



CALIFORNIA
COMMUNITY
COLLEGES

**ECONOMIC &
WORKFORCE
DEVELOPMENT
PROGRAM**

**BUSINESS AND WORKFORCE
PERFORMANCE IMPROVEMENT INITIATIVE**



**Industry Scan Report
Riverside and San Bernardino Counties**

CONSTRUCTION INDUSTRY
Home Construction Job Skill Ladder



**Center of Excellence, EWDP Region 9
San Bernardino Community College District**

September 30, 2005



Strategic Opportunities for Inland Empire Community Colleges

Home Construction Job Skill Ladder

Revised: September 30, 2005

Prepared By:

Center of Excellence, EWD Region 9
Riverside and San Bernardino Counties
San Bernardino Community College District
114 S. Del Rosa Avenue, San Bernardino, CA 92408
Phone: (909) 382-4037 Fax: (909) 382-6005
kflaming@sbccd.cc.ca.us
www.ccewd.net

In Collaboration With:

John Husing, Ph.D.
Economics and Politics, Inc.
961 Creek View Lane Redlands, CA 92373
Phone: (909) 307-9444 Fax: (909) 748-0620
john@johnhusing.com www.johnhusing.com

THE BUSINESS AND WORKFORCE PERFORMANCE IMPROVEMENT INITIATIVE IS A GRANT-FUNDED PROJECT THROUGH THE ECONOMIC & WORKFORCE DEVELOPMENT PROGRAM OF THE CALIFORNIA COMMUNITY COLLEGES. OUR MISSION IS TO STRENGTHEN CALIFORNIA'S WORKFORCE AND ADVANCE ECONOMIC GROWTH THROUGH EDUCATION, TRAINING AND JOB DEVELOPMENT.

Table of Contents

EXECUTIVE SUMMARY	3
OVERVIEW OF STRATEGIC OPPORTUNITY	
Description	5
Where Opportunities Exist	7
Basis for Demand.....	8
Value for Community Colleges	9
Labor Market Projections	10
Industry Validation	10
Source Data	10
INDUSTRY OVERVIEW	
State of the Industry	12
State of the Region	12
Growing Demand and Drivers.....	14
Industry Associations	15
Industry Opportunities and Workforce Challenges	15
Future Trends and Implications for Workforce Training.....	17
INDUSTRY TRAINING NEEDS	
Skills, Competencies, Type and Scope of Training	19
Preferred Methods of Training	23
Barriers or other Factors to Consider In Developing Training	24
SUMMARY	26
REFERENCES CITED	27
APPENDICES	
A. Occupational Outlook – Construction Industry	28
B. Construction Links.....	35
C. How To Utilize This Scan	37

California's construction industry sector is expected to grow by more than 160,000 jobs (24%) by the year 2010 – Source: California State Employment Development Department

Executive Summary

Home Construction is a blue-collar sector that offers workers with marginal education the opportunity to start work at reasonably good pay and move up a variety of skill ladders to much higher incomes. Completely untrained workers can enter this field in "helper" positions averaging \$9.29 an hour (*Beginning Construction Worker*), well above the \$6.75 minimum wage. With training and experience, these workers can begin learning the various skills found on a job site and move up to average pay of \$16.48 an hour (*Entry Level: Skilled Worker*). Those workers that use experience and training to become fully qualified craftsmen can specialize in 21 different trades averaging \$23.60 an hour (*Specific Craft Skilled Worker*). Those transitioning to management can make an average of \$31.85 an hour (*Front Line Supervisor*).¹

From 1993-2004, the Inland Empire construction industry has added an annual average of 6,518 jobs (9.9% compounded) including 11,800 in 2004 (11.9%).² Home Construction workers can feel confident that their sector will continue offering employment for years to come. This is the case because rapid population growth in Southern California and the Inland Empire has meant that the Home Construction industry has had trouble building houses at the rate they are demanded. Thus, there is enough work to employ workers for decades.

“The community colleges have a strategic opportunity to develop training programs (both credit and not-for-credit) that can help workers move up a four step skill ladder towards higher incomes and responsibility in the Home Construction industry.”

For the community colleges, the sector offers an opportunity to make an important contribution to assisting the 46.8% of Southern California's workforce that has never had a college class to start the process of moving toward the middle class (*Inland Empire: 50.3%*). Industry employers indicate that they find a need for several types of training, in both credit and not-for-credit settings. Entry-level workers need to understand the culture of work and appropriate behavior within it. Workers wishing to stay in the sector need the basic educational foundation required to master a skill. Workers wanting to become proficient at one of the 21 skill specialties must be taught the theory and practice of their trade and learn to use the specialized tools to handle job site challenges. First line supervisors need to learn how to transition from doing work to directing it.

There are, however, some difficulties. Large home builders do not have a history with the community colleges so relationships must be built from scratch. Meanwhile, most projects involve large numbers of small sub-contractors performing specialized tasks for a master developer. Complaints about worker quality or job site behavior by master developers are often a commentary on the employees of their sub-contractors. These

1 CA Employment Development Department, LMI Division, Occupational Employment Statistics, 2004

2 Calculations by Economics & Politics, Inc. from OES data weighted by employment for relevant occupations

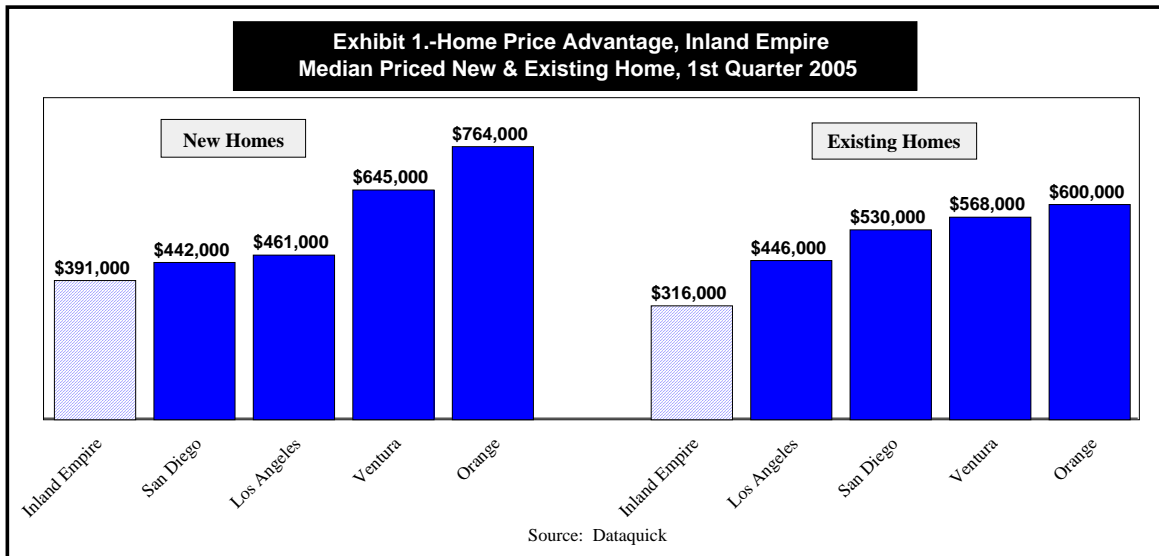
smaller firms often expand by hiring relatives or friends of existing workers so it may be difficult to gain their acceptance of certified students or a hiring preference for them. In addition, many sub-contractors are craftsmen themselves and not business owners in the traditional managerial sense. Many will be Spanish-speaking. College program staff must thus become an integral part of a very specialized working community if they are to understand it and gain acceptance for their training programs.

Another issue is that of unions. Historically, the movement first succeeded when the construction trades organized all those with specific skills and limited the supply of workers by controlling training. Today, though many skilled workers are non-union and having learned their trades on-the-job, organized labor still controls many formal training programs. Also, though master home developers and their sub-contractors tend to be non-union, they must pay union scale due to "prevailing wage" laws applicable to projects with any form of public funding. For these reasons, the entrance of the community colleges into this arena may prove to be a challenge.

Meanwhile, students entering this sector will have families, relatively low incomes, no college experience and an appetite for a quick return on their education investment. Many courses will thus have to be in short increments and offered at non-traditional hours and off-campus. The educational fundamentals needed by many of the workers will be very basic. That said, in overcoming these difficulties, the community colleges will be fulfilling an important part of their mission.

Overview of the Strategic Opportunity

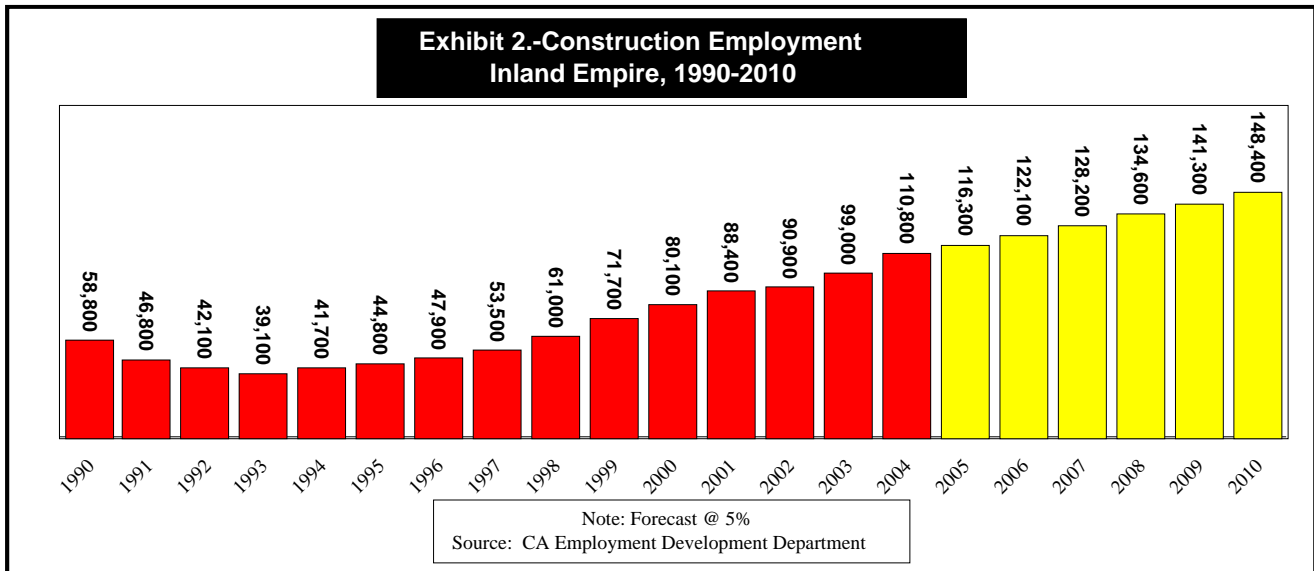
Since the late 1990's, California's population pyramid has annually put more and more families into age groups where they want to own homes. At the same time, a shortage of available land in traditional markets, plus restrictions and lawsuits by environmental and NIMBY (*not in my backyard*) groups, and infrastructure fees from cash strapped local governments (*e.g., transportation uniform mitigation fees*) have restrained the production of new dwellings. As a result, the state faces a severe housing shortage and rapidly rising home prices.



