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# The U.S. Army's Long-Range Hypersonic Weapon (LRHW)

## What Is the Army's Long-Range Hypersonic Weapon?

The Army's Long-Range Hypersonic Weapon (LRHW) (**Figure 1**), with a reported range of 1,725 miles, consists of a ground-launched missile equipped with a hypersonic glide body and associated transport, support, and fire control equipment. According to the Army:

This land-based, truck-launched system is armed with hypersonic missiles that can travel well over 3,800 miles per hour. They can reach the top of the Earth's atmosphere and remain just beyond the range of air and missile defense systems until they are ready to strike, and by then it's too late to react.

**Figure 1. Artist Rendition of a Notional LRHW Unit**



**Source:** <https://www.popularmechanics.com/military/weapons/a36421213/army-hypersonic-weapon-1700-mile-range/>, accessed November 18, 2021.

The Army further notes:

The LRHW system provides the Army a strategic attack weapon system to defeat Anti-Access/Area Denial (A2/AD) capabilities, suppress adversary long-range fires, and engage other high payoff/time critical targets. The Army is working closely with the Navy in the development of the LRHW. LRHW is comprised of the Common Hypersonic Glide Body (C-HGB), and the Navy 34.5 inch booster.

## LRHW Components

### Missile

The missile component of the LRHW is reportedly being developed by Lockheed Martin and Northrop Grumman. When the hypersonic glide body is attached, it is referred to as the Navy-Army All Up Round plus Canister (AUR+C). The missile component serves as the common two-stage booster for the Army's LRHW and the Navy's Conventional Prompt Strike (CPS) system, which is

intended to be fired from both surface vessels and submarines.

### Common Hypersonic Glide Body (C-HGB)

The C-HGB is reportedly based on the Alternate Re-Entry System developed by the Army and Sandia National Laboratories. Dynetics, a subsidiary of Leidos, is currently under contract to produce C-HGB prototypes for the Army and Navy. The C-HGB "uses a booster rocket motor to accelerate to well-above hypersonic speeds, and then jettisons the expended rocket booster." The C-HGB is to be maneuverable, making it more difficult to detect and intercept and "can travel at Mach 5 or higher ... at least five times faster than the speed of sound or up to 13,000 miles per hour."

## LRHW Organization and Units

The LRHW is to be organized into batteries. Initially, each battery reportedly is to have four Transporter Erector Launchers (TELs), each with two missiles, a mobile Battery Operations Center, and a number of support vehicles such as the Army's Heavy Expanded Mobility Tactical Truck (HEMTT) to transport the LRHWs.

Reportedly, the 5<sup>th</sup> Battalion, 3<sup>rd</sup> Field Artillery Regiment at Joint Base Lewis-McChord, Washington, is to operate the first battery of eight LRHW missiles. The battalion, also referred to as a Strategic Long-Range Fires battalion, is part of the Army's 1<sup>st</sup> Multi Domain Task Force (MDTF), a unit in the Pacific-oriented I Corps also stationed at Joint Base Lewis-McChord. Other LRHW batteries are planned for Strategic Long-Range Fires battalions in the remaining MDTFs scheduled for activation.

## LRHW Testing and Program Activities

The Army had planned for three flight tests of the LRHW before the first battery fielding in FY2023. On October 21, 2021, the booster rocket carrying the C-HGB vehicle reportedly failed a test flight resulting in what defense officials characterized as a "no test" because the C-HGB had no chance to deploy. Reportedly, a June 2022 test of the entire LRHW missile also resulted in failure.

### Flight Test Delays

In October 2022, it was reported the Department of Defense (DOD) delayed a scheduled LRHW test in order to "assess the root cause of the June [2022] failure." Reportedly, the delayed test will be rescheduled to the first quarter of FY2023.

### DOD Inspector General Evaluation of LRHW and Navy Conventional Prompt Strike

On August 8, 2022, the DOD Inspector General (IG) informed the Army and Navy that it would initiate an

evaluation “to determine whether the Army Long Range Hypersonic Weapon and the Navy Conventional Prompt Strike Program Offices are meeting their weapons systems development and fielding timelines and milestones.” It is not known when the DOD IG evaluation will be completed.

