



MAKE IT IN AMERICA

THE APOLLO GREEN MANUFACTURING ACTION PLAN



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Support the Apollo Green Manufacturing Action Plan

With the goal of informing federal clean energy manufacturing policy, we are actively engaging endorsers and allies from the manufacturing, labor, clean energy, and other business sectors. Consistent with the vision of the GreenMAP initiative, our partnerships will advance the principles of domestic production and good jobs, and engage the broader movement toward a clean energy future of increased climate stability, energy security, and widely shared economic prosperity.

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MAKE IT IN AMERICA

THE APOLLO GREEN MANUFACTURING ACTION PLAN

I do not accept a future where the jobs and industries of tomorrow take root beyond our borders – and I know you don't either. It is time for America to lead again.

– President Barack Obama, February 24, 2009

The U.S. manufacturing sector is in trouble. Since 1999, a total of 4.6 million U.S. manufacturing jobs have disappeared, many of them sent overseas. More than a million manufacturing jobs have been lost since the start of the current recession in December 2007, including 200,000 in January 2009 alone.¹ These are some of the country's best middle-class jobs, paying an average of \$25,000 more per year than service sector jobs and often providing benefits such as health care and pensions. For workers without four-year college degrees, these jobs have long been the ticket to the American middle class. As manufacturing and associated jobs disappear, the only option for many workers is low-paid service sector jobs without clear career advancement opportunities. The result: growing inequality and a dramatically shrinking middle class.

Despite its hardships, American manufacturing still represents a considerable share of the U.S. economy. The sector's gross output in 2005 was \$4.5 trillion, and it still supports nearly 13 million jobs, or almost 10 percent of total non-farm employment.²

One of the most promising new ventures for American manufacturing is clean energy. Despite its recession-induced woes, the clean energy sector is on the rise. The domestic market for solar panels, wind turbines, fuel cells, combined heat and power (CHP) systems, and biomass engines is projected to reach \$226 billion annually by 2016.³ Demand for solar and wind power will continue to expand over the next 20 years, and between 70 and 80 percent of the new jobs created in those industries will be in the manufacturing sector.⁴



A sharp rise in energy production from photovoltaics and a steady decrease in the cost of generating power from the technology is driving Hemlock Semiconductor's business strategy. Courtesy Hemlock Semiconductor

MIDWEST MANUFACTURER SEES OPPORTUNITY IN SUN'S BRIGHT LIGHT

When the Dow Corning Corporation announced in February that it was one of the few industrial companies in the Midwest that not only earned a healthy profit, but had produced double-digit increases in annual revenue in 2008, the company credited Hemlock Semiconductor, its solar energy materials unit, for much of the good news.

Since it was formed in 1961, Hemlock Semiconductor has manufactured polycrystalline silicon, the basic raw material that powered the computer chip industry. In 2002, as global interest grew in generating solar energy from photovoltaic cells, the company began manufacturing what it called "solar grade" polycrystalline silicon to solar cell and solar module manufacturers.

Driving Hemlock Semiconductor's business strategy is a sharp rise in energy production from photovoltaics and a steady decrease in the cost of generating power from the technology. The number of photovoltaic installations in the United States in 2007, many of them on the flat roofs of Wal-Mart and other superstores, increased 45 percent.

To keep up with the demand for its polycrystalline silicon,

Hemlock is in the midst of a nearly \$4 billion construction program to expand capacity. It is increasing production at its plant in Hemlock, a mid-Michigan community, where 1,400 people already work. Hemlock is building a \$1.2 billion plant in Clarksville, Tenn. When both projects are completed in 2014, Hemlock will employ up to 1,200 more workers.

The company, a joint venture between majority owner Dow Corning, Shin-Etsu Handotai Co. Ltd., and Mitsubishi Materials Corporation, does not disclose its revenue or specific details about wages and benefits. Jarrod Erpelding, the company's spokesman, said employees fill dozens of job categories – from mechanical and electrical engineers to chemical plant operators. Hemlock employees, he said, earn wages that are equal to or better than the prevailing manufacturing wages in Michigan, which range from \$14 to over \$20 an hour depending on job classification and experience. Most employees also receive health and retirement benefits.

"Hemlock Semiconductor is a prime example of how investments in clean energy produce the job and economic growth of the future," he said.

