

National Strategy
for the
Marine Transportation System:
A Framework for Action



By the
Committee on the Marine Transportation System
July 2008

National Strategy for the Marine Transportation System: *A Framework for Action*

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Cover image: Aerial view in Los Angeles of Pier 300 / APL Container Terminal (foreground) and Pier 400 / APM Terminal (background). Photo courtesy Port of Los Angeles.



THE SECRETARY OF TRANSPORTATION

WASHINGTON, D.C. 20590

July 10, 2008

It gives me great pleasure, as Chair of the Committee on the Marine Transportation System, to announce publication of the *National Strategy for the Marine Transportation System: A Framework for Action*.

As one of the world's leading maritime and trading nations, the United States relies on an effective and efficient Marine Transportation System (MTS) to facilitate commerce and protect our national security. On December 17, 2004, President Bush directed a cabinet-level committee, the Committee on the Marine Transportation System (CMTS), to create a partnership of Federal agencies. Currently, 18 different Federal agencies serve on the CMTS. The President charged the CMTS with providing high-level leadership and improved coordination to promote the safety, security, efficiency, economic vitality, sound environmental integration, and reliability of the MTS for commercial, recreational, and national defense requirements.

The CMTS developed the *National Strategy for the Marine Transportation System: A Framework for Action* to serve as both a policy framework for the next five years and as a structure upon which to build an implementation plan for that policy. It presents the most pressing, current challenges facing marine transportation, and calls for coordinated Federal action in five priority areas: capacity, safety and security, environmental stewardship, resilience and reliability, and finance and economics.

To identify the priority areas and Federal actions needed, the CMTS actively sought perspectives and ideas from a diverse group of stakeholders. The *National Strategy* responds to issues raised by and incorporates recommendations from commercial, national defense, and recreational interests. This *Framework for Action* helps ensure that America's Marine Transportation System serves the needs of the Nation now, and will grow to meet the challenges projected for the future.

We have made great progress, but to achieve the goals set in the *National Strategy*, the CMTS is relying on you for support and leadership.

A handwritten signature in blue ink, reading "Mary E. Peters", is positioned above the printed name.

Mary E. Peters

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PREFACE

“The United States Marine Transportation System will be a safe, secure, and globally integrated network that, in harmony with the environment, ensures a free-flowing, seamless, and reliable movement of people and commerce along its waterways, sea lanes, and intermodal connections.”

(CMTS Coordinating Board, October 2006)

America’s Marine Transportation System (MTS) moves people and goods through U.S. ports, utilizing a system of harbor channels and waterways to final delivery points or connections to highways, railways, and pipelines, and it is thriving. The MTS allows the worldwide distribution of our Nation’s agricultural and manufactured products. The MTS also carries 43.5 percent by value and 77.6 percent by weight of all U.S. international trade.¹ The Department of Transportation (DOT) predicts that between 2010 and 2020 the value of freight carried by water will increase 43 percent domestically and 67 percent internationally.² In 2006, 27 million 20-foot equivalent units (TEUs) of containerized cargo (an international industry standard) were loaded and unloaded at U.S. ports.³ If all of these containers were placed end to end, they would circle the globe four times.

America’s MTS, which relies on unimpeded freedom of the seas throughout the world, is critical to our national economy and our national security.

The MTS is at a crossroad. While MTS trade is thriving, segments of the MTS are showing signs of strain, which will intensify as cargo and passenger traffic increases. Large containerized cargo ports, which are beginning to experience capacity problems, will be pressured to keep up with the growth in trade. The MTS physical infrastructure will experience increased strain and become prone to failures. The U.S. military’s reliance on MTS ports to deliver equipment and supplies to defense forces abroad adds to the strain. Globalization and international trade, U.S. security commitments overseas, and treaty and Federal law requirements to protect human health and the marine environment pose critical planning challenges for the MTS in the areas of

¹ Bureau of Transportation Statistics, Pocket Guide to Transportation 2007, Tables 5-5 and 5-6.

² Federal Highway Administration Freight Analysis Framework, 2002.

³ U.S. Water Transportation Statistical Snapshot (2007), Maritime Administration, US DOT.

capacity, safety and security, environmental stewardship, resilience and reliability, and finance and economics.

To address these critical issues, the Committee on the Marine Transportation System (CMTS), composed of 18 Federal Cabinet Secretaries, Agency Administrators, and representatives from the Executive Office of the President, all with maritime jurisdictions, has ratified a *National Strategy for the Marine Transportation System: A Framework for Action (National Strategy)*. Through the *National Strategy*, the CMTS will communicate information about challenges that need to be addressed to improve the MTS and ensure that policies and actions of its Agencies are synchronized, coordinated with other policy facilitation structures such as the Committee on Ocean Policy, focused on the future, and targeted to the most critical issues. This *National Strategy* supports the President's U.S. Ocean Action Plan to improve the MTS portion of the Nation's precious ocean resources.

EXECUTIVE SUMMARY

The National Strategy for the Marine Transportation System: A Framework for Action (National Strategy) was prepared by the Committee on the Marine Transportation System (CMTS), which is composed of 18 Federal Cabinet Secretaries, Agency Administrators, and representatives from the Executive Office of the President.⁴ The *National Strategy* is the policy framework for the Marine Transportation System (MTS) for the next five years, with a view to addressing issues 20 years and more into the future. It presents the most pressing, current challenges to marine transportation, and calls for Federal action and leadership in five priority areas: capacity, safety and security, environmental stewardship, resilience and reliability, and finance and economics.

Capacity

The MTS consists of ocean, coastal, and inland waterways, ports, intermodal connections (connecting points for changes in modes of transportation), vessels, and commercial, military, and recreational users. DOT projects that by 2020 total freight volumes will increase by more than 50 percent and international container traffic will double from 1998 levels.⁵ Growth in use of the MTS, particularly at containerized cargo ports, brings with it the demand for additional staging areas, expanded landside access, and logistics technologies. The development and increased use of flow-through models and technologies can improve productivity without expanded infrastructure, but to accommodate all projected growth, additional infrastructure would be needed. Inland and intracoastal waterway systems are generally viewed as reliable but face increasing operational and maintenance challenges as locks age, repairs become more extensive and expensive, and dredging becomes more expensive. Current financing mechanisms are not providing sufficient revenue to keep pace with construction, replacement, expansion, and rehabilitation projects, as the majority of the commercially active inland waterway locks and dams have been in place more than 50 years. Dockside cargo infrastructure and roadway improvements are needed, yet some ports are constrained by the lack of available land for expansion. Rail shipments to or from the ports can be delayed due to inadequate intermodal

⁴ A full list of the 18 Departments and Agencies that have jurisdiction over the MTS is provided in Annex I.

⁵ USDOT Freight Analysis Framework National Summary: 1998, 2010, 2020.
fhwa.dot.gov/freight/freight_news/faf/talkingfreight_faf.htmFAF1

connections or rail chokepoints far from marine terminals. Maintenance dredging and the costs of deepening a channel are significant infrastructure challenges in some waterways and ports. DOT predicts that between 2010 and 2020 the value of freight carried by water will increase by 43 percent domestically and 67 percent internationally.⁶ Capacity expansion in key cargo ports is critical for economic growth. Even more than other parts of the Nation's transportation system, marine transportation is a joint private- and public-sector enterprise. The private sector owns and operates the vessels and most of the terminals; it is responsible for the commerce that flows through the system. The public sector provides much of the infrastructure at ports and on the waterways; it keeps the system functioning in support of commerce in a safe, secure, and environmentally sound manner.⁷ Therefore, expansion of MTS capacity requires significant collaboration among Federal, State, and local governments, the formation of public-private partnerships, and efforts to improve the efficiency of the system. A comprehensive look at innovative approaches will be necessary because of the complexity and diversity of structure and ownership, both public and private. This comprehensive look must include the existing Inland Waterways and Harbor Maintenance Trust Funds, as well as existing fees and taxes.

To address capacity issues, improve the efficiency of the MTS, and reduce transportation congestion, the CMTS recommends the following eight actions:

- Work collaboratively to address Federal statutory, regulatory, and institutional requirements in order to improve MTS performance;
- Encourage the expansion of shipping on the Marine Highways, including the establishment of a pilot program to designate Marine Highway Corridors to relieve congestion on roadways;
- Propose economic incentives for private sector investment in MTS infrastructure and operational technologies to make the MTS more efficient for existing and future needs;
- Collaborate with State, local, and private entities to ensure environmental and National Environmental Policy Act (NEPA) compliance, and to plan for land use in and near ports;
- Share best practices and create incentives to encourage private sector interests and local governments to pursue initiatives for increased efficiency and environmental sustainability;

⁶ Federal Highway Administration Freight Analysis Framework, 2002.

⁷ Transportation Research Board, The Marine Transportation System and the Federal Role, Special Report 279, 2004.

- Publish valid, reliable, and timely data on the MTS including cargo movements, capacity, and productivity;
- Facilitate standardized terminologies, interpretations, and flow-through models to foster increased productivity; and
- Develop performance measures to assess the productivity of the MTS and the risk of potential infrastructure failures to the MTS.

Safety and Security

The expected increase of commercial and recreational vessel traffic, continued ocean and inland water research from vessels, and the operation of U.S. military vessel traffic will place burdens on waterway and port safety and security services, and raise the risk of accidents. The challenge is to ensure that the business, recreational, safety, military, and security needs of vessels on our oceans, harbors, ports, Great Lakes, and inland waterways are met. Security mandates including the Maritime Transportation Security Act of 2002 and the Safe Port Act of 2006, among other legislative initiatives, have created additional pressures on the MTS to balance operational requirements and security needs with limited public and private resources. Maritime security issues are currently being addressed via a number of existing Federal strategies and plans that are outside the scope of this document. Overarching directives guiding this effort are contained in the National Strategy for Homeland Security, Presidential Directive NSPD-41/HSPD-13, the National Strategy for Maritime Security, and HSPD-7. The priority of the *National Strategy* is to be aligned with the Nation's security strategies. Many safety, resiliency, environmental, and efficiency improvements will have synergies with security, and the *National Strategy* will leverage these whenever possible.

The Federal government provides a network of services that improve safety and security for the MTS. For instance, the National Oceanic and Atmospheric Administration's (NOAA) Office of Coast Survey provides hydrographic surveys, charts, and information on hazards to navigation and channel conditions; U.S. Customs and Border Protection (CBP) collects import duties, enforces trade laws, apprehends individuals attempting to enter the U.S. illegally, and protects ecological, agricultural, and economic interests from harmful pests and diseases; and the U.S. Coast Guard (USCG), through its Vessel Traffic Service (VTS), provides active monitoring of

and advice to vessels in congested waterways to prevent vessel collisions, allisions,⁸ and groundings. The USCG also approves port and facility security plans, inspects and examines inbound ships, and provides rapid reaction forces to deter and respond to security threats. The Minerals Management Service (MMS) collects and maintains up-to-date location data on offshore energy infrastructure such as platforms and pipelines. Publicly available on the MMS web site and on navigational charts produced by NOAA, the data are crucial to ensuring the safe passage of vessels through, and while anchoring within, offshore waters regulated by the U.S. The provision of the highest-caliber information and services to navigate America safely and securely into the future is a challenge to the continued growth and vitality of the MTS.

To ensure and strengthen the marine safety of the MTS, and to coordinate maritime security, the CMTS recommends the following seven actions:

- Coordinate existing Federal navigation programs to ensure collaboration, reduce duplication, and standardize terminology and presentation;
- Deliver timely, relevant, accurate navigation safety information to mariners, including real-time information systems such as the Physical Oceanographic Real Time Systems (PORTS), e-navigation, under-keel clearance, High Frequency Radar (HFR) air gap technology, Real Time Current Velocity systems at locks, and those systems associated with development of the Integrated Ocean Observing System to improve navigation safety and efficiency and reduce the risk of accidents;
- Encourage, coordinate, and support navigation technology research and development to enhance navigation safety;
- Enhance and improve existing frameworks that plan for, operate, maintain, and mitigate risks to vessels and the environment, and respond to accidents and natural disasters;
- Ensure coordination among maritime transportation and maritime security policy-making bodies and programs;
- Consider ways in which security measures impacting the movement of trade by water can be streamlined, and where economies and coordination can be realized between safety and security imperatives; and

⁸ An allision is when a vessel strikes a fixed object.

- Work closely with State and local boating authorities and entities, recreational boating organizations, commercial shipping interests, and ports to reduce accidents resulting from competing uses of navigation channels, and increase and manage safety of the MTS.

Environmental Stewardship

The economic health of the MTS and the natural health of the Nation's ocean, coastal, and freshwater ecosystems must co-exist in a way that supports transportation while protecting and sustaining human health and the environment. The MTS, including its ocean and coastal shipping routes, ports, and inland waterways, crosses, intersects with, and is in close proximity to sensitive and valuable natural resources, including wetlands, estuaries, drinking water sources, recreational waters, watersheds, critical habitats, fisheries, coral reefs, and marine mammals.

