Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington DC 20515

Peter A. DeFazio
Chairman

Katherine W. Dedrick
Staff Director

Sam Graves
Ranking Member

Paul J. Sass
Republican Staff Director

November 10, 2021

SUMMARY OF SUBJECT MATTER

TO:	Democratic Members, Subcommittee on Coast Guard and Maritime Transportation
FROM:	Staff, Subcommittee on Coast Guard and Maritime Transportation
RE:	Hearing on "Rebuilding Coast Guard Infrastructure to Sustain and Enhance Mission Capability"

PURPOSE

The Subcommittee on Coast Guard and Maritime Transportation will hold a hearing on Tuesday, November 16, 2021, at 10:00 a.m. EST in 2167 Rayburn House Office Building and via Zoom to highlight the need to invest in and provide oversight of shoreside infrastructure, information technology (IT), and data infrastructure support for the U.S. Coast Guard (Coast Guard or Service) to carry out its missions efficiently and without interruptions resulting from chronic underfunding and obsolescence of the Service's physical and technology assets, technological change, data gaps, or natural/environmental hazards. The Subcommittee will hear testimony from the U.S. Coast Guard and the U.S. Government Accountability Office (GAO).

BACKGROUND

Coastal Hazards and Risk

Public infrastructure, including Coast Guard mission critical facilities, face increasing risk due to climate change along our coasts and lakes.[1] Extreme storm activity, sunny-day flooding, coastal erosion, wildfire, and changing weather patterns have increased infrastructure vulnerability and associated risks; population shifts and increasingly extreme weather events across the country

[1] FHWA, 2008: Highways in the Coastal Environment, Second Edition. Hydraulic Engineering Circular No. 25. FHWA-NHI-07-096. Federal Highway Administration. Department of Civil Engineering, University of South Alabama, Mobile, AL, 250 pp.; Kunz, M, et al., 2013: *Investigation of superstorm Sandy 2012 in a multi-disciplinary approach. Natural Hazards and Earth System Science*, 13 (10), 2579–2598. doi:10.5194/nhess-13-2579-2013; Great Lakes Coastal Resilience Planning Guide, 2013.

have resulted in a more vulnerable coastal and ocean userbase.[2] Additionally, other changes such as sea-level rise (SLR), intensified rain, wave, and drought patterns, and increased ocean acidity and salinity have accelerated the pace of coastal infrastructure damage,[3] resulting in higher costs for national, regional, and local economies.[4]

Together, these impacts exacerbate the vulnerability of billions of dollars' worth of federal infrastructure.[5] For example, a report using moderate SLR projections for the year 2040 and corresponding increases in storm surge found that the cost of coastal natural hazards affecting state and federal infrastructure in 132 coastal counties will exceed $1 billion.[6] Moreover, other studies estimate between $66-106 billion worth of coastal real estate will be below sea level by 2050 and grow to $238-507 billion by 2100.[7]

Incorporating adaptation and resilience into infrastructure upgrades for shoreside facilities is a crucial strategy to mitigate future risk and damages. Low-lying coastal facilities like ports, marine terminals, and Coast Guard and Navy installations are particularly vulnerable to extreme weather events associated with increasing sea levels and tropical storm activity.[8] For example, in 2018 when Hurricane Michael—a category 5 storm—made landfall in Panama City, Florida, facilities at nearby Tyndall Air Base were destroyed forcing the Air Force to spend an estimated $3 billion to repair and rebuild facilities.[9]

Coast Guard Shoreside Infrastructure

The Coast Guard owns or leases more than 20,000 shore facilities, such as piers, docks, boat stations, air stations, and housing units at more than 2,700 locations.[10] According to a 2019 GAO report, at the time, the Service operated with a $2.6 billion backlog in deferred or overdue maintenance, repair, and recapitalization work for its shoreside infrastructure and housing.[11] This backlog does not include hundreds of recapitalization projects for which the Coast Guard has not made a cost estimate.[12] The Service currently estimates the backlog at $3 billion.[13] The Coast Guard's

---

[2] Padgett, J., et al., 2008: Bridge damage and repair costs from Hurricane Katrina. *Journal of Bridge Engineering*, 13 (1), 6–14. (2008)13:1(6); AECOM, 2013: The Impact of Climate Change and Population Growth on the National Flood Insurance Program Through 2100. AECOM (for FEMA), Arlington, VA; Air Worldwide, The Coastline at Risk: 2016 Update to the Estimated Insured Value of U.S. Coastal Properties, Boston, MA, 2016; Cohen, Darryl. "Coastline Population Continues to Grow: 60 Million Live in the Path of Hurricanes." U.S. Census Bureau, August 6 2018.