In Southern California, the full power of these forces is being felt in San Diego, Orange, Los Angeles and Ventura counties. Median existing home prices in these markets now range from \$442,000 (*San Diego County*) to \$600,000 (*Orange County*) (*Exhibit 1*). Median new home prices are from \$461,000 (*Los Angeles County*) to \$764,000 (*Orange County*). The result has been a home construction boom in the Inland Empire where land is still plentiful, restrictions less severe and governments more accommodating to population growth. Since the trough of the post-Cold War recession, San Bernardino and Riverside counties saw an annual average of 6,500 construction jobs created from 1993-2004 or 9.9% compounded. It was 7,700 a year from 2000-2004 and 11,800 in 2004 alone. If growth slowed to 5.0% compounded from 2004-2010, the sector would still add 6,300 jobs per year in the inland area. That is a conservative estimate given the lack of land in Southern California's coastal counties (*Exhibit 2*)³.

Description Multiple sources, including interviews with area executives indicate that the community colleges have a strategic opportunity to develop training programs (both credit and not-for-credit) that can help workers move up a four step skill ladder towards higher incomes and responsibility in the Home Construction industry (*please see list of validating sources later in this report*). These programs will assist adult workers to increase their understanding of the workforce culture, advance their basic educational foundations and develop specialized construction skills. As workers move up the skill ladder, their greater knowledge and skill will qualify them to accept higher levels of re-

sponsibilities and achieve greater incomes. The home building industry will benefit through development of a long-term source of trained workers.

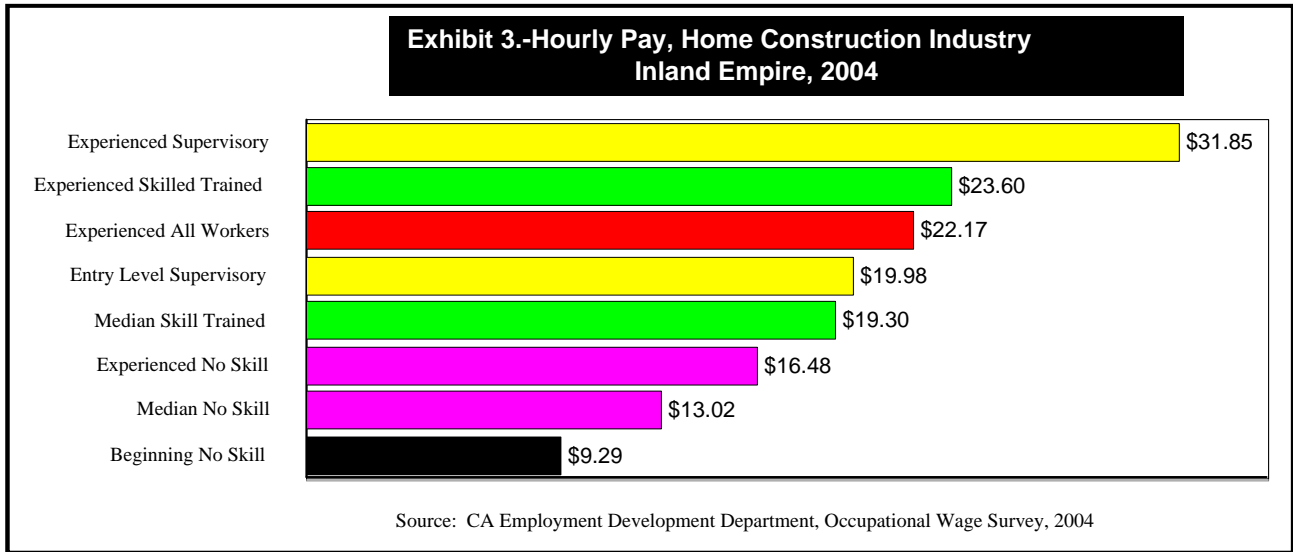


At level one, a Home Construction entry program would help workers understand acceptable workforce behavior as well as teach them about the various tasks that must come together to build homes. Also, the first level would involve assessing each worker's basic educational foundations. Workers would receive a document of completion qualifying them to begin work as unskilled workers at an average of \$9.29 per hour (*minimum wage is \$6.75*) (*Level 1: Beginning Construction Worker*).

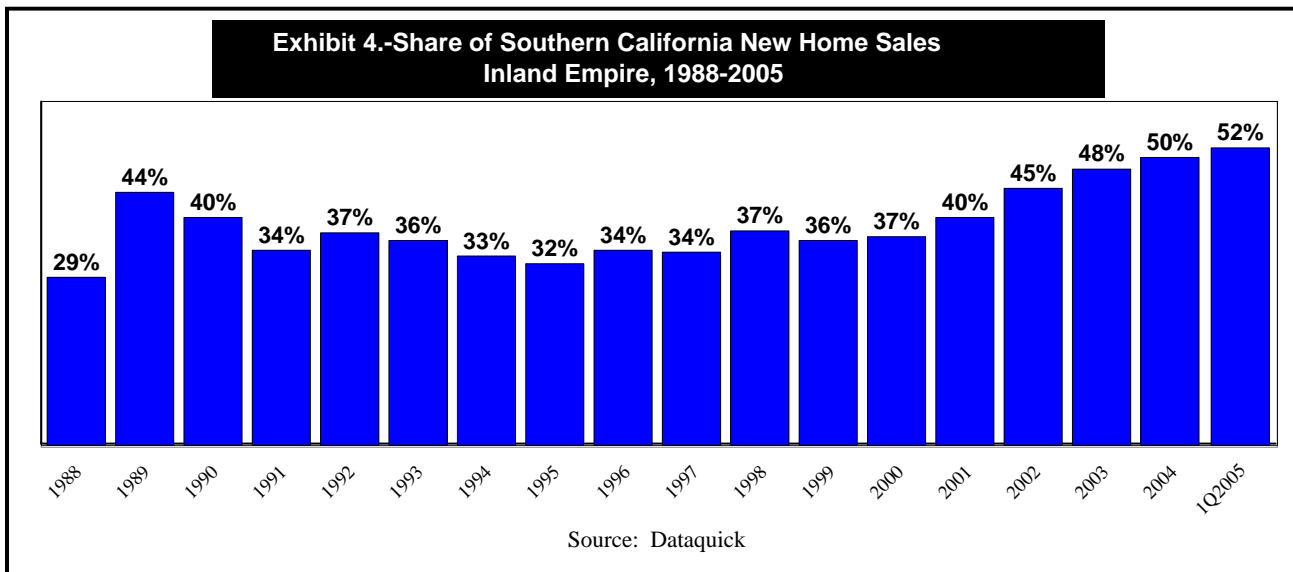
At level two, workers would receive hands-on experience in most home building tasks by building a house via a charitable project (*e.g., Habitat for Humanity or YouthBuild*). They would also receive instruction in the basic educational fundamentals needed for these skills. Completion of this training would allow them to work at the entry level in a variety of skills at a median of \$13.02 per hour going up to an average of \$16.48 per hour with experience (*Level 2: Entry Skilled Worker*).

Level three training would involve sharpening skills in one of a wide variety of trades (*e.g., plumbing, electrical, framing*). There would also be instruction in the educational fundamentals essential to their chosen specialty. Competency in these areas would allow students to work at skilled jobs with a median of \$19.30 per hour going up to an average of \$23.60 per hour with experience (*Level 3: Specific Craft Skilled Worker*).

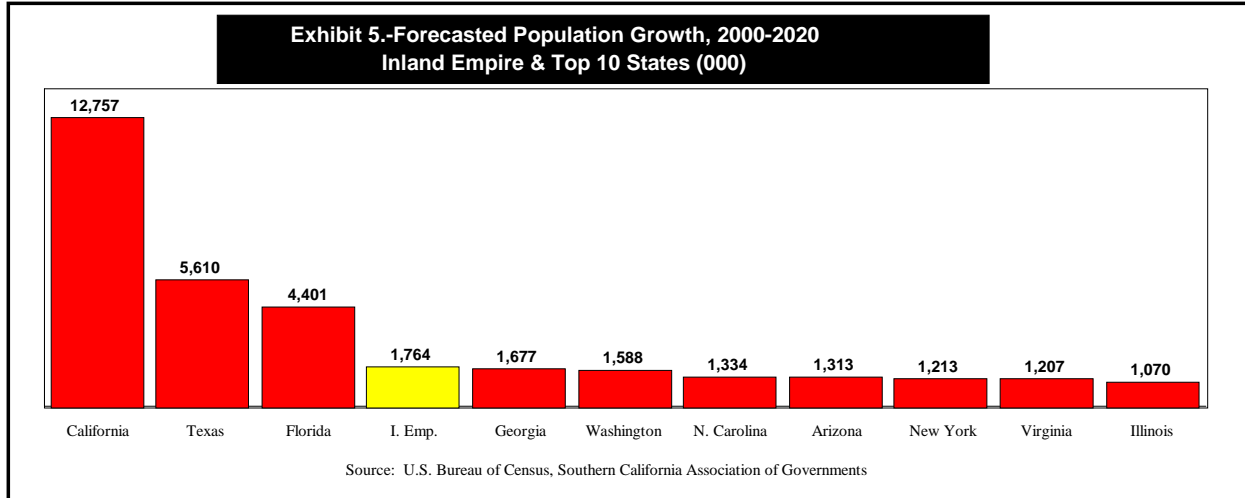
Finally, the Home Construction industry needs front line supervisors. Level four training would prepare workers to transition from hands-on tasks to management. The training would include the educational fundamentals needed for written, oral and computerized communications plus the mathematics needed for tasks like budgeting and estimating. Students would learn fundamental organizational principles and management behavior. Proficiency will qualify them for jobs with beginning pay of \$19.98 per hour going up to an average of \$31.85 per hour with experience (*Level 4: Front Line Supervisor*).



Where Opportunity Exists Job creation in the Home Construction industry is occurring throughout California. However, the Inland Empire has the strongest growth. It has most of Southern California's available undeveloped land and accounted for 52% of its new home sales in first quarter 2005 (*Exhibit 4*).



