MARINE TRANSPORTATION

Marine transportation involves waterways and ports that move goods (e.g., agriculture, oil and gas, cars, clothing, appliances) and people (e.g., on ferries, cruise ships, sightseeing vessels). It has broad-reaching impacts to the Northeast region, as well as nationally and internationally. It is economically critical, providing for jobs—such as pilots, port operators, and vessel staff—as well as taxes to local, state, and federal entities. It is also crucial to national security by enabling the rapid movement of military resources and logistical support.

Marine transportation provides people an alternative means of transportation in some congested areas and may offer the only method to get to work in certain Northeast island and coastal communities. Northeast ferries carried 26.6 million passengers and 5.4 million vehicles in 2010, and they are expected to carry more in the coming decade.[1] The cruise industry is also seeing a 16 percent increase in expenditures over the past four years.[2] Movement of goods is another necessary component of marine transportation. Nationally, more than 75 percent of everything we consume arrives via ship, and the Northeast region is no exception.[3] Just-in-time winter deliveries of home heating oil, liquefied natural gas, and propane, essential for heat and electricity, in general add up to more than 12,000 transits, approximately 8,000 of which were accomplished by tugs and tank barges. Container volume through the Port of Boston was more than 237,000 20-foot equivalent units (TEUs) in 2015. Container volume is likely to increase once the main Boston Harbor shipping channels are dredged to accept larger container vessels transiting the recently widened Panama Canal.[4]

In total, marine transportation contributes $5.4 billion to the regional economy as well as providing more than 37,000 jobs.[5] The implications for ocean planning are that the Northeast must continue to sustain important marine transportation activities and systems while making sound decisions about how to manage the introduction of new infrastructure related to marine transportation or changes to the current marine transportation mix.

REGULATION AND MANAGEMENT

Over 25 federal agencies are directly or indirectly engaged with marine transportation, including the USCG, US Army Corps of Engineers (USACE), Federal Maritime Commission (FMC), Maritime Administration (MARAD), and NOAA, to name a few. The USCG has a unique multimission role involving waterway safety, security, environmental protection, and regulatory authority.[6] The

USACE is responsible for permitting waterway infrastructure projects and maintaining navigable waterways. MARAD manages several programs that promote the use of marine transportation infrastructure, including ports, and has authority for the licensing of offshore LNG- and oil-receiving port facilities. NOAA provides all nautical charts and maps and geodetic measurements, including developing strategies for coastal mapping. The FMC is an independent federal agency responsible for regulating the US international ocean transportation system for the benefit of US exporters, importers, and the US consumer.

USCG regulatory and management responsibilities

The most relevant USCG missions for regional ocean planning are those that protect ports and sea lanes through waterways management, law enforcement, and environmental protection. The relevant USCG missions and responsibilities provide context for the USCG's role in the everyday operation and management of marine transportation as well as in the regulatory review process for offshore projects requiring a permit, lease, or license from other agencies.

The USCG's Ports, Waterways, and Coastal Security (PWCS)[7] mission entails the protection of marine transportation infrastructure and the protection of those who live, work, or recreate near it; the prevention and disruption of terrorist attacks, sabotage, espionage, or subversive acts; and response to and recovery from those events that do occur. As part of this mission, the USCG is responsible for safety of navigation by inspecting foreign and domestic vessels, managing marine licensing, and enforcing treaties. The USCG's Aids to Navigation role[8]—to establish, maintain, and operate navigational aids—is well known, and relied upon, by mariners. The Ice Operations Program[9] facilitates the movement of vessels through ice-laden Northeast waters. The USCG enforces the International Convention for the Prevention of Pollution from Ships (MARPOL), as well as ESA, CWA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other US environmental laws in an effort to protect the marine environment.[10] Search and Rescue[11] entails "minimizing the loss of life, injury, property damage or loss by rendering aid to persons in distress and property."[12]

The USCG protects waterways and reviews new offshore projects through several authorities including the Captain of the Port (COTP) Authority[13] and the Ports and Waterways Safety Act (for assisting with decisions to permit Private Aids to Navigation, Bridges, and Marine Events), and participates as a cooperating agency for NEPA reviews, providing navigation safety evaluations to lead licensing, leasing, and permitting agencies (such as USACE and BOEM) for new waterway uses. Additionally,

under the Deepwater Port Act, the USCG has been delegated authority for application processing and environmental review functions for offshore LNG- and oil-receiving port facilities.[14]

The USCG has broad authorities over vessels, facilities, cargo operations, and the people that work on vessels and the waterfront. The USCG, through the District Commander or COTP, may establish different types of limited or controlled access areas and regulated navigation areas that may be used to mitigate risk to all waterway users. For example, a COTP order is one of several tools available to provide operational controls over a very specific emergent situation that poses safety, security, or environmental risks to the COTP's area of responsibility.

