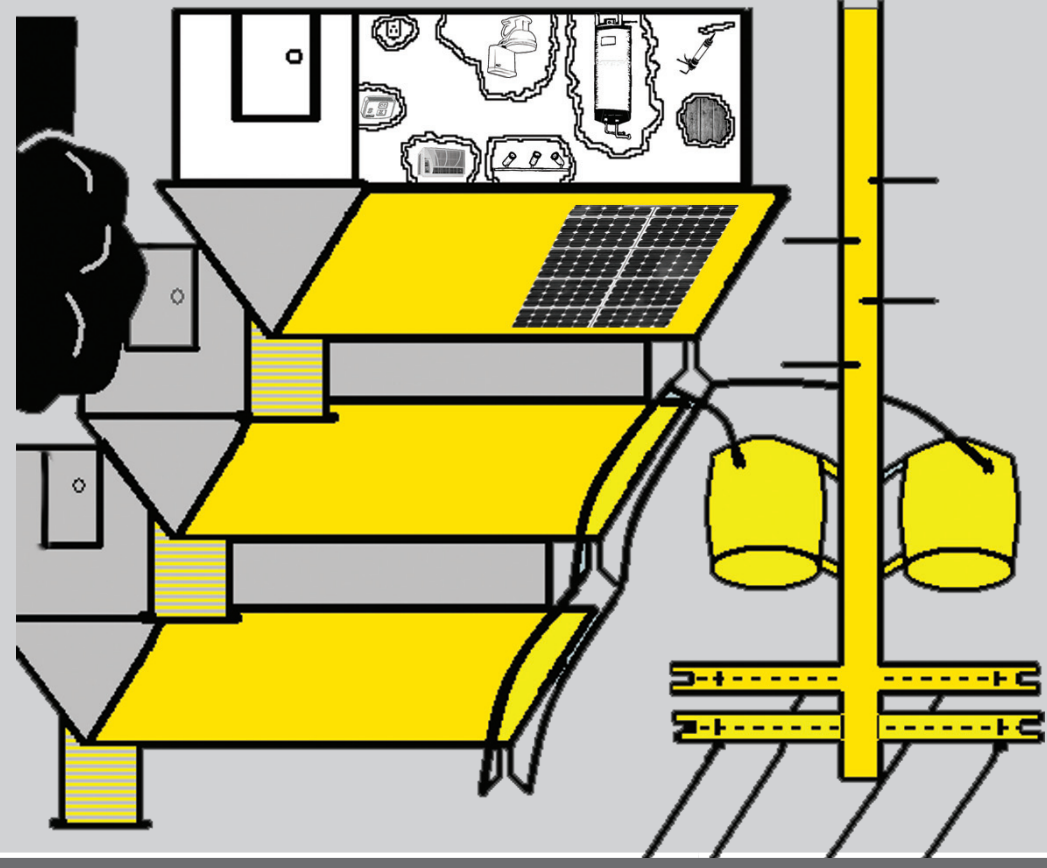


COMPREHENSIVE ENERGY EFFICIENCY

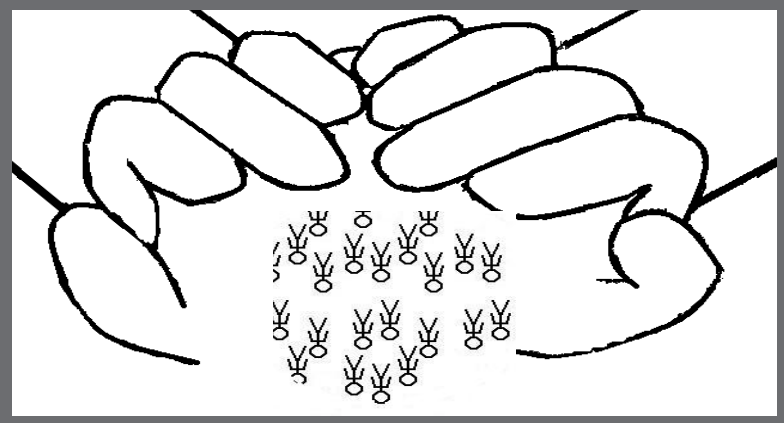
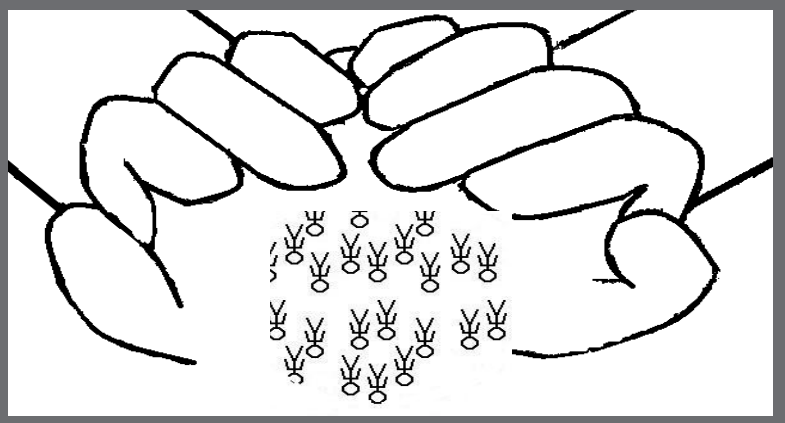
Construction industry best practices treat buildings as comprehensive systems where the many mechanical and non-mechanical elements are connected. Energy efficiency retrofits need to reflect these best practices by treating buildings as whole and integrated systems, and not just "cherry-pick" the easiest basic weatherization items.



RETROFIT ELEMENTS	BASIC WEATHERIZATION ELEMENTS	COMPREHENSIVE ENERGY EFFICIENCY ELEMENTS	CONSTRUCTION CAREERS AVAILABLE
1 Sealing Air Leaks and Caulking	✓	✓	Handy person, Laborer
2 Insulation	✓	✓	Insulator, Helper
3 Wrapping Pipes and Water Heaters	✓	✓	Plumber, Laborer, Helper
4 Weatherization		✓	See Above
5 Lighting changes and lighting controls		✓	Electrician
6 HVAC system upgrades		✓	Heating, Ventilation and Air Conditioning
7 Smart grid and building monitoring systems		✓	Electrician, Operating Engineer
8 Renewable Energy Generation		✓	Electrician, Lineman, Roofer
9 Materials beneficial to environment and occupant		✓	N/A
10 Healthy indoor environmental quality		✓	Painter, Plasterer, Asbestos Worker, Laborer
11 Site Improvements		✓	Asbestos Worker, Laborer, Bricklayer, etc.
12 Water conservation		✓	Plumber, Pipefitter
13 Operations and maintenance		✓	Operating Engineer

DIRECT & INDIRECT IMPACTS

“High-road” green construction careers lead directly to family-supporting wages, health & retirement benefits, and home ownership opportunities for individual workers and their families. In addition to these direct impacts, wages from these careers are usually re-invested in local business development, taxes, & public amenities.



