



# STANDARD BOTS

## Testimony of Evan Beard

Before the U.S. Congress Joint Economic Committee on

“Frontier Technologies, Industrial Efficiency, and Pro-Innovation Policies”

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# Introduction

Chairman Schweikert, Ranking Member Hassan, and Members of the Committee, thank you for the opportunity to speak today.

My name is Evan Beard, and I'm the Co-Founder and CEO of Standard Bots, an American robotics manufacturer headquartered in Glen Cove, New York. At Standard Bots we design and assemble robots, including robotic arms, powered by artificial intelligence – machines that learn from people, adapt to their environment, and keep improving over time.

Our robots perform tasks like welding, packaging, machine tending, and assembly in factories and warehouses across the country. Serving American manufacturers gives us a clear view of where production slows down and what's holding back the next wave of American productivity.

We founded this company after seeing a stark reality: American factories had essentially no American-made industrial robots. Foreign systems dominated the market, and manufacturers told us those robots were too expensive, too complex, and still unable to automate enough tasks for them to remain competitive.

Yet across both parties, there is agreement on something fundamental: rebuilding America's manufacturing strength is essential for economic resilience, national security, and long-term competitiveness. And advanced robotics is a foundational technology – the fastest, most scalable way to rebuild competitively and bring back jobs.

Today, we're told we are the largest U.S. industrial robotics company by robots shipped, with revenue growing nearly tenfold annually. Our arms operate in factories from small shops to Fortune 500s like Lockheed Martin, Verizon, and even NASA, automating tasks no one else has been able to automate. Customers tell us, bluntly, that without our robots they would shut down lines, close facilities, or lay off workers. When they succeed, America succeeds.

Our team has worked nights, weekends, and holidays to put U.S. robotics back on the map. But our journey also reveals how far American manufacturing has eroded. When we first sourced parts for our robot, U.S. quotes were ten times higher than Chinese suppliers.

That experience points to the core issue: the United States is not cost-competitive in manufacturing today. But we can be – with the right plan. Our competitors already have national strategies, but America does not have a specific, actionable, and funded plan to lead in advanced manufacturing and physical AI. Based on surveys of hundreds of American manufacturers, this testimony outlines a practical four-part plan to change that.

## **1. Create a nationwide network of Manufacturing Excellence Centers**

Fully fund a network of interconnected, high-tech centers where manufacturers can access modern equipment and learn the latest production techniques across critical processes like milling, turning, anodizing, powder coating, casting, metal bending, laser cutting, stamping, welding, metrology, robotic automation, and wire-harness assembly.

These centers should offer hands-on training in partnership with local companies, universities, community colleges, and national labs. They should also research, document, and publish world-class operational best practices covering manufacturing software, automation, engineering workflows, and factory optimization, so U.S. manufacturers can operate at the frontier of global efficiency.

## **2. Establish a national manufacturing loan program**

Create a federal lending program, modeled on successful Department of Energy programs, that provides low-cost, long-term loans and loan guarantees to help American manufacturers start up, expand, buy advanced equipment including robotics, and hire workers, especially when private capital is unavailable or unaffordable.

All projects should require private co-investment, strong repayment prospects, and clear job-creation or strategic benefits, growing U.S. industrial capacity while protecting taxpayers.

## **3. Solve the talent shortage limiting American industry**

Use Manufacturing Excellence Centers as industrial intelligence hubs that continuously align training programs with real-time industry needs, while implementing targeted workforce investments across all education levels.

Key initiatives such as education grants, instructor credits, and dedicated training centers can ensure that our talent pipelines produce workers with the robotics, automation, and advanced manufacturing skills modern factories actually require.

## **4. Address economic inequalities between the US and other countries in robotics**

Ban Chinese-made robots or realign tariffs to counter foreign subsidies, ensuring a level playing field so America can lead in robotics and advanced manufacturing.

Chinese manufacturers, heavily subsidized under initiatives like “Made in China 2025,” pose growing economic and strategic risks. As PRC-origin robots are sold at or even below cost, American robot makers face unfair competition that threatens domestic manufacturing, introduces security vulnerabilities in critical facilities, and risks long-term dependence on a strategic competitor.

