THE CENTURY FOUNDATION

REPORT **HIGH WAGE AMERICA**

Revitalizing America's Manufacturing Communities

OCTOBER 16, 2017 — JOEL S. YUDKEN, THOMAS CROFT AND ANDREW STETTNER

Four decades after deindustrialization and disinvestment began ravaging the nation's industrial heartland, including rural areas, small towns, and cities throughout the Midwest, Northeast, and Upper South, the city of Pittsburgh has emerged as a poster-child for economic recovery. Once a center of American steelmaking—an industry that virtually collapsed in the 1980s—Pittsburgh now has a vibrant, diversified economy centered around technology, health care, and bio-science. Some view the city's rise from the ashes as a model for revitalizing the "Rust Belt" and other industrial regions.

Pittsburgh's recovery, however, has not extended much beyond the city limits. Outside Pittsburgh's revived urban core, many communities throughout western Pennsylvania continue to suffer from declines in employment and population, high levels of poverty, poor schools, increasing violence, growing social dysfunction, and environmental degradation. As long-time Youngstown State University business professor John Russo[1] observes, "Deteriorating factories, empty parking lots, dilapidated housing, and vacant lots, all bear witness to the continuing material and social costs of economic restructuring."[2]

Other cities that have had similar phoenix-like comebacks—Cleveland and Milwaukee, for example—also have been unable to pass their economic vitality on to their surrounding areas. This is not to say that there's something wrong with these renewals.[3] Rather, as Russo concludes, "It's simply incomplete." This incompleteness is also revealed in the cities themselves, with inner-city neighborhoods that are adjacent to prospering urban centers, yet never fully recovered from large-scale losses of manufacturing jobs that undercut the fortunes of America's working class, particularly among African-American families.[4] For example, nearly a quarter of Pittsburgh residents continue to live in poverty.[5]

Despite the best intentions of federal and state efforts—some with roots that go back to the New Deal—America's current patchwork of economic development, workforce assistance, and safety-net programs is poorly funded, and has had limited success in helping former industrial communities recover from the hardships and disruptions stemming from trade agreements, offshoring, technology change, and government policy shifts, among other causes. While conventional wisdom has tended to discount a return of manufacturing to our shores as a viable economic recovery strategy for these communities, this report argues otherwise.

The Prospects of a Manufacturing-led Recovery

Although the role of manufacturing in the national economy has been contested since the dot-com "New Economy" era of the 1990s, this report explicitly reaffirms the importance of rebuilding a globally competitive, innovation-based advanced manufacturing sector in the United States. Indeed, there is an emerging consensus that a strong American manufacturing base remains vital to maintaining America's economic strength and national security in the twenty-first century.[6] This report asserts that revitalizing and restoring manufacturing is key to the recovery of regional, state, and local economies; is essential for rebuilding the American middle-class; and is critical for creating opportunities for minorities and low-income families to increase their social and economic mobility.

Specifically, this report proposes a public policy agenda and strategy for harnessing American manufacturing to the recovery of regional and local industrial economies hurt by globalization, technological change, government policy shifts, and other economic shocks over the past four decades. The goal is to provide a framework and template for federal, state, and local governments, working with nongovernmental stakeholders, to enable and accelerate the transition to economic prosperity of the beleaguered rural and urban communities in the nation's industrial heartland.

The need to restore American manufacturing has received a lot of bipartisan political support, serving as a major campaign issue in the 2016 presidential elections. Donald Trump won the White House in part by promising to bring manufacturing back to America. His attack on "bad" trade deals and support for "Buy America" policies appealed to voters in economically distressed communities in the industrial Midwest and the South, which had suffered from massive trade-related losses in unionized manufacturing jobs since the 1970s. Democratic candidate Bernie Sanders' message that free trade agreements led to a loss of American jobs and depressed American wages also resonated. He called for America to rebuild its manufacturing base and support well-paying jobs for American labor. Hillary Clinton also put forth substantive policy proposals on manufacturing revival, innovation, infrastructure, revitalizing left-behind communities, and criticized bad trade deals, though belatedly and less forcefully.

Even before the election, the Obama administration had begun focusing on strengthening industrial innovation and promoting advanced manufacturing through its Manufacturing USA initiative as the path forward to revive American manufacturing competitiveness and stimulate growth in advanced manufacturing capacity in the United States.[7]

The Importance of an Industrial Commons

Industrial advocates and policy experts have increasingly focused on rebuilding what is known as the nation's *industrial commons* as a necessary step in enabling a robust revival of American manufacturing driven by innovation and advanced manufacturing technologies. Harvard Business School professors Gary Pisano and Willy Shih introduced the term industrial commons to characterize the resources and capacities required to sustain and foster innovation and a strong advanced-manufacturing base. The notion of a commons is rooted in the historical practice of community members benefiting from the common use of shared town lands to graze their animals. The modern-day equivalent of a commons for industry includes sharing of specific resources: the research and development and manufacturing infrastructures, including the know-how, process development skills, and engineering capabilities, as well as access to suppliers of advanced materials, tools, production equipment, and components necessary for retaining, restoring, and growing new industrial capacity in specific sectors and geographical locations.[8]

A robust industrial commons by itself—even a high-tech, high-wage one—is not sufficient to ensure that the gains from reinvigorated industrial growth will benefit America's most economically distressed communities and vulnerable and dislocated workers.

At the same time, a robust industrial commons by itself—even a high-tech, high-wage one—is not sufficient to ensure that the gains from reinvigorated industrial growth will benefit America's most economically distressed communities and vulnerable and dislocated workers. Some proponents of an innovation-led manufacturing revival, such as the Information Technology and Innovation Foundation (ITIF), warn that, without appropriate actions, industrial heartland communities hurt by the loss of U.S. manufacturing could still be left out of any new advanced manufacturing boom. ITIF cautions that a "rising tide doesn't automatically lift all regional boats,"[9] and former White House advisor Jim Pinkerton argues that "we can't live with . . . a country in which whole states are left behind, in the dust."[10] In a similar vein, McKinsey Global Institute analyst Sree Ramaswamy says that addressing dislocation must be a priority for revitalizing American manufacturing, and he calls for place-based strategies to invest in manufacturing communities, mitigate trade dislocation, and address the needs of older workers and the problem of declining mobility.[11]

Building a High-Road Industrial Commons

To meet the challenges facing America's industrial heartland, there needs to be a proactive effort that brings together public, private, and civil sector stakeholders to forge a link between the initiatives that drive manufacturing revival and the efforts to promote the recovery of regional and local economies. Our vision, therefore, is to construct a *high-road* industrial commons; that is, one that explicitly ties rebuilding America's manufacturing base to the revitalization of economically vulnerable or distressed regions and communities across the country.

A high-road industrial commons is one that:

- retains, restores, and establishes new globally competitive advanced manufacturing and related industrial businesses;
- retains, restores, and creates family sustaining jobs for dislocated, incumbent, and young workers;
- promotes social inclusion, and creates economic opportunities for minorities and low-income families to increase their economic and social mobility;
- targets *all* left-behind, struggling communities and their residents, regardless of race, ethnicity, age, gender, or geographical locales (that is, rural, urban, and suburban communities suffering from economic distress);
- emphasize collaboration and partnerships between key federal, state, and local government agencies and programs, as well as business, labor, academic, nongovernmental, and not-for-profit actors and stakeholders engaged in the commons; and
- strengthens linkages, breaks down silos, and supports coordination across the activities within the commons.

Federal, state, and local governments are instrumental in all aspects of the strategy, though, as noted above, its implementation entails active participation and forging partnerships with and between industry, labor, academic institutions, and nongovernmental and other civil sector stakeholders. As shown in Figure 1, the strategy includes two national drivers, and four regional drivers. Taken together, these drivers will foster the retention, restoration, and growth of America's industrial commons, while enabling the recovery of economically vulnerable and distressed communities in America's industrial heartland.

First, at the national level, we recognize the importance of federal policy drivers to enable sustained success of the strategy applied at the regional and local levels. We should note that, while federal policies and programs are the focus of these drivers, there is a role for state and local governments to support, supplement, and extend the national drivers to benefit their jurisdictions. To drive change, the federal government must:

- **Level the playing field for U.S. manufacturers in international and domestic markets.** Key measures of this driver include fair trade agreements; enforceable labor and environmental standards; enforcement of unfair trade practices; addressing currency overvaluations; and tax and financial reforms to reduce corporate incentives to move production offshore.

- **Create and expand demand for U.S.-made goods at home and abroad.** This driver would present new market opportunities for U.S. producers, and ensure that U.S. manufacturers in fact benefit from these opportunities. The former includes government investments to address major national needs (for example, infrastructure, clean energy and affordable housing). The latter refers to domestic content requirements in government procurement (for example, Buy America) and encouraging consumer purchases of U.S.-made goods.

