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# Mobilizing the Defense Industrial Base in the Event of Major Conflict

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## Abstract

Increasing tensions in the Pacific, sudden conflict in the Levant, and continuing support for the war in Ukraine continue to strain the capacity of the U.S. defense industrial base. While some progress has been made increasing the production of munitions since Russia's invasion of Ukraine, challenges with acquisition approaches, budget processes, and other issues continue to stymie defense production despite significant leadership attention and resources focused on this issue. This condition will simply not suffice in the event of major conflict involving U.S. and allied forces in Asia or elsewhere.

This paper will examine past and recent efforts to dramatically increase defense production and address the research question, how can DoD truly mobilize the industrial base to rapidly scale production to support National Defense Strategy (NDS) objectives? Resources are certainly important, but the Ukraine experience has demonstrated the limits of resources alone to increase speed. DoD and Congress, working in partnership with industry, need to rethink acquisition policies and incentive structures to design and deliver capabilities at the speed required to meet today's challenges; reform elements of the Planning, Programming, Budgeting, and Execution (PPBE) process to enable the rapid insertion of capabilities to meet warfighter needs; foster contracting practices that incentivize and facilitate rapid production; and ensure that the right authorities are in place to accomplish these objectives.

From this analysis, the author will develop a set of recommendations for policies, incentives, process changes, practices, and authorities that enable effective industrial mobilization. Many of these activities are needed now, but they will be essential—even existential—in the event of a major conflict involving U.S. and allied forces. This paper will also complement and buttress the author's 2023 NPS ARS paper on a developing a Build Allied approach to increasing industrial base capacity.

## Executive Summary

This paper examines how the United States can mobilize its defense industrial base in the event of major conflict. Increasing tensions in the Pacific and ongoing support to Israel and Ukraine continue to strain the capacity of the U.S. defense industrial base. This condition will simply not suffice in the event of major conflict involving U.S. and allied forces in Asia or elsewhere.

We examine why mobilization matters and how we have mobilized during World War II, the Mine-Resistant Ambush Protected (MRAP) experience in Iraq and Afghanistan, and providing support to Ukraine in its war against Russia. With this, we then identify elements of mobilization and establish a model for how these mobilization elements can work together to develop the capabilities and capacities needed to achieve the defense industrial base resilience necessary for success. We conclude with a series of recommendations to maximize the defense industrial base's ability to mobilize in major conflict.

## Why Mobilization Matters

Increasing tensions in the Pacific and ongoing support to Israel and Ukraine continue to strain the capacity of the U.S. defense industrial base. While some progress has been made



increasing the production of munitions since Russia's invasion of Ukraine, challenges with sourcing, budget processes, and other issues continue to stymie defense production despite significant leadership attention and resources focused on this issue. This condition will simply not suffice in the event of major conflict involving U.S. and allied forces in Asia or elsewhere.

These events have led to an increased focus on industrial mobilization in the event of a prolonged major conflict involving the United States. Unfortunately, we have a somewhat checkered history with mobilization. During World War II, our industrial base ultimately was successful in developing and providing the ships, tanks, planes, and other systems that help our forces win on the battlefield, but the country and our industrial base was woefully unprepared for large-scale conflict. As both Arthur Herman and Mark Wilson show in their respective masterful books, it took some time for the arsenal of democracy to get rolling.<sup>1</sup> In the more recent case of the Mine Resistant Ambush Protected (MRAP) vehicle during conflicts in Iraq and Afghanistan, it took the secretary of defense acting essentially as the program manager to speed the development and fielding of MRAPs to save American soldiers being killed by the thousands by improvised explosive devices.<sup>2</sup> Finally, providing support to Ukraine in the wake of Russia's unprovoked invasion, our industrial base showed strength and resolve, but also brittleness.<sup>3</sup>

Our experience and the national security threats facing our nation make it clear that we need to do better. This paper addresses that challenge head-on through our research question: How can DoD truly mobilize the industrial base to rapidly scale production to support National Defense Strategy (NDS) objectives?

## The Shape of the Defense Industrial Base

To answer this question, we must first look at the level of capabilities, capacities, and resilience in our defense industrial base. While the United States undeniably produces the highest caliber weapons and defense systems in the world, our industrial base has received increased attention in recent years as its vulnerabilities and limitations have been exposed through events such as Chinese industrial policy to seize critical areas such as rare earth elements processing and lithium batteries production, difficulties in surging production of munitions to support Ukraine, and wargames demonstrating dramatic losses of major weapons systems in the event of major conflict in Asia.

Our defense industrial base is comprised of the enterprises and institutions that provide the materials, products, and services to the Defense Department and other agencies related to national defense. The defense industrial base has two broad components. Both of these two components' defense-related operations are funded and provided tax benefits by Congress, and their work is contracted, regulated, and managed by the DoD.

One defense industrial base component consists of private businesses in the commercial sector. These businesses range from firms with publicly traded stock and large market capitalization to privately owned or venture capital-backed small companies. Likewise,

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<sup>1</sup> Arthur Herman, *Freedom's Forge: How American Business Produced Victory in World War II* (New York: Random House Trade Paperback, 2012); Mark R. Wilson, *Destructive Creation: American Business and the Winning of World War II* (Philadelphia: University of Pennsylvania Press, 2016).

<sup>2</sup> James Hasik, *Securing the MRAP: Lessons Learned in Marketing and Military Procurement* (Texas A&M University Press, 2021).

<sup>3</sup> M. F. Cancian, A. Saxton, L. A. Bryan, and O. Helman, "Industrial Mobilization—Assessing Surge Capabilities, Wartime Risk, and System Brittleness," *Naval Engineers Journal* 132, no. 2 (2020): 39–49; Jerry McGinn, *Breaking Defense*.



these businesses range from prime integrators and original equipment manufacturers to system, component, and parts suppliers as well as firms that provide all manner of services from classified intelligence analysis to office support. Not all these businesses limit themselves to the defense market.

The other component includes the modest organic industrial base of government-owned arsenals, shipyards, and depots as well as government, academic, and scientific entities. Government labs, such as the Defense Advanced Research Projects Agency and the Army Research Lab, conduct scientific and engineering research, development, and testing. Similarly, University Affiliated Research Centers and Federal Funded Research and Development Centers such as Johns Hopkins University's Applied Physics Lab and the Aerospace Corporation, provide engineering, research, and development services and facilities.

Inasmuch as both of these two components are dependent upon funding and tax benefits from Congress, their initiatives and incentives alike are determined by Congress. Equally, the DoD sets out the requirements, regulations, and contract competitions which steer and frame the components' work and revenue.

The interplay of these participants drives the resultant shape and outputs of our defense industrial base. These outputs can be summarized in three major components:<sup>4</sup>

- **Capabilities:** The types of products and services needed to meet current and future national security challenges;
- **Capacity:** The ability to produce systems or provide services at the scale and speed necessary to successfully address national security requirements; and
- **Resilience:** Maintaining an adequate balance of capabilities and capacities that enables the defense industrial base to equip and sustain U.S. forces to successfully deter or, if necessary, defeat adversary forces. Resilience, therefore, is a function of the other components and represents the ultimate end-state of the defense industrial base.<sup>5</sup>

It is these defense industrial base components that enable or inhibit mobilization. The recently released National Defense Industrial Strategy (NDIS) defines *mobilization* as

the legal and regulatory mechanisms that enable the United States government to rapidly expand, reconfigure, and draw on the defense industrial ecosystem in times of national emergency or war. Mobilization planning outlines how the government will work with the defense private sector and how the government will operate the [organic industrial base] OIB during times of crisis to ensure the timely production and distribution of essential materials, equipment, and services to support national security objectives.<sup>6</sup>

Using this definition, this paper will start with an examination of how we have mobilized in the past, looking at the cases outlined above. From the findings of these cases, we will then define

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<sup>4</sup> This builds on analysis originally presented in John G. McGinn, "Building Resilience: Mobilizing the Defense Industrial Base in an Era of Great-Power Competition," Baroni Center White Paper series No. 6 (2020), pp. 2-3. Available at <https://business.gmu.edu/news/2021-10/no-6-building-resilience-mobilizing-defense-industrial-base-era-great-power> (accessed April 3, 2024).

<sup>5</sup> The 2022 NDS defines resilience as the "ability to withstand, fight through, and recover quickly from disruption." The NDIS includes this definition as well, but the NDS definition was principally focused on the "cyber and space domains" (NDS, p. 8).