Manufacturing Generates Jobs

Investing in renewable energy and energy efficiency manufacturing creates and retains permanent good jobs on the factory floor. In general, every \$1 million of investment in renewable energy systems creates approximately five full-time component manufacturing jobs.⁵ Every \$1 million invested in energy efficiency programs creates three to four building-material manufacturing jobs and five energy efficient appliance manufacturing jobs.⁶ Investing in manufacturing also drives regional economic development: every dollar invested in manufacturing generates more associated jobs – in other words, has a higher “multiplier effect” – than each dollar invested in other sectors of the economy, such as services.⁷ The Economic Policy Institute estimates that every direct manufacturing job supports an additional 2.9 indirect jobs in finance, transportation, supply chains, installers, and other related businesses.⁸ Based on these figures, the Apollo Alliance calculates that \$50 billion of federal and private investment in industrial retooling and retraining programs would create 250,000 direct manufacturing jobs in the U.S., support an additional 725,000 indirect jobs, and generate as much as \$120 billion in revenue due to increased demand for products and services.

Moreover, federal policies currently being discussed in Washington – such as a renewable energy standard or, more significantly, a carbon pricing program – will generate unprecedented demand for clean energy systems and components. Done right, these policies will create millions of new American jobs. Data from the Renewable Energy Policy Project and the Energy Information Administration indicate that by adding enough new wind, solar, geothermal, and biomass energy to the power grid to produce 25 percent of our electricity from renewables, the U.S. could generate approximately one million jobs in the manufacturing sector alone, 2.5 million “indirect” jobs in related industries, and industry revenues of over \$400 billion.⁹

Clean energy manufacturing offers an opportunity to strengthen and expand America’s middle class. But there’s one big problem: we don’t make most of the systems and components here in the U.S. Fully half of America’s existing wind turbines were manufactured overseas.¹⁰ And we rank fifth among countries that manufacture solar components, even though the solar cell was born in America.¹¹ The fact that other countries are prepared to deliver these products – and we are not – means that every new American bill creating demand for renewable energy systems and energy efficiency services actually creates new jobs overseas, even



IceStone manufactures durable indoor surfaces from recycled materials at its plant in Brooklyn, New York Courtesy IceStone

though we have a robust manufacturing infrastructure and skilled workforce here in the U.S.

We must not squander the opportunity provided by the transition to a clean energy economy by giving up on American manufacturing. With the right roadmap through the transition – one that directly invests in domestic clean energy manufacturing – we will reduce the nation’s carbon footprint, expand exports, increase energy security, and create and retain high-quality jobs in our valuable manufacturing sector over the long term. For a country trying to rebuild its middle class and reduce its carbon footprint, the only path forward is one that invests in domestic clean energy manufacturing.

GreenMAP: Toward a Strong Domestic Manufacturing Base

The Apollo Alliance, a national coalition of labor, business, community, and environmental leaders, has created the clean energy roadmap for revitalizing America’s manufacturing sector. The Apollo Green Manufacturing Action Plan (GreenMAP) – part of the *New Apollo Program*, our comprehensive national strategy for building a clean energy, good jobs economy – calls for federal investment in the domestic manufacture of clean energy equipment and components, and in making manufacturing plants more energy efficient overall. An aggressive program such as we propose could benefit tens of thousands of U.S. firms capable of making the equipment and components of the clean energy economy, the majority of them located in the twenty states hardest hit by manufacturing job losses.¹²

In the fall of 2008, the Apollo Alliance brought together representatives from academia, industry, labor, and environmental groups to develop strategies for rebuilding domestic manufacturing for the growing clean energy economy. Members of this group include the AFL-CIO, Change to Win, the American Wind Energy Association, the

Solar Energy Industries Association, Environmental Defense Fund, the Alliance for American Manufacturing, the National Council for Advanced Manufacturing, the International Economic Development Council, Johnson Controls, Inc., General Motors, the Renewable Energy Policy Project, the Center on Wisconsin Strategy, and Campaign for America's Future.

The group developed the following federal policy recommendations to spur domestic green manufacturing:

1) Provide direct federal funding for clean energy manufacturers to retool their facilities and retrain their workers to develop, produce, and commercialize clean energy technologies.

This funding could take the form of loan guarantees, bonds, grants, tax incentives, or any combination of these or other investments, and would be available to domestic firms and foreign-owned firms that maintain manufacturing operations in the U.S for at least five years. There is no one size fits all strategy; the agreed-upon instruments must be cost-effective, relevant to prevailing macroeconomic conditions, and appropriate for the particular types, sizes, and risk profiles of manufacturers that they target. It is also essential that any public funding be consistent and long-term, so that it leverages large-scale private investment. In addition, these funds must target certain stages of product development, such as the so-called 'valley of death' that occurs between early-stage venture investment and full-scale commercialization.

