Policy Matters Ohio

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Manufacturing: Still vital to Ohio

by Michael Shields

At its height, manufacturing dominated the Ohio economy, employing half of all workers in the state. That was during World War II, supplying the Allied forces. Since then, the manufacturing footprint has shrunken, but the sector remains a vital part of the economy. Today, one in eight Ohio workers is in manufacturing, making the state third in the nation, after California and Texas, for the size of our manufacturing workforce: nearly 687,000 in 2015. Average wages of $1,119 per week in the sector exceeded the average for all sectors by 24.9 percent. Ohio manufacturers contributed $108 billion to the economy in 2015, 17.8 percent of the total for the state.

These trends show that, while manufacturing has lost its former dominance in our diversifying economy, it remains a key source of both good jobs and economic growth in Ohio. Not only that: there are countervailing forces at work in the trajectory of the sector. That the number of Ohioans working in manufacturing is half what it was half a century ago underscores a structural shift in our economy that includes production efficiencies, increased use of automation and global trade. Despite these factors, manufacturing jobs in Ohio have grown since the start of the recovery.

Key findings

- About 687,000 Ohio workers work in manufacturing, more than in all but two other states
- Manufacturing generates one in every six dollars and one in every eight jobs in Ohio
- The typical worker with a high school diploma and no college earns $2.99 more per hour in manufacturing.
- Some signs point to a partial recovery in manufacturing

That trend reflects the need to better understand what affects manufacturing in Ohio, and to develop a policy framework to support this sector: a vital contributor both to our state economy and to a thriving workforce. This report identifies those opportunities.

Policy Matters identified strategies in four focus areas to strengthen Ohio's manufacturing sector: trade, in-state demand, manufacturer resources including human capital, and job quality. Opportunities include:

Deal with globalization and trade

- **Form a D.C. Fair Trade office** to advocate policies that strengthen worker and environmental protection and level the playing field. Partner with other manufacturing states.
- **Create teams to help firms identify cost savings and other advantages of local production**; including reduced transit costs, shorter time to delivery, elimination of language barriers and access to regional manufacturing hubs.

Boost in-state demand

- **Use state procurement policy** to extend preference to Ohio manufacturers. Ohio currently has a 5 percent preference.

- **Increase public infrastructure investment** and use policy to incentivize investment, such as through energy policies designed to increase renewables and combined heat and power.

Expand manufacturing resources

- **Improve access to equipment and specialized functions through Manufacturing Extension Partnerships, makerspaces, and innovation hubs.** Support these resources to provide access to tools and machines, research and development, and training.
- **Develop industry/labor/academic partnerships with high schools and community colleges to train manufacturing workers**; establish industry recognized credentials and leverage existing funding including Workforce Innovation and Opportunity Act funding.

Protect job quality

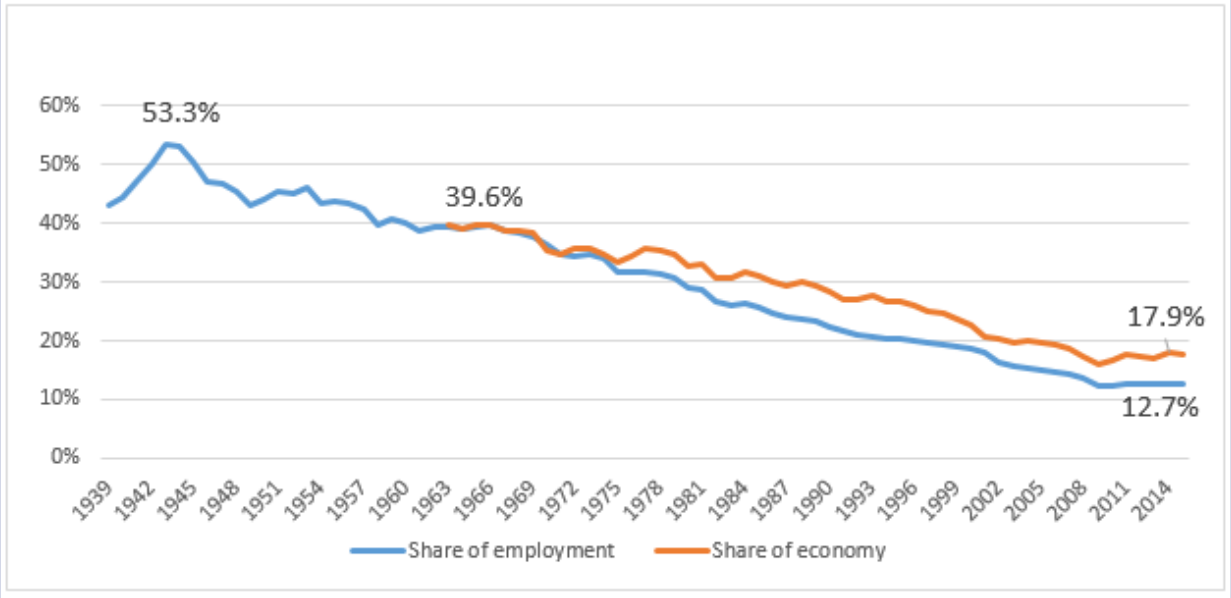
- **Seek models for holding lead firms accountable for good labor practices in their supply chains.** Poor working conditions and labor law violations can crop up in the supplier networks of firms which follow much better practices in-house. To protect job quality in a quickly diversifying industry, Ohio should explore models for holding lead firms accountable.

