U.S. COAST GUARD'S LEADERSHIP ON ARCTIC SAFETY, SECURITY, AND ENVIRONMENTAL RESPONSIBILITY

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BEFORE THE

SUBCOMMITTEE ON
COAST GUARD AND MARITIME TRANSPORTATION

OF THE

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TRANSPORTATION AND
INFRASTRUCTURE
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Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Peter A. DeFazio
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Katherine W. Dedrick, Staff Director

Sam Graves
Ranking Member

Jack Ruddy, Republican Staff Director

DECEMBER 1, 2022

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Coast Guard and Maritime Transportation
FROM: Staff, Subcommittee on Coast Guard and Maritime Transportation
RE: Subcommittee Hearing on "U.S. Coast Guard's Leadership on Arctic Safety, Security, and Environmental Responsibility"

PURPOSE

The Subcommittee on Coast Guard and Maritime Transportation will hold a hearing on Wednesday, December 7, 2022, at 10:00 a.m. EST in 2167 Rayburn House Office Building and via Zoom to examine the implementation of the U.S. Coast Guard's Arctic Strategy. The Subcommittee will hear testimony from the U.S. Coast Guard (USCG), the U.S. Arctic Research Commission (USARC), the Government Accountability Office (GAO), the Polar Institute of the Wilson Center, and Le Moyne College.

BACKGROUND

The Arctic region has transformed on multiple fronts in the decade since the release of the USCG's 2013 Arctic Strategy.[1] Geophysically, the surface temperature of the Arctic is warming 2–3 times faster than the world as a whole,[2] altering snow cover, ice cover, and trends in extreme storm events.[3] Between 1971 and 2019, the by-month average extent of sea ice in the Arctic declined in all months of the year but especially September (43 percent decline from 1971 to 2019), with climate models predicting that the first ice-free September in the Arctic could occur as soon as 2040.[4] This extended summer has created novel opportunities for maritime transit,

[1] USCG, 2013. https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Arctic%20Policy/USCG%20Arctic%20Strategy.pdf?ver=2017-10-05-123403-330, accessed November 8, 2022; USCG, 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic__Strategy__Book__APR__2019.pdf, accessed November 8, 2022.

[2] Arctic Council, 2021. https://oaarchive.arctic-council.org/bitstream/handle/11374/2621/MMIS12__2021__REYKJAVIK__AMAP__Arctic-Climate-Change-Update-2021-Key-Trends-and-Impacts.-Summary-for-Policy-makers.pdf?sequence=1&isAllowed=y; IPCC, 2021. https://www.iarpccollaborations.org/plan/introduction-and-background.html, accessed November 8, 2022.

[3] IPCC, 2021. https://www.iarpccollaborations.org/plan/introduction-and-background.html, accessed November 8, 2022.

[4] Arctic Council, 2021. https://oaarchive.arctic-council.org/bitstream/handle/11374/2621/MMIS12__2021__REYKJAVIK__AMAP__Arctic-Climate-Change-Update-2021-Key-Trends-and-Impacts.-Summary-for-Policy-makers.pdf?sequence=1&isAllowed=y, accessed November 14, 2022.

broadening the stage for commercial activities such as shipping, passenger cruises, energy development, and mineral extraction (Fig. 1).[5]

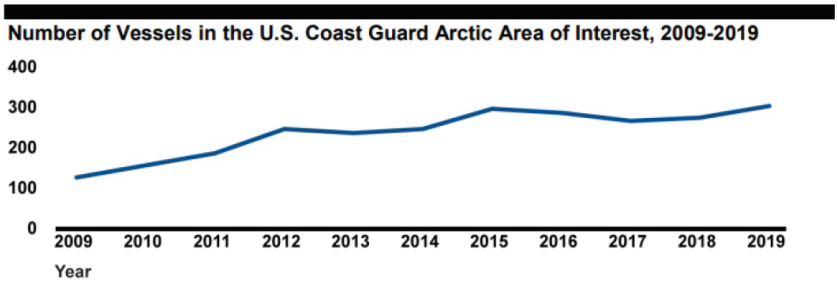

Figure 1. Increase in vessel traffic in USCG District 17 Arctic area of interest, 2009–2019.[6]

Source: GAO analysis of U.S. Coast Guard data. GAO–20–460

Note: The USCG District 17 Arctic area of interest is defined as north of the Bering Strait to the North Pole, east to Banks Island in the Canadian Arctic, and west into Russia to the New Siberian Islands.

Geopolitically, the Arctic has been a region of increasing focus for the eight Arctic nations (U.S., Canada, Denmark (Greenland), Iceland, Sweden, Norway, Finland, Russia), and self-proclaimed "Near Arctic" states including the People's Republic of China (Fig. 2).[7] The USCG, the U.S. Department of Defense (DOD), and the U.S. White House each released updated strategic plans within the past three years.[8]

Russia's renewed aggression toward Ukraine has heightened geopolitical tensions, and previous efforts to work cooperatively in the Arctic are suspended until further notice, heightening risk and creating new uncertainty in USCG operations.[9]

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[5] GAO, 2020. "MARITIME INFRASTRUCTURE: A Strategic Approach and Interagency Leadership Could Improve Federal Efforts in the U.S. Arctic", available at https://www.gao.gov/products/gao-20-460, accessed November 27, 2022.

[6] *Id.*

[7] DOD, 2019. https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF, accessed November 27, 2022.

[8] DOD, 2019. https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF, accessed November 27, 2022; U.S. White House, 2022. https://www.whitehouse.gov/wp-content/uploads/2022/10/National-Strategy-for-the-Arctic-Region.pdf, accessed November 27, 2022; USCG, 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic__Strategy__Book__APR__2019.pdf, accessed November 8, 2022.

[9] DOS, 2022. https://www.state.gov/joint-statement-on-arctic-council-cooperation-following-russias-invasion-of-ukraine/, accessed November 27, 2022.

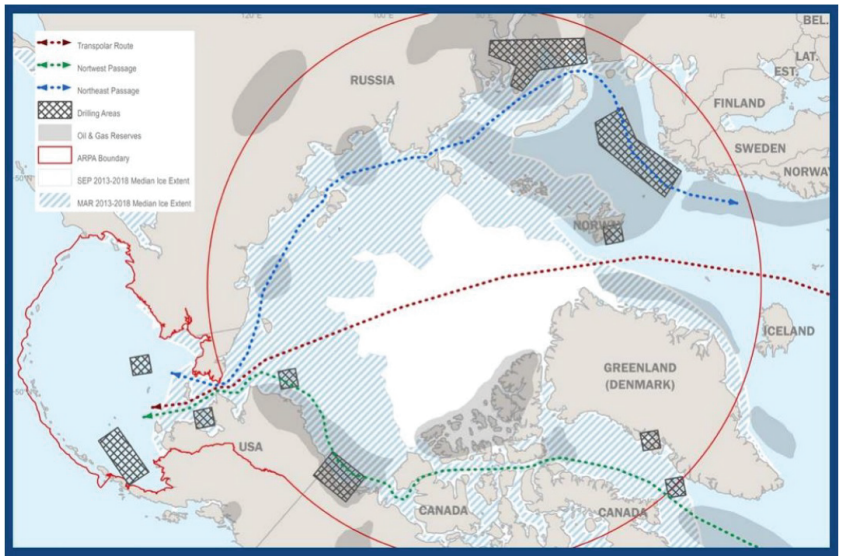

Figure 2. Map of the Arctic region as defined by the Arctic Research and Policy Act of 1984 (ARPA),[10] highlighting two transit routes (Northwest Passage, Northeast (''Northern'') Passage) of high interest to the U.S.[11] [12]

I. USCG Strategy in the Arctic

The USCG's vision for operating in the Arctic region is, "Ensure safe, secure, and environmentally responsible maritime activity in the Arctic." [13] Safety, security, and environmental stewardship capture the spectrum of the USCG's primary duties under section 102 of title 14, U.S. Code.[14] In a place as vast and remote as the Arctic, the USCG accomplishes this diverse mission set via multi-agency partnerships and multi-purpose assets and infrastructure.[15] In this way, USCG activity in the Arctic can be viewed as an example of how the USCG optimizes use of its limited resources for its priority missions.

As an illustration of scale, Dutch Harbor in the Aleutian Islands is currently the closest U.S. deep draft port to the Arctic; roughly 1,100 nautical miles from Point Barrow (the northernmost point in the U.S.).[16] Construction for the Deep Draft Port Project, which was authorized at $333 million in the 2020 Water Resources Development Act included in the Consolidated Appropriations Act of 2021, is expected to begin in Spring 2023 and will provide a new deep draft port option in Nome, Alaska, still approximately 500 nautical miles from Barrow.[17] Likewise, the closest USCG Air Station to Barrow is in Kodiak, Alaska, located approximately 945 nautical miles to the south.[18]

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[10] ARPA, 2006. https://www.arctic.gov/uploads/assets/arpa__amended.pdf, accessed November 27, 2022.
[11] USCG, 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic__Strategy__Book__APR__2019.pdf, accessed November 8, 2022.
[12] DOD, 2019. https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF, accessed November 27, 2022.
[13] USCG, 2013. https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Arctic%20Policy/USCG%20Arctic%20Strategy.pdf?ver=2017-10-05-123403-330, accessed November 8, 2022.
[14] Homeland Security Act of 2002, cited by USCG, 2022. https://www.history.uscg.mil/Home/Missions/, accessed November 28, 2022.
[15] USCG, 2013. https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Arctic%20Policy/USCG%20Arctic%20Strategy.pdf?ver=2017-10-05-123403-330, accessed November 8, 2022.
[16] USCG, 2013. https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Arctic%20Policy/USCG%20Arctic%20Strategy.pdf?ver=2017-10-05-123403-330, accessed November 8, 2022.
[17] Alaska Public Media, 2022. https://alaskapublic.org/2022/11/18/nomes-arctic-deep-draft-port-project-approaches-milestone/, accessed November 28, 2022.
[18] USCG, 2013. https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Arctic%20Policy/USCG%20Arctic%20Strategy.pdf?ver=2017-10-05-123403-330, accessed November 8, 2022.

USCG Arctic operations are primarily based out of the USCG District 17 Command Center in Juneau, Alaska, and Base Kodiak, which is the largest USCG command in the entire Pacific Area.[19] District 17 encompasses 3.9 million square miles and over 47,300 miles of shoreline throughout Alaska and the Arctic, from north of the Bering Strait to the North Pole, east to the Banks Island in the Canadian Arctic, and west to Russia to the New Siberian Islands.[20]

A. Safety

Safety encapsulates four of the "non-homeland security" missions of the USCG: Marine Safety; Search and Rescue; Aids to Navigation; and Ice Operations.[21] During an average month, USCG District 17 saves 22 lives and over $1.65 million in property (includes onshore); reports and investigates 25 marine casualties; services 93 buoys and fixed aids to navigation; performs 143 commercial fishing vessel safety exams; teaches 375 kids about life jacket wear; and performs 95 marine inspections.[22]

B. Security

Security encapsulates all five domestic security missions of the USCG: Ports, Waterways, and Coastal Security; Drug Interdiction; Migrant Interdiction; Defense Readiness; and Other Law Enforcement.[23] In the context of the Arctic region, Ports, Waterways, and Coastal Security and Defense Readiness are key functions of the USCG as it works in coordination with the DOD to stabilize the region geopolitically while safeguarding U.S. interests.[24] Particularly, the USCG's non-homeland security missions, e.g., Search and Rescue, give the USCG visible presence and allows it to interact in non-confrontational ways. As such, the USCG—an armed service—is uniquely qualified to initiate and enhance partnerships between the U.S. government and others, be it local Alaskan communities, private commercial enterprises, or foreign nations.

C. Environmental Stewardship

The Alaskan commercial fishing industry is estimated to have a $3 billion impact on the U.S., and fished species are expected to shift northward within and into the Arctic as sea water temperatures rise,[25] creating potential new enforcement challenges for the USCG to the current international prohibition on commercial fishing in the central Arctic Ocean.[26]

The USCG also plays a vital leadership role in responding to oil spills and other environmental pollution incidents.[27] This role is expected to require more of the USCG's time and resources as maritime traffic increases with the melting of the Arctic sea ice.[28] However, it is worth noting that techniques to physically remove oil from ice-heavy landscapes are still underdeveloped.[29] Oil pollution, along with the region's changing ecology, make federally and internationally protected marine

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[19] USCG, 2022. https://www.pacificarea.uscg.mil/Our-Organization/District-17/, accessed November 28, 2022.

[20] USCG, 2022. https://www.pacificarea.uscg.mil/Our-Organization/District-17/, accessed November 28, 2022; GAO, 2020. "MARITIME INFRASTRUCTURE: A Strategic Approach and Interagency Leadership Could Improve Federal Efforts in the U.S. Arctic", available at https://www.gao.gov/products/gao-20-460, accessed November 27, 2022.

[21] Homeland Security Act of 2002, cited by USCG, 2022. https://www.history.uscg.mil/Home/Missions/, accessed November 28, 2022.

[22] USCG, 2022. https://www.pacificarea.uscg.mil/Our-Organization/District-17/, accessed November 28, 2022.

[23] Section 468, Title 6, U.S.C. https://uscode.house.gov/view.xhtml?req=(title:6%20section:468%20edition:prelim)%20OR%20(granuleid:USC-prelim-title6-section468)&f=treesort&edition=prelim&num=0&jumpTo=true, accessed November 28, 2022.

[24] DOD, 2019. https://media.defense.gov/2019/Jun/06/2002141657/-1/-1/1/2019-DOD-ARCTIC-STRATEGY.PDF, accessed November 27, 2022.

[25] Huntington et al., 2020. "Evidence suggests potential transformation of the Pacific Arctic ecosystem is underway", available at https://www.nature.com/articles/s41558-020-0695-2, accessed November 28, 2022.

[26] USCG, 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic__Strategy__Book__APR__2019.pdf, accessed November 8, 2022.

[27] GAO, 2020. "MARITIME INFRASTRUCTURE: A Strategic Approach and Interagency Leadership Could Improve Federal Efforts in the U.S. Arctic", available at https://www.gao.gov/products/gao-20-460, accessed November 27, 2022.

[28] USARC, 2012. "Oil Spills in Arctic Waters", available at https://www.arctic.gov/uploads/assets/oil__spills__2012__hi.pdf, accessed November 30, 2022.

[29] NAS, 2022. "Oil in the Sea IV", available at https://nap.nationalacademies.org/catalog/26410/oil-in-the-sea-iv-inputs-fates-and-effects, accessed November 28, 2022.

mammals and other endangered species more vulnerable to extinction,[30] and put Alaskan communities that depend on local food resources at increased risk.[31]

D. Additional Duties of the USCG

Complimentary to the USCG's statutory missions listed in section 468 of title 6, U.S. Code, are seven statutory duties listed under section 102 of title 14, U.S. Code. Together, these statutes codify the necessity of the multi-purpose approach of USCG. For example, two duties that are particularly relevant to the Arctic strategy are the directives to develop and operate icebreaking facilities pursuant to international agreements, and to engage in oceanographic research of the high seas and in waters subject to the jurisdiction of the U.S.[32] So, in addition to having the ability to perform nine of the 11 statutory missions, polar icebreakers shall also engage in oceanographic research. The White House's National Strategy for the Arctic Region emphasizes a commitment "to a whole-of-government, evidence-based approach"[33]—a principle which further emphasizes the planned use of icebreakers as multi-mission platforms.[34]

E. Partnerships, the Polar Code, and Arctic Sovereignty

The USCG's most recent Arctic guidance, the *USCG Arctic Strategic Outlook* (2019), offers three immediate lines of effort: 1) Enhance capability to operate effectively in a dynamic Arctic; 2) Strengthen the rules-based order; and 3) Innovate and adapt to promote resiliency and prosperity. These efforts are to be guided by the underlying principles of partnership, unity of effort, and culture of continuous innovation.[35] To carry out these efforts, partnerships exist between the USCG and other U.S. federal agencies (e.g., National Oceanic and Atmospheric Administration, U.S. Arctic Research Commission), Alaska state agencies, Alaska local and indigenous communities, non-governmental organizations, academic institutions, and foreign-based entities.[36]

International cooperation in the Arctic has been facilitated largely through the Arctic Council (Council), established in 1996.[37] The Council is made up of the eight Arctic nations, six Indigenous Peoples' organizations (Permanent Participants), and a variety of other governmental and nongovernmental partners (Observers).[38] In 2009 the Council called upon the International Maritime Organization (IMO) to formulate and adopt the International Code for Ships Operating in Polar Waters, referred to as the "Polar Code." The Polar Code went into effect on January 1, 2017, and enacts mandatory requirements intended to improve vessel safety and prevent pollution from vessels transiting in the Arctic, including ship construction, navigation, crew training, and ship operation.[39] The Polar Code applies to passenger and cargo ships of 500 gross tons or more engaged in international voyages.[40]

The Council is a consensus-based, intergovernmental forum that works to promote environmental, social, and economic aspects of sustainable development in the Arctic. Russia was scheduled to chair the Council from 2021–2023, but since Russia's invasion of Ukraine in March 2022, the seven other Arctic state members (including

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[30] *Id.*

[31] CRS, March 2022. "Changes in the Arctic: Background and Issues for Congress", available at https://crsreports.congress.gov/product/pdf/R/R41153, accessed November 28, 2022.

[32] Section 102, Title 14, U.S.C. https://uscode.house.gov/view.xhtml?hl=false&edition=prelim&req=granuleid%3AUSC-prelim-title14-section102&num=0&saved=%7CKHRpdGxlOjE0IHNlY3Rpb246MTAyIGVkaXRpb246cHJlbGltKSBPUiAoZ3JhbnVsZWlkOlVTQy1wcmVsaW0tdGl0bGUxNC1zZWN0aW9uMTAyKQ%3D%3D%7CdHJlZXNvcnQ%3D%7C%7C0%7Cfalse%7Cprelim, accessed November 28, 2022.

[33] U.S. White House, 2022. https://www.whitehouse.gov/wp-content/uploads/2022/10/National-Strategy-for-the-Arctic-Region.pdf, accessed November 27, 2022.

[34] CRS, September 21, 2022. "Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress", available at https://crsreports.congress.gov/product/pdf/RL/RL34391, accessed November 28, 2022.

[35] USCG, 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic__Strategy__Book__APR__2019.pdf, accessed November 8, 2022.

[36] *Id.*

[37] Arctic Council, 2022. "About the Arctic Council", available at https://www.arctic-council.org/about/, accessed November 30, 2022.

[38] *Id.*

[39] IMO, 2022. "Shipping in polar waters", available at https://www.imo.org/en/MediaCentre/HotTopics/Pages/Polar-default.aspx, accessed November 30, 2022.

[40] *Id.*

the U.S.) jointly declared a suspension of their participation from Council activities.[41] The future of the Council remains unclear.

II. Documented Challenges to USCG Arctic Operations

A. Infrastructure

Numerous governmental and academic reports have identified infrastructure and operational challenges to maritime transportation in the U.S. Arctic. Liabilities include limited satellite coverage and architecture to support voice and data communications, hazardous weather and ice conditions, and the lack of channel marking buoys and other floating visual aids to navigation (for which installation is not always possible due to continuously moving ice sheets).[42] In addition, to ensuring safe and efficient maritime transportation in the region, it is necessary to conduct surveys to improve nautical charts, improve communications capabilities, improve weather forecasting and modeling, and develop community and regional emergency response networks in preparation for vessel and aircraft accidents and environmental damage related to increased ship traffic and industrial development.[43] In many cases, data exist or are actively being collected, but the lag between data collection, communication, and operational use by the USCG is severe.[44]

In addition to known infrastructure requirements, the USCG has explored the need for the creation of new vessel routing measures to reduce the risk of marine casualties and increase the efficiency and predictability of vessel traffic in the U.S. Arctic.[45] The USCG is also conducting several Arctic-focused research projects in collaboration with academia at the Arctic Domain Awareness Center, including methodologies to minimize environmental damage from spilled oil in extreme cold, enhanced navigational capabilities in the Arctic, establishing exposure limits for Search and Rescue team members in extreme cold, and developing a classification system of ice conditions.[46] Other efforts to improve Arctic capabilities include the International Arctic Ocean Buoy Program, which maintains an international network of drifting buoys in the Arctic Ocean to provide meteorological and oceanographic data for real-time operational and research through the U.S. Integrated Ocean Observing System.[47]

B. Assets

While several U.S. agencies have a physical presence and substantial interests in the Arctic, the USCG's experience, material assets, and installations located throughout Alaska establish it as a key presence in the region. However, with no assets permanently stationed above the Arctic Circle, the USCG is restricted to a seasonal presence via mobile command and control platforms such as large cutters and ocean-going ice-strengthened buoy tenders, and establishing seasonal air and communications capabilities by leasing facilities.[48] Compared to Russia's six Arctic

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[41] DOS, March 2, 2022. "Joint Statement on Arctic Council Cooperation Following Russia's Invasion of Ukraine", available at https://www.state.gov/joint-statement-on-arctic-council-cooperation-following-russias-invasion-of-ukraine/, accessed November 8, 2022.

[42] Arctic Council, 2009. "Arctic Marine Shipping Assessment"; U.S. White House, 2013. "National Strategy for the Arctic Region"; GAO, 2014. "Maritime Infrastructure: Key Issues Related to Commercial Activity in the U.S. Arctic over the Next Decade"; Alaska Arctic Policy Commission, 2015. "Final Report"; U.S. Committee on the Marine Transportation System, 2016. "A Ten-Year Prioritization of Infrastructure Needs in the U.S. Arctic"; Council on Foreign Relations, 2017. "Arctic Imperatives, Reinforcing U.S. Strategy on America's Fourth Coast"; Center for Strategic and International Studies, 2017. "Maritime Futures, the Arctic and the Bering Strait Region".

[43] *Id.*

[44] Simonee et al. 2021. "Sila Qanuippa? (How's the Weather?): Integrating Inuit Qaujimajatuqangit and Environmental Forecasting Products to Support Travel Safety around Pond Inlet, Nunavut, in a Changing Climate", available at https://doi.org/10.1175/WCAS-D-20-0174.1, accessed November 16, 2022.

[45] USCG, 2016. "Port Access Route Study: In the Chukchi Sea, Bering Strait, and Bering Sea. Preliminary Findings", Number USCG–2014–0941 and USCG–2010–0833; USCG, 2018. "Port Access Route Study: Alaskan Arctic Coast", available at https://www.govinfo.gov/content/pkg/FR-2018-12-21/pdf/2018-27604.pdf, accessed November 28, 2022.

[46] USCG, 2018. "FY18 RDT&E Project Portfolio" in Acquisition Directorate. Research, Development, Test & Evaluation; Examples: Next Generation Arctic Navigational Safety Information System (proj #6211), Arctic Operations Support (proj #6210), Robust Maritime Arctic Communications (proj #6213), Safety Parameters for ICE Operations (proj #5301), Response to Oil in Ice (proj #4701), Ice Condition Risk Assessment Tool (proj #6512), and Arctic Technology Evaluation 2018 (proj #62101).

[47] IOOS, 2022. https://ioos.noaa.gov/regions/aoos/, accessed November 28, 2022.

[48] GAO, 2020. "Maritime Infrastructure: A Strategic Approach and Interagency Leadership Could Improve Federal Efforts in the U.S. Arctic", available at https://www.gao.gov/products/gao-20-460, accessed November 27, 2022.

bases and 14 newly built icebreakers, the USCG is forced to stretch assets and capabilities to secure a wide mission set with limited resources.[49]

The operational U.S. polar icebreaking fleet currently consists of one heavy polar icebreaker, Polar Star, which carries out its primary mission, the resupply of McMurdo Station, in the Antarctic, and one medium polar icebreaker, Healy, which carries out its primary mission, scientific research, in the Arctic (Fig. 3).[50] A decade-long effort to expand USCG capabilities in the Arctic found footing in Congress with the establishment of the USCG Polar Security Cutter (PSC) program and a Joint Program Office with the U.S. Navy in 2016.[51] Authorization for the acquisition or procurement of a market-available icebreaker is included in the Don Young Coast Guard Authorization Act of 2022, as is authorization for a third Polar Security Cutter (PSC; heavy polar icebreaker) and evaluation of the USCG's acquisition of three Arctic Security Cutters (ASCs; medium polar icebreakers). The USCG PSC program received a total of $1.8 billion in procurement funding through FY 2021, including $300 million that was provided through the U.S. Navy's shipbuilding account (FY 2017–2018).[52] With the funding the USCG PSC program received through FY 2021, PSCs 1 and 2 are fully funded.[53] Construction of the first PSC is anticipated to begin in Spring 2023 for an on-time delivery in FY 2025,[54] though a delay appears probable at this time.[55] Delivery of a heavy polar icebreaker will mark the U.S.'s first new heavy icebreaker in nearly 50 years.[56]

Figure 3. Coast Guard Cutter Healy, a 420-foot medium endurance icebreaker/research vessel, is the only icebreaker currently dedicated to Arctic operations. No other U.S. military service branch operates icebreakers.[57]

The mixed fleet (three PSCs, three ASCs) arrangement currently under consideration will help close four major gaps in USCG Arctic capabilities that were identi-

[49] USCG, 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic__Strategy__Book__APR__2019.pdf, accessed November 8, 2022.

[50] CRS, September 2022. "Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress", available at https://crsreports.congress.gov/product/pdf/RL/RL34391, accessed November 28, 2022.

[51] *Id.*

[52] U.S. Naval Institute, January 7, 2022. https://news.usni.org/2022/01/07/report-to-congress-on-coast-guard-polar-security-cutter-16, accessed November 28, 2022.

[53] *Id.*

[54] USCG, July 29, 2022. "Q3 FY2022 USCG Surface Acquisition Update—CG&MT", briefing to CGMT.

[55] Katz, J., November 14, 2022. "Why a small shipyard merger could signal bigger problems for the US military", available at https://breakingdefense.com/2022/11/why-a-small-shipyard-merger-could-signal-bigger-problems-for-the-us-military/, accessed on November 29, 2022.

[56] CRS, September 2022. "Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress", available at https://crsreports.congress.gov/product/pdf/RL/RL34391, accessed November 28, 2022.

[57] Photo credit: USCG, 2022. https://www.history.uscg.mil/Our-Collections/Photos/igphoto/2002136680/, accessed November 27, 2022; Lind, 2018. "USCG Cutter Healy Deploys for the Arctic", available at https://www.passagemaker.com/trawler-news/uscg-cutter-healy-deploys-

Continued

fied by the Homeland Security Operational Analysis Center—unreliable communications, lack of adequate maritime domain awareness, scarcity of available assets (especially ice-resistant air support and icebreakers) and supporting infrastructure, and institutional difficulty to identify, articulate, and close capability gaps.[58] The report states that if these capability gaps are not closed by the 2030s, the USCG risks facing substantial vulnerabilities in several of its missions in the Arctic including search and rescue, marine safety, ice operations, marine environmental protection, and ports, waterways, and coastal safety.[59]

III. RECENT CONGRESSIONAL ACTIONS

The Don Young Coast Guard Authorization Act of 2022, which is expected to be included the National Defense Authorization Act for Fiscal Year 2023, includes key support for the USCG to continue implementing its Arctic Strategic Outlook. Title I, Authorizations, would authorize $167.2 million for a third PSC, $150 million for the acquisition or procurement of an available icebreaker, and $20 million for icebreaking cutters for operation in the Northeast, Arctic, and Great Lakes (FY 2023). Additionally, Title I would authorize $1 million for the USCG to evaluate design requirements for the ASC (FY 2023–2024).