One way to combine several different types of funding instruments would be to place them under the authority of a Clean Energy Bank, which would finance manufacturers in the fashion best suited to their particular characteristics. Similar entities have been introduced in several pieces of legislation: New Mexico Senator Jeff Bingaman's 21st Century Energy Deployment Corporation, for instance, as well as Ohio Senator Sherrod Brown's Green Technology Manufacturing Corporation and a Clean Energy Finance Authority proposed in an early version of the American Recovery and Reinvestment Act of 2009. Were such a bank created, it should specifically support retooling, expanding, or establishing domestic facilities to manufacture clean energy systems and, importantly, their component parts.

Policymakers can also use existing funding streams to fund critical manufacturing projects. One example is the Clean Renewable Energy Bond (CREB) program, established in the 2005 Energy Bill. These bonds have been very successful in funding the development of rural, public, and

cooperative electricity-generating projects that use technically viable technologies such as wind, solar, geothermal, and biomass. Over 80 percent of CREBs applicants were approved in the program's first round of funding: 532 city, county, and tribal projects in 22 states received bonds ranging from \$23,000 to \$3.2 million, and 78 cooperatives in 24 states received bonds totaling \$554 million. The Renewable Energy Policy Project has proposed that the CREBs program be expanded to apply to private clean energy manufacturers.

Currently available tax credits could also be amended to cover clean energy manufacturers. The Investment Tax Credit (ITC) supports the installation of clean energy equipment (primarily solar panels), while the Production Tax Credit (PTC) supports the production of electricity from such equipment (primarily wind turbines). These highly successful instruments could be altered to benefit domestic manufacturers that retool their facilities to produce clean energy products or make their facilities more energy efficient. In addition, tax credits must be made more flexible or even refundable so that they are effective during the current credit liquidity crisis. For instance, the ARRA includes a 30 percent investment tax credit for clean energy manufacturers, but our current recession limits its effectiveness.

Whatever the funding mechanism, a fraction of federal funds (e.g., one-half of one percent) should be set aside for local development agencies and other community-based or manufacturing support organizations. The New York Industrial Retention Network in New York City, NextEnergy in Detroit, and similar groups provide outreach, technical, and marketing assistance to small manufacturers and help them access government benefits. Small manufacturers of clean energy systems and components, particularly those in our inner cities, provide some of the highest quality employment opportunities available to residents in surrounding neighborhoods; however, their small size, ownership status, and lack of management or supply chain resources often limit their ability to enter emerging markets.

2) Attach standards to funding: Condition federal support to manufacturers on their ability to meet labor and domestic content standards.

When investing in the clean energy industries of the future, we must avoid perpetuating current weaknesses in the economy, such as low-quality employment and reliance on foreign products. Therefore, strong labor standards – including prevailing or living wages, benefits, card-check



After workers at Republic Windows and Doors occupied the plant to protest its abrupt shutdown in December, the job action prompted marches and rallies in Chicago and across the country. Getty Images

TALK ABOUT A WINDOW OF OPPORTUNITY

In early December, when 260 members of United Electrical, Radio and Machine Workers of America Local 1110 lost their jobs at Republic Windows and Doors, workers mounted a quiet but exceptionally effective resistance. Scores of them, working in shifts, occupied the Chicago-based manufacturer for six days, asserting that they had the right under law to receive vacation and severance benefits.

The peaceful protest drew international media attention and the support of Barack Obama, a Chicago resident who just two weeks earlier had been elected president on a promise to leverage energy efficiency and clean energy development to rebuild the economy and the middle class. It also attracted the interest of Kevin Surace, the chief executive officer of Serious Materials, a Sunnyvale, California-based manufacturer of ultra energy efficient windows. Surace was busy scrubbing the country for window manufacturing plants to buy, anticipating a big economic stimulus bill that included considerable investment in weatherization and energy efficiency.

Surace wasn't disappointed. On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act, which included \$34 billion for energy efficiency. Two weeks later, Surace reached agreement with the plant's former owner and with the United Electrical Workers and purchased the Chicago factory. He also committed to honoring the union contract, which pays an average \$14.11 an hour plus benefits, and to eventually rehiring all

of the plant's union workers.

In short, an event that first appeared as a new twist in the all too familiar tale of hard times in American manufacturing has evolved into a much more satisfying narrative.

"These workers will not only earn a paycheck again" said Vice President Joe Biden on the day that Serious Materials announced the sale, "they will go back to work creating products that will benefit America's long-term economic future."

