



Arsenal of Procrastination: The United States Must Expand Munitions Production, Not Merely Replenish





Authors

Jonathan Ruhe

Fellow for American Strategy

Ari Cicurel

Associate Director of Foreign Policy

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I. Introduction

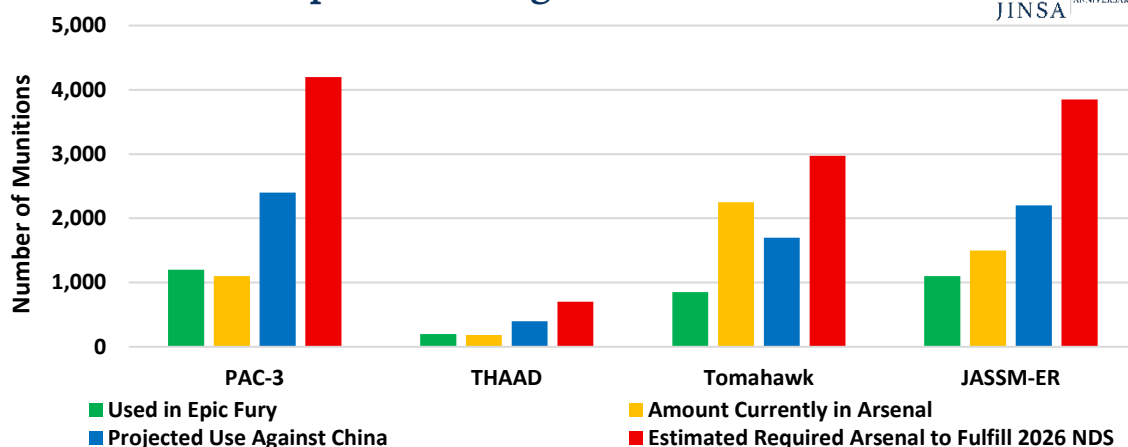
On July 20, a U.S. official who spoke with The Washington Post indicated that “the U.S. is planning for a wider war” war with Iran, but “we do not have enough [munitions] to safely sustain operations, and I don’t think the White House is aware of that.”¹ The White House had asked Congress on June 24 for \$21 billion to replace U.S. munitions expended in 39 days of Operation Epic Fury.² That same day, President Donald Trump met with major munitions manufacturers to press them to produce more, faster.³ Fighting Iran depleted U.S. munitions far faster than its factories can replenish them, let alone build up U.S. inventories to avoid another depletion in the next crisis.⁴ This problem is due to procrastination in changing how the U.S. government and defense industrial base (DIB) do business. It means the United States cannot expect to deter, fight, and win major conflicts with the arsenals it has.

In Epic Fury, American forces expended close to half of their total prewar stockpiles of several key offensive and defensive capabilities, including about 1,200 Patriot PAC-3, 200 Terminal High Altitude Area Defense (THAAD) interceptors, 850 Tomahawk land attack (TLAM) missiles, and 1,100 Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER) missiles, representing 52, 52, 27, and 42 percent, respectively, of total prewar U.S. stockpiles of those munitions.

The Trump administration’s recent requests for greater funding to replenish these stockpiles are positive steps, but far from enough. Even before Epic Fury, these magazines already were too shallow for U.S. forces to reliably fulfill the 2026 National Defense Strategy’s mission to deter or prevail in fights with China, defend the homeland, respond to other contingencies, and maintain adequate reserves.⁵ In terms of force planning guidance, this translates roughly to the ability to wage an intensive conflict against a peer competitor, simultaneous with waging a smaller but potentially overlapping conflict against a regional power, as well as maintaining sufficient reserves while stocks depleted in these conflicts are replenished.

Applying this proposed requirement to critical munitions with publicly reported expenditures during Epic Fury, the United States would need to build and maintain stockpiles generally equivalent, at a minimum, to 3.5 times what it used in 39 days against Iran. The United States is now left with roughly 1,100 PAC-3, 184 THAAD, 2,250 Tomahawks, and 1,500 JASSM-ER missiles—small fractions of the roughly 4,200 PAC-3, 700 THAAD, 2,975 Tomahawk, and 3,850 JASSM-ER missiles we estimate are needed to offer adequate deterrence and readiness commensurate with threats laid out in the National Defense Strategy.

