REGIONAL ECONOMIC DEVELOPMENT INSTITUTE (REDI)

The Strategic Opportunity To Build a Green Workforce In Los Angeles

(Working Copy)

A Regional Education and Training Action Plan

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Table of Contents

Acknowledgements

This report is part of a series of labor market studies on the energy/utility industry sponsored by the Regional Economic Development Institute (REDI) at Los Angeles Trade-Technical College (LATTC). The report specifically focuses on the education and training needs and opportunities in the emerging sustainable development field as it particularly relates to greening the built environment—its real estate, power, water, transportation and waste infrastructure. The report offers a comprehensive, regional approach to educating and training a Green Workforce in order to respond to: 1) the demands of the sector which is highly diverse and dispersed, 2) the assets, capacities and interests of the K-20 public educational system, and especially, 3) the geographic diversity and interests of our industry and community partners within the Los Angeles Infrastructure and Sustainable Jobs Collaborative. Through collaboration—stitching together our different but complementary programs and initiatives—we can build a better partnership, a better industry sector, a better city and a better future.

Funding for this study was generously provided by the Los Angeles Department of Water and Power, the Los Angeles Community Development Department and Bank of America.

Special acknowledgement goes to the CDTech staff responsible for the production of this report. The report was researched and written by two talented and dedicated CDTech interns: Loralei Bingamon and John Breckenfeld. Kristine Williams, Vice President for Strategic Initiatives provided final editing assistance. Dr. Denise Fairchild, founding director of LATTC/REDI and CDTech President, served as senior editor and provided overall project guidance.

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Executive Summary

In fall of 2007, over 200 employers and investors from the Los Angeles infrastructure sector (energy-utility and construction), community organizations, labor unions, public agencies and educators convened to identify education and training needs of the emerging Green Sector, and also to identify workforce development strategies to connect, particularly, unemployed and underemployed Angelinos to these current and future career opportunities. This report responds to the interest and enthusiasm of the Forum participants by organizing the findings from the Sustainable Energy Forums, recent labor market research, program documents, and primary interviews into a suggested Regional Education and Training Action Plan. The plan is based upon the following major findings:

Industry Trends

- The vision, policies and consumer demand for a Green L.A. is greater than the number of existing jobs; the labor demand (actual & projected number of jobs by occupations) is not yet precisely quantifiable (see "Job/Skill Demands" and *Figure 5*, p. 25-26).

- Los Angeles County currently lags behind the state and nation with respect to the number of Green Sector firms.

- The largest number of Green employers in the Los Angeles area include: solar power (n=92), environmental consulting (n=75), waste disposal (n=61) and alternative fuel vehicles (n=21). These numbers are still small compared to other major regions.

- With the exception of solar energy firms which are widely dispersed, there is some regional clustering of firms evident:
  - Solid waste in South LA, the San Fernando Valley and the South Bay;
  - Environmental planning in downtown LA and the Westside;
  - Alternative Transportation in the South Bay (San Pedro and Long Beach);
  - Environmental Manufacturing in East LA;
  - Water Treatment and Supply in South Bay and West L.A

- Greater clustering (agglomeration) of firms in the region is needed to expand the growth and development of the Green Sector.

- The greatest potential for green jobs is emerging out of public sector initiatives. The Green LA plan, for example, offers growing opportunities in: 1) green building, 2) alternative fuels, and 3) energy/utility.

Jobs & Job Skills/Business Opportunities

- Labor demand is growing with employers reporting both future hiring plans and some difficulty in finding workers with the right skills.

- The foundation for most green jobs in the infrastructure sector is in traditional occupations, such as the construction trades, technology, manufacturing and business.

- Flexible, interdisciplinary skills, however, will grow in demand as the sector advances, including knowledge (if not skills) of environmental sciences, renewable energy, computer technology and manufacturing.

- Small businesses—construction contractors, restaurants and automotive mechanics—need technical and regulatory training, to keep up with both the new compliance environment and business opportunities.

- General skills remain huge barriers to employability, including general math and science, problem solving, communication, interpersonal and technical writing skills.

Education and Training Infrastructure

- The Los Angeles Unified School District's (LAUSD) small learning communities (SLCs)/career academies offer the best opportunity for filling the long-term needs of this emerging sector. There are over 50 existing SLCs in Green Jobs related fields, including: 1) environmental sciences, 2) architecture/engineering and construction, 3) math/science/technology, and 4) advanced transportation. These programs need an enriched curricula and to be better networked and developed.

- Los Angeles Community College District (LACCD) schools (n=9) offer a full range entry-level pathways for professional and technical careers in the green sector. There are 132 industry-related certificate and 88 associate degree programs; the bulk of them, however are in the building/construction fields. Most of these programs need to be "greened" and articulated across the Los Angeles public education system.

- LACCD school curricula reveal education and training gaps in green manufacturing, solar installation, water conservation and waste management.

- There are several exemplary "field-based" programs within LACCD and LAUSD that provide a good foundation for expansion/replication. Greater involvement of industry is needed to expand a full range of work experience opportunities for students.

- Greater collaboration, standardization and articulation of programs across the public education system are needed to help build the workforce of the future.

- Community and labor programs are essential partners in a comprehensive education and training strategy, offering entry points and pathways for unemployed and underemployed individuals not enrolled in an educational institution.

Key Recommendations: A Regional Education and Training Action Plan

System Development

- ***Invest in the Future***. Support the growth and development of the K-12 educational system to increase an eco-ethic (environmental consciousness and behaviors), as well as career awareness, exposure and opportunities among L.A.'s youth. Specific opportunities exist to better coordinate and build-out LAUSD's 50+ green-related small learning communities by providing: 1) a vibrant learning community of teachers, 2) regular meetings of 'teacher leaders', 3) regular new teacher training (four times a year minimum), and 4) on-going curricula planning and development support. These adjustments would follow the Los Angeles Education Partnership Humanitas collaborative model (see **Invest in the Future**, p. 40 of Section 4).

- ***Build the Base: Cluster Development***. Grow L.A.'s green economy by advancing the evolution and growth of regional clusters. Organize and fund industry-education-labor-community networks in key sub-sectors, such as: 1) green building; 2) environmental technology and manufacturing; 3) alternative transportation, and 4) utility. Each cluster network would be centered at a Community College and include a K-20 public school-labor-community partnership that will provide the network with on-going industry and labor market research, regulatory and policy support, formulation of job standards and skills, curricula development and workforce development training.

Short-term Interventions

- ***Scale-up***. Establish a "Train the Trainers" program for K-12, Community College and community educators to increase the quantity and quality of public sector and community-based education and training programs focused on the green sector.

- ***Go Green***. Green all green-related courses offered within the L.A. Community College District, including green building programs (architecture, engineering, construction), automotive/transportation, manufacturing and other disciplines.

- ***Start Small: Small Business Development***. Create a focus on green technology small business development. Provide small firms with green business certification training, involving basic, short-term introductory technical and compliance training. Community Colleges and small business assistance organizations can help increase awareness and access to the growing green business opportunities; including introduction to LEED certification for small contractors and compliance/green business certification for restaurant and automotive businesses.

- ***Advance Jobs of the Future***. Build new curricula programs and courses to meet immediate and growing demand in solar installation, renewable energy technicians, energy efficiency auditing, water conservation/landscaping and environmental planning.

➲ Section 1: The Relationship between Green Technology & Los Angeles-Based Industries

Overview

At the forefront of economic development discussions in Los Angeles is the question of socially equitable job growth for residents[1] as the city embarks on the next level of economically beneficial industrial growth. The emergence of a green jobs sector within existing industries can provide a pathway to addressing social and economic obstacles for unemployed and underemployed communities in the region. A carefully chosen plan to guide how industries grow and develop their green workforce in Los Angeles can set a new national benchmark in demonstrating how a cleaner environment can go hand in hand with innovative business practices and effective job preparation.

This study specifically aims to advance the planning and implementation processes that will fill the projected job gaps within Los Angeles regional industries.[2] Focusing on available training and education opportunities for Los Angeles residents, the study builds out a learning continuum capable of producing candidates for living wage entry level jobs, as well as pathways to wage increases and job mobility through additional training. If the study succeeds, further insight will be gained on what educational and training programs need to be developed and/or improved in the green jobs arena.

Key Questions

Four primary questions drive this study:

- What are the societal and systemic factors influencing projected job trends for industries involved with green activity in Los Angeles? Why are these factors significant?
- Given the projected job trends, what are the existing educational options available within Los Angeles that provide low-income and underserved communities with entry-level job opportunities in industries that appear to be economically and socially stable?
- What are the skill sets necessary for entry level jobs in the most desirable sectors and occupations targeted for "greening" in Los Angeles?

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[1] According to a report prepared by the Economic Roundtable on *Jobs in L.A's Green Technology Sector* (2006), ideally, green technology will contribute to the three pillars of sustainable development in Los Angeles. These pillars are: 1) environmental stability, 2) economic stability, and 3) social sustainability.

[2] Eric Tharp of the Los Angeles Department of Water & Power (LADWP) stated that of the current 8,300 LADWP employees, within the next 2 years, one-half of the employees will be eligible for retirement. Many other employers within this sector have similar labor shortages due to "baby boomer" retirement over the next 5-10 years. (Statement taken from presentation given at the Working for a Sustainable Future: A Workforce Development Forum held on October 26, 2007, in Los Angeles, sponsored by the Los Angeles Infrastructure and Sustainable Jobs Collaborative).

- What are the next steps to address the future of the green job sector as it relates to Los Angeles' education and training infrastructure?

Each of these questions provides an opportunity to investigate the current relationship between industries with green potential and the existing or non-existing opportunities for Los Angeles residents to fill current and/or future entry-level positions within these industries.

Methodology

The main purpose of this research study is to encourage the advancement of green jobs in the Los Angeles region. It specifically crafts a regional, multi-level approach to meeting the workforce needs of this emerging sector. The goal is to prepare L.A. residents for entry-level and advanced work in this emerging green sector. The research methods used to produce this report include the following:

1) Two day-long focus groups with local industry professionals and educators (K-20).[3]
2) Primary data collected from various databases.
3) Primary interviews and site visits.
4) Secondary source research, including reports recently written about the emerging green technology sector in industries with a stake in green technology.

Green Jobs Defined

What exactly is green technology and how does it apply to the creation of green jobs? What is the significance of expanding and exploring the idea of green jobs within Los Angeles today?

When attempting to define "green technology," the term "technology" must first be broken down to its most basic level. In doing so, one finds that at the core of technology lies the "application of knowledge for practical purposes."[4] Whereas, "green" makes reference to the environment, "green technology" can then be seen as the "application of knowledge for practical purposes as it relates to the environment."

Borrowing the definition of "green collar jobs" by Pinderhughes and applying it to the context of green jobs within this study, "green jobs" can be viewed as skilled and professional jobs where specific training is provided to produce products and services that directly improve environmental quality.[5] From a more focused economic lens, this sector can be seen as a non-

[3] The LA Infrastructure and Sustainable Jobs Collaborative held a two-part forum focusing on workforce development as it relates to Los Angeles industries and green technology. At the second forum, breakout sessions were held where various industry clusters discussed the training and education available for workers now and what type of curriculum needs to be developed for the future.

[4] Quote take from *Green Technology*, a non-profit initiative designed to inform government efforts toward sustainability by creating a forum for government officials to speak to private sectors involved with green technologies. http://www.green-technology.org/what.htm.

[5] Pinderhughes, p.9

traditional job cluster identified by the objectives of the products and services that it develops.[6] Confusion may arise as to whether or not the green job sector is separate from other industries in the greater economy. The fact-of-the-matter is that green jobs do not form a separate economy. Rather, they are embedded within existing industries that are influenced by similar economic factors.[7] These include, but are not limited to, construction, transportation, manufacturing, business and professional services and more. The ambiguity of both green jobs and green technology complicates the process of determining the future of the green market globally and locally, particularly regarding the recruitment and training of industry workers.

To bring this situation into focus, this report emphasizes the key economic drivers leading to high-wages and large or expanding employment.[8] Various factors play a part in why some sectors, for specific reasons, grow faster than others. Section 2 explores these reasons and helps shed light on up and coming green technology trends within Los Angeles.

Section 2: A Strategic Opportunity for the "Greening" of Los Angeles

This section summarizes the findings of a number of recent studies analyzing the size and nature of the Green Economy in the Los Angeles region, as well as the factors influencing its growth and direction. In general, the green sector is growing, but still remains somewhat underdeveloped and undefined. The current and potential opportunities include a wide-range of blue collar and white collar jobs particularly in the construction, transportation, utilities, and manufacturing sectors.

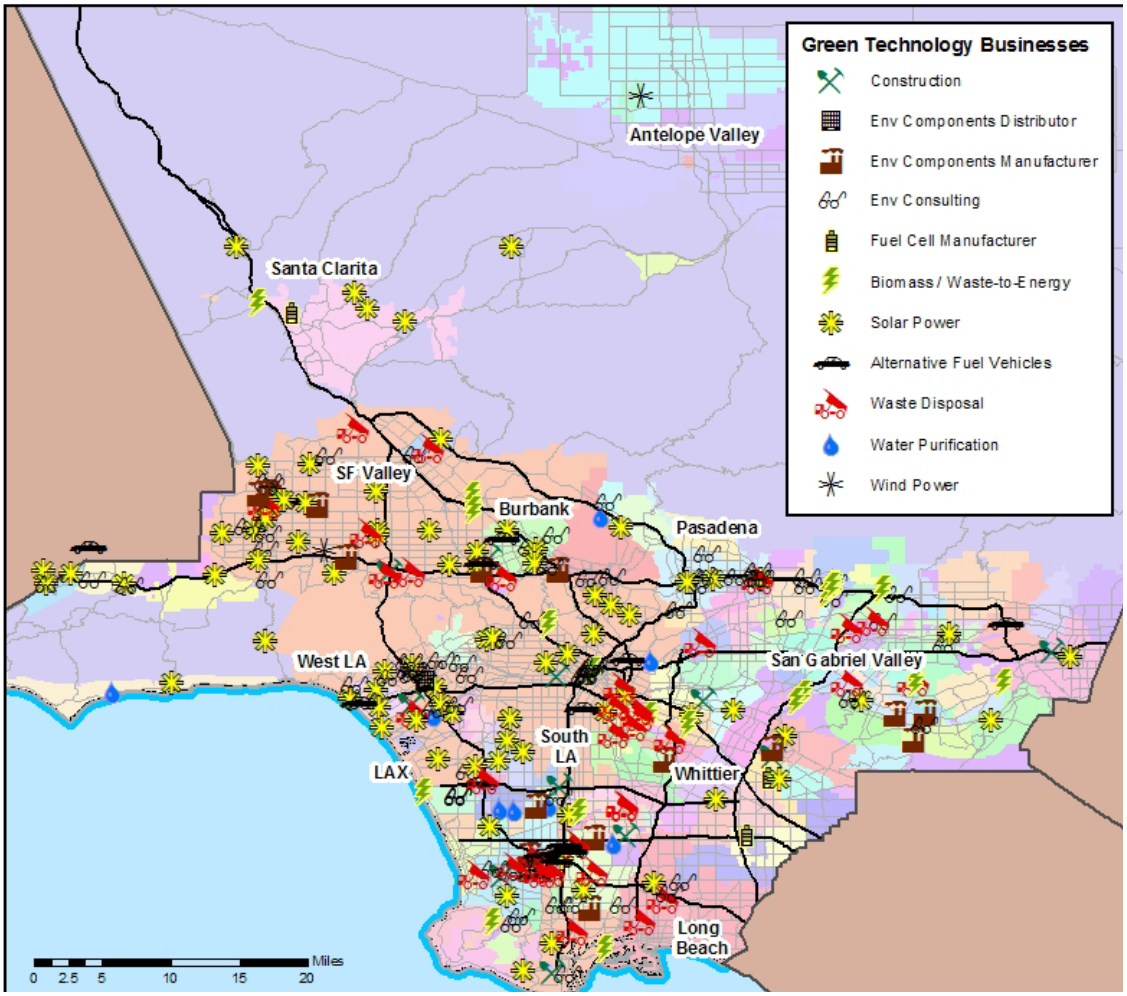
Current Green Business Activity within Los Angeles

A recent labor market study by the Economic Roundtable identifies the sectors with green jobs potential in Los Angeles. The study identified 296 green technology businesses in Los Angeles County, with 40% of these concentrated in the City of Los Angeles. Solar power (n=92), environmental consulting (n=75), waste disposal (n=61), and alternative fuel vehicles (n=21) businesses are the most numerous[9]. Twenty (n=20) firms are also currently involved in green manufacturing/distribution. The City also includes businesses involved in green manufacturing (n=7).[10] ***Figure 1*** (p. 11) shows how these businesses cluster geographically. Waste disposal, for example, is concentrated in the cities of Los Angeles, Vernon, Huntington Park, Torrance and Irwindale. Environmental consulting can mostly be found in downtown Los Angeles. Solar businesses are scattered throughout the region. The transportation and alternative fuels sector concentrates in the San Pedro and Long Beach area. Of particular note is the general absence of

[6] Information taken from a presentation on the "LA Labor Market Study" given by Josh Williams, BW Research Partnership on October, 26, 2007.
[7] Economic Roundtable
[8] Economic Roundtable
[9] Economic Roundtable. See Appendix A for Number and Grouping of Green Technology Businesses In L.A.
[10] Economic Roundtable. See Appendix A

environmental businesses in South Los Angeles, other than waste disposal. For more information on the breakdown of green business in L.A. County and within the City of Los Angeles please refer to Appendix A.