Approximately 100,000 tons of oil from sources other than natural seeps are released annually into North America's waterways and sea lanes.⁹ Petroleum products spilled into waterways can have both short- and long-term effects on water quality and living resources. Engines of ocean-going vessels, as well as diesel-powered vehicles and engines at the ports, emit significant amounts of air pollutants (e.g. particulate matter, sulfur oxides, nitrogen oxides, and greenhouse gases) that increase public health risks and contribute to global warming. Large cruise ships generate large volumes of black and grey water that must be disposed of properly. Any discharge of oil or refined petroleum products, hazardous substances, garbage, marine debris, human waste, and the transport and introduction of non-indigenous invasive species into the marine environment create health concerns for all citizens, and adversely affect marine and coastal ecosystems. Additional environmental concerns arise from dredging and dredged material management, sediment, storm water runoff, and point-source discharges. Changes to shipping lanes and increased traffic levels could have implications for managing and protecting marine habitats and migration patterns of fisheries and marine mammals. Management of these concerns requires better science and management of invasive species, and interagency coordination to reduce the risks of groundings, allisions, and hazardous cargo spills.

⁹ Oil in the Sea III, Inputs, Fates and Effects, 2003. U.S. National Academy of Sciences.

Coastal and inland waterway navigation crosses, intersects with, and is in proximity to sensitive and valuable natural resources, including wetlands, coral reefs, estuaries, drinking water supplies, recreational areas, critical habitats, fisheries, and marine life. Jurisdiction over laws and regulations protecting the MTS environment is distributed among 18 Federal Agencies, 50 States, Territories, and many local and some Tribal governments. While the Federal government sets national standards for the protection of air, land, and water, States and localities also regulate pollution, wetlands, and land use. A goal of the *National Strategy* is to foster a system-wide approach to planning for environmental protection, and provide for effective implementation of environmental regulations. This will support a dynamic and synergistic program of environmental stewardship.

To protect the environmental health of communities and ecosystems that may be affected by the MTS, the CMTS recommends the following eight actions:

- Advocate transportation projects, technologies, and mitigation activities that improve air quality, reduce greenhouse gas emissions, and reduce congestion in port areas and other MTS components;
- Work collaboratively to foster the collection of data and information that will underpin environmental impact assessments and decision-making in MTS planning and development;
- Support research and develop and implement practical strategies to control and mitigate effects on the marine environment from pollutants, invasive species, and anthropogenic sound, and to reduce negative interactions between ships and marine mammals;
- Ensure environmentally appropriate dredged material management;
- Promote coordinated regional and watershed efforts of States, Federal Agencies, and other partners to manage sediment, dredging and dredged material, point source discharges and storm water runoff, oil or hazardous material spills, harmful anti-fouling systems, and sources of marine debris to restore habitats, reduce pollution, and plan for conservation and mitigation;
- Support harmonization of State, Federal, and international environmental standards, policy, laws, and regulations through work with Federal interagency bodies, in the International Maritime Organization and other organizations, and implement international treaties such as those regarding prevention of maritime pollution at sea;
- Support national and international solutions to environmental problems related to ship decommissioning and dismantling; and

- Encourage use of industrial land banks and formerly polluted industrial areas for MTS and intermodal transportation system facilities, and promote MTS development that avoids disproportionate impacts on minority and low-income communities.

Resilience and Reliability

Natural and human-caused disruptions to ports and waterways not only threaten the continuity of operations on the MTS but also have an adverse ripple effect throughout the U.S. economy.

New streamlined supply-chain networks with strong links to providers, suppliers, and customers have minimized inefficiencies, bringing products to customers faster, but this efficiency has been achieved at the cost of increased vulnerability. Companies may have leaner supply chains, but are now exposed to significant disruptions by external disputes including wars and embargos, internal events such as accidents, fires, and labor disputes, and natural events such as hurricanes, floods, earthquakes, and tsunamis. The challenge is to reduce the risk of disruption and plan for an orderly recovery. Disruptions may be local, such as waterway closures resulting from a barge hitting a bridge, or may be regional, such as the shut-down of Gulf Coast ports from hurricanes. Impacts from these disruptions can have national ramifications because the MTS is a critical component in the national supply chain.

Because of globalization, increasing quantities of containerized manufactured goods and other commodities upon which our economy relies are moving through our ports. In addition, the military's need to deliver troops, equipment, and supplies from or through U.S. ports to defense forces deployed around the world further emphasizes the importance of the MTS. The MTS must have the capability to respond quickly to disruptions and return to normal operations. To build resilience and reliability into the supply network, risks must be identified and managed, and emergency and contingency plans must be developed.

Consistent with the National Response Framework, to increase the resilience and reliability of the MTS, the CMTS recommends the following six actions:

- Provide coordination, expertise, and resources to ensure continuity of operations, essential public services, and the resumption of commercial marine activities following a disruption;

- Develop reserve and surge capacity in the MTS and coordinate with industry on response and recovery operations;
- Develop a coordinated approach to emergency permitting for channel restoration following a large-scale sediment deposit in navigation channels from natural disasters such as hurricanes, which may obstruct the channel and disrupt port activities;
- Work collaboratively to resolve cross-cutting jurisdictional issues surrounding abandoned and wrecked vessels or damaged bridges;
- Develop and promote national and international strategies for addressing potential climate change impacts on ports, waterways, and other vulnerable elements of the MTS; and
- Provide appropriate consultation and coordination with other policy facilitation structures, such as the Committee on Ocean Policy.

Finance and Economics

Collaborative action between the Federal government and State, local, and private interests is necessary for preserving and enhancing the MTS. The Federal role in managing the MTS is considerable and includes public infrastructure, mobility, channels, navigational systems, charting, weather and real-time navigational information, environmental oversight, marine safety and security, and incident response. State and local agencies address the demands of their geographic areas. The private sector invests in vessel, port, and transfer assets. The *National Strategy* envisions a coordinated and detailed exploration of specific options for increasing the efficiency of the existing MTS system, developing better methods for prioritizing investments, and developing ways of attracting more private sector investments. Increases in Federal funding should be considered only after a thorough exploration of opportunities for increasing the efficient use of existing infrastructure, prioritizing investments so that increased funds are used effectively, and after an identification of both private and public sources of funds so that any additional public funds leverage additional private investments.

The costs typically associated with Federally financed infrastructure can be divided into three types: fixed, incremental, and congestion. Fixed costs are incurred once and do not vary with the volume of use. Incremental costs are incurred each time the infrastructure is used. Congestion costs account for the delay cost that each additional user imposes on other users. Fees, taxes, or

general revenue contributions that equal the sum of the fixed and incremental costs must be collected to finance the project. The incremental costs should be allocated to the users who impose them on the system. Fixed costs should be allocated between users and general revenues in the least distorting manner. Congestion prices should be charged when appropriate. The revenues collected from congestion pricing can offset fixed costs and make for more efficient usage of commonly shared resources. Tax equity and economic efficiency should guide decisions when collecting the fixed and incremental costs for financing the Federal share of any project.

To maintain and improve the infrastructure of the MTS, the CMTS recommends the following five actions:

- Study alternative approaches to financing construction, rehabilitation, and maintenance of infrastructure projects, as well as environmental impact mitigation. This study should consider fees, taxes, and general revenue contributions for financing infrastructure projects, depending on the characteristics of the projects. The study should involve high-level discussions and collaboration with Federal, State, local, and Tribal governments, and also with private entities, as appropriate, on funding strategies;
- Study approaches to prioritizing how Federal dollars should be allocated among competing priorities;
- Ensure that cost allocation takes into consideration environmental and human health costs, promotes economic efficiency, and that the allocations do not create unfair competitive disadvantages;
- Study how best to coordinate the allocation of Federal funds for projects across Agencies; and
- Coordinate a CMTS membership policy recommendation to the President for congestion prices, which should be charged when appropriate. The revenues collected from congestion pricing can offset fixed costs and thereby reduce economic distortions.

Going Forward

The U.S. Ocean Action Plan directed the 18 Departments and Agencies that form the Committee on the Marine Transportation System to identify the most critical challenges facing the MTS, to

take action to address these challenges, and to ensure that their policies and actions are synchronized and well coordinated to produce maximum results. Through the CMTS, these agencies will report progress on the actions described in the *National Strategy* biennially to the President, Congress, and the American public. This *National Strategy* does not address detailed performance measures because of the substantial volume of the recommendations. The CMTS Working Group does plan to prioritize these recommendations and develop performance measures as the next step.

The CMTS proposes the following supporting actions:

- Facilitate prioritization and development of strategies for the actions prescribed in the *National Strategy*;
- Facilitate high-level discussions regarding funding strategies, as appropriate, for the MTS;
- Facilitate the use of the CMTS high-level membership and “Integrated Action Team” capabilities to develop and recommend to the President policies that will improve the MTS, as directed in the U.S. Ocean Action Plan of 2004; and
- Report to the President, Congress, and the American public biennially on the progress made to fulfill the actions of the *National Strategy*.

In the years ahead, as the endorsed actions of the MTS *National Strategy* are executed by the CMTS and its member Departments and Agencies, substantive and measurable progress to improve the MTS is expected. The capacity of the MTS will expand to support and achieve significant system efficiencies. Advancements in navigation information and services will ensure a new level of system safety and security. The air, water, and land in proximity to or affected by maritime-related activities will reach new standards of quality as reductions in air pollution, including greenhouse gases, land-based sources of pollution, and marine pollution at sea and in coastal areas are realized. Additionally, contingency plans will be in place and system-wide coordination institutionalized to respond effectively to both system disruptions and climate-change impacts. Taken together, the completion of the endorsed actions will move the MTS forward, maintaining and advancing the Nation's standing as the global leader in maritime trade, as people and commerce are moved safely, securely, and reliably in a manner that is environmentally protective within this ever-advancing integrated network.

SECTION ONE: THE MTS

Overview

The MTS extends from the outer boundaries of the Nation's Exclusive Economic Zone (EEZ) to the inland ports of our rivers and Great Lakes, including approximately 25,000 miles of commercially navigable channels¹⁰ and 360 deep and shallow draft ports.¹¹ The waterways and land access connectors facilitate commerce, recreation, and national defense. The navigable channels and harbors provide safe passage for a wide range of vessels, including container ships, tankers, dry bulk carriers, barges, passenger ferries, oil and gas refined product carriers, military transport vessels, rescue boats, cruise ships, fishing boats, and pleasure craft. Increasingly, dinner and tour boats, oceanographic research interests, and local marine transportation have taken part in the MTS. Finally, the MTS is built upon shared resources—oceans, lakes, and rivers—that include marine protected areas, drinking water sources, and support many species of wildlife.

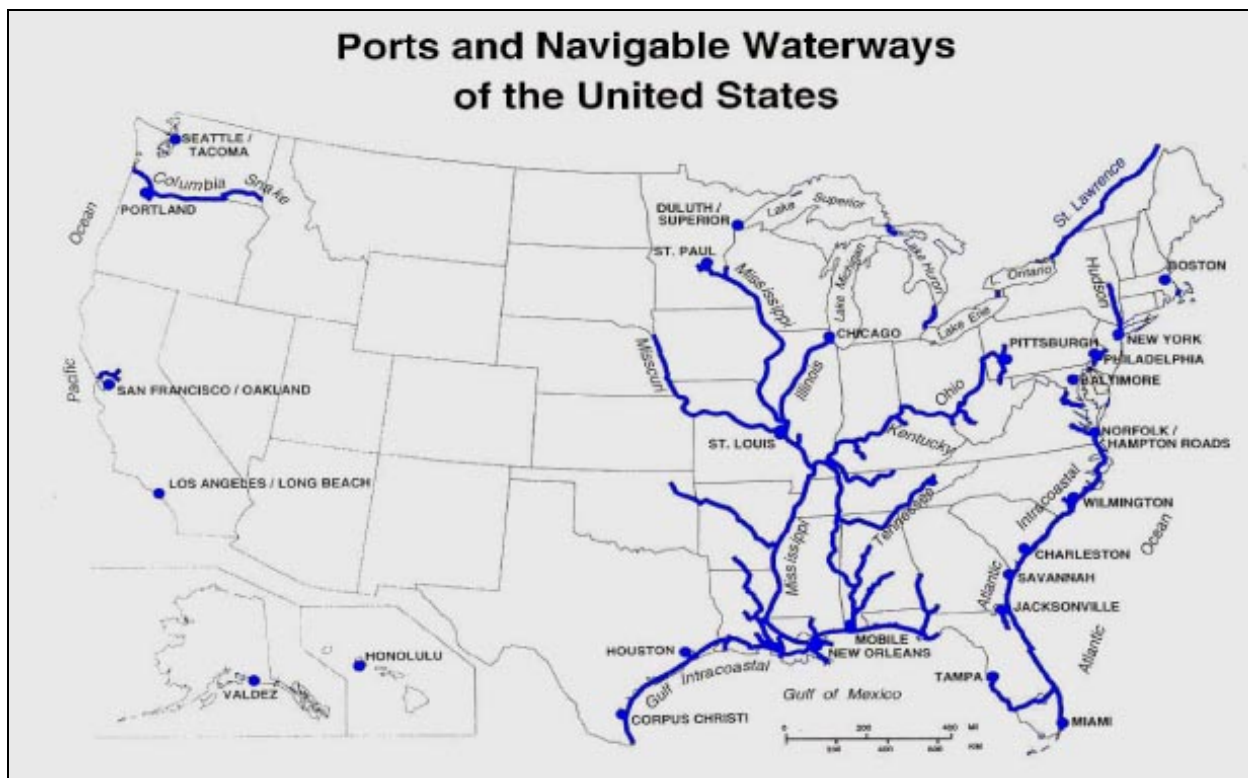
Components

The MTS has five main components:

- Navigable Waterways
- Ports
- Intermodal Connections
- Vessels
- Users

¹⁰ U.S. Army Corps of Engineers, Headquarters Operations Division, "Fingertip Facts" (multiple years).