Plainly, Serious Materials sees a big market for its products. Despite the worst economic downturn in almost 80 years, the company is on a buying spree. In June 2008, it purchased Alpen Windows, a Boulder, Colorado market leader in high-performance, energy-efficient windows and glass.

In January 2009, Serious Materials bought Kensington Windows in Vandergrift, Pennsylvania. The Kensington plant closed in October, putting 150 people out of work after it's parent declared bankruptcy. On March 16, 2009, Pennsylvania Governor Ed Rendell was the honored guest at a ribbon cutting ceremony marking the Vandergrift plant's formal reopening.

According to Sandra Vaughan, chief marketing officer for Serious Materials, 25 workers have been rehired and more will return to the plant as sales pick up. "We see a big opportunity as a result of the Recovery bill," said Vaughan. "We are very focused on the U.S. market. We are focused on building good green American jobs to serve that market."



In March, Serious Materials opened a plant in Vandergrift, PA, where the staff of 25 workers will soon grow to 100. Courtesy of Serious Materials



Litecontrol, an employee-owned and unionized Massachusetts manufacturer of energy efficient lighting for commercial and institutional buildings, employs 220 people who earn good wages and generous health and retirement benefits.

Courtesy Litecontrol

neutrality, and full compliance with labor laws – should be required for funding eligibility. Additionally, federal policy must prioritize investment in those regions hardest hit by unemployment. Local or domestic content requirements, which set a quota in each manufactured clean energy product for components or subcomponents made in-state or in the U.S., will help guarantee that domestic clean energy manufacturing supports American businesses and furthers local and national economic development. Finally, effective policy must ensure that standards are enforced by all levels of government, from the federal to the local, and include recapture mechanisms for firms that fail to fulfill their commitments.

A good domestic content requirement should prioritize funding for manufacturers that document the greatest use of domestically sourced parts and components. Alternatively, a requirement could be added such that funding go only to manufacturers that use at least 85 percent American-made component parts in their products and conduct final assembly in the United States. Domestic content share could be calculated based on the purchase value of the domestic materials or components used, the domestic value added to the final product or component, or some combination of these. This will not only increase demand for domestic components but also for more domestic *suppliers* of these components, thereby expanding our clean energy market and preparing it for self-sufficiency. It will also reduce carbon emissions from international goods transport and ensure that our clean energy systems and components are not purchased from countries with poor labor and environmental standards.

Federal, State, and International Examples

The American Recovery and Reinvestment Act includes prevailing wage standards for government-funded projects,¹³ and requires the use of domestic steel, iron, and