Manufacturing Trends

Ohio's manufacturing sector once dominated the state's economy and employed more than half its workforce. As a share of the workforce and in aggregate terms, manufacturing employment has fallen dramatically and consistently from its height. It is against this backdrop that policy-makers must confront questions of how to sustain and reinvigorate a sector that continues to generate substantial wealth for the state's economy and employ about an eighth of its workforce – in quality jobs. Recent modest recovery and changing production factors signal that opportunities for manufacturing resurgence exist to be tapped.

Figure 1

Manufacturing share of Ohio workforce and economy, 1939-2014

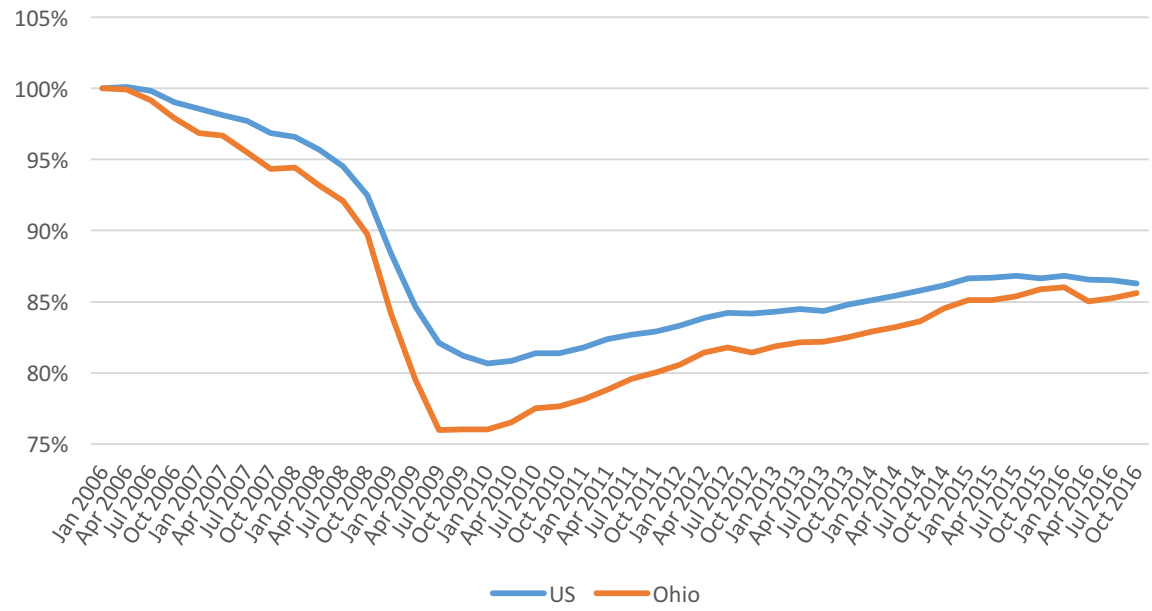


Source: Policy Matters Ohio, from Bureau of Labor Statistics, Bureau of Economic Analysis

Manufacturing employment has yet to return to pre-recession levels in Ohio or the nation, but jobs have been on a partial recovery since 2010. Today manufacturing jobs sit at just 86 percent of their January 2006 level, but substantially higher than their lowest point. The sector added some 78,000 jobs in Ohio since its low point in June 2009, and 804,000 in the U.S. since bottoming out in February/March 2010. As Figure 2 shows, Ohio's manufacturing sector was hit harder than that of the nation, but has nearly regained ground lost relative to the US.