### LRHW Ground Support Equipment Procurement

In October 2022, the Army reportedly announced it would transition from an Other Transaction Agreement (OTA) acquisition strategy to a traditional Federal Acquisition Regulation (FAR) acquisition strategy for LRHW ground support equipment (LRHW Transporter Erector Launcher [TEL] and Battery Operations Center). By adopting a FAR acquisition strategy, the Army hopes to attract multiple bidders for LRHW ground support equipment.

Reportedly, the Army plans to field a prototype LRHW battery in FY2023 and then transition to a formal Program of Record and field second and third batteries in FY2025 and FY2027. There are also plans for technology insertions intended to upgrade the C-HGB in FY2026 and FY2027.

### FY2023 LRHW Budgetary Information

**Table 1. FY2023 LRHW Budget Request**

Funding Category	Total Request (\$M)
<b>RDT&amp;E</b>	\$806
<b>Procurement</b>	\$249

#### Sources:

**RDT&E**—Department of Defense Fiscal Year 2023 Budget Estimates, Army Justification Book 2a of 2, RDT&E, Volume II, Budget Activity 4, April 2022, p. 700 and Department of Defense Fiscal Year 2023 Budget Estimates, Army Justification Book 2e of 2, RDT&E, Volume II, Budget Activity 5D, April 2022, p. 185.

**Procurement**—Department of Defense Fiscal Year 2023 Budget Estimates, Army Justification Book of Missile Procurement, April 2022, p. 66.

**Notes:** RDT&E = Research, Development, Test & Evaluation; \$M = U.S. dollars in millions.

**Table 2. FY2023 LRHW Authorizations and Appropriations**

Funding Category	Authorized (\$M)	Appropriated (\$M)	Total Request (Qty.)
<b>RDT&amp;E</b>	\$857	\$862	—
<b>Procurement</b>	\$249	\$249	—

#### Sources:

**RDT&E Authorized:** P.L. 117-263, H.R. 7776—James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, December 27, 2022, pp. 734-735; **Procurement Authorized:** P.L. 117-263, p.710; **RDT&E Appropriated:** Fiscal Year 2023 Omnibus Appropriations Bill, H.R. 2617, Division C—Department of Defense Appropriations Act, 2023, December 19, 2022, p. 89K and 89N; **Procurement Appropriated:** Fiscal Year 2023 Omnibus

Appropriations Bill, H.R. 2617, Division C—Department of Defense Appropriations Act, 2023, December 19, 2022, p. 57A.

### Considerations for Congress

Oversight questions Congress could consider include the following:

#### LRHW Missile Costs

According to a January/February 2022 Arms Control Association article “Congress Authorizes Accelerated Hypersonics Plan”:

The CAPE office [Office of the Secretary of Defense Cost Assessment and Program Evaluation] estimated that the Army’s LRHW program will cost the Pentagon \$4.4 billion for development and \$2.5 billion for production. With a plan for 66 missiles, including 48 development models, the cost of each LRHW missile comes to \$106 million.

A January 2023 Center for Strategic and International Studies (CSIS) report, “The First Battle of the Next War: Wargaming a Chinese Invasion of Taiwan,” when discussing hypersonic weapons, suggests:

Their high costs limits inventories, so they lack the volume needed to counter the immense numbers of Chinese air and naval platforms (p. 5).

Given concerns about LRHW costs and how they could influence LRHW inventories, policymakers might decide to further examine LRHW missile costs.

#### LRHW Overseas Basing

On March 30, 2021, the Chief of Staff of the Army, discussing the LRHW, reportedly noted, “The politics of where they’re based, how they’re based, will be up to the policymakers and the diplomats.” Given the 1,725 mile range limitation of the LRHW, the inability to secure overseas basing rights for these units could limit or negate their effectiveness. A 2022 RAND study, “New Directions for Projecting Land Power in the Indo-Pacific,” further notes, regarding Army long-range precision fires systems (including LRHW):

Our preliminary analysis finds that there are too many constraints on effectiveness for the Army to have a decisive effect on most scenarios through LRPFor to make an effective long-term argument that the cost and feasibility compare favorably with other joint options for fires in this theater.(p. xviii).

Two of the LRHW constraints examined in the study were basing restrictions and weapons ranges, with both constraints raising concerns about the feasibility of the LRHW in the Indo-Pacific region. Recognizing the importance of LRHW basing, policymakers might examine ongoing Army efforts to secure LRHW basing in the Indo-Pacific region.

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