"Quiche Versus Cargo" The Changing Development Role of U.S. Ports

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Port authorities in the United States have traditionally focused their resources on the development of marine terminals and related infrastructure for waterborne commerce. In recent years, however, forces within the port industry and the communities they serve have directed many port authorities to allocate land and capital resources toward the development of a broad range of land uses unrelated to waterborne commerce. The resulting increase in competition between maritime and non-maritime uses for limited waterfront land resources (sometimes characterized as the struggle of "quiche versus cargo") is a source of ongoing debate within the port industry.

This growing competition between maritime and non-maritime uses of the waterfront has been confined primarily to the Pacific coast. Dramatic growth in trade with the Pacific Rim and rapidly growing real estate markets have combined to exert tremendous development pressure on the scarce waterfront land resources of port authorities in major port cities such as Long Beach, Los Angeles, and Oakland. More recently, however, this issue has also begun to emerge in port cities in the southeastern United States. For instance, Tampa faced this issue when it began the redevelopment of the Garrison Terminal, an aging general cargo[1] facility located on the eastern edge of the Tampa central business district. The Garrison Seaport Center, as the project will be known, will be a mixed-use complex anchored by the Florida Aquarium, a non-profit educational and tourism facility featuring Florida aquatic life. The long-term benefits of the project are clear. The Garrison Seaport Center will greatly expand the offerings in downtown Tampa by drawing residents and visitors to this waterfront location during evenings and weekends. Commercial development of the site will provide the Tampa Port Authority with a significant stream of revenue, which can be used to finance maritime development projects, while the center will serve as the site of the port's cruise terminal complex.

The decision to undertake this project raised many concerns within the port industry in the Tampa Bay region. Although the age and location of the Garrison Terminal limited its usefulness for general cargo operations, it was nonetheless an active cargo terminal. The loss of this facility has constrained the Tampa Port Authority's capacity to handle general cargo at a time when the port's cargo traffic is growing dramatically. Capital funds and Tampa Port Authority staff resources required for the redevelopment of the Garrison Terminal has further limited the Authority's ability to perform its more traditional functions. The Tampa Port Authority has recognized that non-maritime development will play an important role in its future. To minimize potential conflicts with its traditional development mission, the Tampa Port Authority has included a new set of policies to guide its non-maritime development activities in its recently-updated strategic plan.[2]

This article will examine several aspects of the "quiche versus cargo" debate, using the Tampa Port Authority as an example. The competition between maritime and non-maritime uses of the waterfront must be balanced with the economic benefits of traditional maritime development and the unique spatial requirements of marine terminals. To do this, a set of broad policy guidelines for the management of waterfront land resources will be presented.

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Increasing Competition for Waterfront Land

Waterfront land is a scarce and valuable resource in any port community. Conflict among various public and private users of waterfront land is expected. In recent years, however, the level of conflict over the appropriate use of waterfront land in port communities has intensified. These increasing conflicts are the result of technological and economic changes within the port industry and changes in the broader development environment within which port authorities operate.

Changing design of marine terminals. The advent of containerization significantly changed the design and operation of general cargo marine terminals. The technological changes associated with containerization have generally reduced the amount of berth space and labor required to handle a given volume of cargo. Conversely, the area needed for storage and the overall capital cost of marine terminal development have increased significantly. Containerization has rendered many older general cargo marine terminals functionally obsolete. Originally designed for handling breakbulk cargo, these facilities are frequently located near urban centers on constrained sites with poor truck access. The Garrison Terminal in Tampa and the Columbus Street Terminal in Charleston are examples of such facilities. Redevelopment interest has focused on these facilities because of their location near commercial centers and their declining utility as active marine terminals. As cargo volumes grow and port activity shifts away from these older facilities, however, new and larger sites capable of supporting modern terminal development must be identified and preserved.

Financial Pressure on Port Authorities. The need to develop new marine terminals to accommodate changes in shipping technology has resulted in a dramatic increase in capital investment by port authorities. At the same time, containerization has increased the level of competition between port authorities. This competition has lowered the rates port authorities charge shipping lines for the use of their facilities. To remain financially viable in this highly competitive environment, port authorities have begun searching for alternative revenue sources. Commercial development of appropriate waterfront parcels has the potential to generate substantial amounts of revenue while requiring minimal capital investment on the part of port authorities.

