Geographic Resilience Under the Defense Production Act

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In the fall of 2024, many American patients who were experiencing health emergencies or going into labor arrived at the hospital and received surprising news: Instead of getting a standard IV hookup, they would be receiving Gatorade.[1] Other patients with scheduled elective surgeries often found their procedures delayed indefinitely.[2]

These patients were reaping the consequences of the United States' lack of geographic resilience for its critical industry. A single facility in North Carolina produces 60 percent of the country's hospital IV fluids—and that facility had been badly damaged by flooding from Hurricane Helene, a tropical cyclone that struck the southeastern United States in September 2024. With IV production dramatically reduced, hospitals quickly experienced shortages, and began taking emergency steps toward conservation. The federal government ultimately stepped in and invoked the Defense Production Act's (DPA) Title I authorities to prioritize materials needed to expedite repairs and restore IV production.[3]

It's not just an IV fluid problem. The geography of much of our critical industry is exposed to a range of contemporary threats, leaving the American industrial base increasingly vulnerable. Consider a few examples:

- Fertilizer. Our food supply flows from an agricultural system that is highly dependent on phosphate-based fertilizer. Domestic fertilizer production is concentrated in the Southeast—a region of the country particularly vulnerable to severe hurricanes.[4] Florida has the largest concentration of fertilizer manufacturing plants in the country, constituting 80 percent of all national

[1] Usha Lee McFarling, *How hospitals are grappling with the IV fluid shortage wrought by Hurricane Helene*, STAT (Oct. 9, 2024), https://www.statnews.com/2024/10/09/iv-fluid-shortage-hurricane-helene-milton-hospitals/.

[2] Berkeley Lovelace Jr. & Mustafa Fattah, *IV fluid supply crunch forces hospitals to postpone elective surgery*, NBC NEWS (Oct. 9, 2024), https://www.nbcnews.com/health/health-news/iv-fluid-supply-crunch-forcing-hospitals-postpone-elective-surgeries-rcna174649.

[3] Fact Sheet: Biden-Harris Administration Takes Action to Ensure Americans Can Access Medical Supplies Following Hurricanes Helene and Milton, U.S. DEP'T OF HEALTH & HUMAN SERVS. (Oct. 11, 2024), https://web.archive.org/web/20241029102500/https://www.hhs.gov/about/news/2024/10/11/fact-sheet-biden-harris-administration-takes-action-ensure-americans-can-access-medical-supplies-following-hurricanes-helene-milton.html.

[4] TENORM: Fertilizer and Fertilizer Production Wastes, U.S. ENVTL. PROT. AGENCY (updated Jan. 14, 2025), https://www.epa.gov/radiation/tenorm-fertilizer-and-fertilizer-production-wastes.

productive capacity.[5] In October 2024, as the Category 5 storm Hurricane Milton neared landfall, nearly all of Florida's fertilizer production fell within the storm's potential path.[6] While fertilizer producers were spared from the worst impacts, any extensive hurricane damage could have halted production for months, disrupted critical supply chains, and caused food price spikes and crop shortages.[7]

- Data Centers. Data centers, the backbone of cloud computing and artificial intelligence research, are heavily concentrated in Northern Virginia.[8] The increasing growth of data centers in the area threatens to strain local infrastructure, such as the energy grid and water supply.[9] In July 2024, sixty data centers in Fairfax County almost caused a region-wide blackout as a result of an equipment failure.[10] They have also made the area a target for domestic terrorism.[11]
- High-Purity Quartz. Hurricane Helene also caused extreme flooding in North Carolina mines that produce 80 percent of the global supply of high-purity quartz essential to semiconductor production, nearly disrupting that industry.[12]

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[5] *Id.*; Ayurella Horn-Muller, *Helene and Milton upended a key part of the nation's agriculture system*, GRIST (Oct. 24, 2024), https://grist.org/food-and-agriculture/helene-and-milton-upended-a-key-part-of-the-nations-food-supply/.

[6] Horn-Muller, *supra* note 5.

[7] Emma Marsden, *Hurricane Milton Could Wreak Havoc on America's Food Supply*, NEWSWEEK (Oct. 10, 2024), https://www.newsweek.com/hurricane-milton-could-wreak-havoc-americas-food-supply-1966941; *see also Open Markets Institute Comments on "Access to Fertilizer: Competition and Supply Chain Concerns," AMS-AMS-22-0027*, OPEN MARKETS INST. (June 16, 2022), https://www.openmarketsinstitute.org/publications/open-markets-institute-comments-on-access-to-fertilizer-competition-and-supply-chain-concerns-ams-ams-22-0027.

[8] *Inside the data center capital of the world*, MARKETPLACE (Sept. 25, 2024), https://www.marketplace.org/episode/2024/09/25/inside-the-data-center-capital-of-the-world.