Title II dedicates an entire Subtitle to provisions affecting USCG operations in the Arctic region. Building on Title I authorizations, Title II would establish a medium icebreaker (i.e., ASC) program office within the USCG so that the it can conduct a PSC/ASC fleet mix analysis, and establish the conditions under which an available icebreaker may be acquired. Title II would also extend the timeline of the Pribilof Island Transition Completion Act of 2016 (Public Law 114–120) and require an update to Congress on the USCG's activities and infrastructure needs at St. Paul Island, Alaska.

WITNESS LIST

PANEL I

- Vice Admiral Peter W. Gautier, Deputy Commandant for Operations, United States Coast Guard
- Hon. Michael Sfraga, Chair, United States Arctic Research Commission
- Mr. Andrew Von Ah, Director, Physical Infrastructure Team, Government Accountability Office

PANEL II

- Dr. Rebecca Pincus, Director, Polar Institute, Wilson Center
- Dr. Martha Grabowski, Professor, Le Moyne College and Rensselaer Polytechnic Institute; Past Chair, Marine Board, National Academies of Sciences, Engineering, and Medicine

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for-the-arctic#:~:text=In%20mid-July%20the%20United%20States%20Coast%20Guard%20Cutter,vessel%20operated%20by%20the%20USCG%2C%20measuring%20420%20feet, accessed November 28, 2022.

[58] Homeland Security Operational Analysis Center, 2018. "Identifying Potential Gaps in the U.S. Coast Guard Arctic Capabilities", available at https://www.rand.org/pubs/research_reports/RR2310.html, accessed on November 29, 2022.

[59] *Id.*

U.S. COAST GUARD'S LEADERSHIP ON ARCTIC SAFETY, SECURITY, AND ENVIRONMENTAL RESPONSIBILITY

WEDNESDAY, DECEMBER 7, 2022

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COAST GUARD AND
MARITIME TRANSPORTATION,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:01 a.m. in room 2167 Rayburn House Office Building and via Zoom, Hon. Salud O. Carbajal (Chair of the subcommittee) presiding.

Members present in person: Mr. Carbajal, Mr. DeFazio, Mr. Larsen of Washington, Mr. Auchincloss, Mr. Gibbs, Mr. Graves of Missouri, Mr. Weber of Texas, and Mr. Garamendi.

Members present remotely: None.

Mr. CARBAJAL. This subcommittee will come to order.

I ask unanimous consent that the chair be authorized to declare a recess at any time during today's hearing.

Without objection, so ordered.

I also ask unanimous consent that Members not on the subcommittee be permitted to sit with the subcommittee at today's hearing and ask questions.

Without objection, so ordered.

As a reminder, please keep your microphones muted unless speaking. Should I hear any inadvertent background noise, I will respectfully request that the Member please mute their microphone.

And to insert a document into the record, please have your staff email it to DocumentsT&I@mail.house.gov.

Good morning, and welcome to today's hearing entitled, "U.S. Coast Guard's Leadership on Arctic Safety, Security, and Environmental Responsibility."

Before we get started, I would like to acknowledge that today's hearing will be both Chairman DeFazio's and Ranking Member Gibbs' last hearings as Members of Congress. Both have decided to retire. For 36 years, the House of Representatives has been a better place because of Chairman DeFazio's leadership and insight. This institution will miss him, and I will miss his friendship.

Mr. DeFazio, thank you for your leadership, your mentorship, and your service to our country.

Mr. DEFAZIO. Thank you, Salud.

Mr. CARBAJAL. And, Mr. Gibbs, I want to thank you for your partnership and expertise as we worked through this year's bipartisan Coast Guard reauthorization. I appreciated the bipartisan collaboration that we developed to do our subcommittee's work, and I appreciate the friendship we developed along the way. Thank you for your 10 years of service to our country as well.

Today also marks 81 years since the attack on Pearl Harbor that led our Nation to declare war within a day. To all of our veterans and active military families, thank you for your sacrifice and service to our country.

Global peace is always tenuous. Today, we will hear testimony from five witnesses who are experts on the Arctic, a region where security and geopolitics are both at play. Today, we have experts before us to focus on the national security issues that are on the top of our minds, while others will enlighten us on the Coast Guard's leadership on maritime safety and environmental stewardship.

Nearly 10 years ago, the Coast Guard published its first strategic plan for the Arctic region. The Service updated this plan in 2019 to reflect its coordination with the White House, Department of Defense, and the Department of State, which showed a new level of interest in the status of the United States as an Arctic nation.

With Russia's recent aggression towards Ukraine, the geopolitical significance of the Arctic is even more pronounced. Although the Coast Guard security missions are critical, the Service continuously executes numerous other critical missions.

The Coast Guard is responsible for maritime safety—that is, search and rescue, and aiding mariners in safe navigation by breaking ice, marking channels, and communicating real-time weather hazards.

The Coast Guard must also enforce environmental laws in the Arctic. This will become more and more important as melting sea ice means more shipping traffic, more oil pollution, and migrating commercial fish stocks.

Coast Guard partnerships with Alaskans and indigenous peoples, with private corporations, the State of Alaska, other Federal agencies, and other countries have met a gold standard in the last 10 years. Coordination and cooperation are not optional at the North Pole.

To help us appreciate the importance of all the Coast Guard's Arctic missions, Admiral Gautier will be joined on a panel by the Honorable Michael Sfraga, the presidentially appointed Chair of the U.S. Arctic Research Commission, and Mr. Andrew Von Ah, Director of the Physical Infrastructure team at the Government Accountability Office.

The USARC is working hard to draw attention to the critical gap between the collection of data in the Arctic—weather, sea state, coastal mapping—and the Coast Guard's ability to use this information in its everyday operations.

Similarly, the GAO has completed a number of studies in recent years that measure the success of, and gaps in, the Coast Guard's Arctic operations.

Today's second panel will feature an Arctic strategic defense expert, Dr. Rebecca Pincus, director of the Polar Institute; and Dr.

Martha Grabowski, a professor at Le Moyne College and a past chair of the Marine Board in the National Academies of Sciences.

The Coast Guard has proven to be a nimble and resourceful leader for the U.S. in the Arctic. It can only fully implement its strategic plan if we fully grasp the form and severity of the challenges Coasties face operating in such a harsh, remote part of the world.

The Coast Guard plays a multidimensional leadership role in the Arctic. Fortunately, we have five witnesses before us with multidimensional expertise.

Let's begin.

[Mr. Carbajal's prepared statement follows:]

Prepared Statement of Hon. Salud O. Carbajal, a Representative in Congress from the State of California, and Chair, Subcommittee on Coast Guard and Maritime Transportation

Good morning, and welcome to today's hearing on "U.S. Coast Guard's Leadership on Arctic Safety, Security, and Environmental Responsibility."

Before we start, I'd like to acknowledge that today's hearing will be Chairman DeFazio's last as a Member of Congress. For 36 years, the House of Representatives has been a better place because of his leadership and insight. This institution will miss him and I will miss his friendship. Mr. DeFazio, thank you for your leadership and service to our country.

Today also marks 81 years since the Attack on Pearl Harbor that led our Nation to declare war within a day. To all of our veterans and active military families, thank you for your sacrifice and service.

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The Coast Guard plays a multi-dimensional leadership role in the Arctic. Fortunately, we have five witnesses before us with multi-dimensional expertise. Let's begin.

Mr. CARBAJAL. First, I would like to recognize Chairman DeFazio.

Mr. DEFAZIO. Well, thank you, Mr. Chairman. Thanks for the kind words, and thank you for holding this hearing.

We ignore the changes that are rapidly coming to the Arctic North at our own peril. And I am pleased to see that we have a number of proactive plans in place, but more is certainly going to need to be done.

Although some deny that climate change exists, we are seeing extraordinary extended periods of ice retreat navigable waters throughout the Arctic region. We are now going to see, obviously, more transit of freighters, even tour ships in that area, which is obviously going to put burdens on the United States Coast Guard for their duties both for security and for protection of life and property.

I am pleased, after many years of struggle, that we have two Polar Security Cutters fully funded, and we are going to authorize another one in the Don Young Coast Guard Authorization Act.

We are also going to authorize the temporary utilization of an existing commercial icebreaker under lease so that we can enhance our capabilities. We have the *Healy*, and then we have the one remaining—and I always get them mixed up, *Polar Star* and *Polar Sea*, but whichever one we have—which is it, Admiral?

Admiral GAUTIER. *Polar Star*.

Mr. DEFAZIO. *Polar Star*. Good. OK. That was the one I was on. It is just too close together; I can never remember—which is patched together every year after it does its major duty and run to McMurdo Sound.

It is interesting that, I mean, I guess they are still harvesting circuit boards and things that we don't make anymore with transistors off of the old *Polar Sea*, or they have been stockpiled somewhere, but it is pretty pathetic. I mean, Russia has 40. China, not even an Arctic nation, has two, and they are building more.

This is going to be an era and an area of international competition, and potential issues will arise. I mean, there are resources and claims being extended. The idiots in the Senate have been unable to approve the Law of the Sea Treaty, so, we don't have full standing to object to Russia continually extending claims further and further into the Arctic region. But nothing can be done about the idiots in the Senate.

So, with the Don Young bill, which will be hopefully tonight or this afternoon as part of the Water Resources Development Act—which is now the Water Resources Development Act, National Defense Authorization, Coast Guard Authorization, and God only knows what else is in that piece of legislation.

And then there are other issues: bases. You are pretty distant from the more northern—because we only went there on a seasonal

basis. I understand that we are looking at an enhanced deep-draft harbor. Our Coast Guard air station is, again, pretty far away, so, we are going to have to be looking at shoreside and seaside facilities to give us more proximity and less travel time to get into that area.

As the chairman noted, this is my last hearing after 36 years. I started down there somewhere, right about there I think, many years ago. This has been the honor of my life, to serve on this committee. I had great mentors. Particularly Jim Oberstar was an extraordinary mentor to me. And I hope I have mentored some of the next generation.

And I wish Sam Graves, who I fully expect to be the next chairman, well on this committee. Sam is balanced and wants to get things done, so, I am looking forward to see that this committee will still be productive.

And to Bob, congratulations. I am calling this the "Year of the Great Retirement." A lot of people are retiring, and we are joining that crowd, although I am not going away, though I am going to be officially retired from Congress.

And I want to thank my absolutely incredible staff. I can't name them all, but they have done so much great work over the years. A Member of Congress and this committee are only as good as the fabulous staff we have, whether it is legislative, investigative, or just organizational. This is the biggest committee in Congress. It is a little bit unwieldy, but I think we do pretty damn well.

[Mr. DeFazio's prepared statement follows:]

Prepared Statement of Hon. Peter A. DeFazio, a Representative in Congress from the State of Oregon, and Chair, Committee on Transportation and Infrastructure

Mr. Chairman, thank you for scheduling this morning's hearing to highlight the important role the Coast Guard serves in the Arctic. Of its many mission sets and various responsibilities, no role is more rapidly evolving than the Coast Guard's mission in the Arctic.

The Coast Guard does not have the privilege of ignoring the significant and consequential impacts that climate change is having on our environment. Its servicemembers operate in the harsh terrain of the Arctic and bear witness to the full effects of a warming planet in that region. The fact is we all see it and we all experience it; from extreme weather events to coastal erosion, climate change is not something we can continue to ignore. We have to provide resources to the Coast Guard so they can mitigate the effects of climate change in their operational planning.

As polar ice steadily decreases, new trade routes will emerge, linking Asia, North America, and Europe. The retreat of sea ice and the opening of navigable sea routes will only serve to accelerate the demands placed on this once inaccessible and remote region. This, inherently, will drive increased demand for Coast Guard services in the Arctic. That translates to more search and rescue response, more regulation of commercial fishing activity, more pollution response, more scientific data collection, and more icebreaking to facilitate commercial ships traversing Arctic waters. Indeed, the Coast Guard will need to augment its presence in this region if we, as a nation, are serious about protecting U.S. life and sovereignty in the Arctic.

The Coast Guard operates the nation's only heavy polar icebreaker, the *Polar Star*. In years prior, Congress rightly recognized the need to expand Coast Guard capabilities in the Arctic and authorized $1.8 billion toward that effort. With two Polar Security Cutters fully funded and a third authorized in the Don Young Coast Guard Authorization Act of 2022, we have a modest start.

The Coast Guard is the nation's most prominent Arctic presence, but I fear we risk losing our dominance as an Arctic state if we don't take more aggressive action. If the construction timeline for the *Polar Sentinel*—the first of three new Polar Se-

curity Cutters to be built—holds, we'll have a grand total of three polar icebreakers by the end of 2025. By comparison, Russia has 40 active icebreakers in the Arctic alone. China, which is not even a polar nation, currently operates two icebreakers, with plans to build more. Clearly, we have some catching up to do.

I look forward to Congress passing the Don Young Coast Guard Authorization Act, which includes an authorization of $150 million to acquire a commercial icebreaker to fill the gap until the arrival of *Polar Sentinel*.

I'll note, however, that recapitalizing our icebreaker fleet is just one of many steps needed to fill the capability gap in the Arctic. We also need to address the communications gap experienced in this frontier. Communications are key to any mission, but in the Arctic communications are especially strained and data transmission is very limited. Further, every Coast Guard mission starts on land. While the Coast Guard has a presence in Alaska, Congress needs to ensure that the personnel stationed in remote locations are fully supported with robust housing, childcare, and medical facilities. Coast Guard cutters and aircraft do not operate themselves so we must do better to improve the lives of Coast Guard servicemembers.

Finally, we cannot ignore the ongoing war in Ukraine and the impact it has had on diplomacy in the Arctic. The pause of the U.S. involvement in the Arctic Council and the associated loss of international cooperation in the Arctic is troubling, and the long-term consequences of such are unknown. The U.S. does not yet have a clear path forward in this new, non-cooperative geopolitical arena. We need to bolster our Arctic capabilities so we are prepared for any scenario, threat, or hazard that may emerge.

Today's hearing is timely, and the array of witnesses before us boast impressive resumes and expertise in the Arctic domain. I look forward to their testimony.

I'd also like to mention that today will be the last hearing of the Transportation and Infrastructure Committee for the year, and my last hearing before I retire at the end of the 117th Congress. Being Chair of the Committee over the past four years has been the highlight of my 36-year career. I wish Sam Graves the best as he prepares to take over the gavel at the beginning of the 118th Congress. I hope and expect he will continue the bipartisanship and productivity that this committee is known for. Thank you.

Mr. DEFAZIO. So, with that, I yield back the balance of my time.

Mr. CARBAJAL. Thank you, Mr. Chairman.

Now I would like to recognize Ranking Member Graves.

Mr. GRAVES OF MISSOURI. Thank you, Mr. Chairman.

And I thank the witnesses, too, for being here, and I appreciate you being here.

I particularly want to add my thanks and respect to both Chairman DeFazio and Ranking Member Gibbs. This is their last committee hearing, and their hard work and expertise from both of you are going to be missed on the committee overall and this subcommittee.

I very much appreciated serving with both of you, and you have both done a lot of good things for the country when it comes to jurisdictions under this committee. And I can only hope that Oregon and Ohio will be just as well represented as you move on. But thanks for your service.

I do know this is an Arctic hearing, but I do want to thank Admiral Gautier for what you are doing. And I want to remind you of the importance of getting the Barbers Point aviation facilities completed. That is something that means a whole lot to me when it comes to the next generation of aircraft and making sure that those maintenance facilities are up to date. And I look forward to working with the Coast Guard to obviously complete whatever is needed there at the Barbers Point Station in particular.

I know that Arctic shipping routes are only available, unfortunately, for about 3 months during the summer along the Northern Sea Route or the Northwest Passage. And I do know the changing

conditions in the Arctic have made maritime transportation in the region much more feasible, but I do know there are significant challenges associated with increasing vessel traffic in the U.S. Arctic and the Arctic Ocean overall.

And I do know that, sadly, the U.S. is woefully unprepared for the increased traffic that we are going to see. But I look forward to hearing from you all today and reading your testimony, and, again, I appreciate you being here. The Coast Guard means a lot to me, and I know it does to the country. And so, I want to make sure that you all have everything that you need.

[Mr. Graves of Missouri's prepared statement follows:]

Prepared Statement of Hon. Sam Graves, a Representative in Congress from the State of Missouri, and Ranking Member, Committee on Transportation and Infrastructure

I know this is an Arctic hearing, but I want to thank Vice Admiral Gautier for your work and remind you of the importance of getting the Barbers Point facilities fully ready for the next generation of Coast Guard aircraft. I look forward to working with the Coast Guard to complete the needed upgrades at that Air Station.

Historically, Arctic shipping routes were only available for up to three months in the summer along the Northern Sea Route or the Northwest Passage. Changing conditions in the Arctic have made maritime transportation in the region more feasible. However, there are still significant challenges associated with increasing vessel traffic in the U.S. Arctic and the Arctic Ocean as a whole.

Sadly, the U.S. is woefully unprepared for this increased vessel traffic. I look forward to hearing from the witnesses today on the potential for increased Arctic maritime transportation and how to manage that growth effectively.

Mr. GRAVES OF MISSOURI. Thanks. I yield back.

Mr. CARBAJAL. Thank you, Mr. Graves.

I now will recognize Ranking Member Gibbs.

Mr. GIBBS. Thank you, Mr. Chairman. I want to also thank you for your kind words, and then, Chairman DeFazio, for your kind words.

And one of my fondest memories I have of Chairman DeFazio is, when I was looking for offices, like, 4, 5, or 6 years ago in the Rayburn Building, I stumbled across Chairman DeFazio's office, and he was gracious enough to show me his nice big balcony.

Which, I don't know if they let you out there anymore on that. I heard——

Mr. DEFAZIO. [Inaudible.]

Mr. GIBBS. Yes. But you were so gracious to do that, other side of the aisle. I appreciated that. That is a fond memory I have. You probably don't even remember when that happened.

And I want to thank Ranking Member Graves for his kind words. And I am sure that the T&I Committee will be in good hands starting January 3rd, but I will be watching from afar. I will let you know how you are doing, if you mess up too bad.

But I have been on this committee since 12 years ago when I first came to Congress, and I was privileged enough to be chairman of the Water Resources and Environment Subcommittee for 6 years. And I enjoyed working with the Army Corps and now the Coast Guard. And such memorable experiences, and I learned a lot. And I didn't know a whole lot when I started those chair positions

and ranking member, but it has been wonderful. So, I will treasure those memories. I really appreciate it.

So, Chairman DeFazio, I wish you well. I don't know how many years you were here, but you have had an esteemed career, and I am sure you will do fine out on the west coast.

Mr. DEFAZIO. Thirty-six.

Mr. GIBBS. Thirty-six years. So, I wish you well.

Today, the subcommittee will hear testimony on the need for increased United States infrastructure to facilitate safe and efficient maritime transportation in the Arctic.

For the first time in recorded history, more portions of the Arctic each year are becoming navigable. Vessel transits through the area covered by the Polar Code on shipping increased 25 percent between 2013 and 2019 and are expected to continue.

It is critical that we understand current traffic flows and the steps that need to be taken to ensure that both vessels and mariners and the environment are properly protected. One way to ensure better Arctic access is to increase the U.S. icebreaker presence in the U.S. Arctic.

The Coast Guard has contracted to acquire a new class of Polar Security Cutter, the first heavy icebreakers built in the U.S. since 1977. Though this is a good first step towards more fully implementing an active U.S. presence in the Arctic, these cutters are officially 1 year, and unofficially 2 years, behind their original construction timeline.

The vessels will fall at least 1 more year behind their stated timeline, which was never realistic. In addition, the first cutter will conduct an Antarctic breakout and will not be available for work in the Arctic. So, they are going to Antarctica first, I guess, and then back to the Arctic, so, there will be more delays for up there. In other words, we are nearly a decade away from increased U.S. icebreaker presence in the Arctic.

I look forward to the Coast Guard providing us a realistic timeline for when we can expect to see additional icebreaking capacity in the Arctic and what interim capacity measures the Coast Guard plans until then. However, while icebreakers provide important capabilities, there are many other issues that must be addressed to ensure safe and efficient Arctic navigation.

Additional infrastructure and operational challenges to maritime transportation in the Arctic include: limited satellite coverage and architecture to support voice and data communications; the lack of a deep-draft port accommodating ships that will draft up to 35 feet; unpredictability in flow patterns of icebergs in shipping lanes; the lack of channel-marking buoys and other floating visual aids which are not possible due to continuously moving ice sheets; and scant hydrographic surveying and other data needed for safe navigation and resource protection and management.

The United States is not alone in our efforts to facilitate safe commerce in the Arctic. We are part of the Arctic Council along with other Arctic nations like Canada, Russia, and the Nordic countries. However, the Council's activities have been in abeyance since Russia's invasion of Ukraine. Russia holds the Council's chairmanship in 2022 and 2023, and it is not clear what the Council's future is after that.

Working together in a consensus-based intergovernmental forum allowed Arctic nations to promote environmental, social, and economic aspects of sustainable development in the Arctic. The Council was also critical to successfully implementing the International Code for Ships Operating in Polar Waters—the Polar Code. If the Council cannot be revived, we need to find other mechanisms to ensure international cooperation on these issues.

This Arctic really is the last frontier, the portion of our Nation's waters about which we still have much to learn. However, unless we can get the U.S. Coast Guard and other agencies assets into the area—an expensive and time-consuming challenge—we will not be able to use these areas strategically.

[Mr. Gibbs' prepared statement follows:]

Prepared Statement of Hon. Bob Gibbs, a Representative in Congress from the State of Ohio, and Ranking Member, Subcommittee on Coast Guard and Maritime Transportation

Today the Subcommittee will hear testimony on the need for increased United States infrastructure to facilitate safe and efficient maritime transportation in the Arctic. For the first time in recorded history, more portions of the Arctic each year are becoming navigable. Vessel transits through the area covered by the Polar Code shipping increased 25 percent between 2013 and 2019 and are expected to continue.

It is critical that we understand current traffic flows and the steps that need to be taken to ensure that both vessels and mariners, and the environment, are properly protected. One way to ensure better Arctic access is to increase the U.S. icebreaker presence in the U.S. Arctic.

The Coast Guard has contracted to acquire a new class of Polar Security Cutter, the first heavy icebreakers built in the U.S. since 1977. Though a good first step toward more fully implementing an active U.S. presence in the Arctic, the PSCs are officially one year, and unofficially two years, behind their original construction timeline.

The vessels will fall at least one more year behind that stated timeline, which was never realistic. In addition, the first PSC will conduct the Antarctic break out, and will not be available for work in the Arctic. In other words, we are nearly a decade away from increased U.S. icebreaker presence in the Arctic.

I look forward to the Coast Guard providing us a realistic timeline for when we can expect to see additional icebreaking capacity in the Arctic, and what interim capacity measures the Coast Guard plans until then. However, while icebreakers provide important capabilities, there are many other issues that must be addressed to ensure safe and efficient Arctic navigation.

Additional infrastructure and operational challenges to maritime transportation in the U.S. Arctic include limited satellite coverage and architecture to support voice and data communications; the lack of a deep-draft port; unpredictability in flow patterns of icebergs in shipping lanes; the lack of channel marking buoys and other floating visual aids, which are not possible due to continuously moving ice sheets; and scant hydrographic surveying and other data needed for safe navigation and resource protection and management.

The United States is not alone in our efforts to facilitate safe commerce in the Arctic. We are part of the Arctic Council, along with other Arctic nations like Canada, Russia, and the Nordic countries. However, the Council's activities have been in abeyance since Russia's invasion of the Ukraine. Russia holds the Council's chairmanship in 2022 and 2023, and it is not clear what the Council's future is after that.

Working together in a consensus based, intergovernmental forum allowed Arctic nations to promote environmental, social, and economic aspects of sustainable development in the Arctic. The Council was also critical to successfully implementing the International Code for Ships Operating in Polar Waters—the Polar Code. If the Council cannot be revived, we need to find other mechanisms to ensure international cooperation on these issues.

This Arctic really is the last frontier—the portion of our nation's waters about which we still have much to learn. However, unless we can get U.S. Coast Guard

and other agencies assets into the area—an expensive and time-consuming challenge—we will not be able to use these areas strategically.

Mr. GIBBS. Thank you, Chairman Carbajal, for your work here on the committee, and I wish you all the best in the future.

I yield back.

Mr. CARBAJAL. Thank you, Representative Gibbs.

I would like to now welcome our first witness panel: Vice Admiral Peter W. Gautier, Deputy Commandant for Operations at the United States Coast Guard; the Honorable Michael Sfraga, Chair of the United States Arctic Research Commission; and Mr. Andrew Von Ah, Director of Physical Infrastructure at the Government Accountability Office.

Thank you for being here today, and I look forward to your testimony.

Without objection, our witnesses' full statements will be included in the record.

Since your written testimony has been made part of the record, the subcommittee requests that you limit your oral testimony to 5 minutes.

Vice Admiral Gautier, you may proceed.

TESTIMONY OF VICE ADMIRAL PETER W. GAUTIER, DEPUTY COMMANDANT FOR OPERATIONS, U.S. COAST GUARD; HON. MICHAEL SFRAGA, PH.D., CHAIR, U.S. ARCTIC RESEARCH COMMISSION; AND ANDREW VON AH, DIRECTOR, PHYSICAL INFRASTRUCTURE, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Admiral GAUTIER. Good morning, Chairman Carbajal, Ranking Member Gibbs, Chairman DeFazio, and distinguished members of the subcommittee.

I am really pleased and thank you for inviting me here today to update you on the Coast Guard's efforts on our Arctic strategy to promote safety, security, and environmental protection for the Arctic.

And I would like to take a minute to add the Coast Guard's sincere appreciation, Chairman, for the service of Chairman Peter DeFazio, for his distinguished service to the United States Coast Guard, as well as the ranking member, Representative Bob Gibbs.

The Coast Guard owes a debt of gratitude to you both and to your distinguished and dedicated staffs. Under your leadership, the House passed two Coast Guard authorization acts, and we were also included on two hurricane supplementals, CARES Act funding, as well as the Infrastructure Investment and Jobs Act and many other things that have helped the Coast Guard.

And before I left for here today, Admiral Fagan, our Commandant, asked to express her personal thanks to you both. The Coast Guard is better for your support of us.

The Arctic is undergoing a dramatic transformation of its physical, operational, and geostrategic environment. We are witnessing firsthand how the impact of climate change is opening up new access to Arctic waters. This drives greater activity in the Arctic region and, with it, risk across the maritime sector. And the Coast Guard is deeply concerned about the rising strategic risk to our Na-

tion as Russia and China compete with diplomatic, economic, and strategic advantage and influence in the Arctic.

