

**Green Collar Jobs:**  
**Pathways Out of Poverty for Bay Area Residents with Barriers to**  
**Employment**

**Raquel Pinderhughes, Ph.D. and David Schechter, MCP<sup>1</sup>**

**Commissioned by REDF**

**February 2008**

---

<sup>1</sup> Raquel Pinderhughes is Professor of Urban Studies and Planning at San Francisco State University. David Schechter is a consultant working in the areas of economic development, social justice, and the environment.

## TABLE OF CONTENTS

<b>I. INTRODUCTION.....</b>	<b>1</b>
• What are green collar jobs?.....	1
• Who gets green collar jobs and how do they find them?.....	2
• Why is it important to connect workers with barriers to employment to green collar jobs?.....	3
<b>II. WHO STANDS TO BENEFIT THE MOST FROM GREEN COLLAR JOBS?.....</b>	<b>4</b>
• How much income does it take to achieve self sufficiency in the Bay Area?.....	4
• How many residents have incomes below the Self Sufficiency Standard, and who are they?.....	6
• How many residents are unemployed or underemployed, and who are they?.....	7
• How many residents face significant barriers to employment, such as low educational attainment, limited English proficiency, or having been incarcerated?.....	9
• What types of jobs are available to residents with barriers to employment, and how much do these jobs pay?.....	11
<b>III. GREEN COLLAR JOBS, SECTORS, BUSINESSES, AND WORKERS.....</b>	<b>12</b>
• Economic sectors that provide green collar jobs.....	14
• Characteristics of Bay Area green businesses that provide green collar jobs.....	15
• What employers are looking for in entry level green collar workers.....	17
• Obstacles to connecting job seekers with barriers to employment to green collar jobs.....	18
<b>IV. THE FUTURE OF GREEN COLLAR JOBS IN THE BAY AREA.....</b>	<b>18</b>
• Government action to improve environmental quality.....	18
• State and local government support for green economic development.....	20
• Environmental initiatives by large institutions.....	20
• Growth in consumer demand for sustainability-oriented products and services.....	20
• Growth in venture capital investment in green technologies.....	21
• Growth in markets for green products and services.....	21
• Shortage of workers for green collar jobs.....	21
• Green collar job initiatives in the Bay Area.....	22
• Existing Bay Area programs that provide green collar job training.....	22
• Proposed Bay Area green collar job training programs.....	24
<b>V. CONCLUSION.....</b>	<b>25</b>
<b>VI. BIBLIOGRAPHY.....</b>	<b>27</b>
<b>VII APPENDIX</b>	
• Appendix 1. Pinderhughes Green Collar Jobs Training & Placement Program Model..	29
• Appendix 2. Background Information on Methods and Data Collection.....	31
• Appendix 3. Summary of Select Data on 35 Bay Area Green Businesses that Provide Workers with Green Collar Jobs.....	33
<b>ACKNOWLEDGEMENTS.....</b>	<b>38</b>

## I. INTRODUCTION

Poverty and unemployment are significant problems in the San Francisco Bay Area. Over 330,000 workers in the nine Bay Area counties are officially unemployed and over 650,000 people are living below the poverty line (American Community Survey, 2006). In the three counties on which this paper focuses -- Alameda, San Francisco, and Santa Clara counties -- almost 200,000 people are officially unemployed, and over 350,000 people want full time work but cannot find it (American Community Survey, 2006; Bureau of Labor Statistics, 2007). Clearly, there is an urgent need for stable, living wage jobs for low income men and women, particularly those with barriers to employment such as the lack of a high school degree, limited labor market skills, limited English proficiency, having a criminal record, homelessness/lack of stable housing, or health conditions such as mental illness and substance abuse.

There is a category of jobs that has significant potential to meet this need -- "green collar jobs." In this paper, we define what we mean by green collar jobs, and describe their important characteristics, the enterprises that provide them, and the people with barriers to employment who could benefit most from them. We explain why green collar jobs are well suited to provide pathways out of poverty, and discuss what it would take to make these jobs available to the people who need them the most, on a large scale, in the San Francisco Bay Area. The paper is informed by two years of in-depth research on Bay Area green businesses that provide workers with green collar jobs conducted by Professor Pinderhughes as well as analysis of demographic and economic data about low income residents of Alameda, San Francisco, and Santa Clara Counties who face barriers to employment.<sup>2</sup>

### ***What are green collar jobs?***

"Green collar jobs" are "blue collar jobs in green businesses" -- manual labor jobs in private, public and nonprofit businesses and other types of enterprises whose products and services directly improve environmental quality (Pinderhughes, 2007). They include a wide range of work force opportunities, in 24 different sectors of the U.S. economy, ranging from bike repair to weatherization (see Table 12).

An in-depth study of 22 Berkeley based green businesses, employing an average of 20 green collar workers each, revealed that green collar jobs represent an important category of work force opportunities for residents with barriers to employment because they are high quality jobs<sup>3</sup> with opportunities for occupational advancement, with low barriers to entry, in sectors poised for dramatic growth (Pinderhughes, 2007).<sup>4</sup>

---

<sup>2</sup> A report summarizing findings for the city of Berkeley can be found at <http://bss.sfsu.edu/raquelrp/>

<sup>3</sup> Green collar jobs provide workers with good wages and benefits. The average hourly wage (with benefits) for a green collar job is \$15/hour in Berkeley and \$16/hour in San Francisco. In addition, green collar jobs have a number of other desirable characteristics, which we describe in Section III.

<sup>4</sup> Although 22 businesses may seem like a small number, it is critical to understand that the vast majority of green businesses in the Bay Area provide workers with white collar jobs and that a much smaller number (we estimate less than 10%) provide workers with green collar jobs. Out of a total number of 218 Berkeley based green businesses in 2006, only 31 of these businesses provided workers with green collar jobs.

“Low barriers to entry” refers to the fact that green business employers regularly hire workers with little, if any, direct work experience for most entry level green collar jobs.<sup>5</sup> To qualify for most green collar jobs, applicants do not have to have experience in the sector - 86% of the green business employers surveyed in the Pinderhughes study (2007) hire workers without previous direct experience or training for green collar jobs in their firms.

What workers need is what employers refer to as “job readiness” – which employers describe as a combination of six basic work force attributes and skills: (1) a sense of responsibility; (2) basic presentation, listening and communication skills; (3) ability to consistently arrive to work on time; (4) a positive attitude towards the work and colleagues; (5) ability to work both independently and as part of a team; and (6) a strong work ethic. Given these skills and attributes, green collar job employers are willing to hire inexperienced workers and train them -- 94% of businesses surveyed by Pinderhughes provide on the job training for workers in entry-level positions. Most employers pay for basic equipment operation training and certification as well as other appropriate skills training.

### ***Who gets green collar jobs and how do they find them?***

Despite low barriers to entry, job seekers with barriers to employment do not have easy access to green collar jobs. There are three reasons for this.

First, although employers put announcements of job openings in local newspapers and on the Internet, they rely heavily on professional contacts and current employees to inform potential employees of green collar job openings in their firms (Pinderhughes, 2007). Consequently, most new job applicants find out about green collar job openings through social networks, which include employees who are already employed in the firms or sectors to which they are applying. This makes it difficult for men and women outside of these professional and social networks to find out about green collar job openings in a timely manner. Word of mouth is by far the most important way in which job seekers learn about green collar job openings (Pinderhughes, 2007).

Second, few workers are *formally* trained for entry level green collar jobs. This is because there are very few institutions or organizations that train workers for entry level green collar jobs (although this will not be the case for long).<sup>6</sup> Most workers apply for their first green collar job because they heard about an opening from someone they knew and are interested in the mission or work of a particular green business. They are hired because their educational training (often a college degree) or relevant vocational skills (i.e. a background in electrical work for a job in solar installation) are more than sufficient to get them an entry level green collar job. After they are hired, they receive on-the-job training for a specific green collar job.

---

<sup>5</sup> Furniture making, bike repair, and hazardous materials cleanup are exceptions. In these three sectors, workers are typically required to have previous experience and/or training in order to be hired for entry level positions.

<sup>6</sup> An increasing number of Bay Area institutions and organizations are now offering, or planning to offer, training programs that will prepare people for green collar jobs (e.g. HVAC, solar installation, energy audits, green landscaping, green construction and building, etc.)

Third, very few programs exist to train job seekers with barriers to employment for green collar jobs.<sup>7</sup>

As a consequence of these dynamics, the majority of workers currently employed in green collar jobs learned about a job opening for a green collar job through their social or professional networks; were hired for their first green collar job without having any formal training for that job; and typically have more education than a green collar job requires. If low-income men and women with barriers to employment are to gain access to high quality green collar jobs they will need to be targeted for green collar job training and placement.

***Why is it important to connect Bay Area workers with barriers to employment to green collar jobs?***

Thousands of Bay Area men and women with limited labor market skills are struggling to make ends meet because the work force opportunities available to them are inadequate, and their incomes are too low for the cost of living in the Bay Area. Eleven percent of Santa Clara County residents, 13% of Alameda County residents, and 15% of San Francisco residents have incomes below \$25,000 a year (American Communities Survey, 2006). These residents are from all racial and ethnic groups, but are disproportionately African American and Latino. They are all ages, but are disproportionately young.

Green collar jobs are among the few categories of jobs in the Bay Area that offer living wages, excellent working conditions, and occupational mobility to workers with limited labor market skills. The average green collar worker in Berkeley earns \$32,864 a year (plus benefits), and the average green collar in San Francisco earns \$34,632 (plus benefits) – far better than what they could expect from the low wage jobs that are typically available to residents with barriers to employment.

Training and placing workers with limited labor market skills and other barriers to employment for and in green collar jobs would help hundreds of low income Bay Area job seekers who would otherwise be locked into low wage, unstable jobs or long term unemployment.

The time is ripe for such an initiative in the Bay Area. The sectors in which green collar jobs are located have plenty of entry level jobs. All of these sectors are poised for dramatic growth, and employers are experiencing a shortage of skilled workers for green collar jobs. In the Pinderhughes study, 73% of the Bay Area green collar employers surveyed stated they were experiencing a shortage of skilled workers for green collar jobs in their firms (Pinderhughes, 2007).

---

<sup>7</sup> None of the large Bay Area job training programs, such as Job Corps and Rubicon, currently have a green collar job training focus (although Rubicon is beginning to develop this focus and Job Corps has recently placed trainees in green collar jobs). Job training programs like Cypress Mandela in Oakland offer training in construction, but the focus is not on “green” construction. Only a few small Bay Area programs train people with barriers to employment for green collar jobs. These include the Alameda County Computer Resource Center, Conservation Corps, Clean City, Rising Sun Energy Services, and Goodwill.