Increased Public Awareness of the Waterfront. In many port cities, the waterfront has traditionally been viewed as an economic resource to be exploited for the development of port facilities and water-dependent industries such as ship repair. The success of numerous waterfront redevelopment projects undertaken in the 1980s, most notably Baltimore's Inner Harbor, has transformed the attitudes of government officials, private developers, and the general public regarding appropriate use of the waterfront. Heightened interest in alternative development of the waterfront, ranging from providing public access to intensive mixed-use development, has placed considerable pressure on port authorities to consider non-maritime use of their real estate.

More Stringent Environmental Regulation. The development of waterfront land is among the most highly regulated activities in the United States. Waterfront development is regulated by all levels of government, which have applied increasingly strict standards over time. The introduction of more stringent environmental standards has had three effects on waterfront development:

- the amount of waterfront land where development is permitted is reduced;
- mitigation requirements add to the cost of development and further reduce the net amount of waterfront property available for development; and
- the increased length of the environmental permitting process adds to cost of development and increases financial risk.

Regulations are designed to enhance and preserve vital waterfront environmental resources, such as tidal wetlands, which is clearly in the public interest. One consequence of these regulations, however, is that public and private bodies engaged in waterfront development have become increasingly reluctant to yield their

New transit shed and paved storage area under construction at the Port of Tampa.

existing development rights to alternative uses for fear that they cannot be replaced.

Institutional Conflict With few exceptions, port authorities in United States operate outside the structure of local government. The most common model for port management in the southeastern United States is a state-wide agency responsible for the development and management of public port facilities within various local jurisdictions throughout the state. Although free-standing port authorities have many advantages, one seemingly inevitable consequence is a lack of intergovernmental coordination between the port authority and local communities. This lack of coordination often results in the poor integration of port development into the land use and transportation plans of local and regional governments, exacerbating conflicts over the appropriate use of waterfront land. For example, the Tampa Port Authority, a major traffic generator and a key element of the regional transportation system, was not a member of the Metropolitan Planning Organization (MPO) which directs overall development of the region's road network.

Land Use Policies of Port Authorities

The decision to develop or redevelop a waterfront site which is suitable for a marine terminal for a non-maritime use should be approached with caution. Two considerations should govern this decision: the particular spatial requirements of marine terminals and the significant economic benefit that ports provide to their communities.

Spatial Requirements of Ports

A marine terminal serves as an interface between waterborne and land-based transportation modes; waterfront location is the primary spatial requirement of a marine terminal. Simply providing waterfront access is not sufficient, however. A site must offer deepwater access to be suitable. A deepwater berth and an unobstructed navigation channel (no low-lying bridges, power lines or other overhead structures) linking the site to ocean shipping lanes must be constructed and maintained in a manner which is both economically feasible and environmentally sound. Providing deepwater access has become more difficult in recent years. First, ships are becoming larger. One of the consequences of containerization has been an increase in ship size. Before containerization, a typical general cargo ship was 600 feet in length and had a draft of less than 35 feet. The modern container ships now calling at major ports such as Charleston and Norfolk may be over 950 feet in length and have a draft in excess of 42 feet. Bulk ships are even larger. Some carriers transporting coal between Hampton, Virginia and European ports have drafts in excess of 55 feet. The wider and deeper navigation channels and berths needed to accommodate these larger, more efficient vessels has reduced the number of sites suitable for modern port operations and significantly increased the cost of port development and maintenance. Compounding this problem are the increasingly stringent environmental regulations governing the dredging of navigation channels and the disposal of dredge spoils. Finally, the reduction and delay in funding of navigation projects by the federal government, which through the U.S. Army Corps of Engineers has historically assumed responsibility for development and maintenance of the country's waterways and navigation channels, has shifted an increasing share of the financial burden onto state and local port authorities.