These issues, especially the trade, tax, and currency measures, have long occupied much of the manufacturing policy debate. As there already is an extensive relevant literature on these issues (including a recent report authored by Fred Block for The Century Foundation),[12] this report will not present substantial discussion of them here, except when there is specific application to localized industrial recovery efforts. The remainder of this report will discuss the four major drivers of a manufacturing-led economic recovery at the regional, state, and local levels. To drive change, regional, state and local leaders must:

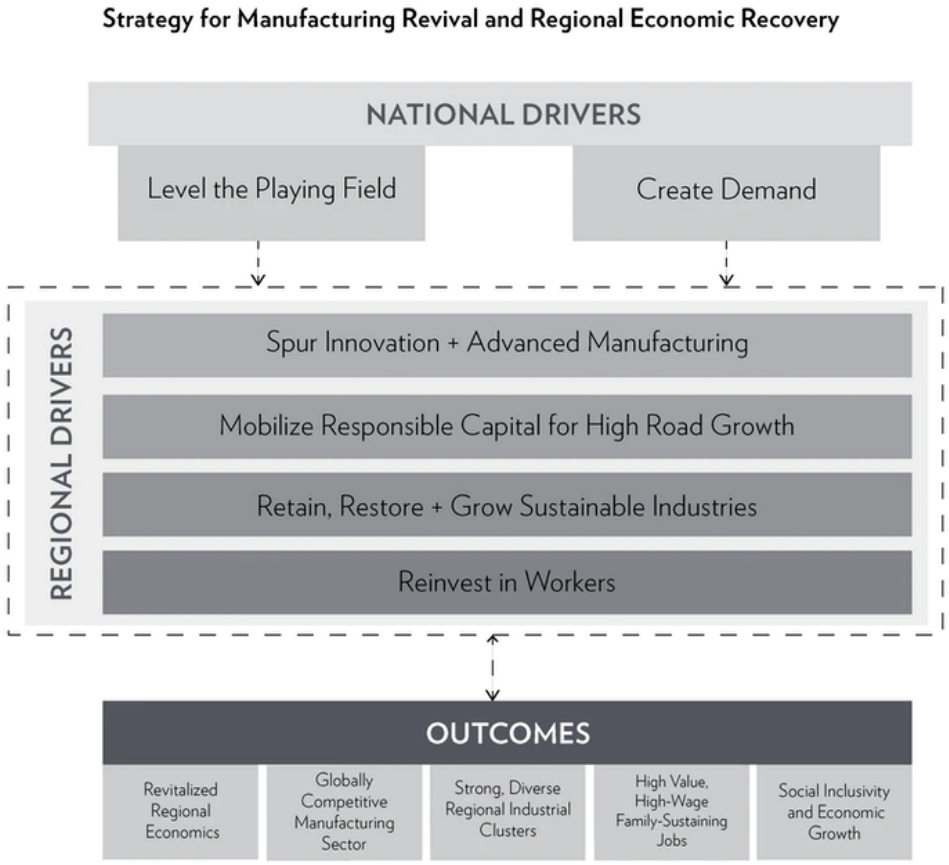
- **Spur innovation and advanced manufacturing.** This driver would strengthen the capabilities of the public, private, and civil sectors to support the development and diffusion of advanced manufacturing innovations to improve the competitiveness of U.S. industries.

- **Retain, restore and grow sustainable industries.** This driver includes stakeholder-led economic development tools, measures, and initiatives to support and assist manufacturing revitalization and high-road industrial restructuring, especially in economically vulnerable and distressed communities.

- **Reinvest in workers.** This driver would support the growth of robust, regionally based workforce education, training, and certification to enable workers seeking employment to qualify for high-value, family-supporting jobs in manufacturing and emerging industries, while building a high-skilled workforce to meet the needs of those sectors.

- **Mobilize responsible capital for high-road growth.** This driver would support the development and availability of well-resourced and accessible capital strategies and financing options to assist manufacturing revival and high-road recoveries in struggling industries and communities.

FIGURE 1



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The remainder of this report provides a template and best practice examples for state and local actions associated with each of the four regional drivers to build a high-road industrial commons for revitalizing manufacturing regions and communities. As the report will show, the drivers, while having distinct characteristics and elements, in reality, must be understood as operating together. That is, there are necessary overlaps and synergies across the drivers. The workforce reinvestment and capital strategies drivers are especially cross-cutting: their applications help enable and enhance the impacts of the other drivers (for example, both capital availability and a skilled workforce are critical to advanced manufacturing innovation).

Driver 1: Spur Innovation and Advanced Manufacturing

Any viable national strategy to restore America's manufacturing preeminence and support the recovery of left-behind industrial communities must start with measures that grow and strengthen the nation's industrial commons in regional and local economies. These measures should not only maintain and strengthen America's unequaled basic and applied research system, but also advance the development of advanced manufacturing technologies, processes, and capabilities arising from this system to facilitate the transition of promising early-stage technological inventions into scalable, cost-effective, and high-performing domestic manufacturing enterprises.[13]

The offshoring of American manufacturing production over a period of decades seriously eroded the nation's industrial commons, with significant consequences for America's competitiveness, economic well-being, and national security. The loss of manufacturing from U.S. shores has undermined the nation's R&D and innovation system, weakening the innovation capabilities of domestic industrial sectors, which, as Pisano and Shih note, diminishes "the knowledge, skills and equipment needed to turn inventions into high-quality, cost competitive, cutting-edge products."[14] The erosion of the industrial commons also was reflected in the deindustrialization and disinvestment that has devastated numerous communities in the nation's industrial heartland that once depended on manufacturing.

Ensuring a robust industrial commons for America will entail restoring and enhancing the institutions, capabilities, and resources required to foster process-oriented and advanced manufacturing innovation. There are notable examples of where manufacturing revivals have driven successful regional and local economic recoveries. It should be cautioned, however, that building a high-road industrial commons does not include simply the restoration of traditional manufacturing bases, but rather the successful growth of new, cutting-edge industrial sectors, which often built upon the legacy of earlier industrial competencies. Cornell University geographer Susan Christopherson,

in 2009, wrote about "phoenix industries," describing examples of manufacturers in "often-dismissed Rustbelt cities" (such as Pittsburgh, but also Syracuse and Rochester, New York) "rising up from the ashes" to be leaders in innovation and advanced technology. Noting that "innovation is about more than finding and helping talented lone wolves," but about "building industry environments where inventive firms can thrive and grow," she observed that "some of the best environments for new advanced technology companies have emerged in unlikely places: our old industrial cities."[15]

PITTSBURGH WATERFRONT. SOURCE: FLICKR.

Similarly, Antoine van Agtmael and Fred Bakker, in their book *The Smartest Places on Earth*, tell the stories of communities that transitioned from traditional manufacturing industrial bases, to globally competitive economies built around innovation and "smart" manufacturing.[16] The initiatives, such as Akron, Ohio (around polymers) and Albany, New York (around semiconductors), that enabled these transformations were based on building up robust industrial commons that emphasized investments in innovation, modernization, and advanced and "smart" manufacturing, fostered by collaborative industrial ecosystems comprised, typically, of company research activities, research universities, community colleges, local government authorities, and start-ups.[17] To reproduce these successes, state and local governments should pursue the following strategies.

Support regional innovation and advanced technology R&D institutions

In addition to traditional industrial recruitment measures, many state and local governments are promoting innovation and advanced technologies to grow new, competitive industrial sectors and foster regional growth and employment.[18] These efforts include drawing on and expanding the capabilities of public and private research universities, and supporting the formation and operation of regional science and technology centers, advanced technology R&D partnerships, and manufacturing incubators.

- *States should continue and increase their investments in universities and cooperative R&D centers and partnerships.* Cooperative research centers—also called joint laboratories, centers of excellence, engineering-research centers, and industry-university research centers—bring together multiple research activities, to help dissolve the barriers between scientific disciplines and between scientific research, engineering applications and product and process commercialization.[19] They also refer to joint R&D efforts (consortia and networks) of multiple firms and other research institutions. For example, Ohio's Thomas Edison Program was created in 1983 to encourage university–industry cooperation to promote development and implementation of new technologies for products and production. It supports seven technology centers, an incubator initiative, Ohio's Manufacturing Extension Partnership (MEP) affiliation, and a new advanced manufacturing program. These programs depend on robust financial support for public universities, which train engineers and scientists, perform critical basic research and serve as the magnet for cooperative research and development agreements.

