

Report on Transshipment Feasibility and Economic Diversification Prepared for the Guam Transshipment Task Force





May 15, 2024

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I. Introduction and Background Report

This report is prepared for the use of the Guam Transshipment Task Force (GTTF), to further its mission to determine the feasibility of transshipment in Guam. The Matsuda Team, a consultant team led by David Matsuda of Matsuda & Associates, LLC, prepared a comprehensive Background Report and submitted the Report to the GTTF in November 2023. The entire Background Report is provided in Appendix A to this document. Portions of the Background Report are reprinted in this section, to provide a relevant context for this Report.

A. Guam Transshipment Task Force

GTTF's mission is to research and recommend policies and plans regarding potential economic development and investment opportunities in the areas of transshipment, manufacturing, assembly, distribution and export. Such opportunities will be designed to help Guam meet the goal of diversifying its economy and creating employment opportunities, while improving the quality of life for the people of Guam.

Public Law 36-23 includes specific mandates, directly cited below.

- Contact regional shipping partners, manufacturers, the U.S. Department of Homeland Security, the U.S. Customs and Border Protection and any other agencies within the U.S. government that are relevant to transshipment
- Conduct a feasibility study and provide recommendations involving local tax policy, workforce development and incentive programs that can assist in promoting transshipment on Guam
- Receive reports and testimony from individuals, government of Guam agencies, and any other interested public and private organizations
- Submit an Economic Diversification Plan with recommendations to I Maga'hågan Guåhan (Governor of Guam) and I Liheslaturan Guåhan (the Guam Legislature), within one year of the enactment of this Article.

Excerpt from Public Law 36-23

B. Feasibility Study Overview

PL 36-23 specifically mandates that the GTTF deliver a Feasibility Study and Economic Diversification Plan. The Feasibility Study will address the potential for growth in transshipment, manufacturing, assembly, distribution and export business activities on Guam. The Study also will include recommendations pertaining to local tax policy, workforce development, incentive programs and other aspects, to be determined by the GTTF. Finally, the Study will provide details of a review and update of the government of Guam's previous plans and studies (*e.g.*, the 2005 GEDA Regional Distribution Center Plan) related to the areas to be explored in the current Study.

The first phase of the Study will include a Background Report. This document constitutes that Report.

C. What is Transshipment?

The GTTF crafted and adopted the following definition of transshipment, directly cited below.¹



The GTTF definition is broader than the definition commonly associated with the term in the shipping industry, as it includes additional activities that can occur in the intervening phase, when goods are transferred between two vessels. The U.S. Maritime Administration (MARAD) defines transshipment as

¹ Source: "Transshipment Task Force Definition & Mission Statement," undated.

the "transfer [of] goods from one transportation line to another, or from one ship to another."² The term commonly refers to the act of moving cargo from origin to destination, via multiple vessels (and, potentially, multiple modes).

Given the breadth of the GTTF definition, the Matsuda Team recommends focusing GTTF's efforts on transshipment cargo models and specific cargo markets that hold the most promise for cargo expansion.

Transshipment models

As described previously, GTTF uses an expansion of the traditional definition of transshipment, to include the additional activities that can occur in the intervening phase, when goods are transferred between two vessels. As shown in the table below, traditional transshipment is commonly associated with a "hub and spoke" operations model; the second component of the GTTF definition often is associated with a model best described as "value-added operations," and the third component is associated most closely with a "transloading" operations model.

GTTF Definition Component	Relevant Model		
Traditional transshipment	<i>Hub and spoke operations:</i> The traditional definition includes hub and spoke – the transportation of items from one destination to another, through an intermediate destination		
Made in the USA/Guam	<i>Value-added operations:</i> Bringing in raw materials and/or partially assembled goods and components for final completion, packing and re-export. Such finished goods may be considered "Made in the USA/Guam"		
Processing and fulfillment centers	<i>Transloading:</i> Businesses can utilize Guam's location to warehouse items for order mixing, packaging and fulfillment for distribution		

The Matsuda Team believes these models are useful for analyzing feasibility, as described, below.

Hub and spoke

At present, the Port of Guam's transshipment activities primarily fall into the traditional hub and spoke model, where the Port serves as a hub within the western Pacific. This enables the Port of Guam to link regional and global shipping networks together effectively, at either end of the network. Singapore, the

² Source: Maritime Administration (2008) "Glossary of Shipping Terms,"

https://maritime.dot.gov/sites/marad.dot.gov/files/docs/education/adopt-ship-program/341/glossaryfinal.pdf

busiest transshipment port in the world, is a prime example of the hub and spoke model. The Port of Singapore consolidates cargo from countries in Asia to major export markets in Europe, North America and elsewhere – handling 100,000 Twenty-foot Equivalent Units (TEUs) per day, and connecting to 600 other ports.³

As described in the "Baseline Assessment" section below, Matson Navigation Company, Inc. (Matson) connects Guam to the U.S. mainland, Hawaii, China and Japan, but relies on transshipping cargo to its final destination. Kyowa and Marianas Express Lines, Ltd., transport cargo to Micronesia and Marshall Islands destinations, such as Yap, Pohnpei or Majuro. APL also offers service to and from Asia, but transships cargo both on Guam (to connect with other islands) and in Asia (to connect with the U.S. west coast). These models are known as a "hub and spoke" transshipment operation. In some cases, the hub and spoke approach is utilized because a market may be too small to receive a call from a service on major trade lane. This can occur if a port or a market is:

- Unable to support the necessary cargo volumes to be economically sustainable
- Too remote, which increases trip cost and time
- Unable to support the vessel sizes used on the primary trade lanes

In other cases, transshipment allows for the consolidation of cargo on board a larger vessel. This results in increased economies of scale that drive down the per-TEU transportation cost of moving cargo, which increases economic viability of a marine transportation service.

Although multiple types of "traditional" transshipment exist, the hub and spoke model accounts for most transshipment activity. Within this process, the greatest activity is the consolidation of cargo from smaller vessels, originating at smaller ports, onto larger vessels that journey to larger destination ports. For example, the Port of Singapore and Port of Hong Kong consolidate cargo from numerous Asian ports carried aboard "feeder" vessels into larger vessels that travel to Europe or North America. The need for consolidation has increased as vessel sizes have grown and as carriers have increased their focus on vertical integration.

Interviews with stakeholders, in preparation for this report, revealed a concern that existing Port infrastructure, including berth depths and crane capabilities, would limit the Port from becoming a major transshipment hub, due to the larger vessel sizes typically utilized at existing hubs.

³ Source: https://www.singaporepsa.com



Figure 1. As shown in this figure, the role of a traditional transshipment port is to facilitate cargo consolidation to accommodate transfers to vessels of different sizes.

Another model of hub and spoke activity involves a larger vessel delivering cargo to a destination port where a portion of the cargo is then divided between or among smaller vessels. Those vessels then journey to small, final destination ports. Example ports include Colombo (Sri Lanka) and Guam, which serve as staging grounds for cargo destined for other regional ports. This process allows for cargo to travel between origin and destination, when no direct connection exists, as shown in Figure 2.



Figure 2. The "staging ground" variation of the transshipment port model accommodates a shift from a single, large vessel market to smaller vessels serving multiple destinations.

In both cases, hub and spoke transshipment involves no modification of the cargo, as it passes through the transshipment port. The activity principally is in the hands of the carriers with little or no input from cargo owners and largely is a financial exercise to determine whether the mainline service can reduce costs by using smaller, secondary vessels, at either the origin or destination side. The benefit of the transshipment port to the local economy is minimal, beyond the stevedoring and other support services required to assist with vessel calls and transfer the cargo between vessels.

More than half of Guam's exports are goods transshipped to surrounding islands.⁴ While Guam transshipment volumes rebounded in FY2022, these volumes are still down from FY2018.⁵ One of the reasons cited for the decline in transshipment volumes at the Port of Guam is the years-long population decline in the islands that rely on container service via Guam.⁶

The Port of Guam provided the data in the table, below. The data reveal that transshipment volumes have not recovered from FY2018 levels.

Transshipment	FY2018	FY2019	FY2020	FY2021	FY2022
Import Loaded	7,964	5,531	6,391	6,056	6,584
Import Empty	4,938	2,840	2,690	2,711	3,906
Export Loaded	8,003	5,666	6,462	6,104	6,708
Export Empty	4,702	3,156	2,572	2,670	3,870
TOTAL	25,607	17,193	18,115	17,541	21,068

As noted above, transshipment services currently connect Guam to the Federated States of Micronesia, the Northern Mariana Islands, the Marshall Islands, Palau and the Caroline Islands. As detailed in Figure 3, World Bank data confirm that the overall population on the "transshipment" islands has decreased since 2000.⁷ The population of Guam has increased by 7.2%, for a compound annual growth rate of 0.3%. The combined population of the Federated States of Micronesia, the Northern Mariana Islands, the Marshall Islands and Palau experienced a 16% decrease, for a compound annual growth rate of negative 0.8%.

Regional Population, 2000-2022⁸

⁴ Source: Port of Guam 2023 Master Plan, Page 5-17.

⁵ Source: Port of Guam data supplied to the Matsuda Team

⁶ Source: Interview with Port Authority of Guam, September 28, 2023

⁷ Source: The World Bank, https://data.worldbank.org/indicator/SP.POP.TOTL

⁸ Ibid.



Stakeholders on Guam believe that the population decline is a primary factor in limiting the opportunity for increased levels of inter-Micronesia transshipment cargo activity. Multiple stakeholders noted that the construction projects associated with Camp Blaz paid above standard wages and offered better benefits, and therefore, continue to attract workers away from the outer islands to Guam. However, one stakeholder noted that cargo opportunities on the outer islands might increase due to a planned expansion of the U.S. military footprint at those locations.

There may be opportunities to expand the number of carriers involved in hub and spoke transshipment on Guam, to increase the container throughput to ports beyond those currently served. However, the positive economic impact on Guam would be minimal. The Port of Guam should consider expanding its transshipment activities beyond its Micronesian neighbors, to identify prospective carriers bypassing Guam. The Port also should identify potential new destinations based on cargo flow, such as the Philippines, Papua New Guinea or New Zealand.

Value-added operations

Of the three transshipment models described, value-added operations provide the greatest opportunity for economic development on Guam, as these operations allow for additional economic activity, such as final assembly activities, where unfinished goods are imported, unloaded and processed, and then, reloaded and shipped off-island, as finished goods. This normally occurs when there is an opportunity to carry out the final assembly of the products, such as televisions, in a country that allows the country of origin to be altered. In the case of Guam, finished goods could be labeled as "Made in the USA," to avoid U.S. import duties and/or tariffs.

Value-added operations occur when cargo unloaded from its original container undergoes a transformative operation before being loaded back into a container for transportation to the next location. Often, this transformation involves a manufacturing process, including final assembly into a finished product, or other sub-process that adds to the cargo's value. Inbound cargoes can include raw materials, or semi-finished goods. The amount of value added to the product often is measured as a portion of its final sale value, or the per-unit value of the new content added, plus per-unit value of labor involved.

These operations typically take place outside the Port and have significant requirements, including:

- Manufacturing space availability a requirement that often is more significant than simple warehousing and storage space
- Infrastructure requirements outside of the Port, potentially including a reliable energy supply and roadways capable of handling the movement of heavy cargo
- Skilled labor resources and availability
- Investors and capital resources
- Sufficient space for warehousing and storage of materials and finished goods
- Efficient transfer and drayage operations



Figure 4. The value-added operations transshipment model requires establishment of both an import and export supply chain through the Port.

Given the complexity of establishing value-added manufacturing facilities on Guam, manufacturers may consider transshipment cargo service availability as only one of many factors in its decision whether to operate its supply chain through Guam.

Transloading

The transloading of cargo involves an additional handling step in the transshipment process. This step occurs between intermediary stages of the journey, when cargo within one container is split and/or consolidated into another container or multiple containers. The most common reason for transloading is

that cargo has traveled as far as it can by water and is, therefore, re-packaged before it continues to its final destination. For example, the majority of containers shipped from Asia to North America are an industry-standard 40 feet in length; however, land transportation cost savings can be achieved by consolidating the contents of 40-foot containers into 53-foot containers, moved over-the-road by truck or by intermodal rail. (Six 53-foot containers can hold the equivalent of eight 40-foot containers, thereby reducing the number of trucks and truck drivers needed to transport this amount of cargo by 25%, if 53-foot containers are used.)

Another common application of transloading occurs when containers are delivered to a distribution center, so that their contents can be re-distributed and then transported to the final destination (e.g., a Wal-Mart or Target store). Transloading also can occur when cargo carried within a container is distributed among smaller containers, such as when the next transportation mode is by air.

Transloading activities can be carried out by a freight forward or shipper, but rarely are performed by the carriers (vessel operator). A cargo owner or their forwarding agent also can consolidate imported goods from different overseas points of origin, into containers for delivery to the final destination country. This option requires significant supporting elements, including a qualified labor force; sufficient infrastructure, including roads with high-weight permitting and reliable power supply for refrigerated cargo; warehousing space availability for cargo storage and consolidation activities; and possibly, sufficient trade and tax agreements and policies to support the market for consolidated goods.



Figure 5. The model for a transshipment port accommodating transloading activities involves opening shipping containers and consolidating the contents.

From a transshipment perspective, goods can be sourced from different origin ports, and then un-packed and consolidated at the transshipment port. The re-packed containers are then shipped forward to other ports. This can include sea-to-air transfers, as well as fishing industry shipments. This type of activity requires warehousing facilities within a duty-free zone or other limited taxation environment, to avoid taxation on goods that did not originate from, and ultimately, are not destined for the transloading port.

Additional requirements for a transloading operation include:

- Land availability
- Infrastructure requirements outside the Port (including a reliable energy supply and roadways capable of handling the movement of heavy cargo)
- Labor resources and availability
- Identifying investors
- Identifying customers

• Being prepared to initiate a significant investment in modern port infrastructure to ensure high levels of productivity, and warehousing and distribution facilities.

Some cargoes might transship between different modes of transportation. For example, Guam recently wound down a robust fishing transshipment supply chain. Under this activity, commercial fishing vessels would bring their catch to the Port of Guam, for transfer to the Airport, where the cargo would be flown to market destinations. Data collected by the Team through initial interviews indicated that the export of fish from Guam had been strong until 2021, when it was interrupted by a southward shift of the tuna population in the waters surrounding Guam. The market for Guam fish exports has since dried up and Guam now faces competition from other fish exporting locations around the world. However, interviewees noted that fish species other than tuna might now be available for export from Guam.

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II. Guam Transshipment Task Force and Matsuda Team Document Process

A. Post-Background Phase outreach activities

The Matsuda Team's research involved four specific types of data on the feasibility of transshipment on Guam. The data types include:

- 1. Qualitative data from individual interviews
- 2. Survey data
- 3. Commodity-specific trade data
- 4. Qualitative data from in-person focus group workshops.

The Team analyzed data gathered from direct interviews with focus groups, surveys and trade data to develop the structure and participant composition of each focus group. Each step in the process is described below.

Interviews

The first set of individual interview data was collected through virtual and in-person interviews, starting in September 2023 and ending in October 2023. Details from the Background Report, provided in Appendix A, informed and helped to focus the interview questions. The Matsuda Team conducted the interviews with key stakeholders in transshipment and used the information collected to identify initial insights, opinions and perspectives.

Among others, the initial interview phase included representatives from the Guam legislature, the Guam International Airport Authority, the Port Authority of Guam and Guam Customs and Quarantine Agency. This phase, along with the survey data, helped shape initial insights that were presented for consideration in focus groups that were conducted later. The Team utilized a systematic approach to scale feedback on the insights, opinions, and perspectives gathered through the interviews, to allow for more detailed perspectives on specific topics, during later phases of the study.

Stakeholder Survey

The Team created an online survey with the aim of verifying the information collected from the research and interviews, as well as from the trade data research. Survey Monkey[®] was used to design the survey

and GEDA reviewed the survey ahead of distribution to the members of the Guam Transshipment Task Force and other key stakeholders.

The focus of the survey was to "develop information about the market potential for shipping various types of commodities through Guam, as part of a sustainable transshipment industry." The survey included definitions of the three models of transshipment that were used throughout this study.

The complete survey is provided in Appendix B. Survey questions included:

- Biographical information, including name and email address .
- Sector of employment and role •
- Degree of focus on transshipment within job
- Level of potential viability of proposed commodities to be transshipped through Guam .
- Open-ended request for other commodities that could be considered for transshipment through Guam
- Overall assessment of the likelihood for expansion of Guam's transshipment industry.

The survey was open for a total of three weeks, during which time the Team received 14 survey responses. The following figures present the results of the survey; the key findings include:

- More than half of the respondents were employed in the government sector, with other sectors equally represented with a single response.
- One half of respondents indicated that the topic of transshipment was either the main focus of their • work or came up frequently in their work.
- The distribution of roles within the respondents' organizations was varied, with five program . managers, including three Chief Executive Officers, Executive Directors and other C-Suite executives. Other roles included:
 - Chief Planner

Land Administrator

- Professor External Consultant
- Chief Planner
 Director
 Industry Development Specialist
- 11 respondents believed that the likelihood of transshipment on Guam was either very likely or somewhat likely.



Figure 6. Sector of respondents' current professions



Figure 7. Transshipment's importance to respondents' work



Figure 8. Respondents' place in current employer's workforce hierarchy



Figure 9. Respondents' opinion on likelihood of expansion of Guam's transshipment industry

The results of the participants' assessment of the potential of various industries for transshipment through Guam are presented below. The selection of these industries was based on study team research and interviews as well as the trade data research described in the previous section. The industry identified as having the highest potential was aquaculture products (10 responses), followed by pharmaceutical products, additive manufacturing of spare parts, and specialty textiles (each with eight responses). The

industries identified as having the lowest potential were prepared food items and aerospace components, with three responses each. Low-value and high-value textiles were identified as being unlikely to have potential, with seven and five responses, respectively.

Industry	Has potential	Might have potential	Unlikely to have potential	l don't know
Aquaculture products	10	4	0	0
Office furniture	5	7	1	1
Small, high-value electronics	7	5	2	0
Clean energy industry	7	5	0	2
Pharmaceutical products	8	4	1	1
Additive manufacturing of spare parts	8	4	0	2
High-value textiles	4	3	5	2
Low-value textiles	4	3	7	0
Specialty textiles	8	6	0	0
Prepared food items	3	7	4	0
Digital electronic devices	6	4	4	0
Aerospace components	3	6	3	2
Plastic and rubber products	4	5	3	2
Consolidation of small packaged goods	7	5	2	0

Commodity-specific trade data

The objective of the trade data research task was to determine broadly the types of commodities imported to the U.S. by container – via maritime or air freight – have demonstrated a cost sensitivity to factors such as tariffs or pandemic-related supply chain disruption. In this case, the Team sought to identify commodities that potentially have shifted production to different countries of origin, instead of originating in China, during the period from 2017 to 2022. Specifically, the Team focused on commodities that now are originating in the member states of the Association of Southeast Asian Nations (ASEAN)⁹ or originating in Latin America. The Team presumed that these shifts are influenced greatly by U.S. tariffs on China, or by the COVID-19-related disruption of supply chains and the subsequent focus on supply chain resiliency and redundancy. These commodities should be examined further, to determine whether

⁹ "Commodity-specific trade data" Section (ASEAN)1: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam

parallels exist for these or similar commodities that could be feasible for transshipment through Guam, as part of a value-added operation, and where future development efforts should be focused.