Munitions Stockpile Planning



The United States cannot buy its way out of this munitions crisis. Even if Congress appropriated enough funds to build PAC-3, THAAD, Tomahawk, and JASSM-ER arsenals to meet the needs spelled out in the National Defense Strategy, reaching those levels would take roughly 3.5-6 years. That timeline depends on how fast production ramps up under January 2026 framework agreements between the Department of Defense signed and Lockheed Martin and RTX to expand interceptor and missile production. This is not a new problem.⁶ The Commission on the National Defense Strategy warned in 2024 that “U.S. industrial production is grossly inadequate to provide the equipment, technology, and munitions needed today, let alone given the demands of great power conflict,” and issued a similar warning as far back as 2018.⁷

Our national security cannot afford further procrastination. Simply placing more orders will not expedite output or overcome deep structural constraints on our workforce, suppliers, and plant capacity. How the U.S. government commits funding is at least as important as the amounts of those funds, since manufacturers will not invest in new plants without predictable and durable demand signals. Even by themselves, those demand signals would not address the sheer fact that approving additional suppliers of key components currently takes years of testing and certification. It also takes years to train new welders, machinists, ordnance technicians, and other skilled laborers.

The United States must invest in production capacity that sustains manufacturing between crises and provides surge capacity when conflicts occur. At root, this entails changes in how Congress, the Executive Branch, and the defense industry do business. This requires action on seven fronts:

- Funding multiyear contracts, authorized by Congress, at quantities large enough to justify new plants;
- Protecting munitions funding from reprogramming into ships, aircraft, and other large platforms;
- Breaking production bottlenecks by qualifying second sources for single-source components;
- Building a tiered force that pairs exquisite interceptors with cheap, attritable systems bought in bulk;
- Treating the skilled trades as warfighting capacity by funding apprenticeship pipelines;
- Expanding co-production with Israel, Japan, and other partner nations; and
- Adopting a force-sizing methodology that sizes each service against the projected need for major war with China, homeland defense, and concurrent demands in additional theaters.

II. Epic Fury Exposed Shallowness of U.S. Munitions Stocks

In only 39 days against a regional power, Epic Fury consumed concerning percentages of U.S. munitions that are critical for deterrence and warfighting against great power competitors China and Russia, and for other contingencies. U.S. Central Command (CENTCOM) confirmed that U.S. forces struck more than 13,000 Iranian targets, indicating a floor for the number of offensive munitions expended during Epic Fury.⁸ Since Iran fired an estimated 7,780 missiles and drones in the conflict, according to JINSA data, attempting to intercept that volume at the doctrinal rate of two interceptors per projectile would require U.S. Israeli, and Gulf defenses to expend roughly 15,560 interceptors.⁹ Within that total, public reporting indicates the United States expended an estimated:

- 1,200 PAC-3 interceptors, more than half its prewar stock;⁴
- 200 THAAD interceptors, more than half its prewar stock;¹⁰
- 850 TLAM cruise missiles, more than a quarter of its prewar stock; and¹¹
- 1,100 JASSM-ER missiles, roughly forty percent of its prewar inventory.⁴

Such stockpile issues are not new. Compared to operations against Islamic State in the previous decade, where U.S. air-to-ground munitions usage never seriously threatened to deplete stockpiles or exceed production capacity, intense and prolonged operations in Ukraine since 2022 have exposed these dangers of shallow stockpiles and long replenishment timelines.¹² Congress and the Pentagon answered those warnings with incremental steps, not sustained investment, leaving reserves dangerously thin before Epic Fury. Defense Secretary Pete Hegseth testified before the House Armed Services Committee in June 2025 that “decades of under-investment have left [the DIB] strained, overly consolidated, and at risk of not keeping pace with modern and near-peer threats, especially in a protracted conflict.”¹³ Acting Assistant Secretary of Defense for Sustainment Steven J. Morani also testified last June that the force faced “long lead times for critical munitions” and told the same committee that “wars are won starting from the factory floor.”¹⁴