¹¹ www.globalsecurity.org/security/library/congress/2004_h/040127-bald.htm; Covering the Waterfront—A Review of Seaport Security Since September 11, 2001, United States Senate Committee on the Judiciary, 2004.



Map depicts selected ports, rivers, and lakes that compose navigable waterways of the U.S. Marine Transportation System.

Navigable Waterways

The Nation's navigable waterways are extensive and include coastal and ocean areas; the Great Lakes St. Lawrence Seaway System; the Mississippi, Ohio, and Columbia River systems; canals; the Atlantic and Gulf Intracoastal Waterways; and Arctic waterways. They serve as waterways to transport manufactured, mineral, agricultural, and bulk products, other trade goods, and passengers to and within America, and are used for commercial, recreational, scientific, and military purposes. Navigation on the MTS is supported and facilitated by a system of canals, locks, dams, and aids to navigation.

Ports

The manner in which the MTS operates is complex. Coastal and river ports are both publicly and privately owned and operated. Terminal operators, warehouse operators, longshore labor, intermodal connectors, and overall port management are important components of port operations that directly impact a port's ability to move people and goods efficiently. Terminal

operators include stevedoring companies or shipping companies that load and unload their own ships or those of others that contract for their services. Stevedores also employ longshoremen to perform cargo loading and discharging operations.

Intermodal Connections

The railroad, shipping, trucking, and air freight companies that transport goods to and from ports with prior or subsequent water movement are considered marine transportation providers.¹²

Intermodal connections are linkages at the land-water boundary that allow the transfer of passengers and cargo between transportation modes. These intermodal connections include road, rail, and airport access routes for transporting passengers and cargo, and pipelines for transporting petroleum products.

To move waterborne cargo quickly to or from inland locations, clear access and connections to ports must be provided to trucks, railroads, and pipelines. For some ports, the weakest link in the logistics chain is the intermodal connection, where congested roadways or inadequate rail connections to marine terminals cause delays and raise transportation costs.

Efficient transportation depends upon seamless connections among road, rail,

pipeline, and water facilities. However, choke points and interruptions in the flow of commerce are common. The Maritime Administration (MARAD) states in its 2005 *Report to Congress on the Performance of Ports and the Intermodal System* that robust intermodal connectivity is necessary to support the flow of global commerce and the deployment of military forces. The report further indicates that the MTS' greatest challenge is the projected growth in our international trade, and the ability of the marine, highway, and rail systems to accommodate the



Cargo is moved rapidly from ship to truck or rail.
Photo courtesy Port of Seattle.

¹² “The Marine Transportation System and the Global Supply Chain,” Marine Transportation System Advisory Council (MTSNAC), July 2006.

increased volumes of freight shipments so vital to our Nation's continued economic growth.

Vessels

The vessels that move people and goods within the MTS include commercial oceangoing, coastal, and inland vessels, as well as military and recreational vessels. The vessels that carry our international commerce, as well as cruise ships, have grown much larger. Since the advent of containerization in the 1960s, vessel capacities have grown from 500+ TEU ships to the 12,000+ TEU container ships that are expected to become common on Trans-Pacific routes.¹³ To carry the large number of containers, the length of the largest ships has increased to 1,300 feet, with widths of 184 feet and drafts of over 50 feet at full capacity.

Domestically, modern ferryboats transport thousands of commuters and tourists every day. The New York Waterway passenger ferry operation in and around Manhattan, for example, carries an average of over three million passengers per year.¹⁴ U.S. passenger ferry usage has grown to more than 64 million riders annually.¹⁵ There are 18 million motorized and non-motorized recreational boats in the Nation,¹⁶ often sharing the same coastal navigation channels with commercial vessel operators.

Users

Users are a critical component of the MTS and the very reason it exists. Users can be categorized as direct and indirect. Direct users are easily recognizable groups such as vessel operators, port operators, commercial fishermen, marine service industries, recreational boaters, passengers, cargo owners, and government. Indirect users are the U.S consumers who buy finished manufactured goods that were transported on the MTS, and businesses and industries that either use or sell raw materials, intermediate goods, or finished products that traversed the MTS. The importance of the MTS is readily evident to direct users by their daily and frequent usage of the system, and yet transparent to most indirect users.

¹³ Source: John Vickerman, Transystems, 2007.

¹⁴ NYWaterway.com

¹⁵ American Public Transportation Association, 2004.

¹⁶ National Marine Manufacturers Assoc.: www.nmma.org/facts/boatingstats/2006/files/populationstats

A Gallup Organization report of January 2005 stated that although citizens recognized the importance of transportation at the State and local levels, they do not include it when asked about the “most important problems of the Nation.” Further, the U.S. Chamber of Commerce’s “Trade and Transportation” report of 2003 states that “...while the importance of freight transportation to the national economy has never been in doubt, the true magnitude of the Nation’s dependence on a reliable, cost-effective system for the distribution of goods is not well understood by the majority of people.” Although most Americans live on or near a navigable waterway, port authorities routinely must implement programs to educate their neighbors about the value of port operations to the community. The American Association of Port Authorities holds marketing seminars to suggest how a port operator can educate the public on the nature and value of port operations to a community and region.

Functions

The MTS has three functions: commerce, recreation, and national defense.

Commerce

The MTS is a critical component in the trade of goods to and from the United States. In 2005 there were 61,047 vessel calls from abroad at U.S. ports carrying food, petroleum, and manufactured goods.¹⁷ Over 66 percent of crude oil consumed in the United States is delivered by tankers from overseas sources.¹⁸ Products such as petroleum, coal, and liquid natural gas, food products, and manufactured goods move on and through navigable waterways and ports every day. The U.S. cruise ship industry generated almost \$37.5 billion in annual spending in 2006.¹⁹



Photo courtesy Port of Tacoma.

¹⁷ Vessel Calls at U.S. and World Ports, 2005. Maritime Administration, Department of Transportation.

¹⁸ Energy Information Administration, U.S. Department of Energy.

¹⁹ Business Research and Economic Advisors. *The Contribution of the North American Cruise Industry to the U.S. Economy in 2006*, Arlington, VA: International Council of Cruise Lines, August 2007.

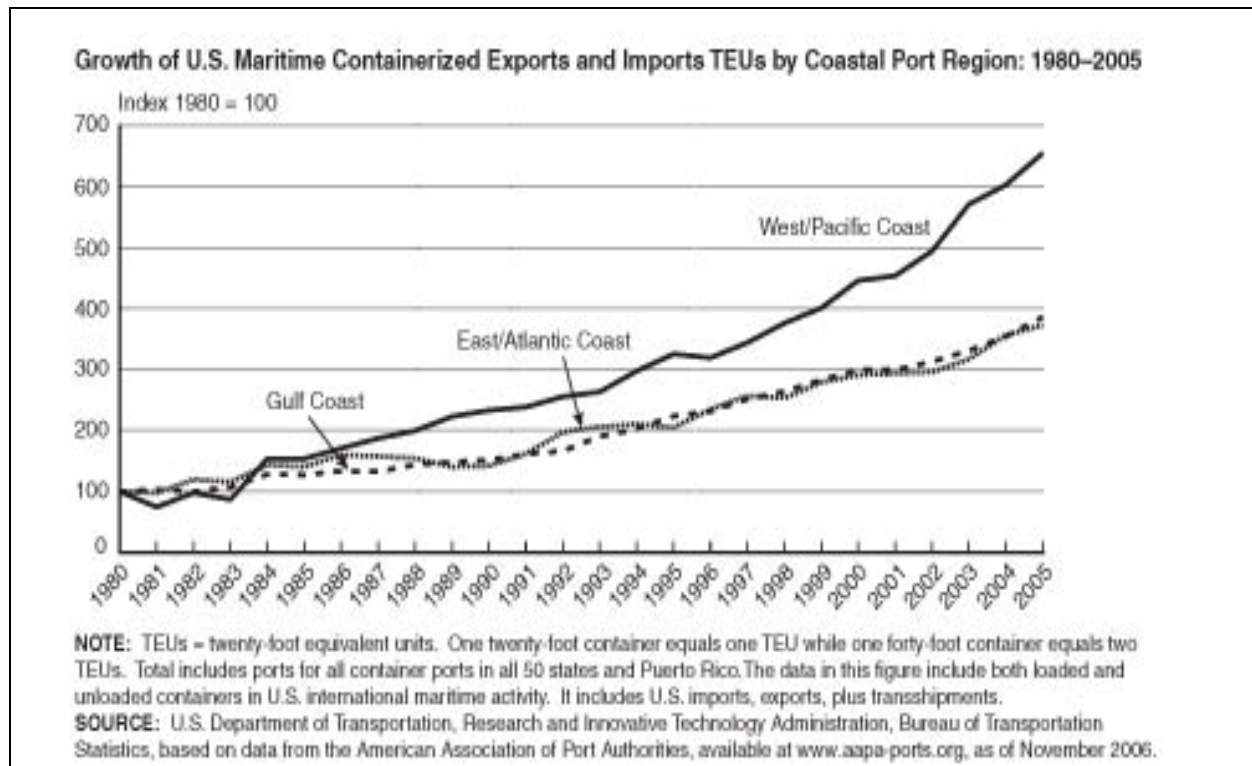


Chart depicts upward trend in containerized exports and imports.

The MTS spurs local economic development and employment. As noted in the chart above, over half—nearly 55 percent—of U.S. containerized merchandise trade in terms of TEUs passed through West Coast ports in 2005, up from 42 percent in 1980. Regionally, West Coast ports grew the fastest during this 25-year period. In 2006 the MTS was responsible for the employment of more than eight million Americans working in port and port-related industries. In addition to the direct economic benefits created by marine terminal employment ashore and afloat, the MTS also contributes to local and regional economies by supporting jobs and other activities that relate to the port industry.

The *National Defense Strategy of the United States* (March 2005) reinforces the economy as an instrument of national power. It remains among the important strategic advantages of the United States. As identified in the *National Security Strategy of the United States* (March 2006), opportunities and challenges that come from new and increased trade and investment are growing in significance with the increase in globalization. The 2005 and 2006 National Defense Strategies underscore the key contributions that the MTS makes to the U.S. economy, and the need to

expand and improve the MTS to meet future trade growth. To support a vibrant economy and the free-flowing commerce of the modern era, the MTS must have the integrated capabilities to meet future growth in trade.



The Deep Draft Caisson Vessel built by Exxon Mobile Corporation is one of the newest offshore drilling and production platforms that are a piece of the critical part of the U.S. oil supply from the Gulf of Mexico.
Photo courtesy USCG.

Our ocean, coastal, and inland waters provide opportunities for the harvesting of living resources such as commercial fishing, and the extraction of non-living resources such as offshore production of petroleum and natural gas. Another major growth industry is the building of undersea communications infrastructure. These industries are supported by the service industries of the MTS to transport people and supplies, and move the products as required. Industrial production on our Continental Shelf and within our EEZ, an

area that starts at the coastal baseline and extends 200 nautical miles²⁰ out from our shores, is important to national interests. U.S. ratification of the International Convention on the Law of the Sea could potentially result in the acquisition of rights to additional seabed resources of great value and importance. Globally, the production and transportation of energy products and other natural resources are vital to our way of life.

The MTS supports the commercial fishing industry and its 110,000 fishing vessels, which contributed approximately \$35 billion to the U.S. economy in 2006.²¹ In 2006 domestic energy production from the U.S. Outer Continental Shelf (OCS), which consists of the submerged lands, subsoil, and seabed in a specified zone up to 200 nautical miles or more offshore from U.S. coasts, provided the Nation with about 507 million barrels of oil and three trillion cubic feet of natural gas with a market value of more than \$47 billion, as well as tens of thousands of U.S.

²⁰ Or more, in some cases of an extended continental shelf.

²¹ National Marine Fisheries Service, Fisheries of the United States-2006.

jobs.²² Currently, about 27 percent of the Nation's oil and 15 percent of its natural gas production come from the OCS. Primarily as a result of new deepwater development in the Gulf of Mexico, oil and gas production from the OCS is expected to account for 40 percent of domestic oil and nearly 20 percent of domestic gas production within the next five years.²³ With the passage of the Energy Policy Act of 2005, the OCS will also witness the development of alternative energy projects to convert wind, ocean wave, and current power into useable energy to offset the growing imbalance between U.S. consumption and production.

Arctic Commerce

Scientific evidence indicates that the Summer Arctic ice cap has shrunk by nearly half since the early 1950s, suggesting that commercial shipping into, out of, and through the Arctic could increase, perhaps significantly, in the coming years. Some anticipate that an oceanic trade route across the Arctic from the North Atlantic to the North Pacific will eventually become a reality, at least seasonally, if not year-round. Such a trade route would represent a transformational shift in maritime trade, akin to the opening of the Panama Canal in the early 20th century. A commercially viable Arctic marine highway could cut existing oceanic transport by an estimated 5,000 nautical miles or up to one week of sailing time. Further, studies indicate that significant potential oil and natural gas resources may lie in the Arctic.²⁴

While transportation and energy developments in the Arctic could be critical to future national interests, the Arctic represents an especially complex and ecologically sensitive oceanic area. Navigation practices and traffic schemes, vessel standards, maritime security, environmental protection, and enforcement and response capability unique to the environment are just a short list of pressing maritime governance issues to be addressed.²⁵

²² Minerals Management Service, Minerals Revenue Management.