Upon analyzing data from the United States Census Bureau, the Team found that China's share of maritime containerized imports to the U.S. increased from 35.1% in 2015 to 37.0% in 2018, and then fell to 29.0% in 2023. The peak to trough in this period was an 8.0 percentage point decrease between 2018 and 2023. By contrast, the share of containerized imports from ASEAN increased by 5.1 percentage points between 2018 and 2023, while Central America's share increased by 0.7 percentage points between 2018 and 2022, before a decrease in 2023. Land imports from Mexico to the U.S. also have surged, and Mexico became the top trade partner with the U.S. in 2023, accounting for 15.4% of all imported goods to the U.S., while China was second with a 13.9% share.¹⁰

The Team further explored this shift in manufacturing to better understand the types of freight that was shifting away from China to other locations, with the goal of identifying the broad commodity types that might be suitable for development on Guam for subsequent export to the U.S. mainland. While manufacturing and transportation costs on Guam might not be able to compete directly with those of countries in Southeast Asia or Latin America, the broad commodity groups provide guidance on where Guam-based development efforts should be focused.

¹⁰ *Source*: "Commodity-specific trade data," Section (13.9% share.): U.S. Census Bureau, Top Trading Partners. Retrieved February 12, 2024, from https://www.census.gov/foreign-trade/statistics/highlights/topyr.html



Share of Maritime Containerized Imports to U.S. by Country/Region, 2015-2023

Figure 10. U.S. Census trade data infer a shift in manufacturing from China to other countries around the same time of tariff increases.

The data source for the analysis was the United States Census Bureau. Imports to the U.S. were studied for the full 2017 and 2022 calendar years, using the Harmonized System Code. In each case, commodities were studied at the six-digit level. For maritime cargo, the selection of commodities was based on those that had at least a 10,000-ton reduction from China and a 10,000-ton increase from either Latin America or ASEAN. For air cargo, the selection of commodities was based on those that had at least a 500-ton increase from either Latin America or ASEAN. The Team selected these parameters to produce a manageable number of top commodities for purposes of analysis. Future investigations may consider broadening the search to produce a wider selection for analysis.

A total of 228 commodities imported from China by container had a decrease of at least 10,000 tons between 2017 and 2022. A total of 152 commodities imported from China by air had a decrease of at least 500 tons between 2017 and 2022. When compared to the increases seen from ASEAN and Latin America, the results show 23 commodities transported by air and 88 commodities transported by water. The 2022 value-per-ton also was calculated to help with the evaluation. Many of these commodities were grouped into broader categories for ease of understanding, as shown below.

Commodity Categories by Freight Type

Air Freight

Textile and Fabric Products, Clothing and Footwear

Codes: 420292, 610230, 620442

Includes bags and women's/girls' coats and dresses.

High tech digital items

Codes: 847150, 847160, 847170, 847180, 853400, 853669, 853710, 847149, 854370

Includes a range of digital processing and storage devices, printed circuits, and electronic machines and apparatus.

Electronic Components Group

Codes: 841191, 844399, 854231

Includes turbojet and turbopropeller parts; printer, copier and fax machine parts, and electronic integrated circuits for processors and controllers.

Power Supply and Communication Technology Group

Codes: 850440, 854470, 851762, 852351, 852352, 852550, 852721

Includes static converters, power supplies for ADP systems, insulated optical fiber cables, and communication technology devices such as machinery for voice, image, and data processing.

Sea Freight

Frozen Seafood Products

Codes: 030617, 030743

Includes frozen shrimps, prawns, squid, tunas, skipjack tuna and bonito.

Preserved and Prepared Food Products

Codes: 160414, 160521, 200820

Covers preserved and prepared seafood (shrimp, prawns, and tuna) and pineapples.

Edible Plant-Based Products

Codes: 110620, 200899, 230400

Includes flour and meal of sago, roots/tubers, prepared or preserved fruits, and soybean oilcake.

Construction Materials

Codes: 252329, 441113, 441114, 441239

Includes Portland cement, medium-density fiberboard, plywood, and builders' joinery of wood.

Plastic and Rubber Products

*Code*s: 392321, 392530, 392620, 401110, 401120

Commodity Categories by Freight Type

Comprises sacks and bags of polymers, shutters, blinds, apparel articles, and clothing accessories made of plastics, and rubber tires for motor cars, buses, or trucks.

Paper Products

Codes: 481092, 481830, 482010, 482030

Includes paper and paperboard products, such as registers, account books, tablecloths, table napkins, binders, and folders.

Textile and Fabric Products, Clothing, and Footwear

Codes: 540220, 540233, 550320, 550410, 611020, 640391, 611120, 640399, 640411, 620462, 621010

Includes synthetic filament yarn, synthetic staple fiber, and various garments made of cotton and polyester, and various types of footwear, including those with rubber soles, leather uppers, and sports shoes.

Metal and Wooden Furniture

Codes: 940161, 940169, 940320, 940340, 940350, 940360, 940421, 940429, 940490

Includes a variety of furniture, including metal and wooden pieces, such as upholstered and nonupholstered seats, metal furniture, kitchen and bedroom furniture, and diverse wooden furniture items.

Focus group planning

The Matsuda Team considered survey results, interview results and its own observations on trade data to create a set of topics for further focus group testing. The commodities listed as having potential also were aligned with a series of potential industries submitted by the Guam Chamber of Commerce to the Governor's Economic Diversification Working Group, in late 2020.¹¹ This included pharmaceutical manufacturing, ship repair, a "Silicon Village Initiative," a satellite launch industry. ; and expansion of the existing aquaculture and agriculture sectors.¹²

For the containerized-water-based and air-freight cargo, few commodities stood out as potentially available for added value or final assembly. The Team focused on groupings that appear to hold potential for transshipment on Guam and used them as a basis for focus group testing with stakeholders. Several commodity groupings were ruled out easily, as having a low probability of success. The commodity groups listed below were of particular note.

¹¹ *Source*: https://growthzonesitesprod.azureedge.net/wp-content/uploads/sites/1456/2020/12/FINAL-Think-Tank-Paper.pdf

¹² *Source:* "Focus Group Planning" section (existing aquaculture and agriculture sectors.): Guam Daily Post (December 30, 2020) Governor establishes Economic Diversification Working Group, https://www.postguam.com/news/local/governor-establishes-economic-diversification-working-group/article_4bcacd92-49b2-11eb-bebe-5f34b50282ea.html

• The garment industry thrived in CNMI, when it benefited from quota- and duty-free access to U.S. markets for shipments of goods in which 50% of the value was added locally. A 2006 GAO report indicated that tourism and the garment industry accounted for 96% of the exports from CNMI and relied on a non-citizen workforce, with the report noting that the "2000 U.S. Census shows that noncitizens, predominantly Chinese and Filipinos, [made] up over half of CNMI's population."¹³

Changes to World Trade Organization quota rules in 2005 resulted in a sharp drop in apparel manufacturing in CNMI. The island lost its competitive advantage and "more than 3,800 garment jobs were lost between April 2004 and the end of July 2006, with 10 out of 27 garment factories closing."¹⁴ The last three garment factories ceased operations in 2009.¹⁵ The textile industry appears to remain highly sensitive to labor cost. Given the relatively higher cost of labor on Guam and the surrounding islands, combined with the market separation that has resulted in higher transportation costs versus direct U.S. imports from SE Asia and the Near East, we believe that these factors weigh against Guam seeing elevated levels of transshipment of textiles.

- Data collected on several agricultural and seafood products suggest that Guam-based equivalents, and the sector itself, are worthy of further exploration as a potential transshipment commodity. The 2022 Guam Aquaculture Feasibility Study¹⁶ outlined the various factors that affect the development of aquaculture on Guam, such as high costs, market demand, seedstock supply, environmental sustainability and government support. The Study further suggested that the industry might benefit from concentrating on supplying live or fresh seafood to the local market, niche export markets with competitive advantage, high-priced export products and seed for reef fisheries enhancement.¹⁷ Several of these recommendations incorporate transshipment opportunities.
- For electronics and high-tech items, the 2023 Guam Additive Manufacturing Feasibility Study indicated that no dedicated metal and feedstock-specialist suppliers could be located on Guam, but that sourcing of raw materials from Japan, South Korea and other East Asian countries would be possible.¹⁸

¹³ Source: "Focus Group Planning" section (up over half of CNMI's population.): United States Government Accountability Office (2006) U.S. Insular Areas: Economic, Fiscal, and Financial Accountability Challenges, Page 15

¹⁴ Ibid, Page 16-17

¹⁵ *Source:* https://www.rnz.co.nz/international/pacific-news/181253/last-three-remaining-garment-manufacturers-in-cnmi-to-close

¹⁶ Source: "Focus Group Planning" section (The 2002 Guam Aquaculture feasibility Study): Wyban, Jim (2022) Guam Aquaculture Feasibility Study, Prepared for Guam Economic Development Authority

¹⁷ Source: "Focus Group Planning" section (seed for reef fisheries enhancement.): Wyban, Jim (2022), Guam_Aquaculture Feasibility Study, Prepared for Guam Economic Development Authority

¹⁸ *Source*: "Focus Group Planning" section (other East Asian countries would be possible.): ASTRO America (2023) Guam Additive Manufacturing Feasibility Study Prepared for Guam Economic Development Authority, Page 63-64

• Several commodity groups can be eliminated from consideration as they focus on the transportation of raw materials or items that are either minimally processed or are low-value items not suited for manufacture on Guam (including construction materials, paper products and plastic and rubber products).

Focus groups

The Team conducted five in-person focus groups during April 2024, in a small group format, to develop further insights on data generated through the initial interviews, surveys and commodity analysis. The Team worked with GEDA to identify workshop participants selected from organizations impacted by, or involved in, transshipment, both directly and indirectly.

By conducting small-group discussions in a focus group setting, the Team was able to develop additional and more nuanced understandings of the themes uncovered through the individual interviews on the role that transshipment can play in developing the Guam economy. The Team identified broadly supportable themes from each interview and grouped them by occurrence. Working with GEDA, the Team invited a range of interested parties to attend each session – at times multiple staff from the same organization. In addition to working with GEDA, the Team utilized a "snowball technique" to identify additional parties, initially unknown to the organizers. This allowed the Team to obtain an even wider range of potential perspectives. The Team collected data through notetaking, utilizing three notetakers in each session.

After the workshops concluded, the Team examined the qualitative data collected and identified recurring themes, patterns and opinions expressed by participants within the discussions. The Team scrutinized transcripts and notes to uncover underlying trends, attitudes and perspectives relevant to the research objectives. Through systematic categorization, the Team developed insights into the depth and breadth of participant responses, providing the Team with valuable qualitative data to inform their understanding of the research topic.

B. Stakeholders

Through the course of the research, the Team collected information from the following individuals, representing the organizations listed below.

Report on Transshipment Feasibility and Economic Diversification

Stakeholder Organizations			
Government of Guam – Executive Branch			
The Honorable Lourdes "Lou" Aflague Leon Guerr	ero, Governor of Guam		
Guam Le	egislature		
• Vice Speaker Tina Muna Barnes, Office of the V	Vice Speaker		
• Chirag Bhojwani, Office of the Vice Speaker			
Senator Amanda Shelton			
Senator Jesse Lujan			
Agencies of the Go	overnment of Guam		
Guam Economic Development Authority	Guam International Airport Authority		
Mel Mendiola	Fred Tupaz		
Ed Camacho	Juan Reyes		
Matthew Baza			
Marie Reyes			
Bureau of Statistics and Plans	Department of Land Management		
Lola Leon Guerrero	• Joseph Borja		
Esther Camacho	Celine Cruz		
Monica Guerrero			
Department of Agriculture	Guam Customs and Quarantine Agency		
Chelsa Muna-Brecht	Ike Peredo		
Roy Gamboa	Johnric Mendiola		
Frank Camacho Roberto	• Pete Ofeciar		
Brent Tibbatts	Adrian Mora		
Federal .	Agencies		
National Oceanic and Atmospheric Administration	U.S. Maritime Administration		
Tori Spence	Jeffrey Flumignan		
	Gus Hein		

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	Stakeholder Organizations			
	Workforce Development and Education Entities			
	Government Educational Institutions		Private Educational Institutions	
•	Dr. James Ji Jr., DBA, University of Guam	•]	Monte McDowell, Guam Trades Academy /	
•	Dr. Mary Okada, Guam Community College	1	AMI Guam	
	Private Sector Organizations			
	Various	Entit	ies	
•	Luke Rector, Amazon	• (Carlo Leon Guerrero, M80 Solutions	
•	Jack Scogin, American President Lines	• (Ginger Cruz, MANTID International	
•	Charles Emsley, American President Lines	•]	Ed Cruz, Marianas Express Lines	
•	Charlie Hermosa, Bella Wings / Korean Chamber of Commerce Representative	•	Jessica Leon Guerrero, Guam Women's Chamber of Commerce Designee	
•	Joseph L. Cruz, Cabras Marine Corporation	•]	Patrick Bulaon, Matson Navigation Company	
•	Will Calori, Cabras Marine Corporation	•]	Krystle E. Merfalen, PACAIR Properties,	
•	Wayne Bigler, Cabras Marine Corporation]	LLC	
•	Albert Wu, Chinese Chamber of Commerce of	•]	Ron Pangelinan, Platinum Properties Guam	
	Guam		Liz Duenas, REMAX Guam	
•	Catherine Castro, Guam Chamber of	•	George Chiu, Tan Holdings, Inc.	
	Commerce	•]	Derrick Wang, Tan Holdings, Inc.	
•	Camilo Lorenzo, Guam Contractors	•	Joel Quitugua, Triple B Forwarders	
		• Yvonne Speight, Triple B Forwarders		
•	Bernie Giles, Guam Energy Office	•]	Lynn Baker, JL Baker & Sons Freightways	
•	Hyunhi Chong, Independent Farmer			
•	Bobby Sachdev, Landmark Realty Group & Services			

C. Economic development and investment opportunities

The Team offers the following observations, and recommendations, where applicable, that resulted from the research and analyses performed. These observations are focused primarily on industries that were analyzed most closely for transshipment feasibility.

Aquaculture

While the market for export of aquaculture from Guam is easy to understand, given Guam's historical success with transshipment of fresh fish from the Seaport to the Airport, and air freighted to Asian markets, the future transshipment potential for aquaculture may look different. For example, farming of aquaculture, whether shellfish or finned fish, may require equipment and consumable supplies, such as feed, that require import to Guam and transshipment to other Micronesian islands.

The aquaculture sector on Guam is evolving, and presently includes raising aquatic organisms for consumption, export and restocking, while preserving the species and the ecosystem. The current focus on aquaculture activities on Guam appears to be on supplying the local population, with community-focused "fish gardening" and other locally oriented approaches. However, workshop participants agreed that the importance of food security and the potential for an export market meant that the expansion of aquaculture could be beneficial, if supported.

Guam has a potential to export high-value and disease-free products, such as shrimp and grouper, to Asia and the Middle East, as well as value-added products, such as fish sauce and crab paste. However, Guam faces challenges, including competition with less expensive Asian producers, high shipping costs, lack of reliable cargo services, regulatory barriers, natural disasters, and limited workforce and infrastructure.

Workshop participants identified a lack of aquafarming expertise on Guam and suggested that there may be opportunities for Guam to collaborate with other Micronesian islands and Asian countries to share resources, expertise and markets for aquaculture. Additional suggestions focused on sustainability of the workforce. Ideas included:

- Guam taking action to acquaint younger generations with the aquaculture industry
- Educating farmers on the scientific and technical aspects of aquaculture, and showing them the market opportunities and requirements.

Much of the discussion at the workshop echoed elements of the recent "Guam Aquaculture Study." The workshop and the Aquaculture Study detailed several opportunities where aquaculture could support transshipment activities and vice versa, as described below.

 Guam raises Specific Pathogen Free (SPF) shrimp broodstock that are in high demand throughout Southeast Asia, where shrimp often is reported to have tested positive for certain pathogens.¹⁹ The Aquaculture Study estimated that the market value for SPF shrimp broodstock was \$82 million in 2019, with major markets in China, India, Vietnam, Indonesia and Thailand – noting that SPF

¹⁹ Source: "Aquaculture" section (test positive for certain pathogens.): [1] Wyban, Jim (2022) Guam Aquaculture Feasibility Study, Page 12, Prepared for Guam Economic Development Authority

broodstock "is one of the highest revenue generators within the shrimp industry."²⁰ Although these markets currently do not have direct air connections to Guam, the Philippines and South Korea are noted as secondary markets.

- Other disease-free stocks also are suitable for export, including "groupers, various invertebrates, and algae."²¹
- High value products like Lapu (Coral Trout) and sea cucumbers present an opportunity for exports to Japan and South Korea.
- Expanding existing hatcheries that currently support local markets not only would help Guam to become more self-sufficient, but also would allow Guam to become a regional supplier.
- The export of ornamental reef fish to collectors would be low-volume, but high-value. Some species unique to Guam are prized by aquarists and collectors worldwide, with the U.S. Mainland being one of the largest markets. While there are restrictions on use of SCUBA diving gear to harvest reef fish for commercial purposes, the Team learned there may be opportunity to seek exceptions to these rules, when harvesting limited amounts to seed stocks for commercial development.
- Secondary business opportunities related to aquaculture exist, including value-added processing and food manufacturing activities, manufacturing of necessary supplies, and scientific research and advancement activities.

Other factors related to the development of an aquaculture transshipment industry in Guam include:

- More rapid evolution in consumer preferences related to aquaculture: due to widespread education campaigns and development of standards, the perception of aquaculture is changing. More local and sustainably harvested products are featured in restaurants and hatcheries. Some restaurants list seafood countries or regions of origin on their menus, with some even listing the names of the vessel and captain.
- Guam's air freight logistics capabilities and Guam Customs and Quarantine Agency processing are viewed, in general, as positive, and flexible enough to serve Asian and U.S. mainland markets. Previous tuna fish transshipment markets on Guam were remembered as well-supported by both air cargo service providers and the Guam Customs and Quarantine Agency, to create a fairly seamless logistics enterprise serving Asian markets. Equipment selection was cited as a key factor, as widebody jets provided a higher capacity for air freight containers than smaller aircraft. Given the limited shelf life of fresh fish, speed to market was critical and will continue to be.

²⁰ Source: "Aquaculture" section (highest revenue generators within the shrimp industry.): Ibid, Page 15

²¹ Source: "Aquaculture" section ("groupers, various invertebrates, and algae."): Ibid, Page 31

• Processing seafood on Guam by, for example, canning or freezing, could create potential to export products via refrigerated ocean container, instead of solely air freight. This lower cost method could be available, if processing leads to a product with a longer shelf life.

Recommendations

Efforts are already underway to strengthen aquaculture on Guam. The Transshipment Taskforce could consider assisting this process with a focus on increasing regional food security and fish exports. Courses of action that should be explored are listed below.

Suggested short-to-medium-term activities

- Support and enhance existing workforce development efforts, including grade-school level outreach.
- Explore and identify manufacturing opportunities to process raw sea food into finished products.
- Explore opportunities to supply inputs required for aquaculture industry based on Guam and other regional islands (feed stocks, hardware).
- Work to establish a program that can take advantage of the "clean" seafood, so that Guam is not competing on price with the Philippines and other SE Asia locations.
- Seek assistance from external partners to create incentives and develop feedback on existing regulations to support local farmers and investors.
- Leverage the aquaculture incubator to create a supportive culture that identifies and responds to the needs of the producers and farmers.
- Create a position to liaise between producers and farmers, and territorial, federal and external markets, to support the growth and development of transshipment in aquaculture.
- Work closely with the Aquaculture Taskforce to determine areas of overlap that exist and to better support implementation of the recommendations in the Aquaculture Feasibility Study.

Suggested long-term activities or those requiring that other steps be completed first

 Guam's energy infrastructure must be sufficiently resilient to support aquaculture farming, which depends on a reliable power supply for pumps, etc. Long outages can destroy an entire crop, creating significant risk for farmers, particularly in the event of a typhoon or other severe weather event.