While our missions in the high latitudes have evolved since we first started operating in Alaska and the Arctic in 1867, the Coast Guard's commitment to the region has not. We are operating forward to address the safety and security of our Arctic residents and mariners who make their living there, homeporting new cutters, investing in infrastructure and capabilities, prioritizing our operations, supporting research, and strengthening our international partnerships.

Changing conditions in the Arctic are driving an increased demand for Coast Guard services; there is no question about that. And we have a sense of urgency to make sure we can deliver now and well into the future.

Our actions are supported by the 2022 U.S. National Strategy for the Arctic Region and its four interconnected pillars. And this strategy is fundamentally supported by our 2019 Coast Guard Arctic Strategic Outlook.

Despite the geographical remoteness and logistical challenges inherent to all Arctic operations, the Coast Guard is meeting service demand through our flexible and expeditionary approach.

This year, in our Operation Arctic Shield, we increased seasonal presence in the U.S. Arctic to provide Coast Guard services across 65 remote communities. Together with Federal, State, Tribal, and local stakeholders, we responded to Typhoon Merbok to ensure numerous impacted communities could receive critical fuel and supplies ahead of the winter freeze. And, in October, the Coast Guard cutter *Healy* reached the North Pole for the second time to conduct important scientific research.

Strategic competition across the Arctic is also driving demand for our leadership. Last year, Coast Guard cutters intercepted four Chinese military vessels operating together in the U.S. exclusive economic zone off the Aleutians. And, in September, we intercepted a combined Russian-Chinese task group of seven ships in a similar location. In both instances, the Coast Guard met presence with presence to ensure these ships operated in accordance with international law.

The Coast Guard's strategic influence extends beyond the U.S. Arctic. We routinely conduct engagements with other Arctic nations and partners. And despite the absence of Russia in the Arctic Council and Arctic Coast Guard Forum, we continue to work with like-minded nations to advance shared interests in safety, environmental stewardship, and responsible governance.

We appreciate deeply the continued support from Congress and this committee in particular to build the next generation of Coast Guard capability for the Arctic. A top acquisition priority is the Polar Security Cutter, and we are working hard to advance that effort.

We have asked for funding in this year's budget to increase near-term presence in the Arctic through acquisition of a commercially available medium icebreaker. With Congress' help, we are moving forward on this.

Never before has Coast Guard leadership been more important to the Arctic.

Thank you again, Chairman, for this opportunity, and I look forward to your questions.

[Admiral Gautier's prepared statement follows:]

Prepared Statement of Vice Admiral Peter W. Gautier, Deputy Commandant for Operations, U.S. Coast Guard

INTRODUCTION

Good morning, Chair Carbajal, Ranking Member Gibbs, and distinguished Members of the Subcommittee. It is my pleasure to be here today to discuss the Coast Guard's role in advancing national interests in the Arctic. The United States is one of only eight Arctic coastal States with both sovereign rights and sovereign responsibilities to safeguard our respective and shared interests. As climate change and strategic competition increasingly affect the geography, stability, and security of the Arctic region, U.S. Coast Guard presence and leadership have never been more critical.

Arctic activity is increasing and evolving at a rapid pace, from a surge in oil and gas exploration a decade ago to growth in types and locations of vessel transits, including a significant expansion of environmental tourism over the past five years. The dynamic and accelerated changes in the Arctic environment make Arctic waters more accessible, creating new opportunities and challenges, and increasing multinational strategic competition.

The Arctic's dynamic evolution magnifies the importance of U.S. national security across the region and intensifies the demand for the Coast Guard's services and leadership. In a region where presence means not only influence, but also security, the U.S. Coast Guard has been a key leader and interagency partner in shaping the Arctic security environment for over 150 years. I understand the significant level of investments required to further champion our Nation's efforts in the Arctic, and I embrace the trust Congress and the American people have placed in the U.S. Coast Guard. The Service will continue to prioritize actions that safeguard U.S. interests while promoting safe, secure, and environmentally responsible maritime activity in the Arctic.

NATIONAL SECURITY DRIVERS ACROSS THE ARCTIC

The 2022 U.S. National Strategy for the Arctic Region (NSAR) sets the vision for the Arctic as peaceful, stable, prosperous, and cooperative. The four pillars to achieve that vision are security, which encompasses both homeland security and national defense, climate change and environmental protection, sustainable economic development, and international cooperation and governance. These pillars are interconnected in terms of domestic and international risks, effects, and mitigating actions. They require coordination with the State of Alaska and across a broad spectrum of Arctic stakeholders including Indigenous communities, partners and allies, domestic and international bodies, academics, scientists, and the private sector. Our 2019 Coast Guard Arctic Strategic Outlook and its three lines of effort—enhancing capability to operate effectively, strengthen the rules-based order, and innovate and adapt to promote resilience and prosperity—support the four NSAR pillars.

Peace and prosperity depend on adherence to the rules-based international order, particularly in the maritime domain. As we see around the globe, state and nonstate malign actors take advantage of any governance gaps to poach natural resources or attempt to intimidate others through incursions into sovereign waters. Meeting these challenges requires the United States to be present, collaborate with others, and model professional behavior at sea. With our unique combination of authorities as an armed service, a law enforcement agency, a regulatory agency, and a humanitarian service, the Coast Guard is an ideal tool for the Nation to govern the U.S. Arctic maritime environment responsibly. The Coast Guard has excelled and will continue to excel in all of these elements, to include setting an example of responsible governance and reinforcing the rule of law through operational presence and strategic leadership.

PILLAR 1: SECURITY AND CAPABILITY

The geopolitical environment in the Arctic continues to evolve as state and nonstate actors seek to advance their interests in the region. Allies, partners, and competitors increasingly contend for diplomatic, economic, and strategic advantage and

influence. Russia and China exemplify this competition. Both have declared the Arctic a strategic priority; both have made significant investments in new or refurbished capabilities; and both are attempting to exert direct or indirect influence across the region using all of their instruments of national power.

As the only U.S. armed force with both military and law enforcement authorities, and as a member of the Intelligence Community, the Coast Guard seamlessly employs multi-mission assets and cross-trained personnel to advance U.S. Arctic priorities. The Coast Guard serves as a critical bridge between the power of the Department of Defense and the diplomacy of the State Department, cultivating strong international relationships and building coalitions among Arctic partners based on mutual interests and values. These relationships enhance safety, maritime governance, and prosperity across the region, which in turn strengthen both national security and regional stability.

The Coast Guard is directly observing increased strategic competition in the U.S. Arctic. Through the operations of its Seventeenth District, which is responsible for Coast Guard activities for an over 3,853,500 square mile area including Alaska and the Arctic, the Coast Guard meets presence with presence both to counter competition and positively influence behavior. Over the past two years, the Coast Guard has intercepted a Chinese military Surface Action Group, as well as a combined Russian-Chinese Task Group, operating in the U.S. Exclusive Economic Zone. In both instances, the Coast Guard's visible forward presence ensured that both groups operated in accordance with international law. The Coast Guard will continue to exhibit model governance grounded in international law, rules, norms, and standards, including freedom of navigation, in the U.S. Arctic and empowering like-minded partners and allies to do the same in their Arctic waters.

PILLAR 2: CLIMATE CHANGE AND ENVIRONMENTAL PROTECTION

The effects of climate change span the Arctic's physical, operational, and strategic environments. These pronounced effects threaten the stability of Arctic communities and natural resources, the traditional lifestyles of Alaska Natives, and national sovereignty across the region. Addressing these impacts begins with an informed understanding of how, when, and where the physical environment is changing, which enables evidenced-based decision-making to reduce the operational and strategic consequences. Scientific research within the Arctic, in general, will require investments and a coordinated whole-of-government approach to inform policy decisions. The Coast Guard looks forward to supporting Arctic research endeavors through its robust partnerships with institutions like the National Science Foundation, U.S. Arctic Research Commission, Polar Institute, National Oceanic and Atmospheric Administration (NOAA), U.S. Navy, and U.S. National Ice Center. The Coast Guard has long provided Arctic access by including interagency and international scientists aboard the USCGC *Healy* to conduct critical scientific research. This research, and the understanding it affords, has enabled the Coast Guard, along with our national and international partners, to protect the maritime environment, build community resilience, and shape the security environment.

While long-term trends indicate a more consistently navigable Arctic, near-term conditions are less predictable and thus more dangerous. In September 2022, Typhoon Merbok hit more than 1,000 miles of Alaska's west coast with hurricane-force winds, wave heights over 50 feet, and storm surges that were the highest recorded in almost 50 years. Storms of Merbok's magnitude usually occur in October and November after the formation of shoreside (first-year) ice that offers protection for coastal communities. However, unusually warmer waters in the Bering Sea enabled this storm's formation much earlier in the season. Merbok also hit during the fall subsistence harvest, damaging or destroying hunting and fishing boats and camps along the coasts and forcing immediate repairs to homes, businesses, and camps at the expense of harvest activities necessary to ensure winter food security in these communities.

In the face of Merbok's dangerous and challenging conditions, the Coast Guard provided critical value to the region by proactively advancing community resilience. As a visible, agile, and adaptive force, the Coast Guard helped to coordinate the Federal, Tribal, State, and local response. The Service conducted damage assessments in 32 remote communities, focusing on bulk fuel facilities, and connecting waterways to ensure communities could receive their fuel shipments and other critical supplies ahead of the winter freeze-up. Natural disasters like Merbok are only expected to increase in frequency and severity as a result of climate change, and the Coast Guard will be increasingly called upon to respond.

PILLAR 3: SUSTAINABLE ECONOMIC DEVELOPMENT

As Arctic accessibility increases, so does the potential for new economic opportunities. The Arctic currently supplies roughly 10 percent of the world's oil and 25 percent of its natural gas, but it is estimated to hold 22 percent of the Earth's undiscovered oil and natural gas supply. It also contains significant deposits of minerals essential to technology supply chains; at present, Alaska has the world's largest zinc mine and the largest known graphite deposit in the United States. Today, Alaska's top export is its seafood, topping $6 billion in labor income annually, $15 billion in economic output, and accounting for over 40% of the total U.S. seafood exports and a significant portion of global seafood supply.

These valuable resources are driving increased maritime activity in the U.S. Arctic. Oil and gas exploration has surged, as has environmental tourism. During the 2022 operating season, at least eight transits of adventure tour ships were planned from Greenland to Nome. As another means of enabling sustainable development, the Coast Guard supports scientific research, such as NOAA studies on the distribution of impacts to the region's fish and marine mammal stocks as well as other aspects of wildlife ecology. These studies also help inform our domain awareness and operational risks across the region. For example, understanding where fish stocks are moving and how commercial, recreational, and subsistence harvesters are responding enables the Coast Guard to proactively manage the waterways as well as protect both the mariners and the environment.

Since 2009, the Coast Guard has influenced Arctic governance and sustainable development through Operation Arctic Shield. This Operation demonstrates the Coast Guard's operational capability, asserts leadership and models responsible international governance in a region of key geostrategic importance. The annual Operation includes three task forces—National Security and Enforcement, Aviation, and Marine Safety. Through these task forces, the Coast Guard, along with its Federal, Tribal, state, and Arctic Nation partners, protects sovereignty, enhances domain awareness, and regulates commercial activity. This year's operational highlights included the Coast Guard's interception of a Russian vessel fishing illegally in U.S. waters. The Coast Guard notified our counterparts in the Russian Border Guard who, at our request, investigated the incident and fined the vessel. The Coast Guard also conducted spill response and mass rescue exercises with Arctic hub communities, industry partners, and various other Tribal, state, and local stakeholders. These exercises enable our ability to not only protect people and the environment but also enhance our ability to maintain the Arctic's waterways and marine transportation system, the primary transportation mechanism across the region. This operational presence and responsible model of governance positions the Coast Guard as a central U.S. leader in influencing, shaping, and protecting sustainable economic development, subsistence lifestyles, and cultural traditions in the Arctic across the international landscape.

PILLAR 4: INTERNATIONAL COOPERATION AND GOVERNANCE

The Coast Guard's unique authorities, experience, and leadership distinguish it from the other Armed Services and traditional military instruments of national power. Leveraging these skills and characteristics provides the ability to both model responsible governance and compete below the level of armed conflict across the Arctic landscape. A key tenant of the new NSAR and the 2019 Coast Guard Arctic Strategic Outlook is asserting international leadership to advance cooperation that upholds international law, rules, norms, and standards for the Arctic coastal states and other non-Arctic flag States whose ships sail in Arctic waters. Upholding this strategic initiative, the Coast Guard consistently asserts its leadership and provides guidance and direction through such preeminent multilateral forums as the Arctic Council and the International Maritime Organization (IMO).

The Arctic Coast Guard Forum (ACGF) similarly acts as a bridge between diplomacy and operations. This forum continues to serve as an independent, but complementary, body to the Arctic Council, with an operational focus on safe and environmentally responsible Arctic maritime activity. Since 2017, the Coast Guard has conducted multiple exercises with partner Arctic nations through the ACGF. These exercises enhance interoperability and provide a platform for direct dialogue among the Arctic agencies fulfilling Coast Guard functions. In 2021, the Arctic Council and the ACGF issued a joint statement of cooperation to enhance collaboration on both search and rescue and oil spill preparedness and response. This cooperation includes joint exercises, such as the 2021 ARCTIC GUARDIAN exercise, conducted under Iceland's Chairmanship, which explored both large-scale search and rescue and oil spill response protocols to a cruise ship incident in Arctic waters.

Despite Russia's illegal war against Ukraine, the Coast Guard continues to bolster international cooperation and leadership commitments with the other Arctic Nations. The Coast Guard continues to participate in bi-lateral and multi-lateral Arctic exercises and patrols throughout the Arctic region with like-minded partners. This cooperation highlights that all other Arctic nations are aligned in upholding international law, rules, norms, and standards for those operating in the region. Participation in these activities enables the Service to build experience operating across the region, expand response capacity with international partners, and strengthen these strategic relationships.

BUILDING ARCTIC CAPACITY

The ability for the United States to protect U.S. national sovereignty, safeguard our homeland, and lead in the Arctic hinges on physical presence and access. U.S. operational presence and influence in the Arctic are founded on Coast Guard polar icebreakers. These ships provide assured, year-round access to the Polar Regions not only for Coast Guard missions, but also in support of critical activities of other agencies and Tribal Nations that protect key economic, environmental, and national security interests in the high latitudes.

Thanks to Congressional support for the Coast Guard's Polar Security Cutter (PSC) program, which includes our Fiscal Year (FY) 2023 President's Budget request of $167.2 million for PSC program management and production activities, Coast Guard presence will continue well into the future. The PSC is a top acquisition priority for the Coast Guard and the Navy and is vital for the U.S. to continue to project sovereignty and protect national security interests in the Polar Regions. The PSC is the capability the Nation needs to ensure persistent presence and robust domain awareness in the Arctic and Antarctic regions. The integrated Coast Guard-Navy Program Office continues to work actively with the prime contractor to mitigate schedule risks and ensure effective and efficient use of U.S. taxpayer dollars to deliver this critical capability. With Congress's continued support, the Nation is closer than we have been in over 40 years to recapitalizing our icebreaking fleet. Continued investment is key to meeting our Nation's growing needs in the rapidly evolving and dynamic Polar Regions.

The FY 2023 President's Budget also requests $150 million to support the acquisition of a commercially available polar icebreaker, including initial modifications, crewing, and integrated logistics support required to reach initial operating capability. The U.S. has vital national interests in the Polar Regions and the purchase of a commercially available polar icebreaker is a viable strategy to accelerate U.S. presence in the polar regions in the near-term and increase capacity in the long-term.

In addition to recapitalization of our icebreakers, the Coast Guard also needs adequate Arctic-capable surface and aviation assets, properly trained and equipped personnel, enhanced communication and domain awareness capabilities, and logistics resources. As outlined in the Coast Guard's 2019 Arctic Strategic Outlook, closing gaps in these areas requires a whole-of-government approach coupled with consistent investment to meet not only the challenges the Arctic presents, but also the opportunities.

CONCLUSION

The Coast Guard has served and shaped national security in the Arctic for over 150 years and continues to play a critical role in the whole-of-government approach to secure national interests in the Polar Regions. The Coast Guard, and the Nation, must remain committed and agile in the rapidly evolving geopolitical and operational Arctic.

The continued support of the Administration and Congress for a modernized and capable polar fleet and increased Coast Guard Arctic capacity and capabilities will fortify the Nation's position in this age of Arctic prominence. Coast Guard leadership is essential in maintaining a coalition of like-minded partners to shape the Arctic domain as a region of strategic cooperation. Thank you for the opportunity to testify before you today and for your actions to support the members of the Coast Guard. I look forward to answering your questions.

Mr. CARBAJAL. Thank you, Vice Admiral Gautier.
Dr. Sfraga, you may proceed.

Mr. SFRAGA. Thank you.

Chairman Carbajal, Ranking Member Gibbs, Chairman DeFazio, and members of this committee, thank you for the opportunity to address you today.

I am Mike Sfraga. I am the Chair of the United States Arctic Research Commission. It is an independent Federal agency that advises Congress and the White House on issues related to Arctic research and related policies. I also sit before you as a resident of America's Arctic, the State of Alaska.

I begin my remarks today by noting the U.S. Coast Guard and its forerunner, the Revenue Cutter Service, have a long history of supporting scientific research, starting with the environmental observations of the noted naturalist John Muir soon after the 1867 purchase of Alaska from Russia.

Our Nation requires the Coast Guard's enduring support of Federal research to protect and defend America's Arctic interests, to better understand the changing Arctic landscape and its implications, to inform prudent economic development, and to foster peaceful, stable, and a prosperous North.

I note that while oceanographic research is not among the 11 statutory missions of the Coast Guard, it is indeed their sixth statutory primary duty.

The Coast Guard advances scientific understanding of the polar regions in two fundamental ways. First, the Coast Guard itself supports a broad range of relevant basic and applied research, development, testing, and evaluation. And, second, Coast Guard icebreakers provide scientists—supported by many Federal agencies—direct access to the Arctic. These vessels also have modern scientific tools and enhanced capabilities, much of which have been provided by other Federal agencies.

The U.S. National Strategy for the Arctic Region emphasizes two guiding principles relevant to today's discussion: first, plan for long-term investments, which means icebreakers; second, commit to a whole-of-Government approach.

Clearly, icebreakers that may cost $600 million apiece are significant national investments and assets, requiring interagency efforts for long lead time for planning, construction, and outfitting.

I turn my attention now to one of our Nation's two icebreakers, the *Healy*. Over the past 20 years, most of the *Healy*'s time at sea has been in support of research, but two challenges loom just over the horizon.

First, in recent years, *Healy* has become less available to the scientific community because there has been an increase in missions and patrols directly related to priorities of the Department of Homeland Security. Clearly, these missions are critical to our Nation's security and must continue.

This inherent push/pull on the *Healy*'s time in the Arctic demonstrates the ever-growing demands the Coast Guard has on it and that one single agency has upon it. This rebalancing of *Healy*'s missions profile provides few alternatives to U.S. researchers other than to rely on foreign icebreakers for support.

Second, *Healy* is now 23 years old, with an original service life of 30 years. *Healy* will undergo a 5-year service extension, but decommissioning is not far off. What vessel will replace the *Healy*?

Will it be another Coast Guard vessel, perhaps an Arctic Security Cutter, for which there is no yet program of record?

While the *Healy*'s decommissioning may seem far off, it is sooner than we think, particularly for those of us who think in icebreaker years. Planning for replacement takes time, given the complexities of identifying interagency requirements, seeking authorizations and appropriations, procurement, construction, outfitting, sea trials, and so on. So, my message today to you is: Let's start now.

And, finally, I want to shift the focus and describe the soft-power diplomacy that results from international scientific research and its value.

Coast Guard icebreakers have long served as platforms for international scientific collaboration. By addressing common problems and sharing data when appropriate, the U.S. builds constructive relationships with like-minded nations in and outside of the Arctic, which strengthens the international rules-based order, the transatlantic alliance, U.S. and Canada, U.S. and Nordic cooperation, and cooperation throughout North America. The U.S. also benefits through access to new ideas, technologies, databases, and research partnerships.

So, in conclusion, I offer four suggestions:

Government planning to ensure continued and enduring access to the Arctic Ocean needs to begin now, given the long lead time before delivery.

Two, when the Government procures new icebreakers, it should consider the broad mission sets and requirements of all applicable Federal departments and agencies, and when feasible, incorporate them into vessel designs in order to advance the full range of our Nation's Arctic interests.

Three, specifically, multibeam sonar systems should be standard hydrographic equipment installed on all U.S. icebreakers, because the charts that they create reveal the depth and shape of the sea floor and provide information critical to safe navigation, economic development, weather prediction, coastal hazard assessment, coastal change analysis, fisheries habitat, and resource development.

And, finally, continue to support research enabled by the Coast Guard in order to reap the international benefits of soft-power diplomacy.

Mr. Chairman and Ranking Member Gibbs, thank you for the opportunity to speak with you today, and I do look forward to your questions.

Thank you.

[Mr. Sfraga's prepared statement follows:]

Prepared Statement of Hon. Michael Sfraga, Ph.D., Chair, U.S. Arctic Research Commission

Chairman Carbajal, Ranking Member Gibbs, and distinguished members of the Committee, thank you for convening this hearing on the United States Coast Guard's (USGC) leadership on Arctic safety, security, and environmental responsibility. I am Dr. Mike Sfraga and I am honored to appear before you today as the presidentially appointed Chair of the United States Arctic Research Commission (USARC) to discuss these urgent set of issues.

THE US ARCTIC RESEARCH COMMISSION

The USARC is an independent federal agency established by the Arctic Research Policy Act of 1984 as amended.

Our agency's mission is to advance Arctic research on behalf of and to the benefit of the U.S.

There are eight commissioners, seven of whom are directly appointed by the President. The eighth is the Director of the National Science Foundation (NSF) who serves as a non-voting *ex officio* member.

The current members of the Commission are:

- Dr. Mike Sfraga, Chair; filling an academic/research seat, the founding director of the Wilson Center's Polar Institute, former director, Global Risk and Resilience Program, Wilson Center, and currently serving as chair and distinguished fellow, Polar Institute, Wilson Center.
- Dr. Nikoosh Carlo; filling an academic/research seat, the founder and chief strategist at CNC North Consulting.
- Elizabeth Qaulluq Cravalho; filling an industry seat, the vice president of lands for NANA Regional Corporation, an Alaska Native Corporation.
- David Kennedy; filling an academic/research seat, the current Global Fellow at the Wilson Center's Polar Institute, Board Member of the World Maritime University, and Chairman of the External Advisory Board of the School of Marine Science and Ocean Engineering at the University of New Hampshire.
- Dr. Mark Myers; filling an industry seat, the principal of Myenergies.
- Dr. Jacqueline Richter-Menge; filling an academic/research seat, a research affiliate with the University of Alaska Fairbanks, 34 years of experience with the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory.
- Deborah Vo; filling the Indigenous seat, Program Officer with the Rasmuson Foundation.
- Dr. Sethuraman Panchanathan; Director, NSF.

The Commission releases a biennial report to the White House and to Congress on Arctic research goals and objectives to advise the president, Congress, guide the Interagency Arctic Research Policy Committee (IARPC) five-year plan, and to inform overall U.S. Arctic research efforts. The Commission also assists IARPC in establishing a national Arctic research program plan every five years to implement Arctic research policy.

In addition to the above tasks, the Commission's duties, assigned by law, include:

- Facilitating cooperation between the Federal Government and State and local governments with respect to Arctic research;
- Reviewing Federal research programs in the Arctic and recommending improvements in coordination among programs;
- Recommending methods to improve logistical planning and support for Arctic research;
- Recommending methods for improving efficient sharing and dissemination of data and information on the Arctic among interested public and private institutions;
- Offering other recommendations and advice to the IARPC as it may find appropriate;
- Cooperating with the Governor of the State of Alaska and with agencies and organizations of that State which the Governor may designate with respect to the formulation of Arctic research policy; and
- Recommending to the IARPC the means for developing international scientific cooperation in the Arctic.

The USARC is a statutory member of the North Pacific Research Board and the North Slope Science Initiative. The USARC is also a member, participant, liaison, or observer on the IARPC, the Interagency Coordinating Committee on Oil Pollution Research, the National Ocean Council, the Extended Continental Shelf Task Force, the Study of Environmental Arctic Change (SEARCH), the Civil Applications Committee, the Scientific Ice Expeditions Interagency Committee (Navy submarines), the Arctic Icebreaker Coordinating Committee of the University National Oceanographic Laboratory System, the Alaska Ocean Observing System, the Department of State's Arctic Policy Group, the Arctic Research Consortium of the United States, the International Permafrost Association, and the Ted Stevens Center for Arctic Security Studies.

US COAST GUARD'S STATUTORY ARCTIC RESPONSIBILITIES INCLUDE RESEARCH

The USCG has several statutory responsibilities in the Arctic that are pertinent to USARC's mission, which is to advance Arctic research in support of national Arctic policy and strategy.

I start with the Coast Guard's research-focused Arctic statutory *duties*.

Of the seven primary duties assigned to the Coast Guard in 14 USC 102[1], three are relevant to today's discussion.

- Section 102(4) directs the Coast Guard to develop, establish, maintain, and operate, with due regard to the requirements of national defense, aids to maritime navigation, icebreaking facilities, and rescue facilities for the promotion of safety on, under, and over the high seas and waters subject to the jurisdiction of the United States;
- Section 102(5) directs the Coast Guard to, pursuant to international agreements, develop, establish, maintain, and operate icebreaking facilities on, under, and over waters other than the high seas and waters subject to the jurisdiction of the United States.
- Section 102(6) directs the Coast Guard to engage in oceanographic research of the high seas and in waters subject to the jurisdiction of the United States.

In addition to these duties, the Coast Guard was assigned 11 statutory *missions*[2] by the Homeland Security Act of 2002 (P. Law 107–296, November 25, 2002). Section 888(a)(1)(F) of that Act includes "ice operations" among the non-homeland security missions.

In light of these responsibilities, I note, as a simple observation, and as a curiosity, that while "oceanographic research" is the sixth statutorily defined "primary duty" of the Coast Guard, "oceanographic research" is not mentioned as a statutorily defined "mission."

I also note, from a historical perspective, that the USCG and its forerunner, the Revenue Cutter Service, led by Captain Michael A. Healy, supported the conduct of natural science and the gathering of environmental observations since soon after the 1867 purchase of Alaska from Russia. This federal activity has long been part of the proud history of the Coast Guard.

And more recently, such as on page 23 of its own 2013 "Arctic Strategy," the Coast Guard astutely recognized that "limited operational resources . . . underline the need for increasing collaboration in the region," and that "[t]he Coast Guard must also collaborate with academia and non-governmental partners to incentivize Arctic research . . ."

RESEARCH IMPLICATIONS OF FEDERAL POLICY ON COAST GUARD OPERATIONS

As mentioned above, federal policy has implications for the Coast Guard's operational support of Arctic scientific research.

The foundation for national Arctic policy is the National Security Presidential Directive-66/Homeland Security Presidential Directive-25 (NSPD66/HSPD25, "Arctic Region Policy,"[3] released in January 2009 by President Bush and subsequently reaffirmed by President Obama. A directive of this policy is to "[e]nhance scientific monitoring and research into local, regional, and global environmental issues."

