

Costs of United States Military Activities in the Wider Middle East Since October 7, 2023

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Summary

In the two years since October 7, 2023, the United States has incurred significant costs in a broad set of military actions in support of U.S., Israeli, and allied interests in the wider Middle East. The costs of these actions through September 2025 are estimated to cost from US \$9.65 - \$12.07 billion. In addition, according to a companion report by William D. Hartung, the U.S. spent some \$21.7 billion on military aid to Israel in the same period, for a total of \$31.35 - \$33.77 billion (see Table 1).²

Table 1. U.S. Spending on Post-10/7 Wars, Oct. 2023 – Sept. 2025

U.S. Military Aid to Israel	\$21.7 Billion
U.S. Military Operations in Yemen, Iran, and the Wider Middle East Region	\$9.65 – \$12.07 Billion
Total	\$31.35 – \$33.77 Billion

This report updates previous estimates by the same author of United States spending on U.S. activities in the wider Middle East since October 7, 2023. A prior report published in October 2024 estimated these costs at \$4.86 – \$4.87 billion in the first year.³ Since then, between October 1, 2024 – September 15, 2025 (FY2025), the U.S. has incurred an additional \$4.8 – \$7.2 billion in costs, for an estimated total range of \$9.65 - \$12.07 billion in two years (see Table 2).

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² Hartung, William D. (2025, October 7). U.S. Military Aid and Arms Transfers to Israel, October 2023 – September 2025. *Costs of War, Watson School of International and Public Affairs, Brown University*. <https://costsofwar.watson.brown.edu/paper/AidToIsrael>

³ Bilmes, L., Hartung, W., & Semler, S. (2024, October 7). United States Spending on Israel's Military Operations and Related U.S. Operations in the Region, October 7, 2023-September 30, 2024. *Costs of War, Watson School, Brown University*. <https://costsofwar.watson.brown.edu/paper/united-states-spending-israels-military-operations-and-related-us-operations-region-october-7>

Table 2. Costs of U.S. Activities in Wider Region since Oct. 7, 2023 (in Billion \$USD)

		Cost - Lower-End Estimate (\$)	Cost - Higher-End Estimate (\$)
Previous	FY 2024	\$4.86	\$4.87
Current	FY 2025		
	Houthis/Regional	\$2.76	\$4.95
	Iran	\$2.04	\$2.25
	Total 2025	\$4.8	\$7.2
All	Total, 2 Years	\$9.65	\$12.07

Overall, in the past year (FY 2025), the U.S. government escalated its military operations and commitments in the region. In addition to sending two carrier strike groups to the Red Sea area to protect maritime shipping from Houthi attacks and maintaining a significant military presence throughout the year, the U.S. military conducted two large-scale operations: Operation Rough Rider (ORR), a bombing campaign against the Houthis in Yemen, and Operation Midnight Hammer (OMH), a strike against Iran’s nuclear facilities. The combined costs of these activities are estimated to range from \$4.8 to \$7.2 billion. As stated above, this cost is in addition to the continued direct U.S. assistance to Israel (\$21.7 billion as estimated by William D. Hartung in a companion report for Costs of War), as well as any costs associated with expanded strategic and financial ties to Saudi Arabia and other countries in the region.⁴

This report is designed to estimate U.S. budgetary expenditures, not to evaluate U.S. policies in the region. The report uses primary and/or recognized sources of data wherever possible and provides a range of costs where there is some uncertainty. The report does not attempt to place a financial value on certain additional costs incurred, although they may be considerable, such as the amount of time and managerial capacity that the U.S. government has devoted to diplomacy, negotiations, military decision-making, brokering commercial arms deals, or costs/benefits to America’s “soft power” and alliances in the region.

⁴ Hartung, William D. (2025, October 7).

I. Fighting the Houthis in Yemen and the Wider Region

Context: U.S. Military Presence in the Wider Middle East and Actions in Yemen

The U.S. has long maintained a large presence in the Middle East, including military bases or facilities in Bahrain, Egypt, Iraq, Israel, Jordan, Kuwait, Qatar, Saudi Arabia, Syria, the United Arab Emirates, and other countries⁵. The largest U.S. base in the region in terms of personnel is Al Udeid Air Base in Qatar, which includes the U.S. Central Command (CENTCOM) headquarters and maintains over 10,000 U.S. troops. Over the past year, the U.S. has maintained between 40,000 and 43,000 U.S. service members in the region, including those on U.S. bases and at sea⁶.

For most of the past year, at least one U.S. aircraft carrier strike group (CSG)⁷ has been operating in or near the Red Sea, primarily to counter Houthi attacks on commercial shipping, with the USS Dwight D. Eisenhower (IKE) initially assigned and later relieved by the USS Harry S. Truman. The Eisenhower's deployment was extended multiple times, and other carriers including the USS Theodore Roosevelt and USS Abraham Lincoln were also deployed to the region within the last year to maintain a continuous carrier presence and show of force against the Houthis and in support of U.S. allies, including Egypt, whose economies rely on revenues from shipping in Suez canal⁸.

Costs to the United States of Engaging and Fighting the Houthis (Oct. 1, 2024 – Present)

Yemen is a large country almost twice the size of Wyoming. It occupies a strategic location that controls the Bab el-Mandeb straits, which connect the Red Sea to the Gulf of Aden and the Indian Ocean. Prior to October 2023, some 19,000 vessels carrying 30% of the world's container traffic passed through the straits each year⁹. After the October 7, 2023 Hamas attacks on Israel, the Houthis (members of Yemen's Shia-Zaydi minority group) started launching drones and missiles at Israeli and at commercial ships, which they claimed was in support of Palestinians in Gaza. Over the course of 18 months following October 2023, the group carried out 155 strikes on Israeli territory and launched more

⁵ USCENTCOM AoR map. U.S. Central Command. <https://www.centcom.mil/MEDIA/igphoto/2002844889/>

⁶ Ferragamo, M., Roy, D., Masters, J., Merrow, W. (2025, June 23). *U.S. Forces in the Middle East: Mapping the Military Presence*. Council on Foreign Relations. <https://www.cfr.org/article/us-forces-middle-east-mapping-military-presence>

⁷ Ferragamo, M., et al. (2025).; A Carrier Strike Group (CSG) is a vast operation, including (in addition to the carrier itself), 1 cruiser, 4-6 destroyers, 75 aircrafts, 1-2 supply ships, 7,500 sailors and personnel, and in some cases a submarine. The U.S. has only 11 CSGs in total, and they require continuous maintenance and frequent rotation (every 6-8 months).

