# Green Jobs or Green Careers: The Role of Apprenticeships to Train a Workforce for Energy Efficiency Retrofits

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## ABSTRACT

One major barrier to fulfilling the promise of green jobs in construction is to connect job creation efforts to quality career training and placement programs. This paper focuses on two main strategies to create quality careers and placement opportunities through deep green energy efficiency retrofits, namely joint labor-management apprenticeships and community workforce agreements (CWAs). Most of the jobs that will be created as a result of energy efficiency will be construction jobs, so it makes sense to develop a deeper understanding of effective training and placement pathways in the construction industry. In this paper, the authors highlight one training and placement program in particular, namely joint labor-management apprenticeships. These joint labor management apprenticeships are some of the largest privately-funded career training programs in the country. The emerging energy efficiency market should take advantage of this existing career training and placement infrastructure that has been developed over many years in the construction industry. In addition, community workforce agreements (CWAs) can be used in order to enforce workforce and contractor standards as well as to create access to quality energy efficient construction careers for historically disadvantaged groups. The authors also describe two different active energy efficiency programs, Clean Energy Works Portland/Oregon and SustainableWorks Washington, as examples of the types of challenges and successes that these groups face in incorporating community workforce agreements and joint labor-management apprenticeships into their programs. The paper builds upon research from the authors' forthcoming book, *Beyond Green Jobs: Building Lasting Opportunities in Energy Efficiency.*

## Introduction

It is 2012, and the nation's energy efficiency market is at a crossroads. As public funding winds down for energy efficiency and many efforts have generated short-term, temporary jobs, practitioners are now trying to understand how to move forward and create stable, long-term careers. Meanwhile, the slow economic recovery is not producing quality, long-term career opportunities. High unemployment persists. Social inequality is widening, with some of the most severe impacts falling upon low-income communities and communities of color. Many of these same communities also disproportionately face environmental problems, including high-energy costs, food shortages, toxic air quality, and health problems. Long-term strategic thinking and action are required to overhaul a crumbling and unhealthy building stock and to develop lasting energy efficiency career opportunities in the construction industry.

In this paper, we focus on the need for energy efficiency practitioners to prioritize "deep green" whole-building/whole-community retrofits. We assert that there are many shades of green and illustrate how deep green energy provides stable, long-term careers. Because deep green energy efficiency work is most closely tied to work in the construction industry (Zabin, et al. 2011a, xiii), we focus on construction workforce training pathways. We see deep green energy

efficiency building upon registered apprenticeships in construction, and break down the process of joint labor-management apprenticeships, which are comprehensive training programs that employers and workers jointly design.

First, we provide some background on the construction industry and the employment outlook after the economic recession. We then define deep green and discuss its links to strong careers and apprenticeships. Next we describe how joint labor-management apprenticeships typically function and how they relate to job quality. We explore the outcomes of two cases, Clean Energy Works Portland/Oregon and SustainableWorks Washington, which build upon the apprenticeship system.

For the purposes of this research, we do not focus on the full range of jobs related to energy efficiency, which include energy auditors, architects, electrical and environmental engineers, policy analysts, and manufacturing workers. We recognize that suitable workforce development programs that provide careers training and placement in these fields are also critical. Instead, we focus primarily on the construction workforce onsite, which include apprentices, journey-level workers, foremen and others, in a variety of specific trades.

## The Economic Impact of Quality Employment in the Construction Industry

Many analysts consider the construction industry a bellwether for the health of the overall economy. Bringing jobs back to the construction industry will be critical to any major economic recovery effort. The energy efficient construction market creates an opportunity for the construction industry to grow even as new construction projects are put on hold or not pursued due to the over-supply of real estate in the market. As one of the nation's largest sectors, the construction industry has a dollar value approaching $800 billion and employs more than 7.2 million workers. Yet, the past five years have seen a collapse in demand for construction workers (U.S. Census 2007). According to the US Bureau of Labor Statistics, construction employment showed little movement in November 2011, and has shown little net change since early 2010 (US Bureau of Labor Statistics 2011). Unemployment rates in the construction industry have held steady at approximately 25% since 2010. Since 2007, one-third of all construction workers lost their jobs as a result of the recession, equaling a total loss of 2.1 million jobs in payroll employment (Hendricks & Golden, 1). What's more, over 90 percent of contractors in the construction industry are small businesses, which have suffered greatly in this economic crisis (Hendricks & Golden, 1).

