Aerospace Manufacturing Locations in Southcentral U.S.

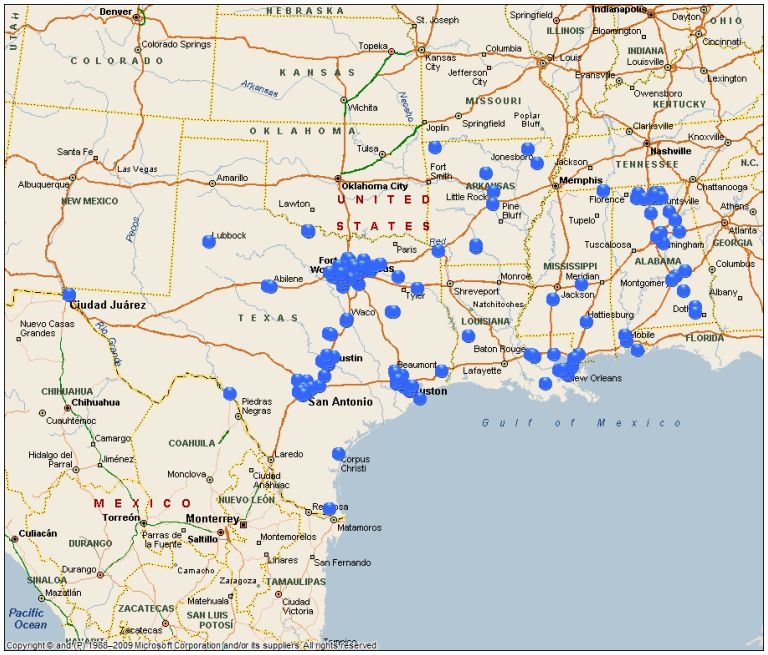
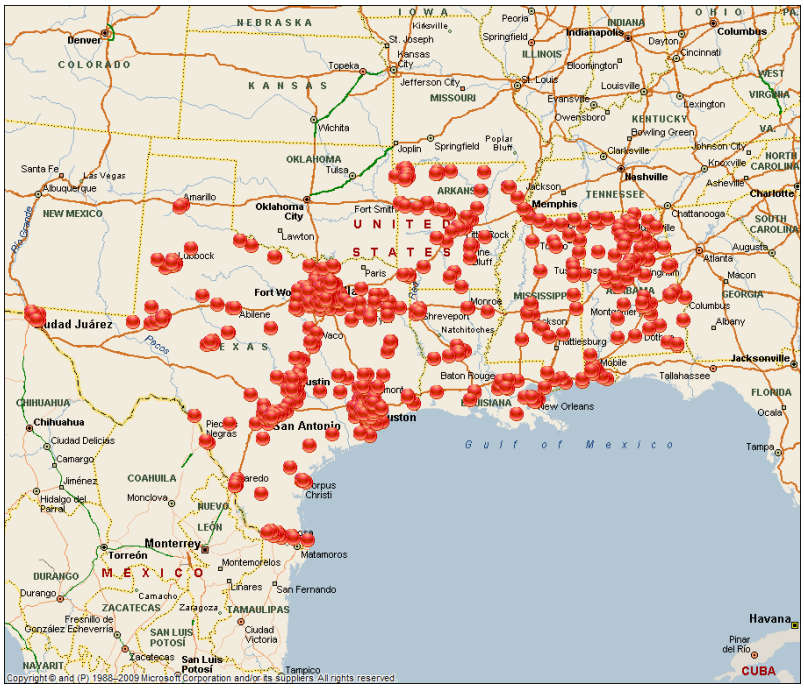


Exhibit III-26: Location of Automobile and Parts Manufacturing Locations in the South-Central U.S.



4. Iron and Steel Market

The iron and steel import market has been a major break bulk market handled by the Gulf Coast ports. This market consists of numerous steel products, including:

- Pig iron
- Semifinished products
- Bars and rods
- Alloy steel
- Flat rolled iron and steel (hot and cold rolled)
- Ferroalloys
- Angles shapes

The Gulf Coast port range has led the nation in imported iron and steel products. Over the 2014-2023 steel imports have declined by about 5.4% annually (Exhibit III-27). It is to be noted that 2014 was a record year for steel imports by all modes,[7] and the decline over the period reflects a combination of Section 232 Tariffs imposed in 2018 on iron and steel imports.

[7] International Trade Administration, Steel Import Monitoring and Analysis, May 2020

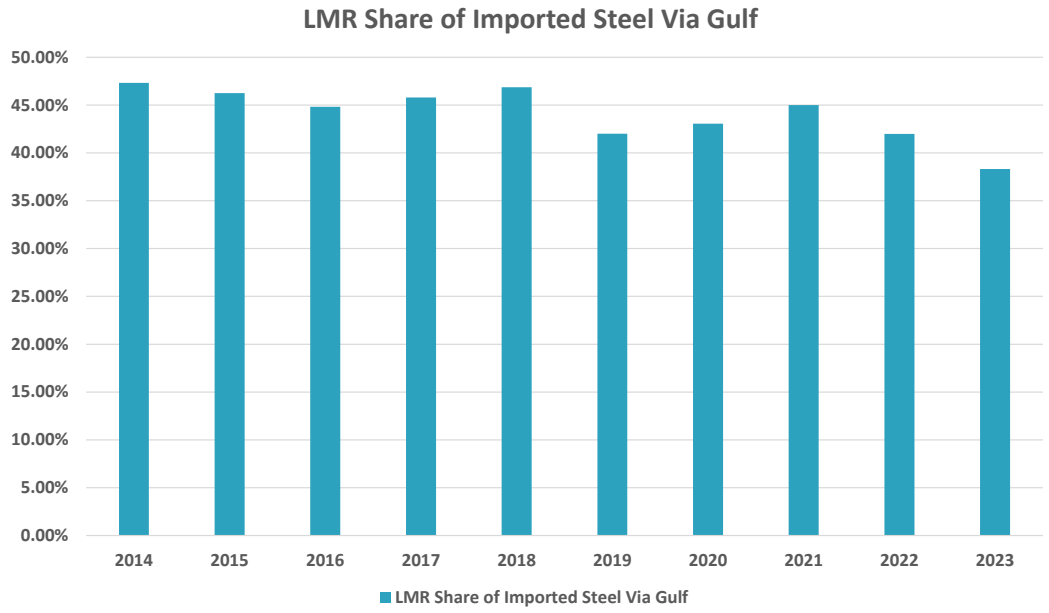
Exhibit III-27: Imported Iron and Steel Products Tonnage by Coastal Range

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Gulf	19,745,834	17,102,534	14,527,277	16,370,427	15,754,886	13,764,320	10,870,124	15,271,898	13,424,359	12,990,436	-4.5%
South Atlantic	2,899,935	3,472,239	3,338,583	3,696,846	3,674,652	3,133,760	3,040,941	3,621,855	2,965,903	2,777,974	-0.5%
North Atlantic	4,367,153	3,483,836	3,246,793	3,624,003	2,856,624	2,342,734	1,276,730	2,921,103	1,935,112	1,633,068	-10.4%
Great Lakes	2,338,398	2,030,914	1,897,750	2,523,220	2,102,276	1,564,352	1,244,171	2,048,429	2,045,124	1,574,972	-4.3%
PSW	2,357,915	1,779,333	1,338,188	1,525,355	2,140,420	1,697,345	1,421,747	2,151,305	1,460,434	1,246,890	-6.8%
PNW	2,263,523	1,727,412	1,498,047	1,599,765	1,904,533	1,726,339	1,207,861	1,124,866	1,084,722	902,850	-9.7%
NOCAL	985,464	909,700	724,844	176,655	107,207	105,567	53,257	70,983	96,266	72,739	-25.1%
Total	***34,958,222***	***30,505,968***	***26,571,480***	***29,516,271***	***28,540,598***	***24,334,417***	***19,114,831***	***27,210,440***	***23,011,919***	***21,198,930***	***-5.4%***

USA Trade OnLine

The LMR ports have handled between 35% and 45% of the iron and steel imports into the Gulf Coast region over the 2014–2023-year period, and have lost market share most recently between 2021 and 2023, as shown in Exhibit III-28.

Exhibit III-28: LMR Ports Market Share of Imported Iron and Steel Products into the Gulf Coast Port Range



Source: USA Trade OnLine

The Port of Mobile handles the largest volume of imported iron and steel followed by New Orleans, Houston, Gramercy, and Baton Rouge (Exhibit III-29). Pig iron and slab are the leading iron and steel import commodities at terminals within the New Orleans Customs District as well as at the Port of Mobile. Structural steel and shapes/pipe are the key commodities imported at the terminals within the Houston Customs District.

Exhibit III-29: Imported Iron and Steel at Gulf Coast Ports (Tonnage)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Mobile, AL	6,082,328	5,285,514	5,030,772	5,836,232	5,609,020	5,828,983	4,707,897	5,505,350	4,622,199	5,057,163	-2.0%
New Orleans, LA	5,334,458	5,765,220	4,730,171	4,838,946	4,302,428	3,782,088	3,192,727	4,791,599	4,491,103	3,067,651	-6.0%
Houston, TX	3,936,658	3,207,418	2,439,036	2,784,162	2,379,803	1,817,422	1,154,592	2,165,836	2,081,405	1,955,673	-7.5%
Gramercy, LA	2,561,225	1,220,014	1,649,279	2,203,424	2,876,357	1,197,797	1,285,600	1,409,397	723,161	1,038,345	-9.5%
Baton Rouge, LA	1,449,449	926,261	132,931	454,807	204,431	802,106	201,463	671,076	421,490	870,367	-5.5%
Freeport, TX	0	0		9,121	144,780	187,311	99,077	234,078	325,985	433,179	NA
Corpus Christi, TX	15,908	3,941	367	14,822	3,694	1,648	994	111,998	274,849	294,185	38.3%
Tampa, FL	206,173	242,596	233,548	207,563	203,227	141,164	178,672	268,256	269,347	149,589	-3.5%
Port Manatee, FL	30,785	6,500	11,084	3,172	26,440	4,155	4,836	11,047	34,481	50,352	5.6%
Brownsville, TX	28,331	32,012	40,451	9,551	4,590	1,645	40,607	72,288	126,114	45,058	5.3%
Panama City, FL	97,246	406,372	226,831	357	0				0	28,801	-12.6%
Other	3,271	6,686	32,808	8,271	116	2	3,659	30,973	54,226	73	-34.5%
Total	***19,745,834***	***17,102,534***	***14,527,277***	***16,370,427***	***15,754,886***	***13,764,320***	***10,870,124***	***15,271,898***	***13,424,359***	***12,990,436***	***-4.5%***

Source: USA Trade OnLine

Brazil is the major source of steel imports into both Mobile and New Orleans, reflecting the import of pig iron/slab and semi-finished products from South America's East Coast, while the Mediterranean is the key import source for steel at the Houston terminals. The key imports moving from the Mediterranean include pig iron as well as steel shapes/bars and pipe (Exhibit III-30)

Exhibit III-30: Sources of Imported Iron and Steel Products (Tonnage)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
South America EC	**6,264,097**	**6,265,730**	**4,293,623**	**5,419,133**	**4,953,994**	**6,299,814**	**4,442,629**	**5,441,032**	**4,855,466**	**7,020,944**
7201 Pig Iron & Spiegeleisen In Pigs, Blocks Etc.	1,749,929	1,580,742	751,903	1,042,333	707,937	1,234,773	897,062	1,837,649	2,414,560	3,089,246
7207 Semifinished Products Of Iron Or Nonalloy Steel	2,768,424	2,414,921	1,609,385	2,229,751	2,464,566	3,303,654	2,545,384	2,743,308	1,789,841	2,678,170
7224 Alloy Steel Nesoi In Ingots, Oth Pr Frm & Semif Pr	944,442	937,867	1,186,627	1,354,372	1,352,082	1,374,830	637,380	508,109	277,191	759,347
7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad Etc	149	241,361	455,544	391,743	156,900	232,584	240,419	216,227	205,398	215,198
7213 Bars & Rods, Iron & Na Steel, H-r Irreg Coils	103,182	111,710	152,080	168,496	131,126	107,972	97,452	105,506	111,596	102,327
7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-rl, Not Clad	356,856	661,328	48,003		2,882	10,623	2,974	8,872	4,911	92,321
Subtotal	5,922,983	5,947,929	4,203,542	5,186,695	4,815,495	6,264,437	4,420,671	5,419,670	4,803,498	6,936,609
Other	341,115	317,801	90,081	232,439	138,499	35,376	21,958	21,362	51,968	84,335
Mediterranean	3,311,832	3,416,552	3,566,722	4,371,920	4,109,697	2,912,304	3,119,337	3,950,379	2,927,699	2,862,324
7201 Pig Iron & Spiegeleisen In Pigs, Blocks Etc.	641,266	393,880	642,817	1,229,772	1,973,138	1,570,173	2,123,482	1,844,951	770,456	1,253,735
7214 Bars & Rods, Iron & Na Steel Nesoi, H-r Etc	925,033	1,515,699	1,425,954	1,116,151	761,130	639,305	631,432	771,558	843,234	878,804
7224 Alloy Steel Nesoi In Ingots, Oth Pr Frm & Semif Pr	18,754	16,560	13,859	33,831	105,783	141,740	82,760	202,284	298,244	253,852
7202 Ferroalloys	281,151	162,174	188,027	292,027	312,280	218,783	149,094	245,865	310,678	164,901
7213 Bars & Rods, Iron & Na Steel, H-r Irreg Coils	316,734	427,722	385,608	315,715	127,681	112,115	19,327	204,967	191,761	128,875
Other	1,128,894	900,518	910,456	1,384,424	829,686	230,187	113,243	680,754	513,327	182,158
North Europe	**11,228,020**	**8,494,427**	**8,412,209**	**9,713,386**	**9,460,362**	**6,020,234**	**4,532,738**	**7,035,667**	**3,939,320**	**2,760,384**
7204 Ferrous Waste & Scrap; Remelt Scr Iron/steel Ingot	448,997	511,669	902,892	992,508	781,341	646,806	813,265	927,363	540,254	755,340
7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad Etc	585,237	579,050	642,342	708,607	672,446	527,327	503,130	573,663	657,224	584,223
7225 Fl-rl Alloy Steel Nesoi Nun 600mm Wide	674,112	606,893	739,897	776,942	808,119	689,440	439,393	605,518	598,714	576,748
7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-rl, Not Clad	1,980,647	1,155,792	610,999	343,513	287,886	193,272	120,428	302,239	241,730	210,793
7202 Ferroalloys	251,165	258,275	256,681	287,281	318,867	254,295	289,717	363,905	329,041	199,509
7216 Angles, Shapes & Sections Of Iron & Nonalloy Steel	266,582	207,609	163,913	181,477	108,960	102,506	20,527	43,548	63,797	125,648
7209 Fl-rl Iron & Na Steel Nun600mm Wd Cold-rl, No Clad	280,939	239,945	131,429	471,160	178,191	97,850	43,038	113,400	177,214	92,808
7213 Bars & Rods, Iron & Na Steel, H-r Irreg Coils	135,266	195,329	282,917	289,783	228,398	133,047	73,464	111,770	100,933	55,563
Other	6,605,076	4,739,864	4,681,139	5,662,114	6,076,152	3,375,690	2,229,775	3,994,261	1,230,414	159,752
Japan/Korea	**4,285,737**	**4,476,284**	**3,788,389**	**2,393,112**	**2,292,085**	**2,019,331**	**1,692,153**	**2,270,459**	**2,447,168**	**2,074,560**
7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-rl, Not Clad	1,828,815	1,921,244	1,567,483	728,162	1,006,169	797,599	566,750	951,561	921,470	850,082
7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad Etc	612,134	788,878	735,969	616,281	461,638	523,617	499,871	526,813	571,303	404,558
7216 Angles, Shapes & Sections Of Iron & Nonalloy Steel	173,572	153,561	157,951	159,914	115,949	122,692	120,696	142,190	179,527	159,263
7213 Bars & Rods, Iron & Na Steel, H-r Irreg Coils	233,885	286,897	265,499	161,596	139,410	171,760	126,916	173,334	202,935	151,654
7225 Fl-rl Alloy Steel Nesoi Nun 600mm Wide	337,248	381,888	277,933	231,473	172,510	145,898	111,658	117,112	130,849	122,781
7227 Bars & Rods Alloy Steel Nesoi, H-r Irreg Coils	129,278	157,986	128,966	117,709	101,240	108,747	81,467	113,233	108,010	120,150
7209 Fl-rl Iron & Na Steel Nun600mm Wd Cold-rl, No Clad	152,053	210,664	101,195	24,958	19,654	18,619	59,048	91,106	75,755	70,255
7228 Al Steel Nesoi Bars, Ang Etc; Hol Dr St Bars Etc	102,109	92,833	85,254	74,106	50,451	34,121	24,830	26,061	52,930	48,223
7214 Bars & Rods, Iron & Na Steel Nesoi, H-r Etc	135,519	276,925	273,647	51,610	33,414	31,978	26,358	36,630	65,087	40,349
7207 Semifinished Products Of Iron Or Nonalloy Steel	525,847	115,135	113,037	91,474	113,738	3,358	27,345	29,660	46,685	40,277
Other	55,277	90,273	81,454	135,831	77,913	60,942	47,214	62,759	92,616	66,966

Exhibit III-30 (continued): Sources of Imported Iron and Steel Products

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Central America	**1,158,908**	**783,496**	**652,744**	**1,009,500**	**1,213,883**	**1,572,796**	**1,288,966**	**2,110,998**	**1,900,905**	**1,654,051**
7224 Alloy Steel Nesoi In Ingots, Oth Pr Frm & Semif Pr	270,407	295,119	162,355	142,277	298,535	679,235	437,637	692,031	789,530	841,493
7207 Semifinished Products Of Iron Or Nonalloy Steel	779,052	411,387	406,606	721,633	813,597	791,310	782,927	1,129,119	865,476	689,709
Other	109,449	76,989	83,783	145,590	101,750	102,251	68,402	289,847	245,899	122,848
Caribbean	**1,863,545**	**1,675,651**	**1,580,027**	**1,678,876**	**1,666,340**	**1,870,836**	**1,463,075**	**1,712,557**	**1,576,845**	**1,459,477**
7203 Spongy Ferrous Prod & Iron 99.94% Pure, Lumps Etc	1,856,571	1,675,554	1,580,027	1,678,876	1,666,065	1,858,360	1,462,116	1,702,639	1,568,259	1,451,516
Other	6,974	97	0	0	276	12,476	959	9,919	8,585	7,961
Canada	**1,041,851**	**928,624**	**973,594**	**1,236,797**	**1,327,241**	**1,216,665**	**945,203**	**1,433,965**	**1,455,560**	**1,157,026**
7204 Ferrous Waste & Scrap; Remelt Scr Iron/steel Ingot	676,516	490,500	460,419	686,692	804,284	661,198	520,640	721,310	596,355	488,633
7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-rl, Not Clad	332,573	405,123	454,173	478,973	420,623	351,976	348,383	594,630	564,441	433,247
Other	32,762									
Africa	**1,250,317**	**910,673**	**790,588**	**1,048,803**	**959,592**	**716,851**	**484,665**	**611,953**	**675,037**	**558,648**
7202 Ferroalloys	902,201	507,163	512,245	616,625	547,823	407,553	298,544	395,665	405,334	331,626
7201 Pig Iron & Spiegeleisen In Pigs, Blocks Etc.	282,014	220,377	105,275	148,093	191,953	115,181	110,836	109,656	152,759	162,873
7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad Etc	24,110	56,408	128,094	155,859	96,301	99,382	74,916	102,355	115,370	64,149
Other	41,992	126,726	44,974	128,224	123,516	94,735	368	4,278	1,575	0
SE Asia	**7,324**	**99,678**	**842,270**	**798,180**	**1,147,155**	**676,681**	**221,736**	**876,867**	**1,176,390**	**455,239**
7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad Etc	6,753	26,565	359,870	430,980	610,800	224,720	117,322	598,190	632,842	219,461
7202 Ferroalloys	89	253	120	19,882	107,759	103,962	66,565	85,496	133,769	125,869
7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-rl, Not Clad		1,739	300	3,498	16,002	36,474		50,051	20,844	38,554
7214 Bars & Rods, Iron & Na Steel Nesoi, H-r Etc	0		26,379	52,190	16,568	16,009	0	10,489	0	34,440
7209 Fl-rl Iron & Na Steel Nun600mm Wd Cold-rl, No Clad	348	60,065	448,470	253,257	297,688	199,540	26,079	104,066	83,976	16,265
Other	134	11,056	7,131	38,372	98,337	95,976	11,770	28,575	304,961	20,649
Australia/NZ	**518,435**	**576,115**	**434,442**	**454,693**	**477,250**	**410,649**	**411,216**	**339,822**	**392,912**	**451,785**
7209 Fl-rl Iron & Na Steel Nun600mm Wd Cold-rl, No Clad	15,800	31,625	130,248	238,103	203,925	198,701	183,977	169,773	158,399	147,711
7202 Ferroalloys	129,691	115,730	124,901	145,322	180,144	160,783	115,833	124,215	127,365	102,917
7207 Semifinished Products Of Iron Or Nonalloy Steel	0	0	0			1,448	49,971		91,543	87,801
7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad Etc	1,667	13,404	39,791	14,694	8,940	23,053	3,921	7,786	7,411	43,801
7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-rl, Not Clad	371,239	414,849	139,453	55,102	57,680	11,740	36,453	4,561	8,194	39,439
Other	38	507	48	1,472	26,560	14,925	21,061	33,486	0	30,116

With respect to the potential to regain and grow the imported iron and steel market at the LMR ports, it is important to understand the factors driving the import levels. Imports into the eastern Gulf, specifically Mobile are driven by slab and pig iron for steel production; coils for use in the auto industry and aerospace industry located in the Southeastern U.S., and structural steel for regional construction. The imported steel handled at the Western Gulf ports is driven by imported steel products primarily used in the oil fields and construction, including pipe, structural steel, and major infrastructure projects. Imports into the LMR ports are likely to grow in the near term due the LNG facility development in Plaquemines Parish and associated pipeline development. As discussed previously, the development of the carbon capture projects in the Red River Valley/Port of Caddo-Bossier region as well as at the carbon capture projects at the Port of Greater baton Rouge and the Port of South Louisiana (to be discussed in a later section addressing the future energy initiatives at LMR ports section), along with the expansion of the methanol production facilities in the Red River region, will likely increase the demand for imported specialty steel products via the LMR ports in the near future.

However, the off-shore wind industry development in the Gulf along with associated monopile construction could possibly be negatively impacted by the new administration's potential policies towards wind farm tax credits. There is also the possibility of increased tariffs on imported iron and steel products under the new administration which could result in a 20-30% decline in steel imports into the Gulf Coast region using the observed volume reaction of imported iron and steel imports between 2018 and 2020 as the result of tariffs imposed in 2018.

Exported Iron and Steel Products

Iron and steel exports from the Gulf Coast port regions have increased by about 7.8% annually since 2014, as shown in Exhibit III-31.

Exhibit III-31: Exports of Iron and Steel by Port Coastal Range (Tonnage)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
North Atlantic	5,377,067	4,674,087	4,878,452	5,346,578	5,830,457	5,790,748	5,584,795	5,694,629	5,937,570	4,746,468	-1.4%
Gulf	1,449,473	1,454,500	1,319,242	2,877,431	2,162,627	2,055,921	2,383,684	1,821,128	2,310,340	2,856,332	7.8%
PNW	1,440,484	1,115,343	1,023,567	1,210,318	1,708,527	1,209,928	1,229,221	1,519,719	1,359,987	1,449,196	0.1%
NOCAL	1,544,767	1,361,402	1,146,585	1,381,070	1,425,547	1,336,889	1,195,309	1,346,467	1,267,772	1,142,546	-3.3%
PSW	1,412,421	1,410,244	1,013,943	1,298,636	1,475,358	1,189,353	1,017,483	954,179	1,066,091	874,417	-5.2%
South Atlantic	324,877	289,588	224,958	274,642	236,423	202,386	192,402	315,172	250,583	238,869	-3.4%
Great Lakes	70,312	71,022	41,231	43,792	41,576	35,177	53,769	13,118	20,425	54,261	-2.8%
Total	***11,619,400***	***10,376,186***	***9,647,978***	***12,432,466***	***12,880,513***	***11,820,401***	***11,656,664***	***11,664,411***	***12,212,768***	***11,362,091***	***-0.2%***

Source: USA Trad OnLine

Exhibit III-32: Exports of Iron and Steel Products by Key Port (Tonnage)

Port	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Corpus Christi, TX		**17**	**115,320**	**1,030,229**	**1,057,589**	**947,930**	**1,225,151**	**672,520**	**753,146**	**1,174,227**
7203 Spongy Ferrous Prod & Iron 99.94% Pure, Lumps Etc	0	0	115,320	1,030,229	1,057,579	947,916	1,225,151	672,449	753,130	1,174,178
Other	0	17	0	0	10	15	0	71	16	49
New Orleans, LA	**5,084**	**19,265**	**2,684**	**52,620**	**6,623**	**84**	**92,569**	**59,403**	**309,924**	**463,741**
7203 Spongy Ferrous Prod & Iron 99.94% Pure, Lumps Etc				0	0				90,941	287,862
7204 Ferrous Waste & Scrap; Remelt Scr Iron/steel Ingot	1,896	17,944	22	38,234	0	9	92,253	51,157	214,859	175,873
Subtotal	1,955	17,944	22	38,234	5,085	9	92,253	53,361	309,512	463,741
Other	3,129	1,321	2,662	14,386	1,538	75	316	6,041	412	0

Source: USA Trade OnLine

Within the Gulf Coastal Region, the majority of the exports were handled at terminals within the Port of Corpus Christi's Customs District and the Port of New Orleans Customs District (the

LMR ports). As shown in Exhibit III-32, the export iron and steel product were steel scrap as well as direct reduced iron pellets (DRI). The majority of the exports were destined to Europe, where the DRI and scrap were used in steel production. The scrap and DRI moved into the LMR ports via the Mississippi River system, and transferred to vessel for the ocean voyage.

5. Break Bulk Rubber Imports

Overall, about 95% of rubber imported into the U.S. moves via containers, primarily via the West Coast port range, followed by the South Atlantic port range and then the North Atlantic port range. While the Gulf Coast ports rank fourth in terms of total rubber imports (containerized and non-containerized) as shown in Exhibit III-33, the LMR marine terminals in the New Orleans Customs District lead the country in terms of break bulk rubber imports (Exhibit III-34). Since 2020, these LMR ports have handled more than 50% of all break bulk rubber imports into the U.S. (Exhibit III-35)

Exhibit III-33: Rubber Import (Container and Non-Container) Tonnage by Port Coastal Range

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
PSW	2,106,304	2,086,992	1,901,875	1,943,888	2,138,899	1,880,431	1,817,740	2,234,082	2,566,857	1,922,743	-1.01%
South Atlantic	1,518,137	1,632,125	1,702,662	1,740,850	1,905,041	1,994,258	1,746,223	2,118,748	2,189,385	1,899,192	2.52%
North Atlantic	1,162,388	1,132,156	1,189,590	1,319,402	1,390,983	1,568,258	1,351,428	1,680,438	1,764,425	1,595,097	3.58%
Gulf	634,526	676,218	696,305	688,819	725,412	791,289	730,923	880,929	1,038,829	860,428	3.44%
NOCAL	131,675	121,451	195,489	212,279	204,727	211,535	221,468	237,886	278,184	277,263	8.63%
PNW	332,010	321,228	338,962	294,351	294,170	246,981	250,897	282,661	280,667	221,848	-4.38%
Grand Total	5,885,040	5,970,170	6,024,883	6,199,589	6,659,233	6,692,753	6,118,679	7,434,745	8,118,346	6,776,571	1.58%

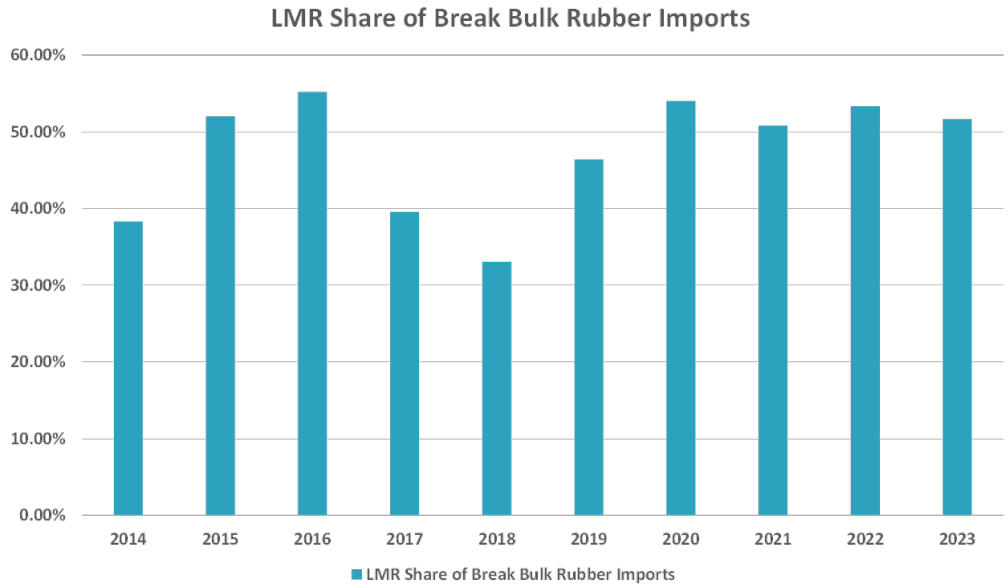
Source: USA Trade OnLine

Exhibit III-34: Break Bulk Rubber Import Tonnage by U.S. Port

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
New Orleans, LA (Port)	86,859	101,756	101,689	99,603	89,218	164,455	155,439	167,160	260,089	192,643	9.25%
Beaufort-Morehead City, NC (Port)	23,573	16,605	23,281	21,750	29,800	46,170	39,707	36,350	78,422	82,228	14.89%
Savannah, GA (Port)	37,028	31,498	33,257	21,474	41,890	95,060	65,691	80,471	69,405	47,281	2.75%
Charleston, SC (Port)	1,556	5,309	1,092	743	909	2,059	654	15,450	32,044	13,553	27.18%
Los Angeles, CA (Port)	40,135	12,235	9,986	61,121	70,193	26,293	12,562	14,545	16,661	12,429	-12.21%
Houston, TX (Port)	730	716	646	918	1,214	1,226	495	835	6,247	8,532	31.41%
Long Beach, CA (Port)	3,193	3,022	1,817	32,174	24,961	8,106	4,209	4,128	10,568	5,510	6.25%
Brunswick, GA (Port)	4	0	6	0	1	0	1	0	0	3,867	112.40%
Newark, NJ (Port)	6,207	7,035	4,216	4,466	3,315	2,576	2,628	4,075	3,655	3,043	-7.62%

Source: USA Trade OnLine

Exhibit III-35: LMR Share of Break Bulk Rubber Imports into the United States



Source: USA Trade OnLine

The LMR ports serve the following tire manufacturing facilities located throughout the central, southeastern and midwestern regions, including:

- Goodyear:
  - Lawton, Oklahoma
  - Akron, Ohio
  - Danville, Virginia
  - Gadsden, Alabama
  - Topeka, Kansas
  - Union City, Tennessee
  - Fayetteville, North Carolina
  - Freeport, Illinois
  - Tyler, Texas
- Cooper:
  - Albany, Georgia
  - Tupelo, Mississippi
  - Findlay, Ohio
  - Texarkana, Arkansas
- Mickey Thompson (Stow, Ohio)
- Mastercraft Tires (Findley, Ohio)
- Titan (Quincy, IL)

The break bulk rubber moves from the LMR ports to these manufacturers by truck (71%), 16% by rail, and the balance by water. The U.S. Tire Manufactures Association projects about a 1% annual growth tire production for U.S. tire manufacturing, based on new automotive production and

replacement tires. In order to maintain and grow this break bulk rubber market, warehouse capacity is needed at the LMR ports.

6. Potential Auto/RoRo Market

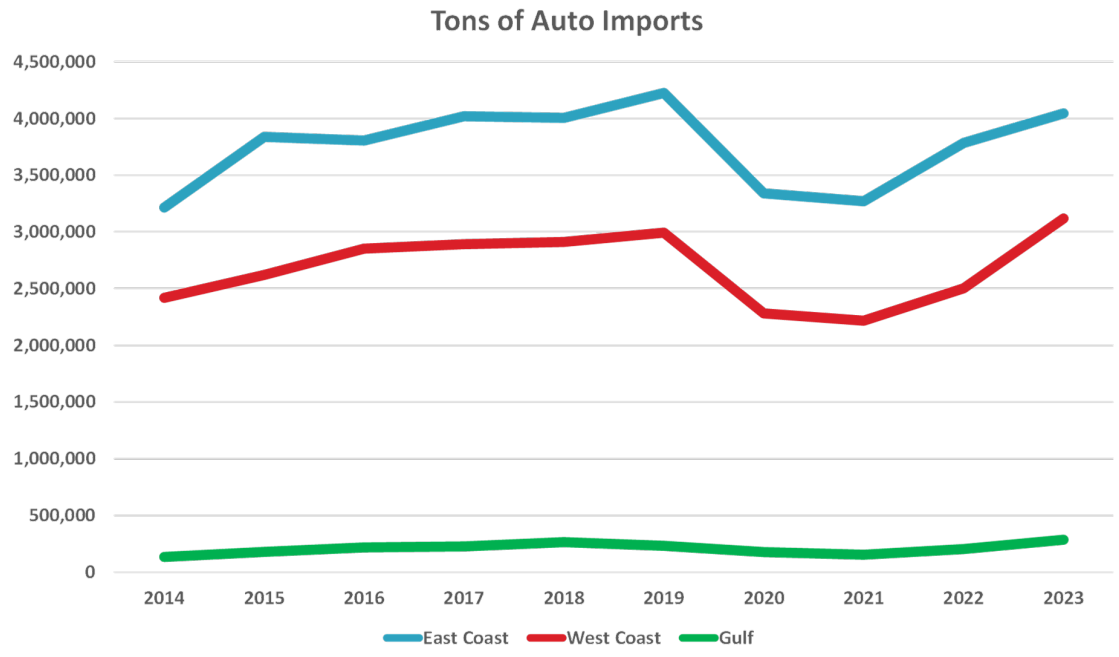
The potential to participate in the auto and RoRo market was investigated. A review of the historical level of auto import tonnage moving via the various port ranges indicates that imports into the Gulf Coast port range have significantly lagged auto imports along the Atlantic and Pacific Coast port ranges (Exhibit III-36).