²³ Minerals Management Service, Offshore Energy and Minerals Management.

²⁴ U.S. Geological Survey, The Arctic Energy Assessment (U.S. Department of the Interior; U.S. Geological Survey: 2007).

²⁵ The National Research Council has noted, "The potential for increased human activity in the northern latitudes will likely increase the need for the United States to assert a more active and influential presence in the Arctic to protect not only its territorial interests but also to project its presence as a world power concerned with security, economic, scientific, and international policy issues of the region." National Research Council, *Polar Icebreakers in a Changing World: An Assessment of the U.S. Needs* (Washington, DC: 2006), S-2.

As an Arctic nation, the United States has varied and compelling interests in that region. The U.S. government is operating under a 1994 Presidential Decision Directive/NSC 26 (PDD-26), which articulated six principal objectives in the Arctic region:

- Meeting post-Cold War national security and defense needs;
- Protecting the Arctic environment and conserving its biological resources;
- Assuring that natural resource management and economic development in the region are environmentally sustainable;
- Strengthening institutions for cooperation among the eight Arctic nations;
- Involving the Arctic's indigenous communities in decisions that affect them; and
- Enhancing scientific monitoring and research into local, regional, and global environmental issues.

While these basic objectives endure, the U.S. government is developing a new Arctic policy that will take into account a number of significant developments that have taken place in, or relate to, the Arctic region since 1994. These developments include, among other things, the significant effects of climate change and increasing human activity in the Arctic, the advent of other relevant rules and mechanisms, and a growing awareness that the region is both fragile and rich in resources.

In relation to the Marine Transportation System, the United States is preparing to address both on its own and in cooperation with other nations a host of issues that are likely to arise from any increases in shipping into, out of, and through the Arctic. A top priority will be to facilitate shipping that is safe, secure, and environmentally sound. Safe maritime commerce in the Arctic will depend on the enhancement of infrastructure to support search and rescue capabilities, short- and long-range aids to navigation, high-risk area vessel traffic management, iceberg warnings, other sea ice information, and effective shipping standards. Even if Arctic vessel traffic does not increase as much as predicted, prospective commercial activities in the region will provide unique challenges for the MTS. For example, the Department of the Interior's Minerals Management Service (MMS) has recently completed successful lease sales in the U.S. Beaufort

and Chukchi Seas. Additional lease sales are planned in both areas under the currently approved 5-year oil and gas leasing program, but are not scheduled until 2009 through 2012. The CMTS is poised to facilitate and coordinate the development of national policies to ensure that if commerce and navigation expand in the Arctic region, they are conducted in a manner that is safe, secure, and environmentally protective.

Recreation

BoatUS, an association representing boat owners, reports that 18 million Americans are recreational boat owners. They contribute to the economy with nationwide retail expenditures on recreational boating exceeding \$39.5 billion in 2006.²⁶ Moreover, hundreds of millions of visitors spend billions of dollars every year to enjoy our Nation's ocean, lake, and river beaches.²⁷ The burgeoning cruise line industry embarked nine million passengers in 2006.²⁸

National Defense

The U.S. military relies on commercial port infrastructure to enable the rapid deployment of forces during a national emergency, as most American military power moves around the world by ship. For planning purposes, facilities are designated at 15 commercial strategic seaports having sufficient capability to support major military deployments. In addition, there are several Department of Defense-owned terminals, supporting specific military outload requirements, such as ammunition. Access to these designated ports and other key components of the MTS, such as the intermodal connections between the ports and military bases, are vital to the transformed military envisioned in the Quadrennial Defense Review (QDR) (February 2006). The QDR calls for rapid global mobility to support a full range of operations. Whether deploying a large force with combat equipment, shipping humanitarian supplies for a disaster relief mission, or deploying and sustaining a peacekeeping force, the MTS provides a critical capability. A robust and resilient MTS is essential so that it can continue to perform its commercial function while responding to a national defense event or other disruption.

²⁶ National Marine Manufacturers Association. 2006 Statistical Abstract.

²⁷ www.nmma.org/lib/docs/bs/global/2005/press/NMMA_06_Abstract_Release_FINAL.pdf; National Marine Manufacturers Association: Recreational Boating Statistical Abstract, 2006.

²⁸ Business Research and Economic Advisors. *supra* pg 16.

SECTION TWO: MTS CHALLENGES

System Capacity

There are many factors that contribute to providing sufficient and reliable capacity for the MTS. They range from maintaining navigational channels, maintaining and rehabilitating locks and the associated dams, making infrastructure improvements, encouraging growth in trade and travel, and accommodating changes in distribution operations, to providing accurate and timely maritime data. Each of these factors can impact both existing and future capacities.

Coastal Channel Dimensions

The Army Corps of Engineers (USACE) serves the major coastal harbors in this country by maintaining their Federal channels. It also deepens, widens, and extends these harbors and channels. Through an economic assessment of proposals by individual ports, it makes recommendations regarding authorization and funding of improvements to the channels to accommodate the new generation of container vessels and larger bulk vessels calling on the ports. In 2000, more than one-quarter of the vessel calls in the U.S. were depth-constrained by current channel and port depths. More recent constraints in the Great Lakes are due in part to low lake levels.²⁹

Concerns have been raised in the Great Lakes and elsewhere about allocation of funding for maintenance dredging among coastal harbors and channels and the total spent for maintenance dredging. Revenues in the Harbor Maintenance Trust Fund are generated by the Harbor Maintenance Tax, which is an ad valorem tax based on cargo value, and fund 100% of USACE coastal navigation operation and maintenance expenses. Annual revenues to the Harbor Maintenance Trust Fund are sufficient to finance whatever level of investment in maintenance dredging is deemed to be justified. USACE gives priority to the principal channels in the 59 harbors that handle approximately 90 percent of all cargo tonnage moving through U.S. coastal ports, including the Great Lakes, while also providing some level of service to channels and

²⁹ USACE, National Dredging Needs Study of U.S. Ports and Harbors: 2002. Institute for Water Resources Report 00-R-04.

harbors handling significant but lesser quantities of commercial cargo. An assessment of the impacts of channel maintenance is underway, which will provide better economic information on the level to which navigable channels and gateway ports should be maintained and the degree to which container ships, tankers, bulkers, and other larger, wider, and deeper vessels are affected.

Inland Waterways

The USACE operates a network of about 12,000 miles of rivers, canals, and other inland and intracoastal waterways serving 27 states. The program provides a low-cost transportation alternative mostly to shippers of bulk goods in areas located near these developed inland and intracoastal waterways. The inland and intracoastal waterway systems are generally considered reliable, but face increasing operational and maintenance challenges as locks age, repairs become more extensive and expensive, and dredging becomes more expensive.

Since the 1960s the Federal government has invested heavily in the maintenance and rehabilitation of the three busiest inland waterways (the Ohio River, the Mississippi River, and the Illinois Waterway), which handle the vast majority of all inland waterways traffic. USACE periodically evaluates the condition of all locks and dams on these waterways to identify and prioritize repair and replacement investments within each waterway system.

Congress finances one-half of the cost of the Federal capital investment in inland and intracoastal waterways from the Inland Waterways Trust Fund. The source of funding for this Trust Fund is an excise tax on diesel fuel



De-watering and repairs of the Inner Harbor Navigation Canal Lock, New Orleans.

Photo courtesy USACE Digital Visual Library.

used on certain inland and intracoastal waterways. The tax is not raising enough revenue to keep pace with the cost of current or projected Federal capital investments. When taking into account

not only capital investments, but also the costs of operation and maintenance financed by general revenues to the Treasury, the annual Trust Fund receipts cover less than 10 percent of the total costs that USACE incurs each year to support inland waterway navigation. In 2008 the Administration proposed legislation to phase out the fuel tax and replace it with a lock usage fee, which would preserve current cost-sharing and lead over time to a more productive use of our national transportation system.

Great Lakes St. Lawrence Seaway System

The Great Lakes St. Lawrence Seaway System (Seaway System), also known as “America’s Fourth Seacoast,” is a vital waterborne transportation link for moving goods from the heartland of North America to international markets. The Seaway System, a bi-national waterway operated jointly by the U.S. and Canada, encompasses the St. Lawrence River and the five Great Lakes, and extends 2,300 miles from the Gulf of the St. Lawrence at the Atlantic Ocean to the western end of Lake Superior at the twin ports of Duluth, Minnesota, and Superior, Wisconsin.

For nearly 50 years, the bi-national St. Lawrence Seaway has served as a vital transportation corridor for the international movement of bulk and general cargoes such as steel, iron ore, grain, and coal, serving a North American region that makes up one-quarter of the U.S. population and nearly half of the Canadian population. Maritime commerce on the Seaway System annually sustains more than 150,000 U.S. jobs, \$4.3 billion in personal income, \$3.4 billion in transportation-related business revenue, and \$1.3 billion in Federal, State, and local taxes.

The bi-national waterway is expected to become an even more important commercial transportation route over the next decade as the U.S. and Canadian governments seek ways to ease highway and rail congestion, especially along North America’s East and West Coasts and Midwest region. In the past few years the St. Lawrence Seaway has enjoyed significant growth in new business as the waterway has become a viable alternative for shippers looking to avoid port, highway, and rail congestion. Each Seaway maximum-size vessel carries roughly 25,000 metric tons, the equivalent of 870 tractor-trailers. As congestion-related initiatives such as encouraging shipping on the Marine Highways continue to develop, the St. Lawrence Seaway will further improve its position as a competitive alternative for shipments to and from the

Midwest. Recent forecasts show a doubling of containerized traffic carried by all modes in the U.S./Canadian Great Lakes St. Lawrence Seaway region from 70 million TEUs to 140 million TEUs by 2050.

In November 2007 the U.S. Department of Transportation, Transport Canada, and the U.S. Army Corps of Engineers released the “Great Lakes St. Lawrence Seaway Study,” which assessed the future U.S. and Canadian infrastructure needs of the Great Lakes St. Lawrence Seaway System, specifically the engineering, economic, and environmental implications of those needs as they relate to the marine transportation infrastructure on which commercial navigation depends. The study provides U.S. and Canadian policymakers with a “blueprint” for what would be required to maintain the commercial navigation infrastructure at its current level of reliability over the next 50 years. The study identified more than \$630 million in U.S. and Canadian infrastructure renewal investments through 2050 as part of a proactive program of upgrading and repairing the Great Lakes Seaway System’s most critical infrastructure.

Growth in Trade and Travel

The Government Accountability Office report entitled “Transforming Transportation Policy for the 21st Century” (September 2007) states: “projected population growth, technological changes, and increased globalization are expected to increase the strain on the Nation’s transportation system.” As a critical component of the global and domestic transportation system, the MTS is experiencing the same challenges that the aviation, highway, and rail systems are experiencing, such as increasing congestion and stressed infrastructure. As the U.S. economy continues to expand and greater international trade liberalization is realized, the importance of well-maintained marine transportation infrastructure will increase. The projected future growth in commercial and recreational vessel traffic brings with it the challenge to ensure that vessels on our oceans, coasts, Great Lakes, and inland waterways are operating in an environment that is available, reliable, and environmentally responsible. Transportation freight and logistics planners must be certain that reliable MTS infrastructure can meet today’s demands and tomorrow’s projected growth.

In 2005 U.S. waterborne commerce amounted to 2.3 billion metric tons. International commerce accounted for 59 percent of the total tonnage, up from 55 percent five years earlier.³⁰ DOT predicts that between 2010 and 2020 the value of freight carried by water will increase by 43 percent domestically and 67 percent internationally.³¹ Approximately 50 percent of international commerce arrives at U.S. ports in containers.³² The U.S. Chamber of Commerce noted that ports and their associated intermodal systems may no longer be able to build their way out of their capacity problems.³³ Seventy-five percent of the 16 ports surveyed for the study could encounter significant capacity problems if nothing is done, and the study predicted that all reserve port capacity could be exhausted in the near future. As trade volumes increase, the need for an intermodal plan that efficiently links waterborne traffic with all components of the land transportation system is critical. The challenge is to find ways that ports can expand their operations within available land and financing constraints to better handle increased volume and accommodate growth. This involves the coordination of the necessary Federal, State, and local expertise and resources needed to improve intermodal connections and port efficiency, and to synchronize ship and inland intermodal freight information across the modes.

A broad challenge facing the MTS is how to use existing port system capacity in the most efficient manner to accommodate growth. There is substantial public and private infrastructure already in place throughout the Nation's ports; however, capacity issues at some ports and bottlenecks at various intermodal connectors reduce efficiency. The challenge is to streamline connections between water and land transportation modes, and identify where it is feasible to shift cargo and passenger transport from over-utilized modes to under-utilized modes or off-peak periods. Flow-through models could be developed and implemented to facilitate better cargo movement efficiencies. The MTS can no longer be regarded and addressed as a distinct mode, separate from the land transportation system. Efforts to improve the MTS should be part of a systematic approach to national transportation policy that better coordinates expenditures for highways, public mass transit, rail, airports, seaports, and waterways.

³⁰ Report to Congress, Maritime Administration, Fiscal Year 2006.

³¹ Federal Highway Administration Freight Analysis Framework, 2002.