⁸ Mongilio, H. & Lagrone, S. (2025, June 18). Middle East Aircraft Carrier Commitment Keeps Pressure on U.S. Fleet, Deployment Data Shows. *USNI News*. <https://news.usni.org/2025/06/18/middle-east-aircraft-carrier-commitment-keeps-pressure-on-u-s-fleet-deployment-data-shows>;

⁹ LaRocco, L. A. (2023, December 4). Viewpoint: What Red Sea attacks mean for shipping. *Freight Waves*. <https://www.freightwaves.com/news/viewpoint-what-red-sea-attacks-mean-for-shipping>; Shkuro, S. (2023, August 31). What are the Major Sea Routes in the World? *Sea Rates*. <https://www.searates.com/blog/post/what-are-the-major-sea-routes-in-the-world>

than 520 attacks targeting at least 176 ships¹⁰. Consequently, global trade has been disrupted and the majority of ships have been obliged to re-route through the Cape of Good Hope, and/or to pay exorbitant insurance, adding time and expense to each trip¹¹.

The Houthi situation is part of a complex long-running civil war between the Iranian-backed Houthi movement headquartered in Sanaa and the internationally-recognized Presidential Leadership Council (PLC) based in Aden and backed by Saudi Arabia. The U.S. engagement with the Houthis over the past two years thus needs to be viewed not only as part of the Israel/Gaza conflict but also within the context of the rivalry between Iran (which supplies money and weapons to the Houthis) and the Saudis and Gulf States, as well as the Houthi's ambition to take over all of Yemen (the group currently controls some 1/3 of the geographic area and over 2/3 of the population)¹². The official Houthi Sarkha (slogan) makes its priorities clear: "God is great, Death to America, Death to Israel, Curse on the Jews, Victory to Islam"¹³.

In this geopolitical context, the largest budgetary expenditures for the U.S. taxpayer in FY 2025 have been related to military actions taken against the Houthis, both directly and as part of U.S. efforts to protect commercial shipping. Throughout 2024 and early 2025, U.S. Central Command (CENTCOM) carried out a series of precision airstrikes against the Houthis¹⁴, as part of multinational "Operation Prosperity Guardian", and "Operation Poseidon Archer" to protect shipping lanes. For example, on January 8, 2025, U.S. forces launched major strikes directly against two Advanced Conventional Weapon (ACW) storage facilities within Houthi-controlled territories of Yemen, which was a prelude to an escalation in the spring as well as "Operation Rough Rider," which was specifically targeted at degrading Houthi military capabilities.¹⁵

On March 15, 2025, the U.S. military launched Operation Rough Rider (ORR), the longest military campaign of President Donald Trump's second term. The mission targeted Houthi missiles, as well as their unmanned aerial vehicle (UAV) infrastructure, radar systems, and storage sites with the goal to restore navigation in the Red Sea and Gulf of Aden. Over 1,000 strikes were conducted by U.S. Central Command, degrading

¹⁰ ACLED data indicate that Houthi attacks targeted commercial vessels linked to over 50 nationalities, of which only 17% had officially known affiliations with Israel, the U.S., or the UK. Nevola, L. (2025, May 6). A Red Sea hall of mirrors: US and Houthi statements vs. actions. *ACLED*. <https://acleddata.com/report/red-sea-hall-mirrors-us-and-houthi-statements-vs-actions>

¹¹ Nevola, L. (2025, May 6).

¹² Khoury, N. A. (2025, June 12). *Yemen's Houthi Movement Reconsidered*. Arab Center Washington DC. <https://arabcenterdc.org/resource/yemens-houthi-movement-reconsidered>

¹³ U.S. Department of State. *2017 Report on International Religious Freedom: Yemen*. <https://www.state.gov/reports/2017-report-on-international-religious-freedom/yemen>; Section III

¹⁴ Nevola, L. (2025, May 6).

¹⁵ U.S. Central Command. (2025, January 8). *CENTCOM Forces Strike Houthi Advanced Conventional Weapon Storage Facilities in Yemen*. <https://www.centcom.mil/MEDIA/PRESS-RELEASES/Press-Release-View/Article/4023812/centcom-forces-strike-houthi-advanced-conventional-weapon-storage-facilities-in/>

infrastructure and killing senior commanders¹⁶. ORR involved striking more than 1,000 Houthi targets in Yemen using 2000 -pound bombs, precision munitions, missiles, and Patriot air defense systems¹⁷. The U.S. deployed two carrier strike groups, the Carl Vinson and the Harry S. Truman, as well as fighter aircraft, bombers, drones, and other weaponry¹⁸. The costs involved were highly asymmetric, with the U.S. employing costly air defense systems and munitions to take out low-cost Houthi drones¹⁹. In some cases the U.S. military was employing nearly \$2 million missiles to defeat drones that cost as little as \$2,000²⁰. The total U.S. costs of these activities during the past year (FY25) are estimated from a lower-end range of \$2.8 billion to a mid/higher-end range of \$4.9 billion, as explained below (see Table 3).

Table 3: Cost of U.S. Military Actions Against the Houthis, FY 2025

(Sources listed under “Item” column with lower-case letters such as (a), (b) or (c) matching the citation list found below Table 3.)