The construction industry is also currently suffering from the loss of quality career opportunities. Between 1973 and 2002, average hourly earnings for all construction workers declined by an estimated 17.5% (Ehrlich & Grabelsky 2005, 5). As Jeff Grabelsky and Mark Erlich write in *Standing at a Crossroads: The Building Trades in the Twenty-First Century*, "In 1967, construction employees in the United States earned more than industrial workers in petro-chemical refining, steel mills, motor vehicles, aircraft or chemicals; by 1997, construction workers earned less than employees in each of these five industries (Ehrlich & Grabelsky 2005, 5)." This trend of reduced wages for construction workers is troubling as energy efficiency practitioners are looking to increase work opportunities in the construction industry. It is important that the energy efficient construction jobs that will be created actually result in quality career opportunities for workers, and not just continue this "race to the bottom" with respect to wages.

Good jobs have a ripple effect throughout the community and the greater economy. Middle class careers feed dollars into the US economy, supporting local businesses and increasing the tax base. Additionally, construction jobs are difficult to outsource, ensuring lasting local economic benefits.

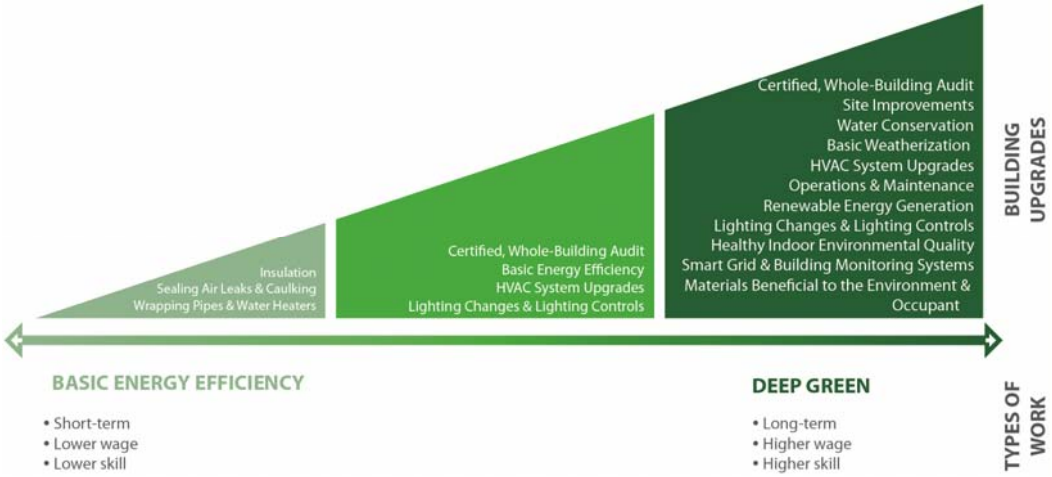
**Deep Green Energy Efficiency Creates Career Opportunities**

Deep green energy efficiency, which builds upon construction apprenticeship system provides a promising pathway to ensure that emerging job opportunities in energy efficiency are stable, long-term careers. Energy efficiency initiatives up to this point have largely focused on basic weatherization. Basic weatherization includes measures like sealing air leaks and insulation. These measures save 5% to 15% of energy use, compared with more extensive retrofits which can save 20% to 50% and usually last longer (Fuller 2008, 5). Yet, these basic weatherization, or single task-specific efforts have tended to generate short-term, temporary jobs without making significant long-term environmental and economic impacts (Bloomberg 2010, 1-9; Redman 2010, 6-7 23-38; U.S. DOE Commercial Buildings; USGBC; Zabin, et al. 2011a, xiv).

By contrast, deep green energy efficiency describes a whole-building and whole-neighborhood approach to retrofitting buildings. Beginning with a certified, comprehensive audit, deep green retrofits mix and match simple and more complex building upgrades to maximize energy gains over the life of a building. Deep green also refers to a philosophy of comprehensively designing energy efficiency programs with the full construction supply chain in mind. A deep green energy efficiency program is place-based, focusing on the full range of possibilities to reap the most energy savings in one geographic area. By concentrating on one geographic area, contractors can bundle together groups of building retrofits to create larger contracts and retain greater savings, which they can then pass along to consumers. Deep green energy efficiency maximizes job creation, greenhouse gas emissions reductions, and energy savings as compared to basic energy efficiency.

Figure 1 demonstrates the range of building improvements and their impact on the types of work they generate. If a retrofit program includes basic weatherization elements, then the types of construction jobs available would be limited to sealing windows, caulking, and replacing appliances. These jobs tend to be short-term and lower-paid. Deep green entails a more comprehensive set of auditing, energy efficiency, renewable energy, water conservation, and indoor air quality retrofits, which then lead to longer term, higher wage and higher skill work.