³² www.whitehouse.gov/homeland/book/sect3-1.pdf; White House National Strategy for Homeland Security: Border and Transportation Security (no date on this document). "Each year, nearly 50% of the value of all U.S. imports arrives via 16 million containers."

³³ Trade and Transportation—A Study of North American Ports and Intermodal Systems. U.S. Chamber of Commerce, 2003.

Maritime Data

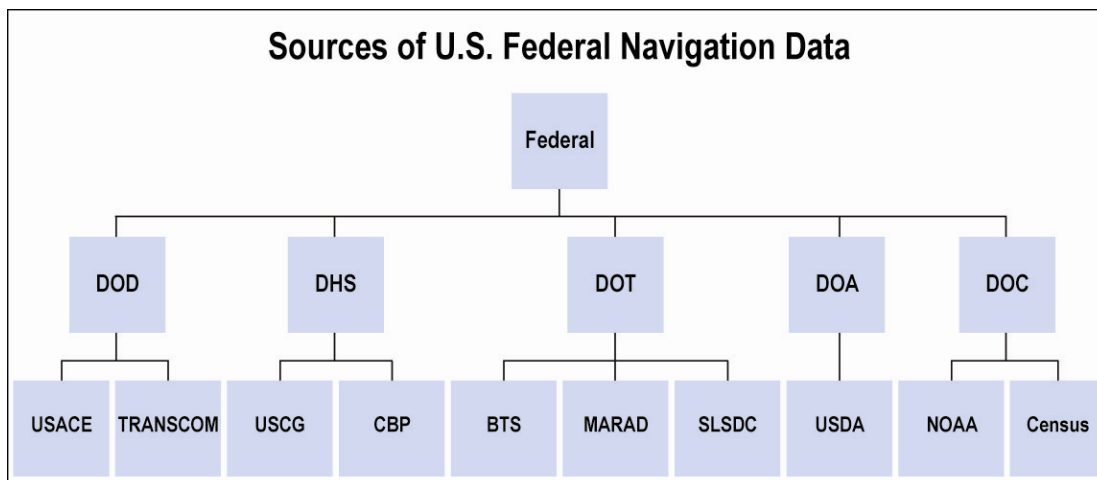
The ability to provide the safest, most efficient, and environmentally responsible MTS is certainly dependent upon a reliable physical infrastructure such as fully maintained channels, locks, dams, and berths. However, there are additional MTS services that directly support navigation along the waterways and the ability of vessels to serve U.S. ports. Vessel Traffic Services (VTS) provide real-time vessel monitoring and navigational warnings for mariners in certain confined and busy waterways. By expediting ship movements, VTS increases transportation system efficiency and improves all-weather operating capability.

Real-time environmental observations for weather, tides, and currents enhance mariner situational awareness, but are not currently available in all critical areas of the MTS.

Additionally, navigation charts with the most recent, full-coverage bathymetric soundings and advanced electronic presentations alert mariners to shoals, rocks, wrecks, and other obstructions they must avoid to reduce the risk of accidents that could result in loss of life and damage to property and the environment. NOAA's Federal advisory committee identified the need to aggressively survey and map the Nation's shorelines and navigationally significant areas, integrate coastal mapping efforts, modernize tidal gauging to implement real-time water levels and current observing and reporting systems in all major commercial ports, and disseminate hydrographic services data and products for the greatest public benefit.³⁴ NOAA's Office of Coast Survey reports that of the 43,000 square nautical miles of critical navigation areas, approximately 21,660 square nautical miles are yet to be surveyed.³⁵

³⁴ NOAA's Hydrographic Services Review Panel, Most Wanted Hydrographic Services Improvements, March 2007.

³⁵ NOAA Hydrographic Survey Priorities, 2007 Edition.



Maritime data can be presented in real-time or as static data. Real-time information, such as in a Physical Oceanographic Real Time Systems (PORTS) tide gauge, supports immediate navigation needs. Static data are commonly used to provide historic and economic information that enable projections and planning. Five Departments and numerous Agencies currently collect maritime data. The data are presented in varying ways, may have different interpretations, and applications are derived from Federal statutes with differing goals and objectives. For Federal maritime data, there is currently no central source, and no ability to prevent duplications. However, there are currently a number of efforts to coordinate and collaborate, such as the Customs and Border Protection's Automated Commercial Environment (ACE) supported by the International Trade Data System (ITDS), and NOAA's and the U.S. Army Corps of Engineers' collaboration on surveying and survey data.

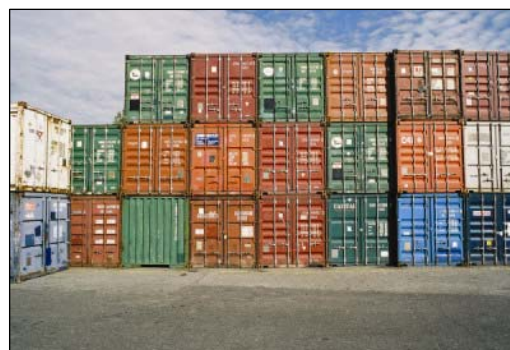
Container Transportation

Increasing economies of scale in the movement of containers from foreign ports to U.S. ports may create capacity and reliability challenges for the MTS. This trend is driven by larger vessels and more complex, leaner supply chains, which require warehousing located closer to intermodal nodes.³⁶ Commercial pressures to reduce costs and increase speed and reliability have led to the use of longer truck trailers for over-the-road transport, double-stack container trains, and “super-sized” container vessels, all of which pose their own unique challenges to their various

³⁶ *Principles for a U.S. Public Freight Agenda in a Global Economy*, by Martin E. Robins and Anne Strauss-Wieder from January 2006—The Brookings Institution Series on Transportation Reform.

transportation modes. Some shippers are now unloading the 40- to 48-foot standard ocean containers and reloading the cargo into 53-foot over-the-road trailers, a practice that increases handling costs, but reduces overall transportation costs. The increasing use of just-in-time delivery and value-added warehousing are two examples of supply chain practices that have made transportation reliability more important.

Value-added warehouses, where final assembly occurs, are being built at ports (for distribution in the regional area of the port) and intermodal nodes (for distribution at inland regional intermodal connections) that are close to the customer. However beneficial for the cargo distributors, expanded warehousing adjacent to ports increases regional highway and terminal congestion. Also, the increase in long-distance shipping and the potential use of multiple freight conveyances during the journey makes supply chains more vulnerable to disruptions caused by weather, congestion, and other factors.



Containers stacked at the Port of New York to conserve space.

Photo courtesy U.S. Department of Transportation, Federal Highway Administration.

Safety and Security

Federal Agencies provide critical services to ensure the safe and secure movement of people and goods through the MTS in a way that is economically sound and environmentally protective. The growth of inbound passengers and goods arriving by sea continues to place burdens on government oversight services such as those provided by the Department of Homeland Security's U.S. Customs and Border Protection and the USCG to approve vessel, cargo, crew, and passenger arrivals and entries, inspect for U.S. maritime safety requirements under Port State Control, and screen for illegal drugs, illegal immigrants, bombs, implements of terrorism, and invasive species. The Federal government, in conjunction with international, State, local, industry, and public partners, is responsible for ensuring the safety and security of the MTS. In 2006 the USCG responded to 28,316 cases of mariners in distress, and 1,765 collisions, allisions,

and groundings occurred on our congested waterways. Some accident rates are trending downward, but despite strong prevention efforts, 59 professional mariners, 15 passengers, and 703 recreational boaters died, and many more were injured.³⁷

Commendable efforts have been made to combine legacy Customs, Immigration, and USDA inspection services into a single, cross-trained officer corps, but meeting the increasing demands and the sheer volume of cargo entering the United States is a challenge. The Maritime Transportation Security Act of 2002 (MTSA) and the Safe Port Act of 2006 added security mandates that are currently being addressed via a number of existing Federal strategies and plans that are outside the scope of this document. Overarching directives guiding this effort are contained in the National Strategy for Homeland Security, Presidential Directive NSPD-41/HSPD-13, the National Strategy for Maritime Security, and HSPD-7. The priority of the *MTS National Strategy* is to be aligned with the Nation's security strategies. Continuous consultation with industry is essential to meet the ongoing needs of waterborne commerce and the protection of U.S. resources from a range of dangerous and unwanted materials.

MTSA requires vessels and port facilities to conduct vulnerability assessments and develop security plans that may include passenger, vehicle, and baggage screening procedures, security patrols, establishment of restricted areas, personnel identification procedures, access control measures, and installation of surveillance equipment. The volume, cost, and technical complexity of these new requirements have been a challenge to both business and the government, as they cope with financing infrastructure needs and increased operating costs. Developing and implementing regulations such as the requirements for vessel and facility security plans, and personnel identification procedures such as the Transportation Worker Identification Credential (TWIC), requires complex policy and sophisticated equipment. The Safe Port Act of 2006 added requirements to MTSA to improve security of U.S. ports. The Federal oversight authorities must balance the interest for a high level of protection needed for the MTS while supporting and facilitating the flow of commerce.

³⁷ USCG FY 2008 Budget-in Brief and Performance Report dated Feb 2007. Available at www.uscg.mil/top/about/doc/FY08_Budget.pdf

Environmental Impacts

As waterborne trade increases, stresses to sensitive marine and freshwater environments, as well as to port communities, likely will increase. Emissions from vessels, port equipment, trucks, and locomotives have emerged as a significant concern in many port communities at the national and international level, in part due to serious human health effects associated with diesel particulate matter and other air pollutants. Regulation of carbon emissions will increase the need for accurate air quality monitoring and modeling at sea and in port; energy alternatives and technologies such as green vessel design that reduce and mitigate emissions; and research to measure and quantify effects of pollutants on human health and the environment. Discharge of oil and other pollutants, contaminated sediments, and the spread of non-indigenous invasive aquatic species through releases of ballast water or other means can affect water quality and ecosystem stability. CMTS Agency partners must look systemically at the hydrology, hydrodynamics, sediment, and water and air quality of the marine environment, and their focus on issues such as regionalization and integrated water resources will help support a more sustainable transportation system. CMTS Agencies will also focus on climate change and its implications for the MTS.

Growth in trade and travel, and associated use and activities in the MTS, as well as maintenance, improvements, and expansion of the MTS infrastructure, present challenges for protecting the environment. Accidents, disruptions, and safety and security issues also present environmental challenges and potential impacts to human health and the environment. Measures to avoid and mitigate impacts will be needed to sustain the projected growth in waterborne trade and the increase in other ocean-related activities in a manner that protects and sustains the environment and human health.

The Federal government and its MTS partners advocate the practice of environmental stewardship while operating within the MTS. Like most MTS-related laws and regulations, the authorities governing environmental protection are distributed among many Federal, State, and local agencies. Management of complex ocean, river, and lake resource linkages requires agencies and MTS partners to work together to support environmental, economic, and human health interests.

For example, the Federal government is responsible for setting national standards for the protection of air, land, and water, while States and localities frequently implement these standards and in some instances have authority to make these standards more stringent. Further, the global nature of maritime commerce means that international standards and practices also affect the MTS. For example, the International Maritime Organization is responsible for setting international maritime environmental standards, including those for maritime transportation impacts to the environment. A systems approach to Federal MTS environmental protection is needed to assist a broad array of maritime industries in complying with Federal and international guidelines and regulations. Local and regional initiatives remain vital parts of the planning process, and should be part of the national effort to achieve system-wide cohesion.

The value of waterfront access and property is evolving, and the importance of the waterfront for recreational and residential interests is increasing. Ports often must compete with other development interests for land and access. The economic standard has become more stringent to justify infrastructure investment for ports. Lightly contaminated industrial areas near ports offer potential for port development, but must compete with other land uses.

Disruptions

Minor MTS disruptions due to congestion, bottlenecks at intermodal connectors, infrastructure failures, collisions, allisions, and unavailable services or other events are experienced every day. The long-standing professional nature of MTS users and regular contingency planning provide sufficient flexibility to respond to short-term disruptions without seriously impeding the flow of passengers and goods through the waterways. Natural disasters, labor management disputes, terrorist threats, and even outbreaks of a pandemic influenza can pose severe threats to the MTS and our national economy by shutting down a significant port or an entire region and disrupting a critical supply chain. The shutdowns following Hurricanes Katrina and Rita in 2005 and labor-management disputes at West Coast ports in the Fall of 2002 highlighted the importance of the MTS to the U.S. supply chain. For example, the estimates of economic damage from the 2002 West Coast shutdown were between \$140 million and \$2 billion per day. The Congressional Budget Office (CBO) estimated in 2006 that the economic impact of a one-week shutdown just

of the container traffic going through the Ports of Los Angeles and Long Beach would average \$9.3 to \$21 million per day.³⁸ However, accidents and failing infrastructure pose the most immediate threat to the MTS. The MTS, as a critical component in the global and domestic transportation system, must have the infrastructure, service capabilities, and effective intermodal connections to support our Nation's economic needs and expectations, and a growing international trade sector.

The MTS will also need to plan and build in flexibility to deal with uncertainties in the future. While trends in containerized traffic may be predicted, there are unforeseen situations such as natural disasters and political instabilities around the globe that may place unexpected demands on the MTS. This may include humanitarian or military responses to assist with stabilization reconstruction, or possible military conflict. The operational efficiency of the MTS must be balanced with the capability to support these contingencies, maintaining sufficiently robust infrastructure to enable continued commercial traffic while simultaneously supporting the movement of necessary equipment and supplies.