POTENTIAL AUTO AND RO/RO MARKET OPPORTUNITIES

- OPPORTUNITIES ARE LIMITED DUE TO:
  - PROXIMITY TO MAJOR AUTO IMPORT PORTS ON SOUTH ATLANTIC THAT HAVE MORE ATTRACTIVE LOTIGISTCS COSTS TO KEY MARKETS
  - LONG TRANSIT UP-RIVER
- RAIL ACCESS TO RO/RO MANUFACTURES IN MIDWEST IS ATTRACTIVE AND SHOULD BE PURSUED, BUT LONGER TRANSIT UP-RIVER IS AN ISSUE

Exhibit III-37 shows Houston, Galveston and Freeport have led the region in auto and light truck imports into the Gulf Coast ports. Since 2023, the auto import operation handled at Houston, primarily Volkswagen, has relocated to Freeport, while BMW remains at the Port of Galveston.

Exhibit III-36: Auto Import Tonnage by Port Range



Source: USA Trade Online

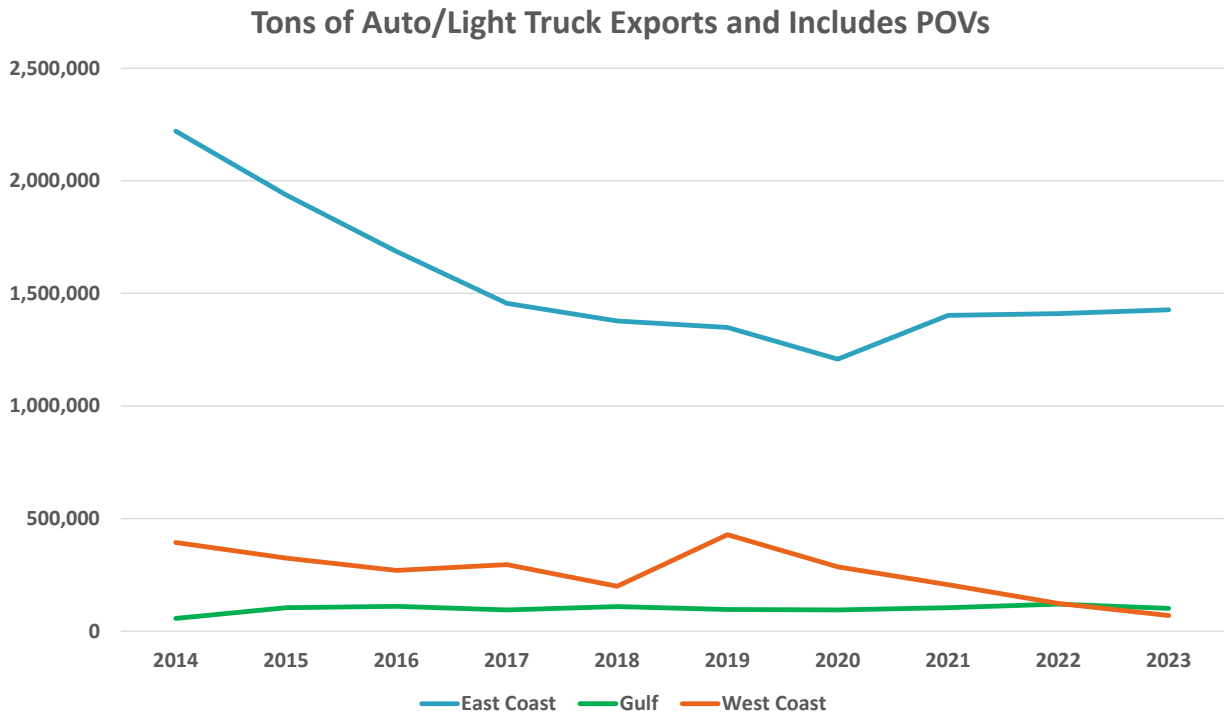
Exhibit III-37: Auto and Light Truck Import Tonnage by Gulf Coast Port

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Freeport, TX (Port)	0	64,877	86,888	65,516	80,115	64,577	82,629	98,174	97,630	77,996	NA
Houston, TX (Port)	26,984	20,100	11,832	7,819	4,835	2,973	2,868	2,144	19,630	20,803	-2.85%
Galveston, TX (Port)	25,607	15,134	10,350	20,220	23,041	27,272	7,918	3,587	1,430	1,190	-28.90%
Tampa, FL (Port)	3,537	3,161	404	140	200	987	490	355	827	1,095	-12.22%
Port Manatee, FL (Port)	290	85	74	99	238	148	66	20	0	435	4.58%
Other	566	375	167	267	263	106	70	294	73	174	-12.27%
Total	***56,985***	***103,731***	***109,715***	***94,060***	***108,692***	***96,064***	***94,042***	***104,573***	***119,590***	***101,692***	**6.65%**

Source: USA Trade OnLine

The auto and light truck export market has shown a continual decline on all port ranges. The tonnage included in Exhibit III-38 also includes a small portion of previously owned vehicles (POVs), which move to areas such as the Caribbean and to a lesser extent the Middle East and Africa.

Exhibit III-38: Export Tonnage of Autos/Light Truck and POVs



Source: USA Trade OnLine

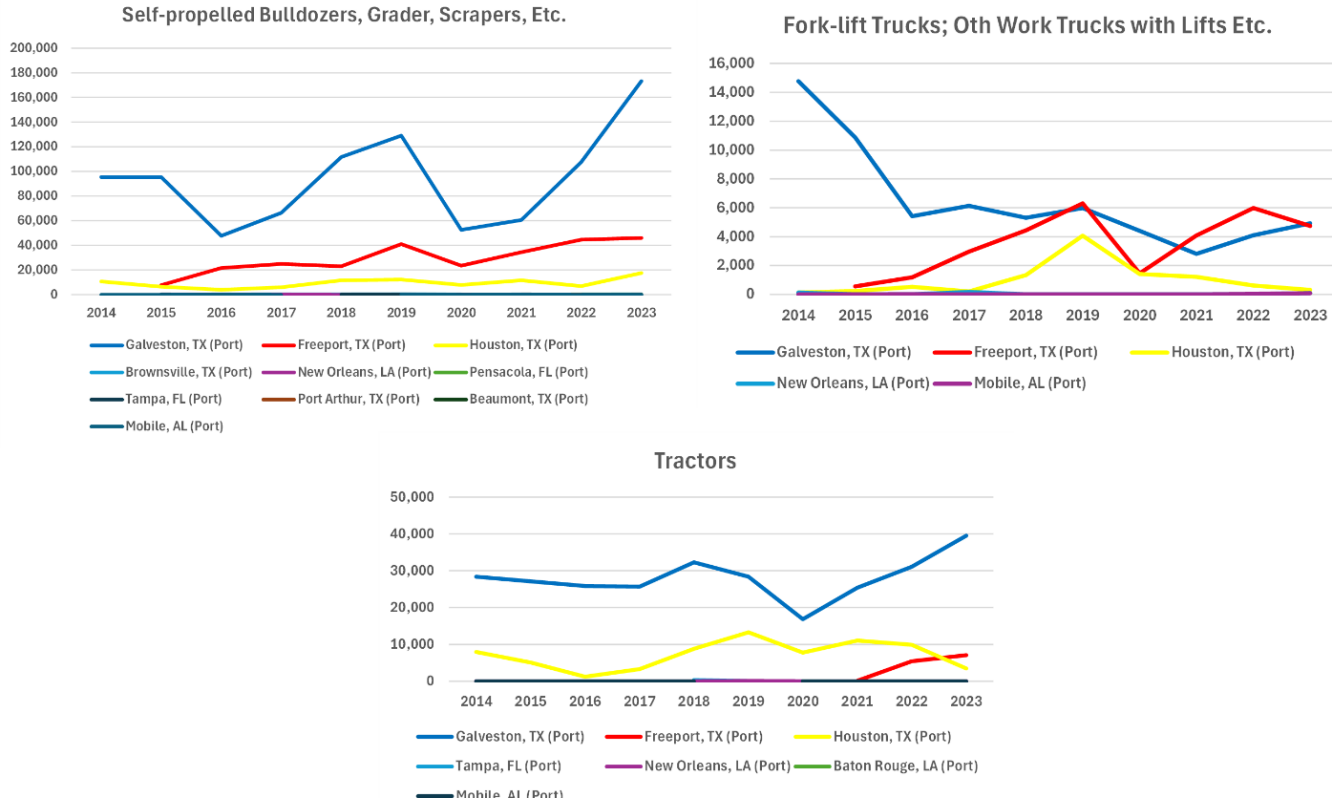
As this exhibit shows, the export market has been contracting, and Atlantic Coast ports lead in exports due that they are located in proximity to the auto manufacturing plants in the midwestern and Southeastern U.S. The export activity has been growing at ports such as Charleston due to proximity to the manufacturing facilities.

Interviews with auto processors indicated that New Orleans had been evaluated in terms of a potential auto import site, but several factors led to the decision to develop import facilities more in the Western Gulf, specifically Texas. The importers indicated that first the longer sail up river and associated costs was one major factor, but the driving factor why New Orleans was not selected was

the fact that the LMR location was too far east to serve key markets not served by West Coast. The auto operations at Jacksonville and Brunswick serve the key Southeastern markets and an LMR location would have to compete with these established import operations to serve the Southeastern markets, but the trucking costs to serve the midwestern and southcentral markets were too high via the LMR port. Instead, a Texas port location was chosen. Furthermore, Mobile has developed an auto facility but the facility is highly underutilized for similar reasons. Texas provides a better gateway for key markets not served via ports on the West Coast and Southeastern U.S. The Houston cars moved to Freeport, while Galveston handles the BMWs to markets not served by the BMW operations at Port Hueneme

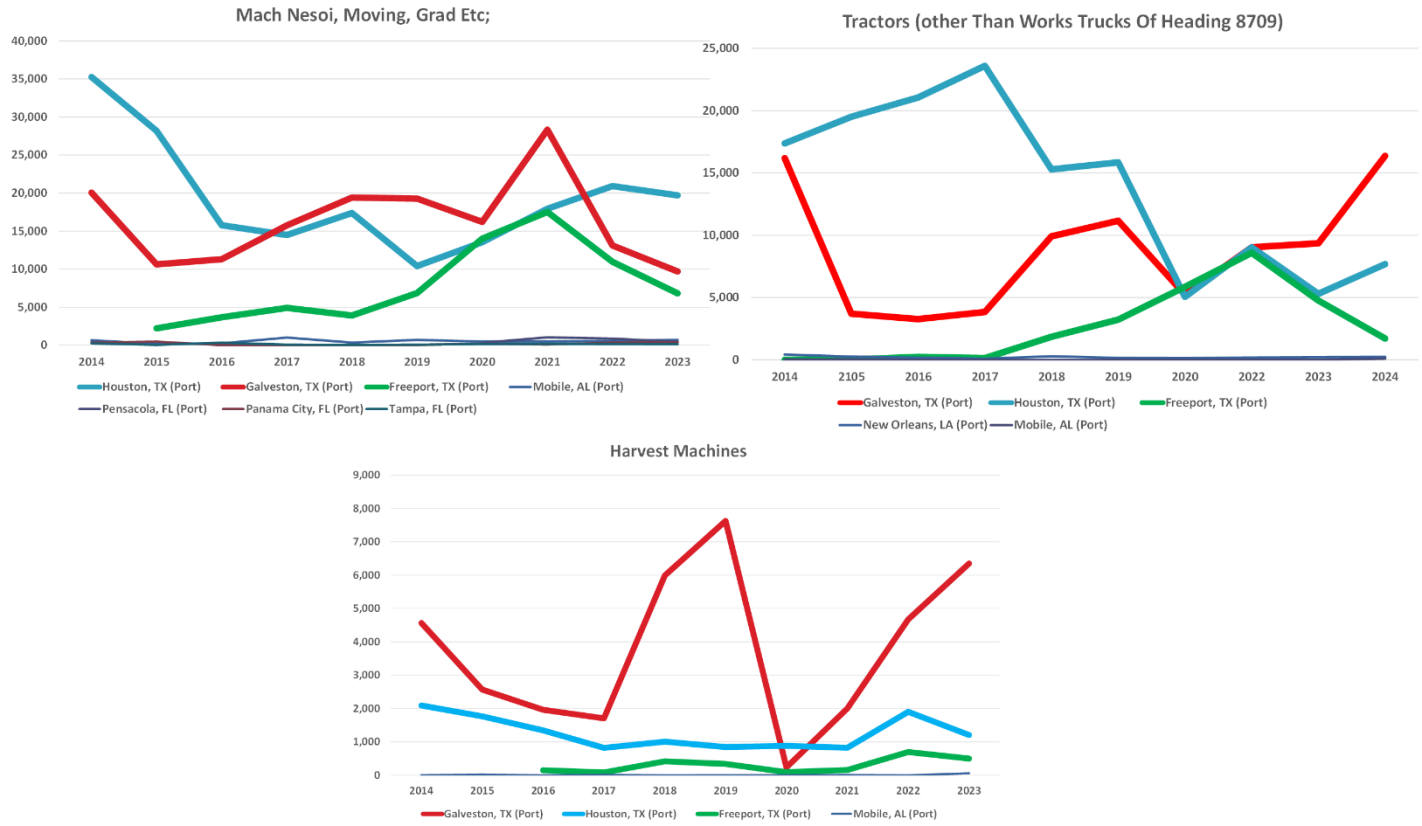
In addition to the auto and light truck markets, Martin Associates also reviewed the import and export activity of roll-on/roll-off (RoRo) operations. RoRo cargo consists of heavy trucks, self-powered mining and agricultural equipment, and large self-propelled construction equipment. Galveston and Freeport dominate the Gulf Coast RoRo import market as shown in Exhibit III-39. Galveston, Freeport and Houston also dominate the RoRo export market (Exhibit III-40).

Exhibit III-39: Import Tonnage of RoRo Cargo at Gulf Coast Ports



Source: USA Trade OnLine

Exhibit III-40: Export Tonnage of RoRo Cargo at Gulf Coast Ports



Source: USA Trade OnLine

Interviews with RoRo processors indicated that the longer sail up river impacts the ability of the carriers to maintain schedule integrity, but the rail access to midwestern RoRo manufacturing facilities is attractive for export cargo. Therefore, the LMR ports should market to both the RoRo carriers as well as equipment manufactures located in the Midwest. However, without a significant load-out volume per vessel call, the port costs due to the river transit would offset any inland cost advantage.

7. Potential Refrigerated/Frozen Break Bulk and Container Market

The LMR ports have historically participated in the export of frozen poultry. As shown in Exhibit III-41, the perishable export market from the Gulf Coast ports has been dominated by the export of the frozen poultry market, followed by the export of vegetables. The export of pork via the Gulf Coast ports has grown by about 15.4% annually since 2014. As shown in Exhibit III-42, the LMR marine terminals located within the Port of New Orleans Customs District have led this market of poultry exports, followed by Mobile and the Port of Houston.

PERISHABLE MARKET OPPORTUNITIES

- WITH COLD STORAGE INFRASTRUCTURE IN PLACE, PORK AND BEEF OFFER POTENTIAL EXPORT MARKET
- FOCUS ON CENTRAL AMERICA AND CARIBBEAN FOR EXPORT POULTRY MARKET, AND RE-ESTABLISIHNG CARRIER SERVICE TO MEXICO, GUATEMALA, HONDURAS AND CARIBEAN
- DIRECT MARKETING EFFORTS TO FRUITS AND VEGETABLES FROM:
  - MEXICO
  - CENTRAL AMERICA
  - SOUTH AMERICA
  - AFRICA
  - MEDITERRNEAN
- EXPLORE POTENTIAL TO EXPORT LOCAL SEAFOOD

Exhibit III-41: Total Tonnage Exports (Container and Break Bulk) of Perishables from Gulf Coast States

Perishable Exports	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
0207 Meat & Ed Offal Of Poultry, Fresh, Chill Or Frozen	818,393	602,517	719,919	747,143	735,356	812,240	779,675	838,271	822,544	735,337	-1.18%
0713 Leguminous Vegetables, Dried Shelled	139,524	214,671	237,412	210,766	196,672	174,414	222,486	202,589	207,993	221,197	5.25%
0203 Meat Of Swine (pork), Fresh, Chilled Or Frozen	39,181	46,917	48,762	61,279	77,884	90,567	113,388	143,020	120,356	141,751	15.36%
0206 Ed Offal, Bovine, Swine, Sheep, Goat, Horse, Etc.	148,498	113,693	119,568	105,758	106,915	103,210	100,834	109,935	101,538	101,270	-4.16%
Other	96,740	128,154	96,023	133,805	93,480	79,723	75,343	112,230	103,302	107,422	1.17%
Total	1,242,336	1,105,952	1,221,685	1,258,751	1,210,307	1,260,153	1,291,725	1,406,044	1,355,733	1,306,977	0.57%

Source: USA Trade OnLine

Exhibit III-42: Export Tonnage of Perishables by Gulf Coast Port

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Houston, TX (Port)	**504,221**	**575,168**	**596,229**	**584,552**	**569,246**	**559,909**	**636,026**	**622,759**	**566,080**	**557,911**	**1.13%**
0713 Leguminous Vegetables, Dried Shelled	132,239	203,434	234,474	192,437	195,870	172,369	215,685	200,603	207,215	191,907	4.22%
0207 Meat & Ed Offal Of Poultry, Fresh, Chill Or Frozen	153,635	155,927	177,068	198,488	193,241	200,635	249,452	243,237	190,243	187,471	2.24%
0206 Ed Offal, Bovine, Swine, Sheep, Goat, Horse, Etc.	133,364	109,805	115,618	101,817	96,747	95,953	89,250	79,956	72,526	68,278	-7.17%
0802 Nuts Nesoi, Fresh Or Dried	23,599	44,994	30,730	27,579	20,378	26,423	21,374	32,869	36,344	43,663	7.08%
0203 Meat Of Swine (pork), Fresh, Chilled Or Frozen	11,883	13,147	8,226	14,774	23,488	36,714	34,389	31,539	23,648	33,245	12.11%
0202 Meat Of Bovine Animals, Frozen	6,000	11,164	4,585	4,881	8,500	6,682	6,424	13,039	20,331	12,501	8.50%
0708 Leguminous Vegetables, Shelled Or Not, Fr Or Chill	183	245	613	5,096	2,657	3,023	3,213	2,012	2,932	5,157	44.90%
0201 Meat Of Bovine Animals, Fresh Or Chilled	8,308	6,029	5,537	6,696	4,509	3,302	4,068	3,383	1,901	3,086	-10.42%
1602 Prepared/preserved Meat, Offal, Blood, Insects Nes	14,723	4,483	2,715	7,146	4,850	1,873	1,399	5,519	1,484	2,137	-19.30%
0303 Fish, Frozen (no Fish Fillets Or Other Fish Meat)	67	411	2,457	3,399	1,108	4,214	3,119	1,358	2,252	2,041	46.20%
1601 Sausage Etc Of Meat,offal,blood,insects;food Preps	1,412	1,987	1,441	1,642	1,500	1,309	1,565	1,391	1,426	2,008	3.99%
0808 Apples, Pears And Quinces, Fresh	150	181	31	47	10			2,076	592	1,830	32.07%
Other	18,658	23,361	12,735	20,551	16,387	7,413	6,088	5,777	5,184	4,587	-14.44%
New Orleans, LA (Port)	**381,335**	**308,888**	**354,274**	**372,784**	**358,037**	**402,465**	**344,440**	**378,814**	**337,506**	**317,744**	**-2.01%**
0207 Meat & Ed Offal Of Poultry, Fresh, Chill Or Frozen	370,734	273,186	326,736	349,483	334,145	390,722	328,101	355,792	326,468	277,059	-3.18%
0713 Leguminous Vegetables, Dried Shelled	927	457	555	8,730	484	660	719	1,190	423	26,071	44.87%
0203 Meat Of Swine (pork), Fresh, Chilled Or Frozen	4,848	19,131	15,209	5,897	10,760	7,134	10,485	5,866	5,255	11,250	9.81%
1602 Prepared/preserved Meat, Offal, Blood, Insects Nes	2,383	9,505	5,998	3,585	5,841	1,981	1,760	4,933	3,449	1,406	-5.70%
0206 Ed Offal, Bovine, Swine, Sheep, Goat, Horse, Etc.	505	2,640	1,444	1,734	4,854	313	428	1,558	721	702	3.73%
0202 Meat Of Bovine Animals, Frozen	502	1,589	1,834	833	856	658	826	622	780	390	-2.76%
Other	1,435	2,379	2,498	2,521	1,097	997	2,120	8,854	410	866	-5.46%
Mobile, AL (Port)	**226,524**	**129,683**	**168,074**	**129,783**	**139,557**	**157,251**	**169,779**	**251,495**	**302,628**	**275,103**	**2.18%**
0207 Meat & Ed Offal Of Poultry, Fresh, Chill Or Frozen	224,438	127,959	166,810	129,011	138,944	151,857	136,554	176,711	240,213	205,663	-0.97%
0203 Meat Of Swine (pork), Fresh, Chilled Or Frozen	1,222	536		107	113	3,196	23,294	43,146	35,783	34,447	44.91%
0206 Ed Offal, Bovine, Swine, Sheep, Goat, Horse, Etc.			340	156	27	1,591	6,754	23,515	23,843	28,555	NA
Other	864	1,187	924	508	472	607	3,178	8,124	2,789	6,437	25.00%

Source: USA Trade OnLine

The major destination for the poultry and meat exports from the Gulf is Central America, with a strong growth in exports to China through 2022. Southeast Asia is a growing market as well (Exhibit III-43).

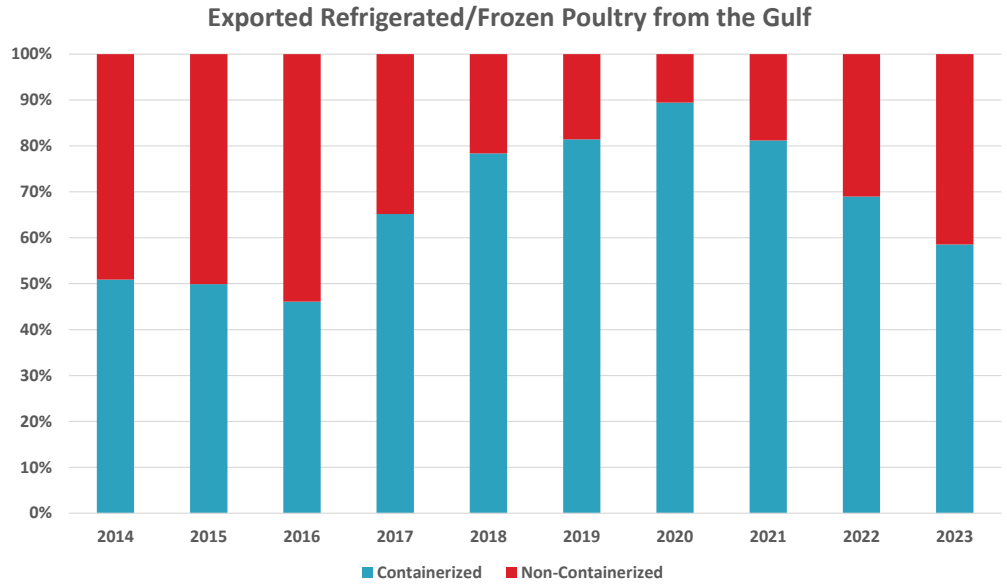
Exhibit III-43: Destination of Refrigerated/Frozen Poultry and Meat Export Tonnage from Gulf Coast Port

Trade Lane	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Central America	98,531	122,009	142,631	134,021	136,998	146,076	138,023	154,957	145,217	166,088	5.97%
China	93,114	76,291	68,916	91,780	95,049	115,599	210,355	177,177	231,399	136,101	4.31%
Caribbean	118,342	81,191	172,907	182,910	164,610	181,651	125,237	210,295	193,346	133,648	1.36%
Africa	167,846	134,183	133,689	122,244	153,662	131,656	98,281	114,104	116,355	115,101	-4.10%
SE Asia	7,045	5,791	22,608	22,702	40,116	52,261	54,714	55,904	46,574	78,977	30.81%
Mediterranean	93,144	77,312	48,490	86,682	58,751	87,196	61,902	48,920	26,300	35,329	-10.21%
Middle East	71,090	46,987	64,657	57,058	25,922	29,844	29,195	25,475	15,531	35,155	-7.53%
South America WC	18,988	12,833	29,353	17,211	22,611	21,507	26,871	20,809	11,473	16,698	-1.42%
South America EC	10,427	12,158	21,307	18,291	23,348	29,811	25,404	21,036	24,722	15,757	4.69%
North Europe	130,119	16,183	8	63	482	1,131	2,822	2,538	9,761	2,111	-36.74%
All Other	2,576	1,494	2,692	1,402	2,648	1,258	1,302	449	1,411	215	-24.11%
Japan/Korea	1,258	326	503	186	654	1,086	385	1,597	320	156	-20.70%
SW Asia	5,914	15,759	12,157	12,593	10,504	13,163	5,185	4,869	75	2	-58.17%
Australia/NZ								141	60		NA
Grand Total	818,393	602,517	719,919	747,143	735,356	812,240	779,675	838,271	822,544	735,337	-1.18%

Source: USA Trade OnLine

As shown in Exhibit III-44, the share of exported refrigerated/frozen poultry and meat tonnage moving in containers increased significantly through 2020, but as exports to China contracted in years after 2020, the share of break bulk exports increased, reflecting the export to Central America and the Caribbean moving in break bulk, as shown in Exhibit III-45.

Exhibit III-44: Share of Exported Refrigerated/Frozen Poultry Moving Container vs. Break Bulk



Source: USA Trade OnLine

Exhibit III-45: Destinations of Exported Break Bulk Refrigerated/Frozen Poultry from the Gulf Coast Ports

Trade Lane	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Caribbean	96,480	58,541	140,465	155,046	136,180	134,523	59,304	139,369	152,966	99,992	0.40%
Central America	50,075	57,973	74,613	47,255	2,270	332	587	837	42,291	59,313	1.90%
Africa	93,927	71,178	69,039	30,593	13,367	9,079	10,122	5,234	26,228	44,847	-7.89%
China	13,828	18,587	20,394	5,659	2,541	3,192	9,103	8,741	20,576	33,029	10.16%
SE Asia	1,180	411	9,269	463	1,981	469	531	617	4,423	22,265	38.60%
Mediterranean	57,759	49,947	33,453	13,067	178	952	58	623	4,323	21,896	-10.22%
Middle East	19,654	10,487	15,596	2,077	377	1,998	2,287	1,107	2,886	16,159	-2.15%
South America EC	3,340	5,369	8,265	1,963	1,828	281	215	1,077	393	4,257	2.73%
South America WC	1,862	3,525	9,985	1,246	226	0	59	55	669	2,108	1.39%
North Europe	56,676	16,183	8	63	0	0	11	47	288	776	-37.93%
All Other	2,333	1,265	2,425	846	0	0	0	0	0	215	-23.28%
SW Asia	4,497	8,327	4,587	1,977	123	35	0	0	0	0	NA
Australia/NZ								0	0		NA
Japan/Korea	428	28	95	0	61	0	0	0	0	0	NA
Grand Total	402,040	301,822	388,194	260,256	159,131	150,862	82,277	157,707	255,044	304,857	-3.03%

Source: USA Trade OnLine

With the infrastructure in place to handle the frozen poultry exports, it is recommended that the LMR ports pursue expanding the perishable export market for pork as well as other meat exports. This will require coordination with rail service to the midwestern states to access the meat exporters located in such states as Colorado and Nebraska. Blast freezing capabilities will be required at the LMR port region., which are in place to handle the poultry exports. In addition, with the focus on the Central American and Caribbean export market for poultry, focus on strengthening vessel service to Central America, including Mexico, Guatemala, Honduras as well as the Caribbean is necessary. Recapture of lost container volume to and from Mexico by the LMR ports is addressed in the container market section of this report.

In addition to expanding the perishable export market, particularly the export of frozen beef and pork, the perishable import market may provide a growth opportunity for the LMR ports. Bananas and dates/figs/pineapples dominate the perishable goods import market into the Gulf Coast ports, as shown in Exhibit III-46.

Exhibit III-46: Perishable Imported Tonnage into the Gulf Coast Port Range

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
0803 Bananas, Including Plantains, Fresh Or Dried	1,663,015	1,649,289	1,637,972	1,606,804	1,563,594	1,521,447	1,498,009	1,543,609	1,677,069	1,659,353	-0.02%
0804 Dates, Figs, Pineapples, Avocados Etc, Fr Or Dried	402,007	386,101	370,611	360,820	318,911	309,443	315,342	350,224	429,939	475,993	1.89%
0807 Melons And Papayas, Fresh	126,762	123,855	78,788	84,487	77,193	64,551	50,925	54,122	68,534	66,213	-6.96%
0306 Crustaceans	25,257	25,346	29,525	44,809	51,063	52,251	57,079	81,042	70,107	65,906	11.25%
0202 Meat Of Bovine Animals, Frozen	68,572	70,438	35,079	25,033	22,972	28,852	30,537	34,593	40,882	62,827	-0.97%
0304 Fish Fillets & Oth Fish Meat, Fresh, Chill Or Froz	31,742	40,496	44,536	44,908	56,436	54,260	55,648	60,032	65,572	61,602	7.65%
0811 Fruit & Nuts (raw Or Cooked By Steam Etc), Frozen	11,252	12,196	19,085	14,513	16,523	21,951	30,329	47,586	45,882	49,777	17.96%
0710 Vegetables (raw Or Cooked By Steam Etc), Frozen	33,316	30,710	35,157	44,660	43,547	35,189	45,637	43,556	42,503	47,304	3.97%
0805 Citrus Fruit, Fresh Or Dried	8,238	14,031	17,853	26,490	40,821	47,023	55,217	59,822	58,480	45,102	20.79%
0713 Leguminous Vegetables, Dried Shelled	33,265	27,615	11,851	17,433	25,037	14,277	21,608	31,031	40,106	33,101	-0.05%
0707 Cucumbers And Gherkins, Fresh Or Chilled	19,338	22,001	25,347	32,037	26,601	24,924	17,912	18,300	25,556	29,847	4.94%
0709 Vegetables Nesoi, Fresh Or Chilled	16,588	17,157	16,479	13,199	15,055	23,594	25,443	21,807	24,554	27,569	5.81%
0714 Cassava, Arrowroot Etc, Fresh Or Dry; Sago Pith	5,352	10,434	8,412	9,565	12,744	11,713	10,926	18,682	64,722	26,549	19.48%
1605 Crustaceans, Molluscs Etc. Prepared Or Preserved	9,396	12,052	11,413	17,945	23,673	23,308	23,494	23,141	26,017	24,088	11.03%
1604 Prep Or Pres Fish; Caviar & Caviar Substitutes	10,965	11,373	14,197	13,478	18,270	17,350	22,748	19,457	24,182	19,513	6.61%
0303 Fish, Frozen (no Fish Fillets Or Other Fish Meat)	8,482	6,417	9,001	7,704	9,808	11,690	11,479	14,087	11,342	13,247	5.08%
Other	41,572	53,921	51,641	44,898	48,723	48,088	44,479	64,016	86,905	71,892	6.27%
Grand Total	***2,515,120***	***2,513,432***	***2,416,948***	***2,408,785***	***2,370,969***	***2,309,910***	***2,316,812***	***2,485,108***	***2,802,352***	***2,779,883***	***1.12%***

Source: USA Trade OnLine

Gulfport handles the majority of these imports, as Dole and Chiquita are the key importers located at that port, handling imported bananas, pineapples and fresh fruit. Exhibit III-47 presents the tonnage volume of imported perishables handled by the Gulf Coast ports. While the import tonnage of the perishables has remained steady over the 2014-2023 period, the imported perishables have declined significantly at the LMR marine terminals included in the New Orleans Customs District. This decline reflects the loss of imported bananas handled at the Port of New Orleans in 2017, as Chiquita moved its operation to Gulfport, MS.

