

ISSUE BRIEF

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The Coast Guard Needs Six New Icebreakers to Protect U.S. Interests in the Arctic and Antarctic

James Di Pane

The Polar regions (the Arctic and Antarctic) are seeing more natural resources and shipping lanes become available due to reduced ice coverage as well as increased presence from China and Russia. The U.S. Coast Guard must also increase its presence to protect U.S. sovereignty and economic interests. Icebreakers are essential for providing this presence in the Polar regions. However, the Coast Guard's icebreaker fleet currently consists of only two ships: one medium and one heavy polar icebreaker. This capacity is unable to meet the growing national requirement for icebreaking and presence.

In the Antarctic, heavy icebreakers specifically are necessary to support the National Science Foundation with the annual resupply of the McMurdo research station, the primary research facility in the Antarctic, and to support requests from the U.S. Department of State for enforcement of the Antarctic Treaty of 1959 because the thick ice makes it difficult to access this area.¹

Current Economic and Security Environment in the Polar Regions

As an Arctic nation, the U.S. has important economic interests in the region, including a large exclusive economic zone (EEZ) containing numerous

natural resources like minerals, oil, and gas. Approximately 13 percent of undiscovered oil resources and 30 percent of undiscovered gas resources are located in the Arctic.² Melting ice has opened up seasonal arctic shipping lanes for potentially more efficient transit of goods between Asia and North America, and has provided greater access to large deposits of energy and mineral resources that were not previously accessible. Adventure tourism and transpolar flights are also increasing the activity levels in the Arctic.

Additionally, Russia has made aggressive claims to natural resources under the icecap, arguing that its continental shelf extends far beyond its recognized territorial limits, and has invested heavily in military assets capable of operating in the Arctic.³ China is increasing its presence in both Polar regions as well, sailing its icebreaker through the Arctic recently and constructing a second icebreaker.⁴ These activities increase the level of competition and could place U.S. resources at risk for exploitation by foreign powers if the U.S. cannot effectively shape events.

The Icebreaker Fleet

Icebreakers perform nine of the eleven Coast Guard statutory missions, including law enforcement, search and rescue, and defense missions. The only two missions they do not perform are migrant and drug interdiction operations, simply because those do not occur in the Polar regions. Icebreakers are the primary U.S. instrument in polar international cooperation, competition, and conflict deterrence.⁵ The U.S. cannot shape events in an area it cannot physically access.

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The Heritage Foundation
214 Massachusetts Avenue, NE
Washington, DC 20002
(202) 546-4400 | heritage.org

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The current icebreaker fleet is incapable of effectively meeting current mission requirements. From 2010 to 2016, the U.S. only fulfilled 78 percent of ice-breaking requests.⁶ The Coast Guard currently operates one heavy polar icebreaker, the *Polar Star*, and one medium polar icebreaker, the *Healy*. The Coast Guard's other heavy polar icebreaker, the *Polar Sea*, is no longer operational and serves as spare parts for the *Polar Star*.

Commissioned in 1976, *Polar Star* was designed for a 30-year service life. The *Polar Star* requires extensive dry-dock maintenance following the annual resupply of the McMurdo research station in the Antarctic, making this its only annual mission. It completed a service life extension in 2012, designed to extend its service to 2023, when the first new icebreaker is due to be completed.⁷ Even after undergoing this maintenance cycle, it is unclear whether the icebreaker will last until then, creating a possible capability gap.⁸

While the *Healy*, commissioned in August 2000, is more modern than the *Polar Star*, it has less ice-breaking capability, and struggles to support heavy icebreaking operations like the Antarctic McMurdo resupply, and is incapable of reaching certain areas of the Arctic in all seasons.⁹ It can only provide seasonal presence in the Arctic as it cannot break through thick ice (greater than 4.5 feet) at a sustained speed.

Fleet Requirements

In order to assure the U.S. meets its strategic objectives in the Polar regions, the Coast Guard needs a fleet of icebreakers. Its official requirement calls for up to six new polar-class icebreakers, three heavy and three medium. Coast Guard Commandant Admiral Zukunft acknowledges that some flexibility comes with that requirement, as six heavy icebreakers would better fulfill all of the mission requirements.¹⁰

The requirement itself comes from the 2010 High Latitude Study, which the Department of Homeland Security affirmed in a Mission Needs Statement in June 2013.¹¹ A fleet of six new polar-class icebreakers would allow year-round access to the Arctic and redundancy and self-rescue capability, as well as the ability to meet national strategic objectives in the Antarctic.¹² The Coast Guard partially based this requirement on the concept commonly used by the U.S. Navy that it takes three ships to ensure one ship is constantly deployed. Typically, one ship is deployed, another is in training, and the final ship is undergoing major maintenance.¹³