USACE regulatory and management responsibilities

The US Army Corps of Engineers' role in marine transportation is twofold. The USACE is authorized by Congress under its Civil Works programs to study, design, construct, operate, and maintain federal navigation projects (FNPs). Additionally, through its regulatory authorities (RHA, CWA, and MPRSA), the USACE issues permits for work, structures, the discharge of dredged or fill material, and the transportation for disposal of dredged material in navigable and ocean waters.

Under its Civil Works program, the USACE studies, designs, and constructs new projects, or makes modifications to existing projects either in response to congressional authorization or under its delegated Continuing Authorities Programs (CAP). For navigation projects, those with a federal cost of more than $10 million are typically authorized by Congress, while those up to $10 million are typically handled under the Section 107 (RHA) CAP program. Nonfederal cost-sharing is required for feasibility studies (50 percent), while design and construction is shared according to project design depth, in accordance with the requirements in the Water Resources Development Act (WRDA) of 1986.

Inherent in all federal navigation projects is the authority to maintain those projects in perpetuity. The majority of the USACE navigation program in New England in most years involves maintenance of existing FNPs. Currently, the USACE New England District (NAE) has one major deep draft navigation improvement project (Boston Harbor deepening), in partnership with Massport (the state entity responsible for the Port of Boston), that has been authorized by Congress and is currently in the final design phase. Another deep draft improvement project, the widening of the Portsmouth Harbor turning basin, in partnership with the New Hampshire Port Authority, has been forwarded to Congress for consideration for authorization, and is also in the final design phase. NAE also has several projects in the region under study as Section 107 small harbor improvements.

Other USACE authorities cover a range of business lines and project purposes. For example, the USACE also has the authority to address issues with damages to shorelines caused by FNPs (RHA Section 111), to restore habitat including areas formerly used as dredged material placement sites (RHA Section 1135), and to find beneficial use of dredged material for habitat creation or storm damage risk management (RHA Section 204).

MARAD regulatory and management responsibilities

The Maritime Administration promotes the development and maintenance of an adequate, well-balanced United States merchant marine, sufficient to carry the nation's domestic waterborne commerce and a substantial portion of its waterborne foreign commerce, and capable of service as a naval and military auxiliary in time of war or national emergency. MARAD seeks to ensure that the United States maintains adequate shipbuilding and repair services, efficient ports, effective intermodal water and land transportation systems, and reserve shipping capacity for use in time of national emergency. MARAD is also charged with meeting the country's commercial mobility needs while maintaining national security and protecting the environment. MARAD is an active participant at the national and international stage, advocating the need for consistent standards that value environmental protection.

Particularly relevant MARAD programs include the following:

Deepwater Port Program:[15] MARAD, in consultation with the US Coast Guard, is delegated the authority to license deepwater ports (DWPs),[16] including facilities constructed at sea that are used as terminals to transport oil or natural gas to or from a state.[17] MARAD carefully considers all licensing applications to ensure, among other things, that projects achieve the DWPA's

stated goals: to protect the marine and coastal environment; to prevent or minimize adverse impacts of port development; to promote the safe transfer of oil or natural gas to DWPs while minimizing the traffic and risk associated with such transport; and to protect the energy security of the United States.[18]

Ship Disposal Program: MARAD serves as the federal government's ship disposal agent of obsolete, noncombatant vessels weighing 1,500 gross tons or more. The program seeks to dispose of obsolete vessels in the most expedient, best value, and most environmentally safe manner. The program prioritizes the removal of the vessels that present the highest risk to the environment first. While MARAD is authorized to consider alternative ship disposal methods, such as, for example, artificial reefing, donation, and SINKEX (sink at-sea live-fire training exercise), MARAD focuses on vessel sales and ship dismantling options as those have been deemed the most expedient, cost-effective, and environmentally friendly methods available.