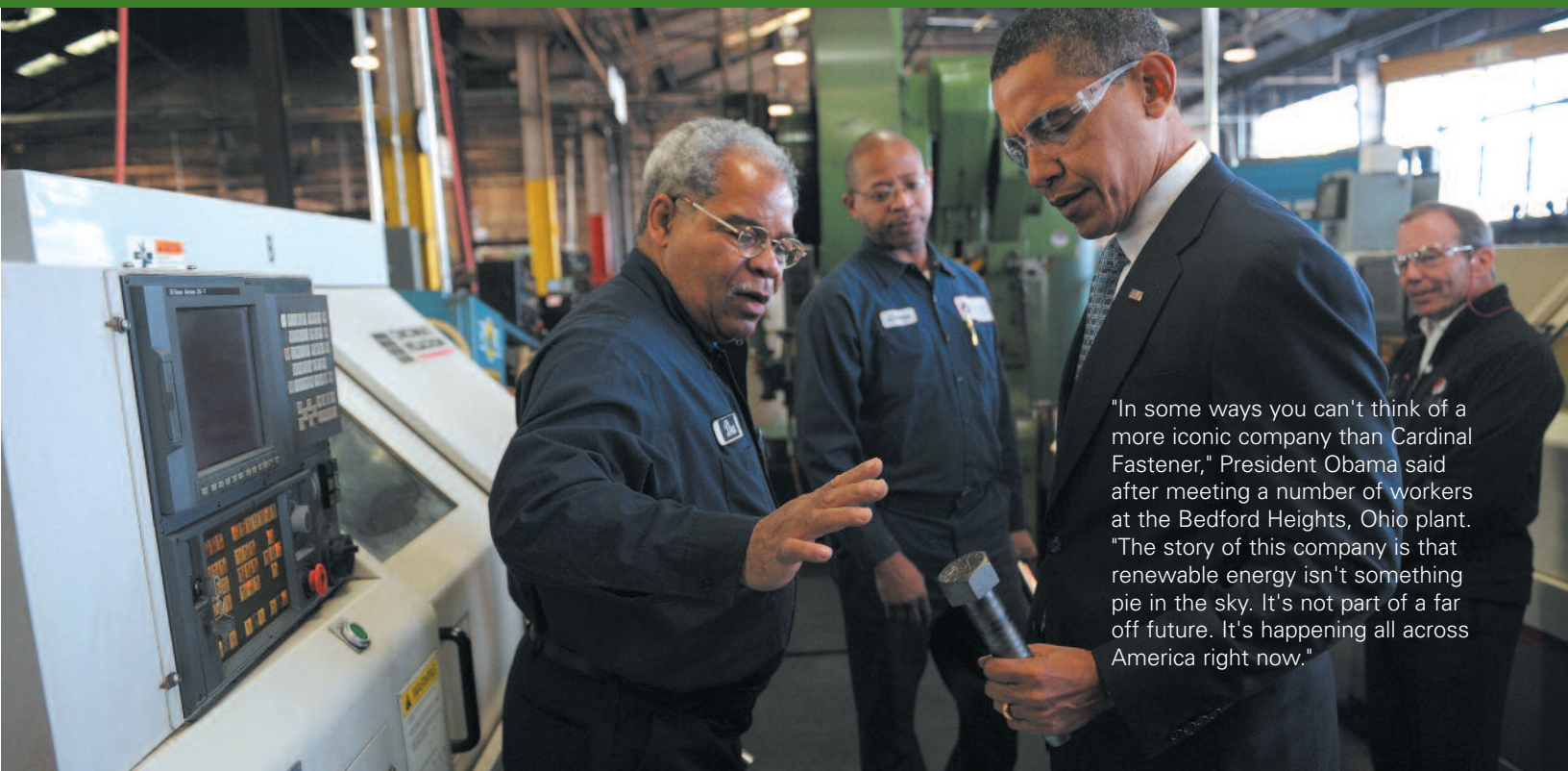
manufactured goods in public works. There are also several state-level clean energy initiatives that contain labor standards and local content requirements. Small wind system manufacturers in Oklahoma, for example, can receive a transferable income tax credit through 2012 if they show that they have made economic development investments within the state. In California, the Industrial Development Bond Small Business Program requires that beneficiaries such as small clean energy manufacturers pay prevailing wage. It also awards extra points for businesses that locate in areas of high poverty and unemployment.

Several states also include domestic content requirements in their clean energy incentive programs. A bill passed by Oregon's state legislature provides a 50 percent income tax credit to renewable energy generation facilities that use systems and components made in-state. At least two tax rebates in Massachusetts carry additional incentives for generators if renewable energy components are manufactured in the state. Ohio production incentives for utility-scale wind projects are contingent upon a) at least 30 percent of total turbine cost coming from parts manufactured in-state; b) one of the major turbine component groups being completely manufactured in-state; or c) the turbine being completely assembled in-state with a workforce of at least 50 employees dedicated to the task.

Across the Atlantic, the Spanish region of Navarra – 65 percent of whose energy comes from renewables – famously benefited from a comprehensive 1995 energy plan whose project development incentives, tied to local content requirements, created an estimated 4,000 jobs.

3) Increase funding for the Manufacturing Extension Partnership, both to expand its role in strengthening the clean energy supply chain and to establish partnerships with regional/local development and manufacturing support organizations.

Currently there is a shortage of domestically manufactured clean energy components, a problem worsened by the fact that existing manufacturers don't have a nationally standardized model for collaboration. For instance, when a clean energy original equipment manufacturer, or OEM (the maker of the finished solar panel or wind turbine), enters a new market and needs to establish a supplier base, it must contact all component makers individually, save in a few areas where manufacturers have established their own regional partnerships. Similarly, components travel vast distances to reach clean energy OEMs, even though suppliers near the OEM may be prime for retooling if they



"In some ways you can't think of a more iconic company than Cardinal Fastener," President Obama said after meeting a number of workers at the Bedford Heights, Ohio plant. "The story of this company is that renewable energy isn't something pie in the sky. It's not part of a far off future. It's happening all across America right now."

Getty Images

CARDINAL FASTENER BOLTS TO CLEAN ENERGY PROFIT

More than two years ago, when the Cardinal Fastener & Specialty Company was still focused on manufacturing large-diameter, high-tensile strength bolts for construction projects and heavy equipment makers, an order arrived from Iowa. The buyer asked for specialty fasteners and they needed them in a hurry.