Ultimately, this is the bill coming due after deliberate decisions, starting in the early 1990s, to shrink the U.S. defense industrial base and consolidate manufacturers as part of the post-Cold War peace dividend.¹⁵ The Department of Defense compounded that choice in seeking to boost efficiency, at the cost of effectiveness, by importing a civilian manufacturing philosophy into military logistics. While just-in-time production and delivery works for civilian commerce between fixed points on a predictable schedule, it fails for warfighting, where readiness depends on accumulating stockpiles in warehouses at important locations around the world.¹² In both the military or civilian realms, moreover, just-in-time production and delivery tends to seize up and fall apart in major crises, whether the Ukraine war or COVID pandemic.¹²

III. Readiness Entails Much More than Just Replenishment

Increasing global challenges from a number of capable adversaries, not solely from Iran in the Middle East, argue for arsenals far larger than what existed at the outset of Epic Fury. The 2026 National Defense Strategy acknowledges the need to prepare for conflict with China—one presumably more intensive than Epic Fury—while also addressing other threats elsewhere. Beyond these scenarios, the United States also needs adequate munitions reserves, as a bridge, while stockpiles expended in these conflicts would be replenished.

Epic Fury highlighted America's unpreparedness to meet even a minimal interpretation of these broader requirements. During the operation, the Pentagon moved most of its JASSM-ERs from the continental United States and the Indo-Pacific to meet potential CENTCOM needs, leaving roughly 1,500 total JASSM-ERs across the entire force, including only about 425 total outside the Middle East theater.¹⁶ For context, in a November 2024 bipartisan conflict simulation run by the House Select Committee on the Chinese Communist Party with the Center for Strategic and International Studies, the United States expended 500 JASSM-ERs in the first three weeks alone—more than the estimated 425 now left over for all contingencies outside the Middle East.¹⁷ The same wargame exhausted the entire U.S. inventory of Long Range Anti-Ship Missiles (LRASM), which take up the same production lines as the JASSM-ER.

Though it was conducted barely more than a year prior, this simulation's projected JASSM-ER use against a peer competitor ended up being roughly half of what Epic Fury expended in six weeks against a smaller regional power. Looking ahead based on this new data, a major war with China risks lasting longer and consuming more of these relevant munitions than Epic Fury, even if it also presents a larger version of the general concept of operations for Epic Fury, namely: heavy use of U.S. standoff air and naval power to disrupt the enemy's command and control and degrade its long-range precision strike and anti-access/area denial capabilities.

In terms of U.S. offensive munitions, conflict with China entails a much larger target set than does Iran, especially given China's more advanced, layered, and extensive air defenses that form part of this target set. At the same time, China possesses more expansive and capable offenses than Iran, translating to greater projected expenditures of U.S. interceptors. In a back-of-the-envelope, baseline assumption of a war scenario with China that lasts only as long as Epic Fury—but also double the duration of the CSIS wargame—and consumes double the number of munitions of Epic Fury, the United States would expend 2,400 PAC-3 and 400 THAAD interceptors, as well as 1,700 TLAM and 2,200 JASSM-ER missiles.

The United States also must ensure its arsenals do not become dangerously depleted in a major war with China. Epic Fury and any number of Middle East operations in the prior two decades showed that the United States will need to prepare for, and possibly fight, periodic conflicts of moderate duration and intensity beyond the Indo-Pacific, even as it officially seeks to pivot attention and resources toward the latter. The 2026 National Defense Strategy acknowledges the need to be prepared for conflicts with adversaries other than China, and elsewhere than the Indo-Pacific. Beyond these scenarios, the United States also will need adequate munitions reserves as a bridge while stockpiles expended in the Indo-Pacific and/or other theaters are replenished. This would act as a residual deterrent of last resort against a third power that seeks to exploit America's strategic predicament by undertaking opportunistic armed aggression, likely in an additional combat theater.

In terms of U.S. force planning guidance, this translates roughly to a rubric of waging an intensive conflict against peer competitors China or Russia, simultaneous with a smaller (but similar and potentially overlapping) conflict against a regional power like Iran or North Korea, while still maintaining at least some bare minimum of reserves. For the sake of simplicity, and given the sheer scale of the U.S.

buildup needed to meet even these guidelines, this force planning construct consciously avoids more ambitious goals of winning any of these conflicts decisively, let alone achieving multiple decisive military outcomes. The general scenarios posited here, if not their actual specifics, reflect once-standard practice in the Pentagon when it comes to devising guidelines for the size and composition of U.S. military forces.¹⁸

For the critical U.S. munitions under examination here, this force planning construct is equivalent to:

- Twice the munitions expenditure of Epic Fury, for major conflict against a peer competitor; plus
- Equal the munitions expenditure of Epic Fury, for a smaller conflict against a regional power; plus
- One-half the munitions expenditure of Epic Fury, to deter or hold against aggression elsewhere.