**Figure 1. Basic Energy Efficiency vs. Deep Green Energy Efficiency**




Source: California Construction Academy – UCLA Labor Center, 2012.

Including deep green energy efficiency retrofit elements means generating a range of direct construction jobs. This can include: plumbers, HVAC mechanics, and electricians. These job types tend to pay higher wages and benefits, and place workers on apprenticeship tracks that lead to long-term careers. The higher skill demands and larger projects associated with these jobs will also provide more opportunities for contractors, including minority and women contractors, to perform energy efficiency retrofits.

Basic weatherization efforts and basic appliance rebate measures are both insufficient to significantly reduce greenhouse gas emissions (GHG) and energy savings, and incapable of creating an energy efficiency market that can sustain high road jobs. While basic weatherization may create short-term jobs, these jobs usually do not translate into apprenticeship-based career pathways out of poverty. Investing in deeper energy efficiency retrofit elements would help achieve deeper reductions in energy consumption and greenhouse gas emissions, and would help create longer-term, family-supporting careers.

In contrast to basic weatherization, deep green energy efficiency retrofits consider the full range of building energy improvements, maximizing environmental benefits as well as good, long-term careers. Deep green energy efficiency builds upon construction industry expertise, while also introducing innovative strategies to generate demand in this emerging market. It addresses the three pieces of a successful jobs program: job creation, job quality, and job access.

A deep green scope of work generates high quality work opportunities for contractors, workers, and apprentices. By increasing demand for a wide range of deeper retrofits, deep green energy efficiency escalates demand for high skill labor and high quality jobs. These work opportunities mean improved wages, as Table 1 below demonstrates. Table 1 shows the federal Davis-Bacon prevailing wage determination for weatherization in California. The wage rate for a "weatherization worker" in residential construction in Alameda County is $15.25 plus $.50 in additional benefits, while the rate for an electrician is $29.87 plus $11.95 in additional benefits (US DOL 2009).

**Table 1. Davis-Bacon Residential Weatherization and Additional Crafts, Prevailing Wages (California)**

| Weatherization Survey (S2009-CA-001) | | | | Existing Residential Wage Determination | | |
|---|---|---|---|---|---|---|
| **Counties** | **Weatherization Worker** | **Doors & Windows Replacement Worker** | **HVAC, Furnace, Heating & Cooling Repair, Installation Replacement Worker** | **Carpenter** (Excludes Door and Window Replacement, and work listed as performed by Weatherization Worker) | **Electrician** (Excludes electrical work associated with HVAC installation, overhaul, and work listed as performed by Weatherization Worker) | **Plumber** (Excludes work associated with HVAC installation repair or overhaul and work listed as performed by Weatherization Worker.) |
| Alameda | $15.35 + .50 | $24.73 + 10.34 | $20.00 + .38 | $36.50 + 21.40 | $29.87 + 11.95 + 3% | $45.96 + 24.90 |
| Alpine | $11.18+ .69 | $11.18 + .69 | $17.93 + 1.54 | $13.00 | $12.67 | $10.25 |
| Amador | $16.14 + 5.71 | $16.14 + 5.71 | $17.93 + 1.54 | $18.58 + 6.455 | $17.93 + 3.38 + 3% | $19.72 + 6.71 |
| Butte | $16.21 + 3.83 | $16.21 + 3.83 | $18.88 + 5.14 | $9.63 + 1.61 | $9.00 | $14.00 + 5.14 |
| Calaveras | $16.14 + 5.71 | $16.14 + 5.71 | $17.93 + 1.54 | $29.27 + 20.96 | $26.72 + 10.65 + 3% | $27.35 + 6.85 |
| Colusa | $15.24 + 4.50 | $18.10 + 7.18 | $20.00 | $11.30 + 3.645 | $9.89 + 2.91 | |
| Contra Costa | $15.28 | $22.77 + 3.65 | $27.00 + .52 | $36.50 + 21.40 | $29.87 + 11.95 + 3% | $33.66 + 14.69 |
| Del Norte | $13.00 + .25 | $13.00 + .25 | $20.00 | $19.08 + 6.915 $19.23 + 6.955 | $18.80 + 5.53 + 3% | $16.47 + 9.45 |
| El Dorado | $13.97 | $13.97 | $18.88 + 5.14 | $29.27 + 20.96 | $29.87 + 11.95 + 3% | $29.78 + 9.57 |

Source: US Department of Labor, Wage and Hour Division, 2009

For employers, a well-trained workforce can help save time and money, and increase safety. For workers, the difference is huge. Rather than work temporary, short-term jobs to wrap pipes, they can receive training as skilled construction craft workers, and can access a wide range

of work throughout their careers. A deep green energy efficiency retrofit program has a great impact on job creation, particularly for disadvantaged groups. By including a wide range of energy efficiency upgrades, deep green energy efficiency increases the variety and scale of long-term work opportunities available to workers and entrepreneurs over the long-term.