<sup>6</sup> National Defense Industrial Strategy, Department of Defense 2023, pp. 39-40. Available at <https://www.businessdefense.gov/NDIS.html> (accessed March 30, 2024).



the elements of mobilization. Finally, we build a roadmap for future mobilizations by making recommendations to strengthen each of the elements of mobilization.

## How Have We Mobilized in the Past?

### World War II

The mobilization, culminating in creating the industrial capacity that won World War II (WWII), commenced on January 28, 1938. President Roosevelt called for increased aircraft production and a 20% boost in the Navy's building program. The Fleet Expansion Act of May 1938 bolstered the Navy's building program, which injected \$1.1 billion into expanding the U.S. fleet, leading to significant naval construction.<sup>7</sup> In January 1939, Roosevelt's budget proposal furthered his efforts to garner backing for rearmament, emphasizing key aspects of preparedness. Aligned with Roosevelt's agenda, Congress passed the Air Corps Extension Act on April 3, 1939, aiming to triple the existing fleet size. By August, the U.S. military had allocated \$100 million in new orders to the aircraft industry, marking the beginning of production for many of the bombers crucially utilized during World War II.<sup>8</sup>

Phase Two, Expansion, began on May 10, 1940, as German forces advanced into Europe. Roosevelt's urgent call for increased military spending and establishing GOCO facilities propelled industrial growth. The Lend-Lease Act of 1941 further facilitated aid to allies, significantly shaping the war economy. President Roosevelt's "Arsenal of Democracy" speech in December 1940 further underscored the nation's commitment to mobilization efforts. This speech served as a rallying cry, emphasizing the importance of the United States becoming a supplier of essential war materials to its allies.<sup>9</sup>

As the threat of war loomed after the attack on Pearl Harbor on December 7, 1941, the United States found itself thrust into full-scale mobilization. The War Production Board (WPB) was established in 1942 and further solidified efforts to coordinate industrial production for the war effort. Under the direction of the WPB, industrial output surged, with factories retooled to produce weaponry, equipment, and supplies at an unprecedented rate.<sup>10</sup>

Focusing on shipbuilding appealed to a broad spectrum of political and economic interests in the United States, including interventionists and isolationists. Unlike other forms of military production, such as aircraft or tanks, shipbuilding enjoyed bipartisan support because it aligned with America's historical identity as a maritime nation. The WPB differed from its World War I predecessor by being established earlier in the conflict and having broader authority to coordinate industrial production. Additionally, the WPB implemented innovative measures and fostered collaboration between government, industry, and labor to maximize industrial output and support the Allied war effort.<sup>11</sup>

This mobilization effort marked a departure from the experiences of World War I. During WWI, the United States entered the conflict late, resulting in a rushed and less organized industrial mobilization. However, during WWII's buildup, Roosevelt's proactive measures ensured that industrial mobilization began well before the nation formally entered the war. This foresight allowed for a more structured and comprehensive approach, swiftly enabling the

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<sup>7</sup> Cancian et al, "Industrial Mobilization," pp. 13-14.

<sup>8</sup> Ibid., p.14.

<sup>9</sup> Ibid., p.15.

<sup>10</sup> Herman, *Freedom's Forge*.

<sup>11</sup> Ibid.



United States to transition into a wartime economy. Furthermore, Roosevelt oversaw a significant expansion of the U.S. military, including increasing the size of the Army and Navy, modernizing equipment, and enhancing military infrastructure. These measures were crucial for strengthening America's defense capabilities in anticipation of potential involvement in the conflict.<sup>12</sup>

The substantial backing for the World War II endeavor in the United States is underscored, especially in the aftermath of the Pearl Harbor attack, which spurred the American populace into action and consolidated public opinion in favor of the war effort. This upsurge of patriotism and obligation to safeguard the nation and its principles permeated all segments of society, with workers, corporate leaders, and everyday citizens uniting to contribute to various capacities. Whether by enlisting in the military, laboring in war-related sectors, or aiding from the Homefront, there was a resolute sense of solidarity and commitment to supporting the war.

Furthermore, the significance of government propaganda and media campaigns in shaping public sentiment and fostering backing for the war is highlighted. Messages promoting patriotism, sacrifice, and the necessity of achieving victory were widely circulated through newspapers, radio broadcasts, and posters. The broad public support and unity behind the World War II effort in the United States underscore the collective determination of the nation to overcome obstacles and secure triumph. As an extension of the widespread support for achieving victory, the industrial sector also received widespread backing as it was perceived as a patriotic force-enabling success.<sup>13</sup>

A significant aspect of the U.S. industrial mobilization policy during World War II was government and private industry collaboration. Leaders from both sectors worked closely to mobilize the nation's industrial resources for the war effort. Through close cooperation, obstacles such as shortages in materials and labor were overcome, leading to increased production efficiency and effectiveness.<sup>14</sup> The introduction of government-owned, contractor-operated (GOCO) plants significantly expanded industrial capacity, while collaborative efforts among firms ensured efficient production. The United States emerged as a prime example of full-scale economic mobilization, delivering vast quantities of weaponry and supplies.<sup>15</sup> Collectively, they manufactured two-thirds of all Allied military equipment deployed during World War II, including the atomic bomb. Military equipment encompassed an astonishing array: 41 billion rounds of ammunition, 434 million tons of steel, 2.6 million machine guns, 2.5 million trucks, half a million jeeps, 286,000 warplanes, 86,000 tanks, 8,800 naval vessels, and 5,600 merchant ships. The ongoing partnership between government officials and prominent business leaders throughout World War II sustained a consistent expansion of industrial output until the conflict's conclusion on September 2, 1945.<sup>16</sup>

### **Findings**

President Franklin D. Roosevelt's pivotal role in mobilizing American industry during World War II stands out. His leadership, strategic initiatives, and collaboration with influential business figures like Henry J. Kaiser and William S. Knudsen were instrumental in expanding industrial output during the war effort. Roosevelt's actions to prepare the United States for war,

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<sup>12</sup> Cancian et al, "Industrial Mobilization," p 13-14; Herman, *Freedom's Forge*.

<sup>13</sup> Herman, *Freedom's Forge*.

<sup>14</sup> Ibid.

<sup>15</sup> Cancian et al, "Industrial Mobilization," p.10.

<sup>16</sup> Herman, *Freedom's Forge*.



including establishing the Lend-Lease program, signing the Selective Service Act, and delivering the “Arsenal of Democracy” speech, were significant.

The remarkable feat of industrial mobilization during World War II, unfolding in rearmament, expansion, and total mobilization phases, demonstrated effective collaboration between the government and private industry. The substantial public support for the war effort, particularly following the Pearl Harbor attack, underscored a widespread sense of patriotism and dedication to supporting the war. Government propaganda and media campaigns played a crucial role in shaping public sentiment and fostering backing for the war. Additionally, the collaboration between the government and private industry in mobilizing the nation’s industrial resources for the war effort led to increased production efficiency and effectiveness. The extensive output of military equipment, including the ongoing partnership between government officials and prominent business leaders in sustaining industrial output until the conflict’s conclusion, marked a significant aspect of U.S. industrial mobilization policy during World War II.

American factories achieved unprecedented output levels, churning vast quantities of weaponry and supplies to support the military and Allied forces. Government and partnerships with influential business leaders played a crucial role in ensuring the continuous expansion of industrial output to support the war effort through the end of World War II. Sustained growth and adaptation of the U.S. industrial base throughout World War II demonstrated the nation’s ability to mobilize its resources effectively in times of crisis. This mass production capability played a pivotal role in ensuring the eventual victory of the Allies by providing them with the resources needed to sustain their campaigns.<sup>17</sup>

## **MRAP**

The Mine-Resistant, Ambush-Protected (MRAP) vehicle emerged as a program of record in 2007 in response to escalating casualties from improvised explosive devices (IEDs) in Iraq and Afghanistan. Secretary of Defense Robert Gates personally spearheaded an urgent initiative to ramp up the production and deployment of MRAPs based on existing foreign designs. MRAP vehicles presented a promising solution for offering sustained protection to our forces following the Joint Urgent Operational Need Statement (JUONS) pathway. Secretary Gates underscored this potential in a letter dated May 2, which included the following points:

The MRAP program should be considered the highest priority Department of Defense acquisition program. ... Any and all options to accelerate the production and fielding of this capability to the theater should be identified, assessed and applied where feasible. ... The urgency of the situation ... requires that we thoroughly examine all options to put as much of this enhanced capability in the hands of our troops as rapidly as reasonably possible. ... Speed is of essence.<sup>18</sup>

On May 30, 2007, the Defense Secretary issued further directives through a letter calling for establishing a department-wide task force. This task force integrated planning, analysis, and actions for acquiring MRAPs as comprehensively and judiciously as feasible within the coming year.<sup>19</sup> Secretary Gates’s direct leadership involvement and a simplified focus on improving soldier survivability were central to driving the MRAP program’s success. The program adopted a rapid acquisition approach, soliciting bids in three categories tailored to different mission sets.