JOB PROJECTIONS

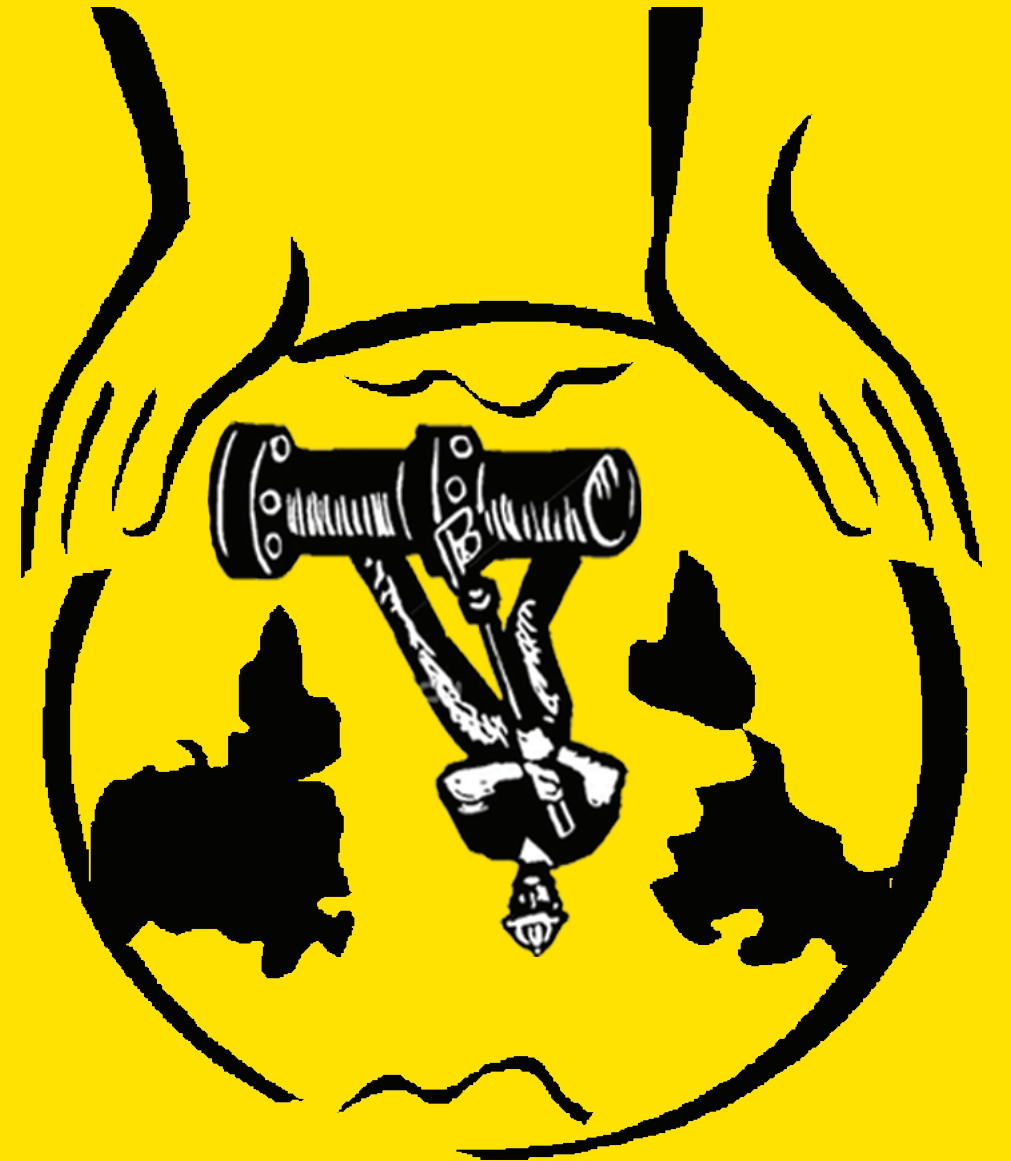
Comprehensive Energy Efficiency Retrofits create demand for workers with more diverse skills that will remain in demand over the long-term. Basic weatherization creates demand for workers with narrow skills that will be in increasing lower demand in the long-term. Workers should not just be taught how to wrap pipes, but how to install them.

LONG-TERM JOBS

SHORT-TERM JOBS

GREEN CONSTRUCTION CAREERS

A Growth Opportunity for the Building Trades



A POLICY REPORT FROM
 2010 Community Scholars Program
 Department of Urban Planning
 UCLA School of Public Affairs

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ADDITIONAL RESOURCES

What can the Building Trades do to increase this demand?

Increasing **consumer demand** for comprehensive energy efficiency retrofits leads to **good jobs** and a **healthy planet**.



POLICY & PROGRAM RECOMMENDATIONS

GENERATING DEMAND

EFFECTIVE OUTREACH & EDUCATION

Utilize community-based organizations to perform education, outreach, and marketing in neighborhoods in order to increase and aggregate demand, bundle contracts, achieve economies of scale, and encourage behavior changes.