- *States should also encourage and increase their support for manufacturing incubators*, often associated with universities, which provide environments where startups and innovation concepts can be developed without the short-term pressure for generating revenues in the marketplace.[20] Notable examples include the Youngstown Business Incubator, created with help of Ohio Edison Program's Incubator Initiative and the Arkansas Research and Technology Park located near the University of Arkansas-Fayetteville, to nurture technology-based companies.[21]

Support state and local advanced manufacturing R&D investment sources and incentives

Many states support programs and mechanisms to encourage and leverage federal and private sector investments in private and public-sector R&D institutions and initiatives. There is especially a perceived need to attract early stage financing for innovative start-ups.[22]

- *States should offer and increase research and development tax credits, especially for advanced manufacturing technologies.* All but twelve states make some form of these credits available to encourage private sector investments in innovation.[23] Evaluations of the state credits—which parallels the federal R&D tax credit—note however that these incentives are most effective in states already having a significant level of research activity and a substantial high-tech business community, and are best applied when tailored to fit the state's needs.[24]

- *States also should provide innovation vouchers*, which several states already have had some success with (for example, Connecticut, Iowa, New Mexico, Rhode Island, and Tennessee). These are grants to small and medium-sized firms to enable them to access outside R&D resources. For example, Rhode Island provides grants of up to $50,000 to local enterprises with fewer than 500 employees, to fund R&D assistance from a Rhode Island university, research center, or medical center.[25]

- *States should introduce and expand innovation investment programs* that directly fund state-based, technology-oriented economic development initiatives, especially favoring early stage technology development. For example, Ohio's Third Frontier program, created in 2002, provides funding to state-based technology-oriented companies, universities, and nonprofit research companies, to encourage the growth of new companies, industries, products, and jobs. Its $2.3 billion budget in 2015 was the largest development initiative ever undertaken in Ohio. An assessment of the program concluded it had generated 15,945 direct jobs and 79,565 jobs as of mid-2012.[26] Arkansas also provides early-stage innovation support via tax incentives, and several investment funds.[27]

Promote regional multi-firm and multi-stakeholder innovation clusters in advanced manufacturing and related sectors

Innovation clusters comprise collaborative networks of multiple stakeholders—usually for a specific industry sector and in geographical proximity—including manufacturers, specialized supplier chains, government agencies, universities, research institutes, community colleges, and vocational institutions, and other nongovernmental and nonprofit organizations. According to the National Academies of Science (NAS), in 2010, there were several hundred distinct cluster initiatives—that is, formally organized efforts to facilitate cluster growth—operated by U.S. regions and states. Local benefits that clusters can deliver include transition from unemployment to high-skill employment; creation of new, higher-wage opportunities; growth of local businesses that are less susceptible to offshoring; and increased manufactured products for export.[28]

- *States should continue and increase their investments for, and support the growth of new innovation clusters, especially focused on advanced manufacturing technologies*, as a leading means for fostering the competitiveness of their local industries in new technology areas, ideally building on existing competencies (such as Toledo, Ohio's photovoltaics cluster built on its legacy of glass manufacturing).[29] Growing these clusters hinges on strong support for local university research programs and facilities that support cooperative R&D programs with local industrial enterprises, often accompanied by long-term investments in workforce development, scientific infrastructure, and knowledge-based entrepreneurship. State investments also sought and often succeeded in leveraging federal and private investments for these initiatives.[30] Notable states supporting industry clusters in promising emerging advanced manufacturing technologies include Michigan (electric energy storage), Arkansas (wind energy), Kansas (biotechnology), and Ohio (flexible electronics, photovoltaics and biomedicine).

- *States should support and continue their matching investments for the Manufacturing USA program*, a federal interagency-funded network of fourteen public-private regional institutes, led by the Commerce Department's National Institute of Standards and Technology (NIST). Modeled on Germany's highly successful Fraunhofer-Gesellschaft applied research system,[31] Manufacturing USA brings together academia, large companies, small business, and government, emphasizing innovation, collaboration, and workforce education and training in critical advanced manufacturing areas (for example, robotics, additive manufacturing, lightweight metals). The institutes build around the competencies of major research universities, in partnership with industry and state and local government programs, in large and medium-sized industrial cities, such as Pittsburgh, Detroit, Chicago, Youngstown, Raleigh, Albany, and San Jose, among others.[32] The initial goal of Manufacturing USA was to establish many more institutes in regions around the nation, to seed and drive the growth of American advanced manufacturing industries. State and local stakeholders should organize efforts to pressure their congressional representatives to maintain, if not significantly increase, the budget and size of this important federal program.[33]

Support development of "maker" and coworking spaces

The urban "maker" movement of small producers designing, prototyping, and producing newly developed manufacturing goods has been reviving interest in urban manufacturing. The maker movement began with hobbyists who make and fix things, but is increasingly seen as a potential source of product innovation and future manufacturing opportunities. "Makerspaces," which provide a location where makers carry out their work, are twenty-first-century machine shops equipped with 3-D

printers, CNC machine tools, water jets, and the like, and support engineering-oriented pursuits such as electronics and robotics, as well as traditional maker activities such as metalworking and woodworking. In these spaces, startups develop their prototypes and can get assistance from other "makers" or manufacturing specialists to help them with product design and prototype manufacturing.

A growing number of cities have embraced the maker movement, viewing it as important for fostering innovation and interest in the revitalization of urban manufacturing.

A growing number of cities have embraced the maker movement, viewing it as important for fostering innovation and interest in the revitalization of urban manufacturing.[34] The maker movement is particularly strong in former manufacturing cities such as Chicago, Portland, and New York, which have been successful in attracting creative talent while retaining connections to manufacturing capital, as well as in traditional manufacturing centers such as Youngstown, Ohio. The Urban Manufacturing Alliance (UMA), a coalition of almost 600 members across 175 cities, is a leading proponent of makerspaces to sustain and grow manufacturing in urban centers.[35] There are several key recommendations to bolster this manufacturing.

- *Cities can provide facilities and funding for makerspaces where aspiring makers can invent and produce small batches of goods.* Cincinnati Made–First Batch is a publicly funded business accelerator for manufacturing startups, providing financing and production space.[36] One Pennsylvania report recommends investing $30 million in public and private funds to support 100 makerspaces to help jumpstart a new local manufacturing economy.[37]

- *Create and assist local branding organizations, like Made in NYC, that market locally produced products and provide business assistance to small urban manufacturers* not typically reached by traditional manufacturing assistance programs.[38] Additional economic development resources (often in tandem with local academic institutions) should be dedicated to connecting makers with local manufacturers who can take new products into larger production runs.

- *Local zoning policies can preserve industrial spaces.* It is critical to preserve urban spaces for manufacturers, as urban spaces are close to creative talent and markets for locally produced goods. One successful project is Indy Rezone, a new zoning schedule that designates spaces for artisan manufacturers and artisan food manufacturers in Indianapolis and allows them in residential zones.[39] Zoning policies can protect small manufacturers within rapidly gentrifying neighborhoods with a history of industrial production.

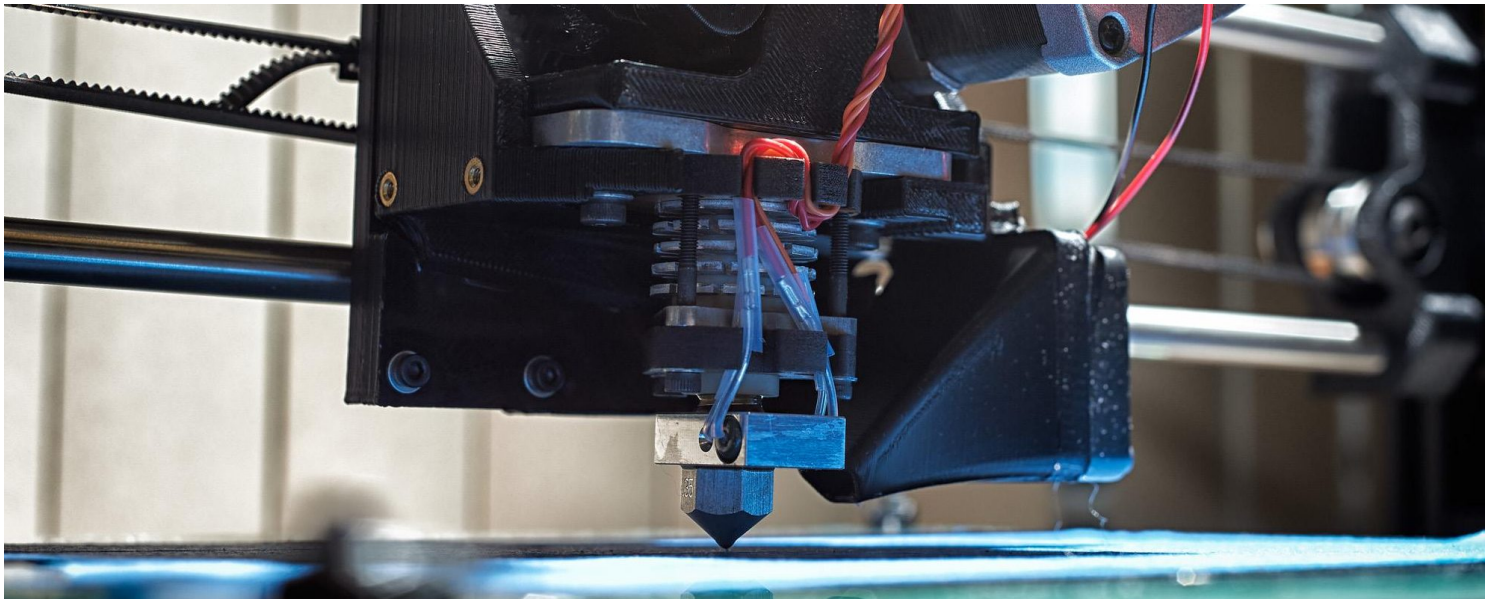
A Best Practice Example: Northeast Ohio Clusters Project

In the mid-1990s, three leading economic development organizations launched initiatives to accelerate economic growth in Northeast Ohio based on building clusters of suppliers, customers, and resources in eight key industries.[40] From 2000 to 2002, public and private actors in the region started initiatives and took actions that, in less than a decade, led to a thriving biomedical industrial cluster in the Cleveland area that has already earned national attention. The "innovation network" at the heart of the cluster is comprised of professional nonprofit development organizations and revamped, professionally staffed universities transfer units.[41] The cluster is self-reinforcing, attracting new companies, large-scale federal funding, and other public and provable investments.[42]

The region has long been home to a large polymer and chemicals cluster centered in Akron, Ohio. The cluster is comprised of seven manufacturing industries involved in the production of a variety of products including petrochemicals, fertilizer, paint, soap and rubber. In 2014, the cluster employed 1 percent of Ohio's total employment, more than 51,000 workers. Seventy-five of Ohio's eighty-eight counties have at least one polymer industry establishment.[43] Building on this legacy, new advanced technology clusters have emerged, in biomaterials and flexible electronics.