America's Marine Highway Program: America's Marine Highway Program[19] is an initiative led by the Department of Transportation to expand the use of waterborne transportation by integrating it into the nation's surface transportation system while relieving landside congestion and reducing air emissions. This collaborative effort among federal agencies, academia, industry, and public stakeholders supports important sustainability-related improvements, including reductions in petroleum reliance and greenhouse gas emissions, and encourages the use of alternative fuel technologies, such as liquefied natural gas, through the strategic and diversified use of waterborne shipping routes.[20] The program seeks to provide public benefits that relate to the overall transportation system in the US by, for example, reducing wear and tear on surface roads and bridges through the use of waterborne transportation; using less energy to transport goods; reducing air emissions; and providing local public health benefits from the mandatory use of modern technology on designated projects.

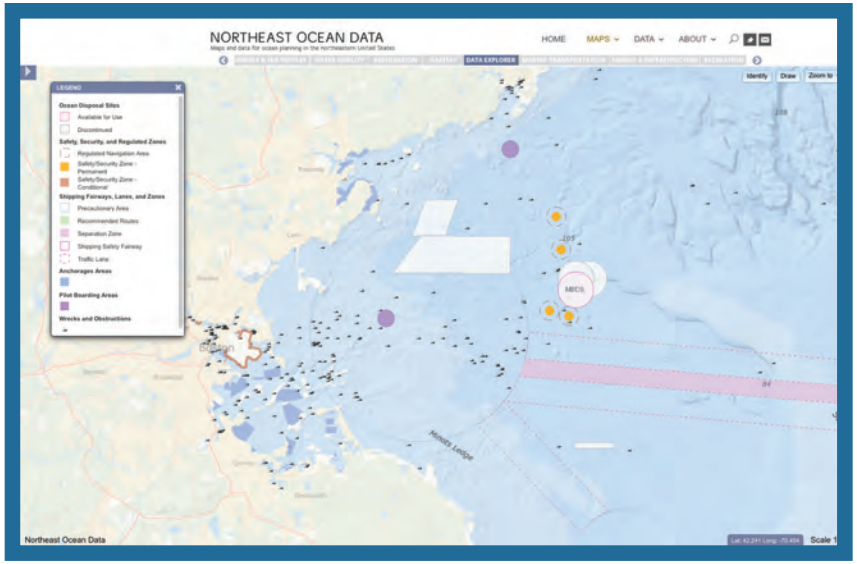
Maritime Environmental and Technical Assistance (META) Program: The maritime industry has increasingly become the focus of new environmental regulations, and it must now comply with a broad array of requirements in the areas of air and water quality, hazardous waste disposal, and aquatic species protection. The Office of Environment (OE) addresses these environmental issues through the META Program. The program provides marine transportation stakeholder support and assistance, including research and development, related to emerging marine transportation environmental issues. MARAD collaborates with industry, academia, and other public stakeholders to address critical marine transportation issues including, but not limited to, ballast water treatment, port and vessel air emissions, and alternative fuel technologies to develop solutions to the most-pressing environmental problems associated with the design, construction, and operation of ships. MARAD also encourages cooperative research programs in regional and international bodies with similar foci. META seeks opportunities to partner on research projects to advance sustainable vessel operations.

US Committee on the Marine Transportation System management responsibilities

The federal marine transportation agencies engage through the US Committee on the Marine Transportation System (CMTS). The CMTS was established by presidential directive in 2005 and authorized in statute in 2012 to regularly assess the state of marine transportation infrastructure; ensure that marine transportation is integrated into other modes of transportation; and to coordinate federal maritime policy. The CMTS interagency teams are developing enhanced marine safety information for the mariner; harmonizing among the navigation agencies the geospatial and referential information of navigable waterways; addressing marine transportation resilience risk factors; engaging academia to collaborate on research, development, and technology; enhancing interagency cooperation with vessel pollution treatment technologies; and investigating the use of public-private partnerships for infrastructure development. The CMTS is a one-stop-shop portal to engage the many federal marine transportation agencies in a holistic manner.