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[1] 14 U.S.C. 102, Title 14—Coast Guard, Subtitle I—Establishment, Powers, Duties, and Administration, Chapter 1—Establishment and Duties

[2] 6 U.S.C. 468(a) Definitions, Title 6—Domestic Security; Chapter 1—Homeland Security Organization; Subchapter VIII—Coordination with Non-Federal Entities, Inspector General, United States Secret Service, Coast Guard, General Provisions; Part H—Miscellaneous Provisions

The USCG's "non-homeland security missions" include:
(A) Marine safety.
(B) Search and rescue.
(C) Aids to navigation.
(D) Living marine resources (fisheries law enforcement).
(E) Marine environmental protection.
(F) Ice operations.

The USCG's "homeland security missions" include:
(A) Ports, waterways and coastal security.
(B) Drug interdiction.
(C) Migrant interdiction.
(D) Defense readiness.
(E) Other law enforcement.

[3] NSPD66/HSPD25, https://irp.fas.org/offdocs/nspd/nspd-66.htm

Building upon that policy, the White House recently released an updated NSAR, and the White House Arctic Executive Steering Committee[4] and National Security Council are currently developing an implementation plan for the NSAR that is scheduled for release in 2023.

To fulfill the nation's vision for the Arctic, and to address the strategic pillars of the NSAR, the United States must have the critical infrastructure provided by science-capable polar icebreakers.

Broadly speaking, the role of icebreakers and the relevance of research can be connected to all four pillars, which are:

- Pillar 1—Security: Develop Capabilities for Expanded Arctic Activity
- Pillar 2—Climate Change and Environmental Protection: Build Resilience and Advance Adaptation, while Mitigating Emissions
- Pillar 3—Sustainable Economic Development: Improve Livelihoods and Expand Economic Opportunity
- Pillar 4—International Cooperation and Governance: Sustain Arctic Institutions and Uphold International Law

Progress on many of the "strategic objectives," beneath each pillar, requires icebreakers and scientific research.

For example:

- *Strategic Objective 1.1 Improve Our Understanding of the Arctic Operating Environment*. This requires scientific research to improve Arctic observing, mapping and charting; weather, water, and sea ice forecasting; and subseasonal and seasonal predictions.
- *Strategic Objective 2.3: Expand Research to Better Understand Climate Change and Inform Policy Decisions*. Of all the strategic objectives in NSAR, this is most directly related and important to Arctic scientific research, and to the need for icebreaker access to the high Arctic.

The NSAR also emphasizes two *guiding principles* relevant to today's discussion. They are:

- *Plan for Long-Lead Time Investments*, which mentions procuring additional icebreakers and investing in scientific research.
- *Commit to a Whole-of-Government, Evidence-Based Approach*, which emphasizes that responsibilities in the Arctic region extend beyond any single government agency, and that "U.S. Federal departments and agencies will work together, through coordinating bodies like the Arctic Executive Steering Committee and the National Security Council, to provide the resources, support, and expertise required to implement this strategy."

Clearly, vessels that are anticipated to cost over $600M to build are significant national investments, requiring long lead-times for planning, construction, and outfitting. The USCG currently has intentions of constructing and operating up to six icebreakers.

Separately, the National Science Foundation is currently developing the design for a Polar Class 3 icebreaker, a new Antarctic Research Vessel[5], which, if fully funded, is expected to be delivered by mid-2031. Should this vessel come to fruition, NSF intends to operate it exclusively in the Southern Hemisphere as a science-dedicated vessel.

Consistent with the NSAR guiding principles of (a) "plan for long-lead time investments", and (b) "commit to a whole-of-government, evidence-based approach," White House leadership, coordination, and guidance of all departments and agencies requiring icebreaker capabilities will be instrumental in ensuring the continued judicious and fiscally responsible use of taxpayer funds.

US Coast Guard's support for polar scientific research

The US Coast Guard is a critically essential and successful partner in advancing scientific understanding of the polar regions for two reasons.

First, the Coast Guard itself supports a broad range of Arctic-relevant basic and applied research, development, testing, and evaluation at the USCG Research and Development Center, the US National Ice Center, the International Ice Patrol, and through partnerships, such as with the Department of Homeland Security's Arctic Domain Awareness Center.[6]

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[4] Arctic Executive Steering Committee, https://www.whitehouse.gov/ostp/ostps-teams/climate-and-environment/arctic-executive-steering-committee-aesc/

[5] https://www.nsf.gov/news/news__summ.jsp?cntn__id=305919&org=OPP

[6] Arctic Domain Awareness Center, https://arcticdomainawarenesscenter.org

Second, USCG's icebreakers provide direct scientific access to the Arctic. Much of the time that Coast Guard icebreakers are at sea, they are supporting scientific research missions by providing physical access with ships that have scientific and technical capabilities, much of which is funded by other federal agencies.

For example, according to the USCG's annual cruise reports, over 90 percent of the time that USCG Cutter HEALY (WAGB–20) operated at sea over the past 20 plus years, including transit time, it did so in support of scientific research.

The Coast Guard's icebreakers are the only vessels owned and operated by the United States government that enable US scientists and their international collaborators to access and investigate regions at both poles that are infested with multi-year ice. The icebreakers are, in short, essential research infrastructure.

The access provided by icebreakers enables scientists, funded by a wide range of government agencies, to study, understand, and explain how the polar regions serve as "Earth's refrigerators," and how these regions are warming and changing rapidly. For example, scientists now report that Arctic air temperatures are warming four times faster than the global average [7], and Arctic waters are acidifying at three to four times of non-Arctic waters.[8]

These changes, and their implications on weather, marine ecosystems, food supplies, transportation, tourism, and resource development are critically important to understand as the US advances its priorities noted in the NSAR and NSS. Knowledge and insights gained from basic and applied research: (a) informs responsible stewardship of the Arctic region, the ancestral home of Indigenous Peoples; and (b) advances our understanding of the opportunities to wisely develop America's Arctic renewable resources, such as fish, and timber, and non-renewable resources, such as oil, gas, and minerals.

Most of this research has been sponsored (i.e., financially supported) by a wide range of federal partners and stakeholders, such as the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the Office of Naval Research (ONR), the National Aeronautics and Space Administration (NASA), Department of Interior entities, such as the Bureau of Ocean Energy Management (BOEM), the Bureau of Safety and Environmental Enforcement (BSEE), and the U.S. Geological Survey (USGS), and the Department of State, among others.

These agencies have reimbursed Coast Guard many millions of dollars for "ship time" on icebreakers for the scientists, engineers, researchers, and investigators that these federal partners support.

Here are a few scientific highlights of Arctic research conducted aboard HEALY:

- Over many oceanographic expeditions, NOAA, USGS, and State Department supported the seafloor and sub-seafloor mapping of the US's Extended Continental Shelf (ECS) in the Arctic region, consistent with international law. This has been a critically important process in determining US sovereign rights on and beneath this seabed, beyond the US's 200-mile Exclusive Economic Zone. Based on the scientific results, the size of the US's entire ECS is about two times the size of California, and half of that area surrounds Alaska.
- HEALY recently returned from an extended and highly successful expedition, partially funded by the NSF, that reached the North Pole. Academic scientists collected data as part of an internationally coordinated, multi-ship sampling campaign during 2020–2022, named "Synoptic Arctic Survey," to study pan-Arctic ocean circulation, biogeochemical cycles and marine ecosystems. Notably, this research cannot be conducted from remote sensing platforms, or from electronic moored or autonomous devices. Physical presence, provided by icebreakers, is required. This research can also be considered an early US contribution toward our treaty obligation to help establish a "Joint Program of Scientific Research and Monitoring" by June 2023 as per the international Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean.
- NOAA has been the primary sponsor of multiple HEALY expeditions in support of US participation in an international initiative referred to as the "Distributed Biological Observatory," which consists of a series of eight sampling locations, spanning from the Bering Sea to the Beaufort Sea, offshore Alaska. These sites serve as a "change detection array" where scientists can observe variations in physical and oceanographic conditions, such as biodiversity, productivity and food webs, which impact Alaska's fisheries. According to a report from the Alaska Seafood Marketing Institute, Alaska produces more seafood than all other U.S. states combined and provides two-thirds of the nation's wild-caught fish and shellfish. Alaska seafood is sold in 100 countries and is the State's top export, in excess of $3 billion, annually. Food web changes also impact walruses,

[7] https://www.nature.com/articles/s43247-022-00498-3#Sec6
[8] https://www.science.org/doi/epdf/10.1126/science.abo0383

seals, and ducks, which, in turn, are harvested by US citizens living in small, vulnerable Indigenous communities in Alaska's coastal areas. As a result, icebreakers are essential to understand food web changes which are linked to food security issues.

- The Office of Naval Research has funded both basic and applied Arctic research conducted aboard HEALY that directly support US Navy operations, and concurrently addresses USCG missions associated with homeland and national security and domain awareness. Examples include the "Stratified Ocean Dynamics of the Arctic Ocean" (SODA) initiative, and an "Innovative Naval Prototype program aimed at engineering a networked Arctic Mobile Observing System (AMOS). These research programs require access to the ice-covered central Arctic, some of which contain "multi-year" (thick and old) accessible only with "medium" and "heavy" icebreakers.
- One of the important steps in addressing the NSAR strategic objective of mitigating greenhouse gas emissions in the Arctic is to observe and understand the natural exchanges of carbon dioxide between the Arctic Ocean and overlying atmosphere that is associated with physical processes and the marine ecosystem. While gas exchange can be monitored remotely, and on broad scales, by satellites, detailed *in situ* measurements, aboard oceanographic vessels, fill a critical gap in observations and improve efforts to quantify ocean uptake of carbon dioxide, and hence our ability to model and predict future climate scenarios. To that end, NSF has funded research programs to equip HEALY and use the vessel as a "ship of opportunity," on a not-to-interfere basis, to make such measurements and contribute them to global databases.[9] Additional measurements, of other needed atmospheric and surface ocean observations (long and short wave radiation, air temperature, wind speed, humidity, sea surface temperature, etc.) could also be collected, and would also help inform domain awareness and the global forecast system.

CURRENT AND FUTURE CHALLENGES AND OPPORTUNITIES

Increasing demand for HEALY

The demand for HEALY to conduct missions prioritized by the Department of Homeland Security (DHS) has increased significantly over the last few years, thereby reducing HEALY's availability for scientific research missions, which are also increasing.

Greater demand for the vessel, and prioritization of DHS missions, has had an outsized impact on Arctic research because HEALY is the only asset in the US fleet capable of providing access to the high Arctic Ocean. The rebalancing of HEALY's mission profile toward security and international search and rescue efforts provide few options to US researchers other than to rely on foreign icebreakers for support, which will impact both the amount and the nature of science that US investigators can achieve. In addition, federal science agencies remain responsible for ongoing operational costs for the scientific and technical equipment and capabilities they have installed on HEALY, even when such capabilities are not being used.

HEALY replacement

Commissioned in 1999, USCGC HEALY is now 23 years old, and has a designed service life of 30 years, with an anticipated five-year Service Life Extension Project beginning in FY 2026. A replacement will be needed for the HEALY by about 2034, suggesting that construction of the new vessel will need to begin no later than 2031, which is the same year that NSF anticipates delivery of the Antarctic Research Vessel.

In short planning for the HEALY replacement, to operate in the Arctic Ocean, must start in the next couple of years, if not now.

This situation raises many questions, such as:

- How will the US government provide that icebreaker, which is essential to meet our obligations and needs in the North?
- Will the USCG provide one of its three "medium" icebreakers, referred to as an "Arctic Security Cutter"—consistent with the Coast Guard's "High Latitude Mission Analysis Report recommending three "medium" and three "heavy" vessels, as part of USCG's "Polar Security Cutter" Program? [10]

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[9] https://www.socat.info

[10] Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress, https://s3.documentcloud.org/documents/22275439/coast-guard-polar-security-cutter-polar-icebreaker-program-background-and-issues-for-congress-aug-30-2022.pdf

- If so, will that vessel be designed and constructed in a manner that reflects the requirements of multiple missions, including scientific research?
- How will the requirements for those various missions, from other agencies, be identified, coordinated with the USCG, and incorporated into the overall design requirements?
- What government entities will be provided with the responsibilities and necessary budgets to identify, procure, install, operate and maintain the scientific and technical capabilities and equipment of the vessel, such as with multibeam sonar systems?
- Will there be White House leadership and coordination, including of budgets (e.g., from Office of Management and Budget (OMB), National Security Council (NSC), and Office of Science and Technology Policy (OSTP)) to ensure a whole-of-government approach to this process?

Other U.S. government vessels that operate in ice-infested waters

R/V Sikuliaq

The *R/V Sikuliaq*, owned by the NSF and operated by the College of Fisheries and Ocean Sciences at the University of Alaska Fairbanks, with support from the NSF, provides excellent scientific access to waters covered with thin ice, up to 2.5 feet thick. This vessel, commissioned in 2015, is outfitted with a wide range of modern science capabilities and has proven most successful in addressing key research questions. The Sikuliaq, however, is not an icebreaker, and is not capable of accessing large regions of the Arctic, where thicker ice is encountered.

Antarctic research vessel

Last year, the NSF announced[11] funding for the design of an Antarctic Research Vessel (ARV)[12], which would essentially serve as a replacement for the *R/V Nathanial B. Palmer* and possibly also the *R/V Laurence M. Gould* that NSF charters from Edison Chouest Offshore, Inc.

The ARV will be designed as a modern, world-class, ice-breaking research vessel outfitted with first-rate scientific equipment and enhanced capabilities. If the project is approved by NSF for construction and fully funded by Congress, the ARV is expected to be delivered to the NSF by mid-2031, only three years before HEALY is anticipated to be decommissioned.

Notably, the NSF would operate the ARV exclusively in the Southern Hemisphere, in support of Antarctic research. To my knowledge, the NSF has no current plans for a similar icebreaking research vessel for the Arctic region, and I also don't know whether the NSF is in discussion with the US Coast Guard regarding the opportunities to outfit Coast Guard vessels, beyond HEALY (i.e., the "commercially available polar icebreaker" USCG has requested in its FY23 budget request, or any of the three heavy icebreakers considered in the Polar Security Cutter program), with scientific research tools and capabilities to advance scientific research objectives in the Arctic region. Regardless, my overarching recommendation is that, consistent with the NSAR's guiding principle of a "whole-of-government" approach, any icebreaker owned and operated by the US government should consider mission requirements of the broader interagency user community, not just one department or agency.

Autonomous platforms

While ship-based observing will remain a critical pillar of Arctic research, the use of autonomous platforms will continue to expand, providing access to remote regions and to spatial and temporal scales that have previously been impractical or impossible to sample. Research-capable icebreakers could support new networks of autonomous instruments—both to deploy and recover instruments and to service critical supporting infrastructure, such as acoustic beacons that will provide 'underwater GPS' for accurately geolocating assets operating under sea ice.

SOFT POWER DIPLOMACY

Finally, I would also like to highlight the soft power diplomacy advanced by Arctic scientific research that is often associated with international scientific parties aboard icebreakers both domestic and foreign.

Over many decades, USCG icebreakers (HEALY, POLAR STAR and POLAR SEA) provided platforms for international science collaboration that allowed key interactions by scientists to move forward even when political differences of various

[11] https://future.usap.gov/new-antarctic-vessel-approved/
[12] https://www.nsf.gov/news/news_summ.jsp?cntn_id=305919&org=OPP

countries strained relations in other areas. Ongoing climate change issues warrant continued and expanded international research programs and USCG icebreakers are essential assets for such activities.

Let me provide some specifics. In the recently released "State of Arctic Science," [13] the International Arctic Science Committee refers to the Distributed Biological Observatory and the Synoptic Arctic Survey research programs, of which, as mentioned above, US leadership has been a central element. These programs require icebreaker access to the high North. The UN Decade for Ocean Science and Sustainable Development will have a focus on the Arctic Ocean.

By addressing common problems and data sharing where appropriate, the US builds constructive relationships with, Canada, Iceland, the Kingdom of Denmark (Greenland and the Faroe Islands), our Nordic partners, and scientists and research organizations in non-Arctic nations in Europe and Asia. The US benefits through access to new ideas, technologies, and data bases, research partnerships, and it encourages, supports, and reinforces the international rules-based order. Enabling joint international research, international search and rescue operations, ensuring interoperability with vessels and crews from other nations, and working closely with other Arctic and non-Arctic nations in areas such as the North Atlantic and Barents Sea, also serves to reinforce the transatlantic alliance at a time of geopolitical uncertainty; specifically, as this uncertainty ripples globally to include the Arctic.

And looking even longer term, Russia's presence in the Arctic cannot be ignored. Because of Russia's war on Ukraine, relations with Russia are the worst they have been since the Cold War. We do not know when the war will end, or when relations with Russia will begin to rebalance. But at some point in the future, scientific research in the Arctic region could be one step forward in rebuilding a more comprehensive understanding of the region and perhaps serve as a foundational effort to rebuild relations between Russia and the West.[14]

SUMMARY OF RECOMMENDATIONS

On behalf of the U.S. Arctic Research Commission, I recommend:

1. Federal agencies should continue to, where feasible, ensure that icebreakers procured by the United States, consider the broad mission sets of several agencies.
2. Multibeam sonar systems on icebreakers that reveal the depth and shape of the seafloor can provide information critical to safe navigation, economic development, weather prediction, coastal hazard assessment, coastal change analysis, habitat studies, and resource development, among many other activities. It is a requirement before declaring any potential marine protected areas, or the United States' extended continental shelf. As called out on page 4 of the US Arctic Research Commission's last "Goals report," Arctic marine charts are suboptimal in that only 4.1 percent of the US maritime Arctic is charted to modern international standards.[15]

Mr. Chairman and Ranking Member Gibbs, thank you again for the opportunity to testify before you and this Subcommittee on the United States Coast Guard's leadership in the Arctic. As I have stated, the US Coast Guard is a critically essential and successful partner in advancing scientific understanding of the polar regions and advancing our nation's interests in the region. It must continue to be so even with increasing and competing demands for icebreaker missions. I am confident the recommendations offered in this testimony will help achieve that.

Mr. CARBAJAL. Thank you, Dr. Sfraga.

Next, Mr. Von Ah, you may proceed.

Mr. VON AH. Chairman Carbajal, Ranking Member Gibbs, and members of the subcommittee, thank you for the opportunity to discuss our work on Federal efforts to address gaps in maritime infrastructure in the Arctic.

Climate change has led to record-low levels of sea ice, making Arctic waters navigable for longer periods of time, leading to increased shipping activity. Data show more transits of the Bering Strait in 2021 than ever before.

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[13] https://iasc.info/about/publications-documents/state-of-arctic-science

[14] https://www.tandfonline.com/doi/full/10.1080/2154896X.2022.2137091

[15] https://www.arctic.gov/uploads/assets/usarc__goals__2019-2020__low.pdf

Increased shipping of natural resources extracted from the Arctic, growing demand for tourism and destination cargoes, and greater interest in trans-Arctic routes that can reduce travel times may continue to drive activity in the region.

These potential economic opportunities also bring safety and environmental risks, particularly given that the U.S. Arctic does not have the typical elements of a Marine Transportation System, such as a deep-draft port, comprehensive charting of waterways, and robust communications infrastructure.

These gaps in infrastructure exacerbate the inherent challenges of maritime activity in the Arctic—vast distances, dangerous weather, and unpredictable ice conditions—which pose risks to mariners as well as the fragile Arctic ecosystem.

My statement today is based on reports we issued in 2020 and 2016 which had findings and recommendations related to addressing these gaps.

In our 2020 report, we found that Federal efforts in the Arctic lacked a current strategy with goals and measures, as well as interagency leadership. We therefore recommended that the Executive Office of the President develop and publish a strategy to address gaps in Arctic maritime infrastructure and designate an interagency mechanism responsible for leading Federal efforts, given that several Federal agencies have key roles and responsibilities in the Arctic.

In response to the recommendations, the White House reactivated the Arctic Executive Steering Committee as the mechanism to advance U.S. interests and coordinate Federal actions in the Arctic. In doing so, it appointed an executive director and convened its first meeting in December 2021.

Since then, the steering committee has met several times and has developed and approved eight interagency initiatives. One of the eight initiatives, to advance safe and secure Arctic shipping, is led by the Coast Guard.

In addition, in October 2022, the White House issued a National Strategy for the Arctic Region, which identifies needed improvements to maritime capabilities in the Arctic, including enhanced communications, mapping, charting, and navigational capabilities, as well as the need for a deep-draft harbor in Nome, Alaska, and additional icebreaking capabilities.

While the strategy establishes a vision for Arctic capabilities, it does not provide details on steps needed to achieve that vision or establish goals or measures for addressing gaps in Arctic maritime infrastructure, as we had recommended.

For example, although the strategy calls for investments in telecommunications infrastructure and the development of ports, it does not specify how agencies should prioritize these investments, nor does it identify measures to assess progress.

In November, the executive director told us that the process of developing an implementation plan for the strategy was underway. Encouragingly, he noted that for each major action of the strategy, the implementation plan should identify lead and supporting agencies, and the plan should also identify investment priorities and resources to implement the actions and a way to measure progress.

By completing this plan and establishing goals and metrics, the Federal Government should have the tools to demonstrate the results of its efforts and decisionmakers could gauge progress in addressing these gaps.

Our report in 2016 found that, although the Coast Guard was taking some actions to implement its Arctic strategy, it did not have a systematic way to assess how its actions will help mitigate Arctic capability gaps. We therefore recommended that the Coast Guard, as it develops an implementation plan for its strategy, also develop measures for assessing its progress.

As of December 2022, the Coast Guard is continuing to update its implementation plan. The plan is expected to provide the foundation for assessing its efforts, although Coast Guard officials have not identified a timeline to complete the plan.

Better understanding its progress and addressing capability gaps will be important given the Coast Guard's recent and planned investments in icebreaking capabilities. The Coast Guard plans to invest an estimated $13.3 billion to acquire, operate, and maintain three heavy polar icebreakers. And by tracking its progress in addressing its icebreaking and other capability gaps, the Coast Guard will be better positioned to understand how to support these assets and what level of infrastructure and support investments are ultimately needed.

Moreover, the Coast Guard has an important opportunity to coordinate the completion of its plan with the recently released National Strategy. The Coast Guard's multimission role and its presence in the region gives it a central role to many Federal efforts. Taking such action will position the Coast Guard to understand how to allocate its resources and prioritize activities to help achieve the national goals in the Arctic region.

Mr. Chairman, this concludes my statement. I would be happy to answer any questions you may have.

Thank you.

[Mr. Von Ah's prepared statement follows:]

Prepared Statement of Andrew Von Ah, Director, Physical Infrastructure, U.S. Government Accountability Office

Chairman Carbajal, Ranking Member Gibbs, and Members of the Subcommittee:

I am pleased to be here today to discuss our work on Arctic maritime infrastructure. As we have previously reported, climate change has led to widespread effects, including warming in the Arctic that has exceeded the warming in the rest of the world. Since 1900, the Arctic region has warmed by about 3.6 degrees Fahrenheit—double the rate of the global temperature increase—leading to a significant decline in sea ice cover over the last four decades.[1] Record low levels of sea ice have made Arctic waters navigable for longer periods of time and have increased opportunities for shipping in the region. This change presents potential economic opportunities as well as safety and environmental risks, particularly given the lack of maritime infrastructure in the region. In particular, the U.S. Arctic does not have the typical elements of a marine transportation system, such as a deep-draft port,[2] comprehen-

[1] *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (Washington, D.C.: U.S. Global Change Research Program, 2018).

[2] The U.S. Army Corps of Engineers defined a deep-draft port as one that can accommodate large vessels such as big cargo ships with a water depth greater than 35 feet. See U.S. Army Corps of Engineers, *Alaska Deep-Draft Arctic Port System Study* (March 2013). The closest deep-draft port is Dutch Harbor in the southern Bering Sea and is over 800 miles from the Bering Strait.

sive waterways charting, and robust communications infrastructure. These gaps in infrastructure exacerbate the inherent challenges of maritime activity in the Arctic—vast distances, dangerous weather, and unpredictable ice conditions—that pose risks to mariners as well as to the fragile Arctic ecosystem.

Within the United States, there are a number of stakeholders involved in maritime infrastructure in the Arctic, and they include several federal agencies, such as the Coast Guard, the National Oceanic and Atmospheric Administration, and the U.S. Army Corps of Engineers. The Coast Guard is a multi-mission, maritime military service that is responsible for maritime safety and security, environmental protection, and national security, among other responsibilities. Given the growing expanse of navigable waters and human activities, the Coast Guard faces expanding responsibilities for implementing and enforcing maritime policy in the region.

We have previously made five recommendations to strategically plan and assess progress in federal efforts to address gaps in Arctic maritime capabilities and infrastructure. As described in greater detail in this statement, we are pleased to report that the U.S. Committee on the Marine Transportation System (CMTS) and the Executive Office of the President have addressed two of the three recommendations in our April 2020 report.[3] Specifically, the CMTS—a federal interagency coordinating committee focused on the maritime transportation system—has addressed our recommendation to assess the risks posed by gaps in U.S. Arctic maritime infrastructure. In addition, the Executive Office of the President has addressed our recommendation to designate a group responsible for leading and coordinating federal Arctic maritime efforts. The Executive Office of the President has partially addressed our other April 2020 recommendation to develop a strategy to address U.S. Arctic maritime infrastructure that identifies goals and objectives, performance measures to monitor agencies' progress. Meanwhile, the Coast Guard has not yet implemented our two June 2016 recommendations: (1) to develop measures for assessing how its actions have helped to mitigate Arctic capability gaps and (2) to design and implement a process to systematically assess its progress.[4]

My statement today will address:

1. trends in maritime shipping in the U.S. Arctic since 2009,
2. the extent to which federal actions to address maritime infrastructure have been informed by risk, and
3. government-wide and Coast Guard strategies to address maritime infrastructure and assess outcomes.

This statement is based primarily on our April 2020 report on U.S. Arctic maritime infrastructure gaps and June 2016 report on the Coast Guard's Arctic capabilities.[5] For the reports cited in this statement, among other methodologies, we reviewed Arctic strategies, interviewed selected agencies involved with maritime infrastructure and capabilities, and compared efforts to leading practices. Since the issuance of these reports, we received and reviewed information from the White House and the Coast Guard on the actions taken in response to our recommendations. In addition to our prior work, for this statement we spoke to the Executive Director of the Arctic Executive Steering Committee (AESC) and collected updated Arctic shipping data from the Coast Guard. Based on our review of these data for anomalies, outliers, or missing information and our previous assessment of such data for our April 2020 report, we determined that these data were sufficiently reliable for our purposes of describing Arctic shipping trends since 2009.

More detailed information on our scope and methodology can be found in the reports cited in this statement. We conducted the work on which this statement is based in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based

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[3] GAO, *Maritime Infrastructure: A Strategic Approach and Interagency Leadership Could Improve Federal Efforts in the U.S. Arctic*, GAO–20–460 (Washington, D.C.: Apr. 29, 2020).