Figure 2

Manufacturing jobs as a share of January 2006 level



Source: Policy Matters Ohio, from Bureau of Labor Statistics, Bureau of Economic Analysis

This recovery could bring more future growth, and not only because numbers are on the rise. There are rising costs of moving or keeping operations offshore and growing recognition by manufacturers of the value of producing domestically. These include speed of delivery to U.S. customers, still the largest market in the world; access to a highly skilled workforce in regional clusters; more ability to innovate by keeping research close to where products are actually made; and fewer communications barriers associated with distance and language.

Not only are rising costs and growing awareness of them causing some manufacturers to second guess offshoring plans, research has begun to show how some of the challenges U.S. manufacturers face stem from trade and currency policies that the U.S. could change.

Policy Landscape

Trade policy

The U.S. has been running a large and growing trade deficit since the 1970's. While the U.S. has always traded with the world, our current trade rules favor multi-national corporations and their investors over workers, and policies continue to destroy domestic jobs and exacerbate wealth inequality. U.S. trade policy should focus on reducing our trade deficits.

The Economic Policy Institute has shown that the North American Free Trade Agreement (NAFTA) cost the U.S. 683,000 jobs from 1994 to 2010.[1] Manufacturing lost the most, 60.8 percent, and Midwest states like Ohio took the hardest hit. Simultaneously, because it was structured to shift profits from workers to the wealthiest, NAFTA displaced Mexican small farmers and business owners, and did not raise wages relative to those in the US.[2] Despite that, the treaty served as a model for the World Trade Organization, normalizing economic relations with China, and similar deals. Economist Jeff Faux puts the toll for those policies at an additional net loss of 2.7 million U.S. jobs. Josh Bivens has costed out the impact on U.S. workers: the typical American with a high school degree and no college loses $1,800 per year.

One reason these trade deals have been so destructive is that they have transferred power to international investors away from workers, and even from governments. They bar nations from enacting labor and environmental policies that protect the public but shrink profit margins. They strip away political sovereignty on policies to boost demand for domestic products, such as local sourcing preferences.[3] And they shift labor/management relations into a global arena with complex legal frameworks and a fractured workforce, but fail to create a new legal status for workers that gives them mechanisms or even the positive right to bargain with employers.

A trade regime that exacerbates the deficit separates labor markets from consumer markets. U.S. firms sell overwhelmingly to U.S. consumers, but when firms shift production overseas and press down labor costs, American wages are pushed downward. This harms American workers directly, but it also makes them increasingly price sensitive as consumers, creating a cycle.

Our persistent trade deficit means that money U.S. consumers spend leaves our economy and doesn't come back. That's not because U.S. workers are inefficient. On the contrary, American manufacturing workers are among the most productive in the world. One challenge domestic producers may face is a currency misalignment that inflates the value of dollars relative to other currencies, and thereby raises the price of U.S. goods in global markets. In other words, U.S. goods may be expensive simply because dollars are expensive. Nations across the world frequently stockpile U.S. dollars. Whatever the reason, high demand for *dollars* raises the cost of U.S. products relative to goods produced by other nations. The U.S. should account for this effect as we enact the policies that structure our trade landscape.

We must stop negotiating trade deals that encourage offshoring of jobs, degrade global labor standards, and shift profits to the wealthiest. President-elect Donald Trump has said that he will not ratify the Trans-Pacific Partnership and will renegotiate NAFTA. Any move to revise NAFTA should strengthen labor and environmental protections, and specifically eliminate the Investor-State Dispute Resolution bodies that favor profits over the public interest. The U.S. should also refrain from entering other trade deals that make it easier for multi-national corporations to shift jobs to low-wage countries and hamstring the ability of governments to protect labor and the environment. A new trade regime must be developed with the goal of balancing U.S. trade and protecting and empowering all workers affected by trade going forward.

