An Analysis of the Opportunities and Obstacles in the Green Jobs Market for Boston’s Chinese Community
PATHWAYS TO GREEN JOBS

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May 1, 2009
Acknowledgments

The authors would like to thank the many people who agreed to be interviewed and otherwise contributed to the research that went into the preparation of this report. In particular, our thanks go to Nancy Ahmadifar, Chris Albrizio, Dave Bassett, Matt Bruce, Shirley Carrington, Gene Chang, Brian Greenfield, Juan Leyton, Kenny Mak, Eryn McDonald, Jim Snow, Marina Spitkovskaya, and Loreen Zwible. We would also like to thank the staff of the Chinese Progressive Association, including Lydia Lowe, Amee Chew, and Max Ng, for allowing us to contribute to CPA’s important work creating greater opportunities for Boston’s Chinese community. Finally, we would like to thank Tufts faculty advisors Rachel Bratt and Rusty Russell and student advisors Chrissy Ungaro and Holly Elwell who provided invaluable advice throughout this project.
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ABOUT THIS REPORT

BACKGROUND
This report was prepared in connection with the Tufts University Department of Urban and Environmental Policy and Planning (UEP). First-year master’s students in this program are responsible for completing research projects for local community organizations as part of the requirements for the course “Field Projects: Policy and Planning in Practice.” The Boston-based Chinese Progressive Association (CPA) was matched with graduate students Jonathan Crowe, Rachel Levine and Juan Sanchez (“project team”) in late 2008 and students commenced work on the project in early 2009. Research was conducted from January through April 2009, culminating in a final presentation and submission of this report. The team was advised by Lydia Lowe, Executive Director of the Chinese Progressive Association (“client”), Tufts UEP professors Rachel Bratt and Rusty Russell, and Teaching Assistants Chrissy Ungaro and Holly Elwell (“UEP advisory team”).

PURPOSE & SCOPE
As discussed in Section 1, the rising interest in “green collar jobs” is creating a wide variety of economic opportunities. Many
Box 1. Pathways to Green Construction Jobs

The focus of this report is employment opportunities in green construction industries. For the purposes of this analysis, “green construction” includes both new energy-efficient, environmentally-friendly construction as well as efficiency-related work on existing buildings, including retrofitting and weatherization. These areas will collectively be referred to as “green construction” throughout this document, except in places where a particular discussion pertains only to a specific subset of the field.

Figure 1. Relationship between Green Jobs and Construction Jobs

However, it is important to note that the pathways to these jobs are often indistinct from the pathways to conventional construction jobs. For example, a worker interested in weatherization will need many of the same skills as a worker interested in a traditional construction job and the two may participate in the same union apprenticeship programs or apply for jobs at the same company.

Because pathways to green jobs are often the same as the pathways to construction jobs in general, this report refers “green construction jobs” or “green jobs” only when discussing topics which relate specifically to the green sector of the construction industry. The more general term “construction” is used anywhere the relevance a topic is not limited to green construction.

While this report focuses on green construction jobs, the overarching purpose is to ensure access to jobs, whether green or traditional. The green jobs market provides unique opportunities, but opportunities in traditional sectors should not be overlooked.

of these are concentrated in the construction industry due to the implementation of large-scale retrofitting and weatherization initiatives. Historically, low-income and minority communities have received disproportionately small shares of the benefits created by new economic opportunities. The purpose of this project was to examine the barriers which might prevent members of the Boston-area Chinese community from accessing the opportunities that are emerging from the green jobs movement. This topic provides an enormous wealth of potential avenues of research; however, the scope of this project was necessarily constrained by available time and resources. The objective of this research was refined through discussion with the client and in consultation with the Tufts UEP advisory team.

First, the project team considered the relative benefits of research that would (a) create additional green job opportunities or (b) ensure access for Chinese workers to whatever opportunities existed or were being created. There was strong consensus that the latter goal would provide more direct benefits to the Boston-area Chinese community and that the former was already well underway as a result of local, state, and federal initiatives. In other words, it was decided that it was less important to seek to enlarge the “pie” of emerging opportunities in green construction and more important to ensure that the Boston-area Chinese community received an equitable portion of the already-growing pie.

Second, the project team considered the scope of “green jobs” to investigate. A particular focus on the construction industry was
selected to allow for a more targeted analysis of an industry where the Boston-area green job opportunities would likely be the greatest and the most accessible to Chinese workers. In addition to the fact that retrofitting and weatherization are major focuses of the green jobs movement, construction is a field that generally pays high wages and allows immigrants to relatively easily transfer technical skills and experience obtained in their countries.\textsuperscript{1,2} See Box 1 for further discussion of the distinctions between “green jobs” and “construction jobs.”

Third, the project team considered what segment of the community should be the focus of research. In other words, for whom should this project identify opportunities? The two primary groups were considered: (a) Chinese workers and (b) Chinese business owners. While the team chose to focus primarily on opportunities for workers, further investigation revealed the extent to which these two goals are interrelated. For example, a major way to create opportunities for workers is to create or expand Chinese-owned small businesses. The choice was made to pursue both avenues, but with a primary emphasis on Chinese workers. As a result, research topics specific to small business owners, such as contracting requirements or liability insurance, were not aggressively pursued.

Fourth, at the request of the client, research was conducted with two primary beneficiary groups in mind: (a) youth (who typically have higher English language skills but fewer technical skills), and (b) experienced workers (who often have technical skills but struggle with English language requirements). The dichotomy presented by these two groups was useful for conceptualizing the challenges confronting the Chinese community but it was recognized that not all members of the Chinese community fit neatly into these simplistic categories. Hence the project team deliberately decided not to restrict its analysis based to these two groups.

Fifth, it was recognized throughout this project that the residency status of workers is an important issue that underlies many of the barriers discussed in this report. Legal residency impacts the ability to get work, register for training programs, create small businesses, and even has implications for logistical considerations like transportation. However, time and resource limitations necessitated limiting the scope to exclude substantial investigation of immigration-related issues. Hence all subsequent analysis presupposes a legal status that allows workers to seek employment, though many of the issues discussed may be relevant for other groups as well.

Finally, the decision was made not to interview Chinese workers in the construction field. While the perspective of currently-employed workers would yield invaluable insights, a number of logistical constraints led the project team, client, and advisory team to conclude that this avenue of research should be excluded from the project scope. First, obtaining a representative sample of perspectives would have increased the total number of interviews beyond the capacity of the project team. Second, while interviews
would have been structured and conducted in ways that protect workers, the potentially sensitive nature of workforce-related issues could expose them to risk. Even the possibility of such risks could have opened the project to more extensive oversight by the Tufts Institutional Review Board (IRB), adding the possibility of delays to an already condensed projected timetable.

This report does not intend to make generalizations about the Chinese community in Boston, but to be as comprehensive as possible in recognizing the array of challenges faced within it.

It is important to note that the Boston-area Chinese community is demographically diverse and multifaceted. For example, there are wide variations in the degree of English proficiency, education level, technical skills, income level, and family and personal circumstances. This report attempts to provide a substantive look at the role each of these barriers can play while recognizing that each worker will likely face only a subset of the possible barriers. In short, this report does not intend to make generalizations about the Chinese community in Boston, but to be as comprehensive as possible in recognizing the array of challenges faced within it.

It is also worth noting that this report focuses specifically on Boston’s Chinese community. However, many of the issues faced by this community are applicable to other minority or underprivileged groups, as are many of the solutions presented. It is the intention of this report to provide information that is both highly relevant to the Boston-area Chinese community while also offering generalizable principles which could have a wider benefit if applied to other groups or in other localities.

**METHODOLOGY**

The bulk of this report is based on interviews conducted by the project team. Open-ended interview questions were designed to capture the experience of interviewees in the fields of training, unions, or construction businesses. The client provided the project team with a list of potential contacts, which was supplemented with additional contacts identified during initial interviews, research and at the Green Education & Training Opportunities Fair sponsored by Boston Connects, Inc. in Roxbury on March 21, 2009. In all, a total of thirteen individuals were interviewed (see Appendix A).

Interviewees were chosen based on their first-hand experience, familiarity with relevant fields, or other professional expertise. Interviewees included union representatives, Chinese small business owners, coordinators of green job training organizations, community non-governmental organizations (NGOs), and representatives of city agencies. Each interview was attended by two team members: a lead interviewer who posed questions and facilitated discussion and a secondary interviewer who recorded information and participated in the
discussion to a more limited extent. When consent was given, some sessions were tape-recorded and transcribed. Research methodology was reviewed and approved by the Tufts University Institutional Review Board (IRB).

**AREAS FOR FUTURE RESEARCH**

Project scope was necessarily limited by time and resource constraints, as discussed above. However, this dynamic and multi-faceted topic yielded numerous avenues for future research and the suggestions discussed below identify only a small subset of the available topics.

First, this study is predominantly qualitative in nature and does not attempt to quantify trends in Chinese involvement in the construction industry or related programs due to the limited availability of statistical information. The field would benefit from more specific quantitative data, including current and historical information related to:

1. Rates of employment of Chinese in construction fields.
2. Chinese participation in third party construction- and English language-related training programs.
3. Rates of Chinese membership in unions and participation in apprenticeship programs.
5. Effectiveness of third party training programs, including completion rates, wage impacts, and employment rates of workers who participate in these programs.

Additional qualitative investigation of workers’ attitudes and experiences would also be extremely valuable. As mentioned, the decision was made not to interview currently-employed construction workers. However, it was recognized that workers perspectives would provide invaluable insights and should play a central role in shaping programs designed for their benefit. In particular, further research could investigate:

1. Awareness, knowledge, and opinions of unions and training programs.
2. Experiences or difficulties entering the construction industry.
3. Perceived barriers and benefits.
4. Career goals and expectations.
5. Attitudes related to the value of English language skills.
6. Experiences with racism, whether institutionalized or present in the attitudes and actions of individuals, and typical ways victims, employers, or unions respond to incidences of racism.

Finally, another avenue for future research would be the potential for creating bilingual training programs. While interviewees did not raise this as a feasible option, it is a potentially valuable solution in need of more detailed analysis. Allowing workers to receive training in their native language would accelerate their entry into construction fields, providing immediate employment benefits while also allowing them to pursue more long-term solutions to language barriers.
While virtually any topic discussed in this report could be the subject of extensive further research, it is hoped that this project will provide a valuable foundation for future exploration of this topic.

REPORT ORGANIZATION

This report assesses both the opportunities presented by the emerging Green Jobs market and the associated challenges faced by Boston’s Chinese community. These subjects will be discussed in the context of three primary “pathways” to employment, as illustrated in Figure 2.

1. **Training Programs (red arrows).** Section 2 discusses pathways to employment through training programs, illustrated in Figure 2 by the red arrows.

2. **Unions (blue arrows).** Section 3 provides an overview of union pathways, including the options to join a union directly at the “journey” level or enter through a union apprenticeship program.

3. **Direct Pathways to Employment (green arrow).** Section 4 discusses enhancing “direct” pathways to employment, including the promotion of Chinese-owned small businesses and the creation of a community-owned Energy Service Company (ESCO).

Together these options present an array of options for workers interested in the green construction industry.

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**Figure 2. Pathways to Green Jobs**

[Diagram showing the pathways: Chinese Workers, Training Programs, Union Apprenticeships, Unions, Jobs, with arrows indicating the different pathways.]
Evidence suggests that a significant transformation of the U.S. economy is underway. In recent years, mere talk of a green revolution has begun the transformation from concept to reality as funding streams have spawned countless new programs, rising energy prices have spurred an explosion of ‘green’ businesses, and mounting concerns over global climate change have drawn public attention to energy and environmental issues like never before.

Events in late 2008 and early 2009 have brought further evidence of a unique opportunity in U.S. history to simultaneously address economic, environmental, and equity concerns through the promotion of green collar jobs. In particular, the urgent need for economic recovery, the growing interest in energy efficiency, and the Obama administration’s focus on green jobs are together creating a unique climate of opportunity in the emerging green construction industry.

In the past, new economic opportunities have not always provided benefits to low-income and minority communities in an equitable or proportionate manner. Boston’s Chinatown, for example, has seen a rapid increase in housing development but many fear that the
community is not benefiting from the high-price housing or from the construction jobs its development creates.

However, the potential economic benefits from Chinatown’s redevelopment may pale in comparison to the eventual impact of a local and nationwide focus on green construction initiatives, many of which are already underway. Organizations like the Chinese Progressive Association seek to ensure minority communities are positioned to benefit from the long-term, high-paying, rewarding careers in this growing industry.

This report seeks to further explore the opportunities presented by the emerging green jobs market by examining three “pathways” to employment in the green construction industry:

- Training programs,
- Unions and union apprenticeships, and
- “Direct pathways” to employment, which include job placement, small businesses, and a community owned energy service company.

This study then identifies barriers along these paths that might prevent the Boston-area Chinese community from realizing the full benefits of the green jobs movement. Finally, it seeks to lay a foundation of analysis that will help the community overcome the challenges it faces.

**TRAINING PROGRAMS**

Training programs provide participants with necessary job skills, professional skills and life skills that will help them obtain and maintain long-term employment. Many Boston-area programs offer courses specific to green construction industries and include components that help students develop better English skills or obtain a GED, advancing multiple areas of a student’s credentials simultaneously.

Despite the benefits of workforce development training programs, prerequisites and other barriers sometimes prevent workers from entering, completing, or obtaining work following the program. The following five barriers present the most common challenges relevant to Boston’s Chinese community:

1. Workers may have inadequate education to meet program prerequisites
2. Workers may have insufficient English language proficiency to participate
3. Workers may have difficulty paying tuition costs
4. Workers may be are unaware of programs
5. Student progress and prospects after completing programs may be hindered by inadequate mentoring and career counseling

Training organizations are recognizing the challenges posed by many of these barriers and responding with increased flexibility in entry requirements and
supplemental education to help students once they are admitted. All of the programs analyzed in this study offer some form of financial assistance to address tuition cost barriers. Some have also implemented programs specifically targeting minorities and non-native English speakers. Most training organizations provide students and graduates with career counseling and use their connections to help them obtain employment or enroll in accredited degree programs at local colleges.

Nevertheless, underutilization of training opportunities is a persistent problem. There are perennial challenges connecting Chinese students with the programs and ensuring they can satisfy the organization’s prerequisites. Even in programs that target non-native English speakers, the fact that courses are taught in English makes them impractical for many in the target demographic.