Figure 1:
Geography of Los Angeles County Green Technology Vendors[11]



Map and Explanation of current green business distribution in Los Angeles

Despite these trends, the size of the environmental sector in Los Angeles currently lags behind the state and the nation. The *location quotient,*[12] an analytical tool used to compare state and local economies with the national economy, indicates that California is above the national average for many of the green businesses measured. Los Angeles County, on the other hand, does not meet the national quotient in even one category.[13] A policy memo written last year by

[11] Economic Roundtable
[12] A location quotient of 1.00 indicates that an industry in the local economy meets the national economic concentration of that industry. If a quotient is above 1.00, it indicates specialization in that field.
[13] Economic Roundtable

Paul Ong and Varisa Patraporn suggests that the L.A. region has not achieved the clustering needed to lead the green industry. In support of their argument, Ong and Patraporn state:

> Regional agglomeration effects occur at the sub metropolitan level. There are numerous examples in various cities in which such industry/service clusters function successfully. They include the insurance industry the entertainment industry in Burbank, CA and the high technology parks in various Northern California regions. An environmental cluster would promote firm-to-firm interactions, centralize market transactions, and include incubator activities.[14]

Four industries do, however, come close to the average. They are hazardous water treatment and disposal (LQ 0.98), water supply and irrigation systems (LQ 0.97), testing laboratories (LQ 0.97), and measuring & control device manufacturing (LQ 0.92).[15] With these trends noted, and given the technological strengths of L.A. together with the local demand for green products and services, the potential for expanding the green jobs sector in Los Angeles does indeed exist.[16]

According to a 2007 study by Urban Planning graduate students at the University of California Los Angeles, one industry in which L.A. can potentially lead the national economy is in green building.

> Based on our research in this memo, we believe the regional clustering to be increasing, although a formal cluster has not been created. We are not sure if LA is ahead or behind the curve, but we do not believe the region to be leading the nation in green building, although there is that potential.[17]

Green Economy Growth Factors

While the Los Angeles region may currently be lagging in green job opportunities, growth in this sector is imminent. Measurable changes in consumer awareness and attitudes, early indications of stronger green business activity and a changing legislative environment herald the coming of the "green era" in California and, ultimately, Los Angeles.

(1) Shift in Consumer Attitudes & Behaviors

A growing eco-consciousness and ethic is permeating the attitudes and behavior of a majority of Californians. The *Next 10 Global Warming Survey of California* found that 75% of Californians agree that some action should be taken to combat global warming, compared with 61% of Americans as a whole. Californians are now leading the country in environmentalism and driving business investments in new products and services to satisfy consumer demands.[18]

> With a majority of Californians viewing global warming as a threat to the State's economy (41%), overall quality of life (49%), coastal communities (51%), farmer's in the Central Valley (53%), the State's

[14] Carter, Vanessa, et al.
[15] Economic Roundtable
See Appendix 2 for chart with NAICS codes for these industries
[16] Economic Roundtable
[17] Carter, Vanessa, et al.
[18] Next 10

snowpack and water supply (63%), and the health of Californians living where air quality is poor (66%), it seems that a societal support structure is not lacking in regards to the green technology initiative.[19]

(2) Business Growth Opportunities

The nexus between the economy and the environment is often overlooked. Historically, the "job versus the environment"[20] used to be the dominant paradigm, but it has proven a false dichotomy. The notion that the state of the environment is shaping and shifting the current and future workforce is coming to be more widely accepted and, thus, driving the nation on a forward-thinking route regarding how to relieve and suppress environmental pains and future workforce gaps.

Venture Capital

Innovation and economic growth within an industry is fueled by the availability of venture capital. In this regard, California is credited with having the largest investment devoted to the advancement of the green technology field. In 2006, 36% of venture capital investment in energy technology in the United States went to firms located in California, attracting $884 million.[21] Over the last 18 months, Los Angeles and Orange County alone have seen $319 million invested in local clean technology, $222 million in energy generation, $40 million in energy storage and $26 million in transportation.[22]

Patents

Another predictor of industry growth that goes hand in hand with new venture capital is the rate of patent activity within a given region. Since patents are markers of the discovery and registry of innovative ideas, in areas where patent progress is prominent there is high likelihood for a continued influx of research and development funding. Recently, California accounted for 44% of all U.S. patents in solar and 37% in wind technologies.[23] Due to state innovation, California is currently drawing research and development funds for clean energy. These dollars are essential in creating a regionally competitive advantage as they allow for green technology innovation to continue and prosper.

A study conducted by Environmental Entrepreneurs and the National Resource Defense Council concluded that venture capital investments in California's Clean Tech industry could seed 52,000 to 114,000 new jobs statewide through 2010.[24] When looking at Southern California, specifically at the projected trajectory for a green workforce in Los Angeles County and City, the amount of venture capital investment and the types of industries supported are predictors of future job and revenue growth.

[19] Next 10
[20] Lubchenco, Jane
[21] Next 10
[22] Williams, Josh
[23] Next 10
[24] Pinderhughes, Raquel

(3) A Changing Legislative Environment

A priority shift in the attitudes and behaviors of society regarding current environmental issues and the prevalence of business growth opportunities leading to green technology innovation are essential to the development of the green technology industry. It is, however, the enforced national, state, and local policies that will influence the most long-lasting results. Policies are in fact the muscle for institutionalized change in the future of the environment and the economy. From 2005-2007, numerous bills were passed focusing on the adoption of green products and practices by residents, businesses and government institutions. Major environmental bills that have been passed are depicted in ***Figure 2*** along with the sectors of the economy that are most impacted. Reinforcing a combination of actions that utilize green innovation in the form of technology, these bills will produce a multiplier effect on the environment, economy and society.

Figure 2
Summary of Federal Legislation

Federal Legislation:	**Sector Impact**
HR 3221: New Direction for Energy Independence, National Security & Consumer Protection Act Moving the United States toward greater energy independence and security, developing innovative new technologies, reducing carbon emissions, creating green jobs, protecting consumers, increasing clean renewable energy production, and modernizing our energy infrastructure, and to amend the Internal Revenue Code of 1986 to provide tax incentives for the production of renewable energy and energy conservation.	▪ Small Energy Efficient Businesses ▪ Marine Renewable Energy Technologies ▪ Solar, Wind, Geothermal, and Agriculture Energy ▪ Biofuels ▪ Carbon Capture & Storage ▪ Natural Resources & Wildlife Programs ▪ Ocean Programs ▪ Oil & Gas ▪ Transportation & Infrastructure ▪ Water Resources ▪ Emergency Management ▪ Appliance, Lighting, Building Efficiency ▪ Industrial Efficiency
HR 6: Energy Independence & Security Act of 2007 An Act to move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.	▪ Biofuels ▪ Renewable Fuels ▪ Energy Efficiency ▪ Marine & Hydrokinetic Renewable Energy ▪ Carbon Capture & Storage ▪ Sustainable Public Buildings ▪ Average Fuel Economy Standards
HR: 2847: Green Jobs Act of 2007 To amend the Workforce Investment Act of 1998 to establish an energy efficiency and renewable energy worker training program.	Job Training & Placement Programs

"Green" Federal Policies

Three major federal bills help define the scope and scale of the new environmental influences and changes taking place in the U.S. economy: HR3221, HR6 and HR2847

New Direction for Energy Independence, National Security, and Consumer Protection Act, HR 3221: An investment in the future was made on August 4, 2007 when the New Direction for Energy Independence, National Security, and Consumer Protection Act HR 3221, [25] a bill put on the ballot by Congresswoman Nancy Pelosi, and was passed by the House of Representatives. This bill, which draws from eleven House committees[26] to bring a broad assortment of resolutions to the US agenda, attempts to:

1) Move towards greater energy independence and security, develop innovative new technologies, reduce carbon emissions, create green jobs, protect consumers, increase clean renewable energy production, and modernize our energy infrastructure and
2) Get on a path towards energy independence, strengthen national security, grow our economy and create new jobs, lower energy prices, and begin to address global warming.[27]

The Energy Independence and Security Act, HR 6 & the Green Jobs Act of 2007, HR 2847: An obvious power player in the legislative game is the approved Energy Independence Act,[28] also known as HR 6, signed by President Bush on December 19, 2007. This particular piece of legislation goes by many titles, including the Green Jobs Act, or HR 2847,[29] which was introduced by Congresswoman Hilda Solis (California) and John Tierny (Massachusetts) in June of 2007. Unlike HR 6, the Green Jobs Act was only scheduled for debate in June 2007 and never made it to the vote in the House. Nonetheless, the focus of these initiatives is very similar. According to Apollo Alliance,[30] through the passage of the Energy Independence Act, the following priorities will begin to take place: (1) creating the next generation of cars; (2) energy savings for American consumers and businesses; and, (3) training for green-collar jobs.

Training is a priority of this legislation and focuses on American workers most in need of jobs—urban youth, returning veterans, struggling farmers and displaced workers from manufacturing sectors.[31] $125 million in funding is authorized under the Green Jobs Act to establish national and state job training programs administered by the US Department of Labor; the aim is to help address job shortages that are impairing growth in green industries, such as: energy efficient buildings and construction, renewable electric power, energy efficient vehicles, and bio-fuels development.[32] $25 million[33] of the $125 million allocated would be directed toward a new program helping low income workers get the skills they need to follow a "Green pathway out of poverty."[34] Incorporating almost all industries involved with green business, it is estimated that 35,000 people a year will benefit from cutting edge, vocational education in "green collar job"[35]

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[25] For synopsis of HR 3221, see <http://www.govtrack.us/congress/bill.xpd?bill=h110-3221&tab=summary >
[26] To view House committees particular to HR 3221 see Appendix C or <http://speaker.house.gov/legislation?id=0076>
[27] Congresswoman Nancy Pelosi Home Page
[28] For synopsis of HR 6, see <http://www.govtrack.us/congress/bill.xpd?bill=h110-6 >.
[29] For synopsis of HR 2847, see <http://www.govtrack.us/congress/bill.xpd?bill=h110-2847>.
[30] Apollo Alliance, see state and local energy bill
[31] Ella Baker Center, Green Collar Jobs Campaign
[32] Congresswoman Hilda Solis Home Page
[33] Apollo Alliance, see state and local energy bill
[34] Congresswoman Hilda Solis Home Page
[35] Ella Baker Center, Green Collar Jobs Campaign

fields that could simultaneously save the earth and solve the employment crisis for the tens of thousands of Americans who are falling behind in the global job market.

It is also the intention of the bill to help identify and track new jobs and skills needed to expand the renewable energy and energy-efficiency industries as well as link research and development in the green industry to job standards and skills training curricula. This plan for the creation and sustainability of green jobs is set to do nothing short of bringing the green technology industry to the forefront of the economic game and change the current face of the workforce population.

Recognition of coalitions such as the Apollo Alliance, which is made up of business, labor, environmental and community leaders and strategy and action centers such as the Ella Baker Center for Human Rights, is crucial when analyzing current policy. Without these collaborations and organizations initiating and advocating for policies, the Energy Independence and Security Act/Green Jobs Act would not exist today. It is apparent that the changing behaviors and attitudes of society also play a large role in the institutionalization of federal policy.

California Laws

The 2007-2008 California legislative priority includes 22 new environmental bills. Various policies within the state of California will not only affect the state of the environment and the economy within the state, but will also play a role in the formation of green jobs in Los Angeles. The bills having the potential to be the most influential correlate well with the region's existing construction, energy-utility and transportation sectors. In combination with the federal acts explained above, these policies can do nothing short of spark an overall green transformation within the region and nation as a whole.

The bill with perhaps the biggest influence on the expansion of California's green job market is the Global Warming Emissions Cap/AB32 (2006). Assembly Bill 32 requires that the state's global warming emissions be reduced to 1990 levels by 2020, through an enforceable statewide cap on global warming emissions. Given that this bill addresses the general concern over greenhouse gas emissions and climate change, it can act as a stimulus to national, state, and local public and private investments in renewable energy, energy efficiency, alternative fuels and water conservation that will generate millions of green collar jobs for U.S. workers over the next decade(s).[36]

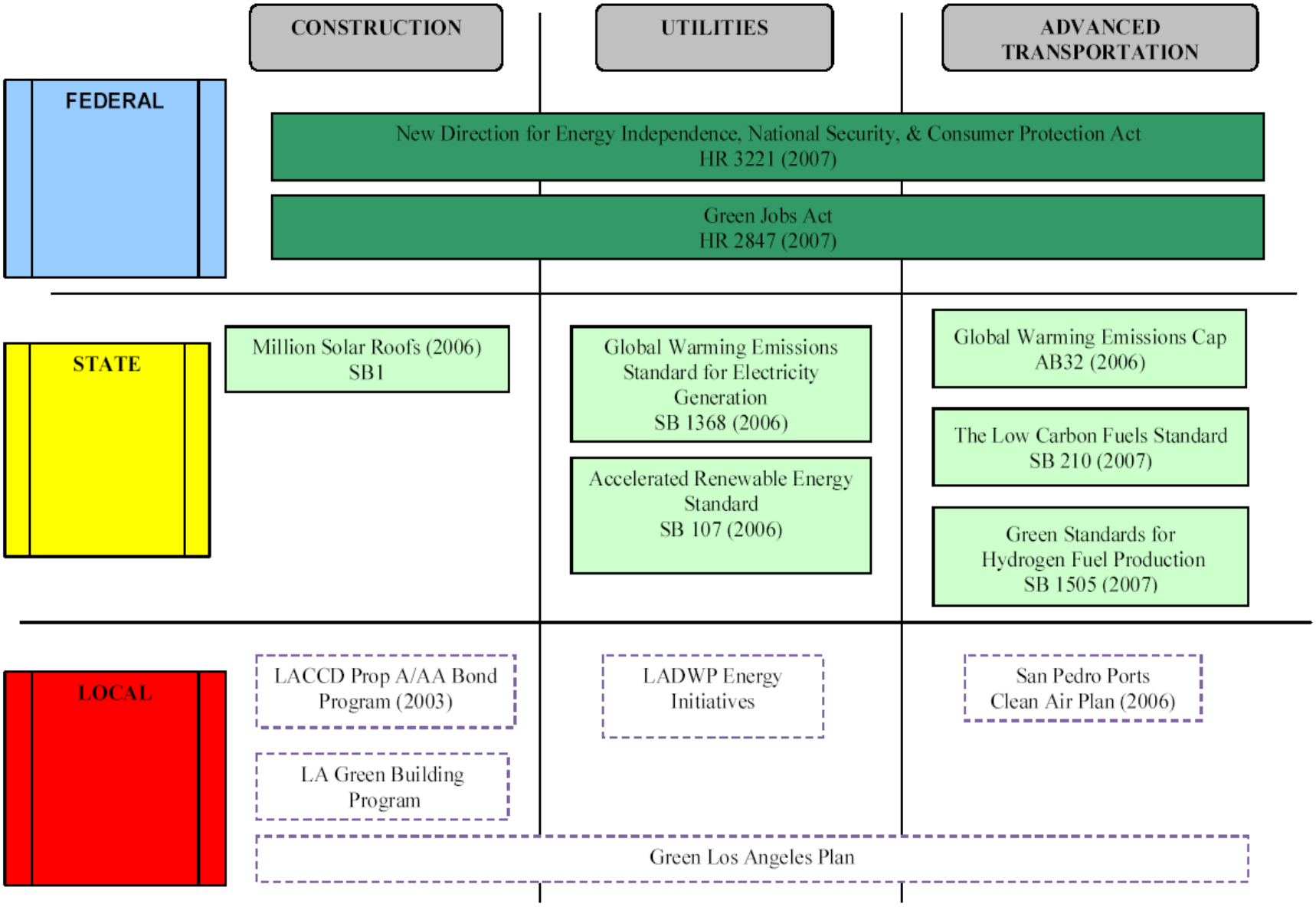
Local Results

Figure 3 (p. 17) summarizes federal, state, and local legislation (policies, initiatives, plans, etc.) that currently have or will have a strong influence on economic activity or venture capitalist trends in the L.A. region within three industry clusters: construction, utilities, and advanced transportation. The local policies and initiatives identified in Figure 3 are described in pages 18-24. Further analysis of these three industry clusters is found within sub-sections Job/Skill Demands (p. 24-26) and Education and Training for Adults (p. 32-35).

[36] Pinderhughes, Raquel

Figure 3: Highlights of Influential Policies & Programs within Los Angeles

Dashed Lines (---) indicate non legislative action or ordinance not yet passed but is significant to the growth of green jobs in Los Angeles



Los Angeles Green Initiatives/Programs

The City of Los Angeles is steadily increasing its support for green economic development and green businesses, particularly through programs, policies and initiatives set forth by the City and various community and business stakeholders. The desired improvement of environmental quality is a leading force behind the trend. The following Green Initiatives will increase business opportunities and the progression of growth for green collar jobs in: solar energy, waste reduction, materials reuse, transportation, green building, energy and water efficiency and alternative fuels.