Deep green energy efficiency could prove to be the light at the end of the tunnel, a way to expand the construction market share and to incorporate a demographically shifting workforce. To seize this moment, however, energy efficiency practitioners must gain knowledge from existing construction industry practices and focus on creating good, long-term careers.

**Registered and Joint-Labor Management Apprenticeships**

Over its many years in existence, the construction industry has faced volatile up and down economic cycles. As a result, it has developed sophisticated infrastructure to deal with these "feast or famine" trends. These strategies include a registered apprenticeship system, which provides rigorous training for workers in the newest building technology and safety, helping them stay competitive. Hiring halls allow contractors to access a ready supply of trained workers on an as-needed basis, allowing them to hire based on the ebb and flow of their projects. Some employers provide pay packages for workers that take into account gaps between construction projects. Through joint labor-management apprenticeships and hiring hall systems, the industry has created mechanisms to incorporate new technologies, create safe worksites, and maintain a consistent and skilled labor force (White & Gordon 2010, 11-12). As the energy efficiency market grows, it is critical to create policies that draw from the industry's history, expertise, and existing practices.

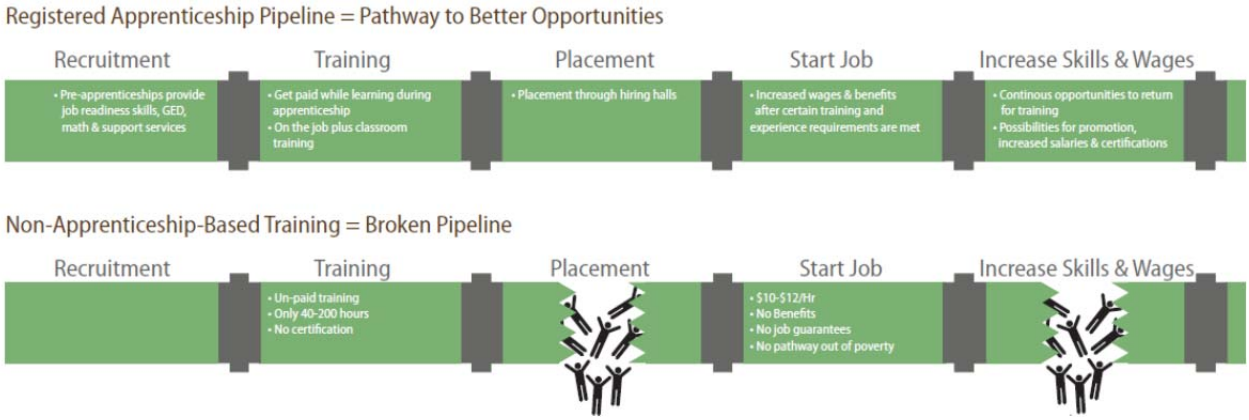
Registered apprenticeships are programs in which workers get on-the-job training alongside in-class instruction. It is registered with and regulated by the Department of Labor in order to ensure that apprentices who actually undergo the whole program will get a comprehensive set of skills and experience in order to have life-long careers in the clean energy economy. Providing both in-classroom and on-the-job training, these apprenticeships provide a structure for workers to ascend a career ladder with increasing responsibility and pay, and to return throughout their careers to update their skills (White & Gordon 2010, 10). Linking energy efficiency to existing apprenticeship training program infrastructure that provide transferable skills and certifications will determine whether construction jobs remain temporary or provide a link to long-term careers and stable pathways out of poverty (White, Dresser & Rogers 2010, 30-33).

In the joint labor-management apprenticeship model, both contractors and workers contribute resources to a training fund. Construction contractors generally lack the resources or incentives to invest in comprehensive worker training on their own. Given the transient nature of employment in the industry, individual employers face the possibility that investing in training for current employees might benefit their competitors in the future when their current employees go to work elsewhere. But another pathway to training does exist. Through the collective bargaining process, employers agree to invest in joint labor-management administered apprenticeship programs that offer intensive skills training. This apprenticeship system represents the most effective construction training mechanism in the United States, with 15,000 certified instructors, 1,500 state-of-the-art training facilities, and hundreds of millions of dollars of private capital (Grabelsky et al. 2011, 6). These joint labor-management apprenticeships

provide ready-made pathways to train highly skilled construction workers who can perform deep green energy efficiency retrofits across the country (White, Dresser & Rogers 2010, 27).

