Including women in the resurgence of good U.S. manufacturing jobs
ACKNOWLEDGEMENTS

This report is part of the #WomenCanBuild project, inspired by the Jobs to Move America coalition, a national project that aims to make our public transit dollars go the distance.

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Finally and most significantly, we thank the powerful women in manufacturing, who provide wonderful examples of progress and have helped to move forward the conversation on gender parity in manufacturing. As we suggest below, we believe that all of us have a stake.

- Manuel Pastor and Jared Sanchez, USC Program for Environmental and Regional Equity (PERE)
Rosie the Riveter remains an icon of empowerment, resilience, and hard work. She was critical in keeping the American economy afloat when so many men went to war in the 20th Century, and has remained a symbol of women’s contribution to the workforce. But with the end of World War II and the economic restructuring – namely, de-industrialization – over the past several decades, Rosie retired and for a while had few successors. Now, with the U.S. economy at another turning point, and policymakers’ energy turning to how to build a strong economic future, it may be time for Rosie to stage a comeback.

As the U.S. economy is coming back from the Great Recession, manufacturing – long thought to be a vestige of our industrial past – is projected to as well. The reasons for our industrial renaissance are complex. They range from the (re)discovery by firms that it is often better to keep assembly near design (particularly for advanced manufacturing),\(^1\) to the fact that public policies (particularly around procurement of transit equipment) tilt toward supporting U.S. rather than overseas employment. For example, the Buy America Act (49 U.S.C. § 5323(j)) mandates that all steel, iron, construction materials, and manufactured projects for large projects funded by the Federal Transit Authority be produced domestically\(^2\).

But to ensure the equitable growth of the United States economy – which research shows is stronger growth than inequitable growth\(^3\) – we need a balanced and skilled workforce; we once again need Rosie. According to our tabulations, while women make up 47 percent of the U.S. labor force, they comprise just 30 percent of the manufacturing industry. The gap is even bigger in the transportation equipment manufacturing sector, where women make up only 24 percent of the workforce. When we further disaggregate employment by job type, we find that women in these industries are sorted into lower-paying, more clerical positions. It is critical that women, too, benefit from these middle-class building jobs because they are often the
breadwinners of the family. Mothers are the sole or primary source of income for a record 40 percent of households with children under age 18. Women’s access to good, family supporting manufacturing jobs could provide stability for these families.

The transportation subsector of manufacturing is particularly promising, as federal and local investment are driving new growth. Figure 1 shows that there are markedly more women in non-manufacturing sub-industries – 51 percent of that workforce is female. Within transportation, women are the least represented in the railroad rolling stock sub-industry, half of what they are in motor vehicle and aerospace jobs. This matters for two reasons. First, sub-industries like railroad rolling stock tend to pay better – the median annual wage is $45,000 while the median wage for motor vehicle equipment is $35,000. Second, it is exactly the rolling stock sub-industry which is being spurred by transit build-out across the nation.

This brief addresses the need to include women in the growth of good manufacturing jobs that can sustain the middle class and contribute towards rebuilding our economy. We focus here specifically on the role of women in transportation equipment manufacturing, an industry expanding because of significant federal investment in mass transit systems, including bus and rail. With the transit manufacturing industries poised to grow, all Americans – by virtue of their tax dollars being spent – should benefit from those investments. In what follows, we briefly outline the state of manufacturing and the women in it, barriers to their inclusion, and some promising best practices.

**RE-MAKING MANUFACTURING**

Manufacturing is integral to U.S. economic strength. It accounts for 12 percent of the national gross domestic product, is responsible for 70 percent of all domestic research and development, and holds 90 percent of all U.S. patents. A measure of its integration in our economy: each manufacturing job supports approximately 2.9 jobs in related industries – non-manufacturing jobs depend on the industry, too. So, manufacturing is critical to broader U.S. employment opportunities.

As a means of reinvigorating the economy and meeting the needs of the growing population,
federal and local transportation funds – as well as public-private partnerships – are investing in transit systems. In places like Los Angeles County, voters are taxing themselves to build out their transportation systems. Of the revenue generated from Los Angeles County’s Measure R half-cent tax, 65 percent will be used for rail and bus related-projects. Meanwhile, Amtrak ridership alone increased 51 percent from 2001 to 2013 and U.S. bus manufacturers expect growth as municipal fleets age and must be replaced.

Recently, transit build-out in some states is further spurred by investment from the private sector. Supporters of public-private partnerships suggest that this funding strategy reduces costs and shares risks, making a reality of large-scale transportation projects that would otherwise just be a pipe dream. For example, private companies are expected to play a role in the construction and operation of California’s future high-speed rail system, a project that has faced much opposition.