Applying this proposed requirement to critical munitions with publicly reported expenditures during Epic Fury, the United States would need to build and maintain stockpiles generally equivalent to 3.5 times what it used in 39 days against Iran:

U.S. Munitions Expenditure: Epic Fury, Projected Needs, and Current Stocks					
Munition	Epic Fury (EF) (6 Weeks)	China Baseline (6 Weeks)	Proposed Force Planning Construct (2 EF+1 EF+0.5 EF)	Post-Epic Fury Stockpiles	Net Amount Needed for Force Planning Construct
PAC-3	1,200	2,400	4,200	1,100	3,100
THAAD	200	400	700	184	516
Tomahawk	850	1,700	2,975	2,250	725
JASSM-ER	1,100	2,200	3,850	1,500	2, 0

IV. Appropriations Problems Minimize Munitions Outputs

Even if the Executive Branch determines such buildups are necessary, nothing will happen unless Congress funds the utilization and expansion of production capacity to meet it. Congress has not funded relevant production lines to meet their current production capacity, and that capacity itself falls far short of needs implied in the 2026 National Defense Strategy. Even if Congress funded existing lines to manufacture munitions at the potential “normal” rate, reflecting one daily work shift of employees working five days per week and eight hours per day (“1-8-5”), rather than at the maximum rate based on multiple daily shifts, replacing what Epic Fury consumed would still take an estimated two to four years.

Delivery for Key Munitions by Fiscal Year



Given insufficient appropriations, the Department of Defense has not procured munitions at the normal 1-8-5 capacity of existing production lines. The Department of Defense only procured 341 PAC-3 interceptors in FY2026, well under the normal annual production rate of 650; only 37 THAAD interceptors against the 48-a-year normal production rate; and only about 64 Tomahawks against the 250-a-year normal rate. JASSM-ER is the exception, with recent orders of roughly 550-a-year already exceeding its 325-a-year normal rate. This shows how Congress can fund a line above its normal rate when it chooses, but it still has not funded this line at the maximum production rate—the fastest physical pace achievable today by running multiple shifts at existing plants rather than building new ones.

Such insufficient funding has both minimized and delayed output of key munitions. The United States has not received any THAAD interceptors since 2023 and—based on budgeting and delivery schedules set over previous years—would only resume receiving them next year, with an average of roughly 34-a-

year through FY2029, well under the 48-a-year normal rate. Based on those schedules, PAC-3 deliveries would average roughly 270-a-year through FY2029, also well under the 650-a-year normal rate. JASSM-ER remains the exception, with deliveries averaging roughly 370-a-year through FY2029, which indicates that production lines already have pushed above the normal rate of 325-a-year. It remains unclear how long production lines could operate above normal rates, which would likely also incur higher costs than expanding capacity to operate at higher levels under normal conditions.

Iran War Use and Time to Build Stockpiles					
System	Iran War Use	Normal Annual Production Rate	Maximum Rate Per Year	Years to Replenish at Normal Rate	Years to Reach Arsenal Adequate for Force Planning Construct
PAC-3	1,200+	650	2,000	~1.8	~5
THAAD	200+	48	96	~4.2	~11
Tomahawk	850+	250	600	~3.4	~3
JASSM-ER	1,100+	325	860	~3.4	~7

The Trump administration's FY2027 budget request reflects the scale of the necessary procurement expansion, with the Navy seeking 785 Tomahawks, up from roughly 55-58 in FY2026, while the Army and Missile Defense Agency together seek 2,798 PAC-3 and 857 THAAD interceptors. Meeting the FY2027 requests at current normal production rates alone would take more than three years for Tomahawk, over four years for PAC-3, and nearly eighteen years for THAAD, showing that even this year's larger request cannot remotely close the gap within a single budget cycle.