WHY? This will help to address the barriers of lack of information and risk aversion.

DO NOT TREAT ALL BUILDINGS THE SAME

Conduct a detailed analysis of building stock, building types, tenancy, and utility metering.

WHY? The differences regarding building stock, building types, building tenancy, and who pays the utility meter will greatly affect what types of retrofits should be installed, how the retrofits are financed, how the costs of retrofits are repaid, and who should pay for those retrofits.

COMPREHENSIVE ENERGY EFFICIENCY AUDITS

Start with a comprehensive audit that includes energy efficiency elements that go beyond weatherization. This deep green technical approach uses a Building Performance Institute (BPI) standard audit and includes: electrical systems, heating and cooling (solar thermal & combined heat and power), water conservation, renewable energy, solar thermal elements, and healthy home elements.

WHY? These audits result in a full scope of work that takes into account the non-mechanical and mechanical elements of a building. These audits also address public health concerns, such as asbestos abatement, in order to accomplish safe and deep green energy efficiency.

CREATE IMMEDIATE VALUE FOR CONSUMERS

Building owners and tenants should realize an immediate and quantifiable reduction in energy costs and an increase in building comfort as a result of the retrofit work.

WHY? Helping the utility rate-payers to benefit financially in the short-term and long-term as a direct result of retrofit work will help to address the barriers of high up-front costs and risk aversion.

A TURN-KEY APPROACH

Develop a user-friendly interface and approach to customer service that will help partner a building occupant/owner with a program administrator or "energy advocate" that can walk them through the retrofit process from the beginning to end.

WHY? This will increase demand since building owners/renters no longer have to go out by themselves to research complex and un-coordinated incentives, to recruit quality contractors, and to apply for relevant loans.

GENERATING SUPPLY

PLACE-BASED RETROFITS

Target whole neighborhoods instead of individual buildings, and view each neighborhood as a distinct market with different consumer demographics.

WHY? This will help to realize the highest economies of scale and synergies, and to address community-level infrastructure needs.

HIRE LOCAL AND ENFORCE LABOR STANDARDS

Create career pipelines for local communities (local hiring and retention), and also regulate and enforce labor standards to level the playing field for all contractors. High labor standards should be prioritized, including family-supporting wages, healthy working conditions, healthcare benefits, retirement benefits, and training and professional development pathways.

WHY? In order to achieve the maximum amount of triple-bottom line benefits within a local community, it is critical that the employment, business ownership, and other economic opportunities are retained and recycled within that community. Generating additional income within a community will also enable more people to be able to afford the costs of retrofits, therefore helping to reduce the high up-front cost barrier.

ACCESSIBLE FINANCING

The financial risks in an energy efficiency retrofit program should be mitigated through the development of sound financial assumptions, education and financial counseling for building owners/occupants, loan loss reserves, and credit enhancements. In addition, energy efficiency retrofit programs should make available a variety of financing mechanisms for building owners/occupants that would address their different financing needs. Some examples of financing mechanisms include: on-bill financing and/or on-bill repayment, property assessed clean energy (PACE) programs, tax rebates, and energy efficiency mortgages.

WHY? The development of sustainable financing mechanisms that are offered in a variety of ways in order to meet the different needs of building owners/occupants will address the barriers of high up-front costs, lack of public and private capital, and split financial incentives.

THIRD PARTY CERTIFICATION

Utilize a third-party label for each building, such as ENERGY STAR, to certify the energy savings as a result of the work. Certification should include monitoring and verification of completed work.

WHY? Having an independent entity monitor and verify actual energy savings as compared to estimated savings will help: 1) To ensure that quality work is being performed, 2) To strengthen financial assumptions that should be based on the level of actual energy savings realized, 3) To ensure building owners/occupants that they will realize the expected energy savings or will be offered some form of recourse, and 4) To create a "brand of distinction" for the more energy efficient building, therefore making it more attractive to potential building occupants and helping bring awareness of energy efficiency to people who pass by the building.