From 2000-2020, the region is predicted to keep growing adding more people than all but three U.S. states (*Exhibit 5*). As stated, its large tracts of undeveloped land mean its homes sell for less than those in coastal counties (*Exhibit 1 earlier*).⁴



What Is The Basis For Demand Fundamentally, the Inland Empire’s housing demand is growing because of the rapid expansion of families in home buying age groups and the lack of lots in Southern California’s coastal counties. The pricing system has driven buyers inland, causing an acceleration of construction employment in the area (*Exhibit 2 above*). Industry executives, worksite recruiters, and subcontractors alike indicate that the supply of knowledgeable skilled workers has been largely exhausted. At the recent Construction Career Opportunities Forum 2004, sponsored by the Inland Empire Small Business Development Center, leading construction and land management companies agreed. Remarks from the forum and an associated survey included an on-going need for employees with:

Knowledge of the Basics

Basic computers	Basic mathematics	Worksite safety standards
Basic use and care of tools	Understanding the entire construction process	Office equipment

Technical Skills

Estimating costs	Reading blueprints	Specialized skills (i.e. plumbing, electrical)
Purchasing and inventory control	Operating machinery	Supervising others

Soft Skills

Communication with others	Appropriate dress and hygiene	Good grammar
Customer service	Having a positive attitude	Ethics and personal responsibility

A leading construction services company executive at the forum stated, "Without trained workers, companies will continue to steal qualified employees from each other. The cost of training our own is high. I need to have a pool of reasonably trained individuals to draw from." Moreover, when a new worker is found, they are often inexperienced relatives or acquaintances of existing workers. Most are learning their trades on-the-job with no real training. Many lack the educational fundamentals to advance in their trades.

Many of these new hires have little understanding of normal behavior in the working world (e.g. *timeliness*). Few see the relationship between their jobs and their employer's profitability. Most have only a vague idea of the many functions that must come together to build a home. At the same time, the industry offers no formal training for its new workers and the supply of craftsmen coming from union programs is far below demand. At the front line supervisory level, the industry generally promotes experienced workers with no management background.

What does all this mean? These factors point to a demand for worker training programs by the home construction industry. Employers indicate that they would benefit by having access to a continuous supply of trained workers with some understanding of their industry. Workers would benefit by having a route to entering a growing field with 2004 median pay of \$18.06 an hour or \$37,572 a year, going up to an average of \$22.17 per hour or \$46,121 a year with experience.⁵

Value to Community Colleges The community colleges can add value in the Home Construction industry by providing workers with training (both credit and not-for-credit) programs allowing them to move up the industry's four step skill ladder:

- **Beginning Construction Worker** Workers would complete a short course in proper workforce behavior plus one covering the basic elements of the home building industry. They would receive a document verifying completion and skill competency. After assessment, they could go to work as an unskilled worker or they might choose to take courses in the basic educational fundamentals they will need to succeed in one of the sector's specialized skills. This beginning program would be brief as it is designed to get workers on to jobs quickly and whet their appetites for additional training that will allow them to earn greater pay.
- **Entry-Level Skill Competency** After assessment, workers would complete courses in the basic educational fundamentals needed to perform the variety of skills performed on a home construction site (including worksite safety, knowledge of tools, how the construction process fits together). They would also begin honing these skills by participating in each aspect of building a house through a program like *YouthBuild* or *Habitat for Humanity*. Upon the project's completion, they would receive a document of completion indicating they have touched on the full range of skills used by the Home Construction industry.
- **Advanced Skill Coursework** After assessment, workers would take courses (either credit or not-for-credit) in the basic educational fundamentals required for their chosen specialized skill. They would also choose to take instruction in one of the major Home Construction fields. However, it would be unrealistic for the schools to attempt to train workers in all 21 trades. **The best use of college re-**

sources would be to offer training in those with the most jobs: carpenters, electricians, plumbers, dry wall & ceiling tile, cement masons and concrete finishers. They represent 50,753 or 65% of the sector's skilled jobs (see Appendix A – Exhibit 10). The length of the skill program would depend on the complexity of the trade and if apprenticeship training is a component.

- **Construction Management/Supervisory Training** Workers would take courses in management and supervisory fundamentals and communications. As necessary, they would also be given instruction in the basic educational fundamentals necessary for written, oral and computerized communication plus the mathematics needed for basic budgeting and estimating. For some workers, vocational Spanish might compliment their training endeavors.

Projections According to the CA Employment Development Department, there will be 148,400 jobs in the Home Construction sector in the Inland Empire by 2010 compared to 110,800 today (see Exhibit 2 earlier). This will include 30,662 who will be in unskilled positions with beginning pay that averages \$9.29 per hour in 2004. With experience, the average pay in these positions is \$16.48. There will be 77,175 in skill and craft positions that today average \$23.60 with experience. And, there will be 6,663 working as first line supervisory jobs that today average \$31.85 with experience.⁶

Validation In developing material for this strategic opportunity, discussions were held with executives involved in the home building industry, organizations like the Building Industries Association and the construction unions. In addition, interviews were conducted with WIB job developers working to identify job openings in the Inland Empire and match them with qualified workers. There are community college staff members in the inland area working in this field and discussions were held with them. Additional validating data was derived from discussions during industry forums, extracted from economic reports, and compiled from workforce surveys.

Source Data This report has utilized information made available by the following individuals, organizations and associations:

- Economic Strategy Panel Regional Economies Base Report: Southern California Region
- Inland Empire Small Business Development Center – Construction Career Opportunities Survey 2004
- San Bernardino County Comprehensive Economic Development Strategy (CEDS)
- 2004 Inland Empire Indicators Report – Inland Empire Economic Partnership (IEEP)
- Sacramento Employment and Training Agency (SETA) - Construction Careers Occupational Outlook 2004 – 2005
- International Brotherhood of Electrical Workers, Local Union 440
- Joint Electrical Apprenticeship and Journeyman Training Program (*Riverside and San Bernardino Counties*)
- Building Industry Association of Southern California
- Associated General Contractors of California
- National Association of Home Builders

- San Bernardino City Workforce Investment Board
- Workforce Investment Board staff. Contact: Barbara Halsey, Director. E-mail: bhalsey@jesd.sbcounty.gov
- California State EDD LMID (www.calmis.ca.gov)
- Sacramento Regional Research Institute
- U.S. Department of Labor ETA – Occupational Outlook (www.doleta.gov)
- San Bernardino County Workforce Training Directory – List of apprenticeships
- Construct your Career (www.buildingtrades.org)
- Inland Empire Quarterly Economic Report (www.johnhusing.com)
- Southern California Association of Governments
- The Press-Enterprise Newspaper
 - *Growth Survey Shows Inland Most Optimistic* – August 5, 2004
 - *Inland Area Stakes its Own Economic ID* – November 19, 2004
 - *Helping Hand: YouthBuild Program* – February 3, 2005
 - *Building Boom To Echo in '05* – March 10, 2005
 - *New Census Estimates Paints Inland Boom* – April 14, 2005
 - *Training Fails State, Union Says* – April 26, 2005
 - *Help Wanted: Construction Firms Say They Need Workers and Fast* – June 21, 2005
- San Bernardino County Sun Newspaper
 - *Area Building Scene Smoking* – September 24, 2004
 - *Multi-family Housing Permits on the Rise in 2004* – August 24, 2004
 - *Home Building Activity Rises* – August 4, 2004
 - *Area Building Cracks \$6 Billion Mark* – July 28, 2004
 - *Building Boom Looms* – May 19, 2005
 - *May Construction Permits Up 11 Percent* – June 22, 2005
- Inland Valley Daily Bulletin Newspaper - Ontario
 - *More People Want to Rent Closer to the Workplace* – November 22, 2004
 - *Office Construction in the Inland Empire Remains Strong* – April 12, 2005
- Redlands Daily Facts Newspaper
 - *Commission OKs Plans that Could Bring 2,500 Homes to Loma Linda* – April 22, 2005
 - *Apartment Building On The Rise* – November 23, 2004
- Los Angeles Times Newspaper
 - *Paying Price of Growth in Inland Empire* – November 25, 2001
- USA Today
 - *Buildings To Go Up Like Never Before* – December 13, 2004
 - *Report Gives Communities a Tool To Match Development With Growth* – December 13, 2004

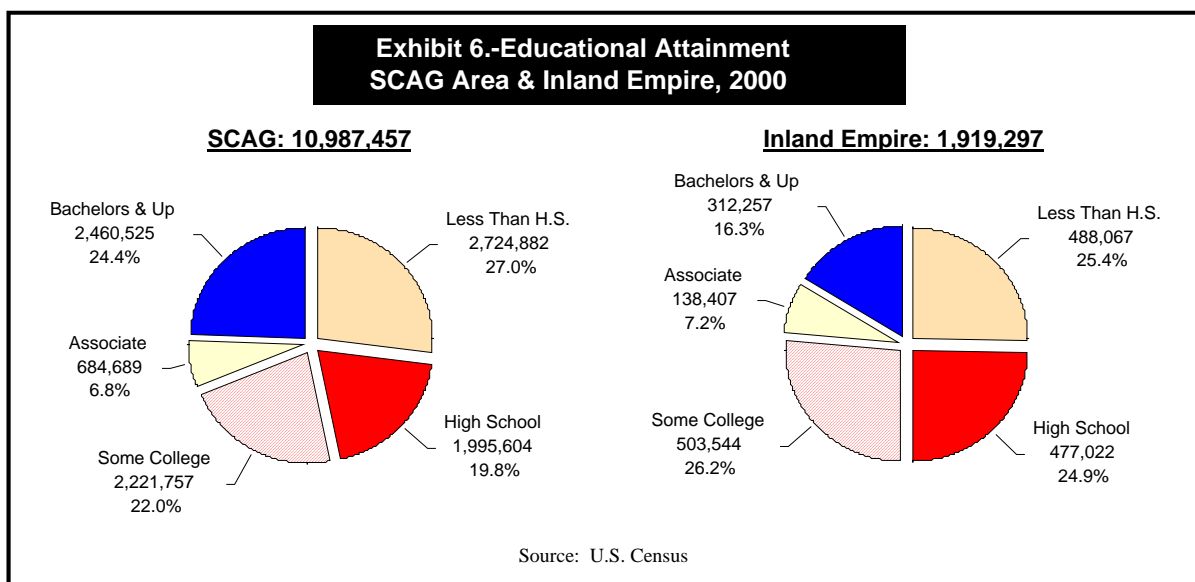
Overview of the Industry

State of the Industry Within the Inland Empire, the growth of the construction sector gives the community colleges the ability to use their workforce education efforts to expand the employment options of a large number of adult workers. In 2004, the sector added 11,800 workers to bring its employment to 110,800 (*Exhibit 2, above*). Another 11,600 jobs were added between first quarter 2004 and 2005 (11.3%).