MAPS AND DATA

Agencies with authority over marine transportation rely on having access to relevant data to make decisions about day-to-day (even minute-by-minute) operational activities, and they also issue permits, a process that can last several years. Accurate maps and data are essential to moving people and goods in a safe, timely, and efficient manner. Having a central repository, such as the Portal, is a significant tool for implementing marine transportation authorities. The Marine Transportation theme on the Portal reflects two main categories: Navigation and Commercial Traffic.



This map displays the busy approach to Boston Harbor. Without any other ocean uses displayed, marine transportation in this area includes several navigational features: Regulated Navigation Area, Boston Traffic Separation Scheme (TSS) Precautionary Area, Ocean Disposal Site, a private aid to navigation at the Northeast Gateway Deepwater Port, and an inbound traffic lane for the Boston TSS, as well as numerous shipwrecks.

Navigation

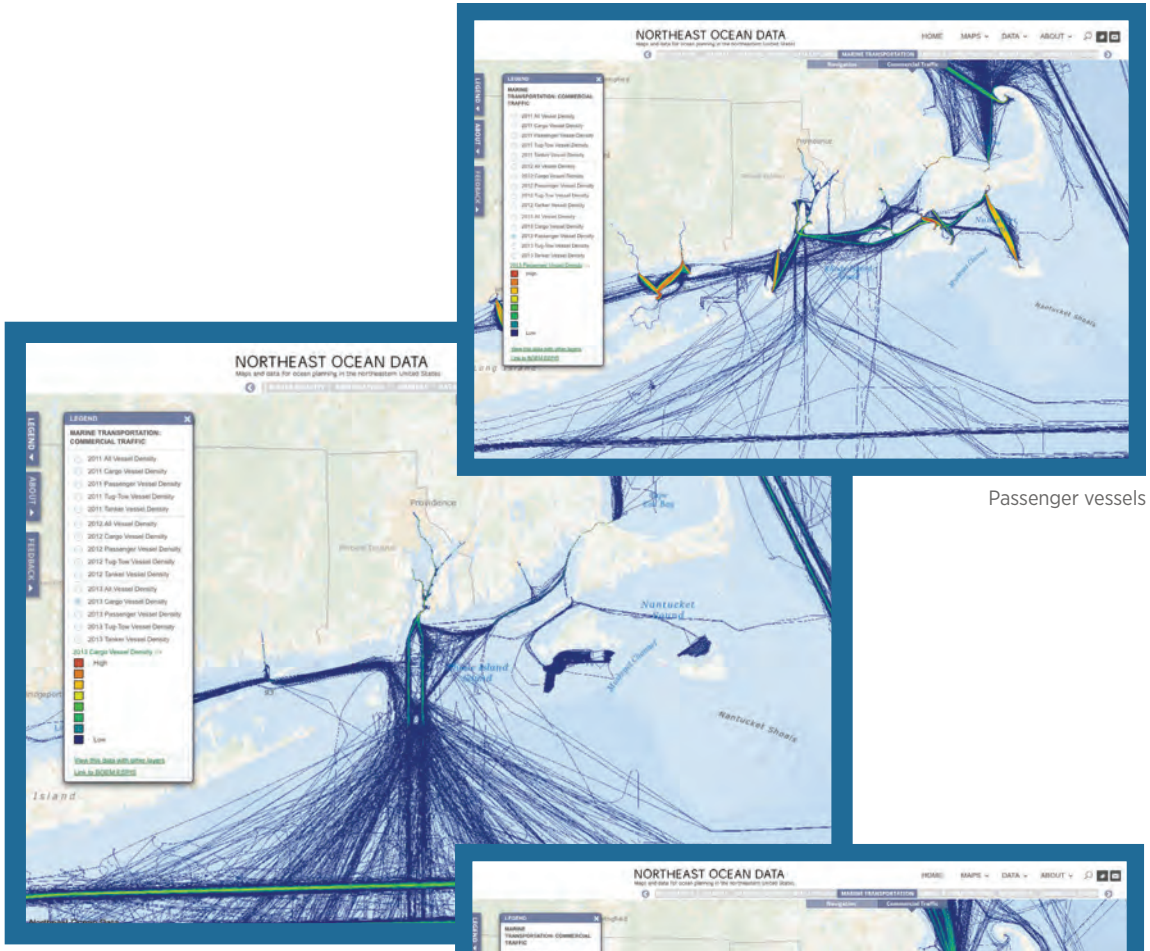
The Navigation map includes several features that are important to waterway users (e.g., pilots, mariners, fishermen, port authorities, industry representatives) and decision makers in order to maintain a safe and secure waterway. Features include Pilot Boarding and Anchorage Areas, Maintained Channels, Disposal Sites, Shipping Traffic Separation Schemes, Regulated Navigation Areas, and Obstructions, as well as the Aids to Navigation System. These features were reviewed and finalized after much input from stakeholders.