[3] Jacobs, J.M., et al., 2018: Transportation. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II. U.S. Global Change Research Program, Washington, DC, USA, pp. 479–511.

[4] Moser, S. C., et al., 2014: Ch. 25: Coastal Zone Development and Ecosystems. Climate Change Impacts in the United States: The Third National Climate Assessment. Melillo, J. M., T. (T. C. Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, Washington, DC, 579–618; Rafael Romo, "Puerto Rico aid is trapped in thousands of shipping containers," CNN, September 28, 2017.

[5] Fleming, E., et al., 2018: Coastal Effects. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II. U.S. Global Change Research Program, Washington, DC, USA, pp. 322–352.

[6] *Id.*

[7] Houser, T., S. et al., 2015: Economic Risks of Climate Change: An American Prospectus. Columbia University Press, New York.

[8] Becker, A.H., et al. "A note on climate change adaptation for seaports." *Climatic Change* (2013).

[9] *Id.*

[10] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.

[11] *Id.*

[12] *Id.*

[13] Peter Ong, "U.S. Coast Guard Presents Some Aging Infrastructure Concerns and Fixes," USNI Blog, October 12, 2021, https://blog.usni.org/posts/2021/10/12/u-s-coast-guard-presents-some-aging-infrastructure-concerns-and-

Office of Civil Engineering maintains a robust database of units that need repair or recapitalization, and its civil engineers constantly monitor and prioritize these lists.[14]

There are two types of maintenance for shore infrastructure: routine recurring maintenance, known as Organizational-Level Maintenance (OLM), and major maintenance tasks that are beyond the capability of an individual unit, known as Depot-Level Maintenance (DLM).[15] Projects are prioritized through regional DLM and central DLM planning boards, which meet twice annually to prioritize shore infrastructure needs based on expected appropriations and other factors, such as damage caused by natural disasters.[16]

In his State of the Coast Guard Address in 2020, Commandant of the Coast Guard Karl Schultz outlined the critical nature of the service's shoreside infrastructure conditions.[17] "Every mission begins and ends at a Coast Guard facility," Schulz said. "Unfortunately, due to years of flat-line budgets forcing trade-offs, the facilities that our men and women deploy from and return to are crumbling around them. 40 percent of Coast Guard buildings are over 50 years old."[18] The GAO, however, found that as high as 45 percent of the Coast Guard's shore infrastructure assets were beyond their 65-year service life.[19]

Given the sheer number of structures past their service life and their location in salt air, high wind, and often wet environments, facilities have fallen into disrepair and are in critical condition, pose public health hazards, or have been condemned altogether.[20] Not only does this impact the quality of the facility in which service members must work in support of their missions, but it threatens the health and safety of our service members should critical failures occur at their housing, child care, or duty stations.[21] Further, outdated facilities could be a demoralizing force over extended periods of time, leading to lower workforce recruitment and retention.[22]

According to the GAO, this situation could deteriorate rapidly as more than 65 percent of Coast Guard buildings over 1,000 square feet in size are vulnerable to natural disasters; these estimates do not include other mission critical infrastructure like airport runways, boat lifts, and hangars.[23] The Commandant addressed this directly in his February 2020 address discussing shoreside infrastructure vulnerability to natural/environmental hazards. "Mold, leaky roofs, flooding, outdated building standards, these have all culminated in a $2 billion backlog of facility

fixes#:~:text=The%20U.S.%20Coast%20Guard%20faces,of%20mid%E2%80%93Fiscal%20Year%202021.&text=Worse%2C%20half%20of%20the%20Coast,that%20was%20reported%20in%20FY2018.