Participants lacking English proficiency, education, or technical skills may also feel overwhelmed by the amount of training needed to enter green construction fields and more rapid transitions to employment may be necessary. This need for quick deployment of workers in the field is further enhanced by the rapidly evolving pace of the green construction industry. While the uncertainties inherent in this developing field make it difficult to keep programs on the cutting edge, training coordinators are optimistic about the enormous benefits green construction jobs could bring to their communities and are well-positioned to help individuals enter these growing fields.

UNIONS AND UNION APPRENTICESHIPS

Similarly, trade unions provide a great potential source of training and job opportunities. Unions typically provide members and trainees with access to a wide range of resources, including elaborate training facilities, invaluable employer connections, and extensive and formal training programs which offer participants the opportunity to earn a living wage while they acquire new skills. A number of trends suggest that Boston-area unions have become increasingly interested in minority participation and many are actively involved in coalitions focused on workforce development among minority and low-income populations.

While apprenticeships yield excellent opportunities and provide a fast-track to high-paying careers, admission requirements can be daunting and may prevent workers from applying. Other barriers impact a worker’s chances of completing an apprenticeship or successfully finding employment upon completion. The challenges can be especially significant for minority and low-income communities.

The following eight barriers present the most significant obstacles faced by Boston’s Chinese community:

1. Union structures and processes inadvertently inhibit a potential union roll in helping employers meet minority hiring goals or quotas, block some of the possible solutions to other barriers, and present other challenges for newcomers
2. A worker's educational background may not be adequate to meet apprenticeship prerequisites.

3. Workers may have insufficient English language proficiency to participate in apprenticeship programs or communicate effectively enough on job sites to meet logistical and safety-related needs.

4. Workers may have accumulated a tax liability from past undocumented work that could be revealed once they receive documented pay.

5. Workers may lack access to private transportation.

6. Socioeconomic factors may create a greater burden on workers who have difficulty meeting the obligations of an apprenticeship program on top of full-time work, or may struggle with personal problems resulting from factors sometimes endemic to disadvantaged communities.

7. Workers may encounter bigotry in the workplace, creating an environment that makes it difficult for them to continue.

8. Workers may not enter apprenticeship programs due to timing that is incompatible with work obligations, and apprenticeship programs may become suspended during times of economic slowdown.

The relevance of these barriers depends greatly on an individual worker's situation and the union they choose to enter. For example, trade skills and education are largely interchangeable; applicants need education but not experience to enter apprenticeship programs while workers with experience can bypass the apprenticeship stage.

Many unions have already taken steps to help facilitate minority participation, such as increased flexibility in the application process and integrated ESL classes. A high school equivalency is preferred rather than required by many Boston-area apprenticeship programs, a trend that should be encouraged by community organizations whenever possible. The language barrier, however, remains persistent; unions do not have the resources to create bilingual training programs in multiple languages, and lowering workplace communication requirements could be impractical or create safety hazards.

Many solutions involve increasing community outreach and creating connections between union programs, community organizations, prospective apprentices, and experienced union members in the Chinese community. Outreach should emphasize the benefits of union membership, the long-term barriers created by undocumented pay, and the importance of learning English to increase lifetime career prospects.

With proper support, outreach and attention to key barriers, the Chinese community could see rapid growth in union participation. The dramatic wage increases offered by union pay would also contribute to the economic development of the whole community, helping to further address logistical barriers like mobility and mitigate some of the challenges endemic in disadvantaged communities.
DIRECT PATHWAYS TO EMPLOYMENT

In addition to entering the construction industry through formal training programs and unions, there are also channels which help workers obtain employment more immediately and without the use of preparatory programs. These include:

- direct employment,
- small businesses, and
- a community-based energy service company (ESCO) model.

These solutions create both near-term and long-term opportunities that help meet Chinese workers’ immediate needs while also providing a foundation for more sustainable employment.

Emerging community-oriented companies in the green construction field are providing entry-level positions with career advancement opportunities that are ideal for workers with limited skills. Small businesses likewise provide on-the-job training, often in an environment where a worker’s native language is spoken by a coworker or employer. A community-owned ESCO, currently under consideration by a coalition of Boston-area non-profit organizations, could provide immediate benefits to the Chinese community in the forms of employment and energy-efficiency, reducing the community’s financial hardships in multiple ways.

These direct pathways to employment present numerous benefits and long-term opportunities, but a number of obstacles must be addressed for the full potential to be realized:

1. Workers may lack adequate English language proficiency to start a small business
2. Potential business owners may be deterred by the complex processes of creating and managing a small business
3. Language may create a barrier to the development of a racially- and culturally-integrated community ESCO that functions in a unified manner
4. Mobility limitations may prevent workers from having adequate access to job sites

The creation and development of small businesses can build numerous opportunities for Chinese workers. While business formation is somewhat hindered by language barriers, this limitation is minimized by the fact that companies generally only need one bilingual member to successfully facilitate communication between the client and team.

Previous business experience is helpful but also not essential; governmental and non-governmental organizations exist to help minorities succeed in creating and managing a small business. This advances owners to a higher level of career development while simultaneously creating a trickle-down effect for Chinese workers who are earlier in their careers, especially those who would otherwise be substantially hindered by a lack of English proficiency.

A similar approach could be used to facilitate communication in a community ESCO by capitalizing on the language skills of bilingual members who can interpret for members of their workforce team.
This is a short-term solution and falls short of the ESCO’s vision of being a racially integrated organization, but it would allow workers to gain immediate employment while they pursue long-term development of language skills that would open additional career-advancement opportunities.

A team-based approach could also help address mobility limitations by facilitating carpooling between members of the same community. In short, the flexibility of the community ESCO allows it to adapt quickly to overcome barriers while simultaneously working toward more ideal long-term solutions.

CONCLUSIONS & RECOMMENDATIONS

While each of the three pathways to green construction jobs discussed in this report present unique challenges, many common issues and themes emerge. Awareness of valuable programs and resources was one factor, but educational attainment and inherent English language requirements often inhibit full use of these opportunities. Relatively low rates of car ownership make mobility restrictions a significant issue for the Chinese community. Finally, complexities inherent in the process of finding employment can create challenges for those who are new to the construction field.

In most cases, organizations are beginning to address these issues and further progress can be made by working within existing programs, expanding or modifying them in ways that remove barriers. For example, communities have looked to existing training programs to incorporate green components and trade-specific English classes. They have likewise relied on existing small business development organizations to guide potential business owners. Building on existing resources, rather than creating new ones from scratch, allows for more efficient use of organizational knowledge and capacity.

Full recommendations are listed in Section 5, but center around the following themes:

1. Ensure adequate support networks through mentoring, career counseling, and post-program follow-up to address continuing barriers.

2. Encourage workers to pursue English language skills by emphasizing its central role in high paying, long-term job prospects.

3. Partner with training organizations, unions, and key businesses to increase awareness of opportunities, facilitate matching of workers and employers, and address barriers to entry or employment.

4. Encourage community development of small businesses and cooperatives in order to create accessible long-term job opportunities.

Overall, there are positive signs that opportunities in all three pathways are increasing. Training programs are staying relevant by adapting programs to address emerging opportunities by adding green components to existing programs. Unions are showing increased interest in minority inclusion.
Many are developing partnerships with community organizations, and evidence suggests that the number of minorities in unions is increasing. Finally, minority communities are taking an active role in the creation of community-based opportunities, including small business development and the creation of a community ESCO. These encouraging trends show great promise for the Boston-area Chinese community’s future access to green job opportunities.
1. INTRODUCTION

1.1 CHALLENGES FACED BY CHINATOWN

Boston’s Chinese community is located in the midst of major redevelopment in Boston. In recent years, the Chinatown region has become increasingly attractive to new development due to its location in the center of Boston and its proximity to the expanding Theater District. Despite the development in and around Chinatown, many in the community are concerned that few Chinese residents are benefiting from the associated employment and economic opportunities.3

Box 2. Trends in Chinatown and Greater Boston’s Chinese Community

The most readily-available demographic data, studies, and reports on the Boston-area Chinese community typically focus on Chinatown. However, Chinese populations are by no means limited to this area, nor are the challenges or opportunities discussed in this section. As shown in Figures 3 and 4, significant concentrations of Chinese residents are present in Malden, Quincy and other areas, and similar patterns of income can be seen there as well.
Figure 3. Chinese-Born Population in the Boston area

Chinese Foreign Born by Census Tracks

- 0% - 3%
- 4% - 17%
- 18% - 51%
- Chinatown

Map by Tufts University, CPA Team 2009
Source: Census 2000
Figure 4. Poverty Rates in the Boston Area
Chinatown is one of Boston’s poorest and most densely populated residential districts. Census data from 2000 indicates a median household income in Chinatown of $14,829 compared to $39,629 for the metropolitan Boston area. As of 2000, Chinatown’s poverty rate was 37 percent, compared to 20 percent citywide. In addition, the levels of educational attainment are much lower for Chinatown residents than for the metropolitan Boston area. Sixty percent of Chinatown’s residents have achieved less than a high school diploma, compared to 20 percent for metropolitan Boston in general.4

Housing development in the Chinatown area is increasing rapidly. According to the Asian Community Development Corporation (ACDC), 1,761 new housing units have either been developed or proposed in the past nine years, representing an increase of 84 percent over the 2,091 housing units that were present in 2000. The majority of these developments cater to families in high income brackets, which not only excludes Chinatown residents who cannot afford to live in them, but increases housing prices in the surrounding area. For example, a recent study found that six Chinatown housing developments had seen between 10 and 200 percent rent increases.5

Not only do these high-income developments provide little affordable housing for the Chinese community, but there are strong concerns that the community is not benefiting from the economic benefits these projects bring. Organizations like the Chinese Progressive Association and the Asian Community Development Corporation are working to ensure that Chinatown’s Chinese residents are not left out of the opportunities arising in their communities.

Figure 5. Annual Municipal Greenhouse Gas Emissions by Sector in the City of Boston

Data reproduced from: City of Boston Climate Action Plan8
1.2 EMERGING OPPORTUNITIES IN GREEN CONSTRUCTION

In addition to new development, opportunities are emerging in green construction fields. The 2008/2009 economic crisis, coupled with rising concern over climate change and greenhouse gas emissions, has heightened interest in energy efficiency in residential and commercial buildings.

Increased energy efficiency will lead to a number of environmental and health benefits. Approximately 80 percent of greenhouse gas emissions in the City of Boston are the result of building energy use. In addition, three-quarters of Boston’s annual 300,000 tons of municipal carbon dioxide emissions come from the heating and cooling of buildings.

Given the immense impact of building energy use, it is estimated that one quarter of global energy consumption could be avoided by retrofitting existing facilities. Reducing energy consumption also creates health benefits due to the fact that most Boston-area electricity is generated through the combustion of fossil fuels. Decreasing energy use improves local and regional air quality, reducing incidents of asthma and other respiratory illnesses that are especially common in low-income, environmentally degraded communities.

Energy efficiency improvements come with economic gains as well. The University of Massachusetts’ Donahue Institute estimates that at least 163,224 low- and low-to-moderate-income households in Massachusetts will have difficulty paying their heating oil bills in 2009.

In addition, more than 60 percent of the Boston small businesses that were surveyed reported that rising energy costs are the most significant financial challenge they face. Retrofitting existing buildings reduces energy costs for owners and tenants, relieving a major financial burden for members of low-income communities.

Like much of the Boston area, Chinatown’s building stock is old and inefficient. Approximately 31 percent of Chinatown’s buildings were built before 1960, and 50 percent were built between 1960 to 1979. Houses built before 1939 use about 50 percent more energy per square foot than those built in 2000. However, a complete energy retrofit can make old homes as energy-efficient as new ones, lowering residents’ energy bills and making housing far more affordable.

There is an exceptional opportunity for underprivileged communities to carve out a niche in an emerging industry full of jobs with modest skill requirements.

Most significantly for the purposes of this report, the demand for energy efficiency services will provide increased employment opportunities. The Massachusetts Department of Workforce Development notes that “services to buildings and dwellings” will grow by 18 percent between 2004 and 2014, making it one of the twenty fastest growing industries. Opportunities in energy efficiency

“We want to build a green economy strong enough to lift people out of poverty. We want to create green pathways out of poverty and into great careers for America’s children. We want this ‘green wave’ to lift all boats.”

- Van Jones, White House Council on Environmental Quality
Box 3. The American Recovery and Reinvestment Act of 2009

Federal

On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (ARRA) to help jump start the country’s struggling economy. The $787 billion investment seeks to create and/or save more than 3.5 million jobs nationwide while laying the foundations for long-term economic growth based on a new green economy. Because the ARRA invests heavily in the modernization of the nation’s transit, water, and parks systems and the retrofitting of public buildings and residential homes, many of the new jobs it creates will be in the construction field. The ARRA will undertake the largest weatherization program in the U.S. history by retrofitting 75 percent of federal buildings and more than one million homes.19

More specifically, the ARRA programs outlined in Table 2 will play a key role in the development of job opportunities in construction/retrofitting and energy efficiency. These investments represent substantial increases over past expenditures. For example, the Weatherization Assistance Program investment is 25 times greater than prior years.

State

The Commonwealth of Massachusetts is prepared to take advantage of the opportunities provided by the stimulus money. The state government has passed the Act Mobilizing Economic Recovery in Massachusetts to allocate the resources efficiently and provide fair opportunities for all residents. It is estimated that Massachusetts will receive between $6 and $9 billion from the ARRA, an investment that government officials say will save or create approximately 79,000 jobs in the state over the next two years. Furthermore, through the “Converting Federal Buildings to High Performance Green Buildings Program” Massachusetts with receive millions of dollars to retrofit federal buildings in the next two years. The General Service Administration (GSA), which is in charge of this program, is currently evaluating which projects will create the most jobs and help meet the energy savings targets.20 As GSA Administrator Paul Prouty describes it, “the act has provided GSA $5.5 billion [nationwide] to invest in our federal buildings, which will lead to jobs for construction workers, electricians, plumbers, and many other trades.”21

Local

More locally, the City of Boston is also preparing for the influx of ARRA funds. The City expects to receive at least $147.4 million for capital investment in projects that will improve the city’s infrastructure and create hundreds of jobs, especially in the construction field. More specifically, the Boston Housing Authority will receive $33 million through the Public Housing Capital Fund to perform energy efficiency upgrades in affordable housing units. The City will also receive $6.5 million in direct funding from the Energy Efficiency Block Grant to fund “Renew Boston,” a program designed to reduce greenhouse gas emissions to 7 percent below 1990 levels by 2012. In order to achieve this goal, the city will focus heavily on improving energy efficiency in buildings, a sector which is responsible for three quarters of Boston’s emissions.23
have the potential to benefit less skilled workers in low-income and minority communities. Almost one-third of the jobs created will be entry-level, almost two-thirds will be skilled or semi-skilled. Only about one in fourteen will be a supervisory position. There is an exceptional opportunity for underprivileged communities to carve out a niche in an emerging industry full of jobs with modest skill requirements.