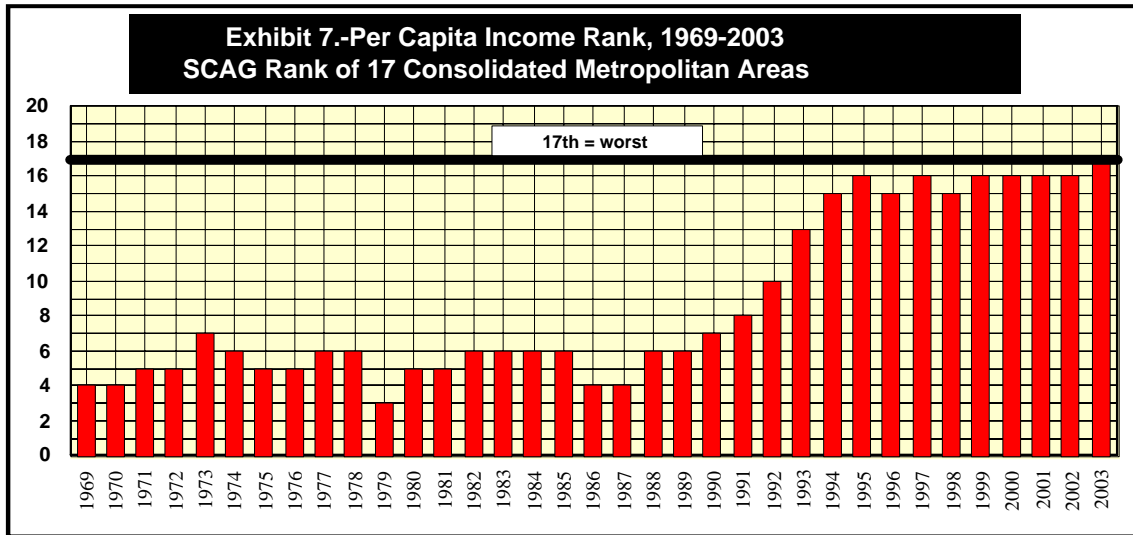
As indicated, employment is growing in this sector because there is a much greater demand for homes in California than there is a supply. Prices have been forced to very high levels to allocate the available supply among those willing to pay, giving builders a tremendous incentive to expand. In an area like the Inland Empire, where land exists and local governments are willing to see homes built, home construction is thus expanding rapidly. That is why the demand for workers at every level of the industry is growing rapidly.

Pay scales within the various aspects of the Home Construction group of sectors are quite strong (*Exhibit 3*). The weighted average of all jobs is \$22.17. At the low end, beginning unskilled construction workers can start in a variety of jobs at a weighted average starting pay level of \$9.29 (*minimum wage \$6.75*). With experience and training, people in these same entry level jobs can move up to a weighted average of \$16.48 an hour. Experienced workers in skilled occupations can earn from an average of \$18.58 an hour (*plumbers*) to \$33.86 an hour (*glaziers*). The weighted average of all experienced skilled craft workers is \$22.17 an hour. Experienced front line supervisory personnel average \$31.85 an hour.⁷

State of The Region California's Community Colleges are one of the few public educational vehicles that can provide training leading to upward income mobility for the very large share of adults who have not taken a single class beyond high school. In the Inland Empire, this situation is of particular importance as the 2000 Census found that 50.3% of people 25 years and older, or 965,089 of the region's 1.9 million adults fell into this category (*Exhibit 6*).



Further, Inland Empire is a key part of the 5-county Southern California Association of Governments (SCAG) region (*Los Angeles, Orange, Riverside, San Bernardino, Ventura*) that has seen its per capita rank among the seventeen major U.S. multi-county areas fall from the fourth best (1989) to the 17th and worst (2003) (*Exhibit 7*).



Given the increasing correlation between education and income, the deterioration in the status of the region's relative income rank is very likely related to the fact that in this wider area 46.8% of the population 25 years and older has not gone beyond high school (*Exhibit 6*).

Given these extraordinary challenges, the attempt has been made to identify a key sector with which community colleges can work to offer adult workforce training that will give large numbers of people the opportunity to qualify for and find employment that will provide them with life-long rising incomes. The Home Construction industry is poised to fill this role in the Inland Empire given the lack of land in the coastal counties and the need for housing to accommodate Southern California's growing population. In addition, this is true because the sector fulfills the several of the requirements needed to give workers a solid employment environment over the long term:

- Competitiveness** The sector must be one for which the region has clear competitive advantages so that, over time, job opportunities will increase. If competitive advantages do not exist, history has shown that a sector's employment will eventually wither as firms migrate to other states or nations. Clearly, Southern California has powerful competitive advantages for the home building industry due to the region's large and growing base of families. The Inland Empire has a key advantage in its tracts of undeveloped land.
- Entry Level Skill Requirements** The sector needs to hire and use workers with entry-level skill sets that a large number of adults can achieve without lengthy schooling. This is an important consideration as the subject population has already shown a hesitancy to continue their formal education. The home building industry has this key characteristic as it uses large numbers of entry-level unskilled workers.

- **Entry Level Pay** The sectors should provide beginning salaries for inexperienced workers well above the minimum wage (*\$6.75 an hour or \$13,500 for 40 hours a week/50 weeks a year*). The average beginning pay in Home Construction is \$9.29 an hour.
- **Job Ladders & Lattices** The sector should provide identifiable skill ladders or lattices through which workers can move to higher incomes via a combination of on-the-job learning or additional workforce education. With experience and training, Home Construction workers can move into positions of increasing skill and pay.
- **Technology** Preferably, work within the sectors should be changing in response to technologies that are making employees more efficient and thus providing the opportunity for higher pay. This is currently not one of the strengths of the Home Construction industry.

Growing Demand There will be a growing demand for training in the Home Construction industry because the sector will grow with the expansion of Southern California's population. Most of this expansion will come from the natural increase of births over deaths. Part will come from foreign and domestic in-migration. As the population grows, so will the demand for dwellings with single-family detached homes being the core of the component. Thus in November 2003, a Public Policy Institute of California survey, financed by the Packard, Irvine and Hewlett Foundations, asked Californians two revealing questions:

- Do you prefer to live in a low-density neighborhood where driving is a necessity? The answer from 66% was "Yes".
- What is the kind of home where you would ideally want to live? The answer from 86% was a Single Family Detached Home.

Within the Inland Empire, the existence of large tracts of undeveloped land, at a time when coastal areas are approaching build-out, means that housing development will be a major expanding industry for the next several decades.

Drivers The key factors driving the demand for trained Home Construction workers in Southern California and the Inland Empire are:

- Population growth and an age pyramid putting increasing numbers of people into age groups where they want to own homes.
- The increasing gap between the supply of homes and the demand for them. This has resulted in rapidly rising prices to force some buyers to continue living in apartments, staying with parents or doubling up with other families.
- Combined, these facts have made it more and more profitable to build homes, increasing the demand for Home Construction workers.
- The Inland Empire's large tracts of undeveloped land have pushed 52% of Southern California's home market into the region meaning that an increasing share of the demand for Home Construction workers will be in the inland area.

- The California legislature is becoming increasingly aware that the legal environment has contributed to the lack of home construction and the fact that families are increasingly unable to find homes they can afford to buy. A coalition of some environmental groups, housing advocates and industry representatives is working on a compromise to make home development approvals easier to achieve. Currently, this legislation is focused on in-fill markets. It will benefit the Inland Empire's Home Construction industry by easing construction in the portions of the area that large tract development has left behind.

With housing demand continuing to grow, the supply of existing trained Home Construction workers has been exhausted:

- There is a need to train new workers for the industry.
- There is also a need to allow existing workers to upgrade their skills.
- The workers in question often need to enhance their basic educational foundations to learn entry level or advanced skills.
- Beginning employees do not have the workplace awareness or understanding that companies need.
- English-as-a-second language would help a large number of workers in the construction field. Spanish-as-a-second language would be very useful to front line supervisors.

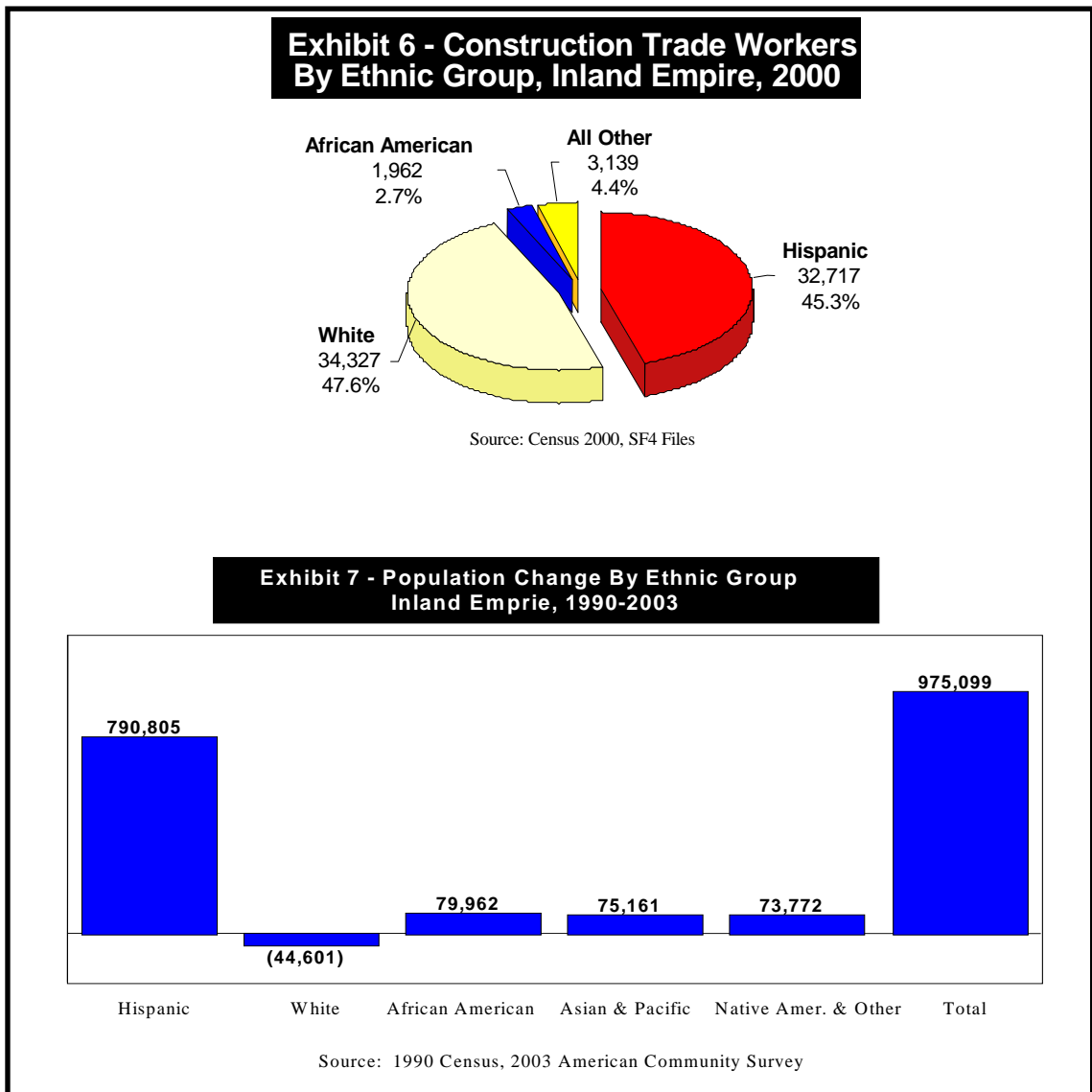
Combined, these factors mean that both the Home Construction industry and its workers would benefit greatly if the community colleges worked closely with them and offered practical training (both credit and not-for-credit) for the sector.