Exhibit III-47: Imported Perishable Cargo (Containerized and non-Containerized) by Gulf Coast Port

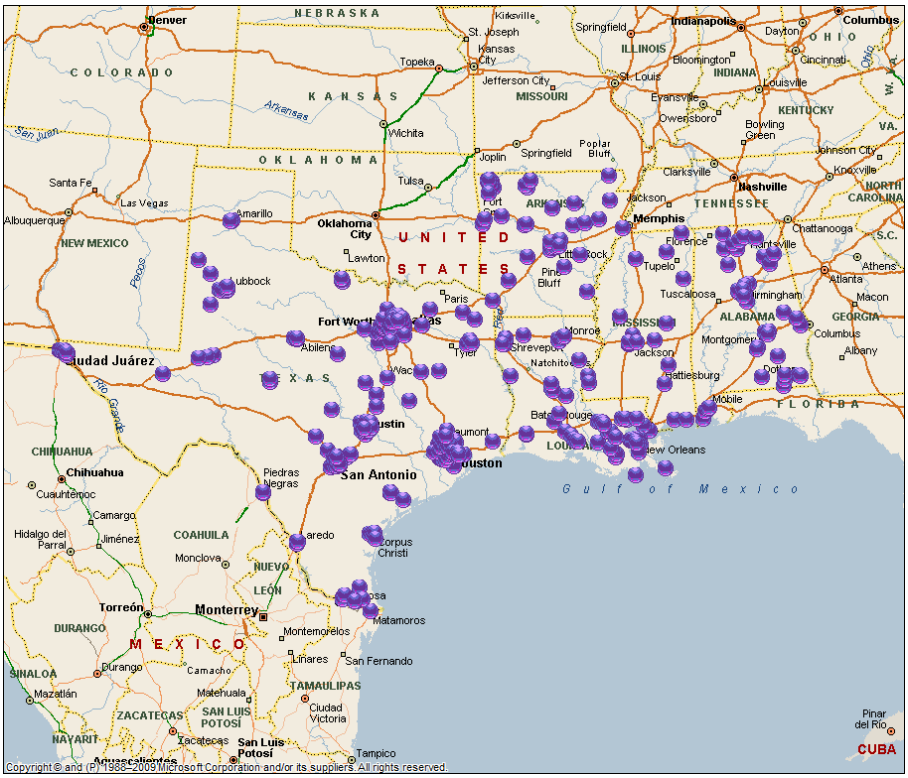
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Gulfport, MS (Port)	700,982	461,094	560,805	728,600	647,579	668,460	655,829	637,690	708,653	695,617	-0.09%
Houston, TX (Port)	464,180	527,987	502,023	520,378	471,517	436,873	466,058	542,617	589,059	514,055	1.14%
Port Manatee, FL (Port)	441,104	441,249	389,300	395,576	412,036	385,487	398,144	396,576	460,537	472,811	0.77%
Galveston, TX (Port)	425,791	441,689	420,745	395,854	421,227	445,207	451,320	446,938	428,334	443,021	0.44%
Freeport, TX (Port)	366,418	330,985	321,655	302,512	333,887	284,427	265,396	297,069	376,688	419,341	1.51%
Tampa, FL (Port)	3,832	5,749	3,795	2,881	19,664	18,961	12,739	72,499	131,770	122,663	46.98%
Panama City, FL (Port)	36,615	41,509	47,651	53,836	51,136	58,648	49,828	49,731	57,760	62,105	6.05%
Mobile, AL (Port)	939	931	759	2,013	2,019	2,868	5,185	16,754	19,920	28,906	46.33%
New Orleans, LA (Port)	75,251	262,239	170,166	7,136	11,904	8,978	12,293	11,868	27,730	12,655	-17.97%
Baton Rouge, LA (Port)								3,307	334	8,709	NA
Other	6	0	48	0	0	0	19	10,059	1,567	0	NA
Grand Total	***2,515,120***	***2,513,432***	***2,416,948***	***2,408,785***	***2,370,969***	***2,309,910***	***2,316,812***	***2,485,108***	***2,802,352***	***2,779,883***	***1.12%***

Source; USA Trade OnLine

Given the history of imported perishables at the LMR ports, as well as the current leading position of the LMR ports in terms of perishable exports, (mainly poultry), the LMR ports should direct marketing efforts to grow the export trade of beef and pork by utilizing existing temperature-controlled infrastructure, and further focus on the development of an import perishable market. This import business does not have to be limited to banana/pineapple imports, but marketing efforts should be directed to fruits and vegetables entering the U.S. market from Mexico/Central America as

well as the West Coast of South America (i.e., grapes and asparagus), East Coast of South America (pears and apples), and Africa and the Mediterranean (i.e., tangerines). These products move both in containers and break bulk, and to enter this market it will be necessary to develop infrastructure to handle these products, including treatment centers (methyl bromide or irradiation) to control for pest infestation. The imported perishables would then be distributed directly to the food products distribution centers in the New Orleans/Louisiana region. The location of the major food products distribution centers are shown in Exhibit III-48, and the concentration of these facilities in proximity to New Orleans is evident.

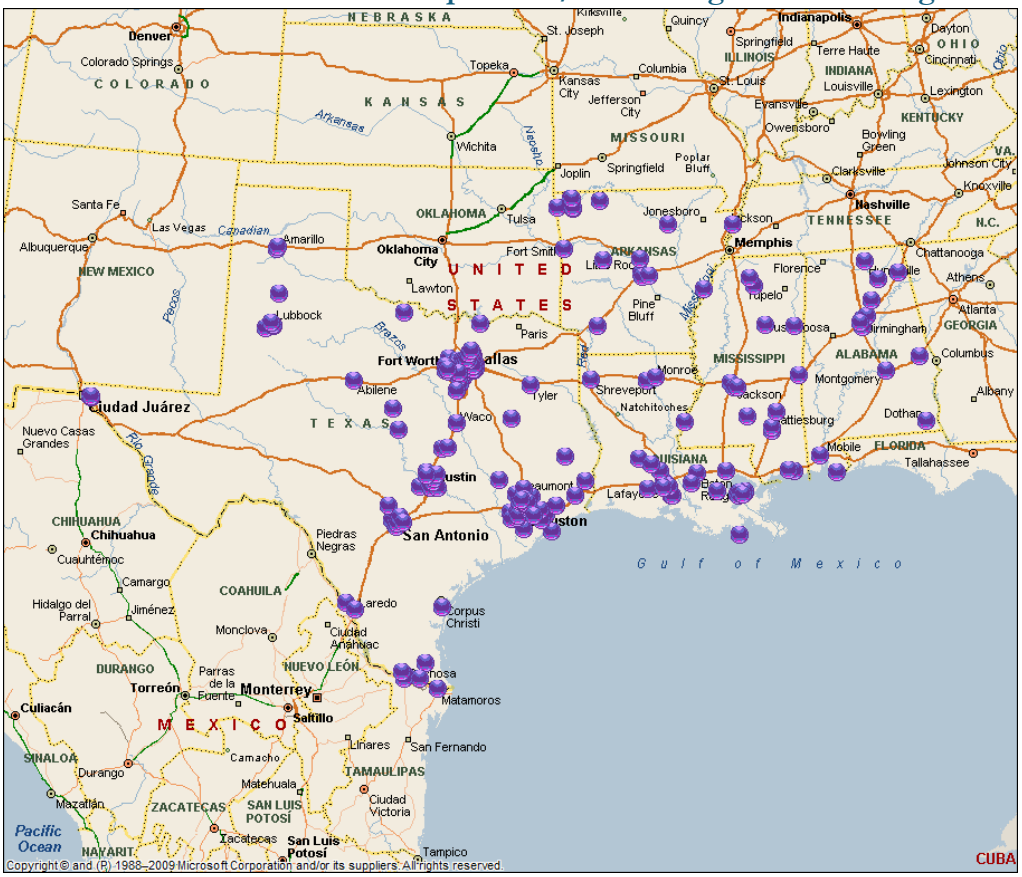
Exhibit III-48: Location of Key Food Products Distribution Centers



Source: A to Z Databases

In addition to the focus on the imported perishables for direct distribution, the increased import of perishables via the LMR ports could be used to grow the food preparation industry already located in the LMR region, as shown in Exhibit III-49.

Exhibit III-49: Location of Food Preparation/Processing Manufacturing Facilities



Source: A to Z Databases

The growth in the imported perishable market could be complimentary to the growth in the palm oil imports that have been increasing at LMR ports, and with the access to the regional sugar crop, these imports could provide a new source of inputs into local food processing and manufacturing.

Adding to the potential growth of imports and exports of perishables is the possibility of increasing the export of the local seafood industry. Exhibit III-50 show that more than 500 million pounds of seafood catch was recorded for the Empire-Venice, LA port region which is located in Plaquemines Parish. With the potential expansion of the export of frozen poultry, pork and beef, the LMR ports should investigate the possibility of growing the local seafood export market, which would require similar refrigeration/freezing infrastructure as the poultry, pork and beef export market.

Finally with the growth in the perishable import and export market in the LMR port region, such food processing activity could also be used to stimulate the import of paper packaging material.

Exhibit III-50: Seafood Catch by Region in Louisiana

Port	2018	2019	2020	2021	2022
Empire-Venice, LA	569.2	209.2	210.3	302.6	498.4
Intracoastal City, LA	327.9	233.5	137.2	296.1	295.3
Dulac-Chauvin, LA	33.9	35.1	26.5	30.6	36.2
Grand Isle, LA	17.8	16.2	10.9	9.7	17
Delacroix-Yscloskey, LA	15.7	11	10.3	14.9	16.3
Slidell-Covington, LA	7.4	5.9	6	4.6	4.8
Lafitte-Barataria, LA				9.7	17
Iberia, LA	4			5.6	3.8
Orleans, LA				4.9	4.5
Cameron, LA					2.8
Grand Total	975.9	510.9	401.2	678.7	896.1

Source: NOAA, National Marine Fisheries Service

8. Potential Project Cargo Market

The project cargo market consists of large, over dimensional pieces of equipment that includes boilers, structural pieces, components of manufacturing facilities and wind energy equipment such as towers, blades and nacelles. Project cargo requires open space for laydown area of the over dimensional pieces, and these pieces move to and from the port by specialized truck, rail and barge. Barge transportation is particularly relevant in moving equipment that is too large to move via truck and rail, and as a result the LMR ports are well positioned to handle project cargo with access the six Class I railroads as well as the Mississippi River System.

PROJECT CARGO OPPORTUNITIES

- PROJECT CARGO MARKET LIKELY TO GROW TO SUPPORT MAJOR PROJECTS:
  - LNG FACILITY CONSTRUCTION
  - CARBON CAPTURE PROJECTS
  - OFF-SHORE WIND PROJECTS AND SUPPORTING COMPONENT MANUFACTURING
- MAXIMIZE USE OF RIVER SYSTEM AND 6 CLASS I RAILROADS SERVING THE LMR PORTS

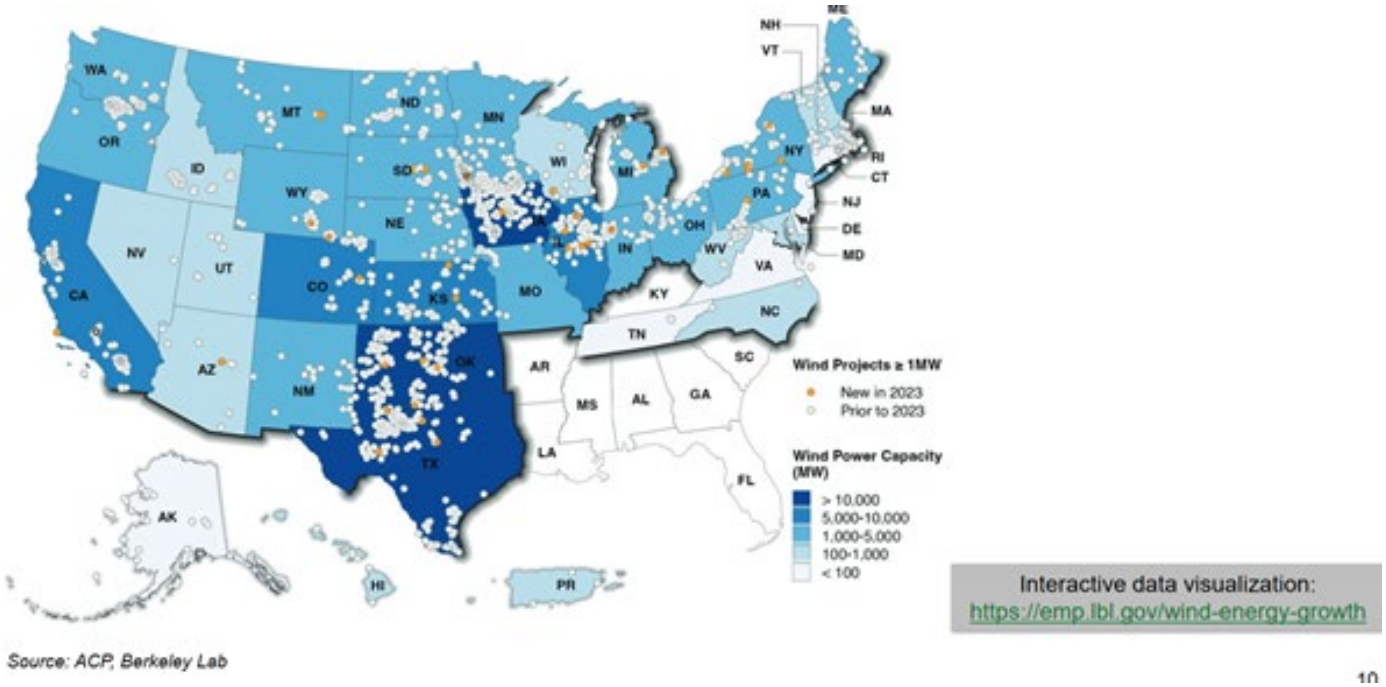
Exhibit III-51: Wind Energy and Associated Project Cargo Tonnage Handled at Key Project Cargo Ports (Non-Containerized Cargo)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	CAGR
Galveston, TX (Port)	184,606	193,634	118,824	170,766	233,700	317,145	170,284	228,879	243,055	309,000	5.89%
Houston, TX (Port)	143,468	164,085	117,728	84,658	104,485	113,075	105,761	120,585	120,107	130,052	-1.08%
Freeport, TX (Port)	3,897	15,003	40,863	46,656	60,077	88,592	54,763	66,236	87,664	104,203	44.07%
Corpus Christi, TX (Port)	17,688	10,129	7,413	37,798	40,006	66,777	76,451	152,765	49,611	42,070	10.11%
Mobile, AL (Port)	7,282	28,078	59,909	100,989	77,277	112,821	76,340	118,641	51,686	25,374	14.88%
New Orleans, LA (Port)	14,899	23,459	15,306	19,824	19,172	15,179	26,036	44,464	14,136	19,512	3.04%
Pensacola, FL (Port)	123	0	0	101	20	3,574	38,439	17,635	24,856	14,118	69.41%
Other	8,940	52,792	61,360	80,024	47,282	40,157	130,235	20,295	53,910	21,338	10.15%
Total	***380,903***	***487,179***	***421,404***	***540,816***	***582,019***	***757,320***	***678,309***	***769,500***	***645,025***	***665,669***	***6.40%***

Source: USA Trade OnLine

As shown in Exhibit III-51, the LMR marine terminals in the New Orleans Customs District have handled an increasing volume of wind energy equipment and associated project cargo tonnage, reaching its peak volume in 2021. As the pieces of the wind energy units increase, truck and rail transportation to wind farm installations in Texas, Kansas, Colorado, Nebraska, the Dakotas and Iowa, become problematic and river transportation to wind farm installation centers becomes the inland transportation mode of choice. For example, blades have been increasing from 60 meters to 72 meters, and as a result the dimensional constraints on highways and rail right of ways have made barge transportation an increasingly attractive mode. From the river terminals, the wind equipment is moved by truck to inland wind farm consolidation centers in Kansas, Oklahoma, Nebraska and the Dakotas. In addition to the actual blades, nacelles and towers that are delivered to the Port for shipment to the inland wind farms, containers carrying wind energy components also arrive at the port. Typically, these containers are then trucked to the inland wind farm consolidation points. The locations of the current wind farm installations are shown in Exhibit III-52.

Exhibit III-52: Location of Current Land Based Wind Installations



Source: ACP, Berkeley Lab

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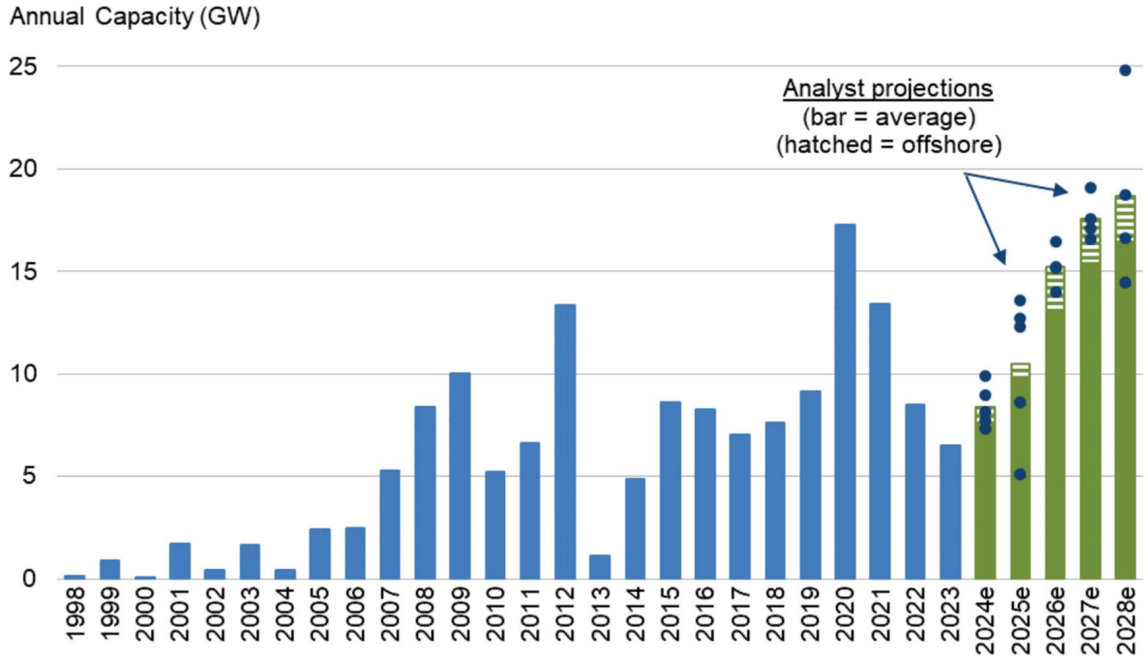
With respect to the future levels of wind energy installation, the Berkeley Lab projects that wind energy installation demand will show moderate growth through 2024, but will accelerate through 2028 (Exhibit III-53). However, with the change in the administration in January 2025, and the potential change in policy towards wind energy credits, these projections may be robust. Nevertheless, the LMR ports should pursue attraction of wind energy projects for both maintenance and new installations. Key points of contact include GE Logistics, Siemens-Gamesa, Vestas, and Transportation Partners & Logistics (TP&L).

Exhibit III-53: Projected Wind Energy Installations



Sources: ACP, independent analyst projections

With respect to off-shore wind farm development, Louisiana has developed a target of 5GW of off-shore power to be developed by 2035. The targeted developments are the Diamond Offshore Wind – (Jefferson and Lafourche Parishes) and the Havram Offshore Wind project (Cameron and Vermillion Parishes). With the development of these off-shore wind projects opportunities arise for the LMR ports in terms the production of:

- Towers
- Monopiles
- Nacelles
- Cable

If such production operations were established in the LMR region, demand for steel products would likely increase, as well as containerized cargo to support the production of the wind energy components. In addition to manufacturing activity, the LMR ports could serve as ports for installation support as well as service and maintenance support and locations for workboat operations. The location of Gulf Wind at Avondale is consistent with the recommended focus on wind energy component manufacturing. As noted, with increased development of the wind farm component manufacturing, demand for steel imports will likely increase. However, if federal policy towards wind energy development shifts, the impact on imported steel will be minimized

9. Summary of Break Bulk and Auto/RoRo Market Potential

Martin Associates conducted detailed interviews with numerous importers/exporters, ocean carriers, and terminal operators as part of the break bulk and container potential market analysis. Those companies interviewed are included in Appendix A. Based on the interview results and the analysis of the competitive position of the LMR ports in the various break bulk markets, the following summary of break bulk market potential was developed:

Forest Products Market

The forest products commodity group is the largest break bulk market served by the Gulf Coast ports in which the LMR ports have had limited participation. With respect to pulp imports, there is a strong demand with 300,000 new tons coming on line by one importer, and 700,000 tons projected by another importer over next 5 years. The key factors to participate in this growing market are summarized below.

Proximity to mills is key. The ability to offset potential delays due to water level uncertainty of the use of barge requires the development of clear span warehouse capacity with a minimum floor load of 1,000 PSF, and access to rail and truck to minimize inventory carrying costs of delays due to river level uncertainty.

With respect to paper imports, the key growth sector is packaging paper, with strong demand in the future driven by environmental concerns for plastic packaging. One major importer indicated that over the next five years there will be an additional 800,000 tons of new packaging paper moving into the U.S. There is a desire to move more westwardly on the Gulf Coast, and the imported paper will move via break bulk. The major customers of the packaging paper imports are similar customers as the pulp importers and mills, and the end user proximity is key to port selection. Clearspan warehouse capacity is necessary for inventory control.

The lumber import market has been steadily growing. LMR ports had previously handled lumber but have lost market share over past 10 years to neighboring ports in Texas and Western Louisiana, where warehouse capacity exists and is being developed. The demand for the lumber is driven by construction demand and proximity to key home improvement distribution centers. Warehouse capacity is required for untreated lumber, which represents a growing demand for longer term storage/distribution center capacity at the port of import. Treated structural lumber requires outside storage.

The plywood break bulk market displayed strong growth during COVID but then experienced a rapid decline on all coasts. Break bulk plywood imports are highly sensitive to container rates, and further plywood imports are very price sensitive requiring low storage rates and high dwell times. Warehouse capacity is critical, but the storage of plywood may not provide a sufficient return for warehouse construction, due to the price sensitivity of plywood imports.

Precious metals market

The precious metals market consisting of copper, lead and zinc represents a strong potential growth market for the LMR ports. This demand for copper and lead is driven by battery production, electronics, EV production, and EV charging station development. Copper is key in the petrochemical

industry, off-shore drilling and off-shore wind farms, due to its non-corrosive nature. Lead and zinc may require warehouse storage, while the copper importers prefer inside for security.

Aluminum

The LMR ports have had a strong market position in handling imported aluminum, and this market is anticipated to grow as a key input into auto and aerospace industries, as well as construction. EV auto production requires nearly 4 times the amount of aluminum as non-EV auto production to control for weight. Covered storage is not required to handle the aluminum.

Iron and steel imports

The LMR ports are a major import region for iron and steel imports. The majority of the imports handled at the LMR ports is used by the petroleum industry, including drilling and new facility construction, as well as local construction. The local demand will grow with the development of a new LNG facility in Plaquemines. The use of the Mississippi River System provides a low-cost logistics supply chain to move automobile grade coils to the Midwest auto manufacturing operations, and this market should be a point of focus to LMR port managers and terminal operators. Structural steel and pipe require outside storage, while auto grade coils typically use covered storage.

The interviews with the terminal operators, carriers and break-bulk importers identified two key factors that impact the use of the LMR ports for break bulk cargo, in addition to limited warehouse capacity. The sailing distance and associated port charges to move up river are viewed as a disadvantage to using the LMR ports for break bulk cargo, and this cost disadvantage is exacerbated if the vessel load is not fully discharged at the LMR ports. A partial discharge results in a higher cost per ton, and becomes prohibitive to call the LMR ports with partial loads. Secondly, the terminal operators interviewed identified the highly aggressive price competition that has been occurring along the Lower Mississippi River system and private break bulk terminals. This aggressive price competition reduces the incentive for capital investment by existing and potential new terminal operators, and further has not resulted in new tonnage on the river system, but instead a reallocation of break bulk cargo from one terminal to another.

Rubber

The LMR ports handle nearly 50% of all break bulk rubber imported into the U.S. The majority of the imported rubber handled at the LMR ports is used in tire manufacturing. The key markets outside of Louisiana are Ohio, Illinois and Tennessee. Modest growth in imported break bulk rubber imports is expected, and covered storage is required.

Autos

Interviews with auto processors indicated that New Orleans had been evaluated in terms of a potential auto import site and determined that the major disadvantage of using the LMR ports for auto import operations is the fact that an LMR port location is too far east to serve key markets not served by West Coast auto import ports. The auto operations at Jacksonville and Brunswick serve the key Southeastern markets and an LMR location would have to compete with these established import operations to serve the Southeastern markets, but the trucking costs to serve the midwestern and southcentral markets were too high via the LMR port.

Interviews with RoRo processors indicated that the 15-18 hour sail up-river impacts the ability of the carriers to maintain schedule integrity, but the rail access to midwestern RoRo manufacturing facilities is attractive for export cargo. Therefore, the LMR ports should market to both the RoRo carriers as well as equipment manufactures located in the Midwest. However, without a significant load-out volume per vessel call, the port costs due to the river transit would offset any inland cost advantage.

Perishable Commodities

With the infrastructure in place to handle the frozen poultry exports, it is recommended that the LMR ports pursue expanding the perishable export market for pork as well as other meat exports. This will require coordination with rail service to the midwestern states to access the meat exporters located in such states as Colorado and Nebraska. Blast freezing capabilities will be required at the LMR port region. In addition, with the focus on the Central American and Caribbean export market for poultry, emphasis should be on strengthening vessel service to Central America, including Mexico, Guatemala, Honduras as well as the Caribbean.

In addition to expanding the perishable export market, particularly the export of frozen beef and pork, the perishable import market may provide a growth opportunity for the LMR ports. This import business does not have to be limited to banana/pineapple imports, but marketing efforts should be directed to fruits and vegetables entering the U.S. market from Mexico/Central America as well as the West Coast of South America (i.e., grapes, asparagus), East Coast of South America (pears and apples), and Africa and the Mediterranean (i.e., tangerines). These products move both in containers and break bulk, and to enter this market it will be necessary to develop infrastructure to handle these products, including treatment centers (methyl bromide or irradiation) to control for pest infestation. The imported perishables would then be distributed directly to the food products distribution centers in the New Orleans/Louisiana region.

The perishable export market could also capitalize on the potential to export frozen seafood, as well as utilize the current palm oil imports in food product manufacturing in the New Orleans region.

Project Cargo/Wind Energy

The LMR marine terminals in the New Orleans Customs District have handled an increasing volume of wind energy equipment through 2021, but then experienced a significant decline. As the pieces of the wind energy units increase in dimension, truck and rail transportation to wind farm installations in Texas, Kansas, Colorado, Nebraska, the Dakotas and Iowa, become problematic and river transportation to wind farm installation centers becomes the inland transportation mode of choice. In addition to the actual blades, nacelles and towers that are delivered to the Port for shipment to the inland wind farms, containers carrying wind energy components also arrive at the port. Typically, these containers are then trucked to the inland wind farm consolidation points.

With respect to off-shore wind farm development, Louisiana has developed a target of 5GW of off-shore power to be developed by 2035. With the development of these off-shore wind developments opportunities arise for the LMR ports in terms the production of:

- Towers
- Monopiles

- Nacelles
- Cable

If such production operations were established in the LMR region, demand for steel products would likely increase, as well as containerized cargo to support the production of the wind energy components. In addition to manufacturing activity, the LMR ports could serve as ports for installation support as well as service and maintenance support and locations for workboat operations. Gulf Wind location at the Avondale site is an example of the development of manufacturing activity to support wind energy development.

IV. Container Market Analysis and Potential

This section of the report focuses on the major container ports located along the Gulf Coast for which the LMR ports compete directly. These ports are New Orleans, Houston and Mobile. At the request of the LMR ports sponsoring the study, this regional analysis covers the period 2014-2023, as is the time period for the other competitive market assessments included in this report. In addition, the ensuing regional analysis is based on the use of loaded twenty-foot equivalent units (TEUs) which is a standardized metric to measure container volume across ports. The S&P PIERS data base is used to review trends in loaded TEUs. This data based was supplied to Martin Associates by the Port of New Orleans. ***Appendix I presents an overview of the dynamics of the U.S. container market with implications for container operations at LMR ports, and is critical in understanding the overall market position of the LMR ports with respect to regional ports as well as ports on the Atlantic and Pacific Coasts***

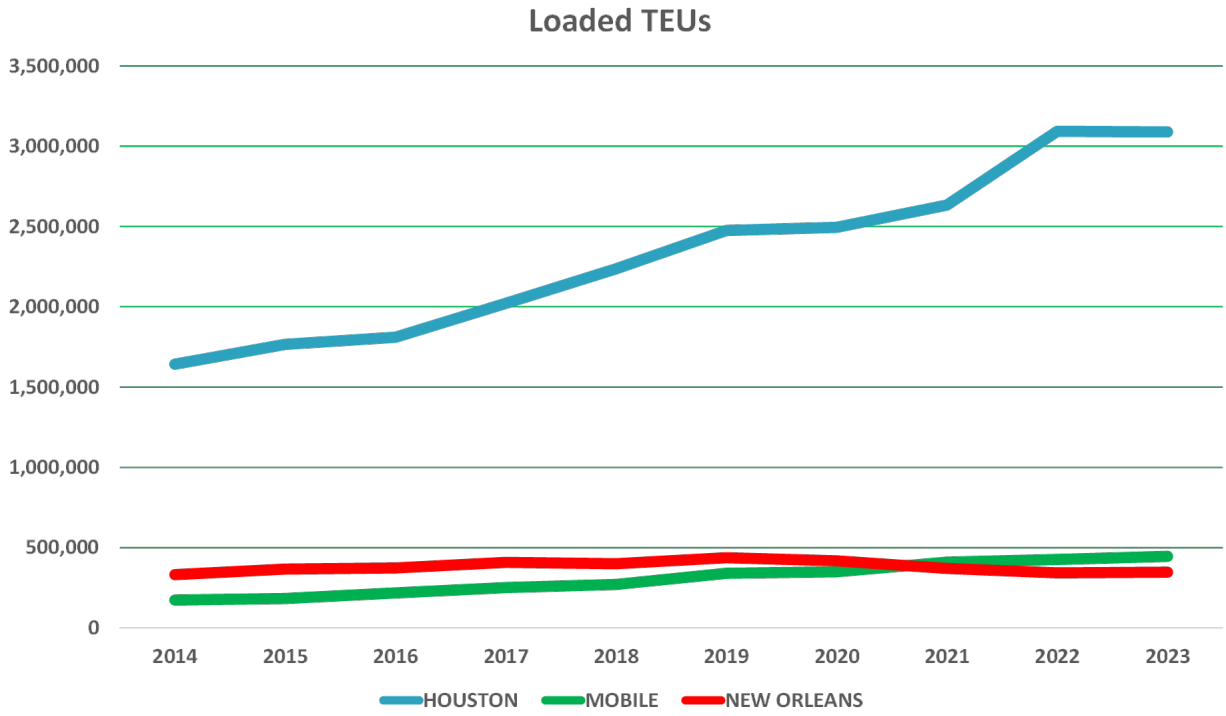
LMR CONTAINER MARKET PERFORMANCE AND OPPORTUNITIES

- CONTAINER VOLUME HANDLED AT LMR PORTS, PRIMARILY PORT OF NEW ORLEANS, HAS BEEN CONTRACTING SINCE 2019 DESPITE STRONG GROWTH IN VOLUME AT PORTS OF HOUSTON AND MOBILE:
  - LMR REGION SMALLER MARKET – 2.2 MILLION PERSONS VS. 7.5 MILLION PERSONS IN HOUSTON MSA
  - LOW VALUE OF IMPORT COMMODITIES AND EXPORT COMMODITIES - MOBILE AND HOUSTON SERVE AN IMPORT MARKET WITH AN AVERAGE VALUE PER TON TWICE THAT OF THE IMPORT MARKET IN THE LMR REGION – LESS VALUE TO OCEAN CARRIERS TO CALL LMR PORTS
  - KEY EXPORT CONTAINERIZED CARGO VIA LMR IS PLASTIC RESINS, LOW VALUE EXPORT CARGO AND HENCE LESS INCENTIVE FOR OCEAN CARRIERS TO CALL
  - IMBALANCE OF EQUIPMENT- MORE EMPTY CONTAINERS ARE DISCHARGED THAN FULL CONTAINERS MAKES LMR REGION AN EXPENSIVE MARKET TO CALL FOR CONTAINER OPERATORS
  - INTERMODAL SERVICE BY 6 CLASS 1 RAILROADS IS ATTRACTIVE TO CARRIERS, BUT NOT PANACEA FOR FUTURE GROWTH
- CRESCENT CITY BIRDGE LIMITS SIZE OF CONTAINER VESSESL – NEED FOR DOWNRIVER CONTAINER TERMINAL TO ACCOMMODATE GROWING SIZE OF CONTAINER VESSLE FLEET
- TO GROW CONTAINER VOLUME INTO LMR REGION:
  - DOWNRIVER CONTAINER TERMINAL
  - INCREASE DISTRIBUTION CENTER SQUARE FOOTAGE
  - FOCUS ON DEVELOPMENT OF HIGHER VALUE MANUFACTURING – AEROSPACE, BATTERY PRODUCTION, MEDICAL DEVICES, FUTURE ENERGY PROJECTS, FOOD PROCESSING

Exhibit IV-1 shows the number of loaded TEUs handled at each of the three ports over the 2014-2023 period. As shown in this exhibit, the Port of Houston experienced a strong growth in loaded TEUs over the period, growing from 1.6 million TEUs in 2014 to 3.1 million TEUs in 2023. Loaded TEUs at Mobile increased from 173,621 loaded TEUs in 2014 to 445,144 loaded TEUs in 2023. In contrast, loaded TEUs at the LMR ports, primarily handled at the Napoleon Avenue Container Terminal in New Orleans remained nearly constant over time – 331,620 loaded TEUs in 2014 and 347,546 loaded TEUs in 2023. Loaded TEUs reached a peak at the Port of New Orleans in 2019, 437,402 TEUs, but then fell by about 100,000 loaded TEUs through 2023. This decline of 100,000 loaded TEUs is in sharp contrast to the growth posted at

the Ports of Houston and Mobile during this time period when containers grew by 614,659 loaded TEUs at the Port of Houston and 105,410 loaded TEUs at the Port of Mobile.