[4] GAO, *Coast Guard: Arctic Strategy Is Underway, but Agency Could Better Assess How Its Actions Mitigate Known Arctic Capability Gaps*, GAO–16–453 (Washington, D.C.: June 15, 2016). In addition, GAO has issued several other reports on federal priorities in the Arctic. See GAO, *Arctic Capabilities: Coast Guard is Taking Steps to Address Key Challenges, but Additional Work Remains*, GAO–20–374T (Washington, D.C.: Feb. 5, 2020); GAO, *Coast Guard Acquisitions: Polar Icebreaker Program Needs to Address Risks before Committing Resources*, GAO, GAO–18–600 (Washington, D.C.: Sept. 4, 2018); and GAO, *Arctic Planning: Navy Report to Congress Aligns with Current Assessments of Arctic Threat Levels and Capabilities Required to Execute DOD's Strategy*, GAO–19–42 (Washington, D.C.: Nov. 8, 2018).

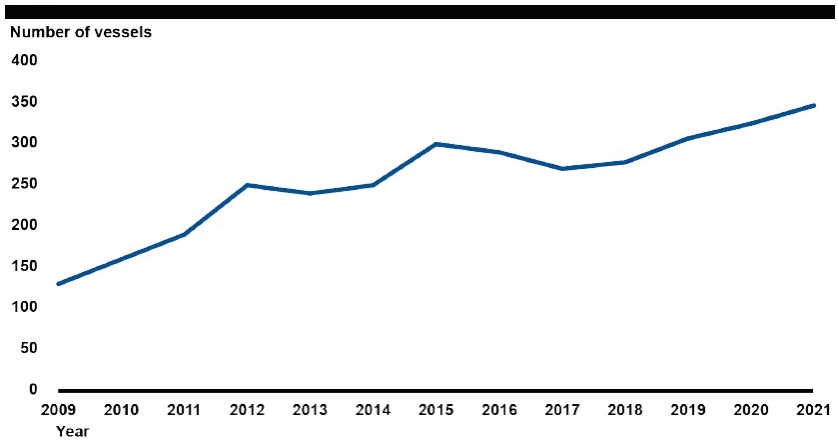
[5] The term "Arctic" refers to the entire region north of the Arctic Circle. We define the "U.S. Arctic" as bounded by a line at 60 degrees north that crosses the Bering Sea. This definition was set by the International Maritime Organization, the United Nations agency responsible for the safety and security of shipping.

on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

MARITIME SHIPPING IN THE U.S. ARCTIC HAS INCREASED FROM 2009 THROUGH 2021 DESPITE CHALLENGING SAFETY CONDITIONS

Coast Guard data indicate that both the number of vessels in the U.S. Arctic and the number of transits through the Bering Strait increased from 2009 through 2021. Specifically, the number of vessels in the U.S. Arctic more than doubled from 130 in 2009 to 347 in 2021 (see fig. 1). Given that a single vessel can make multiple trips per shipping season, the Coast Guard also measures maritime activity by the number of transits that vessels make per year through the Bering Strait, a key convergence point for trans-Arctic routes to the Pacific Ocean. According to that data, the number of transits through the Bering Strait increased from 280 in 2009 to 545 in 2021. The Coast Guard attributed increased cargo traffic levels in 2016 to the construction of a liquefied natural gas facility on the Yamal peninsula and, in subsequent years, identified Russian shipments from the facility as a driver of Bering Strait vessel traffic.

Figure 1: Number of Vessels in the Coast Guard Arctic Area of Interest, 2009–2021



Source: GAO analysis of Coast Guard data. GAO–23–106411

Note: The Coast Guard District 17 Arctic area of interest extends north of the Bering Strait to the North Pole, east to Banks Island in the Canadian Arctic, and west to the New Siberian Islands in Russia.

Although warming over the past decades has made trans-Arctic maritime routes more accessible, Arctic sea ice extent remains seasonal, with most shipping occurring during a narrow window extending from summer to early fall. Arctic sea ice typically reaches its maximum extent in March and its minimum in September each year; as a result, the shipping season is typically from June through October. As shown in figure 2, the extent of sea ice in September 2019 had a much smaller coverage area than the median September extent from 1981 to 2010. Meanwhile, the contraction of sea ice over time has increased accessibility to the Northwest Passage through the Canadian archipelago and the Northern Sea Route along the northern border of Russia. These two trans-Arctic maritime routes enable shipments between non-Arctic destinations, such as between Asia and Europe.[6] However, most traffic in the U.S. Arctic is destinational, meaning it transports goods to and from the U.S. Arctic. Such traffic includes shipping supplies to U.S. Arctic communities, as well as transporting natural resources extracted from the U.S. Arctic to the global marketplace.

[6] Coast Guard officials note that because of more ice and much shallower draft restrictions, the Northwest Passage contains far less marine traffic than the Northern Sea Route.

Figure 2: Trans-Arctic Maritime Routes and Arctic Sea Ice Extents from March and September 2019 Compared with the September Median, 1981 to 2010

Sources: GAO analysis of National Snow and Ice Data Center; Office of Naval Intelligence; Map Resources.
GAO–23–106411

Although diminished sea ice has prolonged the shipping season and opened up shipping routes, environmental changes have also resulted in less predictable conditions, with more volatile weather and sea ice. In April 2020 we reported that stakeholders told us variation in ice conditions from year to year makes planning Arctic voyages difficult to do with reasonable accuracy.[7] The unpredictable and harsh weather and ice conditions—combined with the vast distances and lack of maritime infrastructure—pose safety risks that stretch the region's already limited search and rescue capabilities and slow incidence response, according to stakeholders.

Federal Agencies' Actions to Address Arctic Infrastructure Gaps Have Not Been Informed by a Government-wide Assessment of Risks

We have previously identified gaps in maritime infrastructure that can exacerbate inherent challenges to shipping in the Arctic.[8] For example, since all of the Coast Guard's permanent assets are based well below the Arctic Circle, the agency is constrained by the time for surface vessels and aircraft to travel the vast distances to support operations above the Arctic Circle.[9] See table 1 for examples of maritime infrastructure gaps in the U.S. Arctic identified by the U.S. Committee on the Marine Transportation System (CMTS) and other federal agencies as we reported in April 2020.[10]

[7] GAO–20–460.
[8] GAO–20–460.
[9] GAO–16–453.
[10] CMTS is a federal interagency coordinating committee focused on the maritime transportation system.

Table 1: Examples of Maritime Infrastructure Gaps in the U.S. Arctic as GAO Reported in April 2020

Infrastructure Category	Examples	Status in the U.S. Arctic
Environmental information.	Charting and mapping	GAO reported in April 2020 that less than 5 percent of the U.S. maritime Arctic had been comprehensively surveyed to modern standards for nautical chart updates, according to the National Oceanic and Atmospheric Administration (NOAA).
	Weather and sea ice forecasting.	NOAA's National Weather Service and the U.S. National Ice Center—a partnership among NOAA, the U.S. Navy, and the Coast Guard—produce sea ice and weather forecasts. NOAA has previously noted that observations that are needed for timely forecasts, such as for wind and clouds, are very limited in the Arctic.
Response services	Search and rescue	There is limited infrastructure to support aviation-based search and rescue operations. The nearest Coast Guard air station to Utqiagvik, on Alaska's northern coast, is about 945 miles away in Kodiak.
	Oil spill response	NOAA, Coast Guard, Interior, and the State of Alaska have roles in this area. Their ability to respond to oil spills is affected by the communications limitations in the region and the vast distances over which responders and their equipment must travel.
	Icebreakers	The Coast Guard's medium polar icebreaker *Healy* was commissioned in 2000 and is the primary polar icebreaker used in the U.S. Arctic. The only Coast Guard heavy polar icebreaker, the *Polar Star*, was commissioned in 1976 and is typically used in Antarctica to support McMurdo station.
Operating environment and Navigation.	Communications	Communications, which are sufficient to support voice and data needs in the Bering Sea but limited at higher latitudes, are necessary for vessels to receive weather and sea ice information or request emergency services.
	Deep-draft port	The closest deep-draft port is Dutch Harbor in the southern Bering Sea and is over 800 miles from the Bering Strait.
	Harbors of refuge	A harbor of refuge is a port, inlet, or other body of water normally sheltered from heavy seas by land in which a vessel can safely moor during severe conditions or when it needs repairs. The U.S. Arctic lacks such a harbor designated by the International Maritime Organization (IMO).

Source: GAO analysis of federal agency information. GAO–23–106411

In 2020, we found that federal agencies had taken some actions to address gaps in U.S. Arctic infrastructure. For example, the Coast Guard reported that it had taken a flexible approach to addressing infrastructure gaps by establishing seasonal, forward operating bases in the U.S. Arctic as needed to provide search and rescue support in areas where major shipping activity is occurring. In addition, the National Oceanic and Atmospheric Administration reported in 2019 that it had acquired nearly 1,500 square nautical miles of Arctic hydrographic survey data over the past 3 years. This, however, is a small percentage of the over 200,000 square nautical miles significant to navigation in the U.S. Arctic.

We also found in 2020 that the agencies' actions were not based on a government-wide assessment of the economic, environmental, and safety risks posed by maritime infrastructure gaps to inform investment decisions in the U.S. Arctic. Rather, agency officials said that they based Arctic infrastructure decisions on their agency-specific missions, strategies, and collaborative efforts. Agency officials said that securing the resources to address U.S. Arctic infrastructure is challenging because such projects must compete with other established agency mission areas. For example, officials told us that infrastructure investments may not compete well against other agency-established priorities in other parts of the country, in part, because the Arctic is an emerging region and because of the considerable costs of developing infrastructure in the harsh Arctic environment.

We reported that without a government-wide assessment of the economic, environmental, and safety risks posed by maritime infrastructure gaps, agencies lack as-

surance that their investments are addressing the highest-priority risks.[11] Risk management is a widely endorsed strategy for helping policymakers decide about allocating finite resources and taking actions in conditions of uncertainty.[12] A government-wide risk assessment could better enable agencies to evaluate potential U.S. Arctic infrastructure expenditures and assess the extent to which these expenditures will mitigate identified risks.

We noted that the U.S. Committee on the Marine Transportation System (CMTS) was well suited to conduct such an assessment based on the committee's statutory role to coordinate the establishment of domestic transportation policies in the Arctic and its past work in this area. Therefore, we recommended that the CMTS complete a government-wide assessment of the economic, environmental, and safety risks posed by gaps in maritime infrastructure in the U.S. Arctic to inform investment priorities and decisions. In 2022, we confirmed that CMTS had taken several actions that, taken together, addressed the intent of this recommendation.[13] As a result, the federal agencies responsible for addressing gaps in U.S. Arctic maritime infrastructure will have more useful information to better inform their investment decisions.

Government-wide and Coast Guard Strategies Lack a Means to Measure Progress in Addressing Infrastructure

In April 2020, we found that government-wide interagency efforts to address U.S. Arctic maritime infrastructure lacked an up-to-date strategy and consistent interagency leadership to guide agency actions.[14] In particular, in our April 2020 report we recommended that the appropriate entities within the Executive Office of the President, including the Office of Science Technology and Policy (OSTP):

1. Develop and publish a strategy for addressing U.S. Arctic maritime infrastructure that identifies goals and objectives, performance measures to monitor agencies' progress over time, and the appropriate responses to address risks.
2. Designate the interagency group responsible for leading and coordinating federal efforts to address maritime infrastructure in the U.S. Arctic that includes all relevant stakeholders.[15]

As of December 2022, the Executive Office of the President has addressed our recommendation to designate a group responsible for leading and coordinating federal Arctic maritime efforts. It did so in September 2021 by announcing the White House would reactivate the Arctic Executive Steering Committee (AESC) as a mechanism to advance U.S. interests and coordinate federal actions in the Arctic, including maritime infrastructure.[16] In doing so, the White House appointed an executive director who convened the first meeting in December 2021. As of December 2022, according to the Executive Director of the AESC, the group has met several times and has developed and approved eight interagency initiatives. One of the eight initiatives—to advance safe and environmentally secure Arctic shipping—is led by the Coast Guard.

In addition, as of December 2022, the Executive Office of the President has partially addressed our April 2020 recommendation to develop a strategy to address U.S. Arctic maritime infrastructure. In October 2022, the White House issued a *National Strategy for the Arctic Region*, which updated the previous *National Strategy for the Arctic Region*, issued by the Obama Administration in May 2013.[17] OSTP officials told GAO that they had participated in this work, which had been led by the National Security Council (NSC). The updated strategy covers the period from 2022 to 2032, and establishes four "pillars" to address both domestic and inter-

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[11] GAO–20–460.

[12] GAO, *Risk Management: Further Refinements Needed to Assess Risks and Prioritize Protective Measures at Ports and Other Critical Infrastructure*, GAO–06–91 (Washington, D.C.: Dec. 15, 2005). See also GAO, *Enterprise Risk Management: Selected Agencies' Experiences Illustrate Good Practices in Managing Risks*, GAO–17–63 (Washington, D.C.: Dec. 1, 2016).

[13] In March 2022, CMTS published its "U.S. Arctic Marine Transportation System Infrastructure Risk Resource Compendium," which addresses a range of risks, including the economic, environmental, and safety issues affected by Arctic infrastructure gaps. While this compendium does not represent a government-wide assessment of all risks posed by the infrastructure gaps, it provides useful information to federal agencies responsible for addressing gaps in U.S. Arctic maritime infrastructure to better inform their investment decisions.

[14] GAO–20–460.

[15] OSTP is an office within the White House that leads interagency science and technology policy coordination efforts.

[16] The AESC is chaired by the Director of the OSTP and it includes members from more than 20 other federal departments and entities.

[17] Our April 2020 report noted that agency officials and stakeholders regarded the 2013 strategy as outdated, given the changes in conditions in the region. In particular, agency officials said national security was a growing concern in the Arctic.

national issues in the U.S. Arctic. They are: (1) security; (2) climate change and environmental protection; (3) sustainable economic development; and (4) international cooperation and governance. The strategy identifies needed maritime capability improvements in the U.S. Arctic, including for enhanced communications, mapping, charting, and navigational capabilities, as well as the need for a deep draft harbor in Nome, Alaska.

However, the current strategy does not establish goals and measures specifically to addressing Arctic maritime infrastructure as GAO recommended in April 2020. For example, although the strategy identifies an objective to invest in infrastructure such as supporting the development of a deep draft harbor, the strategy does not specify how agencies should prioritize these investments or identify goals and measures to assess progress. In November 2022, the AESC Executive Director told GAO that the White House—including OSTP and NSC—is early in the process of developing an implementation plan for the strategy. The AESC Executive Director noted that for each major action in the strategy, the implementation plan should identify lead and supporting agencies as well as a way to measure progress and to identify investment priorities and resources necessary to implement these actions. By completing this plan and establishing goals and associated performance measures, the federal government would have the tools to demonstrate the results of its efforts, and decision makers could gauge the extent of progress in addressing maritime infrastructure gaps.

In addition, in June 2016, we found that the Coast Guard identified various gaps in its U.S. Arctic capabilities but had not assessed its progress in addressing these gaps.[18] For example, the Coast Guard polar icebreaking fleet comprises two operational polar icebreakers—the *Polar Star* and *Healy*—of which only the *Healy* is currently operating in the Arctic. However, we found that, although the Coast Guard was taking some actions related to maritime in the Arctic, the Coast Guard had not assessed how its actions helped to mitigate its Arctic capability gaps. We noted that such an assessment—which would include developing measures for gauging its progress, when feasible—is critical to the Coast Guard's understanding of its progress toward addressing these gaps.

As a result, we recommended that the Coast Guard (1) develop measures for assessing how its actions have helped to mitigate Arctic capability gaps and (2) design and implement a process to systematically assess its progress.[19]

As of December 2022, however, the Coast Guard had not yet implemented these two recommendations. The Coast Guard is currently updating its implementation plan for the Arctic strategy it published in 2019. The plan is expected to provide the foundation for assessing efforts to address Arctic capability gaps. Coast Guard officials stated that they are also developing a strategic metrics framework for measuring progress in addressing the capability gaps. Coast Guard officials did not identify when they plan to complete the plan and framework, stating that these are longer-term efforts.

Developing a means to measure progress in addressing capability gaps is especially important given recent and planned investments in Coast Guard capabilities. For example, the Coast Guard, in collaboration with the Navy, plans to invest an estimated $13.3 billion for the acquisition, operation, and maintenance of three heavy polar icebreakers—also known as the Polar Security Cutters—over their entire 30-year life cycle.[20] The Coast Guard initiated procurement of the first Polar Security Cutter, awarding a $746 million contract for design and construction in April 2019. By assessing and measuring how its actions have helped to mitigate capability gaps, the Coast Guard will be better positioned to plan its Arctic operations more effectively, including prioritizing activities to target gaps and allocating resources.

Chairman Carbajal, Ranking Member Gibbs, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

Mr. CARBAJAL. Thank you, Mr. Von Ah.

We will now move on to Member questions. Each Member will be recognized for 5 minutes, and I will start by recognizing myself.

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[18] GAO–16–453.

[19] GAO–16–453.

[20] This estimate is the acquisition program baseline as of May 2021. See GAO, *DHS Annual Assessment: Most Acquisition Programs Are Meeting Goals Even with Some Management Issues and COVID–19 Delays*, GAO–22–104684 (Washington, D.C.: March 8, 2022).

Vice Admiral Gautier, I understand that the closest deep-draft port to the Arctic is in the Aleutian Islands, some 800 miles from the Bering Strait and some 1,000 miles from the northern population center in Barrow.

That means that, unless an icebreaker happens to be nearby, a Coast Guard cutter or aircraft would have to travel over 1,000 miles to a potential maritime search and rescue case. That clearly won't work.

Please give us a sense of the magnitude of the investments that would be necessary for the Coast Guard to establish a year-round Arctic base and also what the benefits may be to doing so versus the Coast Guard's current seasonal operating approach.

Admiral GAUTIER. Mr. Chairman, so the Coast Guard's Alaska home port that launches our Arctic operations is Kodiak. And we deeply appreciate Congress' support to continue the build-out of Kodiak.

I think the port you are referring to is Dutch Harbor, and we do operate forward pretty frequently from Dutch Harbor, Alaska.

The Coast Guard currently hasn't identified a specific deep-water port that we require as a home port, but we are really encouraged by sort of a whole-of-Government or interagency thoughts in terms of building additional Arctic infrastructure like Nome that was mentioned in the new National Strategy for the Arctic Region. We will use those locations for our Coast Guard operations if those are built.

The further you get north, sir, to answer your first element of your question, the more expensive things get.

Mr. CARBAJAL. I kind of figured that.

Dr. Sfraga, in your written testimony, you discuss how the Coast Guard's engagement with scientific research may be used to advance soft-power diplomacy.

How do you gauge the importance of the Coast Guard's diplomacy and soft power in a region where Russia and China have taken such publicly aggressive actions?

Mr. SFRAGA. Thank you, Mr. Chairman.

As the Admiral noted, presence does a lot of things, including influence and match our presence to others. The Coast Guard really is the tip of the spear for us in the north, whether we are talking about the Bering Sea or the Barents, on either side of the North American continent.

So, to have the Coast Guard patrolling in those areas, my home off the coast of Alaska, or with allies in Europe off the coast of Iceland and Greenland, north of Norway in the Barents, it shows that the United States is engaged. Most of the time, we are engaged with our allies.

This is a signal. It is not unlike a signal that NATO provides, where we have multiple partners. The United States enjoys partnerships and allies. Russia does not enjoy that. China does not enjoy that. We do.

And so, to bring together our Coast Guard with others does a number of things: interoperability—tyranny of distance in the north is a thing to overcome, unlike others. So, together, we can incorporate our interoperability. Two, having the presence there.

Three, understanding that domain better. Although our Coast Guard has a long history, that domain is changing as we speak.

So, to have a presence there most of the year, all year around, just projects U.S. national interests and projects our sovereignty over that area.

Mr. CARBAJAL. Thank you.

Mr. Von Ah, to what extent has the Arctic maritime transiting season been lengthened due to melting sea ice? Can you expand on how this lengthened season increases risk for the United States in terms of maritime safety and environmental stewardship? For example, how has this affected the personnel needs and resource allocations of the Coast Guard?

Mr. VON AH. Thanks for that question, Chairman Carbajal.

So, recent data that we looked at shows that it has increased from—it used to be more around 3 months. For several years, it was looking like it was 5 months that there was access to that region. And, most recently, that increased to 7 months, based on the information we saw.

So, obviously, that puts pressure on the Coast Guard and puts demand on services for Coast Guard, whether it is potentially for inspecting new vessels crossing the Bering Strait to see that they are outfitted correctly, incident response, or just for general security and safety in the region.

Mr. CARBAJAL. Thank you.

I now would like to recognize Ranking Member Gibbs.

Mr. GIBBS. Thank you, Chairman.

Vice Admiral, in the National Defense Authorization Act, which I guess we are going to vote on today I think, there is a request for authorization for an icebreaker and then also an existing icebreaker. The measure will waive certain contracting requirements that apply to construction of these new vessels.

Assuming these funds are provided for the requested acquisition, how long do you expect this acquisition to take? And what additional funds will be required to refit this vessel for Coast Guard use in the Arctic? And when do you expect such a vessel to be available for service?

Admiral GAUTIER. First off, Ranking Member, we really enjoy the congressional support that we are getting on the commercial icebreaker acquisition and for the relief needed in order to field it more quickly.

So, our plan for this—and it is a bit of a voyage of discovery. We just haven't purchased commercially. In the Coast Guard, we traditionally don't do that—is, once we can get the money to acquire it, is to do a phased-in approach so we can do some just very initial work on it to make it a basic Coast Guard cutter. So, some basic damage control, basic command and control, and a paint job and staffing to make it a Coast Guard cutter so we can field it in the Arctic as quickly as possible.

We think that in a phased-in approach over 2 years we can make it, then continue to build it out into the type of Coast Guard cutter that we need it to be, with the full suite of requirements met, so that we can then homeport it in a location where it will be operable in the Arctic.

Mr. GIBBS. OK. Thank you.

Mr. Sfraga—did I say that right?

Mr. SFRAGA. "Sfraga."

Mr. GIBBS. "Sfraga." OK. Thank you.

The issues the Coast Guard, with the icebreaker—the Coast Guard kind of pretends the *Healy*'s replacement is an unrelated topic, but designing an Arctic Security Cutter, also a Great Lakes icebreaker. Do you believe that the Coast Guard cutter *Healy*, which is used for Arctic research, should be recapitalized by providing for a fourth Polar Security Cutter, assigning an Arctic Security Cutter to the mission, designing a purpose-built research icebreaker, or using an array of unmanned platforms and other investments to deal with that issue?

Do you understand?

Mr. SFRAGA. Thank you, Ranking Member. If I understand the question correctly, it is Arctic Security Cutter versus unmanned——

Mr. GIBBS [interrupting]. Some of that, yes.

Mr. SFRAGA. OK.

Mr. GIBBS. And then I think, too, more Polar Security Cutters.

Mr. SFRAGA. And more Polar Security Cutters.

Well, the hearing today is about the Arctic, and I know the Polar Security Cutters, the heavies, will likely go down to the Antarctic. It doesn't preclude them from going north, but, in terms of the research community, we really do need those assets north. So, we would advocate for an Arctic Security Cutter to be outfitted to support research to head north sometime sooner rather than later.

As I said, the *Healy* is going to phase out in a very short period of time in the icebreaker life. So, we are concerned about what happens then. Not that you should take away from the portfolio of a Polar Security Cutter program, but the fact is, our Nation needs a reliable Arctic Security Cutter, something like the *Healy*. If we do not have the *Healy*, we will not have capacity——

Mr. GIBBS [interrupting]. OK. So, I guess what you are saying, you favor the Arctic Security Cutter instead of having a polar research vessel to operate in both Antarctica and the Arctic? You want the other vessel to be just operating in the Arctic?

Mr. SFRAGA. The research community would like to have a dedicated icebreaker in the north that we could rely on to conduct our research.

Mr. GIBBS. OK.

Vice Admiral, I want to bring this up. Our late esteemed chairman, Don Young, represented Alaska for almost 50 years and had an issue up at St. George. There was a facility that was housing a helicopter for search and rescue, I believe. And I think anything close to that was more than 400 miles. And the Coast Guard had a lease agreement, and the locals didn't maintain the roof, and things kind of fell apart.

What's the status—it seems to me that the environment up there and the distances, that it is probably a pretty important thing to have that capability of that helicopter for rescue missions and so on. Is the Coast Guard planning on reentering a lease and making sure that the facility is kept up? What are your thoughts on what your plans are?

Admiral GAUTIER. It is important for the Coast Guard to that have that location in Saint Paul Island with the hangar so we can pre-stage helicopters out of that location. Especially as we see fish stocks migrating further north and the fishing fleet that is following that, Saint Paul Island is just an important location where we can conduct our missions more readily with the fishing fleet.

So, we understand that in the draft authorization bill there is some language that might provide us a degree of relief that will enable us to continue to use that, and we do commit to using that facility.

Mr. GIBBS. Will you commit to, prior to January 31st of next year entering a lease, that you will brief the subcommittee staff on that issue, before you enter into a lease?

Admiral GAUTIER. So, if I understand the question, with the relief provided under the auth bill, that we would continue the leasing of that hangar so we can operate helicopters out of——

Mr. GIBBS [interrupting]. Yes, I think what the subcommittee staff is looking at is a briefing from your folks prior to signing the lease, I think, to understand what the plan is.

Because I think the concern is, when you are entering a lease, that the incident that happened with the damaged hangar won't happen again, and we won't be left without having that capability in that area.

Admiral GAUTIER. Right. Yes, we really look forward to a future where we can resolve the issues so that we can use a hangar that is appropriate——

Mr. GIBBS [interrupting]. Yes, I understand that. I think the subcommittee staff wants to be kept up to speed——

Admiral GAUTIER [interposing]. Absolutely.

Mr. GIBBS [continuing]. And make sure that—they want input and to make sure the lease is what is going to work.

Admiral GAUTIER. Certainly.

Mr. GIBBS. I think that is—I yield back.

Mr. CARBAJAL. Thank you, Mr. Gibbs.

I now would like to recognize Chairman DeFazio.

Mr. DEFAZIO. Thanks, Mr. Chairman.

Vice Admiral, you weren't around then, but I objected to the icebreaker contract with Halter that had never, ever built anything like that before. And I said, this is a really dumb idea. I still don't know why it happened.

And, luckily, they have now been taken over by a company that actually has built and can continue to build ships and has built a bunch of Coast Guard boats with never a single defect.

So, I just caution, if we—I am hoping that the Coast Guard will finish its evaluation on the ASCs. I don't see how you are going to get by without them. The *Healy* is kind of getting old and could use some modern replacements, and I think there is going to be a lot of work coming.

How far away do you think you are on finishing an evaluation of the need for the ASCs?

Admiral GAUTIER. Well, certainly, your counsel is incredibly valuable, given your history on this topic.

Our focus is on the Polar Security Cutters at the moment, as you said. We do intend on forming a program of record in the future

where we can examine requirements for a follow-on Arctic Security Cutter, a medium icebreaker, to provide us the sort of fleet mix and flexibility that we think we need.

That is out in the future while we continue to focus on our preeminent acquisition, the PSC, plus now, with the support of Congress, bringing on this commercial medium icebreaker into the fleet.