In addition to adequate water access, a site must also provide access to land transportation. The site must be linked to the regional highway system by a local roadway network with a capacity, roadway geometry, and level of service sufficient to support large volumes of truck traffic. Marine terminals also require direct rail links for the movement of conventional rail traffic. Because of growing volumes of container traffic moving by rail, it is becoming increasingly important for modern container terminals to have access to intermodal rail facilities.[3]

Marine terminals also serve as storage facilities for export cargoes awaiting ships and imports stored for distribution. The factor that most often limits the throughput capacity of a marine terminal is the availability of tracts of land large enough to support substantial storage. As previously noted, the amount of land area required for handling general cargo has increased with containerization and the growth in the size of vessels. While a berth for handling breakbulk general cargo may only require five to ten acres, a general rule of thumb for the development of a large-scale container terminal is fifty acres per berth. Further expanding the land requirements for modern marine terminals is the growing trend toward locating trade-related distribution facilities and intermodal railyards adjacent to container terminals.

Marine terminals are heavy industrial sites which should be situated in a low-performance, heavy industrial use zone. Marine terminals typically operate 24 hours per day, generating significant levels of noise, visual pollution, and traffic. In addition, marine terminals often handle and store hazardous materials and should therefore be isolated from most residential and commercial land uses.

These four spatial requirements, deep-water access, excellent rail and roadway transportation access, adequate land area, and isolation from incompatible uses, greatly limit the number of sites suitable for marine terminal development. Even in Tampa, which enjoys an excellent natural harbor, there are a surprisingly limited number of sites where marine terminal development is both economically and environmentally feasible. There are two consequences of these stringent spatial requirements. Most waterfront locations are eliminated as potential sites for marine terminal development, free-

ing these areas to be developed or redeveloped for non-maritime uses. On the other hand, the scarcity of suitable sites for marine terminal development heightens the importance of landbanking appropriate sites for marine-related uses.

Economic Impact of Ports

Historically, the development and management of the nation's port system was one of the first responsibilities assumed by federal, state and local governments. This early and continuing public involvement in port development is based on the significant economic benefits of an efficient port system. The economic benefits provided by a port are twofold. Direct, indirect and induced economic activity result from port operations, while industries and consumers within the port's hinterland region benefit from the efficient transportation of raw materials, finished products, and consumer goods through the port.

Economic Impact of Port Operations Ports are powerful economic engines which generate significant levels of employment, economic activity, and tax revenue. The economic activities associated with port operations consist of both the physical handling of cargo and trade-related services that are directly required for the movement of cargo. These activities include ocean transportation; marine terminal operations, inland transportation by truck and rail, warehousing and distribution, customs-house brokering and freight forwarding; insurance, trade-related finance, and government agencies.

The economic impact of port operations vary by the type of cargo being handled. Non-containerized general cargo, the most labor intensive cargo to handle and transport, generates the highest levels of direct employment. In contrast, the handling of highly mechanized bulk cargoes, which predominate Tampa's cargo throughput, produces much lower levels of employment.

A study of the economic impact of the Port of Tampa on the Tampa Bay region[4] estimated that during its 1985-86 fiscal year, the port generated 68,000 jobs in direct, indirect and induced employment within the five-county port region, $1.4 billion in income, and $684 million in tax revenues. To place this in perspective, the surrounding five-county region had a total employment approximately 768,000 in 1986.[5] Based on this estimate, the Port of Tampa generated approximately 8.8 percent of all employment in the region, making it one of the region's most important economic forces. Because the Port of Tampa is primarily a bulk port located within one of the largest employment centers in the southeastern United States, its employment impact is small compared to many other ports. Ports which are located in smaller cities and handle substantial volumes of containerized and non-containerized general cargo (such as Charleston, South Carolina and Norfolk, Virginia) exert a profound influence on the regional economy. In these communities, the port often represents the major share of the basic sector of the regional economy, acting as the primary engine driving regional economic development.