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Suggested long-term activities or those requiring that other steps be completed first (continued)

- Leverage Guam's duty-free port status and incentivize investments through reduced government fees.
- Once an aquaculture export program has been established, assess the need for an agricultural inspection station and/or cold storage facilities to support transshipment activities.

Overall, these actions can be implemented relatively quickly, as they build on existing foundations, investments and partnerships. Implementation will require coordination among various stakeholders, appointed leadership and management, along with constant monitoring. Opportunities to establish or strengthen a public-private partnership would ensure access to natural resources and infrastructures, and explicit investments or funding, along with an increase in education and awareness that will further develop the aquaculture industry in Guam.

Small electronics and other high value industries

Guam's geographic location presents both an advantage and disadvantage, with regard to transshipment. On the one hand, Guam is within a reasonable proximity to sources of raw or semi-finished materials in Asia. On the other hand, Guam is a considerable distance from U.S. mainland markets. With current routing services, shipping from Asia to the U.S. mainland is faster and less expensive than from Guam, due to the ultra-large container vessels (ULCVs) in use on such routes, and the rotations of the container services that currently call at Guam.

However, the economics for shipping smaller, higher-value goods change when air freight cargo is an option. The Team held one workshop that was focused on small electronics and other high-tech items, as these are high-value, low-weight commodities that are better suited to air freight.

Transshipment of these items through Guam may be envisioned through a light manufacturing facility that receives components and materials from Asia, via the Port, and exports finished products via air freight. This market concept is consistent with the analysis results from trade data that revealed several types of goods fitting this description. Further, the appeal of a "Made in America" designation, making the product more competitive in certain markets – such as federal procurement – adds another market advantage. Transshipment for this type of product also is supported by data gleaned from stakeholder interviews.

Potential industries include those related to green energy, drones and pharmaceuticals. The potential for Guam to operate within this sector is tied strongly to the various programs designed to encourage economic growth on the island, as described in Section IV(B), "Local tax policy and incentives."

Workshop participants pointed out that the option of Guam Customs and Quarantine Agency's preclearance and "fast lane" treatment for small electronics in Guam could provide an extra benefit by reducing time and cost for the shippers. This could create a new industry on the island.

Aside from market-specific factors, discussion about the feasibility of implementing high tech, lightmanufacturing efforts identified two major challenges – specifically, workforce suitability and real estate availability. In particular, the recurring theme on the need for workforce development and training to support transshipment efforts was perceived to be of critical importance in relation to the small electronics industry and other high-tech industries. The participants mentioned the role of workforce development/training partners such as Guam Community College (GCC), the possibility of using foreign labor – particularly for facility startup periods and technology transfer, and the examples of successful workforce development strategies involving Guam's telecom and maritime sectors.

The Team was made aware that at least one pharmaceutical manufacturer recently considered siting a manufacturing facility on Guam. Conceivably, from a logistics standpoint, pharmaceuticals would be transshipped like other small, high-value goods. Raw materials would be imported through the Port and finished products exported from Guam by air cargo and/or ocean freight. While the opportunity to develop pharmaceutical industry manufacturing on Guam was not a common theme that emerged from the Team's research, it is clear that several major factors would impact this opportunity. These include availability of real estate to site specialized manufacturing facilities, workforce readiness, availability of inspectors from various regulatory agencies for the markets in countries where the manufacturer wishes to sell the products (*i.e.*, U.S. Food and Drug Administration), reliability of facility power source and potentially other issues. Guam likely cannot accommodate the largest-sized pharmaceutical manufacturing facilities; however, Guam is likely to be a good fit for smaller to mid-sized facilities.

Recommendations

The tariffs that have been placed on a wide range of imports from China, combined with the shift to establish more resilient supply chains, provide an opportunity for Guam. The nation would be able to import raw materials or components from Asia, and manufacture, assemble and add-value for cargo that, then, can be air-shipped to the U.S. mainland.

Recommended courses of action are listed below.

Suggested short-to-medium-term activities

- Establish a task force to match commodity opportunities with Guam's capabilities.
- Support and enhance existing workforce development efforts via K-12 programming and other efforts to strengthen the labor pool on "Day One" for a potential employer.
- Assess specific infrastructure needs for high-value commodities, including pharmaceuticals, and ensure that existing infrastructure can support future development efforts (including consistent power and roadway access).
- Determine whether it would be beneficial to establish Foreign Trade Zones near the Seaport and/or Airport to remove taxation on imported raw materials, and instead, have taxes apply to finished commodities.

Suggested long-term activities or those requiring that other steps be completed first

- Conduct further exploration into the manufacturing and development of drone technology. Multiple applications exist that are well suited to the geography of Micronesia and include mapping, cleaning, climate monitoring, and search and rescue.
- Conduct further research into the pharmaceutical industry. The "Made on Guam U.S.A. label" may be attractive for U.S. ex-pat markets in Asian cities. Previous inquiries demonstrate that there is interest in establishing manufacturing facilities on Guam. The high-value, low-weight nature of the produced commodities is well suited to air freight transport to the U.S. mainland. In addition, determining optimal footprint profiles for pharmaceutical facilities that Guam can accommodate would help narrow market efforts to manufacturers that are interested in siting small to mid-sized facilities.

The actions can be initiated in the short term, but will require further investment and infrastructure development, as companies scale up. Drone manufacturing could start with small scale assembly of specific drone models that cater to military support or have other missions in the Micronesia region. Support of a vibrant, regional drone market could give rise to additional transshipment opportunities, such as creating spare parts via 3D printing. Further, a transshipment opportunity might be created from supporting manufacturing of drones from raw materials, once the regional market, workforce skillsets and technology have been proven. Long-term strategies require planning and coordination to overcome barriers to ensure sustainable growth in the manufacturing of drones. In addition, it is necessary to ensure that Customs and trade agreements are met.

Federally incentivized commodities

The third workshop focused on the opportunities and challenges of transshipment of federally incentivized cargoes. Discussion targeted such industries as federal defense contracting and clean energy – industries that have strong incentives and requirements for American-made products. For example, the Pentagon's recent focus on the importance of the Pacific region has led to decisions to expand the military presence on Guam and other islands throughout the region.

The U.S. military construction and relocation efforts on Guam already have made a significant impact on Guam's economy and infrastructure. In addition, while the build-out effort is underway, it is possible that further expansion plans related to missile defense will be announced in the future.

The level of Defense Department (DOD) spending (approximately \$3.4 billion on military construction on Guam from FY 2015 through FY2023 and \$7.3 billion requested for FY2024 through FY2028)²² on footprint growth in the Pacific Region has meant opportunities for Guam businesses to serve the Department, due to "Buy American" laws and regulations. These laws mandate a preference for U.S. manufactured items, among other purchases, when federal agencies conduct direct procurements.

The military build-up provides an elevated level of federal spending during the construction phase for these DOD sites. During the build-up, transshipment opportunities might look like one Guam company's approach to supplying office furniture to these DOD facilities. While finished furniture pieces are imported from the U.S. mainland, they are "kitted" in Guam to develop kits of furniture that can be custom-ordered and transported efficiently to other destinations in the Pacific Region. As of March 2024, workshop participants speculated that the elevated pace of activity during the build-up could last until 2030 or beyond.

Once the build-up phase is completed, a more regular, sustainment phase of military operations may present different opportunities for transshipment. At a steadier state, the larger population on Guam, and throughout the region, will require a higher level of cargo. A general rule of thumb provides that, in the U.S., more than 50 tons of freight are shipped each year, per person.²³ For Guam, where fewer local resources exist, this figure may be higher.

The Team consistently heard from interview and focus group participants that one current challenge appears to be the lack of information on DOD sustainment needs. One DOD representative with whom the Team communicated explained that DOD is in the process of conducting several studies of the impacts

²² Source: "Federally Incentivized Commodities" (FY2024 through FY2028): Guam: Defense Infrastructure and Readiness (August 3, 2023), U.S. Congressional Research Service, Page 7

²³ Source: "Federally incentivized Commodities" (more than 50 tons of freight are shipped each year per person) – https://www.epa.gov/smartway/why-freight-matters-supply-chain-sustainability

of these large military development projects, including economic and environmental impacts. This official cited the Department's need to maintain consistency of messaging by limiting what can be communicated, with regard to impacts of the build-up, outside of the study process required by the National Environmental Policy Act (NEPA). The conclusion of this process could take a year or more.

Clean energy products are another federally incentivized cargo, as the past three years have led to significant federal incentives for companies to develop onshore manufacturing capabilities. The *Infrastructure Investment and Jobs Act of 2021* and the *Inflation Reduction Act of 2022* combined for the largest ever climate- and energy-related investment in U.S. history. These investments are geared toward developing clean energy technology industries in the U.S., including domestic supply chains. Since many of the leaders in clean energy industries are non-U.S.-based companies, the laws created significant incentives to attract investment in the U.S. Tax and grant incentives in these laws to assist with onshoring of green technology manufacturing consist of manufacturers of electric vehicle batteries, offshore wind components, and solar cells and other photovoltaic system components.

Focus group participants identified several factors that make Guam a difficult and costly market for transshipment and manufacturing. These factors include land availability, power and fuel prices, workforce limitations, federal regulations and cybersecurity requirements.

Recommendations

Suggested short-to-medium-term activities

- Establish direct dialogue to the extent possible and practicable between the Government of Guam and industry, with DOD logisticians and leaders of relevant commands, to better understand what is needed on a sustainment basis for all of DOD's Eastern Pacific facilities, and the potential role for Guam to help meet DOD's goals through serving as a transshipment hub.
- Several federal programs exist that provide funding or incentives for establishing clean energy and high-tech manufacturing. While many may not be suitable for Guam, considering industrial space considerations (*e.g.*, chip foundries), the GTTF should explore which, if any, might be suitable for Guam.
- Consult with current workforce and education partners to develop programs that support skills development for occupations in industries that support transshipment of defense and clean energy markets.
- Explore ways in which Guam can act as a release-valve in the global supply chain.
- Evaluate Guam's unique value to the green energy economy, including as a distribution hub for clean energy equipment in Micronesia, which can reduce equipment downtime by maintaining a ready reserve of spare components.

D. Foreign Trade Zone Mechanics and Benefits

The U.S. Department of Commerce International Trade Administration defines Foreign-Trade Zones (FTZs) as "secure areas under supervision of U.S. Customs and Border Protection (CBP) that are considered outside the Customs territory of the United States for the purposes of duty payment. Located in or near Customs ports of entry, they are the U.S. version of what are known internationally as free trade zones."²⁴

The FTZ program aims to boost the U.S. economy and competitiveness by allowing certain benefits for products made within the Zones, such as lower duties and taxes. FTZs allow non-U.S. and domestic merchandise to be stored, processed or manufactured without paying duties or taxes until they enter the U.S. market or are exported. Also of note is that no duty is paid on non-U.S. components that become scrap or waste, and that streamlined Customs procedures may result in improved logistical efficiency.

Sponsored by qualified public or private entities, FTZs are subject to public interest review and U.S. laws and regulations. A single Zone may contain multiple Zone operators. The sites and facilities within the Zones fall under the jurisdiction of local, state, or federal governments or agencies.

Merchandise in Zones can have different statuses that affect their entry, classification and appraisement when transferred to the U.S. market or exported. These statuses include privileged foreign, zone restricted, nonprivileged foreign, or domestic status, depending on the date, source and condition of the merchandise.

Within an FTZ, it is permissible for merchandise to be "assembled, exhibited, cleaned, manipulated, manufactured, mixed, processed, relabeled, repackaged, repaired, salvaged, sampled, stored, tested, displayed and destroyed."²⁵ It is important to note that no retail trade of non-U.S. merchandise may be conducted in an FTZ. An FTZ is similar to a bonded warehouse, but in an FTZ, there is no time limit on goods. Domestic and non-U.S. goods can comingle, and a wide range of production activity may be authorized.²⁶

An FTZ would benefit value-added transshipment activities, as any imported materials used in the manufacturing of a final product would not be subject to taxation by the U.S. The final product also could be taxed differently, depending on whether it has a different tax category or qualifies as "Made in America."

²⁴ Source: "Foreign Trade Zone Mechanics and Benefits" (known internationally as free trade zones."): 84th Annual Report of the Foreign-Trade Zones Board to the Congress of the United States, Foreign-Trade Zones Board (2023)

²⁵ Source: "Foreign Trade Zone Mechanics and Benefits" ("tested, displayed & destroyed."): The U.S. Foreign-Trade Zones Program, https://www.trade.gov/sites/default/files/2020-08/FTZ_Info_for_CBP.pdf

²⁶ Source: Ibid., "Foreign Trade Zone Mechanics and Benefits" (activity may be authorized.)
The Team heard that expanding the Airport's apron, where cargo and passengers are loaded and unloaded, could result in increased operational efficiency and create additional opportunities for transshipment.

The Team explored the designation of Guam as a U.S. port. Ports receive designations from various federal agencies, including the U.S. Army Corps of Engineers, U.S. Coast Guard, and Customs and Border Protection. Designation as a U.S. port from Customs and Border Protection ostensibly would create a cargo port of entry in the U.S., where cargo would be screened and tariffs would be assessed. Overall, the issue was not raised as a critical concern on the path to transshipment expansion; however, the Team notes that it may be sensible for certain types of transshipment opportunities and land use plans, to incorporate an FTZ, as siting may be effective only in limited locations close to the Port and the Airport.

Recommendations

Suggested short-to-medium-term activities

- Regularly gauge industry interest in establishing an FTZ. At this time, it appears industry interest is lacking, but this sentiment may change. Without strong industry interest, an FTZ will not be successful.
- Explore the feasibility of establishing a Foreign Trade Zone in a location easily accessible to the Seaport and/or Airport, to cater to potential businesses that import raw materials or semi-finished products and transform them into finished commodities. Incorporate potential sites into relevant land use planning documents to ensure that viable locations are not otherwise used for incompatible purposes.
- Work with the Port Users' Group, the Port Authority of Guam and the Guam International Airport Authority to explore feasibility and perform a needs assessment for establishing a corridor between the terminal and/or Airport and a potential bonded warehouse and FTZ.

III. Feasibility and Economic Diversification

A. Transshipment vs. assembly, distribution and export

As described in Section II, "Background Report" and in the full Background Report, provided in Appendix A, the definition of transshipment adopted by the GTTF is expansive. Two of the three components of the adopted definition lie outside of what is traditionally referred to as transshipment by the logistics industry. During the course of the study, the Team confirmed that the two additional components of the definition – including distribution centers and manufacturing and value-add activities – are activities that are less reliant on transportation and logistics factors when making siting decisions. Instead, distribution centers are more likely to consider proximity to customers, market size and overall cost. Manufacturers are more likely to take into account the full financial implication of a siting decision, including cost factors well beyond transportation and logistics. These include costs of labor; access to raw materials; real estate availability; and incentives, taxes and tariffs. Manufacturers also are more likely to consider non-cost factors, such as workforce availability and infrastructure resilience.

During the course of the research, the Team came upon concepts that achieved many of the same economic benefits of transshipment, but technically, did not meet the definition. For example, a manufacturer siting a facility on Guam simply to serve the Guam market technically would import, but not export. A more realistic scenario might exist for a manufacturer primarily serving the Guam market (or, for example, the DOD market in Guam), but also the Micronesia market. In this case, the transshipment opportunity may not be the primary driver of the siting decision, but rather, a byproduct of that decision.

While theoretically possible, a pure export market may be difficult to define. For example, while peppers grown on Guam may be used to manufacture denanche, the glass bottles used for packaging are likely to be imported from elsewhere, as is vinegar or any other processed ingredients. In addition, scrap metal, a common export from Guam, likely did not originate on Guam, in whatever form it previously had occupied.

Given the variation in these terms – transshipment, export, distribution and assembly – and the breadth of the factors and stakeholders involved, the Team focused its efforts on the factors influencing transshipment, understanding that many of these factors will be relevant to assembly, distribution and export operations.

B. Local tax policy and incentives

Stakeholders did not often raise taxation of transshipped goods as an issue during the course of the Team's research. This is largely due to the fact that tariffs are not assessed on goods that do not enter Guam. For

items that do enter and leave Guam, no tariff is assessed. When items are manufactured in Guam, raw materials are not assessed. However, finished goods could be subject to a gross receipts tax, if they are sold on Guam.

Several existing tax incentives can be leveraged to support new economic development in Guam. These include the Qualifying Certificate Program, Headnote 3(a), and the Guam State Trade Expansion Program (STEP). The Qualifying Certificate Program is a GEDA-administered tax incentive program that was created in 1965 to attract investment in activities that would improve Guam's economy and quality of life.²⁷ The tax benefits vary by business type, but can include an income tax rebate of up to 75%, for up to 20 years; a dividend tax rebate of up to 75%, for up to five years; and a 100% real property tax abatement for up to 10 years. A wide range and number of businesses are eligible for the program - many of which are relevant to this study, as shown below.

- Agriculture

- Agriculture
 Aquaculture
 Mariculture
 Manufacturing
 Distribution, Transformation of Existing and Conternation Fulfillment Center
- Green Technology
- Commercial Fishing
- Export Trading CompanyDrone Industry
- Processing Trade Company

General Headnote 3(a)(iv) of the U.S. Harmonized Tariff Schedule grants a beneficial trade status to Guam that allows for products that are made or put together on Guam to enter the U.S. Customs territory without paying duty, as long as they follow General Headnote 3(a)(iv) and relevant Customs rules.²⁸ To qualify for this duty status, the products made or assembled on Guam must have a limit on how much non-U.S. material they can use. When these products are brought into the U.S., the non-U.S. material cannot be valued at more than 70% of the final assessed, total value of the product.

Guam STEP is partly funded by the U.S. Small Business Administration, and aims to increase the number of small businesses with export operations as well as the value of exports from existing small businesses with export operations.²⁹ The program offers eligible businesses extensive export training, financial help for new or expanded export activities, and international market access. The Program components are listed below.

²⁷ Source: Additional information is provided here: https://www.investguam.com/gualifying-certificate-gc-program

²⁸ Source: Additional information is provided here: https://www.investguam.com/general-headnote-3a

²⁹ Source: Additional information is provided here: https://www.investguam.com/step

- The Export Readiness Program (ERP) offers training and counseling to eligible small businesses that want to start or increase their export market and sales. The Program consists of various export training workshops, webinars and individual business counseling.
- After completing the ERP, businesses can submit an export plan to the International Marketing Program (IMP), which provides up to \$5,000 in financial assistance to six businesses. These funds must be used, as follows:
 - To help increase or enhance e-commerce export-related activities
 - To create international marketing media, designed to reach target audiences, improve export sales capacity and increase market opportunities.
- The Trade Promotion Program (TPP) allows qualified businesses that have completed the ERP to compete for an opportunity to join GEDA-organized trade shows and missions.
- Export conferences by GEDA, structured to help local small businesses learn about and access export opportunities.

The Team received input on how critical these incentives are to supporting growth of transshipment on Guam. Taken individually, none of these incentives were viewed by stakeholders as critical factors in the siting of a transshipment facility on Guam. Instead, they are viewed as critical to making the economics of transshipment work. Some stakeholders pointed out that value-added manufacturing activities may be expanded further, if the non-U.S. content threshold is raised above seven (7), incentivizing more pure assembly activities in Guam.

Recommendation

Suggested short- and long-term activity

Continue to offer economic and tax incentives targeting specific new industries that might consider siting on Guam as a transshipment operation. Reassess frequently to determine whether these incentives are appropriately targeted and not interfering competitively with existing Guam businesses.

C. Workforce development initiatives

Competitiveness of Guam workforce

Guam's labor force can be competitive. I believe we have the talent. Our students are employable, promotable, and ready – they are critical thinkers."