In addition to creating opportunities at all levels of employment, energy efficiency will create opportunities in a wide variety of construction-related fields. For example, retrofitting an existing building requires a series of steps that encompass a variety of trades including insulation, electrical work, plumbing, heating ventilating and air conditioning (HVAC), and window and door sealing, as detailed in Table 1.

The rising concern over climate change, the urgent need for economic recovery, the growing interest in energy efficiency, and an administration interested in green jobs are together creating a unique climate of opportunity in the emerging green construction industry. Underprivileged groups, including much of Boston’s Chinese community, can benefit greatly from long-term, high-paying, rewarding careers in this growing industry. Many of the relevant trade skills can be obtained through training programs or on the job in accessible entry-level positions. Together these trends are creating significant opportunities for a community that has historically received little benefit from emerging industries.

“Now is a moment not just for challenge, but also of opportunity. The American Recovery and Reinvestment Act provides our Commonwealth with funding to save and create jobs now and lay the foundation for long-term economic growth”

- Massachusetts Governor Deval Patrick

“Boston is in a good position to use the stimulus funding to build on its strengths and create thousands of jobs in Massachusetts during this harsh economic downturn”

- Mayor Tom Menino

<table>
<thead>
<tr>
<th>Type of Work</th>
<th>Purpose</th>
<th>Estimated % of Total Construction Labor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>adding or replacing insulation (including insulating pipes)</td>
<td>54%</td>
</tr>
<tr>
<td>Electrical</td>
<td>replacing lighting fixtures and light bulbs, installing light sensors and thermostat controls, replacing appliances</td>
<td>20%</td>
</tr>
<tr>
<td>HVAC/Plumbing</td>
<td>replacing heating and cooling systems and improving indoor air circulation systems (including duct work, blowers, and fans) and replacing toilets and faucets to minimize water use</td>
<td>15%</td>
</tr>
<tr>
<td>Windows and Doors and Air Sealing</td>
<td>replacing windows with insulated glass and caulking around windows and replacing doors and adding sweeps to minimize heating and cooling loss</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: The Green Justice Solution
## Table 2. ARRA Programs with Investments in Building Retrofitting

<table>
<thead>
<tr>
<th>Program</th>
<th>Funding (National)</th>
<th>Uses</th>
<th>Impact on City of Boston</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weatherization Assistance</td>
<td>$5 billion</td>
<td>● Weatherization of residences</td>
<td>No funds allocated yet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Installing renewable energy systems</td>
<td></td>
</tr>
<tr>
<td>Energy Efficiency and Conservation Block</td>
<td>$3.2 billion</td>
<td>● Residential and commercial building energy audits</td>
<td>$6.5 million. Will finance “Renew Boston”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Establish financial incentive programs for energy-efficiency improvements</td>
<td></td>
</tr>
<tr>
<td>Public Housing Capital Fund</td>
<td>$4 billion</td>
<td>● Development, financing, and modernization of public housing projects</td>
<td>$33 million</td>
</tr>
<tr>
<td>Energy and Green Retrofit Investment</td>
<td>$250 million</td>
<td>● Retrofit and green investments in project-based assisted housing</td>
<td>No funds allocated yet</td>
</tr>
<tr>
<td>State Energy Program</td>
<td>$3.1 billion</td>
<td>● States may use funds to promote energy efficiency in government buildings and residential</td>
<td>No funds allocated yet</td>
</tr>
</tbody>
</table>

Sources: A User’s Guide to the 2009 American Recovery and Reinvestment Act; City of Boston’s Federal Recovery webpage
2. GREEN JOBS
TRAINING PROGRAMS

2.1 OPPORTUNITIES

As discussed in Section 1.1, levels of educational attainment and income are frequently lower in Boston’s Chinese community than in the region as a whole. Entry-level green construction jobs can provide workers with a solid foundation that will help them transition to higher-wage careers. Training programs provide an important resource to help workers with limited skills obtain employment in the green construction industry with significantly increased wages and job quality. (As discussed in Box 1, this report uses the term “green construction” to include energy efficiency-related sectors like retrofitting and weatherization in addition to new construction). Training programs provide participants with necessary job skills, professional skills and life skills that will help them obtain and maintain long-term employment. Many programs also provide valuable opportunities to network with potential employers.
2.1.1 Characteristics of a Successful Training Program

Successful green construction-related job training programs combine hands-on training with classroom instruction, laying a foundation that will make subsequent employment more accessible. Training programs for people with limited English are most successful when they combine job training, English language, math skills and literacy components. Graduates of such programs have higher rates of employment and earn higher initial wages. The National Evaluation of Welfare-to-Work Strategies conducted a study of eleven training programs, and found that successful program completion resulted in a 21 percent increase in employment and a 25 percent increase in earnings compared to members of a control group. Another study found that participants of the Center for Employment and Training in San Jose, California were able to obtain jobs with wages 26-45 percent higher than a control group who had not attended the program. In addition, successful programs also offer a variety of additional services, including job search techniques, professional skills and job placement assistance. The Boston area programs discussed below each contain some or all of these components.

Many programs are being adapted to add green construction components or to increase accessibility for non-native English speakers. This strategy allows training institutions to expand existing successful programs to meet these additional needs rather than create new programs.

2.1.2 Overview of Programs

This section focuses primarily on training programs that address the needs of the two population groups, as discussed under Project Scope:

1. Young people with English fluency but limited construction experience.
2. Older people with construction experience, but limited English fluency.

Many Chinese youth who graduate from high school or even two-year post-secondary schools end up working in low-paying jobs without opportunities for advancement, despite their credentials and English fluency. This section will explore pathways that offer Chinese youth the opportunity to pursue high-paying, long-term careers.

The older generation includes many members who gained construction experience in China prior to immigrating to the U.S. Others have gained skills working for Chinese-owned construction companies in the U.S. Despite their experience, members of this group often do not have sufficient English proficiency to work in the mainstream construction industry. Because many of the most lucrative construction opportunities are with large contractors or union employers, this limitation can be quite significant. Pathways to expand employment opportunities for skilled Chinese workers with limited English language skills will also be addressed.

With these primary demographics in mind, training programs were analyzed to identify which offered the greatest opportunities for each group.
Training Programs

The following questions guided the research:

- What training programs in the Boston area address the needs of Boston’s Chinese community?
- What skills do these training programs provide, and how is the curriculum organized?
- What are the prerequisites to enter the program?
- What are the tuition costs, and what financial aid or funding streams are available?
- How does the program provide graduates with pathways to employment?
- What additional courses or services are offered that might precede or supplement the training program?

The following section outlines the Boston-area green construction training programs most relevant to the Chinese community. Please refer to Table 3 for a comparison of the major components of each program and Appendix B for each organization’s contact information.

BEEMS is a six-month program held in two cycles each year. Most students work at least part-time while participating in the program, as long as their income does not disqualify them from receiving financial aid. The program consists of classroom instruction, hands-on training and a supervised five-week internship.

One strength of the BEEMS program is that it draws from the industry for experienced instructors. For example, the energy efficiency component is taught by representatives from Clean and Smart, a green building company located in Cambridge. Energy efficiency concepts are infused into the training component for each trade, including methods for calculating energy cost savings. AACA’s Building Energy Efficient Maintenance Skills Program Coordinator Chris Albrizio stresses that awareness of the larger implications of energy efficiency is one of the main lessons that graduates take away from the program.29

Please see Table 4 for more details on AACA’s BEEMS curriculum.

Based in Chinatown, the Asian American Civic Association (AACA) has added green components to its 7-year old Facilities Maintenance Training Program, renaming it the Building Energy Efficient Maintenance Skills Program (BEEMS). BEEMS is designed to be an entry-level program for immigrant and minority workers and includes a vocational English component.

In the early fall of 2009, JFYNetWorks will launch a pilot Clean Energy Training Program that will focus on energy audits and retrofitting. The organization has run its Environmental Technology Training Program since 1993 and is familiar with training and job placement in the environmental field. The program is run in

“The BEEMS program is entry level enough that someone new to the field can come in and get skills, but high-level enough that they can go out and get jobs.”

- Chris Albrizio, Asian American Civic Association
### Table 3. Training Program Components

<table>
<thead>
<tr>
<th></th>
<th>AACA’s Building Energy Efficient Maintenance Skills Program</th>
<th>JFYNetWorks’ Clean Energy Training Program</th>
<th>RCC’s Certificate Programs</th>
<th>YouthBuild Boston’s Construction Training Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training Program Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Duration</td>
<td>24 weeks</td>
<td>16 weeks</td>
<td>6-12 weeks</td>
<td>24-40 weeks</td>
</tr>
<tr>
<td>Trade-specific ESL component</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible by Public Transportation</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>On-the-job Training</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Internship/Apprenticeship Requirement/Duration</td>
<td>5 weeks</td>
<td>180-240 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Skills/ Counseling</td>
<td>x</td>
<td>x</td>
<td>n/s</td>
<td>x</td>
</tr>
<tr>
<td>Cost of Tuition</td>
<td>$6250, though usually fully funded</td>
<td>no cost for participants</td>
<td>$800-950</td>
<td>no cost for participants</td>
</tr>
<tr>
<td>Financial Aid Available</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Stipend Offered</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>GED Preparation Component</td>
<td>CORE track only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Entrance Requirements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GED/high school diploma</td>
<td>flexible</td>
<td>x</td>
<td>x</td>
<td>Advanced track only</td>
</tr>
<tr>
<td>Age requirement</td>
<td></td>
<td></td>
<td></td>
<td>Must be between 16-24</td>
</tr>
<tr>
<td><strong>Other Offerings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GED training course</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>ESL course</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Trade-specific ESL course</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

Source: Based on information from training program websites and brochures

*n/s: information not stated in training program materials

Association with Boston Connects, Inc., the non-profit affiliate of the Boston Redevelopment Authority. The 16-week program prepares students for employment in energy auditing, insulation and air sealing. The program includes classroom learning, hands-on training and professional development skills. JFYNetWorks’ Environmental Technology Training Program focuses on a number of trades related to conservation and community health. The skills most relevant to green construction are asbestos remediation and mold abatement.
The newest additions to Roxbury Community College’s Workforce Development Program are two year-long, non-credit certificate programs: Energy Conservation and Efficiency, and Alternative and Renewable Energy. The certificate programs began in the fall of 2008, and aim to help students access economic opportunities in the growing field of green jobs.

Each certificate program includes three courses, an internship, and a Leadership in Energy and Environmental Design (LEED) examination preparatory course.

Please see Table 4 for more details on RCC’s certificate program curriculum.

As the name suggests, YouthBuild Boston (YBB) is a job training and placement organization for youth between the ages of 14-24. YBB’s Construction Training Program prepares students for careers in green building trades.

Students enter in “cohorts” of about 25 at a time on a quarterly basis. The first month is spent in preliminary training, which includes first-aid and Occupational Safety and Health Administration (OSHA) training, team-building exercises and visits to construction sites. In order to advance through the program, students must exhibit perfect attendance within the first month. Most students complete the program in 6 to 10 months. The program alternates on a weekly basis between full-day classroom lessons and hands-on training. Training consists of four main components: academics, vocational education, life skills and counseling.

YBB’s Construction Training Program focuses specifically on building green affordable housing; this includes ground-up construction, renovation and facilities maintenance. For example, students participate in the construction of LEED-certified affordable housing developments. Though YBB does not currently have a building retrofitting focus, the Massachusetts YouthBuild Coalition is currently drafting a proposal for a new program that would prepare graduates for entry-level positions in this field.

YBB’s program is noted for its racial diversity, a fact which has led some employers to recruit YBB graduates in part to fulfill minority participation requirements set out in the Boston Residents Jobs Policy. Most YouthBuild Boston students are African American, Latino or Cape Verdian.

In addition to the Construction Training Program, YBB offers Project Advantage: Green Industry Exploration, a program that exposes students to trades related to the natural and built environments including landscape construction, carpentry and interior landscaping.

YouthBuild Boston is one of eleven YouthBuild programs in the state of Massachusetts, which make up the Massachusetts YouthBuild Coalition. Nationally, there are more than 200 YouthBuild programs. A national advocacy and support program, YouthBuild USA, is headquartered in Somerville, Massachusetts.
Please see Table 4 for more details on YBB’s Construction Training Program curriculum.

2.2 BARRIERS

Despite the benefits of workforce development training programs, prerequisites and other barriers may prevent workers from entering, completing, or obtaining work following the program. The following five barriers present the most common challenges relevant to Boston’s Chinese community:

1. Strict educational requirements
2. English language proficiency
3. Tuition costs
4. Lack of awareness of programs
5. Lack of mentoring or career counseling

The following section addresses each barrier and discusses the ways in which it impacts each of the four training programs discussed above. Potential solutions for each barrier are discussed in Section 2.3.

<table>
<thead>
<tr>
<th>Table 4. Training Program Curricula</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AACA’s Building Energy Efficient Maintenance Skills Program</strong></td>
</tr>
<tr>
<td>Energy Efficiency Concepts and Measures</td>
</tr>
<tr>
<td>Carpentry</td>
</tr>
<tr>
<td>Plumbing and Heating</td>
</tr>
<tr>
<td>Electricity</td>
</tr>
<tr>
<td>Painting</td>
</tr>
<tr>
<td>Appliance Repair</td>
</tr>
<tr>
<td>Cleaning</td>
</tr>
<tr>
<td>Occupational Safety</td>
</tr>
<tr>
<td>Workplace Readiness</td>
</tr>
</tbody>
</table>

Source: Based on information from training program websites and brochures
*additional components may exist
2.2.1 Educational Requirements

Job training programs often require applicants to have a high school diploma or General Educational Development (GED) certification. Both JFYNetWorks and RCC include such educational prerequisites in their program entry requirements. This poses a significant barrier to potential applicants who are interested in pursuing trade-specific training but lack adequate education credentials. Some training programs are willing to accept foreign credentials, though this is not true in all cases.

2.2.2 English Language Proficiency

Because all programs evaluated in this study are taught in English, applicants lacking sufficient English language skills face inherent obstacles to entrance and completion. English proficiency is vital throughout classroom and on-the-job training portions of the programs and plays a critical role in the process of obtaining employment after graduation.