Green LA Action Plan

Los Angeles is in a unique position to become a leader and innovator in Green Jobs development. In fact, municipal leadership has positioned itself at the forefront by addressing various environmental and health issues. Together, various City departments have initiated a plan of action called, "Green LA, An Action Plan to Lead the Nation in Fighting Global Warming" (May 2007).[37] The plan identifies over 50 actions to help Los Angeles reach the goal of reducing greenhouse gas emissions in the city to 35% below the 1990 levels by 2030.[38]

The significance of the Plan lies in the direction it sets for Los Angeles towards a cleaner, healthier, more sustainable and economically vibrant "greened" city**.** The plan speaks to the needs of the citizens, addressing health issues that will simultaneously lead to the development of a sustainable green job force. Highlights of goals derived from the *Green LA* plan are displayed below within ***Figure 4***.[39]

Figure 4
Green LA Action Plan Goals

Energy	• Increase renewable energy from solar, wind, biomass, and geothermal sources to 20% by 2010 • Increase use of renewable energy to 35% by 2020 • Complete energy efficiency retrofits of all city-owned buildings to meet a 20% or more reduction in energy consumption • Install the equivalent of 50 "cool roofs" per year by 2010 on new or remodeled city buildings • Become a worldwide leader in green buildings (* see LA Green Building Program below)
Water	• Reduce per capita water consumption by 20%
Transportation	• Require 85% of city fleet to be powered by alternative fuels • Convert 100% of city refuse collection trucks and street sweepers to alternative fuels • Convert 100% of MTA buses to alternative fuels
Waste	• Recycle 70% of trash by 2015
Port of Los Angeles	• Fully implement the San Pedro Bay Ports Clean Air Action Plan
Airport	• Develop and implement comprehensive policies to green Los Angeles' airports to meet

[37] Los Angeles City Web Page, City Council Meeting on Environmental Issues Departmental Report, Environmental Affairs Department
[38] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[39] To reference the all goals see pages 5-7 of the GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming

	green building specification, improve recycling, use alternate fuel sources, use recycled water, employ water conservation methods, reduce energy requirements and reduce green house gas emissions.
Open Space and Greening	• Create 35 new parks by 2010 • Plant 1 million trees

Because the *Green LA* plan was written in conjunction with several of the city's utility companies and departments, many new jobs will come out of their need to implement the path they have set forth. A proposed new Green Business Certification is currently moving through City Council committees, which would motivate restaurants, auto repairs shops and other small businesses to "green" their operations. This entails skills in compliance and energy efficiency auditing.

L.A.'s Water, Power & Transportation Agencies

Although each of the strategies within the aforementioned areas is significant, three quasi-municipal agencies within the City of Los Angeles are in the strongest position to drive a green economy and green jobs strategy. According to the *Green LA* plan, the Los Angeles Department of Water and Power (LADWP), the Los Angeles World Airports (LAWA) and the Port of Los Angeles are the three best equipped quasi-public entities with the resources, capacity and mandate to green Los Angeles.[40] Consequently, any education and training strategy should be directed toward the resources, needs and initiatives of these Agencies.

Los Angeles Department of Water & Power

Description: The Los Angeles Department of Water and Power (LADWP) is the largest municipal utility in the nation, providing water and power to the city's residents and businesses. It has the ability to affect the generation and consumption of electricity—the largest source of green house gas (GHG) emissions—and water through the adoption of renewable energy sources and measures to improve energy efficiency and reduce water consumption.[41]
Goals: The LADWP has established measurable goals to meet its own energy standards as well as those identified in the Mayor's Climate Action Plan. The DWP is committed "To boost the amount of renewable energy that the utility provides its customers to 20% of retail electric sales by 2010." The long-term goal is to achieve 35% renewables by 2020.[42]
Strategies: LADWP has three strategies to meet this goal: (1) increase energy conservation; (2) upgrade existing power plants; and, (3) invest in renewable energy. [43] Given these ambitions, the LADWP has created programs, implemented policy and is in the process of constructing further projects to continue greening the power it produces.
Policy: Among the first of the policies enforced by the LADWP is the **Renewable Portfolio Standard (RPS)**. When passed in June 2005, the goal of this policy was for 20% of its energy sales to come from

[40] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[41] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[42] LADWP Renewable Energy Policy
[43] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming, p4

renewable energy sources by 2017. However, these goals were accelerated from meeting the 20% in 2017 to 2010 due to a challenge made by Mayor Antonio Villaraigosa. Since the implementation of the RPS, the portfolio has been doubled through the purchase of wind, solar and geothermal power.

Programs:

The **Rooftop Solar Incentive Program** was recently revised in 2006, but actually began in 2000. For the first six years of its inception, the LADWP Solar Incentive Program put more than 800 LADWP supported installations into service; since 2006, over 420 additional installations have been made.[44] Regarding the revised guidelines, they are designed to meet the requirements of Senate Bill 1, the 2006 California Solar Initiative. Under the approved legislation, the LADWP has a goal of installing 280 megawatts of customer-sited solar power by the end of 2016. The program, which was to run through June 2011, will now run through 2016.[45]

The LADWP is encouraging residential and corporate clients to contribute toward its renewable energy goals. The DWP provides several incentives through **residential and non-residential rebate programs**. There are residential rebate programs for: Refrigerator and Clothes Washer appliances; Solar Power and Outdoor Lighting; Shade Trees; and Electric Vehicle Programs.[46] Non-residential rebate programs include: Commercial and Outdoor Lighting; Refrigeration and Chiller Efficiency; Commercial Water Conservation Rebates; Solar Power Incentives; and non-residential New Construction Incentive and Custom Performance Programs.[47]

Other projects that are currently in service include:

- Powerex-hydroelectricity (2007)
- PPM Energy- wind (2006)
- Small hydroelectric projects (various dates)
- Biomass (various dates)
- Hyperion wastewater plant-digester gas (1998) [48]

Projects Under Development: The **Terminal Island Renewable Energy (TIRE) Project**, which is currently under construction, will have more advanced monitoring, sampling & analysis, and more comprehensive scientific and environmental review than all similar projects ever conducted in the U.S.[49] By injecting bio-solids, the soil-like by-product of wastewater treatment, into depleted oil and gas reservoirs under Terminal Island, clean energy will be created due to the conditions present below the earth's surface. This stored energy will be converted into electricity.

Another proposal in progress is one under the direction of the **RENEW-LA**[50] plan. Within this proposal, the city is looking over plans to build four state-of-the-art facilities that will transform trash into electricity.

Other projected projects and the dates they are expected to be brought on line include:

- Pine Tree Wind Farm (July 2007)
- Concentrated solar (December 2010)
- Solar trough (2010)
- Landfill waster-to-energy (July 2010)
- Concentrated solar (October- Dec 2010)
- Various wind projects (2008-2010) [51]

[44] LADWP Solar Incentive Program Press Release
[45] LADWP Solar Incentive Program Press Release
[46] LADWP Residential Rebates and Programs, February 5, 2008. See the following link for more information on LADWP residential initiatives: <http://www.ladwp.com/ladwp/cms/ladwp001860.jsp>.
[47] LADWP Non-Residential Rebates and Programs
[48] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming, p16
[49] Bureau of Sanitation and Public Works, "Terminal Island Renewable Energy Project"
[50] Smith, Greig, see <http://www.lacity.org/council/CD12/renewla/cd12renewla243131327_07272005.pdf> for details

Los Angeles World Airports (LAWA)

Description: Los Angeles World Airports is made up of four Southern California Airports, including two commercial terminals: LAX and Ontario, and two regional: Palmdale and Van Nuys. In October 2006, L.A. City Council introduced a Greening LAX Motion that required the Board of Airport Commissioners (BOAC) to develop an aggressive 10-year program to make LAX the "Greenest Airport in the World."[52] LAWA Division plans on working to document all sustainable programs and initiatives to create a department-wide baseline on sustainable activities which will be a foundation for future benchmarks.

Policy: As of January 22, 2007, through the passing of resolution No 23199, BOAC adopted a policy which incorporates LEED standards into new construction occurring at the airport.[53] More specifically, the policy calls for any remodeling and tenant improvement construction performed on facilities owned or operated by LAWA to meet the highest possible LEED standards (Platinum).[54] LEED standards promote a whole-building approach to sustainability by recognizing performance in human and environmental health, including sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.[55]

An **Alternative Fuels Conversion Policy** is also currently in effect by the LAWA at LAX. This policy is trying to combat the poor air quality of the airports by converting all on-road vehicles weighing 8500 pounds or more into alternative fuel vehicles. This includes rental shuttles, trucks and other large vehicles in use at LAX. Eventually, LAWA hopes to apply this policy at all Los Angeles regional airports. See the LAX Master Plan for more details of this program.[56]

Project: The **Tom Bradley International Terminal Renovation Project** is the first LAX project that is operating under LEED standards. This 38-month program began in February 2007 and is expected to complete in March 2010 with the overall cost surmounting $723.5 million. 15% of renewable electricity needed for this project will be purchased from the LADWP Green Power Program. The plans for the renovation project are to create a new heating/ventilation/air conditioning system and more efficient electrical and lighting systems to reduce energy consumption. A new plumbing system will also increase water conservation. More than 75% of the construction and demolition waste will be recycled.

Project Under Development: The drafting of **Ground Service Equipment (GSE) Conversion Policy** is currently taking place. This policy, anticipated to be in effect in early 2008, would require the conversion of the entire GSE fleet at LAX to Zero Emissions by 2016. This includes various ground equipment that service aircrafts, including tugs, baggage loaders, catering trucks and fueling vehicle.[57]

Port of Los Angeles

Description: The San Pedro Bay Ports, the combined facilities of the Port of Los Angeles and Long Beach

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[51] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming, p17
[52] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming, p17
[53] Los Angeles City Web Page, City Council Meeting on Environmental Issues Departmental Report, Airports Department
[54] Los Angeles City Web Page, City Council Meeting on Environmental Issues Departmental Report, Airports Department
[55] Los Angeles World Airports, "Tom Bradley Renovation Project," Press Release
[56] LAX Master Plan
[57] Los Angeles City Web Page, City Council Meeting on Environmental Issues Departmental Report, Airports Department

Ports, have staggering global dimensions and domestic economic/employment impacts. Combined, they form the busiest container port in the United States and the 5th busiest in the world. The port system has 30 major cargo terminals, covers 43 miles of waterfront, and includes 7,500 acres of land and water. More than 43% of all imports into the United States enter through the Ports of Los Angeles and Long Beach; more than 60% of this cargo is destined for locations outside of Southern California.[58] In 2005, the ports generated 886,000 jobs in California and 3.3 million jobs nationally. "As a regional, statewide, and national economic engine and job creator, the role of the Port of Los Angeles continues to grow."[59]

Environmental Issues: Along with all the economic and employment generation and its towering international status, the San Pedro Bay Ports contribute dreadful amounts of air pollution to the region. Communities near and around the port have suffered serious environmental and public health impacts from port-related air pollution. Port operations are responsible for approximately 12% of the city's diesel emissions, including those from ocean-going vessels and the 16,000 trucks traveling to and from the ports.[60] Railroads, the burning of diesel fuel, heavy fuel used in ships and gasoline all contribute to the high amounts of regional GHG (green house gas) emissions and Los Angeles' infamous smog layer.

Clean Air Plan: One response to this environmental catastrophe is the San Pedro Ports Clean Air Plan (CAAP), initiated in 2006. CAAP is the first of its kind in the country, linking "The emissions reduction efforts of the two largest ports in the United States with the efforts of the regulatory agencies responsible for ensuring compliance with air quality standards."[61] The plan demands air pollution reduction goals from oceangoing vessels, cargo-handling vehicles, and heavy-duty vehicles, including: "47% reduction in diesel particulate matter; 45% reduction in nitrogen oxides (NOX); and 52% reduction in sulfur oxides (SOX)."

Initiatives: A series of initiatives over the next five years will address the sources of port-related air pollution, including installing alternative marine power, also known as cold-ironing, at more than 10 berths at the Port of Los Angeles. This will allow ships to use electricity to power their engines while at berth.[62]

Future Initiatives: Future initiatives will attempt to ensure the full implementation of CAAP:

- **Heavy-duty vehicles:** By the end of 2011, all trucks calling at the ports will meet or exceed the U.S. Environmental Protection Agency's (EPA) 2007 emissions standards for on-road particulate matter.
- **Oceangoing vessels:** 100% compliance with the Vessel Speed Reduction Program, use of low-sulfur fuel, increase use of alternative marine power (cold-ironing).
- **Cargo-handling equipment:** All yard tractors will meet the minimum EPA 2007 on-road or Tier IV engine standards.
- **Harbor craft:** All craft will meet EPA Tier II standards or equivalent reductions (Tier III when available).
- **Railroad locomotives:** For Pacific Harbor Line switch engines, use of Tier II engines and emulsified or other equivalently clean alternative diesel fuels available. Diesel-powered Class 1 locomotives entering port facilities will be 90% controlled for particulate matter and NOX. Complete the strategic plan for the Port of Los Angeles, including sustainable and green growth options. Complete the economic development plan for the port, identifying opportunities to link the port's investment in green growth to new economic opportunities in the green sector.[63]

[58] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[59] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming. The names "San Pedro Bay Ports" and "Port of Los Angeles" are used interchangeably.
[60] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[61] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[62] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming
[63] GREEN LA: An Action Plan to Lead the Nation In Fighting Global Warming

Green Building & LEED Certification

Los Angeles has a rare opportunity to grow a green building portfolio while building a "green" workforce.[64] Recent support by Mayor Villaraigosa and the LA City Council for the Apollo Alliance challenge will produce a surplus of new jobs within the city in various construction areas. Various programs, plans and proposed ordinances within the city support the creation of green jobs through green building:

Initiatives: The **Green Retrofit Initiative** is the result of efforts by the Apollo Alliance Los Angeles, a local alliance of labor unions, community-based organizations, environmentalists, and business leaders united under the desire to create a sustainable, equitable and clean energy economy.[65] Under this initiative, municipal green retrofitting which abides by LEED standards has driven the resulting projects. One situation that inspired this action is the astounding reality that 691 of 842 General Service Department Buildings are in need of repairs as the average grade of public buildings is a "D." Private, non-residential construction in Los Angeles is experiencing increased growth and new construction of these buildings will also need to abide by LEED standards.

The **Leadership and Environmental Design (LEED)** rating system has established the standards that are most widely accepted and implemented nationally, across all sustainable design, construction, and operations-related industries. LADWP also looks to LEED standards when setting future goals. LEED operations include the following initiatives: new construction; existing buildings; commercial interiors; core and shell; schools; retail; healthcare; homes; and neighborhood development. Overall, there are three certification levels a project can acquire within the LEED Rating System: Platinum, Gold, and Silver.

The **LACCD Prop A/AA Bond Program**, a $2.2 billion project, is currently the largest public sector sustainable building effort in the United States. All nine colleges of the Los Angeles Community College District (LACCD) are involved in this effort to green these institutions of learning. According to the plan, more than 40 new buildings will meet or exceed USGBC LEED certification standards. The current status of this project is as follows[66]:

LEED Projects Competed: Los Angeles Valley College Los Angeles Valley College - Maintenance and Operations Facilities / Sherriff's Station (April 2006)

LEED Projects Under Construction in 2007:

- Los Angeles Valley College: Allied Health and Science Center
- Los Angeles Harbor College: Student Services Center; Northeast Academic Building; Technology Instruction and Classroom Building
- Los Angeles Southwest College: Child Development Center
- Los Angeles City College: Maintenance Facilities; Science and Technology Building
- Los Angeles Mission College: Health and PE Fitness Center Building
- Los Angeles Trade-Technical College: South Campus projects (two new academic buildings)

[64] Lee, Joanna
[65] Green Cities, Green Jobs
[66] Department of City Planning. Committee on Energy and Environment. Modifications to Green Building Program.

Projects Under Development:
Despite various programs and action plans, no current laws enforcing green building/retrofitting in Los Angeles exist to date. However, the City of Los Angeles **Green Building Proposal** is currently being screened by City Council. As of January 11, 2008 amendments to the proposal include that the standard of sustainability for buildings, including residential buildings, in excess of 6 stories or at least 50,000sf of floor area, or the area of retrofitting is at least 50,000sf must meet LEED certification.[67] Other ordinances proposed and under review look at the building and retrofitting of all buildings in Los Angeles.

LEED certified building standards produce quality results that ultimately become rewards for all: lowered operations costs and increased asset values; reduced levels of waste sent to landfills; energy and water conservation; ensured health and safety for occupants; reduced harmful greenhouse gas emissions; qualification for tax rebates, zoning allowances, and other incentives; a clear demonstration of an owner's commitment to environmental stewardship and social responsibility.[68]

The LEED Professional Accreditation program is a national system of training and accountability. "LEED Accredited Professionals (LEED APs) have demonstrated a thorough understanding of green building practices and principles and the LEED Rating System. More than 43,000 people have earned the credential since the Professional Accreditation program was launched in 2001."[69]

Due to the current and projected popularization of LEED standards, it is obvious that city projects demanding LEED standards will also demand a new green workforce that has acquired various levels of LEED training.

Job/Skill Demands

While the creation of Green Jobs reflects a nascent enterprise and the size of the job market remains nebulous, several trends are clear. Three major industry sectors are projected to have the greatest current and long-term demand in the Los Angeles region based upon the aforementioned legislative and investment environment: (1) Green Building/Construction, (2) Advanced Transportation, and (3) Energy-Utility. Within each cluster there are three distinct job functions & skill sets: design/engineering/manufacturing; building/installation and operations/ maintenance.

Figure 5 (page 26) identifies the priority jobs within this matrix of opportunities. The education and training infrastructure needs to be evaluated and changed to ensure that it supports the current and projected opportunities in these fields. Of particular need is beginning and intermediate training in:

- Construction: solar installation, LEED certification training; energy auditor.