> Dr. James Ji, DBA, Assistant Professor of Management University of Guam

The issue of Guam's workforce came up in every workshop and most engagements with stakeholders. Many participants highlighted the lack of local, skilled and trained workers necessary to support transshipment in Guam. Various theories were offered to explain why Guam's available workforce is limited, in terms of range of skills, training, certification and proficiency. Reasons posited include:

- Impacts of pandemic-era assistance programs that may serve as a disincentive for candidates to seek full-time employment
- Impacts of large employers recruiting from Guam to staff DOD build-up-related projects or off-island facilities
- Lack of candidates able and willing to pass a drug test
- Cultural and generational trends of preferring occupations that are not in industrial environments.

While the answer to this question may be beyond the scope of a transshipment feasibility study, the impacts of a small available workforce were largely agreed upon by stakeholders. These impacts include:

- High turnover, increasing training costs for employers
- Greater need to utilize foreign workers
- Greater pressure on wages, impacting competitiveness

Guam can bring in H-2 workers for companies that do not perform services through military contracts. The H-2 Visa Program allows U.S. employers to hire non-U.S. workers to fill temporary agricultural and

non-agricultural jobs, including positions in such industries as hospitality, construction, healthcare and manufacturing.

Guam, as a U.S. territory, can participate in the H-2 Visa Program to address labor shortages in various sectors of its economy, regardless of whether the company has military contracts. However, there are certain regulations and criteria that must be met by both the employer and the non-U.S. workers to qualify for the H-2 Visa Program. These include demonstrating that there are not enough U.S. workers available to fill the positions, offering fair wages and working conditions to H-2 workers, and obtaining approval from the U.S. Department of Labor and U.S. Citizenship and Immigration Services (USCIS).

Concerning transshipment, it is clear that a new employer to Guam will consider the availability and skill level of the workforce, as well as the potential pipeline of workers, in siting decisions. However, in no case did the Team hear of a situation where an employer declined to site on Guam solely due to workforce or wage issues. For most employers, unless seeking specific skills, there is opportunity to establish a new facility with foreign workers (likely current employees from other sites) to train the local workforce and develop a pipeline.

Among stakeholders, there was a high level of confidence on Guam's workforce development capability for skilled labor occupations and supervisory level positions. For example, workforce partners, such as Guam Community College, have developed "boot camp-style"- training programs to upskill labor forces quickly, in a multitude of sectors. The University of Guam has developed a track record for success in working with funding partners, such as the Economic Development Administration. The school is working to develop transshipment-relevant programs of study, including supply chain logistics certificated programs and relevant research work. Overall, the ingenuity and flexibility of Guam's workforce development community to address current and future workforce needs could be attractive to potential transshipment employers who are interested in evaluating Guam.

The Team heard several additional workforce-related suggestions, some of which the Team recommends to help address the needs of an expanded transshipment industry.

Recommendations

Suggested short-to-medium-term activities

 Build and provide sufficient resources for a recruitment strategy for Guam workers focused on industrial occupations, including transshipment-related ones. This campaign should include enhancing awareness of occupations in transshipment-related industries; designing outreach campaigns to appeal to younger demographics, starting at the 6th grade level, through targeted marketing and educational initiatives.

Suggested short-to-medium-term activities (continued)

- Continue collaborative efforts between industry stakeholders and educational institutions to tailor training programs to specific job roles, and develop training standards, with credentials, where appropriate. This includes expansion of the Guam Registered Apprenticeship Program (GRAP), which qualifies for many federal funding resources. Under GRAP, employers can receive a tax credit equal to up to 50% of training expenses, including apprentice wages and benefits, mentor wages, instructor costs, training materials and safety gear. Note that businesses may not take advantage of both GRAP and Qualifying Certificate programs simultaneously.
- Market the use of GCC-led boot camps to potential employers, in the short-term, and to the GCA Trade Academy, in the medium-term, as workforce partners in the transshipment sector
- Establish a working group to assess ongoing barriers to workforce participation, such as minimum wage concerns and turnover rates, and develop a long-term approach to address the issues. Include community leaders, educators or others who work directly with youth, as well as employers, as part of this working group
- Market Guam's worker pipeline development capabilities, including case study examples, as an asset to potential shippers who are seeking to site a facility on Guam.

Suggested long-term activities or those requiring that other steps be completed first

Develop a plan to initiate sustainable workforce strategies, including programs at the middle school level and younger, to foster an earlier exposure to careers and occupations in transshipment-related industries.

D. Other aspects, as determined by the GTTF

Real estate, zoning and environment

One theme that was repeated in almost every interview and workshop was the limits imposed by the availability and cost of real estate as well as the cost and time requirements of any associated development.

In addition to the lack of available, suitable properties, any transshipment opportunities face challenges from the zoning and permitting process itself, as well as potential infrastructure requirements. Guam's zoning laws designate land suitable for light manufacturing and warehousing activities as "M-1"/Light Industrial Zone. Permitted uses in M-1 land are listed below.³⁰

³⁰ Source: "Real Estate, Zoning and Environment" (Permitted uses in M-1 land include:): [1] 2022 Guidebook to Development Requirements on Guam, Page 17, Guam Coastal Management Program Bureau of Statistics and Plans

- Any use permitted with or without condition in the commercial zone
- Manufacturing, compounding, processing or treating of drugs, cosmetics and food products (not including fish and meat products, nor the rendering of fats and oils)
- Manufacturing, compounding, assembling or treating articles or merchandise from previously prepared materials
- Automobile repair shops, including painting, body and fender work, and rebuilding; truck and tractor repairing; and tire retreading
- Bottling and packaging plants
- Manufacturing of ceramic products
- Laundries, cleaning and dyeing establishments
- Machine shops and sheet metal shops
- Warehouses and cold storage plants
- Lumber yards, building material sales yard, contractor's equipment storage yards, and similar establishments
- Other uses that, in the judgment of the Commission, as evidenced by resolution in writing, are similar to those listed herein
- Uses customarily accessory to any of the above listed and accessory buildings.

Three conditional uses also may be permitted by the Guam Land Use Commission within M-1 zoned land:

- Other industrial uses that are not objectionable, obnoxious or offensive by reason of odor, dust, smoke, noise, gas fumes, cinders, vibration, flashing lights or water-carried waste
- Utilities and public facilities
- Accessory uses and buildings for the above

A process exists for land to be re-zoned, if the Guam Land Use Commission "finds that the action will serve public necessity, public convenience and general welfare."³¹ The estimated time for rezoning land is listed as 16-20 weeks, including a public hearing. However, workshop participants noted that if a property is not zoned for use, then it can add years to a project. Participants also detailed that extensive permitting requirements exist, including fire-code and environmental impact, and that permitting a warehouse can take three-four months.

³¹ Source: "Real Estate, Zoning and Environment" (and general welfare."): 2022 Guidebook to Development Requirements on Guam, Page 24, Guam Coastal Management Program Bureau of Statistics and Plans

The Team heard from multiple sources that the existing shortage of land zoned for warehousing and lightmanufacturing has become more severe, as the military buildup on Guam has increased the demand for temporary housing for construction workers. These temporary housing sites require the same M-1 zoning designation as warehousing and light manufacturing space.

Workshop participants noted that, at present, the demand for workforce housing far exceeds the demand for anything else. As such, land zoned as M-1 is being absorbed by housing projects. A recent infrastructure assessment by the U.S. Congressional Research Service also noted that there was a shortage of housing on Guam,³² and that the labor shortage was contributing to rising construction costs.³³ Temporary H-2B visas for construction workers who could help build new housing, cannot be issued unless there is housing available for them. This creates a sequencing issue that cannot be resolved easily.

The DOD-related construction also has driven up labor and resource costs across Guam. The result is that when space is available, the cost to develop it potentially becomes a limiting factor. Other barriers to the development of land include environmental and historical review processes, the long duration of the permitting process, expectations of off-island clients for turn-key ready premises, limited lease lengths and limited infrastructure. While some of these issues can be addressed (*e.g.*, incorporating backup generators within developments), other issues might require political intervention to effect change (*e.g.*, re-zoning of land or adjusting the five-year lease limit on government-owned land).

The Team heard consistent concerns about the five-year lease limitation on government-owned land and how it serves as an obstacle for further development. This is more applicable to transshippers, who are more likely to seek locations close to the Seaport and Airport. Much of the available space near these key freight centers is government-owned land.

While there is abundant unused land on the island, much of it is located far away from required infrastructure. Limited space already zoned for warehousing or light industry is available, including at sites near the Airport and marine Port. The two most promising opportunities are:

- The permitted, but not built, expansion of Pac-Air's Integrated Air Cargo Facility near theP, which features full backup generators
- The recently completed Pacific Industrial Park, located near Camp Blaz, which features 40 acres of M1-Zoned land, equipped with power, water, telephone lines and sewer connections at 51 lots (which can be combined, if desired).

³² Source: "Real Estate, Zoning and Environment" (shortage of housing on Guam): Guam: Defense Infrastructure and Readiness (August 3, 2023), Page 23 U.S. Congressional Research Service

³³ Source: "Real Estate, Zoning and Environment" (rising construction costs.): Ibid, Page 26



Figure 11. Location of existing Pac-Air Integrated Cargo Facility



Figure 12. Existing Pac-Air Integrated Cargo Facility

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Figure 13. Location of Pacific Industrial Park



Figure 14. Site map of Pacific Industrial Park

Recommendations

Many of the challenges faced by realtors, developers and investors stem from the complexity of regulations, policy and processes in Guam. Immediate action is needed to clarify regulations, defining "Conditional Use" of certain activities permitted in specific zones, address permitting delays, limited inventory, and the refurbishment requirements of warehouses. Transparency and a sound planning process between private and public sectors would help facilitate infrastructure development and zoning updates. In addition, it is important for collaboration to occur among stakeholders, to identify and prioritize workforce housing needs, especially for supporting workforce influx related to military realignment. Valuable space and inventory quickly become consumed without the foresight and support for the growth of a transshipment economy in Guam. Specifically, several urban planning issues and land-use development needs should be addressed.

Suggested short-to-medium-term activities

- The five-year lease limit on government-owned land needs to be revisited to allow for a shorter and more transparent approval process for longer-term leases.
- Allow temporary workers housing to be constructed on residential-zoned land.
- The use of M1-Zoned lots (light manufacturing) for housing temporary workers is exacerbating the limited land available for transshipment-related industries. Consider the following changes to alleviate the development pressure, as they are within Guam's control and would not need federal government action, which inevitably would delay the process:
 - Streamline the permitting process to allow for concurrent processing.
 - Redefine or re-zone the land use categories to facilitate light manufacturing activities, including considering re-zoning land to M1 or dedicating M1 lots.
 - Review the assumptions supporting Public Law 31-72 and its ban on temporary worker housing on residential-zoned land; consider whether allowing construction in areas beyond land zoned for light manufacturing use, potentially to include residential-zoned land, would reduce price pressure on M1 land, effectively.
- Evaluate the infrastructure needs adjacent to the Airport to determine whether adequate roads exist for increased truck traffic.
- Build out the second phase of the Pac-Air Facility. The location of the facility makes it perfectly suited for transshipment operations.
- Work with the U.S. Delegate to keep the cargo needs a priority of the U.S.-based airlines that serve the Guam Airport.

Suggested long-term activities or those requiring that other steps be completed first

- Identify a region for long-term development that could serve as a transshipment industrial site, with convenient access to the Port, Airport or both, and are consistent with a designation of a Foreign Trade Zone, as described in Section III(D), "Foreign Trade Zone Mechanics and Benefits."
- Provide permitting flexibility to allow warehousing and clean manufacturing to occur on residentialzoned land, under certain circumstances that can be applied equally and equitably.
- Re-zone unutilized lots currently zoned as residential to M-1, light-industrial, where appropriate.
- As land is expanded or re-zoned to support light manufacturing, evaluate the parking needs of trucks and other freight-moving vehicles.
- Develop the Airport's apron to allow manufacturing to take advantage of having imported inputs go into a secure area, and then back onto a plane, that would provide a competitive advantage. However, the infrastructure development would be expensive. In light of this, exploration of grant opportunities would be beneficial.

Other regulatory matters

The Team explored several regulatory issues that arose during the course of the investigation. These issues are described below.

Customs standardization, digitalization and modernization

Guam Customs and Quarantine Agency has plans to modernize and improve efficiency. The country is working to adopt the World Customs Organization's Harmonized Commodity Description and Coding System³⁴ for classifying traded products. The agency is also working with the Oceania Customs Organization to explore opportunities to streamline processes through design of modern Customs processing systems. The agency also has interest in implementing automation/digitalization tools to further expedite processing.

By and large, while Guam Customs and Quarantine Agency regulations and operations were not viewed among stakeholders as an impediment to expansion of transshipment, opportunities for improvement exist.

³⁴ *Source*: "Infrastructure Needs" section (provided by renewable energy sources.): U.S. Energy Information Administration, https://www.eia.gov/state/print.php?sid=GQ

Jones Act

The Jones Act, the popular name of the Merchant Marine Act of 1920 (46 USC App. 883), generally requires that shipping between U.S. ports be conducted by vessels flagged under the U.S. registry and built in the U.S., with a U.S. owner and at least 75% U.S. citizen crewmembers. Voyages to and from Guam are exempt from the U.S.-built requirement for such vessels.

As detailed in the Background Report, provided in Appendix A, describing current maritime services to Guam, the Island is served by a mix of Jones Act and non-Jones Act carriers. Combined, these services offer transportation options to and from various markets. During the course of the Team's research, ocean shipping service was raised in the context of opportunities for operating improvements. However, with regard to ocean shipping and the Jones Act specifically, they were not seen as impediments for expansion of transshipment. In fact, "low-hanging fruit" opportunities for expanded transshipment exist, in the form of empty containers leaving Guam regularly, particularly on Jones Act vessels.

Maritime ocean carriers invest heavily in their fleets, as they are long-life-cycle capital assets. In most cases, these assets are viable only in Jones Act markets. As such, Guam shippers are guaranteed to have service, as long as the carrier is in business. Fortunately, Guam shippers have options, with multiple Jones Act carriers and multiple non-Jones Act carriers providing competitive service.

Heavy haul roads

Guam recently designated Routes 1, 8, 11 and 16, along with any additional highways designated by the director of the Department of Public Works, as "heavy haul roads," allowing for truck weights (including cargo) of up to 95,000 lbs. and truck lengths of 85 feet (Public law 36-74). Most U.S. interstate roads, and the previous weight limit on these roads, was 80,000 lbs. and the previous length limit was 65 feet. The bill revisited previous standards that restricted movement for key indivisible loads.

The issue was raised on occasion during the Team's research. Stakeholders see the policy change as a positive measure that will allow consideration of local movements of larger loads, if a shipper requires it. However, the transshipment opportunities the Team found most feasible are not likely to require additional flexibility.

Free Trade Agreements

Guam may not necessarily be a party to free trade agreements negotiated by the U.S. Government. In such case, Guam does not receive the benefits of those agreements, which in many cases include exemption of certain goods from tariffs. During the course of the Team's research, the topic of potential free trade

agreements was raised. While the lack of a free trade agreement was not identified as a barrier to a specific opportunity or market, it could serve as a barrier in the future.

Recommendations

Suggested short-to-medium-term activities

- Guam Customs and Quarantine Agency should continue on its path toward modernization, with an
 emphasis on identifying opportunities to digitalize processes, some of which may start at point of
 origin well in advance of any processing. Some digital systems being implemented are linked to
 or managed by large ocean carriers, creating a familiar process for potential new shippers who
 have experience with these systems.
- Opportunities to improve ocean shipping service exist. These include stronger coordination for scheduling and flexibility in scheduling for ship arrivals, as delays can often compound. Given the different organizations required to unload a vessel and process its cargo, the Port Authority of Guam could host a regular meeting with carriers, relevant labor unions, and the Guam Customs and Quarantine Agency, to ensure operational continuity and develop contingency plans for late arrivals.
- Government of Guam officials could meet with the Office of U.S. Trade Representative to discuss Guam's role in all U.S. free trade agreements, including existing agreements, agreements currently under negotiation, and those that have not yet begun negotiations. Discussion topics can include whether any barriers exist to including Guam in such agreements, as well as whether any federal legislation might be needed to authorize such actions.
- The Guam Department of Public Works and the Port Authority of Guam could have regular dialogue with transshipment stakeholders to identify any impediments to safe, efficient freight transportation on Guam. The Team's observation is that the Port Authority of Guam already has regular communication with industry, including the Port User's Group; however, it is unclear how frequently the Department of Public Works is engaged, and whether such topics include upland transportation challenges beyond the Port gates.

Infrastructure needs

Diesel fuel and residual fuel oil provide approximately 80% of the Guam Power Authority's (GPA) generating capacity, with the remainder provided by renewable energy sources.³⁵ Guam plans to reach the 50% mark for renewable energy sales by 2035 and 100% by 2040. GPA experienced a loss of around one-seventh of its power generation ability after a fire at the GPA's main power plant in 2015, and as a result there are sporadic power rationing and power outages. A new 198-megawatt ultra-low sulfur diesel and

³⁵ *Source*: "Infrastructure Needs" section (other local environmental needs.): U.S. Energy Information Administration, https://www.eia.gov/state/print.php?sid=GQ

liquefied natural gas power plant is scheduled to come online in late 2025, while another 100 megawatts of solar power is planned to come online in the coming years.

Severe weather and natural disasters pose a threat to Guam's infrastructure. The new powerplant was delayed following damage suffered during Typhoon Mawar in 2023, and there are "unique wind turbine siting issues," with turbines designed to handle earthquakes and typhoon-force winds with locations factoring in "military facilities, endangered species, and other local environmental concerns."³⁶

The vulnerability of Guam's energy system to weather and other sources of power outages is a concern for potential manufacturers, as it raises costs for backup generators or other equipment needed to ensure reliable power supply. Some facilities require "clean" power, with a limit on distortion or noise that could damage sensitive electronic components. Improving Guam's energy resilience, to ensure business continuity after a storm, could help address this concern. For concentrated areas of industrial activity, such as an industrial park, a common or shared backup power system could be useful.

Water and sewer connections are required for any warehousing or light manufacturing building. It was stated during the workshop that existing water and sewer infrastructure limits new development, although one participant noted that a nitrate system could potentially allow for some facilities to be built without a connection to the sewer system.

Another infrastructure barrier that exists at some locations on Guam is limited road widths, with narrow stretches of road preventing vehicles from being able to pass or gain access to a facility, as described above.

Recommendations

Suggested short-to-medium-term activities

- Take inventory of infrastructure needs through a coordinated freight plan could allow for planned, prioritized and budgeted upgrades. Such a plan will also help prospective investors to more readily understand the level of activity that existing sites can support, as described in Section IV(D), "Other regulatory matters, Heavy haul roads."
- Develop a plan for power continuity at transshipment-related facilities and promote energy resilience of Guam's manufacturing sites.

³⁶ Source: "Port Master Plan" section (consists of three elements.): 2023 Master Plan, Page 8-6 and Page 9-2, Port Authority of Guam

Review of Plans

Regional distribution and fulfillment center plan

The team researched the needs of large distribution and fulfillment center operators. Distribution centers remain a key part of the logistics supply chain for shippers, as inventory can be pre-positioned, sorted, and delivered more quickly to customer markets. Large retailers can serve customer markets directly via e-commerce (*e.g.*, Amazon, Alibaba, etc.) or through brick-and-mortar retail stores (*e.g.*, Target, Costco, Best Buy, etc.). Most retailers utilize distribution centers to take advantage of efficiencies of scale and provide flexibility in managing inventory amongst regional markets they serve.

Potential distribution and fulfillment center requirements are described below.

Facility size: These facilities can range in size from 1,000 square feet (micro-fulfillment centers) to 1 million square feet, or more. Size requirements will depend on the size of the retailer's customer market in the region served. Scalability also is important, so that the facility can accommodate future growth needs without having to undergo the siting process multiple times.