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<sup>17</sup> Ibid.

<sup>18</sup> U.S. Secretary of Defense Robert Gates, “Speed is of Essence,” memorandum for Secretaries of the Military Departments, Washington, DC, May 2, 2007.

<sup>19</sup> Ibid.





The Department of Defense's conventional modernization programs seek a 99% solution over a period of years. Stability and counterinsurgency missions require 75% solutions over a period of months. The challenge is whether these two different paradigms can be made to coexist in the U.S. military's mindset and bureaucracy. Given the types of situations the United States is likely to face, it is time to think hard about how to institutionalize the procurement of [critical] capabilities and get them to the field quickly.<sup>20</sup>

The genesis of the MRAP concept traces back to earlier conflicts, such as the Rhodesian Civil War and conflicts in South Africa, where innovative designs like the V-shaped hull demonstrated remarkable success in mitigating blast impact. However, no single company held exclusive rights to the design, leading to a complex web of acquisitions and licenses over the years.<sup>21</sup>

In response to the urgent need for combat vehicles capable of withstanding high-threat environments, the CENTCOM Joint Urgent Operational Needs Statement (JUONS) was issued on October 26, 2006. This document underscored the critical requirement for vehicles that could survive mines, IEDs, and small arms fire. Subsequently, the Marine Corps Systems Command (MARCORSYSCOM) awarded a sole-source contract to Force Protection Industries, Inc. (FPII) on November 9, 2006, for the procurement of up to 280 vehicles, with additional vehicles sought through an open Request for Proposal (RFP) issued simultaneously.<sup>22</sup>

Multiple manufacturers responded with assorted designs, each offering unique features and capabilities.<sup>23</sup> Manufacturers' bids were managed inside the Pentagon, cognizant of the need for accelerated production timelines, prompting the MRAP program office to award multiple initial contracts swiftly. Designs that demonstrated superior maintainability, mobility, and survivability were further incentivized with additional contracts.<sup>24</sup> The government's decision to elevate the program's priority facilitated the expedited deployment of the vehicles. This initiative-taking stance encouraged industry investment in critical components before exercising delivery options while retaining integration responsibilities for mission equipment packages.<sup>25</sup> Such an approach was far from conventional. The U.S. military had not pursued such a multitude of

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<sup>20</sup> Robert Gates, "A Balanced Strategy: Reprogramming the Pentagon for a New Age," *Foreign Affairs*, January-February 2009.

<sup>21</sup> Jerry McGinn and Michael T. Roche, *A 'Build Allied' Approach to Increase Industrial Base Capacity* (June 26, 2023). Baroni Center Report No. 9, June 26, 2023. Available at <https://business.gmu.edu/news/2021-10/no-6-building-resilience-mobilizing-defense-industrial-base-era-great-power> (accessed April 20, 2024).

<sup>22</sup> "USMC Doc Urgent Need for MRAP Vehicles." POGO, May 2007, [https://pogoblog.typepad.com/pogo/2007/05/usmc\\_doc\\_urgent.htm](https://pogoblog.typepad.com/pogo/2007/05/usmc_doc_urgent.htm); Urgent Change of Acquisition for Urgent Operational Needs." Defense Acquisition University. Accessed April 11, 2024. <https://aaf.dau.edu/aaf/uca/uons/>; Defense Acquisition University. "Urgent Operational Needs." July 7, 2016. <https://acqnotes.com/wp-content/uploads/2014/09/DAU-Urgent-Operational-Needs-7-Jul-2016.pdf>; U.S. Army Materiel Command. "ECOP Pocket Guide." Last modified March 4, 2020. [https://www.amlc.army.mil/Portals/73/Documents/ECOP\\_POCKET\\_GUIDE.pdf?ver=2020-03-04-092340-860](https://www.amlc.army.mil/Portals/73/Documents/ECOP_POCKET_GUIDE.pdf?ver=2020-03-04-092340-860); McGinn and Roche.

<sup>23</sup> McGinn and Roche, *Build Allied*.

<sup>24</sup> Hasik, *Securing the MRAP*.

<sup>25</sup> GAO. (2009, October 8). *Rapid acquisition of MRAP vehicles*. <https://www.gao.gov/assets/gao-10-155t.pdf>



parallel designs for a singular purpose since the dawn of nuclear submarine production in the late 1950s and early 1960s.<sup>26</sup>

Secretary of Defense Ashton Carter later underscored the effectiveness of MRAPs, citing that troops in these vehicles were significantly more likely to survive roadside explosions compared to those in traditional Humvees.<sup>27</sup> Specifically, Carter highlighted that forces in MRAP vehicles were 14 times more likely to survive roadside explosions in Iraq and Afghanistan than forces riding in Humvees.<sup>28</sup> Guided by DoD directives, manufacturers reached a significant milestone by delivering an unparalleled quantity of MRAP variant vehicles, establishing it as the most substantial defense acquisition program of Fiscal Year (FY) 2010—a notable accomplishment considering its nonexistence in FY 2006. The MRAP program concluded when the last vehicle was produced in 2013, which led to the Joint Program Office (JPO), which managed the initiative, closing on September 30, 2013. As a result, the JPO's responsibility for MRAP vehicles officially ended on December 19, 2013.<sup>29</sup>

In under 3 years from the government's proposal request, 16,204 vehicles were manufactured, and 13,848 were deployed.<sup>30</sup> As casualties from improvised explosive devices mounted by the fall of 2006, public support for the war dwindled. The MRAP vehicle program played a crucial role in sustaining the presence of U.S. forces in Iraq. From 2007 onward, the widespread introduction of MRAP vehicles brought about a fundamental shift in this situation.<sup>31</sup> By 2007, the public perception was that MRAP vehicles saved the lives of U.S. troops.

### **Findings**

Five critical determinants of the MRAP program's success stand out: senior leadership sponsorship, utilization of established foreign designs, rapid development, fielding, flexibility in requirements, and a multi-sourcing strategy.

- **Senior Leadership Sponsorship:** The Secretary was at the forefront of championing the Department's MRAP initiative, actively engaging to guarantee the swift delivery of critical, life-preserving equipment to our forces on the battlefield.
- **Utilization of Established Foreign Designs:** Leveraging foreign designs from previous decades, with minimal adjustments, proved highly effective for coalition forces during operations in Afghanistan and Iraq after 9/11. The U.S. acquisition system adopted this design approach and collaborated with the industry to generate diverse solutions, resulting in remarkable success.
- **Rapid Development and Fielding:** The MRAP program swiftly transitioned a proven foreign design into U.S. production by prioritizing established technologies and industry-provided non-developmental solutions. This approach, praised by the Government Accountability Office (GAO), defied typical DoD program delays, accelerating fielding during wartime.

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<sup>26</sup> Hasik, *Securing the MRAP*.

<sup>27</sup> McGinn and Roche, *Build Allied*.

<sup>28</sup> Vanden Brook, T. (2012, September 30). Officials say MRAPs made the difference in wars. *USA Today*. <https://www.usatoday.com/story/news/world/2012/09/30/mraps-saved-lives/160014>

<sup>29</sup> Friedman, Norman. *This Truck Saved My Life! Lessons Learned From the MRAP Vehicle Program*. Joint Program Office, Mine Resistant Ambush-Protected Vehicles, 2013.

<sup>30</sup> GAO. *Rapid acquisition*.

<sup>31</sup> Friedman, *This Truck*.