[9] Katherine Hafner, *'Unprecedented' energy demand from data centers poses big challenges for Virginia, commission says*, VPM NEWS (Dec. 10, 2024), https://www.vpm.org/news/2024-12-10/unprecedented-energy-demand-from-data-centers-poses-big-challenges-for-virginia-commission-says.

[10] Matthew Gooding, *Virginia narrowly avoided power cuts when 60 data centers dropped off the grid at once*, DATA CTR. DYNAMICS (Mar. 20, 2025), https://www.datacenterdynamics.com/en/news/virginia-narrowly-avoided-power-cuts-when-60-data-centers-dropped-off-the-grid-at-once/.

[11] Sebastian Moss, *Right wing terrorist gets 10 years for plotting to blow up AWS data center*, DATA CTR. DYNAMICS (Oct. 1, 2021), https://www.datacenterdynamics.com/en/news/right-wing-terrorist-gets-10-years-for-plotting-to-blow-up-aws-data-center/.

[12] Megan Cassella, *How a tiny town hit by Helene could upend the global semiconductor chip industry, CNBC* (Oct. 3, 2024), https://www.cnbc.com/2024/10/03/helene-quartz-mine-semiconductor-north-

These geographic vulnerabilities create risk across the economy and jeopardize our national security. They also exacerbate monopoly power: Exposure to extreme weather is particularly harmful to small manufacturers least able to withstand damage, leading to industry consolidation.[13]

This is not the first time that the geography of American industry has set off alarm bells. During the Cold War, policymakers concerned about direct military conflict with the Soviet Union sought to encourage a broader dispersal of industry in order to mitigate the economic impact of an attack. Congress codified this principle of geographic dispersal through an amendment to the Defense Production Act of 1950, declaring it federal policy to "encourage the geographic dispersal of industrial facilities in the United States to discourage the concentration of such productive facilities within limited geographic areas that are vulnerable to attack by an enemy of the United States."[14]

While geographic dispersal helped coordinate a safer distribution of domestic industry during the Cold War, the DPA's statutory language is now archaic and ill-suited to meet contemporary threats beyond just an attack by a foreign enemy. Congress also never reinforced its preference for industrial dispersal with real tools the government could use to effectuate that policy. As it reauthorizes the DPA this year, Congress should update the DPA and buttress it with funding and tools to better promote contemporary geographic resilience for the critical industries of our time, from healthcare production to artificial intelligence infrastructure.

carolina.html; *see also* GARPHIL JULIEN, OPEN MARKETS INST., IDENTIFYING BOTTLENECKS IN THE SUPPLY CHAINS OF KEY SECTORS 5 (July 2022), https://static1.squarespace.com/static/5e449c8c3ef68d752f3e70dc/t/62d02fd9c8d3ec3604e8d5ff/1657810906366/Bottlenecks-SupplyChain-Report_OMI.pdf.

[13] Jacopo Ponticelli, Qiping Xu & Stefan Zeume, *Temperature, Adaptation, and Local Industry Concentration* (Nat. Bureau of Econ. Research, Working Paper No. 31533, 2023), https://www.nber.org/papers/w31533.

[14] 50 U.S.C. § 4502(b)(6).

Geography, Resilience, and the Defense Production Act

Beginning during World War II, military planners began prioritizing geographic dispersal of industrial production for the war effort.[15] The federal government financed a massive expansion of the country's industrial capacity. With most of the nation's industry concentrated in the Northeast, members of Congress from the Midwest pressed Franklin Roosevelt's administration on the strategic value of dispersing new factories to their states. For example, an Arkansas senator made the case for his state based on its "safety from foreign invasion and sabotage; … large number of vacant housing facilities; … many idle schools, churches, stores, [and] public utilities; … abundant fuel; … [and] low living costs[,]" among other attributes.[16] According to a federal postwar report, the Office of Production Management's Plant Site Board "did endeavor to locate new facilities away from highly industrialized areas."[17] Indeed, the government disproportionately steered new manufacturing facilities away from New England and the mid-Atlantic states, and toward the middle of the country, such as aircraft assembly plants in Kansas and Nebraska.[18]

The federal government continued to emphasize dispersal after the war and into the Cold War. Congress enacted the National Security Act of 1947, which instructed the Office of Defense Mobilization to advise the President on "the strategic relocation of industries, services, government, and economic activities, the continuous operation of which is essential to the Nation's security."[19] In 1951, a joint congressional committee commissioned a staff report on *The Need for Industrial Dispersal* ("The *Dispersal* Report"), which recommended adding a dispersal amendment to the recently-enacted Defense

[15] Andrew Garin & Jonathan Rothbaum, *How place-based policy during WW2 shaped economic mobility in the US*, VoxDev (Jan. 17, 2025), https://voxdev.org/topic/public-economics/how-place-based-policy-during-ww2-shaped-economic-mobility-us.