Category	Item	Units	Unit Cost	Cost – Lower Range Estimate (\$)	Cost – Higher Range Estimate (\$)
	<i>Logistics</i>				
ORR (Operation Rough Rider)	Patriot system transport (land) ^(b)	2	\$10,000,000	\$10,000,000	\$10,000,000
ORR	Patriot system transport (air, 73 C-17 flights) ^(c)	2	\$27k/hour; 10–15 hrs./flight	\$39,420,000	\$59,130,000

¹⁶ U.S. Department of War. (2025, April 29). *Statement by Assistant to the Secretary of Defense for Public Affairs and Senior Advisor Sean Parnell on the First 100 Days at the Department of Defense*. [Release]. <https://www.war.gov/News/Releases/Release/Article/4169267/statement-by-assistant-to-the-secretary-of-defense-for-public-affairs-and-senio/>

¹⁷ Demarest, C. (2025, April 11). U.S. Moves Patriot defenses to Middle East with dozens of C-17 flights. *Axios*. <https://www.axios.com/2025/04/11/paparo-patriot-missiles-houthis-iran> ; Gordon, C. (2024, October 17). B-2 Bombers Strike Houthi Targets in Yemen. *Air & Space Forces Magazine*. <https://www.airandspaceforces.com/b-2-stealth-bombers-strike-houthis-targets-yemen/>; OSMP Collection. *US munitions used in Yemen 2025*. <https://osmp.ngo/collection/us-munitions-in-yemen/>

¹⁸ U.S. Department of War. (2025). *Statement on the First 100 Days at the Department of Defense*.

¹⁹ The cheapest drones were typically made with low-cost Iranian components, then assembled in Yemen. Cubukcu, S. & Jordan, E. (2025, July 26). The Houthi Drone Supply Chain. *Orion Forum*. <https://orionpolicy.org/the-houthi-drone-supply-chain>

²⁰ Smith, W., Saeed, F., Kelanic, R., Brew, G. (2025, May 20). Was US Military Action against the Houthis Worth It? *Inkstick*. <https://inkstickmedia.com/was-us-military-action-against-the-houthis-worth-it/>

	Estimated C-17 depreciation (10–15% of hourly rate) (d)			\$3,942,000	\$8,869,500
	<i>Carrier Strike Groups</i> (e)				
General	Aircraft Carrier 1 (f)	9–10 months	\$9.05m per day	\$1,727,544,000	\$2,712,000,000
ORR	Aircraft Carrier 2 (g)	60 days	\$9.04m per day	\$542,400,000	\$1,645,280,000
	<i>Munitions</i>				
ORR	Bombs (a)	1,000–1,500	\$85,000	\$85,000,000	\$127,500,000
ORR	Tomahawks(a)	75	\$1.5–\$1.9m	\$112,500,000	\$142,500,000
ORR	Missiles AGM-158 (a)	20	\$1.5m	\$30,000,000	\$30,000,000
Losses	F/A-18 Super Hornets(h)	3 lost	\$70m	\$210,000,000	\$210,000,000
	Total Cost Range FY25			\$2,760,806,000	\$4,945,279,500

Sources and Notes for Table 3:

a) Kube, C., & Lubold, G. (2025, May 8). Trump operation against Houthis cost more than \$1 billion. *NBC News*. <https://www.nbcnews.com/politics/national-security/trump-operation-houthis-cost-1-billion-rcna205333>

b) The U.S. spent > \$10 million moving at least two Patriot missile defense systems to the region by ship. Kube, C., & Lubold, G. (2025, May 8).

c) Testimony by Adm. Sam Paparo (U.S. Indo-Pacific Command): 73 C-17 flights to move each Patriot system; C-17 ≈ \$27,000/hour; 10–15 hours per flight. “To Receive Testimony on the Posture of United States Indo-Pacific Command and United States Forces Korea: Stenographic Transcript, April 10, 2025,” United States Senate, Committee on Armed Services, 4102025fulltranscript.pdf, 73.

d) Hansard (UK Parliament, Apr 8, 2010): fully loaded C-17 cost £44,000/mile. *“Military Aircraft: Operating Costs”, Vol 508*. <https://hansard.parliament.uk/commons/2010-04-08/debates/10040879000012/MilitaryAircraftOperatingCosts>

e) Hendrix, J. (2013). At What Cost a Carrier? *CNAS*. 2025 value ≈ \$9.05m/day (inflation-adjusted). <https://www.cnas.org/publications/reports/at-what-cost-a-carrier>

f) Aircraft Carrier 1 present from Oct 24–Jun 2025. Low estimate attributes only 70% of cost to this mission; high estimate attributes the full cost to this mission.

g) Aircraft Carrier 2 assumed at 100% for 60 days.

h) Three F/A-18 Super Hornets lost overboard; cost reflects estimated budgetary outlay for replacement.

Cost Drivers

The main cost drivers of U.S. operations against the Houthis include:

1. Munitions (Bombs, missiles, and other munitions including seven drones shot down.) Munitions included 2,000-pound bombs, at least 75 Tomahawk cruise missiles, and at least 20 AGM-158 missiles²¹. These are estimates based on the lowest possible number of munitions used during Operation Rough Rider, and the low/high range reflects a range of prices, depending on the quantity and specific type of munition and when it was acquired²². The full cost may be higher if a larger number of items were used or purchased at higher prices.
2. Logistics (including relocating Patriot air defense from the Indo-Asian theater and depreciation of aircraft). The specific expenses included here for logistics include the cost of shifting two entire Patriot air missile defense battalions from the Indo-Pacific theatre to the CENTCOM theatre. These systems intercept missiles and aircraft. The moves required 73 flights from C-17 cargo aircraft to move each battalion.²³
3. Deployment of two carrier strike groups (operating cost per day, including fuel, personnel, supplies, depreciation, etc.). The largest expense is the cost of deploying two carrier strike groups (CSGs) to the region. This includes the continued deployment of a CSG for at least nine months (October 2024- June 2025), and the deployment of a second CSG for at least 60 days (53 days of conflict during ORR plus transportation to/from the theater). The cost of maintaining a fully staffed CSG per day is \$9.05 million per day, based on detailed analysis²⁴. The higher range attributes the full cost per day to this deployment; the low range attributes only 70% of the cost per day to the estimate. *Note that in FY 2025, the Houthi effort absorbed a significant percentage of the U.S. Navy's *total* global carrier capacity. By June 18, 2025, analysts assessed that the CENTCOM region accounted for 41% of all carrier "steaming days" (up from 8% the previous year), with multiple carrier strike groups rotating or overlapping to support Red Sea and broader Middle East missions²⁵.
4. Lost aircraft. The U.S. wholly "lost" three expensive aircraft during this operation, a rare occurrence. According to U.S. Navy statements, an F/A-18E Super Hornet fell from the hangar bay onto the deck and overboard into the Red Sea during a towing incident. The second F/A-18F Super Hornet was lost shortly thereafter during a landing attempt. The

²¹ Kube, C. & Lubold, G. (2025, May 8).