## II. WHO STANDS TO BENEFIT THE MOST FROM GREEN COLLAR JOBS?

In this section, we analyze data from three Bay Area counties (Alameda, San Francisco, and Santa Clara) about poverty, unemployment, barriers to employment, and low wage employment, in order to understand who can benefit most from green collar jobs.

We address six questions:

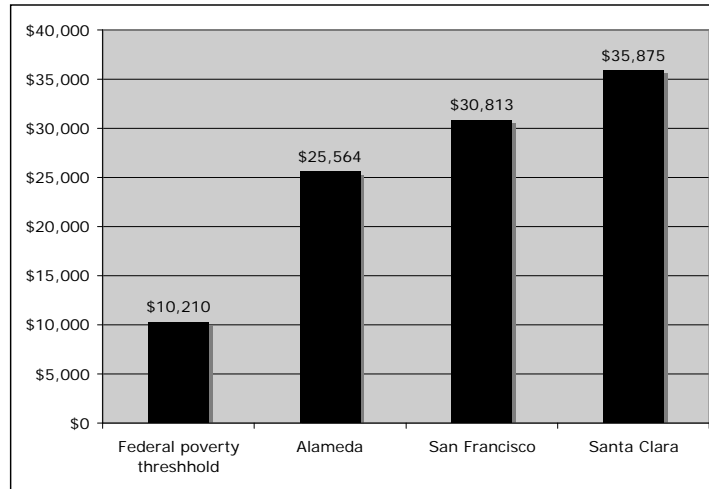
1. How much income does it take to achieve self sufficiency in the Bay Area?
2. How many residents have incomes below this level, and who are they?
3. How many residents are unemployed, employed part time, or employed full time at low wage jobs, and who are they?
4. How many residents face significant barriers to employment, such as low educational attainment, limited English proficiency, or having been incarcerated, and who are they?
5. What types of jobs are available to these residents, and how much do they pay?
6. What skills do these residents need in order to get living wage jobs?

### ***How much income does it take to achieve self sufficiency in the Bay Area?***

The most commonly used standard for defining “low income” in the U.S. is the Federal poverty threshold. Unfortunately, this threshold significantly underestimates the true cost of living in a region such as the Bay Area because it ignores significant variations in the cost of living between different geographic areas, and because it is based on the cost of only one item – food. Therefore, we use an alternative measure developed by the Insight Center for Community Economic Development, the *Self-Sufficiency Standard*, that includes the cost of housing, transportation, health care, child care, and other important expenses as well as food, and accounts for local differences in the cost of living.

The Self Sufficiency Standard is considerably higher than the poverty threshold. For example, Figure 1 shows that a self sufficient single adult with no children in 2006 would need an annual income at least 2.5 times the Federal poverty threshold in Alameda County, more than 3 times the poverty threshold in San Francisco, and more than 3.5 times the poverty threshold in Santa Clara County.

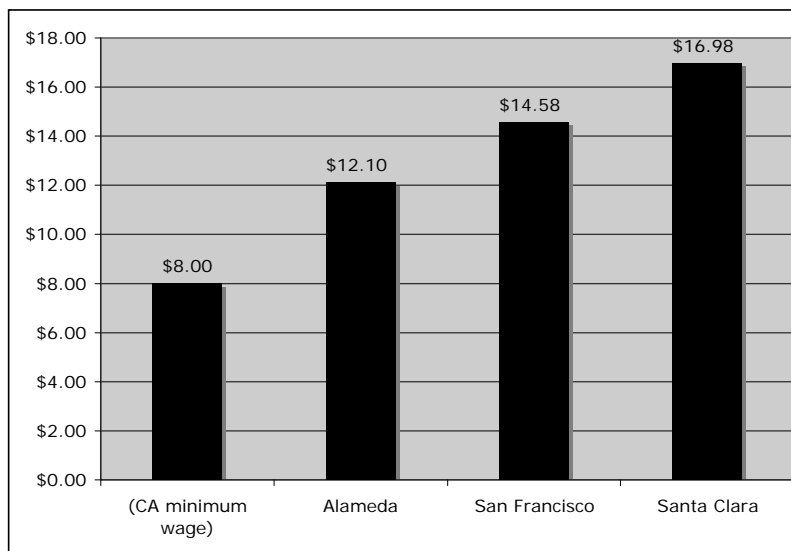
**Figure 1**  
**Annual Income Self Sufficiency Standard (Single Adult, No Children)**



Source: Insight Center for Community Economic Development, 2003, [www.insightcced.org/index.php?page=ca-sss](http://www.insightcced.org/index.php?page=ca-sss)  
 Adjusted for inflation based on data from Bureau of Labor Statistics, 2007

Figure 2 shows that meeting these standards would require a single adult with no children to earn a minimum hourly wage of at least \$12.10 in Alameda County, \$14.58 in San Francisco, and \$16.98 in Santa Clara County.<sup>8</sup> In comparison, the California minimum wage is only \$8.00 an hour in 2008, and nearly 1.4 million California workers (most of them adults) earned less than \$8.00 per hour in 2006 (California Budget Project, 2007).

**Figure 2**  
**Self Sufficiency Wage (Single Adult, No Children)**

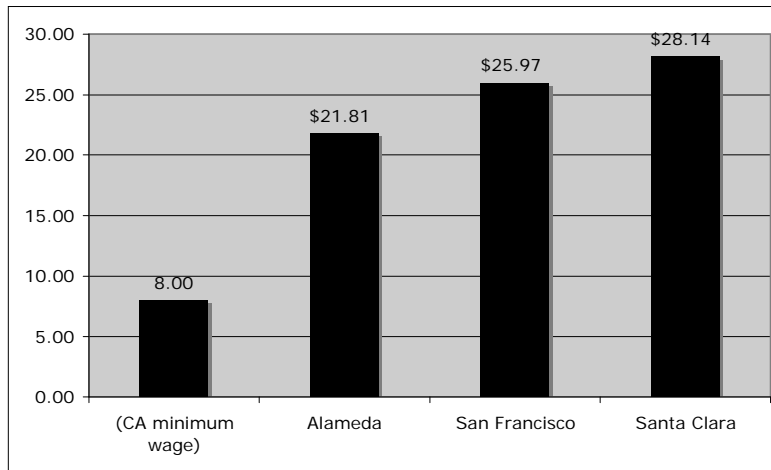


Source: Insight Center for Community Economic Development, 2003, [www.insightcced.org/index.php?page=ca-sss](http://www.insightcced.org/index.php?page=ca-sss)  
 Adjusted for inflation based on data from Bureau of Labor Statistics, 2007

<sup>8</sup> In a two income household with two school age children, each full-time adult worker would have to earn slightly less - \$11.73 in Alameda County, \$13.66 in San Francisco, and \$15.52 in Santa Clara County.

Self sufficiency requirements for single parents with children are considerably higher. Figure 3 shows that a single parent supporting two school age children would need an hourly wage of \$21.81 (Alameda County), \$25.97 (San Francisco), and \$28.14 (Santa Clara County) – from 2.7 times the California minimum wage to more than triple the California minimum wage.

**Figure 3**  
**Self Sufficiency Wage (One Adult with Two School Age Children)**



Source: Insight Center for Community Economic Development, 2003, [www.insightcced.org/index.php?page=ca-sss](http://www.insightcced.org/index.php?page=ca-sss)  
Adjusted for inflation based on data from Bureau of Labor Statistics, 2007

***How many Bay Area residents have incomes below the Self Sufficiency Standard, and who are they?***

Table 1 shows that a substantial portion of Bay Area households have incomes well below the Self Sufficiency Standard.

**Table 1**  
**Percentage of Population with Incomes Below the Self Sufficiency Standard**

	Alameda	San Francisco	Santa Clara
<b>(Self Sufficiency Standard - 2 adults, 2 school age children)</b>	\$49,535	\$57,713	\$65,574
<b>(Self Sufficiency Standard - 1 adult, no children)</b>	\$25,564	\$30,813	\$35,875
<b>Percent below \$50K</b>	39.4%	39.9%	31.5%
<b>Percent below \$35K</b>	20.5%	22.2%	16.7%
<b>Percent below \$25K</b>	13.3%	14.9%	10.8%

Source: American Community Survey, 2006

As in other U.S. regions, Bay Area incomes vary dramatically by race and ethnicity. Table 2 shows median household incomes by race and ethnicity in the three counties, with the lowest incomes found among Black and Latino households.

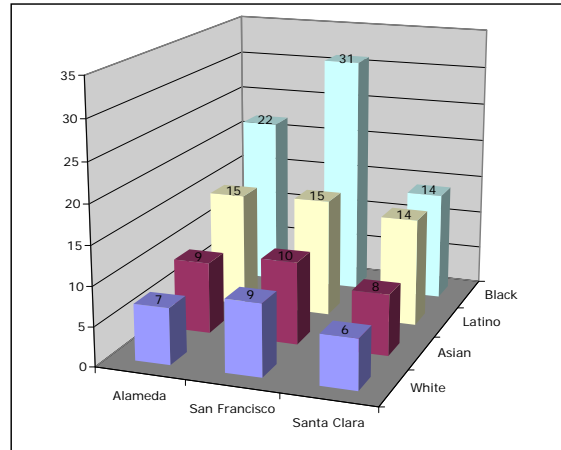
**Table 2**  
**Median Household Income by Race and Ethnicity**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
<b>White</b>	\$74,927	\$82,177	\$87,780
<b>Asian</b>	\$76,459	\$55,072	\$94,989
<b>Latino</b>	\$52,139	\$49,561	\$52,831
<b>Black</b>	\$36,357	\$31,080	\$51,020

Source: American Community Survey, 2006

As Figure 4 shows, these disparities are even more dramatic within that portion of the population whose incomes fall below the Federal poverty threshold.

**Figure 4**  
**Percent of Population Below Poverty Level by Race and Ethnicity**



Source: American Community Survey, 2006

***How many residents are unemployed or underemployed, and who are they?***

Census figures for unemployment only include people who have been actively looking for work within a four-week period. A more useful measure is “*underemployment*” – a number published by the Bureau of Labor Statistics that includes all unemployed people who want to work and part time workers who want to work full time. Nationally, the “underemployment rate” is approximately 1.8 times the official unemployment rate (Bureau of Labor Statistics, 2007). Using official unemployment rates to estimate “underemployment rates” reveals that between 10% and 13% of workers in the three Bay Area counties are either unemployed or underemployed.