Commercial traffic

The Commercial Traffic map is composed of layers derived from the Automatic Identification System (AIS).[21] It displays vessel traffic density, which can be parsed out by general vessel type (cargo, passenger, tug-tow, and tanker) for each year between 2011 and 2013. These maps do not directly show the number of transits, but rather the relative density of vessels in a particular block over the course of a calendar year.

These maps were reviewed and validated by the USCG and by vessel owners, pilots, and port authorities in the region who suggested the data be broken out by vessel type. This distinction is important because each vessel type may operate in a different manner, may employ different routes, may present different navigational risks, and may interact with other activities in unique ways.

After discussing these data with vessel operators, several operating patterns emerged. Cargo vessels will often wait in an anchorage for pier space to become available or for tide and current conditions to become favorable. Passenger vessels usually adhere to a rigid schedule, and security measures must be coordinated to avoid delays. Tankers generally employ tugs for docking assistance, and, if they are delivering LNG or propane, significant security measures are required by the USCG and local authorities. Tugs with barges towed astern are more restricted in their ability to maneuver than most other vessels, and they often transit routes closer to shore. Some vessels adhere to routes that have been chosen for a variety of reasons, including weather, fuel consumption, and safety concerns.



Passenger vessels

Cargo vessels

Tug-tow vessels

These maps show passenger, cargo, and tug-tow vessel activity in southern New England, where several offshore wind projects have been proposed. The maps demonstrate the unique patterns associated with different vessel types.

OVERVIEW

ACTIONS

MT-1 Maintain existing maps and data on the Portal

MT-2 Provide additional data through new analyses

MT-3 Use the Plan and the Portal to inform regular operations and management of marine transportation infrastructure

MT-4 Use the Plan and the Portal to identify potential conflicts, impacts, and potentially affected maritime stakeholders during permitting and leasing for new proposed activities

MT-5 Use the Plan to inform dredging and federal navigation projects

MT-6 Continue outreach to maritime stakeholders to understand current trends and the potential effects of new activities on marine transportation

ACTIONS: MAINTAIN AND UPDATE DATA

MT-1. Maintain existing maps and data on the Portal: Much of the marine transportation data on the Portal is provided by the Marine Cadastre including each of the datasets in the Navigation map except Pilot Boarding Areas and Safety and Security Zones. Those two datasets were developed by the Portal Working Group and reviewed by pilot associations and USCG staff in the region. At the time of the writing of this Plan, the Marine Cadastre began maintaining these two datasets as well. Therefore, the Navigation maps on the Portal will be maintained through updates provided by the Marine Cadastre, and regional USCG staff intend to ensure those maps are reviewed by marine transportation agencies and stakeholders.

The USCG is the original source for two vital datasets on the Portal: Aids to Navigation (ATON) and AIS vessel traffic. By law, the USCG has and will maintain the US Aids to Navigation System, which is reviewed and corrected on a regular basis by sector and district waterway managers and displayed on NOAA nautical charts.[22] The USCG also developed and maintains the nationwide AIS.[23] The USCG Navigation Center (NAVCEN) gathers AIS data on a continual basis and provides real-time and historical annual data to government agencies, including ocean planning efforts such as this Plan. As of the publication of this Plan, USCG will provide annual AIS and ATON data to the Marine Cadastre, which will provide it to the Portal Working Group for incorporation into the Portal.