The University of Akron, which has the world's largest polymer science and engineering program, has partnered with local hospitals and the Northeast Ohio Universities College of Medicine and Pharmacy to launch the BioInnovation Institute, a joint R&D initiative building on the city's leadership in polymers to make it a world leader in biomaterials. It is also collaborating with Ohio State University, the University of Dayton, and eighty-five companies to operate the National Polymer Innovation Center, to develop critical technologies for flexible electronics products, which involves the printing of electronic devices on flexible materials, such as plastics, paper, fabrics, and foldable glass. The university has also joined an effort, the FlexMatters Accelerator Initiative, to establish a flexible electronics industry, formed in 2006 by NorTech, a nonprofit technology-based economic development organization, and Kent State University, helped as well by a grant from the Ohio Third Frontier. Comprised of university research organizations and private companies, the cluster's ultimate goal was to create 1,500 jobs, $75 million in payroll, and $100 million in capital for the region's economy.[44]

The University of Toledo, building on the city of Toledo's legacy of glass manufacturing, plays a leading role in the growing photovoltaic (technologies turning light into energy) industry cluster in and around the city. Industry collaboration the university, funded by grants, formed the basis of additional photovoltaic manufacturers. The



CREDIT: NORTHEAST OHIO ADDITIVE MANUFACTURING CLUSTER FACEBOOK.

cluster's solar industry firms also gain benefits from a variety of local, state, regional and federal programs.[45]

Driver 2: Retain, Restore, and Grow Sustainable Industries

States and municipalities have at their disposal policies, strategies, tools, and resources that reside not only in government programs, but also in their stakeholder communities, to support and assist manufacturing revitalization and high-road economic recovery. They can also leverage the resources of multiple federal programs to help them restructure and transition their industrial bases in response to economic shocks, such as trade impacts, policy shifts (defense downsizing, environmental regulations), recessions, and natural disasters.

For example, the Department of Commerce's Economic Development Administration (EDA), Appalachian Regional Commission (ARC), and Department of Labor (DOL) are key agencies that sponsor programs—public works and infrastructure investments, economic development and adjustment assistance, layoff aversion, sector partnerships, and financing tools—to help economically distressed communities. Although EDA's scope is national, its programs are implemented regionally and locally. ARC, which includes both federal and state officials, assists struggling communities in the Appalachian region. Other important agencies include the Defense Department's Office of Economic Adjustment (OEA), which assists communities adversely affected by defense program changes (base closures, defense downsizing), and NIST's Hollings Manufacturing Extension Partnership (MEP), which assists small-and-medium-sized manufacturers (SMMs).[46] A number of economic assistance programs involve coordination across multiple agencies. The Obama-initiated Partnership for Opportunity and Workforce and Economic Revitalization (POWER) Initiative, founded to help coal-impacted communities, led by EDA, involves nearly a dozen agencies.[47]

All these federal programs rely on close partnerships with local and state entities. Leadership at the local and state level determines the success of efforts to steer economic development. In particular, states and localities should pursue the following strategies.

Promote the establishment of and strengthen existing state-supported strategic early warning networks and business retention services

Many shutdowns can be averted with sufficient early warning, coupled with a well-organized and expedient business turnaround or buyout effort. A program should include early identification of firms at risk of layoffs, the use of feasibility studies to assess the needs and options for at-risk-firms, and the delivery of investment and financial restructuring, economic development and adjustment, and employment and training services to address the risk factors. Early warning and layoff aversion have a strong record of success in the retention of manufacturing businesses and saving jobs, with substantial public benefits.[48] Perhaps the nation's most effective state program—and pioneer—in this area is Pennsylvania's Strategic Early Warning Network, spearheaded by the Steel Valley Authority (see the Best Practice Example, below).

- *States need to adopt, maintain, and strengthen their capacity to implement early warning/layoff aversion strategies* in response to economic dislocation, especially in industrial regions. The Workforce Innovation and Opportunity Act of 2014 (WIOA) now requires state and local workforce systems to establish of early warning and layoff aversion actions as part of their "rapid response" program for layoffs. Although mandated in WIOA, many states at best give lip service to adopting layoff

aversion into their economic development repertoire and to developing the core turnaround capabilities to avert potential business failures and plant closures. State labor departments that typically administer WIOA services cannot do this alone. States should allocate resources toward intermediating entities (such as the Steel Valley Authority) to locate businesses in trouble, assess their retention potential, and provide services that enable companies to retain their workforce and turn their businesses around. And, these layoff aversion services must be hard-wired into the regular process followed by the state when they receive a notice of an impending layoff. To date, states have received insufficient guidance and technical resources from the U.S. Department of Labor and should continue to push for a stronger federal investment in early warning and layoff aversion.

Support state-level reshoring assistance and initiatives

Reshoring is the practice of returning overseas manufacturing facilities and assets back to U.S. locations. It also can refer to restoring the domestic sourcing of currently imported supply chain inputs for reshored original equipment manufacturers (OEMs). Manufacturer decisions to reshore have been driven by a combination of macroeconomic factors (rising overseas labor and transportation costs) and internal business-related factors. To help manufacturers determine the cost-effectiveness of reshoring their production operations or their supplier chains, the Reshoring Initiative (RI) has developed an online Total Cost of Ownership (TCO) calculator to enable manufacturers to compare the total costs of outsourced parts or products. RI estimates that 50,000 jobs were reshored between 2010 and 2013, about 10 percent of the total manufacturing job increase.[49] Forecasts of how many jobs could be reshored, range from 500,000 to 3 million manufacturing jobs.[50]

Reshoring decisions depend on companies having accurate information about the true, often hidden costs, of overseas production—creating a critical opening for state and regional economic development officials that interact with companies in their states.

- *States should launch multifaceted reshoring initiatives.* This includes establishing state reshoring teams, encompassing state agency leaders and service providers dedicated to increased reshoring efforts. The tools for the reshoring initiative include a major role by state economic development agencies in refining and promoting tools that assess the offshore/onshore trade-off; giving reshoring companies priority for receiving state financial assistance; and redeploying economic development resources to work with major manufacturers to reassess elements of their existing supply chain that could be reshored or new supply chain capacities that need to be developed to make a reshoring decision possible.[51]

Strengthen the competitiveness of small-and-medium-sized manufacturers and U.S.-based supplier chains

Small- and medium-sized manufacturers (SMMs) comprise 99 percent of manufacturing establishments in the United States, employ over 70 percent of all manufacturing employees, and account for the large majority of new jobs created in manufacturing.[52] SMMs form the backbone of America's supply chains and include all of today's small entrepreneurial start-ups. SMMs often lack sufficient financing, personnel, capacity, capital equipment, expertise, and experience—especially compared to large manufacturers—to improve their competitiveness, in areas ranging from innovation and productivity improvement, to workforce recruitment and training, to business development and modernization, among other needs. Several federal programs have been created to assist SMMs, though the NIST manufacturing extension partnership (MEP) is by far the most important of these.[53]

Improving SMMs' competitiveness is also critical for strengthening the nation's domestic supply chains. Suppliers account for 50 to 70 percent of a typical manufacturer's final production value.[54] As Mforesight[55] associate director Thomas C. Mahoney and Case Western Reserve University economics professor Susan Helper observe in their report on next generation supply chains, "How U.S. manufacturers manage their supply chains has been key to offshoring production and will be the key to rebuilding a robust manufacturing sector."[56]

- *States should continue, strengthen, and expand the active role they play in helping SMMs in multiple areas.* These often entail working with federal partners (for example, MEPs, Manufacturing USA institutes), universities, manufacturing associations, private sector groups and firms, nongovernmental service providers and intermediating organizations. Indeed, even before MEP, states such as Georgia, North Carolina, Ohio, and Michigan had programs to help manufacturers, often through university-based industrial extension programs. Most critically, the federally funded manufacturing extension program operates through a network of centers located in all fifty states and Puerto Rico.[57] Each MEP center is a partnership between the federal government and a variety of public or private entities, including state, university, or nonprofit organizations (for example, Pennsylvania's MEP consists of the state's seven private, nonprofit Industrial Resource Centers). States serious about manufacturing realization should increase their investments in their MEP centers and urge Congress to at least maintain, and ideally increase federal resources in MEP.