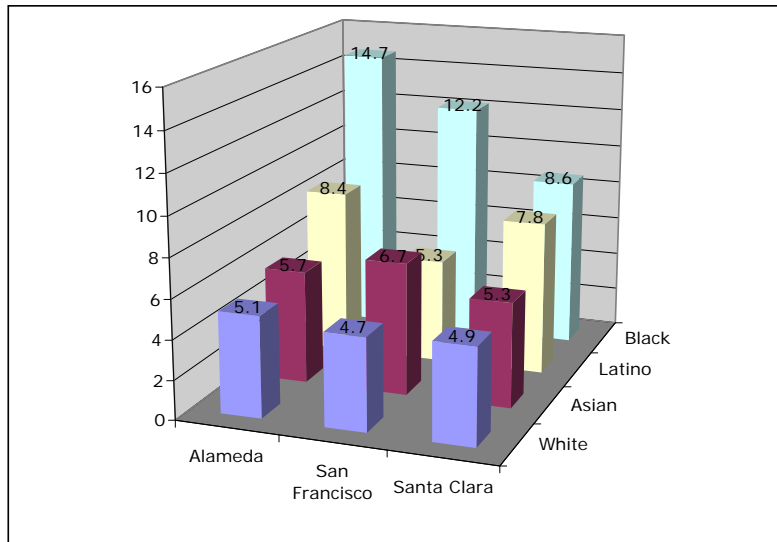
**Table 3**  
**Employment Rate vs. Underemployment Rate**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
<b>Official unemployment rate (percent)</b>	7.2%	5.8%	5.9%
<b>“Underemployment” rate</b>	13%	10.4%	10.6%

Sources: American Community Survey 2006, Bureau of Labor Statistics 2007

Like household incomes, unemployment rates vary dramatically by race and ethnicity. Figure 5 shows that Blacks are two to three times more likely to be unemployed as Whites.

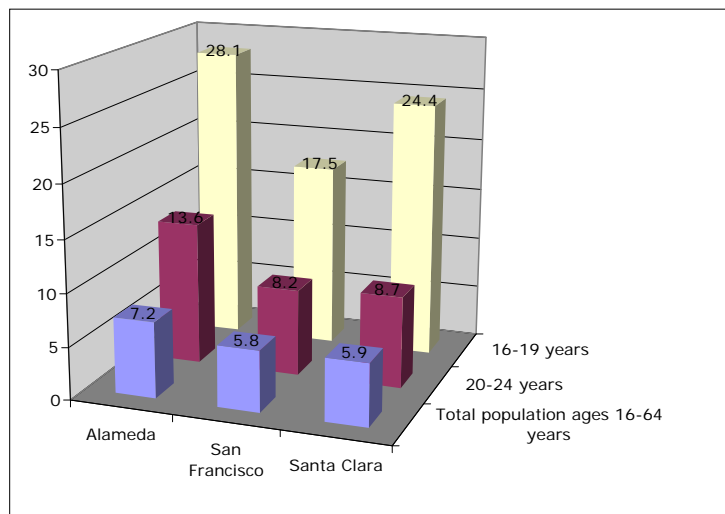
**Figure 5**  
**Percent Unemployment by Race and Ethnicity**



Source: American Community Survey 2006

Unemployment is also disproportionately high among young people. Figure 6 shows that unemployment among young people ages 16-19 is from three to four times as high as it is for the working population as a whole (ages 16-64 years).

**Figure 6**  
**Percent Unemployment by Age Group**



Source: American Community Survey 2006

**How many residents face significant barriers to employment, such as low educational attainment, limited English proficiency, or having been incarcerated?**

Many Bay Area residents face significant barriers to employment, such as lack of a high school degree, limited labor market skills, limited English proficiency, having a criminal record, homelessness/lack of stable housing, or health conditions such as mental illness and substance abuse. In this section, we analyze data related to three barriers – low educational attainment, limited English proficiency, and having a criminal record.

*Education*

Table 4 shows that education is highly valued in the Bay Area labor market. Without a college degree, workers in the Bay Area do not earn enough to meet the Self Sufficiency Standard. Those without a high school diploma can barely get by, earning less than half of the Self Sufficiency Standard.

**Table 4  
Median Earnings by Level of Education**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
Total population	\$41,388	\$45,225	\$47,221
Less than high school graduate	\$20,435	\$19,570	\$22,045
High school graduate (includes equivalency)	\$30,226	\$26,033	\$29,313
Some college or associate's degree	\$39,749	\$35,965	\$41,252
Bachelor's degree	\$54,585	\$55,696	\$63,390
Graduate or professional degree	\$71,410	\$71,046	\$94,624

Source: American Community Survey 2006

More than 50% of workers ages 25 years and older in Alameda, San Francisco, and Santa Clara Counties do not have a Bachelor's degree. About one in seven don't have a high school diploma or GED (see Table 5).

**Table 5  
Educational Attainment - Population 25 years and Older**

	<b>Less than high school graduate</b>	<b>No college</b>	<b>Less than Bachelor's degree</b>
<b>Alameda</b>	14.6%	37%	61.4%
<b>San Francisco</b>	15.1%	29%	49.5%
<b>Santa Clara</b>	13.9%	32.2%	56%

Source: American Community Survey 2006

The barrier of low educational attainment is highly correlated with race and ethnicity. In a labor market that highly values education, people of color are far more disadvantaged than whites (see Table 6).

**Table 6**  
**Percentage of Population 25 years and over with Less than High School Education**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
<b>White</b>	5.1%	3.6%	5.2%
<b>Asian</b>	14.4%	27.3%	11.2%
<b>Latino</b>	38.7%	30.1%	36.3%
<b>Black</b>	13.4%	17.8%	8.1%

Source: American Community Survey 2006

*Linguistic Isolation: Limited English Proficiency*

Limited English proficiency is also a significant barrier to living wage employment.<sup>9</sup> Table 7 shows that large numbers of Bay Area residents face this barrier.<sup>10</sup>

**Table 7**  
**Households that are Linguistically Isolated (Limited English Proficiency)**

<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
9.5%	13.6%	12.6%

Source: American Community Survey 2006

*Having a Criminal Record*

Having a criminal record is one of the most significant barriers to employment. As a group, formerly incarcerated workers experience low employment rates and low earnings. Some occupations are legally closed to them, and many employers are reluctant to hire them (Holzer, Raphael, & Stoll, 2003).

California's incarcerated population has almost doubled since the passage of the "Three-Strikes" law in 1994 and other "tough on crime" legislation, and a further 30% increase is expected in the next 20 years (King, 2008). Between 1995 and 2004, the number of adults on parole in California increased by more than 21%, from 90,450 to 110,130. Table 8 below shows that there are over 23,000 parolees and probationers in Alameda County, close to 15,000 in San Francisco, and more than 19,000 in San Mateo County.

**Table 8**  
**Number of Parolees and Adult Probationers**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
<b>Parolees</b>	6,288	2,295	1,276
<b>Adult probationers</b>	17,023	12,463	17,970
<b>Total</b>	23,311	14,758	19,246

Source: California Department of Corrections and Rehabilitation, 2005; State of California Department of Justice, Criminal Justice Statistics Center, 2005

<sup>9</sup> In a 2006 survey of 431 U.S. employers representing a combined workforce of over 2 million employees, English language reading and writing were rated as the most important basic skills for new hires at all education levels (Partnership for 21st Century Skills, 2006).

<sup>10</sup> The Census Bureau defines a "linguistically isolated" household as one in which all members of the household 14 years and over have at least some difficulty with English.

The unemployment rate for Alameda County's reentry population is 54%. In addition, 30% of Alameda County parolees and probationers lack a high school diploma (Urban Strategies Council, 2006).<sup>11</sup>

Like other barriers to employment, incarceration disproportionately affects people of color. In California, people of color constitute 69.6% of male parolees and 58.5% of female parolees, although they represent only 40.2% of the total population (California Department of Corrections and Rehabilitation, 2005; American Community Survey, 2006). In Alameda County, African American men and women represent 65.6% of all parolees in the county, although they make up less than 15% of the total county population (Urban Strategies Council, 2006).

***What types of jobs are available to residents with barriers to employment, and how much do these jobs pay?***

Typically, the jobs available to Bay Area residents with barriers to employment are in low wage occupations. Table 9 shows some of the most common low wage occupations in the Bay Area and the percentage of workers who hold these jobs in each of the three counties.

**Table 9  
Percentage of Work Force in Selected Low Wage Occupations**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
<b>Healthcare support</b>	2.1%	0.7%	1.8%
<b>Food preparation and serving</b>	3.9%	4.0%	5.0%
<b>Building and grounds cleaning and maintenance</b>	3.4%	1.6%	4.1%
<b>Personal care and service</b>	3.4%	1.8%	3.8%
<b>Transportation and material moving</b>	5.0%	1.5%	3.6%
<b>Total</b>	17.8%	9.6%	18.4%

Source: Bureau of Labor Statistics, 2006

Table 10 on the next page shows the median earnings for these occupations in each county. In contrast, the average green collar worker in Berkeley earns \$32,864 a year (plus benefits), and the average green collar in San Francisco earns \$34,632 (plus benefits).

<sup>11</sup> It is important to note that another population that will be reentering the U.S. labor market are returning veterans (Dobie, 2008).

**Table 10**  
**Median Earnings for Selected Low Wage Occupations**

	<b>Alameda</b>	<b>San Francisco</b>	<b>Santa Clara</b>
<b>Healthcare support</b>	\$24,688	\$22,571	\$26,825
<b>Food preparation and serving</b>	\$12,965	\$21,070	\$16,239
<b>Building and grounds cleaning and maintenance</b>	\$21,585	\$21,490	\$20,154
<b>Personal care and service</b>	\$15,591	\$17,680	\$13,495
<b>Material moving workers</b>	\$25,377	\$27,464	\$20,656

Source: Bureau of Labor Statistics, 2006

### **III. GREEN COLLAR JOBS, SECTORS, BUSINESSES, AND WORKERS**

Green collar jobs are manual labor jobs in businesses or other enterprises whose goods and services directly improve environmental quality. They include a wide range of employment opportunities in multiple sectors of the U.S. economy. The transportation sector encompasses everything from bicycle delivery and bike repair to the production and distribution of alternative fuels, as well as public transportation jobs related to driving and vehicle maintenance and repair. The energy sector includes HVAC, solar installation, water conservation, whole building performance and energy retrofits, with entry-level jobs available in basic energy audits and energy evaluation, installation, construction, maintenance and repair.

Waste stream diversion includes both the recycling of materials, with jobs in collection, sorting, driving and loading, as well as materials re-use, which includes jobs in salvaging, sorting, loading, driving, packaging, product design, production of new goods, and warehouse management. Computer and electronics recycling is one of the most rapidly growing areas, offering workers many of the same opportunities associated with other kinds of materials recycling, as well as jobs related to the dismantling and assembling of computers, televisions, and other electronic goods. Large scale green waste composting is an emerging area that will offer workers jobs related to hauling, driving, sorting, composting, and soil science.