A deep green energy efficiency retrofit takes advantage of effective existing construction industry infrastructure and connects energy efficiency work to registered joint labor-management apprenticeships when possible. Doing so provides pathways to stable, long-term careers with family-sustaining wages, benefits and the opportunity to build long-term skills. These apprenticeship programs do not just train workers on narrow energy efficiency skills, but rather on a broad range of construction skills and safety procedures, apprentices graduate as journey-level workers. This means they are well prepared for long-term careers in construction even after demand for retrofits tapers off. Focusing on apprenticeships that lead to long-term careers with family- and community-supporting wages and benefits needs to be a primary workforce development goal for deep green energy efficiency programs. Figure 2 below compares workforce outcomes for registered apprenticeships as compared to non-apprenticeship training.

**Figure 2. Registered Apprenticeship Pipeline – Pathways to Better Opportunities**

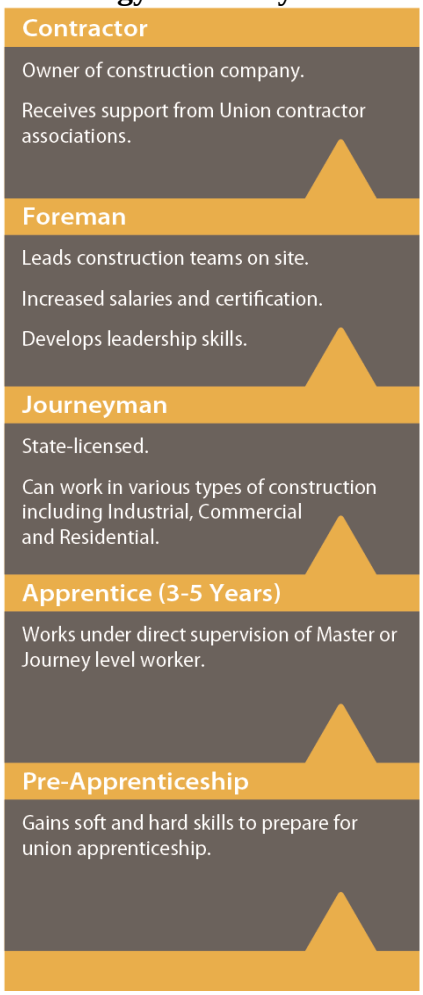



Source: California Construction Academy – UCLA Labor Center 2012

There is a vital role for community-based training programs, community colleges, and other training providers to provide pre-apprenticeship training that prepares workers to pass registered apprenticeship exams, and to be successful in the apprenticeship programs. In addition, community colleges, community-based training programs, and even 4-year colleges can play critical roles in developing training programs for other non-construction careers that are created by energy efficiency retrofits, including engineers, architects, building auditors, business managers, administrators, marketing professionals, etc. Focusing in on worker training, however, pre-apprenticeship programs usually consist of training on basic math, reading, time management, and other skills to equip potential apprentices with the skills to successfully qualify for and complete apprenticeship programs. Pre-apprenticeship programs work best when they are directly coupled with and connected to registered apprenticeship programs so that pre-apprentices receive training in the specific competencies that the apprenticeship programs require, and so there are clear pathways for pre-apprentices to enter these programs (White & Gordon 2010, 9; US BLS 2011, 20, 26). For example, the AFL-CIO Building and Construction Trades' Multi-Craft Core Curriculum is a pre-apprenticeship curriculum designed to directly coordinate with the needs of apprenticeship programs, and provide a direct "on-ramp" to joint labor-management apprenticeships (White, Dresser & Rogers 2010, 27; US BLS 2011, 21).