Mr. DEFAZIO. Right. Well, I mean, the PSCs, they are going. I mean, all you needed was to oversee it, and now you have someone who can actually build ships. So, it is not going to take a lot of work, unlike that other company.

But the commercial—I think you have already addressed the commercial acquisition and the potential for that. And I understand that is going to take some time. But I would hope then you immediately move on to ASCs. I have some sense of haste.

I just really think, even when we finally get to three functional, modern, major icebreakers, I mean, you still have the Antarctic mission and other things. I think the flexibility that the smaller ones afford is going to be absolutely necessary. And I just hope that there will be a real focus on that.

I am also wondering, are you looking at interesting or new technologies for the region, whether that would be some unmanned aviation surveillance or things like that to extend your look in that region?

Admiral GAUTIER. Yes, we certainly are, Mr. Chairman. I think the use of UAS is going to expand the eyes and ears that will just help us perform our mission that much better.

The other thing that we continue to actually make some progress on is communications in the high latitude, which has been a historical challenge given just the nature of operating up there. And we are making progress along those lines, too.

Mr. DEFAZIO. So, in the Arctic region, satellite communication is—I mean, just because of where you are at, there is no real good satellite communication?

Admiral GAUTIER. Actually, there has been progress that is being made both with the Department of Defense and commercial industry. Space Force just launched two satellites that can provide us some secure communications and improvements in the high latitudes. And there are a number of commercial concerns that continue to launch constellations that will cover the high latitudes. So, actually, we are quite encouraged along those lines.

Mr. DEFAZIO. Great. Great. That is going to fill in some gaps.

That is it, Mr. Chairman. I yield back the balance of my time. Thank you.

Mr. CARBAJAL. Thank you, Mr. Chairman.

Next, I will recognize Representative Weber.

Mr. WEBER OF TEXAS. Thank you, Mr. Chairman.

And I, too, want to add my word of thanks to Peter DeFazio for chairing the committee. And he is not paying attention, so, I will have to kill time here, which is OK for a Congressman. We have a saying, "Why use four words when eight will do?"

And so, Mr. Chairman, I was just saying we are going to miss you. I went on a codel with you and Myrnie over to Europe, the T&I Committee. It was great fun, and it was very well organized

and very well done. I think Kathy probably had a lot to do with that. But I wish the best for you.

And, Bob Gibbs, we are going to miss you. I remember when I was a freshman and came up here the first time, I parked in your parking space, because I didn't know better. And you were very gracious. And I have never recovered from that, because I am getting paid back. Every time there is a new crew, they seem to park in my parking space.

But, anyway, thank you all. Congratulations for a job well done.

A couple of questions, if I may, I guess to you, Vice Admiral.

We have a company called GulfLink that is working on a project in Missouri City. And at a previous hearing in April of this year, MARAD Acting Administrator Lessley stated on the record that the USCG environmental review and MARAD record of decision for Texas GulfLink—you may have to do a little checking on that, Texas GulfLink—would be completed at the early part of 2023.

And, of course, their question, as you might have supposed, is: Are we on track with that? Do you have any knowledge of that?

Admiral GAUTIER. I do have knowledge of that. And that is right; the Coast Guard is tightly coordinated with MARAD in their lead Federal agency role in the permitting of this project. We are providing MARAD with information so they can conduct the environmental analysis.

On our side, the Coast Guard has responsibility for doing things like reviewing their operations plan and making sure they comply with the safety and security regulations. They needed to do a risk analysis and some other things.

So, those efforts will continue on the Coast Guard side without delay, sir.

Mr. WEBER OF TEXAS. All right. I appreciate that.

And, secondly, on November 17th, Representative Babin and myself wrote the Coast Guard a letter with questions regarding VT Halter.

Does the contract that the Coast Guard approved for VT Halter require that U.S. law is followed in all aspects?

Admiral GAUTIER. It does.

Mr. WEBER OF TEXAS. It does?

Has the Coast Guard contacted VT Halter to instruct the company that they need to resolve the question of proper licensing for the use of patented technology?

Admiral GAUTIER. I think, in general, in working with VT Halter, we reinforced the fact that they need to comply with law.

I think on the particular instance that you might be referring to, my understanding is that there might be a complaint about a certain patent infringement. To date, the Coast Guard nor DoD or the Navy have received through channels a complaint on any patent infringements, but we understand that something might be out there. And if and when we receive something, we will act appropriately and take it seriously.

Mr. WEBER OF TEXAS. So, you know that it is out there, and during the recent purchase of VT Halter by Bollinger Shipyards—and you all did a review of that purchase, right?

Admiral GAUTIER. We haven't actually received a patent infringement complaint, sir.

Mr. WEBER OF TEXAS. Nothing at all? Well, you are aware of that patent licensing issue. So, was that included in the Coast Guard review of the sale? The possibility, if nothing else.

Admiral GAUTIER. Not to my knowledge specifically.

Mr. WEBER OF TEXAS. OK. Do you know when we could anticipate an answer to these questions? Could you look into that? You said not to your knowledge.

Admiral GAUTIER. Well, certainly, sir, we could. But I think it is important that any entity that might have a patent infringement complaint needs to make that complaint to the Federal Government through channels.

Mr. WEBER OF TEXAS. OK, but you are aware of it; it just has not come through the right channels to you?

Admiral GAUTIER. It has not been received by the Navy or the Coast Guard through our Integrated Program Office.

Mr. WEBER OF TEXAS. OK. Well, I appreciate that and appreciate your response.

I appreciate what you all do. My oldest and longest—well, my youngest and longest living uncle, Vernon Weber, was a Coastie. And he is 92 and living up in Woodville, Texas. And so, we appreciate you guys.

And, with that, I yield back. Thank you, Mr. Chairman.

Mr. CARBAJAL. Thank you, Mr. Weber.

I will now recognize Representative Larsen.

Mr. LARSEN OF WASHINGTON. Thank you, Mr. Chair.

Admiral, first for you, this is somewhat related to Mr. DeFazio's questions, but I wonder if you could be more specific.

In 2018, the Homeland Security Operational Analysis Center identified a number of interrelated capability gaps that could challenge the Coast Guard's ability to operate in the Arctic, including voice and data communications and sensor coverage.

And I was curious what steps the Coast Guard has taken to address those gaps, and is there anything yet that needs to be done?

Admiral GAUTIER. Sir, we have issued a contract for second-generation Coast Guard communications capabilities across the entire fleet of Coast Guard cutters, not just the ones that will be operating in the Arctic.

And, as part of this, we continue to work closely with DoD, like in the Space Force example that I mentioned, where they are providing some additional coverage through their constellation in the polar regions for military-specific secure communications.

In addition to that, working directly with other commercial providers and then other entities like DHS Science and Technology, we are exploring efforts for commercial satellite provision. In fact, the *Polar Star*, which is a couple of days out of Australia, headed down to Antarctica, is carrying a commercial satellite receiving capability on it for operation in Antarctica.

Mr. LARSEN OF WASHINGTON. Is that going to be—is that experimental? Is that prototyping? Or is this a——

Admiral GAUTIER [interrupting]. It is. We are essentially experimenting with a couple of different options, and this one is just an easy, commercially available one. It will enable the crewmembers to communicate back with their families and things like that.

Mr. LARSEN OF WASHINGTON. With regards to Space Force capability, without getting too far into this in this setting, is that strictly a military communications capability for national security uses only?

Admiral GAUTIER. To my knowledge, it is.

Mr. LARSEN OF WASHINGTON. To your knowledge. OK, yes.

So, in terms of commercial or safety, environmental purposes, your communication and sensors—you haven't developed those capabilities to address these other missions of the Coast Guard in the Arctic region?

Admiral GAUTIER. Congressman, we are improving. We are not necessarily where we want to be or need to be. We still think that we have gaps, but the good news here is that, in particular, the commercial capability is being fielded pretty quickly to be able to close those gaps.

Mr. LARSEN OF WASHINGTON. Yes. And so, related to that, the commercial fishing industry supports a lot of jobs in my State, and in Alaska, obviously. A lot of folks, they live in the Pacific Northwest during the winter and fish up north in the summer for obvious reasons. The Coast Guard plays a pretty key role, though, in responding to spills and other environmental pollution incidents that have an impact on the quality of fishing.

There are techniques to remove oil from ice-heavy landscapes, but those are still underdeveloped. Is the Coast Guard taking any action to put any work into developing those techniques?

Admiral GAUTIER. We are. Through our research—the Coast Guard's research and development programs and the network we then have through other elements like DHS Science and Technology and other research institutions, the Coast Guard has been working on some solutions. In particular, for ice-covered waters in the Arctic, we recently tested an underwater remote vehicle that can detect oil sub-ice. And so, things like that we are proceeding at so we can close some of those gaps.

Mr. LARSEN OF WASHINGTON. Yes. Mr. Von Ah, your testimony recommends that the Coast Guard develop measures for assessing how its actions have helped mitigate capability gaps and design and implement a process to address progress.

Are there specific gaps that can be addressed more quickly if recommendations are implemented?

Mr. VON AH. Thank you for that question, Representative Larsen. I don't know if we have done the work to say whether or not there are certain gaps that could be addressed more quickly. Certainly, what we are looking for in our recommendations is the ability for these agencies to be able to prioritize their investments relative to the goals that we are trying to achieve in the Arctic, that are laid out in the Arctic maritime strategy and, in the Coast Guard's case, in their own agency Arctic strategy.

So, we haven't seen an implementation plan yet from them in terms of how they are going to go about—what specific plans and what goals they have. We understand it is still being developed. And so, it is hard to say exactly which ones could go more quickly, but I think that is sort of what we are hoping to see in their plan.

Mr. LARSEN OF WASHINGTON. With that, thank you. I will yield back.

Mr. CARBAJAL. Thank you, Mr. Larsen.

I will now recognize Representative Auchincloss.

Mr. AUCHINCLOSS. Thank you, Chairman.

I would like to focus on the Arctic Council and what Russia's war in Ukraine means for the alliance. The Arctic Council, as you all know, is a consensus-based intergovernmental forum made up of the eight Arctic nations, six indigenous peoples organizations, and a variety of other Government and nongovernmental partners. Russia was scheduled to chair the Council from 2021 to 2023, but was suspended from all participation due to its invasion of Ukraine.

Vice Admiral, a question for you. Accepting as a premise that the Arctic Council is an important international convenor for the maritime community and serves U.S. security and economic interests, what is the Coast Guard planning to do to fill the void of leadership left by Russia at the Arctic Council?

Admiral GAUTIER. The Arctic Council is indeed an important international forum to maintain the sorts of free and open and stable Arctic waters that we all hope to enjoy. So, when Russia invaded Ukraine, Arctic Council activities were suspended for a time, but then the remaining Council members got together, absent Russia, and put together a work plan with some projects to continue as they can, as we can, to move forward on some of those items.

So, Norway becomes the chair of Arctic Council in April of next year, and there are discussions about what a work program moving forward might look like for the Arctic Council in the future.

Mr. AUCHINCLOSS. The Coast Guard has no assets permanently stationed above the Arctic Circle, compared to Russia's 6 Arctic bases and 14 newly built icebreakers. So, given these limitations, what can Congress do to support us asserting our leadership with this vacuum that is being created in the Arctic Council?

Admiral GAUTIER. Well, in terms of not having a home port, so to speak, by the Arctic Council, continued support for the types of investments that we have requested in terms of basing of our Polar Security Cutters, in terms of other home ports. Things like you supporting in Kodiak are tremendously important.

So, the State Department leads our delegation to the Arctic Council, and I think just general Government congressional support of what U.S. Government does in the Arctic Council is helpful.

Likewise, we have a more preeminent role in the Arctic Coast Guard Forum, which is different but related to that. And our conversations with respect to oilspill response, search and rescue, and other things that we do in the Arctic Coast Guard Forum, we hope to move forward under Norway's chairmanship in the future, too.

Mr. AUCHINCLOSS. Good. So, in addition to Russia being increasingly aggressive, they released a naval doctrine in August that emphasized the Arctic Ocean's importance to the country, and I already talked through their assets that they have.

China is also increasing the assertive. In February 2022, Beijing and Moscow pledged in a joint statement to increase cooperation on sustainable development in the Arctic. In September, Chinese and Russian warships conducted a joint exercise in the Bering Sea. In September, the USCG cutter *Kimball* was on patrol when it identified a Chinese-guided missile cruiser about 75 nautical miles north of Alaska's Kiska Island.

How are you redistributing your assets and patrols given increased activity and demonstrated interest by the CCP in operating in the Arctic?

Admiral GAUTIER. So, our Coast Guard District 17 commander has created an operation called Frontier Shield. And what we have done is—so, with the decommissioning of our High Endurance Cutters, or 378s, we have operated more National Security Cutters in the region in addition to the Coast Guard cutter *Healy*. And we are on patrol in a way where we can get, through intelligence means and the Department of Defense, sort of an advanced warning of where we might be confronting or seeing these surface action groups so we can position ourselves the right way so we can meet their presence with our presence to make sure everyone is complying with international rules and norms.

Mr. AUCHINCLOSS. We need to make it absolutely clear, and not just in the South China Sea, but also clearly in the Arctic as well, that the United States Navy and Coast Guard is going to ensure that international waters are a global commons that are to be navigated free of incursions by CCP. It needs to be absolutely unequivocal. To the extent that you need support from Congress in doing so, I hope that you will be forthcoming.

Admiral GAUTIER. Thank you, sir.

Mr. CARBAJAL. Thank you, Mr. Auchincloss.

Next, I will recognize Representative Garamendi.

Mr. GARAMENDI. Thank you, Mr. Chairman. And thank you for the privilege of joining your committee for this hearing.

The Arctic should be on all of our minds. I know the Coast Guard has been trying to provide the necessary activities in the Coast Guard for a long time, and, unfortunately, has not been able to develop the necessary vessels, basically icebreakers of various kinds, to do the job. I want to focus on the icebreaker issue, which was discussed earlier. So, I am going do it again.

What is the current status of the one heavy icebreaker that soon will be under construction? When do you expect it to be completed?

Admiral GAUTIER. Sir, you are referring to the *Polar Star*, I believe. The status of the *Polar Star*, actually, a few days out of Australia on its way to——

Mr. GARAMENDI [interrupting]. No. No, no. I am sorry. Not that. That one is the only one you have, but the new one that you intend to——

Admiral GAUTIER [interrupting]. Oh, on the *Healy* or the——

Mr. GARAMENDI [continuing]. Well, let me put it more——

Admiral GAUTIER [interrupting]. On the Polar Security Cutter, my apologies.

Mr. GARAMENDI. You are authorized and you have money to build an icebreaker. What is the status of that project?

Admiral GAUTIER. Forgive me, sir.

Mr. GARAMENDI. That is OK.

Admiral GAUTIER. I understand the question.

So, in terms of the Polar Security Cutter progress, in terms of construction, we do know that it is taking longer than we anticipated to complete, for the shipyard to complete, the detailed design phase of the Polar Security Cutter project. This is a crucial phase that needs to happen right, especially on the first-of-class ice-

breaker before we can move together with construction of the first PSC.

So, having said that, it is unlikely, sir, that the lead PSC will be delivered during fiscal year 2025, which I think might have been the latest update from the Coast Guard on that. And that's what is in the contract. And, in fact, we assess that there is considerable schedule risk even for delivery in fiscal year 2026.

Mr. GARAMENDI. So, we are looking beyond 2025?

Admiral GAUTIER. We are.

Mr. GARAMENDI. Any idea how far beyond? You say there is risk in the schedule.

Admiral GAUTIER. Sir, we want to give you a precise estimate of what that looks like, and we won't——

Mr. GARAMENDI [interrupting]. You have not been precise in the past, so, just give me a range. Are we talking 2030?

Admiral GAUTIER. We need to evaluate what this detailed design phase, how long it is going to take.

Mr. GARAMENDI. When will you come to us with that evaluation?

Admiral GAUTIER. We are at risk to be into fiscal year 2027, sir.

Mr. GARAMENDI. So, what do you intend to do between now and then, that being, what, 6 years from now?

Admiral GAUTIER. We are continuing to compress the schedule wherever we can on the acquisitions. We have asked, as you know, for funding in this fiscal year to purchase a commercially available medium icebreaker.

Mr. GARAMENDI. And what is the status of that purchase? I assume that is the Chouest.

Admiral GAUTIER. Pending the fiscal year 2023 budget passage, sir, we intend on doing a quick evaluation and moving forward on an acquisition for that, and then moving into a phased-in process so we can get that into the Arctic as quickly as we possibly can.

Mr. GARAMENDI. And your proposed schedule to accomplish that is?

Admiral GAUTIER. We think it will be a phased-in 2-year schedule before we can have it homeported, permanently homeported and operational. We hope that we will be able to actually operate that particular icebreaker sooner than 2 years from now.

Mr. GARAMENDI. Do you have a specific work plan to accomplish that?

Admiral GAUTIER. We have, honestly, a lot of details to be filled in on that. We need to take a deeper look at the icebreaker that——

Mr. GARAMENDI [interrupting]. You have not yet done a deep look at it?

Admiral GAUTIER. Sorry?

Mr. GARAMENDI. You have not yet done a deep look at that icebreaker?

Admiral GAUTIER. We have done an initial evaluation of this particular icebreaker, but pending an acquisition, it will enable us to put together a much more——

Mr. GARAMENDI [interrupting]. Please. Understand, this committee, for at least the decade that I have been involved in it, wants you to have icebreakers. Don't dance with us. Give us the specific information we need to make it happen. You are going to

need law. You are going to need money. You are going to need acquisition authority. You have got to give us the precise information. Don't dance around. You are very good at dancing. You haven't given me a solid answer on anything yet. But you have got to be very, very precise.

This ship has been before you for more than a year, and yet you have not done a detailed look at what it is going to take, or maybe you are not willing to give us the information we need so that we can help make it happen.

Now, there are other icebreakers that are available from foreign countries, specifically Finland and Sweden, that have offered to lease—long-term lease—icebreakers to the United States. Have you looked at that possibility?

Admiral GAUTIER. We have looked at that possibility previously. Obviously, we need to have some statutory relief to Buy American in order to do something like that.

Mr. GARAMENDI. We understand that. We know the law. We write the law. We understand. We also understand we have got a very serious problem in the Arctic. We don't have the ability to patrol the Arctic unless the *Healy* is available, and it is going to go into a shipyard and won't be available until just towards the end of the Arctic summer season, correct? That's standard.

I will just tell you I am very disappointed. I am very, very disappointed. We have been at this 10 years, and the Coast Guard is still dancing around. You have got to come to us with a solid plan. Here is what we need. We need it by this date. Here is how we can get it done. And yes, you are going to need authority to do that, but you are not going to get authority until we know what it is and how the plan works. So, please, I am 10 years into this. I am pretty damn tired of the dancing around. OK.

Now, what is the followup for the heavy icebreaker that is perhaps going to be done sometime between 2027 and 2030? What is the plan for the next followup?

Admiral GAUTIER. So, we intend on opening up a program for a follow-on icebreaker, the Arctic Security Cutter is what we are calling it, as you know, a medium icebreaker.

Mr. GARAMENDI. And you intend to?

Admiral GAUTIER. We intend on creating a program of record in order to do that. Our focus is really on the Polar Security——

Mr. GARAMENDI [interrupting]. Sir, if I might, 30 seconds?

So, have you communicated with this committee about what that plan is?

Admiral GAUTIER. I don't think we have provided details yet because, quite frankly, we need to develop those details.

Mr. GARAMENDI. I yield back.

Mr. CARBAJAL. Thank you, Mr. Garamendi.

If there are no further questions, I thank the witnesses from our first panel and will now call up panel 2. Thank you very much.

Welcome. I would now like to welcome our next panel of witnesses: Dr. Rebecca Pincus, director of the Polar Institute at the Wilson Center; and Dr. Martha Grabowski, professor at Le Moyne College and Rensselaer Polytechnic Institute—I hope I pronounced that right—and former chair of the Marine Board at the National Academies of Sciences, Engineering, and Medicine.

Thank you for being here today, and I look forward to your testimony.

Without objection, our witnesses' full statements will be included in the record. As with the previous panel, since your written testimony has been made part of the record, the subcommittee requests that you limit your oral testimony to 5 minutes.

Dr. Pincus, you may proceed.

TESTIMONY OF REBECCA PINCUS, PH.D., DIRECTOR, POLAR INSTITUTE, WILSON CENTER; AND MARTHA GRABOWSKI, PH.D., PROFESSOR, LE MOYNE COLLEGE AND RENSSELAER POLYTECHNIC INSTITUTE; PAST CHAIR, MARINE BOARD, NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE

Ms. PINCUS. Thank you.

Chairman Carbajal, Ranking Member Gibbs, and distinguished members of the committee, I am honored to appear before you today as director of the Wilson Center's Polar Institute.

In keeping with the global, policy-focused work of the Wilson Center, I offer the following comments on the U.S. Coast Guard's Arctic missions in the context of U.S. national interests and objectives in the Arctic and beyond.

My argument is threefold. First, that in the global context of long-term strategic competition, the Coast Guard is an effective means for strengthening relationships with allies and partners and for competing with adversaries via the integrated deterrence framework established in the National Defense Strategy.

Second, that the U.S. has clearly identified the Indo-Pacific as the priority theater and Europe as the secondary theater of strategic importance, and the Arctic must be understood in that strategic hierarchy.

And third, for a number of practical reasons, the Coast Guard is a cost-effective means to pursue multiple national interests in the Arctic.

The Coast Guard's missions in the Arctic take place in the global context of geopolitical competition, with China as the pacing threat, while Russia is broadly viewed as an acute threat. The 2022 National Defense Strategy establishes the concept of integrated deterrents as the chief means of engaging in holistic competition with both China and Russia. The Coast Guard can play a unique role in integrated deterrence.

In the Arctic and beyond, the Coast Guard is a welcome partner on a host of issues of shared concern. From search and rescue, to fisheries enforcement, to drug interdiction, the Coast Guard is a partner welcomed by countries around the world. The top maritime concerns of many partner nations are bread-and-butter U.S. Coast Guard missions: enforcing fisheries regulations, interdicting crime and terrorism at sea, and maritime safety and response. Coast Guard international partnerships enhance partner capacity, pave the way for U.S. access, and embody the vision of integrated deterrents enshrined in the NDS.

In addition, clear identification I referenced above of the Indo-Pacific as the first priority and Russia and Europe as the second priority helps place the Arctic in context. In light of these priorities,

the Department of Defense has identified stability in the Arctic as its desired objective, and is taking a requirements-driven approach to calibrating its posture in the Arctic.

In pursuit of stability in the Arctic, the Coast Guard has an important role to play in the National Defense Strategy concept of campaigning. Defined in the NDS as the conduct and sequencing of logically linked military initiatives aimed at advancing well-defined, strategy-aligned priorities over time, campaigning in the Arctic should not contribute to escalation. The Coast Guard is well-positioned to campaign without escalating, as white-hulled Coast Guard vessels are inherently less escalatory than Navy warships.

Finally, given the extra costs associated with achieving and maintaining U.S. Government presence in the Arctic, it is imperative to achieve maximum results for the investment of taxpayer dollars. In the Arctic, the U.S. needs Swiss Army knife solutions: cheap, durable, and useful for accomplishing many different tasks. On a single patrol, a U.S. Coast Guard icebreaker might demonstrate sovereignty, respond to a search and rescue case, and support scientific research.

The ability of Coast Guard assets to perform multiple missions in the Arctic simultaneously advances multiple national interests, in the spirit of the National Strategy for the Arctic Region's emphasis on whole-of-Government solutions.

In conclusion, there are both strategic and practical reasons to fully resource the Coast Guard's Arctic missions. The Coast Guard is a highly useful tool for conducting integrated deterrence, campaigning, and engaging in strategic competition. For example, the Coast Guard could partner with Denmark and Greenland to build capacity and enhance Maritime Domain Awareness, strengthening our relations with these important allies.

More importantly, the Coast Guard should develop a strategy for conducting and resourcing integrated deterrents and campaigning operations. The Arctic region provides an ideal test bed for developing and implementing integration concepts with global applicability.

The Coast Guard is a useful means of meeting the complex threats to U.S. security interests and to ensuring a stable and open international system, but only if it can clearly identify a path forward and justify additional resources. The Coast Guard should be asked to proactively articulate a coherent, specific, and a rigorous strategic vision for its role in advancing U.S. strategic ends in the Arctic.

Thank you for the opportunity to share these thoughts, and I look forward to your questions.

[Ms. Pincus' prepared statement follows:]

Prepared Statement of Rebecca Pincus, Ph.D., Director, Polar Institute, Wilson Center

INTRODUCTION

Chairman Carbajal, Ranking Member Gibbs, and distinguished members of the Committee, thank you for convening this hearing on the United States Coast Guard's (USCG) leadership on Arctic safety, security, and environmental responsi-

bility. I am Dr. Rebecca Pincus and I am honored to appear before you today as the Director of the Wilson Center's Polar Institute to discuss these issues.

Prior to directing the Polar Institute, I served on the faculty of the U.S. Naval War College, in the Center for Naval Warfare Studies. From 2020–2022, I was detailed from the Naval War College to the Office of the Secretary of Defense for Policy, first to the Deputy Assistant Secretary of Defense for Strategy and Force Development office and later the newly established Deputy Assistant Secretary of Defense for Arctic and Global Resilience. Before joining the Naval War College, I served on the faculty of the U.S. Coast Guard Academy, and led research for the Coast Guard's Center for Arctic Study and Policy.

WOODROW WILSON CENTER'S POLAR INSTITUTE

The Polar Institute was established as a program within the Woodrow Wilson International Center for Scholars in 2017. Since then, it has become a premier forum for discussion and policy analysis of Arctic issues. The Polar Institute holistically studies the central policy issues facing these regions, with an emphasis on Arctic governance, climate change, economic development, scientific research, security, and Indigenous communities. Our nonpartisan analysis and findings are communicated to policymakers and other stakeholders.

The Polar Institute is holding a series of public events on the recently-released 2022 National Strategy for the Arctic Region (NSAR). Our first event, in October, provided an opportunity for speakers from the Arctic Executive Steering Commission, National Security Council, Department of Defense, and Department of State to unpack the NSAR and discuss their agencies' work. Our next event will be a deep-dive into the work of the Department of Homeland Security in the Arctic. In February 2023, we will hold an event focusing on science and research in the Arctic. Events are livestreamed, and recordings are available on our website.

In addition, we have ongoing work streams on Nordic and European Union security perspectives on the Arctic, critical minerals and the green energy transition in the Arctic, and maritime security and stewardship.

We do this work within the administrative context of the Woodrow Wilson Center, which was chartered by Congress in 1968 as the official memorial to President Woodrow Wilson. The Wilson Center is the nation's key non-partisan policy forum for tacking global issues through independent research and open dialogue to inform actionable ideas for the policy community.

THE COAST GUARD AS A STRATEGIC MEANS TO ACCOMPLISH NATIONAL ENDS

In keeping with the global, policy-focused work of the Wilson Center, I offer the following comments on the U.S. Coast Guard's Arctic missions. By framing the USCG missions in the context of U.S. national interests and objectives in the Arctic and beyond, I will underscore the valuable contributions made by the Coast Guard and its value as a tool of national power.