The food sector provides a diverse array of opportunities, from urban agriculture, including the growing, harvesting, packaging, warehousing and delivery of foods from urban gardens and farms, to working at farmers' markets. The production of specialty foods offers numerous jobs such as baking artisan breads, producing nut butters and other prepared foods, roasting coffee, and brewing beer. Work related to the preservation and expansion of open space includes tree cutting and pruning, planting and maintenance. Green building and woodworking includes jobs in construction, installation, carpentry, demolition, hauling, and driving. The growing emphasis on reducing toxic materials in modern life presents opportunities that include the production of non-toxic cosmetics, cleaning solutions and other products, residential and commercial non-toxic cleaning services, and non-toxic commercial printing services. Table 11 on the next page categorizes different types of green collar jobs by sector and by service provided – both entry level and related higher level jobs.

**Table 11 - Types of Green Collar Jobs<sup>12</sup>**

<b>Green Business Sector</b>	<b>Types of Services Providing Green Collar Jobs</b>	<b>Examples of Entry Level Green Collar Jobs Currently Available</b>	<b>Examples of Related Higher-level Green Collar Work</b>
<b>Energy</b>	Energy Retrofits HVAC (Heating, Ventilation, AC) Solar Installation Water Conservation Whole Home Performance	Customer Service, Evaluation, Installation, Construction, Maintenance, Repair, Apprenticeship	Project Manager, Journeyman, Solar Electrician, Service Technician
<b>Water</b>	Water Conservation Adaptive Grey Water Reuse	Installation, Construction, Maintenance, Repair	Project Manager, Journeyman
<b>Green Building</b>	Construction	Construction, Carpentry	General Contractor
	Demolition & Removal	Demolition, Hauling, Driving	Project Manager
<b>Woodworking</b>	Custom architecture, cabinetry, furniture manufacture/installation	Assembly, Sanding, Finishing, Carpentry, Installation	Lead Carpenter, Journeyman
<b>Green Space</b>	Parks & Open Space	Planting, Maintenance	Project Manager
	Landscaping	Tree Cutting/Pruning	Head Gardener
<b>Food</b>	Urban Agriculture	Growing, Packaging, Delivery	Production Manager
	Farmers' Markets	Set-up/Tear-down, Selling	Market/Events Manager
	Specialty Foods Production	Food Prep/Packaging, Brewing, Roasting	Floor Manager
	Baking	Baking, Mixing, Cleaning	Lead Baker
<b>Transportation</b>	Bicycle Delivery	Dispatch and Delivery	Messenger/Owner
	Bicycle Repair	Assembly and Repair	Shop Manager
	Bio-Diesel/Veggie Fuels	Fuel Production, Distribution	Production Manager
	Public Transportation	Driving, Maintenance, Repair	Head Mechanic
<b>Non-Toxic Printing</b>	Commercial Printing Services	Binding, Post-Press, Delivery	Press Op, Pre-Press
<b>Waste Stream Diversion</b>	Materials Recycling	Collection, Sorting, Driving, Loading	Operations Manager
	Materials Re-use	Salvaging, Sorting, Loading, Driving, Warehouse, Packaging, Retail sales	Warehouse Manager, Floor/Department Manager

<sup>12</sup> This table first appeared in Pinderhughes (2007).

## ***Economic sectors that provide green collar jobs***

Green collar jobs are located in 24 sectors of the U.S. economy, ranging from bike repair to weatherization (Pinderhughes, 2006). These sectors can be grouped into eight categories of environmental services (see Table 12).

**Table 12**  
**Green Collar Job Categories and Sectors**

<b>CATEGORY</b>	<b>SECTOR</b>
Transportation	Bicycle repair
	Bike delivery services
	Car and truck mechanic jobs, production jobs, and gas-station jobs related to bio-diesel, used vegetable oil and alternative fuels that do not harm the environment
	Public transit jobs related to driving
Energy	Energy retrofits to increase energy efficiency and conservation
	Solar installation and maintenance
Materials/recycling	Whole home performance (i.e. attic insulation, weatherization, energy and water audits, reducing air flow through buildings, installing control devices on appliances to reduce energy and water use, improving lighting systems, reducing hot water flows by installing appropriate technologies, etc.)
	Green waste composting on a large scale
	Hazardous materials clean up
	Materials reuse/producing products made from recycled, non-toxic materials
	Recycling
Food	Hauling and reuse of construction and demolition materials and debris (C&D)
	Food production using organic/sustainably grown agricultural products;
	Warehousing & delivery of sustainable/organic food products
Green space	Peri-urban and urban agriculture <sup>13</sup>
	Parks and open space expansion and maintenance
Green building and green maintenance	Green (sustainable) landscaping
	Tree cutting and pruning
	Green building
Water	Non-toxic household cleaning in residential and commercial buildings
	Water retrofits to increase water efficiency and conservation
Other	Furniture making from environmentally certified and recycled wood
	Manufacturing jobs related to large scale production of a wide range of appropriate technologies (i.e. solar panels, bike cargo systems, green waste bins, etc.)
	Printing with non-toxic inks and dyes

Below we group these sectors into three categories based on their relative maturity in the market -- “well established,” “hitting their stride,” and “emerging.”

Well established:

- Bicycle repair
- Food production using organic and sustainably grown agricultural products
- Warehousing & delivery of sustainable/organic food products
- Green building
- Green (sustainable) landscaping
- Hazardous materials clean-up
- Parks and open space expansion and maintenance

<sup>13</sup> The term “peri-urban” agriculture refers to agriculture that occurs on the periphery of a city.

- Public transit jobs
- Recycling
- Tree cutting and pruning

Hitting their stride:

- Bike delivery services
- Energy retrofits to increase energy efficiency and conservation
- Printing with non-toxic inks and dyes
- Solar installation and maintenance
- Water retrofits to increase water efficiency and conservation
- Whole home performance

Emerging in the U.S. market:

- Car and truck mechanic jobs, production jobs, and gas-station jobs related to bio-diesel, vegetable oil and other alternative fuels that do not harm the environment<sup>14</sup>
- Furniture making from environmentally certified and recycled wood
- Green waste composting on a large scale
- Hauling and reuse of construction and demolition materials and debris (C&D)
- Manufacturing jobs related to large scale production of a wide range of appropriate technologies (e.g. solar panels, bike cargo systems, green waste bins, etc.)
- Materials reuse/producing products made from recycled, non-toxic materials
- Non-toxic household cleaning in residential and commercial buildings
- Peri-urban and urban agriculture

### ***Characteristics of Bay Area green businesses that provide green collar jobs***

Data for the Pinderhughes study was collected through in-depth interviews and surveys with green business employers who provided workers with green collar jobs. Employer interviews were two to four hours long and included administering a survey composed of 31 open and closed ended questions designed to provide detailed information about green businesses, green collar jobs in these businesses, factors that contribute to the success of green businesses, and the willingness of employers to hire workers with barriers to employment (see Appendix 2 for details on methods and data collection).

Because their core products and services are designed to improve environmental quality, these businesses are “double bottom” line organizations, whose missions are environmental as well as economic. To the extent that they also strive to provide quality jobs for Bay Area residents with barriers to employment – especially low income people of color – they become “triple bottom line” organizations with missions that are social as well.

---

<sup>14</sup> It is important to note that there are significant environmental problems associated with large scale production of agro-based biofuels – (Santa Barbara et al, 2007).

The Pinderhughes study identifies the important characteristics of the green collar jobs in these green businesses. They:

- are small enterprises, with an average of 28 total employees, 20 of which, on average, are green collar employees;
- can be either private, non-profit, or cooperatively owned businesses;
- are located in areas that are zoned for industrial uses;
- do not own their property;
- have leases that will expire in the next few years;
- are currently experiencing an increased demand for their goods or services;
- are projecting future growth;
- want to stay in the city in which they are currently located;
- are very concerned about access to adequate, appropriate, affordable space to accommodate growth over the next 5-10 years;
- provide goods and services that cannot easily be outsourced (see Appendix 3 for summary of select findings).

The study also identifies important characteristics of the green collar jobs in these green businesses. They:

- provide green collar workers with wages well above the minimum wage;
- pay workers an average of \$15.80 if they are located in Berkeley, CA;
- pay workers an average of \$16.65 if they are located in San Francisco, CA;
- provide workers with excellent benefits (i.e. health care, travel allowances, 401K plans);
- provide workers with on the job training for green collar jobs;
- do not require high levels of education or vocational training for entry level jobs;
- provide workers with opportunities for occupational advancement in their firms;
- do not have an adequate supply of skilled workers for green collar jobs in their firms.

Below we provide more detail on the Pinderhughes 2007 findings.

Green collar jobs provide workers with good wages. The average hourly wage for a green collar worker is \$15.80 in Berkeley and \$16.65 in San Francisco. By comparison, the self sufficiency wage for single adults without children in 2006 was \$12.10 in Alameda County and \$14.58 in San Francisco; Berkeley's current "living wage" is \$11.39 per hour; San Francisco's minimum wage is \$9.14 per hour; and the California minimum wage is \$8.00 per hour.

Green collar jobs provide workers with health benefits. Of the businesses included in the Pinderhughes study, 90% offer healthcare coverage to their green collar employees. Most pay the full cost of insuring their workers, and many extend health care coverage to workers' dependents. This is impressive, considering that rising health care costs are especially burdensome for small businesses, and significant, considering the increasing proportion of Bay Area residents without adequate health coverage.

Green collar jobs provide workers with many additional benefits. These benefits include paid time off, financial incentives (i.e. IRA, 401-K plans, profit sharing), bonuses, service awards, mileage allowances, transit passes, trade relate benefits, flexible scheduling,

employee assistance programs, and, in a minority of sectors and firms, the benefits associated with union membership.

Green collar jobs provide workers with meaningful work. By definition, green collar jobs improve environmental quality, typically in local communities and in very visible and direct ways. Thus, green collar jobs offer not only a paycheck and benefits, but meaningful, community-serving work, an important feature that most jobs with low barriers to entry lack.

Green collar jobs provide workers with high levels of job satisfaction. Workers in green collar jobs have high levels of employee satisfaction, attributed to good pay and benefits, good working conditions, shared values, job security, advancement opportunities, and the fact that green collar jobs provide workers with meaningful community serving work that directly improves environmental quality.

Green collar jobs provide opportunities for on-the-job training and skill development. Business owners/managers in the vast majority of green collar jobs sectors provide workers with on-the-job training for all green collar jobs in their firms. Assistance provided to green collar workers by Bay Area green businesses includes training and assistance to obtain a Class B license, forklift operator certification, green building certification, and certifications to become a journeyman, solar electrician or general contractor.