We have already seen this dynamic in solar power: aggressive Chinese subsidies in the 2010s flooded the global market with underpriced panels, wiping out much of the U.S. solar manufacturing base, a pattern documented by the U.S. International Trade Commission and widely cited in the collapse of firms like Solyndra.

Below, we outline each of these recommendations in more detail. America still has the talent, ingenuity, and drive to lead the world in making things. But every month we wait, our manufacturing base slips further behind. I urge Congress to enact policy to support this vision: make the United States the best place on Earth to build again, and ensure we lead the next generation of robotics and AI.

## Background: Automation as the Engine of U.S. Industrial Growth

U.S. labor productivity has averaged growth around 1 to 1.5 percent per year over recent years. According to data from the U.S. Bureau of Labor Statistics, this rate is significantly below the 2-3 percent per year norms of past decades, with an even steeper disparity in the manufacturing sector<sup>1</sup>. Despite record employment, U.S. economic growth remains below trend because output per hour has stagnated.

In addition, manufacturing and logistics, which underpin our supply chains and exports, are particularly constrained by labor shortages. The American Welding Society projects a deficit of over 320,000 welders by 2029<sup>2</sup>. The National Association of Manufacturers reports over 400,000 unfilled manufacturing jobs right now<sup>3</sup>. With an aging workforce and limited population growth, expanding employment alone cannot sustain output. Productivity improvements must carry the load.

Advanced robotics can deliver the productivity needed. When robot systems handle repetitive or high-precision tasks, the same number of workers can produce more value, their quality improves, and safety incidents decline. Manufacturers also recognize this. In a recent Aptean survey of 225 North American manufacturers, 63% shared they are combating their workforce shortages by using technology to automate more tasks, and 58% are using automation to upskill their existing employees<sup>4</sup>. Manufacturers that increased automation in response to staffing and skills shortages grew their revenue by 9.6 percent on average in 2023-2024, compared to 7.1 percent among manufacturers that took no action.

The Standard Bots user network attests to these positive impacts directly. One gear manufacturer described no net change to employment: “Automation has resulted in little impact

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<sup>1</sup> Bureau of Labor Statistics, Productivity, <https://www.bls.gov/productivity/charts/long-term-labor-productivity-by-sector-for-selected-periods.htm>

<sup>2</sup> AWS Workforce Data, <https://weldingworkforcedata.com/>

<sup>3</sup> NAM Manufacturing in the United States Key Data, <https://nam.org/mfgdata/>

<sup>4</sup> Aptean IM Trend Report 2025, <https://assets.ctfassets.net/grb5fvwhwnyo/6PzpdhnsHJDD9g4sFSaaZB/5e37ef6386e883db827a14e7676ef5db/Aptean-IM-Trend-Report-2025-en.pdf>

to the number of employees hired... Any workers displaced by our automated systems have been relocated into other roles in other production processes; typically more challenging roles with better task variety than those they were performing before we automated.” Even while doubling their headcount over the past seven years, automation continues to serve as a force multiplier for this business where they now “achieve the same output in 24 hours on one automated machine that would require three machines and three people otherwise.”

These success stories are widespread among our customer base and broader automation community. These impacts compound far beyond the teams and businesses deploying robots. At a macroeconomic level, a ten-percent gain in durable-goods manufacturing productivity alone would raise annual output between \$150-160 billion<sup>5</sup>, roughly half a percentage point of GDP. Today, our company’s biggest challenge is building and supporting the installation of robots fast enough to meet U.S. demand – yet another signal of automation’s ability to stimulate economic growth at a national level.

## Background: Automation’s Role in Reshoring Production

Standard Bots designs and assembles six-axis robotic arms powered by AI: robots that learn, adapt, and evolve from human inputs. These robots automate critical manufacturing tasks such as welding, packaging, machining, and more processes in factories and warehouses across the country. As both a supplier to U.S. companies and an American manufacturer ourselves, we encounter the obstacles to revitalizing American productivity every day.

Our customers are deploying robots to reshore production and rebuild American teams. One automotive supplier has thousands of employees in Mexico staffing a repetitive manual process that they are now reshoring, which will lead to hundreds of higher paying jobs stateside in the form of Standard Bots operators and technicians.