[16] Reginald C. McGrane, Civilian Production Admin., Special Study No. 19, The Facilities and Construction Program of the War Production Board and Predecessor Agencies, May 1940 to May 1945 57 (1945).

[17] *Id*. at 58

[18] *Id*. at 57-58

[19] 50 U.S.C. §404(b)(6).

Production Act (DPA).[20] The *Dispersal* Report observed that manufacturing as a whole remained concentrated in major metropolitan areas, which made production costlier:

> "Cities, like industrial plants, can become inefficient and inadequate for modern production methods. The total costs of production [...] must include costs of moving products through old- fashioned street lay-outs[, ...] the costs of commuting long distances where there is no available housing, the costs of supplying water and policing in overcrowded areas, and many other services which become increasingly difficult to provide under conditions of overconcentration."[21]

The *Dispersal* Report determined that "[a]chieving a sound pattern of industrial development" involved identifying areas of the country that (i) were industrially under-developed; (ii) had high labor force slack; and (iii) enjoyed relative geographic security against enemy attack.[22] The report recognized that expanding industry to under-invested communities would be both good for national security and economic stability given that "[m]any sections [of the country] which are below the national average of industrialization are also known to be low-income areas[.]" More equitably dispersing manufacturing activity, the report added, would "strike at the root of the low-income problem—low productivity—and not only provide the reserve capacity needed at this time but will make for greater stability in the long run."[23]

Following The *Dispersal* Report, proposed legislation in the House would have amended the DPA to encourage geographic dispersal. The bill instructed the President to only direct government assistance or subsidization to a new industrial facility if its location would enhance national security by dispersing production, better utilize the available human resources of the country, and avoid industrial concentration in areas with overburdened housing markets.[24] While that legislation did not pass, the Eisenhower administration nonetheless relied on the DPA to expand the industrial base in dispersed locations. To double the nation's supply of aluminum, the

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[20] STAFF OF THE JOINT COMM. ON THE ECON. REPORT, 82D CONG., THE NEED FOR INDUSTRIAL DISPERSAL (Joint Comm. Print 1951) (hereinafter "THE NEED FOR INDUSTRIAL DISPERSAL").

[21] *Id*. at 4.

[22] *Id*.

[23] Id. at 5.

[24] *See* H. REP. NO. 639, at 39 (1951).

administration used Title III of the DPA to finance new private factories in Illinois, Tennessee, and California.[25]

In 1956, in an effort led by Senator Wallace Bennett of Utah, Congress again considered adding a geographic dispersal amendment to the DPA.[26] Proponents said the country should not "have all its eggs in one basket" in order to protect domestic industry in case of atomic war.[27] New Englanders, led by Senator Prescott Bush of Connecticut, fought Bennett's amendment, viewing it as "a dagger pointed at the economic heart" of the industrial northeast.[28]

In June 1956, Bush and Bennett debated the merits of the proposed amendment on the Senate floor.[29] Opposing the amendment, Bush argued that geographic dispersal should not be elevated over other important factors for plant location. Forcing dispersal, he believed, would distort the market's efficient spatial allocation of industry, and create a geographic mismatch between plant sites and skilled experienced workforce and management, leading to lower production. He also warned that dispersal would give "dictatorial power" to federal officials to favor chosen regions over others; stagnate existing industrial areas like the Northeast; and lead to higher government spending (through purchasing more-expensive manufactured goods as well as funding housing and community infrastructure in otherwise under-developed regions).[30]

In defense of his dispersal amendment, Bennett pointed to the threat of military attack on concentrated industry. "Two H-bombs could destroy one-third of our steelmaking capacity," he warned. "Bomb placements on 5 cities: Pittsburgh, Chicago, Youngstown, Cleveland, and Detroit, would destroy 50 percent of our steel industry."[31] Similar geographic concentrations left much of the country's machinery production and petroleum processing industries just as vulnerable.[32] Bennett argued that dispersal

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[25] DOUGLAS I. BELL, "A LITTLE-KNOWN BILL OF GREAT NATIONAL SIGNIFICANCE": THE USES AND EVOLUTION OF THE DEFENSE PRODUCTION ACT, 1950-2000, U.S. ARMY HERITAGE & EDU. CTR. 17 (2020).

[26] MICHAEL S. MAYER, THE EISENHOWER YEARS 33-34 (2009).

[27] *Defense Production Act Passes Senate After Sharp Debate*, ST. JOSEPH, MO., NEWS-PRESS, June 23, 1956, at 2.

[28] *Bush Fights Federal Plant Dispersal Idea*, MERIDIEN RECORD, Apr. 26, 1956, at 15.

[29] 102 CONG REC. S10,834-841 (daily ed. June 22, 1956).

[30] *Id.* at 10,835 (statement of Sen. Prescott Bush).