Green collar jobs provide entry level workers with opportunities for internal advancement and occupational mobility. Most of the green businesses in the Pinderhughes study provide workers in green collar jobs with opportunities to gain experience and develop skills that can lead to occupational mobility within the firm or in a related field outside of the firm.

Green collar jobs have low barriers to entry. Employers need applicants who are job ready but, in most sectors, applicants do not need to possess the skill sets associated with a particular green collar job because they will receive on the job training.

### ***What employers are looking for in entry level green collar workers***

Employers in the Pinderhughes study identified “job readiness” as the most important requirement for entry level green collar employees in their firms. As stated previously, these employers define “job readiness” in terms of six attributes: (1) a sense of responsibility; (2) basic presentation, listening and communication skills; (3) ability to consistently arrive to work on time; (4) a positive attitude towards the work and colleagues; (5) ability to work both independently and as part of a team; and (6) a strong work ethic (2007).

Most employers do not require applicants to have the “hard” skills associated with a particular green collar job, preferring to train workers on the job. All of the employers in the Pinderhughes study provide workers with extensive on the job training for green collar jobs (2007). This is one of the main reasons why green collar jobs are so well suited for applicants with barriers to employment. Residents with barriers to employment only need to be job ready and connected to green collar job employers.

Employers in the Pinderhughes study expressed enthusiasm about hiring and training low-income residents for green collar jobs if these workers are “job ready.” Assuming

that applicants have basic job readiness skills, employers are willing to hire workers with limited skills and provide them with on the job training in the specific skill sets that their green collar jobs require.

### ***Obstacles to connecting job seekers with barriers to employment to green collar jobs***

The characteristics of green collar jobs, and the dramatic growth of the sectors that produce them, hold great promise for Bay Area residents with barriers to employment. However, four major obstacles stand in the way of connecting residents with barriers to employment to green collar job opportunities that could make a profound difference in their lives:

1. They lack “job readiness” skills (as defined above);
2. They are not connected to the social networks employers use when they search for green collar job applicants;
3. They are frequently competing with more highly educated and/or skilled applicants;
4. They lack training in areas related to green collar job fields.

To address these obstacles, Pinderhughes (2007) developed a model for a local scale green collar workforce development and job placement program that would help to overcome all four obstacles. The three essential elements of that model are (1) job readiness training; (2) an internship component; and (3) strong links between training programs and green collar job employers working through a Green Business Council (a detailed description is contained in Appendix 1). The model is going to be piloted in the City of Oakland through the *Green Jobs Corps* program, and in the City of Cleveland through the *Pathways out of Poverty through Green Collar Jobs* program.

## **IV. THE FUTURE OF GREEN COLLAR JOBS IN THE BAY AREA**<sup>15</sup>

Research shows that green collar job sectors are poised to expand significantly over the next few decades, and that as these sectors expand there will be large increases in green collar work force opportunities. Pinderhughes (2007) attributes this growth to five factors: (1) state and local policies designed to improve environmental quality; (2) government support for green economic development; (3) the efforts of large institutions to reduce their ecological footprint; (4) changes in consumer spending patterns; and (5) private investment in the green economy. Below, we discuss each of these factors in more detail.

### ***Government action to improve environmental quality***

State and local governments are increasingly adopting public policies designed to improve urban environmental quality in areas such as solar energy, waste reduction, materials reuse, public transit infrastructures, green building, energy and water efficiency, and alternative fuels. The goals and programs associated with these public policies increase business opportunities for green enterprises, which results in an expansion of green collar job opportunities.

---

<sup>15</sup> This section of this paper first appeared in *Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment* (Pinderhughes, 2007).

Growth in the recycling industry is illustrative of this trend. As cities and states pass policies to reduce waste going to landfills and incinerators, green collar jobs are increasing exponentially. According to the US Environmental Protection Agency, 50.8 million tons of materials were recycled or composted in 1999, a 50% increase from the previous decade. Throughout the United States over 56,000 recycling facilities, both private and public, are creating more than 1.1 million jobs. Recycling is now a major industrial sector of the US economy, comparable to the automobile manufacturing and mining industries and surpassing waste management (Williams, 2004).

Reuse and recycling operations are typically labor-intensive, and excellent sources of entry level positions. Recycling creates more jobs than conventional waste disposal methods. Between 1992 and 1995, there was a 30% job growth in the recycling industry in the state of Washington; 371 firms created 3,700 jobs in recycling and 13,000 jobs in the remanufacturing sector. Additional jobs can be created locally by attracting industries that convert recovered materials into finished products ([http://www.smartcommunities.ncat.org/success/materials\\_reuse\\_and\\_recycling](http://www.smartcommunities.ncat.org/success/materials_reuse_and_recycling), May 2007).

Realizing the importance of this new economic sector, the State of California has designated 40 Recycling Market Development Zones and now provides low interest loans of up to \$1 million for businesses utilizing recycled materials. In its first 18 months, the Oakland/Berkeley Zone generated \$8.2 million in investment for recycling, creating 155 new jobs and diverting 100,000 tons of new material from landfills (tufts.edu/tuftsrecycles/notenough, May 2007).

The cities of San Francisco and Berkeley have both set goals of 75% waste diversion by 2010 and zero waste by 2020. San Jose is considering the adoption of the same goals in a slightly longer time frame. Even achieving 75% waste diversion rates will require huge increases in the number of jobs associated with hauling construction and demolition materials, composting green waste, and picking up, hauling, sorting and selling recycled materials. It will also generate more work for materials reuse businesses and industries.

Mayors, chief climate officials, and business leaders from 45 cities recently gathered in New York for the second *Large Cities Climate Summit* to share best practices, identify collaborative projects, and chart future action in the fight against global warming ([www.c40cities.org](http://www.c40cities.org)). In California, Assembly Bill 32 requires that the state's global warming emissions be reduced to 1990 levels by 2020, through an enforceable statewide cap on global warming emissions. In Berkeley, a strong majority of voters (81%) passed Measure G in November 2006, calling for the Mayor to develop a plan to achieve an 80% reduction in greenhouse gas emissions by 2050. Measures like these, and general concern over greenhouse gas emissions and climate change, are stimulating national, state, and local public and private investments in renewable energy, energy efficiency, alternative fuels, water conservation, resource recovery systems, bicycle infrastructures, and public transit that will generate millions of green collar jobs for U.S. workers over the next decades.

Although this paper focuses on the Bay Area, it is important to note that on a national scale, organizations like the Apollo Alliance and Green For All successfully lobbied the Congress to include *the Green Jobs Act of 2007* in the Congressional Energy Independence and Security Act. *The Green Jobs Act* authorizes \$125 million to train job

seekers for renewable and clean energy jobs in sectors like the solar and wind energy, green building construction, and bio-fuel production. This is very promising, and so is the fact that 20 percent of its funds are earmarked to support a Pathways Out of Poverty Program which will target low-income individuals.

### ***State and local government support for green economic development***

Over the last few years, U.S. states and cities have been substantially expanding their support for green economic development. As states and cities provide green businesses with marketing and branding opportunities, streamlined permitting processes, procurement contracts and infrastructure support, existing Bay Area green businesses will expand their operations, entrepreneurs will create new green businesses, and green businesses from other parts of the U.S. – and beyond -- will decide to locate in the Bay Area.

The City of Berkeley's Sustainable Business Action Plan is a good example. The plan sets bold goals and strategies for reductions in waste and greenhouse gas emissions, water conservation, and green building. It also sets out a program to develop green businesses by increasing demand for green products and services, nurturing existing green businesses in the city, creating the necessary conditions for startup environmental businesses, and developing an environmentally-oriented "Berkeley brand" that would be useful to all the city's green businesses.

Another good example is the City of Oakland's recent decision to create the Oakland Green Jobs Corps (discussed in Section V of this report).

### ***Environmental initiatives by large institutions***

Like cities and businesses, many large institutions, (i.e. universities, hospitals, and federal buildings) are creating green collar jobs as they implement initiatives designed to reduce their ecological footprints and improve environmental quality. At the 4th University of California Berkeley Sustainability Summit in April 2007, Chancellor Birgeneau announced an aggressive target for reducing campus greenhouse gas emissions to 1990 levels by 2014, six years ahead of Governor Schwarzenegger's target for California.

### ***Growth in consumer demand for sustainability-oriented products and services***

Bay Area residents are increasingly choosing to purchase goods and services from businesses that are environmentally responsible and whose products and services improve environmental quality. As people reorient their consumption towards greener goods and services, they will generate more work for green businesses and, as these businesses stretch to meet increases in consumer demand, more green-collar jobs.

In the U.S. alone, there is a \$228.9 billion market for goods and services focused on health, the environment, social justice, personal development and sustainable living. These include purchases related to renewable energy, organic food, alternative fuel vehicles, non-toxic cleaning products, alternative health care, and resource-efficient products. This market – sometimes referred to as LOHAS, short for Lifestyles of Health and Sustainability -- is projected to reach \$1 trillion annually by 2020 (LOHAS Journal, 2007). Sales of organically grown food are growing at the rate of 20 percent per year

(Jason and Danaher, 2006). According to a study done by the Outdoor Industry Association, bicycles contribute \$15 billion to the economy of the Pacific region, most of it in the form of tourism and supported rides (Business Leaders Hear from Cycling Industry - [bikeportland.org/2007/04/05](http://bikeportland.org/2007/04/05)).

### ***Growth in venture capital investment in green technologies***

A survey by market research firm Dow Jones VentureOne and consulting firm Ernst & Young found that in 2006, venture capitalists in the United States, China, Europe, and Israel boosted investments in clean technology by 93.5 percent over the \$664.1 million spent in 2005 ([www.planetark.com/dailynewsstory.cfm/newsid/40558/story.htm](http://www.planetark.com/dailynewsstory.cfm/newsid/40558/story.htm)). A study conducted by Environmental Entrepreneurs and the National Resource Defense Council concluded that venture capital investments in California's clean tech industry could seed 52,000 to 114,000 new jobs statewide through 2010 (Pernick et al, 2004). According to the Cleantech Venture Network, venture capital investment in clean technologies increased to \$1.6 billion in 2005, a 35% increase over 2004. Clean tech is now the third largest investment category, behind biotechnology and software. In the first half of 2006, investment in clean tech reached \$1.4 billion in 2006 (California Clean Tech Open, 2006).

### ***Growth in markets for green products and services***

Because of the convergence of these five driving forces, the markets for green products and services are expanding dramatically. In 2005, the market for alternative energy, biofuels, wind, solar photovoltaics, and fuel cell/distributed hydrogen was estimated at \$39.9 billion and projected to reach more than \$226.5 billion in the next decade (Pernick and Makower, 2007). In 2006, the market for non-residential green building was estimated to be approximately \$43 billion a year. Every single employer in the Pinderhughes study, which focused on green businesses that provide workers with green collar jobs in the Bay Area, stated that both their sector and their firm was likely to grow in the next five years (2007).