Location: When selecting locations, one source indicated that distribution facilities do not necessarily need to be immediately accessible to the Airport or Seaport. Proximity to customer markets is more important. However, if the market includes areas beyond Guam, such as all of Micronesia, a cross-dock solution within a bonded facility with direct airside access may be sought.

Other facility attributes: Cost is the major consideration, but for many global retailers, environmental sustainability also is a key consideration. Distribution facilities selection factors may include environmental footprint, waste and runoff considerations, and availability of solar or other renewable energy sources.

Workforce: Wage rates are among the largest components of distribution center operating costs, but these costs are not the only consideration driving siting and other decisions. Distribution centers essentially are large warehouse operations. Some may involve varying levels of technology and automation that will dictate skills required for occupations at these facilities. "Day One" workforce readiness and the potential to develop a pipeline of workers over time, are considerations for companies in evaluating siting opportunities. Ideally, worker experience also is considered, including convenience of transportation to and from the facility, as well as other factors that are likely to influence employee retention.

Market size: Market size minimum appears to be less of a priority than return on investment for retailers. For example, a large retailer may enter a market by partnering with an established third party or vendor

that already has a physical warehousing operation in the area. In this case, moves within the warehouse can cut out otherwise more expensive, business-to-business shipments.

Other factors: Large distribution center operators may take a partnership approach to working through challenges along with government partners.

Team observations

For high-volume e-commerce retailers, Guam's consumer market size alone may not be enough to create the efficiencies needed to justify construction of a large distribution center. Distribution facilities serving either the mainland U.S. market or Asian markets likely require competing with major transshipment hubs, such as Singapore and Hong Kong. Even if a market existed, there are limitations on Guam for the size of a facility that could be developed and supported. However, there may be certain circumstances when shippers might benefit from utilizing Guam as a distribution hub.

Port Master Plan

As an island, Guam's economy is highly dependent on the operational efficiency of the Port. The Port Authority of Guam – 2023 Master Plan incorporated a capital plan. The \$692.6 million 2022-2032 Port Capital Plan consists of the following elements:³⁷

- **Capital Improvement Plan** projects include rehabilitation of Hotel Wharf and its access road, replacement of Golf Pier and Pier F1, rehabilitation of Gregorio D. Perez Marina, Agat Small Boat Marina, and other projects. The Capital Plan lists \$191.6 million in projects.
- **Port Readiness Program** projects, such as wharf renovation and/or reconstruction, dredging Hotel Wharf and Fuel Piers, and procuring new gantry cranes, etc. The Capital Plan lists \$489.1 million in projects.
- **Maintenance/Sustainability** projects to keep assets in a state of good repair. The Capital Plan lists \$11.9 million in projects.

The Port Authority of Guam Board of Directors approved the procurement of up to three new ship-toshore cranes, during its April 2024 board meeting. These would replace the existing cranes that are more than 40 years old and at the end of their useful lives. The Port twice sought financial assistance for new cranes, through USDOT/MARAD's Port Infrastructure Development Program (PIDP) grant, but their applications were unsuccessful. The MARAD-funded H-Wharf upgrade program will be temporarily halted, with those resources plus extra funds being redirected towards acquiring new cranes.

³⁷ Source: "Port master plan" consists of three elements: 2023 Master Plan, Page 8-6 and Page 9-2, Port Authority of Guam

The Port Authority of Guam issued revenue bonds in 2018, in part to finance its capital improvement program. The 2023 Master Plan stated that approximately \$41.5 million is to be allocated to Capital Improvement Projects between FY 22 and FY 30.³⁸ The port also has a Facility Maintenance Fund (FMF) that is funded by a charge on handled cargo (\$34.66 per loaded container or \$1.88 per revenue ton for breakbulk), with \$1.8 million collected in FY2021. FMF revenue is assigned to Sustainability Plan projects within the cargo terminal each year.

The Master Plan outlined various ongoing studies and plans for port modernization. This includes an information technology study and a feasibility study aimed at supporting the construction of a new inspection facility on a four-acre parcel next to the main terminal gate.

Interviews revealed that, while the size of the container yard was seen as sufficient for current and future needs, there was demand for more warehouse space within the port.

Recommendations

Specific recommended enhancements to the port to facilitate transshipment operations will vary based on the activities in question. However, the ongoing actions detailed within the 2023 Master Plan show that efforts are underway to modernize and maintain the facility. Broad recommendations are below.

Suggested short-to-medium-term activities

- Work with the Port Users' Group and the Port Authority of Guam to explore the feasibility/needs assessment for establishing a corridor between the terminal and a potential bonded warehouse/foreign trade zone.
- Investigate demand for warehouse space within the Port fence line, and, if necessary, develop a capital and operational plan.
- Aggregate warehouse needs among multiple distributors in a single location or several focused locations. Warehouse space can be developed on Airport property and in ready-to-build sites. While any one shipper may not have sufficient volumes to justify investments in individual facilities, a common, divisible and scalable facility may draw sufficient interest and mitigate enough risk to allow smaller to mid-size shippers to grow.
- The U.S. military build-up on Guam and throughout the Pacific may lead to Guam serving as a logistics hub for various DOD components and supporting entities. Organizations that serve DOD

³⁸ Source: "Port master plan" section (between FY2022 and FY2030.): "2023 Master Plan," Page 8-4, Port Authority of Guam

as vendors, described in Section III(C), "Federally incentivized cargo," and are serving DOD Pacificarea facilities, may consider mirroring DOD supply chains, to the extent that there are potential economies of scale. This could make Guam a potential hub for DOD suppliers in the Pacific.

 Starting small and optimizing supply chains for existing shippers and distributors on Guam may help to attract larger shippers with the potential for higher volumes of cargo. At least one large distributor mentioned its willingness to test new distribution channels on a low-risk basis, particularly when a vendor or customer already has an established presence in the region. This may involve leasing space from a vendor in an existing warehouse.

Suggested long-term activities or those requiring that other steps be completed first

As industries suitable for transshipment are identified, work with stakeholders to ensure that the Port is capable of efficiently handling any industry-specific imported raw/semi-finished materials and exporting the finished goods.

IV. Conclusions

Broad conclusions

Given the current flows of cargo to and from the region, and the infrastructure built to accommodate these cargoes, Guam is a key transshipment hub for cargo destined for and coming from the Micronesia region. Growth opportunities in these markets are somewhat limited by population, with the overall population of the "transshipment" islands having decreased since 2000, as detailed in the Background Report, provided in Appendix A, and markets this small never will generate large amounts of cargo. However, near-term U.S. military development in the region may lead to increased transshipment opportunities for a relatively short build-out phase, and sustainment level cargo may generate some incremental growth in transshipment should populations grow in these regions due to the build-up.

Guam's potential to serving as transshipment center for Asia-U.S. mainland trade is a tougher nut to crack, due to Guam's location. Apra Harbor is 3,333 nautical miles from Honolulu, 5,311 nautical miles from Los Angeles, 1,685 nautical miles from Shanghai, 1,595 nautical miles from Busan, and 1,370 miles from Tokyo.³⁹

A more feasible opportunity for Guam to compete for cargo in this trade lane is through sea-air transshipment. In such a model, low-weight, high value cargoes could be manufactured or assembled on Guam (using raw materials or components arriving via the Port) and exported via air cargo. Whether the Headnote 3A standard could be met will have to be determined on a case-by-case basis. During the course of the research, no case was brought to the Team's attention that a minimum U.S. content requirement prohibited such an opportunity.

Vision for the future of transshipment in Guam

As described in Appendix A, Background Report, transshipment opportunities may be characterized by a number of models, and through a number of commodities shipped. Each has its own requirements for success, which itself requires defining. There are models of transshipment on Guam that might lead to very little economic benefit for the Territory. For example, development of a marine fuel transshipment depot might create additional ship traffic to the Port of Guam, but have very little effect on jobs and economic growth locally. To lead to the types of outcomes that might truly help diversify Guam's economy, the Team focused research on transshipment markets with potential for more than a modicum of job and economic activity.

³⁹ Source: Calculations derived from https://sea-distances.org

A common observation by the Team is that the vision for the future of transshipment in Guam is likely to differ from previous Guam transshipment markets for fresh tuna or textiles, or conventional notions of transshipment by large manufacturers or fulfillment distributors. Instead, future transshipment opportunities are more likely to be defined by available facility size, Guam's competitive advantages, and interest and experience of Guam's transportation and economic development professionals.

Context of recommendations and next steps

Context of recommendations

Recommendations included in this document are provided by the Matsuda Team, based on the input received from stakeholders, survey and trade data research, and observations made directly. The stakeholder input was very valuable, particularly from those who are involved in decision-making on the transactions and potential transactions leading to transshipment opportunities. The Team thanks all participants in this project who took time to provide input and help sharpen the picture of transshipment opportunities in Guam.

The recommendations are organized by topic and outcome time horizon; however, they are not rated in order or importance or priority. This reflects the fact that to truly assess the effectiveness of each recommendation, they must be considered in light of the goals they are intending to achieve. Further planning is required for this assessment. As an example, to further develop the potential for growth in the cargo market for defense-related freight transshipped through Guam, a more focused strategic plan might include further input from stakeholders, including DOD, to consider the recommendations included herein, as well as others identified. These should be considered in light of potential costs and benefits of each, and a plan of action with milestones can move such an initiative forward.

Next steps: "Low-hanging fruit"

While the recommendations in this reported are presented in the context described above, the Team identified a limited set of recommendations – considered "low-hanging fruit"—that likely would have significant impact on every transshipment market opportunity and with low risk that they won't be effective. These primarily address the lack of available industrial space in Guam and include the following:

1. Remove the five-year restriction for leases of government land

As described in Section IV(D), Real estate, zoning and environment, currently, new leases on government property for longer than five years require approval by Guam's Legislature. The Team heard numerous instances where this requirement served as a disincentive to a shipper siting in Guam, due to the uncertainty of the legislative process involved. This requirement serves as a competitive disadvantage for

Guam versus other locations. The impact may be understated, as this requirement may eliminate Guam from consideration, early in the due diligence process regarding siting decisions or may disqualify Guam, from the beginning. Stakeholders relayed that often the time horizon required for a shipper to realize returns on investments related to facility build-out are longer than five years, which underpins a desire for leases with longer terms, for example, up to 25-30 years.

2. Develop a forecast of potential post-buildup defense-related transshipment cargoes

As described in Section III(C), "Federally Incentivized Commodities," the military build-up in the Pacific region may give rise to Guam as a strategic transshipment hub. To the extent that multiple units in the military are developing plans for longer-term sustainment operations (post-buildup), such a forecast could be useful in determining whether and how Guam could serve as a transshipment center to supply such future needs. These supplies should focus on commercial supplies (*i.e.*, consumer goods) rather than military cargoes (*i.e.*, ammunition). For example, the volume of soft drinks or energy drinks shipped to Pacific-region DOD locations might justify a bottling plant and/or bottle recycling facility on Guam, rather than shipping bottled products back and forth from the U.S. mainland.

3. Identify and build out dedicated industrial property for transshipment, and preserve for FTZ

The lack of industrial space on the Island that is available for development is a key barrier to expansion of transshipment. Two recommendations from different sections, taken in conjunction, are suggested for action. Firstly, long-term planning for siting of industrial space convenient to the Port and/or Airport will guide land use decisions and allow for promotion of these sites as ideal for transshipment operations. The Port of Savannah, Georgia, provides a case study in proactive, government land development activities, to realize the Port's potential.⁴⁰

Secondly, as described in Section III(D), "Foreign Trade Zone Mechanics and Benefits," planning for potential designation of these spaces as FTZs would benefit value-added transshipment activities. Proximity to port of entry or exit would be desirable, as it would further optimize efficiency and lower transportation costs. The Port Authority of Guam's upland and marine properties encompass approximately 450 acres and include several tracts of vacant land, located north and south of Route 18 and west of Route 1.⁴¹ The 2023 Port Master Plan suggests that the Port should consider designating the area as Marine Industrial to "provide potential development opportunities…compatible with marine and port operations."⁴² Additional land is available near the Airport, including the permitted but unbuilt second

⁴⁰ Source: A brief historical view of Savannah's relevant policy and planning decisions:

https://porteconomicsmanagement.org/pemp/contents/part9/port-of-savannah-logistics-cluster

⁴¹ Source: 2023 Master Plan, Page 4-15, Port Authority of Guam

⁴² Ibid.

phase of the Pac-Air Integrated Cargo Facility. Finally, other dedicated space suitable for transshipmentrelated activities within an FTZ also should be identified. In conjunction with this effort, it is advisable to identify and prepare for the necessary steps to establish an FTZ.

4. Revisit zoning policies to make properties for transshipment uses more accessible and affordable

Similar to the previous "low-hanging fruit" recommendations concerning the best ways to address the real estate-related challenges, zoning changes to protect potential industrial properties for transshipment use are included on this list. Several stakeholders reported a shortage of vacant land zoned M1 where new warehouses or light-manufacturing facilities could be constructed. The issue has been exacerbated due to the ongoing military buildup and the resulting need for foreign construction workers. Public Law 31-72, passed in 2011, legislated that the Guam Land Use Commission (GLUC) should "liberally interpret the term 'temporary workforce housing' in order to ensure the protection of the public's interests, safety and welfare" and that the "GLUC shall not approve any workforce housing development in any zoning area other than an M1 Zone."⁴³

Construction of worker housing on an M1 lot spells the likely death knell for using these properties in an industrial capacity anytime soon. This zoning policy, in conjunction with high demand for temporary worker housing, has increased prices for available M1 land. At the same time, due to the increase in construction activity, construction costs have increased and construction labor has become scarcer. Independently, construction material costs have increased. Although little can be done to impact the supply-demand balance for workers and materials, legislation can be adjusted to increase the availability of M1 land for transshipment-related purposes.

5. Develop and fund an industrial worker recruiting initiative

While there is a general confidence among stakeholders in Guam's workforce and workforce development capabilities, many of the challenges identified were not limited to transshipment – or even to Guam. Some challenges reflect changes in demographics and generational preference. These are cross-cutting challenges relevant across many fields with industrial occupations.

Stakeholders cited numerous tools for creating and funding effective training programs. This is an important step to developing the workforce, but getting individuals to undergo training appears to be a more difficult challenge. Many of the potential solutions occur much earlier in the candidate's work life.

⁴³ Public Law 31-72 https://guamlegislature.com/Public_Laws_31st/P.L.%2031-72%20%20Bill%20No.%2015-31.pdf

In recommending the initiation of an industrial worker recruiting initiative, the Team felt this would help address a gap in current workforce needs, while making Guam more attractive to potential transshipment employers seeking to site on Guam. Recruiting addresses the "Day One" workforce needs and workforce pipeline needs. Such an initiative could be developed in collaboration with existing industrial employers and workforce initiatives, linked to potential apprentice positions with relevance to transshipment and logistics occupations, and coordinated with all relevant stakeholders. Finally, details of such efforts could be considered for inclusion in marketing materials to highlight Guam's commitment to developing its transshipment sector.

Report on Transshipment Feasibility and Economic Diversification

Appendices

- A. Background Report
- B. Matsuda Team Complete Survey





Guam Transshipment Task Force Feasibility Study Background Report





November 22, 2023

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I. Introduction

The Guam Transshipment Task Force (GTTF), was established by Guam Public Law (PL) 36-23 to investigate the potential for Guam to increase its role as a transshipment point for freight. The law mandates involve studying issues – both central and tangential to transshipment – and conducting a feasibility study regarding potential economic opportunities and obstacles to developing transshipment in Guam. The mandate also includes development of an Economic Diversification Plan, to be submitted to the Governor of Guam and the Guam Legislature.

In 2023, the Guam Economic Development Authority (GEDA), a member of the GTTF, retained Matsuda & Associates, LLC to assist the GTTF in addressing the mandates. Matsuda & Associates, LLC is a Washington, DC-based consulting firm, established in 2013, and offers a wealth of experience with maritime industry issues, and can meet GEDA's expectations within the required timeframes. The firm assembled a strategic partnership – the Matsuda Team – to assist the GTTF in meeting its mandates. David Matsuda, Principal, Matsuda & Associates, LLC, is leading The Matsuda Team in addressing GEDA's needs. The diverse Team is composed of professional consultants and other experienced subcontractors, including Guam-based André Development Group; Hackett Associates, LLC; Senior Consultant Karen M. Freeman; and ELY Public Affairs, LLC. The Team offers the necessary subject matter expertise and is structured to ensure reliable support for GEDA and the GTTF.

This "Background Report" is the culmination of the Background Report phase of the project. The Report covers an investigation of baseline conditions and areas intended to be explored further in later project phases. The project will conclude with a Feasibility Report and Economic Diversification Plan.

II. Background

A. Guam Transshipment Task Force

GTTF's mission is to research and recommend policies and plans regarding potential economic development and investment opportunities in the areas of transshipment, manufacturing, assembly, distribution and export. Such opportunities will be designed to help Guam meet the goal of diversifying its economy and creating employment opportunities, while improving the quality of life for the people of Guam.

Public Law 36-23 includes specific mandates, directly cited below.

- Contact regional shipping partners, manufacturers, the U.S. Department of Homeland Security, the U.S. Customs and Border Protection and any other agencies within the U.S. government that are relevant to transshipment
- Conduct a feasibility study and provide recommendations involving local tax policy, workforce development and incentive programs that can assist in promoting transshipment in Guam
- Receive reports and testimony from individuals, government of Guam agencies, and any other interested public and private organizations
- Submit an Economic Diversification Plan with recommendations to I Maga'hågan Guåhan (Governor of Guam) and I Liheslaturan Guåhan (the Guam Legislature), within one year of the enactment of this Article.

Excerpt from Public Law 36-23

B. Feasibility Study Overview

PL 36-23 specifically mandates that the GTTF deliver a Feasibility Study and Economic Diversification Plan. The Feasibility Study will address the potential for growth in transshipment, manufacturing, assembly, distribution and export business activities in Guam. The Study also will include recommendations pertaining to local tax policy, workforce development, incentive programs and other aspects, to be determined by the GTTF. Finally, the Study will provide details of a review and update of the government of Guam's previous plans and studies (*e.g.*, the 2005 GEDA Regional Distribution Center Plan) related to the areas to be explored in the current Study.

The first phase of the Study will include a Background Report. This document constitutes that Report.

C. What is Transshipment?

The GTTF crafted and adopted the following definition of transshipment, directly cited below.¹

¹ Source: "Transshipment Task Force Definition & Mission Statement," undated.

The root word of transshipment, "transship," means to transfer for further transportation from one ship or conveyance to another. However, the intent and spirit of Public Law 36-23 and the Transshipment Task Force is to seek all potential economic opportunities related to transshipment, with a focus on:

- The traditional model of transshipment specifically, the moving of items from one destination to another through an intermediate destination
- Bringing in raw materials, and/or partially assembled goods and components for final completion, packing and re-export. Such finished goods may be considered "Made in the USA/Guam" and
- Establishment of order processing and/or fulfillment centers, where businesses can utilize Guam's location to warehouse items for order mixing, packaging and fulfillment.

Excerpt from Transshipment Task Force Definition & Mission Statement

The GTTF definition is broader than the definition commonly associated with the term in the shipping industry, as it includes additional activities that can occur in the intervening phase, when goods are transferred between two vessels. The U.S. Maritime Administration (MARAD) defines transshipment as the "transfer [of] goods from one transportation line to another, or from one ship to another."² The term commonly refers to the act of moving cargo from origin to destination, via multiple vessels (and, potentially, multiple modes).

Given the breadth of the GTTF definition, the Matsuda Team recommends focusing GTTF's efforts on transshipment cargo models and specific cargo markets that hold the most promise for cargo expansion.