One-off orders from partner nations for U.S.-made munitions compound this problem—in turn undermining collective defense against shared threats from China, Russia, and Iran—by creating competing demands on existing production capacity. Japan, NATO allies, and Gulf states are waiting on deliveries that are now delayed further by demands on those same U.S. production lines created by the needed to replenish after Epic Fury.¹⁹ The Army's April 2026 contract added \$4.76 billion in accelerated PAC-3 production, but \$4.5 billion of that represents production already contractually obligated to foreign partners.²⁰ By itself, Saudi Arabia's pending order for 730 PAC-3 interceptors represents more than a year's worth of the line's 650-a-year normal output, competing with Germany, Japan, and the Netherlands for space on the same line as new U.S. orders.²¹ Rising PAC-3 demand has led the Pentagon to warn Baltic and Scandinavian buyers, including Lithuania, of possible delivery delays. Japan's stalled \$2.35 billion order for 400 TLAMs, split into two batches of 200 originally due by April 2028 but now delayed by up to two years as the Pentagon prioritizes its own restocking, shows how allied orders compete for space on the same line as the Navy's own replenishment.²²

V. Expanding the Lines Depends on Fixes that Large Orders Alone Cannot Buy

Contracts for large orders alone will not expand production capacity over the long haul. Even at maximum production rates, manufacturers can only produce as fast as their suppliers, workforce, and design constraints allow—all of which takes time to adapt and expand. This creates years-long lag effects for manufacturers to ramp up necessary output, even after Congress appropriates the required funding. Several core considerations and challenges are at play here:

A. Need for Durable Demand Signals

Manufacturers are highly reluctant to invest in spare production capacity, amass stockpiles in excess of current or foreseeable needs, and otherwise assume short-term financial risks in the absence of clear and predictable signals for long-term demand.

B. Supplier Concentration Creates Production Chokepoints

The limited number of available suppliers also limits how fast output can grow. Key munitions components often come from a sole qualified manufacturer, creating chokepoints and single points of failure throughout the complex supply chain for any given munition. A rocket motor, a seeker focal plane, or a specialized microelectronic each can hold up an otherwise finished interceptor. A shortage at one supplier can send delays rippling down the rest of the supply chain, holding up the finished product no matter how great the capacity of the final assembly line. Qualifying a second manufacturer for any given component could mean putting the munition through years of further testing and certification, thus preventing deliveries from occurring on the same schedule as a funding increase.

C. Skilled Labor Is Hard to Find and Train

Labor also remains a major constraint, because it can take years to train the highly skilled and specialized workforces needed to produce complex munitions. Likewise, it can take years to rehire and, in many cases, retrain these workforces in response to greater demand. For all the automation in modern production lines, final assembly of a PAC-3 interceptor, for instance, still requires human welders, electricians, machinists, and ordnance technicians capable of doing precise hand-tooling work. But when the United States cut munitions orders sharply after the Cold War, and again as post-9/11 demand subsided, the defense industry found it more economical to shed these trained workers instead of sustaining them through lean years. Fifty-six percent of aerospace and defense companies now report struggling to hire skilled manufacturing workers away from private-sector and other public-sector industries, and defense industry employment attrition reached nearly 15 percent in 2024—more than double the rate across other manufacturing sectors.²³ Expanding production will require training new workers or attracting previous employees back to defense industry jobs—and possibly retraining them.

D. Design and Technology Lock-In Delays Vital Upgrades

Design choices made years ago can slow the rate of which new and improved technologies can update existing munitions. The electronics that set a munition's range and effectiveness often change far faster than the casing and motor around them. But a missile whose seeker, processor, and datalink are built integrally into the airframe as cost-saving measures cannot incorporate such new technology without sending the entire munition back through time-consuming qualification processes.

VI. Current Efforts to Expand Production Remain Inadequate

The Pentagon has begun seeking multiyear funding commitments to give manufacturers enough demand certainty to justify sustainable additions in production capacity. The FY2026 National Defense Authorization Act (NDAA) authorized multiyear procurement for eight systems, including PAC-3, SM-6, SM-3 Block IB, THAAD, AMRAAM, TLAM, JASSM, and LRASM. That authorization sets the legal groundwork for expanded manufacturing, but Congress has not backed it with sustained appropriations that would turn these authorities into greater production.