[14] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.

[15] *Id.*

[16] *Id.*

[17] Mike Gooding, "USCG Commandant says infrastructure 'antiquated' and 'crumbling'," 13NewsNow, February 20, 2020, https://www.13newsnow.com/article/news/national/military-news/uscg-commandant-says-infrastructure-antiquated-and-crumbling/291-80c90197-1e82-4ecd-92f7-c6a9b07f954a.

[18] *Id.*

[19] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.

[20] *Id.*

[21] Interview with Daniel J. Gormley, AIA, PMP, Senior Planner, US Coast Guard Shore Infrastructure Logistics Center. (August 1, 2021)

[22] *Id.*

[23] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.

repairs," he said at the time.[24] "Every day we continue to operate with antiquated infrastructure, it gets harder to protect our modern maritime economy, harder to save those in peril, harder to attract talented men and women into our ranks and, ultimately, harder to defend the nation."[25]

In 2018, the Coast Guard delivered its Strategic Plan 2018-2022 with three overarching strategic priorities—maximize readiness today and tomorrow; address the nation's complex maritime challenges; and deliver mission excellence anytime, anywhere—and numerous relevant objectives, including modernizing shoreside infrastructure.[26] In particular, objective 1.2.3. aims to modernize shore infrastructure support programs and mature long-term homeporting processes, outlining the connection between shoreside resiliency and operational readiness/successful mission execution.[27] This includes prioritizing and implementing the repair or replacement of degraded shore infrastructure that negatively impacts steady state operations or hinders workforce readiness; developing and employing a shore infrastructure management system that anticipates future readiness needs; and building a comprehensive, long-term homeporting plan.[28]

The Coast Guard's Office of Civil Engineering sets agency-wide civil engineering policy, which includes facility planning, design, construction, maintenance, and disposal of real property.[29] The Service's Shore Infrastructure Logistics Center (SILC), established in 2009, is tasked with the management and coordination of infrastructure condition assessments via six regional Civil Engineering Units (CEUs), along with other divisions and offices, in addition to implementing shore infrastructure policies.[30] The condition of individual shore infrastructure assets is determined by CEU personnel and civil engineers in the field.[31] According to Service officials, every facility, from a base to a boat station, is to be inspected by a CEU representative every three years.[32] The SILC has so far prioritized structural analysis for buildings it believes to be more susceptible to earthquake damage, as earthquakes strike with little warning.[33]

In 2015, the Coast Guard began its multi-year, multi-phase Shore Infrastructure Vulnerability Assessment (SIVA) effort to assess the vulnerability of shore infrastructure facilities to natural hazards, including seismic/earthquake, flood, tsunami, sea-level rise, Coastal Vulnerability Index (CVI), hurricane, wildfire, volcano, tornado, and drought risks by district.[34] The Coast Guard

---

[24] Mike Gooding, "USCG Commandant says infrastructure 'antiquated' and 'crumbling'," 13NewsNow, February 20, 2020, https://www.13newsnow.com/article/news/national/military-news/uscg-commandant-says-infrastructure-antiquated-and-crumbling/291-80c90197-1e82-4ecd-92f7-c6a9b07f954a.
[25] Mike Gooding, "USCG Commandant says infrastructure 'antiquated' and 'crumbling'," 13NewsNow, February 20, 2020, https://www.13newsnow.com/article/news/national/military-news/uscg-commandant-says-infrastructure-antiquated-and-crumbling/291-80c90197-1e82-4ecd-92f7-c6a9b07f954a.
[26] USCG, "Coast Guard Strategic Plan 2018 – 2022," https://www.uscg.mil/Portals/0/seniorleadership/alwaysready/USCG_Strategic%20Plan__LoResReaderSpreads_20181115_vFinal.pdf?ver=2018-11-14-150015-323.
[27] *Id.*
[28] *Id.*
[29] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.
[30] *Id.*
[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] GAO, "Coast Guard Shore Infrastructure: Actions Needed to Better Manage Assets and Reduce Risks and Costs," GAO-19-711T. https://www.gao.gov/assets/710/701790.pdf.