In brief, my core argument is threefold: first, that in the global context of long-term, strategic competition, the Coast Guard is an effective means for strengthening relationships with Allies and partners and for competing with adversaries via the integrated deterrence framework established in the National Defense Strategy (NDS); second, that the U.S. has clearly identified the Indo-Pacific as the priority theater, and Europe as the secondary theater of strategic importance, and therefore the Arctic must be understood in that strategic hierarchy; and third, for a number of practical reasons, the Coast Guard is a cost-effective means to pursue multiple national interests in the Arctic.

1. GLOBAL CONTEXT: LONG-TERM, STRATEGIC COMPETITION

The Coast Guard's missions in the Arctic take place in the global context of geopolitical competition, with China as the pacing threat. For several years, there has been bipartisan consensus in the United States on the importance and scale of the challenge posed by China, while Russia is broadly and accurately viewed as an "acute" threat. The 2018 and 2022 National Defense Strategies share similar language on the threats posed by China and Russia:

- (2018) "Long-term strategic competitions with China and Russia are the principal priorities for the Department . . ."
- (2022) "The 2022 NDS advances a strategy focused on the PRC [People's Republic of China] . . . as our pacing challenge . . . also accounts for the acute threat posed by Russia . . ."

The 2022 NDS establishes the concept of integrated deterrence as the chief means of engaging in holistic competition with both the PRC and Russia: in the words of

Secretary of Defense Austin, "to develop, combine, and coordinate our strengths to maximum effect . . . in close collaboration with our counterparts across the U.S. Government and with Allies and partners." [1]

The Coast Guard can play a unique role in integrated deterrence. It can serve as a fulcrum between the DoD and DHS, able to leverage the authorities and missions of both federal departments. It partners with State, local, and Tribal entities; with the private sector in the global maritime industry; and with its foreign counterparts. In this regard, the Coast Guard is a unique national tool for working across jurisdictions and functions.

The Coast Guard is useful in forging strong relationships with Allies and partners, in the Arctic and around the world. As a law-enforcement agency, it is also key to upholding the rules-based order that all countries rely upon. It is an important component of strategic competition with Russia and China.

In the Arctic and beyond, the Coast Guard is a welcome partner on a host of issues of shared concern. From search and rescue to fisheries enforcement to drug interdiction, the Coast Guard is a partner welcomed by countries around the world. The top maritime concerns of many partner nations are bread-and-butter USCG missions: enforcing fisheries regulations, interdicting crime and terrorism at sea, and maritime safety and response. The Coast Guard's Mobile Training Teams train over 1000 international military students each year, in over 40 countries, in both bi- and multilateral formats.[2] International training covers the range of Coast Guard missions, and is tailored to specific national or regional needs. Coast Guard international partnerships enhance partner capacity, pave the way for U.S. access, and embody the vision of integrated deterrence enshrined in the NDS.

Consider U.S. interests in forging closer ties with Greenland. As part of the Kingdom of Denmark, and host of the U.S. Air Base Thule, Greenland also holds important strategic mineral resources. In 2020, the U.S. reopened a consulate in Nuuk, Greenland, and work is ongoing to broaden and deepen the relationship between the U.S. and Greenland.[3] The U.S. Coast Guard should be a more significant part of these efforts. According to the Greenlandic government, the fishing industry is responsible for more than 85% of exports and over 20% of employment. USCG is ideally poised to partner with Greenland and Denmark on maritime domain awareness, enforcement, and safety: issues of top concern to Greenland's leaders.

In the Arctic, the U.S. Coast Guard is also able to navigate sensitive relationships. The most obvious example is along the U.S.-Russia maritime boundary in the Bering Sea, where USCG has maintained a professional and functioning working relationship with the Russian Border Guard throughout the current crisis driven by Russia's further invasion of Ukraine. For example, even in 2022, we saw just one incident in which a Russian fishing vessels crossed the boundary line to fish illegally in U.S. waters; when the U.S. Coast Guard reported the vessel, the Russian Border Guard responded.

Another, less obvious example is Canada: the U.S. and Canada do not agree on the international status of the Northwest Passage, and the maritime boundary in the Beaufort Sea is unresolved. Despite these differences, the U.S. Coast Guard has partnered with its Canadian counterparts to conduct two transits of the Northwest Passage recently, in 2017 and 2021. In 2021, the icebreaker Healy carried officers from the British Royal Navy and the Dutch Navy on its transit, and used its onboard multibeam sonar system to provide Canada with high-resolution hydrographic survey data in the approach to the hamlet of Resolute, in Nunavut, which will be used by the Canadian Coast Guard to identify a safe shipping lane. This transit and associated activities are evidence of the mission's contribution to strong relationships with allies and partners in the Arctic and beyond.[4]

In addition to building relationships with allies and partners, the U.S. Coast Guard contributes to integrated deterrence through fortifying the rules-based order and demonstrating U.S. sovereignty and resolve in the Arctic.

In September 2022, the U.S. Coast Guard cutter Kimball encountered a flotilla of PLA Navy and Russian Navy vessels in the Bering Sea, inside the U.S. exclusive

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[1] Department of Defense, "2022 National Defense Strategy," pp. iv. https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF

[2] For more information, see the website of the U.S. Coast Guard Office of International Affairs and Foreign Policy, https://www.dco.uscg.mil/Our-Organization/Director-of-International-Affairs-and-Foreign-Policy-CG-DCO-I/.

[3] U.S. Department of State, "The United States and Greenland." https://dk.usembassy.gov/our-relationship/u-s-greenland/.

[4] Melody Schreiber, "US icebreaker departs on a voyage that will transit the Northwest Passage." Arctic Today, August 26, 2021. https://www.arctictoday.com/us-coast-guard-science-joint-mission-northwest-passage/.

economic zone.[5] The combined naval exercise in the Bering followed another encounter in 2021, when USCG encountered four PLAN warships, also in the U.S. EEZ.[6] In 2020, a Russian Navy flotilla conducted operations in an active fishing area inside U.S. waters.[7] Chinese icebreakers Xue Long and Xue Long II regularly conduct research in the Arctic.[8]

Without U.S. Coast Guard patrols in these waters, the Russian and Chinese warships would have symbolic free rein. USCG presence to identify and monitor these activities ensures the safety of U.S. citizens and interests in the Arctic.

In November 2022, the Federation Council of Russia approved a law restricting vessel traffic in the Northern Sea Route. According to the new law, foreign military vessels traveling in the NSR must request permission from the Russian government 90 days before the date of passage. Further, no more than one foreign warship or other state vessel may be in the NSR at a time. Foreign submarines must surface while in the NSR. The law allows for the suspension of passage of foreign state vessels.[9]

The new Russian legislation is likely to increase calls for a freedom of navigation exercise by the U.S. While Russia designates the Northern Sea Route as internal waters, the U.S. holds that key parts of the passage are international straits, where restrictive measures are not permitted under the terms of the UN Convention on the Law of the Sea (UNCLOS).

Given the maritime hazards present in the NSR, icebreaker support for a FONOP, particularly in the eastern stretches, is advisable. USCG vessels may be considered less inflammatory to the Russians.

2. The Arctic is not the priority theater in U.S. strategy

The clear identification of the Indo-Pacific as the first priority, and Russia/Europe as the second priority, helps place the Arctic in context. The Department of Defense has not yet achieved its desired posture and balance of forces in the Indo-Pacific. Military support to Ukraine and reassurance of NATO Allies have placed further demands on the DoD. In light of these urgent priorities, the DoD has identified stability in the Arctic as its desired objective and is taking a requirements-driven approach to calibrating DoD posture in the Arctic. DoD's priority in the Arctic is homeland defense and early warning.

The 2022 National Security Strategy seeks to "Maintain a peaceful Arctic" and states: "We will uphold U.S. security in the region by improving our maritime domain awareness, communications, disaster response capabilities, and icebreaking capacity . . . We will exercise U.S. Government presence in the region as required, while reducing risk and preventing unnecessary escalation."[10] The 2022 National Defense Strategy notes that "The United States seeks a stable Arctic region characterized by adherence to internationally-agreed upon rules and norms."[11]

In pursuit of stability in the Arctic, the Coast Guard also has a role to play in the NDS concept of campaigning. Defined as "the conduct and sequencing of logically-linked military initiatives aimed at advancing well-defined, strategy-aligned priorities over time,"[12] campaigning in the Arctic should not contribute to escalation. The Coast Guard is well-positioned to campaign without escalating, as white-hulled Coast Guard vessels are inherently less-escalatory than Navy warships.

Stability in the Arctic, and a lower priority relative to the Indo-Pacific, does not mean the region is not important to the United States. The U.S. has significant territorial equity and sovereignty interests, including northern and western parts of Alaska, as well as the Aleutian Island chain and the Bering, Beaufort, and Chukchi

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[5] Maggie Nelson, "Coast Guard spots Chinese and Russian military ships together in Bering Sea." Alaska Public Radio, September 27, 2022. https://alaskapublic.org/2022/09/27/coast-guard-spots-chinese-and-russian-military-ships-together-in-bering-sea/.

[6] Dylan Simard, "Coast Guard encountered Chinese warships in the Aleutians in August." Alaska Public Radio, September 14, 2021. https://alaskapublic.org/2021/09/14/coast-guard-encountered-chinese-warships-in-the-aleutians/.

[7] Nathaniel Herz, "'Move out of the way': Bering Sea fishing boats report close encounter with Russian military." Alaska Public Radio, August 27, 2020. https://alaskapublic.org/2020/08/27/move-out-of-the-way-bering-sea-fishing-boats-report-close-encounter-with-russian-military/.

[8] Atle Staalesen, "Chinese icebreaker sails to North Pole, explores remote Arctic ridge." Arctic Today, August 12, 2021. https://www.arctictoday.com/chinese-icebreaker-sails-to-north-pole-explores-remote-arctic-ridge/.

[9] TASS, November 30, 2022. [Cyrillic text] https://tass.ru/ekonomika/16462331 (tass.ru).

[10] The White House, "National Security Strategy," October 2022. Pp. 44–45. https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf

[11] 2022 NDS, pp. 16.

[12] 2022 NDS, pp. 1.

Seas adjacent to Alaska, which are all included in the definition of Arctic provided in the 1984 Arctic Research and Policy Act.[13]

The U.S. has economic interests in the Arctic maritime, including fisheries, energy, shipping, and tourism. The Alaskan fishing industry harvests two-thirds of the nation's seafood, according to an industry group, and generates over $15 billion in direct and secondary economic outputs.[14] The cruise industry calls Alaska "the premier cruise destination market in the United States." In 2019, Alaska received almost two-thirds of all cruise passenger visits at U.S. ports, producing $1.2 billion in income in Alaska and 23,000 jobs.[15] Cruise traffic is rebounding from the pandemic and trends prior to 2020 indicate strong growth across the industry.

U.S. Arctic waters may also be affected by activities in adjacent Russian waters. While Russia's war in Ukraine has dampened shipping activity through the Northern Sea Route, Russia continues to ship LNG from its Arctic developments in Yamal. These LNG shipments are increasingly heading east, to Asia, transiting the Bering Strait and increasing environmental and maritime risks in the region. Less dramatic, but more frequent, are environmental impacts from garbage and pollutants that regularly wash into U.S. Arctic waters from Russia, including petroleum products and industrial debris. In 2020, large amounts of garbage washed ashore in the Bering Strait region, covering miles of shoreline and including hazardous waste (insecticide, lubricants, butane) and large amounts of plastic debris, as well as dead seabirds. Russian text and logos were identified on the marine debris, much of which was related to commercial fisheries.[16]

Reductions in sea ice and warming conditions in the Arctic enable increased maritime activity. Changing weather conditions create uncertainty. The combination of increased maritime activity and less-predictable weather conditions generate maritime hazards. Fishing vessels, cruise ships, and other vessels are all subject to the maritime hazards present in Arctic waters. Climate change is anticipated to increase need for search and rescue in the region.[17] Whatever the cause or origin, when an accident occurs in the Arctic—particularly in the Bering Strait, the narrow body of water separating the U.S. and Russia—there may be consequences in U.S. waters. Proximity to Russia raises the stakes for humanitarian or environmental disaster response.

From a military perspective, Alaska and the U.S. Arctic are important to homeland defense, as forward locations for early warning detection and interdiction systems. New delivery systems from vectors in Eurasia make investments in U.S. and NORAD missile early warning and defeat systems critical, as outlined in the NDS. Alaska is also an important location for its proximity to the Indo-Pacific theater. As such, it hosts the largest concentration of fifth-generation fighter aircraft in the world. However, the NDS demands that the DoD focus ruthlessly: "we must not over-exert, reallocate, or redesign our forces for regional crises that cross the threshold of risk to preparedness for our highest strategic priorities."[18]

3. Practical benefits of Coast Guard missions in the Arctic

There is an Arctic cost premium: whether building infrastructure, maintaining vehicles, or buying milk, it's more expensive, often significantly so. In rural Alaska, a gallon of gas may often cost $10–15, and a gallon of milk will be similarly expensive.[19] Shipping in goods raises costs. U.S. Government operations are not immune to the additional costs inherent to remote, harsh environments like the Arctic.

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[13] Arctic Research and Policy Act of 1984, Section 112, "Definition." Available from US Arctic Research Commission at https://www.arctic.gov/legislation/.

[14] Alaska Seafood, "Updated Report Affirms Alaska's Seafood Industry is Essential Driver of State Economy." January 12, 2022. https://www.alaskaseafood.org/news/for-release-2022-economic-value-of-alaskas-seafood-industry-report/#:~:text=Nationally%2C%20the%20Alaska%20seafood%20industry,%248.6%20billion%20in%20multiplier%20effects.

[15] Business Research and Economic Advisors, "The Contribution of the International Cruise Industry to the U.S. Economy in 2019." Cruise Lines International Association (CLIA). Pp 51–52. https://www.alaskatia.org/wp-content/uploads/2019-USA-Cruise-EIS.pdf.

[16] G. Sheffield, et al. "2020 Foreign Marine Debris Event—Bering Strait." NOAA Arctic Report Card 2021. https://arctic.noaa.gov/Report-Card/Report-Card-2021/ArtMID/8022/ArticleID/952/2020-Foreign-Marine-Debris-Event%E2%80%94Bering-Strait.

[17] Fourth National Climate Assessment, "Chapter 26: Alaska." https://nca2018.globalchange.gov/chapter/26/.

[18] 2022 NDS, pp. 22.

[19] See, for example: Zachariah Hughes, "Fuel in the Alaska village of Noatak was $16 a gallon. The costs are more than just money." Anchorage Daily News, May 18, 2022. https://www.adn.com/alaska-news/rural-alaska/2022/05/18/fuel-in-the-alaska-village-of-noatak-was-16-a-gallon-the-costs-are-more-than-just-money/; Ann Schmidt, "Extreme grocery prices in rural Alas-

Given the extra costs associated with achieving and maintaining U.S. Government presence in the Arctic, it is imperative to achieve maximum results for the investment of taxpayer dollars. In the Arctic, the U.S. needs Swiss Army knife solutions: cheap, durable, and useful for accomplishing many different tasks. On a single patrol, a Coast Guard icebreaker might demonstrate sovereignty, respond to a search and rescue case, and support scientific research. The ability of Coast Guard assets to perform multiple missions in the Arctic simultaneously advances multiple national interests, in the spirit of the National Strategy for the Arctic Region's emphasis on whole-of-government solutions.

The Coast Guard's practical application in the Arctic contrasts with the U.S. Navy, which is confronting several significant strategic and operational challenges that defy quick solutions, and which make additional missions in the Arctic potentially costly, in both financial and strategic terms. Its shipbuilding and future fleet plans reflect the challenges of responding to the current and future threats posed by Chinese military advances, new technologies including unmanned systems, and budget issues. Its 30-year plan for shipbuilding has been characterized as requiring annual appropriations that the Congressional Budget Office describes as "unprecedented since World War II."[20] It faces serious challenges in maintenance and repair at yards[21], including at Navy submarine yards.[22] In recent years, the Navy has experienced a string of accidents[23] and scandals[24] that further complicate its ability to reposition itself to meet future demands. Adding further demands, for operations in a region that is famously harsh, does nothing to help the Navy. Moreover, it does not reflect the broader national and defense strategies that enshrine cost-effective, whole-of-government, integrated solutions. The Coast Guard has a strong track record of achieving maximum effects with minimum resources, leading some experts to take a hard look at transferring Navy budgets for small combatant funding to USCG.[25]

So what can the Coast Guard do better?

In conclusion, there are both strategic and practical reasons to fully resource the Coast Guard's Arctic missions. The Coast Guard is a highly useful tool for conducting integrated deterrence, campaigning, and engaging in strategic competition. It is an agency with a remarkably high degree of trust around the world. Through its capacity-building work with partner nations on fisheries enforcement, drug interdiction, and search and rescue, the Coast Guard helps the U.S. win partners and future allies. By building maritime law enforcement capacity around the world, the Coast Guard contributes to the U.S. effort to establish and uphold the global rules-based order that our prosperity and peace depend upon.

In the Arctic, the Coast Guard could partner with Denmark and Greenland to build capacity and enhance maritime domain awareness, strengthening our relations with these important allies. While USCG already engages with the Danish Joint Arctic Command (JACO) in Greenland via the Arctic Coast Guard Forum, and has participated in international maritime exercises, expanding and deepening the relationship could yield benefits.

More importantly, the Coast Guard should develop a strategy for conducting and resourcing integrated deterrence and campaigning operations. This is important in the Arctic and beyond. The Coast Guard's 2022 Strategy and 2019 Arctic Strategic Outlook are valuable documents, but do not match the National Defense Strategy in terms of specificity, prioritization, and an overarching strategic framework to guide decision-making. The 2020 Tri-Service Maritime Strategy, which was jointly signed out by the Navy, Marine Corps, and Coast Guard, provides an example of

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ka shock TikTok: '$18 for milk'." Fox Business, December 3, 2021. https://www.foxbusiness.com/lifestyle/rural-alaska-grocery-store-prices-viral.

[20] Congressional Budget Office, "An Analysis of the Navy's December 2020 Shipbuilding Plan." April 2021. https://www.cbo.gov/publication/57091.

[21] U.S. Government Accountability Office, "Naval Shipyards: Ongoing Challenges Could Jeopardize Navy's Ability to Improve Shipyards." May 10, 2022. GAO–22–105993.

[22] Congressional Budget Office, "The Capacity of the Navy's Shipyards to Maintain its Submarines." March 2021. https://www.cbo.gov/publication/57083.

[23] Robert Faturechi, et al. "Years of Warnings, then Death and Disaster." ProPublica, February 7, 2019. https://features.propublica.org/navy-accidents/us-navy-crashes-japan-cause-mccain/.

[24] Blake Herzinger, "Fat Leonard Cost the US Navy More than Money." October 24, 2022. https://foreignpolicy.com/2022/10/24/fat-leonard-us-navy-corruption-scandal/.

[25] See, for example, Craig Hooper and Bryan Clark, "Fed Up, Congress Considers Giving Coast Guard the Navy's Small Ship Funding." Forbes, May 23, 2022. https://www.forbes.com/sites/craighooper/2022/05/23/fed-up-congress-considers-giving-coast-guard-navys-small-ship-funding/.

an integrated approach to naval and maritime strategy. The Arctic region provides an ideal test bed for developing and implementing integration concepts across the Navy-Marines-Coast Guard, as well as with Allies and partners.

The Coast Guard in the Arctic—and beyond—can play a unique role in integrated deterrence and campaigning as defined in the NDS. Through strengthening relationships with Allies and partners, and assisting in security cooperation, the Coast Guard can advance national objectives and minimize escalation. The Coast Guard is an important means of meeting the complex threats to U.S. security interests, and to ensuring a stable and open international system: only if it can clearly identify a path forward and justify additional resources. The Coast Guard should be asked to proactively articulate a coherent, specific, and rigorous strategic vision for its role in advancing U.S. strategic ends in the Arctic.

Thank you for the opportunity to share these thoughts with you today, and for your support for the Coast Guard family. I look forward to your questions.

Mr. CARBAJAL. Thank you, Dr. Pincus.

Dr. Grabowski, you may proceed.

Ms. GRABOWSKI. Good morning, Chairman Carbajal, Ranking Member Gibbs, and distinguished members of the subcommittee. I appreciate the opportunity to testify today in this hearing addressing Coast Guard leadership in the Arctic.

I have had the privilege of being associated with the National Academies for 30 years, and I just completed my second tour as chair of the Marine Board and the Transportation Research Board. In 2014, I chaired the NASEM study sponsored by the Coast Guard and seven other organizations that focused on the Nation's ability to respond to a catastrophic oilspill in the Arctic. I am also a member of the current NASEM committee examining the adequacy of Coast Guard statutory authorities to respond to novel uses of the maritime environment. Our committee work is in process at present, and I am not going to comment on it today.

My focus today, however, are on three areas important for Coast Guard leadership in the Arctic: Maritime Domain Awareness, support for Coast Guard operations and personnel, and Coast Guard's needs for a resilient physical, technological, and human infrastructure.

Coast Guard needs to support U.S. missions in the Arctic depend on effective Maritime Domain Awareness, which for the Coast Guard requires improved visibility of and access to vessel traffic information, as well as current nautical charts. Important to this is the Coast Guard's increasing need to adopt current and future-facing information technology and systems, as was highlighted in several recent GAO reports.

Several studies have addressed the Coast Guard's risks and challenges in the Arctic. Few efforts, however, have adopted systematic processes and advanced analytics with multiparty Arctic stakeholders to determine the impact and the risks of the accelerating changes that the Coast Guard is facing in the Arctic today and in the future.

Operationally, changing Arctic traffic and environmental conditions will increase needs for Coast Guard emergency response, vessel safety, and environmental protection capabilities. Maritime resources and other rescue equipment and supplies for response are limited in the Bering Strait region, and as we have already heard, the Coast Guard is far from possible incident locations.

Arctic missions are also going to require, as we have heard, new technology, certification, training, proficiency, and experiences, as

the Coast Guard increasingly adopts and regulates the use of uncrewed and autonomous maritime systems.

Underlying effective operational support are robust, secure, and available communications; data and infrastructure; real-time and longitudinal sea ice, charting, navigation, and shoreline effects data; efficient and enterprisewide data systems; and advanced analytics capabilities; all of which are going to be a challenge for the Coast Guard.

Coast Guard needs to support their environmental protection mission and oilspill response activities are significant. Some of the NASEM 2014 recommendations that were in that report have been addressed, such as a call for traffic evaluation in the Bering Strait and oilspill and emergency response training programs for local entities so that the Coast Guard and the communities can develop trained response teams in the local communities. But others, such as the call for increased Coast Guard presence and performance capability in the Arctic, establishment of a comprehensive, collaborative long-term Arctic oilspill R&D program, and increased oilspill response infrastructure and marine facilities in the Arctic have not been.

Finally, Coast Guard leadership in the Arctic depends on resilient physical, technological, and human infrastructure. Historically, investments in the Arctic have not grown with expanded Coast Guard responsibilities. As important will be the required investments in Coast Guard technology and human infrastructure that are important for a robust and resilient Coast Guard today and in the future.

Coast Guard Arctic operations occur in a unique social and cultural setting that is reliant on partnerships with neighboring countries, Arctic nations, and the Arctic Council, as well as on partnerships with local organizations, the Arctic communities, and strong bonds within the Arctic communities and with Arctic stakeholders. The coproduction of knowledge, policies, regulations, and programs with local stakeholders, indigenous groups, and community leaders is critical for Coast Guard success in the Arctic.

Ultimately, a robust and resilient maritime infrastructure requires significant, long-term, and interdisciplinary Arctic research with partners that can benefit the Coast Guard, as well as all of its Arctic partners.

Mr. Chairman, Ranking Member Gibbs, and members of the subcommittee, thank you again for the opportunity to testify before you on these important issues about Coast Guard leadership in the Arctic. The Coast Guard is a critical leader and a partner in the Arctic, with increasing demands and missions stretching their capability and capacity. Your support of the Coast Guard's critical mission needs is essential for an effective Coast Guard today and in the future.

Thank you for this opportunity. I look forward to your questions.

[Ms. Grabowski's prepared statement follows:]

Prepared Statement of Martha Grabowski, Ph.D., Professor, Le Moyne College and Rensselaer Polytechnic Institute; Past Chair, Marine Board, National Academies of Sciences, Engineering, and Medicine

Good morning, Chairman Carbajal, Ranking Member Gibbs, and distinguished members of the subcommittee. I appreciate the opportunity to testify today in this hearing addressing Coast Guard leadership on Arctic safety, security and environmental responsibility, and I thank you for your continued support of the United States Coast Guard.

I am a professor of Information Systems at Le Moyne College in Syracuse, New York, and a senior research scientist in the Department of Industrial Engineering at Rensselaer Polytechnic Institute, in Troy, New York. I am a 1979 graduate of the U.S. Merchant Marine Academy at Kings Point, in the 2nd class of women to graduate from a federal service academy. Upon graduation, I was licensed by the Coast Guard as a Third Mate, and ultimately as Second Mate, and I sailed on tankers, liquefied natural gas carriers, and ocean-going integrated tugs and barges carrying super phosphoric acid to Russia.

I have been licensed by the Coast Guard, my research has been funded by the Coast Guard, and my research, exploring technology impacts in safety-critical systems and the marine transportation system, is important to the future of the marine transportation system.

I'm currently investigating the impact of advanced visualization and artificial intelligence technology on maritime safety, decision-making, communications and agility in a series of simulator experiments using Google Glass with the Staten Island Ferry. My earliest research developed and tested an artificial intelligence ship navigation system aboard Trans Alaskan Pipeline Service (TAPS) Trade tankers sailing into and out of Valdez, Alaska. My current research takes me further north in Alaska, with funding from the National Science Foundation, as our research team develops resource allocation models, and addresses the challenges and needs for resilient maritime infrastructure in the Arctic, with benefits for Arctic communities.

Most recently, several weeks ago, I was in Fairbanks, Alaska with my students, having met with Coast Guard Sector Anchorage and with researchers at the University of Alaska Fairbanks, on our research projects that use uncrewed aerial systems in Arctic search and rescue, and for Arctic maritime infrastructure data gathering and analysis. We flew out as Typhoon Merbok blew in, and the impacts of the Typhoon and the onslaught of the increasingly impactful series of major storms and maritime events besieging the Arctic and Western Alaska are both impressive and frightening to consider.

I have had the privilege of being associated with the National Academies of Science, Engineering and Medicine (NASEM) for 30 years, and just completed my 2nd tour as Chair of the National Academies' Transportation Research Board/Marine Board. I have also chaired or co-chaired five NASEM studies and served on four other NASEM committees. In 2014, I chaired the NASEM study sponsored by the Coast Guard, the U.S. Arctic Research Commission, the American Petroleum Institute, the Department of Interior/Bureau of Safety and Environmental Enforcement and the Bureau of Ocean Energy Management, the Marine Mammal Commission, NOAA, and the Prince William Sound Oil Spill Recovery Institute. That study assessed the nation's ability to respond to a catastrophic oil spill in the Arctic. The nation's capability to respond in 2014 was not strong, and in 2022, it has not measurably improved.