Exhibit IV-1: Loaded TEUs Handled at the Ports of Houston, New Orleans and Mobile



Source: PIERS

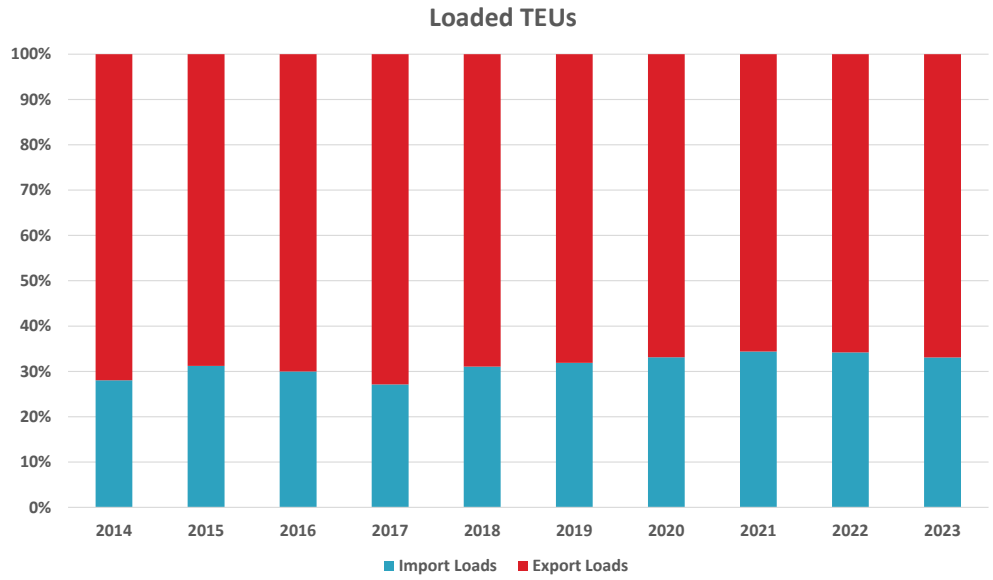
With respect to the direction of the container trade in terms of exports and imports, New Orleans has a greater share of loaded TEUs exported than imported. In contrast, both the Ports of Houston and Mobile have a greater share of loaded import TEUs than export TEUs, suggesting that the container vessel calls at the Port of New Orleans are driven by the export market, not the import market, which is the case at Houston and Mobile. Exhibits IV-2, IV-3 and IV-4 compare the balance of import and export loaded TEUs at the three ports. In the early part of the period the Port of Houston also had a greater share of loaded TEUs exported than imported, but with increased distribution center development in the Houston area, along with the increased vessel service at the Port of Houston's two container terminals, Barbours Cut and Bayport, the Port of Houston was able to attract direct all-water service from Asia to bring in imported consumer goods and electronics. Previously these containerized cargoes moved intermodally into Dallas by rail from Los Angeles/Long Beach, and then were distributed throughout Texas by truck. However, with the growth in the distribution centers around the Houston area, as well as Austin and San Antonio, ocean carriers increased the number of direct calls to serve the high freight rate value import market represented by these consumer goods. Plastic resins, which are relatively lower rated cargo in terms of freight rates, became the backhaul from the Port of Houston. After discharge of the import cargo, the empty containers remain in the Houston market area and provide a supply of empty containers that can be used to handle the plastic resin backhauls to Asia. Therefore, the cost of repositioning empty containers to handle the export move at the Port of Houston is relatively small as the empty containers

that were stripped with high value import cargo remain in the Houston area. This is very attractive to the ocean carriers as the repositioning costs of empty containers is relatively small. This would not be the case if empty containers had to be repositioned from far away distances to handle the plastic resin exports.

The growth in distribution centers around the Port of Mobile, fueled by the large-scale Wal Mart distribution center in Mobile, as well as the growing auto industry in Alabama and the southeastern U.S. represent a strong import market for high value consumer goods and auto parts, stimulating increased vessel calls at the Port of Mobile.

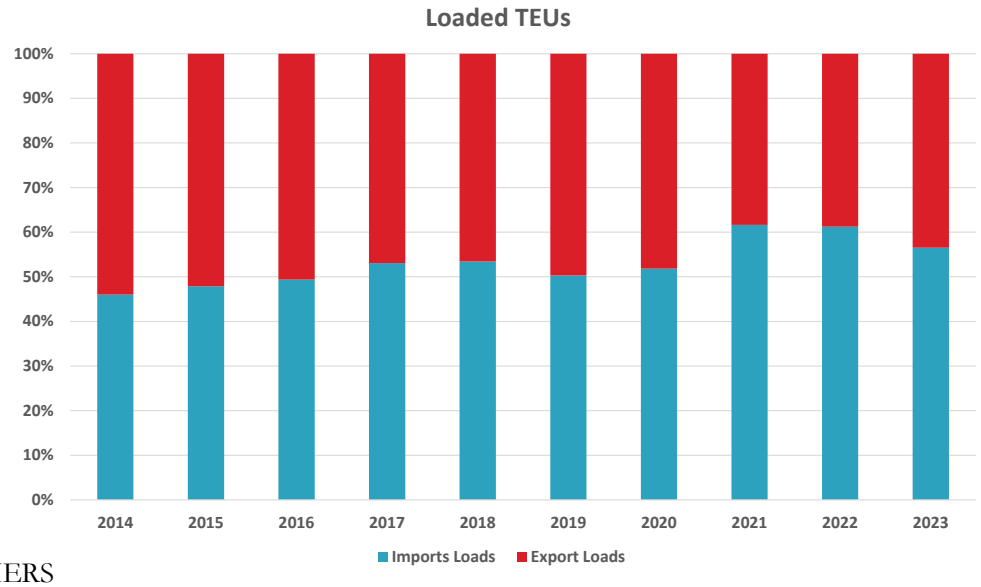
In contrast, the container market served by the LMR ports is characterized as an export driven market with relatively low rated (in terms of freight rates) plastic resins as a backhaul. A potential export market is the use of transloading bulk agri-bulk products from barge moving down the Mississippi River into empty containers for a repositioning international container move. However, containerized agri-bulk products are relatively low value and command relatively low freight rates for the ocean carrier. On the import side, coffee is the key import containerized commodity, and it is a relatively low value import cargo compared to consumer durables, electronics and auto parts, and thus not able to command a high freight rate. As a result, due to the less attractive freight rates on imported coffee and the imbalance of export cargo in the form of low value plastic resins, ocean carriers have less incentive to call the Port of New Orleans.

Exhibit IV-2: Balance of loaded TEUs at the Port of New Orleans by Direction of Trade



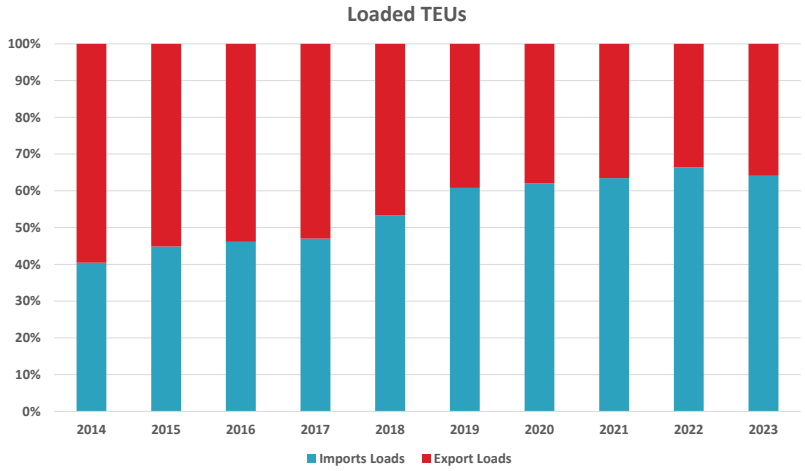
Source: PIERS

Exhibit IV-3: Balance of Loaded TEUs at the Port of Houston by Direction of Trade



Source: PIERS

Exhibit IV-4: Balance of loaded TEUs at the Port of Mobile by Direction of Trade



Source: PIERS

Exhibit IV-5 shows the trade lanes served by each port. The key trade lanes served by the Port of Houston are China, followed by Northern Europe and the Mediterranean. Similarly, China is the leading trade lane served by the Port of Mobile, followed by Japan /Korea (auto parts). In contrast, Europe, Central America and the East Coast of South America are the key trade lanes served by the Port of New Orleans, while China has been growing.

Exhibit IV-5: Trade Lanes Served by Houston, Mobile and New Orleans (Loaded Total TEUs)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
HOUSTON	1,642,371	1,766,378	1,810,880	2,021,497	2,235,971	2,474,758	2,494,347	2,633,563	3,093,100	3,089,416
China	217,988	288,518	333,085	431,750	453,715	477,325	547,745	705,440	884,179	945,667
North Europe	402,899	415,181	373,941	415,934	462,827	483,619	430,447	423,719	432,195	396,374
Mediterranean	272,705	279,389	277,412	273,091	320,659	374,063	346,751	319,174	356,847	377,689
South America EC	237,077	234,170	230,240	225,831	257,737	271,283	294,854	290,324	315,196	298,010
Japan/Korea	27,137	39,175	59,170	83,563	134,956	162,298	190,701	196,733	248,926	269,590
Central America	120,466	142,883	151,525	163,813	153,513	163,634	225,322	212,734	242,481	191,595
SW Asia	27,339	52,595	66,168	74,978	87,465	103,275	97,346	110,242	138,869	161,156
Middle East	122,915	97,269	109,635	120,431	113,346	123,158	100,348	99,526	128,915	121,762
SE Asia	15,786	29,162	27,203	34,754	63,834	123,471	117,158	102,840	131,458	143,829
Caribbean	100,065	83,521	79,936	101,606	95,518	86,482	44,695	80,344	121,363	79,926
Africa	33,672	38,186	38,672	34,151	33,384	44,961	49,782	39,256	40,373	53,837
South America WC	57,497	59,116	59,510	57,296	53,405	55,689	42,765	46,247	43,859	44,695
Australia/NZ	6,091	6,708	4,095	3,763	5,015	5,116	6,081	6,733	7,573	4,870
All Other	282	364	203	276	248	237	172	173	775	222
Canada	454	142	85	262	345	147	143	78	92	169
MOBILE	173,621	182,878	218,095	251,295	270,610	339,734	350,266	409,703	426,864	445,144
China	30,214	43,203	70,871	96,047	114,322	154,930	162,596	197,924	190,583	190,031
Japan/Korea	27,819	36,967	47,781	54,817	61,455	86,234	91,091	107,015	123,348	133,431
Central America	6,749	7,666	8,769	9,936	9,235	17,881	27,752	24,356	35,913	36,720
North Europe	33,005	30,494	29,337	29,369	26,054	33,447	29,249	33,748	31,390	28,349
SE Asia	5,383	5,600	8,168	10,182	11,052	12,851	13,960	19,400	22,522	24,069
South America EC	6,322	5,065	3,460	3,527	2,586	3,094	2,719	2,455	2,735	5,901
Mediterranean	9,418	7,230	7,367	7,901	7,898	5,295	8,451	8,798	9,195	7,706
Caribbean	40,827	37,554	36,903	34,032	30,997	17,367	3,021	3,822	5,196	12,230
SW Asia	8,234	4,178	1,119	1,552	1,908	3,334	3,391	4,693	2,803	3,042
Africa	2,168	776	1,169	1,532	2,941	2,472	4,098	3,587	1,620	1,699
South America WC	1,721	1,871	1,037	467	675	1,162	773	693	184	830
Middle East	1,291	1,735	1,727	1,091	887	820	1,532	1,423	722	1,031
Australia/NZ	471	540	381	840	599	836	1,628	1,788	653	99

Source: PIERS

Exhibit IV-5 (Continued): Trade Lanes Served by Houston, Mobile and New Orleans

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
NEW ORLEANS	331,620	366,969	373,110	408,195	400,151	437,402	417,381	370,672	343,503	347,546
North Europe	71,171	71,943	74,915	78,241	85,640	90,036	76,859	61,578	67,093	59,525
Central America	53,540	94,221	82,574	73,799	51,905	63,506	59,317	71,420	54,386	49,482
South America EC	69,544	62,782	66,222	69,519	75,779	82,377	91,479	80,938	69,351	66,246
China	9,786	7,612	10,995	23,263	29,537	40,648	47,649	38,384	40,952	47,663
Mediterranean	54,970	59,839	52,949	58,005	57,922	62,742	50,210	36,752	29,392	30,438
SE Asia	1,127	2,888	4,245	14,048	16,260	21,967	23,090	18,018	18,797	23,317
Caribbean	40,913	35,537	43,895	46,656	36,102	26,583	14,711	18,425	17,830	15,087
Japan/Korea	364	1,207	840	4,951	8,471	12,863	17,929	16,063	13,071	19,083
South America WC	11,304	13,366	16,927	18,717	16,784	11,882	13,519	13,139	14,249	12,831
SW Asia	3,208	3,155	4,984	4,796	6,481	7,063	5,464	5,309	5,082	8,478
Middle East	7,673	7,589	9,499	10,021	7,152	6,809	6,611	4,603	6,189	7,758
Africa	6,667	5,791	4,197	5,124	7,187	9,949	9,299	4,322	5,470	6,398
Australia/NZ	1,096	903	631	964	761	856	1,170	1,689	1,519	1,207
All Other	190	121	191	85	158	121	72	28	94	27
Canada	67	15	47	6	12		2	3	28	6

Source: PIERS

Interviews with ocean carriers serving the Gulf Coast ports indicated several disadvantages to call the Port of New Orleans or an LMR port over Houston and Mobile. These are:

- The imported container cargo served via the LMR ports (primarily via the only container terminal currently located at the Port of New Orleans) is lower value than at the Ports of Houston and Mobile
- The market served by the LMR ports is relatively small compared to Houston (the Houston MSA population is 7.5 million vs. 2.2 million in the New Orleans and Baton Rouge MSAs)
- The imbalance of export loads to import loads results in higher equipment positioning costs at the LMR container terminal, and the fact that imported coffee moves in 20 ft. containers and plastic resin exports move in 40 ft. containers exacerbate the equipment repositioning costs
- The current 10-14 hour sail each way on the river from the Gulf is costly and poses problems when delays occur at the Port of Houston. When delays occur, the New Orleans container terminal port call is typically dropped in order to maintain schedule integrity of the ocean carrier to meet is schedule at Mobile

To evaluate the value of import cargo at the three ports, Exhibit IV-6 presents the key commodities handled at each port, while Exhibit IV-7 shows the average value per ton of an imported container at New Orleans compared to the average value per ton of imported containerized cargo at Houston and Mobile. As shown in Exhibit IV-6, consumer goods including furniture, electronics and equipment are the key imported commodities at the Port of Houston; auto parts and consumer goods are the key import commodities at the Port of Mobile; and coffee, chemicals and wood products are the key containerized commodities handled historically at the Port of New Orleans container terminal.

Exhibit IV-7 compares the average value per ton of all import and export containerized cargo handled at the three ports in 2023, as obtained from U.S. Trade OnLine. The average value per ton of imported containerized cargo handled at the Port of Houston and at the Port of Mobile is nearly double the value of the average value per ton of imported cargo at the now handled at the Port of New Orleans container terminal, consistent with the results of the interviews with the carriers. With the lower import cargo value, the freight rate charged for imported cargoes at New Orleans is less than at Houston for the higher value cargo, thus reducing the attractiveness of the LMR port region as an import port of call to an ocean carrier. Further exacerbating the cargo value situation is the fact that the imbalance of loaded export cargo compared to loaded import TEUs at New Orleans container terminal reduces the revenue attractiveness of the port to the carriers, as the value per ton of the export cargo at all three ports is significantly less than the value of the import cargo per ton, reflecting the lower valued plastic resin export cargo.

Exhibit IV-6: Commodity Mix for Import Cargo at the Ports of Houston, Mobile and New Orleans

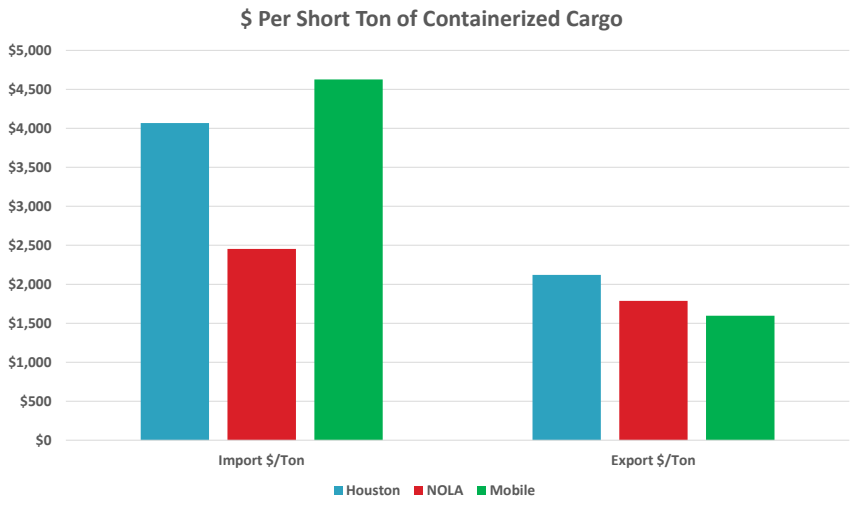
HOUSTON	Percent	Cumulative %
FURNITURE; BEDDING ETC; LAMPS NESOI ETC; PREFAB BD	11.82%	11.82%
NUCLEAR REACTORS, BOILERS, MACHINERY ETC.; PARTS	10.47%	22.29%
ELECTRIC MACHINERY ETC; SOUND EQUIP; TV EQUIP; PTS	9.78%	32.07%
PLASTICS AND ARTICLES THEREOF	7.32%	39.39%
ARTICLES OF IRON OR STEEL	7.60%	46.99%
TOYS, GAMES & SPORT EQUIPMENT; PARTS & ACCESSORIES	4.49%	51.48%
WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL	4.19%	55.67%
RUBBER AND ARTICLES THEREOF	3.55%	59.22%
VEHICLES, EXCEPT RAILWAY OR TRAMWAY, AND PARTS ETC	3.33%	62.55%
BEVERAGES, SPIRITS AND VINEGAR	3.32%	65.86%
ART OF STONE, PLASTER, CEMENT, ASBESTOS, MICA ETC.	2.07%	67.94%
ALUMINUM AND ARTICLES THEREOF	2.07%	70.01%

MOBILE	Percent	Cumulative %
VEHICLES, EXCEPT RAILWAY OR TRAMWAY, AND PARTS ETC	19.70%	19.70%
FURNITURE; BEDDING ETC; LAMPS NESOI ETC; PREFAB BD	12.43%	32.13%
TOYS, GAMES & SPORT EQUIPMENT; PARTS & ACCESSORIES	9.49%	41.62%
ELECTRIC MACHINERY ETC; SOUND EQUIP; TV EQUIP; PTS	8.84%	50.46%
NUCLEAR REACTORS, BOILERS, MACHINERY ETC.; PARTS	7.51%	57.98%
PLASTICS AND ARTICLES THEREOF	6.61%	64.59%
ARTICLES OF IRON OR STEEL	3.73%	68.32%
RUBBER AND ARTICLES THEREOF	3.34%	71.65%

NEW ORLEANS	Percent	Cumulative %
COFFEE, TEA, MATE & SPICES	12.59%	12.59%
ORGANIC CHEMICALS	8.01%	20.60%
WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL	7.36%	27.96%
NUCLEAR REACTORS, BOILERS, MACHINERY ETC.; PARTS	7.44%	35.40%
FURNITURE; BEDDING ETC; LAMPS NESOI ETC; PREFAB BD	6.29%	41.69%
INORG CHEM; PREC & RARE-EARTH MET & RADIOACT COMPD	4.94%	46.63%
PLASTICS AND ARTICLES THEREOF	4.76%	51.39%
ALUMINUM AND ARTICLES THEREOF	5.65%	57.04%
RUBBER AND ARTICLES THEREOF	3.60%	60.64%
ARTICLES OF IRON OR STEEL	4.50%	65.15%
BEVERAGES, SPIRITS AND VINEGAR	2.02%	67.17%
ELECTRIC MACHINERY ETC; SOUND EQUIP; TV EQUIP; PTS	3.00%	70.17%

Source: PIERS

Exhibit IV-7: Average Value per Ton of Import and Export Cargo at the Ports of Houston, Mobile and New Orleans



Source: USA Trade OnLine

In addition to the imbalance of loaded import to loaded export containers at the Port of New Orleans, the mix of empty and full containers is cited by the ocean carriers as a further disadvantage for calling the Port of New Orleans or a container terminal along the LMR. As shown in Exhibit IV-8, more than 40% of the containers discharged at the Port of New Orleans are empty containers, compared to less than 10% of the export containers loaded on board the vessels.

Exhibit IV-8: Ratio of Empty to Full Containers at Discharge (Import) and Load (Export) at the Port of New Orleans

Year	Empty to Total Import	Empty to Total Export
2017	45.93%	4.05%
2018	49.55%	8.58%
2019	47.72%	13.12%
2020	42.61%	8.58%
2021	36.90%	7.68%
2022	34.18%	4.80%
2023	41.51%	9.59%

Source: Port of New Orleans

Marine containers typically are manufactured in two sizes, a twenty-foot container and a forty-foot container. The mix of the sizes of containers is often driven by the commodity carried in the container as well as the trade lane. Coffee most often moves from Central and South America in a twenty-foot container, while plastic resin export customers typically move the export in forty-foot containers. The fact that coffee is the leading import containerized cargo, and plastic resins the leading containerized export cargo not only results in an imbalance of loaded export and import containers, but the mix of twenty-foot containers for import and forty-foot containers for export further exacerbates the imbalance of equipment handled by the steamship lines calling the Port. Exhibit IV-9 shows in many years more than 50% of the total forty-foot containers discharged at the Port of New Orleans were empty, meaning that these containers carried no inbound revenue to the carrier, while about 11% in 2023 of the discharged twenty-foot containers were empty, reflecting the use of this sized container for imported coffee. Based on the most current data from the Port of New Orleans, for the first 8 months of 2024, there are nearly two times as many empty forty-foot containers discharged than full forty-foot containers discharged. Therefore, the ocean carriers are essentially moving empty, non-revenue generating forty-foot containers into the LMR region to pick-up lower rated plastic resin exports. This results in high repositioning of equipment costs at New Orleans. Conversely, at Houston, the majority of the inbound forty-foot containers are loaded with high revenue yielding import cargo, and then after the container is stripped at import facilities, often located near the Port of Houston, the empty forty-foot container is used to handle the exported plastic resins from the Port of Houston, minimizing empty equipment repositioning costs. Thus, the ocean carrier

earns revenue on both the import move as well as the export move, making Houston a more attractive port to call from an ocean carrier's business perspective.

Exhibit IV-9: Equipment Utilization by Size of Container at the Port of New Orleans

Year	Empty to Full 20s Import	Empty to Full 40's Import	Empty to Full 20s Export	Empty to Full 40s Export
2017	26.37%	196.06%	5.44%	3.26%
2018	29.88%	214.23%	11.09%	8.24%
2019	18.18%	214.62%	22.63%	10.85%
2020	21.84%	146.57%	14.14%	6.33%
2021	22.88%	109.51%	9.67%	7.09%
2022	11.55%	104.53%	7.78%	3.17%
2023	10.94%	153.20%	19.05%	5.86%

Source: Port of New Orleans

In addition to the equipment imbalance and the value of the import cargo discharged at the Port of New Orleans, the size of the market has also limited the growth of containerized cargo at the Port. As noted, New Orleans and Baton Rouge MSAs have a combined population of 2.2 million compared to the Houston MSA with a population of about 7.5 million. In order to overcome the issue with equipment imbalance at the Port of New Orleans container terminal, as well as the current commodity mix of lower value of imported cargo within the LMR region, it is necessary to identify the ability of a LMR container terminal to expand its market hinterland and grow a higher value import commodity mix base. It is further important to identify cargo that now moves to and from the LMR Ports' competitive logistics hinterland via other ports. This potential market is the subject of the following sections.

1. Potential Container Market at the LMR Ports

The current geographic distribution of containerized cargo that moves via the LMR Ports was identified through the use of S&P Transearch data. Truck warehoused data originating and destined in Orleans Parish was used as a proxy to allocate containerized imports and exports moving through the LMR ports by county for the southeastern and south-central U.S. It is to be emphasized that the Transearch data is used as a proxy for import and export destination and origins, and it may contain warehouse cargo that was domestically produced in Orleans Parish (for imports) or consumed in Orleans Parish for imports.[8]

Exhibit IV-10 shows the distribution of containerized cargo moving from the LMR ports (Orleans Parish) by state. About 57% of the containerized cargo imported via the LMR ports is destined within Louisiana, followed by about 18% into Mississippi, and 13% into Texas. Of the 13% share of Texas destined cargo from Orleans Parish, the majority moves into Harris, Dallas and Tarrant Counties. This suggests that the trucked warehouse cargo going into Harris County is likely non-import cargo via LMR ports, but could be domestic cargo moving for consumption in Harris County (Houston), or cargo moving out of Orleans County for export via the Port of Houston. Similarly, Dallas and Tarrant Counties are the sites of large distribution centers in Texas, as well as major westbound rail Intermodal Container Transfer Freight (ICTF) terminals that connect to the Ports of Los Angeles and Long Beach. Therefore, this trucked warehouse cargo originating in Orleans Parish likely includes containerized cargo originating in Orleans County for export via the West Coast ports using the intermodal operations in the Dallas area. With these caveats, it appears that the current import market served by the LMR ports is very confined to Louisiana and Mississippi. Nearly 50% of the imports via the Orleans Parish into Mississippi are destined for Hinds, Harrison, Jackson and Madison Counites.

Exhibit IV-10: Distribution of Containerized Cargo Moving from the LMR Port Region

State	Share Of Imports Via LMR Ports
Louisiana	57.18%
Mississippi	18.10%
Texas	13.08%
Arkansas	5.29%
Colorado	4.60%
Missouri	0.56%
Oklahoma	0.48%
Kansas	0.02%
Other	0.69%

Source: S&P Transearch

[8] Other data bases were reviewed to identify inland origins and destinations including the PIERS data base. For the most part the actual ultimate origin/destination records are absent for more than 70% of the transactions. While there is the possibility of including some domestically produced and consumed warehoused trucked cargo in this Transearch data based, it appears to be much more representative in providing a proxy to profile the current hinterland for the LMR ports.

With respect to containerized cargo exported via Orleans Parish, nearly all containerized cargo exported via the LMR ports originates in Louisiana, and is characterized by the local plastic resins market (Exhibit IV-11).

Exhibit IV-11: States Supplying Current Container Exports via the LMR Port Region

State	Share Of Exports Via LMR Ports
Louisiana	96.48%
Texas	2.40%
Mississippi	0.49%
Missouri	0.35%
Arkansas	0.10%
Colorado	0.07%
Kansas	0.07%
Oklamoma	0.03%
Other	0.01%

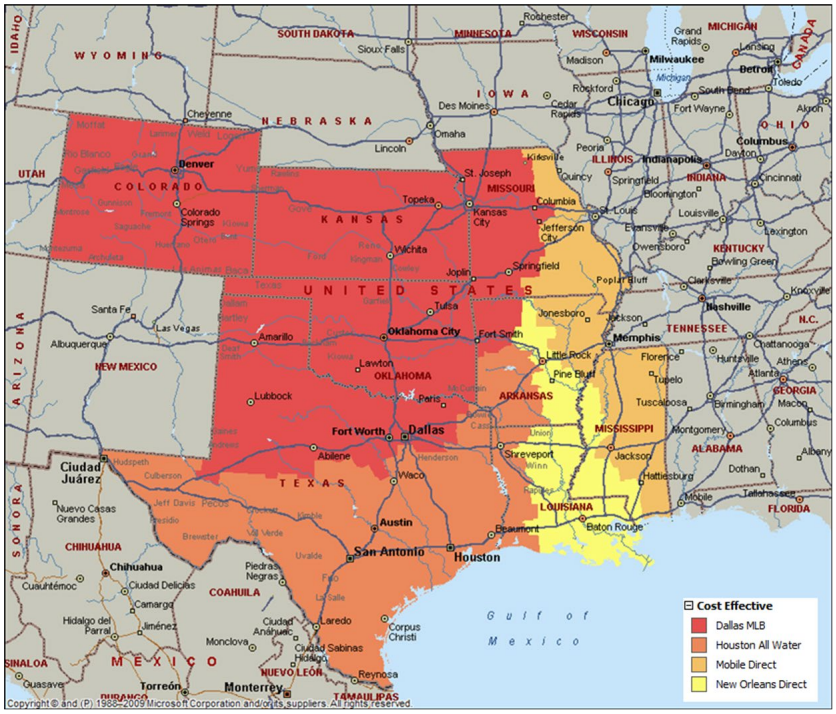
Source: S&P Transearch

This analysis of the current distribution of imported containerized cargo moving via the LMR ports, specifically Napolean Avenue Container Terminal, which is the only container terminal on the LMR, serves a very localized market. The fact that this market is relatively small and confined to a very regionalized Louisiana and Mississippi market is consistent with an analysis of the competitive logistics costs of moving containers via the LMR ports vs. the Ports of Houston and Mobile, as well as via mini-land bridge between Dallas and the Ports of Los Angeles and Long Beach.

Martin Associates developed a detailed logistics cost model to assess the cost-effective hinterland for the LMR ports. The competitive logistics analysis consists of the current container shipping rates for Asian cargo to Los Angeles/Long Beach and the Gulf Coast ports, as developed from the Shanghai Freight index; combined with the trucking costs between the Ports of Houston, Mobile, New Orleans and a combination intermodal rate between Los Angeles/Long Beach and Dallas and then trucked to each county seat in Texas, Mississippi, Missouri, Arkansas, Colorado, Kansas, Oklahoma and Louisiana from Dallas. In addition, to account for transit time, an inventory carrying cost per day was developed based on an $80,000 forty-foot container value (based on USA Trade OnLine Data for imports handled at Gulf Coast ports in 2023). Truck transit time was based on a truck speed of 40 miles per hour, and rail transit time to and from Los Angeles/Long Beach and Dallas was based on scheduled services.

Exhibit IV-12 presents the cost-effective hinterland, based on total logistics costs for cargo originating or destined in Asia. As this exhibit shows, the LMR ports' hinterland is very limited compared to the Ports of Mobile and Houston and the use of mini land bridge (MLB) via Dallas.[9]

Exhibit IV-12: Total Logistics Cost-Effective Hinterland for Asian Cargo

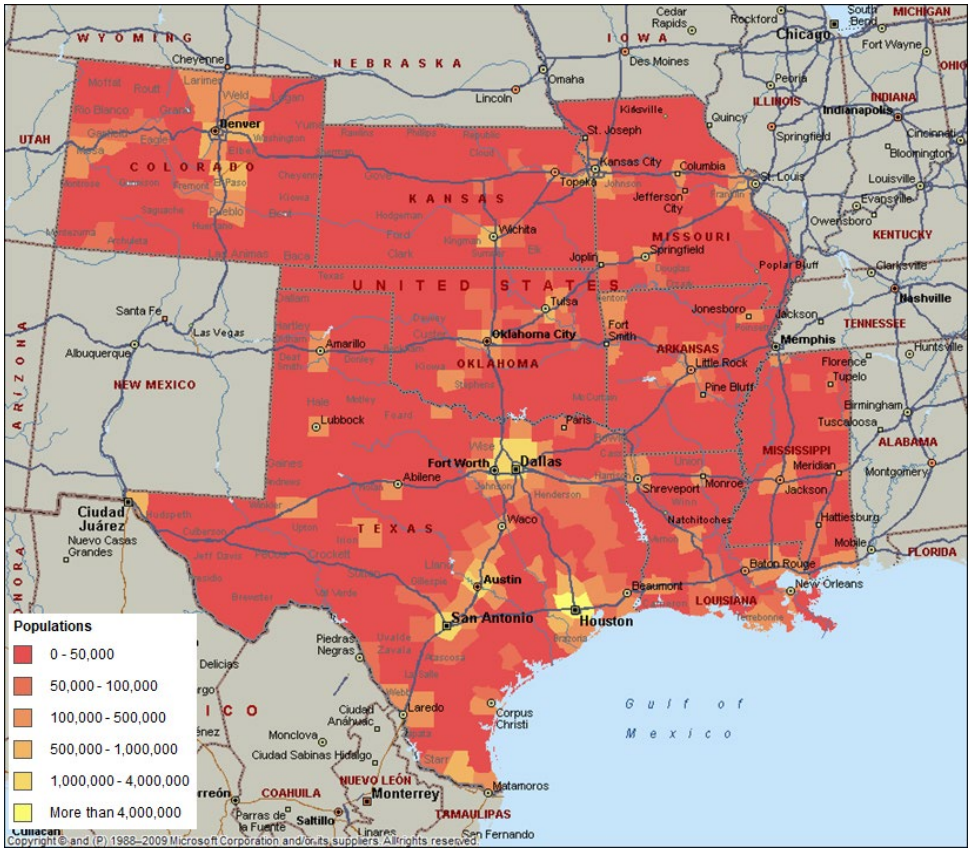


For European and Mediterranean cargo, the only change in the cost-effective hinterland is that the mini-land bridge service via Dallas and the Los Angeles/Long Beach ports is not a factor.

Not only is the competitive hinterland available to the LMR ports relatively small in geographic size, the population density included in this geographic hinterland is limited when compared to the Port of Houston. Similarly, the distribution center density is likewise limited in the New Orleans cost-competitive hinterland. Exhibit IV-13 shows population density while Exhibit IV-14 presents the location of the distribution centers. Population density is critical as it is a proxy for the size of the import of consumer goods market, which tend to be higher value import cargoes. As Exhibit IV-14 demonstrates, the majority of distribution centers are concentrated in Houston, Dallas/Fort Worth, Austin and San Antonio. There is a cluster of distribution centers around New Orleans, but the Port of Houston provides cost-effective access to a large number of the distribution center clusters in Texas, including Houston, San Antonio, and Austin.