- *States should join with federal agencies and private sector partners to strengthen and optimize regional-based supply-chains.* Supply-chain optimization emphasizes managing the total supply chain for maximum value.[58] States can support initiatives to work with local OEMs and SMMs, to foster the creation of supply chains, and provide access to tools and techniques for their effective management.[59] Although business must lead in implementing tools and systems, state and federal programs

should work closely with private and nonprofit providers to help manufacturers build strong supplier partnerships.[60] Such supply chain efforts can be led by university-based manufacturing programs or cluster-based organizations that engage with manufacturers across the supply chain.

Enact and strengthen state and local trade and demand creation measures that support industrial revitalization

These efforts are a critical corollary to efforts to strengthen state manufacturing capacity.

- *State and local governments can encourage in-state and in-country sourcing of products and services in their procurement.* This includes reviewing their current procurement strategy and laws and strengthening their Buy America, Buy [State], and buy local provisions. States also can strengthen support for buying locally manufactured goods, such as subsidizing markets at which local and state producers sell and partnering with industry associations and cities to encourage buy local and branding efforts.[61] Furthermore, states should when possible meld job quality requirement into in-state sourcing policies, for example by using the U.S. Employment Plan provisions for transportation goods.[62]

- *State and local governments should invest in critical regional infrastructure and advocate for greatly increased federal investments in rebuilding the nation's infrastructure.* Infrastructure investments not only increase the demand for domestic and regionally produced products and services, a well-developed infrastructure is a strong selling point for attracting new industry to an area.[63]

- *State and local government leaders can advocate for U.S. fair trade policies.* These actions could include passing state resolutions, establishing a state Fair Trade Office to provide SMMs access to U.S. unfair trade protections, and pushing their members of Congress to vote for better trade policies.[64]

Strengthen multi-stakeholder, comprehensive regional and local economic assessment and strategic planning tools and capabilities

Effective revitalization strategies start with a regionally based planning process. The EDA requires communities it assists to develop a Comprehensive Economic Development Strategy (CEDS), which engages local governmental and nongovernmental stakeholders in a process to develop strategic blueprints for regional industrial recovery and economic transition.[65] This process depends on an accurate assessment and analysis of an area's economic and industrial assets, resources, opportunities, and weaknesses, and other conditions important for formulating an effective recovery strategy.

- *State and local governments should strengthen their data, research, and analytical capacities to aid stakeholder-driven planning processes.* Several federal statistical agencies make high-quality economic, industrial, labor market, demographic, and other required data publicly available.[66] Many state and local government agencies (for example, Pennsylvania's Department of Labor and Industry) also collect and make available data useful for evaluating regional and local needs and opportunities. Such data, research, and analytical capacity is necessary to support regional manufacturing cluster development, early warning/layoff aversion, and reshoring strategies. New York State's Department of Labor, in particular, innovated an early warning data dashboard for multiple state agencies to track and correlate multiple economic and firm data sets. States should make aggregated data easily available to economic development entities. Moreover, they should mine more obscure sources of data, such as licensing and tax records, to give a fuller picture of which types of establishments are changing and how that is impacting local workers.

A Best Practice Example: Steel Valley Authority—Strategic Early Warning Network

The Steel Valley Authority (SVA) was founded in 1985 by the City of Pittsburgh and eleven Mon Valley communities, in response to severe deindustrialization. The SVA is one of the few special purpose regional jobs authorities chartered in the United States. A mix of regional business, labor, community stakeholders, and former clients serve on its board. The SVA was founded to help the region address ongoing waves of plant closures and dislocations, rising worker insecurity, mismanaged pensions, the need for industry revitalization and city renewal, and the need of small-medium sized manufacturers (SMMs) to find flexible capital.

Commissioned by the Pennsylvania Department of Labor and Industry in 1993, the SVA began and has continued to manage the Commonwealth's layoff aversion program, the Strategic Early Warning Network (SEWN). From its main office located in Pittsburgh, with branches in Harrisburg, Bethlehem, Philadelphia, and Erie, the SVA SEWN program provides turnaround services to SMMs in all the Commonwealth's sixty-seven counties. A critical component of the state's Rapid Response program, SEWN relies on a unique public-private information system, quality programs, public awareness and professional staff and consultants to achieve its objectives.

Since 1993, SEWN has assisted 1,300 manufacturers and averted or deferred the loss of 23,000 Pennsylvania manufacturing jobs.[67] Over the past five years, SEWN has saved jobs at an average cost of $976 per job saved. The state's Department of Labor and Industry, Center for Workforce Information and Analysis estimates that SEWN has saved a total of 14,478 jobs over the past four fiscal years, preserving tens of millions of dollars in Unemployment Insurance benefits, contributed hundreds of millions of dollars to Pennsylvania's total economic output, and generated nearly $125 million in state and local tax revenue.[68]

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A notable success story is the Bollman Hat Company, an employee-owned firm that has been producing hats for almost 150 years. In the 2000s, low-cost hat imports cut sales by nearly $3 million in one year. SEWN was brought in during 2009 to assist with financial restructuring and reshoring options, including new strategies for manufacturing its Kangol Hat brand in Lancaster, reshoring it from China. In 2015–16, Bollman completed a successful Kickstarter campaign featuring actor Samuel L. Jackson, who encouraged "Motherfunders" everywhere to bring jobs back to America, and with a major investment (and help from the state), created two dozen jobs in Lancaster.[69]

Driver 3: Reinvest in Workers

America has a workforce "matching" problem. U.S. manufacturers complain about skills gaps, the difficulty finding workers with the skills they need. Yet, many Americans, especially in economically distressed, left-behind rural, urban, and suburban communities continue to struggle to find decent, family-supporting jobs. This group includes disadvantaged youth; minorities and women; incumbent workers dislocated or threatened by offshoring and technological change, or by policy shifts (defense cuts, environmental regulation); and long-term unemployed workers. This is the real "gap" that needs to be bridged for America to grow a competitive twenty-first-century economy.

The Workforce Innovation and Opportunity Act (WIOA), which governs today's federal workforce training and employment system, strengthened programs that address the workforce matching problem. It encourages states to develop strategic plans to build an educated and skilled workforce to meet regional employers' needs, while helping job seekers acquire industry-recognized credentials for jobs in demand and enhancing job services for the unemployed, incumbent workers dislocated due to trade and technology, and other job seekers (vulnerable youth, people with disabilities, and people in disadvantaged communities).[70] Congress also has established targeted assistance programs, such as the Trade Adjustment Assistance (TAA) program, which is designed to reduce the damaging impacts of imports, and which includes assistance for workers, firms, farmers, and communities.[71]

Although America's workforce assistance system has helped reduce the economic hardship of many displaced workers, it has been criticized as being too fragmented, inadequately resourced, difficult to access, of limited scope, poorly targeted, and of mixed and uneven effectiveness.[72] As U.S. Senator Chris Coons (D-DE) observes, "Too many Americans have borne the brunt of rapid and dramatic economic disruption . . . without seeing any upside." He notes that "Investment in prevention, mitigation, and transition is insufficient. . . . [B]etween the patchwork nature and lack of investment, it's not surprising that Americans are finding these programs painfully inadequate."[73]

There are multiple strategies to reinvigorate federal, state, local and private sector investments in the nation's workforce system.

States and local communities should support and increase investment for regional multi-employer industry or sector partnerships

Industry or sector partnerships bring together multiple employers, labor and apprenticeship organizations, training providers, and other stakeholders around specific industries in a region to address the workforce needs of employers and provide workers pathways to high-value, family-sustaining jobs.[74] Because they focus on the needs of industries rather than single employers, they realize economies of scale in providing effective training and certification for multiple employers in an area.[75] Industry partnerships are especially valuable strategies for SMMs, which because of their size and limited resources find it difficult to implement effective workforce training programs.[76]

Recognizing their effectiveness, the drafters of WIOA made sector partnerships a required activity for states and local workforce boards.[77] Many states have adopted sector-based approaches to bridge the gaps between education and training programs and the skills needs of their main industries. For example:

- *The Wisconsin Regional Training Partnership (WRTP)* was created in the 1990s, to support industrial renewal and address the workforce needs of the Milwaukee area's traditional industrial base. In 2001, WTRP joined with the Building Industry Group Skilled Trades Employment Partnership (WRTP/BIG STEP), to coordinate employer-driven worker readiness efforts and help job-seekers gain the skills high-road employers need in key sectors, such as manufacturing and construction.[78]

- *Pennsylvania's Industry Partnerships program* began in 2005, in response to employers' call for better ways to train their workers. Manufacturing industry partnerships exist in most regions of the state. The state's fiscal year 2016–17 budget allocated $1.8 million for the program, generating thirty-three applications from several sectors, but mostly from advanced manufacturing.[79]

- *The Midwest Urban Strategies Consortium (MUSC)*, founded in 2015, brings together urban workforce development boards of twelve Midwestern cities,[80] to establish an effective, industry-sector-focused workforce development system in key industry sectors.[81] MUSC has secured more than $13 million to develop a talent pipeline in major industries such as manufacturing, construction, health care, and information technology. It has pledged to place more than 1,200 people in high growth industries across nine cities and seven states.