[31] *Id*. at 10,840 (statement of Sen. Wallace Bennett).

[32] *Id*.

would protect public investments in industry: "Of course, Government cannot tell industry where it can build," he said, "but the Government can refuse financial assistance unless a dispersed site is selected from among several suggested alternatives. The taxpayer at least ought to have the assurance that his money is not being spent to increase our already dangerous vulnerability."[33] Securing the country's industrial production, Bennett believed, meant building strategic redundancy into the system: "Multiple source of supply is the key to real dispersal," he said.[34]

Bennett's amendment passed both houses of Congress and was signed into law by President Eisenhower. The amended DPA now included a statement of policy that "the United States Government should encourage the geographic dispersal of industrial facilities in the United States to discourage the concentration of such productive facilities within limited geographic areas that are vulnerable to attack by an enemy of the United States."[35] Still part of the law today, this dispersal imperative doesn't just apply to DPA projects, but to *all* industrial projects receiving federal funding:

> "[I]n the rendition of any financial assistance by the United States Government for the construction, expansion, or improvement of any industrial facility, [...] under this chapter or any other provision of law, each department and agency of the United States Government should apply, [...] when practicable and consistent with existing law and the desirability for maintaining a sound economy, the principle of geographic dispersal of such facilities in the interest of national defense."[36]

Bennett's amendment, and the broader federal commitment to industrial dispersal, succeeded in shifting the map of manufacturing in the United States. Several missile contractors subsequently relocated to Bennett's Utah.[37] Over the second half of the twentieth century, industrial production overwhelmingly moved out of the old

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[33] *Id*.

[34] *Id*.

[35] 50 U.S.C. § 4502(b)(6).

[36] *Id.* § 4502(b)(8).

[37] *Bennett to Announce Bid for Third Term*, DESERET NEWS SALT LAKE TELEGRAM, June 30, 1962, at 1B.

industrial heartland of the Midwest and Northeast in favor of the South and West, particularly among defense manufacturers.[38]

Decades later, the recent surge in new manufacturing under policies enacted by the Biden administration yielded investment across much of the country. The Biden administration oversaw $80 billion in place-based industrial policy, including programs to select sites for new semiconductor manufacturing plants, regional technology and innovation hubs, and clean hydrogen hubs.[39] Those policies prompted some significant manufacturing investment to return to the old industrial Northeast and Midwest, including Central New York, Pennsylvania, and Indiana.[40] But the bulk of the new industrial investment replicated existing production patterns by flowing to the South and West.[41]

Why Geographic Resilience Matters

[38] *See* Paul G. Pierpaoli, Jr., Truman's Other War: The Battle for the American Homefront, 1950-1953, 14 OAH MAG. OF HIST. 15, 19 (2000); *see also* ANN MARKUSEN & PETER HALL ET AL., THE RISE OF THE GUNBELT: THE MILITARY REMAPPING OF INDUSTRIAL AMERICA (1991). This move was also facilitated by southern low-wage, anti-union policies. *See id.* at 43 ("[M]any defense contractors have shown an unusual antipathy toward unions and heavily unionized cities and regions").

[39] Mark Muro & Robert Maxim et al., *Breaking down an $80 billion surge in place-based industrial policy*, BROOKINGS INST. (Dec. 15, 2022), https://www.brookings.edu/articles/breaking-down-an-80-billion-surge-in-place-based-industrial-policy/.

[40] *See* Joel Dodge, *My Hometown Is Getting a $100 Billion Dose of Bidenomics*, ATLANTIC (June 27, 2023), https://www.theatlantic.com/ideas/archive/2023/06/biden-domestic-industrial-investment-chips-act/674529/; *see also* Cate Charron, *SK Hynix lands $450M in federal CHIPS Act funding for Indiana facility*, INSIDE INDIANA BUS. (Aug. 6, 2024), https://www.insideindianabusiness.com/articles/sk-hynix-lands-450m-in-federal-chips-act-funding-for-indiana-facility; Susan Phillips, *To rein in climate change, Biden pledges $7 billion to regional 'hydrogen hubs'*, NPR (Oct. 13, 2024), https://www.npr.org/2023/10/13/1205739482/to-rein-in-climate-change-biden-pledges-7-billion-to-regional-hydrogen-hubs.

[41] *See* Hans Nichols, *South, Mountain West see manufacturing boom under Biden*, AXIOS (July 23, 2023), https://www.axios.com/2023/07/23/south-mountain-west-manufacturing-boom-biden.

Ensuring a geographically resilient manufacturing base is critical for defense strategy, economic security, geographic equity, and disaster resilience.