Some training programs address this barrier through trade-specific English as a Second Language (ESL) courses or other mechanisms, while other programs place little emphasis on language-specific issues. For example, RCC makes no mention of catering to non-native English speakers in its certificate programs and JFYNetWorks does not offer an ESL component as part of their training program. YBB has multilingual staff members, though the program itself is taught in English.

2.2.3 Tuition Costs

Though some training programs are offered at no cost to participants, others have associated tuition and fees which can range from $800 to $6,250 (see Table 3). Since the majority of potential applicants are from low and low-to-moderate income households, devoting even a small portion of their earnings to job training can present significant challenges. In order to address this issue, training programs work with potential applicants to find the most suitable form of financial aid available.

Financial aid is a barrier that is addressed thoroughly by AACA, JFYNetWorks and YouthBuild Boston, as discussed in Section 2.3.3. Though RCC's Financial Aid Office promises to assist students pursuing funding options, promotional materials make it clear that non-credit courses are not covered by state or federal financial aid and it is unclear what types of financial aid are offered by the school.32

2.2.4 Lack of Awareness of Programs

While a number of effective training programs are in place, lack of awareness of programs creates a gap between its administrators and potential students. As a result, valuable training opportunities often go underutilized by their target demographics.

Lack of awareness is a barrier that often persists despite outreach efforts. AACA's Chris Albrizio notes that, while the program is focused
primarily on immigrant communities, they have accepted native English speakers in addition to non-native English speakers for the program’s first cycle. Though AACA’s grant from the City of Boston does not require participation by specific minority groups, the Office of Jobs and Community Services has urged AACA to seek greater participation from Asian Americans. Similar requests from other funding organizations could spur an increase in Chinese and Asian American participation in training programs across the board.

Limited awareness of training opportunities was also illustrated during a Green Jobs Training Fair held in Roxbury in March 2009. When one speaker asked which audience members were aware that RCC offered green jobs training programs, few indicated that they had heard of such programs. This illustrates that even people who are interested in green jobs (enough to attend a training fair) and live in the community where a training program operates may be unaware of its existence. Though this event was held in a community with relatively few Chinese residents, it illustrates that lack of awareness is a wider problem affecting other communities as well.

Because training programs do not typically track exact statistics on the participation of particular racial groups, statistical information was impossible to obtain. However, anecdotal evidence suggests that there are some Chinese students in Boston-area training programs, but not an overwhelming number. Dave Bassett, Program Manager of the City of Boston’s Office of Jobs and Community Services, suggests that some cultural groups tend to work more in particular industries. While specific data is not available, he suggested that the construction industry is one in which the Chinese community has likely not traditionally participated.

2.2.5 Availability of Mentoring and Career Counseling

Regardless of the academic merit of a training program, graduates may have difficulty obtaining and maintaining employment without guidance. Programs that provide career counseling and follow-up services to their graduates are likely to experience higher graduate employment rates.

The Boston-area training programs evaluated in this report all offer some form of mentoring or career counseling, though some are more limited than others. For example, RCC’s certificate programs do not include job search skills or career counseling components, though the college’s Career Services Center is available to assist students and graduates.

2.3 SOLUTIONS

Boston area organizations offer a variety of green jobs training programs, providing different opportunities for students with different needs. For students with some English proficiency but few technical construction skills, programs like JFYNetWorks, Roxbury Community College and YouthBuild Boston provide the necessary training to enter the construction field, as well as the opportunity to earn a GED.
For students who bring some construction experience but less fluency in English, AACA’s BEEMS program is the most suitable of the available options. However, RCC and JFYNetWorks also offer ESL and vocational English courses to help participants reach a sufficient level of English competency.

It is important to note that the training programs outlined in this report are not the only options for Boston residents seeking to improve English skills or obtain a high school equivalency. Stand-alone ESL and GED courses are also offered through other private companies or organizations, and at most community colleges in Massachusetts.

This section discusses ways organizations are addressing these and other barriers to program participation identified in Section 2.2.

2.3.1 Overcoming Education Requirements

Programs are recognizing the challenges posed by educational barriers and have responded with flexible requirements and/or supplemental education to help students once they are admitted.

In order to help accommodate immigrants and non-native English speakers, AACA’s BEEMS program includes some flexibility in its educational requirements. AACA accepts foreign high school diplomas or equivalencies, and has accepted some students in the past even if they do not meet the educational requirement. AACA conducts an interview with all applicants in order to assess their education level, work history, motivation, and goals for participating in the program. AACA is most interested in candidates who see a long-term future in green facilities maintenance and factors this into their admissions decisions.

In addition to their Clean Energy Training Program, JFYNetWorks offers a flexible GED training program that allows students to advance at their own pace and take the examination when ready. The convenience of being able to pursue both job training and a GED at the same organization increases the chances that students will take advantage of both opportunities.

YBB’s Construction Training Program offers two tracks based on a student’s background. The Core track caters to students who want to earn their GED, allowing them to alternate between classroom lessons focusing on GED preparation and hands-on construction training. The Advanced track caters to students with a high school diploma or GED who are interested in entering the construction trade. Though academic support is available, the Advanced track focuses mostly on practical training.

High school diploma and GED requirements likely dissuade some from applying to training programs, even if they offer flexible entry requirements or supplemental education options. However, the flexibility of some program requirements and availability of post-entry training options raise the question of whether high school education credentials are truly necessary for students to be successful. Organizations that are willing to loosen educational requirements may generate
increased interest in their programs by making it clearer that there are alternatives for people who lack educational credentials.

2.3.2 Overcoming Language Barriers

While language barriers play a prominent role in restricting access to programs, some organizations are working to provide resources and implement policies which lessen the restrictive impact of the language barrier and allow students to take advantages of training opportunities in spite of it.

The BEEMS program evaluates applicants through reading and math assessments taken from the Test of Adult Basic Education (TABE), in-house developed writing and listening comprehension tests, a strength test, and interview. AACA prefers that students enter with at least fifth grade-level English skills, though they maintain that this evaluation is flexible. AACA places the greatest importance on speaking ability, preferring applicants in the intermediate to high-intermediate range.

In addition to the BEEMS program, AACA offers a five-level ESL program catering to beginner and intermediate English speakers. BEEMS also offers a four-level Adult Basic Education (ABE) program that caters to English speakers at the intermediate level and above. Unlike ESL training, ABE is a no-fee program funded by a grant from the Department of Elementary and Secondary Education. ABE is intended to serve as a transitional program between ESL and college or job training.

RCC’s Department of Continuing Education offers the English for Construction Trades course, providing students with trade-specific language skills to complement their existing technical skills. RCC’s website states, “With proof of enough related work experience in the United States, students who successfully complete the course may enroll in the Builder’s License Exam course in preparation for their state licensure.” Courses like this provide distinct certifications, which are extremely valuable because they convert past experience to tangible credentials. RCC’s course can help provide a level of English adequate for taking the certification tests. In addition, the Department of Continuing Education offers four levels of Community ESL courses that could serve as preparation for the certificate programs.

Most YBB students speak English as their first language or speak English fluently. For those who do not, case managers work with students on an individual basis to address this and other obstacles to training and employment, potentially making referrals to external organizations. YBB has some multilingual staff members, though courses are only taught in English.

Though English language components greatly strengthen training programs, it may not be reasonable to expect all programs to incorporate this element. For this reason, it is important for training organizations to also offer separate ESL courses. As with GED training, students in need of additional English language skills will be much more likely to pursue studies at an organization that can address all of their training needs.
2.3.3 Overcoming Tuition Cost Barriers

All programs offer some form of financial assistance to address tuition cost barriers, though the degree of assistance varies among programs.

The tuition cost for enrolling in AACA’s BEEMS program is usually fully offset by grants. AACA works with individual students to identify the most appropriate resources and has two funding streams available:

- The City of Boston’s Green Jobs Training Program Grant, of which AACA is the first and only recipient to date. The grant is funded by the Neighborhood Jobs Trust, and is managed by the City of Boston’s Office of Jobs and Community Services. The grant provides funding for 20 Boston residents to participate in the BEEMS program within its first 18 months.

- The federal Workforce Investment Act’s Individual Training Account (ITA) education vouchers provide funds to low-income adults and dislocated workers who receive unemployment benefits. The ITA program follows federal poverty guidelines in order to determine eligibility.

Both JFYNetWorks and YBB programs are offered at no cost to participants. YBB’s Construction Training Program and Project Advantage requires that students be between the ages of 16 and 24 and live within the City of Boston. YBB is funded by private foundations and city, state, and federal funds, including a grant from the U.S. Department of Labor.

In addition to free tuition, students in YBB programs receive a daily stipend of 25 to 50 dollars per day. In order to encourage responsible saving, YBB offers Individual Development Accounts, in which whatever portion of the stipend a student chooses to save will be matched upon successful completion of the program. In addition, YBB helps connect program graduates interested in post-secondary education with local community colleges.

2.3.4 Creating Program Awareness

Many programs engage in significant outreach efforts, but underutilization is a persistent problem. More analysis is needed before drawing strong conclusions about the low participation levels, particularly from the Chinese community.

AACA conducts outreach and recruitment within the framework of a comprehensive strategy that includes print ads, flyers, radio announcements, direct communication with target community residents and merchants, partnerships with other organizations, and word of mouth. Chris Albrizio notes that this last approach may be the most effective in recruiting applicants. AACA’s recruitment efforts are more extensive than other organizations in part because they have a staff person devoted to recruitment for all of AACA’s workforce training programs. Despite AACA’s presence in Chinatown, however, the majority of BEEMS participants are not Chinese. As mentioned above, this is an area where further research could provide more insight into lack of Chinese participation.
Training fairs can also provide valuable opportunities to get information in the hands of potential students. Both AACA and JFYNetWorks attended the March 21, 2009 Boston Connects, Inc. Green Jobs Training and Opportunities Fair in Roxbury, which provided attendees the opportunity to learn more about the benefits of green jobs training.

YouthBuild Boston finds students primarily through word of mouth and referrals from other community agencies. YBB is also well-known in the community due to their participation in local job fairs and community service projects.

Despite efforts to increase awareness of available opportunities, this is an issue that lingers. In order to ensure participation, organizations need to identify the most successful recruitment strategies and make public awareness a priority.

2.3.5 Expanding Mentoring and Career Counseling

Training organizations provide students and graduates with job search assistance and career counseling, often as an integrated part of training programs. In addition, training organizations use their connections to help graduates obtain employment or enroll in accredited degree programs at local colleges.

In order to ensure that the BEEMS program is the start of a new career, AACA offers career counseling to help ensure that students advance. AACA has partnered with the Asian Community Development Corporation, which advises AACA on green building development trends and helps them build partnerships with local businesses. AACA currently has five employer partners who have committed to interviewing and hiring graduates who meet the companies’ needs. The employer partners include prominent, well-established companies like CJ/CMJ Management Company, The Hilton Back Bay Hotel, The Lenox Hotel, Maloney Properties, Inc. and the Winn Companies. AACA’s employment staff works closely with BEEMS graduates in order to ensure a steady transition into the workplace and commits to maintaining contact with graduates for two years after completion of the program.

Upon successful completion of their program, JFYNetWorks will assist graduates in obtaining interviews with potential employers. Since JFYNetWorks has another training program in the environmental field, they are familiar with potential employment opportunities and take advantage of these connections to assist graduates in their job search.

Every YBB student is assigned a case manager who is responsible for guiding the student through the program. YBB also has career counselors who help program graduates pursue next steps, whether it is finding employment, joining a union, attending college, or seeking more advanced technical training. Job readiness skills include resume building, mock interviews and other “soft skills” critical to obtaining and maintaining employment.

Though YBB does not have any permanent employer partners, they have a staff member devoted to job development. YBB partners
with a job readiness program run
by Action for Boston Community
Development, Inc. to help students
find employment or enroll in
college. Together they have
placed graduates in positions at
Lee Kennedy Construction, the
Boston Housing Authority, Bovis
Lend Lease, and Continental
Construction. Several recent YBB
graduates hold union carpentry
jobs, earning the prevailing wage
of $17.44 per hour plus benefits.43
YBB has also placed graduates in
educational institutions including
Roxbury Community College,
Bunker Hill Community College,
Boston Architectural School and
Northeastern University.

2.4 CONCLUSIONS

Despite the availability of strong
training opportunities, there are
perennial challenges connecting
students with the programs and
ensuring they can satisfy the
organization’s prerequisites.

Participants lacking English
proficiency, education, or technical
skills may feel overwhelmed by
the amount of training needed to
enter green construction fields.
Those with limited background
in all three areas are particularly
disadvantaged and traditional
training paths – such as completing
an ESL program, followed by a GED
preparatory program, followed by a
technical skills program – are often
impractical for participants with
limited resources. The Center for
Law and Social Policy recommends
“short term bridge programs” that
offer a quicker transition from
training to employment, a critical
factor in maintaining the motivation
necessary to complete training and
enter the workforce.44 Programs like

BEEMS are beginning to address
this need, though there is room to
further adapt the bridge model in
order to ensure a swift transition
from training to employment.

Rapidly moving workers from
training to employment is also
particularly critical for the emerging
green construction industry.
However, the rapid evolution of the
field is making some organizations
cautious about planning new training
programs before the future direction
of the green economy becomes
more clear.

The organizations discussed
above have constructed their
programs through careful analysis
and consultation with emerging
industries. By meeting with energy
service and construction companies,
training programs have sought to
identify green jobs positions where
future demand will be the greatest.
Despite the uncertainties inherent
in the field, training coordinators
are optimistic about the enormous
benefits green construction jobs
could bring to their communities.
3. UNIONS AND UNION APPRENTICESHIP PROGRAMS

Like the third party training programs discussed in Section 2, union apprenticeship programs provide invaluable instructional opportunities for workers who are preparing for new careers. Unions often have access to a greater range of resources, more elaborate training facilities, more extensive employer connections, and they offer more extensive and formal training programs. While apprenticeships yield excellent opportunities and provide a fast-track to high-paying careers, admission requirements can be daunting and may prevent some workers from applying. This section explores the opportunities unions can provide, the barriers to entry, and possible solutions to help make union resources more accessible to members of Boston’s Chinese community.

3.1 OPPORTUNITIES

3.1.1 The Importance of Unions

Unions can be invaluable partners in an effort to help minority workers secure high-paying, long-term careers in the construction trades. Because unions use collective bargaining to promote the interests of their members, their interests align with workers seeking entry
or advancement in the field, such as good pay, consistent work, safe conditions, and fair treatment. Gaining Chinese workers entry into unions is a great way to leverage their extensive resources.