- **Flexibility in Requirements:** The MRAP program was a model for demonstrating flexibility in requirement categories. It enabled firms to focus on providing specialized solutions for specific operational needs rather than applying a one-size-fits-all approach.
- **Multi-sourcing Strategy:** The MRAP program adopted a multi-sourcing approach to address capacity limitations, awarding contracts to nine commercial sources. This strategy allowed firms to specialize in providing optimal solutions for specific requirement categories.<sup>32</sup>

## Ukraine

While the United States had provided support to Ukraine since Russia's 2014 seizure of the Crimea, the United States intensified its commitment after the Russian February 2022 invasion of Ukraine. This support was crucial in strengthening Ukraine's military capabilities and resilience. Congress approved significant supplemental appropriations totaling \$48.7 billion to fund this assistance.<sup>33</sup>

Providing support for the war in Ukraine exposed some significant shortcomings in the U.S. defense industrial base.<sup>34</sup> Initially, the United States provided Javelins, HIMARS, Stingers, and other munitions from existing stocks and used congressional appropriations to pay for the replenishment of these stocks. However, the rapid usage of munitions on the battlefield coupled with the inability to quickly increase production became quickly apparent. Long lead items, obsolete parts, systems no longer in production, and other factors underscored the urgent need for surge capacity in defense production.<sup>35</sup> Under Secretary of Defense for Acquisition and Sustainment, Dr. William LaPlante, began to stress the importance of production capacity over previous efforts to focus on cost reduction in defense acquisition. Potential threats in East Asia highlight the necessity of scaling up defense systems production.<sup>36</sup>

## Findings

Providing support to Ukraine exposed significant challenges in four facets of the defense industrial base.<sup>37</sup>

- **Production capacity.** Defense industrial base production is driven solely by contracts between the DoD (or foreign countries) and industry. Thus, when demand fluctuates or ends, industry responds accordingly. Munitions production, in particular, has pitched and yawed significantly over time. Our Baroni Center analysis of 80 missile and ammunition accounts over 20 years found that funding levels could swing as much as 50% year over

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<sup>32</sup> The first three findings are derived from McGinn and Roche, *Build Allied*; the final two are from Hasik, *Securing the MRAP*.

<sup>33</sup> Congressional Research Service 2024. U.S. Security Assistance to Ukraine. Retrieved from <https://crsreports.congress.gov/product/pdf/IF/IF12040>.

<sup>34</sup> See, for example, Seth G. Jones, *Empty Bins in a Wartime Environment: The Challenge to the U.S. Defense Industrial Base*, January 2023. Available at <https://www.csis.org/analysis/empty-bins-wartime-environment-challenge-us-defense-industrial-base> (accessed April 15, 2024).

<sup>35</sup> Wall Street Journal Video, "How Arming Ukraine Exposed Cracks in the U.S. Defense Supply Chain," February 25, 2023. Available at [https://www.youtube.com/watch?v=JEe\\_dJZtF1E](https://www.youtube.com/watch?v=JEe_dJZtF1E) (accessed April 15, 2024).

<sup>36</sup> McGinn and Roche, *Build Allied*, p. 2.

<sup>37</sup> This draws heavily from McGinn, "Four Steps."



year, hardly a recipe for stability.<sup>38</sup> Moreover, because industry builds facilities to meet the terms of contracts, there is generally little readily available to quickly surge production despite available funding.

- **Acquisition practices.** DoD acquisition processes are heavily detailed to ensure precision of specifications and fairness to industry partners. This adds complexity and time. Budgeting processes, meanwhile, prioritize advanced planning that is inconducive to responding to crisis.
- **Supply chains.** Challenges with defense supply chains have been clear for some time, and COVID shone a bright light on this. As industry attempted to respond for increased demand for munitions in Ukraine, the limitations in existing supply chains became painfully evident.
- **Working with allies and partners.** Companies based in countries that are close allies and partners of the United States provide significant support to U.S. systems provided to Ukraine and these firms also had industrial capacity to develop systems to support Ukraine. While many NATO and other partner countries pledged support to Ukraine, they also struggled with increasing capacity.

Beyond the mechanics of developing and providing capabilities and capacity, maintaining public support within the United States for Ukraine has proven challenging. The recent budget showdown on Capitol Hill highlighted the contentious debate surrounding economic support and military assistance to Ukraine. Despite Congress passing appropriations for FY24, supplemental aid to Ukraine was conspicuously absent. This absence reflects a growing divide within the Republican party regarding U.S. support for Ukraine.<sup>39</sup> In the broader public, a Chicago Council on Global Affairs survey from September 7–18, 2023, indicates a notable shift in public sentiment towards Ukraine. While most Americans still supported economic assistance and military transfers to Ukraine, these majorities had decreased since November. Nonetheless, a slim majority believed the \$43 billion in military aid already sent to Ukraine had been worth the cost.

## Elements of Mobilization

These cases demonstrate the tremendous capabilities and capacities of our industrial base over time. They also demonstrate the substantial challenges in ramping up mobilization efforts and, in some cases, the importance of factors such as public support. To chart a path for the future, it is therefore important to identify and examine the component parts, or elements, of mobilization. This decomposition helps identify the levers that policy-makers can impact today to facilitate faster mobilization in the future.

Building on these cases and an examination of the mobilization literature, we have identified seven elements that make up how the Executive and Legislative Branches, working with industry partners, mobilize to meet critical national security crises. These elements, their respective purposes, and the key required outcomes are outlined in Table 1.

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<sup>38</sup> Eric Lofgren, “Year-to-year stability of munitions procurement funding,” *Acquisition Talk*, February 15, 2023. Available at <https://acquisitiontalk.com/2023/02/year-to-year-stability-of-munitions-procurement-funding/> (accessed April 15, 2024).

<sup>39</sup> Smeltz, D. & El Baz, L. 2023, October 4. American Public Support for Assistance to Ukraine Has Waned, But Still Considerable. The Chicago Council on Global Affairs. Available at <https://globalaffairs.org/research/public-opinion-survey/american-public-support-assistance-ukraine-has-waned-still> (accessed February 6, 2024).



**Table 1: Elements of Mobilization**

<b>Mobilization Element</b>	<b>Purpose</b>	<b>Key Required Outcomes</b>
<b>Authorities</b> - Legal authorities and executive branch plans	Enable USG and industry to organize and execute	- Running start - Ability to marshal all elements of national power
<b>Design</b> - Types and nature of systems needed	Determine what we are going to buy	- Radically simplified requirements - Ability to rapidly iterate designs - Designing for production
<b>Resourcing</b> - Funding levels (i.e. appropriations) - Funding process (i.e. PPBE)	Determine how much we are going to buy and in what manner	- Consensus on funding levels - Flexibility in program execution
<b>Acquisition</b> - Program development - Prototyping and experimentation - Source selection & contracting - Production	Develop and produce what we buy	- Maximized industry involvement - Ability to rapidly scale production - Contracting strategies that enable speed and surge
<b>Sustainment</b> - Supply chains - Repair or replace systems in theater	Deliver, sustain, and replace U.S. forces and systems	- Secure supply chains - Succeeding in contested logistics environments - Robust stockpiles and sourcing capabilities
<b>Public support</b>	Gain and keep public support	- Favorable climate for mobilization actions
<b>Allies and partners</b>	Get a little help from our friends	- Co-development, co-production, FMS/DCS

Each of these elements require substantial coordination and cooperation across the government, both within the DoD and the Executive Branch as well as between the DoD and Congress. Industry partners are also central to most of the mobilization elements. As the cases clearly demonstrate, the involvement of industry partners as well as government officials with significant industry experience is critical from design through sustainment.

These elements of mobilization are distinct but obviously need to collaborate to achieve success. Figure 1 depicts a model for how these mobilization elements can work together to develop the capabilities and capacities needed to achieve the defense industrial base resilience necessary for success.