[67] Department of City Planning. Committee on Energy and Environment. Modifications to Green Building Program.
[68] USGBC Project Certification
[69] USGBC LEED Professional Accreditation

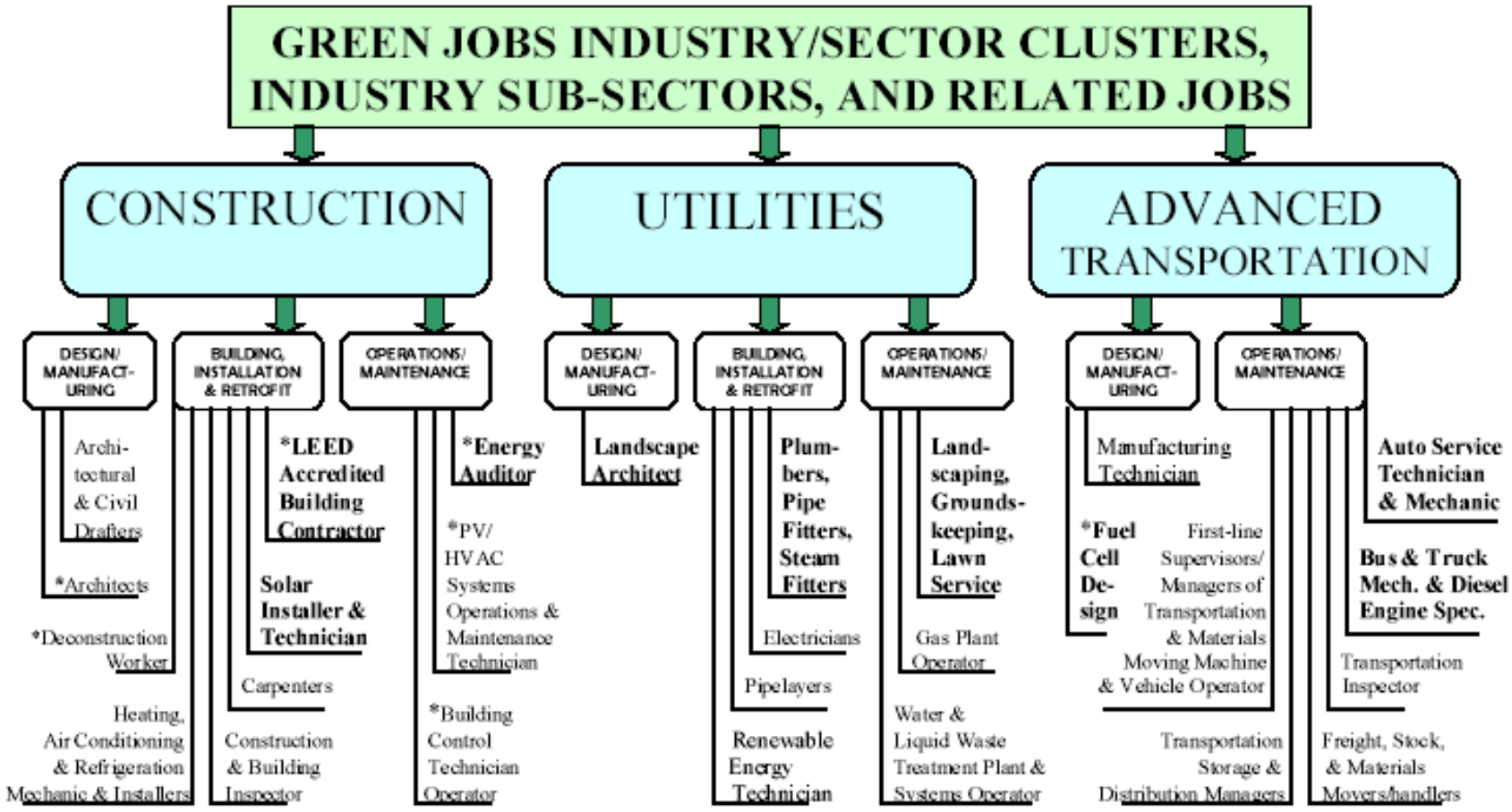
- Utility/energy efficiency – energy efficiency audits/compliance.
- Utility/Water conservation – landscape architects and landscape/maintenance
- Transportation - alternative fuel manufacturing and installation.

The current thinking is that Green Jobs simply require specialty skills that are performed within traditional occupations such as renewable energy/electricity, new heating/ventilation and air conditioning systems, new plumbing systems, and/or renewable car batteries. Accordingly, it is important to develop incumbent training programs for current workers as well as businesses that will be expected to meet new compliance standards (e.g., LEED certification) and to access new business opportunities available to firms that are "green".

Greening existing disciplines, however, will not grow the sector. As the field advances, so will the required skills. Best practice research in the Clean Technology report produced by BW Research (March 2008) notes the growing importance of inter-disciplinary programs within the energy field. This includes skills in environmental sciences, renewable energy, materials management and more**.**

Figure 5: Green Jobs Industry/Sector Clusters, Industry Sub-Sectors, and Related Jobs

For the purpose of our study, the following green jobs industry/sector clusters best apply to communities in Los Angeles. These industries are most competitive in offering entry level jobs that require low to moderate levels of training and education (GED/ high school diploma, 1-2 year certificate programs, 2 year associate degree programs, 2-5 year apprenticeship programs, or OJT). All jobs listed below pay over $2,500 per month in CA ($15/hr)[1], and have a state-wide projection of over 200 job openings annually.



[1] careeronestop: Explore Careers (http://www.careeronestop.org/ExploreCareers/ExploreCareers.aspx), browse occupations, job name, link to state (California).

*These job titles are not found on careeronestop, they project less than 200 job openings in CA, or they require a minimum training of BA/BS.

Jobs in BOLD are considered by the Infrastructure & Sustainable Jobs Collaborative to occupy initial green target areas.

➲Section 3: Green Jobs Skills Education and Training Infrastructure

The growth and development of a Green Economy and Green Jobs require a coordinated and effective education and training infrastructure to support the needs of industry, as well as incumbent and entry-level workers. A considerable number of public, community and labor education and training programs already exist. L.A.'s regional public education system—the Los Angeles Unified School District (LAUSD,) Los Angeles Community College District (LACCD), California State University (CSU) and the University of California (UC) schools—offer numerous affordable, competitive, and creative options. Labor Unions are providing valuable apprenticeship training in green jobs industries. Community-based organizations and various industries are also responding to help educators fill training gaps and, ultimately, meet the rising demands for skilled laborers in green job fields. Of course, a number of improvements need to be addressed, including the need to take a more proactive role in building a Green Economy by establishing regional centers to:

- improve the quantity and overall access to existing programs;
- conduct on-going research;
- address regulatory and policy needs of each sector;
- develop new programs to fill the gaps between labor demand and job skills;
- strengthen the educational (and career) pipelines through K-20 articulation agreements;
- connect educational programs to work experience and job opportunities; and,
- provide incumbent skills training programs.

This section inventories the existing programs followed by recommendations for improvements within Section 4: Conclusion.

Educational Training for High School Age Youth

Several opportunities exist for youth in LAUSD schools to be exposed to green jobs-related curriculum. There are a few noteworthy green industry supported internship programs that provide education and training for youth. With effective curriculum sharing and networking of resources, students graduating from LAUSD high schools can emerge with a foundation of necessary skills and career awareness to support green industries.

Los Angeles Unified School District (LAUSD)

A long-term view and strategy is critical to filling and creating jobs and business opportunities in the Green Sector. The Los Angeles Unified School District currently provides numerous avenues for the implementation of green jobs curriculum. The required math and science classes alone establish a firm academic foundation for LAUSD High School graduates. All students on the path to graduation are required to compete three years of high school level Mathematics (Algebra 1, Geometry, and Algebra 2) and two years of Science (Biology and Chemistry or Physics). Basic knowledge of these subjects is most essential to being a competitive candidate in

green jobs industries. LAUSD high school graduates will have already established an educational skill foundation needed to begin the career paths critical to the emerging green sector. Thus, it is imperative that youth are proficient in the Mathematics and Science standards established by California Board of Education at all grade levels. The adoption of innovative teaching methods, such as applied/project-based learning, contextualized learning, team-based learning, in partnership with industry, can greatly improve the outcomes for youth to be successful in the emerging Green economy.

Career Academy/Small Learning Communities (SLC) model

In addition to the core subject requirements, numerous opportunities exist for the integration of green jobs curricula within the LAUSD Career Academy/Small Learning Community model (SLC). Established in spring of 2005, the goal of the SLC model is:

> To provide students and teachers with a more personalized and caring learning environment, to provide a rigorous, standards-based curriculum in an identifiable context to all students, and to provide a portfolio of quality options for students, teachers, and parents.[70]

In essence, an increasing number of California high schools are being organized into small schools of 400-600 students around career themes, such as health, construction, travel/tourism. The core academic curricula—math, language, history—are taught within the context of the career and technical education (CTE) and other themes in order to provide relevant (albeit rigorous) learning opportunities. These SLCs are not intended to "track" students into vocational careers. Rather, they are designed to provide applied learning experiences to help increase student interest, retention and academic engagement. In fact, one SLC director indicated that only 1/3 of its SLC students actually pursued careers related to the SLC themes. Several thematic areas can, nonetheless, provide essential exposure to knowledge and basic skills in green jobs.

Currently, there are 15 State approved career-technical themes; several have direct relevance to building awareness, interest and skills in sustainable jobs: energy/utility, construction/building trades, engineering and design; information technology; and, manufacturing. Moreover, as of January 16, 2008, 309 SLCs lend themselves to green jobs curricula within LAUSD: Engineering and Architecture (16 SLCs); Technology (Information/Computer, 16); Environmental Studies (13); and Math/Science (9).[71] In sum, over 50 SLCs can be a good education and training ground for the green economy.

Figure 6 (p. 29) displays the location of LAUSD high schools that house green jobs-related SLCs within these four categories: (1) Engineering/Architecture/Construction, (2) Environmental Science, (3) Math/Science/Technology, and (4) Advanced Transportation.

[70] Los Angeles Unified School District Office of School Redesign

[71] Office of School Redesign, Attachment C. The list made available to the public by the LAUSD Office of School Redesign does not categorize SLCs into the aforementioned themes. These categories were arranged by CDTech for the purpose of this study. For the complete list of SLCs visit the link for: LAUSD Office of School Redesign, Attachment C webpage (websites cited).

Figure 6
LAUSD High School Green Jobs-Related SLCs

Unfortunately, the capacity of these SLCs is underdeveloped. A phone survey of 40 different SLC site coordinators suggested the following trends across the LAUSD/SLC network: (1) little to no established universal curriculum standards or requirements exist between SLCs of similar titles or content themes; (2) very little curriculum organization exists within individual SLCs; and, (3) district-wide accountability to ensure that individual or collective curriculum standards are being met is unclear. Larry Tash, Director of the LAUSD Office of School Redesign, confirmed these findings. Mr. Tash identified that "Instructional support from community partners is minimal," guessing that only a few schools are receiving outside assistance. He suggested that one contributing factor to this dim reality is limited resources within community partners, noting that schools he has contacted are often reluctant to share the names of their outside partner organizations for fear of losing the highly needed resources and support their partners provide. The SLC attributes would be more attainable with better district-wide collaboration, more communication between SLCs of like themes, and inner-SLC collaborations set up to share curriculum and resources. According to Mr. Tash, instead of developing internal networks or establishing curriculum standards, LAUSD may be depending on support from outside partners that have substantial resource capacities and motivation to connect multiple SLCs and schools together.[72]

Los Angeles Infrastructure Academy

A current, promising, green jobs initiative for high school youth and young adults in the region is the newly formed L.A. Infrastructure Academy. The Academy was designed through a joint effort by two significant partners: the Office of Los Angeles Mayor Antonio Villaraigosa and the LA Department of Water and Power. The initiative targets several priorities of the L.A. Infrastructure & Sustainable Jobs Collaborative and the Mayor's administration, "including education reform, youth development, the creation of economic development opportunities for underserved areas, and environmental responsibility."[73]

The L.A. Infrastructure Academy consists of a selective, two-year program for young people interested in pursuing a career in civil infrastructure. Students apply in the second half of their sophomore year of high school and begin the program in the summer between their sophomore and junior years.[74]

The initial pilot program launched in January 2008 at LA Trade Tech College (LATTC). The pilot's structure entails a six week orientation phase from January 26 - March 8, and a core program from March 10 - June 21. The orientation curriculum highlights four tiers: Personal Effectiveness Characteristics; Academic Competencies; Workplace Competencies; and Industry and Career Exposure.[75] Curriculum for the core program is being finalized as student interests and competency levels are revealed during the orientation phase. Marcus Castain, Chief Executive Officer of the Academy, shared specific details of the pilot group. Sixty students, comprised of 11th and 12th graders and some recent graduates, are the first participants in the pilot program. They are fulltime attendees of Jefferson, Manual Arts, and Santee Learning

[72] Information provided by Larry Tash was recorded during a CDTech phone interview.
[73] LA Infrastructure Academy, About Us
[74] LA Infrastructure Academy, About Us
[75] Orientation DRAFT Curriculum, Infrastructure Academy

Complex high schools, and the Accelerated School. Women are also networked into the L.A. Infrastructure Academy through the Jobs Corps at YWCA Los Angeles. All participants are working toward a GED or high school diploma, and will be eligible to receive credits at LATTC upon completing various phases of the program.[76]

The second site, a full two-year program, will open at the College of Engineering at Cal State LA and is scheduled to run from May 2008 - April 2010. Three additional sites are scheduled to operate from July 2008 - May of 2010, one more at LATTC.

Additional sites (in Los Angeles) will be determined based on employer and labor interest, local higher education's willingness to participate, and student/community interest. Beginning in 2009, the Infrastructure Academy is planning to expand beyond the City of Los Angeles to other communities in California.[77]

The education, skills training, and industry networking exposure are key building blocks of the L.A. Infrastructure Academy's mission. A most valuable, culminating element is job placement. Current students will meet in groups (8-10 students per group) with industry mentors, 10-15 hours per week, to receive career counseling and professional development support. Graduating seniors and recent graduates will ideally have a job secured upon finishing the program; juniors will be placed in summer internships. "The Academy will work with students through the employers' application processes and will support them on an ongoing basis during and after the program. Mentoring will be a critical component throughout the entire student-alumni life cycle."[78]

iSEE Architecture & Engineering Internship Program

Another very promising high school student training and internship program is iSEE (I'm a Student Exploring Excellence), part of the Facilities Services Division of the LAUSD[79]. The iSEE mission is: "To engage, expose and challenge LAUSD high school youth to explore architecture, engineering and construction as career opportunities by capitalizing on the District's ownership of the nation's largest School Construction and Renovation Program."[80] In its second year of operation, 130 students are currently involved full-time in Phase 1 of the program, operating from January-May, which includes a Computer Aided Design (CAD) course made available through a partnership with LATTC; additionally, five class seminars will be held, one per month.

This CAD curriculum will introduce students to computer design software, as well as provide opportunities for hands-on projects. The classes will take place on various Saturdays from January to March 2008. Students will receive college credit for completing this course. Each of

[76] Information provided by Marcus Castain was recorded during a CDTech phone interview.
[77] LA Infrastructure Academy, Locations
[78] LA Infrastructure Academy, About Us
[79] Facilities Services Division webpage
[80] iSEE webpage

the five seminars will provide students an introduction to architecture, engineering, construction and construction management.[81]

Phase 2 of the program is a paid summer internship. Guelsy Gomez, Program Coordinator of iSEE, explained the program components. Students with perfect Phase 1 attendance (15 class sessions and five seminars) are eligible for the internship. After being exposed to several industry options during Phase 1, students are paired with an engineering, architecture or construction firm that typically combines convenient location and student preference. Gomez pointed out that the soft skills students acquire through iSEE summer internships, such as resume writing, professional appearance/culture, and verbal communication, are equally important to the technical training students receive or job skills they develop.[82]

An article by *Engineering News Report* entitled "Interns Grab Real World Experience, Not Coffee," depicts the summer internship success story of Diego Ramirez, a 17-year-old 2007 high school graduate. His internship at Earth Tech, Inc. in Long Beach provided a wealth of valuable opportunities, as the story portrays:

> Ramirez works alongside project managers and graduate engineering student interns in the environmental remediation group. He runs cost and volume estimations on contaminated soil zones, which will inform clients about how to excavate and then backfill with clean material. His order of the day is formulas and data tabulation on Excel spreadsheets, not mindless filing…He wants to come back to Earth Tech next summer or even after graduation. Though he had no prior exposure to the field, he says the iSEE internship has encouraged him to pursue an engineering career. Ramirez plans to study mechanical engineering at the University of Southern California this fall.[83]

The iSEE program values industry and career exposure to all youth, and actively recruits students from all high schools within LAUSD. According to Veronica Soto, LAUSD director of contractor relations and small business program, who spearheaded iSEE, 95% of iSEE participants are minorities from over 50 different schools in LAUSD's 80 total high schools. "It's a real cross section of the district," she says. "We are changing the face of the industry."[84] Diego Ramirez's success story is proof of Soto's statement, and evidence that youth in Los Angeles, with the right training and job experience, can be the answer to the growing needs of green technology industries.

Education and Training for Adults

Los Angeles County provides a host of quality, innovative, work experience-based green jobs education and training for adults. Community colleges and apprenticeship programs through the trade union locals are leading the way in these categories.

[81] iSEE webpage
[82] Information provided by Guelsy Gomez was recorded during a CDTech phone interview.
[83] Engineering News Report, Interns Grab Real World Experience, Not Coffee
[84] Engineering News Report

Los Angeles Community College District (LACCD)

The nine college campuses within the Los Angeles Community College District (LACCD)[85] have the potential to provide the widest range of green related education and training and, ultimately, the most employment preparation opportunities for unemployed and underemployed communities of Los Angeles. Adults and teens with all levels of education have access to numerous community college level courses and certificates or associate degree programs. One can enter a school within the LACCD and access a diverse selection of reasonably affordable, traditional professional and technical training programs related to the Green sector.