A role for the state in reshoring and retention

Trade policy falls to the federal government. However, states can establish bodies to advocate better trade policies and to help in-state firms take advantage of existing trade protections. Pennsylvania had a now-defunct Fair Trade Office in D.C., tasked in part with using WTO anti-dumping law to protect domestic manufacturers. Keystone Research Institute economists have recommended the reestablishment of that

[1] http://www.epi.org/publication/nafta-legacy-growing-us-trade-deficits-cost-682900-jobs/
[2] http://www.epi.org/blog/nafta-twenty-years-disaster/
[3] http://www.epi.org/publication/u-s-trade-policy-time-to-start-over/

agency. Ohio should join Pennsylvania's effort, and could establish a collaborative body. Collaboration makes sense not only to increase capacity, but because Ohio and Pennsylvania are home to manufacturers in the same supply chains and even clusters.

Some reshoring and retention efforts need not focus on global trade policy at all. Keystone has shown that offshoring as a business practice is often not the most cost effective, but is undertaken simply out of a management culture which has come to assume it will save costs.[4] Companies take on substantial supply chain complications when they move production far from their other operations and customers. Unless it results in substantial cost savings it may not make sense. Helping companies to recognize and monetize these disadvantages will help to retain operations. Creating state-supported teams with the financial expertise to help firms identify cost advantages of continuing or returning domestic operations could support reshoring and retention.

Pennsylvania's Strategic Early Warning Network (SEWN), now successfully provides lay-off aversion services to companies facing potential closure, saving around 1,000 jobs a year at a cost of less than $1,000 each – a substantial savings over other approaches including many economic development deals. This could serve as a model for Ohio on plant retention and closure prevention. Plants at risk of near-term closure must now report 60-day advance warnings under the federal Worker Adjustment and Retraining Notification Act (WARN). Ohio could extend the advance notice window to identify firms earlier, when there is greater opportunity for successful intervention, and a realistic window for workers to retrain if firms choose not to use lay-off prevention support or efforts don't succeed. Ohio Rapid Response efforts now focus on employee transition services including education, job search, and limited financial assistance, but Ohio lacks an aversion program similar to SEWN.

Job quality

One reason that manufacturing is so crucial to sustaining a robust economy with widespread prosperity is that, historically, manufacturing jobs have been good jobs. This is especially true for workers who do not attend college. Manufacturing workers with a high school diploma in Ohio earned $2.99 more per hour than their peers in other sectors as of 2013. And despite the fact that educational attainment is at an all-time high, a high school degree is still the highest level of completion for two thirds of the U.S. workforce, about 100 million Americans.

However, wages have declined dramatically for workers with just a high school degree in recent years. Real wages for high school grads were at $13.79 per hour in 2015, down from $16.87 in 1979.

Just as college graduation rates – and student loan debt - reach record highs, wage growth for new college graduates has slowed to a standstill, unchanged over wages fifteen years ago. A comprehensive plan for shared prosperity must reverse the downward mobility that workers have experienced for over a generation. With the nation is as wealthy as it's ever been, the resources for that prosperity exist. It's the political will-power that must be found. Part of the need is to preserve good jobs such as those long sustained by the manufacturing industry.

We can't take for granted that manufacturing jobs will remain good jobs simply because they have been in the past. Manufacturing wages – like those across sectors – have declined.[5] The manufacturing sector in Ohio and the U.S. is undergoing structural changes that fracture production centers into stratified

[4] Keystone Research Institute, Manufacturing Policy Agenda for Pennsylvania, working draft.
[5] Catherine Ruckelhaus and Sarah Leiberstein, *Manufacturing Low Pay: Declining Wages in the Jobs that Built the Middle Class,* National Employment Law Project, http://www.nelp.org/content/uploads/2015/03/Manufacturing-Low-Pay-Declining-Wages-Jobs-Built-Middle-Class.pdf

pockets of profitability for some producers and tight margins for others. Labor unions, which have played a strong role in securing and protecting job quality, face restrictive policies already and may see policies that further threaten their viability. Policies are needed to ensure that manufacturing jobs remain good jobs; they should focus on pushing profits out of concentrated centers and across the industry, and strengthening worker voice and ability to bargain for their share. The manufacturing sector in Ohio and the U.S. is as profitable as ever. It falls to policy makers to create the mechanisms to ensure that prosperity is shared with the workforce that makes it possible.

Structural changes separate workers from profit centers and make them more vulnerable

Changes in the manufacturing sector threaten job quality. The sector is increasingly complicated, but supply chains are still commonly organized by large, recognized firms that command market power and earn large profits. Economists call them lead firms, and they are usually the companies that make and sell end-use products to consumers, rather than components that go into products.