Turns out the buyer was a wind turbine manufacturer. Cardinal Fastener's ability to quickly fill the order helped the company open a new market in the American clean energy sector that is steadily expanding.

The company now employs 65 people, 15 more than in 2007. In the last two years Cardinal Fastener manufactured half a million parts for the wind industry, all domestically produced from made in America materials. It expects to double that number this year. Sales to the clean energy sector accounted for 15 percent of the company's \$10 million in annual revenue in 2008.

John Grabner, the Cardinal Fastener president, said he expects business to be strong enough in 2009 to add 30 to 40 more employees, and revenues could grow to \$40 million annually in 2010, half of it from sales to clean energy companies.

The company's performance has attracted prominent admirers. Last December, during a conference in Cleveland on Ohio's potential to manufacture parts and equipment for the clean energy industry, Governor Ted Strickland commended Cardinal Fastener for its nimble ability to recognize and fill a new market.

In January 2009, just four days before his inauguration, President-elect Barack Obama showed up at the company's 95,000-square foot plant in Bedford Heights, a Cleveland suburb. The new president viewed the company as an apt example to promote the

administration's nearly \$800 billion American Recovery and Reinvestment Act, and especially the roughly \$100 billion the recovery proposal devoted to investment in clean energy development and green-collar job generation.

"If anybody doubts that we can dig ourselves out of this hole, I invite them here to Ohio and look what you've done at Cardinal Fastener," President Obama said. "It hasn't been easy here either. It hasn't been without risk. In an economy that's losing jobs, we're creating them. They're the kind of jobs that don't just support families and sustain communities — but also help transform our economy, spurring growth not just today, but for decades to come."

Indeed, Cardinal Fastener is one of 90 companies in Ohio's clean energy industry supply chain, according to Governor Strickland. In May 2008, Governor Strickland signed Ohio's renewable energy standard to encourage more manufacturers to get involved. The new law requires Ohio utilities to develop 12.5 percent of their power from wind, sun, and other renewable sources by 2025, and the governor is actively recruiting a wind turbine manufacturer to his state.

Like other Midwest governors, Strickland recognizes that clean energy manufacturing holds the promise of generating good green-collar jobs. Cardinal Fastener's diverse workforce - 80 percent minority and 35 percent women - earns competitive wages of \$15 to \$19 per hour plus performance bonuses. The living wage for Bedford Heights, Ohio is \$8.10 per hour for one adult or \$12.50 an hour for two adults. Jeff Grabner, Cardinal Fastener's wind product manager put it this way: "We are the glue that holds it all together."

received federal funding, as well as assistance from national or state agencies and organizations.

The Manufacturing Extension Partnership (MEP), a division of the Commerce Department's National Institute of Standards and Technology, was designed to help manufacturers reduce costs and increase productivity, with an eye to the existing supply chain. The program supports thousands of U.S. manufacturers, assisting them with process improvement, energy efficiency, and waste minimization, all of which likewise benefit surrounding communities that too often bear the burden of harmful particular emissions and poorly contained industrial waste. The MEP also promotes the development and commercialization of new sustainable technologies and assists clients with market diversification – identifying opportunities to expand into new markets using existing or slightly altered capacity.

The organization is vastly underfunded and should receive considerably more federal support – at least double its current authorization. This increased funding would help the MEP expand its role to more effectively address the development of the clean energy manufacturing supply chain, and to facilitate communication or ‘matchmaking’ between clean energy component suppliers and OEMs. State MEP centers should, for instance, receive additional points towards funding (e.g., through an RFP process) if they form strategic partnerships with economic development agencies and financial institutions to reach out to existing manufacturers and identify and resolve barriers in the clean

Manufacturing Extension Partnership Centers

The MEP and its state centers are federal-state partnerships with slightly over \$100 million in authorized federal funding, and a two-to-one matching requirement. The matching requirement places incredible strain on cash-strapped state governments and small manufacturers to provide the additional two-thirds of funds, limiting the program's capacity. Currently the MEP's 59 centers around the U.S. are able to assist only two to three percent of the country's 330,000 small manufacturing plants (those with fewer than 500 employees). Based on the MEP's current average cost per consultation, the program would need another \$100 million in federal funding (assuming the federal government does not increase its contribution share) in order to reach an additional 10,000 U.S. manufacturers. By current estimates, MEP activity creates or retains just over 50,000 manufacturing jobs per year, so doubling federal funding for the MEP, matched two-to-one by state and private dollars, could create or retain more than 100,000 jobs.¹⁴

energy supply chain. These partnerships should also help manufacturers procure sufficient domestically-made material and components, ensuring that a certain percentage of each final product is made in America.