Associations Serving the Industry There are several key associations serving the Construction industry with whom contact has been made, relationship developed, or contribution made to this report:

- Building Industries Association, Baldy View (BIA, Baldy View), Contact: Frank Williams. (www.biasc.com)
- Building Industries Association, Riverside (BIA, Riverside), Contact: Borre Winckel. E-Mail: winckel@msn.com
- National Electrical Contractors Association
- International Brotherhood of Electrical Workers
- National Joint Apprenticeship and Training Committee
- American Subcontractors Association of California

Industry Opportunities and Workforce Challenges The interviews and forums held with major home building operations indicated that their workers can make good entry level pay in the Home Construction sector and be on a skill ladder taking them to far better pay. However, to move up to each of the ladder's four levels, they face a variety of workforce performance requirements:

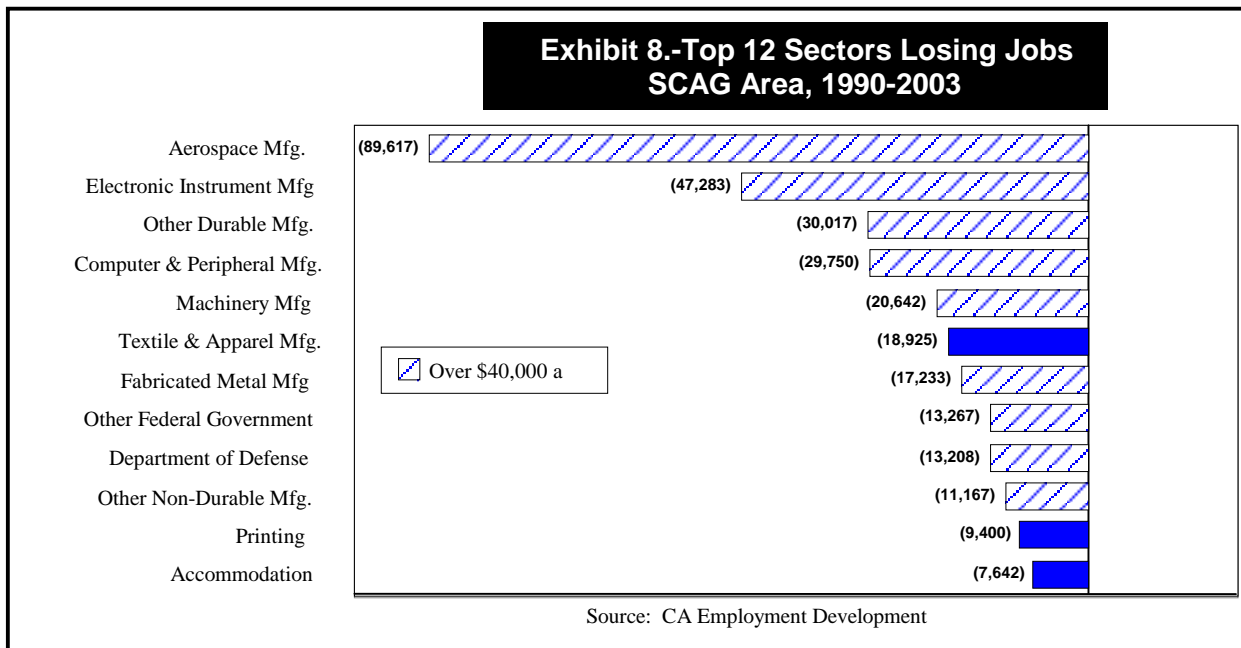
- Basic Workforce Behavior** Many job applicants are friends or relatives of existing workers. They have little or no workforce experience and do not understand that jobs are not there for their own benefit. Furthermore, today job seeker has little concept of the workforce culture including such behaviors as coming to work on time, consistently showing up for work or appropriately treating fellow workers. They have even less understanding of the relationship between a firm's success and their ability to have job and an income. For instance, the 2004 Construction Career Opportunities survey revealed that many employers feel a minimum requirement for entry-level workers is an understanding of the importance of making a profit.
- Basic Education Foundation** It would be helpful to workers in the basic Home Construction jobs if they had the ability to read and write English and if they had basic mathematics skills. To advance to higher levels of skill, their educational foundations will have to be further developed as the skills and tools in the various trades require it (blueprint reading, and understanding mechanical drawings).



Those making the transition to the front line supervisory jobs will need to become almost bi-lingual in Spanish. This is the case as 45.3% of the Inland Empire's construction trade workers were Hispanic in 2000 while 47.6% were white and 2.7% African American and 4.4% all other groups (*Exhibit 6*). Supervisors will also need to become adept at written and oral communications plus the use of mathematics for such tasks as estimating and budgeting.

- Specific Occupational Skills** As with any occupation, Home Construction workers must master a variety of tasks to move up the skill ladders and pay scales within their industry. At the entry level, they will be engaged in largely manual "help" work while being exposed to a variety of tools and skill types. At the next level, they will work with the same tools and variety of skills while starting to learn some of the skills themselves. The highest level of blue-collar work is to become a skilled worker or craftsman in any one of the very wide variety of occupations that are involved in home building (please see specific skill sets listed later in this report). From there, workers joining the first tier of management jobs must switch to understanding such concepts as organization, time management, human relations, business communications and, ultimately, how to pull together all of the functions needed to build a home.

Future Trends/Implications for Workforce Training Southern California's economy faces two facts which make the expansion of a trained Home Construction labor force critical. One is the aforementioned 46.8% of the region's workers who have not attended one college class (*50.3% in the Inland Empire*). The second is the demise of the manufacturing sector as a major growth force. From 1990-2003, nearly every major part of Southern California to lose jobs has been in this sector (*Exhibit 8*). It is a ramification of California's high cost of doing business as well as the extraordinarily low cost of production in China where manufacturing wages range from \$0.56 to \$0.67 an hour.



For generations, manufacturing was the major route to upward income mobility for marginally educated workers. It is no longer playing this role. Fortunately, the size and potential growth of the Home Construction industry being studied here provides the essential ingredients once offered only by manufacturing: good starting wages, a defined skill ladder which workers could move upward by on-the-job learning and additional training. The group has the added advantage of needing to be in Southern California because of the area's rapidly growing number of families.

Industry Training Needs

Skills, Competencies, Type & Scope of Training The community colleges have the opportunity to assist workers at every level of the Home Construction sector as they move up to higher paying jobs. Below the skills, competencies, type and scope of training for each of the sector's four levels of skill are outlined:

1. **Entry Level Occupations, Beginning Workers** Beginning workers can start in the Home Construction Industry at an average pay of \$19,322 with short-term job experience (\$9.29 per hour). The problems facing potential students are threefold:
 - **Basic Workforce Behavior.** Again, many applicants for construction jobs are young, coming off of public assistance, and have little or no workforce experience. They have little concept of the workforce culture including such behaviors as coming to work on time, consistently showing up for work, appropriately treating fellow workers. Also, they have a poor understanding of the relationship between a firm's success and their ability to have job and an income.
 - **Basic Education Foundation.** Workers in the most basic Home Construction jobs should be able to at least speak, hear and read English. Basic mathematics would be helpful to their ultimate ability to move up to more complex and better paying jobs. Many beginning workers do not have this foundation.
 - **Specific Occupational Skills.** Entry-level workers in a Construction operation will largely perform manual tasks working as "helpers" to skilled workers. Their ability to be hired and eventually move up within the system would be helped if they had some knowledge of:
 - How tract homes are built and the various functions that must be combined for a tract to be a success.
 - The use of the basic tools of carpenters, electricians, plumbers, dry wallers and cement workers.
 - The basic approaches that workers in these skill groups take in doing their jobs.

California's Community Colleges have a strategic opportunity to add value for workers with marginal educations. They can do so by helping them acquire the basic skills and background to enter and succeed in a sector where they can move up an essentially blue-collar skill ladder to positions of increasing complexity, responsibility and income. The colleges can do so by creating a program that assembles three elements and leads to a Beginning Construction Competency:

- An element that explains and demonstrates appropriate workforce behavior to workers and helps them to understand the relationship between a firm's success and their income. This could be a course or the introduction to each of the two courses below.
- A course in all of the various elements that must come together to built a home from grading to finished lot preparation through building of homes. The courses would cover such functions as the role and sequencing of framing, roofing, elec-

trical, plumbing, drywalling, windows, flooring, appliances and cement work plus the inspection process.

- A course in the approaches and tools used by skill workers in the five main trades where beginning workers will likely serve as unskilled helpers: carpentry, electrical, plumbing, dry walling, cement.

In addition, students would be given an assessment of their educational foundation and told about appropriate courses in elementary mathematics, ESL and other subjects where they can learn the basics needed for moving up the skill ladder in the Home Construction industry.

This beginning program is not designed to give workers in-depth skill training or schooling in educational fundamentals. It is for people in a hurry to start earning money. The effort is thus to give students the basic fundamentals to start work in the Home Construction sector and acquaint them to the possibilities of further training that can lead to higher levels of skill and income.

2. Beginning Skill Training Construction industry employees have the opportunity to move beyond largely "helper" functions to acquiring craft skills. Without moving deeply into a specialty, these workers can still move up to average pay of \$34,277 with median term job experience (*\$16.48 per hour*). The problems facing potential students are fourfold:

- **Basic Workforce Behavior** To the extent that they are not already in the industry, they may well have the same issues of lack of workforce experience and understanding of the work place culture as entry-level workers. Based upon student assessment, they may or may not need to be placed in the entry-level course (*described above*) aimed at giving them this information.
- **Basic Education Foundation** Again, it would be helpful to workers to have at least a rudimentary ability to speak, hear, read and write the English language. Elementary mathematics would be helpful to their ultimate ability to move deeper into several craft specialties.
- **Understanding Construction** Students already in the Home Construction industry will already understand a great deal about how the sector functions. Those that have not yet entered the field will not. Here again, it will be necessary to assess student understanding with those lacking this knowledge so that those who do not can take a brief course that explains the sector.
- **Skills** There are some 21 skill categories (*Exhibit 10*) that are brought together in the Home Construction industry. A worker considering a career in the sector would do well to sample these various skills. This is a consideration as most workers entering the field today do so simply because a job opportunity opened for them, not because they had demonstrated an ability or interest in a particular craft.