GOALS

- MAXIMIZE REDUCTIONS IN GREEN HOUSE GAS EMISSIONS
- MAXIMIZE POTENTIAL ENERGY SAVINGS
- EDUCATE COMMUNITY ON ENERGY SAVINGS AND GREEN BEHAVIORS

GOALS

- MAXIMIZE OPPORTUNITIES TO GENERATE HIGH-ROAD APPRENTICEABLE JOBS, AND BUSINESS DEVELOPMENT OPPORTUNITIES
- STRENGTHEN COMMUNITY, LABOR, MANAGEMENT, AND MUNICIPAL RELATIONSHIPS

1 WHY DON'T THE GOOD JOBS EXIST?

Consumer demand has to be generated for comprehensive energy efficiency retrofits in order to create more green construction careers. Why aren't consumers demanding retrofits that will save them money in the long run? If we can answer that question, we are well on our way to creating a lot of good jobs. The first thing we need to do is eliminate the following BARRIERS that keep people from choosing comprehensive energy efficiency retrofits.

LACK OF INFORMATION	Potential energy efficiency retrofit customers lack easily-accessible and user-friendly information regarding the environmental and financial benefits of retrofits.
SPLIT (FINANCIAL) INCENTIVES	Building owners who do not pay utility bills usually do not have short-term incentives to invest in energy efficiency. Building tenants (renters) are reluctant to invest their own money to do energy efficiency retrofits in units they do not own and may not live in very long. Thus, neither building owners or renters usually end up investing in retrofits.
UP-FRONT COSTS	The high up-front costs of a retrofit often deter a building owner's/renter's investment in energy efficiency, or make it impossible for those without access to capital to pay for the retrofits.
DISRUPTION COSTS	The time and disruption involved in the retrofit process usually require building occupants to be inconvenienced by construction crews, utilities shut-off, etc. These disruptions can deter owners/renters from installing retrofits.
COMPLEX POLICIES	Many of the incentives and regulations for retrofits are complex and are spread across different public agencies and private companies. Thus, the system is not user-friendly and is difficult to navigate for the general public.
LACK OF CAPITAL TO FINANCE RETROFITS	Most states and municipalities currently do not have the funds to cover up-front capital and financing costs to support a mass scale retrofit program. Some private investors are developing capital funds to finance retrofits, but these programs are still relatively small.
RISK AVERSION	Policy-makers, businesses, and potential energy efficiency customers tend to be risk-averse, especially in today's challenging economic environment. These risks include loan defaults, unscrupulous contractors, bad quality installations, poorly performing retrofits, and shifting regulatory environments.
SILOED APPROACH	The successful implementation of energy efficiency retrofits require stakeholders to act in a cross-sectoral & collaborative manner, which is different than the siloed approach that has historically been taken between public officials, private investors, environmentalists, community advocates, labor unions, workforce development practitioners, and academic researchers.



BARRIER: LACK OF INFORMATION

Example: Of the over 150 residential loan programs in the United States, most reach less than 0.1% of their potential customers.

BARRIER: COMPLEX POLICIES

Example: Currently in the Greater Los Angeles area, owners/renters must seek out a random and un-coordinated set of property tax rebates, property tax financing, local tax rebates, tax exclusions, utility grant and loan programs, state grant and loan programs, and municipal grant and loan programs.

BARRIER: SPLIT INCENTIVES

Example: "Why should I pay thousands of dollars for retrofits when I don't get a cent back in energy savings?" asks Phil – Building Owner. "Why should I pay thousands of dollars for retrofits if I'm moving out in 6 months?" Asks Maria – Building Tenant

GREEN CONSTRUCTION CAREERS



Comprehensive energy efficiency retrofit programs make more environmental, social, and economic sense than basic weatherization programs. For example, comprehensive energy efficiency retrofits create both more short-term and long-term jobs. The Building and Construction Trades apprenticeship training model is well-suited to meet the new demand for labor generated by comprehensive energy efficiency retrofits because of its emphasis on thousands of hours of "on-the-job" training, high quality of work performed, and timeliness of project completion.

