

Science mission requirements for US govt's future Arctic icebreakers

What's needed?



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BLUF

USARC, NSF, and ONR propose, thru AICC, that UNOLS establish a special purpose committee to review and refresh science missions and affiliated science mission requirements for future federal icebreakers operating in the Arctic.



Why am I here, speaking about this...?

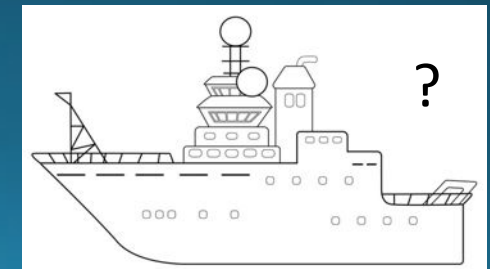
USARC's statements to POTUS and Congress on icebreakers

“Icebreakers capable of accessing all regions of the Arctic Ocean remain an enduring and long-term requirement of the scientific research community.”

“Planning needs to begin now to ensure continued and enduring access to all regions of the Arctic Ocean via icebreakers equipped with the modern scientific tools and enhanced capabilities necessary to meet US Arctic research requirements.”

In the future, what US icebreaker(s) will be used for Arctic research?

- *R/V Sikuliaq*, in light/seasonal ice
- *USCGC Healy*, service life to 2030, & beyond...
- USCG “Commercially Available Polar Icebreaker?” in FY24 budget request
- USCG Arctic Security Cutter, envisioned, but no program of record, yet? A Polar Sec. Cutter?



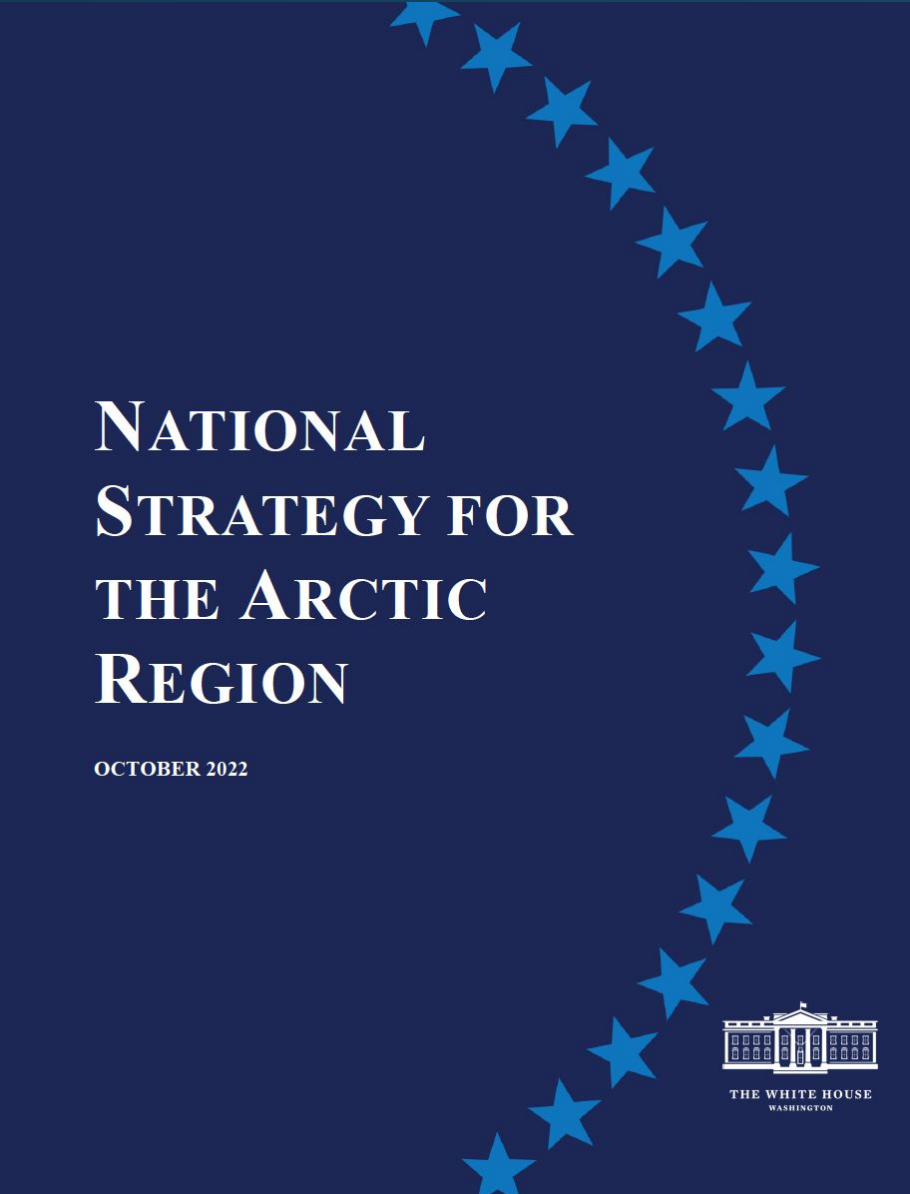
NATIONAL STRATEGY FOR THE ARCTIC REGION

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Guiding principle 3

- **Plan for Long-Lead Time Investments:** Many of the investments prioritized in this strategy will require long lead times. We will be proactive, anticipating changes coming to the Arctic over the next several decades and making new investments now to be prepared. Among other investments, **we will procure additional icebreakers**, enhance communications and maritime transportation infrastructure, support communities to build climate resilience, **and invest in scientific research.**



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Guiding principle 5

- **Commit to a Whole of Government, Evidence-Based Approach:** The Arctic extends beyond the responsibility of any single region or government agency. U.S. Federal departments and agencies will work together to implement this strategy.
- We will improve our understanding of the Arctic environment and develop whole-of-government **capabilities** [e.g., **icebreakers**] to support expanding activity in the U.S. Arctic region.