See Figure 3 below for a career ladder that starts with a pre-apprenticeship program. In this career ladder, the pre-apprentice moves into an apprenticeship program where they are comprehensively trained to become state-licensed journey level workers that can work on a variety of construction projects, including energy-efficiency projects. According to this career ladder, workers in the electrical field, for example, are not narrowly trained on specific tasks related to simply changing out a lighting kit or installing a solar panel, but rather they are trained to understand the comprehensive electrical systems, wires, and components in a building. Since the effectiveness of energy efficiency measures is dependent on the performance of a whole building and not just by the performance of single elements, it is important for workers who perform energy efficiency retrofits to have a comprehensive understanding of these systems. Pre-apprentices who enter into apprenticeships and then become journey level workers also have the opportunity to continue to increase their skills as construction continues to become more efficient in the future. In addition, most of the energy efficiency work that is projected to occur will be done by existing construction workers who will need to update their skills, and not by new workers (Zabin et al. 2011b, 88). Thus, it is important to focus on a career ladder that helps individuals continue to improve their skills to meet energy efficient construction throughout their long careers (Zabin et al. 2011b, 83).

**Figure 3. Energy Efficiency Career Ladder**




Source: California Construction Academy – UCLA Labor Center

### Adapting to Energy Efficiency Technology Changes

One of the primary mechanisms by which the construction industry adapts to regional weather variations, market change, and technological change is through apprentice training, research, and project development capacity in the construction trades. Through joint labor-management apprenticeships, contractors working in the field identify needs or opportunities for new construction materials and practices. In turn, Joint Labor-Management Apprenticeship Training Councils (JATCs) incorporate these new technologies and practices into their apprenticeship curricula to quickly prepare construction workers to face these changes in the industry in real time (US BLS 2011, 16, 18). One such curriculum is in use at the Electrical Training Institute of Southern California (ETI), which actively networks with other training facilities, contractors, and manufacturers across the country to identify and test the newest building technologies. It has helped to develop and support state-certified training programs that put energy efficiency to practice, such as the California Advanced Lighting Control Training Program (CALCTP), partnered with small businesses to promote solar panel manufacturing, and worked with government agencies, like the City of Los Angeles, to upgrade public buildings by using more energy efficient materials and processes (Templin 2011).

### Project Labor Agreements and Community Workforce Agreements

To build a sustainable energy efficiency retrofit market, it will be critical to establish both labor and building standards for retrofit initiatives. These standards create the necessary infrastructure to enable private and public financial investments and to create family-supporting career ladders in this emerging field.

Historically, project managers have used project labor agreements (PLAs) as a policy tool to create good construction jobs and managing complex projects. The first PLA was used for the construction of the Hoover Dam in 1931, and it has been used since then to set wages, hours, working conditions and work requirements on large projects.

Now, some energy efficiency programs are drawing upon the workforce development components of the PLA model, more commonly known as a Community Workforce Agreements (CWAs). CWAs are agreements that establish requirements for worker training, wages and benefits, local/targeted hiring of workers, and contractor standards for a particular construction project or a set of projects. These agreements usually require contractors to hire certain percentages of the workforce locally or from targeted communities, and stipulate that projects include target numbers of apprentices from registered apprenticeships. This creates work and training opportunities for community residents. Practitioners from the most innovative and successful energy efficiency initiatives are using CWAs to facilitate their programs' growth. CWAs can help to manage and coordinate projects among a more scattered group of employers and investors, as in the residential housing market. Used properly, a CWA can also help to create significant energy savings, environmental benefits, and long-term construction careers (Grabelsky et al. 2011).

## Examples from the Field: Clean Energy Works Portland (Portland, OR)

Several years ago, the city of Portland, Oregon faced a problem: homeowners needed a streamlined way to hire qualified contractors to perform energy efficiency retrofits on their

homes. However, the fragmented, scattershot nature of the residential market meant that a traditional project labor agreement (PLA) would need to be adjusted. Clean Energy Works Portland (CEWP), launched as a pilot project in 2009, and established the first community workforce agreement (CWA) in an energy efficiency initiative (Hays 2010).

With a financing model in place, Portland was ready for a community workforce agreement to cover all its residential retrofit projects. CEWP was able to negotiate a CWA by engaging local contractors, workforce development programs and labor unions early in the program's development. According to Jeremy Hays, Chief Strategist for State and Local Initiatives at Green for All, traditional PLAs work where there are high unionization rates, and where there is one construction end-user (such as a private developer or the city acting as a developer) and a related set of contractors. However, in the residential building market, traditional PLAs have proven more challenging both legally and structurally because with home retrofit programs there is a single construction end-user for every house (e.g. a 500-home project generates 500 construction bids).

Hays explains that the stakeholders in such a program—contractors, utility companies, and homeowners themselves—need to come together to decide on priorities and goals. The result of this discussion forms the basis of the CWA, which may include: local hiring provisions, agreements on the percentage of work hours that go to small contractors, connections to registered apprenticeship pathways, and creating incentives or mandates for employers to provide healthcare and other benefits to workers.