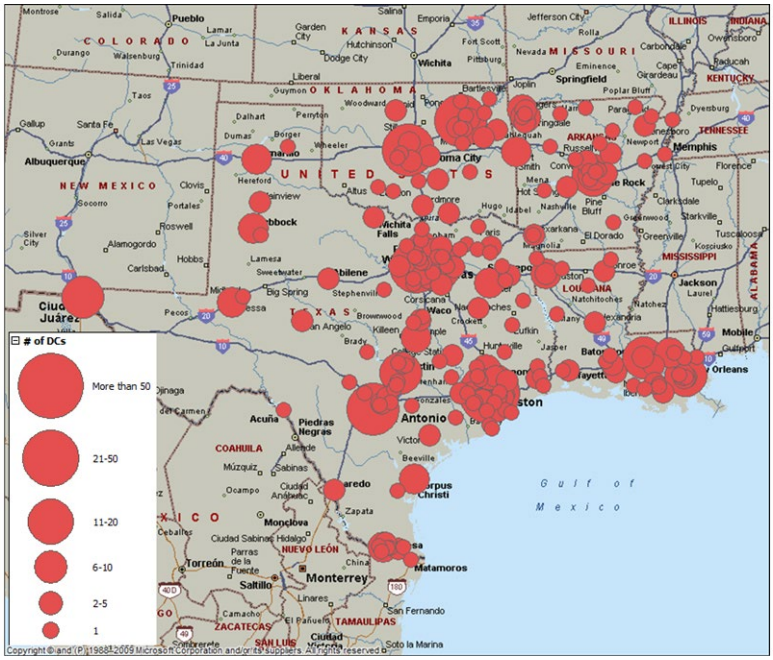
[9] With increased rail dwell times in Los Angeles/Long Beach in November 2024, the Houston cost advantage could move further westward. However, the current 8-day rail dwell time at the San Pedro Bay Ports reflect seasonal demand as well as congestion in inland rail hubs in Chicago and the Midwest. These dwell times will likely be reduced in the near future as seasonal demand is reduced. It is to be emphasized that the number of intermodal trains from the San Pedro Bay ports averages about 30 trains per day.

Exhibit IV- 13: Population Density



Source: U.S. Census

Exhibit IV-14: Location of Distribution Centers in the South-Central Region



Source: A to Z Directory

Current Container Volume Potential

The immediate potential container market for the LMR ports is defined as the volume of containerized cargo moving into and from the LMR cost-effective hinterland as described. Transearch data was also used to identify the volume of container cargo that was destined into the LMR cost-effective hinterland via the Ports of Houston, Dallas/via mini land bridge, and Houston. Exhibit IV-15 shows the volume of loaded containerized cargo moving into the LMR cost-effective hinterland from other ports (a proxy for imports) and the volume of containerized cargo moving from the LMR cost-effective hinterland to other non-LMR ports (export). These volumes are expressed as loaded forty-foot equivalent units (FEUs) and twenty-foot equivalent units (TEUs).

Exhibit IV-15: Potential Container Volume Moving by Truck (and Mini-Land Bridge) into and from the LMR Cost-Competitive Hinterland Now Served by Other Ports

	Truck Potential (FEUS)	Total TEUS
Loaded Import FEUS	18,416	36,831
Loaded Export FEUS	31,117	62,234
Total Loaded Potential	***49,533***	***99,065***

Source: Transearch

This data suggests that there are nearly 100,000 loaded TEUs that move to and from the LMR cost-effective hinterland via other ports. Consistent with the imbalance of exports and imports at the Port, the volume of import potential moving from other ports is less than the volume of export cargo originating in the LMR cost-effective hinterland that is trucked to other ports. In fact, about 63% of the identified truck potential is export cargo. This further exacerbates the import deficit position of the LMR ports as described previously. When empty containers are factored, it can be assumed that there are about 200,000 TEUs of potential containerized cargo that are trucked to and from the LMR cost-effective hinterland via other ports.[10]

In addition to the potential leakages from the LMR ports' cost-effective hinterland by truck, Transearch data was also used to estimate the potential volume of plastic resins that are railed from the region to other ports. Using the Transearch intermodal and carload rail data, another nearly 56,000 TEU equivalents of resins were identified as being railed from the LMR cost-effective hinterland to other non-LMR ports, the majority moving to Savannah as shown in Exhibit IV-16. In some cases, the resins move in bulk to the export ports where they are bagged and exported, while other resins are bagged in the LMR region and moved to the ports for export. Overall, this market represents about 56,000 full TEUs of lost export cargo by rail.

[10] Based on the Transearch data, of the containers imported into Louisiana and trucked from other ports, about 63% are trucked from the Port of Houston, and about 36% move via the Port of Los Angeles/Long Beach either via mini-land bridge and truck via Dallas or trucked directly from Los Angeles/Long Beach. For the containers exported from Louisiana and trucked to other ports for export, about 54% are trucked to Houston, about 30% are trucked to Dallas and put on a rail to Los Angeles/Long Beach or trucked directly to Los Angeles/Long Beach, while about 14% are trucked to the Port of Mobile for export.

Exhibit IV-16: Volume of Plastic Resins Originating in the LMR Cost Effective Region Moved by Rail for Export via non-LMR Ports

Origin	Charleston, SC	Los Angeles, CA	Savannah, GA	Loaded FEUS Total	Loaded TEUS Total
Baton Rouge, LA	4,403	3,350	6,015	13,767	27,535
Jackson, MS	24	363		387	773
Lake Charles, LA	1,217	1,574	1,556	4,347	8,694
New Orleans, LA	2,786	819	5,836	9,441	18,881
Grand Total	***8,430***	***6,105***	***13,407***	***27,942***	***55,884***

Source: Transearch

The Transearch data was also used to identify direct intermodal rail containers that move to and from the LMR ports by intermodal rail. Exhibit IV-17 presents the volume of intermodal loaded TEUs that move into and from the LMR cost-effective hinterland. It is to be emphasized that it is not possible to identify if the intermodal moves to and from Chicago are import and export containers, but for the purpose of this analysis it is assumed that these TEUs are international either imported or exported from the Ports of Los Angeles/Long Beach and moved into Chicago and then to the LMR region, or are moving to and from the Canadian ports of Price Rupert and Vancouver and the LMR region. This intermodal volume represents about 37,000 loaded TEUs or about 74,000 TEUs assuming a one-to-one empty to full ration.

Exhibit IV- 17: Intermodal TEUs Moving to and from the LMR Region

Destination BEA	Port of Import (Full TEUS)					
	Charleston, SC	Chicago, IL	Houston, TX	Los Angeles, CA	Savannah, GA	TOTAL TEUS
Baton Rouge LA	57	5,394	120	0	48	5,620
Lake Charles LA	0	0	0	0	0	0
New Orleans LA	0	11,724	71	3,627	2,030	17,452
Shreveport LA	0	0	0	0	0	0
TOTAL LOUISIANA	***57***	***17,118***	***191***	***3,627***	***2,079***	***23,072***

Origin BEA	Port of Export (Full TEUS)					
	Charleston, SC	Chicago, IL	Houston, TX	Los Angeles, CA	Savannah, GA	TOTAL TEUS
Baton Rouge LA		2,985		36	150	3,171
Lake Charles LA						0
New Orleans LA	17	3,974		1,558	5,583	11,132
Shreveport LA				12		12
TOTAL LOUISIANA	***17***	***6,959***		***1,605***	***5,734***	***14,315***

Source: Transearch

When the truck, plastic resins rail and direct intermodal potential container markets are combined, a total of nearly 400,000 TEUs (empty and full) of market potential is estimated:

- 99,065 loaded TEUs of potential export and imports moving by truck to and from other ports
- 55,884 loaded TEUs of potential resin exports moving from the LMR region to other ports
- 37,387 loaded TEUs of direct intermodal containers moving to and from the LMR region from other ports, including intermodal yards in Chicago.

This equates to 192,336 loaded TEUs of identified market potential. Assuming a one-to-one ratio of empty to fill containers, the 192,336 loaded TEUs represent about 384,672 total TEUs of potential.

2. Projected Container Market

However, it is to be emphasized that this represents *potential* container market as defined as moving to and from the LMR cost-effective hinterland. As described previously, the possibility to penetrate this potential market depends upon the ability to attract ocean carriers to call on a potential market represented again by an imbalance of loaded exports compared to loaded imports. Based on interviews with the key container operators calling the Gulf Coast ports, the lack of high value imports is a significant disadvantage to induce port calls at the LMR ports, which explains the lack of growth of the container volumes at the LMR container terminals, namely the Napolean Avenue Terminal. In fact, between 2017 and 2023, total TEUs handled at the Port of New Orleans fell from 524,186 TEUs in 2017 to 481,582 TEUs in 2023. Between 2019 and 2023, the Port of New Orleans lost 166,377 total TEUs. With a current capacity of about 1 million TEUs estimated for the Napolean Avenue Container Terminal, the current terminal is utilized by less than 50%.[11] Exhibit IV-18 shows the total volume of TEUs handled at the Port of New Orleans.

Exhibit IV-18: Total TEUs (Empty and Full) Handled at the Port of New Orleans

Year	Total TEUS
2017	524,186
2018	587,182
2019	647,959
2020	572,845
2021	488,094
2022	430,054
2023	481,582

Source: Port of New Orleans

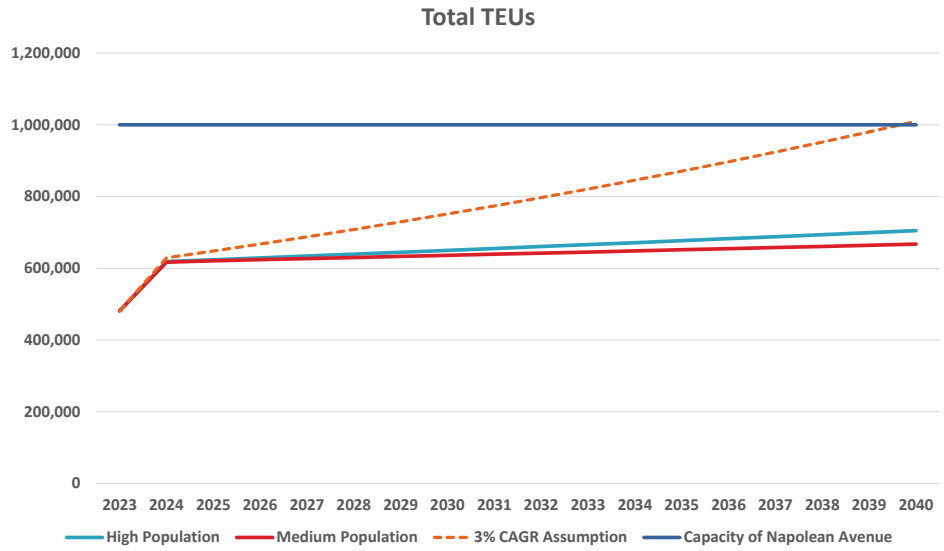
Based on this analysis, and assuming full capture of the 400,000 TEU potential identified over the next three years, which is a very aggressive assumption, three sets of container projections were developed. Each forecast assumes a capture of the entire 400,000 TEU potential market. It has been established that the import market will drive the growth in vessel calls, and the export market will follow. Using projected population growth for Louisiana, which has been developed under a medium and high forecast scenario from the Louisiana Demographics and Geography. Under the medium population forecasts a 0.48% annual growth rate is projected, while under the high population forecasts a 0.82% annual growth rate is projected. Imports tend to be driven by population growth and these population growth rates are applied to the 2023 actual TEU volume handled plus assuming the port captures all of the 400,000 TEU potential over the next three years.

[11] Commercial Growth Strategy, Port of New Orleans lists Napolean Avenue Container Terminal capacity at 1 million TEUs.

The third set of projections assumes that again all of the 400,000 TEU potential will be captured over the next three years, and the organic growth of the cargo is a 3% annual growth rate over the period through 2040. This 3% growth rate is used to replicate the overall growth in containerized cargo at all U.S. ports between 2003 and 2023. It is to be emphasized that under the medium population growth scenario, the compound annual growth of the TEUs is about 1.9%; under the high population forecast the compound annual growth rate (CAGR) is 2.3%; and under the 3% annual organic growth rate assumption along with the capture of the 400,000 TEUs over the next three years, the annual compound growth rate is 4.45%. These projected growth rates compare to a compound annual growth rate of 2.3% for imported containerized cargo and 3.2% for exported containerized cargo at the Port of New Orleans over the 2003 to 2023 period.[12]

Exhibit IV-19 shows the projected growth in TEUs at the LMR ports under the three projection scenarios, all based on the aggressive assumption that the regional container terminal can capture 100 percent of the identified 400,000 TEU identified potential over the next 3 years. Even under this most aggressive scenario, capacity at the current container terminal at the Port of New Orleans (represented by the thick blue line in the chart) is not met until 2040.

Exhibit IV-19: Projected Container Volume at LMR Ports



It is to be emphasized that the 400,000 TEUs of potential cargo include an imbalance of exports to imports. Based on the potential market analysis 59,903 loaded TEUs of the 192,336 loaded TEUs, or about one-third of the potential, are import TEUs with balance being export loads. This suggests that the capture of the entire 192,336 loaded TEU market is a very aggressive assumption. From a planning perspective, it appears that the Napolean Avenue Container Terminal has adequate capacity to handle future growth in container volume in the LMR region for the next 10-15 years at the minimum, but the air draft limitations of the Crescent City

[12] USA Trade OnLine

Bridge could limit the container fleet that is able to call the current container terminal. The next section of the potential market analysis focuses on the expansion of the LMR container market reach though intermodal rail service to compete for discretionary cargo moving into the central and northern midwestern states via the West Coast.

Intermodal Penetration into the Central and Midwestern States

The ability to attract imported discretionary cargo moving via the Ports of Los Angeles and Long Beach into the central and northern midwestern states has been identified as a potential market for the LMR ports.[13] Martin Associates developed a transit time logistics analysis to assess if the Port of New Orleans or a new LMR container terminal could compete from a transit time perspective with the West Coast in delivering imported containerized cargo moving on the Transpacific routing into central and upper midwestern states. Using data from the Intermodal Association of North America (IANA), about 3.3 million TEUs moved from the Southern California region to the midwestern portion of the U.S. Of these 3.3 million TEUs about 1.1 million TEUs were full inland point intermodal moves (IPI). The IPI move is a direct rail move of a marine container from the marine terminal to the inland destination, while the balance of the 3.3 million TEUs, about 2.2 million TEUs, were domestic containers, which may include marine containerized cargo that was transloaded into domestic 53 ft. containers in the Los Angeles area for a move inland. With respect to TEUs moving from the central and upper midwestern states, 3.2 million TEUs moved back to the Southwestern region. Of these 3.2 million TEUs, about 1.0 million TEUs were IPI moves, with the balance moving in domestic containers, mainly 53 ft. containers.

The transit time analysis conducted by Martin Associates does raise questions as to the potential to penetrate the inbound container market moving from the Southern California ports by rail into the central and midwestern U.S. This analysis includes an assessment of the current sailing times between major Asian ports such as Singapore and Shanghai and Los Angeles, compared to the time into the Gulf of Mexico ports such as Houston, New Orleans and Mobile, as well as the transit time into Prince Rupert and Vancouver. The rail service time from each of the port areas to points in the central and midwestern U.S. are added to these transit times.

Exhibit IV-20 provides the transit times between Shanghai and Singapore and the Ports of Los Angeles/Long Beach, Prince Rupert, Vancouver, Houston and Mobile. These transit times are taken directly from the published sailing schedules of Maersk, CMA-CGM and MSC. New Orleans is not included in the sailing schedules. In order to simulate a call into New Orleans, about 3 days should be added on to the Houston schedule to allow for a 10–14-hour sail upriver. It is likely that New Orleans would be a second port of call after Houston due to the size of the Houston market compared to the New Orleans market. A new downriver terminal could reduce the sailing time by about 4 to 8 hours depending upon the location of a downriver terminal.

[13] Port of New Orleans Container Trade Forecasts, May 2023

Exhibit IV-20: Voyage Transit Times

	Days			
Sailing Schedules - From Singapore	**Los Angeles**	**Prince Rupert**	**Houston**	**Mobile**
MSC Mirjam			41	
MSC Erica			39	
MSC Ingy			37	
CMA CGM Columbus	28			
CMA CGM Galapagos	29			
CMA CGM Lincoln	29			
Manila Maersk		22		42
Mette Maersk		22		41
Milan Maersk		22		41
Maren Masersk		23		42
MSC Kumsal	27			
MSC New Jersey			40	36
MSC Gina				
AVERAGE DAYS	***28***	***22***	***39***	***40***
Sailing Schedules - From Shanghai	**Los Angeles**	**Prince Rupert**	**Houston**	**Mobile**
MSC Lone Star Express			34	30
Carl Schulte			28	37
MSC Ludovica			34	31
MSC Orient Service	20			
Maersk Alfirk	20			
Gerner Maersk	21			
Gunde Maersk	21			
Marcus V		13		
San Felipe		14		
Methoni		13		
MSC Maple Service		14		
AVERAGE DAYS	***21***	***14***	***32***	***33***

Source: Published Sailing Schedules

Based on the review of these actual sailing schedules, a Gulf Coast port call is about 11-18 days longer from Asia compared to Los Angeles and Prince Rupert. Three days are added to this differential to simulate New Orleans vessel service, assuming a Houston first port-of-call. This suggests that there exists about a 14–21-day voyage transit time advantage of West Coast ports compared to a New Orleans call for discretionary intermodal cargo.

Exhibit IV-21 provides actual rail transit times between each of the ports and Memphis, Chicago and Kansas City, key intermodal points in the central and northern midwestern states. The comparison of rail transit times suggests that rail transit times between Mobile and New Orleans to the midwestern states are equalized. Into Memphis, New Orleans and Mobile could save about 2-3 days for rail transit over a West Coast routing assuming contract rail schedules and the newly announced express rail services by the UP into Memphis and Chicago. Using a 3-day advantage in rail transit time, this results in a about an 11–18 transit time advantage for a West Coast routing over a New Orleans/LMR terminal routing to serve the discretionary intermodal markets in the central and northern midwestern states. However, under current and unusually high rail dwell times at Los Angeles (November 2024 rail dwell times in Los Angeles were more than 9 days according to the Pacific Merchant Shipping Association), which compares to 2-4 days of average rail dwell time. Therefore, the transit time advantage of using a West Coast port over the use of New Orleans to serve inland markets falls to about 4 to 11 days, assuming an increase of 7 days of rail dwell time currently.

Exhibit IV-21: Rail Transit Times

	From:	To:	Days	Hours
CSX	Mobile	Memphis	4	1
	New Orleans	Memphis	4	15
	Mobile	Chicago	4-5	
	New Orleans	Chicago	4-5	
	Savannah	Memphis	6	21
CN	Mobile	Memphis	1	
	New Orleans	Memphis	1	
	New Orleans	Chicago	2	
	Mobile	Chicago	2	
	Prince Rupert	Chicago	6	
	Prince Rupert	Memphis	6	
BNSF	LA	Memphis	9	
	LA	Chicago	9	
UP	LA	Chicago	3-5	
	LA	Memphis	2-5	
Contract	LA	Chicago	4	
	LA	Mempis	4	
	LA	Kansas City	4	

Based on this analysis, intermodal rail may not provide the panacea for container operations at the LMR ports, despite a sizeable potential discretionary market. Even with the rail capacity and service provided by the six Class I railroads, overall transit time to key intermodal points via a LMR container terminal vs. the use of Los Angeles/Long Beach and Prince Rupert/Vancouver does not favor a container terminal on the LMR as a gateway port to the Midwest when combined with vessel transit times, rail service times and low value of local import market. Under the most optimistic transit time schedule the use of New Orleans to serve Chicago and Memphis results in an average 4–11-day transit time disadvantage over the West Coast for Asian cargo (with the current 9-day rail dwell time). With an inventory carrying cost of about $56 per day for a container valued at $81,360, there is an additional inventory carrying cost ranging from $225-$600 per forty-foot container to use New Orleans over a West Coast routing for Asian cargo. Higher value cargo would be assessed a higher inventory carrying cost, and a return to normal real times at the San Pedro Bay ports would result in an even higher inventory carrying cost. Longer transit times are not attractive to higher valued import goods, further reducing the potential for high value imports to be moved intermodally via New Orleans into the discretionary market. Furthermore, Mobile and New Orleans have similar transit times to Memphis and Chicago and strong competition with CN express service via both ports. As demonstrated, Mobile serves a more profitable import market to induce ocean carrier service than is the case for New Orleans. Finally, the private terminal planned on the Houston Ship Channel will have an on-dock ICTF, which combines the strong local market with the potential for intermodal service to the central and midwestern markets as well as Mexico.

With respect to serving the west bound market such as Dallas from an LMR container terminal, it is to be emphasized that the Port of Houston and container terminals on the Houston

Ship Channel have a strong competitive logistics cost advantage over an LMR port to serve the Dallas market from a trucking perspective. These terminals are located about 240 miles from Dallas, about 3.5-hour drive time. In contrast, the mileage between an LMR port and Dallas is about 510 miles, with an estimated driving tome of about 7 hours. The current rail transit time from Los Angels into Dallas ranges from 3 to 4 days with daily train departures from Los Angeles. With an assumed 1-day transit into Dallas from an LMR container terminal, the ports of Los Angeles and Long Beach would still provide about an 8-day transit time advantage over the use of a first in-bound direct call at an LMR port to serve the Dallas market on a transpacific sourced market routing. Furthermore, the volume of Dallas destined cargo via an LMR port would have to be large enough to justify daily rail service for a direct comparison with service via Los Angeles into the Dallas market.

3. The Case for the Development of a Down River Container Terminal

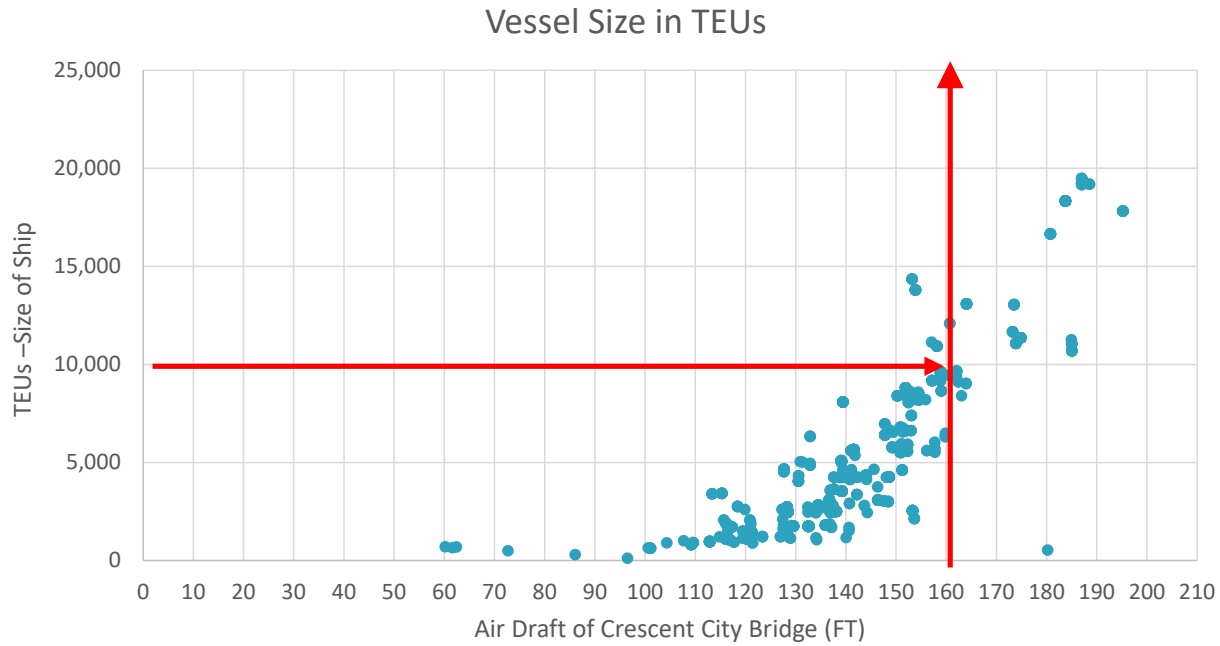
There has been much discussion regarding the development of a new container terminal along the LMR. Based on the market analysis and aggressive projections, the current Napoleon Avenue Container Terminal utilizes less than 50% of its theoretical capacity. Given the demand projections for container terminal throughput, this suggests that the current capacity will likely be sufficient through the 2035-2040 period, even under the most aggressive projection scenario which yields a 4.5% compound annual growth rate over the period and assumes the capture of nearly 400,000 TEUs of cargo that now moves from and to the LMR cost-effective hinterland.

While demand does not appear to drive the development of a new container terminal in the LMR region, another key factor must be considered in the development of a downriver terminal – the restrictive air draft of the Crescent City Bridge. Based on the river levels, the air draft of the bridge is about 160 ft., which restricts larger vessels calling the Napolean Avenue Container Terminal.[14] This compares to the recently raised Bayonne Bridge in New Jersey, which has a 215 ft. clearance while the planned new raising of the Talmadge Bridge in Savannah is targeting a 230 ft. vertical clearance[15]. The bridge height restrictions of the Crescent City Bridge currently limit the ability to handle the larger ships being deployed not only on the Asia-U.S. trade using the Panama Canal, but also the deployment of larger ships on the Northern Europe, Mediterranean and the Asia -U.S. routing using the Suez Canal.

Martin Associates used the S&P database Seaweb to identify the air draft and size of the vessels in the world container fleet (size measured in terms of vessel TEU capacity). While not all vessels report mast to keel height, for those that did, the air draft was calculated by subtracting the design draft from the mast to keel height. Exhibit IV-22 shows a scatter diagram of the air draft of the sample of vessels and the TEU capacity of the vessel. Based on this analysis, the 160 ft. average air draft of the Crescent City Bridge restricts vessels in excess of about 10,000 TEUs. While air draft and TEU size does vary in specific cases, the exhibit clearly indicates that vessels in excess of 10,000 TEUs tend to have an air draft in excess of 160 ft. This being the case, as vessels grow in size, a larger share of the world container fleet will be restricted from calling the Napolean Avenue Container Terminal.

[14] At 0 gauge the air draft of the Crescent City Bridge is 170 ft.
[15] Savannah River Crossing Feasibility Study, Final Report, Georgia Department of Transportation, September 2022.

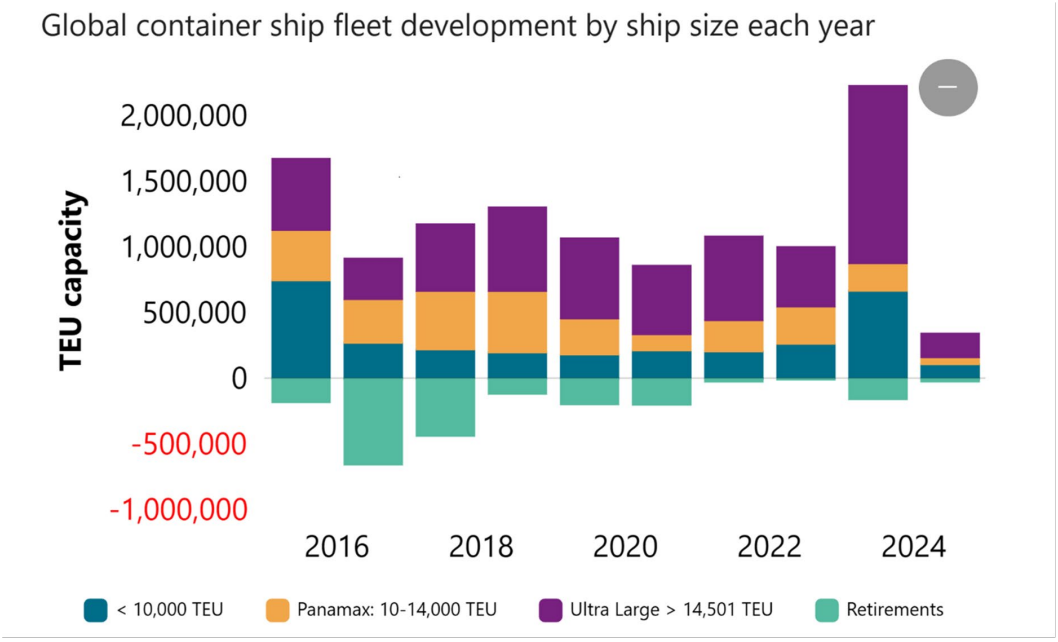
Exhibit IV-22: Relationship Between TEU Size of Vessel and Air Draft



Source: S&P Seaweb

The order book for 2024 and container vessels delivered by size since 2016 are presented in Exhibit IV-23. A review of the vessels on order indicates that a large proportion of the new build containerships on order are Panamax (10,000 to 14,000 TEUs) and ultra large vessels (over 14,000 TEUs). As these vessels are deployed into the world container fleet, the Crescent City Bridge will clearly limit the ability of the Port of New Orleans Napolean Avenue Container Terminal to attract new Transpacific and Transatlantic services.

Exhibit IV-23: World Order Book and Deliveries of Container Vessels by Size of Vessel



Source: S&P Research, Journal of Commerce. 2024

Without moving the container terminal downriver, the LMR port region will be blocked from serving the majority of the world container fleet and will clearly not be able to penetrate current potential markets, as well as expand market reach though the intermodal access to the midwestern discretionary container market. When developing the container terminal down river, access to the six Class I railroads will be critical. While it has been demonstrated that penetration into the central and upper midwestern discretionary container market is challenging for an LMR container port given the current local limited local market, the ability to attract lower time sensitive containers moving into the midwestern states from Asia will be an important marketing tool for the growth of a downriver terminal. It has further been shown that an LMR port to serve a west bound container market such as Dallas for Transpacific cargo is at a competitive disadvantage compared to intermodal service via Los Angeles/Long Beach and truck service via Houston.

With the development of a new terminal downriver, the existing Napoleon Avenue Container Terminal will be available to serve container markets served by smaller vessels such as the central American container market, as well as utilize the area for project cargo, and cargo requiring outside storage.

With the potential growth in near-shore marketing occurring in Mexico and other parts of Central America where trade has been growing with the United States Gulf Coast ports, the Napolean Avenue Container Terminal could be focused on the Central American market, accompanied by the development of temperature-controlled warehousing and fumigation/inspection facilities. Development of service with Mexico has been growing at ports such as Port Manatee (FL) and Gulfport (MS), focusing on the import of perishables and to a lesser extent manufactured products. At Port Manatee this service is provided by World Direct, and leverages imported break bulk cargo such as pulp from South America as a backhaul for empty containers headed to the Mexican markets,

as described previously in this report. Exhibit IV-24 summarized the truck traffic now moving between Mexico and Southeastern U.S. states. The exhibit indicates the current truck volume moving into each state from Mexico in 2023, and further identifies the key commodities moving into each state from Mexico.

Exhibit IV-24: Commodities Moved from Mexico to Selected States by Truck

STATE	2023 Truck Tonnage From Mexico (1,000 tons)	Commodity	Truck Tons	Share	Cumulative Share
FLORIDA	*1,143*	Edible fruit and nuts; Peel of citrus fruit or melons	249,030	21.8%	21.8%
		Edible vegetables and certain roots and tubers	236,309	20.7%	42.5%
		Beverages, spirits and vinegar	60,282	5.3%	47.7%
		Preparations of vegetables, fruit, nuts, or other parts of plants	19,665	1.7%	49.5%
		Meat and edible meat offal	13,291	1.2%	50.6%
GEORGIA	2,137	Beverages, spirits and vinegar	660,047	30.9%	30.9%
		Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	330,364	15.5%	46.3%
		Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	190,712	8.9%	55.3%
		Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	118,587	5.5%	60.8%
NORTH CAROLINA	941	Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	215,590	22.9%	22.9%
		Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	163,927	17.4%	40.3%
KENTUCKY	871	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	209,979	24.1%	24.1%
		Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	185,407	21.3%	45.4%
		Beverages, spirits and vinegar	97,541	11.2%	56.6%
TENNESSEE	904	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	240,075	26.6%	26.6%
		Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	227,693	25.2%	51.8%
		Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	73,921	8.2%	59.9%
		Plastics and articles thereof	57,286	6.3%	66.3%
SOUTH CAROLINA	417	Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	117,734	28.3%	28.3%
		Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	60,217	14.5%	42.7%
		Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	59,689	14.3%	57.0%
VIRGINIA	329	Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	50,997	15.5%	15.5%
		Edible vegetables and certain roots and tubers	49,875	15.2%	30.7%
		Furniture; Bedding, mattress supports, cushions and similar stuffed furnishings; Lamps and lighting fittings, not elsewhere specified or	33,923	10.3%	41.0%
		Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	25,884	7.9%	48.8%
		Dairy produce; Birds' eggs; Natural honey; Edible products of animal origin, not elsewhere specified or included	23,508	7.1%	56.0%
OKLAHOMA	301	73 Articles Of Iron Or Steel	78,430	26.0%	26.0%
		25 Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	61,536	20.4%	46.5%
		72 Iron And Steel	42,417	14.1%	60.5%
		87 Vehicles, Except Railway Or Tramway, And Parts Etc	33,582	11.1%	71.7%
		84 Nuclear Reactors, Boilers, Machinery Etc.; Parts	24,599	8.2%	79.9%
ALABAMA	713	Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	225,061	31.6%	31.6%
		Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	110,676	15.5%	47.1%
		Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	72,697	10.2%	57.3%
		Articles of iron or steel	56,900	8.0%	65.3%
		Furniture; Bedding, mattress supports, cushions and similar stuffed furnishings; Lamps and lighting fittings, not elsewhere specified or	55,515	7.8%	73.1%
MISSISSIPPI	266	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	61,114	23.0%	23.0%
		Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	59,441	22.4%	45.4%
		Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	34,653	13.0%	58.4%
		Paper and paperboard; Articles of paper pulp, of paper or of paperboard	26,468	10.0%	68.4%
ARKANSAS	122	Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and re	22,499	18.5%	18.5%
		Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	21,573	17.7%	36.1%
		Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	17,977	14.7%	50.9%
		Toys, games and sports equipment; Parts and accessories thereof	12,369	10.1%	61.0%
		Beverages, spirits and vinegar	7,483	6.1%	67.2%
		Paper and paperboard; Articles of paper pulp, of paper or of paperboard	7,278	6.0%	73.1%
KANSAS	115	84 Nuclear Reactors, Boilers, Machinery Etc.; Parts	32,250	28.0%	28.0%
		87 Vehicles, Except Railway Or Tramway, And Parts Etc	16,386	14.2%	42.2%
		40 Rubber And Articles Thereof	15,355	13.3%	55.5%
		68 Art Of Stone, Plaster, Cement, Asbestos, Mica Etc.	11,035	9.6%	65.1%
		98 Special Classification Provisions, Nesoi	8,523	7.4%	72.5%
		73 Articles Of Iron Or Steel	6,583	5.7%	78.2%
LOUISIANA	105	21 Miscellaneous Edible Preparations	13,891	13.2%	13.2%
		84 Nuclear Reactors, Boilers, Machinery Etc.; Parts	11,392	10.9%	24.1%
		38 Miscellaneous Chemical Products	10,235	9.8%	33.9%
		68 Art Of Stone, Plaster, Cement, Asbestos, Mica Etc.	9,643	9.2%	43.1%
		44 Wood And Articles Of Wood; Wood Charcoal	8,336	7.9%	51.0%
		39 Plastics And Articles Thereof	7,102	6.8%	57.8%
		87 Vehicles, Except Railway Or Tramway, And Parts Etc	6,141	5.9%	63.6%

Source: U.S. Bureau of Transportation Statistics

Exhibit IV-25 shows the historical tonnage moving between Central American countries and the Gulf Coast ports. Overall, this market has shown growth, led by Guatemala, Honduras and Costa Rica. For the most part this reflects perishable imports and liner board exports.