completed Phase 1 findings in May 2018, which will help the Service to better understand the risks to infrastructure and how best to protect investments from future damage.[35]

Risk levels and primary risks are typically region-specific, e.g., earthquake/tsunami risk in the Pacific Northwest, and hurricane and flooding risk on the Gulf Coast. To maintain mission readiness and capability, however, the Coast Guard will require shoreside infrastructure assets designed to withstand sea-level rise, tsunamis, increased storm surge, and other climate-related stressors affecting its coastal operating locations.[36] The risk metric CVI is a United States Geological Survey product that quantifies the likelihood that physical changes may occur in the coastal zone based on analyses of the location's tidal range, ice cover, wave height, coastal slope, historical shoreline change rate, geomorphology (i.e., coastal erosion/deposition and evolution), and sea-level rise.[37] While CVI values vary, numerous Coast Guard facilities, including Sector infrastructure are adjacent to or in high risk CVI zones, e.g., Sectors San Diego and San Francisco.[38] These Sectors are critical for drug and migrant interdiction, port and waterway security, marine environmental protection, law enforcement, marine security, and other missions.[39] Such Coast Guard units cannot sustain threats to operational capacity or mission execution, and multiple locations across the Service require close monitoring and vigilance to shoreline changes, especially with higher sea levels, more intense/frequent storm events, and larger storm surges expected in the future.[40]

Since 2005, the Coast Guard has received about $1.4 billion dollars in disaster recovery money as of 2019, some of which has been used to rebuild damaged facilities to be more resilient.[41] For example, the Service relocated some buildings further inland to protect them from the weather and designed replacement buildings to better withstand hurricane winds and floods.[42] These more resilient buildings are designed such that the first inhabited floor is above the local flood plain, critical building systems such as HVAC and utilities are elevated to protect them from water damage, and windows or shutters can withstand high winds.[43]

Historically, there have been few funding requests for the Coast Guard's shoreside infrastructure budget, leading to a lack of appropriations resulting in long-term deterioration of critical assets for docked vessels and their crews.[44] The GAO also recently identified serious gaps in the Service's management and planning strategies for their existing assets.[45]

---

[35] GAO, "Coast Guard Shore Infrastructure: Actions Needed to Better Manage Assets and Reduce Risks and Costs," GAO-19-711T. https://www.gao.gov/assets/710/701790.pdf.
[36] GAO, "Coast Guard Shore Infrastructure: Actions Needed to Better Manage Assets and Reduce Risks and Costs," GAO-19-711T. https://www.gao.gov/assets/710/701790.pdf.
[37] *Id.*
[38] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.
[39] *Id.*
[40] *Id.*
[41] *Id.*
[42] *Id.*
[43] *Id.*
[44] *Id.*
[45] *Id.*

Table 1: Number of Assets and Replacement Values of Select Coast Guard Shore Infrastructure Asset Lines for Fiscal Year 2018

Asset Line	Examples of assets	Number of assets	Replacement Value ($)
Civil works	Utility distribution, water lines, pipelines, fuel storage	6,665	1,871,695,931
Base services	Vehicle garages, parking, hazardous materials storage	4,180	880,425,200
Housing	Housing	2,901	2,922,645,848
Technology	Communication towers, vessel traffic service, Rescue 21[a]	1,910	835,495,120
Waterfront	Piers, wharfs, boathouses, small boat lifts	1,577	2,493,516,056
Community services	Medical, dining, physical fitness and recreation	1,135	1,393,797,869
Shore operations	Stations, maintenance buildings, cutter support operations	1,056	1,950,949,302
Sector/ District	Regional operations centers, command buildings, warehouses	459	2,029,394,665
Aviation	Runways, landing areas, hangars	334	2,570,049,983
Training Facilities	Flight simulators, rescue training facilities	174	420,723,370
Industrial	Maintenance shops, corrosion control facilities, ship lifts	52	466,672,941
Total:	—	**20,433**	**17,835,366,285**

Source: GAO analysis of Coast Guard documentation. | GAO-19-675
Legend: "—" = not available or not applicable.