Transshipment models

As described previously, GTTF uses an expansion of the traditional definition of transshipment, to include the additional activities that can occur in the intervening phase, when goods are transferred between two vessels. As shown in the table below, traditional transshipment is commonly associated with a "hub and spoke" operations model; the second component of the GTTF definition often is associated with a model best described as "value-added operations," and the third component is associated most closely with a "transloading" operations model.

² Source: Maritime Administration (2008) "Glossary of Shipping Terms,"

https://maritime.dot.gov/sites/marad.dot.gov/files/docs/education/adopt-ship-program/341/glossaryfinal.pdf

GTTF Definition Component	Relevant Model
Traditional transshipment	<i>Hub and spoke operations:</i> The traditional definition includes hub and spoke – the transportation of items from one destination to another, through an intermediate destination
Made in the USA/Guam	<i>Value-added operations:</i> Bringing in raw materials and/or partially assembled goods and components for final completion, packing and re-export. Such finished goods may be considered "Made in the USA/Guam"
Processing and fulfillment centers	<i>Transloading:</i> Businesses can utilize Guam's location to warehouse items for order mixing, packaging and fulfillment for distribution

The Matsuda Team believes these models are useful for analyzing feasibility, as described, below.

Hub and spoke

At present, the Port of Guam's transshipment activities primarily fall into the traditional hub and spoke model, where the Port serves as a hub within the western Pacific. This enables the Port of Guam to link regional and global shipping networks together effectively, at either end of the network. Singapore, the busiest transshipment port in the world, is a prime example of the hub and spoke model. The Port of Singapore consolidates cargo from countries in Asia to major export markets in Europe, North America and elsewhere – handling 100,000 Twenty-foot Equivalent Units (TEUs) per day, and connecting to 600 other ports.³

As described in the "Baseline Assessment" section below, Matson Navigation Company, Inc. (Matson) connects Guam to the U.S. mainland, Hawaii, China and Japan, but relies on transshipping cargo to its final destination. Kyowa and Marianas Express Lines, Ltd., transport cargo to Micronesia and Marshall Islands destinations, such as Yap, Pohnpei or Majuro. APL also offers service to and from Asia, but transships cargo both in Guam (to connect with other islands) and in Asia (to connect with the U.S. west coast). These models are known as a "hub and spoke" transshipment operation. In some cases, the hub and spoke approach is utilized because a market may be too small to receive a call from a service on major trade lane. This can occur if a port or a market is:

- Unable to support the necessary cargo volumes to be economically sustainable
- Too remote, which increases trip cost and time

³ Source: https://www.singaporepsa.com

• Unable to support the vessel sizes used on the primary trade lanes

In other cases, transshipment allows for the consolidation of cargo on board a larger vessel. This results in increased economies of scale that drive down the per-TEU transportation cost of moving cargo, which increases economic viability of a marine transportation service.

Although multiple types of "traditional" transshipment exist, the hub and spoke model accounts for most transshipment activity. Within this process, the greatest activity is the consolidation of cargo from smaller vessels, originating at smaller ports, onto larger vessels that journey to larger destination ports. For example, the Port of Singapore and Port of Hong Kong consolidate cargo from numerous Asian ports carried aboard "feeder" vessels into larger vessels that travel to Europe or North America. The need for consolidation has increased as vessel sizes have grown and as carriers have increased their focus on vertical integration.

Interviews with stakeholders, in preparation for this report, revealed a concern that existing Port infrastructure, including berth depths and crane capabilities, would limit the Port from becoming a major transshipment hub, due to the larger vessel sizes typically utilized at existing hubs.



Figure 1. As shown in this figure, the role of a traditional transshipment port is to facilitate cargo consolidation to accommodate transfers to vessels of different sizes.

Another model of hub and spoke activity involves a larger vessel delivering cargo to a destination port where a portion of the cargo is then divided between or among smaller vessels. Those vessels then

journey to small, final destination ports. Example ports include Colombo (Sri Lanka) and Guam, which serve as staging grounds for cargo destined for other regional ports. This process allows for cargo to travel between origin and destination, when no direct connection exists, as shown in Figure 2.



Figure 2. The "staging ground" variation of the transshipment port model accommodates a shift from a single, large vessel market, to smaller vessels serving multiple destinations.

In both cases, hub and spoke transshipment involves no modification of the cargo, as it passes through the transshipment port. The activity principally is in the hands of the carriers with little or no input from cargo owners and largely is a financial exercise to determine whether the mainline service can reduce costs by using smaller, secondary vessels, at either the origin or destination side. The benefit of the transshipment port to the local economy is minimal, beyond the stevedoring and other support services required to assist with vessel calls and transfer the cargo between vessels.

More than half of Guam's exports are goods transshipped to surrounding islands.⁴ While Guam transshipment volumes rebounded in FY2022, these volumes are still down from FY2018.⁵ One of the reasons cited for the decline in transshipment volumes at the Port of Guam is the years-long population decline in the islands that rely on container service via Guam.⁶

The Port of Guam provided the data in the table, below. The data reveal that transshipment volumes have not recovered from FY2018 levels.

⁴ Source: Port of Guam 2023 Master Plan, Page 5-17.

⁵ Source: Port of Guam data supplied to the Matsuda Team

⁶ Source: Interview with Port Authority of Guam, September 28, 2023
Transshipment	FY2018	FY2019	FY2020	FY2021	FY2022
Import Loaded	7,964	5,531	6,391	6,056	6,584
Import Empty	4,938	2,840	2,690	2,711	3,906
Export Loaded	8,003	5,666	6,462	6,104	6,708
Export Empty	4,702	3,156	2,572	2,670	3,870
TOTAL	25,607	17,193	18,115	17,541	21,068

As noted above, transshipment services currently connect Guam to the Federated States of Micronesia, the Northern Mariana Islands, the Marshall Islands, Palau and the Caroline Islands. As detailed in Figure 3, World Bank data confirm that the overall population on the "transshipment" islands has decreased since 2000.⁷ The population of Guam has increased by 7.2%, for a compound annual growth rate of 0.3%. The combined population of the Federated States of Micronesia, the Northern Mariana Islands, the Marshall Islands and Palau experienced a 16% decrease, for a compound annual growth rate of negative 0.8%.

Regional Population, 2000-2022⁸



Stakeholders in Guam believe that the population decline is a primary factor in limiting the opportunity for increased levels of inter-Micronesia transshipment cargo activity. Multiple stakeholders noted that

⁷ Source: The World Bank, https://data.worldbank.org/indicator/SP.POP.TOTL

⁸ Ibid.

the construction projects associated with Camp Blaz paid above standard wages and offered better benefits, and therefore, continue to attract workers away from the outer islands to Guam. However, one stakeholder noted that cargo opportunities on the outer islands might increase due to a planned expansion of the U.S. military footprint at those locations.

There may be opportunities to expand the number of carriers involved in hub and spoke transshipment on Guam, to increase the container throughput to ports beyond those currently served. However, the positive economic impact on Guam would be minimal. The Port of Guam could consider expanding its transshipment activities beyond its Micronesian neighbors, to identify prospective carriers bypassing Guam. The Port also could identify potential new destinations based on cargo flow, such as the Philippines, Papua New Guinea or New Zealand.

Value-added operations

Of the three transshipment models described, value-added operations provide the greatest opportunity for economic development in Guam, as these operations allow for additional economic activity, such as final assembly activities, where unfinished goods are imported, unloaded and processed, and then, reloaded and shipped off-island, as finished goods. This normally occurs when there is an opportunity to carry out the final assembly of the products, such as televisions, in a country that allows the country of origin to be altered. In the case of Guam, finished goods could be labeled as "Made in the USA," to avoid U.S. import duties and/or tariffs.

Value-added operations occur when cargo unloaded from its original container undergoes a transformative operation before being loaded back into a container for transportation to the next location. Often, this transformation involves a manufacturing process, including final assembly into a finished product, or other sub-process that adds to the cargo's value. Inbound cargoes can include raw materials, or semi-finished goods. The amount of value added to the product often is measured as a portion of its final sale value, or the per-unit value of the new content added, plus per-unit value of labor involved.

These operations typically take place outside the port and have significant requirements, including:

- Manufacturing space availability a requirement that often is more significant than simple warehousing and storage space
- Infrastructure requirements outside of the port, potentially including a reliable energy supply and roadways capable of handling the movement of heavy cargo
- Skilled labor resources and availability
- Investors and capital resources

- Sufficient space for warehousing and storage of materials and finished goods
- Efficient transfer and drayage operations



Figure 4. The value-added operations transshipment model requires establishment of both an import and export supply chain through the port.

Given the complexity of establishing value-added manufacturing facilities in Guam, manufacturers may consider transshipment cargo service availability as only one of many factors in its decision whether to operate its supply chain through Guam.

Transloading

The transloading of cargo involves an additional handling step in the transshipment process. This step occurs between intermediary stages of the journey, when cargo within one container is split and/or consolidated into another container or multiple containers. The most common reason for transloading is that cargo has traveled as far as it can by water and is, therefore, re-packaged before it continues to its final destination. For example, the majority of containers shipped from Asia to North America are an industry-standard 40 feet in length; however, land transportation cost savings can be achieved by consolidating the contents of 40-foot containers into 53-foot containers, moved over-the-road by truck or by intermodal rail. (Six 53-foot containers can hold the equivalent of eight 40-foot containers, thereby reducing the number of trucks and truck drivers needed to transport this amount of cargo by 25%, if 53-foot containers are used.)

Another common application of transloading occurs when containers are delivered to a distribution center, so that their contents can be re-distributed and then transported to the final destination (*e.g.*, a Wal-Mart or Target store). Transloading also can occur when cargo carried within a container is distributed among smaller containers, such as when the next transportation mode is by air.

Transloading activities can be carried out by a freight forward or shipper, but rarely are performed by the carriers (vessel operator). A cargo owner or their forwarding agent also can consolidate imported goods

from different overseas points of origin, into containers for delivery to the final destination country. This option requires significant supporting elements, including a qualified labor force; sufficient infrastructure, including roads with high-weight permitting and reliable power supply for refrigerated cargo; warehousing space availability for cargo storage and consolidation activities; and possibly, sufficient trade and tax agreements and policies to support the market for consolidated goods.



Figure 5. The model for a transshipment port accommodating transloading activities involves opening shipping containers and consolidating the contents.

From a transshipment perspective, goods can be sourced from different origin ports, and then un-packed and consolidated at the transshipment port. The re-packed containers are then shipped forward to other ports. This can include sea-to-air transfers, as well as fishing industry shipments. This type of activity requires warehousing facilities within a duty-free zone or other limited taxation environment, to avoid taxation on goods that did not originate from, and ultimately, are not destined for the transloading port. Additional requirements for a transloading operation include:

- Land availability
- Infrastructure requirements outside the port (including a reliable energy supply and roadways capable of handling the movement of heavy cargo)
- Labor resources and availability
- Identifying investors
- Identifying customers
- Being prepared to initiate a significant investment in modern port infrastructure to ensure high levels of productivity, and warehousing and distribution facilities.

Some cargoes might transship between different modes of transportation. For example, Guam recently wound down a robust fishing transshipment supply chain. Under this activity, commercial fishing vessels would bring their catch to the Port of Guam, for transfer to the airport, where the cargo would be flown to market destinations. Data collected by the Team through initial interviews indicated that the export of fish from Guam had been strong until 2021, when it was interrupted by a southward shift of the tuna population in the waters surrounding Guam. The market for Guam fish exports has since dried up and Guam now faces competition from other fish exporting locations around the world. However, interviewees noted that fish species other than tuna might now be available for export from Guam.

D. Baseline Assessment

Current transshipment activities and services

As a U.S. territory, Guam is subject to cabotage restrictions, including the Jones Act. Generally, these restrictions require ships carrying goods between two U.S. ports to be built in the U.S., at least 75% owned and managed by a U.S. company, and crewed with at least 75% citizen mariners for unlicensed crew.

Guam falls within a partial exemption to the Jones Act. This exemption allows the use of non-U.S.-built vessels in service to and from Guam's domestic maritime cargo markets, including Hawaii and the U.S. west coast.

The Port of Guam currently is served by four primary oceangoing carrier lines, although many of the services are shared. These carriers include Matson, APL, Micronesia Express Lines, Ltd (MELL), and Kyowa. The Jose D. Leon Guerrero Commercial Port of Guam 2023 Master Plan (hereafter, *Port of Guam 2023 Master Plan*, includes a breakdown of the containerized cargo volume handled by each of the carriers in the 2021 Fiscal Year, as depicted in Figure 6, below.



Distribution of containers handled, by carrier, at the Port of Guam in Fiscal Year 2021⁹

Figure 6. Matson accounted for more than 50% of the containers handled at the Port of Guam in Fiscal Year 2021, while APL accounted for almost 25%. Kyowa and MELL combined accounted for approximately 20% of the total.

The four services are described in detail, below.

Matson Navigation Company, Inc.: Matson operates ships and assets that are both U.S.-built and U.S.-crewed. Matson connects Guam to the U.S. mainland, and to China and Japan. Matson's weekly service utilizes five container vessels with an average capacity of 3,253 TEU and an average of 416 reefer plugs. The maximum draft of the vessels used is 40 feet. The current rotation is shown below.

 $\texttt{Guam} \rightarrow \texttt{Saipan} \rightarrow \texttt{Naha}, \texttt{Okinawa} \rightarrow \texttt{Ningbo} \rightarrow \texttt{Shanghai} \rightarrow \texttt{Long Beach} \rightarrow \texttt{Honolulu} \rightarrow \texttt{Guam}$

⁹ Source: Port Authority of Guam 2023 Master Plan





Figure 7. By container volume, Matson is the largest ocean carrier serving Guam.

Matson also utilizes Tamaraw, a tug and barge service, to connect Guam, Saipan and Tinian. Recently, Matson announced a three-ship acquisition project to recapitalize the Guam route.¹¹



Figure 8. Matson recently announced a \$1 billion shipbuilding project for three new dual-fuel, LNG-capable, 3,220-TEU vessels, to be used on its Guam route.

¹⁰ Source: Matson Investor Presentation, February 2023

¹¹ *Source*: https://investor.matson.com/news-releases/news-release-details/matson-add-three-Ing-powered-aloha-classcontainerships

APL GSX: APL is a U.S.-flagged subsidiary of French shipping and logistics company CMA CGM, the third-largest container carrier in the world, in terms of fleet capacity. APL's Guam Saipan Express service (GSX) connects Busan and Yokohama with a weekly service to Guam and a bi-weekly service to Saipan. APL's Eagle Express 1 service (EX1) provides a link to the U.S. mainland with service to Los Angeles and Oakland. GSX and EXI use U.S.-flagged vessels.

GSX utilizes two container vessels with an average nominal capacity of 1,722 TEU, and either 320 or 413 reefer plugs. The maximum draft of the vessels used is 36 feet. The current rotation is split, offering a fortnightly service with calls at Saipan and Gwangyang on alternating weeks, as shown below.

Guam \rightarrow Hakata \rightarrow Busan \rightarrow Hakata \rightarrow Yokohama \rightarrow Saipan \rightarrow Guam Guam \rightarrow Busan \rightarrow Gwangyang \rightarrow Hakata \rightarrow Busan \rightarrow Yokohama \rightarrow Guam



APL GSX Service¹²

Figure 9. APL's ocean carrier service to Asia connects to its US mainland-bound routes.

¹² Source: https://www.apl.com/products-services/line-services/flyer/GSXAPL

Mariana Express Lines: MELL is a container line based in Singapore. The company is a subsidiary of Pacific International Lines (PIL), a Singapore-based shipping company that also offers logistics services. MELL operates a fortnightly service (East Micronesia Service) utilizing two container vessels with an average capacity of 777 TEU and 100 reefer plugs. The maximum draft of the vessels used is 29 feet.



Figure 10. MELL operates vessels Kota Ratu and Kota Raja in its Guam service; both were constructed in 1998. Photo source: Marinetraffic.com

The vessels used in MELL's Guam service are the oldest in its fleet, with build dates in 1998. The MELL current rotation is shown below.

 $\textbf{Guam} \rightarrow \textbf{Chuuk} \rightarrow \textbf{Pohnpei} \rightarrow \textbf{Kosrae} \rightarrow \textbf{Majuro} \rightarrow \textbf{Ebeye} \rightarrow \textbf{Hong Kong} \rightarrow \textbf{Kaohsiung} \rightarrow \textbf{Guam}$



MELL East Micronesia Service¹³

Figure 11. MELL offers niche service on smaller vessels to many Pacific islands.

Kyowa Shipping Company: Kyowa is a shipping line based in Japan. The company operates a fortnightly service (Micronesia Service) utilizing three multi-purpose container vessels with an average capacity of 649 TEU. The maximum draft of the vessels used is 26 feet. The current port rotation is shown below.

Guam → Pohnpei → Chuuk → Kosrae → Majuro → Ebeye → Kwajalein → Yap → Koror → Busan → Kobe → Nagoya → Yokohama → Saipan → Guam

¹³ Source: https://www.pilship.com/en-our-service-network-pil-pacific-international-lines/112.html



Kyowa Micronesia Service¹⁴

Figure 12. Kyowa offers Guam ocean services to and from Japanese ports via many Pacific islands.

Description of the Port

Current Port market position

According to the *Port of Guam 2023 Master Plan* Update,¹⁵ the Port facility is the largest deep-water seaport in the Western Pacific Region. It is the only commercial port on the island of Guam and serves a myriad of sectors, including local commercial and government customers. Port of Guam officials indicated that 90% of the cargo destined for the island enters through the marine port, of which approximately 30% is related to the military.

From a transshipment perspective, the Port of Guam is the primary transshipment hub for neighboring islands in the region, serving a population of more than 400,000.¹⁶

¹⁴ Source: https://www.kyowa-line.co.jp/en/service/route.html#_w001

¹⁵ Source: Port of Guam 2023 Master Plan, Page ES-1

¹⁶ Ibid.

Within Micronesia, the Port of Guam is the region's largest commercial port, supported both by Guam's approximately one-third share of the region's population, and the presence of Naval Base Guam and Andersen Air Force Base. The U.S. Marine Corps' Camp Blaz is scheduled to be completed in 2024.

The Port of Guam's navigation depth, container crane capabilities and available laydown space make the Port the de facto hub for the region's cargo, as it is the only port that combines these attributes. The region's other significant ports have the following attributes:

- The Port of Saipan has 22 acres of container yard and 2,600 linear feet of berthing space. The channel, turning basin and berthing areas have a depth of 30 feet (according to carriers). The Port of Saipan utilizes two mobile cranes for operations, and currently, does not have fixed or floating cranes.
- The Port of Majuro does not have fixed, mobile or floating cranes. With a container yard area of approximately 6.3 acres and 1,464 linear feet of total berthing space, the Port of Majuro is considerably smaller than the Port of Saipan. The channel, turning basin and berthing areas have a minimum depth of 50 feet. The Port of Majuro serves primarily small fishing vessels and cargo vessels that transport a variety of imported food, household items, construction equipment and materials, fuel products, and copra and coconut oil.¹⁷

Guam's distance from other major ports serves as an advantage in that it protects the Port of Guam's role in the regional market; however, it also limits the market that the Port can serve economically, via transshipment. Several stakeholders noted that call costs at the Port of Guam were very high, in comparison to larger ports, which limits the potential for growth of the port, as a transshipment hub. However, cost may be a less important factor for cargo growth, than other market limitations.

Port facility description

The Port of Guam's cargo terminal "comprises a total of 91 acres made up of the following:

- Four berths numbered F3-F6 encompassing four acres
- 40 acres of storage yard for containers
- Nine acres of open storage for breakbulk, vehicles and general cargo
- 10 acres for buildings, structures, parking and circulation
- Four acres of gates and terminal access roadways

¹⁷ Source: Port of Guam 2023 Master Plan, Page 5-32

• 24 acres of undeveloped land reserved for expansion.