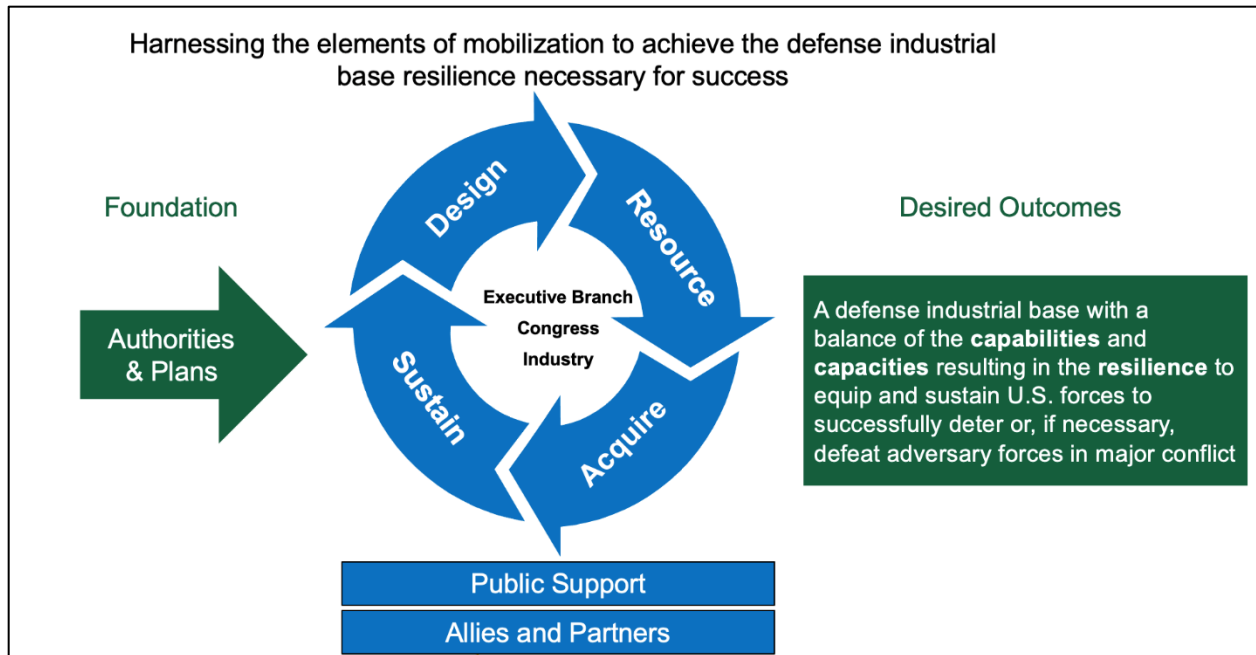


Figure 1: Mobilization Model for Major Conflict

## Building a Roadmap for the Future

To execute this model, we must take a series of steps to strengthen the elements of mobilization and thereby maximize the defense industrial base’s resilience in major conflict.

### Authorities

The government’s ability to mobilize its industrial base in many ways starts with the legal authorities and the agency plans and policies to facilitate production, reduce bottlenecks in the supply chain, and otherwise streamline how government and industry can develop the capabilities and capacities to meet the needs of the country in a crisis. The creation of the Office of Production Management and its better-known successor, the War Production Board, for example, helped FDR’s Administration to organize government and industry for and facilitate mobilization.<sup>40</sup> In the MRAP case, uses of the Defense Production Act (DPA) in various manners demonstrated how the government could shortcut bureaucratic processes to meet exigent circumstances. Section 1244(c) of the FY 2023 NDAA gave DoD authority for multi-year procurement of numerous munitions in Ukraine to send a stronger demand signal to industry to support munitions production for Ukraine.<sup>41</sup> This authorization was eventually accompanied by funding in the FY24 appropriations approved in March 2024.<sup>42</sup> Overall, our legislative authorities

<sup>40</sup> Wilson, *Creative Destruction*, pp. 59-76.

<sup>41</sup> Congressional Research Service, “Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress,” December 20, 2023, p. 13. Available at <https://sgp.fas.org/crs/natsec/R41909.pdf> (accessed April 11, 2024).

<sup>42</sup> Valerie Insinna, Ashley Roque, Michael Marrow and Theresa Hitchens, “Replicator, planes and multi-year deals: What’s in the new FY24 defense spending bill,” *Breaking Defense*, March 21, 2024. Available at <https://breakingdefense.com/2024/03/replicator-planes-and-multi-year-deals-whats-in-the-new-fy24-defense-spending-bill/> (accessed April 8, 2024).

are strong, but there are opportunities for strengthening their uses, coupled with agency planning, that will strengthen the nation's ability to respond to crises.

### **Recommendations for Strengthening**

**Keep the Defense Production Act strictly focused on national security needs.** The DPA was passed in 1950 and there are three active titles today.<sup>43</sup> It became widely known during COVID, but the MRAP case demonstrates how it has been used previously. Today, it is currently being used to great effect in reshoring and building industrial base capacity in areas such as rare earth processing, castings and forgings, and advanced batteries as well as countering foreign investment that impact national security.

The increased use of DPA is welcome but has also led to its recent invocation to support domestic production of solar panels and heat pumps, which has caused political controversy.<sup>44</sup> This was a focus at a recent House Financial Services Committee hearing focused on DPA reauthorization.<sup>45</sup> The hearing struck exactly the right tone. It is essential to keep DPA focused exclusively on essential defense and national security issues, in particular threats from our pacing competitor, China. Using DPA outside of direct national security purposes threatens “the viability of this unique tool for rebuilding a robust, resilient, and globally competitive American industrial base.”<sup>46</sup>

**DPA Title I – Update executive orders and regulations.** The distribution and allocation authorities under DPA Title I are critical to get correct. However, at the national level, the DPA is governed by a mishmash of old and overlapping executive orders spanning numerous administrations that need to be refreshed and simplified. While detailed plans are not solutions by themselves, the Administration should conduct a thorough review of relevant executive orders and regulations to better orient DPA policies and practices to address future national security challenges.<sup>47</sup>

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<sup>43</sup> For a summary of the DPA's history and usage, see Alexandra G. Neenan and Luke A. Nicastro, *The Defense Production Act of 1950: History, Authorities, and Considerations for Congress*. CRS Reports, R43767, updated October 6, 2023. Available at <https://crsreports.congress.gov/product/pdf/R/R43767> (accessed April 11, 2024). See also, McGinn, “Building Resilience,” pp. 5-7.

<sup>44</sup> <https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/06/fact-sheet-president-biden-takes-bold-executive-action-to-spur-domestic-clean-energy-manufacturing/> (accessed April 11, 2024); Press Release, House Energy and Commerce Committee Chair Cathy McMorris Rodgers, December 20, 2023. Available at <https://energycommerce.house.gov/posts/chairs-rodgers-and-duncan-decry-administration-s-use-of-war-time-authority-to-subsidize-radical-rush-to-green-agenda> (accessed April 11, 2024).

<sup>45</sup> March 12, 2024 hearing of the House National Security, Illicit Finance, and International Financial Institutions Subcommittee Entitled “Mission Critical: Restoring National Security as the Focus of Defense Production Act Reauthorization.” Hearing and background memorandum available at <https://financialservices.house.gov/calendar/eventsingle.aspx?EventID=409167> (accessed April 11, 2024).

<sup>46</sup> William Greenwalt, Jerry McGinn, and Christopher Zember, “The Defense Production Act is helping rebuild the U.S. industrial base. Let's keep it that way,” *Defense News*, June 15, 2022. Available at <https://www.defensenews.com/opinion/commentary/2022/06/15/the-defense-production-act-is-helping-rebuild-the-us-industrial-base-lets-keep-it-that-way/> (accessed April 11, 2024).

<sup>47</sup> Jerry McGinn and Daniel Kaniewski, “Where does the Defense Production Act Go from Here? Key aspects need strengthening,” *Defense One*, November 24, 2020. Available at



**DPA Title III – Delegate determination authority and use purchase commitment authority.** Title III has been a tremendous tool to address aggressive and often illegal Chinese economic practices in areas such as rare earth processing, batteries, magnets, and microelectronics. The non-delegable requirement for the president’s signature on each DPA determination, however, has significantly slowed the process by which DPA projects are developed and executed. Allowing the delegation of that determination in the upcoming 2025 reauthorization of the DPA, perhaps to the Secretary level of those agencies with Title III authority,<sup>48</sup> would significantly streamline the development of Title III projects.

Another significant improvement would be the use of purchase commitments under Title III. All existing Title III projects are purchases under Section 303 of the DPA, but the authority also permits multiyear purchase commitments. Purchase commitments would allow the DoD to create a guaranteed demand signal for an industrial capability over a mutually agreed upon period of time, thereby reducing risks for industry to make their own investments.<sup>49</sup> Adding a number of purchase commitment projects could significantly help maintain capacity levels in areas such as critical materials to support future mobilization efforts. Purchase commitment projects, however, are not an option currently because Congress has appropriated DPA funds over the past 3 years using standard Procurement funds which expire in 2 years, contrary to traditional DPA appropriations which do not expire. That needs to change to start using this important authority.