Economic Benefits to Port Users Beyond the economic impact of port operations, ports also facilitate the efficient transportation of goods in and out of the region. This is by far the Port of Tampa's most important function. Neighboring Polk County is one of the world centers for the mining and processing of phosphate fertilizer materials. The raw materials used in the production of fertilizer (such as liquid sulphur and ammonia) are imported through the Port of Tampa. Roughly 55 percent of the industry's output, in the form of phosphate rock and finished fertilizer, is shipped to foreign and domestic destinations through the Port of Tampa. The Port of Tampa exports fresh grapefruit and other citrus products grown in the region. It is also the point of distribution for refined petroleum products moving into central Florida and handles imports of lumber, steel, and other inputs used by the region's construction and manufacturing industries.

Straddle carrier and container storage at the Port of Tampa.

Guidelines for Non-Maritime Development

In light of the many economic benefits of traditional port activity, the Tampa Port Authority established the promotion of waterborne commerce as the primary goal of its 1992 strategic plan. The Tampa Port Authority, however, has substantial real estate holdings not suitable for

maritime commerce. It has adopted a series of guidelines for marketing these assets.

- *Site Control and Selection* Promoting maritime commerce is the primary goal of the Port. Only real estate assets which are not suitable or needed to support maritime commerce are candidates for non-maritime development.
- *Capital Investment* The Tampa Port Authority must make substantial investments in port facilities in coming years and has limited capital funds available to pursue non-maritime development. Because of its capital constraints, non-maritime development undertaken by the Port must be largely self-financing.
- *Revenue Generation* A key purpose of non-maritime development is to generate revenues to finance port development. The Tampa Port Authority seeks projects which generate significant revenues and have low operating costs.
- *Land Use Compatibility* The Port is a heavy industrial activity and non-maritime uses must be selected and sited so as not to create potential conflicts with the Port's existing marine uses.
- *Enhance Port Performance* Certain uses, such as distribution facilities, enhance the marketability of a port. Development of such facilities is given priority.

It appears certain that competition between maritime and non-maritime uses of the waterfront will continue to grow within port communities. Both port authorities and local governments should temper their enthusiasm for non-maritime development with a careful assessment of the current and future needs of the port industry. Ports occupy an important position within the economies of their communities. Appropriate waterfront sites must be preserved through landbanking and zoning controls to insure that the long-term spatial needs of the port industry can be met. Once the decision has been made to permit development of a site suitable for port use, the decision is often irreversible. CP

Notes

[1]Cargo is typically classified into two broad categories: bulk and general. Bulk cargo consists of commodities, such as petroleum products, iron ore, grain, and coal which are loaded and discharged from ships using pipelines, conveyors, and similar mechanical handling equipment. Bulk commodities tend to be low in value and are typically transported in large volumes on dedicated vessels. General cargo consists of a broad range of higher value commodities, such as apparel, automobiles, foodstuffs, and machinery. General cargo is further classified according to how it is packaged and handled during shipment. Breakbulk cargo is packaged in relatively small units, such as bags, pallets, or drums. This is the traditional means of transporting general cargo and is very labor intensive. Containerized cargo consists of general cargo which is loaded into specially design metal shipping containers for transport. The use of shipping containers (which are similar in size to truck trailers) permits the efficient transfer of cargo between ship, truck and rail and greatly reduces the time and cost involved in ocean transportation of general cargo. Neobulk cargo consists of general cargo, such as automobiles, lumber and steel, which cannot be readily loaded into containers, but whose physical characteristics enable the cargo to be bundled into large units for efficient handling.

[2]Tampa Port Authority (Prime Interests, Inc. and Frederic R. Harris, Inc.), *Tampa Port Authority Strategic Plan Update*. November 1991.

[3]Intermodal rail refers to the inland movement of truck trailers and containers on railroad flatcars. Because of the lower cost of transporting trailers and container by rail, this has become an increasingly important means of moving containerized cargo to/from ports, particularly if the origin or destination of the cargo is more than 500 miles from the port.

[4] University of South Florida Center for Economic and Management Research, *The Economic Impact of the Port of Tampa*. July, 1988.

[5]U.S. Department of Commerce, *County Business Patterns -Florida, 1986*. 1987. The five-county Tampa port region consists of Hernando, Hillsborough, Pasco, Pinellas, and Polk counties.

Foreground: Dry bulk conveyer. Background: Scrap metal being loaded.