Our work at Standard Bots centers on a simple mission: to propel human productivity through the world’s most accessible robots. To accomplish this, we are building vertically integrated, AI-native robots that seamlessly learn from humans and scale across every industry, so that human skill is amplified rather than replaced. A recent packaging customer shared that by integrating controls into their packaging machine and implementing a Standard Bots robot, the company’s throughput doubled for a process producing thousands of units per shift with two employees. Another customer shared that in the three years since implementing our robot to automate the production of building materials, they tripled revenue while expanding headcount. Installation after installation, we hear stories like this from American manufacturers who are rapidly growing their businesses thanks to automation that multiplies the impact of talented workers. These stories of transformation are responsible for the conviction and urgency of our

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<sup>5</sup> JEC Monthly GDP Update, Q2 2025 third estimate, [https://www.jec.senate.gov/public/vendor/\\_accounts/JEC-R/gdp/Monthly%20GDP%20Update%20%28PDF%29.pdf](https://www.jec.senate.gov/public/vendor/_accounts/JEC-R/gdp/Monthly%20GDP%20Update%20%28PDF%29.pdf) and Bureau of Economic Analysis, GDP by Industry, <https://www.bea.gov/news/2025/gross-domestic-product-2nd-quarter-2025-third-estimate-gdp-industry-corporate-profits>

mission, which we know will lead to the same benefits for thousands of American businesses focused on reaching the next level of competitiveness.

## Background: Our Survey of Manufacturers and Contributions to Policy

These policy and legislative recommendations advance the Committee's goal of increasing GDP growth and lowering the debt-to-GDP ratio by boosting output per worker. They are informed both by our experience building a vertically integrated manufacturing company and by surveys conducted across Standard Bots' network of thousands of U.S. manufacturers, engineers, and roboticists. More than one hundred companies shared their challenges and successes with automation, their experiences using federal and state programs, and the difficulty of recruiting a skilled workforce. While this sample is not statistically representative and may carry some response bias, the remarkable consistency of the feedback reflects themes we hear again and again from manufacturers nationwide.

We have contributed industry perspectives during National Security Fly-In Weeks with leadership at the Department of Defense, the U.S. National Security Council, and Congress. We have also provided input for staffers working on a National Robotics Strategy, to those researching modernization of the Manufacturing Extension Partnership (MEP) National Network, and submitted public comments to the Section 232 National Security Investigation on Imports of Robotics and Industrial Machinery.<sup>6</sup>

## Recommendation 1: Create a Nationwide Network of Manufacturing Excellence Centers

*Problem: Most U.S. manufacturers lack a true, high-quality resource to learn the modern “art of manufacturing” – a place to master the latest production techniques, experiment with new equipment, and receive hands-on technical training. Existing programs, such as the Manufacturing Extension Partnership (MEP) National Network, remain underutilized and deliver uneven, limited impact, leaving a major capability gap in America’s industrial workforce and technology adoption.*

In surveys to Standard Bots customers, partners, and industry colleagues, SMEs consistently cite three urgent needs: automation, workforce development, and digital transformation. Persistent labor shortages, especially in rural areas, limit their growth and competitiveness. According to the National Association of Manufacturers, 74 percent of American manufacturers have fewer than 20 employees<sup>7</sup>. Many firms want to adopt automation but lack the technical

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<sup>6</sup> Federal Register, Section 232, <https://www.federalregister.gov/documents/2025/09/26/2025-18749/notice-of-request-for-public-comments-on-section-232-national-security-investigation-of-imports-of>

<sup>7</sup> National Association of Manufacturers, Facts About Manufacturing, <https://nam.org/mfgdata/facts-about-manufacturing-expanded/>

knowhow to integrate robots with their existing equipment and processes. To expand sustainably, manufacturers need better access to affordable training and demonstration facilities, clear cybersecurity guidance, and streamlined connections to experts who can help them de-risk and invest in new technology with confidence.

When it comes to supporting manufacturers seeking automation and other productivity technologies, the legacy MEP program is not meeting these needs. Most of Standard Bots' customers have not worked with an MEP, and those that did described their encounters as ineffective.