Exhibit IV-25: Containerized Tonnage Moving Between the Gulf Coast Port and Central America

	2019	2020	2021	2022	2023	CAGR
GUATEMALA	1,932,978	1,963,657	2,212,665	2,191,948	2,653,622	8.24%
MEXICO	1,794,347	1,769,538	1,974,767	2,023,595	1,682,132	-1.60%
HONDURAS	1,082,144	1,081,737	1,107,146	1,662,337	1,402,656	6.70%
PANAMA	1,008,700	1,379,065	1,179,798	1,360,731	1,088,493	1.92%
COSTA RICA	489,527	530,670	675,608	680,647	691,456	9.02%
EL SALVADOR	2,604	2,338	2,919	4,464	1,989	-6.52%
BELIZE	2,233	2,831	4,166	1,507	1,393	-11.13%
NICARAGUA	795	1,077	3,219	3,742	1,230	11.54%
MISC	2,653	1,158	2,320	969	453	-35.71%
Grand Total	***6,315,980***	***6,732,071***	***7,162,609***	***7,929,940***	***7,523,425***	***4.47%***

Source: USA Trade OnLine

The Gulf Coast ports serving these markets are shown Exhibit IV-26. Gulfport is the leading port serving the Guatemala market, reflecting the produce handled at Gulfport, while Port Manatee is the key port service with the Mexican market, reflecting the growth in World Direct service as described previously. Port Manatee also is the key port serving the Costa Rican market, reflecting the Del Monte operation at Port Manatee. The existing LMR container terminal at Napolean Avenue has shown growth in the Guatemala and Honduras trade, but has experienced significant loss in the Mexican trade. This is very important to recapture this market, due to the potential growth in the near-shoring activity in Mexico along with the potential growth in short sea shipping between Mexico and the LMR ports.

Exhibit IV-26: Gulf Coast Ports Serving the Caribbean Market (Tons of Cargo)

	2019	2020	2021	2022	2023	CAGR
GUATEMALA	**1,932,978**	**1,963,657**	**2,212,665**	**2,191,948**	**2,653,622**	**8.24%**
GULFPORT	679,717	606,580	780,409	783,310	1,246,329	16.37%
HOUSTON	464,943	474,818	523,549	535,773	535,652	3.60%
FREEPORT TX	302,587	345,076	350,851	307,836	322,328	1.59%
GALVESTON	279,356	307,215	276,496	256,261	276,919	-0.22%
NEW ORLEANS	201,237	218,383	254,617	225,969	219,250	2.17%
Other	5,138	11,585	26,743	82,798	53,142	79.33%
MEXICO	**1,794,347**	**1,769,538**	**1,974,767**	**2,023,595**	**1,682,132**	**-1.60%**
MANATEE	324,242	413,017	450,449	590,331	626,749	17.91%
NEW ORLEANS	592,133	459,097	524,000	308,886	260,547	-18.55%
MOBILE	303,960	424,798	353,399	373,626	368,579	4.94%
HOUSTON	277,478	308,861	381,443	472,675	277,769	0.03%
PANAMA CY FL	170,087	161,786	181,245	197,233	134,433	-5.71%
TAMPA	118,690	1,460	84,073	80,796	13,702	-41.71%
Other	7,757	518	159	47	353	-53.82%
HONDURAS	**1,082,144**	**1,081,737**	**1,107,146**	**1,662,337**	**1,402,656**	**6.70%**
GULFPORT	616,963	633,878	526,912	583,779	426,807	-8.80%
HOUSTON	268,162	242,921	320,825	646,163	511,983	17.55%
FREEPORT TX	123,563	111,198	118,710	180,284	193,390	11.85%
NEW ORLEANS	72,566	93,535	111,334	95,971	105,690	9.86%
TAMPA	6		29,365	99,890	97,670	1049.19%
MOBILE	885	205		56,250	67,115	195.13%

	2019	2020	2021	2022	2023	CAGR
PANAMA	**1,008,700**	**1,379,065**	**1,179,798**	**1,360,731**	**1,088,493**	**1.92%**
HOUSTON	673,727	1,107,963	874,070	1,038,598	773,945	3.53%
NEW ORLEANS	256,597	204,753	202,527	193,894	196,482	-6.46%
MOBILE	35,515	23,473	32,785	54,855	35,663	0.10%
GULFPORT	20,248	21,294	24,447	36,281	46,337	22.99%
TAMPA	3,487	14,766	34,062	25,571	23,678	61.42%
Other	22,613	21,583	45,969	37,102	36,066	12.38%
COSTA RICA	**489,527**	**530,670**	**675,608**	**680,647**	**691,456**	**9.02%**
MANATEE	145,642	135,900	310,493	406,123	415,792	29.99%
HOUSTON	220,683	246,727	214,483	96,124	67,817	-25.55%
FREEPORT TX	32,127	52,574	56,576	72,229	103,100	33.84%
GULFPORT	44,735	49,649	36,982	68,907	53,270	4.46%
TAMPA	27,064	21,053	27,134	28,606	30,253	2.82%
NEW ORLEANS	19,225	24,765	29,145	8,610	20,857	2.06%
Other	51	2	796	49	368	64.17%
EL SALVADOR	**2,604**	**2,338**	**2,919**	**4,464**	**1,989**	**-6.52%**
HOUSTON	1,699	1,364	1,949	4,195	1,650	-0.74%
NEW ORLEANS	523	609	548	113	69	-39.70%
Other	382	365	422	156	270	-8.30%
BELIZE	**2,233**	**2,831**	**4,166**	**1,507**	**1,393**	**-11.13%**
HOUSTON	1,587	1,835	3,093	841	1,103	-8.70%
NEW ORLEANS	443	550	955	422	155	-23.09%
Other	204	446	118	244	136	-9.66%
NICARAGUA	**795**	**1,077**	**3,219**	**3,742**	**1,230**	**11.54%**
HOUSTON	293	230	2,516	3,508	840	30.10%
NEW ORLEANS	327	677	604	235	390	4.53%
Other	175	171	100	0	0	NA

Source: USA Trade OnLine

4. Summary of Container Market Findings and Strategic Steps

The current container operations at the Port of New Orleans Napolean Avenue Container Terminal have experienced a contraction of volume that began in 2019. Interviews were conducted with key ocean carriers calling the Gulf Coast, as well as terminal operators providing services in the region. The results of these interviews along with the quantitative analysis conducted in this chapter have led to the following conclusions and strategic steps.

The only container terminal on the LMR, Napolean Avenue Container Terminal, has a capacity of 1 million TEUs and is currently handling about 481,000 TEUs, a less than 50% capacity utilization. Interviews with carriers cited and supporting analytics have identified several factors underlying the lagged growth in container throughput at New Orleans compared to the strong growth at Houston as well as Mobile over the past 10 years.

The low value of imports via the Port of New Orleans Napolean Avenue Container Terminal is less attractive to carriers. In contrast, Houston and Mobile serve a container import market with the average import value nearly twice the value per ton than at New Orleans. The major import item in New Orleans is coffee handled in 20 ft. containers, while consumer goods, electronics and high value automobile parts characterized the composition of imports at Houston and Mobile. The imbalance of empty versus full containers on the inbound call, particularly with forty-foot containers has rendered New Orleans an empty box repositioning port to move empty forty-foot containers to load low value plastic resins for export. This is very expensive from the carriers' perspective in terms of equipment repositioning. As a result, if delays occur on the Houston Ship Channel due to fog or other issues, New Orleans is dropped by carriers to maintain schedule integrity. The longer transit time sail on the Lower Mississippi River is problematic for carriers to serve a lower value, limited import market and maintaining schedule without adding vessels.

The LMR region is much less densely populated than the Houston market. The population of the New Orleans and Baton Rouge MSA is 2.2 million compared to 7.5 million for the Houston MSA. The total population in the state of Louisiana is 4.7 million, therefore, the consumption market is limited and further exacerbated by the small density of retail distribution centers compared to Houston, San Antonio, and Austin, as well as Dallas. Not only is the population much smaller in the LMR region as well as the state, but the state population growth projections range from 0.5% to 0.8% per year through 2030, half of the Texas population growth projected at 1.6% over next 10 years.

A current potential market of nearly 200,000 loaded TEUs was identified, of which about two thirds were loaded export containers originating in the LMR region and moving to another port such as Houston, Los Angeles/Long Beach via Dallas mini-land bridge, and Savannah and Charleston. The remaining one third of loaded TEUs identified as potential were moving into the LMR region by truck from the ports of Houston, and Los Angeles/Long Beach via Dallas mini-land bridge. Under the most aggressive projection scenario, which assumes all of the current potential market could be captured by the Napolean Avenue Container Terminal, the 1 million TEU capacity of the current terminal would not be challenged for at least the next 10 years. This projection scenario resulted in a 4.5% annual compound growth rate, compared to about a 3% actual annual growth rate at the Port of New Orleans over the last 20 years.

The fact that the potential market defined as cargo moving from and to the LMR cost-effective hinterland consists of about 67% export containerized cargo, does not improve the position of the LMR container terminal to attract vessel calls with higher valued import cargo, nor improve the imbalance of equipment. Therefore, it is necessary to grow the size of the import market either by increasing the distribution venter activity to serve a larger market region or reaching outside the regional market to serve the midwestern states discretionary market.

Intermodal rail service to capture the midwestern discretionary cargo market may not provide the panacea for container operations at an LMR port despite a sizeable identified potential discretionary market. While the region is served by six Class I railroads, overall transit time to serving intermodal points from New Orleans versus Los Angeles/Long Beach and Prince Rupert/Vancouver does not favor New Orleans as a gateway port to the midwestern states (as well as the Dallas market) when combined with vessel transit times, rail service times and the low value of local import market. Longer transit times are not attractive to higher valued import goods, further reducing the potential for high value imports to be moved intermodally via New Orleans into the discretionary market. Mobile and New Orleans have similar transit times to Memphis and Chicago and strong competition with CN express service exists at both ports. The private terminal planned on Houston Ship Channel will have on-dock ICTF, and with the strong local market in Houston, it is likely that the intermodal markets will be served via Houston given its first port of call status in the Gulf, and a high valued local import cargo market.

The Crescent City Bridge limits the growing size of container vessels, and hence removes the LMR region from competing for services by vessels in excess of about 10,000-12,000 TEUs. This size of vessel will become work horses of Transatlantic as well as Transpacific trade. A downriver container terminal will eliminate the air draft restriction of the bridge, and must have maximum rail service to position the terminal to capture, if possible, intermodal discretionary cargo. If a downriver terminal is constructed, the additional capacity at Napolean Avenue Container Terminal can be used

for iron and steel storage, precious metals and warehouse development, as well as project cargo (wind, solar panels, etc.). Also, the terminal can focus on container service with the Central American trade lanes, which are served by smaller vessels. Growth in perishable markets can be a target of the Napolean Avenue Container Terminal, with associated temperature-controlled warehousing.

For a successful container terminal, it is critical that focus must be on growing the local market and increasing the value and size of the imported container market. Development of import distribution center square footage for consumer goods is critical, but limited population and market size may make this difficult. Most of the region is served by the large distribution centers in Houston, Dallas and Mobile, and this may limit growth in retail import distribution centers in the immediate area. It is also critical to focus on the development of higher value manufacturing, including

- Aerospace
- Medical devices
- Battery production
- Food Processing

Major projects in the region may stimulate import growth and hence carrier service. For example, project cargo will grow to support LNG, hydrogen, carbon capture and other future energy projects, and such project cargo is typically accompanied by containerized cargo. The growth in the LNG export sector would provide LNG bunkering potential, which will be a positive to attract carriers. The placement of three 14,000 TEU vessels on order by CMA-CGM also raises the interest in methanol bunkering activities. However, the facilities along the Houston Ship Channel also offer LNG bunkering potential. In addition, the development of green and blue methanol from the carbon capture projects along the LMR region as well as in the Red River region, can be moved via barge to an LMR container terminal for bunkering of methanol powered container vessels.

Finally, the development of a new downriver container terminal may become a strategic move by carriers to compete with the APM domination at Mobile, but private terminal development along the Houston Ship Channel also offers that potential along with the strong local import market.

V. Future Energy, Economic Development Projects and State and Federal Funding of Port Development

In addition to the cargo specific market analysis conducted in the previous chapters, this chapter addresses trends in future energy developments at the LMR ports as well as statewide. Also, with the identified need for the development of a high value import base, economic development initiatives within the state. Finally, the ability for the LMR ports to access state and federal finding is reviewed.

1. Future Energy Projects

The state of Louisiana has established itself as a leader in future energy project developments. Between 2018 and 2024, $61.1 billion of investments were made in the future energy sector within Louisiana, supporting 26,952 jobs. These investments range from renewable energy projects to emission reduction projects, including carbon capture, solar panel manufacturing, green hydrogen production, EV battery manufacturing, offshore wind farm leasing and LNG production.[16]

FUTURE ENERGY, ECONOMIC DEVELOPMENT PROJECTS IMPLICATIONS FOR LMR PORTS

- FOCUS ON FUTURE ENERGY PROJECTS AND EFFORTS OF LOUISIANA ECONOMIC DEVELOPMENT HAVE AND WILL PROVIDE SIGNIFICANT OPPORTUNITIES FOR GROWTH IN CARGO ACTIVITY AT LMR PORTS:
  - GOWING SIZE OF MARKET AS WELL AS HIGER VALUE IMPORT AND EXPORT CONTIANER MARKET
  - INCREASING DEMAND FOR PRECIOUS METALS, STEEL AND PROJECT CARGO IMPORTS
  - EXPORT OF LNG AND GREEN AND BLUE METHANOL AND BIOFUELS
- CONTINUAL DIALOGUE NECESSARY BETWEEN LOUISIANA ECONOMIC DEVELOPMENT AND LMR PORTS NECESSARY
- FOCUS ON BRINGING MORE DIRECT FOREIGN INVESTMENT INTO LOUISIANA WHICH WILL SUPPORT LMR PORT GROWTH

With respect to current energy resources, Louisiana has the third-highest marketed natural gas production and the seventh-highest natural gas reserves among the states. In 2023, natural gas was the primary fuel used to generate electricity in Louisiana, accounting for 76% of the state's electricity net generation. Natural gas fuels 7 of the 10 largest power plants in Louisiana, based on annual generation.

Louisiana ranks among the top 10 states in both crude oil reserves and crude oil production and accounts for about 1% of both U.S. total oil reserves and production. Louisiana's 15 oil refineries account for about one-sixth of the nation's refining capacity and can process almost 3 million barrels of crude oil per calendar day.

[16] Energy and Emissions Reduction Projects (2019-2024 YTD), www.opportunitylouisiana.gov

In 2023, renewable energy sources provided about 4% of Louisiana's total electricity net generation. Biomass resources are abundant in Louisiana, and wood and wood waste accounted for nearly three-fifths of the state's renewable electricity generation. Carbon capture is a growing opportunity -- especially for aged timber land, and as identified in this report is the focus of two key projects at the Port of Greater Baton Rouge and the Port of South Louisiana.

The potential for offshore wind projects is strong in Louisiana, reflected by the fact in 2023, the U.S. Bureau of Ocean Management awarded a development lease for the Gulf of Mexico Wind Auction 1 in the Lake Charles Lease area, which could potentially add 1.2 gigawatts of offshore wind capacity. [17]

Solar power from both utility-scale (facilities 1 megawatt or larger) and small-scale, customer-sited solar panel electric generating systems (less than 1 megawatt) provided 17% of Louisiana's renewable generation in 2023, and Louisiana's utility-scale solar generation was seven times greater in 2023 than in 2020. In 2024 there are 6 active solar farms in Louisiana, one new farm is under construction and 22 are planned through 2027.[18] Such solar power development and offshore wind projects are likely to generate project cargo imports via the LMR ports as well as drive the demand for steel imports along the LMR marine terminals.

To continue to grow the energy sector, with a focus on future energy, Louisiana Future Energy Center (LFEC) has been developed with a focus on emerging energy sectors. The center is a project of GNO Inc. and located at the University of New Orleans. The goal of the LFEC is to build a clean hydrogen energy cluster to decarbonize the South Louisiana industrial corridor.

Several future energy projects are now under development in Louisiana that have direct impact on the use of the LMR ports. These are:

In September, 2024, the Woodlands Biofuels Development Project was announced at the Port of South Louisiana. This is a $1.35 billion project located at the Port's Globalplex terminal. The project's goal is to establish the world's largest carbon negative renewable natural gas plant / ultra-green hydrogen facility. Phase 1 of this project is the largest carbon negative renewable natural gas facility globally. Phase 2 is the world's largest carbon negative ultra-green hydrogen plant. The processes will utilize waste biomass to produce sustainable biofuel used in transportation, heating and electricity generation.

In 2021, the Louisiana Department of Environmental Quality granted a Minor Source Air Permit to the developer of the Grön Fuels (owned by Fidelis Infrastructure Partners) carbon negative renewable fuel project at the Port of Greater Baton Rouge. The plan is to build a complex for the production of renewable diesel, green hydrogen, bio-plastic feedstocks and sustainable aviation fuels. Capio Sequestration LLC, will help integrate biogenic carbon capture and sequestration. The Phase I portion of the development will produce 65,000 barrels of renewable fuels per day including sustainable aviation fuel, renewable diesel, renewable naphtha, and renewable propane as low carbon

[17] U.S. Department of Energy, U.S. Energy Information Administration, October, 2023
[18] IBID and Solar Farm Development and Leasing in Louisiana, September, 2024, Landgate.com.

transportation fuels. Fidelis (owner of Grön Fuels) anticipates completing the entire project over a period of about 10 years. In addition to the renewable fuels production, the complex is projected to reach 1,000 MW of green hydrogen production capacity.[19]

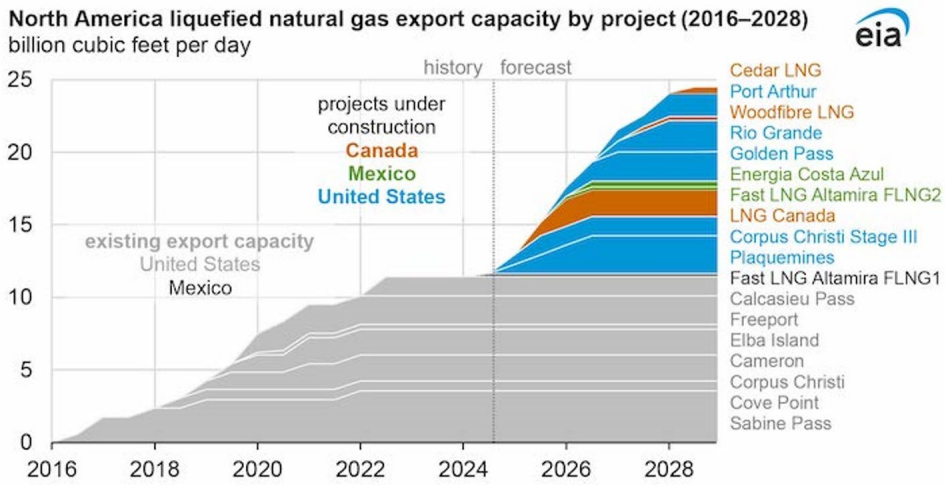
As discussed in the bulk section of this report, in addition to the major future energy projects planned and under construction at the LMR ports, there are new future energy developments planned in the Red River Region as well as Central Louisiana that will likely drive the increased use of the LMR ports. These projects focus on carbon capture as well as the production of green methanol that will provide a source of bunkering for the growing number of ocean vessels that are propelled by methanol. These projects include the Bia Energy planned project in Shreveport that will produce 550,000 tons of blue and bio-methanol per year, which will be exported as well as used domestically and for bunkering of ocean vessels calling the LMR ports. The SunGas Renewables project in Rapides Parish will produce 400,000 tons of green methanol annually, which will also provide a potential cargo for export via the LMR ports, as well as bunkers for ocean going vessels calling LMR ports. The carbon capture projects in the Red River Region and the Central Louisiana, such as the CLECO Power carbon capture and sequestration facility to remove and compress CO^2 emitted by the utility's electric generation unit, will likewise generate increased project cargo and iron and steel receipts at the LMR ports as well.

Complimenting the carbon capture projects and the production of green methanol, the opportunity for the development of biofuels production at the LMR ports is under evaluation, which would capitalize on the access the LMR ports have to grain moving by barge from the central and upper midwestern states to the local elevators, as well as the use of the local soybean crops. The establishment of soybean crushing facilities represents an opportunity for the LMR ports, with a focus on the export of the biofuels, a product that has shown steady export growth from the LMR ports as well as the overall Gulf Coast port range.

The development of the Venture Global Natural Gas facility located in Plaquemines Parish is a liquification and export facility. Upon completion, the facility will have the capacity to export 20 million metric tons per year. During the development of the facility, it is anticipated that demand for steel, pipe, copper and other project cargo items will increase vessel calls at Plaquemines Port, and depending upon the success of the handling of the marine cargo, such induced cargo could entice other non-LNG project related cargo to the LMR system. Not only will the LNG facility generate export LNG cargo when completed, the establishment of LNG bunkering of vessels calling the LMR ports as well as other Gulf Coast ports could stimulate further vessel calls and cargo activity at the LMR ports. The Venture Global project is projected to be completed in 2026. The development of the Venture Global liquefication and export facility is driven by the increasing demand for LNG energy and export, as reflected by the projected doubling of LNG export capacity in North America by 2028. (Exhibit V-1).

[19] "Fidelis' massive renewable fuel project obtains air permit in Louisiana", Renewables Now, April 2021.

Exhibit V-1: LNG Export Capacity - Projected Project Completions



American Journal of Transportation, September 3, 2024
Data source: U.S. Energy Information Administration, Liquefaction Capacity File, and trade press
Note: Export capacity shown is project's baseload capacity. Online dates of LNG export projects under construction are estimates based on trade press. LNG=liquefied natural gas; FLNG=floating liquefied natural gas

2. Economic Development Initiatives in Louisiana and Neighboring States

In addition to the pursuit of future energy projects at the LMR ports and the use of these ports to serve future energy projects throughout Louisiana, it is important to stress the need for economic development in the region in order to stimulate a higher value import market for containerized goods, as well as to grow the demand for regional project cargo shipments and the demand for iron and steel and precious metals and aluminum. Such projects as well as foreign direct investment is discussed in this following section. These investments are summarized as follows:

Louisiana Economic Development Initiatives:

- **Louisiana Green Fuels (subsidiary of Strategic Biofuels Inc):** The purpose of this project is to develop a plant that would produce up to 32 million gallons of renewable fuel, by using a refinery process to develop a renewable fuel through wood waste. In 2021, the company announced a plan to build a 171-acre site at the Port of Columbia to build the refinery plant for the renewable fuel. The initial capital investment was $700 million[20]
- **Heirloom Carbon Technologies** is investing $475 million to establish a facility at the Port of Caddo-Bossier. The project will use limestone to capture CO^2 directly from the air. The company estimates that beginning in 2026 it will remove 17,000 tons of CO^2 from the atmosphere annually.[21]

[20] Louisiana Green Fuels - LED | Louisiana Economic Development (opportunitylouisiana.gov)
[21] Heirloom Carbon Technologies Announces $475 Million Investment to Establish North America's Second Direct Air Capture Facility in Louisiana - LED | Louisiana Economic Development (opportunitylouisiana.gov)

- **Premier Concrete Inc.** is planning to invest up to $10 million in manufacturing expansion in Livingston Parish (Port of Greater Baton Rouge) to help provide for infrastructure projects by adding a new concrete pipe production line to support infrastructure and drainage projects across southern U.S. Operations are scheduled to begin by the end of 2024.[22]
- **UBE C1 Chemicals America Inc (UCCA)** is planning a $500 million investment to build a facility to produce EV batteries in the growing market. The facility will be located at the Cornerstone Energy Park in Jefferson Parish, and manufacture lithium-ion battery ingredients dimethyl carbonate (DMC) and ethyl carbonate (EMC). UBE estimates that the facility will be able to produce 100,000 metric tons of DMC per year and 40,000 metric tons of EMC per year. DMC and EMC are used to produce the electrolyte in lithium-ion batteries that contributes to extended battery life and increased driving range for electric vehicles. DMC is also a key ingredient in certain semiconductor manufacturing processes.[23] The project is slated for completion in 2026. Such a development could further induce imports of previous metals to be used in the battery production sector.
- **Global Seamless Tubes & Pipes** plans to invest $35 million to establish a production center in DeSota Parish. The factory will manufacture carbon, alloy and stainless-steel cold drawn, and hot rolled seamless tubes and pipes. This investment could stimulate trade through the LMR ports in the future, particularly iron and steel products as well as precious metals.[24]
- **Life for Tyres Group Limited**, a manufacturing facility for sustainable commodities, is planning to invest $46 million at the Port of South Louisiana. The facility will recycle tires into high sustainable commodities such as biofuel feed stock, recovered carbon black and scrap steel.[25]

In addition to these projects identified as potential drivers of cargo via the LMR ports and expansion of the region's higher value import market, the International Trade Administration provides employment related to foreign direct investment in states on an annual basis. Using this metric, it is possible to compare the level of foreign direct investment (FDI) generated employment in Louisiana, as well as the neighboring states of Alabama, Mississippi and Texas. These employment levels can then be used as a proxy of the level of FDI that has occurred in each state over the past 10 years.

- Jobs generated by FDI in Louisiana grew from 56,100 in 2010 to 76,200 in 2020, the latest date for which data is available.
- Jobs generated by FDI in Alabama grew from 82,000 in 2010 to 117,000 in 2020;
- Jobs generated by FDI Mississippi grew from 27,000 in 2010 to 46,200 in 2020;
- Jobs generated by FDI in Texas grew from 451,400 in 2010 to 669,900 in 2020.

[22] Livingston Parish Concrete Manufacturer Announces Expansion to Support National Infrastructure Projects - LED | Louisiana Economic Development (opportunitylouisiana.gov)
[23] Japanese Chemical Company UBE Announces $500 Million Investment to Build Louisiana Facility to Serve Growing EV Battery Market - LED | Louisiana Economic Development (opportunitylouisiana.gov)
[24] Source: Louisiana Economic Development
[25] Source Louisiana Economic Development.

These job numbers suggest that Louisiana has lagged in terms of FDI in Alabama and Texas, but exceeded that in Mississippi. In order to stimulate growth in cargo activity at the LMR ports, it is important for the state of Louisiana to continue to attract Foreign Direct Investment, as this not only generates economic growth for the state, but in many cases generates cargo activity, and potentially higher value of containerized import cargo for the LMR ports.

For instance, the types of projects driven by FDI in Alabama are focused on the growing automobile industry in the state. A sample of the new FDI projects in Alabama include[26]:

- Airbus is adding a third assembly line for its A320 family aircraft production at an investment of $700 million.
- Hyundai and Hyundai Mobis (supplier) are investing $505 million in projects to produce electric vehicles at the Montgomery plant.
- Daechang Seat Co. (South Korean based auto parts manufacturer) is planning to invest $23.4 million in an expansion project at the Phenix City plant.
- Toyota is adding a new four-cylinder engine manufacturing line with a total investment of $222 million at the Huntsville factory, which will have the capability of producing hybrid electric powertrains.
- Mercedez-Benz EV battery plant and auto supplier MollerTech have combined to invest over $600 million at the Scott G. Davis Industrial Park in Bibb County.

The continued investment in manufacturing activity within the state of Louisiana, as well as in the green energy sector, is critical to support and grow the LMR cargo markets. These investments are critical in order to drive economic growth and employment in the state and provide a growing market to support higher valued imports and exports. These investments not only drive containerized cargo at the LMR ports, but also are key in growing break bulk cargoes such as iron and steel products and precious metals, but bulk cargoes such as LNG exports and bunkering operations, cement imports and grain flows to support biofuels development.

3. Port Access to State and Federal Funding

The access to state and federal funding of port specific projects is essential for the LMR ports as well as all Louisiana ports to maintain infrastructure, grow, and compete effectively with other regional ports. In order to assess the level of state committed funding for Louisiana ports, this section addresses the level of state direct funding support to the ports in Louisiana, Texas, Florida, Mississippi and Alabama.

[26] Foreign investment accelerates with new growth projects in Alabama - Made in Alabama

3.1 Louisiana State Funding Dedicated to Port Projects

"The Louisiana Port Construction and Development Priority Program" was created by Act 452 of the 1989 Regular Session. Before this program, the state funded port projects through the Capital Outlay Program without requiring any feasibility studies. From 1977 to 1984 Louisiana expended more funds for ports than any other state in the union. For this period, Louisiana spent $25,985,000 on shallow draft ports and $173,424,000 on deep draft ports for a total of $199,409,000. The creation of the Port Construction and Development Priority Program in 1989 changed the method by which Louisiana participated in port improvements. The feasibility of proposed port projects must now be determined and the projects must be prioritized. The source of state funds for the Louisiana Port Construction and Development Priority Program is the Transportation Trust Fund. Revenue accrues to the Transportation Trust Fund through the collection of taxes placed on the sale of gasoline. Currently the Port Priority Program has a $40 million funding limit per year for which all ports in Louisiana must compete. The projects eligible for funding through the Port Priority Program are limited to the construction, improvement, capital facility rehabilitation, and expansion of publicly-owned port facilities including intermodal facilities and maritime-related industrial park infrastructure development, such as wharves, cargo handling capital equipment, utilities, railroads, primary access roads, and buildings which can be shown to be integral components of any port project submitted for funding. Navigation projects funding from the program will not be integrated with or used for the state sponsorship (state matching basis for federal appropriation) for new construction and/or maintenance dredging on federally authorized navigable waterways."[27]

STATE AND FEDREAL FUNDING OF LMR PORT PROJECTS

- CURRENT PORT PRIORITY PROGRAM PROVIDES $40 MILLION ANNUALLY FOR PROJECTS AT ALL LOUISIANA PORTS COMPARED TO:
  - $170 MILLION ALLOCATED FUDING FOR FLORIDA PORTS BY STATE OF FLORIDA
  - $230 MILLION ALLOCATED BY STATE OF TEXAS FOR TEXAS PORTS
- CONTINUE TO APPLY FOR FEDERAL GRANTS:
  - BETWEEN 2022-2024, LOUISIANA PORTS RECEIVED $101.7 MILLION OF $344.6 MILLION OF FEDERAL GRANTS AWARDED

While other sources of funding from the state may be directed to ports through economic development grants and bond issues, the focus of this section is the annual amount that states' have allocated for port projects.

[27] LOUISIANA PORT CONSTRUCTION AND DEVELOPMENT PRIORITY PROGRAM RULES & REGULATIONS MANUAL, Louisiana Department of Transportation, December 2023

3.2 Texas State Funding Dedicated to Ports[28]

In comparison, the state of Texas has established a very aggressive port funding program at the State level, under the direction of the Port Authority Advisory Committee (PAAC). This committee develops a seaport mission plan that includes the identification of port capital projects focusing on port infrastructure, waterway/channel projects, and inland connectivity projects. These projects are initially submitted to the PAAC by the individual ports, which then develops a request for funding from the state legislature for a portion of the funding requests. Once the funds are allocated to by the State Legislature, projects competing for the funding are subjected to a rigorous technical analysis of the economic impact of the project, engineering feasibility, environmental impact and project readiness. The projects applying for the allocated funds are then subject to an engineer evaluation that evaluates the projects in terms of eligibility for state funding, and economic and environmental impacts. Based on the technical review and the engineer review, recommendations are made as to which projects are to be funded. Typically, the port receiving a grant agrees to pay a minimum 25% cost share.