**DPA Title VII – Relook the use of voluntary agreements and the National Defense Executive Reserve (NDER).** While CFIUS continues to do critical national security work evaluating foreign investment under the authority of Title VII, there are important aspects of the title that have been dramatically underutilized. The authority permits the government to establish voluntary agreements or plans of action with industry “to help provide for the national defense.”<sup>50</sup> The Administration, for example, could establish voluntary agreements to prepare stand-by industrial capacity for potential surge use during conflict. The NDER permits the President to establish a volunteer group of industrial executives like WWII’s WPB to advise on or support mobilization efforts. The Administration could similarly examine the utility of creating an active NDER unit to support industrial preparations for potential major conflicts.

## Design

The design and development of the specific types and models of ships, tanks, airplanes, weapons, unmanned systems, and other capabilities used in war can evolve quickly over time. During WWII, it took a great deal of iteration to get to a standard and effective designs for the Liberty and Victory ships, tanks, and the B-29 Superfortress bomber.<sup>51</sup> As shown during

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<https://www.defenseone.com/ideas/2020/11/where-does-defense-production-act-go-here/170301/>  
(accessed April 11, 2024).

<sup>48</sup> Currently DoD, the Department of Homeland Security, and the Department of Health and Human Services have been delegated DPA Title III authority.

<sup>49</sup> Office of the Assistant Secretary of Defense (Industrial Base Policy) briefing, Defense Production Act Title III. Available at <https://www.businessdefense.gov/ibr/mceip/dpai/dpat3/docs/DPA-TitleIII-Overview.pdf> (accessed April 11, 2024).

<sup>50</sup> 50 U.S.C. §4558(c)(1); Section 708(c)(1) of the DPA. See also, Neenan and Nicastro, *The Defense Production Act*, pp. 15-16.

<sup>51</sup> Cancian et al, “Industrial Mobilization,” pp. 16-18; Herman, *Freedom’s Forge*, chapters 16-18.





Ukraine, increasing or restarting the production of precision munitions such as Javelin and Stinger can take months or even years.<sup>52</sup>

Complex, largely handmade munitions are inherently difficult to produce at scale. Part of these challenges begin with how these programs were designed. In the case of the MRAP, former Secretary Gates directed acquisition officials to use existing foreign designs to speed development and fielding. This greatly speeded MRAPs getting to the battlefield.

In a current shipbuilding program, unfortunately, the opposite situation occurred. The Navy selected the “mature design” of the Italian shipbuilder Fincantieri Marine Maritime for its future frigate program back in 2020. One of the major reasons for its selection was the variant built for the U.S. Navy in a Wisconsin shipyard would have 85% commonality with existing models already in service in numerous foreign navies. Design alterations made by Navy engineers, however, dramatically reduced the commonality to 20% and added 3 years to construction timelines.<sup>53</sup> These experiences, among many others, demonstrate that the DoD needs to dramatically rethink how it designs future systems.

The venerable Joint Capabilities and Development System (JCIDS) is structured to develop validated “requirements” that the Services then use to design and develop systems. As Greenwalt and Patt have demonstrated, however, this JCIDS process adds at least 2 years to program development, hardly facilitating mobilization efforts.<sup>54</sup> The Joint Urgent Operational Need (JUON) was created to mitigate this when addressing exigent requirements identified by combatant commands, but our Center study for the PPBE Commission illustrates how difficult it is for JUONs to transition to programs amidst existing service priorities.<sup>55</sup>

### **Recommendations for Strengthening**

**Design for production.** Dramatic attrition in wargame scenarios in the East Pacific echo the case findings that, from munitions to platforms, service acquisition officials need to focus on designing systems for producibility. The Air Force Program Executive Office for Weapons is pursuing just such an approach with its Enterprise Test Vehicle risk reduction effort that is being competed via the Defense Innovation Unit’s commercial solutions opening. The objective of this effort is to “demonstrate an aerial platform that prioritizes affordability and distributed mass production.”<sup>56</sup> Fostering this production-oriented approach to design, using digital

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<sup>52</sup> Bryant Harris and Joe Gould, “Biden’s Javelin factory tour highlights struggle to backfill Ukraine munitions,” *Defense News*, May 2, 2022. Available at <https://www.defensenews.com/industry/2022/05/02/bidens-javelin-factory-tour-spotlights-struggle-to-backfill-ukraine-munitions/> (accessed April 12, 2024).

<sup>53</sup> Jerry Hendrix, “The Navy’s Shipbuilding Doldrums have been Largely Self-Inflicted,” *National Review*, April 10, 2024. Available at <https://www.nationalreview.com/2024/04/the-navys-shipbuilding-doldrums-have-been-mostly-self-inflicted/> (accessed April 11, 2024).

<sup>54</sup> William Greenwalt and Dan Patt, *Competing in Time: Ensuring Capability Advantage and Mission Success through Adaptable Resource Allocation*, Hudson Institute, February 2021. Available at [https://s3.amazonaws.com/media.hudson.org/Patt%20Greenwalt\\_Competing%20in%20Time.pdf](https://s3.amazonaws.com/media.hudson.org/Patt%20Greenwalt_Competing%20in%20Time.pdf) (accessed April 12, 2024), pp. 41-43.

<sup>55</sup> Commission on Planning, Programming, Budgeting, and Execution Reform, *Defense Resourcing for the Future: Final Report*, March 2024, pp. 27-28. Available at [https://ppbereform.senate.gov/wp-content/uploads/2024/03/Commission-on-PPBE-Reform\\_Full-Report\\_6-March-2024\\_FINAL.pdf](https://ppbereform.senate.gov/wp-content/uploads/2024/03/Commission-on-PPBE-Reform_Full-Report_6-March-2024_FINAL.pdf) (accessed April 12, 2024). Baroni Center Report to the PPBE Commission, forthcoming.

<sup>56</sup> sUAS News, “DIU – Enterprise Test Vehicle.” Available at <https://www.suasnews.com/2023/09/diu-enterprise-test-vehicle/> (accessed April 12, 2024).



engineering, modular open systems approaches (MOSAs), and similar methods will be critical for future mobilization.

**Dramatically simplify requirements processes.** An outcome-oriented focus must drive future capability design. JCIDS and even JUONs are inadequate for the current national security challenges. Replicator’s emphasis on speed, rapid iteration cycles, and mature technology mirrors the MRAP experience and clearly indicates that the DoD needs a new approach to requirements for mobilization and beyond.

## Resourcing

Resources are of course essential to mobilization. Throwing a lot of money at the problem can make a big difference and the faster that you can do that, the better. The per capita dollars spent during WWII were astronomical, and the extraordinary funding and reprogramming efforts to acquire and field the MRAP, as well as the rapid bipartisan support for COVID supplemental bills were critical to meeting the exigencies of these respective situations.

As demonstrated in the more recent cases, the challenges with resourcing principally come with how the DoD, working with Congress, programs, budgets, and executes funding. That is governed in the Department by the Planning, Programming, Budgeting, and Execution (PPBE) process and between the Executive and Legislative Branches by the annual budgeting cycle. These challenges can be overcome through strong Departmental leadership and/or close collaboration as demonstrated in the MRAP case, but diverging perspectives or priorities can create challenges such as seen in the Ukraine case. The Congressional Commission on PPBE Reform has closely focused on these issues over the past 2 years and released their final report in March 2024.<sup>57</sup>

## Recommendations for Strengthening

**Implement appropriate PPBE Commission recommendations.**<sup>58</sup> The Commission’s final report contains 28 recommendations for improving PPBE. All deserve close consideration by the DoD and Congress, but several recommendations are particularly relevant for future mobilization efforts:

- **Transform the budget structure.** This major recommendation to move to a new Defense Resourcing System is driven by the Commission’s vision for “a more flexible and agile execution process”;
- **Review and consolidate budget line items (BLI).** This consolidation will increase the DoD’s ability to “adjust rapidly to changing circumstances in the year of execution and inject innovation or adopt new technology to address changing threats”;
- **Encourage improved in-person communications.** Increased in-person updates and execution reviews will be essential to scale and expedite efforts when necessary.

## Acquisition

The performance of the Arsenal of Democracy during WWII was truly extraordinary, but as the case shows, it took 2 years to really accelerate production. The Ukraine case has demonstrated the limits of how our current approach to acquiring most munitions and major defense systems has prioritized efficiency and cost savings over production. The inability to

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<sup>57</sup> The Commission final report and all supporting information about the Commission is available at <https://ppbereform.senate.gov> (accessed April 12, 2024). N.G. The Baroni Center provided research support to the Commission from May 2023 through March 2024.

<sup>58</sup> PPBE Commission Final Report. All subsequent quotes from the Report.



rapidly expand and scale production significantly hampers the capacity of the defense industrial base.