Containerized cargo is stored north of Berths F5 and F6. Similarly, breakbulk cargo is stored north of Berth F4."¹⁸

Container vessels typically call alongside Berths F4-F6, which have a combined length of 1,950 feet and a depth of 37 feet. During stakeholder interviews conducted by the Matsuda Team, one stakeholder noted that the current depth is a high-water level and, therefore, can be a limiting factor, while another suggested that a greater depth would result in calls from larger vessels (although this would not necessarily translate into additional cargo despite a potential decrease in rates due to economies of scale). The *Port of Guam 2023 Master Plan* rated Berth F4 as being in "fair condition," while Berths F5 and F6 were rated as being in "satisfactory condition." Berth F3 has a depth of approximately 28-30 feet and was rated as being in "poor condition," in the *Port of Guam 2023 Master Plan*.

The annual throughput capacity of the terminal is estimated at 126,000 containers; however, the current storage setup is split between storing containers on chassis and on the ground, the former of which is a less efficient use of land, as it does not allow for the stacking of containers. In the *Port of Guam 2023 Master Plan*, the Port estimated that the annual capacity could be increased to 149,000 containers, if 78% of the wheeled slots were converted to grounded slots.

The Port owns three ship-to-shore gantry cranes with a lift capacity of 40 tons, at a height of between 85 and 93 feet. Container handling within the terminal is provided by nine top picks, 25-yard tractors and 14 forklifts.

The *Port of Guam 2023 Master Plan* indicates that the Port can accommodate container vessels with a capacity up to 4,000 TEUs.¹⁹

¹⁸ Source: Port of Guam 2023 Master Plan, Pages 4-20

¹⁹ Source: Port of Guam 2023 Master Plan



Figure 13. The layout of the Port of Guam Cargo Terminal ensures the efficient transfer of container cargoes from ship to shore and vice versa.

Current dredging plans

The Maximum Vessel Draft of the main access channel is 51.8 feet, while the minimum draft alongside the berths reaches 35 feet.

Soundings Chart for Port of Guam²⁰



Figure 14. Current NOAA charts indicate sufficient navigation depth in the Port of Guam harbor to accommodate vessels that regularly call on the Port.

²⁰ Source: National Oceanic and Atmospheric Administration Chart 81054

A close-up view of the commercial dock berth soundings is provided in Appendix A. The original, fullsize version of this chart can be found here: https://charts.noaa.gov/PDFs/81054.pdf

Current port plans, including the Port of Guam 2023 Master Plan

Matson transported 21,100 Forty-foot Equivalent Units (FEUs) to and from Guam in 2022, a 3.7% decrease from 2021, "due to lower retail-related demand."²¹ However, the company "expects continued improvement in the Guam economy with increasing tourism and a low unemployment rate, but there are negative trends as a result of higher inflation, higher interest rates and the end of the pandemic-era stimulus helping personal income that creates uncertainty in the economic growth trajectory."²²

As indicated previously, Matson announced, in late 2022, that it intends to purchase three new container vessels that would "provide for growth in the Hawaii and Guam markets for decades to come."²³ These vessels each have a capacity of 3,220 TEUs with 408 reefer slots and a draft of 40 feet.

The *Port of Guam 2023 Master Plan* does not call for dredging of the main access channel or the berths utilized by container vessels. Although the channel depth does not appear to be a limiting factor for the Port, the *Port of Guam 2023 Master Plan* indicates that the existing ship-to-shore gantry cranes may limit the size of vessels that can call in the future.²⁴

A majority of containerships currently in the global market can be serviced at Berths F4-F6. However, the current 120-foot gauge cranes may limit the size of larger vessels. Future crane replacements should accommodate ships such as the C11 class vessels, having beams of 130 feet \pm and capacities of approximately 5,100 TEUs.

Excerpt from 2003 Master Plan, page 4-23

The three existing gantry cranes were upgraded to "as new" condition in 2009, giving them an estimated remaining service life of 20 years (2029).²⁵ The *Port of Guam 2023 Master Plan* indicates that the Port

²¹ Source: "Matson 2022 Annual Report," Page 32

²² Source: "Matson 2022 Annual Report," Page 30

²³ Source: "Matson 2022 Annual Report"

²⁴ Source: Port of Guam 2023 Master Plan, Page 4-23

²⁵ Source: Port of Guam 2023 Master Plan, Page 4-67

Authority of Guam is already in the process of acquiring replacement cranes, with an Invitation for Bid anticipated to be issued in 2023.²⁶

According to the *Port of Guam 2023 Master Plan*, the existing capacity of the container yard is sufficient to exceed the highest projected annual demand.²⁷ The *Port of Guam 2023 Master Plan* also states that the three ship-to-shore gantry cranes are able to handle the existing forecast volumes.²⁸ It is worth noting, however, that the forecast should be revisited as part of a transshipment infrastructure plan to ensure that the existing capacity would remain sufficient. Interviewed stakeholders either agreed with the container volume forecast or believed it to be conservative. Stakeholders stated that they had concerns that the existing port footprint would be insufficient if cargo volumes significantly increased and that there was already a lack of warehouse space for storing and processing cargo, while another stakeholder believed that inflexible scheduling practices of stevedores at the Port was a challenge, leading to cargo processing delays.

The *Port of Guam 2023 Master Plan* identifies several information technology upgrades that will increase the capacity and performance of the Port, including systems to improve invoicing, equipment life cycle management, data sharing, Customs processing, resilience to cybersecurity attacks, and cargo and container tracking:²⁹

The Port currently is repairing and upgrading a warehouse, while seeking partners to develop and construct warehouses and cold storage facilities on existing properties.³⁰

Marine Highway Designation

In 2022, the U.S. Secretary of Transportation designated the shipping route network that connects Guam and the Commonwealth of the Northern Mariana Islands as a federal Marine Highway (Route Designation M-GNM1). A full description of the route and federal designation published by MARAD is included in Appendix B.

The designation helps focus service planning efforts, including infrastructure development. In addition, projects associated with the M-GNM1 system are eligible for additional federal funding resources, including federal Marine Highway Grants. In 2022, the Port of Guam received a grant under this program. The grant, valued at \$5.7 million, funds the acquisition of modern cargo handling equipment.

²⁶ Source: Port of Guam 2023 Master Plan, Page 4-68

²⁷ Source: Port of Guam 2023 Master Plan, Page 4-31

²⁸ Source: Port of Guam 2023 Master Plan, Page 4-68

²⁹ Source: Port of Guam 2023 Master Plan, Page 4-116

³⁰ Source: Interview with Port Authority of Guam, September 28, 2023

Baseline cargo availability and Port competition

The Matsuda Team analyzed cargo data provided by the Port of Guam and container carriers calling on Guam. The data revealed a consistent, but low-growth, market share for transshipment. This section provides details on the historical and current Guam ocean transshipment cargo market.

Foremost, containerized cargo accounts for approximately 95% of the total non-roll-on/roll-off cargo tonnage handled at the Port of Guam and accounts for approximately 92% of the Port's direct cargo revenues.³¹ As shown in Figure 15, the pandemic does not appear to have impacted volumes significantly, with the total number of handled containers consistently in the 80,000 to 100,000 range since 2002, with one exception in 2016, when the total reached 103,000 containers.



Total Container Volume, FY2002-FY2022³²

Figure 15. As depicted, total containerized cargo volumes have increased by a mere 0.8%, over the past five years, from 88,385 in FY2018 to 89,052 containers in FY2022.

When considering the ratio of containers imported to those exported, as shown in Figure 16, the flow of total containers in and out of the Port is balanced. Transshipment cargo accounted for between 20% and 24% of the total in each of the past five fiscal years, supporting a trend of consistency.

³¹ Source: Port Authority of Guam (2023) 2023 Master Plan, Page 5-18

³² Source: Port Authority of Guam



Total Container Volume, FY2018-FY2022³³

Figure 16. Import and export container volumes through the Port of Guam, including transshipment and non-transshipment cargoes, present a picture of relative consistency.

The total container volumes mask an imbalance of trade that becomes clearer when the statistics are further parsed into loaded and empty container volumes. As illustrated in Figures 17, 18 and 19, imported containers for the non-transshipment market account for almost two-thirds of all full containers handled by the Port. Most exported non-transshipment containers are empty, and while transshipment cargo into and out of Guam is balanced, almost one-third of the containers are empty.

As shown in Figure 17, when evaluating loaded container volumes at the Port of Guam, volumes have decreased at a slightly faster pace than the decline in total container volumes at the Port. This includes a 2.5% decrease over the past five years, as the volume fell from 54,741 containers in FY2018 to 53,376 containers in FY2022.³⁴

Further, in FY2022, imports accounted for 63.4% of total loaded containers handled by the Port, with imports ranging between 60% to 65% of the total, over the five-year period. Transshipment cargo accounted for between 22% and 30% of the total loaded container volume in each of the past five fiscal

³³ Ibid.

³⁴ Data supplied by Port Authority of Guam

years. The data highlights that the flow of transshipment containers in and out of the port is balanced, but loaded imports dominated loaded exports at a ratio of more than five to one.



Loaded Container Volume, FY2018-FY2022³⁵

Figure 17. Port data show that cargo flows into Guam at a rate of five times that of exports, but the flow of transshipment containers is balanced into and out of Guam.

Analysis of the non-transshipment container import and export data further supports the notion that, while the flow of containers into and out of Guam is balanced, the flow of cargo is not. As shown in Figure 18, non-transshipment containerized cargo volumes increased by 4.1%, over the past five years, from 65,316 containers in FY2018 to 67,984 containers in FY2022.³⁶ Loaded container imports grew by 3.8%, over the five-year period, while full exports decreased by 1.1%. The flow of cargo is not balanced, however, as loaded imports accounted for approximately half of the total and empty exports accounted for approximately a further 40% per year.

³⁵ Ibid.

³⁶ Ibid.



Non-Transshipment Container Imports and Exports, FY2018-FY2022³⁷

Figure 18. Port data reveal that non-transshipment container flows are highly imbalanced, with almost all inbound containers full and four-fifths of outbound containers empty.

As shown in Figure 19, transshipment container cargo volume through the Port of Guam has been more volatile over the past five fiscal years, decreasing by 17.7%, from 25,607 containers in FY2018 to 21,068 containers in FY2022.³⁸ Full transshipment imports fell by 17.3%, over the five-year period, while full transshipment exports fell by 16.2%. The flow of cargo is relatively balanced, with loaded transshipment imports accounting for between 31% and 35% of the total transshipment containers each year, while loaded exports accounted for between 31% and 36% each year.

³⁷ Ibid.

³⁸ Ibid.



Transshipment Container Cargo, FY2018-FY2022³⁹

Figure 19. The flow of full transshipment containers into and out of Guam is more balanced than nontransshipment containers, but approximately one-third of transshipment containers are empty.

Regional cargo movement accounted for 98% of the transshipment activity recorded by the Port of Guam in 2022, with Saipan representing 30% of the total, as shown in Figure 20. Stakeholders reported that approximately 90% of regional transshipment cargo was outbound from Guam, and that there was plenty of available vessel capacity, if volumes increase. However, stakeholders noted that inter-island trade occasionally was constrained by box (container) availability.



Distribution of Transshipment Cargo in Calendar Year 2022⁴⁰

Figure 20. Saipan is Guam's largest transshipment trade partner, although trade is spread throughout the region.

The Matsuda Team believes the trade imbalances identified present opportunities for – and barriers to – expanding container trade into and out of Guam. Generally speaking, ocean carriers prefer to handle full containers, as an empty container typically does not generate revenue. The costs associated with moving empty containers usually are subsidized through higher rates charged on the loaded container trip (in this case, higher freight rates on containers imported to Guam offset the non-revenue-generating empty export containers). Ocean shipping economic fundamentals support the notion that, as carriers are eager to fill an otherwise empty container, freight rates on the imbalanced portion of the journey typically are much lower. In Guam's case, importing additional cargo in support of an economic development program could put upward pressure on freight rates, as compared to new supply chains that take advantage of the existing imbalance to leverage potentially lower export freight rates.

Commodity mix

Matson, the largest Guam importer by container volume, states that the cargo it transports to Guam "mainly includes dry containers of mixed commodities, refrigerated containers of food, beverages, retail merchandise, building materials and household goods."⁴¹ Matson also describes a similar commodity

⁴⁰ Ibid.

⁴¹ Ibid.

mix for its transshipment cargo that moves through Guam, stating that it "consists mainly of general sustenance cargo, building materials, hardware and retail merchandise."⁴² Interviews with other carriers supported the observation that regional transshipment cargo mostly was household goods, vehicles, and trash or recycled products.

The Government of Guam Bureau of Statistics and Plans (BSP) collects commodity-level information for imports and exports; however, the process is complicated by the reliance on paper-based records of cargo manifests. Bill 176-37, introduced on September 27, 2023, would "promulgate and adopt rules and regulations" to allow for the cargo to be processed digitally within the globally standardized Harmonized Commodity and Coding System.⁴³ The most recently available data is somewhat outdated, especially on the import side, where the most current data is from November 2018. At that time, food and non-alcoholic beverages accounted for approximately one-third of imports, by value, while apparel accounted for a further 16.1%.⁴⁴

From the data provided, the picture of Guam's major trading partners and commodities is fairly clear. Almost two-thirds of cargo classified as an "import" came from elsewhere in the United States, with much of the remainder sourced from Europe and Asia. Export data for the third quarter of 2022 confirms that cargo is primarily destined for other islands in the region (79.5 %). The largest categories of export cargo were "transportation and parts," alcoholic beverages, and construction materials, that combined, account for 57.1% of the total.

Further details on the containerized commodity breakdown are included in Appendix C.

Description of the Airport

Current airport market position

A.B. Won Pat International Airport is the only commercial airport in Guam. The number of passengers traveling through the airport remains substantially lower than pre-COVID-19 levels. Flight arrivals at the airport increased by 51.1% between the FY2021 and FY2022, although the 18,756 flight arrivals in

⁴² Ibid.

⁴³ *Source*: https://www.guamlegislature.com/37th_Guam_Legislature/Bills_Introduced_37th/Bill%20No.%20176-37%20(COR).pdf

⁴⁴ Source: Guam Bureau of Statistics and Plans

FY2022 was still 65.6% lower than the 54,538 movements in FY2019.⁴⁵ Historically, the airport averaged approximately 50,000+ movements annually.⁴⁶

Airport facilities

The update to the *Guam International Airport Authority (GIAA) Master Plan* includes cargo facility improvements, with estimated costs of \$41.14 million in the short term (0 to 5 years) and \$77.11 million in the long term (11 to 20 years).⁴⁷ The total cost of the facilities implementation plan is estimated at \$762.99 million over the next 20 years, including the expenses shown below.⁴⁸

Improvements	Expenses	
Airfield-related expenses	\$125.67 million	
Terminal	\$63.23 million	
Landside expenses	\$148.56 million	
Cargo		\$118.25 million
General aviation	\$141.69 million	
Support facilities expenses		\$141.69 million
	TOTAL	\$762.99 million

Not all of these expenses are related to transshipment.

As noted in the *GIAA FY2022 Financial Plan*, the GIAA is "exploring opportunities to create a bonded warehouse facility, an agricultural inspection and fumigation facility, and opportunities for a transshipment hub with the establishment of a TSA-certified cargo screening program."⁴⁹

Several tenants on airport property have transshipment operations, including Menzies Aviation Limited, United Airlines Cargo, Federal Express (FedEx) and United Parcel Service (UPS).

⁴⁵ Source: FY 2022 Citizen-Centric Report, https://www.guamairport.com/docs/pages/corporate/reports/citizen-centric-report/fy-2022-citizen-centric-report.pdf, Page 2

⁴⁶ Source: Guam International Airport Authority

⁴⁷ *Source*: https://www.guampdn.com/news/airport-could-anticipate-paying-over-762m-for-upgrades/article_ed9f7d40-2f40-11ee-aafd-37e69e0c1b7f.html

⁴⁸ Ibid.

⁴⁹ Source: Guam International Airport Authority, 2022, "Financial Statements, Required Supplementary Information, and Supplementary and Other Information," Page 11

A transloading facility on airport property operated by PACAIR Properties offers a bonded warehouse with a TSA and Customs on-site presence. Built in 2008, at least one floor of the facility is fully occupied, although approximately 40% are U.S. federal government tenants. The building offers approximately 30,000 square feet of warehouse space on each of its two floors, and space already has been zoned for a second building of a similar size, if additional space is required. However, it would take at least five years to construct a second building. The existing anchor tenants can take advantage of potential expansion space by exercising a right of first refusal to occupy space currently held by tenants with short-term leases.

Current services

As noted in the *GIAA FY2022 Financial Plan*, "all-cargo operators include Asia Pacific Airlines, FedEx and UPS. Star Marianas, Arctic Circle and Marianas Southern Airways also provide services to the CNMI from Guam, utilizing aircraft weighing 12,500 pounds or fewer, on a scheduled and charter basis for passenger and cargo services."⁵⁰ United Airlines is the only U.S. passenger carrier at the airport. The airline also handles cargo within the cargo hold of its passenger aircraft that connect Guam to Japan, the Philippines and Honolulu. Additional passenger service is provided by Japan Airlines, Jeju Air, Jin Air, Korean Air, Philippine Airlines, S2 and T'Way Air.

Asia Pacific Airlines operates a fleet of Boeing 757-200F aircraft via bases in Honolulu, Hawaii and Guam, as shown in Figure 21. Asia Pacific operates multiple flights per week to Honolulu, Koror, Yap, Chuuk, Pohnpei, Kosrae, Kwajalein, and Majuro.⁵¹ The aircraft have a maximum payload of 79,366 pounds and a maximum load range of 3,169 miles. Pacific Air Cargo operates a bi-weekly 747-400F flight between Guam and Honolulu.

The airport handles minimal sea-to-air cargo, although, as indicated in the "Transloading" section of this Report, interviewees described a previously robust fish export supply chain.⁵²

⁵⁰ Source: Guam International Airport Authority, 2022 Financial Statements, Required Supplementary Information, and Supplementary and Other Information, Page 17

⁵¹ Source: https://www.asiapacificairlines.com/networks

⁵² Source: Interview with GIAA staff



Figure 21. Guam serves as a regional hub for Asia Pacific Airlines.

Air cargo volume

Total cargo tonnage has decreased by 19%, over the 10-year period between FY2013 and FY2022, for a compound annual growth rate of negative 2.3%. Although import tonnage decreased by 7.8% over that same period, export tonnage increased by 7.8%. Much of the increase in cargo volume in 2020 and 2021 was due to the influx of freighter activity transporting a combination of COVID-19 supplies, and military movements of personnel and cargo to or through Guam, and to and from Japan and Australia. At present, most cargo is composed of military equipment handled via freighter aircraft, while commercial cargo (both imports and exports) has been relatively flat.

⁵³ Source: Asia Pacific Airlines, http://flightschedule.asiapacificairlines.com/maps.asp



Total Air Cargo Movements, FY2012-FY2022⁵⁴

Figure 22. Air cargo tonnage surged during the COVID-19 pandemic, but remains below the level seen in the FY2012-FY2014 period.

As shown in Figure 23, exports began to outweigh imports in FY2020, following a three-fold increase in exports between FY2019 and FY2020. According to stakeholders, these increases are due largely to COVID-19 supplies and military cargo increases associated with personnel movements to and from Japan and Australia. Commercial air cargo has been flat for both imports and exports, consistently.

⁵⁴ Source: Guam International Airport Authority, Government of Guam



Air Cargo Movements, FY2018-FY2022⁵⁵

Figure 23. GIAA data show that Guam air cargo exports surged in 2020, possibly due to pandemic impacts on supply chains.