California's Community Colleges have a strategic opportunity to add value for workers already in the Home Construction industry or workers with an interest in entry with beginning skills. The schools can do so by helping them acquire a basic understanding of

how to perform in the wide variety of skill sets that are brought together in building a home. Such a program would assemble several elements and lead to an Entry-Level Skill Competency:

- Assessments that determine a student's educational foundation and directs them to courses to achieve an elementary ability to read, hear, write and speak English. Assessments would also direct them to appropriate mathematics and other courses where they can learn the basics needed for entry-level workplace success in the various trades.
- Assessments that determine whether a student understands appropriate work-force behavior to workers and helps them to understand the relationship between a firm's success and their income. Those who do not would be required to take the entry-level material detailed in the previous section.
- Classroom, shop, and field work in the five major skill groups involved in construction: carpentry, electrical, plumbing, dry walling, cement work. The field work would take the form of performing each of the various functions involved in building a home on an actual construction job site. The home would be built in conjunction with an effort like *Habitat For Humanity*.

3. Advanced Skill Training Home Construction workers have the opportunity to move up to the highest level of blue-collar skills. They can do so by becoming proficient at one or more of the 21 job specialties on a construction site. As indicated, 65% of the jobs are in five specialties: carpentry, electrical, plumbing, dry walling, cement work. In these five crafts, workers can move up to an average pay of \$48,487 with median term job experience (\$23.31 *per hour*). The problems students appear likely to face are twofold:

- **Basic Education Foundation** It would be helpful to workers learning Home Construction skills to be able to clearly speak, hear, read and write English as a second language. Elementary and specialized mathematics would be needed for their work depending on the equipment with which they are working. Some specialties require computer skills.
- **Specific Occupational Skills** The most successful construction workers ultimately learn one or more skill in depth. A successful program should teach how work is organized, the approaches to various problems and tasks, the types of materials and supplies needed for various jobs, and use of the tools of the trade to solve problems and perform tasks.

California's Community Colleges have a strategic opportunity to add value for workers already in the Home Construction industry or workers with strong fundamentals. They can do so by helping them acquire the skills and background needed to work in one of the major specialties. Such a program would assemble several elements and lead to an Advanced Skilled Certificate or Document of Completion in one of five specialties:

- Assessments that determine a student's educational foundation and directs them to appropriate mathematics and computer skills courses where they can learn the basics needed for their trade. Where appropriate, students may be recommended to ESL classes.

- Assessments that determine a student's level of skill within their chosen trade specialty.
- A program designed to give students the skills they need to work in their chosen trade specialty. The training would include:
 - Learning the characteristics and practicing with the various tools used in their specialty, and learning where they can acquire them.
 - Understanding the characteristics of the various materials and supplies they will use in their specialty, as well as where to acquire them.
 - Reviewing and practicing the handling of the variety of tasks and practical problems they will encounter on a job site.
 - Learning to estimate the costs of a job and how to bid their time and materials.

Certification will require students to demonstrate that they have mastered their skill according to industry determined skill standards for their craft.

4. Front Level Supervisors Some employees of the Home Construction industry will have the opportunity to transition from the trades to first line supervisors. These workers can move up to average pay of \$66,248 with median term job experience (\$31.85 per hour) plus benefits. The problems students appear likely to face are twofold:

- **Basic Education Foundation** Workers occupying supervisory positions must be able to clearly speak, hear, read and write English. It would be helpful if they had at least an elementary knowledge of Spanish as a second language. Elementary and specialized mathematics would be needed for their work. They also need to be adept at business computer systems.
- **Specific Occupational Skills** Front line supervisors in a Home Construction operation will require training to be able to effectively work with their staffs to accomplish the goals of the firm's executives. Many of the people chosen for these positions will come from the blue-collar ranks and are thus making the transition to the professional world. They will need a variety of new skill sets including:
 - Training in elementary management including such topics as the line and staff flow of institutional power; the development, execution and importance of company policies; human relations policies and procedures; budgeting; inventory control processes.
 - They will need training in reporting processing; memo interpretation and writing; Home Construction workflow planning, organization and execution.
 - They will need to be able to manage a bidding process for both getting jobs and for hiring sub-contractors.
 - They should start becoming adept at business computer systems including e-mail, Internet, word processing, spreadsheets and PDA's.

California's Community Colleges have a strategic opportunity to add value for workers already in the Home Construction industry by helping them acquire the skills and background that move into the beginning ranks of management. This is the highest level that workers can reach in this skill ladder. The colleges can do so by creating a program (credit or not-for-credit) that assembles several elements and leads to competency in Construction Management:

- Assessments that determine a student's educational foundation and directs them to appropriate courses to achieve the ability to clearly read, hear, write and speak English. Assessments that determine their ability to speak and hear Spanish and directs them to elementary courses in Spanish as a second language. Assessments that would also direct them to appropriate mathematics and computer skills courses where they can learn the basics needed for workplace success in handling first line supervisory responsibilities.
- A course in management fundamentals. This is likely already a part of the curriculum in most Community Colleges. It should be relatively easy to nuance a course to specialize in the Construction industry.
- A course in business communications for managers. This is likely already a course in the curriculum.
- A course in Home Construction workflow management as the industry is sufficiently different to where this would be useful to potential managers within it. A segment should include responding to bids and as well as setting up bidding systems and evaluating bids.
- A computer systems program for managers including e-mail, Internet, word processing, spreadsheets, PDA's and have at least a passing understanding of geographic information systems.

Preferred Methods of Training The category of students needing training for the Home Construction sector are likely to feel uncomfortable in a traditional college setting. For that reason, the training should be held in untraditional settings such as a model construction sites or non-campus training centers.

As many of the students will want quick returns on their education investment, the training should be in courses that are only as long as needed to achieve the desired knowledge. This may require adapting existing college classes to this unique audience. Coursework can be packaged as a certificate program or delivered flexibly in a contract education arrangement. Similarly, courses will likely need to be held at non-traditional times like weekends and evenings, given that many students will be adults with families and most will have existing jobs.

As workers move up the skill ladder, these challenges to the education system will become less pronounced. This is an important consideration as some of the advanced level classes for carpenters, electricians, plumbers, dry wallers and cement workers may already be part of the technical curriculum. The supervisory level classes are the ones most likely to use traditional campus classrooms. Workers at this level should also need to be more comfortable in this type of environment.

Barriers There are several major barriers to the success of a Home Construction program:

- The large home builders do not have a history of working with the community colleges and there will be initial difficulties in developing a relationship.
- Nearly all home tract construction projects involve large numbers of small sub-contractors performing specialized tasks for a major master developer (e.g., *KB Homes*). Complaints about worker quality or job site behavior that come from master developers are often a commentary on the employees of their sub-contractors. Getting this wide variety of small firms to embrace coordinated training programs will not be easy.
- The fact that these smaller firms often expand by hiring relatives or friends of existing workers means that gaining acceptance of students earning certificates or documents of completion and a hiring preference for them will be a complex undertaking for a college program coordinator.
- Many smaller firms are owned by people whose primary talent has been their own ability to perform a particular skill. They are not business owners in the traditional managerial or executive sense. An important share of the owners will be Hispanic. College coordinators must be able to become an integral part of this community if they are to understand it and gain acceptance for their programs. Creative outreach and recruitment efforts should be used that will penetrate desired communities.
- Unions have traditionally been strong in the construction trades and have normally controlled skill training with them. Most master developers in the Home Construction sector and their sub-contractors are non-union except on projects involving public funds. The entrance of the community colleges into this part of the economy may be controversial. Coordinators will likely have to carefully work through the attendant issues.

Beyond the Home Construction sectors specific difficulties, training funds is another potential barrier. It can be solved to some extent by funding through programs like Workforce Investment Act, Federal Employment Training Act (*replaced Welfare to Work*) and California's Employment Training Panel. In addition, master developers, needing to train start-up labor forces, replacement labor forces or to increase the educations of their workers, **may be willing to pay for the training** or provide reimbursement to their students. This will be less likely with sub-contractors. Finally, some students may be willing to pay to get training so they can go to work in an upwardly mobile environment.

Another barrier could come in the form of finding sufficient students when a program first starts. The sources could be:

- Students who self-enroll.
- Students sent by master developers looking to have their workers increase their skills or workplace understanding.
- Students sent by sub-contractors looking to have their workers increase their skills or workplace understanding.

- Students sent by Workforce Investment Act (*WIA*) boards or other job intermediaries that have identified jobs their clients can do and wish to build up client skills so they can be employed in them.
- Work with high-schools and regional occupational programs to convince students (and their parents) who do not plan to go to college to take a programs to allow them to get a job and succeed rapidly in this industry.
- Work with community based, faith-based, and special population serving concerns (e.g. Hispanic newspaper, etc.) to attract participants.

Summary

In Southern California and the Inland Empire, the Home Construction industry is one for which workers can be trained with a guarantee that they will find work throughout most of their lives. This is the case because of Southern California's continual rapid population growth and the fact that the Home Construction industry has trouble building houses at the rate they are demanded. The sector thus offers blue-collar workers with marginal education the opportunity to start work at reasonably good pay and move up a skill ladder to much higher incomes through a combination of on-the-job learning and skill training.

For the community colleges, the Home Construction sector offers an opportunity to make an important contribution to assisting the 46.8% of Southern California's workforce that has never had a college class to start the process of moving toward the middle class (50.3% - *Inland Empire*). Industry executives indicate that they find a need for several types of training. Entry-level workers need to understand the culture of work and appropriate behavior within it. Workers wishing to stay in the sector need the basic educational foundation required to master a skill. Workers wanting to become proficient at one of the 21 skill specialties must be taught the theory and practice of their trade. They must learn to use the craft's various tools to handle the kinds of the challenges they will face on job sites. First line supervisors need to learn how to make the move from hands-on work to managing and working within the context of corporate decision systems. Community colleges have a real opportunity to embrace the construction industry, roll-up their collective sleeves, and create a "win-win-win", benefiting the worker, employer, and the college.

"The community colleges have the opportunity to assist workers at every level of the Home Construction sector as they move up to higher paying jobs."

In a Phase 2 Internal Scan, the Region 9 Center of Excellence proposes to identify, clarify and recommend methods of engagement and process adaptation that will enable local Community Colleges to respond to this emerging need.