By breaking production into small parts and outsourcing it to different companies, lead firms press down costs and keep a larger share of profits for themselves. These cost savings can be found in many ways: by shifting a role that would be performed by their own higher-paid workforce to a lower-paying domestic or offshore firm; sourcing interchangeable components from a large pool of generic manufacturers in which competition is fierce and bargaining power severely constrained; or simply displacing operating costs to supplier firms with fewer resources – one way that investments such as R&D get left by the wayside.

These moves segregate the industry into a few highly profitable companies, and several competitive ones with limited bargaining power and little share of the profits. Supplier firms themselves outsource portions of their production so that manufacturing is done by firms in the third tier, fourth tier, and further removed from lead firms. This separation from profit centers limits workers' ability to capture a share of the profits they help to create, and this fractured landscape leads to poor job quality and can even subject workers to labor law abuses.

The Department of Labor found more than 3,700 labor law violations by Ohio manufacturing firms in the 2010-2015 period. Wage and hour violations can crop up in the supply chains of firms not committing violations themselves. Yet, lead firms often evade responsibility for job quality. Lead firms hold the power to improve working conditions in their supply chains and should be held accountable for doing so.

A 2016 measure passed in Cincinnati could serve as a model. The law bars city contracts over a certain value from companies found in violation of wage and hour laws, and enables the city to claw back incentives already awarded. A key mechanism is that it extends to sub-contractors. This shifts responsibility to firms to proactively certify that they have had no wage theft violations, attaches large penalties for violations, and makes lead firms responsible for violations committed by their direct subcontractors. Part of managing a quality supply chain is knowing its suppliers, and ensuring that those suppliers are not only producing quality products, but doing so in compliance with the law.

Job sharing

Manufacturing jobs have experienced long-term decline, falling to just half of their level a half-century ago in 1966. While a number of factors play a role, one is that as production capabilities advance, fewer workers are needed to produce the same level of output. That frees up capacity for more leisure and more growth. Yet without policies to guide outcomes, the result can be job destruction and widening inequality. U.S. and Ohio workers have experienced both.

The fact that efficiency gains free up labor time need not mean fewer jobs. Instead it can mean that work schedules reduce over time and workers can enjoy better work-life balance. Work hours have decreased in

this way for many developed economies over the past several decades, but not for the U.S., where workers now work 1,790 hours per year on average, compared with 1,371 in Germany.[6]

Coming up with innovative ways to share work could play a key role in ensuring full employment and economic stability for workers in middle wage sectors such as manufacturing. Ohio implemented a program to prevent lay-offs in 2013. The policy enables employers to reduce hours across the board instead of laying workers during downturns and to use the unemployment compensation system to help make up part of the loss for employees. This keeps workers connected to the workforce, reduces the number of families who lose jobs, and enables employers to retain a current workforce to tap for expanded hours when demand improves.

Job sharing need not serve only as a lay-off aversion program in recessions. It can also be a way to structure jobs going forward. Ohio has fewer jobs today than in the year 2000. Concerns abound that middle income jobs have been "hollowed out" of the economy. The manufacturing sector is a key source of such jobs.

Filling the gaps – public programs promote investment in shared quality

The manufacturing sector is undergoing a dramatic shift from vertically integrated firms (where a company owns its suppliers) to diffuse supply chains (where the company buys from others). Economists have shown that this shift creates "network failures": underinvestment in things that everyone would benefit from doing but where the investment firm might not capture all or even most of the returns. This is a growing problem in an interconnected sector in which lead firms use the same suppliers as their competitors, so investments to help suppliers innovate benefit not only the lead firm, but its competitors too. In these cases, it makes sense for a public entity to take the lead.

Manufacturing Extension Partnerships (MEP's) already do and could continue to fill this role. Services could include joint marketing and branding, worker training, deployment of new technology, shared capital investment including makerspaces, and reshoring efforts.[7] [8]

Ohio MEPs now provide many of these services, so strengthening effectiveness is less about developing new services, and more about shifting focus from individual firms to industry clusters. Ohio could deepen investments in MEPs by reallocating resources now spent on tax expenditures to specific firms. The state should also seek federal matching funds through the National Institute of Standards and Technology to establish network-focused MEP services that can cost effectively strengthen the industry across the whole region.

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[6] Baker, Dean. *Rigged: How Globalization and the Rules of the Modern Economy Were Structured to Make the Rich Richer,* p. 36.