States and local governments should leverage federal and private sector resources to promote similar multi-employer, sector-based workforce partnerships. As a start, states should include sector initiatives in their WIOA state plans.[82] Other actions include:

- *Direct and redirect public resources and incentivize private resources* to support, sustain, and expand sector initiatives.[83]

- *Increase collaboration among state agencies to produce and use timely, accurate labor market information*, provide up-to-date analysis of industry sectors, and support strategic planning that meets worker and employer needs.[84]

- *Make the expertise of state agencies available to sector initiatives* during the research, planning, and implementation phases of sectoral partnerships.[85]

- *Support efforts by industry partnerships to build standardized training and certification programs* at the local, regional (or even national) level, to build credibility for certifications and portability.[86]

- *Consider establishing tax credits* to support multi-employer industry partnerships.[87]

States should work with industry and educational institutions to support and replicate best practice apprenticeship training programs

Apprenticeships combine paid-on-the-job training and related classroom instruction to obtain workplace-relevant knowledge and skills leading to an industry recognized credential. Apprenticeship programs improve the competitiveness of an area's industries and provide American workers the skills and knowledge they need to obtain good-paying jobs.[88] For example, 91 percent of apprentices find employment after completing their programs, with an average starting wage above $60,000.[89]

Federal support for manufacturing apprenticeships is growing. The Obama administration championed new grants for apprenticeship expansion through the ApprenticeshipUSA program.[90] This past summer, President Trump announced an ambitious program to expand apprenticeship through federal funding and increased involvement of industry associations.[91]

Spurred by this investment, an increasing number of states expanded their apprenticeship programs. Fourteen states increased the number of apprentices by over 20 percent in 2015, including Iowa, which tripled its funds for apprenticeships across key industries, and Georgia, which brought together its workforce development and community college systems to partner with over thirty major employers on apprenticeship.[92] In early 2016, Pennsylvania established a new Office of Apprenticeship and Training, and increased apprentices statewide by nearly 10 percent.[93] Apprenticeship programs based on European apprenticeship models, with close involvement of manufacturers, unions and trade associations, are thriving in the Carolinas, Wisconsin, Georgia, Florida, Tennessee, and Michigan.[94] One promising example is the Industrial Manufacturing Technician (IMT) apprenticeship, which fulfills the increased need of multiple employers for skilled manufacturing technicians. Developed originally in Wisconsin, the program is being expanded to eight additional states by the AFL-CIO Working For America Institute, the Wisconsin Regional Training Partnership/BIG STEP, and Jobs for the Future using federal funding, with a goal of registering 1,450 new IMT registered apprenticeships.[95]

States should act to continue the momentum on apprenticeships by pursuing the following strategies:

- *Provide small grants and tax credits to companies hosting apprenticeships, combined with aggressive marketing of apprenticeships.* South Carolina's legislature allocates $1 million per year to promote apprenticeship, including $1,000 per apprenticeship that goes to employers to defray the cost.[96]

- *Increase the involvement of community and technical colleges in providing related and classroom instruction for apprentices.* States can make college instruction a qualified academic program eligible for financial aid or use economic development funds to provide discounted or free tuition to apprentices.[97]

- *Establish pre-apprenticeship and pipeline programs with community-based organizations to ensure diverse access to apprenticeships.* For example, the Industrial Machine Technician apprenticeship program in Wisconsin includes up to six months of career development and planning before community members start their apprenticeship.[98]

States and localities should work with industry and educational institutions to strengthen career and technical education (CTE) systems

For many years, students have been taught that a four-year college degree is the best pathway to career success. As Nicholas Wyman, CEO of the Institute for Workplace Skills and Innovation, writes, the "college-for-everyone" mentality has "pushed awareness of other possible career paths to the margins." As a result, vocational high schools have all but died out in the United States, which has fueled the skills shortage that manufacturers complain about today.[99]

In recent years, however, high school vocational education has been making a comeback. Federal and state policies have promoted increased investment in vocational high schools and training programs—also known as Career and Technical Education (CTE)—to train students in occupational-specific technical skills needed to fill jobs in manufacturing, and other sectors (for example, construction), and to address the perceived "skills gap." Effective CTE programs require close partnerships with industry, instruction that is relevant to the current needs of industry, and opportunities for work-based learning, in which young people participate in real-life work experiences during the school year.[100]

Vocational schools that carry a full CTE curriculum, usually mixed with academic curricula, have proliferated throughout the country. For example, Philadelphia's Mercy Vocational High School provides students the basics they need to earn both a high school diploma and an industry certification. This is one of roughly ninety CTE schools and centers in Pennsylvania. There also are at least seventy vocational high schools each in Ohio and Massachusetts, and comparable numbers in other states.[101]

Dan Swinney of the nonprofit organization Manufacturing Renaissance (MR) presents a more expansive vision of a system of high schools linked to regional manufacturing sectors. It builds on a successful prototype of a career pathways program linking a single high school to the region's manufacturing sector—the Manufacturing Connect program at Austin College and Career Academy (see the Best Practice Example, below).[102] This program is not only beneficial to employers, but is also an integral part of a strategy for community development.

- *State and local agencies should actively promote industry-labor-academic partnerships with schools and community colleges to establish and expand CTE programs* in their industrial communities, leveraging when possible existing public funding (for example, from WIOA, or the U.S. Department of Education) and private sector funding. A first step is for state and local school district to champion CTE programs, ensuring schools have the trained teachers and adequate equipment needed to fulfill their mission.[103] Massachusetts offers competitive funding to school districts to develop partnerships with businesses and job training providers to provide work-based learning experiences to their students (a total of eleven states have such programs).[104] Beyond funding, states should develop policies to steer school districts and CTE programs to develop meaningful long-standing partnerships with industry to create relevant instruction, work experience, and career pathways for students.

- *State should fund youth apprenticeship programs,* allowing students to complete pre-apprenticeship coursework in CTE programs and to work on-the-job as apprentices during the school year while completing related instruction required for the apprenticeship at their high school.

- *CTE programs should adopt regional and nationally recognized skills standards and certificates.* Examples in manufacturing include the National Institute for Metalworking Standards, which is the gateway to machinist jobs, and the skill training and certification offered by the Manufacturing Skill Standards Council (MSSC).[105]

- *State and local governments, manufacturers, educators, and other stakeholders should initiate and support branding programs that promote a positive perception of manufacturing to the public.*

Require and strengthen incentives for training and education initiatives to target vulnerable, dislocated and transitioning workers, especially in economically distressed urban, rural, and suburban areas

An International Economic Development Council study of inclusive economic development notes that in cities that have seen growth in high-income, high-skilled industries, "success and affluence flourish alongside residents who have not benefitted from that growth."[106] It therefore is encouraging that many federal and state workforce initiatives emphasize helping vulnerable workers find good jobs. For example, WIOA calls for improving linkages between the traditional workforce system and registered apprenticeship programs, to increase the skill level of lower-wage workers, and requires local areas to spend at least 20 percent of youth funds to support work experience programs.[107]

CTE strategies (such as sectoral partnerships) have the potential to promote social equity and inclusion, if they are provided with the necessary resources, equipment, and skilled instructors, and are not places where disadvantaged students are tracked to inferior quality education. For example, an evaluation of Philadelphia's CTE system showed that the graduation gap between white and Asian students, and black and Hispanic students closed by about 10 percent when comparing traditional students to CTE students,[108] and a matched pair evaluation of sector partnerships showed that participants achieved large earning gains and that "race/ethnicity, education level, and disability status, were unrelated to the income impacts."[109] Work-based learning programs—industry partnerships, apprenticeships, and CTE—are designed to bridge between the needs of employers and job-seekers, with an emphasis on targeting struggling workers. For example, WRTP/BIG STEP focuses on providing opportunities to former welfare recipients and other low-income central city residents to qualify for family-sustaining jobs, and has demonstrated effectiveness in doing so. It's goal is to help community residents achieve self-sufficiency.[110]

Although these measures move in the right direction—trying to bring along the "left behind" workers, creating opportunities to qualify for and obtain family-supporting jobs—federal and state programs must take stronger steps when providing grants or resources, to promote economic inclusion.