I am also a member of the current NASEM committee examining the adequacy of Coast Guard statutory authorities in light of novel uses of the maritime environment, including foreseeable developments such as aquaculture, autonomous systems, decarbonization of maritime vessels and systems, offshore energy, fishing, migration and commercial space operations. Our committee's work is in process at present, and I will not comment on its process, deliberations, conclusions or recommendations, except to note that Coast Guard Arctic activities and missions are some of the 'foreseeable developments' noted in the committee's statement of task.

My focus today will be on three areas important for Coast Guard leadership in the Arctic: maritime domain awareness, support for Coast Guard operations and personnel, and Coast Guard needs for resilient physical, technological and human infrastructure in the Arctic.

BACKGROUND

The United States is an Arctic nation, and the United States Coast Guard serves as the nation's first maritime responder and the lead federal agency for homeland security, safety, and environmental stewardship in the Arctic. Coast Guard roles have expanded in the Arctic to include representing American interests as a leader

in the international bodies governing navigation, search and rescue, vessel safety, fisheries enforcement, and pollution response across the entire Arctic.

The types of challenges that the Coast Guard is called upon to address in the Arctic are wide-ranging and significant, stretching from traditional missions in vessel navigation; emergency and oil spill prevention, response and mitigation; search and rescue; vessel safety, inspection and compliance; shoreside facilities' safety and inspection; fisheries; migration; offshore energy; and managing a talented but stretched workforce in a tight employment market across an enormous Area of Responsibility (AOR); as well as growing non-traditional missions supporting national geopolitical and humanitarian needs in remote locations.

Arctic maritime activities and transits are increasing due, in part, to changing climatic and environmental conditions, such as rising sea surface temperatures and declines in sea ice extent. As an example, Bering Strait transits totaled 262 in 2009, but doubled in 2021 to 555 (Marine Exchange of Alaska, 2022). Liquefied natural gas (LNG) tanker, cruise ship, and fishing vessel traffic in the Arctic region is increasing. As the region continues to open and strategic competition drives more actors to look to the Arctic for economic and geopolitical advantages, the demand for Coast Guard leadership and presence will continue to grow. Geopolitical developments and tensions among other nations operating in the region, which are often unpredictable, are constant considerations in U.S. Arctic priorities and operations.

Future geopolitical, fisheries, law enforcement, security and national security interests will bring more and larger vessels of different types to Western Alaska, the Arctic, and through the Bering Strait. With the movement of sea ice through the Bering Strait, occurrences of storms and rough sea waves are also likely to increase, as are maritime navigation risks and the likelihood of vessel accidents. Increases in shipping traffic also bring heightened environmental risks.

Pollution from shipping and human waste is increasing in the Bering Strait. Vessel navigation exposes the Arctic ecosystem to dangers from vessel strikes, noises, and contamination, as well as dangers after accidents, such as oil spills and other hazardous releases. Cleaning up oil spills in the Arctic presents distinct challenges, as conditions such as lack of daylight, remoteness, and ice-cover can complicate response strategies and impact their effectiveness. Furthermore, historic storms exacerbated by climate change are also damaging the Arctic's fragile existing maritime infrastructure, its vulnerable gravel shores, and its power and water facilities, which are often built close to unprotected shorelines.

These effects, coupled with aging fuel tanks located near critical water supplies, melting permafrost, and an increasing number of tsunamigenic landslides near coastal communities and cruise vessel ports, are forcing Arctic communities to relocate, causing shipping and cruise vessel operators to review schedules and port visits, and are occasioning the Coast Guard to consider personnel and workforce assignments.

As oil and gas, shipping, and tourism activities increase, the U.S. Coast Guard will need an enhanced presence and performance capacity in the Arctic, including area-specific training, icebreaking capability, improved availability of vessels for responding to oil spills or other emergency situations, and aircraft and helicopter support facilities for the open water season and eventually year-round. Arctic assignments for trained and experienced personnel and tribal liaisons could benefit by being of longer duration, to take full advantage of their skills.

Operational and personnel support for the Coast Guard's Arctic Area of Responsibility is thus critical, given the size and scope of the Coast Guard's AOR in Alaska, which encompasses over 3.8 million (3,853,500) square miles, and over 47,300 miles of shoreline. Sustained funding and leadership commitment is required to increase the presence of the Coast Guard in the Arctic and to strengthen and expand the Coast Guard's ongoing and future Arctic missions.

1. Maritime Domain Awareness

Coast Guard needs to support effective U.S. missions in the Arctic center depend on effective maritime domain awareness, which for the Coast Guard requires improved visibility and access to transit and destination vessel traffic information. The 2014 NASEM report highlighted Coast Guard needs to obtain broader satellite monitoring of Automatic Identification System (AIS) signals in the Arctic through government means or from private providers. The NAS Committee's recommendation that the Coast Guard expedite its evaluation of traffic through the Bering Strait to determine if vessel traffic monitoring systems, including determining if an internationally recognized traffic separation scheme was warranted, was followed by 2018 action by the International Maritime Organization (IMO)'s Maritime Safety Committee, which adopted new and amended ships' routing measures in the Bering

Sea and Bering Strait, aimed at reducing the risks of incidents—the first measures adopted by the IMO for the Arctic region where the Polar Code applies.

Intrinsic to effective maritime domain awareness is the Coast Guard's increasing need to adopt current and future-facing information technology and systems, as highlighted in several recent GAO reports (U.S. GAO, 2020; 2022). Limited Arctic communications, networks and connectivity, a perennial challenge, impact Coast Guard maritime domain awareness, operational effectiveness and the Coast Guard's ability to interact with its partners in the Arctic.

Key to effective maritime domain awareness is the development of and requirement for data standards for nautical charting, water level, vessel transit and safety data, among others. Recent efforts, such as the multi-agency work led by the Department of Homeland Security and NOAA, the U.S. Committee on the Maritime Transportation System (CMTS) and the U.S. Department of Transportation/Maritime Administration in their Data Harmonization project—in which the Coast Guard was a participant—are an important step forward in this area.

Current nautical charts for the increasing number of vessels transiting the Arctic, and to support Coast Guard missions in the Arctic, are a persistent challenge and NOAA prioritization and resources to accomplish accelerated bathymetric surveys and nautical charting are critical in this regard.

Several studies have addressed Coast Guard risks and challenges in the Arctic. Few efforts, however, have adopted systematic processes and advanced analytics with multiparty Arctic stakeholders to determine the impact and risks of the accelerating technological, industry, climate, geopolitical and economic changes currently facing the Coast Guard or envisioned in the future Arctic. The Coast Guard could benefit from a comprehensive assessment of the risks it confronts in the Arctic, similar to the multi-party, shared decision processes and analyses followed in the Coast-Guard led and supported maritime risk assessments in Prince William Sound, Cook Inlet, and the Aleutian Islands, and similar to the processes that were followed in the State of Washington's two Vessel Traffic Risk Assessments, and the vessel traffic risk assessments currently underway, led by the Washington State Department of Ecology.

A national risk framework that informs Arctic priorities is important as the Coast Guard and Department of Defense increasingly operate in the Arctic and update their Arctic strategies in light of evolving geopolitical forces. A structured approach consistently followed would guide strategic investments, promote transparency and accountability, and include assessment of existing and future Arctic policies and programs.

2. Support for Coast Guard Operations and Personnel

Changing Arctic traffic and environmental conditions will increase needs for Coast Guard emergency response, vessel safety and environmental protection capabilities. Maritime resources and other rescue equipment and supplies for response are limited in the Bering Strait region, with the U.S. Coast Guard far from possible incident locations. As Liquid Natural Gas (LNG) tankers, ore and gravel carriers, and government, research and cruise vessels make more transits, the Coast Guard will likely need to expand its capacity to monitor compliance with transit and environmental regulations in the Arctic region. Ensuring environmental response infrastructure is sufficient and foreign vessels transiting international straits are complying with regulations will be increasingly important over the next decade, as will promulgation of pollution control or mitigation measures, and measures imposed internationally by the Polar Code.

Coast Guard Arctic missions require new technology, skills, certifications and experience. As the Coast Guard increasingly adopts and regulates the use of uncrewed and autonomous maritime systems—in the air, on the water's surface and under the sea—Coast Guard needs for operational policies, procedures, certification, training and performance measurement with these new technologies will be required. Autonomous systems and uncrewed aerial systems are being tested, used and evaluated by the Coast Guard, by industry and by academia to assist with Coast Guard missions in vessel inspection; search and rescue; oil spill response; maritime infrastructure protection; and fisheries management. Training, certification and re-certification policies and procedures are thus important needs for the Coast Guard in the Arctic, and increasing use of autonomous and uncrewed systems will require the Coast Guard to adapt their operations, training and certification policies and procedures.

Key to effective operational support are robust, secure and available communications and connectivity, a perennial Arctic challenge. As important are the data, storage, retrieval, management, security and analytical issues associated with new types of structured (text, numbers, statistics) and unstructured (video, audio, sim-

ulation, pdfs, augmented and virtual reality) data being collected in the Arctic with autonomous and uncrewed systems.

Accelerating changes in the Arctic region increase the Coast Guard's needs for data and data infrastructure. Real-time and longitudinal data on sea ice, charting and navigation data, and shoreline effects data are needed. New missions and operations, such as the use of autonomous and uncrewed systems for vessel and facility inspections; oil spill prevention and response; support for U.S. geopolitical activities; border protection; humanitarian response; and fisheries management, among others, will require *secure data, server, cloud storage and networks, as well as efficient enterprise-wide data and information storage, retrieval and management, and advanced analytic techniques, all of which will be a challenge for the Coast Guard*. Memoranda of Understanding (MOUs) and resources to support this need, and/or arrangements with sister maritime and data agencies are lacking, resulting in gaps and lost opportunities to leverage new technology, data and visualization of Arctic baseline and trend data.

Coast Guard needs to support their environmental protection mission and oil spill response activities, including drills, simulations, and use of new technology, are significant. The 2014 NASEM report *Responding to Oil Spills in the Arctic Marine Environment*, (https://nap.nationalacademies.org/catalog/18625/responding-to-oil-spills-in-the-us-arctic-marine-environment) addressed challenges in the U.S. capability to respond to a catastrophic Arctic oil spill, including needs for oil spill response capabilities, research, logistics, infrastructure, training and international coordination.

Some of the NASEM 2014 report recommendations have been addressed—such as a call for evaluation of traffic in the Bering Strait and oil spill and emergency response training programs for local entities so as to develop trained response teams in local villages—but others, such as (1) the call for increased Coast Guard presence and performance capability in the Arctic, (2) establishment of a comprehensive, collaborative, long-term Arctic oil spill research and development program, or (3) increased oil spill response infrastructure and marine facilities in the Arctic, have not.

In addition, the technology, data and scientific infrastructure required for effective Arctic oil spill response noted in the NASEM 2014 report still needs significant bolstering. This includes (1) an improved real-time oceanographic-ice-meteorological forecasting system and (2) high resolution satellite and airborne imagery coupled with up-to-date high resolution digital elevation models that are updated regularly to capture the dynamic, rapidly-changing U.S. Arctic coastline.

3. Coast Guard Needs for Resilient Physical, Technological and Human Infrastructure

Coast Guard leadership in the Arctic depends on resilient physical, technological and human infrastructure. The rapid and often unpredictable changes occurring in the Arctic are likely to increase pressure on Arctic infrastructure and Coast Guard resources over the next decade. Historically, investments in Arctic infrastructure have not grown with expanded Coast Guard responsibilities. Coast Guard Evergreen strategic planning exercises have identified challenges in and lack of investment in communications, situation and domain awareness capabilities, resource availability and allocation hurdles, and lack of political and institutional will (Tingstad, et al., 2018). The resources available through the Nome Deep Draft Port project will bring new attention to and opportunities to invest in resilient maritime physical infrastructure. As important will be the required associated investments in Coast Guard technology and human infrastructure that are essential elements in a robust and resilient Coast Guard in its Arctic operations.

Developing and strengthening partnerships in the Arctic is a critical Coast Guard leadership role. Effective Coast Guard Arctic missions rely on communications, information sharing and partnerships with neighboring countries and provinces, as well as on international policy developments at the IMO, among Arctic nations, and at consultative and deliberative groups such as the Arctic Council.

Coast Guard Arctic operations occur in a unique social and cultural setting that is reliant on local and traditional knowledge and on strong bonds within and with communities and across Arctic stakeholders. Co-production of knowledge, policies, regulations, programs, and activities from the inception of those activities, in the planning stages through completion and project monitoring, with local stakeholders, indigenous partners and community leaders, as well as knowledge sharing, are crucial for the Coast Guard's effectiveness. In addition, the Coast Guard's partnerships with industry, classification societies, international partners, and R&D institutions are also extremely important for Coast Guard Arctic operations, and in developing improved Arctic maritime domain awareness.

Ultimately, a robust and resilient maritime infrastructure requires significant, long-term and interdisciplinary Arctic research. Research partnerships could clearly benefit the Coast Guard and its Arctic missions. Agencies such as the Arctic Research Commission, the polar and Arctic programs at the National Science Foundation (NSF), the National Institutes for Health (NIH), the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Bureau of Safety and Environmental Enforcement (BSEE) and the Bureau of Ocean Energy Management (BOEM), FEMA, NOAA and the U.S. Army Corps of Engineers, along with the State of Alaska, industry partners and coalitions, incorporated and unincorporated Arctic boroughs, Alaska Native Corporations, non-governmental organizations, academia, environmental groups, and community leaders are natural partners.

Mr. Chairman, Ranking Member Gibbs, and members of the Subcommittee, thank you again for the opportunity to testify before you on the U.S. Coast Guard's leadership in the Arctic. The U.S. Coast Guard is a critical leader and partner in the Arctic, with increasing demands and missions stretching their capacity and capability. Your support of the Coast Guard's critical mission needs, including maritime domain awareness, operations and personnel, and for a resilient physical, technological and human maritime infrastructure in the Arctic, is essential for an effective U.S. Coast Guard today and in the future.

Thank you for the opportunity to share these thoughts with you today and for all that you do for the men and women of the United States Coast Guard. I look forward to your questions.

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Mr. CARBAJAL. Thank you, Dr. Grabowski.

We will now move on to Member questions. Each Member will be recognized for 5 minutes, and I will start by recognizing myself.

Dr. Pincus, the United States will not be able to match Russia's fleet of 40 Arctic icebreakers, nor should we try to as a Nation with a shorter northern coastline and a more diverse fleet of subsurface and air transportation assets.

What is a better metric by which to gauge the U.S. whole Arctic capacity than simply the number of icebreakers? And in addition to their investment in icebreaking assets, how would you rate the

United States investments in the emerging Arctic to that of Russia and China?

Ms. PINCUS. You are starting with an easy question. Thank you.

I appreciate your note that the U.S. will not and should not look for parity in terms of Russian icebreakers. The vast majority of Russian icebreakers are with a commercial purpose, and they are operated by Rosatomflot, which is a Russian state-owned corporation. They have commercial purpose. Although they could certainly be used in the event of a military contingency to provide logistic support to naval vessels, their purpose is commercial. And it is not a good comparison for what the U.S. Coast Guard icebreakers do in the Arctic.

Nevertheless, the U.S. does need robust icebreaking capability. As a global power, we need to be able to project our power and presence around the world at the time and place of our choosing, including in both the Arctic and Antarctica. The fact that the two polar regions are very far apart means that to achieve both polar presences and to have sufficient redundancy to be able to respond in the event of any contingency affecting one of our icebreakers is the true metric. Do we have presence in both polar regions at the time and place of our choosing, year-round access, and do we have sufficient redundancy? And I believe those are the metrics the Coast Guard has used in developing its proposals for the Polar Security Cutter program.

The follow-on Arctic Security Cutter program, I believe, will be more responsive to activity in the region. We are seeing ice diminish faster than scientific predictions had forecasted. So, measured ice reductions are happening faster than our models had projected. That changes requirements for icebreaker access. With shrinking sea ice, we may be able to get by with lower powered icebreakers or a mix of ice-hardened and icebreaking vessels. So, I think that Arctic Security Cutter program will be in response to ice reductions as well as projections in activity.

Looking holistically at investments in the Arctic region, I think we need to toggle to the strategic ends that we are trying to achieve. When it comes to securing U.S. waters, securing U.S. citizens and people under our protection for maritime activity, that's an important metric. Can the Coast Guard observe, monitor, control, and respond to maritime activity, to growing maritime activity in the U.S. Arctic?

We are seeing important growth in cruise tourism. The larger and larger vessels are coming into the region more frequently. That poses scale risks to our missions. We are also seeing changes in the seasonality and location of fishing. So, fishing fleets are another important source of maritime casualties. There's increased air traffic in the region. So, making sure that the Coast Guard can respond to human security is critically important.

In addition, the Coast Guard needs to be able to exert domain awareness and assert sovereignty, as we saw with the Chinese and Russian naval vessels incurring into our EEZ. We need to be able to respond, to communicate that that activity, that foreign activity in our EEZ, does not have free reign. Nevertheless, I would emphasize that the Arctic is not the top U.S. strategic priority. Our priority is the Indo-Pacific and it is Europe. As a secondary theater,

every investment is going to be toggled within that framework. Again, I believe that argues well for Coast Guard presence.

But I would encourage Congress to look at U.S. capabilities in the Arctic in light of our global priorities, and scale them to respond to our multiple national objectives: human security, environmental security, securing economic assets, asserting sovereignty. And I believe that is the framework within which we could accurately make those measurements.

Thank you.

Mr. CARBAJAL. Thank you very much for that very thorough answer.

Dr. Grabowski, we know commercial traffic has been and will continue to increase in the Arctic as the icecaps melt. Would you please expound on the consequence of underfunding the Coast Guard for its environmental missions, such as fisheries enforcement and pollution response?

Ms. GRABOWSKI. Thank you, Mr. Chairman, for that question. So, the consequences of underfunding the Coast Guard in its Arctic mission are seen at multiple levels. At a local level, a failure to fully fund the Coast Guard for its oilspill response and vessel response capabilities has an impact at the local level. Indigenous populations and Arctic villages across the Arctic depend on clean air and clean water and the animals and species that live in the air, on the land, under the water, and on the water. And so, there is a risk to the local population of underfunding Coast Guard missions.

At a national level, it is important for the Coast Guard to be fully funded with respect to its environmental responsibility capabilities, because if it is not, tradeoffs occur. And the question then becomes, which of the 11 statutory Coast Guard missions is more important? And so, when tradeoffs occur because of underfunding, the missions of the Coast Guard are not met fully, and the Nation suffers.

And then, finally, globally there is an impact if we don't fulfill our missions with respect to environmental responsibility, because the voice of the United States within international fora with respect to environmental response is the voice of the Coast Guard. The Coast Guard is our voice of the Nation; at the International Maritime Organization; at the International Association of Lighthouse Authorities, where vessel safety and vessel navigation, standards, and regulations are established; and within the oilspill and the fisheries communities.

So, at many different levels, underfunding the Coast Guard with respect to oilspill responsibilities has impacts locally, for the Nation, and then globally.

Thank you, Mr. Chairman.

Mr. CARBAJAL. Thank you very much.

I will now recognize Representative Gibbs.

Mr. GIBBS. Thank you, Mr. Chairman.

I am going to kind of tie two questions together. I will start with Ms. Pincus. Your answer there, you covered a lot of it, but I guess I am really concerned about what the future holds with Russia and China. And you talked a lot about the commercial interests, and we

don't have a lot of redundancy or resilience up there, and our infrastructure needs help.

And from a national security standpoint, what do you think are actions this administration could undertake to counter some of these activities of Russia and China in the Arctic, and what is your biggest fear? You talked a lot about commercial, but also from the strategic interest.

And then tying that in with the Arctic Council, and Dr. Grabowski can answer too. We see with Russia that the Council has kind of been suspended, I guess, because of the Ukrainian situation. What do you see moving forward with that and how that ties in with our relationship with Russia and China in the Arctic? Just kind of put your glasses on and see what you anticipate and what maybe we should be looking for in the future, legislativewise or our administration, to address these issues with especially Russia and China.

Ms. PINCUS. Thank you for the question. To lead off, when it comes to the Arctic Council, I think I have been reassured in speaking with Norwegian counterparts in the last few weeks, while there had been some concern about the transition from the Russian chairmanship to the Norwegian chairmanship, which is going to take place in May of this year, Norwegians seem less anxious than they were. They seem to feel fairly confident that that transition will happen and happen smoothly, which reassures me that we will soon be in an Arctic Council led by Norway where there will be more opportunities available to continue its important work.

When it comes to Russia and China, I think that is the $64,000 question. Following Russia's invasion of Ukraine, of Crimea in 2014, the imposition of Western sanctions in 2015, we saw a very clear pivot by Russia east towards partnering with China, taking Chinese investment, using Chinese ships to ship through their Northern Sea Route. It was sort of an unintended second-order effect of that sanctions package.

Following the imposition of sanctions this year, Russia's further invasion of Ukraine, China has been less—it has, to a large extent, complied with these sanctions, particularly its larger banks and state-owned corporations have been in compliance. No Chinese vessels have sailed through the Northern Sea Route in 2022. That is significant.

Mr. GIBBS. Wait. Say that again. No Chinese vessel has what?

Ms. PINCUS. No Chinese vessels have sailed through Russia's Northern Sea Route in 2022.

Mr. GIBBS. Oh, OK.

Ms. PINCUS. So, that's really interesting.

Russia is trying to win back that Chinese investment and partnership in developing its Arctic. It needs outside capital and technical know-how to do so. It has also been seeing alternate partners. So, it has been seeking partnership with India and Vietnam and other non-Arctic states.

The extent to which the Chinese-Russia relationship deepens or not in the next year or two is very significant. That's what I am watching. It is hard to tell where that relationship is going. We have seen some mixed messages.

Obviously, there was the declaration of "no limits" friendship in January of last year, which immediately preceded Russia's invasion. Since then, there have been some mixed messages. Should a more full-fledged relationship between them appear, should their joint military exercises deepen into something closer to a military relationship or alliance, we could have a significant challenge in the Arctic region and beyond, of course. But as of yet, I think we have some reason to hope that the natural frictions in that relationship continue to keep them at arm's length. Nothing unites like a common enemy, so, it is important for U.S. foreign policy that we watch that relationship very carefully.

Thank you.

Mr. GIBBS. Dr. Grabowski, do you want to comment on the Arctic Council?

Ms. GRABOWSKI. Thank you for the second half of the question.

Clearly, our partnerships with the Arctic Council, with Arctic nations, and with all our partners across the Arctic are very important. And so, monitoring developments as relationships develop and wax and wane is clearly important.

It is significant to note that, even though there have been disconnects at the Arctic Council, the operational working relationships where people on the ground with respect to oilspill response, for instance, have continued to develop.

And so, District 17 and Sector Anchorage, the Coast Guard representatives in the Arctic, will tell you that those conversations still exist despite the discussions that are occurring at higher levels. That's reassuring from an environmental responsibility because, as we all know, oil doesn't respect international boundaries, and if there is an event, it is important that all hands show up.

Thank you.

Mr. GIBBS. Thank you for your answers. Thanks for being here.

I yield back.

Mr. CARBAJAL. Thank you, Mr. Gibbs.

I now recognize Representative Garamendi.

Mr. GARAMENDI. Mr. Chairman, thank you.

Ms. Pincus, you were responding to a question from the chairman that analyzed the role of the Coast Guard in the Arctic, and as I was trying to follow along on your responses, you were suggesting there's a series of things that need to be done.

The Coast Guard has its Arctic strategy. The Air Force, the Army, and the Navy have an Arctic strategy, which, perhaps you agree with me or not, are sophomoric, maybe freshman.

I would appreciate your analysis of those strategies in detail and your recommendations on what would be a fulsome strategy for the United States in the Arctic, including the environmental issues, which have been discussed here, and also the international competition issues. So, if you can deliver that to this committee—I don't know—maybe Friday of this week, we really need to know.

We really need to lay out an Arctic—we need to force those agencies to develop a good, strong, comprehensive Arctic strategy that, as you said, that coordinates. So, if you can do that in the remaining 1½ minutes or provide a paper on it, it would be very, very helpful. You heard the conversation I had with regard to icebreakers. So, help us.

Ms. PINCUS. Thank you. I appreciate your analysis, and I agree. I think the Service strategies can be improved. And I would point to the National Defense Strategy and the classified portions of the NDS as providing a realistic framework that prioritizes top-level priorities and deprioritizes and accepts risk for lower level priorities. And that's really important. And the classified version contains additional metrics by which those priorities and success or failure can be measured. And I think that is also very useful.

And perhaps Arctic strategy, Service strategies, Coast Guard strategies should have more significant classified sections that would permit a more frank analysis, but that frank analysis is necessary because of the cost involved and because of the competing priorities that must be adjudicated.

I think there is good reason why the Coast Guard is a value-added way to achieve national objectives in the Arctic given urgent DoD priorities. But I would agree with you, that is a strategy. And a robust, specific, measurable strategy that includes yardsticks and timelines is the first step before any other resourcing, because that's what justifies the resources and that is—a Service can be held accountable.

And I would be happy to provide further analysis to your office, absolutely. Thank you very much.

Mr. GARAMENDI. I would appreciate that, but I think the members of the committee would also, and certainly the chairman. So, please. Thank you.

Ms. PINCUS. Absolutely. Thank you.

Mr. CARBAJAL. Thank you.

Not seeing any more questions, that concludes our hearing for today.

I would like to once again thank all the witnesses for their testimony today. The contributions to today's discussion have been very informative and helpful.

I ask unanimous consent that the record of today's hearing remain open until such time as our witnesses have provided answers to any questions that may be submitted to them in writing.

I also ask unanimous consent that the record remain open for 15 days for additional comments and information submitted by Members or witnesses to be included in the record of today's hearing.

Without objection, so ordered.

The subcommittee stands adjourned.

[Whereupon, at 11:44 a.m., the subcommittee was adjourned.]

APPENDIX

QUESTION FROM HON. BOB GIBBS ON BEHALF OF HON. GARRET GRAVES TO VICE ADMIRAL PETER W. GAUTIER, DEPUTY COMMANDANT FOR OPERATIONS, U.S. COAST GUARD

Question 1. Vice Admiral Gautier, in April of this year, Acting MARAD Administrator Lessley committed to the timely processing of Deepwater Ports Act permits. In regards to the Texas GulfLink project, Administrator Lessley stated that MARAD was working with Coast Guard partners to develop a detailed timeline for the environmental review and estimated the completion of a Record of Decision by early 2023. What action is the Coast Guard taking to ensure the application stays on schedule and to maintain the commitment for a Record of Decision by early next year?

ANSWER. The Coast Guard continues to work with the Maritime Administration (MARAD) to develop a legally sufficient Final Environmental Impact Statement (EIS), per the National Environmental Policy Act (NEPA). As required by NEPA, the Coast Guard and MARAD are actively reviewing and methodically responding to approximately 1,600 public comments received during the public comment period on the Supplemental Draft EIS, which closed on November 30, 2022. The Coast Guard continues to diligently support MARAD's deepwater port licensing process during and after Final EIS development.

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