²² Note that the operating and support (O&S) costs for DoD weapons systems comprise roughly 70% of a system's life-cycle cost. This means that each weapon procured requires long-term maintenance, repairs, parts, personnel, contract services, and assessments. (GAO-24-107378). GAO. (2024, April). *Weapon System Sustainment: DOD Needs a Strategy for Addressing Escalating Costs and Availability*. (GAO-24-106831) <https://www.gao.gov/assets/gao-24-106831.pdf>

²³ Kube, C. & Lubold, G. (2025, May 8).

²⁴ Hendrix, J. (2013, March 11).

²⁵ Mongilio, H. & Lagrone, S. (2025, June 18).

third aircraft, an F/A-18E, skidded into the Red Sea when it failed to complete a landing on the USS Harry S. Truman²⁶.

Houthi Actions and Costs since Operation Rough Rider

On May 6, 2025, President Trump announced a ceasefire agreement (proposed and brokered by Oman)²⁷ in which the U.S. military would suspend its air campaign in Yemen in return for an end to Houthi attacks on U.S. Naval and commercial vessels. President Trump quickly declared victory.

However, the situation quickly returned to the previous status quo. Irrespective of the U.S.-Houthi truce, the Houthis resumed attacks on international shipping in July 2025. It sank two Greek-owned vessels in July 2025, killing and kidnapping crew members, and released a video of the hostages as part of a media campaign. On July 29, 2025, the Houthis announced they would resume attacks on commercial ships in the Red Sea linked to Israeli ports or companies.²⁸

The U.S. has not been directly engaging with the Houthi since May 6, 2025 when ORR officially ended. However, Israel and the Houthis have continued hostilities. On August 28, 2025, Israel launched “Operation Lucky Drop”, which killed Ahmed al-Rahawi, the Houthi prime minister, nine other ministers in the government, and two cabinet ministers²⁹. The Houthis have pledged to retaliate; however it is not yet clear how this will affect the situation. As of September 2025, the U.S. Nimitz carrier strike group (CSG) is in the Gulf of Oman but the U.S. does not have a CSG located immediately in the Red Sea³⁰.

Long-term Costs Resulting from U.S. Operations Against the Houthis

The costs provided above, summarized in Table 3, reflect the known costs associated with U.S. government offensive efforts against the Houthis as well as its efforts to protect shipping in the region. There are a number of additional long-term costs that will likely be incurred as a consequence of these activities, which are excluded from this report’s estimated total figure.

First, the budgetary costs of the operations showcase the asymmetry of the U.S. military responses to cheap weapons. Operation Rough Rider was a wake-up call in terms of how the U.S. was disadvantaged in terms of its cost-ratio. General Erik Kurilla testified that the U.S. military was able to intercept only 40% of Houthi drones with relatively low-

²⁶ Epstein, J. (2025, May 19). A US Navy aircraft carrier that lost 3 fighter jets to the Red Sea is sailing home. *INSIDER via Yahoo News*. <https://www.yahoo.com/news/us-navy-aircraft-carriers-disastrous-150728606.html?guccounter>

²⁷ Smith, W. et al. (2025).

²⁸ Mongilio, H. (2025, July 29).

²⁹ Mehvar, A., Eissa, S., Ali, S. H., Al Abdullah, M., & Taha, A. R. (2025, September 5). Middle East Overview: September 2025. *ACLEDD*. <https://acleddata.com/update/middle-east-overview-september-2025>

³⁰ U.S. Naval Institute Staff. (2025, July 28). USNI News Fleet and Marine Tracker: July 28, 2025. *USNI News*. <https://news.usni.org/2025/07/28/usni-news-fleet-and-marine-tracker-july-28-2025>.

cost precision rockets, but most required expensive munitions. He advocated that the U.S. should expand its investments in directed-energy and microwave counter-drone technologies.³¹ It is likely that the Pentagon will not only need to replace munitions but will need to invest in R&D and procurement to develop these next-generation technologies.

Second, the protracted carrier strike group presence in CENTCOM over the past year has budgetary and readiness costs which have not been quantified here. These include extended deployments, deferred maintenance, servicing hundreds of aircraft and vehicles on the carrier strike groups, and displacing or delaying other global commitments for these carriers.

Finally, there are questions about the effectiveness and cost-benefit of the use of U.S. resources, particularly related to the costly Operation Rough Rider, which lasted only a few weeks but did not, according to many experts, succeed in achieving the U.S. objective of significantly degrading Houthi capabilities³². Two weeks into the operation, on March 31, 2025, President Trump stated: "The Iran-backed Houthi terrorists have been decimated by the relentless strikes over the past two weeks. Our attacks will continue until they are no longer a threat to freedom of navigation."³³

However, after weeks of operations by the U.S. military, the Houthis were still able to strike far outside Yemen. On May 4, 2025, two days before the U.S. ceasefire, the Houthis struck Ben Gurion Airport in Israel, which injured four civilians and caused several airlines to suspend flights to Israel for several days.³⁴ An expert panel convened on May 20 noted that the Houthis still retained most of their weapons capability.³⁵ The situation is continuing to evolve, following the Israeli strikes on Houthi leaders.