- *Require businesses to diversify the pipeline of skilled, well-paid workers able to fill their job positions* in work-based learning and other workforce development initiatives.
- *Target public resources to businesses that provide family-supporting jobs and businesses that want to provide them and need assistance to do so.*
- *Provide lower-skilled or inexperienced hires pre-employment training and other services* (such as pre-apprenticeship) to reach proficiency before starting at a worksite, and promote supports during the first few months of employment while they learn new skills.[111]
- *Establish work-based learning funds to support out-of-school youth (and adults with limited work experience)*, as they transition to employer-sponsored apprenticeships or other work-based learning, to insure the broadest possible range of job-seekers benefit.[112]
- *Provide pre-employment training grants to community-based organizations, labor-management partnerships or industry-based intermediaries* to support traditional pre-apprenticeships services.[113]
- *Provide subsidies to employers for training disadvantaged workers, especially those facing barriers to employment*, which is meant to reverse the pattern of companies investing in high-wage workers, many already having four-year degrees. Programs need to be structured to ensure that companies are not subsidized for those they'd hire regardless of the program.[114]

Strengthen and improve state (and federal) measures to support a comprehensive, well-resourced safety-net and system of social protections for dislocated workers

Safety net and social protections include income maintenance, retirement security, health care security, and other forms of support for workers who have experienced economic dislocation. The purpose is to ensure that dislocated workers have sufficient economic resources to protect themselves and their families, especially as they transition to new employment opportunities, or in the case of older workers, enable them to retire with dignity. Unemployment Insurance (UI) is the most important and extensive safety-net program designed to help dislocated workers in the United States. It is the main source of income support for workers who lose their jobs through no fault of their own. UI is a federal-state program financed through federal and state payroll taxes on employers, administered separately by each state within federal guidelines.

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State and federal workforce assistance programs must expand their investments to improve, expand, and make the social protections for workers in transition more holistic, and reduce the barriers to entry to enable them to more easily obtain needed benefits. There must be sufficient income and benefit replacement to allow workers to maintain their standard of living over a designated transition period, sufficiently long to ensure that workers can complete their training program and move on to better opportunities. Specifically, the programs must:

- *Provide adequate income support and other social insurance for displaced workers, long-term unemployed, individuals who can't work for any reason (disability, children), and retirees*. For example, states have direct control of benefit replacement rates for UI benefits and workers compensation, and determine the generosity of

Medicaid programs.

- *Maintain and increase income supports for workers in retraining programs*, to cover their living expenses and program fees sufficiently over the designated periods of transition to enable them to finish their training.

- *Provide extended Unemployment Insurance benefits to workers* in training and improve approved training rules.[115]

- *Protect older workers and provide an adequate bridge to retirement* that preserves their pension and health benefits and provides income for an extended period.

A Best Practice Example: Manufacturing Renaissance—Chicagoland Manufacturing Renaissance Council—Manufacturing Connect

Founded in 2007, Manufacturing Connect is a program of the Chicagoland Manufacturing Renaissance Council (CMRC), which works with the Chicago Public Schools to provide education for high school students in communities such as the Austin community of the West Side of Chicago, to help them acquire skills need for meaningful and secure careers in the regional manufacturing sector, while meeting the talent needs of manufacturing companies. Both Manufacturing Connect and CMRC are programs of Manufacturing Renaissance.[116] The Council's goal is to advocate for the revitalization of manufacturing in the Chicago region that is profoundly tied to the social inclusion and community development. CMR is a public-private-labor-community partnership to reconnect public education to the needs of young people and manufacturing, including closing the skills and success gaps. CMR led the effort to proposal for establishing the school and then to operate the Manufacturing Program in Austin College and Career Academy.

Manufacturing Connect's broad goal is to provide education for the next generation of leaders in all aspects of manufacturing, including engineering, product development, production, business development, and ownership. Specifically, it seeks to create a sufficient pool of high school graduates who have nationally recognized industrial credentials, work experience in manufacturing, and the technical and soft skills needed to close the manufacturing sector's skills gap. Its intended benefit is to create career paths in manufacturing for students and a pool of talent for manufacturing companies. Most important, Manufacturing Connect's desired outcome is to develop a prototype for public education that is now being embraced by the public education system. Chicago Public Schools is now bringing the Manufacturing Connect program into Prosser Career Academy on Chicago's Northwest Side and into Bowen High School on Chicago's South Side. Manufacturing Connect is a model for other school districts around the country.

Some of its principal achievements and milestones, as of fall 2017, include supporting 420 work experiences (paid internships and summer jobs) with students earning a total of $291,000; 421 nationally recognized industry credentials earned by 215 Manufacturing Connect participants; sixty-five full-time manufacturing jobs with an average retention of one year and wages ranging from $20,000 to $75,000, with benefits; and enlisting the participation of ninety-six manufacturing companies. Other accomplishments include creation of a dual credit course with Daley College for juniors and seniors, an adult training program, the formation of the Young Manufacturers Association with over seventy members, and the creation of the Apprenticeship for Advanced Manufacturing Instructors to be technically, culturally, and pedagogically competent, in partnership with CMRC, the Chicago Teachers Union, and the National Institute for Metalworking skills.

Driver 4: Mobilize Responsible Capital for High-Road Growth

Achieving the goals of manufacturing revival and economic recovery associated with the other regional drivers requires ready access to financial resources. A number of federal programs are designed to encourage and incentivize private sector investments in innovation, business, and economic and community development, while addressing public goals.[117] State and local governments also can do a great deal to mobilize public and private capital and leverage federal resources for economically, socially, and environmentally responsible investments to help to revitalize economic distressed manufacturing communities in the nation's heartland and other industrial regions.

Especially since the Great Recession, small- and medium-sized manufacturers face an increasingly risk averse and concentrated U.S. banking sector. Gone in many cases are the local bankers who have known the businesses and their owners for decades. Gone in some cases are the "workout departments" that have some knowledge of the industry and region and help restructure debt when a company gets in trouble.

Different companies have different financing needs. Small- and medium-sized manufacturers need low-cost working capital and cheap, accessible lines of credit. Established companies need state assistance with new markets alternatives and re-shoring assistance, where they might better control their supply chain and costs. In seasoned companies, retiring owners need new capital partners or financing help in selling to their current stakeholders (and, where possible, to provide

diverse ownership opportunities). Startups seeking to innovate need access to early stage capital to commercialize. Despite the improved number of technology start-ups in Pittsburgh, for example, a widely held view among business leaders and entrepreneurs is that firms must relocate out of state to obtain longer-term financing.[118]

States need to consider flexible investment programs that provide low-cost working capital and tax credits and larger write-downs of interest when they make investments in workers (such as employee training, cross-training, and so on). As the so-called "laboratories of democracy," states should increase their investments in finance innovations, such as impact investment funds, which, according to the Global Impact Investing Network (GIIN), are those that are "made into companies, organizations, and funds with the intention to generate social and environmental impact alongside a financial return."[119] Impact investments can be made in both emerging and developed markets, and target a range of returns from below market to market rate, depending upon the circumstances.

A growing national movement, with affiliates in many of states, also endorses the creation of "public banks" by cities or states (such as the Bank of North Dakota, originally established as a credit union-style institution to free state farmers of the state from predatory lenders, and similar institutions in German, Japan and Northern Europe).[120] Public banks could expand affordable working capital for local businesses and fund other local and state economic development projects in partnership with the private sector.[121]

Many cities and states also are tapping a growing source of capital in their own backyard: workers' capital. This capital, which is in fact the working public's money, represents an enormous share of economic and capital market wealth. In 2014, pension assets were valued at just over $36 trillion, across sixteen major pension markets globally; less than two decades ago, in 1996, those assets stood at $11.3 trillion across eleven major pension markets.[122] The U.S. pension assets[123] market has been the largest among these, steadily growing in value from $6.8 trillion in 1996 to $22.1 trillion in 2014. During the same period, U.S. pension assets as a share of Gross Domestic Product (GDP) grew from 87 percent to 127 percent.[124] This capital, part of a larger pool of institutional investments owned by working people (and including insurance funds and bank deposits), has been instrumental in the development of the U.S. economy and its capital markets and those of our global neighbors, fueling the desire for growth and prosperity.

The pension funds of hard-working Americans across the country—such as public employees, teachers, construction workers, and steelworkers—were won after decades of fighting to ensure retirement security once their working lives had ended. These social gains were a result of the movement of labor and social reformers who sought to balance the power of the "marketplace" with the American dream, which would lead to a prosperous and stable middle class, decent working conditions, and environmentally clean and safe communities.

Pension funds must provide a good rate of return—but unlike many Wall Street institutions, where the only goal is short-term profit maximization, pension funds have growing financial incentives, fiduciary duties, and legal directives to invest responsibly (and are being pushed by the market to do so). The 2015 U.S. Department of Labor pension guidance on legality of economically targeted investments (ETIs) recommitted to investments that produce "collateral benefits," targeting investments that yield good jobs, affordable housing and similar concerns.[125] Joining many other countries, it also encouraged investors to consider environmental, social, and governance (ESG) matters in their investments. In the United States and globally, state and national pension funds, banks, and corporations have signed on to the UN Principles of Responsible Investment (PRI), now with 1,700 signatories representing over $70 trillion in assets.