The system can move fast, however. The rapid deployment and deployment of MRAPs demonstrates this. Our experience during COVID also demonstrated this exigency. During the first month of COVID, for example, U.S. Government obligations went from less than \$5 million per day to over \$200 million per day.<sup>59</sup> That speed accelerated to the point where the United State obligated over \$40 billion within 7 months.<sup>60</sup>

The Baroni Center has outlined a number of recommendations for shifting acquisition and contracting practices to facilitate mobilization over the past year.<sup>61</sup> The DoD has also undertaken numerous initiatives along these lines drawing on the experiences in Ukraine and exercises in East Asia, from multi-sourcing 155mm ammunition production to Replicator.

### **Recommendations for Strengthening**

**Continue to prioritize open systems approaches.** The use of continuous competition and modular open systems approaches (MOSA) during the life of a program has grown apace over the past several years and needs to remain a priority for future acquisition efforts. AM General's 2023 win on the Army's Joint Light Tactical Vehicle (JLTV) recompetes contract is a prime example of that approach. Having multiple healthy producers in the wheeled vehicle industrial base, as well as other countless other DoD markets, helps move away from decades-long sole-source franchise programs and, more importantly, strengthens the ability to surge production when needed.

**Where possible, pursue second sourcing.** As outlined in our 2023 Center white paper on the subject, second sourcing played a significant role in maintaining additional industrial capacity, while substantially reducing costs, during the 1970s and 1980s in major sub-systems such as missiles and engines.<sup>62</sup> Given the need for additional production capacity in mobilization, the DoD needs to relook second sourcing as a strategy going forward.

**Maximize use of unmanned and autonomous systems to scale production.** The focus of unmanned and autonomous systems to increase fielded capacity has grown

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<sup>59</sup> Jerry McGinn, James Hasik, and Eric Lofgren, *COVID-19 Response: Contracting with Speed*, Baroni Center Report #3, April 22, 2020. Available at <https://business.gmu.edu/news/2022-03/covid-19-response-contracting-speed> (accessed April 9, 2024).

<sup>60</sup> Jerry McGinn and Eric Lofgren, *COVID-19: Federal Contracting Response and Industry Impact*, Baroni Center Report #5, November 6, 2020. Available at <https://business.gmu.edu/news/2022-03/covid-19-federal-contracting-response-and-industry-impact> (accessed April 9, 2024).

<sup>61</sup> Jerry McGinn, "America needs to grow its capacity to produce weapons. Here's four steps to do it," *Breaking Defense*, March 17, 2023. Available at <https://breakingdefense.com/2023/03/america-needs-to-grow-its-capacity-to-produce-weapons-heres-four-steps-to-do-it/> (accessed April 14, 2024). Olivia Letts, Jerry McGinn, Richard Beutel, "Back to the Future? Second Sourcing in Defense Acquisitions," Baroni Center for Government Contracting White Paper series #16, July 12, 2023. Available at <https://business.gmu.edu/news/2023-07/baroni-center-releases-white-paper-back-future-second-sourcing-defense-acquisitions> (accessed April 14, 2024). McGinn, "How to use the 'MRAP Mindset' to get U.S. industrial base on a wartime footing," *Breaking Defense*, January 3, 2024. Available at <https://breakingdefense.com/2024/01/how-to-use-the-mrap-mindset-to-get-us-industrial-base-on-a-wartime-footing/> (accessed April 14, 2024).

<sup>62</sup> Letts, McGinn, and Beutel, "Back to the Future." See also, Ginny Wylder, Su Chang, and Erin M. Schultz, "Continuous Competition as an Approach to Maximize Performance," *Defense Acquisition Research Journal*, April 2013, Vol. 20 No 1, pp. 37-57. Available at <https://apps.dtic.mil/sti/tr/pdf/ADA583903.pdf> (accessed April 14, 2024).



significantly in recent years and must continue. The Baroni Center examined four service autonomy efforts during its recent research for the PPBE Commission and discovered that service prioritization and Congressional support have been critical to keep these efforts on track.<sup>63</sup> Publicly available information on Replicator has shown similar progress.<sup>64</sup>

### **Contract for speed and surge.**

- **Increase the use of follow-on production Other Transactions (OT) Agreements.** While research and prototype OTs have become standard practice in most parts of the DoD innovation ecosystem, transitioning to production—the so-called valley of death—is where many prototype efforts have struggled. Using more follow-on production OTs, in addition to FAR-based production contracts, will help speed the transition to production for appropriate innovation efforts.
- **Establish surge CLINs.** Include surge tasks in program solicitations to create latent capacity. Contract for advance design and planning work for on-call surge production to greatly reduce the time for increased capacity if needed.<sup>65</sup>

### **Sustainment**

Contested logistics has been a major priority for the DoD given the experience in Ukraine and the daunting supply lines of a potential conflict in East Asia. Assistant Secretary of Defense for Sustainment (ASD(S)) Christopher Lowman recently noted that the shift to great power competition has required that the DoD needs to shift its sustainment approach to better “understand what we should be planning for upfront in the product support planning cycle.”<sup>66</sup>

Supply chains have also been a major focus for the DoD and industry, particularly since COVID. Numerous supply chain illumination initiatives and investments coming from EO 14017 have prioritized DoD actions in the past several years.<sup>67</sup>

### **Recommendations for Strengthening**

**Creating a tax on programs could help enable the second sourcing of parts to reduce supply chain bottlenecks.** Shortages in parts often produce production bottlenecks for industry and the DoD. The Program Executive Offices across the DoD work with industry to mitigate these challenges, but the costs of establishing, qualifying, and maintaining a second source compete with other program priorities. One way to address this challenge would be to create a tax like that used for Small Business Innovation Research, which would go into a

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<sup>63</sup> McGinn et al, *Case Studies of Technology Transition*, Report for the Commission on PPBE Reform, forthcoming.

<sup>64</sup> Brandi Vincent, “Counter-drone systems included in DoD’s initial Replicator selections,” *DefenseScoop*, April 9, 2024. Available at <https://defensescoop.com/2024/04/09/counter-drone-systems-replicator-selections/> (accessed April 14, 2024).

<sup>65</sup> McGinn, “MRAP Mindset.”

<sup>66</sup> Laura Heckman, “Pentagon Developing Sustainment Strategies for Great Power Competition,” *National Defense Magazine*, February 6, 2024.” Available at <https://www.nationaldefensemagazine.org/articles/2024/2/6/pentagon-reassessing-rigid-sustainment-strategies-for-great-power-competition> (accessed April 14, 2024).

<sup>67</sup> See “Executive Order on America’s Supply Chains: A Year of Action and Progress,” The White House, February 7, 2022. <https://www.whitehouse.gov/wp-content/uploads/2022/02/Capstone-Report-Biden.pdf> (accessed April 14, 2024).



specific budget to help fund second sources where the need arises. The DoD could work with Congress to establish a pilot effort along these lines in the FY2024 NDAA.<sup>68</sup>

**Modeling surge requirements will be critical for future mobilization.** ASD(S) has developed a repeatable objective model for surge capacity, and OSD has requested the Services to lay out an incentive structure for surge capacity with a focus on the Indo-Pacific theater in the current Defense Planning Guidance.<sup>69</sup> Building out these types of sustainment models will be critical to establish the needs and contract for the capacity necessary to sustain our forces in any major contingency.

**Grow overseas sustainment capacity.** Given the length of supply chains, the DoD needs to establish facilities in theater to repair and replace systems during conflict. The final assembly and check out (FACOs) facilities in Japan and Italy for the F-35 program are already established and chartered for repair and sustainment work.<sup>70</sup> There are also discussions underway to establish repair facilities for submarines and other initiatives developed under AUKUS in Australia.<sup>71</sup> More of these efforts will increase the resilience of deployed systems.

### **Public Support**

Getting and maintaining public support is critical to mobilization efforts. As Herman and Wilson clearly illustrate in the WWII case, FDR carefully calibrated his mobilization efforts to meet the American domestic political environment. The Japanese attack on Pearl Harbor led to the all-out acceleration of the mobilization effort, but efforts starting in 1938 gave the industrial base a tremendous head start to develop the capabilities and the capacity needed to succeed when it mattered. For example, when domestic Congressional interests supported the development of navy shipbuilding, FDR seized that opportunity to start mobilizing that critical part of the industrial base. Later he used the Lend-Lease program to get equipment to Europe in the face of a skeptical Congress. Similarly, Secretary Gates's outsized role in the MRAP case helped maintain Congressional and public support throughout its development and deployment. In the ongoing Ukraine case, however, maintaining public support has become increasingly challenging as domestic political challenges have grown in the past year.