A. Framework Agreements for Expanded and Accelerated Production

The Department of Defense signed framework agreements with Lockheed Martin and RTX in January 2026 to expand interceptor production, but it will take time to ramp up to meet these goals.²⁴ Lockheed Martin broke ground on a new missile plant in Troy, Alabama, committing to a rate of 2,000 PAC-3 interceptors a year, but expanding production lines to that rate is not expected to occur until roughly 2030.²⁵ A separate seven-year contract worth up to \$35 billion will lead to Lockheed Martin raising THAAD production to 400-a-year, up from a previous maximum rate of only 96 per year.²⁶ RTX also committed to producing several munitions at two to four times the current annual output, including more than 1,000 TLAMs, at least 1,900 AMRAAMs, more than 500 SM-6s, and accelerated production for SM-3 Block IB.²⁷ However, no such framework for increased production exists for JASSM-ER or LRASM. At the meeting with President Trump on June 24, munitions manufacturers stressed that appropriations, not framework agreements alone, would justify the capital investment required to expand production rates.³

Efforts to Expand Production Rates			
			
System	Current Normal Production Rate Per Year	Committed Ramp-Up Production Rate Per Year (Multiyear Contracts)	Years to Reach Arsenal Needed for Force Planning Construct at Ramp-Up Rate
PAC-3	650	2,000	~4
THAAD	48	400	~4
Tomahawk	250	1,000	~3.5
AMRAAM	1,200	1,900	Unknown
SM-6	125	500	Unknown
SM-3	Block 1B: 48 Block IIA: 24	Undetermined Accelerated Production	Unknown
JASSM-ER/ LRASM	JASSM-ER: 325 LRASM: 60	None	~6 (Same as Normal Rate)

B. Production by Partners

Partner nations can add production capacity that eases pressure on U.S. lines without requiring new U.S. plants or appropriations. The Trump administration's July 2026 decision for Ukraine to produce Patriot interceptors domestically marks a step in the right direction.²⁸ President Trump announced the licensing arrangement at the NATO summit in Ankara, framing it as a way for Ukraine to build its own stockpile without waiting or drawing on scarce U.S. supply. Trump acknowledged in the same announcement that the United States itself does not have many Patriot interceptors. It remains unclear whether the license covers specifically PAC-3 interceptors like those expended so heavily in Epic Fury. Standing up Ukrainian manufacturing capacity will take time to reach meaningful volume, leaving unaddressed the near-term gap between what Congress has funded and what existing lines can deliver. Other partner nations already have built certain capacity. Mitsubishi Heavy Industries produces PAC-3 domestically under license in Japan, and Saudi Arabia has signed memorandum of understanding with Lockheed Martin to localize THAAD component production, though the Saudi arrangements remain non-binding.²⁹

C. Affordable Mass: Low-Cost Munitions

Epic Fury reinforced that expensive high-end systems like PAC-3, THAAD, and JASSM-ER cannot be produced on a sustainable cost curve if they are meant to handle every mission. Therefore, the Pentagon has begun building a lower tier of cheaper interceptors and strike munitions to help preserve these precious higher-end stocks for bigger strategic threats. It is seeking to procure more than 10,000 low-cost containerized cruise missiles by 2030 under an “affordable mass” effort that pits CoAspire, Anduril, Leidos, and Zone 5 against each other to add strike capacity and preserve high-end munitions for the hardest targets.³⁰ However, these programs are not currently covered by multiyear procurement authority, meaning contractors face the same incentive problems as high-end manufacturers.

D. Reliance on Emergency Supplemental Funding

The White House sent Congress an \$87.6 billion emergency supplemental on June 24, including \$67.1 billion for defense and \$21 billion to replace munitions consumed in Epic Fury.² Even if Congress appropriates the full amount, a one-time supplemental would fund a single year of purchases rather than the sustained multiyear demand these production lines need to raise their delivery rates.

VII. Recommendations

The United States must not simply replenish what it used during Epic Fury but also expand and sustain munitions production well beyond prewar levels, in order to meet heightened demands for deterrence and warfighting. The requisite workforce, qualified suppliers, and plant capacity each take years to build. Treating the industrial base as a standing element of deterrence means committing to its expansion in anticipation of, not in reaction to, the next crisis. Indeed, kicking this can further down the road merely compounds these difficulties of rebuilding, while also making the next crisis that much more likely.