Under the 86th Legislative Session, the PAAC recommended a funding request of $125 million to assist in funding the projects identified in the Port Capital Program, a part of the Port Mission Plan (2020-2021), which identified $1.5 billion of capital projects at the Texas ports.

Under the 87th Legislative Session, the PACC Port Mission Report for 2022-2023 requested funding for $460 million, of which $130 million was for port capital projects and $330 million for the Ship Channel Improvement Revolving Fund. This request was based on the total capital projects identified in the Port Mission Plan of $3.6 billion.

As part of the 2024-2025 Port Mission Report, $640 million was requested from the 88th Legislative Session. Of the $640 million of state funding, $200 million was for Maritime Infrastructure Grants; $40 million for Seaport Connectivity Grants; and $400 million for channel deepening and widening programs.

3.3. Florida State Funding Dedicated to Ports[29]

The Florida legislature makes available funding each year dedicated to the State's seaports. The Florida Department of Transportation then allocates the funds to ports based on the merits of each port project. Typically, a 50% match is required. Over the past 5 years the following funds have been provided to the State's seaports:

- FY 2019-2020 -- $153.7 million
- FY 2020-2021 -- $142.2 million
- FY 2021-2022 -- $155.3 million
- FY 2022-2023 – $139.4 million
- FY 2023-2024 -- $169.5 million

[28] 2020-2021 Texas Port Capital Program, 86th Legislative Session; 2022-2023 Texas Port Mission Plan, 87th Legislative Session; 2024-2025 88th Legislative Session.

[29] Florida Department of Transportation Work Program Reports, Florida Ports Council

The State also has the ability to issue bonds on behalf of the ports, which last occurred in 2011.

3.4 Alabama State Funding Dedicated to Ports[30]

The state ports in Alabama do not receive any regular support from the State. However, some funding has been made through bond funding. In the FY 2025 budget, $8.5 million has been proposed for and approved by the State Senate and House for the Port of Mobile. In 2023, the State allocated $20 million to modernize the Port of Mobile's McDuffie Coal Terminal. For the period 2021-2025, the State issued $150 million of bonds to deepen and widen the Port of Mobile's shipping channel. The debt service was funded by a fuel tax under the Rebuild Alabama Act 2019 Annual Grant.

3.5 Mississippi State Funding Dedicated to Ports

The Mississippi ports do not receive a fixed allotment for projects from the State. However, in 2023 the Mississippi Legislature established the Strategic Multimodal Investments Fund under the Mississippi Department of Transportation[31]. Under this program the following funds were allocated:

- Rosedale-Bolivar County Port, Bolivar County; $2.1 million – multi-modal expansion project Phase 1.
- Mississippi State Port Authority, Harrison County; $2.6 million – Gulfport intermodal expansion and enhancement project.
- Lowndes County Port, Lowndes County; $1.5 million – East bank rail.
- Port of Aberdeen, Monroe County; $704,700 – Port dredging.
- Yellow Creek Port, Tishomingo County; $2.5 million – Barge berth expansion.
- Port of Greenville, Washington County; $2.2 million – E-Crane purchase.

In June 2022, the Mississippi Department of Transportation awarded a $650,000 grant to rehabilitate the East Pier rail infrastructure at Gulfport. The 2023/2024/2025 Mississippi Legislative Budget Summary identified[32]:

- $6.6 million per year 2021-2025 for the Port of Pascagoula North Rail Corridor Connector from the Gulf Coastal Restoration Funds
- $190.5 million for the Gulfport Port Authority:
    - $45.8 million in 2023
    - $76.3 million in 2024
    - $68.4 million in 2025

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30 (https://alison.legislature.state.al.us/files/pdf/lsa/Fiscal/FY2025/SGF/SGF_FY_2025_HOUSE_PASSED.pdf); https://www.dot.state.al.us/programs/RAAGrantProgram.html) https://www.porttechnology.org/news/alabama-state-port-authority-begins-upgrade-with-deepening-of-mobile-ship-channel/

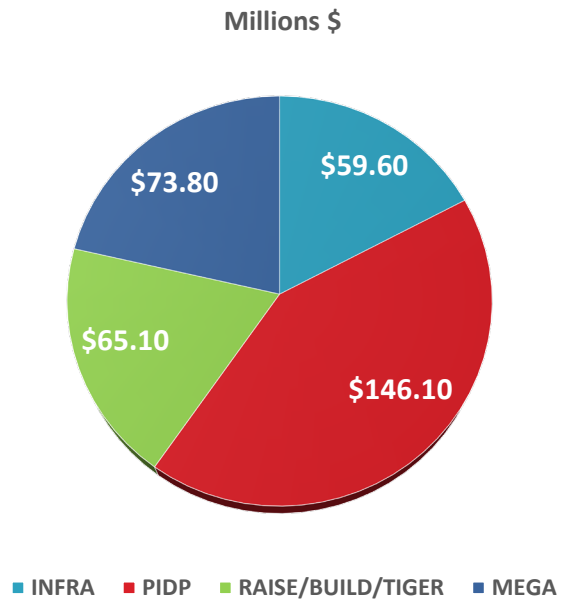
31 https://mdot.ms.gov/portal/news_release_view/1866

32 https://www.lbo.ms.gov/pdfs/2023_leg_sesn_sum_v3.pdf and https://www.lbo.ms.gov/pdfs/2024_leg_sesn_sum_v1.pdf

4. Federal Funding of Port Projects

The Federal Government through the U.S. Department of Transportation and MARAD also provides grant opportunities to ports nationwide. These grant programs include the Infrastructure for Rebuilding America (INFRA), the National Infrastructure Project Assistance program (MEGA), Port Infrastructure Development Program (PIDP), Rebuilding America Infrastructure with Sustainability and Equity (RAISE), Transportation Investment Generating Economic Recovery (TIGER), and Better Utilizing Investment to Leverage Development (BUILD). Between 2022 and 2024, $344,593,674 of grants to ports were awarded. Exhibit V-2 shows the distribution of these funds by Program.[33]

Exhibit V-2: Allocation of $344.6 Million of Grant Funds to Ports 2022-2024



Source: U.S. Department of Transportation

Of the $344,779,805 grants awarded during this period, the state of Florida received the largest share of the grants, $147.6 million, followed by the state of Louisiana with $101.7 million of awards. Within the state of Louisiana, the Port of New Orleans was awarded $73.8 million MEGA grant for the Louisiana International New Container Terminal. The remaining grant funds in Louisiana were received by the Columbia Port Commission, $10.5 million for the land acquisition and construction activities for a truck parking facility near the inland Port of Columbia, LA. The Port of Morgan City received $10 million for the Western Dock Expansion project, while Plaquemines Port received $7.4 million to fund the preliminary design activities and right of way mapping for the Peters Road Bridge and Extension.

[33] $344.6 million includes a few INFRA projects that were selected prior to 2022 but were for projects to be started in 2025 and 2026. These are two projects in Florida- for Port Miami and Port Tampa Bay.

5. Summary of Future Energy, Economic Development and Port Funding

As demonstrated in this chapter, the future energy development projects and initiatives within the state of Louisiana will provide stimulus to the marine cargo activity at the LMR ports. These green projects will likely result in a growth of project cargo, iron and steel, precious metals, cement, liquid bulk and associated containerized parts and equipment shipments driven by such projects as the Venture Globa LNG project, the Grön Fuels project at the Port of Greater Baton Rouge, and the Woodlands Biofuels Development Project at the Port of South Louisiana.

Development initiatives by Louisiana Economic Development will also grow the size of the market for higher valued imported and exported containerized cargoes and precious metals, bulk and liquid cargoes and project cargo. These projects include the development of an EV battery production facility in Jefferson Parish, the expansion of a specialty concrete pipe manufacturing facility, the growth in wind energy technology and component manufacturing, and the development of renewable fuels through wood waste.

Overall, Louisiana has attracted more foreign direct investment than Mississippi, but lags direct foreign investment levels in Alabama, which have been driven by the auto manufacturing industry in that state, and Texas which by its size has attracted significant foreign direct investment.

From a funding perspective, the Port Priority Program provides a $40 million reserve to fund port projects annually within the state. This $40 million of allocated funds for port projects at the state level is significantly less than the allocated amount in Florida, $170 million in 2023, and the $230 million directly allocated to Port projects via Texas Department of Transportation for 2023. Also, the state of Mississippi legislature has allocated $190.5 million for the Gulfport Port Authority through 2025.

The Ports in Louisiana have been very successful in accessing federal grants under the various infrastructure grant programs administered by the U.S. Department of Transportation. Between 2022 and 2024, the Louisiana ports received $101.7 million of federal grant funds out of a total $344.6 million awarded. Only the state of Florida ports received more federal grant funds during this period, $147.6 million.

VI. Summary and Recommendations

This report has evaluated the cargo markets in which the Lower Mississippi River ports operate, and further evaluated the importance of economic development in the region as it impacts port activity and access to state and federal funding. The key recommendations to grow the LMR port activity are presented in this chapter.

The LMR ports, because of their location, have and will continue to have a unique position with respect to the river tonnage moving to and from these port facilities and the central and upper midwestern states. The volume of these cargoes, driven by grains and petrochemical/liquid bulk cargoes, are literally captive to the region and are dependent upon the state of the grain export demand from the U.S., climate factors affecting river levels and harvest production, and production levels of the petrochemical plants in the region. In contrast, the international market has a much greater level of competition with other ports in the Gulf region, particularly with respect to break bulk cargoes and containerized cargo, that are less dependent upon using the inland river system, but rely to a greater extent on local markets, as well as markets served by truck and rail.

This region has numerous logistical advantages to serve not only the state of Louisiana and the region, but also key shippers/consignees located throughout the midwestern United States as served by the Mississippi River System and the nation's six Class I railroads. The access to the central and midwestern regions of the U.S. via the Mississippi River System provides low cost, environmentally friendly transportation infrastructure to shippers/consignees located in the region and served by the LMR ports. In addition, the ability to use the Mississippi River System provides an alternative to rail service, and provides competitive pressures on rail rates offered by the six Class I railroads serving the LMR port region.

The six Class I railroads provide access to the East and West Coasts of the United States, Canada and Mexico, providing the LMR ports with an unparalleled access to these regions compared to other Gulf Coast ports. This rail service provides a true competitive advantage to serve inland markets via the LMR port region.

The LMR ports are also served by major north-south and east-west interstate highways which provide excellent infrastructure for truck service to and from the LMR port region.

In addition to the marine cargo transportation infrastructure by all modes serving the LMR port region, the region is also served by a well-developed pipeline system to serve the regions petroleum, gas and petrochemical industry. This pipeline system, as well as the refineries, petrochemical plants and hydrogen production facilities also provide a strong base for both domestic and international liquid bulk (petroleum products, chemicals) and dry bulk (i.e., petroleum coke) waterborne shipments via the LMR ports. This industrial base provides a strong market for the export of containerized plastic resins, as well. Because of the well-established energy sector and its supporting infrastructure, the state and region have been increasingly focused on the development of a future energy sector, which will further support additional cargo activity via the LMR ports.

Several factors have been identified that limit the attractiveness of the LMR ports to importers/exporters and ocean carriers. These factors include the sailing distance from the mouth of

the passes at the Gulf of Mexico to the marine terminals located at the LMR port districts; the limited market size of the geographic area in terms of population; the proximity to mills importing and exporting forest products; the limited warehouse capacity at the marine terminals; the imbalance of exports to imports for containerized cargo as well as the cost of repositioning marine container equipment in the New Orleans area; the uncertainty with respect to river levels; and the air draft of the Crescent City Bridge that limits the size of the container ships that can call the current container terminal at the Port of New Orleans.

Given the advantages and disadvantages of the river system and the LMR ports, the following recommendations have been developed to position the LMR ports for future growth.

1. Bulk Market Recommendations

The bulk market consists of the liquid and dry bulk international cargo markets.

1.1 Liquid Bulk

The liquid bulk market has shown strong growth in ethanol/biofuels exports, reflecting the increasing demand for the development of new biofuels production facilities in the region, including soybean crushing operations utilizing local soybean crop production as well as soybeans moving on the Mississippi River System. It also includes sustainable aviation fuels. These future energy production targets are consistent with the future energy initiatives under way in the state of Louisiana.

The growth in the petroleum/hydrocarbon export market that is occurring across the Gulf Coast is driven by refinery capacity and expansion, and the Venture Global LNG facility at the Plaquemines Port is consistent with the increasing demand for export LNG operations and bunkering operations as the ocean-going vessels are moving to green propulsion systems including LNG.

1.2 Dry Bulk

The export dry bulk market has shown consistent growth since 2014, at the Gulf Coast regional level as well as at the LMR ports. Grain exports lead the dry bulk exports from both regions. Grains exported via the LMR ports consist primarily of corn and soybeans. The corn moves via river to export elevators at LMR ports, while soybeans are more local and a high percentage arrive via truck. The long-term projections by USDA, Economic Research Service project corn exports from the U.S. to grow at a 3.7% CAGR through 2033-34. Soybean exports are projected to grow at 0.63% CAGR through 2033-34, as domestic soybeans become more input into biodiesel fuels production and domestic feed use. The ability to access the grain production areas by the Mississippi River System provide a unique opportunity for the development of biofuels production facilities at the LMR ports, which is occurring and is consistent with the future energy initiatives underway in Louisiana. It is important that storage capacity is available at the LMR ports to handle the grain for use in biofuel production but also as export facilities.

Fertilizer manufacturing facilities offer a potential development target along the LMR range, given the growth in both export and import fertilizer at the Gulf Coast port regional ports as well as at the LMR ports. The ability to use the Mississippi River System for barge delivery of fertilizer to

inland agricultural sites is a clear advantage for the location of fertilizer facilities at the LMR ports, and further, the ability to export fertilizer provides a strong locational advantage for the development of fertilizer production facilities.

Cement imports have grown across the Gulf Coast region, as the demand for highway and overall construction activity has been growing. With respect to the LMR region, the demand for cement in new infrastructure construction has been growing and targeting of cement import operations is recommended along the LMR ports.

2. Break Bulk Market Recommendations

2.1 Forest Products

The forest products commodity group is the largest break bulk market served by the Gulf Coast ports in which the LMR ports have had limited participation. With respect to pulp imports, there is a strong demand with 300,000 new tons coming on line by one importer, and 700,000 tons projected by another importer over next 5 years. With respect to paper imports, the key growth sector is packaging paper, with strong demand in the future driven by environmental concerns for plastic packaging. There is a desire to move more westwardly on the Gulf Coast, and the imported paper will move via break bulk. The major customers of the packaging paper imports are similar customers as the pulp importers and mills. The lumber import market has been steadily growing. LMR ports had previously handled lumber but have lost market share over past 10 years to neighboring ports in Texas where warehouse capacity exists and is being developed. The break bulk plywood market displayed strong growth during COVID but then experienced a rapid decline on all coasts. Break bulk plywood imports are highly sensitive to container rates, and further plywood imports are very price sensitive requiring low storage rates and high dwell times.

The critical factors that will drive the use of the LMR for increased participation in the forest products market are:

- Least cost access to paper and pulp mills using a combination of rail, truck and barge access
- Development of modern clear span warehouse capacity to store paper, pulp and untreated lumber. The warehouse capacity is necessary to not only store the paper and pulp after vessel discharge, but to provide an inventory control system in order to avoid delays in delivery to customers due to changes in river levels. Therefore, access to rail and truck are critical to serve as an alternative to barge delivery.
- Warehouse development should be based on direct marketing efforts by the terminal operators and port managers, and it is not recommended to construct warehouse capacity without a committed user.

2.2 Precious Metals Market

The precious metals market consisting of copper, lead and zinc represents a strong potential growth market for the LMR ports. This demand for copper and lead is driven by battery production, electronics, EV production, and EV charging station development. Copper is key in the petrochemical industry, off-shore drilling and off-shore wind farms, due to its non-corrosive nature. Lead and zinc may require warehouse storage, while the copper importers prefer inside storage for security purposes.

It is critical that there exists sufficient open storage space at the LMR ports to handle the potential for precious metals storage, and further that covered secure storage is available for copper imports. The growth in this market is consistent with the economic development projects undertaken by Louisiana Economic Development and the growth in the LNG export capacity.

2.3 Aluminum

The LMR ports have had a strong market position in handling imported aluminum, and this market is anticipated to grow as a key input into the auto and aerospace industries, as well as construction. EV auto production requires nearly 4 times the amount of aluminum as non-EV auto production to control for weight of the auto. Adequate outside storage area will be required to grow this market.

2.4 Iron and Steel Imports

The LMR ports are a major import region for iron and steel imports. The majority of the imports handled at the LMR ports are used by the petroleum industry, including drilling and new facility construction, as well as local construction. The local demand will grow with the development of a new LNG facility in Plaquemines. The use of the Mississippi River System provides a low-cost logistics chain to move coils to the Midwest auto manufacturing operations. Structural steel and pipe require outside storage, while auto grade coils typically use covered storage. Therefore, it is important that the LMR ports have adequate open storage space for structural steel, while having warehouse capacity with floor strength able to handle the coils will also be critical. Direct marketing to the carriers carrying the steel and the importers is critical to increase the use of the LMR ports. Furthermore, the use of barge transportation is important to market to those importers that have developed a green logistics strategy.

2.5 Rubber

The LMR ports handle nearly 50% of all break bulk rubber imported into the U.S. The majority of the imported rubber handled at the LMR ports is used in tire manufacturing. The key markets outside of Louisiana are Ohio, Illinois and Tennessee. Modest growth in imported break bulk rubber imports is expected, and covered storage is required. To maintain and grow this market, adequate inside storage will be required.

In summary, the interviews with the terminal operators, carriers and break bulk importers identified two key factors that impact the use of the LMR ports for break bulk cargo in addition to limited warehouse capacity. The sailing distance and associated port charges to move between 15 and 18 hours up river are viewed as a disadvantage to using the LMR ports for break bulk cargo, and this cost disadvantage is exacerbated if the vessel load is not fully discharged at the LMR ports. A partial discharge results in a higher cost per ton, and becomes prohibitive to call the LMR ports with partial loads. Also, the terminal operators interviewed identified the aggressive price competition that has been occurring along the Lower Mississippi River System at private break bulk terminals. This aggressive price competition reduces the incentive for capital investment by existing and potential new terminal operators, and further had not resulted in new tonnage on the river system, but instead a reallocation of break bulk cargo from one terminal to another.

3. Non-Containerized, Non-Bulk Market Recommendations

In addition to the traditional break bulk markets handled at the LMR ports, Martin Associates also evaluated the potential to grow the automobile and Roll-on/Roll-off (RoRo) market, the perishable commodity market, and the project cargo market.

3.1 Auto and RoRo Market

Interviews with auto processors indicated that New Orleans had been evaluated in terms of a potential auto import site and determined that the major disadvantage of using the LMR ports for auto import operations is the fact that an LMR port location is too far east to serve key markets not served by West Coast auto import ports. The auto operations at Jacksonville and Brunswick serve the key Southeastern markets and an LMR location would have to compete with these established import operations to serve the Southeastern markets, but the trucking costs to serve the midwestern and south-central markets were too high via the LMR port. RoRo processors indicated that the 15-18 hour sail up-river impacts the ability of the carriers to maintain schedule integrity, but the rail access to midwestern RoRo manufacturing facilities is attractive for export cargo. Therefore, the LMR ports should market to both the RoRo carriers as well as manufactures of heavy equipment (farm equipment, mining equipment, highway construction equipment) located in the Midwest. However, without a significant load-out volume per vessel call, the port and voyage costs due to the river transit would offset any inland cost advantage.

3.1 Perishable Commodities

With the infrastructure in place to handle the frozen poultry exports, it is recommended that the LMR ports pursue expanding the perishable export market for pork as well as other meat exports. This will require coordination with rail service providers to the midwestern states to access the meat exporters located in such states as Colorado and Nebraska. Blast freezing capabilities will be required at the LMR port region. In addition, with the focus on the Central American and Caribbean export market for poultry, the LMR port managers should work on strengthening vessel service to Central America, including Mexico, Guatemala, Honduras as well as the Caribbean.

In addition to expanding the perishable export market, particularly the export of frozen beef and pork, the perishable import market may provide a growth opportunity for the LMR ports. This import business does not have to be limited to banana/pineapple imports, but marketing efforts should be directed to fruits and vegetables entering the U.S. market from Mexico/Central America as well as the West Coast of South America (i.e., grapes, asparagus), East Coast of South América (pears and apples), and Africa and the Mediterranean (i.e., tangerines). These products move both in containers and break bulk, and to enter this market it will be necessary to develop infrastructure to handle these products, including treatment centers (methyl bromide or irradiation) to control for pest infestation. The imported perishables would then be distributed directly to the food products distribution centers in the New Orleans/Louisiana region.

The perishable export market could also capitalize on the potential to export frozen seafood, as well as utilize the current palm oil imports in food product manufacturing in the New Orleans region.

3.2 Project Cargo/Wind Energy

The LMR marine terminals in the New Orleans Customs District have handled an increasing volume of project cargo and wind energy equipment through 2021, but the market has declined since. As the pieces (blades and towers) of the wind energy units increase in size, truck and rail transportation to wind farm installations in Texas, Kansas, Colorado, Nebraska, the Dakotas and Iowa, become problematic and river transportation to wind farm installation centers becomes the inland transportation mode of choice. In addition to the actual blades, nacelles and towers that are delivered to the Port for shipment to the inland wind farms, containers carrying wind energy components also arrive at the port. Typically, these containers are then trucked to the inland wind farm consolidation points. In order to grow this market, the LMR ports and terminal operators need to market to the wind equipment manufacturers such GE Logistics, Siemens-Gamesa, Vestas, and Transportation Partners & Logistics (TP&L). This focus on wind energy is consistent with the recently expanded operations by LM Wind in New Orleans.

With respect to off-shore wind farm development, Louisiana has developed a target of 5GW of off-shore power to be developed by 2035. With the development of these off-shore wind projects, opportunities arise for the LMR ports in terms the production of:

- Towers
- Monopiles
- Nacelles
- Cable

If such production operations were established in the LMR region, demand for steel products would likely increase, as well as containerized cargo to support the production of the wind energy components. In addition to manufacturing activity, the LMR ports could serve as ports for installation support as well as service and maintenance support and locations for workboat operations. To develop potential support for the off-shore wind industry, the LMR ports should coordinate with the current activities at Port Fourchon regarding off-shore wind energy support and development.

4. Container Market Recommendations

The current container operations at the Port of New Orleans Napolean Avenue Container Terminal have experienced a contraction of volume that began in 2019. The only container terminal on the LMR, Napolean Avenue Container Terminal, has a capacity of 1 million TEUs and is currently handling about 481,000 TEUs, a less than 50% capacity utilization. Interviews with carriers cited, and supporting analytics have identified, several factors underlying the lagged growth in container throughput at New Orleans compared to the strong growth at Houston as well as Mobile over the past 10 years.

Factors contributing to the current container market served by the Napoleon Avenue Container Terminal are:

- **The imbalance of equipment**. For every loaded forty-foot container discharged at the Napolean Avenue Container Terminal, at least one and in some years twice as many empty forty-foot containers discharged. These empty containers discharged are used to pick up plastic resin exports, a low rated cargo. Therefore, the cost of repositioning equipment into

New Orleans is very expensive compared to a port such as Houston. The import market at Houston drives the container ocean carrier service calls, as less than 10% of the forty-foot boxes discharged at Houston are empty. The loaded import boxes are then stripped at local distribution centers and the available empty forty-foot containers are then reloaded with export cargo, primarily plastic resins. This balance of loaded imports and loaded export containers minimizes the cost of repositioning at Houston, unlike the high cost of repositioning empty forty-foot containers at New Orleans. Exacerbating the equipment imbalance at the Port of New Orleans is the fact that the major import containerized cargo is coffee, which moves in twenty-foot containers, not typically used for export of plastic resins. Therefore, empty forty-foot containers must be brought into the New Orleans market to handle the exported resins, driving up costs to the ocean carrier.

- **The low value of imports** via the Port of New Orleans Napolean Avenue Container Terminal is less attractive to carriers. In contrast, Houston and Mobile serve a container import market with the average import value nearly twice the value per ton than at New Orleans. The major import item in New Orleans is coffee handled in 20 ft. containers, while consumer goods, electronics and high value automobile parts characterized the composition of imports at Houston and Mobile. The imbalance of empty versus full containers on the inbound call, particularly with forty-foot containers has rendered New Orleans an empty box repositioning port to move empty forty-foot containers to load low value plastic resins for export. As a result, if delays occur on the Houston Ship Channel due to fog or other issues, New Orleans is dropped by carriers to maintain schedule integrity. The longer transit time sail on the Lower Mississippi River is problematic for carriers to serve a lower value, limited import market and maintain schedule without adding vessels.
- **The LMR region is much less densely populated than the Houston market**. The population of the New Orleans/Baton Rouge MSAs is 2.2 million compared to 7.5 million for Houston MSA. The total population in the state of Louisiana is 4.7 million. Therefore, the consumption market is limited and further exacerbated by the small density of retail distribution centers compared to Houston, San Antonio, and Austin, as well as Dallas. Not only is the population much smaller in the LMR region as well as the state, the state population growth projections range from 0.5% to 0.8% per year per year through 2030, half of the Texas population growth projected at 1.6% over next 10 years.
- **Intermodal rail service by the six Class I railroads** to capture the midwestern discretionary cargo market is clearly attractive to ocean carriers and importers/exporters, but it may not provide the ultimate panacea for container operations at an LMR port despite a sizeable identified potential discretionary market. Overall transit time, which is key to serve intermodal points from New Orleans versus Los Angeles/Long Beach and Prince Rupert/Vancouver does not favor New Orleans as a gateway port to the midwestern states when combined with vessel transit times, rail service times and low value of the local import market. Longer transit times are not attractive to higher valued import goods, further reducing the potential for high value imports to be moved intermodally via an LMR container terminal into the discretionary market.

The development of a downriver container terminal is critical to provide the infrastructure for future container operations on the Lowe Mississippi River.

As part of the container market analysis, a current potential market of nearly 200,000 loaded TEUs was identified, of which about two thirds were loaded export containers originating in the LMR region and moving to another port such as Houston, Los Angeles/Long Beach via Dallas mini-land bridge, and Savannah and Charleston. The remaining one third of loaded TEUs identified as potential were moving into the LMR region by truck from the ports of Houston, and Los Angeles/Long Beach via Dallas and mini-land bridge. Under the most aggressive projection scenario, which assumes all of the current potential market could be captured by the an LMR container terminal, the 1 million TEUs capacity of the current terminal would not be challenged for at least the next 10-15 years. This projection scenario resulted in a 4.5% annual compound growth rate, compared to about a 3% actual annual growth rate in containerized cargo at the Port of New Orleans over the last 20 years. It is to be emphasized that these projections do not include any new cargo commitments by a carrier or terminal operator that would invest in new terminal development along the Lower Mississippi River.

The need for a downriver terminal is driven by the air draft limitations of the Crescent City Bridge. The vertical clearance of Crescent City Bridge limits the growing size of container vessels, and hence removes the LMR region from competing for services by vessels in excess of about 10,000-12,000 TEUs. This size of vessel will become work horses of Transatlantic as well as Transpacific trade. A downriver container terminal will eliminate the air draft restriction of the bridge, and must have maximum rail service to position the terminal to capture, if possible, intermodal discretionary business in the midwestern states. If a downriver terminal is constructed, the additional capacity at Napolean Avenue Container Terminal can be used for iron and steel storage, precious metals and warehouse development, as well as project cargo (wind, solar panels, etc.). Also, the terminal can focus on container service with the Central American trade lanes, which are served by smaller vessels. Growth in perishable markets can be a target of the Napolean Avenue Container Terminal as well, with associated temperature-controlled warehousing development.

While the need to develop a downriver container terminal is necessary in order to accommodate the growing size of container vessels, it is also important to focus on growing the attractiveness of the LMR container market by improving the value of the import and export cargo base, and expanding the market via the six Class I railroads. The first step is to increase the attractiveness of the market to the carriers by raising the value and volume of the import market, and improving the imbalance of equipment. With a stronger and higher value import market, and a lower equipment repositioning cost, carriers will be more likely to increase service into the LMR region, and further discharge intermodal cargo destined for the midwestern states.

To increase the value and size of the import market, development of import distribution center square footage for consumer goods is critical, but limited population and market size may make this challenging. Most of the region is served by the large distribution centers in Houston, Dallas and Mobile, and this may limit growth in retail import distribution centers in the immediate area. Assistance from Louisiana Economic Development may be needed in attracting large scale import distribution centers. Just as important as growing the import distribution market sector, it is equally important to focus on the development of higher value manufacturing, including:

- Aerospace
- Medical devices
- Battery production
- Food Processing

Furthermore, the focus on future energy projects described in the previous chapter may stimulate containerized import and export growth and hence carrier service. For example, project cargo will grow to support LNG, hydrogen, carbon capture and other future energy projects, and such project cargo is typically accompanied by containerized cargo. The growth in the LNG export sector could provide LNG bunkering potential, which will be a positive to attract carriers that are now focused on green fuel propulsion. Similarly, the green and blue methanol produced from the carbon capture projects along the LMR and Red River Region may provide bunkering fuel for the methanol powered container vessels, thus stimulating vessel calls at an LMR container terminal.

Finally, the development of a new downriver container terminal may be marketed as a strategic move to carriers to compete with the APM domination at Mobile. However, the private container terminal development along the Houston Ship Channel can also offer that potential along with the strong local import market.

5. Economic Development and Port Funding

As described in Chapter V, the focus on future energy projects and the efforts of Louisiana Economic Development have created significant opportunities for the LMR ports. These projects have resulted in the development of port tenants, who will in turn generate marine cargo activity at the LMR ports in which they are located. The development initiatives by Louisiana Economic Development will also grow the size of the market for higher valued imported and exported containerized cargoes and precious metals, bulk and liquid cargoes, and project cargo. It is important that the LMR ports have a continual dialogue with Louisiana Economic Development, in assisting each other in bringing such projects to the state as well as the LMR region. Continual focus should be on increasing direct foreign investment in industry sectors that will stimulate economic growth as well as the high value exports and imports. In addition, strategies to develop more import distribution center square forage should be a priority of Louisiana Economic Development, which will in turn support the volume and value of imported and exported containerized cargo.

From a funding perspective, the Port Priority Program provides a $40 million reserve to fund port projects annually within the state. This $40 million of allocated funds for port projects at the state level is significantly less than the allocated amount in Florida, $170 million in 2023, and the $230 million directly allocated to Port projects via Texas Department of Transportation for 2023. Also, the state of Mississippi legislature has allocated $190.5 million for the Gulfport Port Authority through 2025. It is recommended that consideration should be given to expanding the dollar value of the Port Priority Program to be more in line with the funding provided by Florida and Texas. A recent economic impact study by Martin Associates of the Texas Public Ports identified that in 2023, for every $1 dollar invested by the state of Texas in the Texas public ports, $56 were returned in state and local taxes.[34]

Finally, it is recommended that the LMR ports continue to participate in the port infrastructure grant programs administered by the U.S. Department of Transportation. Between 2022 and 2024, the Louisiana ports received $101.7 million of federal grant funds out of a total $344.6 million awarded.

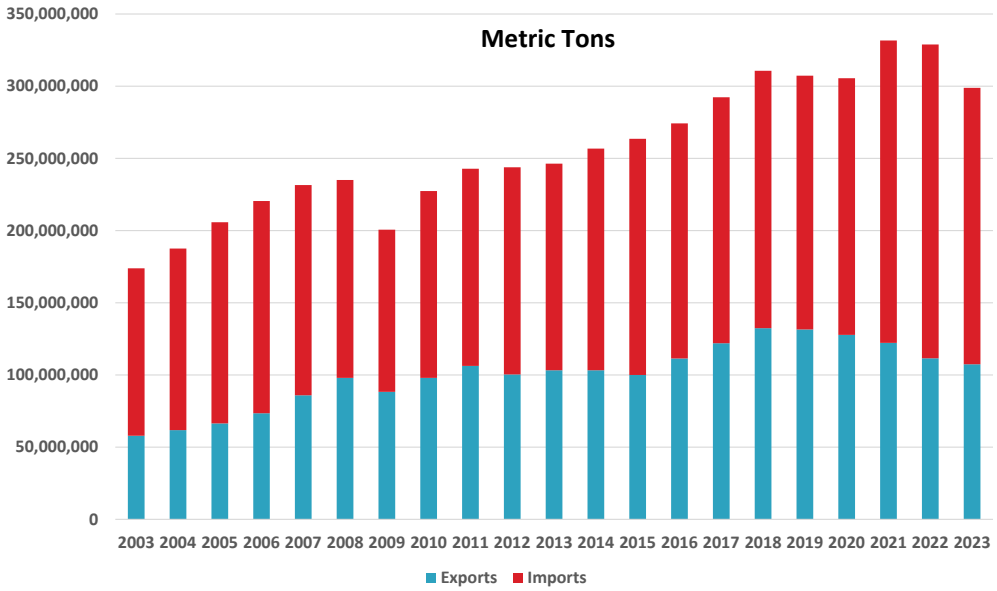
[34] "2023 Economic Impacts of the Texas Ports on the State of Texas, for the Texas Ports Association, September, 2024.

Appendix 1: Dynamics of the U.S. Containerized Cargo Market

The overall dynamics of the U.S. containerized cargo markets are evaluated and the impact of these dynamic trends on the container market in which the LMR ports compete is discussed. The analysis of the container market covers the period 2003 to 2023, rather than the 2014-2023 period for the non-containerized cargo because of the dramatic impact on the logistics supply chain for containerized cargo that resulted from the 2002 West Coast port shutdown.