At the same time, the industry is worried about a skills gap – a problem compounded by the aging workforce. Half of today’s manufacturing workforce is 45 and older. Similarly, 50 percent of transportation equipment manufacturing industry employees are 45 years and older – 75 percent of whom are male. Even as American workers urgently search for any job – let alone good jobs – in the post-Recession economy, as many as 600,000 manufacturing jobs remained unfilled because of a shortage of qualified workers.

Companies are recognizing that they need to find and cultivate new talent to stay competitive. Often new technology is increasing productivity, making the industry more reliant on brain and less on brawn. However, companies are limited by their ability to find the talent to utilize it; 74 percent of companies responding to a survey by the Manufacturing Institute report that skilled production suffers from workforce shortages or skill deficiencies.

Pay disparity is one measure of how women are not benefiting at the same rate as men from the need to expand the manufacturing workforce. Figure 2 shows this to be the case for the U.S. economy at-large; it shows sharp disparities between male and female earnings. The gender pay gap is lower in transportation and warehousing; agriculture,
Figure 3. The higher average wage the less female employment in manufacturing sub-industries

forestry, fishing and hunting; and construction, but manufacturing has large disparities – women make 74 cents for every dollar men make in the industry. So, while manufacturing is known to supply well-paying jobs, women in manufacturing are not benefiting from those jobs at nearly the same rate as men.

Women do not tend to be well represented in the higher paying sectors within manufacturing sectors either. Figure 3 shows the percentage of female employees in an industry by the average annual earnings of women in that same industry. As can be seen, the larger the share of female employment, the lower the wage across all industries.

One central challenge is getting women into higher-skilled occupations within manufacturing. Women hold fewer managerial positions and tend to be concentrated in administrative support and clerical jobs. For example, in 1983, 25 percent of women working in manufacturing were in these administrative positions. Thirty years later that share has only slightly dropped to 20 percent.

Despite earning more than half of all associate’s, bachelor’s, and master’s degrees and making up more than half of all managerial and professional positions in the U.S. across all industries, women are underrepresented in manufacturing.

So how is the industry trending for women? Between 2010 and 2013, manufacturing contributed 530,000 new jobs. Men gained 558,000, while women lost 28,000 jobs. Some of that loss is likely due to sectoral shifts in the labor market, but it is also the case that within the goods-producing industry, manufacturing has the highest level of gender segregation— an indication that interventions will be needed.
Nonetheless, women are interested in manufacturing jobs. In one survey, over 75 percent of women agreed that a manufacturing career is interesting and rewarding, highlighting compensation and challenging assignments as the most favorable attributes20. So, then, what will it take to create parity?

**BARRIERS & BREAKING THROUGH**

During World War II, women stepped up to take on traditionally male-dominated production jobs – providing critical support for U.S. manufacturing. After Pearl Harbor, approximately 3,210,000 women entered manufacturing21. Of course, the significant movement of women into industry did not necessarily change gender dynamics or discrimination – but women were indeed working in good jobs that they previously had not.

Rosie the Riveter symbolized all the hard-working women who contributed greatly to the manufacturing industry. This war-time effort demonstrates the tremendous growth possible, if only we are willing to open the door. It also shows what is possible for gender parity – but what conditions must be in place to make gender parity happen in times when the male labor force has not been pulled away to war? Learning from efforts already in motion, we find that public policy, union activism, and pioneering attitudes are key to re-opening the door.

A major first step towards creating modern-day American Rosies is making sure that American jobs are produced by our public spending. Jobs to Move America is a national project dedicated to ensuring that the billions of public dollars spent on public transit create better results for our communities: good jobs, cleaner equipment and more opportunity for low income people. American cities spend about $5.4 billion tax dollars each year to buy buses and rail cars, yet much of this money goes to global companies who manufacture significant portions overseas, bypassing millions of unemployed Americans and struggling communities.

To remedy this, the Jobs to Move America coalition developed a policy tool called the “U.S. Employment Plan,” which allows transit agencies to reward bus and rail manufacturing companies for creating good American jobs, investing in US manufacturing facilities, and hiring from non-traditional populations.
when they receive multimillion-dollar contracts paid for with taxpayer funds.

In 2013, for example, Los Angeles Metropolitan Transportation Authority introduced the U.S. Employment Plan into its criteria to procure 550 alternative fuel buses. For the first time, companies were required to disclose the number and quality of domestic jobs generated from the $305 million contract. A Canadian company, New Flyer Industries, won the contract and its U.S. Employment Plan commitments were incorporated. The company expanded its St. Cloud, Minnesota operations with 150 new hires and created 50 new jobs at a new facility in Ontario, a community outside Los Angeles. (See sidebar “The Inclusivity Payoff” for more on what steps New Flyer Industries is taking to be inclusive.) Amtrak followed in early 2014 with a similar bidding process for 28 high-speed trains that is projected to support as many as 28,000 good American jobs.