As the markets expand, green businesses are growing, with a corresponding increase in green collar jobs. A study conducted by the Apollo Alliance concluded that major national investments in energy efficiency, renewable energy, and renewable fuels could result in nearly 20 million new jobs in the United States (Apollo Alliance, 2006). A study conducted by the Department of Energy showed that for every \$1 million dollars invested in weatherization programs in low income communities, 52 jobs are created in those communities (Gordon, Hays, Sompolinsky, Tan, and Tsou, 2007). After conducting an energy audit of public buildings, Strategic Concepts in Organizing and Policy Education (SCOPE) in Los Angeles concluded that retrofitting 100 city buildings to be more energy efficient would create an estimated 2,000 jobs (Westenskow, 2007).

### ***Shortage of workers for green collar jobs***

The fact that the economic sectors that provide green collar jobs are growing so rapidly, combined with the fact that there are few places that formally train workers for these jobs, has resulted in a shortage of skilled workers. None of the 24 sectors are adequately prepared to address the job training and work force development needs associated with rapid growth. As stated previously, 73% of employers in the Pinderhughes study stated that they are experiencing a shortage of skilled workers in

their sector, with the greatest needs in energy, green building, mechanics, and bicycle repair (Pinderhughes, 2007).

A 2006 study by the National Renewable Energy Lab identified the shortage of job training as a leading non-technical barrier to renewable energy and energy efficiency growth ([www.nrel.gov](http://www.nrel.gov)). The National Association of Energy Service Companies, American Solar Energy Society, American Wind Energy Association, Renewable Fuels Association and Solar Energy Industries Association have stated that “across the country, our companies experience workforce shortages as one of the key barriers to growth” ([www.sanders.senate.gov/news/record.cfm?id=276874](http://www.sanders.senate.gov/news/record.cfm?id=276874)).

Given the dramatic growth described above, the Bay Area has a unique opportunity to grow a new sector of “triple bottom line” businesses, expand green collar jobs, and make quality jobs available to the low-income people who need them most. Fortunately, the region already has a number of pioneering initiatives trying to achieve this goal. We describe a few of these initiatives below.

### ***Green collar job initiatives in the Bay Area***

The Bay Area is home to a number of nonprofit enterprises that have been training low income residents for green collar jobs for a number of years. In addition, several local efforts designed to support green collar workforce development will be launched in 2008-2009. Below we briefly describe promising examples in these two areas.

### ***Existing Bay Area programs that provide green collar training***

Although the term “green collar jobs” is relatively new, a number of nonprofit organizations in the Bay Area train low income residents for manual labor jobs that directly improve environmental quality without using the term. These are double or triple bottom line nonprofit organizations that use the opportunity to deliver environmental services as a vehicle to prepare men and women with barriers to employment to enter the labor market. Five exemplary programs are the SF Conservation Corps, Rising Sun Energy Center, Clean City, Solar Richmond, and the Alameda County Computer Resource Center. The Conservation Corps, Rising Sun Energy Center, Clean City and the Alameda County Computer Resource Center have been providing green collar job training for years (but not using the term “green collar”) while Solar Richmond is a relatively new organization.

(1) The San Francisco Conservation Corps (SFCC), founded in 1984, is a nonprofit job and academic training organization serving young people ages 18-26 ([www.sfcc.org](http://www.sfcc.org)). Corpsmembers develop their job and academic skills, leadership abilities and environmental awareness by completing outreach, conservation and community service projects throughout the city. Simultaneously, they participate in academic programs such as high school diploma preparation, study halls, environmental and restoration classes, personal and professional development coaching and computer literacy training.

Through the SFCC Recycling Center, Corpsmembers help achieve the goal of sustainable development for the Presidio by establishing and servicing recycling programs for many of the Presidio's tenants, as well as local communities and companies. Corpsmembers also provide environmental education field trips for local school groups. Through the SFCC Project and Education Center, some Corpsmembers

perform public space improvement projects and provide habitat restoration services for local and state agencies, while others develop their work skills and environmental knowledge by leading educational programs for Presidio visitors and performing restoration and maintenance activities throughout the Golden Gate National Recreation Area.

(2) Rising Sun Energy Center (RSEC), founded in 1991, is a nonprofit organization that provides environmental education and direct environmental services. The organization's focus is on energy efficiency and conservation. Rising Sun has two main programs. *California Youth Energy Services* trains and employs young people ages 14-22 years old as "energy specialists" who conduct a basic residential energy audit and install basic energy efficiency hardware in residences. Since 2000, over 300 Energy Specialists have retrofitted over 8,000 East Bay residences and 11 public shelters. *Energy Partners* trains and employs adults to conduct more sophisticated energy audits and installations in low-income households and multi-family apartment dwellings.

Over the past five years RSEC has provided energy and water conservation audits and hardware installation to over 6,500 residences in the East Bay area; trained over 200 high school and college students as Energy Specialists who work in their community to weatherize homes and help people conserve energy; and served over 2,000 homes between 2004-2005 alone through the CYES program, attaining a cumulative savings of 538,133 annual kilowatt hours and 22,959 annual therms.

(3) Clean City is a community-based organization that focuses on cleaning, greening, and beautifying the city of San Francisco. Clean City works to keep the city clean and green by building bridges between resources and the neighborhood groups, merchant associations and residents that need them. They offer transitional employment in sidewalk sweeping, graffiti removal and special event recycling.

Clean City's training program (Clean City Partnership) and social enterprise (Clean City Services) provide employment opportunities and support services, such as the employment counselors who lead computer-based job search sessions each day. Most of Clean City's participants are formerly homeless; all are unemployed when they join the program. Over 90% of Clean City training graduates find jobs during the four months of the program.

(4) Solar Richmond is a volunteer run organization founded in 2005 by a software entrepreneur turned green energy entrepreneur ([www.solarrichmond.org](http://www.solarrichmond.org)). Its immediate goals are to install 5 megawatts of solar power and create at least 100 green collar jobs in Richmond by 2010. To achieve these goals, Solar Richmond is working on multiple fronts, including a residential and commercial installations program, an education program, and an employment program -- a coordinated effort between the education component and the City programs working toward the creation of green collar jobs. Solar Richmond is working with governmental and non-governmental organizations to organize training, raise job awareness, and link with employers to understand their needs and create viable green jobs. Partners in this effort include Richmond Works, Richmond Youth Build (a program to train 150 low income Richmond residents in a comprehensive pre-apprenticeship program for the construction trades and place them in jobs), the Solar Living Institute, and Grid Alternatives.

Along with GRID Alternatives and the city of Richmond, Solar Richmond has developed the Richmond Solar Affordable Housing Project, which installs residential solar electric systems for low-income residents. Installation services are provided free of charge to homeowners through Richmond BUILD construction teams. This program promotes and encourages the use of solar energy throughout the city, helps low-income homeowners reduce their energy bills, and provides green collar jobs for low-income Richmond residents.

(5) Alameda County Computer Resource Center recycles computers, VCRs, televisions, and copy machines from individuals, businesses, and corporations. The organization focuses on repairing and upgrading discarded computers and then giving these refurbished computers, free of charge, to schools, nonprofit organizations, economically and physically disadvantaged individuals, and other organizations in need.

The Center creates dozens of green collar jobs for men and women who are homeless, mentally ill, and/or have been unable to find work until they discovered the Center. Many of the people who work at the Center have been sent there by local rehabilitation programs, homeless shelters, or parole officers who know that they will receive basic on the job training and work skills that they can use as a foundation to build on in the future.

You do not have to know anything about computers to work at the Alameda County Computer Resource Center -- they will train you to identify computer parts and pieces; separate electronic equipment, fix computers, create whole computers, and install and use computer software packages. According to founder James Burgett, working at the Center has had a transformative impact on these workers, helping them to get their lives together in essential ways that include: moving from living on the street into an apartment; kicking drug and alcohol habits; improving their health by taking their medications regularly and keeping medical appointments; and increasing their self esteem and ability to work with others.

### ***Proposed Bay Area green collar job training programs***

Several organizations have recognized the value of training workers with barriers to employment for green collar jobs and are launching training programs in 2008-2009. These programs will provide clients with soft and hard skills training, as well as skills certification (a critical requirement for low skilled workers to advance), and will establish strong ties with employers in order to connect graduates with green jobs that provide living wages, benefits, and advancement opportunities. Three promising programs are described below.

(1) The Oakland Green Jobs Corps is a collaboration between community-based organizations (most notably the Ella Baker Center and Oakland Apollo Alliance), unions, the City of Oakland, and private companies. The program is based on the training model designed by Pinderhughes and outlined in her 2007 report. That model has three essential components: (1) a job training program; (2) an internship component; and (3) a Green Business Council.

The Corps will provide Oakland residents with job training, support, and work experience, particularly related to the energy sector. It prioritizes providing opportunities to residents who are usually considered "hard to employ." The program will provide training in hard skills, soft skills, financial management, and environmental education, combined with wraparound services including case management and job placement.

Participants will finish the program with paid internships in renewable energy and energy efficiency projects. The Ella Baker Center and Oakland Apollo Alliance are currently working to convene a Green Business Council that can define employer requirements for green collar employees, guide the development of training curriculum, and provide the internship placements for Oakland Green Jobs Corps trainees. The Alliance will partner with Mayor Ron Dellums and the Oakland Metropolitan Chamber of Commerce's Green Economy Cluster to invite at least 20 local and regional employers to join the Council. Each firm will agree to provide internship positions for Oakland Green Jobs Corps trainees. The program is scheduled to begin in spring 2008 with funding provided by the City of Oakland.

(2) Global Exchange's Green Workforce Development Program focuses on green career training for youth and adults in San Francisco. Its high school component, called the *Green Guardians Program*, is designed to train inner city high school youth in green neighborhood development skills, many of which are green collar job skills. The program will be organized around neighborhood high schools. Six to ten youth, ages 15-19, will be recruited three times a year and receive training that includes public outreach and education related to energy and environmental issues, urban greening practices, promotion of recycling and composting programs, green building technology and building energy audits, urban agriculture at Alemany Farm, and nonviolent conflict resolution. Job training and placement services will be provided for *Green Guardians* who stay with the program for a certain period of time and meet equal opportunity selection criteria. The program is scheduled to begin in 2008-2009 with funding providing by the city of San Francisco and private foundations.

(3) City College of San Francisco and the Peralta Community Colleges are developing programs that train workers for specific types of green collar jobs. San Francisco City College has a program focused on alternative fuels and construction. Peralta has programs focused on HVAC and sustainable urban agriculture. In addition, both systems have existing programs that could easily be stretched to include new "green" training components—this would include the construction (*City Build*) program at SF City College and the furniture making program at Peralta. Administrators in both systems are currently working to enhance capacity to train future students for green collar jobs across a range of sectors. These programs are ongoing, and funded by the Community College system.