## **Recommendation**

We support the full funding of a redesigned MEP program per the following recommendations:

- **Establish high-impact, high-tech Manufacturing Excellence Centers in every state**

Create a fully funded network of state-based Manufacturing Excellence Centers: one per state by default (to avoid the current problem of funding being overly diluted), with additional centers only when quality and demand justify expansion. These centers should house a representative array of modern production equipment across critical processes such as milling, turning, anodizing, powder coating, casting, welding, metrology, wire-harness assembly, and robotic automation. Each facility could give manufacturers hands-on access to the latest tools, enabling them to test equipment, compare technologies, and learn the techniques required to run a modern factory. Companies could contribute equipment, offer training sessions, and pay scaled fees for participation. The MEP National Network should set and oversee high and consistent quality standards across centers.

- **Provide comprehensive training pathways for workers, entrepreneurs, and employers**

These centers, in coordination with local trade schools and community colleges, could operate as America's primary learning hubs for modern manufacturing, where workers, students, and entrepreneurs can gain practical skills, explore whether manufacturing careers are a fit, and connect directly with employers. Instruction should be delivered through in-person labs, nationally standardized curricula, and online courses, through a roster of vetted instructors shared across all states.

- **Build a national digital library and shared operating system**

NIST could develop a centralized digital library that aggregates all training modules, best-practice playbooks, case studies, and course materials from every center. This "manufacturing OS" would allow any worker or company in the country to find proven solutions and request local support. Centers should share a unified website, a national training calendar, and a map of each center's specializations so manufacturers can easily find the right expertise.

- **Expand hands-on industry partnerships and expand demonstration capacity**

Centers could collaborate closely with local manufacturers, universities, community colleges, and national labs to deliver hands-on training and real factory simulations. They should also

publish world-class operational best practices on manufacturing software, automation, engineering workflows, cybersecurity, and digital transformation, to raise the frontier of U.S. productivity.

- **Strengthen workforce development and career visibility**

Coordinate with K–12 STEM programs, robotics clubs, and career-technical education programs to create early exposure to automation and manufacturing careers. Build apprenticeship pathways and national standards for robotics technicians, machinists, and maintenance technicians. Incentivize mentorship by offering a Master Trades Instructor credit for experienced machinists, electricians, and CNC operators who train apprentices.

- **Adopt unified branding and major outreach efforts**

Rename and standardize branding across all states (e.g., “Ohio Manufacturing Excellence Center”) to eliminate confusion from disconnected local identities like FuzeHub or TMAC. Conduct proactive outreach to every manufacturer in the state via sharing case studies, course offerings, success metrics, and upcoming events to dramatically increase visibility and utilization.

- **Offer direct, menu-based access to service**

Eliminate mandatory pre-audits and allow manufacturers to select services directly through streamlined digital intake forms. Provide clear, modular options such as automation integration assistance, cybersecurity readiness, robotics demonstrations, and process optimization, reducing friction and speeding engagement.

- **Clarify technology demonstration and product endorsement policies**

Issue updated guidance clarifying that educational demonstrations of equipment, robotics, automation, or software are not prohibited endorsements. This will enable centers to host meaningful, vendor-neutral technology showcases, which is critical for smaller firms that cannot attend distant or costly trade shows.

- **Strengthen national coordination and expertise via Objective (c)(5)**

Align centers more tightly with federal institutes like the ARM Institute to access national robotics expertise, standardized integration templates, and best-practice guidance. Create a small federal team, drawing on top young talent and the U.S. Digital Service, to maintain quality standards, coordinate curriculum development, and ensure continuous improvement across states.

## Recommendation 2: Establish a National Manufacturing Loan Program

*Problem: America’s dependence on foreign suppliers leaves us vulnerable to supply chain and national security risks, and makes our supply chains uncompetitive.*

A sustainable increase in labor productivity depends on reliable access to the machinery and components that make automation and advanced manufacturing possible. For example, sensors, servo motors, and motor control boards form the nervous system of modern robotics. The United States led the world during the industrial revolution and post-war economic boom, but has fallen behind countries like China on manufacturing and automation. When foundational tools and machines are imported, particularly from strategic competitors, any disruption in logistics, trade policy, or geopolitics can slow factory modernization across entire regions. This dependence constrains productivity growth and leaves the U.S. industrial base exposed to supply-chain shocks. For the United States to sustain a leadership position in advanced manufacturing, the means of high production must be built alongside the industries that use them.