E. Transshipment Market Factors

The Team researched major market factors influencing transshipment decisions. Some were specific to particular markets, such as fishing or Department of Defense cargoes. Others are cross-cutting issues that impact every Guam transshipment cargo market. These factors largely tracked the GTTF's previous work, as reflected by the breadth of subcommittees created.

GEDA directed The Matsuda Team to research specific topics. The table below shows a comparison of areas of focus for the Matsuda Team, the existing GTTF Subcommittee structure, and major transshipment factors identified by the Matsuda Team in this background phase of the project.

⁵⁵ Source: Guam International Airport Authority, Government of Guam

GEDA- required study topics	Current GTTF subcommittee structure	Market factors identified by the Matsuda Team	
Other	Federal and local regulations	Regulations, including zoning and land use decisions, and U.S. Customs processing	
Tax	Tax policy	Tax policy, including tariff and trade policies	
Workforce	Workforce development	Workforce challenges	
Incentives	Incentive programs	Incentive programs	
	• Infrastructure	• Infrastructure	
	• Financial, investments and outreach	• Availability of on-island warehouse space	
	• Current state of the industry	• Transportation service levels and quality of service (<i>e.g.</i> , capacity, schedule, equipment utilized, port and drayage operations, etc.)	
		• U.S. Department of Defense needs	
		Outer islands economic and population trends	
		Other market-specific factors	

While supply chain diversification did not arise as a prominent transshipment factor during the limited interviews conducted during the background phase, it is an interesting development that potentially could impact transshipment involving the Asia-US mainland trade market. This trend is described in Appendix D.

F. Task Force Approach to Investigation

GTTF has worked with GEDA to hire the Matsuda Team to support its activities. Many of the substantive issues regarding transshipment feasibility track the GTTF's subcommittees created to examine specific issues related to transshipment. GTTF has devised subcommittees to examine specific issues related to transshipment, as shown in the middle column of the table in the previous section.

The Matsuda Team believes that the subcommittee approach is appropriate for the complex issue of transshipment. The Team is working with the GTTF to plan a series of workshops, utilizing the subcommittee structure and varying that structure to accommodate issues of importance that the Team identified during the background phase.

Approach

The Matsuda Team has proposed to collect two types of qualitative research regarding the feasibility of transshipment in Guam. The first is individual interview data, collected through discussions with leaders in the field of transshipment to identify initial insights, opinions, and perspectives. The second is workshop data, collected by holding a series of small-group workshops to expand on insights generated through initial interviews. Workshop participants will be those individuals from organizations impacted by, or involved in, transshipment, both directly and indirectly.

The initial interview phase included representatives from the Guam legislature, both the Airport Authority and Port Authority, and Guam Customs, among others. This phase helped shape initial insights which will be presented at the workshops. By conducting workshops with the GTTF subcommittees, the Matsuda Team will utilize a systematic approach to scaling feedback on the insights, opinions, and perspectives gathered through the interviews. In addition, the workshops allow for new opinions or perspectives on these topics. As described above, GTTF initially created six subcommittees, including tax and policy, workforce development, incentive programs, infrastructure, financial investments and outreach, and the current state of the industry. The Matsuda Team will make recommendations to GTTF on how to best utilize the subcommittees to support organization of the workshops.

The Matsuda Team's proposed methodology follows a common research structure, outlined below.

Proposed Project Data Collection Methodology

1. Define the Research Objectives. The Matsuda Team clearly defined the purpose and objectives of collecting interview and workshop information from industry leaders as critical to the development of factors and other relevant information, in determining the extent to which growth in Guam transshipment markets is feasible. For the workshop phase of the project, the Team will provide additional detail on which specific insights and information will be sought.

2. Select Data Collection Methods. The Matsuda Team chose the appropriate qualitative data collection methods based on the team's research objectives. For the Guam transshipment project, the team selected individual interviews and group workshops to gather this information. In addition to the chosen methods, the Team has created (and will use) an email account to receive additional transshipment information from those parties neither interviewed nor participating in workshops.

Proposed Project Data Collection Methodology

3. *Identify Interviewees and conduct background interviews.* Working with the GEDA, the Matsuda Team selected the initial interviewees, created topical questions, and conducted both virtual and in-person interviews.

4. *Identify Workshops and Participants.* Considering the GTFF subcommittee structure, the Matsuda Team will structure appropriate workshops to collect additional information. Given the heavy presence of Chambers of Commerce represented on the GTTF, the Team will work with the Guam Chamber of Commerce and others, to conduct specific outreach to their members and community. Through reflection of the information presented during the individual interview phase, and to avoid duplication, the Team will endeavor to ensure that workshop participants are representative of broader groups or organizations. Primarily, these workshops are designed to take place in person, with an online option available, if needed.

5. *Recruit Participants.* The Matsuda Team will work with each GTTF subcommittee to identify and recruit participants for each workshop. The Team will include diversity considerations in workshop participants, in terms of roles, expertise and backgrounds, to ensure the capture of a wide range of perspectives.

6. Conduct Data Collection. Throughout the project, the Matsuda Team will collect qualitative data through interviews, workshops and publicly available email addresses. The interviews were individualized and tailored through use of open-ended questions to account for the different ways in which the interviewees related to the issue of transshipment. However, the workshops will reflect a group discussion style, and are designed to be led by a trained facilitator. Participants will be made aware of the email data collection option for materials and through opportunities to communicate information verbally.

7. *Data Analysis.* The Matsuda Team will analyze the qualitative data derived from interviews, workshops and the public email collection system. The data to be analyzed is expected to include anonymized notes of interview proceedings and organized workshop notes, among other potential sources. The Team expects to utilize qualitative data analysis techniques, such as thematic analysis or content analysis, to identify patterns and themes in the data.

8. **Report Findings**. The Matsuda Team will document, in the Feasibility Study Report, any qualitative findings from the workshop process. The Team will summarize and categorize information gathered into themes.

9. *Feedback and Validation.* Once compiled, the Matsuda Team will present its draft findings to the GTTF for validation and feedback. This step helps to ensure accuracy and may lead to additional insights.

Proposed Project Data Collection Methodology

10. Actionable Recommendations. Based on the findings, the data gathered from qualitative engagements will help inform the broader analysis that the Matsuda Team will perform to identify Guam transshipment and transshipment-related opportunities, along with actionable recommendations involving local tax policy, workforce development, incentive programs and other elements, as determined by the GTTF.

Background Report Appendices

- A. Soundings Chart for the Port of Guam
- B. MARAD Marine Highway Background
- C. Guam Containerized Commodity Breakdown



Soundings Chart for the Port of Guam





MARAD Marine Highway Background Information


Marine Highway M-GNM1

Sponsors: Port Authority of Guam (PAG) and Commonwealth Ports Authority (CPA)

Marine Highway Route:

PAG and CPA applied collectively to designate the waterways currently used to transport all goods and commodities between Guam and the Commonwealth of the Northern Mariana Islands (CNMI) main islands of Rota, Tinian, and Saipan.

Description:

PAG and CPA both service marine operations of containers, break-bulk, roll-on/roll-off (RORO) vessels, fishing vessels, fuel operations, and occasionally passenger vessels/cruise ships. The Marine Highway Route Designation supports the expansion of the already existent containerized freight service to the islands.

Attributes:

The island territories are predominantly reliant on marine transportation to sustain their residents' way of life. Nearly all commodities and household and commercial goods, such as food, clothing, fuel, vehicles, construction materials, and medical supplies are transported through the islands' seaports. Shipping routes originate from U.S. ports in California, Washington, and Hawaii. Establishing the Guam-CNMI Marine Highway Route under the AMH Program will allow these territories to leverage the full range of available Federal resources to remain a viable component of America's marine transportation and strategic seaports network, as well as position them to be in the best possible situation to further enhance and economically sustain these markets in the future.





Guam Containerized Commodity Breakdown

Guam Containerized Commodity Breakdown

A variety of commodities are shipped to and from Guam, and most tend to be classified as general sustenance cargo. This type of cargo is intended to support life in the Pacific Island region and supply construction materials that are not available locally.

In November 2018 (the most recent data available), total imports for the month were valued at \$54.3 million. As shown by the relative share of import cargo in Figure C1, food and non-alcoholic beverages accounted for approximately one third of imports by value, accounting for \$17.6 million of cargo. Men's and women's apparel accounted for a further 16.1% with \$8.8 million of cargo.



Share of Import Value by Commodity Category, November 2018¹

Figure C1. BSP data on Guam cargo imports show a mix of items supporting general sustenance and construction activities.

Export data is available through September 2022, although it is presented at a quarterly level. The chart in Figure C2 shows the most recent data as well as the data from the same quarter of 2018, to allow for comparison with the import data from a similar period. Total exports for the three-month period were valued at \$9.91 million in 2018 and \$8.23 million in 2022.

¹ Source: Guam Bureau of Statistics and Plans

Cargo categorized as "transportation and parts" was the largest category from July to September 2022, with the \$1.83 million of cargo equating to a 22.3% share – slightly ahead of the \$1.75 million of alcoholic beverage exports. In the July to September 2018 period, alcoholic beverage exports were the largest category, with \$1.60 million of cargo, equating to a 16.1% share of the total. This cargo was followed by \$1.16 million of food and non-alcoholic beverages, equating to an 11.7% share of the total. Cargo classified as "other exports" accounted for a significant portion of the cargo, during each period. The period from 2022 was dominated by tobacco products – accounting for approximately 72% of the category, while in the 2018 period, the division was more varied, including jewelry and precious metals (37.4% of the "other exports" category), printed books and brochures (25.7%) and tobacco products (19.8%).



Share of Export Value by Commodity Category, July-September 2018 and 2022²

Figure C2. BSP data on Guam cargo show that the largest category of exports is classified within "other" and includes such commodities as tobacco products and jewelry.

In November 2018, considering trading partners, imports from elsewhere in the United States dominated – accounting for 62.2% of the total. Much of the remainder was sourced from Europe and Asia, as illustrated in Figure C3, below.



Share of Import Value by Trade Partner, November 2018³

Figure C3. BSP data highlight Guam's reliance on the United States mainland for imports, although Europe and Asia, each, accounted for approximately 15% of imports.

Export data, provided in Figure C4, below, show such trade to be much more regional in nature, with the Federated States of Micronesia accounting for 54.1% of the total. Combined, the Federated States of Micronesia, Palau, the Marshall Islands and the Northern Marianas accounted for 79.5% of the total, while Asia accounted for much of the remainder.



Share of Export Value by Trade Partner, July-September 2022⁴

Figure C4. BSP data show that most of Guam's exports are destined for regional trading partners in the West Pacific, with the Federated States of Micronesia alone accounting for more than 50% of the total.



Supply Chain Diversification

Supply Chain Diversification

Beneficial Cargo Owners (BCOs) have sought to increase the diversity and resiliency of their supply chains, following the introduction of tariffs on selected goods imported to the U.S. from China and other nations under former President Trump. This effort extended to the supply chain crisis that accompanied the global COVID-19 pandemic. As part of this effort, BCOs have sought to shift a portion of their manufacturing efforts from China back to the U.S. (re-shoring), to nearby nations (near-shoring), or to nations that are seen as more reliable or that are similar in political and economic alignment (friend-shoring). In many cases, this is seen as a "China-plus-one" effort, where manufacturing is diversified and takes place both in China and an additional country.



U.S. Containerized Imports from China and ASEAN, H1 2015 vs H1 2019 vs H1 2023¹

Figure D1. Percentages shown in black bars, above, indicate share of total containerized tonnage for each period. Red and green percentages indicate change in tonnage between H1 2015 and H1 2023. (ASEAN: Association of Southeast Asian Nations- Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand and Vietnam)

¹ Source: U.S. Census Bureau, USA Trade Online: https://usatrade.census.gov

The opportunity for manufacturing outside of China began before the tariffs, as the rise in wages that accompanied China's increased prosperity caused a decrease in the cost advantage that the nation had long relied on. Although U.S. containerized import tonnage in the first half of 2023 was 14.2% greater than in the first half of 2015, the tonnage from China decreased by 6.8%.² China remains the United States' largest containerized trade partner, but the Association of Southeast Asian Nations accounted for 15% of import tonnage in the first half of 2023, up from 9% in the first half of 2015, with the tonnage increasing by 87.9% over the eight-year period.³

An analysis of the import data would identify specific imported goods that have had a faster rate of growth in the ASEAN nations than in China, and allow for an assessment to determine whether any of those goods could be assembled or manufactured in Guam.

² Ibid.

³ Ibid.



Matsuda Team Complete Survey



Guam Transshipment Task Force Survey Introduction

Thank you for your participation in this survey in support of the Guam Transshipment Task Force. The survey is designed to develop information on views about the market potential for growing the shipping volumes for various types of commodities through Guam, as part of a viable and sustainable transshipment industry.

Many of these commodities have been identified through research and investigation of various market factors, such as cost of goods relative to transportation cost, time to market, impact of trade laws/regulations such as Chinese tariffs and U.S. domestic preference procurement policies, availability of container service to/from island, and geographic location of Guam with respect to potential markets, including Department of Defense facilities.

This survey is expected to take approximately 6 minutes to complete. While IP addresses are not collected the survey does ask for your name and contact information. The compiled results will be anonymous and will help inform the work of the Guam Transshipment Task Force.

If you'd like to offer additional information relevant to the study, but beyond the scope of this survey, please email the Guam Transshipment Task Force support team at GTTF@matsuda-llc.com.





Guam Transshipment Task Force Survey Participant Information

1.	What	is	vour	name?
	vvnac	10	your	nume.

First name	
Last name	

2. What is your email address?

Email address

- * 3. In which sector is your current profession?
 - \bigcirc Government
 - Transportation/Logistics industry
 - O Import-export
 - Manufacturing
 - Non-government workforce development-related organization
 - Real estate industry
 - Government contractor
 - Other (please specify)

- * 4. How central is the topic of transshipment to your work?
- Very central. It's the main focus of my work.
- Somewhat central. It comes up frequently, but it isn't the main focus.
- O Not central. It may come up, but I don't focus on it or pursue business that requires it.
- Other (please specify)
- * 5. Please select one option to describe your highest role at your current employer:
 - O CEO/ED
 - \bigcirc C-Suite
 - O Program Manager
 - Program Assistant
 - O External Consultant
 - Other (please specify)



Guam Transshipment Task Force Survey Transshipment Industry Assessment

The Guam Transshipment Task Force defines transshipment to include three different variations. Please consider these models as you review your answers to the questions below. The models include:

- **Transloading Model.** Items that arrive by air or ship are simply transloaded onto a different aircraft/ship for transportation to a final destination; these items never leave their shipping container.
- **Manufacturing/Value-added Model.** Items that undergo some level of value-add processing on Guam, with raw materials or subcomponents arriving from off-island, and assembled items or finished goods being shipped off island.
- **Big Box/Amazon fulfillment-style Model.** Items that are shipped to Guam via air or ship, staged or consolidated on Guam, then sent to their final destination via aircraft or ship.

The following questions ask for your opinions as to the likelihood of success of growing Guam's transshipment industry.

Please state your views as either "has potential," "might have potential," "unlikely to have potential," or "I don't know" the market for the following commodities to be transshipped through Guam:

* 6. Aquaculture products, including fresh fish landed at Port of Guam and flown to market in Asia (direct transfer/no processing)

- 🔘 Has potential
- O Might have potential
- 🔘 Unlikely to have potential
- 🔿 I don't know

* 7. Aquaculture products, including processed/frozen seafood landed at Port of Guam, processed on island and transferred via ship or air freight to markets in Asia/ Mainland U.S.

◯ Has potential

 \bigcirc Might have potential

🔘 Unlikely to have potential

🔘 I don't know

* 8. Products such as office furniture which are shipped to Guam from the Mainland via the Port, assembled on Guam, and transported via ship to U.S. Department of Defense installations throughout the Pacific.

◯ Has potential

O Might have potential

O Unlikely to have potential

🔘 I don't know

* 9. Products such as small, high-value electronics whose components are shipped to Guam from Asia via the Port, assembled on island, and air freighted to the U.S. Mainland.

 \bigcirc Has potential

O Might have potential

🔘 Unlikely to have potential

* 10. Products in the clean energy industry, such as solar panel components, whose raw materials/subcomponents are shipped to Guam via the Port, assembled/manufactured on island, and shipped to the U.S. Mainland via the port.

◯ Has potential

 \bigcirc Might have potential

🔿 Unlikely to have potential

🔘 I don't know

* 11. Pharmaceutical products, whose raw materials arrive via the Port, are manufactured on Guam, and shipped to the U.S. Mainland via air freight and the port.

🔘 Has potential

O Might have potential

🔿 Unlikely to have potential

🔘 I don't know

* 12. Unique spare parts, whose raw materials arrive to Guam via the Port, are made on Guam using additive manufacturing techniques (e.g., 3-D printing), and are shipped to market via the Port or air freight.

◯ Has potential

O Might have potential

🔘 Unlikely to have potential

* 13. High-value textiles (such as famous-label handbags, shoes or wedding dresses), whose raw materials are shipped to the island from Asia via the Port, that are assembled on Guam, and that are shipped via ocean freight or air freight to markets in Asia or the U.S. Mainland.

🔘 Has potential

O Might have potential

🔘 Unlikely to have potential

🔘 I don't know

* 14. Low-value textiles (budget clothing, nonspecific labels) whose raw materials are shipped to Guam via the port, that are manufactured on Guam, and that are shipped via the port to destinations in Asia or the U.S. Mainland.

◯ Has potential

○ Might have potential

🔿 Unlikely to have potential

🔘 I don't know

* 15. Specialty textiles to support U.S. military, whose raw materials arrive from the U.S. Mainland and/or Asia, that are assembled on Guam, and that are shipped to DOD destinations throughout the Pacific Region.

🔿 Has potential

○ Might have potential

O Unlikely to have potential

* 16. Prepared food items including preserved fruits/jam, whose raw materials arrive via the Port, are processed on Guam, and are shipped to market via the Port.

◯ Has potential

O Might have potential

🔿 Unlikely to have potential

🔘 I don't know

* 17. Digital electronics devices, including solid state USB "thumbnail" drives, whose raw materials arrive via the Port, are processed on Guam and are shipped to U.S. mainland markets via air freight.

🔿 Has potential

O Might have potential

🔿 Unlikely to have potential

🔿 I don't know

* 18. Specialty aerospace components, whose raw materials arrive via the Port, are manufactured on Guam, and are shipped to U.S. Mainland markets via air freight.

○ Has potential

O Might have potential

🔿 Unlikely to have potential

🔘 I don't know

* 19. Plastic and rubber products, including shutters, blinds and rubber tires, whose raw materials arrive from Asia via the port, are manufactured on Guam, and are shipped to U.S. mainland markets via the Port.

🔿 Has potential

O Might have potential

🔿 Unlikely to have potential

* 20. Small packaged goods, such as those fulfilled by Amazon or other large warehousebased suppliers, which arrive via the Port or air freight, are consolidated on Guam, and are sent out for distribution via the Port or air freight to markets in Asia, Pacific Islands or Mainland U.S.

◯ Has potential

O Might have potential

🔘 Unlikely to have potential



Guam Transshipment Task Force Survey Wrapping Up

21. Are there other potential types of cargo that you think have a **high likelihood** of success of growing Guam's transshipment industry (please specify):

* 22. In general, what do you believe is the likelihood for expansion of Guam's transshipment industry?

🔿 Very likely

◯ Somewhat	unlikely
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\bigcirc	Not	likely	at	all
------------	-----	--------	----	-----

 \bigcirc I don't have an opinion

Other (please specify)



Guam Transshipment Task Force Survey Survey Complete!

Thank you for your participation in this survey.

If you have any questions or if you'd like to offer additional information relevant to the study, but beyond the scope of this survey, please email the Guam Transshipment Task Force support team at **GTTF@matsuda-llc.com**.