Unions also serve to regulate the local labor force for the industries they serve. When the economy is growing, this is good news for newcomers to union trades; unions have an incentive to build their ranks to fill out the labor supply and increase their bargaining and lobbying power. When work is less plentiful, however, the reverse is true and unions seek to restrict entry into their respective fields to avoid creating excessive competition for a limited supply of jobs.

Unions play a central role in securing higher wages for their members. According to the American Federation of Labor (AFL), union members earn on average 30 percent higher wages than non-

“Painters has a tradition of self-solicitation which is efficient in serving the member companies’ and employees’ interests.”
- Jim Snow, Painters & Allied Trades DC 35

**Box 4. Basics of Union Structure**

**Federations, Districts, and Locals**

Unions operate at the national or international level but must also maintain a local focus in order to effectively bargain with employers and recruit, train, and dispatch employees. To maintain this balance, trade unions have a tiered structure where national federations (often affiliated with international unions) are comprised of numerous area-specific “locals,” which are often grouped in region-based districts. Unionization is usually a bottom-up process, meaning locals form and then affiliate with a national or international federation; they are typically not created or subdivided by national or regional coordinators. Locals may be specific to an individual town or cover a wider metropolitan area. In unions which span a number of related trades, locals are also sometimes trade-specific, overlapping geographically with other locals that have a different specialty.

**Union Models**

Unions differ in their approaches to the allocation of work at member companies. The following are the most common models in the U.S.:

- **Self-Solicitation Model:** Jobs with union-affiliated employers may be solicited by members and non-members alike, though collective bargaining agreements normally require non-members to join the union within a certain period of time after being hired. Federal law prohibits requiring union membership as a precondition for employment. 50

- **Hiring Hall Model:** Positions with union-affiliated companies are filled through a referral process coordinated by the union. Hiring halls maintain an “out of work” list where workers may register their availability. Work is allocated to qualified members based on the length of time they have been available. Note that some hiring halls go so far as to prohibit self-solicitation. 51

**Contractual Relationships with Employers**

Unions and employers (referred to herein as “member employers” or “member companies”) enter into “collective bargaining agreements” which govern a wide variety of issues related to wages, workplace standards, and the hiring process. For the purpose of this report, the latter is the most relevant component of collective bargaining agreements.
union workers. In the construction industry this pay differential is even higher. The Bureau of Labor Statistics reports that in 2008, the median income of construction workers represented by unions was between $1,024 and $1,032 per week, a 55 percent premium over non-union workers’ median income of $668 per week. Construction also has one of the highest rates of union representation of any industry at 16.2 percent, second only to Transportation and Utilities.

Massachusetts ranks slightly above average in union representation, with about 15.7 percent of employed workers holding union membership. Nationally, union membership stands at about 12.5 percent and ranges as high as 25 percent in some states and as low as 3.5 percent in others.

These data clearly show the central role unions play in securing high-paying careers for skilled workers, particularly in construction trades. Encouraging greater minority participation in union programs will help expand these benefits to a wider, more representative sector of the Boston community.

3.1.2 Unions in Boston

While dozens of labor unions are active in the Boston area, only a few trades are particularly relevant to the development of green construction jobs. This report focuses on a sample of three of the most directly relevant unions:

- **United Brotherhood of Carpenters and Joiners of America ("Carpenters")** covers numerous construction trades including: concrete forms, doors, hardware, finishers, floorcovering, interior systems, mill cabinets, modular office furniture, pile driving, windows, wood framing and residential work. The New England Regional District includes 30 locals, 10 of which are in the Boston area.

- **International Union of Painters & Allied Trades ("Painters")** encompasses construction skills such as drywall finishing, glassworking, glazing, painting, sign painting, and wallcovering. District 35 covers most of the New England states and includes 9 Boston-area locals.

- **International Brotherhood of Electrical Workers ("Electrical")** focuses on various electrical construction trades and telecommunications. District 2 encompasses all of New England and includes Local 103, which covers the Greater Boston area and northeast Massachusetts.

While these unions were selected for their relevance to green construction jobs, their activities span a wide array of construction activities, many or most of which fall under traditional construction industry activities. As discussed in Box 1, the focus of this report is green job opportunities but many of the pathways to those opportunities overlap with the pathways to traditional construction jobs. Because union apprenticeship programs generally do not differentiate, unions are an example of one such overlap. Hence this section generally refers simply to “construction” rather than specifying “green construction” in its discussion of the industry.
The diversity of union structure and organization discussed in Box 4 is illustrated in the Boston-area locals of the unions listed above. For example, Electrical has only one local for all of the Greater Boston and northeast Massachusetts areas, while Carpenters is highly decentralized, with several carpentry-focused locals located within the Boston metropolitan area.\textsuperscript{53,54} Carpenters also has some state-wide locals for non-carpentry trade workers included in the union, such as floorcoverers, millwrights, and pile drivers.\textsuperscript{55} It is important for new members or prospective apprentices to approach the union at the local appropriate to their region and trade.

### 3.1.3 Minorities in Unions

A number of trends suggest that Boston-area unions have become increasingly interested in minority participation. While statistical data on historical trends of minority participation in Boston unions proved difficult to obtain, there are positive signs that unions are making inclusiveness a higher priority than in the past.

Union partnerships with non-profit organizations are one of the encouraging trends. For example, Community Labor United (CLU), an organization which seeks to “advance the interests of low and middle-income working families,” includes two union districts and three locals in their list of partnering organizations.\textsuperscript{56,57} In addition, four of the eleven members of CLU’s board of directors are union representatives.\textsuperscript{58}

There is also significant union representation in the Boston Green Justice Coalition (BGJC), an initiative which seeks to build a “broad-based constituency for a sustainable, equitable, and clean energy economy in the Boston region.”\textsuperscript{59} The New England Council of Carpenters and Painters & Allied Trades DC35 are represented in the BGJC’s steering committee and two additional union locals are included among their founding members.\textsuperscript{60,61}

It was difficult to determine whether these trends of increased union interest in inclusiveness and proactive involvement with community organizations have yielded an increase in minority membership. While exact data was not available, anecdotal evidence suggests significant improvements when the issue is viewed in a historical context.

For example, retired construction worker and electrician Gene Chang estimates there were only five Chinese workers in all Boston-area unions when he joined the Electrical union in 1959. Now there are over 50 in Electrical alone.\textsuperscript{62} Though this still represents a small portion of the total Electrical members in the Boston area local, Chang doesn’t believe minorities are deliberately excluded by the unions. For example, he referenced a joint program bringing together Boston-area construction unions called the Greater Boston Construction Workers. The program was designed to increase minority involvement but was eventually abandoned due to the fact that so few workers spoke adequate English to participate in apprenticeship programs.\textsuperscript{63}

Early in his career, Chang was aware of examples of nepotism and favoritism in the industry but the

“Painters has a progressive leadership that believes in diversity and equal opportunity. Our involvement in the Green Justice Coalition is a reflection of that.”

- Jim Snow, Painters & Allied Trades DC 35

“Unions are realizing they can’t take the same approaches to minority inclusion as in the past because the demographics of the industry are changing.”

- Matt Bruce, City of Boston’s Office of Jobs and Community Services
international IBEW office eventually intervened. He also cites a number of examples of Chinese members in high-ranking jobs within the industry as evidence that Chinese have advanced and been successful in the field.64

3.1.4 Union Apprenticeship Programs

To facilitate entry into their fields, most unions offer apprenticeship programs which recruit and train new members. Apprentices usually receive classroom instruction, on-the-job training, paid work, and access to union resources like mentoring and ESL classes. These programs provide a smooth transition by offering comprehensive instruction combined with a source of income.

Union apprenticeship training programs are administered by a labor-management trust that works exclusively with a union and its signatory contractors.66,67 Programs usually last between three and five years and include a mix of classroom instruction and on-the-job training throughout.

Unions vary in their approaches to the on-the-job component. For example, Carpenters requires a minimum of just 160 hours of self-solicited work per year while the Electrical apprenticeship program provides a full-time job with benefits. Pay starts as low as 50 percent of the journeyman rate, but usually increases periodically during the apprenticeship and transitions to the full journeyman rate upon completion.

Apprenticeship program requirements are fairly uniform and are summarized in Table 4 for the three Boston area unions analyzed. Typically the minimum age is 17 or 18 and applicants are required to have a high school diploma or equivalent, be in good health, and complete an aptitude test and interview.

The apprenticeship stage is generally not required for workers with adequate skills and experience. The Carpenters union, for example, has an application process to join as a journeyman, which includes review by a union business agent.68,69 In Painters and other unions where the self-solicitation approach is used, prospective members seek their own employment and their skills are reviewed by potential employers.70 If they are able to obtain work, they then join the union at the journey level, skipping the apprentice stage.

“The industry has become more diverse. To be relevant we have to be diverse to reflect the complexion of the industry.”

- Jim Snow, Painters & Allied Trades DC 35

Figure 6. Sample Union Career Ladder

Source: The Greater Boston Joint Apprentice Training Centers for the Electrical Industry65
Unions & Union Apprenticeships

3.2 BARRIERS

Unions represent a tremendous source of potential opportunity for members of Boston’s Chinese community, offering the promise of high-paying, long-term careers in construction fields. However, the process of applying to union apprenticeship programs or union jobs presents a number of challenges, especially for immigrant and low-income communities.

This section primarily discusses barriers to entering unions -- at either the apprentice or journey levels -- but also considers some of the challenges which may make it difficult to continue in apprenticeship programs, find work upon completion, and/or progress in one’s career.

Specifically, this section explores the following seven barriers:

1. Union structures and processes
2. Education
3. Language
4. Accumulated tax liability
5. Mobility
6. Socioeconomic factors
7. Bigotry in the workplace
8. Logistics and timing

Section 3.3 then analyzes each barrier and discusses potential solutions.

Table 5. Comparison of Union Apprenticeship Programs and Entry Requirements

<table>
<thead>
<tr>
<th>Program Detail</th>
<th>Carpenters</th>
<th>Painters</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>4 years</td>
<td>3 years</td>
<td>4 - 5 years</td>
</tr>
<tr>
<td>Class Time</td>
<td>4 weeks</td>
<td>468 hours</td>
<td>800-1000 hours</td>
</tr>
<tr>
<td>On-the-Job Training</td>
<td>Min 160 hrs/year</td>
<td>6000 hours</td>
<td>8,000 - 10,000 hrs</td>
</tr>
<tr>
<td>Pay</td>
<td>50% journeyman</td>
<td>50% journeyman</td>
<td>n/s</td>
</tr>
<tr>
<td>Pay Increases</td>
<td>Periodic</td>
<td>Every 750 hours</td>
<td>n/s</td>
</tr>
</tbody>
</table>

**Entry Requirements**

<table>
<thead>
<tr>
<th>Entry Requirements*</th>
<th>Carpenters</th>
<th>Painters</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Fee</td>
<td>$0</td>
<td>$0</td>
<td>$40-50</td>
</tr>
<tr>
<td>Min. Age</td>
<td>17</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>H.S./GED</td>
<td>Preferred</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Physical Condition</td>
<td>May req. physical</td>
<td>Physical ability</td>
<td>In good health</td>
</tr>
<tr>
<td>Drug Test</td>
<td>Required</td>
<td>Required</td>
<td>n/s</td>
</tr>
<tr>
<td>Citizen/Legal Resident</td>
<td>n/s</td>
<td>Required</td>
<td>n/s</td>
</tr>
<tr>
<td>Interview/Aptitude Test</td>
<td>Interview &amp; Test</td>
<td>Interview &amp; Test</td>
<td>Aptitude test</td>
</tr>
<tr>
<td>ESL Offered</td>
<td>Yes</td>
<td>Yes</td>
<td>n/s</td>
</tr>
<tr>
<td>Current Status</td>
<td>Active</td>
<td>Suspended</td>
<td>Fall application period</td>
</tr>
</tbody>
</table>

* Requirements may vary from one Local training program to another; typical requirements for Boston-area Locals are listed.
** n/s: information not stated in apprenticeship materials.
Source: Based on information from apprenticeship program web sites; interviews with Jim Snow, (Painters) and Eryn McDonald (Carpenters).
3.2.1 Union Structures and Processes

Unions vary considerably in the ways they help workers obtain employment. As discussed in Box 4, most unions act as hiring halls or follow a model of self-solicitation. This choice has a significant impact on a newcomer’s prospects for gaining work.

Self-solicitation theoretically allows everyone to compete on equal footing, but in reality someone new to the field can be at a disadvantage. Experienced union members know the system and often have established reputations with employers in their field. Some employers may favor someone they have worked with in the past or know by reputation. On the other hand, some employers may be eager to involve new workers in an effort to gain diversity or to satisfy hiring goals.

Hiring halls generally help alleviate this challenge by allocating jobs based on worker availability, regardless of how long they have been in the union. Unless an employer requests a particular combination of skills that only more experienced members possess, new members and recent apprenticeship program graduates are treated equally. In addition, some hiring hall dispatch rules allow employers to request an applicant by name. However, despite addressing the challenges posed by self-solicitation, this approach actually creates some subtle barriers. For example, the obligation to dispatch workers strictly based on availability makes it difficult for a union to help employers meet workplace quotas required by the Boston Residents Jobs Policy. The ordinance mandates, among other things, that 25 percent of worker hours on a City-contracted job site must be from minorities. Collective bargaining agreements, however, dictate the referral process and unions would be violating their contractual relationships if they referred minorities preferentially in order to help employers satisfy worksite quotas. The hiring hall dispatch process also complicates some of the potential solutions to language and mobility barriers, as discussed in Sections 3.2.3 and 3.2.5, respectively.

3.2.2 Education

Most union apprenticeship programs require applicants to have a high school diploma or GED. Sources describe this requirement as a way to ensure that a prospective apprentice has what Jim Snow, Director of Organizing for Painters & Allied Trades DC35, calls a “baseline” of education upon which the program can build. Eryn McDonald of the Boston Carpenter’s Apprenticeship says their program reviews high school transcripts to get a sense of a student’s academic background and to evaluate their work ethic. This helps ensure that applicants have a solid foundation and the basic learning skills needed to be successful in an apprenticeship program.

While adequately educated Chinese immigrants are eligible for apprenticeship programs and highly skilled workers can usually bypass the apprentice stage, there may be a gap for those with both inadequate education and inadequate skills. According to Kenny Mak of Makway Construction, the construction field...
in China often has low educational requirements. For those whose skills are not adequate to skip to the journey level, the time, money, or English language ability required to obtain a GED may create barriers that some workers are not able to overcome.