In July 2014, Chicago Mayor Rahm Emanuel and the Chicago Federation of Labor announced that the Chicago Transit Authority would solicit bids to manufacture up to 846 railcars worth up to $2 billion, with a U.S. Employment Plan. Also in July 2014, the Maryland Department of Transportation released its RFP to manufacture, build, and operate its Purple Line light rail project — including an invitation for railcar manufacturing companies to disclose their job-creation plans. With Jobs to Move America, communities can harness billions of taxpayer dollars to generate opportunities for thousands of workers — women and men — to enter the workforce.

Further, public authorities need to include specific requirements for inclusion. As noted earlier, local transportation authorities are beginning to use their purchasing power to stimulate domestic job growth and to increase job access for marginalized groups. One of several examples, the Chicago Transit Authority (CTA), Chicago Federation of Labor (CFL), and City of Chicago developed the Build Chicago partnership which outlines CTA’s $2 billion railcar procurement plan. The plan incentivizes job creation, while prioritizing manufacturing companies that support domestic job growth — as well as ones that train and hire disadvantaged workers, including women, veterans, and low-income residents. Union, government, and community partnership projects such as these have the potential to meet the needs of multiple stakeholders and show that equity is possible.

Training Tomorrow’s Manufacturing Workforce: WIDER OPPORTUNITIES FOR WOMEN (WOW)

Wider Opportunities for Women (WOW) is a national leader in workforce development and advocacy for women in non-traditional employment fields. Since it was established in 1964, the organization has expanded its focus from advocating for part-time, flexible positions to allow women to enter the workforce while fulfilling familial duties to a more comprehensive model that includes job training, research, and advocacy. WOW assists community-based organizations, educational institutions, and businesses in designing workplace training curriculum and tools.

On the policy front, WOW is a leader in advocating around issues of childcare; green jobs; occupational gender segregation; the gender pay gap; and science, technology, education, and mathematics (STEM) education. Their model shows that direct job preparation, as well as changes in policy, are needed for women to compete and make gender equity real.

Source: http://www.wowonline.org/
As seen in Chicago, labor unions safeguard the manufacturing workforce. Figure 5 shows that unionization in general means higher wages for all workers. It also shows that the rate of unionization among women in manufacturing is lagging behind other industries. Although unions have long been viewed as male-dominated institutions, today women are among the greatest supporters of unions—and for good reason. Unions matter greatly when it comes to women’s wages: Research finds that unionization increases women’s wages overall by 12.9 percent or about $2.50 per hour and that this pay boost is particularly strong for women with lower levels of education. Beyond reducing the gender pay gap, unions provide avenues for female leadership and a venue for engaging workplace issues particular to women.

Unions like IUE-CWA, the Industrial Division of the Communications Workers of America, have institutionalized women’s councils to serve as a platform to discuss and mobilize around women’s workplace issues – leading the fight for pay equity and pregnancy discrimination, for example. Such union grassroots initiatives also break the image of manufacturing as a male-dominated workplace.

Image and attitude also matter. Given the documented difference in pay and hiring, the manufacturing industry does have a certain image problem to overcome. But here, solutions are emerging as well. In a survey of 600 women in manufacturing, the key factors found to attract women to manufacturing are compensation and challenging assignments. But the survey found that there is a lack of recruitment programs targeting women, especially those with advanced degrees. Other important supports include sponsorship from senior women in the field, parity addressed by company executives, promotion of workplace flexibility, promotion of personal development, rebranding, and more.

Women would do well to envision themselves as part of this industry, too. Of course, even the most optimistic and “break-through” attitude will not succeed in the face of discriminatory hiring
and pay practices – which is why programs and policies are necessary. But part of breaking into manufacturing requires women pioneers and changes in one’s own expectations. Women must imagine a place for themselves in a field where most of their supervisors and co-workers might be male.

MADE IN AMERICA

Researchers estimate that it could take until 2056 for women’s pay to reach parity with men’s pay. Increasing female hires in the manufacturing industry – in transportation manufacturing in particular – will play a role in closing this gap. It is a field with promised growth, with good jobs, and with best practices already in place. As our nation advances, it is time for us to return to women in manufacturing.

At the end of the day, it is all about remaking our economy – railcar by railcar, worker by worker, and industry by industry. One thing they had right in the post-war economy was policy for good jobs and unions to ensure it; one thing they had wrong was the desire to remove Rosie from her perch in industry. That sort of exclusion neither works in an industry in the midst of growing pains, nor in a new economy.