Note: Table excludes two asset lines—fixed and floating aids to navigation and signal equipment—which are used to mark federal waterways to safeguard maritime safety and commerce, among other things. The Coast Guard informed us that some of the annual reports we analyzed, upon which the information is based, are not used by Coast Guard senior leaders for tactical decisions, but provide a snapshot of information that is reliable for the purpose of reporting on the overall portfolio of shore infrastructure.

Figure 1- Asset and replacement values for USCG shore infrastructure. (GAO-19-82)

Compounding these issues, the Service lacks a comprehensive strategy to address climate change impacts for its operations and assets in the near- or long-term.[46] In the *Elijah Cummings Coast Guard Authorization Act for Fiscal Year 2021*, Congress mandated that the Coast Guard produce a report by January 2022 on the effects of climate change to the Service, considering mitigation strategies necessary to enhance resilience and the cost of such mitigations.[47] The other armed services have developed plans and strategies to address climate uncertainties and their impact as a threat-multiplier.[48] Since the Coast Guard lacks any long-term shoreside capital planning strategy, the Service has not systematically integrated climate change impacts into its capital investment plan, contracting policies, or long-term strategic planning, nor has it revised its engineering standards to accommodate resilience criteria.[49] As a sea service, the Coast Guard has no alternative other than to operate from exposed coastal locations.[50]

In 2016, the Department of Homeland Security's (DHS) Coastal Resilience Center of Excellence, in collaboration with the Coast Guard, found that the DHS and Coast Guard needed to take a more comprehensive approach to understanding maritime risk.[51] The Center recommended the Coast Guard collaborate with academia and local stakeholders to form interdisciplinary research

[46] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.
[47] William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283.
[48] National Research Council. 2011. National Security Implications of Climate Change for U.S. Naval Forces. Washington, DC: The National Academies Press; Department of Defense. 2014 Climate Adaptation Roadmap. 2014. Alexandria, VA. For example, Virginia's Hampton Roads base suffered operational deterioration when the base flooded, but also when the surrounding communities where service members live were disconnected from the base during sunny-day floods. As such, the DOD collaborated with municipal and state planning authorities in a first-of-its-kind, inter-governmental pilot project to increase Hampton Roads' resilience to the impacts of sea level rise.
[49] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.
[50] Lamothe, Dan. "Coast Guard says it's $900 million short after 'all-hands-on-deck' hurricane response." November 16 2017. Washington, D.C. The Washington Post.
[51] Department of Homeland Security Coastal Resilience Center, "Integrating Maritime and Coastal Resilience Report from the 7th Annual Maritime Resilience Symposium," November 2016, Chapel Hill, NC: UNC North Carolina at Chapel Hill.

project teams, including engineering, ecology, planning and design, and social and behavioral sciences like geography and economics.[52]

To better move toward implementing resilience across the Service, investing in the recapitalization and maintenance projects on the shoreside infrastructure backlog for which costs have already been estimated represents a natural starting point. Many of these projects likely intersect with natural hazard and climate change risks outlined in the SIVAs, and as the facility portfolio continues to age, more projects are and will be added each year. For reference, Coast Guard Headquarters reports that on average, 10 to 15 projects are added per year amounting to approximately $300 million to $450 million.[53] This dollar figure is consistent with the industry standard facility recapitalization rate of 2 percent to 4 percent (a 2 percent recapitalization rate of the Coast Guard's $21 billion shore plant inventory would require approximately $420 million annually).[54]

Congress mandates the Commandant of the Coast Guard to deliver an annual Unfunded Priorities List (UPL) of approved but unfunded Coast Guard priorities and the cost estimates for each.[55] These are ordered from highest to lowest priority and have not been selected for funding in the applicable proposed budget; are necessary to fulfill a requirement associated with an operational need; and would have been recommended for inclusion in the applicable proposed budget had additional resources been available or had the requirement emerged before the budget was submitted.[56] The total facilities upgrades on the UPL only amounts to $429 million which falls far short of the nearly $3 billion recapitalization and maintenance backlog total.[57] It is unclear how the Coast Guard determines what to include from the backlog given the significant gap between their backlog total and the UPL items, how they quantify tradeoffs between projects, how they determine project priority, and their process for removing incomplete or de-prioritized projects.