II. Operation Midnight Hammer (Iran)

Context: United States Relations with Iran

The U.S. government has a long history of adversarial relations with Iran. In 1953, the U.S. Central Intelligence Agency (CIA) played a central role in overthrowing the

³¹ Vincent, B. (2025, June 10). Central Command Looks to Expand Its Counter-Drone Arsenal in the Aftermath of Operation Rough Rider. *DefenseScoop*. <https://defensescoop.com/2025/06/10/central-command-counter-drone-operation-rough-rider-gen-kurilla/>. General Kurilla is likely referring to the full spectrum of Iranian-funded drones, which range from very inexpensive ones assembled by the Houthis as well as more expensive Iranian-produced Shahed 126 drones costing up to \$100,000.

³² Salacanian, S. (2025, July 11). US Airstrikes on Yemen: Tactical Wins, Strategic Setbacks. *Stimson Center*. <https://www.stimson.org/2025/us-airstrikes-on-yemen-tactical-wins-strategic-setbacks/>

³³ Lopez, C. T. (2025, April 4). This Week in DOD: Common Sense Combat Arms Standards, No Halt on Hammering Houthis, Navy's Midshipmen Impress Heck Out of Former Soldier. *U.S. Department of War DOD News*. <https://www.war.gov/News/News-Stories/Article/Article/4146717/this-week-in-dod-common-sense-combat-arms-standards-no-halt-on-hammering-houthi/>

³⁴ Middle East Monitor. (2025, May 5). Airlines halt all flights to Israel after Houthi missile lands near airport. <https://www.middleeastmonitor.com/20250505-airlines-halt-all-flights-to-israel-after-houthi-missile-lands-near-airport/>

³⁵ Smith, Will. A. et al. (2025, May 20).

country's democratically elected prime minister, which helped bring to power the Shah Mohammad Reza Pahlavi. When the Shah was overthrown in 1979, the country became an Islamic Republic under Ayatollah Ruhollah Khomeini. In November of that year, Iranian militants seized the U.S. embassy in Tehran and held 52 Americans hostage for 444 days³⁶.

Against this backdrop, the U.S. government has long been concerned about Iran's nuclear program. After years of negotiations and sanctions, the U.S. was one of six world powers that signed the Joint Comprehensive Plan of Action in 2015, under which Iran pledged to limit its nuclear research development in exchange for sanctions relief. The first Trump administration withdrew from the agreement in 2018 and reinstated sanctions. Although the Biden administration initially attempted to revive an agreement, it was not successful.³⁷ Iran continued to expand its nuclear program, and in May 2025, the United Nations' International Atomic Energy Agency reported that Iran had increased its enrichment of uranium significantly beyond the limits established in 2015³⁸.

Iran has also maintained a longstanding hostility to Israel, both directly and through Iran-backed proxies (Hezbollah in Lebanon, Hamas in Gaza, and the Houthis in Yemen). However, the conflict escalated on all fronts after October 7, 2023. Major actions included Israel striking the Iranian consulate in Damascus, Syria (April 1, 2024), Iran firing missiles directly into Israeli territory for the first time (April 13, 2024), Israel assassinating Hamas political chief Ismail Haniyeh in Tehran (July 31, 2024), and Iran launching further missiles into Israel (October 2024)³⁹.

In March 2025, the U.S. and Israeli Air Forces carried out a joint training exercise over the Mediterranean, in which dozens of Israeli fighter planes flew alongside the American B-52 strategic bomber⁴⁰. This was likely intended as a warning message to Iran of a potential U.S. collaboration with Israel in striking Iran⁴¹. (Costs of these exercises to the U.S. are not included in this paper, due to a lack of reliable data.)

³⁶ Do, K. T. (2025). *A Brief History of the U.S.-Iran Conflict over Nuclear Weapons Development Program*. <https://doi.org/10.2139/ssrn.5339276>

³⁷ Bunn, M. (2022, January 17). America Has No Good Options on Iran. *Foreign Affairs*. <https://www.foreignaffairs.com/articles/israel/2022-01-17/america-has-no-good-options-iran>

³⁸ Director General, International Atomic Energy Agency [IAEA]. (2025, May 31). *Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015)*. IAEA. <https://www.iaea.org/sites/default/files/25/06/gov2025-24.pdf>

³⁹ Gadzo, M. (2024, October 2). Timeline: The key moments that led to Iran's missile attacks on Israel. *Al Jazeera*. <https://www.aljazeera.com/news/2024/10/2/timeline-the-key-moments-that-led-to-irans-missile-attacks-on-israel>; also see Livni, E., Vinograd, C., & Sampson, E. (2024, April 19). A Timeline of Iran and Israel's Recent Attacks. *The New York Times*.

<https://www.nytimes.com/2025/06/12/world/middleeast/israel-iran-conflict-history.html>

⁴⁰ Carlin, M. (2025, March 9). Israeli-U.S. Joint Exercise Serves as Warning to Iran. *The National Interest*. <https://nationalinterest.org/blog/buzz/israeli-u-s-joint-exercise-serves-as-warning-to-iran>

⁴¹ Fabian, E. (2025, March 6). Israeli, US air forces run joint drill with heavy bomber, in likely signal to Iran. *The Times of Israel*. <https://www.timesofisrael.com/israeli-us-air-forces-run-joint-drill-with-heavy-bomber-in-likely-signal-to-iran/>

On June 13, 2025 Israel launched “Operation Rising Lion” which was a coordinated campaign of strikes against Iranian military and nuclear-related sites. Shortly thereafter, beginning on June 21, 2025, the U.S. conducted Operation Midnight Hammer (OMH) with offensive strikes against the Iranian nuclear infrastructure, as well as defending Israel from Iranian missiles.