Clean Energy Works Portland's stakeholders decided their CWA would have to meet these goals: 1) Local hire: At least 80 percent of employees would come from the local workforce. 2) Family-supporting jobs: Workers would earn no less than 180 percent of the state minimum wage. 3) Diverse workforce: Historically disadvantaged or underrepresented people, including people of color, women and low-income city residents, would perform at least 30 percent of project hours. It is important to note here that the targeted percentages of local and disadvantaged workers should be set based on local conditions and may differ depending on factors such as geographic region, availability of workers, and availability of other construction projects (Hays 2010).

The Portland CWA also set up a system of "best value contracting," which assigns points to bidding contractors based on different criteria, including: experience with energy efficiency; an established record of hiring from the local area; ability to hire from a pre-screened list of job training programs; demonstrated experience in hiring people of color; and a good relationship with employees, the public and labor unions. This approach to contracting helps ensure contractors are chosen for desired attributes, and rewards these "high road" practices to encourage local contractors to continue them. This provides an excellent alternative to the "race-to-the-bottom" approach of 'lowest-bidder' models. The CWA is a legally binding document signed by contractors participating in the program (Hays 2010).

One challenge the program encountered was low program cost caps. (Cost caps refer to the maximum amount of money the program is allowed to invest in a project.) Sometimes this amount may also be too low to cover comprehensive energy efficiency retrofits or to develop a robust workforce development system. After establishing its initial cost caps, the Portland CWA decided to utilize prevailing wage rates—which are higher than those they had initially calculated—without increasing cost caps. This became a barrier for the program, since once the project exceeds the cost cap, the property owner must cover the excess cost, typically at the time of the retrofit. This translates into higher up-front and overall costs for property owners and

lower profits for contractors in the CEWP. CEWP's experience illustrates why it's important to consider cost caps at the outset. Setting these too low can stand in the way of deep green, comprehensive retrofits that would result in bigger savings, better jobs, and improved environmental conditions over the long term.

As the Portland program is working to address these types of challenges, the program is also working to streamline and simplify the ways in which it works with contractors and residents. Since initiatives such as CEWP are new programs that contractors and consumers have less prior experience with, this results in higher administrative costs for contractors and necessitates more education for homeowners in the short-term. Portland is working to provide contractors and homeowners with more education and program support, which will result in higher audit-to-retrofit conversion rates for the CEWP. If it is successful, more homeowners who get interested in the program and complete a building audit will take the next step to actually sign up for retrofits on their property, and thus increase the scale and pace of retrofits in the region (Hays 2010).

Portland's use of a community workforce agreement (CWA) contributed to its success, and helped it to win $20 million from the U.S. Department of Energy's competitive Better Buildings grant program to scale up. In February 2011, CEWP expanded to become Clean Energy Works Oregon (CEWO) in order to replicate the pilot throughout the Portland Metro area and certain rural communities.

### Outcomes

Despite the challenges that Clean Energy Works Portland (CEWP) faced, the program was still able to achieve their target goals. By the time the program transitioned from CEWP to Clean Energy Works Oregon in 2011, CEWP had retrofitted over 500 homes (Burtseva 2012). With respect to the workforce outcomes, CEWP created 29 entry-level construction jobs, 381 workers earned paychecks as a result of the CEWP program, and the CEWP also helped these existing workers gain new energy efficient construction skills (Adams 2011). Over 50% of all of the hours worked in the field were performed by individuals from historically disadvantaged groups. In addition, five out of the sixteen contractors that participated in CEWP were minority- or women-owned businesses (ACEEE 2011).

By building on the success of CEWP, Clean Energy Works Oregon (CEWO) has also been reporting high outcomes in the past year. As of May 2012, the CEWO reports that more than 1,200 homes have been retrofitted, with 130 new quality jobs created (CEWO 2012). These outstanding outcomes from CEWP and CEWO show the effectiveness of innovative workforce development and business development strategies that are tied to enforceable community workforce agreement policies, high quality in-class and on-the-job training for entry level workers, and additional skills development programs for existing workers.

## Examples from the Field: SustainableWorks (Washington State)

Washington State's SustainableWorks, in collaboration with the Sound Alliance and the Spokane Alliance, has developed a workforce training program designed to perform energy upgrades. Randy Scott, Secretary-Treasurer of the Washington State Association of the United Association of Plumbers and Pipefitters (UA) explains how Washington local unions partnered with local affiliates of the Industrial Areas Foundations (IAF) to create SustainableWorks in an

effort to create construction jobs in the single-family home residential retrofits market (Scott 2011).