Defense Strategy. As military leaders recognized in the 1940s, the concentration of industry poses a "sitting duck" vulnerability. Too many critical nodes of production in too few regions creates an inviting strategic target for foreign adversaries. Thus, policymakers considered physical "space" to be the only "known defense against the atomic bomb."[42] Still today, military strategists emphasize the need to "distribute" bases and aircraft around different regions of the country to account for potential enemy long-range ballistic missile attacks.[43] And beyond just physical attacks, critical utilities and infrastructure also now face the threat of cyber-attacks. Spreading industry around more of the country would mitigate these defense risks.

Disaster Resilience. Dispersal of industry can also help locate critical manufacturing in areas that have a reduced risk of natural disasters. As discussed above, extreme weather has already affected production sites for IV fluid and fertilizer. The increasing frequency and severity of extreme weather events threatens more devastating impacts on the nation's productive capacity.[44] Advancing geographic resilience will mean avoiding further concentrating critical industry in areas that are particularly vulnerable to flooding, extreme heat, wildfires, and other natural disasters.

Economic Security. The geographic concentration of critical production also poses dangers to the broader U.S. economy. As discussed above, an attack against the electrical grid in Northern Virginia could shutter much of the country's data center capacity, jeopardizing cloud computing and artificial intelligence systems that are increasingly central to the economy. Likewise, a severe hurricane in the Gulf region could devastate much of the country's fertilizer processing supply chain, triggering food shortages. Geographic resilience and building "multiple source[s] of supply," as Senator Bennett put it, help strengthen the durability of the economy from external shocks.[45]

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[42] THE NEED FOR INDUSTRIAL DISPERSAL, *supra* note 20, at 1.

[43] *See* Ganesh Sitaraman, Morgan Ricks & Christopher Serkin, *Regulation and the Geography of Inequality*, 70 DUKE L.J. 1763, 1784-85 (2021).

[44] Mark Poynting & Esme Stallard, *How climate change worsens heatwaves, droughts, wildfires and floods*, BBC (Nov. 14, 2024), https://www.bbc.com/news/science-environment-58073295.

[45] Sitaraman, Ricks & Serkin, *supra* note 43, at 1785.

Geographic Dispersal of Economic Growth. Promoting geographic resilience can also help more evenly distribute industry and therefore economic growth across different regions of the country. Federal geographic dispersal policy during World War II greatly expanded economic opportunity in former under-invested communities, producing long-term increases in wages, manufacturing employment, and upward mobility in areas that received new plants.[46] Policies that counter the tendency of industry to agglomerate in central locations can share the economic benefits of manufacturing with more of the country, and fully utilize the country's human capital. Siting industry with an eye toward geographic resilience may have the incidental effect of expanding economic activity to communities that have suffered disinvestment and under-development. Conversely, resilience policy that disperses industry can also avoid overheating highly-concentrated areas with tight labor and housing markets.

Improving Geographic Resilience Under the DPA

Because industry tends to agglomerate in centralized locations, public policy must provide a countervailing force to encourage more geographically resilient production.[47] With its pre-existing policy of geographic dispersal, the DPA already embodies this impulse. Policymakers should consider the following steps to effectively promote geographic resilience of our industrial base:

Modernize the DPA's Geographic Resilience Provisions. Congress should update the DPA's geographic dispersal provisions to address the multiplicity of threats to physical industrial locations. The paramount concern in the 1950s—a Soviet atomic attack—has receded; now our industrial base is contending with forces like terrorism, extreme weather, grid instability, workforce challenges (like training and housing), cyber-attacks,

[46] Garin & Rothbaum, *supra* note 15.

[47] In industries related to advanced technologies and innovation, agglomeration forces are particularly strong and often desirable for purposes of accelerating advancement. While outside the scope of this paper, others have proposed government intervention to seed new hubs or regional "growth centers" in under-invested communities. *See* ROBERT D. ATKINSON, MARK MURO & JACOB WHITON, BROOKINGS INST., THE CASE FOR GROWTH CENTERS: HOW TO SPREAD TECH INNOVATION ACROSS AMERICA (Dec. 9, 2019), https://www.brookings.edu/articles/growth-centers-how-to-spread-tech-innovation-across-america/. In such a policy regime, geographic resilience should be a consideration for where such growth centers are located.

biohazards, and other concerns.[48] For example, the Department of Defense has recognized that "extreme weather [...] can affect the supply chains and the Defense Industrial Base."[49] Manufacturers are already contending with climate risks in their production decisions.[50] The semiconductor manufacturer Micron, for instance, chose to open a new foundry in Central New York instead of Texas in part because of New York's superior access to a reliable water supply.[51] At the same time, Taiwan Semiconductor Company opted to build a new fab in notoriously water-constrained Arizona.[52] A policy of geographic resilience would encourage critical industry to locate in regions with relatively low vulnerability to natural disasters and other risks that could endanger steady production.[53]

Congress could update the DPA with the following statutory amendment to 50 U.S.C. 4502(b)(6):