The GAO recommended in 2019 that the Coast Guard set specific objectives, performance targets, and deadlines in its Civil Engineering Strategic Plan, identify potential resiliency measures and metrics for effectiveness, and direct field units to incorporate and prioritize resilience in the repair or replacement of degraded shore infrastructure.[58] The GAO additionally recommended that the Service improve and modernize its shore infrastructure management system and emphasized the use of models for predicting the outcome of maintenance investments and optimizing among competing investments.[59]

GAO followed up on its 2019 shore infrastructure report in August 2021 with details on how the Coast Guard has reversed implementation on the GAO's recommendation to employ models for its asset lines for predicting the outcome of investments, analyze trade-offs, and optimize decisions among competing investments.[60] While the Coast Guard told GAO it would take steps to

---

[52] Department of Homeland Security Coastal Resilience Center, "Integrating Maritime and Coastal Resilience Report from the 7th Annual Maritime Resilience Symposium," November 2016, Chapel Hill, NC: UNC North Carolina at Chapel Hill.
[53] Coast Guard Headquarters, RE: Shoreside Infrastructure Backlog, October 14, 2021.
[54] *Id.*
[55] United States Coast Guard. *FY 2022 Unfunded Priorities List.*
[56] *Id.*
[57] *Id.*
[58] GAO, "Coast Guard Shore Infrastructure," GAO-19-82. https://www.gao.gov/assets/700/697012.pdf.
[59] *Id.*
[60] GAO, "Coast Guard Shore Infrastructure (2019-27)," August 31, 2021, https://www.gao.gov/action-tracker/homeland-securitylaw-enforcement-coast-guard-shore-infrastructure-2019-27.

implement this 2019 recommendation, as of April 2021, the Service has not employed models to evaluate its asset lines.[61] Instead, the Coast Guard reported that it is evaluating models to identify a preferred solution to recommend for implementation.[62] The Coast Guard estimated that it will complete this analysis and fully implement a modeling solution by the end of September 2023.[63] To address the recommended action, the Coast Guard will need to demonstrate that it is using models to predict outcomes of its asset lines, which will help the Coast Guard to achieve cost savings and better manage its maintenance backlogs.[64]

Information Technology/Data Infrastructure

The Coast Guard's data systems and IT infrastructure are similarly aging and in need of investment.[65] The Service has historically struggled with IT modernization, and Commandant Karl Shultz made it a priority in what the Coast Guard calls its "Tech Revolution".[66] The Service had been operating on 1990s-era hardware and software, running the risk of critical failures that could affect maritime communications and cutter-shore connectivity.[67] The Commandant even went so far as to say that the Service's IT infrastructure was at the "brink of catastrophic failure."[68] According to Master Chief Jason Vanderhaden, the Coast Guard is taking a multi-phased approach that will involve upgrading its hardware, software, and processes, and that fiscal year 2020 was the first year the Service received funding for the initiative.[69] According to the current Commandant, the Coast Guard currently operates with a $300 million annual IT shortfall.[70]

The Tech Revolution road map outlines strategic goals to improve cutter connectivity, strengthen the reliability of IT infrastructure, modernize enterprise solutions (i.e., increase internet speed for cloud access), improve service delivery to stakeholders (i.e., improve remote access and transition from Coast Guard to industry managed solutions), modernize cyber security and privacy resilience, employ mobility solutions, deploy cloud-based solutions, and expand training delivery methods (i.e., convene virtual C-schools and training sessions).[71]

Technology and data systems remain behind the curve, however. In a 2020 report on the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) data system, which contains information on over 700,000 vessels, GAO found that earlier efforts to upgrade the system