The Federal role in responding to natural and human-caused disasters is governed by the National Response Framework, which replaced the National Response Plan effective March 22, 2008. National efforts to reopen the Gulf Coast ports following Hurricanes Katrina and Rita are examples of Federal actions taken after disasters. Procedures may include securing the port(s), removing obstructions to navigation, and rebuilding Federal infrastructure. After containment of the risk, the first step in restoring operation of the MTS is to facilitate the movement of passengers and goods either by opening the impacted waterway or by rerouting traffic. The private sector interests in vessels, ports, and transfer assets, as well as local and State government interests in opening the ports following a disruption, form the *National Strategy's* policy framework for continuity of operations. Participants at the "Maritime

³⁸ The \$140 million estimate is from Patrick L. Anderson and Ilhan K. Geckil, "Flash Estimate: Impact of West Coast Slowdown," (Anderson Economic Group, LLC, October 15, 2002), while the \$2 billion estimate is from Martin Associates, "An Assessment of the Impact of West Coast Container Operations and the Potential Impacts of an Interruption of Port Operations, 2000" (October 23, 2001). The CBO estimate is from "The Economic Costs of Disruptions in Container Shipments" (March 29, 2006).

Recovery Workshop” held in August 2006 by the USCG made statements such as the following:

- Industry does not want the Federal government to automatically close all ports in response to a local event without a full risk analysis;
- Shippers would like to be in charge of their own logistics contingencies in case their usual port of call is closed, but estimated that as many as 50 percent of shippers do not have contingency plans in place and might welcome guidance from the Federal and State governments to develop them;
- Industry respects that some critical cargo ships may have priority (such as petroleum supplies) to enter a port over other less critical cargo (such as luxury items) after a shut-down; and
- MTS operational interests in the private sector need to be a part of the Federal interagency stakeholder discussions to maximize services and minimize conflicts and confusion.

MTS resilience and recovery can only be accomplished by the cooperation of many Federal stakeholders. The USCG has general oversight responsibilities, the USACE surveys, dredges, and removes obstructions from Federal channels and waterways, NOAA’s Navigation Response Teams assist with surveys and depth soundings to chart the channel bottom, the U.S. Environmental Protection Agency (EPA) provides environment response, and the U.S. Maritime Administration (MARAD) can provide support resources such as the Ready Reserve Force.

Finance and Economics

Collaborative action among the Federal government, State, local, and private interests is necessary for preserving and enhancing the MTS. The Federal role is considerable and includes nationally significant public infrastructure, mobility, channels, navigational systems, charting, weather and real-time navigational information, environmental oversight, marine safety and security, and accident response. Local and State entities address the demands of their geographic areas. The private sector invests in vessel, port, and transfer assets. The costs typically associated with constructing and maintaining Federal

infrastructure include fixed and variable costs. Fixed costs are incurred once and do not vary with the volume of use. Variable costs are incurred each time the infrastructure is used. In addition, congestion costs account for the delay expenses that each additional user imposes on other users.

Federal expenditures for MTS infrastructure maintenance and improvements have been relatively flat for years, in real terms and as a share of Agency budgets, with the exception of funding for Hurricane Katrina-related projects. The challenge is to use existing infrastructure efficiently, quantify the need for new infrastructure, and determine how these needs can be financed and how these financing costs might be distributed across users. A comprehensive look at innovative approaches will be necessary because of the complexity and diversity of structure and ownership, both public and private, and an uneven distribution of the costs and benefits of public infrastructure. This comprehensive look must include the existing MTS Trust Funds³⁹ as well as existing fees and taxes, private sector finance, and innovative new user fees, including increasing the use of congestion pricing.

³⁹ The Harbor Maintenance Trust Fund and the Inland Waterways Trust Fund.

SECTION THREE: MTS PRIORITIES

The *National Strategy* explores the five most pressing and current challenges to marine transportation, and calls for Federal action in these priority areas: capacity, safety and security, environmental stewardship, resilience and reliability, and finance.

Capacity

The capacity of the MTS must be adequate, reliable, accessible, and economical. Impacts to any one of these attributes can result in diminished capacity of the system, a decline in usage, or can cause significant cost increases, any of which could seriously impact the Nation's economy and security. Maintaining and sustaining existing capacity must be a priority to ensure that the MTS remains a thriving and viable entity. Enhancements to the MTS that would increase its capacity should be pursued whenever the need is clearly identified and justified.

Currently, 59 authorized Federal channels handle approximately 90 percent of all cargo tonnage through U.S. ports.⁴⁰ As a leader in world trade, the U.S. relies on its coastal and inland ports and waterway infrastructure to support the smooth flow of an enormous volume of goods shipped through the MTS.

At the USCG MTS National Strategy Workshop in July 2006, industry reported that capacity issues in some of the Nation's major ports require attention. For example, the Ports of Los Angeles and Long Beach (LA/LB) when combined rank ninth in metric ton throughput in the world, and face port congestion and capacity challenges. The ports of LA/LB handled approximately 15.5 million TEUs of containerized cargo in 2006, a 12 percent increase over the previous year.⁴¹ These two ports forecast handling 42.5 million TEUs by 2030,⁴² an average

⁴⁰ U.S. Army Corps of Engineers, 2007.

⁴¹ www.wtca.org/press_05-03-06.htm; WTCA-LAECED Study, 2006. ALSO <http://laedc.org/reports/Trade-2007.pdf>; World Trade Center Organization LA-LB International Trade Trends and Impacts: The Southern California Region, 2006 Results and 2007 Outlook.

⁴² http://freight.transportation.org/doc/water/RichardNordahl_Caltrans.pdf. See slide #6; California Department of Transportation: California Ports Development Update, 2006.

annual increase of more than four percent. The Southern California port authorities recently declared there has been no available land for expansion since 2006,⁴³ and what land is available has gotten progressively more expensive due to other commercial or residential uses. The Ports of Los Angeles and Long Beach are planning to use new technology to increase cargo capacity on the same waterfront acreage without the necessity of new construction, new equipment, or changes in labor. One example is making the ports more “agile” by using “sprint trains” to take intermodal cargo directly from dockside and move it to a remote inland location for storage and sorting prior to distribution. However, the need to improve, enhance, and otherwise modify the existing infrastructure in LA/LB remains a critical element in MTS planning. Any plans to develop additional areas of the ports will be evaluated under the appropriate Federal and State environmental review requirements.

Port capacity issues require coordinated action by public and private entities and may entail improving the Federal navigation channels, the intermodal connectors to railways and highways, and communication with industry on port conditions to enable vessel operators and owners to better time their vessel movements. Facilitating the use of adjacent properties that are currently under restricted use due to contamination—commonly referred to as “brownfields”—may provide land development opportunities for certain ports. Again, interagency and inter-governmental cooperation will be essential. An optimized intermodal freight system would allow rapid movement of cargo to and from inland points and the ports.

In response to natural disasters, terminal and rail congestion, and labor-management disputes, many companies have reoriented their supply chains to minimize the potential impacts of disruptions.⁴⁴ Some companies have begun to use alternative West Coast ports as well as alternative gateways on the Gulf and East Coasts via the Panama and Suez Canals. A central issue for increasing operational efficiencies and productivity is related to how best to improve throughput capacity.

⁴³ www.portstrategy.com/archive/2007/december/regional_feature_us_west_coast/us_west_coast_feature; Port Strategy Online Edition, article "A Balancing Act," 2007. Mr. Steven Lautsch, Executive Vice President, Marine Terminals Corp. stated, "The traditional response has been to expand the ports' footprint but there is little or no land available for expansion."

⁴⁴ Principles for a U.S. Public Freight Agenda in a Global Economy, by Martin E. Robins and Anne Straus Wieder from January 2006-The Brookings Institution Series on Transportation Reform.

Private industry is examining ways to increase throughput capacity by using a number of measures that address total system synchronization. In general, these measures focus on intermodal networks that increase the flow of cargo through marine ports and terminals, and how best to increase transport service for passenger movement.

The Heartland Corridor project is a creative streamlining effort developed by State transportation agencies to improve efficiency of the rail connections between Virginia ports and distribution markets in the Midwest. The project, which will cut the present route to the Midwest by 250 miles, allows double-stacked containers to be transported by rail between the Hampton Roads region of Virginia to locations in West Virginia and Ohio. This will be accomplished by linking existing rail systems, building new rail lines where needed, and raising tunnel and bridge heights to allow for passage of double-stack trains.

On the West Coast, the Pier Pass Program—a private sector initiative to address traffic congestion and air pollution concerns at the ports of LA/LB—is helping to even out the flow of truck traffic in and around the area by expanding and modifying port operations to facilitate container drop-off and pick up. The greater use of port and regional chassis pools at Norfolk, VA and other U.S. ports is creating operational efficiencies for the ports, truckers, and ship operators. The Federal government can offer economic incentives to encourage private sector investment in MTS infrastructure and achieve operational efficiency to reduce congestion. CMTS Agencies can share best practices to encourage private sector interests and local governments to pursue innovative initiatives.

Landside freight congestion has caused some shippers to consider marine transportation as an alternative. Shipping along our Marine Highways has the potential in some cases to facilitate enhanced freight flow, expand freight capacity, reduce congestion, or improve air quality. A minimal reduction in the anticipated growth of trucks on highways can make a significant difference. For example, one 80,000-pound tractor-trailer truck does a great deal more damage to pavement than a car and imposes greater costs per mile for road wear—cars cost an average of .05 cents per mile, single unit trucks cost .31 cents per mile, and multi-unit trucks cost .66 cents



The Kirby Inland Marine Vessel, M/V *Bill Watson*, with a 15-barge tow.
Photo courtesy Kirby Marine.

per mile.⁴⁵ Thus, the use of marine transportation for cargo could reduce the costs of road maintenance.

America's Marine Highways can be viable alternative transportation modes.

America's Marine Highways serve as an extension of the surface transportation system and consist of the navigable coastal, inland, and intracoastal

waters of the United States and nearby Canada and Mexico. These corridors support the movement of passengers and cargo between U.S. ports, or between U.S. and Canadian or Mexican ports, relieving landside congestion. Transporting freight by water has traditionally been used for the movement of bulk commodities such as coal, petroleum, grain, and lumber, yet growing freight traffic congestion on the highways, combined with innovative approaches, could encourage shippers to consider marine transportation for other cargo. To promote optimal use of Marine Highways and decrease congestion, Marine Highway Corridors will be designated. The Federal government could encourage greater use of the MTS for shipping freight, as well as passengers, by supporting the collaborative partnerships to develop specific congestion mitigation projects, promoting public/private partnerships to develop marine highway services, and developing performance measures for assessing the benefits of marine transportation.

The *National Strategy* envisions a coordinated and detailed exploration of specific options for increasing the efficiency of the existing MTS system. Near-term actions should focus on working collaboratively to ensure Federal statutory, regulatory, and institutional requirements concerning the MTS are consistent and coordinated across the system. Regulatory and tax

⁴⁵ 1997 Federal Highway Cost Allocation Study, table V.5, Federal Highway Administration, U.S. Department of Transportation.

policies should be as efficient and equitable as possible and Federal funding should maximize the efficient use of existing infrastructure and leverage the benefits of public/private partnerships.

To address capacity issues, improve the efficiency of the Marine Transportation System, and reduce transportation congestion, the CMTS recommends the following eight actions:

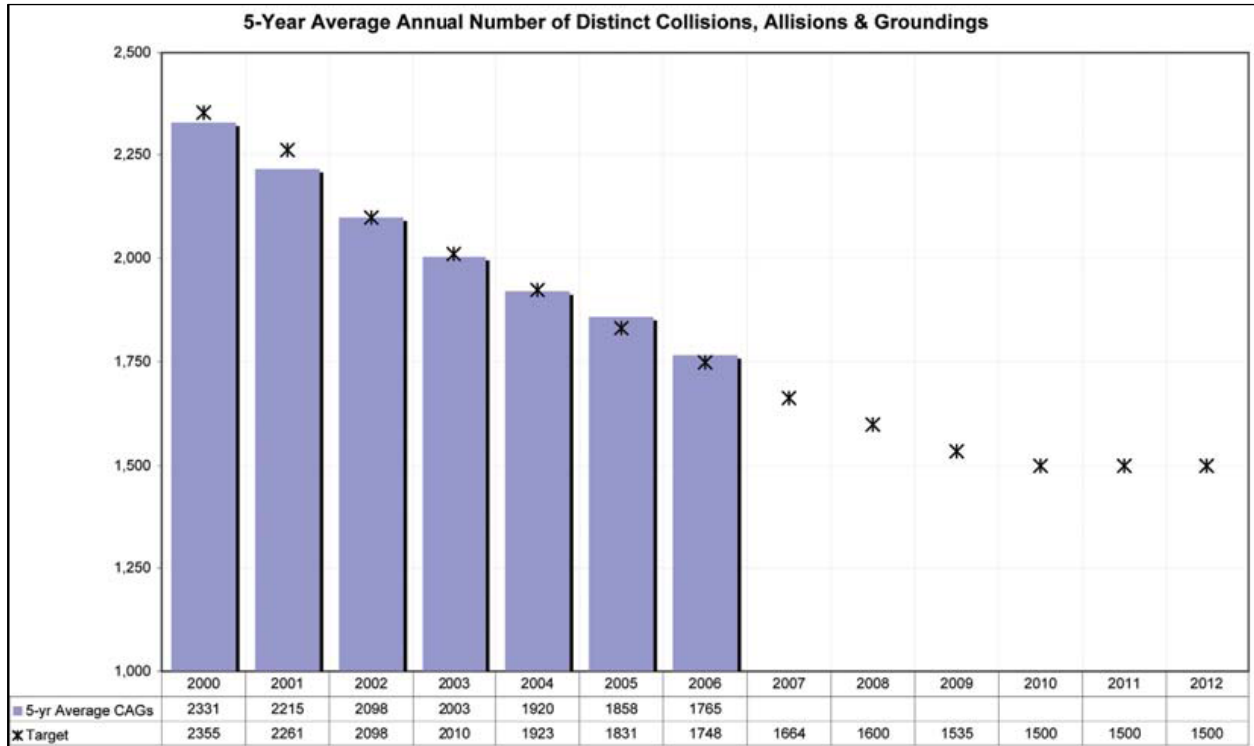
- Work collaboratively to address Federal statutory, regulatory, and institutional requirements in order to improve MTS performance;
- Encourage the expansion of shipping on the Marine Highways including the establishment of a pilot program to designate Marine Highway Corridors to use the waterways to relieve congestion on roadways;
- Propose economic incentives for private sector investment in MTS infrastructure and operational technologies to make the MTS more efficient for existing and future needs;
- Collaborate with State, local, and private entities to ensure environmental and National Environmental Policy Act (NEPA) compliance, and to plan for land use in and near ports;
- Share best practices and create incentives to encourage private sector interests and local governments to pursue initiatives for increased efficiency and environmental sustainability;
- Publish valid, reliable, and timely data on the MTS including cargo movements, capacity, and productivity;
- Facilitate standardized terminologies, interpretations, and flow-through models to foster increased productivity; and
- Develop performance measures to assess the productivity of the MTS and the risk of potential infrastructure failures to the MTS.