> "It is the policy of the United States that [...] in order to ensure productive capacity ~~in the event of an attack on the United States~~ against significant disruption, the United States Government should encourage the geographic dispersal of industrial facilities in the United States to discourage the concentration of such productive facilities within limited geographic areas that are at a heightened vulnerability to attack by an enemy of the United States,

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[48] SECURING DEFENSE-CRITICAL SUPPLY CHAINS AN ACTION PLAN DEVELOPED IN RESPONSE TO PRESIDENT BIDEN'S EXECUTIVE ORDER 14017, U.S. DEP'T OF DEFENSE 5-6 (Feb. 2022), https://media.defense.gov/2022/Feb/24/2002944158/-1/-1/1/DOD-EO-14017-REPORT-SECURING-DEFENSE-CRITICAL-SUPPLY-CHAINS.PDF.

[49] DEPARTMENT OF DEFENSE CLIMATE ADAPTATION PLAN 2024-2027, U.S. DEP'T OF DEFENSE 19 (2024), https://www.sustainability.gov/pdfs/dod-2024-cap.pdf.

[50] David J. Lynch, *Companies are reshaping operations to cope with a changing climate*, WASH. POST (July 25, 2024), https://www.washingtonpost.com/business/2024/07/20/companies-climate-heat/.

[51] Chris Libonati, *Why Micron chose Central New York for $100B investment, explained*, CENTRAL CURRENT (Oct. 4, 2022), https://centralcurrent.org/why-micron-chose-central-new-york-for-100b-investment-explained/. As Micron explained in a 2024 financial filing, its "manufacturing and other operations in locations subject to natural occurrences and possible climate changes" could "result[] in increased costs, or disruptions to our manufacturing operations." Micron Technology Inc., Annual Report (Form 10-K), at 29 (Oct. 4, 2024), https://investors.micron.com/static-files/fa623e00-b0d7-4f70-bbc2-d52296cd9147.

[52] Dylan Sloan, *Water-guzzling chipmaker TSMC and drought-plagued Arizona are an unlikely pair, but officials say Phoenix's water supply can handle booming production*, FORTUNE (Apr. 8, 2024), https://fortune.com/2024/04/08/tsmc-water-usage-phoenix-chips-act-commerce-department-semiconductor-manufacturing/.

[53] *See* THE U.S. CLIMATE VULNERABILITY INDEX, https://map.climatevulnerabilityindex.org/ (last visited Apr. 28, 2025).

energy outages, extreme weather, workforce constraints, housing shortages, biohazards, or other risks to the resilience of the domestic industrial base."

Create a Geographic Resilience Assessment. Congress should commission a Geographic Resilience Assessment. The DPA Committee (or each agency that has been assigned DPA authority by the President) should create an assessment to evaluate geographic resilience strategy for the industrial base.[54] The assessment should be both backward-looking, to identify current threats to industrial resilience, and forward-looking, to determine proactive steps to improve resilience of our long-term strategic and critical production sites. It should take inventory of our current stock of under-utilized manufacturing sites, and identify those of highest strategic value based on factors including geographic resilience, suitability for modern manufacturing, local workforce characteristics, and the degree of degradation or contamination.

Establish a Geographic Resilience Fund. This would be a dedicated fund under the DPA for the President to promote geographic resilience of the industrial base. The President could draw on this flexible fund to provide loans, grants, purchase agreements, or other financial incentives authorized by the DPA to encourage firms engaged in production critical to the long-term strategic interests of the United States to select locations that advance the nation's geographic resilience.

Create a New Industrial Plant Revitalization Authority. The United States has ample untapped industrial resources. The national rate of utilization of manufacturing capacity peaked at nearly 90 percent in 1973, but hovers around 76 percent today—meaning nearly a quarter of our national manufacturing capacity is not being utilized.[55] The United States saw 91,000 factories close from 1997-2020, including nearly 2,000 since 2016.[56] There are also more than 450,000 brownfield sites in the United States,[57] and while many of these abandoned or underused industrial facilities require significant remediation from years of neglect and degradation, many others may be fit

[54] For proposals to strengthen the DPA Committee, see Joel Dodge, *Revitalizing the Defense Production Act Committee*, VAND. POL'Y ACCELERATOR (Nov. 2024), https://cdn.vanderbilt.edu/vu-URL/wp-content/uploads/sites/412/2024/11/01215220/VPA-Revitalizing-DPAC-Nov.-2024-final-text.pdf.
[55] Fed. Rsrv. Bank of St. Louis, *Capacity Utilization: Manufacturing (NAICS)*, FED. RSRV. ECON. DATA (Mar. 2025), https://fred.stlouisfed.org/series/MCUMFN.
[56] Robert E. Scott, *We can reshore manufacturing jobs, but Trump hasn't done it*, ECON. POL'Y INST. (Aug. 10, 2020), https://www.epi.org/publication/reshoring-manufacturing-jobs/.
[57] Brownfields - About, U.S. ENVTL. PROT. AGENCY (last updated Mar. 25, 2025), https://www.epa.gov/brownfields/about.