Overall, historical growth of international containerized cargo tonnage in the lower U.S. states has averaged a 2.9 percent compound annual growth rate since 2003. Import growth has averaged 2.7 percent per year compared to 3.2 percent per year for exported containerized cargo since 2003. International export containerized tonnage has been declining since 2018, while imported international containerized tonnage has been on an increase through 2022. Between 2022 and 2023, imported international containerized tonnage handled at U.S. ports declined by 9.1 percent. This decline in containerized tonnage between 2022 and 2023 is the result of the return to a more normal consumption behavior post-COVID. During the COVID Pandemic, 2020-2022, the volume of containerized cargo handled at most U.S. container ports reached unprecedented levels as the result of the upsurge in consumer spending. In addition, the congestion that occurred on the West Coast ports, particularly in Southern California, resulted in the diversion of imported containerized cargo to Atlantic and Gulf Coast ports. As noted, between 2020 and 2021 during the COVID-19 Pandemic, imported containerized tonnage at the key U.S. container ports experienced an unprecedented growth and remained at record levels in 2022.

Exhibit A-1: Historical Growth in U.S. International Containerized Cargo, 2003-2023



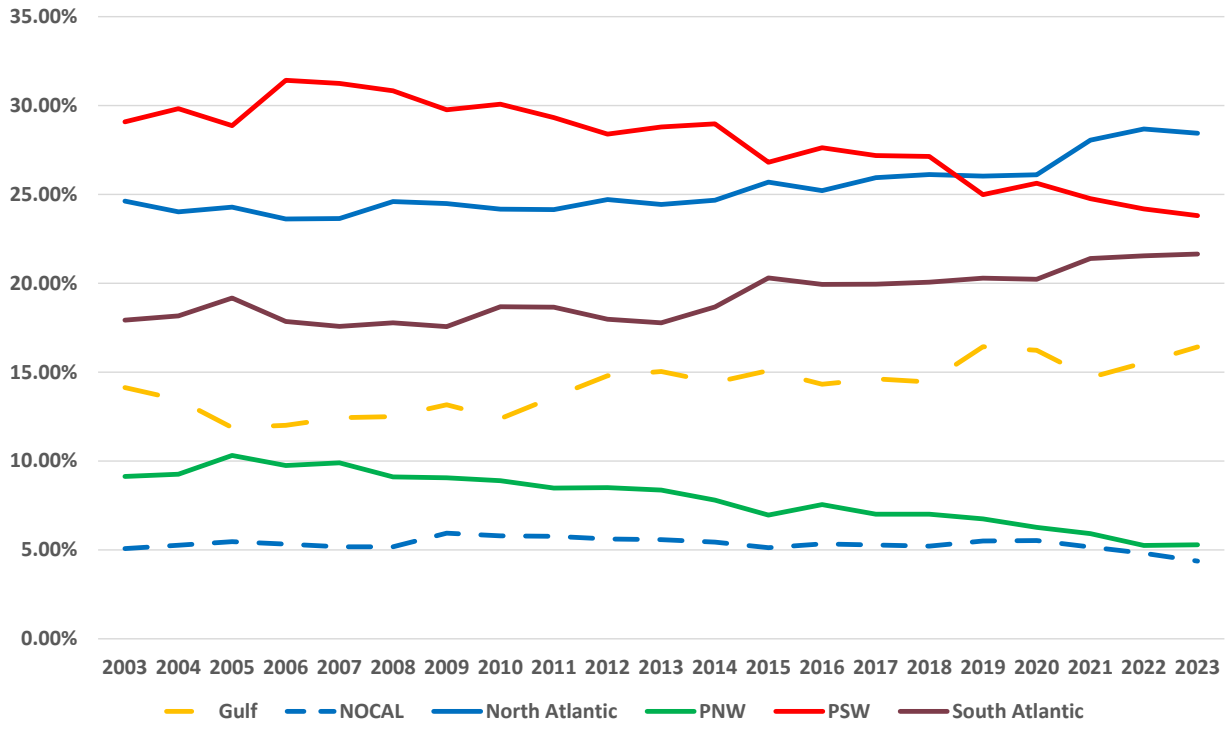
Source: USA Trade OnLine

1 International Containerized Cargo Market – Imports

The U.S. West Coast port range consists of the Pacific Southwest (PSW) ports of Los Angeles and Long Beach; the Pacific Northwest (PNW) ports of Seattle/Tacoma (now known as the Northwest Seaport Alliance, or NSA) and Portland; and the Port of Oakland in Northern California (NOCAL). The North Atlantic (N. ATL) ports consist of ports from Boston to Baltimore; the South Atlantic (S. ATL) ports consist of ports from Norfolk to Miami. Gulf Coast (GULF) ports include ports from Port Manatee (FL) to Brownsville (TX).

As shown in Exhibits A-2, the West Coast port range has gradually lost market share of the total U.S. container market to the other regions (a combined 43% in 2003 to 33% in 2023), and this loss is most pronounced at the Pacific South West (PSW) Ports of Los Angeles and Long Beach (the San Pedro Bay Port Complex), as the PSW share of total containerized cargo has fallen from nearly 30 percent in 2003 to about 23 percent in 2023. This loss of the PSW market share reflects the impact of West Coast labor issues in 2002, late 2014 and early 2015, and in 2022-2023. In addition, the growth in all water Asian services to the Atlantic and Gulf Coasts also reflect the opening of the expanded Panama Canal locks in mid-2016, which allowed ships of up to 14,000 TEUs to transit the Canal to call Atlantic and Gulf Coast ports.

Exhibit A-2: Historical U.S. Containerized Cargo Handled by Port Range, 2003-2023

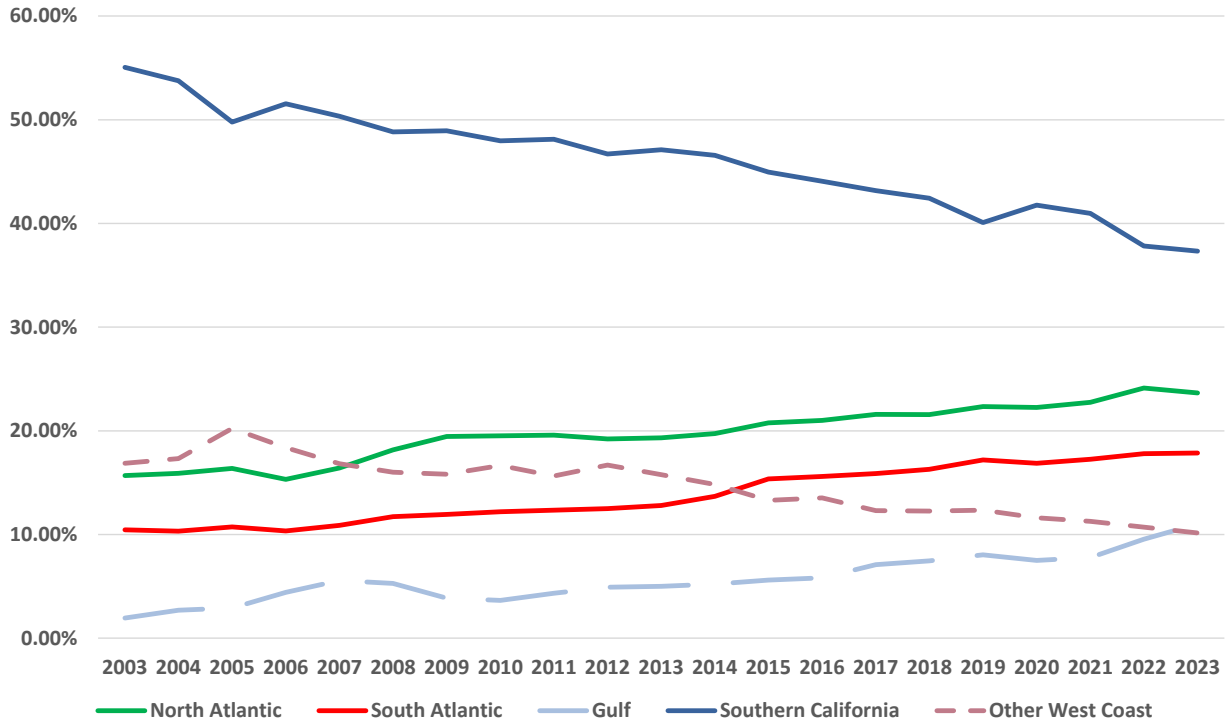


Source: USA Trade OnLine

In contrast, and not coincidentally, the containerized cargo market share of the Atlantic Coast ports (including both N. ATL and S. ATL) has grown from about 43 percent in 2003 to 50 percent in 2023.

The loss of market share by the West Coast ports is even more striking when only imported containerized cargo from Asia is considered. Exhibit A-3 shows that in 2003, the West Coast port range handled about 72% of the imported containerized tonnage from Asia, and this share fell to about 47% by 2023. The Atlantic Coast port share of imported containerized tonnage from Asia grew from 26% in 2003 to 42% in 2023. The Gulf Coast share of imported Asian containerized tonnage grew from about 1.9% in 2003 to about 11% in 2023.

Exhibit A-3: U.S. Containerized Import Cargo from Asia by Port Range, 2003-2023



Source: USA Trade OnLine

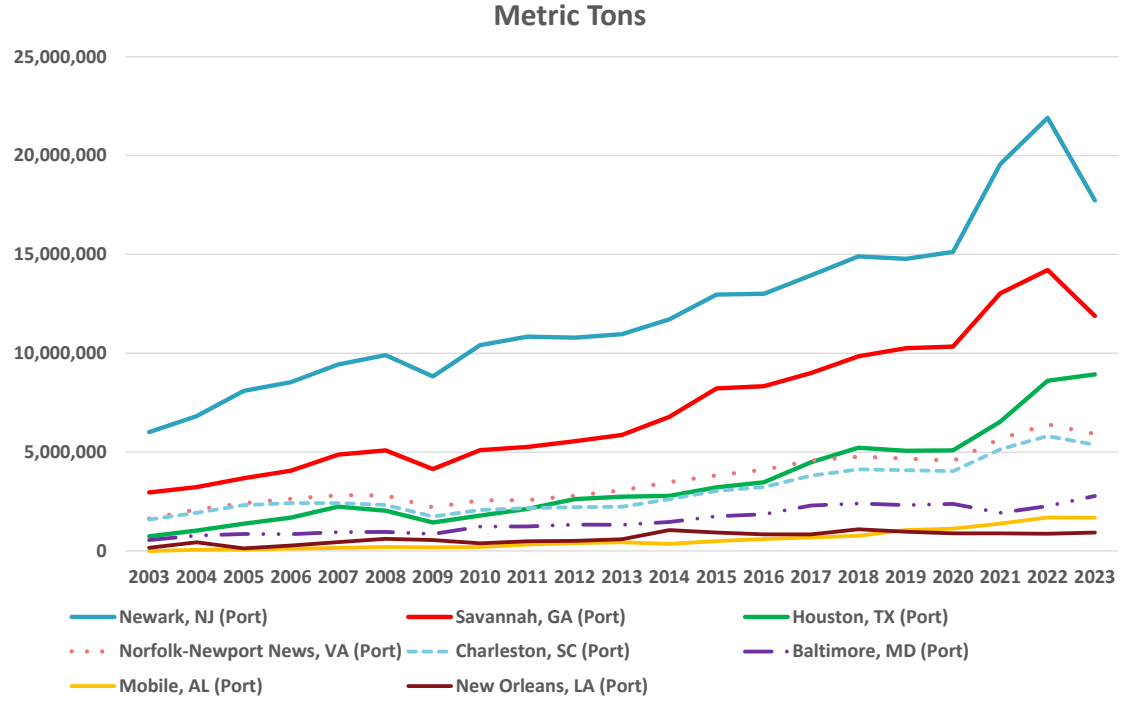
The erosion of the containerized import market share on the West Coast since 2003 reflects the fact that beneficial cargo owners (BCOs) have increased the use of other port ranges to handle imported containers moving from the Pacific Rim into the U.S. This diversification strategy is evident when the share of imported cargo from Asia moving via the various port ranges is reviewed.

Exhibit A-4 highlights this increased growth in Asian imported containerized tonnage at key U.S. Atlantic and Gulf Coast ports. It is to be noted that this growth accelerated after the West Coast port shutdown in 2002. The impact of labor contract issues in 2014 and 2015 at the West Coast ports that led to service disruptions and terminal congestion is also visible in the increased rate of growth in Asian imports at the Ports of New York (including the terminals in Newark) and Savannah during this time. In addition, the impact of the opening of the expanded Panama Canal in 2016 (to accommodate larger vessels operating on all water Trans-Pacific trade) is clearly seen by the accelerated growth in Asian imports at these key Atlantic and Gulf Coast ports. In contrast, this growth in Asian imported containerized tonnage did not occur throughout the period at the Port of New Orleans, especially after 2018, as the volume of Asian containerized import tonnage at New Orleans actually

declined after 2018. This growth in Asian imported containerized cargo with the exception of New Orleans also reflects the vessel and terminal congestion that occurred at the West Coast ports, particularly the San Pedro Bay Ports, during the height of the Pandemic in 2021.

Also noted in Exhibit A-4 is the overall decline in imports from Asia in 2023, which has occurred not only at the San Pedro Bay Ports but at the container terminals at the other key container ports with the exception of the Port of Houston. It is important to emphasize that this decline (2022 to 2023) in Asian imported cargo at the Port of Houston did not occur, as the container terminals at the Port of Houston realized a 3.7 percent increase in Asian imported containerized cargo between 2022 and 2023. The Port of Houston continued to realize the increase in imported Asian container volume as the volume of containers moving intermodally by rail from the San Pedro Bay Port Complex to Dallas and then distributed by truck throughout Texas, Oklahoma, Louisiana region has been declining over time. This is known as mini-land bridge and will be discussed in the following section. The decline in the mini-landbridge service via Dallas has been replaced by direct all water Asian services calling the Port of Houston, which is now serving the Dallas market to a greater extent than in the past.

Exhibit A-4: Asian Imported Containerized Cargo by Key Atlantic and Gulf Coast Port

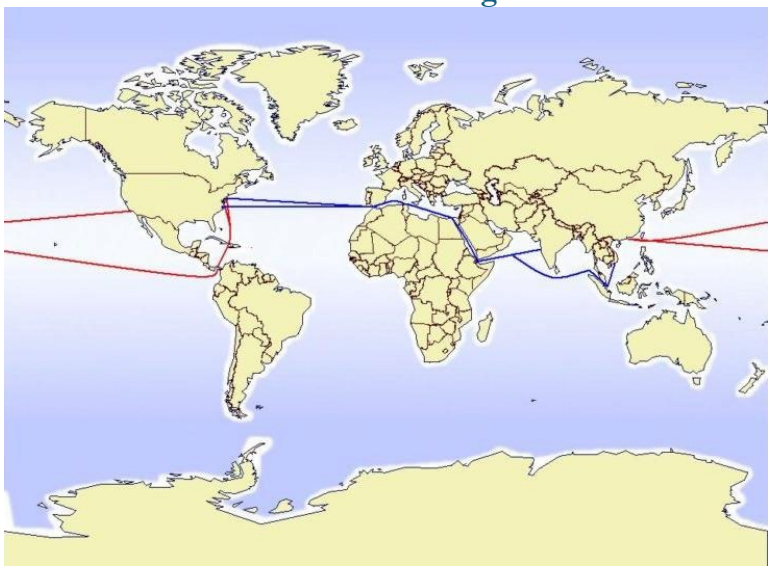


Source: USA Trade OnLine

To accommodate the growing demand for the use of the Atlantic and Gulf Coast ports to handle Asian cargo, ocean carriers responded by increasing sailings between Asia and the Atlantic and Gulf Coast ports via the Panama Canal and the Suez Canal (Exhibit A-5). This did not occur at the Port of New Orleans. Typically, the Suez routing provides a more competitive transit time to the

Atlantic and Gulf Coast ports (over the use of the Ports of Los Angeles and Long Beach) to serve the southeastern Asian market (typically south and west of Singapore), while the Panama Canal routing is the all-water routing usually used to serve the Asian trade north of Singapore, including, China. This is particularly the case to serve the consumption markets located in proximity to the Atlantic and Gulf Coast ports.

Exhibit A-5: All-Water Asian Service Routings to the East and Gulf Coasts



As the ocean carriers increased the number of all-water sailings between Asia and the Atlantic and Gulf Coast ports after the 2002 West Coast ports shutdown, the size of the container ships deployed on the all-water routings also began to increase in order to minimize shipping costs per container. An expanded Panama Canal was opened in 2016, further increasing the cost-competitive all-water Asian routing. The Trans-Pacific trade is characterized by the deployment of larger containerships compared to the size of vessels deployed on European, Mediterranean, Middle East and South American trade lanes. This deployment of larger ships is driven by the economies of scale that are achieved based on the size of the market, as well as on the length of sail for container vessels transiting the Trans-Pacific trade and the Panama Canal (and Suez Canal) routings to the U.S. East Coast and Gulf Coast ports. As the ships of larger sizes cascade from one trade lane to another, there is a constant growth in the size of vessels deployed on all trade routes.

For example, the largest container vessels, those in the 18,000 - 22,000 TEU size range and above category are deployed on the Asia-Europe trade, as the economies of the largest container vessels are realized on the longest trade routes with minimal port calls. As these larger ships, the 18,000 TEU vessels and greater, are deployed on the Asia-Europe routings, the current vessels on that route are moved to the Trans-Pacific routing, which is the routing offering the next level of distance and minimal port calls. These newly deployed vessels on the Trans-Pacific trade (from the Asia-Europe trade) displace the current sized fleet on the Trans-Pacific trade and these displaced vessels then cascade to the all-water Asia-U.S. Atlantic Coast/Gulf Coast trade via the Panama Canal.

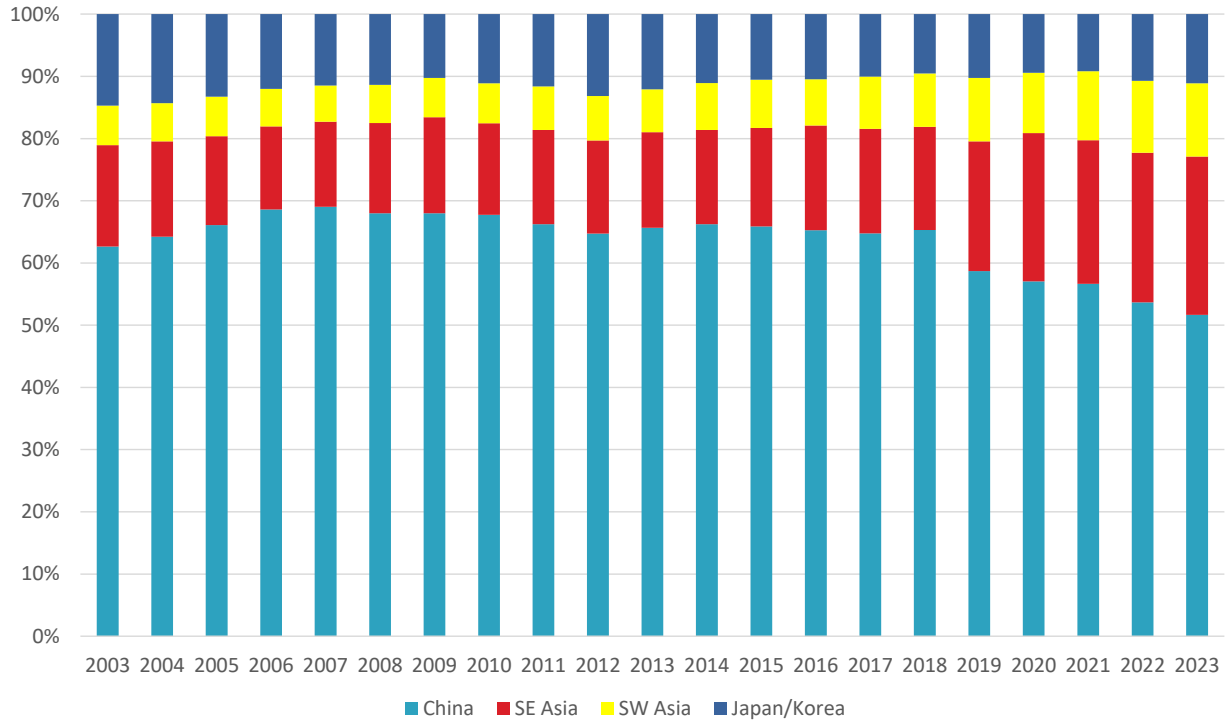
As the vessel size increased on the all-water Asian trades serving the Atlantic and Gulf Coast ports, investment in wider and deeper channels, super-post Panamax cranes and efficient terminal

operations and expanded intermodal rail operations have become a necessity at those ports participating in the Asian all-water services. As documented, these investments have been and are continuing to be made at the Atlantic and Gulf Coast ports, as will be discussed later in this report.

2. Changes in U.S. Import Sourcing and Impact on Discretionary Cargo Market

The production centers in Asia for imports destined into the United States have gradually been shifting away from China to other regions, particularly countries in Southeast Asia. Exhibit A-6 shows that China continues to be the leading source of imports into the United States, but the share of U.S. imports from China has been declining over the period, and in particular since 2018, reflecting the impact of trade policy actions, and is likely to continue to fall as importers diversify the logistics supply chains away from China into countries in Southeast Asia such as Vietnam, Thailand, and Cambodia as well as Southwest Asian countries such as India and Pakistan.

Exhibit A-6: Supply Sources of U.S. Containerized Imports



Source: USA Trade OnLine

The COVID-19 Pandemic has further underscored the importance of diversification of supply sourcing in the future. While China will likely continue to be the largest trading partner in the short to mid-term, its dominance will likely diminish as manufacturing infrastructure and port, highway and rail infrastructure are developed in the other areas of Asia, and near shoring opportunities arise in Mexico, Central America and the Caribbean.

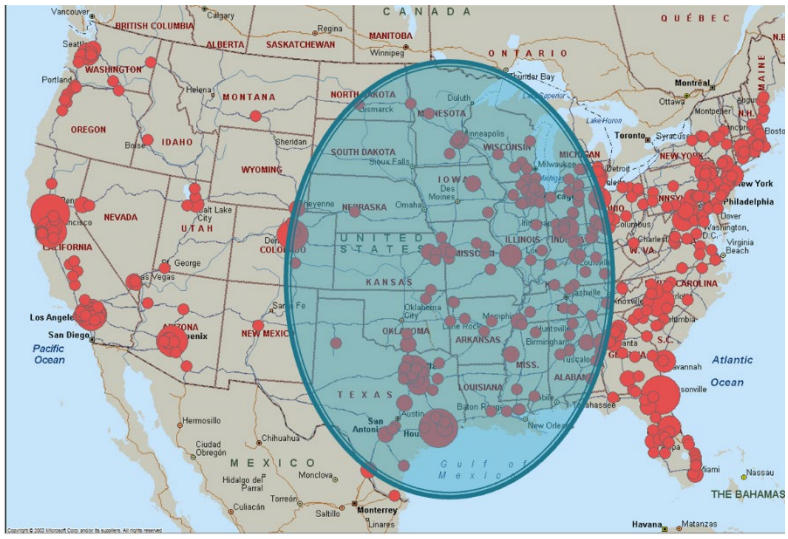
These changes in the sourcing of imports to diversify the supply chains of key U.S. importers away from China, has further implications on the future shipping patterns. For example, as supply

sources shift away from China into Southeast Asia, the Suez Canal becomes the preferred trade lane to serve all-water services into the Atlantic and Gulf Coast ports, and transit time differentials to serve the midwestern consumption markets with Southeast Asian cargo via these two coasts become more competitive with the use of the San Pedro Bay Port complex. As near market sourcing continues, overall Trans-Pacific trade will likely be negatively impacted, affecting not only the discretionary cargo moving via the San Pedro Bay Ports destined for the midwestern, southeastern and south-central U.S., but the overall level of containers moving via the San Pedro Bay Port Complex into California and western U.S. states.

3. Port Terminal Investment to Accommodate the Growth in All-Water Service and Increased Intermodal Service via U.S. Atlantic and Gulf Coast Ports

As the vessels increased in size requiring deeper and wider channels at the Atlantic and Gulf Coast ports, the key container ports embarked on channel deepening and widening projects, and also invested in larger (post Panamax) container cranes, as well as terminal upgrades. Finally, the investment in rail service at the Atlantic and Gulf Coast ports increased in order to serve more inland markets and logistics centers that were previously served via the West Coast ports. These investments in deeper channels, terminal infrastructure and equipment, and intermodal rail terminals at the Atlantic and Gulf Coast ports are not only focused on serving the port local consumption markets, but the focus has been on increasing the markets of these Atlantic and Gulf Coast ports to serve the distribution centers located in the midwestern states that have historically been served intermodally via the West Coast ports for Asian trade, particularly the San Pedro Ports Complex. This cargo is known as discretionary cargo. This battle ground market area is shown in Exhibit A-7.

Exhibit A-7: Region for Intermodal Competition Between Atlantic, Gulf Coast and West Coast Ports



With respect to channel dredging projects at the Atlantic and Gulf Coast ports to accommodate the growing size of container vessels, several ports on the Atlantic coast have a 50 ft. or greater shipping channel. These are the Ports of New York, Baltimore, Norfolk, Charleston, and Miami. Deepening projects of 47 ft. and greater are under way or have been completed at the Ports

of Boston, Savannah, Jacksonville and Port Everglades, and the Port of Charleston is completing a 52 ft. channel. The Delaware River shipping channel has been deepened from 40 ft. to 45 ft. On the Gulf Coast, the deepening and widening of the Houston Ship Channel to accommodate container vessels in excess of 1,100 ft. in length (LOA) is now under way. The U.S. Army Corps of Engineers allocated the funding for the Port of Mobile's shipping channel navigational project in fiscal year 2020, which will deepen the channel to 50 ft. from its current 45 ft. depth and widen the channel from 400 ft. to 500 ft. to accommodate the larger sized container vessels. Furthermore, the deepening of the Lower Mississippi River Shipping Channel has been deepened from 45 feet to 50 feet for about 200 miles from the mouth of the passes.

Not only have the Atlantic and Gulf Coast ports responded to the growing number of all-water sailings utilizing the larger container vessels, but the ports have also responded to this growth in Asian all-water services by investing in terminal and intermodal rail capacity. Nearly $13 billion of investment has been or is planned to be invested over the next 5-7 years in port terminal infrastructure investments to accommodate the growth in all-water service and increased intermodal service via U.S. Atlantic and Gulf Coast Ports. New container terminal development is planned for the Houston Ship Channel (both by a private terminal as well as the Port of Houston), the Louisiana International Container Terminal, a new terminal in Plaquemines Parish, and at Trade Point Atlantic in Baltimore, while continued investments in rail and intermodal terminals are planned for Savannah, Charleston, Baltimore, and New York.

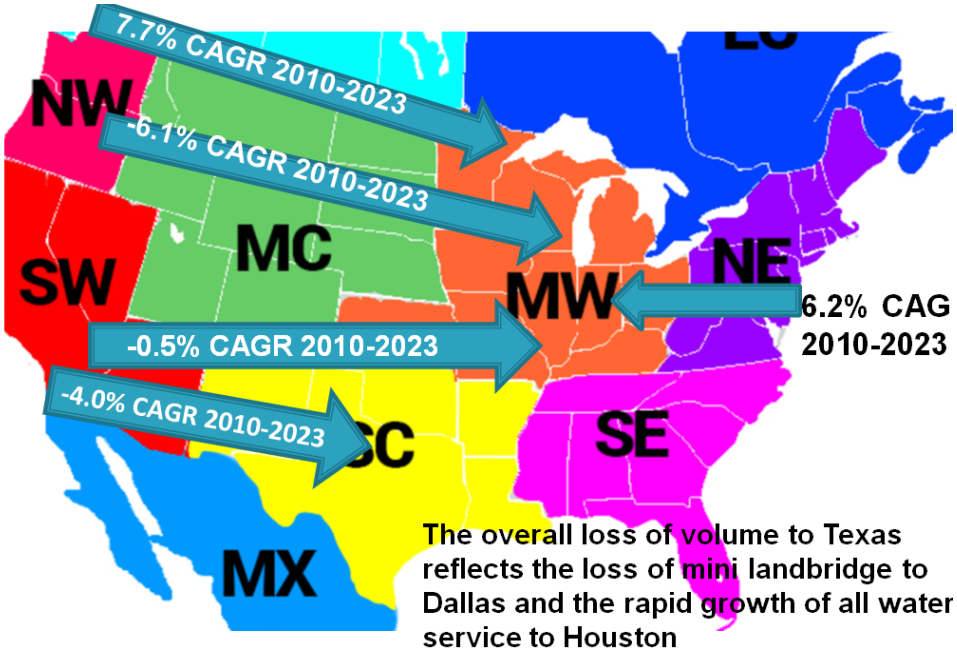
4 Shifting Intermodal Trade Volumes

A comparison of trends in the share of Inland Point Intermodal (IPI) activity, which is the movement of import/export ***marine containers*** by rail, underscores impact that the investment in marine terminal development and accompanying rail infrastructure at the U.S. Atlantic and Gulf Coast ports has and underscores the loss of market share to serve the "battle ground" of Midwest and South-Central consumption markets described previously. To assess the changes in intermodal international containers moving from the San Pedro Bay Ports to the Midwestern and the South Central (Dallas) consumption market battle grounds compared to the growth in intermodal international volume from the Northeastern ports, (primarily New York, Norfolk, Baltimore, and Philadelphia), Pacific Northwest U.S. Ports, and Pacific Canadian Ports (Vancouver and Prince Rupert), historical intermodal international container volumes developed by the Intermodal Association of North America (IANA) were evaluated. The IANA database provides intermodal lifts (defined as actual containers whether 20 ft., 40 ft., or 53 ft.) that are loaded or discharged from a rail car. This data base includes strictly international cargo moving in marine containers (IPI) from the San Pedro Bay Ports, Pacific Northwest U.S. Ports, Pacific Canadian ports and Northeast U.S. Ports to inland points in the midwestern U.S. such as Chicago, as well as into and from the south-central region such as Dallas. The international cargo is classified as Interior Point Intermodal (IPI). The data base also includes intermodal cargo moving in domestic containers, that may contain domestic cargo as well as international cargo that has been transloaded into 53 ft. domestic containers at cross dock facilities near the port of discharge, for transport to inland points. The use of the 53 ft. containers for handling international cargo provides a cost savings as in many cases the uses of a 40 ft. marine container limit the volume of freight that can be loaded into a forty-foot container as lighter, higher value fright such as imported apparel will "cube out" rather than "weight out" the 40 ft. container. The use of transloading into a 53 ft. container provides a cost savings per ton mile traveled for lighter cargo.

Exhibit A-8 shows the historical flows of international intermodal cargo (IPI) to the midwestern region and the south-central region, which are the destinations and origins of the largest intermodal lane flows. As Exhibit IV-8 shows, between 2010 and 2023, the international intermodal traffic between the Southwest region, in which the San Pedro Bay Ports (Los Angeles and Long Beach) are located, and the midwestern states actually declined at a -0.5% CAGR over the period. This compares to a 6.2% CAGR for international intermodal volume from the northeastern ports (primarily New York and Norfolk) to the midwestern region, reflecting the shift in discretionary containerized cargo from the West Coast to the East Coast ports to serve the midwestern market. Additionally, international intermodal cargo (IPI) from the Pacific Northwest container ports of Seattle, Tacoma and Portland posted a significant annual decline of -6.1% annually, reflecting the loss of discretionary cargo destined from the PNW ports to the midwestern U.S., primarily the Chicago market. In contrast, international intermodal cargo grew by 7.7% annually from the Canadian Pacific ports to the U.S. midwestern states.

With respect to the south-central U.S. consumption market, which is dominated by the Texas consumption market, international intermodal cargo declined by -4.0% annually from the southwestern region to the south-central region. This decline in international intermodal cargo into the south-central region reflects the decline in mini-land bridge service, where the imported Asian cargo via the San Pedro Bay Ports is moved intermodally to Dallas, and then distributed by truck from the distribution centers located in the Dallas/Fort Worth/Alliance Texas markets throughout Texas and the other south central consumption points in Louisiana and Oklahoma. This intermodal mini-land bridge move via the San Pedro Bay Port complex has been replaced by the growth in the direct all water services into the Port of Houston container terminals, fueling the growth in Asian imports at the Port of Houston that was noted previously.

Exhibit A- 8: International Intermodal (IPI) Cargo Flows to the Midwest Region, 2010-2023



Source: IANA IPI Trade Lane Data

Appendix 2: List of Companies Interviewed

Shippers:

- Suzano – South American Woodpulp
- Eldorado - South American Woodpulp
- CMPC (IFP)- South American Woodpulp
- Cenibra – South American Woodpulp
- Metsa – EU woodpulp and other paper
- Bracel – South American Woodpulp
- UPM – South American Woodpulp
- Binderholtz - Lumber
- VIDA
- Kronotex/ Kronospan (OSB/PLY)
- MidShip – Wire rod
- Cement/Aggregates - discussed with terminal operators and some agents
- Georgia Pacific
- International Paper KLB
- PCA – KLB (NE/Med)
- Binderholz Lumber
- Dantzler Lumber
- Robinson Lumber
- SSAB – steel
- TATA

Terminal Operators:

- Logistec
- Ports America
- Metro
- Enstructure
- QSL
- SSA / Cooper
- Gulf Stream
- Associated
- Tri-State
- Amports

Carriers:

- G2 Ocean
- Spliethoff
- Clipper
- Saga Welco
- Norvik
- Oslo Bulk
- Norlat
- PaccLine
- Ultra Bulk
- MSC
- Maersk
- CMA-CGM