Many states and responsible managers are investing in strategies that both benefit their beneficiaries and local residents, communities and businesses. For example, there are dozens of at-scale, responsible, pension-capitalized investment funds, with hundreds of billions of dollars in assets, doing business in Pennsylvania and the industrial heartland. There are also hundreds of public, impact, and community development investors in these states. These "investment aviators" are prudently managing huge pools of capital while yielding good jobs in the productive economy, including advanced manufacturing, affordable housing, commercial and green construction, infrastructure and renewable energy, and growth in the sustainable economy.

Measures that states should pursue to mobilize and expand private and public sector-supported, economically targeted, responsible investments to support manufacturing revitalization and regional economic recovery include:

State governments should expand capital for startups and the working capital needs of firms that grow manufacturing, launch public banks, and issue "Make It in (Your State)" state bonds

After years of budget cuts, most state economies need more capital to take hardware startups from a concept to commercial production. Various options for states have been proposed, including making it easier to crowd-source funding. Additional priority and resources should be given to firms that are responsibly retaining or restoring jobs. There is already a movement to advance public banks, mentioned above. Progressive bond initiatives could include "green bonds" and mini-bonds (small enough so average citizens can participate) that allow civic-minded investors to simultaneously save and boost the state economy.

Provide financial incentives for participative, high-road businesses

High-road businesses are firms that pay good, living wages and benefits, including training and retirement coverage; employee-owned companies and those that share profits with employees; minority-owned firms; and firms that source products and materials locally. A growing interest exists in fostering "stakeholder-centered" businesses, such as firms that adopt strong human resource management practices; benefit and purpose corporations (such as certified social purpose businesses such as B-Lab certified firms); and co-ops, employee stock ownership plans (ESOPs), which are more likely to maintain their profits, assets and payrolls in the state.[126] States should support business succession programs to successfully transition the ownership of retiring owners to stakeholders or minority entrepreneurs. On the other hand, states should withdraw support for freeloader firms that pay low, unlivable wages and no benefits, thus requiring workers to apply for welfare to supplement wages.

State and city pension funds, and other institutions, should adopt the UN PRI and enact investment policy measures to comply with the DOL 2015-1 guidance on economically targeted investments

Economically targeted pensions funds should invest in promoting in-state manufacturing and community development and ensuring sustainable investment in cities and communities. The global momentum of ESG investing is borne out by performance meta-studies, which have shown that investors that invest responsibly and practice good corporate governance tend to enjoy financial outperformance.[127] Other reports have amalgamated performance studies on firms with good human resource practices, and found similar results.[128] States or groups of states should also explore financial incentives for state residents to save, or pool venture funds, in ways similar to the provincial Quebec Solidarity Funds. With over $10 billion in workers' capital, the Solidarity Funds have partnered with 2,500 firms and created or maintained over 530,000 primarily industrial jobs since 1990, and now account for an estimated 70 percent of Canadian venture capital.

A Best Practice Example: KPS Capital Partners—New Flyer Industries

KPS Capital Partners, LP, is a family of private equity funds with more than $5.7 billion in assets, capitalized partly with workers' pensions.[129] The funds take controlling equity positions in distressed companies across a range of manufacturing industries. Unlike many so-called turnaround private equity firms that strip and flip target companies for a quick profit, KPS sees itself as a "constructive" investor that takes a long-term approach and seeks to align the interests of management, employees, and all stakeholders in facing challenging operational situations. The firm works with investors and companies who recognize that building sustainable equity value takes time and patience, leading to turnarounds that have resulted in the retention or creation of nearly 40,000 jobs globally, including facilities and thousands of jobs in the heartland. KPS estimates that its industrial restructuring projects have preserved or created over 15,000 mainly union jobs.

KPS restructured and combined two of the most innovative, earth-friendly bus manufacturers in North America: New Flyer Industries and Motor Coach Industries (MCI). The strategic merger, under the name New Flyer Industries, was completed in December 2015, creating a new transit bus company in North America and securing 3,500 mainly union jobs. The original New Flyer Industries, Ltd., bought by KPS in March 2002, had manufacturing facilities in Winnipeg, Manitoba, and Crookston and St. Cloud, Minnesota, and employed about 1,800 workers.[130] Headquartered in Des Plaines, Illinois, MCI operated manufacturing facilities in Winnipeg, Manitoba, and Pembina, North Dakota, a master parts distributor center in Louisville, Kentucky and six service centers in North America, and employed 1,500 mainly union workers.[131]

Today, New Flyer claims it is reportedly the largest transit bus and motor coach manufacturer and parts distributor in North America and claims to be the leader in energy efficient transit bus manufacturing in North America, serving most major municipalities and transit agencies. It's also said to be the continental leader in motor coaches, offering the industry's best-selling intercity coach for eleven consecutive years, and the best-selling coach line in North American motor coach history.

A Best Practice Example: AFL-CIO Housing Investment Trust (HIT)—Midwest@Work

The AFL-CIO Housing Investment Trust (HIT) is an open-end mutual fund that makes responsible fixed-income investments.[132] HIT's mission is to generate competitive, risk-adjusted, fixed-income returns by investing primarily in multifamily mortgage-backed securities, while providing affordable and workforce housing and creating union construction jobs. Capitalized by workers' pensions, the HIT's investment strategy targets the Industrial Heartland to spur economic development and job creation in areas hit hard by manufacturing job losses. The HIT has applied responsible practices to its investments since inception in 1984 as a successor to the AFL-CIO Mortgage Investment Trust (MIT) fund. Since inception, the HIT has invested over $10 billion (in current dollars) and grown to over $6 billion in net assets. Together, with its Building America CDE, it has financing 102,000 units of housing units nationwide (mostly affordable), creating 77,000 union construction jobs.

Its Midwest@Work Initiative is investing $1.2 billion in states that border the Great Lakes, from Upstate New York to Minnesota, and will concentrate on nine cities/metropolitan areas—Buffalo, Cleveland, Columbus, Detroit, Minneapolis, Milwaukee, Pittsburgh, Saint Paul, and St. Louis. HIT's investment in these heartland areas, which were among the hardest hit by job losses in the manufacturing sector, will provide economic development and affordable housing, and generate 25,000 jobs

and at total economic impact of nearly $4 billion over seven years. The strategy addresses many issues caused by the Midwest's economic decline since the 1970s, such as job loss, blighted abandoned housing, and scarcity of investment capital. The $1.2 billion of investment anticipated under the program will leverage an additional $900 million in capital to create a total economic impact of nearly $4 billion over seven years.

Through its investments, HIT's Building America CDE subsidiary recently provided a $8.5 million new market tax credit investment to Detroit Manufacturing Systems (DMS), preserving 130 UAW Local 600 jobs in Detroit, and adding, prospectively, 135 union jobs in a new facility in Toledo. DMS collaborated with the award winning nonprofit Focus HOPE to recruit a diverse workforce, 60 percent of whom live in the heart of the City of Detroit, and many of whom have not worked in over a year.[133] These investments build on a major affordable housing retrofit program in Detroit, part of the Midwest@Work initiative, which has generated major jobs opportunities for minority youth.

Conclusion

This report presents a vision of rebuilding a high-wage, high-road economy that does not leave behind America's economically distressed communities and workers. The issues it addresses have long been ignored, though the 2016 election revealed the power of long-standing public support for manufacturing. States and local communities have the chance to seize the moment to revitalize their manufacturing sectors and the course of their economic development.

Specifically, the report offers a template for state and local actions that to build a high-road industrial commons, which harnesses the revitalization of American manufacturing to helping hard-pressed rural, urban, and suburban communities build pathways to economic growth and a broadly shared, socially inclusive prosperity. The strategy focuses on four drivers of regional industrial and economic change, including recommendations to spur innovation and advanced manufacturing; retain, restore, and grow sustainable industries, reinvest in workers; and mobilize responsible capital for high road growth. Taken together, these measures can foster the revival of advanced manufacturing, both regionally and nationally, while enabling the recovery of economically vulnerable and distressed communities in America's heartland and other industrial regions.

While recognizing the important federal role in enabling, sustaining, amplifying the success of regional strategies, the report also highlights many initiatives that illustrate how states and communities can embrace their role as laboratories of democracy, paving the way for a stronger, proactive national policy agenda for industrial revitalization and economic recovery. Given the sustained political assaults on public budgets at all levels of government, moreover, the need for a national call to action to mobilize communities and states throughout the nation for achieving this goal is greater than ever.

Notes

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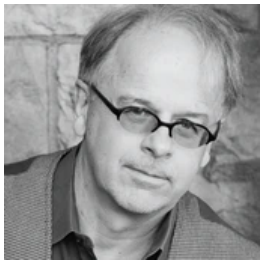

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Thomas Croft is the managing director of Heartland Capital Strategies (HCS), where he manages a national network of responsible investors who seek to rebuild cities, renew the industrial commons, and grow the clean economy; and executive director of the Steel Valley Authority (SVA), a regional development authority focused on retaining, restoring, and creating manufacturing jobs. He is the coauthor (along with Annie Malhotra) of The Responsible Investor Handbook (Greenleaf Publishing, 2016).

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