## **Recommendation**

A national manufacturing loan program could replicate the proven successes of prior federal credit programs while adapting them to today's urgent need to rebuild domestic industry. The program could offer long-term, Treasury-rate financing covering up to 80% of a project's capital needs, allowing manufacturers to start up, expand production lines, buy advanced equipment, or hire and train workers at a cost of capital they simply cannot access in the private market. Private partners would fund the remaining 20%, ensuring shared risk and real market validation. By focusing on projects that expand U.S. productive capacity – such as robotics, advanced materials, clean technologies, precision machining, semiconductor tooling, and other strategically important sectors – the program targets precisely the gaps where commercial lenders hesitate but national competitiveness demands investment.

To safeguard taxpayers and ensure high-quality outcomes, every application would undergo a structured technical and financial viability review performed by federally supported Manufacturing Excellence Centers. These centers can be staffed by engineers, operations experts, and financial analysts to evaluate the project's feasibility, capital plan, unit economics, workforce strategy, and long-term viability. Only projects with strong repayment prospects, demonstrated demand, and clear job-creation or supply-chain benefits would advance to financing. This ensures that public funds go only to credible, well-designed manufacturing projects with real potential to scale.

Once approved, companies would access stable, predictable, low-cost capital during construction and early operations. This is the same model that enabled the first wave of U.S. utility-scale solar plants, helped retool Ford and Nissan's factories, and allowed Tesla to build its first production line. By combining public credit with private co-investment and rigorous oversight, the program would catalyze billions in private manufacturing investment, accelerate the growth of high-paying industrial jobs, reduce reliance on foreign supply chains, and rebuild America's capacity to make the critical technologies of the future.

Our country could additionally accelerate the domestic production of critical automation components through targeted fiscal and procurement mechanisms. A Capital Equipment Credit, similar to credits used for qualifying advanced energy projects in the CHIPS and Science Act,

could offer refundable investment tax credits for U.S. manufacturing of robotics subsystems such as servo motors, gearboxes, encoders, and control electronics. This would help offset the capital intensity of re-establishing production lines and attract private investment in precision manufacturing.

These programs can support both automation projects for existing businesses as well as the founding of new machine shops and advanced manufacturers. Tax credits for machinery and equipment to start new businesses are useful, but one can't start a business on a tax credit. Low cost loans sponsored by federal and state governments for robots, automation and machinery equipment, as well as integration and deployment costs, are a crucial tool entrepreneurs need to rebalance our production capacity in the U.S., where high upfront capital costs and low interest from venture capital can prohibit otherwise successful manufacturers from getting off the ground.

Additionally, tax credits and accelerated bonus depreciation like in Public Law 119-21 (the "One Big Beautiful Bill Act") are already in use among our customers, and can be extended to ameliorate challenges unique to small and medium manufacturers (SMMs). Such incentives should not only include capital equipment, but also the integration and training associated with automation projects. We recommend offering additional grants for robotics use and adoption, funded by tariff revenues, to unlock SMMs that struggle in the final stages of automation projects. This has been ranked as the single most important lever for automation investment by the Association for Advancing Automation<sup>8</sup>.

Over 70% of Standard Bots survey respondents report that incentives like these would accelerate their investments in automation. In parallel, Congress could direct the Department of Defense to expand use of Title III of the Defense Production Act to include purchase guarantees for domestically manufactured robotics hardware, as it has done for batteries and munitions supply chains. Manufacturers producing critical components can be identified and incentivized to participate in MEP programs that strengthen domestic production and reduce reliance on foreign suppliers. Finally, establishing a clear Buy-American Robotics Preference for federally funded automation projects would ensure that public procurement itself strengthens strategic supply chains rather than deepening import dependence. Together, these policies would anchor a resilient ecosystem of American component suppliers and eliminate one of the most persistent chokepoints in industrial modernization.

### Recommendation 3: Solve the Talent Shortage Limiting American Industry

*Problem: We are not doing enough to replace, let alone expand, our manufacturing workforce.*

America's productivity challenge is just as much a talent challenge as it is a machinery or capital challenge. The nation faces a widening gap between the skills that modern manufacturing demands and the training that most workers receive. A Standard Bots user reflected that his

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<sup>8</sup> A3, Advocacy Principles, <https://www.automate.org/a3/advocacy-principles>

own education did not cover practical skills like choosing automation equipment or using commonplace tools like PLCs and other electrical controls. The Manufacturing Institute projects that 1.9M manufacturing jobs will go unfilled by 2033<sup>9</sup> due to this gap. As robotics, automation, and AI systems become essential tools across welding, logistics, and precision machining, too few technicians and engineers are entering the pipeline to design, integrate, and maintain them.