The new heavy icebreakers must be able to break 6 to 8 feet of ice at a continuous speed of 3 knots, and possess the ability to break 21 feet of ice using the back and ram method.¹⁴ Many of their planned features are similar to those of the *Polar Star*, but with key improvements. The new icebreakers are envisioned to have

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 5. Briefing with author at Coast Guard Headquarters by U.S. Coast Guard Arctic and Icebreaker Personnel, February 16, 2018.
 6. U.S. Government Accountability Office, "Coast Guard: Status of Polar Icebreaking Capability and Recapitalization Plan."
 7. U.S. Coast Guard, Acquisition Directorate, "Polar Icebreaker," <https://www.dcms.uscg.mil/Our-Organization/Assistant-Commandant-for-Acquisitions-CG-9/Programs/Surface-Programs/Polar-Icebreaker/> (accessed April 4, 2018).
 8. U.S. Government Accountability Office, "Coast Guard: Status of Polar Icebreaking Capability and Recapitalization Plan," p. 23.
 9. U.S. Government Accountability Office, "Coast Guard: Status of Polar Icebreaking Capability and Recapitalization Plan," p. 16.
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 12. Briefing with author at Coast Guard Headquarters by U.S. Coast Guard Arctic and Icebreaker Personnel, February 16, 2018.
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 14. U.S. Coast Guard, Acquisition Directorate, "Polar Icebreaker Operational Requirements Document," November 2015, https://www.dcms.uscg.mil/Portals/10/CG-9/Surface/Icebreaker/ORD_Report.pdf?ver=2017-08-01-122741-043 (accessed April 4, 2018).
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improved reliability and maintainability, ship control and communications, as well as increased space, weight, and power margins to add scientific or defense equipment later if the need arises.¹⁵ These changes are crucial for addressing the shifting mission needs on ships that will be in service for over thirty years.

Recent Activity on Upgrading the Fleet

The program for the design and construction of a new polar-class icebreaker began in 2013 with a budget request for \$23 million. The Coast Guard has taken steps to advance the program. In August 2016, the Coast Guard created an integrated program office with the U.S. Navy in order to leverage the Navy's shipbuilding expertise to assist in the acquisition effort. It also engaged with the shipbuilding industry in order to get a better understanding of the domestic shipbuilding market.¹⁶

On March 2, 2018, the Coast Guard's Integrated Program Office released a Request for Proposals for the first heavy icebreaker to industry for the advance procurement and detail design, with options for detail design and construction for up to three heavy polar icebreakers.¹⁷ The Coast Guard's fiscal year (FY) 2019 budget requests \$750 million to award the detail design and construction contract for the first new heavy icebreaker, as well as another service life extension for the *Polar Star*.¹⁸

Recommendations

In order to meet the security needs in the Polar regions, Congress and the Coast Guard should:

- **Fully fund the Coast Guard's budget request of \$750 million for FY 2019.** The Coast Guard now estimates that the cost of each icebreaker will be well under the original estimate of \$1 billion. Given the important U.S. interests in the Arctic and Antarctic and increasing competition, it is essential to provide the Coast Guard with the

necessary funding for this first icebreaker, followed by the remaining five.

- **Acquire the first three heavy icebreakers using a block buy strategy.** A block buy strategy could save upwards of \$200 million for the program.¹⁹ While some program flexibility is lost using this strategy, it is made up for by lowering the overall cost of the program.
- **Assess whether to acquire medium icebreakers or three more heavy icebreakers of common design to reach a total of six.** According to a study conducted by the National Academy of Sciences, a fourth heavy icebreaker could cost \$692 million versus \$786 million for the first in class medium icebreaker, a savings of nearly \$1 million for the first ship alone.²⁰ A fleet of heavy icebreakers would also provide more capability, as they can complete the entire suite of icebreaking missions, and reduce maintenance costs.

Conclusion

The Coast Guard requires a fleet of new polar-class icebreakers to defend America's security and economic interests in the Polar Regions. Icebreakers are crucial for meeting the separate challenges of operations in the Arctic and Antarctic, and the current fleet is not capable of meeting those challenges effectively. The Coast Guard has made progress on this program recently, and the proposed new ships will have better capabilities for securing America's interests for the next several decades. Because of this, Congress should fully fund the six new icebreakers needed for this program.

—*James DiPane is a Research Assistant in the Center for National Defense, of the Kathryn and Shelby Cullom Davis Institute for National Security and Foreign Policy, at The Heritage Foundation. Nathaniel DeBevoise, a member of The Heritage Foundation's Young Leaders Program, contributed research to this report.*

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