## **V. CONCLUSION**

The San Francisco Bay Area is one of the most prosperous regions in the United States, but as this paper has shown, its prosperity is not shared by all its residents. The three counties that are the geographical focus of this paper – Alameda, San Francisco, and Santa Clara – have significant numbers of residents who face poverty, unemployment, underemployment, low wage employment, and barriers to employment. These residents represent all racial and ethnic groups, but are disproportionately African American and Latino. They represent all age groups, but are disproportionately young. Given the high cost of living in the region, most of the jobs available to these residents do not pay nearly enough to meet the requirements for self sufficiency. Clearly, there is a need for substantial numbers of additional living wage jobs, with low barriers to entry and opportunities for occupational and educational mobility.

Green collar jobs – manual labors in enterprises whose products and services improve environmental quality – are very well suited to meet this need because of a combination of three important characteristics. First, green collar jobs are high quality jobs. They provide workers with living wages, health insurance, additional benefits, meaningful work, skill training, job satisfaction, and opportunities for both internal and external advancement. Second, green collar jobs have low barriers to entry. They have low requirements in terms of education and work experience, and most employers are enthusiastic about the opportunity to provide low-income local residents with an opportunity to train for, and obtain, green collar jobs in their firms. Third, the economic sectors that provide green collar jobs are expanding dramatically, due to market demand, venture capital investment, and state and local government actions designed to improve environmental quality and expand green businesses.

The Bay Area is a particularly promising region for connecting the needs of low income residents to the opportunity of green collar jobs. This region is a center of innovation and entrepreneurship in environmental technology. Environmental consciousness is high, and so is consumer demand for environmentally sustainable and healthy lifestyle products and services. Local governments are increasing their support for green business development. Venture capital investment in clean technology is substantial and growing in the Bay Area, and local green businesses in all sectors are experiencing rapid growth and a shortage of workers for green collar jobs. This combination of factors provides Bay Area nonprofits, public agencies, and businesses with a unique opportunity to grow the green business sector in a way that not only builds wealth and improves environmental quality, but also alleviates poverty and inequality, by developing and supporting programs that train and place low-income job seekers in green collar jobs.

This opportunity did not exist a decade ago, because the convergence of green business growth, green consumer demand, venture capital investment, and government support is a recent phenomenon – and it may not exist a decade from now, when programs for green collar job training and pathways to green business careers are better established. Actions taken in the next few years will determine who is included in the green collar jobs portion of the expanding green economy, and who is excluded.

Over the next decade(s) green collar jobs will increase in all 24 sectors. But unless there is an intentional and strategic effort, most of these jobs will not go to low income residents with barriers to employment. Instead, they will continue to be filled by people whose education, work experience, lack of barriers to employment, and social network connections make them overqualified for most manual labor jobs and eligible for a much wider range of good work options. In order to provide high quality green collar jobs to the people who need them the most – low income residents with barriers to employment – businesses, nonprofits and government must take coordinated, programmatic action.

As this paper shows, there are some good programs already in place to do this and some very promising new ones set to launch in the near future, but it will take a much more concerted and large scale effort if we are to fully utilize the opportunity to improve urban environmental quality as an opportunity to also reduce social inequality and poverty in the Bay Area.

## **Bibliography**

Apollo Alliance. New Energy for Cities: Energy-Saving & Job Creation Policies for Local Governments. 2006.

Bureau of Labor Statistics. The Employment Situation. September 2007.  
<http://www.bls.gov/news.release/pdf/empsit.pdf>

California Budget Project. California's Two-step Minimum Wage Increase Provides an Important Boost to Low-wage Workers' Earnings. December 2007.  
[www.cbp.org/publications/pub\\_workwagesinc.html](http://www.cbp.org/publications/pub_workwagesinc.html)

California Clean Tech Open. 2006 Competition Report. 2006.

California Department of Corrections and Rehabilitation. California Prisoners and Parolees 2005: Summary Statistics On Adult Felon Prisoners and Parolees, Civil Narcotic Addicts and Outpatients and Other Populations. 2006.  
[www.cdcr.ca.gov/Reports\\_Research/Offender\\_Information\\_Services\\_Branch/Offender\\_Information\\_Reports.html](http://www.cdcr.ca.gov/Reports_Research/Offender_Information_Services_Branch/Offender_Information_Reports.html)

Connelly, Joseph. GREEN: The Green Economy is Today's Hot Business Trend. SFGATE.com, October 27, 2004.

Edwards, John. Building One America in the New Energy Economy with Green Collar Jobs, 2007.

Gordon, Hays, Sompolinsky, Tan, and Tsou. Community Jobs in the Green Economy. Apollo Alliance and Urban Habitat, 2007.

Holzer, Harry, Raphael, Steven, & Stoll, Michael. Employment Barriers Facing Ex-Offenders. Urban Institute Reentry Roundtable, 2003.

King, Ryan. The State of Sentencing 2007: Developments in Policy and Practice. The Sentencing Project. January 2008. [www.sentencingproject.org](http://www.sentencingproject.org)

LOHAS Journal, 2007, [www.lohas.com/journal/](http://www.lohas.com/journal/)

Jason, Mark and Danaher, Kevin. Can We Buy Change? Global Exchange, December 15, 2006.

Partnership for 21st Century Skills. Are They Really Ready To Work? Employers' Perspective on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce. 2006,  
[www.21stcenturyskills.org/documents/FINAL\\_REPORT\\_PDF09-29-06.pdf](http://www.21stcenturyskills.org/documents/FINAL_REPORT_PDF09-29-06.pdf)

Pernick, R. Makower, J., de Cordova, A. Harnessing San Francisco's Clean Tech Future. Clean Edge, 2004.

Pernick, R., Makower, J., and Wilder, C. Clean Energy Trends. Clean Edge, 2007.

Pinderhughes, Raquel. Green Collar Jobs: Workforce Opportunities in the Growing Green Economy: Race, Poverty and the Environment, Vol 13, No 1, Summer 2006.

Pinderhughes, Raquel. Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment, 2007. [bss.sfsu.edu/raquelrp/](http://bss.sfsu.edu/raquelrp/)

Santa Barbara et al. The False Promise of Biofuels. International Forum on Globalization and Institute for Policy Studies, 2007.

State of California Department of Justice, Criminal Justice Statistics Center, 2005)  
<http://ag.ca.gov/cjsc/statisticsdatatabs/SuperCo.php>

Dobie, Kathy. Denial in the Corps. The Nation, February 18, 2008:11-19.

U.S. Dept. of Energy/EERE. Weatherization Assistance Program: Improving the Economies of Low-Income Communities (last update August 2006),  
[www.eere.energy.gov/weatherization/improving.html](http://www.eere.energy.gov/weatherization/improving.html).

Urban Strategies Council. Community Report on Parole & Probation in Alameda County. 2006.

Williams, Taffy Lee. Recycling Industry Supports 1.1 Million American Jobs. The Viking News, February 11, 2004, Volume 73, No. 2.

Westenskow, R. Analysis: Call for Green Collar Workers. United Press International, May 24, 2007

## **Appendix 1.**

### **Pinderhughes Green Collar Jobs Training and Placement Program Model<sup>16</sup>**

**Purpose of the Program:** To prepare men and women with barriers to employment to enter the labor market and obtain entry-level green collar jobs.

**Target population:** 18-35 year old men and women with barriers to employment. This population includes people who do not have a high school degree, have been out of the labor market for a long time, were formally incarcerated, and/or have limited labor market skills and experience.

**Types of Jobs:** This program targets green collar jobs related to:

- bicycle repair
- bike delivery services
- energy retrofits to increase energy efficiency and conservation
- food production using organic and sustainably grown agricultural products
- green furniture (using environmentally certified and recycled wood and other materials)
- green building
- green composting on a large scale
- hauling and reuse of construction and demolition materials and debris (C&D)
- green (sustainable) landscaping
- materials reuse (i.e. producing products made from recycled, non-toxic materials)
- parks and open space expansion and maintenance)
- green printing (using non-toxic inks and dyes, recycled paper, etc.)
- recycling
- solar installation and maintenance
- tree cutting and pruning
- water retrofits to increase water efficiency and conservation
- whole home performance (i.e. HVAC, attic insulation, weatherization, etc.)

**Training:** This is an approximately 3-6 month training program that utilizes both training in the classroom and on-the-job training to provide clients with the following direct services: (1) assessment; (2) basic literacy skills (math, English, writing, computer, oral presentation, basic communication skills, etc.); (3) life skills and soft skills training; (4) financial management skills; (5) OSHA Safety Training Certification; (6) an environmental educational component; (7) basic vocational skills relevant to green collar work force opportunities; and (8) an internship component that utilizes employers in the Green Business Council to identify green collar placement opportunities for job ready clients in green businesses.

**Case Management and Follow Up:** Each client will have access to case management and follow up services during the period in which they work as interns and for up to 12 months after they start their first employment opportunity in a green business. These

---

<sup>16</sup> This model first appeared in *Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment* (Pinderhughes, 2007). The model is being piloted for the first time in the cities of Oakland, California and Cleveland, Ohio.

case management and follow up services are designed to help both the client and the employer.

**Pathways to Employment & Educational and Occupational Mobility:** Graduates of the program will have access to multiple pathways to employment as well as to educational and occupational mobility. These pathways include: (1) ongoing on-the-job training opportunities in green businesses; (2) access to union apprenticeship programs, particularly electrical and construction; (3) access to higher education through adult schools, community colleges, and four year institutions; and (4) ongoing job placement services through employers in the Green Business Council.

**Employers:** In order to succeed, the program must have an involved, supportive, and enthusiastic group of green business employers who regularly communicate with the job training staff preparing program participants to enter the labor market. These employers will (a) identify growing green economic sectors and opportunities; (b) identify training standards for specific green-collar jobs; (c) identify placement opportunities; (d) create internship opportunities for program participants; and (e) hire job ready applicants for entry level green collar jobs when there are job openings in their firms. They may also refer job ready applicants to firms outside of Berkeley.

**Green Business Council:** A Green Business Council should be convened, in order to develop and nurture relationships with employers and ensure job placement. The Council should be composed of the owners and managers of local green businesses in the private, nonprofit, and public sectors that provide workers with green collar job, as well as other stakeholders such as local unions and educational institutions.

**Local Government:** It is essential that government staff working on issues related to economic development, work force development, and improvements in environmental quality provide ongoing, concrete support to the green businesses that provide workers with living wage, community serving green collar jobs. This can be accomplished in many ways, including: streamlining permitting processes for green businesses that provide green collar jobs in the city; utilizing procurement dollars and city contracts to support local green businesses; creating incentives for working with "first source" hiring policies; helping green businesses to access tax credits; and working with regional organizations such as the Workforce Investment Board.