3.2.3 Language

For construction workers with limited proficiency in English, language presents barriers in both apprenticeship programs and on the job.

First, while there are typically no explicit English language ability requirements for acceptance into apprenticeship programs, the fact that classes are taught in English creates an implicit requirement. This is not an attempt to be exclusionary, but is a reflection of the fact that union training programs are too small to offer entire programs in languages other than English. Even if greater resources were available, the broad diversity of Boston-area construction workers would make it impossible to cover enough languages to include all minority groups.

Second, language skills may also present a barrier on job sites. Sources stress that this is, first and foremost, a safety issue. There is an inherent need for workers to communicate on the job site for safety reasons, especially on large construction sites where workers may be spread out over a large area and working with employees of other subcontractors.

3.2.4 Accumulated Tax Liability

Sources indicate that it is not uncommon for some workers in the construction industry to receive pay “under the table.” Enrolling in a union apprenticeship program or seeking employment at union member companies requires standard employee documentation and tax withholding. According to Jim Snow, over time workers who have been operating in the “underground economy” may have accrued a significant tax liability from past wages which may be exposed once they obtain documented employment. The longer this has been true, the harder it is to make the switch. Statistical data on the number of workers operating in the cash economy is difficult to find and even sources familiar with the construction industry have little idea what portion of workers are unregistered.

3.2.5 Mobility

Many of the best opportunities in the construction trades are with large contractors. These companies often operate all over the state or region, making transportation extremely difficult for anyone who does not have access to their own vehicle. Sources stress that this is, first and foremost, a safety issue. There is an inherent need for workers to communicate on the job site for safety reasons, especially on large construction sites where workers may be spread out over a large area and working with employees of other subcontractors.

“This to go outside the community, English is a must. If workers don’t have that, they’re handicapped.”

- Gene Chang, Retired Electrician and Construction Worker
As with language, location and mobility are factors that would be unreasonable to expect a hiring hall-style union or employer to incorporate into the dispatching process and the short-term nature of work in the construction fields would make any arrangements temporary.\(^\text{85}\)

### 3.2.6 Socioeconomic Factors

In addition to the difficulties securing union work or admittance to apprenticeship programs, sources believe that dropout rates from apprenticeship programs are a significant problem.\(^\text{86,87}\)

Often drop-out is a result of factors endemic to low-income communities and/or outside the worker’s control. For example, managing travel and childcare in order to attend training programs on top of a full-time job can make union apprenticeships or construction jobs prohibitively burdensome.\(^\text{88,89}\)

Drug or alcohol problems, while by no means exclusive to low-income or minority communities, can present barriers to maintaining the stability that union training and employment demands.\(^\text{90}\)

### 3.2.7 Bigotry in the Workplace

Unfortunately, racism can also be a factor that leads to drop-out. A worker’s race should never be a barrier to entry due to federal non-discrimination laws and company equal employment policies. However, sources report that some workers have encountered instances of racist comments on the job.\(^\text{91}\)

Attempts such as these to control the supply of labor are not designed to be exclusionary; they simply reflect the reality that the union is unable to provide jobs to apprentices, which is a key component of the program.\(^\text{94}\)
3.3 SOLUTIONS

The challenges discussed in Section 3.2 are not easily overcome. Many involve complex logistical considerations or deep-seated, structural realities that are difficult to change. However, unions have already taken steps to help facilitate minority participation, such as increased flexibility in the application process and integrated ESL classes. These approaches and additional possibilities are discussed below. Note, however, that this section does not attempt to provide a comprehensive set of solutions to each barrier. Rather it seeks to provide a foundation of analysis on which future research can build.

3.3.1 Overcoming Union Structures and Processes

Understanding union structures and navigating the dispatching or work solicitation process can be a daunting challenge for anyone new to unions. Older, seasoned veterans of unions could be invaluable resources for those seeking entry into their fields by sharing techniques they gained through experience. Connecting these two groups through training seminars, mentoring relationships, or by disseminating general advice obtained from experienced workers could provide valuable insights for the generation of workers now entering the unions.

The challenges of self-solicitation, particularly in a constrained economy, may make the hiring hall model more appealing for newcomers. However, while those who have yet to choose a trade can be selective, anyone with experience or interest in a particular trade is limited to the model used by the relevant union. Mentors could also help guide less experienced union members, but workers may be in direct competition under the self-solicitation model. For these reasons, recent retirees may make ideal mentors; they have recent industry knowledge, connections, no conflict of interests, and probably a larger supply of free time. However, given the historically low levels of Chinese in construction unions, the number of potential mentors in this group is not likely to be adequate.

3.3.2 Overcoming Education-Related Barriers

Education is a requirement for apprenticeship programs, but not union membership.95 To some degree this means trade skills and education are interchangeable; applicants need education but not experience to enter apprenticeship programs, while workers with experience do not need education to join a union at the journey level.

While the latter is one route into unions, it ignores the tremendous opportunities offered by union apprenticeships (as described in Section 3.1). The first way to address the educational barrier to entering apprenticeships is to help workers meet the requirement by enrolling in existing GED programs, some of which are discussed in Section 2.3.

A second approach is to work with union training programs to determine whether the requirement can be relaxed. Note that, as discussed in Section 3.1.4, most training programs are administered by an affiliated labor management trust and hence the entry requirements
may not be set directly by the union. Some apprenticeship programs have already implemented measures that help to widen the range of acceptable levels of educational attainment. Most notably, a high school education is not a strict requirement in all cases. For instance, the Boston Carpenters Apprenticeship program merely prefers applicants have a high school diploma or GED.\textsuperscript{96} Research indicates that programs vary in their use of a requirement or a preference from one union to another, and even between different locals in the same union. For example, of the 32 Carpenters locals in New England, 16 prefer a high school degree while only 8 require it (application information was not readily available for another 8 programs).\textsuperscript{97}

If entry requirements are any indication, there is disagreement on whether the high school education standard should be suggested or mandatory criteria. Where it is merely preferred, programs rely more on alternate evaluation techniques, such as interviews and aptitude tests. For instance, Carpenters requires applicants to take a math test, a subject that is particularly relevant to the construction trades.\textsuperscript{98} Carpenters applicants whose math skills fall short of requirements are not excluded from the program; they simply have to acquire adequate math skills through a course provided by the apprenticeship program.\textsuperscript{99} Approaches like this should be encouraged wherever possible.

Union training programs should also be encouraged to place less emphasis on strict education requirements and more on aptitude demonstrated in interviews and tests, and on work- or life-experience. This would help create wider access and prevent workers from being deterred from even applying to apprenticeship programs. In particular, focusing on math and other highly relevant subjects would allow workers with little education to focus their efforts when preparing for an apprenticeship.

### 3.3.3 Overcoming Language Barriers

Language plays a central role in creating barriers to the many opportunities discussed throughout this report. It may be possible for experienced workers to operate on construction sites without speaking English, but only in certain limited contexts. For example, in situations where workers on a construction site share a common language it may be possible for a bilingual foreman or coworker to act as interpreter.\textsuperscript{100} However, this becomes less practical on larger work sites where there may be interactions between multiple companies of different trades.\textsuperscript{101,102}

However, there is little practical way unions can help ensure non-English-speaking workers have access to sites where interpreting is even an option.\textsuperscript{103} Where the self-solicitation model is used, workers may sometimes be able to seek employment in the same organizations as their peers. However, unions that follow the hiring hall method refer workers based on their availability and are not able to match members with job sites where a particular language is spoken.
For those seeking entry to apprenticeship programs, adequate English is an implicit requirement. Once enrolled, some unions offer apprentices free ESL courses to help students develop their language skills.\textsuperscript{104} ESL classes specific to a particular trade or industry are most valuable because they make efficient use of a worker’s time and energy by focusing on the most relevant vocabulary. Some similar third-party programs already exist, including the English for Construction Trades course offered at Roxbury Community College (see Section 2.3.2).

Finally, interviewees Kenny Mak and Gene Chang both emphasize the critical importance of learning English but the hesitancy of some in the Chinese community to invest the necessary time and energy.\textsuperscript{105,106} Both have a great deal of experience in the construction industry and it is important that their advice be heard by those who are working in the field or considering it. Community outreach emphasizing the importance of English in the construction field may help, though mentoring relationships (discussed in Section 3.3.1) may have an even greater impact. Either way, community outreach must respect the difficulty of learning English as a second language, but emphasize the long-term benefits.

### 3.3.4 Overcoming Tax Liability Barriers

Though the precise legal implications are outside the scope of this report, sources characterize “under-the-table” pay as a significant long-term problem for workers.\textsuperscript{107} Consultation with a tax lawyer could help identify solutions for those who have already received a significant amount of undocumented pay. For those earlier in their careers, the best solutions are preventative. Encouraging early entry into union programs and conducting outreach to the community on the long-term risks associated with undocumented work could help. However, it is recognized that members of low-income communities are necessarily preoccupied with obtaining income through whatever jobs are available to them, even if they know they are limiting their long-term prospects. With deep-seated problems like this, mere outreach is not a panacea.

### 3.3.5 Overcoming Mobility Barriers

Two common solutions to mobility are carpooling and public transportation. Characteristics of the construction industry make both solutions challenging and temporary and the potential role of unions in overcoming these issues is limited.

Public transportation is of limited use due to the wide service areas of many union member companies (see Section 3.2.5). The practicality of carpooling is limited by three factors. First, as with language (see Section 3.3.3), workers cannot always rely on their peers for transportation. In both hiring hall and self-solicitation union models, it may be possible for a worker to avoid work at job sites that he or she cannot reach. However, remaining out of work for logistical reasons is hardly an appealing option and unions cannot realistically incorporate transportation considerations when dispatching work.\textsuperscript{108} Second, construction jobs

\begin{quote}
“Cost of classes is a barrier, but not the most important thing. Many workers don’t want to learn English if they can get by without it.”
- Kenny Mak, Makway Construction
\end{quote}
are inherently temporary. Depending on the project and field, a worker may spend months, weeks, or mere days on a given site and mobility barriers would emerge again as soon as either the driver or passenger moved on to a different site. Finally, there are numerous workforce configurations in the construction industry, including cases where workers are operating on a site by themselves, and carpooling may not be an option in all contexts.109 Ultimately, the hope is that access to high union wages will allow workers to afford their own transportation. However, this is a long-term solution for those just entering the field, and particularly for apprentices who are paid only a fraction of the journey rate.

3.3.6 Overcoming Socioeconomic Barriers

Support networks are essential for overcoming barriers endemic to underprivileged communities. An apprenticeship program is both a job and a training program and can be a significant burden for someone already struggling to find the time for work, travel, child care, and other time commitments.110 According to Matt Bruce, City of Boston Empowerment Zone Planner, a follow-up protocol is essential for the success of programs that help prepare workers for union apprenticeships.111 Some of the programs administered by the City of Boston’s Office of Jobs and Community Services follow up with participants one to two years after completion to identify continuing barriers and help people deal with them. The challenges people face are not unique, but without adequate support many may drop out of union apprenticeship programs before their full benefits are realized.

3.3.7 Overcoming Workplace Bigotry

Barriers created by racism in the workplace are also not easily overcome. Shirley Carrington, Interim Executive Director of Boston Connects, Inc., suggests that one of the best approaches is to provide extensive support networks to help people deal with challenging work environments or overt incidents.112 Support systems must address the psychological and emotional impacts of bigotry but also provide practical responses and work toward systemic solutions. Programs should maintain an open dialogue with unions to take preventative actions and respond promptly to any incidents of racism.

3.3.8 Overcoming Logistics and Timing Barriers

Workers considering apprenticeship programs should be encouraged to plan well in advance to ensure they apply during the (sometimes narrow) application window. Community organizations may wish to compile outreach materials summarizing the deadlines of different union programs, or conduct outreach that targets likely candidates at an appropriate time in advance of a union’s yearly application cycle. Once accepted, workers can seek the guidance of apprenticeship program coordinators if they are concerned about current contractual obligations overlapping with the start of apprenticeship curriculum.

Suspension of apprenticeship programs shuts down an important avenue for entry into the world of union employment. Shirley Carrington, Interim Executive Director of Boston Connects, Inc., states: “There needs to be an agency that helps people who are dealing with racism or sexism. People need a support network to survive in that environment and figure out ways of dealing with the problem.”

- Shirley Carrington, Boston Connects, Inc.
construction field, perhaps at a time when it is needed most. One solution is to focus more heavily on third party programs that can position workers for an easy transition to unions once apprenticeship programs resume. This could include pursuing a GED, studying English, or enrolling in an apprenticeship preparation program. For example, the City of Boston’s Apprenticeship Preparedness Program facilitates entry into union apprenticeship programs by providing students with a foundation of skills and basic introductions to various union trades. The 10-week program has affiliations with 17 trade unions in the State of Massachusetts, and helps ensure successful enrollment in apprenticeships upon completion of the training.\footnote{113}

Fortunately, even in a recession new opportunities do emerge over time. This is due to what Jim Snow calls the “churning of the workforce”: a transition of coming and going caused by workers retiring or switching fields.\footnote{114} The increasing average age of the union workforce is creating opportunities for those looking to enter construction trades.

### 3.4 CONCLUSION

There is evidence that minority participation in unions is growing. However, unions remain a powerful resource that is vastly underutilized by the Chinese community. The barriers discussed above provide some insights into possible causes, though further investigation of worker attitudes, knowledge, and experiences could shed further light on this question.

There is also evidence of a sincere and growing desire for minority involvement within many unions and affiliated training organizations. Unions must strike a balance between protecting current member interests and welcoming new members, but many are realizing that greater representation of minority communities is in the best interest of their organizations.

Nevertheless, challenges posed by language and logistics are significant and will require multi-faceted solutions that simultaneously address workers’ short-term needs and long-term goals. Ultimately, unions can be an invaluable resource for workers interested in building a life-long career in emerging green construction industries.
4. DIRECT PATHWAYS TO GREEN JOBS

In addition to entering the construction industry through unions and formal training programs (as described in Sections 2 and 3), there are also channels which have been created to help workers obtain employment more immediately and without the use of preparatory training programs. Approaches that follow this model are described herein as “direct pathways” to employment.

This chapter will describe three such pathways relevant to the green construction industry:

1. Direct employment and job placement
2. Small businesses
3. A community-based energy service company (“community ESCO”) model

Job placement is discussed briefly in Box 5 but the majority of this section will focus on the latter two pathways.