References Cited

- Economic Strategy Panel Regional Economies Base Report: Southern California Region
- Sacramento Employment and Training Agency (SETA) - Construction Careers Occupational Outlook 2004 – 2005
- San Bernardino County Comprehensive Economic Development Strategy (CEDS)
- 2004 Inland Empire Indicators Report – Inland Empire Economic Partnership (IEEP)
- Inland Empire Small Business Development Center – Construction Career Opportunities Survey 2004
- California State EDD LMID (www.calmis.ca.gov)
- The Economic Benefits of Housing in California Report. Sacramento Regional Research Institute, March 2004
- ERISS job information and training. (www.usworks.com/sbeta)
- U.S. Department of Labor ETA – Occupational Outlook (www.doleta.gov)
- San Bernardino County Workforce Training Directory
- Construct your Career (www.buildingtrades.org)
- Joint Electrical Apprenticeship and Journeyman Training Program
- Inland Empire Quarterly Economic Report (www.johnhusing.com)
- International Brotherhood of Electrical Workers, Local Union 440

Appendix A: Occupational Outlook - Construction

Job Growth & Skill Ladders As this report indicated, the Home Construction sector provides workers with the opportunity to take training to qualify for jobs along a four step skill ladder. Training for the jobs along this ladder can be condensed into four elements by the community colleges and offered to prospective workers:

- 1. Beginning Workers** Workers need to get into the Construction industry to start moving up its skill ladders and earn higher pay. Most beginning jobs involve workers acting as "helpers" to skilled workers in craft positions. The average starting salary for these unskilled jobs in the Inland Empire is \$19,322 a year or \$9.29 an hour (*Exhibit 9*).
- 2. Entry Level Skilled Workers** The entry level skill workers will perform tasks similar to those of beginning "helper" workers. However, their greater level of experience and training will allow them to start learning the skills of the craftsmen they are assisting. It is assumed that beginning workers would go to work upon receiving their first certification. For that reason, the second level of the Home Construction skill ladder would be oriented to workers who feel they can move on to higher jobs with more skill training and those not in the industry who choose to take greater preparation before going to work. With training and certification, these groups would increase their earnings potential. At this level of skill, workers can earn a median salary of \$27,084 a year or \$13.02 an hour. Fully experienced workers in the field in the Inland Empire average \$34,277 a year or \$16.48 per hour (*Exhibit 9*).

The jobs applicable to the Beginning Workers and the Entry Level Skill Workers include:

472061 Construction Laborers Perform tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, clean up rubble and debris, and remove asbestos, lead, and other hazardous waste materials. May assist other craft workers.

Exhibit 9 - Beginning Workers & Entry Level Skill Occupations Home Construction, Inland Empire							
OES	Description	Training	2008 Jobs	Entry-level Wage	50th Percentile (Median) Wage	Mean Wage	Experience Wages (Mean)
472061	Construction Laborers	Moderate-Term On-the-Job Training	14,013	\$9.17	\$13.38	\$14.89	\$17.76
473011	Helpers-Brick masons, Block masons, Stonemasons & Tile & Marble Setters	Short-Term On-the-Job Training	1,541	\$9.62	\$14.55	\$14.68	\$17.21
473014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	Short-Term On-the-Job Training	1,596	\$9.88	\$13.71	\$14.58	\$16.93
472141	Painters, Construction and Maintenance	Moderate-Term On-the-Job Training	7,146	\$9.92	\$13.47	\$14.38	\$16.61

473015	Helpers--Pipelayers, Plumbers, and Pipefitters	Short-Term On-the-Job Training	1,151	\$10.49	\$13.67	\$13.89	\$15.26
472130	Insulation Workers	Moderate-Term On-the-Job Training	705	\$9.40	\$12.14	\$12.67	\$14.30
473013	Helpers—Electricians	Short-Term On-the-Job Training	1,856	\$7.80	\$10.26	\$11.50	\$13.35
473012	Helpers—Carpenters	Short-Term On-the-Job Training	1,485	\$8.51	\$11.62	\$11.36	\$12.78
372011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Short-Term On-the-Job Training	111	\$7.55	\$8.91	\$10.51	\$11.98
373011	Landscaping and Groundskeeping Workers	Short-Term On-the-Job Training	186	\$7.71	\$9.51	\$10.54	\$11.96
473016	Helpers—Roofers	Moderate-Term On-the-Job Training	371	\$7.85	\$9.66	\$10.02	\$11.10
473019	Helpers, Construction Trades, All Other	Short-Term On-the-Job Training	501	\$7.70	\$8.53	\$9.37	\$10.21
	ANNUAL		30,662	\$19,322	\$27,084	\$29,304	\$34,277
	HOURLY			\$9.29	\$13.02	\$14.09	\$16.48

Source: CA Employment Development Department

473011 Helpers-Brickmasons, Blockmasons, Stonemasons, and Tile Setters

Help brickmasons, blockmasons, stonemasons, or tile and marble setters by performing duties of lesser skill. Duties include using, supplying or holding materials or tools, and cleaning work area and equipment.

473014 Helpers-Painters, Paperhangers, Plasterers, and Stucco Masons

Help painters, paperhangers, plasterers, or stucco masons by performing duties of lesser skill. Duties include using, supplying or holding materials or tools, and cleaning work area and tools.

472141 Painters, Construction and Maintenance Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns. May remove old paint to prepare surface prior to painting. May mix colors or oils to obtain desired color or consistency.

473015 Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters Help plumbers, pipefitters, steamfitters, or pipelayers by performing duties of lesser skill. Duties include using, supplying or holding materials or tools, and cleaning work area and equipment.

472130 Insulation Workers Line and cover structures with insulating materials. May work with batt, roll, or blown insulation materials.

473013 Helpers—Electricians Help electricians by performing duties of lesser skill. Duties include using, supplying or holding materials or tools, and cleaning work area and equipment.

473012 Helpers—Carpenters Help carpenters by performing duties of lesser skill. Duties include using, supplying or holding materials or tools, and cleaning work area tools.

372011 Janitors and Cleaners, Except Maids and Housekeeping Cleaners

Keep buildings in clean and orderly condition. Perform heavy cleaning duties, such as cleaning floors, shampooing rugs, washing walls and glass, and removing rubbish. Duties may include tending furnace and boiler, performing routine maintenance activities, notifying management of need for repairs, and cleaning snow from sidewalks.

37301 Landscaping and Groundskeeping Workers

Landscape or maintain grounds of property using hand or power tools or equipment. Workers typically perform a variety of tasks, which may include any combination of the following: sod laying, mowing, trimming, planting, watering, fertilizing, digging, raking, sprinkler installation, and installation of mortarless segmental concrete masonry wall units.

473016 Helpers–Roofers Help roofers by performing duties of lesser skill. Duties include using, supplying or holding materials or tools, and cleaning work area and equipment.

473019 Helpers, Construction Trades, All Others All construction workers not listed separately.

3. **Skilled Workers & Craftsmen** After some exposure to the Home Construction industry, many workers decide upon a specialty or craft to which they wish to devote their careers in the industry. For the community colleges, this is the point at which the training for this sector will divide along craft or skill lines. Altogether, there are some 21 different trades that workers could choose. At this higher level of skill, workers with no experience can begin at an average salary of \$26,039 a year or \$12.52 an hour. The median pay is \$40,148 or \$19.30 per hour. Fully experienced workers in the field in the Inland Empire average \$49,089 a year or \$23.60 per hour (*Exhibit 10*).

Workers with no experience can begin at an average salary of \$25,386 a year or \$12.20 an hour in these sectors. Median pay is \$40,233 or \$19.34 per hour. Experienced workers in these fields in the Inland Empire average \$49,089 or \$23.31 per hour.

Exhibit 10 - Skilled Occupations, Home Construction, Inland Empire

OES	Description	Training	2008Jobs	Entry-level Wage	50 th Percentile (Median) Wage	Mean Wage	Experience Wages (Mean)
472121	Glaziers	Long-Term On-the-Job Training	817	\$12.38	\$23.71	\$26.70	\$33.86
472221	Structural Iron and Steel Workers	Long-Term On-the-Job Training	1,206	\$21.25	\$28.70	\$29.76	\$32.43
472043	Floor Sanders and Finishers	Moderate-Term On-Job Training	223	\$13.75	\$21.27	\$24.32	\$29.62
472071	Paving, Surfacing, & Tamping Equipment Operators	Moderate-Term On-the-Job Training	445	\$15.34	\$22.96	\$24.21	\$28.65
472073	Operating Engineers & Other Con- struction Equipment Operators	Moderate-Term On-the-Job Training	2,302	\$15.32	\$21.62	\$23.59	\$27.72
472111	Electricians	Long-Term On-the-Job Training	10,097	\$14.17	\$21.76	\$22.63	\$26.86
472211	Sheet Metal Workers	Moderate-Term On-the-Job Training	3,508	\$10.11	\$16.78	\$20.38	\$25.51

472081	Drywall and Ceiling Tile Installers	Moderate-Term On-the-Job Training	7,201	\$13.48	\$20.92	\$21.36	\$25.29
472171	Reinforcing Iron and Rebar Workers	Long-Term On-the-Job Training	1,039	\$11.82	\$17.89	\$20.71	\$25.17
472082	Tapers	Moderate-Term On-the-Job Training	2,598	\$16.89	\$21.67	\$21.93	\$24.46
472021	Brick masons and Block masons	Long-Term On-the-Job Training	1,336	\$14.23	\$20.63	\$20.57	\$23.75
472044	Tile and Marble Setters	Long-Term On-the-Job Training	2,302	\$14.07	\$20.60	\$20.43	\$23.61
472041	Carpet Installers	Moderate-Term On-the-Job Training	1,726	\$12.17	\$18.75	\$19.56	\$23.25
472031	Carpenters	Long-Term On-the-Job Training	19,860	\$11.85	\$20.06	\$19.41	\$23.18
472151	Pipelayers	Moderate-Term On-the-Job Training	186	\$15.38	\$20.17	\$20.10	\$22.47
472051	Cement Masons and Concrete Finishers	Long-Term On-the-Job Training	4,919	\$12.35	\$18.46	\$18.54	\$21.64
472181	Roofers	Moderate-Term On-the-Job Training	3,731	\$12.07	\$18.30	\$17.92	\$20.84
472161	Plasterers and Stucco Masons	Long-Term On-the-Job Training	4,287	\$11.53	\$15.79	\$17.55	\$20.57
472053	Terrazzo Workers and Finishers	Long-Term On-the-Job Training	334	\$10.16	\$16.60	\$19.05	\$19.83
472152	Plumbers, Pipefitters, and Steamfitters	Long-Term On-Job Training	8,297	\$9.47	\$13.84	\$15.55	\$18.58
474999	All other construction trades and related workers	Moderate-Term On-Job Training	761	\$7.43	\$13.37	\$15.62	\$19.71
	ANNUAL		77,175	\$26,039	\$40,148	\$41,467	\$49,089
	HOURLY			\$12.52	\$19.30	\$19.94	\$23.60

Source: CA Employment Development Department

472121 Glaziers Install glass in windows, skylights, store fronts, and display cases, or on surfaces, such as building fronts, interior walls, ceilings, and table-tops.

472221 Structural Iron and Steel Workers Raise, place, and unite iron or steel girders, columns, and other structural members to form completed structures or structural frameworks. May erect metal storage tanks and assemble prefabricated metal buildings.

472043 Floor Sanders and Finishers Applies filler compound to floor to seal wood. Attaches sandpaper to roller of sanding machine. Guides machine over surface of floor until surface is smooth. Scrapes and sands floor edges and areas inaccessible to floor sander, using scraper and disk-type sander.