---

[61] GAO, "Coast Guard Shore Infrastructure (2019-27)," August 31, 2021, https://www.gao.gov/action-tracker/homeland-securitylaw-enforcement-coast-guard-shore-infrastructure-2019-27.
[62] *Id.*
[63] *Id.*
[64] *Id.*
[65] James Ousman Cheek, "Changing Tides: Appraising and Supporting the Coast Guard's Role In Changing Seas," Consortium for Ocean Leadership, November 2, 2021, https://oceanleadership.org/changing-tides-appraising-and-supporting-the-coast-guards-role-in-changing-seas/.
[66] Lauren C. Williams, "As the Coast Guard wrestles with aging IT, cloud is a long-term conversation," FCW, August 3, 2018, https://fcw.com/articles/2018/08/03/uscg-it-progress-williams.aspx.
[67] Connie Lee, "BREAKING: Coast Guard Releases New 'Tech Revolution' Road Map," National Defense, February 20, 2020, https://www.nationaldefensemagazine.org/articles/2020/2/20/coast-guard-releases-new-tech-revolution-roadmap.
[68] Jackson Barnett, "Coast Guard wants a 'tech revolution' to dig itself out of IT from the '90s," Fed Scoop, February 21, 2020, https://www.fedscoop.com/coast-guard-tech-revolution-plan/.
[69] Connie Lee, "BREAKING: Coast Guard Releases New 'Tech Revolution' Road Map," National Defense, February 20, 2020, https://www.nationaldefensemagazine.org/articles/2020/2/20/coast-guard-releases-new-tech-revolution-roadmap.
[70] *Id.*
[71] United States Coast Guard. *Tech Revolution: Vision for the Future.*, *available at* https://www.dcms.uscg.mil/Portals/10/CG-6/roadmap/C5i-roadmap-FINAL-v6.pdf.

did not deliver all planned improvements, such as an ability to reduce duplicate records.[72] MISLE users outlined that duplicate entries created uncertainty on whether vessels or their operators had earlier safety violations or warranted inspection, and that problems with data errors and missing records persist.[73] GAO made four recommendations, including that the Coast Guard (1) assess and address the causes of data errors and inconsistent data entries; (2) use the results of its 2019 Standardization Team assessment of command centers to develop a plan for improving the consistency and accuracy of MISLE data; (3) develop a mission needs statement; and (4) identify and analyze alternatives to select solutions to meet mission needs. DHS and the Coast Guard concurred with these recommendations, but all four remain open.[74] The Coast Guard has stated it plans to replace MISLE.[75]

In March 2021, the Coast Guard released its first Data Strategy with guiding principles to emphasize a user-centric approach, highlighting people as its most important asset and reinforcing the need to support them with the data and technologies they require.[76] With the Service's workforce in mind, the strategy focuses on reducing the burden of manual data collection by crews during daily operations.[77] The strategy also lays out a future that simplifies access to data, enables data analytics across systems and improves security to protect the information collected, reduces data redundancies, and improves data security, tying together the "Tech Revolution" and the Coast Guard's Strategic Plan 2018 – 2022.[78] Better data collection and management technology could be utilized to respond more quickly and efficiently during oil spills, maritime migrant interdiction, and law enforcement missions, among others.

Similarly, in May 2021, the Deputy Commandant for Mission Support (DCMS) along with the Deputy Commandant for Operations (DCO) and the Chief Information Officer (CIO) signed into action the first-ever Coast Guard Cloud Strategy, highlighting a pivotal turning point in the Service's modernization strategy to improve mission readiness across directorates and districts alike.[79] The implementation of the Cloud Strategy in combination with the Data Strategy will make it possible to bring information and services to Coast Guard mission operators faster and more efficiently. As the Coast Guard increases its use of sensors, imaging, vessel tracking and more, rapid access to these data is vital to supporting mission readiness outcomes.[80]