[7] Ohio's seven MEP's are: Appalachian Partnership for Economic Growth (APEG, Nelsonville), Center for Innovative Food Technology (CIFT, Toledo), Manufacturing Advocacy and Growth Network (MAGNET, Cleveland), Center for Design and Manufacturing Excellence (CDME, The Ohio State University, Columbus), PolymerOhio (Westerville), TechSolve (Cincinnati) and The University of Dayton Research Institute (FastLane, Dayton), https://www.development.ohio.gov/bs/bs_mep.htm

[8] Maker spaces are facilities in which users can access tools, equipment, courses and specialized training to help them learn manufacturing processes and develop and launch products. The focus of the spaces and extent of their offerings vary: some are connected with vocational schools, the Cleveland Public Library supports a makerspace; and some, like the Columbus Idea Foundry – the world's largest makerspace – charge membership and hourly rental fees in exchange for access to an extensive array of equipment https://techcrunch.com/2014/06/02/the-largest-makerspace-on-the-planet-opens-in-columbus-ohio/.

Manufacturing Innovation Hubs are another mechanism for developing and deepening investment in network resources. Youngstown-based America Makes is the first of its kind. Launched in 2012 by President Obama, America Makes, also known as the National Additive Manufacturing Innovation Institute (NAMII), is a hub for manufacturers focused on 3D printing. Today it boasts over 160 members.

MEPs can diversify capacity for small and medium firms

Not only does today's manufacturing landscape lead to underinvestment in network resources, with an increasing share of the industry now comprised of small and medium firms, specialization presents challenges for many of them, and sector-wide productivity is falling as a result. MEPs can fill the gap where small- and medium-sized firms struggle at each stage of innovation: research and development, commercialization, and diffusion.

Small firms often lack dedicated research and development capacity, and many do no R&D at all. R&D is one of the most vital factors that drives productivity, so having engineers and research teams able to do R&D for firms on a fee for service basis is a critical role for MEPs. When they do innovate, small firms often face difficulty bringing their products to market. MEPs can help by developing marketing strategies in partnership with small firms.

In a sector increasingly comprised of small- and medium-sized firms, underutilization of capital is a growing concern. Small firms are often slow to adapt technological processes that can speed efficiency, but MEPs such as MAGNET can provide them with everything from on-site 3D printing to custom CNC machines for purchase.

Training and apprenticeship

Manufacturers report difficulty finding skilled workers to match their needs. If this is true, employers should be willing to either provide training or raise wages to attract skilled workers or to make it worthwhile for workers to invest in their own training. The reported "skills gap" should also represent an opportunity for worker representatives, including labor unions, to carve out a new role in a sector in which unions have been displaced and worker voice severely curtailed. One reason for decline in workplace training may be that supply chain diffusion has created a landscape of small firms that lack capacity or ability to train. Economist Sue Helper has suggested that manufacturing labor unions could play a role in training, selecting, vetting and matching workers, much as building trades unions do.

Partnerships across labor, manufacturers, and academia should collaborate on training to lower costs, better align education with industry needs, and facilitate the development of industry recognized credentials. Manufacturing Extension Partnerships could play a convening role to help identify needs and facilitate program coordination.

Boosting Demand

States' influence over demand for manufactured goods is limited by comparison with the power of the federal government, yet there are opportunities for state policy to make a difference. Procurement policies and infrastructure investment are key opportunities, and this includes creating incentives for private infrastructure investment such as through sustainable energy policy.

State procurement

Ohio has an in-state purchasing preference for firms based in or producing goods in the state. The Department of Administrative Services and state agencies attach a 5 percent preference in contract bidding to Ohio products and services.

Ohio extends preference to bordering states, as long as the bordering state does not pass a preference against Ohio products.[9] This kind of cooperation could also serve as a foundation for collaborative efforts such as anti-poaching agreements between states not to spend incentive money to lure specific firms as an economic development strategy.

Ohio could also extend procurement preferences to cover quality of work issues and to target reshoring. The state should bar contracts from firms in recent violation of labor law. It could also extend special preference to firms bringing operations back to the state.

Energy policy

There is growing interest in Ohio in creating new jobs through energy innovation. Bluegreen Alliance spearheads a labor/environmental partnership. The non-profit Lake Erie Energy Development Corporation is expected to break ground in 2018 on the nation's second offshore wind farm: a pioneer project to generate 21 megawatts of power – enough to power more than ten thousand homes - of the expected 1000 megawatts the area could produce.