Midnight Hammer was a massive attack. The U.S. Air Force and Navy attacked three nuclear sites in Iran: the Fordow Uranium Enrichment Plant, the Natanz Nuclear Facility, and the Isfahan Nuclear Technology Center. U.S. Northrop B-2 Stealth bombers were used to drop fourteen 30,000 pound GBU-57 Massive Ordnance Penetrator (MOP), “bunker buster” bombs, which had never been used before in combat⁴². The B-2 stealth bomber was used because of its long flying time, ability to carry a large heavy payload, and stealth features on radar, where the B-2 “appears to be only the size of a small bird”⁴³.

The U.S. efforts were coordinated closely with Israel. In his comments after the U.S. strikes, President Trump said, “I want to thank and congratulate Prime Minister Bibi Netanyahu. We worked as a team like perhaps no team has ever worked before, and we’ve gone a long way to erasing this horrible threat to Israel. I want to thank the Israeli military for the wonderful job they’ve done”⁴⁴.

The U.S. government framed the effort as the culmination of a 15-year planning and preparations cycle focused on developing a weapon that could destroy these underground Iranian nuclear facilities. A Pentagon press statement on June 26, 2025 stated: “This weekend’s strike on Iran’s Fordow Fuel Enrichment Plant used 30,000-pound GBU-57 ‘massive ordnance penetrator’ bombs. The design of those weapons and plans for attacking the site had been in the works for some 15 years, which resulted in the destruction of Iran’s nuclear capabilities.”⁴⁵

Air Force General Dan Caine, chairman of the Joint Chiefs of Staff, described how the U.S. military had worked with private industry to develop the bombs capable of penetrating these sites. He described this effort: “They tested it over and over again, tried different options, tried more after that — they accomplished hundreds of test shots and dropped many full-scale weapons against extremely realistic targets for a single purpose: kill this target at the time and place of our nation’s choosing.”⁴⁶

⁴² Horton, A., Javaid, M., & Strobel, W. (2025, June 17). What is the Massive Ordnance Penetrator, the U.S. bunker-busting bomb? *The Washington Post*. <https://www.washingtonpost.com/national-security/2025/06/17/massive-ordnance-penetrator-iran-bunker-buster/>

⁴³ Kass, H. (2025, June 11). Why Is the Air Force’s B-2 Spirit So Expensive? *The National Interest*. <https://nationalinterest.org/blog/buzz/why-is-the-air-forces-b-2-spirit-so-expensive>

⁴⁴ Jewish Virtual Library. (2025, June 21). President Trump’s Statement Following Operation Midnight Hammer. <https://www.jewishvirtuallibrary.org/president-trump-s-statement-following-operation-midnight-hammer>

⁴⁵ Lopez, C. T. (2025, June 26). ‘Historically Successful’ Strike on Iranian Nuclear Site Was 15 Years in the Making. *U.S. Department of War DOD News*. <https://www.war.gov/News/News-Stories/Article/Article/4227082/historically-successful-strike-on-iranian-nuclear-site-was-15-years-in-the-making/>

⁴⁶ Lopez, C. T. (2025, June 26).

The costs estimated in this report reflect the main elements of Operation Midnight Hammer. They include the costs of the attack (running costs such as fuel, personnel, and support), munitions, and depreciation for the aircraft, and costs associated with defending the U.S. air base in Qatar from Iranian retaliation. In addition, this report's figures include the high costs to the U.S. of deploying THAAD (high altitude) missiles to defend Israel from incoming Iranian missiles during this period, which required firing nearly 25% of the Pentagon's stockpile of interceptors⁴⁷. (See Table 4, below).

Table 4. Estimated Costs to the U.S. for Operations In and Against Iran (FY25) ^(a)
(Sources listed under "Item" column with lower-case letters such as ^(a), ^(b) or ^(c) matching the citation list found below Table 4.)

Item	Units	Unit Costs	Cost – Lower Range (\$)	Cost – Higher Range (\$)
Preparations (evacuations of personnel, etc.) ^(b)	500	\$2,500-\$3,000	\$1,250,000	\$1,500,000
Evacuate U.S. planes from Qatar base ^(c)	40	\$25,000- \$28,000k * 3 hours estimate	\$3,000,000	\$3,360,000
B2 Stealth Bombers ^(d)	7	36 hours (252 hours) * \$126-\$150/ hour	\$31,752,000	\$37,800,000
B2 Bombers (Depreciation) ^(e)		\$175k-\$280/hr	\$44,100,000	\$70,560,000
<i>Munitions</i>				
MOP 30,000 lb. Bombs ^(f)	14	\$3.5m - 5.0m	\$49,000,000	\$70,000,000
Non-MOP bombs (F-35, F-22) ^(f)			\$4,000,000	\$5,000,000
Tomahawks ^(f)	24	\$1.5m-1.9m	\$36,000,000	\$45,600,000
Other aircraft sorties (fighters, tankers, ISRs, etc.) ^(f)	125	\$12-\$14m	\$12,000,000	\$14,000,000

⁴⁷ Holliday, S., Peled, A., & Fitzgerald, D. (2025, July 24). Israel's 12-day war revealed alarming gap in America's missile stockpile. Wall Street Journal. Retrieved from <https://www.wsj.com/world/israel-iran-us-missile-stockpile-08a65396>.

THAAD missiles (deployed to defend Israel against Iranian missiles) ^(g)	150	\$12-13m	\$1,800,000,000	\$1,950,000,000
<i>Base Defense Al-Udeid</i>				
Patriot interceptor missiles (PAC-3 MSE) ^(h)	14	\$4.1 m	\$57,400,000	\$57,400,000
Total Costs			\$2,038,502,000	\$2,255,220,000

Sources and Notes for Table 4:

- a) See Wilson, S. (2025, June 26). Analysis: Operation Midnight Hammer likely cost taxpayers at least \$200M. *The Center Square*. https://www.thecentersquare.com/national/article_d8b141f3-4bfb-4832-bc6d-25fe5f86da66.html
- b) In the weeks leading up to June 22, the U.S. evacuated its citizens, issued travel warnings, and withdrew non-essential personnel from embassies in the region.
- c) NEWS9 Live. (2025, June 20). 40 US Military Aircraft Vanish from Qatar Base Amid Iran Strike Fears. *News9, YouTube*. <https://www.youtube.com/watch?v=a0W2-ALqfAo>; AFP. (2025, June 19). US military aircraft no longer visible at base in Qatar: satellite images. *France 24*. <https://www.france24.com/en/live-news/20250619-us-military-aircraft-no-longer-visible-at-base-in-qatar-satellite-images>
- d) Kass, H. (2025, June 11). Why Is the Air Force's B-2 Spirit So Expensive? *The National Interest*. <https://nationalinterest.org/blog/buzz/why-is-the-air-forces-b-2-spirit-so-expensive>
- e) Depreciation estimated based on \$2.1 billion cost per B-2. Assume 30 years life/250 total available flying hours/year so lifetime hours = 7500. Assuming 40-year lifetime/300 hours = \$175,000/hour depreciation. See Appendix for calculations.
- f) Counting the Costs of Operation Midnight Hammer: Breaking Down an Estimated \$196 Million Mission. (2025, June 26). *St. Louis Argus*. <https://stlargusnews.com/counting-the-costs-of-operation-midnight-hammer-breaking-down-an-estimated-196-million-mission/>
- g) Holliday, S., Peled, A., & Fitzgerald, D. (2025, July 24). Israel's 12-day war revealed alarming gap in America's missile stockpile. *Wall Street Journal*. <https://www.wsj.com/world/israel-iran-us-missile-stockpile-08a65396>
- h) Cancian, M. F., & Karako, T. (2022, December 16). Patriot to Ukraine: What Does It Mean? *Center for Strategic and International Studies*. <https://www.csis.org/analysis/patriot-ukraine-what-does-it-mean>

These cost estimates do not include amortization of the B-2 Spirit which is the most expensive aircraft ever built, with a price tag of cost of \$43 billion over a decade (\$2.1 billion per plane)⁴⁸. Only 21 B-2s were ever built and there are only 19 in existence today⁴⁹.

⁴⁸ Kass, H. (2025, June 11). It is not possible to attribute the long-term development costs of this aircraft to a specific operation with any degree of accuracy. The B-2 has been used in Kosovo, Libya, Iraq, and Afghanistan, and Yemen, and possibly other theaters, but there is no public record of the total number of sorties flown or intensity of use.

⁴⁹ The B2-Spirit is scheduled to be retired; Northrop Grumman is developing the B-21 Raider as a replacement, which is scheduled to be available by 2040.

Cost Drivers of Operation Midnight Hammer

1. B-2 Stealth bombers. In Midnight Hammer, crews (including both active-duty and Missouri National Guard pilots) flew B-2s originating in Missouri non-stop for 36 hours with multiple in-flight refueling. The B-2 running costs are approximately \$130,000 - \$150,000 per hour⁵⁰. Depreciation costs are estimated based on the total lifetime flying hours of the aircraft over a 30/40-year estimated lifetime⁵¹.
2. GBU-57 MOP “bunker buster” bombs. The B-2s dropped 14 GBU-57 MOP bombs onto Fordow and a second nuclear facility. The estimates of the cost of the bombs are from \$3.5million to \$5million each. Total costs = \$49m–70m (other estimates \$49–50.4m)⁵².
3. Additional forces and munitions: More than 125 U.S. aircrafts participated in the mission, including F-22 and F-35s B-2 bombers, fighter jets, dozens of refueling tankers, Tomahawk missiles, and other munitions⁵³.
4. Costs associated with protecting the Al-Udeid U.S. Air Force base in Qatar. Iran retaliated against Operation Midnight Hammer by striking the U.S. military base in Qatar. Anticipating this response, the U.S. military had already evacuated some 500 personnel, moved an estimated 40 aircrafts out of the base in advance, and positioned Patriot interceptors to defend during the retaliation. Iran notified the U.S. before its strikes. The U.S. fired at least 14 Patriot missile interceptors⁵⁴.
5. Cost association with U.S. deployment of a Terminal High Altitude Area Defense (THAAD) system to Israel in October 2024 to enhance defenses against ballistic missile attacks from Iran. During OMH, the U.S. military used at least 150 interceptors against a barrage of Iranian missiles targeting Israel, which reportedly depleted a significant (around one-quarter) of America's total THAAD stockpile. The operation also enabled the U.S. to test the effectiveness of THAAD⁵⁵.

Analysis of Cost-Effectiveness

While Israeli and U.S. officials concurred that the strikes caused significant damage, they differed on the extent and long-term impact on Iran's nuclear program. On June 21, 2025, President Trump stated that "Iran's key nuclear enrichment facilities have been

⁵⁰ Sorkin, A. R. et al. (2025, June 23). The China Wild Card. *The New York Times*. <https://www.nytimes.com/2025/06/23/business/dealbook/china-iran-airstrikes.html>

⁵¹ Depreciation estimated by author based on U.S. government and DoD practice.

⁵² StLouis Argus. (2025, June 26).

⁵³ StLouis Argus. (2025, June 26).

⁵⁴ Altman, H. (2025, June 26). Largest Patriot Missile Salvo in U.S. Military History Launched Defending Al Udeid Air Base Against Iranian Attack. *TWZ*. <https://www.twz.com/land/largest-patriot-salvo-in-u-s-military-history-launched-defending-al-udeid-air-base-against-iranian-missiles>

⁵⁵ Holliday, S., Peled, A., & Fitzgerald, D. (2025, July 24). Israel's 12-day war revealed alarming gap in America's missile stockpile. *Wall Street Journal*. <https://www.wsj.com/world/israel-iran-us-missile-stockpile-08a65396>

completely and totally obliterated".⁵⁶ However, The New York Times reported that a (leaked) U.S. Defense Intelligence Agency (DIA) analysis had concluded that the struck sites were significantly damaged but not destroyed⁵⁷. The general consensus seems to be that the attack set back the Iranian nuclear program considerably. Rafael Grossi, the Director General of the United Nations International Atomic Energy Agency, reported severe damage to the facilities, particularly at Natanz⁵⁸.