Several current LACCD certificate and degree programs will produce qualified entry level candidates within various green job sectors/industries. Because the green approach is fairly new and cutting-edge, it is currently difficult to evaluate a program or course in reference to a specific green standard. An inventory of LACCD certificate and associate degree programs has been developed, each program listed has specific training or a general focus relevant to various industries/sectors identified in Section 2 of this report. Clearly, green jobs can be found within almost all fields of study and labor. Therefore, we did not include fields such as business, accounting, medicine/health sciences, and computer specific technologies. Rather, we focused the education and training categories into these eight areas that connect "green jobs" more concretely: Advanced Transportation; Building; Building Design; Electrical; Engineering; Manufacturing; Mathematics & Sciences; and Water/Land Conservation.

The inventory revealed that the 9 community colleges within the L.A. Community College District (LACCD) offer the most training in Building Design areas (Architecture and Drafting), with 41 certificates and 15 associate's degrees available in the district. Several Advanced Transportation (Automotive/ Mechanic) related programs exist: 20 certificates; 5 associates. Various choices of general Mathematics and Sciences options are available (10 certificates; 21 associates). Engineering (11 certificates; 13 associates), Electronic (17 certificates; 7 associates), and Building related programs (16 certificates; 8 associates) are in moderate supply. Finally, a few Manufacturing (9 certificates; 5 associates) and Land/Water Conservation (8 certificates; 10 associates) options exist. In sum, we highlighted 88 associate degrees and 132 certificate green jobs related programs currently available within the LACCD.[86]

Figures 7 and 8 (p. 34 & 35) incorporate the eight categories into the three aforementioned overarching industry clusters: Advanced Transportation, Construction, and Utilities. The skills acquired from the eight aforementioned programs will overlap into the broader three clusters; thus, some LACCD certificate/degree programs are accounted for on Figures 7 and 8 more than once. For further details of the programs clustered on the maps (such as program title) see tables: "LACCD Certificate Degree Programs Possessing High Green Curriculum Potential" "LACCD Associate Degree Programs Possessing High Green Curriculum Potential" in Appendix D and E (p. 54 and 58).

[85] LACCD webpage

[86] LACCD Directory of Programs & Courses. See Appendixes D & E for complete LACCD Certificate & Degree lists comprised by CDTech.

Figure 7
LACCD "Green" Certificate Programs

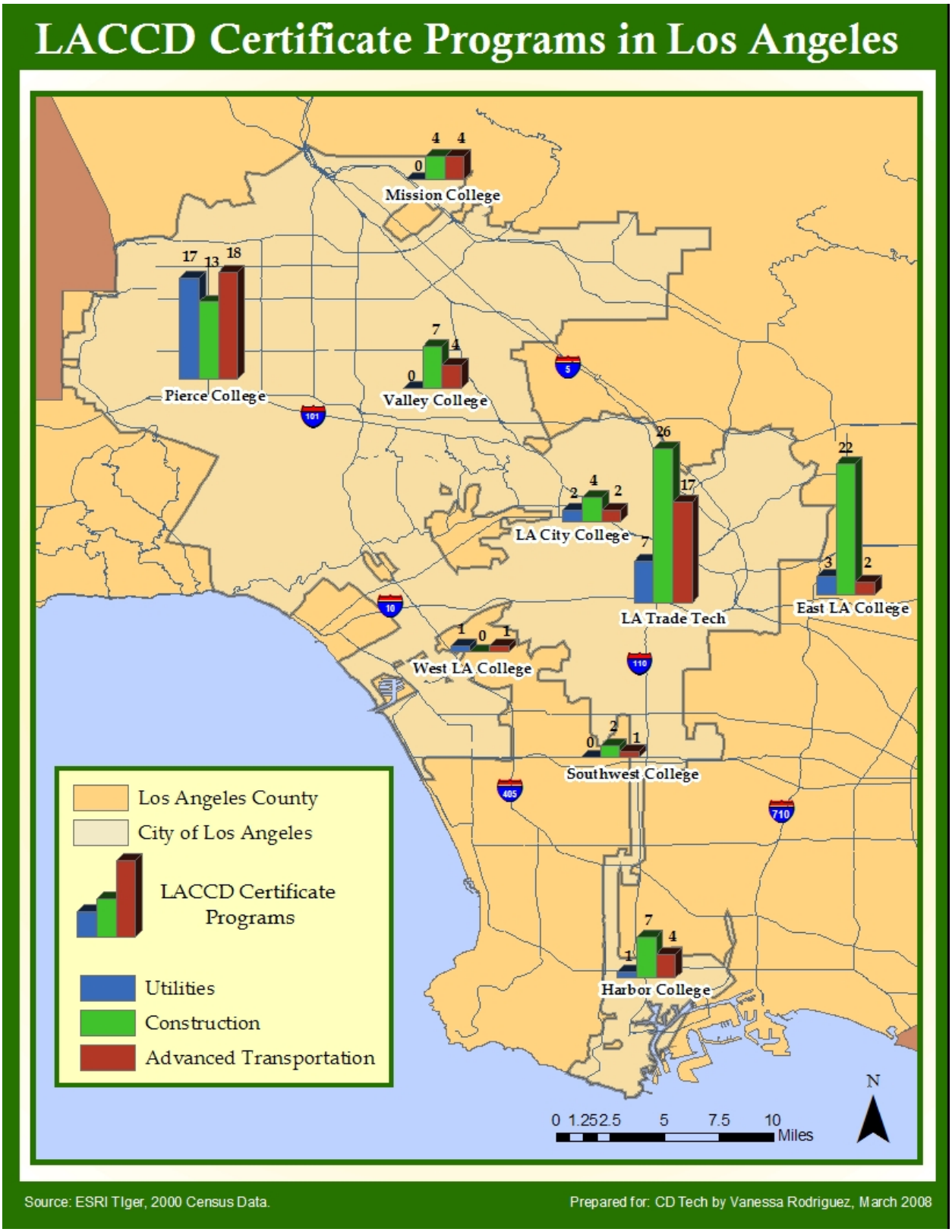
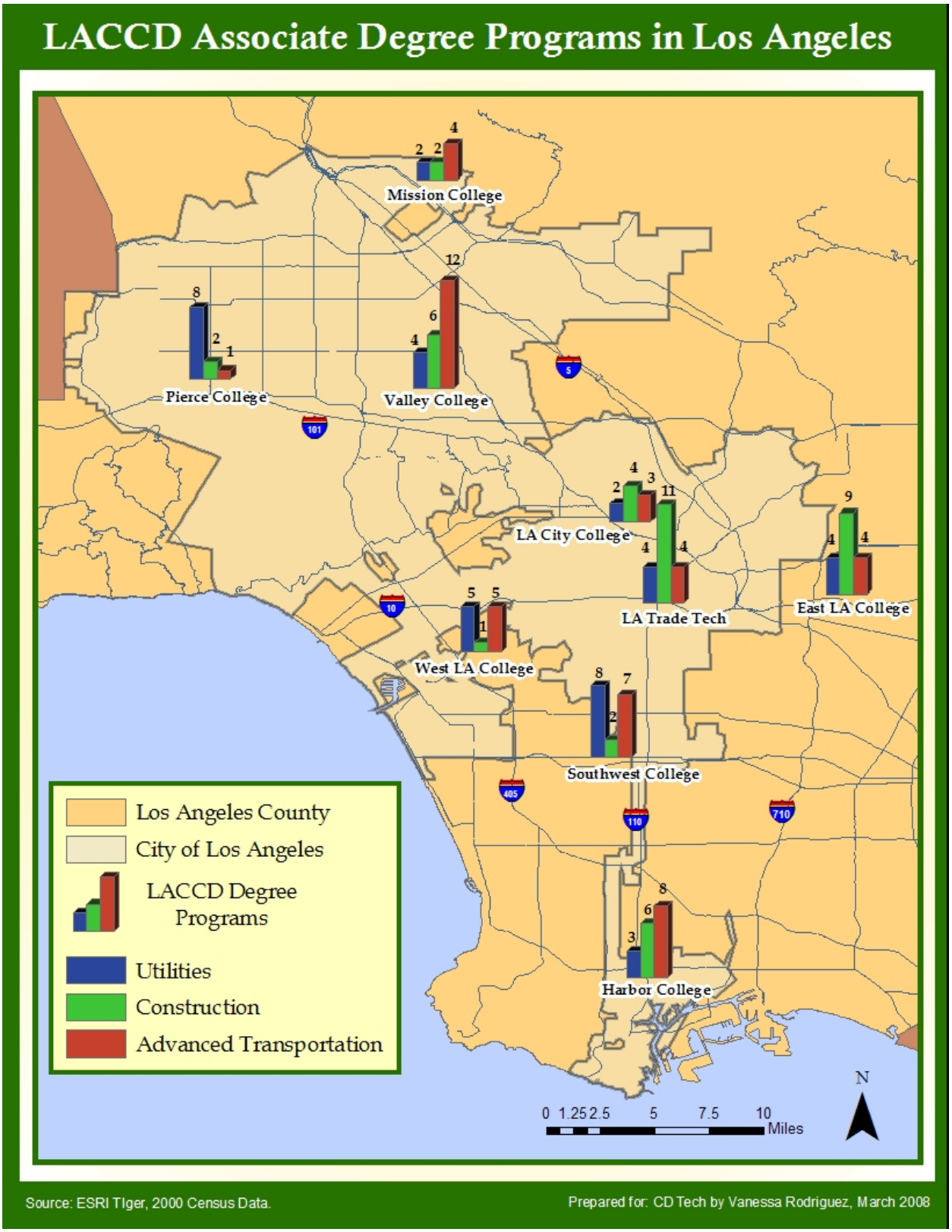


Figure 8
LACCD "Green" Associate Degree Programs



California Community College Center of Excellence

The Center of Excellence hosted at the Los Angeles Community College District recently released the *Green Building Industry Scan* focused on Los Angeles County. It was accompanied by two related reports, *Green Building: Occupational Profiles*, and *Green Building: Related Community College Programs*[87] Research results were contributed by the LACCD, and the report was finalized in November, 2007. Within this report, various Certificate and Degree programs were categorized into the following eight areas: Architecture and Architectural Technology; Environmental Control Technology (HVAC); Energy Systems Technology; Construction Crafts Technology; Electrical; Architectural Design; Civil and Construction Management Technology; Landscape Design and Maintenance. Several LACCD programs are listed within; furthermore, the report serves as a valuable resource that is inclusive of southern California community college programs outside of the LACCD. (These reports can be downloaded at www.cccewd.net/industryscans).

e7 at LATTC/LACCD

The e7 internship program through the LACCD offers remarkable opportunities for adult students enrolled within the district. Just finishing its fourth year of operation, the program has taken advantage of the district-wide reconstruction of LACCD campuses, funded by Proposition A/AA bonds approved by Los Angeles voters in 2001 and 2003. The e7 Architecture Studio mission lists program components that form its new approach to education: "Economic Development, Envisioning Information, Educational Models, Entrepreneurial Strategies, Employment Opportunities, Empowering Communities and the design/build of Environmental and Sustainable projects."[88] Marcela Oliva, architecture professor at LATTC, describes the desired shift of a students' paradigm and her/his approach to architecture, which embodies the e7 mission: "Students are exposed to a visual consciousness and learn to look at the built environment as a life cycle."[89]

With several LEED certified building projects underway, one goal of the e7 is to build the electronic infrastructure to manage the LACCD building initiative. When installed, computer systems within the new facilities will self-monitor all building energy operations daily. This innovative initiative will ensure that all new LACCD facilities are leaving environmental footprints that comply with the LEED standards in which the buildings were designed and constructed.

Michael Rendler, Director of the e7 Studio, explained the benefits of the internship structure. Three student internship phases exist: beginner, intermediate and advanced. Interns take on projects in teams of 10 or 12; the teams have a balanced mix of 1st, 2nd and 3rd phase interns. The groups take on various tasks having architecture, engineering and design related themes; more advanced students help assist novice interns. Program modules last 15 weeks, about a semester long (three per year). The current module has 33 students, but the program capacity is

[87] Center of Excellence, Green Building Related Community College Programs in Southern California
[88] e7 Architecture Studio, Our Mission
[89] Statements by Marcela Oliva and Michael Rendler were recorded during an interview conducted by CDTech on Friday, February 1, 2008.

50. "To date, more than 700 students from the nine colleges in the District have enrolled in the e7 Internship Program."[90]

The aforementioned iSEE program within LAUSD was initiated in 2006/07, as a high school level adaptation of the e7 program.

California State University (CSU)

The California State University system also provides several training opportunities that apply to various green job sectors and industries. CSU Los Angeles, Northridge, Long Beach, Dominguez Hills, and Pomona are accessible by location to LA County residents. These five schools house numerous green related degree programs on the Bachelor and Graduate levels within the fields of Architecture, Engineering, Mathematics, Sciences, Geography and Urban Planning.[91] Students that graduate from LACCD schools with an associate's degree can find several available programs within the CSU system that will continue their field of study to the bachelor level or beyond. Students planning to transfer should coordinate with an academic counselor to fulfill the most appropriate, transferable community college level courses.

Local Labor Unions & Apprenticeship Programs

Several training opportunities through apprenticeship programs are provided by the local trade unions in the Los Angeles County area. For the purposes of our study, we have highlighted the IBEW Local 11 and the UAW Labor Employment and Training Corporation (LETC). CDTech also accessed the comprehensive research results provided by SCOPE, which contain information on 18 local unions.

IBEW Local 11

IBEW Local 11 offers an electrical workers' apprenticeship program. In partnership with the Electrical Training Institute (ETI),[92] the program has produced 1,400 journey level workers, who have joined the union's 8,000 member base.

The apprenticeship program consists of five years of classroom study at night. Each apprentice attends a minimum of 160 hours of schooling for each of the five years of the apprenticeship. Classroom study, coupled with at least 8,000 on-the-job training hours, is a time proven method of graduating a skilled and competent journey level Electrician.[93]

The application process begins with a written exam. All applicants who pass the exam are then scheduled to have an oral interview. There are ten dates scheduled for written exams in 2008: February 27, March 26, April 23, May 28, June 25, July 23, August 27, September 24, October

[90] LACCD District and College News
[91] Assist, Exploring Majors
[92] Electrical Training Institute webpage
[93] ETI, Apprentice info

22, and November 19. Fifty-six applicants passed the entrance exam January 23, 2008, and are now waiting for an oral interview to be scheduled.[94] Apprenticeship members begin work with a starting wage that is 40% of a journey level union member's wage.

The LA Trade Tech electrical department collaborates with the ETI and IBEW Local 11. ETI Outreach Director Jane Templin noted that students who complete the LATTC Electrical Construction and Maintenance Certification or AS/AA degree program (with grades averaging C or better) are waived from taking the required written entrance exam. If accepted into the apprenticeship program, these participants begin at 45% wages of a journey level worker. Students that finish similar programs at Pasadena and Long Beach City Colleges are also eligible for the same benefits.[95]

The ETI hosts Career Fairs providing information from at least 20 different union apprenticeship programs in the building trades covering southern California.[96]

UAW Labor Employment and Training Corporation (LETC)

The United Auto Workers has apprenticeship programs throughout the United States. However, the only auto workers' union in California is located in Freemont. UAW Labor Employment and Training Corporation (LETC)[97] is working with seventeen Building and Construction Trade Unions all of which have apprenticeship programs. These apprenticeship programs are networked through the Southeast Crenshaw WorkSource Center,[98] which is run by the LETC.

The LETC mission includes collaboration with labor force, government, and employers to provide resources for:

> Attaining individual self-sufficiency; enhancing job skills to develop a stable and high-quality workforce; and improving quality of life through: partnerships with business, unions, social services agencies, and faith-based organizations; customized programs; leveraging resources to maximize outcomes; continuous opportunities for learning and development.[99]

Because of the neighborhoods and communities that the Southeast Crenshaw WorkSource Center serves, the Center's initiatives and the oversight of the LETC are of high importance to the efforts of the Industry & Sustainable Jobs Collaborative.

SCOPE Labor Union Report

SCOPE surveyed 18 local trade unions in a recent study completed in January, 2008. These are major employment trends deduced from the survey responses:

- Membership numbers range between 550 to 4500.

[94] ETI, Apprentice info
[95] Information provided by Jane Templin was recorded during a CDTech phone interview.
[96] For additional information about the Career Fair event on April 18, 2008, see Appendix I.
[97] The LETC webpage (www.letc.com) was under construction during the time this study was written.
[98] The SE Crenshaw Worksource Center is located on the LETC webpage.
[99] UAW Labor Employment and Training Corporation, Mission

- Requirements to become a union member are differentiated between unions that require members to find union contractors before being a part of the union and ones that do not. Standard 18+ requirements and a High School diploma or a GED. Some Unions expected basic writing/math skills test, others do not require this.

- Apprenticeships are not required to join the union, as long as they have experience, although it sounds like apprenticeship programs (for those that have them) are good ways into union jobs.

- Starting wages for apprentices are typically less than half of starting wages for journeymen. Starting apprentice wages range from $9.94 an hour to $21.00 an hour. Starting wages for journeyman range from $20.00 an hour to $35.00 an hour. Wages are set by contracts and can be adjusted with contract negotiations.

- Number of students in these programs range broadly, from 125 to 3,000, depending on size of union and type of program.

- Application selection varies from pulling names off a list to written application and oral interview.