MT-2. Provide additional data through new analyses: While the Portal provides useful and accurate representations of vessel traffic, actual counts of unique vessel transits are a better measure for management purposes than the current maps of relative vessel density. In addition, USCG and representatives of the marine transportation sector recommended using AIS data to review monthly and seasonal traffic variability for different vessel types owing to economic and weather-related factors throughout the year. Regularly updated, detailed analyses of vessel traffic data over discrete time periods should demonstrate whether certain types of shipping are affected seasonally and/or on a long-term basis. This information will allow decision makers to better time planned restrictions on, or potential disruptions to, shipping lanes when coordinating competing ocean uses. As of the time of the publication of this Plan, the Portal Working Group is converting AIS data into maps displaying the number of unique transits occurring within a one kilometer block of ocean over a year. Preliminary maps of monthly vessel traffic have also been developed and are being reviewed through a time slider tool allowing the user to visualize monthly patterns. The Portal will be updated with these maps once the review process is complete.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

MT-3. Use the Plan and the Portal to inform regular operations and management of marine transportation infrastructure: On the operational side of the agency, the USCG needs access to data to inform decision-making and to focus further analysis. The Portal and this Plan are key to helping find solutions for the increasing conflicts on ocean use. On a regular basis, the USCG in the Northeast will consult the marine transportation data on the Portal to obtain an initial picture of particular attributes of a waterway and its use. The USCG First District Waterways Management Team communicated internally about the Plan and Portal frequently and extensively. Both at the First District and at Sectors within the Northeast region, Waterway Managers[24] and other decision makers will use the Plan to the extent practicable to understand the navigation risk profile of the relevant waterway, as well as to make decisions about how to use limited resources. The following are examples of potential uses of Plan data and information:

- Adding or removing federal or private ATON.
- Potentially adjusting existing fairways or traffic separation schemes, as identified in a Port Access Route Study (PARS).[25]
- Conducting a Waterways Analysis and Management System (WAMS) study. The expansion of the Panama Canal and the

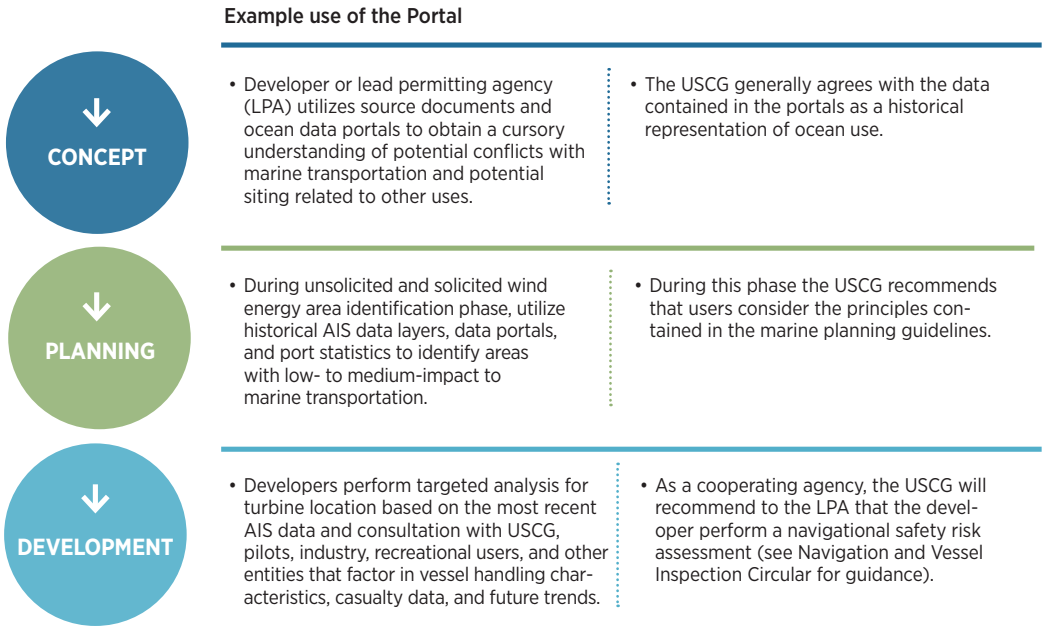
potential for increases in US petroleum production collectively have the potential to increase the number of vessels engaged in marine transportation, the size and capacity of these vessels, and the amount of commerce transiting US ports and waterways.

- Maintaining the Vessel Traffic Systems (VTS) and Vessel Movement Reporting Systems.
- Assisting decision makers in their response to marine event permit applications.[26]
- Deciding where to deploy ice-breaking assets.
- Supporting cleanup actions in response to unlawful spills or discharge events.
- Providing a backdrop for USCG activities at Harbor Safety Committee[27] meetings with government and industry representatives.