Safety and Security

The complex nature of the MTS presents a number of significant safety challenges. Large, sophisticated vessels travel at high speeds in close proximity to each other, often in poor weather conditions. The cargoes they carry can be dangerous and require specialized handling both on the vessel and in the ports. Keeping these vessel and port operations safe requires systems, technology, and trained people to work seamlessly together. When prevention efforts fall short, response systems must be in place to protect lives, the environment, and property.

A number of Federal Agencies administer programs that improve marine safety throughout the various components of the MTS. The USACE operates and maintains locks and dams on our inland and coastal waters, and dredges and maintains channels for vessels of all sizes. The USCG places aids to navigation, operates and maintains electronic navigation and vessel traffic management systems, certifies mariners to ensure their competency, and prevents and responds to oil spills and other accidents with assistance from NOAA and the EPA. It also develops safety standards and enforces compliance on commercial vessels, and examines recreational vessels for safety deficiencies. NOAA surveys and charts our oceans and waterways, and monitors and predicts weather. It also collects and disseminates real-time navigational information on tides, currents, and air drafts. MARAD works with private industry and transportation entities to promote safe, efficient ports. It operates the U.S. Merchant Marine Academy and helps to support the six State maritime academies. The MMS collects and provides mariners with access to location data of both visible and submerged offshore energy infrastructure. Collectively, these programs provide layers of safety to users of the MTS to prevent the loss of life and property, and harm to human health and environmental resources. The CMTS Agencies can work together to develop a unified approach to planning for energy infrastructures and energy import terminals to mitigate risk to vessels and the environment.

The development of new technologies supporting oil and gas exploration in offshore waters is making possible the discovery and production of new energy reserves critical to our Nation's economy. While many reserves continue to be found in shallow-water, near-shore locations, the most significant reserves are being found farther offshore, at water depths exceeding 1,000 feet and approaching 8,000 feet. Most of these new discoveries could result in the construction of either fixed or floating structures that would remain on location until the reserves have been depleted, a period of up to 50 years. Additionally, alternative energy offshore structures supporting wind, ocean wave, and tidal current power are expected to be constructed in Federal offshore waters. Offshore supply vessels have become an important part of U.S. domestic maritime operations. A safe and secure MTS must account for all of these energy structures in order to allow for the safe passage of vessels, both to prevent risks of injury to people and the environment and to prevent loss of energy production.



Coast Guard FY 2008 Budget in Brief and Performance Summary, p 31

While the number of collisions, allisions, and groundings has steadily declined over the years, safety concerns continue to be high due to the increasing number of recreational and commercial boaters that share the waterways.

It is anticipated that use of the ocean will increase. These uses include marine transportation, production of energy, protection and management of living marine resources, tourism and recreation, fishing, and scientific research. The interaction of these uses is also expected to increase. As a result, to promote safety and reduce risks to life, property, and marine life, intergovernmental collaboration and action to address these interactions will be required. As technologies improve, the CMTS Agencies can collaborate to improve marine safety. For example, data integration of Vessel Traffic Services, Automatic Identification Systems (AIS), electronic charts, and real-time navigational and weather information can create a comprehensive navigational safety system that significantly improves the quality and timeliness of safety information.



Ship crews are required to have the training needed to respond to emergencies. Loss of ships and cargoes still cause supply chain disruptions.
Photo courtesy USCG.

Adverse winds, waves, and currents may slow a ship's progress and lengthen a single ocean crossing by days. Ship time has high economic value to marine operations in terms of charter rates and operating costs. Ship routing services based on real-time weather forecasts provide information to mariners to make decisions for safe and economically beneficial ocean crossings. As of 2000 an estimated 50 percent of ocean transits

used some form of weather-based ship routing services for safety and savings in fuel and transit time.

Severe weather is cited as a contributing cause of many maritime accidents. A 1992 study estimated the world fleet's annual "hull and machinery" loss to be about \$2 billion.⁴⁶ In addition, ocean storms with winds sometimes exceeding hurricane force are linked to damage and loss of cargo, environmental damages due to spills of hazardous materials, and human injuries and deaths.

The Federal government, in conjunction with international, State, local, industry, and public partners, is also responsible for ensuring the security of the MTS. Our maritime border is extensive, and security of the MTS is critical to our national security and prosperity. Maritime security issues are currently being addressed via a number of existing Federal strategies and plans that are outside the scope of this document. The two overarching directives guiding this effort are contained in Homeland Security Presidential Directive NSPD-41/HSPD-13 and HSPD-7. The key elements of NSPD-41/HSPD-13 are an interagency Maritime Security Policy Coordinating Committee established to serve as the primary forum for coordinating U.S. government maritime security policies, the *National Strategy for Maritime Security*, and eight

⁴⁶ Kite-Powell, H.L. 1992: Economics of Standards. Ph. D. Dissertation, Ocean Engineering Department, MIT, Cambridge.

supporting plans created by working groups composed of a cross-section of Federal Agencies. HSPD-7 deals with critical infrastructure identification, prioritization, and protection, by establishing a national policy for Federal Departments and Agencies to identify and prioritize United States' critical infrastructure and key resources, and to protect them from terrorist attacks. The priority of the *National Strategy* is to be aligned with the Nation's security strategies. Many safety, resilience, and efficiency improvements will have synergies with security and the *National Strategy* will leverage these whenever possible.

International security standards are a proven methodology that drives business to improve security beyond minimum mandatory requirements. Ports are striving to gain international security certification to demonstrate a level of excellence to their current and potential customers. The process of international standards allows flexibility in addressing security and provides for a holistic approach in the international supply chain.

To ensure and strengthen the marine safety of the MTS, and to coordinate maritime security, the CMTS recommends the following seven actions:

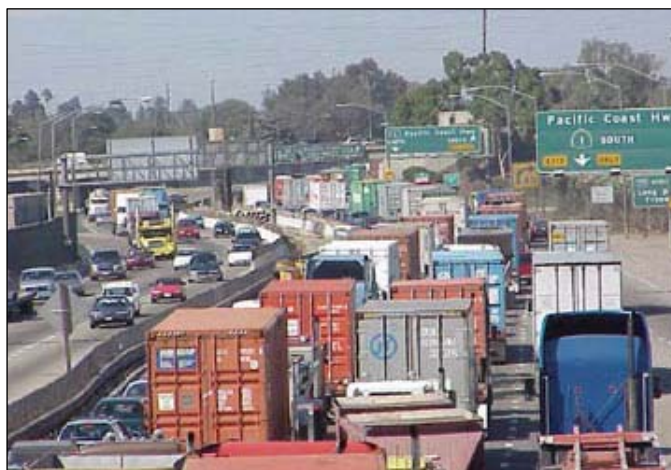
- Coordinate existing Federal navigation programs to ensure collaboration, reduce duplication, and standardize terminology and presentation;
- Deliver timely, relevant, accurate navigation safety information to mariners, including real-time information systems such as the Physical Oceanographic Real Time Systems (PORTS), e-navigation, under-keel clearance, High Frequency Radar (HFR) air gap technology, and Real Time Current Velocity systems at locks and those systems associated with development of the Integrated Ocean Observing System to improve navigation safety and efficiency, and reduce the risk of accidents;
- Encourage, coordinate, and support navigation technology research and development to enhance navigation safety;
- Enhance and improve existing frameworks that plan for, operate, maintain, and mitigate risks to vessels and the environment, and respond to accidents and natural disasters;
- Ensure coordination among maritime transportation and maritime security policy-making bodies and programs;
- Consider ways in which security measures impacting the movement of trade by water can be streamlined, and where economies and coordination can be realized between safety and security imperatives; and

- Work closely with State and local boating authorities and entities, recreational boating organizations, commercial shipping interests, and ports to reduce accidents resulting from competing uses of navigation channels, and increase and manage safety of the MTS.

Environmental Stewardship

The economic health of the MTS and the natural health of the Nation's ocean, coastal, and freshwater ecosystems must co-exist in a way that supports transportation while protecting and sustaining human health and the environment. The MTS, including its ports and inland waterways, crosses, intersects with, and is in close proximity to sensitive and valuable natural resources, including wetlands, coral reefs, estuaries, drinking water resources, recreational waters, watersheds, critical habitats, fisheries, and marine mammals.

Environmental stewardship of the MTS should be directed broadly to protect the environment from MTS-related impacts and to enhance the environment. Green port and waterway design can protect human health and enhance the environment, as can beneficial use of dredged material projects for beach restoration, wetland development, and habitat creation.



The MTS has the potential of becoming the most environmentally advantageous means of commercial transportation. Photo courtesy California Marine and Intermodal Transportation System Advisory Committee.

When compared with other transportation modes, marine transportation is a safe, competitive, and efficient means of moving people and cargo. It also has the potential of becoming the most environmentally advantageous means of commercial transportation. Due to technology advancements, including enhanced hull and propulsion efficiency and advancements in electronic navigation and cargo transfer systems, shipping accidents have

been reduced by 80 percent over the last 30 years, including oil spills from tankers.⁴⁷ As a result, there has been a substantial reduction in marine pollution from vessels over the last 15 years, especially with regard to the amount of oil spilled into the sea, which has fallen more than 60 percent since the 1980s.⁴⁸ This has been accomplished despite a significant increase in worldwide waterborne trade.

However, ecosystems found near MTS infrastructure are impacted by air emissions and other pollution from land-based sources and vessels, such as diesel exhaust, point source discharges, non-point source runoff, vessel discharges, marine debris from ships and from fishing, research, and recreational vessels, oil spills, and invasive species from ship hulls and ballast water. Dredging and dredged material management is a priority issue, especially where sediment may be contaminated by pollutants, and where dredging, disposal, or placement occurs near sensitive habitats, such as wetlands, coastal marine ecosystems, or fisheries areas.

Petroleum products spilled into waterways can have both short-term and long-term negative effects on water quality and living resources. These can be from both chronic, low-level releases as well as from large oil spills. The volume and type of petroleum product, as well as the proximity and sensitivity of the living resources to its release, may also affect the degree of impact. Air pollution from marine vessels and port operations can adversely affect human health and environmental quality in ports and coastal areas, as well as regions far removed from the ports and their intermodal connections. Ocean-going vessels produce sulfur oxides, nitrogen oxides, particulate matter, greenhouse gases, and other air pollutants. Diesel-powered vehicles and engines at the ports emit soot, or diesel particulate matter, and other air pollutants that increase public health risks. Cruise ships generate large amounts of solid and liquid waste that must be disposed of properly, whether in port or at sea. The discharge of petroleum products and oil, hazardous substances, introduction of non-indigenous invasive species, marine debris, garbage, and human waste are matters of concern for the health of citizens and the environment.

⁴⁷ Marine Board Meeting, February 6, 2006.

⁴⁸ 2006 UNEP Environmental Report.

An integrated and coordinated approach to environmental pollution reduction and mitigation is essential in the MTS. Coordinated action to improve the natural environment can result in changes in marine transportation operations and infrastructure, including dredged material placement, ship air emissions, and ballast water treatment, to minimize and mitigate impacts on natural resources and the surrounding communities.