**Community involvement:** The program should involve members of low income communities in assisting with recruitment and retention of program applicants as well as in supporting public and private sector initiatives to improve urban environmental quality and simultaneously create green collar jobs.

## **Appendix 2. Background Information on Methods and Data Collection**

### **Data Collection**

Data for the Pinderhughes study used to inform this report was compiled using both quantitative (survey) and qualitative (interview and archival) methods. Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS). Qualitative data were analyzed using content analysis.

Primary data on green businesses and green-collar jobs was collected through in-depth interviews and surveys with employers. Employer interviews were typically two to four hours in length and included administering a survey composed of 31 open and closed ended questions designed to provide detailed information about green businesses, green collar jobs in these businesses, factors that contribute to the success of green businesses, and the willingness of employers to hire workers with barriers to employment.

#### **Question topics related to the businesses:**

- the work of the firm
- the clients served
- conditions under which local green businesses are most likely to succeed and thrive
- factors that contribute to growth of the sectors
- infrastructure and location issues affecting green business development and growth - i.e. information related to ownership/leasing of buildings and property, square footage for industrial, office, and retail space, expansion plans, etc.

#### **Question topics related to green collar jobs:**

- the range of white collar and green collar employment opportunities in the firm
- detailed characteristics of all green-collar jobs in the firm
- the range, number, and type of green collar jobs
- wages, benefits, and working conditions
- specific training, qualifications, skill sets, certification, equipment, etc. that potential employees must possess in order to apply for particular green jobs
- how jobs are posted
- the networks workers use to find out about employment opportunities in the sector
- how workers are hired
- the potential for occupational mobility

#### **Question topics related to success factors for green businesses:**

- Policies, plans, subsidies, incentives and/or programs that stimulate or limit growth of the firm and sector
- Benefits and/or incentives businesses receive through participation in a green business program

#### **Question topics related to employer attitudes:**

- employers' attitudes about workforce training programs and workers with barriers to employment
- employers' interest in employing residents with barriers to employment in green-collar jobs

- under what conditions employers would hire workers with barriers to employment for green collar jobs.

The sample of Berkeley green businesses that provide workers with green collar jobs was developed using a registry of green businesses maintained by the city of Berkeley's Office of Energy and Sustainability through its Green Business Program. In 2006, there were 218 green businesses registered with the City of Berkeley's Green Business Program. We used this registry to establish our universe of green businesses in the city of Berkeley. From this universe of 218 businesses, we identified 31 businesses that were providing workers with green collar (manual labor) jobs. We contacted each of these 31 businesses by phone and were able to conduct in-depth interviews and surveys with the owners or managers of 22 of these businesses. Thus, our sample includes 68% of the total number of green businesses in Berkeley that provided workers with green collar jobs in 2006. It is important to note that this figure represents a sample that includes almost 70% of the businesses providing workers with green collar jobs in Berkeley and that every sector of the city's green economy is growing which means that there will be an expansion in green collar jobs across multiple sectors over the next decade(s). Together, these 31 Berkeley based businesses provide workers with high quality, family supporting, community-serving, environmentally improving, green collar jobs.

In addition to in-depth interviews and surveys with employers, we conducted informational interviews with staff working in city government and workforce development programs in Berkeley and Oakland in order to understand: local environmental policies, programs, and plans; economic development policies and strategies; green economic development strategies; labor policies; and the structure of workforce development programs.

Census data was analyzed in order to reveal the depth of poverty, unemployment and racial inequality in Berkeley, Oakland, San Francisco and the state of California and, to establish the need to address these problems by deliberately cultivating green collar jobs as a new source of living wage, community serving jobs for low income residents in the city and the region.

Additionally, 36 men and women in Berkeley, Oakland, and San Francisco, who have barriers to employment and were unemployed or underemployed at the time they participated in the study, were interviewed and surveyed in order to gauge their level of preparation for, and interest in, green collar jobs. The survey was composed of 21 questions designed to identify their level of interest in green collar jobs.

**Appendix 3: Summary of Select Data on Bay Area Green Businesses that Provide Workers with Green Collar Jobs<sup>17</sup>**

CODE	Business Sector	Business Type	Business Model	Business Location	Total # of Employees	Total # of Green Collar Jobs	Types of Green Collar Jobs	Types of Other Jobs	Job Growth Projected?	
001	Energy	Energy Retrofits	non-profit	Berkeley	11	5	contractor, handyman/ carpenter/repair	exec, admin, mktg, mgrs	yes	
		HVAC								
002			private	Berkeley	1		electrician, journeyman, apprentice	owner	possible	
003		Solar Installation/Maintenance	private	Berkeley	24	18	warehouse, foreman, service tech, solar tech	exec, admin, development, managers, safety compl, engineers	yes	
004			private	San Francisco	10	4	apprentice, journeyman, foreman	mgmt, sales, engineering	yes	
005			private	Berkeley	12	9	electrician, journeyman, apprentice	general mgr, office mgr, project mgr	possible	
006		Whole Home Performance	non-profit	Berkeley	11	10	energy partners/ specialists; electrical consultant	office manager	yes	
(summer)					100	80				
		Water	Water Conservation							
			Adaptive Grey Water Reuse							
007	Green Building	Construction/Remodeling	private	Berkeley	13	9	carpenters, project manager, intern	exec, admin, financial	yes	
		C&D								

<sup>17</sup> These businesses are located throughout the Bay Area, in the cities of Berkeley, Emeryville, Oakland, San Francisco and Union City.

008	Woodworking	Custom Cabinetry/Furniture Design/Construction/Installation	private	Berkeley	40	20	manufacturing	admin, mktg	yes
009		Recycled Wood Furniture Design/Construction/Sales	private	Berkeley	25	16	warehouse, carpenter, finisher, sander, assembler, loader	general mgr, store mgr, admin, finance, factory/warehouse leaders	yes
	Green Space	Parks & Open Space							
		Sustainable Landscaping							
010		Tree Planting/Cutting/Pruning	non-profit	San Francisco	24	16	youth crew/leaders, planting managers	admin, tree care, edu/outreach	unknown
011	Food	Urban Agriculture	non-profit	Oakland	14	10	farm/mobile mkt mgrs, garden/enterprise apprentices	exec/admin, accounting, development, education/outreach	yes
012		Farmers' Market	non-profit	Berkeley	35	5	prog manager, market manager, market events manager, market assistant	exec, development, admin, mgmt	Yes
013		Catering	private	Emeryville	159	151	prep chefs, servers, dishwasher	exec, ops dir, event mgrs, sales, exec/secondary chefs	Yes
014		Specialty Foods Production	private	Berkeley	4	2	"cellar", packager	owner, brew master	Yes
015			private	Berkeley	6	1	food production	exec, financial, admin, tech, sales	No

016			private	Oakland	18	10	food production	exec, finance, marketing, design, R&D, prod mgmt	Unknown
017			public	Berkeley	11	7	roast, pkg/prod, tech services, driver, customer service	CEO, sales, finance, ops mgr	Possible
018		Bakery	private	Berkeley	160	145	baker, driver, cleaner	exec, admin, sales, mgmt	yes
019			private	Berkeley	19	16	driver, mixer, baker, farmers' market rep	gen mgr, office mgr, prod mgr	yes
020	Transportation	Bicycle Sales/Maint/Repair	co-op	Berkeley	20	6	bike mechanic, assembly	admin, sales, buyers	no
021		Bicycle Delivery Service	co-op	Berkeley	5	4	bike delivery	admin/mkt, web tech	unknown
		Alternative Fuels							
		Public Transportation							
022	Non-toxic Printing	Commercial Printing Services	co-op	Berkeley	22	5	post press/ binding, shpg/drvg	mgmt, sales, pre-press, printing	yes
023			private	San Francisco	4	1	press op	admin, pre-press	yes
024	Non-toxic Cleaning	Residential and Commercial Cleaning Services	co-op	Oakland	59	52	cleaners, customer service, gen/op managers	exec, admin, bus/corp development	yes
	Non-toxic products	Production of non-toxic cosmetics, cleaning products and other items							
025	Waste Stream Diversion	Computer Recycling Services	non-profit	Berkeley	16	13	warehouse, dispatch, computer tech/dis-assembly, driver, mechanic, metal worker	exec, admin	Yes

026		private	San Francisco	72	56	techs, receiving, warehouse (outside drivers)	exec, admin, sales, business development, managers, IT, buyers	Yes
027	Materials Re-use	non-profit	Oakland	29	10	drivers, clerks, artists	admin, special events	Yes
028		non-profit	San Francisco	7	6	facility/yard managers, sales/yard assistants, glass tumblers	admin	Yes
029		non-profit	Berkeley	41	35	driver, loader, salvager, receiving, warehouse, sales	exec, admin, managers	Yes
		Production of recycled products						
030	Residential/Commercial Recycling/Composting Svcs	non-profit	Berkeley	32	23	sorter, equip operator, pay master/scale operator, bale operator, forklift operator, driver, collector, loader	exec, finance, admin, gen/ops managers, supervisors	Yes
031		non-profit	Berkeley	35	19	driver, loader, customer service, farmers' mkt	admin, exec, retail	No
032		co-op	San Francisco	450	280	sorters, equip ops, weigh masters/scale house ops, load checkers, drivers, mechanics	exec, admin, acctg, HR, sales, supervisors/mgrs, compliance, engineers	Yes
033		non-profit	San Francisco	48	41	supervisors, lead/asst ops, maintenance workers, tool lending assoc	exec, admin, prog mgrs/asst, employmt counselor	Yes

034			non-profit	Union City	85	80	customer service, rate supe, mechanic, journeyman, office interns, buyback, cashier, lead ops, equipment ops, sorters, drivers	exec, admin, finance, marketing, advertisting/ community relations	Yes
035	Pet Services	Pet Care and Boarding	private	San Francisco	26	22	pet care techs, crew chiefs, front desk team	exec, managers	Yes

## **Acknowledgements**

This paper was commissioned by REDF (formerly the Roberts Enterprise Development Foundation), a nonprofit organization that provides financial investments and forms alliances with a portfolio of businesses in order to employ people who would otherwise remain living in long-term poverty. We would like to thank REDF for their support of this effort.

We would like to thank Michelle Jacques-Menegaz for assisting with data analysis; Al Auletta, John Brauer, and Ahmad Mansur for sharing valuable insights about workforce development and social equity; Bill Heiser for help with the data on incarceration; Steven Pitts for asking insightful questions and providing invaluable assistance with our search for data on low wage workers and occupations; and Carla Javits for her insightful editorial comments.