It is a new day – and maybe Rosie the Riveter will come back as Maria the Manufacturer. But the principles for generating good jobs and well-paid work for all remain the same. We have the wind at our back on this: the economy is recovering, mass transit is expanding, and advanced manufacturing needs the higher levels of education often typical of women in the labor force. So let us address these issues and re-make ourselves as a nation where women can build.

Sources:
http://www.huffingtonpost.com/linda-nguyenperez/la-bus-buy_b_2729336.html

Women ARE Building
at New Flyer Industries

Bus manufacturer New Flyer Industries’ commitment to quality American jobs pays. New Flyer has been expanding operations at the St. Cloud, Minnesota, factory and providing quality jobs for the diverse region. One of New Flyer’s key advantages is due to the company’s inclusive recruitment and job development practices. John Desm, president of Communication Workers of America (CWA) Local Union 7304, which represents New Flyer employees, says of New Flyer, “The manufacturer has invested heavily in training its women and men in the latest manufacturing processes and highest standards in workmanship.

From bus washers to welders to management, staff are continually trained in every aspect of bus production to ensure that everyone has the resources to be successful and move up the ladder.” Additionally, New Flyer practices responsible procurement in its own contracts to purchase components and materials produced by certified Disadvantaged Business Enterprises (DBE) and Minority and Women-owned Business and Enterprises (MWBE). New Flyer shows that women can build and that manufacturers can do more to improve access for women workers and other non-traditional populations.

Sources:
http://www.huffingtonpost.com/linda-nguyenperez/la-bus-buy_b_2729336.html
Jay Fatima Tapia is an equipment operator at a Los Angeles railcar maintenance facility and has been the only woman working at this facility for the past three years. Fatima has a background in construction and loves working outside with her hands.

She started working at the facility as a composite mechanic, and engaged in hands-on training for several years, feeling that some male co-workers did not want to show her the ropes. But Fatima was persistent about learning everything she could, and after a few years she met the qualifications and had the seniority to move up to the higher-level equipment operator position. Fatima fought for the promotion, and eventually got the job. Now the men at work come to her, to ask how to do things.

“"It’d be nice to see a woman on top. Women can build everything men can build – and better. I think that if women built it, our train will last 10 years longer! And it’ll look better! Flowers painted on the side.""
For Connie McCoy, “Women Can Build” means that women can do any job – not just traditional women’s jobs – with the same (if not more) productivity as men. Connie has been working for Siemens for 24 years and plans to stay with them until she retires. Right now, she is the only woman working in the traction motors department; but she has no problem working with men, even though some of them are old-fashioned.

Connie felt empowered enough to bid for her current position because she had the seniority, wanted to try something new, and had the support of her union (IUE-CWA Local 84765). But she recognizes that women are often pigeonholed away from heavier work. She believes that transportation manufacturing companies should be more proactive about getting women involved in different aspects of the industry. In the future, Connie hopes that more women will have the courage to bid on more jobs in her department.

“I’m always up for a challenge. Don’t ever say you can’t do anything. You can always try, and if you fail, you can always dust yourself off and go on.”
DATA APPENDIX

Unless noted otherwise, all data reported in this document are based on tabulations made by the Program for Environmental and Regional Equity (PERE), at the University of Southern California. The source data for each figure is cited below as follows:

**Figure 1.** Percent Women in Manufacturing and Non-Manufacturing in the United States, 2012  
Source: American Community Survey, 2008-2012 Pooled

**Figure 2.** Employment and Median Earnings of Women, by 2-Digit NAICS Industries in the United States, 2008-2012  
Source: American Community Survey, 2008-2012 Pooled

**Figure 3.** Percent Female Employment by Median Wages, 3-Digit NAICS Manufacturing in the United States, 2012  
Source: American Community Survey, 2008-2012 Pooled

**Figure 4.** Employment in Top Ten Occupations by Gender, 3-Digit NAICS Manufacturing in the United States, 2013  

**Figure 5.** Female Union Membership and Median Earnings, by 2-Digit NAICS Industries in the United States, 2013  

ENDNOTES


18 Joint Economic Committee Democratic Staff, Women in Manufacturing.


21 Mary E. Pidgeon, Changes in Women’s Employment During the War (United States Department of Labor, Women’s Bureau, June 1944), http://fraser.stlouisfed.org/docs/publications/women/sbo20_dolwb_194406.pdf.


27 Lela Klein, Interview with Lela Klein, Staff Attorney for IUE-CWA, interview by Sheila Nem and Pamela Stephens, October 8, 2014.


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