- There are often "pre-apprenticeship" programs before apprenticeship programs, if there is a demand for workers. These pre-apprentices are sent out to do work immediately, but are not fully apprentices because they lack skills/experience.[100]

➲ Section 4: Conclusions

The inventory and assessment of the region's education and training programs against the labor needs of industry suggest the development of both system-level improvements and specific education and training programs.

System-level improvements

Moving the vision of a Green L.A. to reality requires a proactive and strategic response among the region's education and training providers. It calls for a high quality education and training infrastructure that is: industry responsive, coordinated to form a seamless educational pipeline, flexible to meeting rapidly changing needs, and comprehensive to meet the diverse needs of workers and the sprawling marketplace.

[100] SCOPE 5-1-06 Union Apprenticeship Survey Trends. Information made available in this study after CDTech was granted direct permission from SCOPE. Do not quote or distribute without obtaining specific permission from SCOPE.

Invest in the Future. Start now to prepare youth for the emerging green society/economy. A unique opportunity exists to form a LAUSD district-wide green jobs network that would create standardized project-based curricula and teacher training for SLCs in the energy-utility, environmental science, construction, and other related green jobs sectors. This work could be modeled after a very promising collaboration between the Urban Education Partnership and the Humanitas SLCs within LAUSD. "Humanitas is a network of more than 400 teachers working in interdisciplinary teams in 37 small schools at 26 LAUSD high schools."[101] Linda O'Neil, Program Director of Humanitas at the Urban Education Partnership,[102] shed light on several professional development, sustainability and collaboration initiatives that Humanitas SLC partners undertake. Annually, six "Teacher Leader" meetings occur, where lead representatives of each Humanitas SLC gather to plan and share curriculum and instructional methods. A rubric has been designed and is used at these meetings to measure the scale of progress or success for each individual SLC. Humanitas also coordinates eight "Teacher Centers" each year, where new teachers within the network gather to receive more specific guidance and support. Finally, five "Teacher Institutes" happen yearly where ideas are shared regarding content literacy of curriculum materials.[103]

"Using a unique team-teaching and team-learning approach that emphasizes a theme taught across multiple subjects, Humanitas has improved student performance and increased teachers' motivation and skills." The collaboration has produced significant results: "Based on data developed in spring of 2005, Humanitas students are, on average, 30% more likely to graduate from high school than are their peers."[104]

What makes the collaboration most exceptional is the broad range of support it receives from several notable outside partners, such as: "The Los Angeles County Museum of Art, the Academy of Motion Picture Arts and Sciences, the California African-American Museum, the Getty Museum, Loyola Marymount University, and UCLA's Fowler Museum of Cultural History."[105]

This collaboration is exemplary. Similar models, if adopted by like-themed SLCs and green technology/sustainable jobs-focused community and industry partners, could ensure that the broadest range of sustainable jobs curriculum is being effectively implemented into LAUSD high schools. Curriculum application, sustainable networking of resources and consistent communication between green-focused schools would ensure that Los Angeles youth become aware of the increasing employment opportunities within various green jobs sectors and industries.

Build the base: form regional education and training clusters. Align education/training training clusters around the emerging industry clusters to further advance cluster development activities. Specifically organize and fund industry-education-labor and community networks in

[101] Humanitas, About us webpage
[102] Urban Education Partnership, Humanitas
[103] Information provided by Linda O'Neil was recorded during a CDTech phone interview.
[104] Humanitas, About Us
[105] Humanitas, About Us

key sub-sectors: 1) green building; 2) environmental planning and consulting, 3) green technology and manufacturing, 4) alternative transportation, and 5) utility. The Los Angeles Community College District (LACCD) should especially take an active role in fostering the agglomeration that is necessary for Los Angeles to get a stronger footing in the Green Economy by organizing Centers of Excellence in particular specialties based upon existing programs and/or proximity to industry clusters. For example, a Community College-centered K-20 public school cluster could be formed around environmental consulting which is growing in downtown and west Los Angeles; or alternative transportation in the South Bay and the Valley; and manufacturing in dominant regions of South and East Los Angeles. Each cluster network would provide on-going industry and labor market research, regulatory and policy support, formulation of job standards and skills, curricula and workforce training.

Connect the Dots. Map and organize the numerous community, labor and educational institutions offering green jobs training to offer multiple, seamless educational pathways into the sector. Additional work is required to build a complete inventory of programs across all sectors, to assess their quality and to articulate them. Develop joint marketing materials showcase the depth of the educational resources and capacity of the collaboration.

Short-term Interventions

Scale-up. Establish a professional training program in green technologies and laws to increase the capacity of educators and trainers to develop and offer green courses. Instructors in the construction trades (electrical, plumbing, HVAC, etc.), planning, business, transportation, manufacturing and other disciplines need to understand the new laws and technologies driving their discipline in order to retrofit existing courses and establish new ones.

Go Green. Green all green-related courses offered within the L.A. Community College District, including green building programs (architecture, engineering, construction), automotive/transportation, manufacturing and other disciplines. There is a significant number of public education, labor and community-based education and training programs that provide the basic skills and foundations needed to pursue careers in the building trades. While there is limited information about the "green" content of these programs, it is likely that the first order of work might be the "greening" of the curricula, offering LEED certification training across the trades and skills training in energy regulations and compliance. This includes developing a K-20 educational pathway and standardized skills and competencies that meet industry needs, as well as designing new and innovative pedagogies.

Start small: Small Business Development. Provide small businesses throughout the region with green certification training. These basic, short-term introductory technical and compliance training workshops would increase their awareness and access to the growing green business opportunities. LEED certification for small contractors, and compliance and green business certification training for restaurant and automotive businesses have the most immediate demand.

Advance the Jobs of the Future. Build new curricula courses and programs to meet immediate and growing demand in: solar installation, energy efficiency auditing, water conservation, landscaping, environmental planning, and renewable energy.

Next Steps

This work grew out of the vision and efforts of the members of the Los Angeles Infrastructure and Sustainable Jobs Collaborative. An important first step, therefore, is to vet and strengthen the findings and recommendations with the members of the Collaborative. Thereafter, some consideration should be given to reconvening an expanded group of educational partners from the Sustainable Futures Forum to finalize a strategy and workplan for a regional and comprehensive approach to building an educational and training infrastructure that accelerates the preparation of the workforce for the emerging Green Economy.

Data Sources & References Cited

This report has utilized the following information:

Articles & Reports

- Next 10. "California Green Innovation Index 2008 Inaugural Issue." Palo Alto, CA. 2008.

- California League of Conservation Voters. "2007 Legislative Year California Environmental Scorecard." 2007.

- Lubchenco, Jane. "Entering the Century of the Environment: A New Social Contract for Science." Science Magazine. 1998. 8 Jan 2008. <http:www.sciencemag.org/cgi/content/full/279/5350/491>.

- Carter, Vanessa, Ethan Coleman, Juan Matute and Griffin Wright. "Green Construction An Industry Analysis." Prepared for Professor Wolff, Urban Planning Sectoral Analysis. UCLA Urban Planning Department. 13 December 2007.

- Department of City Planning. Committee on Energy and Environment. Modifications to Green Building Program. Goldberg, S. Gail. Los Angeles. 11 Jan 2008.

- Economic Roundtable. "Jobs in L.A.'s Green Technology Sector." 2006. 22 Dec. 2007. <www.economicrt.org>.

- Jones, Van. "Green Jobs Act of 2007." Ella Baker Center. 2007. 24 Jan 2008. <http://ellabakercenter.org>.

- Lee, Joanna, et al. "Green Cities, Green Jobs." Scope/Cipher. Los Angeles, CA. May 2007.

- Los Angeles City. City Council Meeting on Environmental Issues Departmental Report. October 2007. 4 Feb 2008. <http://www.lacity.org/council/cd13/pdf/City%20Council%20Environmental%20Issues%20Departmental%20Report.pdf>.

- Los Angeles World Airports. "Tom Bradley Renovation Project." Press Release. Feb. 26, 2007. 7 Feb 2008. <http://www.lawa.org/news/newsDisplay.cfm?newsID=889>.

- Orientation DRAFT Curriculum, Infrastructure Academy. 3 Jan 2008.

- Pinderhughes, Raquel. "Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment." Berkeley, CA. 2007. 30 Jan 2008. <http://ellabakercenter.org/page.php?pageid=26&contentid=350>.

- SCOPE. 5-1-06 Union Apprenticeship Survey Trends. 7 Feb 2008.

- Smith, Greig. "Together We Can R.E.N.E.W.LA." 7 Feb 2008. <http://www.lacity.org/council/CD12/renewla/cd12renewla243131327_07272005.p>

Presentations & Interviews

- e7 Architectural Studio. Marcela Oliva, Architecture professor at LATTC and Michael Rendler, Director of e7 studio. In person interview: 1 Feb 2008.

- Electrical Training Institute. Jane Templin, ETI Outreach Director. Phone interviews: 24 Jan 2008; 4 Feb 2008.

- iSEE. Guelsy Gomez, Program Coordinator of iSEE. Phone interview: 31 Jan 2008.

- Los Angeles Infrastructure Academy. Marcus Castain, Chief Executive Officer of the LA Infrastructure Academy. Phone interview: 29 Jan 2008.

- LAUSD Office of School Redesign. Larry Tash, Director of the Office of School Redesign. Phone interviews: 14 Jan 2008; 29 Jan 2008.

- Tharp, Eric. "Industry Panel Conversation: Private Sector Perspectives on Sustainable Jobs—Challenges and Opportunities." Los Angeles Department of Water & Power (LADWP). Panelist. Working for a Sustainable Future: A Workforce Development Forum. Los Angeles. 26 Oct. 2007.

- UAW Labor Employment and Training Corporation. Bob Nelson, President and CEO. Phone interview: 7 Feb 2008.

- Urban Education Partnership. Linda O'Neil, Director of Humanitas at the Urban Education Partnership. Phone interview: 30 Jan 2008.

- Williams, Josh. "LA Labor Market Study." BW Research Partnership. Presenter. Working for a Sustainable Future: A Workforce Development Forum. Los Angeles. 26 Oct. 2007.
  Williams, Josh, Clean Technology Workforce Challenges and Opportunities. Report Presented to LA-Orange County Regional Consortium and Los Angeles Trade-Technical College, February, 2008.

Websites

- Apollo Alliance. Energy Bill. 24 Jan 2008. <http://www.apolloalliance.org/stateandlocal_energybill.php>.

- Assist Home Page. 04 Jan 2008. <http://www2.assist.org/exploring-majors/browseCSUs.do>.
  Exploring Majors. 04 Jan 2008. <http://www2.assist.org/exploring-majors/Welcome.do>.

- Bureau of Sanitation and Public Works. "Terminal Island Renewable Energy Project."
  Power Point. September 2003. 7 Feb 2008. <http://www.portoflosangeles.org/Board/2007/January/010407_Pres_TIRE.pdf>.

- Career onestop, occupation search. 30 Jan 2008. <http://www.careerinfonet.org/select_occupation.asp>.

- Congresswoman Hilda Solis Home Page. 23 Jan 2008. <http:solis.house.gov/list/press/ca32_solis/wida6/greenjobsaug4.shtml>.

- Congresswoman Nancy Pelosi Home Page. 23 Jan 2008. <http://www.house.gov/pelosi/>.
  HR 3221. 23 Jan 2008. <http://speaker.house.gov/legislation?id=0076>.

- Economic & Workforce Development through the California Community Colleges. 31 Jan 2008. <http://cccewd.net/index.cfm>.
  Green Building Related Community College Programs in Southern California. 31 Jan 2008. <http://cccewd.net/files/resources/Green%20Building%20Industry%20Scan_Related%20Programs1.pdf>.

- Electrical Training Institute webpage. 4 Feb 2008. <http://www.laett.com/>.
  ETI, Apprentice info. 4 Feb 2008. <http://www.laett.com/apprentice.html>.

- Ella Baker Center. 24 Jan 2008. <ellabakercenter.org/page.php?pageid=27&contented=298>.
  Green Collar Jobs Campaign. 24 Jan 2008. <http://ellabakercenter.org/page.php?pageid=26&contentid=327>.

- Engineering News Report: Interns Grab Real World Experience, Not Coffee. Koo, Annie. 31 Aug 2007. <http://enr.construction.com/people/ENRNext/archives/070831.asp>.

- e7 Architecture Studio, Our Mission. 6 Feb 2008.

<http://www.e7studio.net/mission.html>.

- Facilities Services Division webpage. 31 Jan 2008. <http://www.laschools.org/>.
  iSEE webpage. 31 Jan 2008. <http://www.laschools.org/contractor/sbop/isee>.

- GovTrack.US. 31 Jan 2008. <http://www.govtrack.us/>.
  HR 3221. 31 Jan 2008.
  <http://www.govtrack.us/congress/bill.xpd?bill=h3221&tab=summary>.
  HR 2847. 31 Jan 2008.
  <http://www.govtrack.us/congress/bill.xpd?bill=h110-2847>.
  HR 6. 31 Jan 2008. <http://www.govtrack.us/congress/bill.xpd?bill=h110-6 >.

- Green LA: An Action Plan to Lead the Nation In Fighting Global Warming. City of Los Angeles. May 2007. 4 Feb 2008.
  <http://www.lacity.org/ead/EADWeb-AQD/GreenLA_CAP_2007.pdf>.

- Green Technology. 20 Dec. 2007. <http:www.green-technology.org/about.htm>.

- Humanitas, About Us webpage. 30 January 2008.
  <http://www.laep.org/humanitas/about_us.html>.

- Los Angeles Community College District webpage. <http://www.laccd.edu/>.
  LACCD Curriculum Directory. 30 Jan 2008.
  <http://www.laccd.edu/curriculum/directory-programs-courses/documents/approved_educational_programs.xls>.
  LACCD District and College News. 6 Feb 2008.
  <http://www.laccd.edu/news/PropAStatus.htm>.

- Los Angeles Community College District Building Green. 24 Jan 2008.
  <www.propositiona.org/green_room/html>.

- Los Angeles Community College District, *Proposition A/AA Bond Program. 8 Feb 2008.*
  <http://www.laccdbuildsgreen.org/_pdfs/laccd_is_building_green/green_fact_sheet_june_2007.pdf>

- Los Angeles Department of Water and Power. 5 Feb 2008.
  <http://www.ladwp.com>.
  Renewable Energy Policy. 5 Feb 2008.
  <http://www.ladwp.com/ladwp/cms/ladwp005864.jsp>.
  Residential Rebates and Programs. 5 Feb 2008.
  <http://www.ladwp.com/ladwp/cms/ladwp001860.jsp>.
  Non-Residential Rebates and Programs. 5 Feb 2008.
  <http://www.ladwp.com/ladwp/cms/ladwp001859.jsp>.

- Los Angeles Department of Water and Power, Solar Incentive Program Press Release. October 1, 2007. 7 Feb 2008. <http://ladwpnews.com/go/doc/1475/176491/>.

- Los Angeles Infrastructure Academy, About Us webpage. 29 Jan 2008. <http://www.renewcalifornia.org/index-1.html>.
  LA Infrastructure Academy, Locations webpage. 31 Jan 2008. <http://www.renewcalifornia.org/index-4.html>.

- Los Angeles Unified School District Office of School Redesign. 03 Jan 2008 <http://www.lausd.net/SLC_Schools/slc_hs.htm>.
  LAUSD SLC Attributes. 03 Jan 2008. <http://www.lausd.net/SLC_Schools/docs/slc/slc_attributes.pdf>.
  LAUSD Office of School Redesign, Attachment C: Approved SLCs By School Board District. 29 Jan 2008. <http://www.lausd.net/SLC_Schools/docs/slc/010408.pdf>.

- LAX Master Plan. 7 Feb 2008. < http://www.laxmasterplan.org/>.

- Southern California Gas Company. 5 Feb 2008. < http://www.socalgas.com />.
  Energy Efficiency. 5 Feb 2008. < http://www.socalgas.com/energyefficiency/>.

- Speaker Nancy Pelosi, Current Legislation. 24 Jan 08. <http://www.speaker.gov/legistlation?id=0076>.

- UAW Labor Employment and Training Corporation, Mission. 8 Feb 2008. <http://www.letc.com/mission.htm>.

- Union of Concerned Scientists, Citizens and Scientists for Environmental Solutions. 13 Dec 2007. <http:www.ucsusa.org/clean_california/California_Legislative_Update.html>.

- Urban Education Partnership, Humanitas. 30 January 2008. <http://www.laep.org/humanitas.html>.

- US Green Building Council. 5 Feb 2008. <http://www.usgbc.org>.
  LEED Rating Systems. 5 Feb 2008. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222>.
  Project Certification. 5 Feb 2008. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=64>.
  Online Courses and Webinars, February 5, 2008. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1449>.