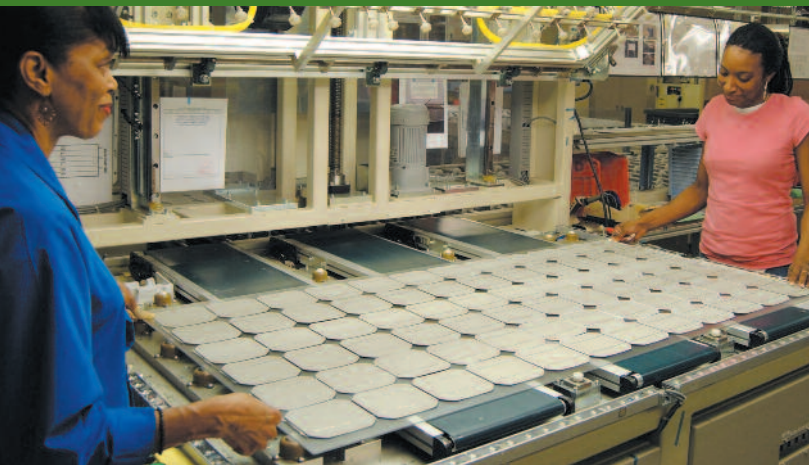
State Examples

The Michigan Manufacturing Technology Center, an MEP affiliate, collaborates with the state's newly named Department of Energy, Labor, and Economic Growth (DELEG), the Michigan Economic Development Corporation (MEDC), and non-profit alternative energy “business accelerators” like NextEnergy. Using their complementary strengths and resources, these groups are analyzing Michigan's existing manufacturing capabilities – many linked to the faltering auto industry – and determining how local manufacturers can take advantage of the state's clean energy potential. Despite the precipitous decline of its economy, Michigan still has a sophisticated and concentrated manufacturing infrastructure, offering a potentially enormous return on investment for companies that retool or expand to produce clean energy equipment and components.

4) Increase funding for the Green Jobs Act and direct funds administered under the law toward workforce and skill standards development for the clean energy manufacturing industries.

Without a national effort to increase the number of American workers with the skills to manufacture the equipment and components of the clean energy economy, our workforce won't meet the labor demands of these growing industries. The Green Jobs Act, established in the 2007 Energy Bill, broadly addresses this problem by supporting labor market data gathering, curriculum development, and job training in the renewable energy and energy efficiency industries. However, the law's current authorization of \$125 million (which has yet to be appropriated¹⁵) is insufficient and does not directly address the need for a skilled workforce in clean energy manufacturing. We recommend doubling the Green Jobs Act authorization, and creating a federal program to direct funds administered under the Act toward the development of skill standards, training, and clear pathways for advancement for all current and expected workers in the clean energy equipment and component manufacturing industries.

Skill standards and training programs for clean energy manufacturing should target incumbent workers, new labor market entrants, and workers affected by offshoring of



Two members of the International Brotherhood of Electrical Workers (IBEW) assemble photovoltaic modules at the Sharp Electronics plant in Memphis, where production has increased 56 percent, to 100 megawatts annually. Courtesy IBEW

manufacturing facilities.¹⁶ They should teach skills identified by employers as essential to clean energy manufacturing – for instance, handling substances and materials specific to photovoltaic panels, or installing high-pressure valves in CHP systems – and these new “green” manufacturing skill standards should be identified, validated, and consolidated into a nationally accepted protocol.

According to the National Council for Advanced Manufacturing, green manufacturing skill standards will help American companies compete with low-wage global competitors by raising the quality of output and attracting and retaining a highly skilled, well compensated workforce. With access to workers prepared for a new energy economy, manufacturers will experience increased productivity, prominence in expanding markets and most importantly, growth that will create hundreds of thousands, if not millions of high-quality American jobs.

5) Create a Presidential Task Force on Clean Energy Manufacturing to bring together a range of federal agencies to make the manufacturing of clean energy systems and components a national priority.

Better coordination of the federal government’s efforts will increase our international competitiveness, create high-wage jobs, and ensure that America remains a leader in renewable energy and energy efficiency. It is essential that the president and executive branch make revitalizing American manufacturing for the clean energy economy a priority of this administration. A coordinating commission should be created within the executive branch to link domestic manufacturers to efforts that build the clean energy economy. Such a commission should include representatives from a wide range of departments and agencies, including but not limited to Labor, Commerce, Energy, Education, EPA, and the U.S. Export-Import Bank. The commission would be charged with identifying opportunities for collaboration among agencies and strategies for leveraging best practices. It would

also encourage adoption of uniform skill standards and partnerships with universities, community colleges, national labs, and the private sector.