### **Recommendations for Strengthening**

**There is no substitute for leadership.** It is hard to overstate the importance of leadership at all levels in mobilization efforts. Regularly stating and restating the rationale for and benefits of mobilization is essential to maintaining support across the branches of government and with the public.

**Make the tangible benefits of mobilization clear.** While mobilization's impact on domestic facilities and firms is well promoted, the impact of support to allies and partners like Ukraine is not as well understood or articulated to the public. Strong articulation of the benefits to the U.S. defense industrial base of foreign assistance, not to mention the significant

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<sup>68</sup> Letts, McGinn, and Beutel, "Back to the Future," p. 10.

<sup>69</sup> Lowman remarks at the NDIA Logistics Forum, Oklahoma City, OK, February 23, 2024.

<sup>70</sup> McGinn and Roche, *Build Allied*, p. 21.

<sup>71</sup> John Grady, "AUKUS Partners Working Through Reality of a Submarine Pact, Official Say," *USNI News*, April 9, 2024. Available at <https://news.usni.org/2024/04/09/aukus-partners-working-through-reality-of-submarine-pact-officials-say> (accessed April 14, 2024).



contributions of U.S. subsidiaries of foreign-headquartered firms, will help blunt some of the political and public skepticism that can arise in mobilization efforts.<sup>72</sup>

### **Allies and Partners – A Little Help from Our Friends**

As the cases clearly demonstrate, mobilization efforts heavily involve U.S.-based production.

But at the same time, we have only so much manufacturing capacity. It is therefore critically important for the United States to harness and leverage the capacity of our allies and partners to supplement our production capacity. This has been evident with the use of foreign designs for the MRAPs that saved thousands of lives in Iraq and Afghanistan. Similarly, the dramatic expansion of 155mm munitions production to support Ukraine is coming from U.S. but also from Polish, Korean, and Indian-based firms.<sup>73</sup>

This additive capacity is essential, particularly so in a potential two-front fight: if deterrence fails in the Western Pacific, the amount of destruction will be catastrophic. Russia could see that as an opportunity to attack the Baltics or conduct punishment strikes elsewhere. European production capacity, particularly for munitions, will help European NATO countries defend themselves while the United States is busy slugging it out in East Asia.

The F-35 Final Assembly and Check Out facilities in Japan and Italy are an example of how existing cooperative efforts create additional capacity in potential operational theaters.<sup>74</sup> So too are the U.S. subsidiaries and investments in Poland.<sup>75</sup> We are fortunate that our treaty allies make up the most successful advanced economies in the world. Their manufacturing and their engineers are a valuable, important component of our alliance systems, just as their armed forces, diplomats, intelligence, air/seaports, and airspace are vital contributors to our alliance system.

### **Recommendations for Strengthening**

**Develop a true Build Allied approach.** Our 2023 Baroni Center report laid out a series of recommendations to strengthen the ability of allies and partners to contribute to overall industrial base capacity that would significantly contribute to mobilization efforts.<sup>76</sup> Each of these deserve consideration, but fortunately the NDIS, other Administration actions, and the FY24

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<sup>72</sup> See, for example, Mark Thiessen, “Ukraine aid’s best kept secret: most of the money stays in the U.S.A.,” *Washington Post*, November 29, 2023. Available at <https://www.aei.org/op-eds/ukraine-aids-best-kept-secret-most-of-the-money-stays-in-the-u-s-a/> (accessed April 14, 2024). See also, McGinn and Roche, *Build Allied*, p. 45.

<sup>73</sup> Jen Judson, “U.S. Army awards \$1.5B to boost global production of artillery rounds,” *Defense News*, October 6, 2023. Available at <https://www.defensenews.com/land/2023/10/06/us-army-awards-15b-to-boost-global-production-of-artillery-rounds/#:~:text=US%20Army%20awards%20%241.5B%20to%20boost%20global%20production%20of%20artillery%20rounds,-By%20Jen%20Judson&text=WASHINGTON%20—%20The%20U.S.%20Army%20said,production%20of%20155mm%20artillery%20rounds> (accessed April 13, 2024).

<sup>74</sup> McGinn and Roche, *Build Allied*, pp. 19-21.

<sup>75</sup> “Poland – Country Commercial Guide.” International Trade Administration, U.S. Department of Commerce. Available at <https://www.trade.gov/country-commercial-guides/poland-defense-industry> (accessed April 13, 2024).

<sup>76</sup> McGinn and Roche, *Build Allied*.



NDAAs have addressed some of these recommendations. There is still work to be done, however, so here are some specific recommendations building off that report:

- **Prioritize international industrial collaboration.** International industrial collaboration has been central to programs such as the F-35, and this collaboration must continue to grow in the future. Recent progress in AUKUS Pillar I and II efforts focused on co-development and co-production are promising,<sup>77</sup> but this emphasis on international collaboration needs to be strongly promoted across the defense acquisition system through actions such as direct DoD leadership guidance, avoiding U.S.-only requirements development, and including international collaboration in performance evaluations for acquisition officials.<sup>78</sup>
- **Promote and fund exportability.** The NDIS rightly emphasizes the importance of building exportability into systems during system design and development, rather than post-production.<sup>79</sup> The key is to make that happen, which requires policy and resourcing changes:
  - o **Strengthen exportability incentives.** As the NDIS notes, DoD Instruction 5000.85 already directs programs to consider exportability during program development. Given the paucity of exportability efforts in current DoD programs, however, there needs to be more education and training on the benefits of exportability throughout the defense acquisition community.
  - o **Dramatically increase funding of the Defense Exportability Features (DEF) program to spur increased exportability.** The DEF was established in 2013 to do exactly as the NDIS emphasizes. While it has contributed to important programs such as the U.S.–Norwegian collaboration on the Three-Dimensional Expeditionary Long Range Radar, it has limped along at \$10 million of annual funding. This needs to dramatically increase if the DoD is going to achieve its NDIS exportability objectives.<sup>80</sup>
- **Ensure that technology transfer regimes facilitate increased collaboration.**
  - o **Closely monitor the implementation of AUKUS export control reforms.** The FY24 NDAA included significant export control reform relief for the United Kingdom and Australia to support AUKUS technology transfer. Given repeated failures in previous efforts, most notably the unsuccessful implementation of the defense trade treaties,<sup>81</sup> the Administration must ensure that these export control changes help, not hinder, the close technological cooperation needed for AUKUS success.
  - o **Technology disclosure and foreign disclosure (TSFD).** Similarly, DoD leadership needs to ensure that TSFD processes such as anti-tamper and electronic warfare do not hamper AUKUS or international cooperative efforts

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<sup>77</sup> See, for example, AUKUS Defense Ministers' Joint Statement, April 9, 2024. Available at <https://www.defense.gov/News/Releases/Release/Article/3733790/aukus-defense-ministers-joint-statement/> (access April 14, 2024). See also, Jen Judson, "Australian companies increasingly look to US following AUKUS pact," *Defense News*, April 5, 2024. Available at <https://www.defensenews.com/land/2024/04/05/australian-companies-increasingly-look-to-us-following-aukus-pact/> (accessed April 14, 2024).

<sup>78</sup> McGinn and Roche, *Build Allied*, pp. 43-44.

<sup>79</sup> NDIS.

<sup>80</sup> McGinn and Roche, *Build Allied*, pp. 8-9, 30-31, and 45.

<sup>81</sup> *Ibid.*, pp. 12-13.



involving sensitive technology. The DoD has reviewed these policies for AUKUS, but the proof will come as Pillar II initiatives begin to mature.<sup>82</sup>

## Conclusion

The national security challenges facing the United States are profound. While the capabilities developed by our defense industrial base are the absolute best in the world, we must reposition our industrial base to meet today's challenges at the speed and scale necessary to ensure success. While further research and actions are needed, this paper lays out a roadmap to help government and industry to mobilize in the event of major conflict.

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<sup>82</sup> Bryant Harris, "Congress lays groundwork for AUKUS export control reform," Defense News, March 22, 2023, <https://www.defensenews.com/congress/2023/03/22/congress-lays-groundwork-for-aukus-export-control-reform/> (accessed April 14, 2024).





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