A. Fund the Multiyear Munitions Contracts Already Authorized

Congress should appropriate multiple years of funding for the eight systems authorized for multiyear procurement in the FY2026 NDAA, at quantities large enough to justify new plants. Without that funding, multiyear procurement authority alone will leave the demand signal too weak to draw the private investment that expansion requires.

B. Protect Munitions Funding from Reprogramming

Congress should place critical munitions in a protected, multiyear account which the military departments cannot reprogram into ships, aircraft, or other major platforms. Designating those munitions as congressional special-interest items would require the Pentagon to notify Congress and secure approval before moving money out of the account. Funding each protected line as its own budget line item would ensure any cut is visible and not buried inside a larger program.

C. Break Bottlenecks in the Lower-Tier Supply Base

The Department of Defense should qualify second sources for currently single-source components that delay final assembly. This is the best and most direct way to address the supplier concentration problem that turns singular shortages in the supply chain into delays for an entire program. This could start with rocket motors, seeker components, and microelectronics for interceptors, with the Department funding and streamlining the qualification and testing that second-source suppliers need to enter the program.

Expanding the government test ranges and energetics facilities that several programs share would help keep output of individual components on the same schedule as final assembly of the munition. Using multiyear procurement to proactively amass reserves of components, particularly those with the longest production lead times, would have the same effect. Cost-sharing new plants and tooling with defense contractors and routing advance payments to lower-tier suppliers, rather than paying subcontractors indirectly through payments to the defense primes, would further shorten the time lag between funding and delivery.

D. Build a Tiered Force Across the Full Range of Threats

The Pentagon should reserve exquisite interceptors like PAC-3 and THAAD for use against ballistic missiles, hypersonic missiles, and other strategic threats. It should prioritize attritable interceptors, directed energy and high-power microwave systems, and low-cost one-way attack drones for countering “mass precision” threats posed by cheap but effective enemy drones and other projectiles like those used by Iran, its proxies, and Russia.

Congress should fund the affordable-mass cruise missile programs at scale, and the Department of Defense should expedite them out of their assessment phase into production. Standardizing seekers, motors, and guidance sections across munitions on modular open architectures would directly address the integrated-design problem in which problems with individual components often delays final munitions assembly. Components built to common interfaces can be upgraded or replaced without sending the entire missile back through recertification, which would hold down production costs for the low tier and let each line absorb technological advances as they arrive.

E. Treat the Skilled Trades as Warfighting Capacity

Congress should fund the apprenticeship and technician pipelines that staff up production lines, including during demand troughs that previously have scattered existing workforces and undermined recruitment and training of new workers. This would directly address the pattern of post-Cold War workforce erosion that left manufacturers unable to rebuild skilled capacity quickly when orders resurged.

Pairing every procurement increase with money to recruit, train, and retain the welders, electricians, machinists, ordnance technicians, and inspectors that final assembly depends on treating the workforce as a standing production input. This should include expanding partnerships with technical schools and

community colleges near major plants, and retention bonuses and sponsorships of security clearances. The trades take years to rebuild once lost, so sustaining them through slow periods costs far less than rebuilding them under wartime pressure.

F. Expand Partner Co-Production to Offset China's Scale

The Department of Defense should expand co-production with trusted partners to add capacity that offsets China's manufacturing scale while keeping the core of each program in the United States. It can build on Japan's role in Standard Missile co-production and Israel's role in producing Iron Dome, David's Sling, and Arrow interceptors. Other partners in Europe, the Pacific, and the Middle East can help produce components, subassemblies, and selected final rounds under long-term agreements that justify their own investment.³¹ Aligning export controls and technology-sharing arrangements would let manufacturers in partner nations build and field common munitions without case-by-case delay.

Congress and the State Department should extend the license-free defense-trade model now used with AUKUS partners to Israel, Japan, and other co-producers. Where risk mitigation is possible, they should move co-production components off the U.S. Munitions List. This would enable co-production programs to proceed under one-time blanket approvals instead of a new license for each individual transfer so that International Traffic in Arms Regulations (ITAR) and other export controls do not unnecessarily slow down established, high-priority supply chains.

Endnotes

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