for redevelopment. Indeed, former plants can be excellent sites for new advanced manufacturing because they tend to be centrally located along existing infrastructure nodes and transportation corridors, with close access to skilled labor.[58] At a recent congressional hearing,[59] Republican members of Congress voiced support for redeveloping brownfields to host data centers, semiconductor fabs, and artificial intelligence infrastructure.[60]

To promote maximal utilization of our existing industrial stock and preservation of our industrial workforce, the DPA should authorize the President to draw on the Geographic Resilience Fund to repurpose, upgrade, and reactivate (or if necessary, rebuild) manufacturing sites that are closed, idle, or under-utilized. The Department of Energy's Domestic Manufacturing Conversion Grant Program under the Inflation Reduction Act, which helped finance the conversion of 13 shuttered or at-risk auto manufacturing and assembly facilities to begin producing electric vehicles and their components, could be a model.[61]

Under a new Industrial Plant Revitalization Authority, the government should seek to restart critical manufacturing at available industrial sites deemed to be of high-strategic value under the Geographic Resilience Assessment. This could begin as an initial pilot program at a small number of sites selected by either the DPA Committee or an independent commission. To restart manufacturing at these sites, the government could draw on a range of flexible arrangements, including joint ventures with private firms, loans or subsidies to private firms, or direct installation of advanced manufacturing equipment at active factories with spare capacity (using Title III of the DPA, discussed below).

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[58] NEW MANUFACTURING ON OLD BROWNFIELDS, U.S. ENVTL. PROT. AGENCY, https://www.epa.gov/sites/default/files/2016-10/documents/manufacturing_guide_10-14-16_fnl.pdf.

[59] *Maximizing Opportunities for Redeveloping Brownfields Sites: Assessing the Potential for New American Innovation: Hearing Before the H. Energy & Commerce Committee's Subcommittee on the Environment*, 119th Cong. (Mar. 11, 2025), https://energycommerce.house.gov/events/environment-subcommittee-maximizing-opportunities-for-redeveloping-brownfield-sites-assessing-the-potential-for-new-american-innovation.

[60] Ellie Borst, *House GOP preps bid to overhaul EPA brownfields program*, E&E DAILY (Mar. 10, 2025), https://subscriber.politicopro.com/article/eenews/2025/03/10/house-gop-preps-bid-to-overhaul-epa-brownfields-program-00219171.

[61] Domestic Manufacturing Conversion Grant Program Selections, U.S. DEP'T OF ENERGY (last visited Apr. 28, 2025), https://www.energy.gov/mesc/domestic-manufacturing-conversion-grant-program.

The government could also take ownership of certain sites outright, via purchase or eminent domain, and either offer low-cost leasing to private manufacturers (a "government-owned, contractor-operated" facility) or operate its own production ("government-owned, government-operated").[62] Alternatively, it could rehabilitate and maintain sites for future production, such as in case of emergency mobilization.

This new authority could also be used to prevent critical industrial plants from closing in the first place. In 2024, Senator Josh Hawley of Missouri asked the Biden administration to invoke the DPA to stave off the closure of one of the country's last remaining aluminum plants, which produced 30 percent of the nation's aluminum supply.[63] Because of cost issues and a lack of flexible DPA authority to execute such a rescue,[64] the Missouri plant was left to close, leading to lost aluminum production that hampered clean energy projects and other aluminum-dependent industries.[65] Under a new Plant Revitalization Authority, the government could intervene to stabilize (or take ownership over) facilities that are at an imminent risk of closure, where such closure would (i) substantially diminish the domestic production of a material critical to the national defense, and/or (ii) weaken the geographic resilience of the nation's industrial base.

Presidential Actions. Without new congressional action, the President could still take steps to de facto modernize the DPA's geographic dispersal policy. This could be done by focusing on regional overlaps between (i) the governing "geographic dispersal" standard under current law and (ii) modern geographic resilience needs. For example, it would be consistent with the current DPA to steer investment toward regions that

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[62] *See* MARK R. WILSON, DESTRUCTIVE CREATION: AMERICAN BUSINESS AND THE WINNING OF WORLD WAR II (2016).

[63] Press Release, Sen. Josh Hawley, Hawley Demands Biden Use Defense Production Act to Save Missouri Aluminum Plant and Union Jobs (Jan. 25, 2024), https://www.hawley.senate.gov/hawley-demands-biden-use-defense-production-act-save-missouri-aluminum-plant-and-union-jobs/.

[64] The DPA currently does not allow for the government to take intervening steps like injecting capital or transferring ownership for distressed industrial plants, and only authorizes the government to make loan guarantees to prevent insolvency of national defense-related producers in limited circumstances. *See* 50 U.S.C. § 4531. The Plant Revitalization Authority proposed here would provide more flexible tools and a broader range of financial interventions to prevent critical plant closures.