Appendix

Appendix A

Taken from Economic Roundtable
"Jobs in L.A.'s Green Technology Sector"
(2006)

Number and Grouping of Green Technology Businesses in Los Angeles

Type of Green Business	City of Los Angeles	Balance of Los Angeles County	Los Angeles County Total
1. Alternative Fuel Vehicles	5	16	21
2. Biomass / Waste-to-Energy Power	7	9	16
3. Construction	5	8	13
4. Environmental Components Manufacturer	7	11	18
5. Environmental Components Distributor	1	1	2
6. Environmental Consulting	31	44	75
7. Fuel Cell Manufacturer	0	3	3
8. Solar Power	43	49	92
9. Waste Disposal	37	24	13
10. Water Purification	2	7	9
11. Wind Power	1	3	4
(Unclassified)	3	3	6
Grand Total 118	118	178	296
	40%	60%	100%

Appendix B

North American Industry Classification System (NAICS)

Taken from Economic Roundtable
"Jobs in L.A.'s Green Technology Sector"
(2006)

NAICS Formal Industry Titles and Codes
Range of Industries Green Technology is Present in Within Los Angeles County

22 Utilities
23 Construction
31 Manufacturing (Non-Durable)
32-33 Manufacturing (Durable)
42 Wholesale Trade
44-45 Retail Trade
48 Transportation and Warehousing
54 Prof., Scientific, and Tech. Services

55 Mgmt. of Companies & Enterprises
56 Waste Mgmt. & Remediation Services
61 Educational Services
81 Other Services
92 Public Administration

List of Industries Capturing Green Technology Business (w/ NAICS Codes)

Transm. & Power Train Parts Mfg 336350
Air Purification Equipment Mfg. 333411
Remediation Services 562910
Res. Plumbing, Heating, & A/C Contr 238221
Environmental Consulting Services 541620
Res. Electrical Contractors 238211
Single-Family Housing Constr. 236115
Roofing Contractors 235610
R & D in Phys, Eng & Life Sciences 541710
Semiconductor Device Mfg 334413
Engineering Services 541330
Measuring & Control Device Mfg 334519
Testing Laboratories 541380
Water Supply and Irrigation Systems 221310
Hazardous Waste Treatment and Disposal 562211

Appendix C

New Direction for Energy Independence, National Security, and Consumer Protection Act Committees (Relevant to HR 3221)

[Information found here was taken from http://speaker.house.gov/legislation?id=0076]

Ways and Means Committee, the Renewable Energy and Energy Conservation Tax Act of 2007 (H.R. 2776). This bill will be voted upon separately and combined with the larger package through the rule.

- The bill provides long-term incentives spurring the production of electricity from renewable sources, including wind, solar, biomass, geothermal, river currents, ocean tides, landfill gas, and trash combustion resources.
- The bill includes incentives to expand production of homegrown fuels such as cellulosic ethanol and biodiesel, along with increasing the number of E-85 pumps for consumers with flex-fuel vehicles.
- The bill provides incentives for manufacturers to build appliances that push the boundaries of efficiency, helps working families afford fuel-efficient plug-in hybrid vehicles, and helps businesses create energy-efficient workplaces.
- The bill encourages the deployment of renewable energy by providing electric

cooperatives and public power providers with new clean renewable energy bonds that will allow these entities to install facilities that generate electricity from renewable resources.

- It also help States leverage tax credit bonds to implement low-interest loan programs and grant programs to help working families purchase energy-efficient appliances, make energy-efficient home improvements, or install solar panels, small wind turbines, and geothermal heat pumps.
- To pay for these renewable energy and conservation incentives, the bill repeals approximately $16 billion in tax breaks for oil and gas companies that were given during an era of record profits. To ensure that oil and gas companies are paying their fair share of taxes, it closes a tax loophole that allows big oil and gas companies to game the system by understating their foreign oil and gas extraction income. It also closes the "Hummer" Tax Loophole, fixing a serious mistake that provides an extra tax incentive for businesses buying luxury SUVs, while exempting vehicles that are used for legitimate business purposes.

Education and Labor Committee, Green Jobs – Title I

- This title creates an Energy Efficiency and Renewable Energy Worker Training Program to train a quality workforce for good "green" jobs -- such as solar panel manufacturers and green building construction workers -- that are created by federal renewable energy and energy efficiency initiatives.
- This program will provide training opportunities to our veterans, to those displaced by national energy and environmental policy and economic globalization, to individuals seeking pathways out of poverty, to at risk youth and to those workers in the energy field needing to update their skills. A major national investment in renewable energy could create 3 million green collar jobs.

Foreign Affairs, The International Climate Cooperation Re-engagement – Title II

- This title states that the U.S. should re-engage in and lead the effort to reach a global agreement that requires binding emissions reduction commitments from all the major emitters including China, India, and Brazil.
- To reduce global greenhouse emissions worldwide, it directs the federal government to promote U.S. energy exports in clean, efficient technologies to India and China and other developing countries.
- The title also creates a new position within the Department of State, the Ambassador at Large for Global Climate Change, to serve as the lead advisor to the President and Secretary of State on these issues.

Small Business Committee, The Small Energy Efficient Businesses – Title III

- This title gives small businesses tools they need to be more energy efficient and increase our energy independence, the bill increases loan limits to help small businesses develop energy efficient technologies and purchases, and increases investment in small firms that are developing renewable energy solutions.

- It also provides technical assistance to small businesses to reduce energy costs.

Science and Technology Committee – Title IV

- To spur innovation, the initiative includes a measure to create an Energy Department agency to coordinate revolutionary, high-payoff energy technology research and development that private industry is not likely to pursue on its own. (H.R. 364, Advanced Research Projects Agency for Energy (ARPA-E))
- The initiative reorganizes the Bush Administration's climate change research program. (H.R. 906, the Global Change Research and Data Management Act)
- It requires federal research, development, and demonstration on carbon capture and sequestration (H.R. 1933, the Energy Carbon Capture, Storage Research, Development and Demonstration Act) and promotes research on biofuels. (H.R. 2773, The Biofuels Research and Development Enhancement Act)
- In addition, this initiative includes measures to bolster research on solar energy (H.R. 2774), geothermal energy (H.R. 2304), and marine renewable energy (H.R. 2313).

Agriculture Committee (based on energy title of Farm Bill) – Title V

- Invests over $2.5 billion to help rural communities, farmers, ranchers and small businesses by reducing their energy costs through energy efficiency and promoting renewable fuels, including cellulosic ethanol and biodiesel.
- This title helps finance the cost of developing and constructing biorefineries and biofuel production plants to carry out projects to demonstrate the commercial viability of converting biomass to fuels or chemicals.
- Continues funding for the Biodiesel Fuel Education Program to award competitive grants to nonprofit organizations that educate governmental and private entities operating vehicle fleets, and educate the public about the benefits of biodiesel fuel use.
- Increases Funding for the Renewable Energy & Energy Efficiency Improvements Program, which authorizes loans, loan guarantees, and grants to farmers, ranchers, and rural small businesses to purchase and install renewable energy systems and to make energy efficiency improvements.
- Extends and Funds the Biomass Research and Development Program to provide competitive funding for research and development projects on biofuels and bio-based chemicals and products.
- Improves and Increases Funding for the Bioenergy Program, which provides production incentives for increases in production of ethanol and biodiesel made from agricultural and forestry crops and associated waste materials, including animal manure and livestock/food processing waste.
- Establishes a Forest Bioenergy Research Program to address the specific issues facing the use of woody biomass for bioenergy production.
- Promotes the Federal Procurement of Biobased Products by providing funds for the testing and labeling of biobased products and for expanding awareness of the

BioPreferred Program.

Oversight and Government Reform Committee, Carbon-Neutral Government – Title VI

- To make the federal government a leader on reducing global warming, this title sets an ambitious goal requiring federal government operations to be carbon-neutral by 2050, with annual government-wide emissions targets. The federal government is the largest energy consumer in the United States.
- Under the legislation, federal agencies must inventory their greenhouse gas emissions, freeze emissions in 2010, and then reduce net emissions by at least two percent each year to achieve zero emissions by 2050.
- The title contains new energy and fuel efficiency policies for federal operations, including minimum greenhouse gas emissions standards for federal fleet vehicles, green building standards for new federal buildings, and expanded authority for agencies to purchase renewable energy.

Natural Resources Committee, Energy Policy Reform and Revitalization – Title VII

- This title ensures greater accountability to the taxpayer from companies that area drilling for oil and gas on federal lands. Among other provisions, it requires more audits to ensure American taxpayers aren't being cheated out of the royalties they are due for the extraction of these publicly-owned resources.
- It authorizes a nationwide assessment of geological formations capable of sequestering carbon dioxide underground, as well as a review of the potential for carbon sequestration in ecosystems.
- The title establishes a national ocean observation system to gather information for climate change research, national defense, and marine commerce, a key recommendation of the Joint Ocean Commission Initiative.
- It ensures the development of a national strategy to assist wildlife populations and their habitats in adapting to the impacts of climate change, and provides states with new funding to assist wildlife in adapting to global warming.
- The title would ensure oil companies that were awarded the 1998 and 1999 royalty-free leases for drilling pay their fair share in royalties.

Transportation and Infrastructure Committee, Transportation Energy Security and Climate Change Mitigation – Title VIII

- This title takes action to cut energy use and carbon emissions, by encouraging people to take mass transit, encouraging states to carry out transportation projects that reduce air pollution, and increasing federal help for local governments to purchase alternative fuel buses, locomotives and ferries.
- This title requires the General Services Administration to use energy efficient and renewable energy systems in Federal government buildings.
- It directs the U.S. Army Corps of Engineers to study the potential for increased hydroelectric power generation at its facilities.

- In addition, it directs the Federal Emergency Management Agency (FEMA) to study its ability to respond to an increased number of natural disasters created or intensified by global climate change.

Energy and Commerce Committee – Title IX

- In landmark efforts to strengthen energy efficiency, this title sets new efficiency standards for appliances such as refrigerators and freezers, requires more efficient lighting and promotes green buildings in the Federal and private sector, and works to speed up Energy Department action on new efficiency standards (after six years of reversal and delay of critical efficiency standards).
- These efficiency provisions will reduce energy costs to consumers and remove as much as 10 billion tons of carbon dioxide from the atmosphere by 2030, more than the annual emissions of all of the cars on the road in America today.
- For cities, counties, and states, the title establishes an Energy and Environment Block Grant to be used for seed money for innovative local best practices to achieve greater energy efficiency and lower energy usage.
- It also promotes homegrown alternative fuels by providing assistance for the installation and conversion of E-85 fuel pumps and the production of flex-fuel vehicles that run on renewable fuel, and increases the amount of grants for cellulosic ethanol production to $1 billion.
- Another provision encourages the domestic development and production of advanced technology vehicles and the next generation of vehicle batteries and plug-in hybrid vehicles.
- The title also creates a "Smart" electric grid to modernize and strengthen the reliability and energy savings of our electricity supply and improves the Department of Energy Loan Guarantee Program for projects that reduce greenhouse gas emissions and employ improved technologies.

Appendix D

LACCD CERTIFICATE PROGRAMS POSSESSING HIGH GREEN CURRICULUM POTENTIAL

College	Program TOP Code	Catalog Year	Degree/Certificate Type	Program Title	State Approval Date	Required Units	LACCD Degree Plan	Occupational Program (Yes/No)	Transfer Program (Yes/No)	State Unique Code
ADVANCED TRANSPORTATION										
AUTOMOTIVE/MECHANIC										
E	0948.00	20062007	C	Automobile Technology	7/1/1974	39		Yes	No	02446
P	0948.00	20062007	CS	AUTOMOTIVE EMISSION SPECIALIST		14		Yes	No	
P	0948.01	20062007	CS	AUTOMOTIVE LIGHT SERVICE TECHNICIAN		13		Yes	No	
P	0948.03	20062007	CS	AUTOMOTIVE PERFORMANCE APPLICATIONS CERTIFICATE		15		Yes	No	
P	0948.02	20062007	CS	AUTOMOTIVE POWERTRAIN SPECIALIST		13		Yes	No	
P	0948.00	20062007	C	Automotive Service Technology	7/1/1970	45		Yes	No	02828
P	0956.31	20062007	CS	CNC OPERATOR		15		Yes	No	
P	0956.32	20062007	CS	CNC PROGRAMMING		15		Yes	No	
P	0956.30	20062007	CS	MACHINE SHOP TECHNOLOGY		15		Yes	No	
T	0948.02	20062007	CS	Auto & Related Mechanical Repair Technology		12		Yes	No	
T	0948.04	20062007	CS	Auto & Related Tech Brake Susp & Steering Tech		12		Yes	No	08318
T	0948.01	20062007	C	Auto & Related Technology-Adjunct:Transmission Rep	7/1/1970	19		Yes	No	10751
T	0948.02	20062007	C	Auto & Related Technology-Adjunt-Mechanical Repair	7/1/1970	18		Yes	No	08478
T	0948.03	20062007	C	Auto & Related Technology-Adjunct: Tune-Up	7/1/1970	18		Yes	No	10752
T	0948.01	20062007	CS	Auto & Related Transmission Repair Technology		12		Yes	No	
T	0948.00	20062007	CS	Automotive & Related Engine Performance Technology		12		Yes	No	
T	0948.00	20062007	C	Automotive and Related Technology	7/1/1970	46		Yes	No	02906
T	0947.00	20062007	C	Diesel and Related Technology	7/1/1970	45		Yes	No	02905
T	0947.01	20062007	C	Diesel and Related Technology - Adjunct	7/1/1970	23		Yes	No	08476
T	0952.22	20062007	CS	ECONMT-s MOTOR CONTROL		15		Yes	No	
ENGINEERING										
C	0799.00	20062007	C	Certified Network Engineer	7/1/1995	51		Yes	No	08221
C	0924.00	20062007	C	Engineering and Technology	7/1/1980	31		Yes	No	08227
E	0924.00	20062007	C	Engineering Technology	7/1/1970	42		Yes	Yes	02443
H	0935.00	20062007	C	Electro-Mechanical Engineering Technologist	7/1/1961	32		Yes	No	02782
M	0924.00	20062007	C	Engineering	7/1/1990	18		Yes	No	10712
M	0924.01	20062007	C	Engineering Assistant	7/1/1990	30		Yes	Yes	08346
M	0953.00	20062007	C	Engineering CADD and CAM (Manufacturing)	7/1/1990	18		Yes	Yes	08347

T	0934.00	20062007	C	Electronics Engineering Technician	7/1/1970	27		Yes	No	12068
T	0945.13	20062007	C	Operation & Maintenance Engineer: Steam Plant	7/1/1970	24		Yes	No	08474
T	0945.14	20062007	C	Operations/Maintenance Engineer Apprenticeship	7/1/1970	36		No	No	08474
V	0956.01	20062007	C	Mechanical Engineering Technology	7/1/1992	37		Yes	No	08541
				MANUFACTURING						
M	0956.00	20062007	CS	Industrial Technology/Manufacturing		17		Yes	No	
P	0956.00	20062007	C	Industrial Technology - General	7/1/1970	26		Yes	No	02830
P	0956.01	20062007	C	Machine Shop Technology	7/1/1970	18	A	Yes	No	10725
S	0956.00	20062007	CS	Automated Manufacturing		15		Yes	No	
T	0956.31	20062007	C	Machine Shop - CNC	7/1/1970	53		Yes	No	02914
T	0956.32	20062007	C	Machine Shop - CNC - Adjunct	7/1/1970	32		Yes	No	08486
V	0956.00	20062007	C	Industrial Technology Manufacturing	7/1/1970	30		Yes	Yes	02959
V	0956.30	20062007	C	Manufacturing Technology - Metal Machining	7/1/1970	25		Yes	No	02960
V	0956.31	20062007	C	Manufacturing Technology - Numerical Control	7/1/1970	30		Yes	No	08542
				MATHEMATICS & SCIENCES (GENERAL)						
P	1701.01	20062007	CS	MATHEMATICS		15		No	No	
P	0401.11	20062007	CS	BIOLOGY - GENERAL		15		No	No	
P	0430.01	20062007	CS	BIOTECHNOLOGY		14		Yes	No	
P	0401.01	20062007	CS	FIELD BIOLOGY		15		No	No	
P	1914.01	20062007	CS	Geology		15		No	No	
P	0401.12	20062007	CS	MARINE BIOLOGY		17		No	No	
P	0403.01	20062007	CS	MICROBIOLOGY		15		No	No	
P	1902.01	20062007	CS	Physics		15		No	No	
T	0958.01	20062007	C	Solid Waste Management Technology	7/1/1981	24		Yes	No	08489
W	2135.00	20062007	C	Environmental Hazardous Materials Technology	7/1/1990	36		Yes	No	03337
				# CONSTRUCTION						
				BUILDING: CONSTRUCTION/CARPENTRY/INSTALLATION						
P	0956.51	20062007	CS	ADVANCED WELDING		15		Yes	No	
P	0956.50	20062007	CS	BASIC WELDING		15		Yes	No	
P	0952.50	20062007	C	Industrial Technology- Woodworking	7/1/1980	29	A	Yes	No	08335
P	0956.50	20062007	C	Welding	7/1/1970	33		Yes	No	02832
T	0952.10	20062007	C	Carpentry	7/1/1970	48		Yes	No	02909
T	0952.12	20062007	C	Carpentry - Adjunct	7/1/1970	21		Yes	No	08479
T	0952.21	20062007	C	Electrical Construction and Maintenance	7/1/1970	48		Yes	No	02910
T	0952.22	20062007	C	Electrical Construction & Maint. Construction Tech	7/1/1970	43	B	Yes	No	08481
T	0952.32	20062007	C	Plumbing: Construction Tech	7/1/1970	22		Yes	No	08484
T	0952.33	20062007	C	Plumbing	7/1/1970	48	B	Yes	No	02911
T	0945.12	20062007	C	Refrig & Air Conditioning Mechanics-Constrctn Tech	7/1/1970	24		Yes	No	08475
T	0945.10	20062007	C	Refrigeration & Air Conditioning Mechanics	7/1/1970	48		Yes	No	02904
T	0946.11	20062007	CS	REFRIGERATION & AIR CONDITIONING SKILL CERTIFICATE		16		Yes	No	
T	0956.41	20062007	C	Sheet Metal Work Apprenticeship	7/1/1970	54		No	No	02915
T	0956.51	20062007	C	Welding, Gas and Electric	7/1/1970	48		Yes	No	02916
T	0956.52	20062007	C	Welding Gas and Electric-Construction Technologies	7/1/1970	22		Yes	No	08487