Existing programs in every state from apprenticeships to community-college certifications are valuable but under-enrolled relative to demand for manufacturing workers, and the absence of a coordinated national effort threatens to slow the diffusion of automation technologies that could strengthen U.S. competitiveness. Left unaddressed, this skills shortage will limit the nation's ability to reshore manufacturing and undermine the promise of technologies meant to lift productivity and wages.

## **Recommendation**

We've consistently heard from manufacturers that today's training programs aren't keeping pace with the rapidly evolving needs of modern industry. Skills in robotics, automation, machining, mechatronics, and advanced manufacturing are in short supply, while many training curricula remain years behind what employers actually need on the factory floor. To solve this, the proposed Manufacturing Excellence Centers could take on a critical coordination role, acting as the connective tissue between local employers, state training programs, and regional workforce boards.

These centers could regularly survey manufacturers, identify emerging skill gaps, and translate real-time industry needs into actionable curriculum updates for nearby trade schools, community colleges, and apprenticeship programs. They could host joint planning forums, share forecasting data, and advise schools on what equipment, certifications, and teaching capacity are required. Centers become the state's "industrial intelligence hub," ensuring that training pipelines are aligned with the technologies and roles manufacturers are hiring for today, not what they needed five or ten years ago.

By institutionalizing this coordination, we give manufacturers the workforce they need to expand, give young people training that leads to high-wage careers, and give states a sustainable mechanism to adapt quickly as industry evolves.

Additionally, closing the skills gap extends across education levels, from K-12 to today's skilled workers. This can be accomplished in several key ways: funding K-12 robotics and STEM grants, creating a master trades instructor credit, establishing centers for robotics technicians training, and increasing the visibility of skilled trades and automation careers.

Congress can use existing frameworks such as the Workforce Innovation and Opportunity Act (WIOA) to fund training that links directly to emerging industrial needs. This same structure can support continuing education initiatives.

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<sup>9</sup> Deloitte Manufacturing Institute, [https://themanufacturinginstitute.org/wp-content/uploads/2024/04/Digital\\_Skills\\_Report\\_April\\_2024.pdf](https://themanufacturinginstitute.org/wp-content/uploads/2024/04/Digital_Skills_Report_April_2024.pdf)

Funding competitive K-12 robotics and STEM grants for middle and high schools to co-develop robotics curriculum with local industry are crucial. These grants can include equipment stipends, mentorship, and field trip programs, and provide the needed early exposure to real-world automation and work experience.

A \$5,000 master trades instructor credit for retired machinists, CNC operators, and electricians who mentor apprentices would bridge the generational knowledge gap that exists in practical trades education.

Programs can work with Manufacturing Excellence Centers to establish and advance national apprenticeship standards for robotics technicians. The National Science Foundation's Advanced Technical Education program can serve as a national model for building, repairing, and operating automated systems, and provide curriculum templates and technical assistance to community colleges nationwide.

A coordinated national campaign can elevate the visibility of skilled trades and automation careers, highlighting that these jobs are creative, secure, and well-compensated. By investing in education, awareness, and retraining, Congress can close the skilled trades gap and secure the workforce engine that drives U.S. leadership in the age of automation.

## Recommendation 4: Address Economic Inequalities Between the US and Other Countries in Robotics

*Problem: The United States' strategic competitors subsidize their robotics companies, creating an unfair playing field for American companies*

Standard Bots anticipates that American demand for robotics and industrial machinery will continue to grow, driven by increasing automation to supplement America's industrial workforce, the continued push to bring manufacturing back to the United States, and fresh tax incentives in Public Law 119-21, commonly known as the "One Big Beautiful Bill Act." Though the overwhelming majority of six-axis robot arms are imported from outside the United States, Standard Bots is rapidly expanding to meet demand.

Robots built in the People's Republic of China (PRC) pose both strategic and technological threats to the United States. The PRC named high-end numerical control machinery and robotics as one of the key industries in its "Made in China 2025" strategy<sup>10</sup>. As with many sectors, robot manufacturers in the PRC are eligible for state-led industrial policies which distort global markets and negatively impact U.S. companies. According to the International Federation of Robotics, China's industrial-robot density rose to 322 robots per 10,000 manufacturing employees in 2021<sup>11</sup>, marking the first time China surpassed the United States (which had ~274 robots per 10,000 in 2021).