Sustainable energy investment

Using capabilities developed in automotive and heavy equipment manufacturing, Ohio invested deeply in energy technology production, to become first in the nation for the number of facilities manufacturing wind components and second for solar equipment producers by 2013. State energy policy should support those investments and recent moves by Gov. Kasich send Ohio back in that direction.

Legislation in 2008 required Ohio utilities to reduce energy consumption by 22 percent and source energy from at least 15 percent "advanced sources" by year 2025. Advanced energy sourcing included a 50 percent in-state sourcing mandate, and had benchmarks for renewables and a small set aside for solar specifically (0.5 percent). Ohio's clean energy standards – which passed just one vote short of unanimously – were undermined for the last several years. The legislature froze energy efficiency and renewable standards in 2014, struck provisions including in-state sourcing, and exempted some sectors from compliance, including heavy manufacturers. The legislature then voted once more in December 2016 to extend the freeze. These changes created uncertainty that pushed wind and solar firms out of Ohio and put jobs in this sector at risk.[10] In late 2016, Gov. Kasich vetoed the freeze, restoring the standards. This should add stability to Ohio's renewables sector. The legislature should resume its original course and restore in-state sourcing requirements and extend the standards to all state electric consumers.

Combined Heat and Power

Sustainable energy policy not only creates demand for manufactured products such as wind turbines and solar panels, but capturing energy generated during manufacturing through Combined Heat and Power can reap substantial savings for the sector. Ohio's manufacturing sector accounts for 12.7 percent of state employment and one-third of its total energy consumption. The state ranks sixth in the nation for industrial energy consumption. Many manufacturers produce heat by-product that could be used to generate electricity, but is currently wasted. CHP is an opportunity to capture that capability and return enormous long term energy savings to firms, while reducing waste in our energy sector.

Doing so would keep more resources in the state: despite being a large coal producer, Ohio spends a net $490 million per year importing coal from other states.

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[9] Only West Virginia is currently excluded from preference, while Michigan, Indiana, Kentucky, and Pennsylvania are covered

[10] http://e67ti2w9ws71al8xmnhsozd3.wpengine.netdna-cdn.com/files/2015/01/PewOhioReport2015.pdf

Ohio has more than twenty CHP plants with capacity of at least one megawatt of electricity – enough to power about 500 homes.

Yet Ohio faces roadblocks to deeper CHP implementation because the state's monopoly utilities see combined heat and power as a threat.[11] They form deals with manufacturers that let firms buy energy at reduced prices – often below cost – then shift the cost burden to residential and other consumers who lack bargaining power. These deals are subject to Public Utilities Commission approval. The commission should stop approving below-cost deals between utilities and large manufacturing firms. Ending this practice would increase fairness for all electric consumers and incentivize the infrastructure investments manufacturing firms could make to harness CHP.

Conclusion and Recommendations

Ohio's manufacturing sector may never again dominate the economy as it once did, but manufacturing still matters. Not only does one in eight Ohio workers work in manufacturing, producing one out of every six dollars generated in the state; but manufacturing jobs are good jobs that can anchor families and stabilize whole communities. This sector is worth preserving. But the advantages workers reap can't be taken for granted. Manufacturing tasks are increasingly outsourced to smaller, poorer firms, sometimes overseas, and union representation is on the decline. This puts the wage premium that manufacturing workers enjoy at risk.

Policy recommendations

- Form a D.C. Fair Trade office in partnership with other manufacturing states.
- Help firms identify advantages of local production.
- Use existing state procurement policy to boost Ohio manufacturers.
- Increase public and private infrastructure investment.
- Use Manufacturing Extension Partnerships, makerspaces, and innovation hubs to improve access to equipment.
- Develop training partnerships and industry recognized credentials.
- Make lead firms responsible for job quality in their supply chains.

Policy interventions are needed not only to strengthen the sector, but to ensure that it continues to support quality jobs. Much of the work falls to the federal government, but states can play a role in generating demand through procurement and infrastructure policies; training the workforce through labor/industry/academic partnerships; incentivizing job quality through targeted resource deployment; bridging network failures by investing in cluster-focused innovation through Manufacturing Extension Partnerships; and spending resources wisely on shared resources. Ohio should build on its strengths and pursue these approaches.

[11] Ohio has four primary electric utility providers, but each customer is served by a grid owned by just one of them, and Ohioans in many counties have access to only one electric producer as well.