USCGC HEALY, and then what...?



- Healy entered into service in 2000, and original service life is until 2030
- Will undergo service life extension program, via 5-yr production betw '26-'30
- Good until when...mid 2030s...beyond?
- Ultimately replaced by what...? A PCS or an Arctic Security Cutter (ASC)
- No “program of record” yet for ASC, but possibly “soon”
- USCG will need “requirements” for the ASC, including science mission requirements (SMRs) based on anticipated science missions (SMs).
- NB: may even be time for additional requirements for PCS conceptual design
- **Who's best to provide SMs & SMRs for future USG icebreakers? ==> UNOLS**

UNOLS precedent

- In 2010, NSF tasked UNOLS to establish a committee to review (refresh) SMs & SMRs for a Polar Research Vessel (PRV) study completed in 2006.
- Committee led by academic researcher, w/ members from research vessel user community and tech/operational experts
- Comm. met several times and held a workshop and survey, for broader input
- Final report completed in February 2012, and given to NSF

We (USARC, NSF, ONR) propose a repeat of the effort for future US government icebreakers operating in the Arctic

NSF's current long-term focus is on the other pole, the Antarctic

- An Antarctic Research Vessel (ARV), to begin ops in 2031 (depending on several "ifs") and to replace *RVIB Nathaniel B. Palmer*
- ARV not previously discussed in UNOLS
- Vessel Integrator, Industry Day 7/12/23 (seeking single vendor for all)



	<i>Nathaniel B. Palmer</i>	Antarctic Research Vessel	
Length	309 ft	365 ft	~20% Larger
Sci/Tech Berthing	45	55*	~20% More scientists
Total Lab Space	3,805 sq ft	4,497 sq ft	~20% More lab space
Working Deck Space	4,054 sq ft	7,197 sq ft	~80% More deck space
Endurance	65 days	90 days*	~40% Longer endurance
Icebreaking	3' @ 3 kts	4.5' @ 3 kts*	50% Greater icebreaking

How many USCG icebreakers?

July 2010: USCG High Latitude Study: 6 (3 + 3)

June 2012: Papp: 6 (3 + 3). \$3.2B

June 2013: DHS: 6 (3 + 3). PSC acquisition program established

Feb. 2015: Zukunft: 6 (3 + 3)

“You can get wrapped around the axle saying do we need six (icebreakers), do we need three and three, or four and two? Whatever it may be, there’s a least a need for one and we haven’t even started on the one yet.” -Papp in Senate hearing 3/5/15

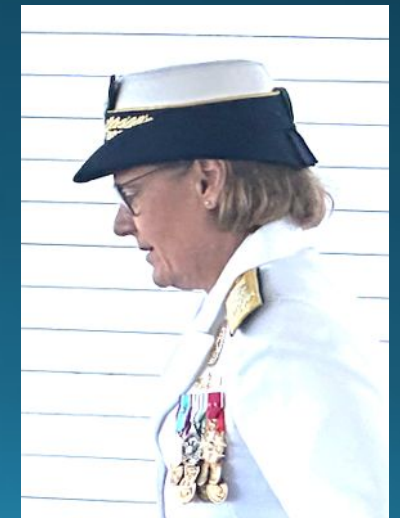
Feb. 2017: Integrated Program Office awards five contracts to industry

July 2017: Nat. Academy of Science report says block-build 4 icebreakers

April 2019: USCG contract to Halter Marine for design and construction of PSC

Nov. 2022: Halter sold to Bollinger. Estimated delivery of 1st PSC is no earlier than 2028.

April and June 2023: USCG testified that the new fleet mix analysis concluded a requirement of 8 or 9 icebreakers



Excerpts from the James M. Inhofe National Defense Authorization Act (NDAA) for FY23 (enacted 12.23.22)

- If the Commandant determines, by April 26, 2023, that it is not more cost effective and efficient to construct 3 additional PSCs rather than constructing 3 PSCs, or if she fails to make a determination by June 1, 2024, then she shall **establish a program office for ASC acquisition** no later than January 1, 2025.
- Not later than 270 days (thus, as late as September 28, 2025), after the date on which the Commandant establishes a program office...the Commandant shall complete the evaluation of **requirements** for the ASC and initiate the design phase of that class.
- Report to Congress the **fleet mix analysis** of polar icebreakers and icebreaking tugs by June 21, 2023
- If the Command acquires a **commercially available polar icebreaker**, she “shall ensure scientific research capacity comparable to the Coast Guard Cutter Healy (WAGB 20), for the purposes of hydrographic, bathymetric, oceanographic, weather, atmospheric, climate, fisheries, marine mammals, genetic and other data related to the Arctic, and other research as the [Commerce] Under Secretary [i.e., NOAA Administrator Rick Spinrad] determines appropriate.”
- **NOAA** will be responsible for costs related to: (a) science party; (b) the scientific mission; and (other scientific assets and equipment that augment such an icebreaker beyond full operational capacity as determined by the NOAA Administrator and Commandant.

We seek AICC endorsement of the proposed activity.

Full details, including draft statement of task, have been provided.

Thank you.