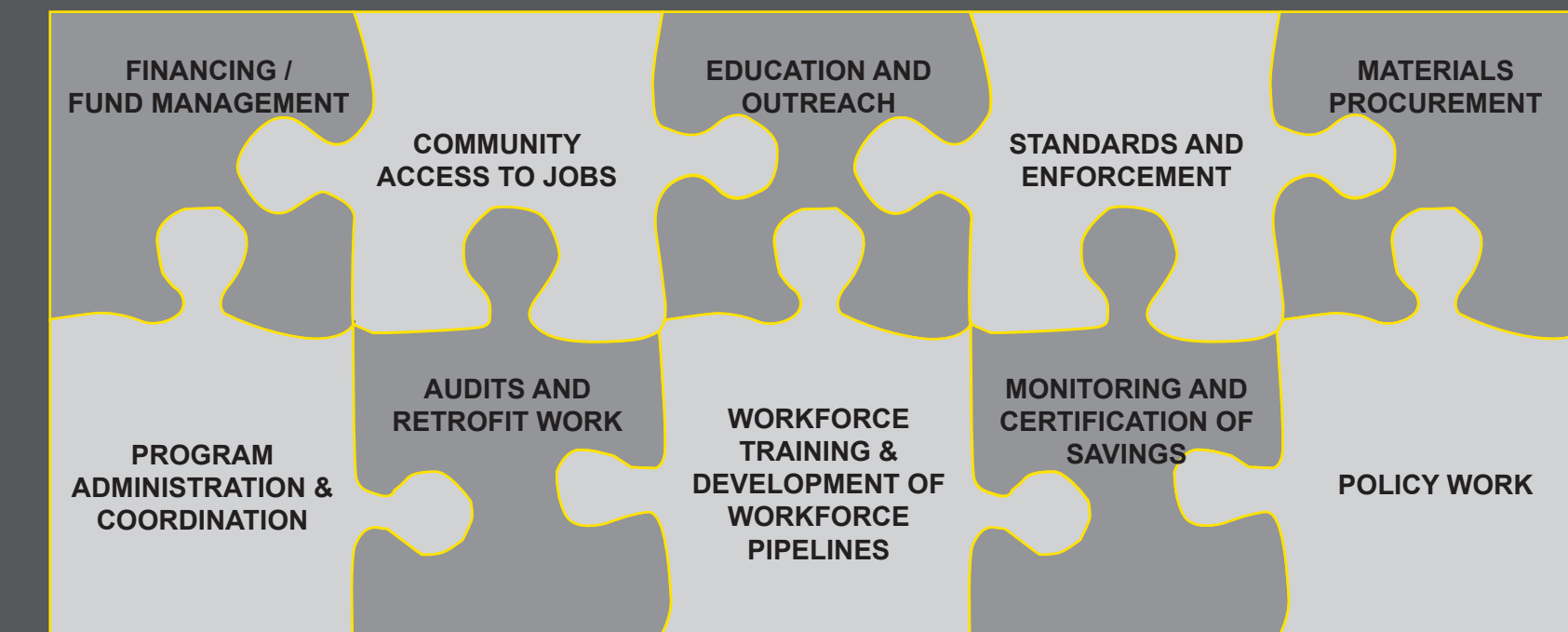
However, there may only be a small window of opportunity. There has been an unprecedented level of public investment in energy efficiency retrofits and green jobs training in the last couple of years. Policies and programs being created now will shape and determine the future of the emerging energy efficiency retrofit market. This fold-out provides the Building and Construction Trades and other stakeholders the necessary tools to affect these energy policies and energy efficiency programs in ways that generate "high-road" green construction career opportunities.

The Building and Construction Trades are at a crossroads. In the last thirty years, it has experienced a decline in union membership, in employment opportunities, in wages, and in market shares. Energy efficiency retrofits present an opportunity for the Building and Construction Trades to regain market share and to create more work opportunities for workers to embark on "high-road" green construction careers.