[65] Alison Kite, *One of nation's only aluminum smelters set to close in Missouri Bootheel*, MO. INDEPENDENT (Jan. 25, 2024), https://missouriindependent.com/2024/01/25/one-of-nations-only-aluminum-smelters-set-to-close-in-missouri-bootheel/; *see also* Jason Plautz, *Aluminum shortage threatens US clean energy plans,* E&E NEWS (Mar. 13, 2024), https://www.eenews.net/articles/aluminum-shortage-threatens-us-clean-energy-plans/.

happen to be both insulated from enemy attack, and relatively secure from extreme weather events.

The President could then use DPA authorities to promote modernized geographic dispersal. For instance, the President could initiate the Geographic Resilience Assessment proposed above, using the DPA Committee or DPA agencies to develop a plan for a geographic resilience strategy for the industrial base.

Second, the President could use existing authority for loans and transactions to increase productive capacity under Title III of the DPA to promote geographic resilience. The President could issue an executive order that, among other actions, sets a policy of favoring production investments in geographically resilient industrial base communities, or establishes DPA incentives specifically for firms that will increase critical production by restarting recently-closed factories.

Third, the President could make use of the DPA's equipment installation authority to advance geographic resilience. Title III of the DPA authorizes the President to "procure and install equipment owned by the Federal Government in plants, factories, and other industrial facilities owned by private persons."[66] This authority allows the President to leverage existing plants with spare capacity for expanded strategic production, such as by distributing cutting-edge manufacturing equipment.[67]

Finally, the President could emphasize the DPA's geographic dispersal mandate across other federal grants and financial assistance programs for industrial facilities. As discussed above, the DPA requires the government to weigh geographic dispersal considerations not just for those new industrial plants developed under the DPA, but for any industrial projects receiving federal funding.[68] Adhering to this mandate could import geographic resilience principles across a range of current and future federal

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[66] 50 U.S.C. § 4533(e)(1)(B).

[67] *See* TODD N. TUCKER, ROOSEVELT INST., PRIORITIES AND ALLOCATIONS: HOW THE DEFENSE PRODUCTION ACT ALLOWS GOVERNMENT TO MOBILIZE TO ENSURE POPOULAR WELL-BEING 13, 21 (Jan. 2022), https://rooseveltinstitute.org/wp-content/uploads/2022/01/RI_PrioritiesandAllocations_IssueBrief_202201.pdf; ARNAB DATTA, ASHLEY GEORGE, JOEL MICHAELS & TODD N. TUCKER, ROOSEVELT INST., SEVEN WAYS THE EXECUTIVE BRANCH CAN TURBOCHARGE GREEN INDUSTRIAL POLICY 12-13 (Aug. 2022), https://rooseveltinstitute.org/wp-content/uploads/2022/08/RI_TurbochargingGreenIndustrialPolicy_IssueBrief_202208.pdf.

[68] *See* 50 U.S.C. 4502(b)(8).

funding streams that promote domestic manufacturing.

Conclusion

The DPA has long recognized that economic security is national security. Congress accordingly sought to strengthen the security of our industrial base in the 1950s. Today's threats are different, but it remains vitally important to protect the geographic resilience of American industry.

Government intervention to promote geographic resilience for industry will undoubtedly raise legitimate objections. As Senator Bush did in 1956, some might worry that the government will dictate where private industry must locate. Of course, optimal geography cannot and should not be the sole consideration for new industrial sites, and should not trump other significant business and productivity factors. Certain industries generate substantial social benefits by clustering together in proximal locations, and while policy make seek to steer future clusters to new regions, it need not break up existing ones in the name of resilience.[69] Prioritizing geographic resilience does not necessitate closing and uprooting existing manufacturing sites—we can add strategic redundancy into the industrial base without disturbing current plants.

Others may fear that a Geographic Resilience Fund under the DPA will become a site for congressional pork and corruption. Realistically, industrial policy is often shaped by political dealmaking. However, steps can be taken to insulate geographic resilience policy as much as is practicable. The initial Geographic Resilience Assessment should be impartial and conducted by policy experts focused on the risks and opportunities in our current industrial landscape—an inquiry that should be insulated from localized political considerations. That assessment should then guide the subsequent site selection and revitalization processes. For additional protection from political favoritism, final site selection could even be determined by a lottery among those sites deemed most promising by the assessment.

Still others may disfavor disrupting the industrial geographic status quo. But the manufacturing map in the United States has never been static, and has historically shifted in response to new policy and emerging risk. Private market decision-making

[69] *See supra* note 47.

will not necessarily produce the resilient industrial base we need to confront modern challenges. The DPA can again be a lever to secure that resilience.