Other USCG offices, such as the Bridge Administration Program[28] and the Marine Transportation System Recovery Units,[29] can review the Portal as they begin to work with agencies and stakeholders.

To the extent practicable, MARAD will use the Portal in monitoring changes in transportation routing, transportation trends, and activities in the region. MARAD also relies on a variety of public and purchased data sources to respond to its stakeholders. To ensure sound maritime policy, MARAD routinely compares data sources and analyzes variation. Identifying changing transportation patterns will assist MARAD and the US Department of Transportation (DOT) in setting sound transportation policy and making wise investments in transportation infrastructure.

MT-4. Use the Plan and the Portal to identify potential conflicts, impacts, and potentially affected maritime stakeholders during permitting and leasing for new proposed activities: For regulatory reviews of offshore projects, such as proposed Wind Energy Areas (WEA) in the Northeast, the USCG First District and Sector Waterways Management teams will use the Portal to the extent practicable to facilitate preapplication discussions with applicants, affected stakeholders, and other government agencies. Additionally, the USCG plans on using internal policies and other maritime safety guidance to evaluate the risk of new activities on an existing waterway and users of that waterway. One example is the marine planning guidelines that came out of the Atlantic Coast Port Access Route Study (ACPARS; see http://www.uscg.mil/lantarea/acpars/). In the role of a cooperating agency for BOEM, MARAD, USACE, or other projects, the USCG will consider Plan data, to the extent practicable, in several ways during the three permitting phases of infrastructure projects.



The figure on the previous page provides an example of how the Portal, as marine planning guidance, can be used at various phases in the BOEM WEA permitting process. This usage includes an initial assessment of impacts or conflicts in a particular waterway. The Portal will help identify potentially affected marine transportation stakeholders and can be used to facilitate individual meetings or to convene stakeholders to understand potential impacts to the operation of marine transportation infrastructure. Such discussions often save time by identifying what is important to particular stakeholders, and they are helpful toward developing alternatives such as rerouting. As a project moves forward into the planning and development stages, navigation risk-mitigation strategies can be developed after reviewing AIS and engaging with vessel operators and owners.

MT-5. Use the Plan to inform dredging and federal navigation projects: The USACE prepares feasibility studies, dredged material management plans, and other decision documents covering its improvement and operations and maintenance (O&M) activities. Environmental assessments and environmental impact statements are also prepared to accompany these decision documents. Due diligence requires that all pertinent sources of information be investigated and considered in making decisions on project benefits and impacts. Federal laws, regulations, policies, and executive orders concerning civil works activities must be considered and their compliance documented. To the extent practicable, the USACE will consult this Plan and the Portal in the preparation of its scopes of study for new projects and its dredged material management plans. For example, Portal data will assist in documenting marine traffic levels, patterns, and concerns as they pertain to the shipping upon which USACE new project recommendation decisions are made. Siting and management of open water dredged material placement areas will also benefit from the marine transportation data available through the Portal.

MT-6. Continue outreach to maritime stakeholders to understand current trends and the potential effects of new activities on marine transportation: The USCG has several communication tools for updating maritime stakeholders on a broad spectrum of information with varying degrees of timeliness. The most immediate communication is the Local Broadcast Notice to Mariners,[30] used to inform mariners over VHF radio of hazards, unusual operations (such as dredging of channels), or unusual conditions. The Homeport[31] website publishes news, alerts, and notices of a less immediate nature, and Marine Safety Information Bulletins[32] provide more-detailed long-range information at the national level and more-urgent safety information at the local level. The USCG also intermittently carries out projects to improve marine transportation and associated infrastructure based on stakeholder feedback. Recently, the USCG partnered with USACE and NOAA to consider the future of navigation.[33]

As cited earlier, the USCG encourages the formation of harbor safety committees (HSCs) and supports their activities through active participation in order to improve local coordination and identify potential marine transportation issues.[34] HSCs provide opportunities to communicate with many stakeholders within the port and can be used to recommend actions to improve the safety and efficiency of a port or waterway. Each HSC is composed of representatives of government agencies, maritime labor, industry organizations, environmental groups, and other public interest groups. The USCG plans to continue to participate in HSCs to review marine transportation data, learn about future trends, and discuss with stakeholders any projects or activities that may affect waterways.