It is important to note that this result would not have been possible without U.S. military involvement. Israel does not possess 30,000-pound MOPs or the B-2 bomber needed to deliver them. The U.S. government's decision to partner with Israel on this effort strengthened the bilateral relationship with Israel. On July 9, 2025, Secretary of Defense Pete Hegseth held bilateral meetings with Israeli Prime Minister Netanyahu in Washington "to honor the historic sacrifice and success of OMH and to celebrate Israel's special partnership with the United States," according to the Department's website. Secretary Hegseth thanked Netanyahu, "for being a friend, a model ally and showing leadership and strength." Netanyahu noted that "I think everybody in the Middle East took note of American resolve and of the strength of our alliance... It was like the roar of two lions, and it was heard around the world."⁵⁹

Broader Regional Ties with Saudi Arabia

It is likely that other factors, including the U.S. relationship with Saudi Arabia, also played a role in the U.S. decision to strike Iranian nuclear facilities. Clearly, the U.S. has an interest in avoiding a nuclear arms race in the region. In 2023, Saudi Crown Prince Mohammed bin Salman (MBS) discussed the prospect of Iran producing a nuclear bomb, stating in a television interview that "if they get one, we have to get one"⁶⁰.

President Trump visited Saudi Arabia shortly before Midnight Hammer, on May 13–14, 2025, where he met with Prince Mohammed bin Salman and King Salman, and announced expanded business ties with Saudi Arabia⁶¹. The Saudis formally joined the

⁵⁶ ABC News. (2025, June 21). Transcript: President Donald Trump addresses nation after US strikes on Iran. <https://abcnews.go.com/Politics/transcript-donald-trump-addresses-nation-after-iran-strikes/story?id=123084288>

⁵⁷ Barnes, et al. (2025, June 24). Strike Set Back Iran's Nuclear Program by Only a Few Months, U.S. Report Says. *The New York Times*. <https://www.nytimes.com/2025/06/24/us/politics/iran-nuclear-sites.html>

⁵⁸ Crisp, E. (2025, June 26). UN watchdog: Iran nuclear program 'suffered enormous damage.' *The Hill*. <https://thehill.com/policy/international/5370609-iaea-united-nations-us-strikes-iran-nuclear-facilities/>

⁵⁹ Lopez, C. T. (2025, July 11). This Week in DOD: Department Unleashes Drone Development; USDA, DOD Partner on Security;; U.S. Hosts Israel for Bilateral Talks. *U.S. Department of War DOD News*. <https://www.war.gov/News/News-Stories/Article/Article/4241647/this-week-in-dod-department-unleashes-drone-development-usda-dod-partner-on-sec/>

⁶⁰ NEWS9 Live. (2025, June 22). Did MBS Quietly Push the U.S. Into Striking Iran? *YouTube*. <https://www.youtube.com/watch?v=jykmld-rBkw>

⁶¹ U.S. Mission Saudi Arabia. (June 4, 2025). What They Are Saying: Trillions in Great Deals Secured for America Thanks to President Trump. *U.S. Embassy & Consulates in Saudi Arabia*. <https://sa.usembassy.gov/what-they-are-saying-trillions-in-great-deals-secured-for-america-thanks-to-president-trump>

Department of Defense's National Guard Bureau State Partnership Program (SPP) and President Trump announced a \$600 billion technology and defense deal with the Saudis⁶². The agreement included the largest-ever arms deal (\$142 billion) of advanced warfighting systems and services from over a dozen U.S. defense firms to the Saudis. Such agreements may benefit U.S. weapons firms in terms of direct revenues.

However, given the history of such deals, it is possible that it may not materialize in full⁶³. A deal of this scale also may pose long-term risks and costs, including intensifying the conflict with Yemen, risks of U.S. technology transfer, fueling a conventional arms race between Saudi Arabia and Iran, and diverting U.S. manufacturing capacity to this purpose.

Conclusions

The American public has a right to know how U.S. funding is used in conflict, and to recognize that U.S. military activities in the Middle East carry significant financial costs for taxpayers. These costs are often hidden and should be weighed alongside how well they advance the goal of peace in the region. This paper seeks to inform that discussion by estimating the U.S. spending associated with current policies.

From October 7, 2023 through September 2025, the U.S. incurred an estimated \$9.65–\$12.07 billion in outlays for regional military operations related to the Israel/Gaza conflict in the Red Sea/Houthi campaign and related to Operation Midnight Hammer in Iran. The largest cost components were lengthy carrier strike group deployments, expenditures on munitions, use of B-2 bombers, and air and missile defense (Patriot and THAAD). The full budgetary impact is likely to increase as replacement and sustainment requirements mature.

Beyond these immediate costs lies the far greater long-term burden of reconstruction once the fighting ends. In February 2025, the World Bank, United Nations, and European Union estimated that rebuilding Gaza would require at least \$53 billion⁶⁴, a figure that is probably low, given that it was calculated before the Israeli ground invasion of Gaza City in September 2025. Although this huge expense may be partially financed by a number of private investors and other governments, the United States will almost certainly shoulder a large portion of the costs.

⁶² Sheely, Z. (2025, August 22). U.S., Saudi Arabia Strengthen Ties Through State Partnership Program. *U.S. Department of War*. <https://www.defense.gov/News/News-Stories/Article/Article/4284178/us-saudi-arabia-strengthen-ties-through-state-partnership-program/>

⁶³ Yousif, E. (2025, May 19). The "Largest Defense Cooperation Agreement in U.S. History" May Not Add Up to Expectations. *Stimson Center*. <https://www.stimson.org/2025/the-largest-defense-cooperation-agreement-in-u-s-history-may-not-add-up-to-expectations/>

⁶⁴ World Bank. (2025, February 18.) New Report Assesses Damages, Losses and Needs in Gaza and the West Bank." Press release. <https://www.worldbank.org/en/news/press-release/2025/02/18/new-report-assesses-damages-losses-and-needs-in-gaza-and-the-west-bank>.