While the training and union programs addressed in Sections 2 and 3 provide less experienced workers with streamlined entry into construction fields, the direct
pathways discussed in this section have the potential to both create immediate opportunities and long-range prospects for local communities. Self-employment, small business development, and community-owned job opportunities create middle- and long-term prospects that help provide Chinese workers with more sustainable employment.

4.1 SMALL BUSINESS DEVELOPMENT

4.1.1 Opportunities

Small businesses represent a significant opportunity for workers interested in entering the green construction industry. The category “small business” includes companies that vary in size and role. For example, one or more workers may act as subcontractors for larger construction firms or as general contractors on smaller construction projects.

The small business model is fundamental to providing middle- and long-term job opportunities for Chinese workers because of the synergy that comes from having trained workers and successful business owners in the same community. Dave Bassett, Program Manager of the City of Boston’s Office of Jobs and Community Services, notes that in the

Box 5. Direct Employment and Job Placement

In traditional direct employment, workers bear the responsibility for securing their own employment. While career centers and other resources may be able to aid in the job search process, their role is typically limited to matching potential employees with job opportunities. This approach generally works well if the goal is to find an entry level job in the short-term.

Fortunately, some companies in the green construction field are following models that deliberately provide entry-level jobs, on-the-job training, and career advancement opportunities. Two such companies are discussed below:

**Next Step Living Inc.,** a Boston company that specializes in home energy improvements, is an example of an emerging company in the energy efficiency field that offers ideal opportunities for those seeking immediate employment and on-the-job training. This company not only provides entry level jobs, but also supports a model of career advancement that can create long-term career opportunities. The Next Step Living approach is based on a two-person team: a Team Leader and an Implementation Aid. The team conducts home energy audits and makes simple upgrades that improve energy efficiency.

www.nextsteplivinginc.com

**Action for Boston Community Development, Inc.** provides weatherization services to low income residents in the Boston area through its Energy Conservation Program. As part of the Obama Administration’s goal of weatherizing one million homes nationwide, 1,100 community action programs will receive $5 billion from the ARRA to perform energy efficiency upgrades in the homes of low- and moderate-income families. Specifically, ABCD will receive $6 million in the next three years to both provide retrofitting training and contract with companies to perform weatherization services.

www.bostonabcd.org/
construction field “employers tend to hire workers that they are familiar with and linked with culturally and by a common language.” He notes that although this may seem like discrimination, it is likely unintentional.

Nevertheless the trend underscores the importance of having employers that are culturally linked with their local community. To address the challenge of creating both immediate jobs and long-term opportunities, Bassett suggests that “minority workers need to become business owners.” This point was reiterated by Kenny Mak, a Chinese construction owner with more than 20 years of experience. He noted that because of the historical shortage of Chinese-owned construction companies in the Boston area, sometimes even Chinese workers who complete training programs still have difficulties finding work.

That being said, Chinese-owned construction businesses may be on the rise in the Boston area. Douglas Ling, a consultant for the Asian Community Development Corporation, has seen an increase in advertisements for Chinatown building contractors published in Chinese-language newspapers. Though he acknowledges that exact measurements are difficult to obtain, there seem to be increasing concentrations of Chinese-owned construction businesses in certain communities including Boston, Quincy and Malden. This observation was reinforced by retired Chinese electrician and construction worker Gene Chang, who has also seen a recent increase in Chinese-owned businesses in the Boston area.

New Chinese-owned building supply companies that cater to emerging construction companies are also indicative of the growth in Chinese-owned construction businesses. For example, Eastern Building Supply Company opened in September 2008 in Quincy to provide a bilingual option for small and medium-sized Chinese construction companies. According to the company’s manager, Wing Cheung, “A lot of Asian people go to Home Depot and have trouble getting materials. A lot of them can’t speak English, so this is the store they come to.”

While there are many indications that Chinese-owned small businesses are on the rise, there are some barriers which may be preventing this growth from meeting its full potential.

4.1.2 Barriers

Starting or expanding a new construction business requires overcoming a number of hurdles. Lack of English proficiency and lack of business experience were two barriers frequently mentioned in interviews. While these barriers are not applicable to all potential business owners, they are particularly significant in minority communities.

4.1.2.1 Lack of English Proficiency

Fluent and clear communication between client and company is imperative. This is especially true in the construction industry where a prospective client must feel confident that specific project requirements are understood and future communications will be uninhibited by language barriers. This need is equally relevant in
projects of all scales and contexts, from small residential projects to large construction sites.

Because many Chinese workers in the construction industry have inadequate English skills to facilitate this process, small business creation is not a universally applicable option and the total number of potential businesses is thereby limited.

4.1.2.2 Lack of Experience with Business Creation

Starting a new business can be a complex process, even for small businesses with only two to three people. A successful business owner needs to understand the process of forming and managing a business. Obtaining appropriate licenses, requesting small business loans, and preparing a business plan are all examples of topics that need to be addressed when creating a new small business. Likewise, once a business is established, the owner will need to establish operating procedures, including financing, accounting, marketing, and contracting. Immigrants, even those with previous business experience in other countries, may face additional burdens when trying to navigate unfamiliar laws and business models and may not be aware of programs designed to aid minorities.

4.1.3 Solutions to Small Business Development Issues

4.1.3.1 Overcoming the English Language Barrier

Small construction businesses can help ensure access to middle- and long-term job opportunities, even if English is a barrier for some workers. According to Kenny Mak, as long as the contractor (the business owner) is bilingual, there is not an urgent need for workers to speak English. In fact, Mak prefers experienced workers over those with English skills but little construction experience: “If I am working as a subcontractor for a general contractor, the language is not a problem because I can translate for my crew, and make sure they do the job right.” In this way, the language skills of a few Chinese business owners can create a trickle-down effect that helps the broader community by creating employment opportunities for workers who lack extensive English language skills.

Small businesses with bilingual owners also provide on-the-job training opportunities that are accessible to non-English speakers. For example, Mak noted that sometimes even his experienced workers lack familiarity with some construction techniques and codes used in the U.S. Although there are formal training programs available that teach these skills, Mak prefers to teach construction standards and techniques on the job. This illustrates how English language skills are not necessary for the transfer of technical knowledge in a small business setting.

4.1.3.2 Promoting Minority-Owned Small Businesses

Motivated and skilled workers may aspire to become self-employed, but are often limited by a lack of familiarity with the process of creating a new business. A number of resources exist to promote small business development, but potential business owners may be unaware

“For small projects, or when working as a subcontractor, language is not a problem because I receive the requests in English and explain the expectations in Chinese to my workers”
- Kenny Mak, Makway Construction
of the technical support available to help them through the process.

In particular, there are state and local institutions specifically focused on the creation and development of minority-owned small businesses.

These include:

- The State Office of Minority and Women Business Assistance
- The City of Boston Office of Small and Local Business Enterprise
- Massachusetts Alliance for Small Contractors

These organizations can provide valuable advice for future construction business owners, even if they plan to work only on smaller residential and commercial projects (See Box 6).

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**Box 6. Minority-Owned Small Business Development Agencies**

1. **State Office of Minority and Women Business Assistance (SOMWBA)**

   This Massachusetts agency provides multiple services to minority- and women-owned businesses, including the option to become “SOMWBA certified”. This certification can provide a competitive edge to businesses that participate in the private and public bidding process in Massachusetts. In 1996, Executive Order 390 created the Affirmative Market Program in Public Contracting (AMP), which seeks to increase the participation of minority- and women-owned businesses in public contracting. Pursuant to this executive order, any company bidding on a contract with a potential financial benefit of at least $50,000 must complete an APM form, in which they indicate past relationships with SOMWBA certified subcontractors and intended partners for the project in question.\(^{125}\)

2. **The City of Boston Office of Small and Local Business Enterprises (S/LBE)**

   This agency offers guidance for general contractors and subcontractors in a variety of fields. The primary objective of S/LBE is to create economic opportunities for small businesses in Boston, but the office has an especially strong commitment to aid minority- and women-owned firms. Additionally, S/LBE helps small businesses compete successfully for City contracts.\(^{126}\)

   Although new Chinese-owned firms might not initially have the capacity to compete for large contracts, the S/LBE office can provide guidance to help them bid as subcontractors, especially on projects where the law sets minority “man-hour” quotas. S/LBE offers workshops, information sessions and counseling on how to submit effective AMP plans.\(^{127}\)

3. **Massachusetts Alliance for Small Contractors (Mass Alliance)**

   Mass Alliance is a non-profit organization that assists small, minority-owned and women-owned businesses by offering them business advice and by working as a liaison between small businesses and larger contractors. Mass Alliance helps small contractors make connections (and get subcontracts) with larger construction companies, while also helping larger firms find qualified subcontractors to diversify their workforce and comply with state and city regulations.\(^{128}\) As ARRA funds increase the number of active construction projects, Mass Alliance will be ideally positioned to help minority-owned businesses take advantage of the increasing opportunities in subcontracting.
4.1.4 Conclusion

The creation and development of small businesses can build numerous opportunities for Chinese workers. While business formation is somewhat hindered by language barriers, this limitation is minimized by the fact that companies generally only need one bilingual member to successfully facilitate communication between the client and team. Previous business experience is helpful but also not essential; governmental and non-governmental organizations exist to help minorities succeed in creating and managing a small business. This advances them to a higher level of career development while simultaneously creating a trickle-down effect for Chinese workers who are earlier in their career, especially those who would otherwise be substantially hindered by a lack of English proficiency.

4.2 COMMUNITY-BASED ENERGY SERVICE COMPANY

4.2.1 Opportunities

4.2.1.1 Organization of Energy Service Companies

Energy Service Companies (ESCOs) are energy efficiency organizations that first appeared in the 1970’s in response to rapidly rising fuel prices. ESCOs seek to reduce a building owner’s operations and maintenance costs by identifying opportunities for savings and making physical improvements. As part of the business model, an ESCO assumes responsibility for designing, financing, and installing efficiency projects and, in return, receives a financial return from the energy upgrades. More specifically, ESCOs typically contract with both public and private organizations to provide the following services.129

1. Energy Audits. Energy audits are performed to identify areas where a building’s efficiency can be improved. Energy audits commonly include inspection of doors, windows and walls, as well as lighting, heating and cooling systems. A detailed energy survey is a crucial first step for an ESCO, as this evaluation determines the economic benefit that could potentially be gained from a contract.

2. Financing. ESCOs generally operate under one of the following financing structures: shared savings or guaranteed savings. Under the shared savings model, the ESCO provides financing to cover the initial cost of upgrades and generally receives all the financial benefits from energy reductions. Once the investment is repaid, excess savings are shared by both parties. However, if the energy upgrade fails to provide the anticipated savings, the customer is still responsible for repayment. In comparison, a guaranteed savings contract makes the client responsible for financing the project but allows them to retain all benefits from energy savings. However, if the projected savings do not materialize, the ESCO is responsible for paying the difference.130

3. Physical Improvements. Once the energy audit has identified improvement opportunities and project funding issues have been determined, the ESCO will implement the relevant physical improvements. The ESCO serves as a construction manager,
selecting contractors, supervising on-site work, obtaining the necessary permits, and confirming the estimated energy savings. Depending on the size of the facility, ESCOs may also be involved in maintaining the facilities in order to help ensure that the promised savings are realized.

4.2.1.2 Current role of ESCOs

According to a 2007 study by the Lawrence Berkley National Laboratory, the ESCO industry is primarily controlled by large, independent companies in the manufacturing, utility, and engineering sectors, with about 90 percent of all revenues earned by only thirteen firms.\textsuperscript{131} Historically, these ESCOs have prioritized large contracts with universities, hospitals, governmental agencies and other large institutions, and paid minimal attention to the residential market. A recent survey shows that residential, public housing and commercial buildings account for only 14 percent of the energy efficiency market, although this share is projected to increase.\textsuperscript{132}

As discussed in Box 3, the ARRA is providing billions of dollars to fund projects that will increase the country’s energy independence and stimulate the economy through green collar job creation and energy savings. Table 2 shows the programs in the ARRA that will invest heavily in residential retrofitting. ARRA funding, commercial ESCO focus on large contracts, spikes in fuel prices, and a growing interest in energy issues together create a unique opportunity for community-based ESCOs to fill a growing niche in residential sector energy efficiency.

4.2.1.3 The Development of a Community ESCO in Boston

A group of non-profit organizations is currently considering the possibility...
of creating a community-owned ESCO (“community ESCO”) in Boston. The community ESCO is an innovative model with few precedents in the U.S. While the ESCO industry as a whole is dominated by large private companies that work primarily with large private institutions, the community ESCO model recruits and trains local workers to retrofit local residences. This creates job opportunities in a growing field while also reducing the community’s energy costs.

Three organizations have already committed to joint ownership of Boston’s community-based ESCO: Alternatives for Community and Environment (ACE), Boston Workers Alliance (BWA) and Co-op Power. Although not currently intended owners, Boston Connects, Inc., CPA, and Community Labor United (CLU) are currently active in the formation of this ESCO (collectively “ESCO members”).

These organizations hope to take advantage of the opportunities presented by the emerging interest in retrofitting and the unique opportunities in the residential sector. According to ACE’s Environmental Justice Services Coordinator Marina Spitkovskaya, “the ESCO will primarily focus on the residential market where there has traditionally been less competition from larger ESCOs.”

Although the business plan is still being developed, high demand for the ESCO’s services is already evident. Community Development Corporations (CDCs) in Boston have expressed interest in using this community-based ESCO for winterization projects. According to Marina Spitkovskaya, “the ESCO is very much in demand and the group wishes that we could start right away.”

The ESCO will initially partner with agencies who have received ARRA funding for green development, thus providing its members with subcontracting jobs in retrofitting and managing building energy efficiency.

A community ESCO will provide long-term employment opportunities and career advancement. The model anticipates that workers will come to the ESCO with limited experience in green construction and will receive ongoing training from the company. In addition to skills, it will help workers acquire licenses and credentials which will make them more attractive to employers should they choose to leave the ESCO.

In addition to career development and training, the goal of the community ESCO is to hand over financial control to the member organizations and workers within ten years of its creation. Although not finalized, the initial business plan will likely split financial investment between investors, community organizations, and workers. Investor equity will be required in order to provide the ESCO with necessary start-up capital. This component of the business model was recommended by Co-op Power, a small energy cooperative whose members have over 25 years experience with cooperative business models.

4.2.2 Barriers

As with the creation of small businesses, language barriers will also impact the ability of Chinese-speaking workers to participate
in a community ESCO. Access to job sites may also impact Chinese workers who are limited to public transportation.