---

[72] GAO, "Actions Needed to Ensure Investments in Key Data System Meet Mission and User Needs," GAO-20-562. https://www.gao.gov/assets/gao-20-562.pdf.
[73] *Id.*
[74] GAO, "Actions Needed to Ensure Investments in Key Data System Meet Mission and User Needs," July 16, 2020, https://www.gao.gov/products/gao-20-562?mobile_opt_out=1#summary_recommend.
[75] *Id.*
[76] Shana Brouder, "Coast Guard's first Data Strategy guides the way forward for data readiness and well-informed decision making," MyCG, March 2, 2021, https://www.mycg.uscg.mil/News/Article/2521127/coast-guards-first-data-strategy-guides-the-way-forward-for-data-readiness-and/.
[77] *Id.*
[78] Shana Brouder, "Coast Guard's first Data Strategy guides the way forward for data readiness and well-informed decision making," MyCG, March 2, 2021, https://www.mycg.uscg.mil/News/Article/2521127/coast-guards-first-data-strategy-guides-the-way-forward-for-data-readiness-and/.
[79] Shana Brouder, "First-ever signed Cloud Strategy moves the Coast Guard one critical step closer to modernization," MyCG, May 28, 2021, https://www.mycg.uscg.mil/News/Article/2638259/first-ever-signed-cloud-strategy-moves-the-coast-guard-one-critical-step-closer/.
[80] *Id.*

The strategic objectives outlined in the Cloud Strategy and subsequent guiding principles provide a framework for the Coast Guard's modernization efforts over the next five years.[81] They are:

- Providing global transformational cloud capabilities to the Coast Guard workforce and mission partners, particularly those at the tactical edge;
- Develop cloud expertise within the Coast Guard workforce;
- Institutionalize cloud governance;
- Enrich cybersecurity posture and advance operational agility;
- Leverage the benefits of the cloud to better surge and respond and enhance mission readiness.[82]

The U.S. Coast Guard Blue Tech Center of Expertise (COE) was created in January 2020 and is focused on forging partnerships with academia and private industry on technological innovation and development for tools useful to the Coast Guard.[83] To accomplish this, personnel have fostered relationships within the San Diego region and beyond, hosting monthly seminars open to all levels of the Coast Guard, with the stated purpose of sharing research and technological developments with the end users of the geospatial/data products, i.e., servicemembers tasked with carrying out the Coast Guard's mission sets.[84] This ground-up feedback and interaction between the members and researchers/developers is crucial in the data tool development process to ensure its usability and utility.

"The Blue Technology Center of Expertise will better connect the Coast Guard with the tremendous government, academic and industry innovation ecosystem in the San Diego area," said then Deputy Commandant for Mission Support Vice Adm. Michael McAllister during the center's opening in January 2020.[85] "It will create a unique pipeline for the rapid identification and implementation of new maritime technologies into critical Coast Guard operations around the globe."[86] Despite the creation of this new center, the Coast Guard requested no additional funds in fiscal year 2022 to support and expand the Blue Technology COE, which currently has only two billets.[87] The Coast Guard is still in the process of performing a Requirements Analysis for the Blue Technology COE.

As Congress continues to provide funding for new assets (Polar Security Cutters, Fast Response Cutters, National Security Cutters, and Offshore Patrol Cutters) it is increasingly important for the Coast Guard to invest in the hard and soft infrastructure required to support these

---

[81] Shana Brouder, "First-ever signed Cloud Strategy moves the Coast Guard one critical step closer to modernization," MyCG, May 28, 2021, https://www.mycg.uscg.mil/News/Article/2638259/first-ever-signed-cloud-strategy-moves-the-coast-guard-one-critical-step-closer/.
[82] *Id.*
[83] USCG, "Blue Tech Center of Expertise," https://www.dcms.uscg.mil/Our-Organization/Assistant-Commandant-for-Acquisitions-CG-9/Blue-Tech-COE/.
[84] *Id.*
[85] United States Coast Guard. "Coast Guard opens new Blue Technology Center of Expertise", January 24, 2020, https://www.dcms.uscg.mil/Our-Organization/Assistant-Commandant-for-Acquisitions-CG-9/Newsroom/Latest-Acquisition-News/Article/2065456/coast-guard-opens-new-blue-technology-center-of-expertise/.
[86] *Id.*
[87] *Id.*

assets. Aging, failing, and condemned infrastructure and obsolete IT systems present real operational challenges.

WITNESS LIST

Vice Admiral Paul Thomas
Deputy Commandant for Mission Support
United States Coast Guard

Heather MacLeod
Acting Director, Homeland Security and Justice
Government Accountability Office