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<sup>10</sup> Congress Research Initiative, Made in China 2025, [https://www.congress.gov/crs\\_external\\_products/IF/PDF/IF10964/IF10964.4.pdf](https://www.congress.gov/crs_external_products/IF/PDF/IF10964/IF10964.4.pdf)

<sup>11</sup> International Federation of Robotics, China overtakes USA in robot density, <https://ifr.org/ifr-press-releases/news/china-overtakes-usa-in-robot-density>

Standard Bots' product specs currently outperform Chinese competitors in the six-axis robotics space, and we have AI capabilities to automate tasks that Chinese competitors currently cannot. We will continue to reduce costs for our customers through innovation and streamlining industrial processes. However, PRC state-led industrial policies have resulted in an environment where PRC-origin robots are sometimes sold in the United States for below the cost of manufacture, creating a very challenging environment for American robot manufacturers.

Unfair competition with PRC robot manufacturers will have significant negative impacts on American manufacturing and employment. In the age of automation and AI, it will be impossible to return manufacturing to the United States without affordable, flexible, easy-to-use robots, such as those made by Standard Bots. We have a narrow window of time to act: Chinese robots are not currently dominating U.S. robotics imports compared to Japanese and European companies, but their inexpensive products are coming to market as domestic demand for automation swells despite constrained capital resources. Any reliance on PRC-origin robots leaves a robotics-assisted manufacturing renaissance vulnerable to PRC control or exploitation, including through the coercive export restrictions similar to those imposed by the PRC on critical minerals<sup>12</sup>.

## **Recommendation**

Protecting the United States from foreign interference and reducing reliance on strategic competitors requires ensuring that the robots powering our factories come from trusted domestic or allied sources. This can be achieved through a ban on Chinese-made industrial robots, or by realigning tariffs to counteract foreign subsidies and create a genuinely fair competitive landscape for American suppliers.

The latest advancements in AI automation require cameras mounted on and around robots. Consider the security implications: imagine foreign robots armed with cameras trained on all our most critical operations in ITAR-controlled facilities. We can't imagine it because it's not allowed by law, so if the United States doesn't address these security risks by using domestic tools, our essential defense equipment will not participate in the next wave of productivity improvements.

Robotics are now foundational to advanced manufacturing, and advanced manufacturing is foundational to producing modern weapons systems. Dependence on the PRC for this core technology would severely weaken America's ability to build critical systems at scale. Matching foreign robotics capabilities is not enough; the United States must lead the world in robotics to secure both our economic competitiveness and national defense.

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<sup>12</sup> Select Committee on the CCP, Critical Minerals Report, <https://selectcommitteeontheccp.house.gov/sites/evo-subsites/selectcommitteeontheccp.house.gov/files/evo-media-document/Critical%20Minerals%20Report%20Cover%20%281%29-merged.pdf>

## Conclusion: Fast Action is Needed to Secure America's Industrial Future

America is standing at a crossroads. Robotics and physical AI give us a once-in-a-generation opportunity to rebuild a competitive manufacturing base that strengthens the middle class, drives long-term economic growth, and secures our leadership in the world economy. This testimony outlines the practical steps federal agencies, education institutions, and industry can take together to unlock that future: modern training infrastructure, competitive financing, a revitalized talent pipeline, and a level playing field for U.S. manufacturers.

Across manufacturing, logistics, and R&D, businesses are ready to invest in automation, but they need clear policy, reliable domestic suppliers, and a workforce prepared for high-tech, high-wage jobs. Addressing these needs now will reduce national security vulnerabilities, accelerate reshoring, and empower the next generation of robot operators, AI developers, and advanced manufacturing entrepreneurs. If we align policy, education, and industry around this shared mission, we can turn today's industrial resurgence into a durable engine of American prosperity and security.

Chairman Schweikert, Ranking Member Hassan, and Members of the Committee, thank you again for this opportunity. I appreciate the work this Committee is doing to improve workforce productivity with bipartisan support. I look forward to continued collaboration with the Committee in their efforts to develop legislation that ensures the productivity of American industries can reach its full potential.

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