By serving as the administrations entity for promoting a more robust ‘Make It in America’ strategy, the commission would ensure that government plays a significantly expanded role in funding, promoting, and valuing American innovation in the clean energy industries. It would also promote public-private partnerships and collaboration, leveraging additional resources to expand our efforts.

Endnotes:

- ¹ Bureau of Labor Statistics (BLS), 2009.
- ² Economic Policy Institute (EPI), 2008; BLS and Bureau of the Census, 2009.
- ³ Makower, Joel et al. *Clean Energy Trends 2007*. Clean Edge, 2007.
- ⁴ Sterzinger, George. *Wind Turbine Development: Location of Manufacturing Activity*. REPP, 2004.
- ⁵ Sterzinger, George. *Component Manufacturing: Michigan’s Future in the Renewable Energy Industry*. REPP, 2006; The Perryman Group. *Redefining the Prospects for Sustainable Prosperity, Employment Expansion, and Environmental Quality in the U.S.: An Assessment of the Economic Impact of the Initiatives Comprising the Apollo Project*. 2003.
- ⁶ Rogers, Joel. *Seizing the Opportunity (for Climate, Jobs, and Equity) in Building Energy Efficiency*. 2007; The Perryman Group, 2003.
- ⁷ California Performance Review Commission (October 2004).
- ⁸ Bivens, Josh. *Updated Employment Multipliers for the U.S. Economy*. EPI, 2003.
- ⁹ Sterzinger. *Wind Turbine Development: Location of Manufacturing Activity*.
- ¹⁰ American Wind Energy Association, 2009.
- ¹¹ Earth Policy Institute, 2007.
- ¹² Sterzinger. *Component Manufacturing: Michigan’s Future in the Renewable Energy Industry*.
- ¹³ Prevailing wage standards are specifically added as a new provision to the CREB program.
- ¹⁴ Helper, Susan. *Renewing U.S. Manufacturing: Promoting a High-Road Strategy*. EPI, 2008.
- ¹⁵ The ARRA designates \$500 million for projects that prepare workers for careers described in the Green Jobs Act, but does not channel the funds through the Act itself. Important provisions of the Act, including labor-market data analysis, training partnerships, and programs that target low-income workers, therefore remain unfunded.
- ¹⁶ NACFAM. *Green Jobs in Manufacturing: Roadmap for Progressively Greener Solutions Through a Sustainable and Green Workforce*. 2009.

The Apollo Alliance promotes investments in energy efficiency, clean power, mass transit, next-generation vehicles, and emerging technologies, as well as in education and training. The overall goal is reduce carbon emission and oil imports, while spurring domestic job growth. The Apollo Alliance has played a key organizing and coordination role.

White House Middle Class Task Force, February 27, 2009

The American Recovery and Reinvestment Act is the first step in building a clean energy economy that creates jobs and moves us closer to solving our enormous energy and environmental challenges. We've talked about moving forward on these ideas for decades. The Apollo Alliance has been an important factor in helping us develop and execute a strategy that makes great progress on these goals and in motivating the public to support them.

Senator Harry Reid, United States Senate Majority Leader, February 17, 2009

Over the past couple of years, there has been a dramatic reversal of thinking: the idea has emerged that protecting the environment – in particular, defeating global warming – can also be an effective engine of economic growth, job creation and even poverty reduction. A small band of determined activist organizations, including the Apollo Alliance, Green For All, and 1Sky deserve credit for pushing this idea into the mainstream.

The Nation, January 28, 2009

Renewable energy proponents such as former California Treasurer Phil Angelides say stupidity would be to stick with current U.S. energy policy, which has turbocharged global warming, super-sized the trade deficit, and propped up oil-rich regimes hostile to American interests. Angelides heads the Apollo Alliance, a coalition promoting clean industries as a means of rebuilding U.S. manufacturing and lessening the nation's dependence on foreign oil.

Los Angeles Times, January 4, 2009

The new principle of American prosperity in the 21st century should be this: clean energy technology that curbs climate change, makes the world more secure, and produces vast new industries and business opportunities that provide the country with millions of good jobs.

Apollo Alliance President Jerome Ringo writing in Scientific American, December 2008



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