472071 Paving, Surfacing, and Tamping Equipment Operators Operate equipment used for applying concrete, asphalt, or other materials to road beds, parking lots, or airport runways and taxiways, or equipment used for tamping

gravel, dirt, or other materials. Include concrete and asphalt paving machine operators, form tampers, tamping machine operators, and stone spreader operators.

472073 Operating Engineers and Other Construction Equipment Operators

Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement. May repair and maintain equipment in addition to other duties.

472111 Electricians Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems.

472211 Sheet Metal Workers Fabricate, assemble, install, and repair sheet metal products and equipment, such as ducts, control boxes, drainpipes, and furnace casings. Work may involve any of the following: setting up and operating fabricating machines to cut, bend, and straighten sheet metal; shaping metal over anvils, blocks, or forms using hammer; operating soldering and welding equipment to join sheet metal parts; inspecting, assembling, and smoothing seams and joints of burred surfaces.

472081 Drywall and Ceiling Tile Installers Apply plasterboard or other wallboard to ceilings or interior walls of buildings. Apply or mount acoustical tiles or blocks, strips, or sheets of shock-absorbing materials to ceilings and walls of buildings to reduce or reflect sound. Materials may be of decorative quality. Include lathers who fasten wooden, metal, or rockboard lath to walls, ceilings or partitions of buildings to provide support base for plaster, fire-proofing, or acoustical material.

472171 Reinforcing Iron and Rebar Workers Position and secure steel bars or mesh in concrete forms in order to reinforce concrete. Use a variety of fasteners, rod-bending machines, blowtorches, and hand tools. Include rod busters.

472082 Tapers. Seal joints between plasterboard or other wallboard to prepare wall surface for painting or papering.

472021 Brickmasons and Blockmasons Lay and bind building materials, such as structural tile, brick, and concrete, cinder, glass block or terra-cotta block, with mortar and other substances to construct or repair walls, partitions, arches, sewers, and other structures.

472044 Tile and Marble Setters Apply hard tile, marble, and wood tile to walls, floors, ceilings, and roof decks.

472041 Carpet Installers Lay and install carpet from rolls or blocks on floors. Install padding and trim flooring materials.

472031 Carpenters Construct, erect, install, or repair structures and fixtures made of wood, such as concrete forms; building frameworks, including partitions, joists, studding, and rafters; wood stairways, window and door frames, and hardwood floors. May also install cabinets, siding, drywall and batt or roll insulation. Include brattice builders who build doors or brattices (ventilation walls or partitions)

in underground passageways to control the proper circulation of air through the passageways and to the working places.

472151 Pipelayers Lay pipe for storm or sanitation sewers, drains, and water mains. Perform any combination of the following tasks: grade trenches or culverts, position pipe, or seal joints.

472051 Cement Masons and Concrete Finishers Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, roads, or curbs using a variety of hand and power tools. Align forms for sidewalks, curbs, or gutters; patch voids; use saws to cut expansion joints.

472181 Roofers Cover roofs of structures with shingles, slate, asphalt, aluminum, wood, and related materials. May spray roofs, sidings, and walls with material to bind, seal, insulate, or soundproof sections of structures.

472161 Plasterers and Stucco Masons Apply interior or exterior plaster, cement, stucco, or similar materials. May also set ornamental plaster.

472053 Terrazzo Workers and Finishers Apply a mixture of cement, sand, pigment, or marble chips to floors, stairways, and cabinet fixtures to fashion durable and decorative surfaces.

472152 Plumbers, Pipefitters, and Steamfitters Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems.

474999 All other construction trades and related workers All construction workers not listed separately.

4. **First Level Supervisors & Inspectors** The workers without college degrees who can achieve the highest pay in the Home Construction industry are those who rise to become supervisors. They can acquire the knowledge necessary to perform these functions through on-the-job learning. Still, managerial training would also be beneficial. The average salary with no experience for these jobs is \$41,558 a year or \$19.98 an hour. However, the median pay is \$55,994 or \$26.92 per hour. Full experienced workers in the field in the Inland Empire average \$66,248 a year or \$31.85 per hour (*Exhibit 11*). The job category is:

471011 First-Line Supervisors/Managers of Production/Operation Supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators. Duties include: Calculates labor and equipment requirements and production specifications, using standard formulas. Confers with management or subordinates to resolve worker problems, complaints, or grievances. Confers with other supervisors to coordinate operations and activities within departments or between departments. Demonstrates equipment operations or work procedures to new employees or assigns employees to experienced workers for training. Determines standards, production and rates based on company policy, equipment and labor availability, and workload.

Exhibit 11 - First Level Production Supervisors, Home Construction, Inland Empire

OES	Description	Training	2008 Jobs	Entry-level Wage	50th Percentile (Median) Wage	Mean Wage	Experience Wages (Mean)
471011	First-Line Sup/Mgrs of Construction Trades and Extraction Workers	Work Experience	6,663	\$19.98	\$26.92	\$27.89	\$31.85
	ANNUAL		6,663	\$41,558	\$55,994	\$58,011	\$66,248
	HOURLY			\$19.98	\$26.92	\$27.89	\$31.85

Source: CA Employment Development Department

APPENDIX B: Construction Links

Northern California Surveyors Joint Apprenticeship Committee (NCSJAC) www.ncsjac.org

The NCSJAC Training Program was established in 1963 to work to provide a field surveyor workforce comprised of well-trained and highly skilled employees.

Sheet Metal Workers International Association (SMWIA) www.smwia.org

The SMWIA represents more than 150,000 skilled crafts persons in the unionized sheet metal industry throughout the United States, Canada, and Puerto Rico.

California Department of Consumer Affairs, Contractors State Licensing Board (CSLB) www.cslb.ca.gov

The CSLB licenses and regulates contractors in 43 classifications that constitute the construction industry. Currently there are approximately 280,000 licensed contractors in California. The CSLB also registers home improvement salespersons.

International Brotherhood of Painters and Allied Trades (IUPAT) www.ibpat.org

The IUPAT is a labor organization representing over 140,000 members in the construction industry, such as Painters, Drywall Finishers, Glaziers, Floor Coverers, and Sign and Display workers.

United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry (UA) www.ua.org

The UA is a multi-craft union whose members are engaged in the fabrication, installation, and servicing of piping systems. There are approximately 326,000 UA members who belong to 321 individual local unions across North America. Apprentices learn through both classroom and on-the-job training through the UA construction industry apprentice program.

United Brotherhood of Carpenters and Joiners of America (UBC) www.carpenters.org

The UBC represents more than 520,000 carpenters, cabinetmakers, millwrights, piledrivers, lathers, framers, floorlayers, roofers, drywallers, and workers in forest-products and related industries. The UBC is also involved in apprenticeship training in California.

Associated Builders and Contractors www.abc.org

Associated Builders and Contractors (ABC) is a national association representing 23,000 merit shop construction and construction-related firms in 79 chapters across the United States. ABC's membership represents all specialties within the U.S. construction industry and is comprised primarily of firms that perform work in the industrial and commercial sectors of the industry.

American Society of Home Inspectors (ASHI) www.ashi.org

ASHI is a one-stop source for information about the home inspection profession, from technical information and Consumer Product Safety Commission recalls to home inspection business resources, services, and products.

California Department of Industrial Relations (DIR), Division of Apprenticeship Standards (DAS) www.dir.ca.gov/das

The Division of Apprenticeship Standards Web site hosts a search engine for apprenticeship programs by occupational group and by county location.

California State Department of Consumer Affairs (DCA), Bureau of Security and Investigative Services (BSIS) www.dca.ca.gov/bsis

The BSIS licenses private patrol operators, private investigators, alarm company operators, repossession agencies, and locksmiths, and certifies their training facilities and instructors. Firearms and baton training

facilities, as well as their instructors, also fall under BSIS' jurisdiction. Licensing and certification ensures that the business operator and specific employees have passed a criminal background check and have met DCA requirements.

International Brotherhood of Electrical Workers (IBEW) www.ibew.org

The IBEW represents approximately 750,000 workers throughout the United States and Canada in a wide variety of fields, including utilities, construction, telecommunications, broadcasting, manufacturing, railroads, and government.

International Code Council (ICC) www.iccsafe.org

The International Code Council (ICC) was established in 1994 as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national model construction codes.

Laborers' International Union of North America (LIUNA) www.liuna.org

The LIUNA is one of the fastest-growing unions in North America. The mission of LIUNA is implemented through nine regions, 55 district councils, and more than 500 local unions.

National Burglar and Fire Alarm Association (NBFAA) www.alarm.org

Founded in 1948, more than 2,400 electronic life safety, security, and systems businesses in all 50 states and 4 U.S. territories hold membership in NBFAA. The NBFAA promotes and protects the industry while providing a constant source of information and training to its members. The following trade or professional associations offer valuable information about current developments in construction and related fields and skill certification programs.*

APPENDIX C: How to Utilize this Scan

About Us - Description of BWPI

The Business and Workforce Performance Improvement (BWPI) initiative is focused on building the capacity of the colleges in the area of economic and workforce development to enhance their ability to deliver education and training services to businesses and workers in high growth industries, new technologies, and other clusters of opportunities.

The Centers of Excellence (COE) within BWPI provide information regarding workforce trends, increasing awareness and visibility about the colleges economic and workforce development programs and services, and building partnerships with business and industry.

The difference this will make to the colleges is that it will position them as THE workforce partners of choice to business and industry and ensure that college programs are current and responsive. This will contribute to the overall economic vitality of the communities in which they serve.

How to Use This Industry Scan

The Centers of Excellence within the Business and Workforce Performance Improvement Initiative of the California Community College Economic and Workforce Development Program have undertaken Industry Scanning to provide targeted and valuable information to community colleges on high growth industries and occupations.

This scan is intended to assist the decision-making process of California community college administrators and planners in addressing local and regional workforce needs and emerging job opportunities in the workplace as they relate to college programs. The information contained in this report can be used to guide program offerings, strengthen grant applications, and support other economic and workforce development efforts.

This report is designed to provide current industry data that will:

- Define potential strategic opportunities relative to an industry's emerging trends and workforce needs;
- Influence and inform local college program planning and resource development; and
- Promote a future-oriented and market responsive way of thinking among stakeholders.

This Industry Scan included a review of the California Regional Economies Project reports and Employment Development Department (EDD) Labor Market Information (LMID) projections that cover the communities in this region, as well as many other sources as listed.

Important Disclaimer:

All representations included in this Environmental Scan product/study have been produced from a secondary review of publicly and/or privately available data and/or research reports. Efforts have been made to qualify and validate the accuracy of the data and the reported findings. The purpose of the Environmental Scan is to assist the California Community Colleges to respond to emerging market needs for workforce performance improvement. However, neither the Business and Workforce Performance Improvement Centers of Excellence, COE host college or California Community Colleges Chancellor's Office are responsible for applications or decisions made by recipient community colleges or their representatives based upon this study including components or recommendations.