To protect the environmental health of communities and ecosystems that may be affected by the MTS, the CMTS recommends the following eight actions:

- Advocate transportation projects, technologies, and mitigation activities that improve air quality, reduce greenhouse gas emissions, and reduce congestion in port areas and other MTS components;
- Work collaboratively to foster the collection of data and information that will underpin environmental impact assessments and decision-making in MTS planning and development;
- Support research and develop and implement practical strategies to control and mitigate effects on the marine environment from pollutants, invasive species, and anthropogenic sound, and to reduce negative interactions between ships and marine mammals;
- Ensure environmentally appropriate dredged material management;
- Promote coordinated regional and watershed efforts of States, Federal Agencies, and other partners to manage sediment, dredging and dredged material, point source discharges and storm water runoff, oil or hazardous material spills, harmful anti-fouling systems, and sources of marine debris to restore habitat, reduce pollution, and plan for conservation and mitigation;
- Support harmonization of State, Federal, and international environmental standards, policy, laws, and regulations through work with Federal interagency bodies, in the International Maritime Organization and other organizations, and implement international treaties such as those regarding prevention of maritime pollution at sea;
- Support national and international solutions to environmental problems related to ship decommissioning and dismantling; and
- Encourage use of industrial land banks and formerly polluted industrial areas for MTS and intermodal transportation system facilities, and promote MTS development that avoids disproportionate impacts on minority and low-income communities.

Resilience and Reliability

There will always be some operational delays within the MTS: a vessel may have to wait for an available berth; a vessel operator may be subject to an unexpected safety or security boarding; and ship traffic volume can delay the availability of a pilot to move the vessel through a



Violent storms threaten ships, cargo, and port infrastructure.
Photo courtesy USCG.

navigation channel. While all delays should be minimized or eliminated, an experienced operations manager or shipper will build typical delays into the costs and consideration of operating. However, because of modern supply chains in the movement of goods and the volume of vital commodities that flow through the MTS, we are more aware of the impact that certain disruptions can have on the economics and quality of life of our Nation. Protecting MTS efficiency and resilience requires providing ports

and infrastructure with layers of operational capability, increasing target hardness, and improving the quality and capacity of the intermodal connectors that complete internal movement of the passengers and goods. By decreasing the physical vulnerability of these assets through new design criteria or improvements in order to mitigate the consequences of an attack or event affecting communications and critical systems, it may be possible to achieve an overall reduction in risk to the MTS. Also, as infrastructure is added to meet capacity challenges, intermodal connections are improved, and cargo is shifted from congested modes to modes with excess capacity, increased system-wide capacity and efficiency will result. By enabling the MTS to achieve larger conduits to re-route cargo around disruptions and congestion, the system's resilience can be enhanced. Continuity of operations and the resumption of shipping following a disruption are essential for business and the economy, as the impact of delayed restoration may be more damaging than the incident itself.

Each MTS entity can play a role in ensuring the resilience and reliability of the MTS.

Operations will be able to resume as soon as possible following a disruption by the coordination of contingency plans for the repositioning of resources needed to address expected increases in

cargo movements at non-affected ports following a disruption, and providing timely and accurate information to industry, commercial, and passenger transportation. The National Response Framework addresses hazards and responses.

Consistent with the National Response Framework, to increase the resilience and reliability of the MTS, the CMTS recommends the following six actions:

- Provide coordination, expertise, and resources to ensure continuity of operations, essential public services, and the resumption of commercial marine activities following a disruption;
- Develop reserve and surge capacity in the MTS and coordinate with industry on response and recovery operations;
- Develop a coordinated approach to emergency permitting for channel restoration following a large-scale sediment deposit in navigation channels from natural disasters such as hurricanes that obstruct the channel and disrupt port activities;
- Work collaboratively to resolve cross-cutting jurisdictional issues surrounding abandoned and wrecked vessels or damaged bridges;
- Develop and promote national and international strategies for addressing potential climate change impacts on ports, waterways, and other vulnerable elements of the MTS; and
- Provide appropriate consultation and coordination with other policy facilitation structures, such as the Committee on Ocean Policy.

Finance and Economics

The *National Strategy* envisions a coordinated and detailed exploration of specific options for increasing the efficiency of the existing MTS system, developing better methods for prioritizing investments, and developing ways of attracting more private sector investments. Increases in funding should be considered only after a thorough exploration of opportunities for increasing the efficient use of existing infrastructure, prioritizing investments so that all funds are used effectively, and an identification of both private and public sources of funds.

The costs typically associated with Federally financed infrastructure can be divided into three types: fixed, incremental, and congestion. Fixed costs are incurred once and do not vary with the volume of use. Incremental costs are incurred each time the infrastructure is used. Congestion

costs account for the delay cost that each additional user imposes on other users. To finance an infrastructure project over the usable life of the infrastructure, fees, taxes, or general revenue contributions must be collected that equal the sum of the fixed and incremental costs. Each of these costs must be broadly allocated between users and general revenue financing.

- Incremental costs should generally be allocated directly to users who impose these costs.
- Fixed costs should be allocated between user-derived fees, taxes, and general revenue contributions. The allocation between these sources should generally reflect the benefits that accrue to the users.
- Congestion prices should be charged when appropriate. The revenues collected from congestion pricing can offset fixed costs and thereby reduce distortions.

As part of this long-term planning, the CMTS will study and consider three interrelated topics in more detail. The CMTS member Agencies will collaborate to study approaches to prioritizing how Federal dollars should be allocated among competing priorities when Federal finance is needed for maintenance and infrastructure projects. In general, projects should be prioritized according to the difference between the public benefits, and the public costs they will incur (including funding); that is, those projects producing the greatest benefits at the lowest cost should be given highest funding priority by the Federal government. It will be important for the CMTS to solicit input on how best to measure prospective costs and benefits, some of which are easier to quantify in economic terms than others. Currently, each Federal Agency has its own list of criteria governing funding decisions for agency projects. The CMTS will address how best to coordinate the allocation of Federal funds for projects across Agencies. Finally, the CMTS will study alternative approaches to financing maintenance and infrastructure projects. This study will consider the appropriate tools (including fees, taxes, and general revenue contributions) for financing infrastructure projects depending on the characteristics of the projects and involve high-level discussions to promote those funding strategies.

To maintain and improve the infrastructure of the MTS, the CMTS recommends the following five actions:

- Study alternative approaches to financing construction, rehabilitation, and maintenance of infrastructure projects, as well as environmental impact mitigation. This study will consider fees, taxes, and general revenue contributions for financing infrastructure projects, depending on the characteristics of the projects, and involve high-level discussions and collaboration with State, local, and Tribal governments, and also with private entities as appropriate on funding strategies;
- Study approaches to prioritizing how Federal dollars should be allocated among competing priorities;
- Ensure that cost allocation takes into consideration environmental and human health costs, promotes economic efficiency, and that the allocations do not create unfair competitive disadvantages;
- Study how best to coordinate the allocation of Federal funds for projects across Agencies; and
- Coordinate a CMTS membership policy recommendation to the President for congestion prices, which should be charged when appropriate. The revenues collected from congestion pricing can offset fixed costs and thereby reduce economic distortions.

SECTION FOUR: GOING FORWARD

The *National Strategy* presents a framework for a way forward for addressing Marine Transportation System needs for the next five years, with a view to emerging issues 20 or more years in the future. It is a short-term action plan with a long-term view.

The *National Strategy* provides guidance for policy formulation and planning to ensure the MTS is properly maintained, fully efficient, safe, secure, and environmentally sustainable. The U.S. must protect its maritime interests across a vast

domain with a limited number of assets that are spread out across multiple organizations. Enhancing our MTS demands a unity of effort

from all stakeholders. The effort is not solely domestic; it spans the globe to include the global supply chain and improving the efficient flow of goods between nations. A systems approach to maritime planning, management, operations, and information sharing will serve as both a force multiplier and a means for coordinating maritime activities.



An aerial view of APM Terminals' new \$450 million dollar Portsmouth, VA facility with intermodal highway and rail connections. Photo courtesy APM Terminals.

Visibility of the MTS is critical for public and private awareness of the system's value to the Nation. The role of the CMTS is to foster a partnership of Federal Agencies with responsibility for the MTS and to provide a forum through which national MTS policies, consistent with national needs, are developed and implemented. The CMTS member Agencies will provide leadership through their policies, activities, and outreach to the many and diverse stakeholder groups in the public and private sectors that will ultimately be needed to accomplish the vision for the MTS into the future. Through its Federal Departmental and Agency members, and building on the relationships forged in producing this document, the CMTS will prioritize the actions within the *National Strategy* and develop a work plan of strategies and steps to fulfill

them. The CMTS will coordinate with other policy facilitation structures, such as the Committee on Ocean Policy, and provide a biennial report to the President on the progress made to complete the actions.

The MTS is a strategic, integrated, and globally competitive transportation system, and, if it is going to effectively serve the U.S. now and in the future, attention must be focused on the priorities identified in the *National Strategy*. The CMTS members have developed a framework for action, and will improve the MTS through the creation of efficiencies that can be realized by enhancing the coordination and integration of Federal government policies and actions, implementing technological advances that can be put in place by combining expertise, and developing financing options that promote sound investments and infrastructure improvements.

In the years ahead, as the recommended actions of the MTS *National Strategy* are executed by the CMTS and its member Departments and Agencies, substantive and measurable progress to improve the MTS is expected. The capacity of the MTS will expand to support and achieve significant system efficiencies. Advancements in navigation information and services will ensure a new level of system safety and security. The air, water, and land in proximity to, or affected by maritime-related activities will reach new standards of quality, as reductions in air pollution, including greenhouse gases, and marine pollution at sea and in coastal areas are realized. Additionally, contingency plans will be in place and system-wide coordination institutionalized to respond effectively to both system disruptions and climate-change impacts. Taken together, the completion of the recommended actions will move the MTS forward, maintaining and advancing the Nation's standing as the global leader in maritime trade, as people and commerce are moved safely, securely, and reliably in a manner that is environmentally protective within this ever-advancing integrated network.

ANNEX I: THE CMTS

The U.S. Congress, in the Coast Guard Authorization Act of 1998, directed the Secretary of Transportation to form a task force to assess the adequacy of the Nation's Marine Transportation System to operate in a safe, efficient, secure, and environmentally sound manner. The MTS Task Force was made up of industry associations, shipper groups, and other stakeholders. Through cooperative efforts between government and private sector partners, the MTS assessment was completed and transmitted to Congress in September 1999. That report, *An Assessment of the U.S. Marine Transportation System*, called for the creation of a coordinating body, and the new Inter-agency Committee on the Marine Transportation System (ICMTS) was established.

The President's U.S. Ocean Action Plan of 2004 called for the elevation of the ICMTS to a cabinet-level committee, and the Committee on the Marine Transportation System (CMTS) was formally established in August 2005 by the Administration. The CMTS members are the Cabinet secretaries and administrators, including DOT, whose Secretary serves as CMTS Chair, the Department of Homeland Security, the Department of Defense, the Department of Commerce, the Environmental Protection Agency, the Department of the Interior, and the Chairman of the Federal Maritime Commission, among others. The CMTS reports directly to the President and is supported by the three sub-organizations:

- A coordinating board of many Federal Agency stakeholders with direct and indirect MTS interests, including the U.S. Coast Guard, the Maritime Administration (MARAD), the National Oceanic and Atmospheric Administration (NOAA), and the United States Army Corps of Engineers (USACE);
- An executive secretariat who are permanent CMTS staff based at DOT and charged with CMTS coordination; and
- Integrated action teams (IATs) that are established as required. The IATs are composed of various Agencies tasked with cooperatively addressing key MTS issues.

ANNEX II: GLOSSARY

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| AMSC..... | Area Maritime Security Committee |
| CBP..... | Customs & Border Protection |
| CBE..... | Chemical, Biological & Explosive |
| CCF..... | Capital Construction Fund |
| CMTS..... | Committee on the MTS (Cabinet Level) |
| CMAQ..... | Congestion Mitigation & Air Quality Improvement Program |
| C-TPAT..... | Customs Trade Partnership Against Terrorism |
| DHS..... | U.S. Department of Homeland Security |
| DOC..... | U.S. Department of Commerce |
| DOE..... | U.S. Department of Energy |
| DOI..... | U.S. Department of the Interior |
| DOT..... | U.S. Department of Transportation |
| EEZ..... | Exclusive Economic Zone |
| EPA..... | U.S. Environmental Protection Agency |
| FMC..... | U.S. Federal Maritime Commission |
| GPS..... | Global Positioning System |
| GDP..... | Gross Domestic Product |
| HMTF..... | Harbor Maintenance Trust Fund |
| HSC..... | Harbor Safety Committee |
| IAT..... | Integrated Action Team |
| IWTF..... | Inland Waterways Trust Fund |
| ISO..... | International Standards Organization |
| ICMTS..... | Inter-agency Committee on the MTS |
| ITS..... | Intelligent Transportation System |
| MARAD..... | U.S. Maritime Administration |
| MMS..... | Minerals Management Service |
| MTS..... | Marine Transportation System |
| MTSA..... | Maritime Transportation Security Act of 2002 |
| MTSNAC..... | MTS National Advisory Council |

NOAA..... National Oceanographic & Atmospheric Administration
NGO..... Non-governmental Organization
OCS..... Outer Continental Shelf
PAWSA..... Port and Waterway Safety Assessment
PORTS..... Physical Oceanographic Real Time Systems
R&D..... Research and Development
TEA-21..... Transportation Equity Act for the 21st Century
TEU..... Twenty-foot Equivalent Unit
TSA..... Transportation Security Agency
TWIC..... Transportation Worker Identification Credential
USACE..... U.S. Army Corps of Engineers
USCG..... U.S. Coast Guard
USGS..... U.S. Geological Survey
VTS..... Vessel Traffic Service



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