4.2.2.1 English Proficiency

Members of this ESCO will come from a variety of communities represented by the diverse group of member organizations. Because workers may not always share a common language, communication barriers within the organization could make it challenging for the ESCO to function in a unified manner. For those with limited English abilities, not having full command of the working language presents a challenge to completing daily tasks in the field, including communicating with homeowners. Miscommunications could potentially result in a lower overall quality of work or create logistical difficulties. Ultimately, lack of English proficiency inhibits a worker’s career advancement, whether in the ESCO or in subsequent employment.

4.2.2.2 Lack of Mobility

Limited mobility can be an inherent barrier in the construction field for any worker who does not have access to their own transportation. The nature of the trade requires workers to move to a new job site every time a project is completed. This is especially true for workers in an ESCO with a residential and small commercial focus; the turnaround time for jobs may be only a matter of weeks or even days. Those involved in the auditing process may even need to reach multiple sites each day. The community ESCO is intended to provide employment opportunities for low-income residents who are often limited by a lack of private transportation, and the Chinese community is no exception. For instance, according to the 2000 Census data, only 11 percent of Chinatown’s residents owned a car, compared to 38 percent ownership citywide.135 Thus, unless work sites are consistently accessible by public transportation, lack of mobility will likely limit job accessibility.

4.2.3 Solutions

4.2.3.1 Overcoming Language Barriers

Unlike ESCO members from other communities where communication is primarily in English, the Chinese community includes a significant number of workers with limited English skills. Fortunately, ESCO members are aware of this limitation and are committed to creating a diverse workforce. A common solution for this type of challenge has been to create workforce teams with bilingual leaders. This model is currently employed by Chinese construction owners, where the business owner communicates with the client in English and instructs his crew members in their native language. Marina Spitkovskaya emphasized, though, that the vision of the ESCO is a diverse and integrated organization that is not limited to separate, race-based groups with bilingual leaders. This model could be a long-term goal of the ESCO.136

4.2.3.2 Overcoming Mobility Barriers

ESCO members are also discussing issues related to transportation and job site access. According to
Marina Spitkovskaya, there is a lot of potential for retrofitting in the local neighborhoods due to the age and inefficiency of homes. While this may bypass the issue of transportation in the short-term, workers will remain limited to job sites that are accessible by public transportation unless a more comprehensive plan is designed.

Since the ESCO decision-making process will include workers, their first-hand experience with the transportation issue and familiarity with their communities should play a central role in creating solutions to this barrier. For example, workers may choose to group themselves together by neighborhood of residence and work at the same jobs sites in order to facilitate transportation.

**4.2.4 Conclusion**

A community-based ESCO is not restricted by the same governing structure as unions, and thus has the advantage of being able to organize itself in a way that best fits the evolving needs of its constituents. Since members have a financial interest in the success of the ESCO, they are also motivated to develop creative solutions to address barriers. In the case of language barriers, a community ESCO has the flexibility to address the issue in the short-term by organizing its workers into groups with bilingual leaders. At the same time it can work towards longer-term solutions by promoting the development of English skills so that workers all share a common language. Likewise, although the ESCO envisions long-term integration of its members, it can group workers together by community of residence to facilitate carpooling when public transportation is unavailable.

In short, the flexibility of the community ESCO allows it to adapt quickly to overcome barriers while simultaneously working toward more ideal long-term solutions.
5. CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL CONCLUSIONS

While each of the three pathways to green construction jobs discussed in this report face unique challenges, a number of common issues and themes emerge.

Awareness of available resources. Evidence suggests that many in the construction field are unaware of programs that exist to help them advance their careers. This leads to underutilization of training opportunities, business development programs, and other resources. Program administrators could increase awareness through enhanced outreach and non-profit organizations could help by disseminating information on valuable programs within their constituent communities.

English language proficiency. In all three pathways, lack of sufficient English language skills emerged as a significant barrier for many members of the Chinese community. Challenges arise in the context of training programs and jobs sites, and can persistently inhibit career advancement. Solutions focus on a two-pronged approach by: (a) working around language barriers
in order to address immediate employment needs while (b) simultaneously working to address workers’ long-term needs by helping them improve their English skills. Seeking to group workers in teams that include at least one bilingual member helps address the former, while integrated ESL classes helps address the latter.

**Transportation.** Restricted mobility associated with low rates of car ownership, combined with the dynamic transportation needs inherent in the construction industry, can create significant logistical hurdles. Carpooling may be an option where workers from the same community are working at the same sites and public transportation may provide supplemental options. However, both solutions face logistical hurdles for those working for large companies or on remote job sites. In such situations, increasing the rate of car ownership may be the only universally effective solution.

**Education.** In both union and non-profit training programs, educational requirements can create barriers to entry that exclude some potential participants. Many programs have worked to increase flexibility by assessing other credentials and some have added options for those who want to pursue a GED after enrolling.

**Industry expertise and guidance.** Complexities inherent in the process of finding employment can create challenges for those who are new to the field. Leveraging the expertise of experienced workers or program staff can help guide newcomers through career counseling, job placement, and mentoring.

In most cases, these issues can be addressed by working within existing organizations and programs, expanding or modifying them in ways that remove barriers. For example, communities have looked to existing training programs to incorporate green components and trade-specific English classes. They have likewise relied on existing small business development organizations to guide potential business owners. Building on existing resources, rather than creating new ones from scratch, allows for more efficient use of organizational knowledge and capacity.

Overall, there are positive signs that opportunities in all three pathways are increasing. Training programs are staying relevant by adapting programs to address emerging opportunities in green construction by adding green components to existing programs. Unions are showing increased interest in minority inclusion; many are developing partnerships with community organizations and evidence suggests that the number of minorities in unions is increasing. Finally, minority communities are taking an active role in the creation of community-based opportunities, including small business development and the creation of a community ESCO. These encouraging trends show great promise for the Boston-area Chinese community’s future access to green job opportunities.

5.2 **RECOMMENDATIONS**

This section explores a number of ways the Chinese Progressive Association (CPA) could help Boston’s Chinese community to
overcome the barriers to green job opportunities.

Many of the courses of action discussed throughout this report involve continuing or expanding partnerships between community organizations, unions, training programs, employers, government agencies and other institutions. CPA plays an important role as an advocate for Boston’s Chinese community and is uniquely situated to address many issues in ways some of these other types of entities could not. However, many of the recommendations below involve solutions that can only be implemented by other institutions, or through partnership with them. This reflects the recognition that many factors are outside the control of individual organizations and often the most effective solutions can only be implemented through collaborative approaches.

5.2.1 General Recommendations

Encourage English Proficiency:
Encourage the Chinese community to take full advantage of ESL courses, as a way to greatly enhance their ability to participate in job training programs and obtain employment. Encourage use of construction trade-specific programs when available.

Host a green jobs and training opportunities fair in Chinatown:
Seek to create greater community involvement by working with Boston-area training programs and other partners to host a green jobs training and opportunities fair, like the one held by Boston Connects, Inc. in Roxbury on March 21, 2009.

Investigate program entrance requirements: Start a discussion with coordinators of union and non-profit training programs that have strict prerequisites to determine whether those requirements could be loosened for future applicants. In particular, encourage the use of aptitude tests, interviews, and waivers for applicants with adequate work experience, rather than adherence to strict GED or high school diploma requirements.

Ensure support for workers facing workplace bigotry: Identify the frequency of such incidents and connect workers with support systems to prevent, cope with, and respond to race-related workplace conflict as needed.

Institute follow-up protocols: Identify ways of tracking workers who have received guidance from CPA on how to enter the green construction field. Follow up with workers periodically to identify continuing barriers and help them overcome challenges.

5.2.2 Recommendations Related to Training Programs

Solidify partnerships with training organizations: Maintain an open dialogue to help address challenges faced by the Chinese community and ensure that Chinese residents take full advantage of the potential benefits offered by training programs.

Dedicate staff to program-specific outreach: Designate a staff member to actively seek out candidates in the Chinese community for training opportunities that lead to careers in green construction and make program recommendations tailored
to individual needs and program characteristics.

**Coordinate mentoring relationships:** Attempt to match new and prospective training participants with more experienced students and graduates. Building mentoring relationships will encourage more in the Chinese community to take advantage of training opportunities and enable them to be successful in the field upon completion.

**5.2.3 Recommendations Related to Unions**

**Expand partnerships with unions:** Seek staff contacts at each major union, encourage those not already in the Green Justice Coalition to participate, and establish dialogues to help make apprenticeship programs more valuable to members of the Chinese community.

**Emphasize the benefits of union membership:** Counter misperceptions about unions and clarify benefits. For example, ensure that those who work in the construction trades understand the extent of potential pay increases, the availability of training, and other advantages of union membership.

**Coordinate mentoring relationships:** Seek to match apprentices or prospective apprentices with experienced union members who can guide them through the process of applying, getting work, and overcoming any workplace challenges they may face.

**Identify legal remedies to tax liability problems:** Consult with a tax lawyer to help workers who are facing liabilities from undocumented work. Seek additional consultation on methods for helping workers avoid such problems.

**5.2.4 Recommendations Related to Direct Pathways**

**Establish partnerships with community-oriented companies:** Identify and establish partnerships with key companies to facilitate direct placement in green construction jobs. Companies like Next Step Living Inc. (discussed in Box 5) have a community focus and accessible entry-level positions designed to provide on-the-job training.

**Encourage the creation of small construction businesses:** Promote awareness of the resources available to help owners create, manage, and register small businesses as minority-owned (see Box 6). Small business development will help advance the careers of owners while generating accessible jobs for others in the community.

**Become an intended owner in the community ESCO:** Take an active role in the community ESCO (discussed in Section 4.2) by committing to ownership and a formal decision-making role. This will help CPA ensure that the ESCO is structured in ways that overcome the particular barriers that Chinese workers may face.
ENDNOTES

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41. Andrew Padilla, email communication, April 30, 2009.

42. Albrizio, April 27, 2009.


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Snow, Jim, email communication with the authors, April 23, 2009.
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61. Padilla, Andrew (YouthBuild Boston), email communication, April 30, 2009.
APPENDIX A: LIST OF INTERVIEWEES

Nancy Ahmadifar, Program Coordinator, City of Boston's Office of Jobs and Community Services

Chris Albrizio, BEEMS Program Coordinator, Asian American Civic Association

Dave Bassett, Program Manager, City of Boston's Office of Jobs and Community Services

Matt Bruce, Empowerment Zone Planner, City of Boston's Office of Jobs and Community Services

Shirley Carrington, Interim Executive Director, Boston Connects, Inc.

Gene Chang, Retired Electrician and Construction Worker

Brian Greenfield, Chief Operating Officer, Next Step Living Inc.

Juan Leyton, Executive Director, Neighbor to Neighbor Massachusetts

Kenny Mak, Owner, Makway Construction

Eryn McDonald, Boston Carpenter’s Apprenticeship Program

Jim Snow, Director of Organizing, Painters & Allied Trades DC 35

Marina Spitkovskaya, Environmental Justice Service Coordinator, Alternatives for Community and Environment

Loreen Zwible, Volunteer Coordinator, YouthBuild Boston
APPENDIX B: BOSTON-AREA TRAINING PROGRAM
CONTACT INFORMATION

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YouthBuild Boston
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Rob Duncan, Program Director
Phone: 617.445.8887 extension 21
Email: rduncan@ybboston.org
Website: http://www.ybboston.org/index.htm
APPENDIX C: ADDITIONAL PARTNERS

Apollo Alliance  
www.apolloalliance.org

Asian Community Development Corporation  
www.asiancdc.org

Boston Adult Literacy Initiative  
www.bostonadultliteracy.org

Boston Connects, Inc.  
www.cityofboston.gov/bra/bostonez/index.html

Green for All  
www.greenforall.org

Massachusetts Green Jobs Coalition  
magicorg.ning.com

Massachusetts Clean Energy Technology Center  
(Website pending)

Massachusetts Workforce Alliance  
www.massworkforcealliance.org

The Workforce Alliance  
www.workforcealliance.org
### APPENDIX D: LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AACA</td>
<td>Asian American Civic Association</td>
</tr>
<tr>
<td>ABCD</td>
<td>Action for Boston and Community Development</td>
</tr>
<tr>
<td>ABE</td>
<td>Adult Basic Education</td>
</tr>
<tr>
<td>ACDC</td>
<td>Asian Community Development Corporation</td>
</tr>
<tr>
<td>ACE</td>
<td>Alternatives for Community and Environment</td>
</tr>
<tr>
<td>AFL</td>
<td>American Federation of Labor</td>
</tr>
<tr>
<td>AMP</td>
<td>Affirmative Market Program</td>
</tr>
<tr>
<td>ARRA</td>
<td>American Recovery and Reinvestment Act</td>
</tr>
<tr>
<td>BEEMS</td>
<td>Building Energy Efficient Maintenance Skills Program</td>
</tr>
<tr>
<td>BGJC</td>
<td>Boston Green Justice Coalition</td>
</tr>
<tr>
<td>BWA</td>
<td>Boston Workers Alliance</td>
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<tr>
<td>CLU</td>
<td>Community Labor United</td>
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<tr>
<td>CPA</td>
<td>Chinese Progressive Association</td>
</tr>
<tr>
<td>ESCO</td>
<td>Energy Service Company</td>
</tr>
<tr>
<td>ESL</td>
<td>English as Second Language</td>
</tr>
<tr>
<td>GED</td>
<td>General Education Development</td>
</tr>
<tr>
<td>GSA</td>
<td>General Service Administration</td>
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<tr>
<td>IBEW</td>
<td>International Brotherhood of Electrical Workers</td>
</tr>
<tr>
<td>ITA</td>
<td>Workforce Investment Act's Individual Training Account</td>
</tr>
<tr>
<td>IRB</td>
<td>Institutional Review Board</td>
</tr>
<tr>
<td>LEED</td>
<td>Leadership in Energy and Environmental Design</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Profit Organization</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>RCC</td>
<td>Roxbury Community College</td>
</tr>
<tr>
<td>S/LBE</td>
<td>The City Of Boston Office of Small Business Enterprises</td>
</tr>
<tr>
<td>SOMWBA</td>
<td>State Office of Minority and Women Business Assistance</td>
</tr>
<tr>
<td>UEP</td>
<td>Urban and Environmental Policy and Planning</td>
</tr>
<tr>
<td>YBB</td>
<td>YouthBuild Boston</td>
</tr>
</tbody>
</table>
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