Public/private funding and consumer demand for comprehensive energy efficiency retrofits are two of the most important factors that lead to the creation of green construction careers. If the Building and Construction trades are interested in creating "high-road" work opportunities, it should pro-actively engage in, and shape energy policies and energy efficiency retrofit programs in order to generate CAPITAL and DEMAND for comprehensive energy efficiency retrofits instead of basic weatherization.

2 WHAT DOES IT TAKE TO CREATE A GOOD JOB?

Workforce training, job creation, and job quality are directly impacted by all components of an energy efficiency retrofit program, not just the parts that are explicitly titled "workforce." How a comprehensive energy efficiency retrofit program is designed and implemented will determine: 1) The types of jobs that are created, 2) Who gets access to these jobs, 3) How long these jobs will last, 4) How much these jobs pay, etc. Stakeholders who are interested in creating green construction careers should be familiar with and engaged in all aspects of program design.



GREEN WORKFORCE TRAINING

The Vermont Growing Renewable Energy/Efficiency Employment Network (VtGREEN) is preparing workers for careers in energy efficiency and renewable energy industries. The program is supplemented by case management, support, referral, placement and post-program follow-up. And after successful completion of the training program, participants receive Certified Green Professional Certification and apprenticeship credits.

GREEN WORKFORCE TRAINING PARTNERSHIPS

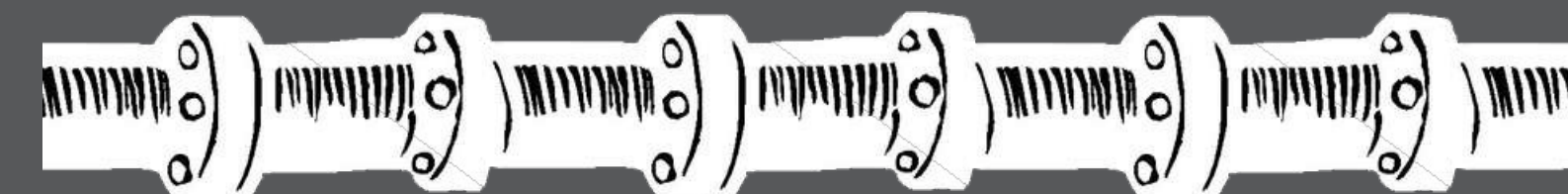
The Regional Energy Efficiency Partnership Training Program (REEPTP) in Detroit is a coordinated training program between labor, government, CBO's, and community colleges. Approximately 340 unemployed workers will be trained in green jobs or apprenticeship opportunities through five training tracks. The combined effort of the various stakeholders will create a pipeline for skilled workers for alternative energy opportunities.

3 TRAINING THAT WORKS

Not all workforce training, placement, and retention programs create the same results. These programs can mean the difference between: 1) Preparing individuals to embark on a "high-road" with certified skills to achieve sustainable long-term careers with family- and community-supporting salaries and benefits, or 2) Preparing individuals to embark on a "low-road" with minimal certified skills to only qualify for short-term, low-wage, and possibly unsafe jobs that may disappear after a few years. Union apprenticeship models have consistently demonstrated their abilities to achieve "high-road" construction careers for over a century, and should be used in order to generate "high-road" GREEN construction careers, as well.

UNION APPRENTICESHIP = PIPELINE TO BETTER JOBS

RECRUITMENT → PRE-APPRENTICESHIP → APPRENTICESHIP → JOURNEYMAN → FOREMAN → CONTRACTOR



NON-UNION BASIC TRAINING = BROKEN PIPELINE

RECRUITMENT → TRAINING → PLACEMENT → START JOB → INCREASE SKILLS & WAGES



	TRAINING (hours)	CERTIFICATIONS	SKILL LEVEL	WORKER SAFETY	WAGES	BENEFITS	JOB STABILITY
UNION APPRENTICESHIP	4,000 +	Yes	High	High	\$45,000 +	Health/Retirement	Long-term
NON-UNION BASIC TRAINING	40 - 200	None	Shallow	Low	\$24,000	None	Temporary