According to Scott, another challenge was creating and coordinating a plan for the three main construction crafts involved who had shown an interest in this work locally – the IBEW (electrical workers), the Sheet Metal Workers and the UA (Plumbers) – to work together in this new residential energy efficiency effort. New to the single-family home residential retrofits market, the three craft unions started by significantly ramping up a joint training workshop series which was created during the Spokane pilot:

> "The trades have long histories with each other, long-standing competition in the marketplace, long-standing jurisdictional disputes… A lot of positive stuff but also a lot of negative stuff… One of the things we told the business managers [from the three craft unions] was they were going to have to leave that stuff outside… We are talking about having electricians, sheet metal workers and plumbers in people's homes and they need to be able to get in and get out, and do their jobs as efficiently as possible. So we set up a training program that put journeymen from those three crafts in a room together and showed them what would need to be done so that they could get in and get out, and try to mesh the gears [for] what they were doing in the homes."

As a result of this joint effort, the partnership developed a class called "Systems Training," which any craft union member participating in SustainableWorks was required to take. As Scott explains, three additional crafts joined SustainableWorks: the Laborers (LiUNA), the Painters (IUPAT) and the Mechanical Insulators. In partnership, the six crafts created a working group which meets monthly to discuss issues such as jurisdiction and wage rates to ensure that the work is highly coordinated and that workers can access family-supporting wages and benefits in the residential sector (Scott 2011).

Contractors who choose to participate in the program must agree to hire pre-apprentice graduates from partner programs, which currently include the Seattle Vocational Institute, Got Green, and Helmets to Hard Hats. These pre-apprentice graduates then enter into registered joint labor-management apprenticeship programs with their respective unions, and the work hours they complete with SustainableWorks contractors contribute to their required on-the-job training hours. Additionally, the program requires contractors to employ a workforce in which 20% of installers are apprentices; 25% of those are first-year apprentices (Scott 2011). The requirement for employers to use apprentices, especially first-year apprentices, opens up new opportunities for entry-level workers to access sustainable construction careers.

With the workforce system in place, SustainableWorks looks forward to achieving the following goals: 1) Retrofit 2,000 homes, 2) Create 120 full-time jobs, 3) Complete $12 million of retrofit work, and 4) Reduce carbon emissions by 3,000 tons (Seattle Foundation 2012).

**Outcomes**

SustainableWorks has been able to achieve many successes so far as it works towards achieving its goals. With respect to workforce outcomes, the program has been able to create over 35 family-wage jobs and to provide 2,000+ hours of training for jobs in clean energy economy (Seattle Foundation 2012). SustainableWorks has also completed over 1,000 energy audits and retrofitted over 365 homes, which creates multiple opportunities for the high quality contractors that they work with (Dolan 2012).

## Conclusion

By first focusing on job creation through comprehensive, whole-building energy efficiency retrofits, otherwise known as deep green energy efficiency retrofits, stakeholders can create a broader scope of work that creates multiple opportunities for workers to acquire higher wages and skills. However, simply creating these jobs is not enough. It is important to ensure that these are high quality jobs that comply with quality standards and certifications, and to ensure that these jobs are accessible to diverse communities. There are significant opportunities available in the emerging energy efficiency construction market to create quality career pathways for workers and contractors through the utilization of community workforce agreements and joint labor-management apprenticeships.

As the SustainableWorks model shows, by utilizing the highly developed and existing joint labor-management apprenticeship infrastructure in the construction industry, energy efficiency stakeholders can leverage existing resources, facilities, curriculum, and teachers to train entry-level workers and to help existing workers update their skills. As the Clean Energy Works Portland/Oregon example demonstrates, implementing and ensuring compliance with a community workforce agreement (CWA) can create work opportunities and contracting opportunities for individuals who come from historically disadvantaged communities. The impact of quality careers is demonstrated by the value and competitive edge experienced by contractors, the sustainable skilled employment provided directly to workers, and the resources generated when they spend their wages in the communities they live, work, and play in.

Many energy efficiency initiatives are still relatively new and are still figuring out the most strategic ways to achieve the multiple goals of greenhouse gas reductions, energy savings, utility bill savings, quality job creation and business development, and healthy communities. By prioritizing deep green energy efficiency retrofits, community workforce agreements, and apprenticeship models that establish high standards and are responsive to employer needs, energy efficiency stakeholders can come closer to achieving these multiple overlapping goals.

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