BUILDING DESIGN: ARCHITECTURE/DRAFTING										
E	0201.02	20062007	CS	Architectural Computer-Aided Design- 3D Modeling		3		Yes	No	
E	0201.00	20062007	C	Architectural Computer Aided Design	7/1/1995	34		Yes	No	08252
E	0201.09	20062007	C	ARCHITECTURAL COMPUTER-AIDED DESIGN-AUTOCAD	7/1/1995	34		Yes	No	08252
E	0201.00	20062007	CS	Architectural Computer-Aided Design- AutoCAD		11		Yes	No	
E	0201.03	20062007	CS	Architectural Computer-Aided Design- MicroStation		12		Yes	No	
E	0201.01	20062007	CS	Architectural Design		12		Yes	No	
E	0201.04	20062007	CS	Architectural Detailing		2		Yes	No	
E	0201.01	20062007	C	Architectural Drafting	7/1/1970	31		Yes	No	02430
E	0201.05	20062007	CS	Architectural Drawing		12		Yes	No	
E	0201.06	20062007	CS	Architectural Geographic Information System/MAPS		6		Yes	No	
E	0201.09	20062007	CS	Architectural Graphics		5		Yes	No	
E	0201.08	20062007	CS	Architectural History		4		Yes	No	
E	0299.01	20062007	CS	Architectural Interiors		6		Yes	No	
E	0299.02	20062007	CS	Architectural Professional Practice I		5		Yes	No	
E	0299.03	20062007	CS	Architectural Professional Practice II		5		Yes	No	
E	0201.07	20062007	CS	Architectural Transportation Planning		6		Yes	No	
E	0953.00	20062007	C	Computer Aided Drafting (CAD)	7/1/1970	30		Yes	No	02447
E	0953.01	20062007	C	Computer Aided Drafting/Design (CADD)	7/1/1996	41		Yes	No	08265
H	0201.00	20062007	C	Architectural Technology	7/1/1949	24		Yes	No	02768
H	0201.01	20062007	C	ARCHITECTURAL TECHNOLOGY	7/1/1949	24		Yes	No	02768
H	0201.01	20062007	CS	Architecture and Technology		17		Yes	No	
H	0925.01	20062007	C	Drafting	7/1/1970	32		Yes	No	02780
H	0925.02	20062007	CS	Drafting - Basic		15		Yes	No	
M	1302.02	20062007	CS	TECHNOLOGY AND INTERIOR DESIGN III		8		Yes	No	
P	0953.01	20062007	CS	ADVANCED DRAFTG-MECH.		15		Yes	No	
P	0201.00	20062007	C	Architecture Technology	7/1/1970	37		Yes	Yes	02814
P	0957.00	20062007	C	Architecture - Construction Technology	7/1/1970	33		Yes	Yes	02833
P	0953.00	20062007	CS	BASIC DRAFTING-MECHANICAL PROGRAM		15		Yes	No	
P	0953.00	20062007	C	Drafting - Mechanical	7/1/1970	32		Yes	No	02829
P	0799.01	20062007	CS	GEOGRAPHIC INFORMATION SYSTEMS (GIS)		16		Yes	No	
S	0953.00	20062007	CS	Drafting		17		Yes	Yes	
T	0201.00	20062007	C	Architectural Technology	7/1/1970	47		Yes	No	08467
T	0201.02	20062007	CS	Computer Aided Drafting		12		Yes	No	
T	0299.00	20062007	CS	DIGITAL DESIGN		17		Yes	No	
T	0299.01	20062007	CS	Historic Preservation		17		Yes	No	
T	2199.02	20062007	CS	MAPPING L.A.@COMMUNITY PLANNING		17		Yes	No	
T	0299.00	20062007	C	Metropolitan Access Planning System-GIS	1/4/2000	30		Yes	No	11956
T	0999.01	20062007	C	Street Maintenance Technology	7/1/1991	30		Yes	No	08488
V	0201.00	20062007	C	Architecture	7/1/1992	30		Yes	Yes	08526
V	2206.11	20062007	CS	CERTIFICATE IN GEOGRAPHIC INFORMATION SYSTEMS GIS		11		Yes	No	
V	0953.00	20062007	C	Mechanical Drafting/Design	7/1/1970	31		Yes	No	02958
ELECTRICAL										
C	0934.01	20062007	C	Electronic Systems	7/1/1970	42		Yes	No	02733
C	0934.00	20062007	C	Electronics - Basic	7/1/1970	30		Yes	No	08228

E	0934.03	20062007	C	Electronics-Computer	7/1/1970	22		Yes	No	13319
E	0934.00	20062007	C	Electronics - Technology	7/1/1970	41		Yes	Yes	02444
E	0934.01	20062007	C	Electronics - Technology I	7/1/1970	22		Yes	No	10723
H	0934.01	20062007	C	Electronic Technician	7/1/1969	32		Yes	No	02781
P	0934.01	20062007	C	Electronics - Analog	7/1/1970	20		Yes	No	10731
P	0934.02	20062007	C	Electronics - Communication	7/1/1970	20		Yes	No	10730
P	0934.03	20062007	C	Electronics - Digital	7/1/1970	20		Yes	No	10729
S	0934.00	20062007	C	Electronics Technology	7/1/1971	16		Yes	Yes	02868
T	0934.01	20062007	CS	BASIC ELECTRIC TRAINEE SKILLS CERTIFICATE		17		Yes	No	
T	0952.25	20062007	C	Electrical Cable Splicer Apprenticeship	7/1/1970	18		No	No	08483
T	0952.26	20062007	C	Electrical Lineman Apprenticeship	7/1/1970	18		No	No	08482
T	0934.01	20062007	C	Electronics Communications	7/1/1970	48		Yes	No	02902
V	0934.01	20062007	C	Electronics Technology - One Year	7/1/1970	22		Yes	No	10757
V	0934.02	20062007	C	Electronics Technology - Two Year	7/1/1970	42		Yes	No	10758
V	0934.20	20062007	C	Industrial Electronics	7/1/1970	42		Yes	No	02956

ENGINEERING

SEE ABOVE

UTILITIES

WATER/LAND CONSERVATION

P	0101.00	20062007	C	Agriculture - General	7/1/1970	39		Yes	Yes	02808
P	0109.00	20062007	C	GARDENING - ADVANCED	7/1/1970	20		Yes	Yes	10726
P	0109.02	20062007	C	Gardening - Advanced	7/1/1970	20		Yes	No	10726
P	0109.01	20062007	CS	Gardening - Basic		10		Yes	No	
P	0109.03	20062007	C	Gardening - Professional	7/1/1971	50		Yes	No	02811
P	0109.12	20062007	C	Landscape Technician - Advanced	7/1/1971	40		Yes	No	10727
T	0958.02	20062007	C	Supply Water Systems Technology	7/1/1981	22		Yes	No	10754
T	0958.03	20062007	C	Wastewater Systems Technology	7/1/1981	21		Yes	No	10755

MATHEMATICS & SCIENCES (GENERAL)

SEE ABOVE

ELECTRICAL

SEE ABOVE

Appendix E

LACCD ASSOCIATE DEGREE PROGRAMS POSSESSING HIGH GREEN CURRICULUM POTENTIAL

College	Program TOP Code	Catalog Year	Degree/Certificate Type	Program Title	State Approval Date	Required Units	LACCD Degree Plan	Occupational Program (Yes/No)	Transfer Program (Yes/No)	State Unique Code
ADVANCED TRANSPORTATION										
AUTOMOTIVE/MECHANIC										
E	0948.00	20062007	AS	Automobile Technology	7/1/1974	39	B	Yes	No	02446
P	0948.00	20062007	AS	Automotive Service Technology	7/1/1970	50	B	Yes	No	02828
T	0948.00	20062007	AS	Automotive and Related Technology	7/1/1970	46	B	Yes	No	02906
T	0947.00	20062007	AS	Diesel and Related Technology	7/1/1970	45	B	Yes	No	02905
T	0999.01	20062007	AA	Street Maintenance Technology	7/1/1991	30	A	Yes	No	08488
ENGINEERING										
C	0924.00	20062007	AA	Engineering and Technology	7/1/1980	48	B	Yes	No	08227
C	0901.00	20062007	AS	Engineering- General	7/1/1955	53	B	No	Yes	08226
E	0924.00	20062007	AS	Engineering Technology	7/1/1970	42	B	Yes	Yes	02443
H	0934.03	20062007	AS	Electronic Engineering Technologist	7/1/1969	46	B	Yes	No	02781
H	0935.00	20062007	AS	Electro-Mechanical Engineering Technologist	7/1/1961	46	B	Yes	No	02782
H	0901.00	20062007	AS	Engineering - General	7/1/1970	56	B	No	Yes	08298
H	0934.00	20062007	AS	Engineering Technology: Electronics Option	7/1/1970	54	B	Yes	Yes	08301
M	0901.00	20062007	AS	Engineering	7/1/1990	51	B	No	Yes	08345
M	0901.01	20062007	AS	Engineering	7/1/1990	42	B	No	No	10711
V	0901.00	20062007	AS	Engineering - General	7/1/1970	22	A	No	Yes	02954
V	0956.00	20062007	AS	Engineering Technology-Industrial Manufacturing Op	7/1/1970	38	B	Yes	Yes	08541
V	0956.01	20062007	AS	Mechanical Engineering Technology	7/1/1992	39	B	Yes	No	08541
W	0901.00	20062007	AA	Engineering, General	7/1/1970	49	B	No	Yes	03312
MANUFACTURING										
H	0925.02	20062007	AS	Mechanical/MFG Option	7/1/1970	55	B	Yes	Yes	08300
T	0956.51	20062007	AS	Welding, Gas and Electric	7/1/1970	48	B	Yes	No	02916
V	0956.00	20062007	AA	Industrial Technology Manufacturing	7/1/1970	38	B	Yes	No	02959
V	0956.30	20062007	AS	Manufacturing Technology - Metal Machining	7/1/1970	33	A	Yes	No	02960
V	0956.31	20062007	AS	Manufacturing Technology - Numerical Control	7/1/1970	37	B	Yes	No	08542
MATHEMATICS & SCIENCES (GENERAL)										

C	1905.00	20062007	AS	Chemistry- General	7/1/1970	68	B	No	Yes	02756
E	1701.00	20062007	AA	Mathematics	4/16/2002	30	B	No	No	12781
E	1701.01	20062007	AS	Mathematics	4/16/2002	42	B	No	No	12782
H	1905.00	20062007	AS	Chemistry	7/1/1970	20	A	No	Yes	02797
H	1701.01	20062007	AS	Mathematics for Computer Science	7/1/1970	22	A	No	Yes	08306
H	1902.00	20062007	AS	Physics	7/1/1970	20	A	No	Yes	02796
M	1701.00	20062007	AA	Mathematics	7/1/1975	18	A	No	No	03355
M	1901.00	20062007	AA	Physical Science	7/1/1975	21	A	No	Yes	03356
S	0401.10	20062007	AA	Biology	7/1/1984	28	A	No	Yes	08442
S	1914.00	20062007	AA	Geology	7/1/1984	20	A	No	Yes	10738
S	1701.01	20062007	AA	Mathematics - Computer Science	7/1/1984	21	A	No	Yes	08450
S	1701.01	20062007	AS	MATHEMATICS - COMPUTER SCIENCE	3/3/1984	38	B	No	No	08450
S	1701.00	20062007	AA	Mathematics - General	7/1/1971	18	A	No	Yes	02882
S	1701.00	20062007	AS	Mathematics - General	7/1/1971	38	B	No	Yes	02882
S	1902.00	20062007	AS	Physics	7/1/1971	51	B	No	Yes	02883
V	0401.10	20062007	AS	Biology	7/1/1987	20	A	No	Yes	02941
V	1905.00	20062007	AS	Chemistry	7/1/1970	40	B	No	Yes	02977
V	1914.01	20062007	AS	Earth Science	7/1/1987	36	B	No	No	08561
V	1914.00	20062007	AS	Geology	7/1/1970	40	B	No	Yes	08560
V	1701.00	20062007	AA	Mathematics	7/1/1970	18	A	No	Yes	02975
V	1902.00	20062007	AS	Physics	7/1/1970	40	B	No	Yes	02976
W	0401.10	20062007	AA	Biology	7/1/1980	38	B	No	Yes	03303
W	1914.00	20062007	AA	Geology	7/1/1985	40	B	No	Yes	08609
W	1905.00	20062007	AA	Chemistry	7/1/1970	45	B	No	Yes	03326
W	1902.00	20062007	AA	Physics	7/1/1970	40	A	No	Yes	03325
				CONSTRUCTION						
				BUILDING: CONSTRUCTION/CARPENTRY/INSTALLATION						
T	0952.11	20062007	AA	Carpentry- Adjunct	7/1/1970	45	B	Yes	No	08479
T	0952.10	20062007	AS	Carpentry	7/1/1970	48	B	Yes	No	02909
T	0952.24	20062007	AA	Electrical Construction & Maint:Construction Tech	7/1/1970	43	B	Yes	No	08481
T	0952.21	20062007	AS	Electrical Construction and Maintenance	7/1/1970	48	B	Yes	No	02910
T	0952.31	20062007	AA	Plumbing: Construction Tech	7/1/1970	45	B	Yes	No	08484
T	0952.30	20062007	AS	Plumbing	7/1/1970	48	B	Yes	No	02911
T	0945.11	20062007	AA	Refrig & Air Conditioning Mechanics-Constrctn Tech	7/1/1970	43	B	Yes	No	08475
T	0945.10	20062007	AS	Refrigeration & Air Conditioning Mechanics	7/1/1970	48	B	Yes	No	02904
				BUILDING DESIGN: ARCHITECTURE/DRAFTING						
C	0201.00	20062007	AA	Architecture	7/1/1970	35	A	Yes	No	02717
E	0201.00	20062007	AA	Architectural Computer Aided Design	7/1/1995	66	B	Yes	Yes	08252
E	0201.03	20062007	AA	ARCHITECTURAL COMPUTER AIDED DESIGN	7/1/1995	66	B	Yes	Yes	08252
E	0201.01	20062007	AA	Architectural Drafting	7/1/1970	63	A	Yes	Yes	02430
E	0201.02	20062007	AA	ARCHITECTURAL DRAFTING	7/1/1970	63	A	Yes	Yes	02430
E	0953.00	20062007	AS	Computer Aided Drafting (CAD)	7/1/1970	32	B	Yes	No	02447
E	0953.01	20062007	AS	Computer Aided Drafting/Design (CADD)	7/1/1996	39	B	Yes	No	08265

H	0201.00	20062007	AS	Architectural Technology	7/1/1949	50	B	Yes	No	02768
H	0925.03	20062007	AS	Drafting Production Design	7/1/1970	42	B	Yes	Yes	02780
P	0957.00	20062007	AS	Architecture - Construction Technology	7/1/1970	45	B	Yes	Yes	02833
P	0953.00	20062007	AA	Drafting - Mechanical	7/1/1970	46	B	Yes	No	02829
S	0953.00	20062007	AS	Drafting	7/1/1971	40	B	Yes	Yes	02869
T	0201.00	20062007	AA	Architectural Technology	7/1/1970	47	B	Yes	No	08467
T	0299.00	20062007	AS	Metropolitan Access Planning System-GIS	1/4/2000	52	A	Yes	No	11956
V	0953.00	20062007	AS	Mechanical Drafting/Design	7/1/1970	39	B	Yes	No	02958
				ELECTRICAL						
C	0934.01	20062007	AS	Electronic Systems	7/1/1970	54	B	Yes	No	02733
E	0934.02	20062007	AS	Electronics - Computer	7/1/1975	40	B	Yes	No	08264
E	0934.00	20062007	AS	Electronics - Technology	7/1/1970	45	B	Yes	Yes	02444
S	0934.00	20062007	AS	Electronics Technology	7/1/1971	36	B	Yes	Yes	02868
T	0934.01	20062007	AS	Electronics Communications	7/1/1970	48	B	Yes	No	02902
V	0934.00	20062007	AS	Electronics	7/1/1970	20	A	Yes	No	02955
V	0934.20	20062007	AS	Industrial Electronics	7/1/1970	37	B	Yes	No	02956
				ENGINEERING						
				SEE ABOVE						
				# UTILITIES						
				WATER/LAND CONSERVATION						
P	0112.00	20062007	AS	Agriculture - Business	7/1/1970	52	B	Yes	No	02813
P	0101.00	20062007	AS	Agriculture - General	7/1/1970	50	B	Yes	Yes	02808
P	0109.04	20062007	AS	Greenhouse and Nursery Industry	7/1/1970	40	B	Yes	No	08309
P	0109.00	20062007	AS	Horticulture - General	7/1/1970	34	A	Yes	Yes	02811
P	0109.10	20062007	AS	Landscape Installation and Maintenance Industry	7/1/1971	47	B	Yes	No	02812
P	0109.11	20062007	AS	Landscape Planning and Design	7/1/1971	50	B	Yes	No	08311
P	0109.13	20062007	AS	LANDSCAPE TECHNICIAN - ADVANCED	7/1/1971	50	B	Yes	No	10727
P	0115.00	20062007	AS	Natural Resources Management	7/1/1980	47	B	Yes	Yes	08314
T	0958.00	20062007	AS	Water Systems Technology	7/1/1981	43	B	Yes	No	02917
W	2135.00	20062007	AA	Environmental Hazardous Materials Technology	7/1/1990	39	B	Yes	No	03337
				MATHEMATICS & SCIENCES (GENERAL)						
				SEE ABOVE						
				ELECTRICAL						
				SEE ABOVE						

Appendix F

CAREER FAIR

The Southern California Coordinators Association
is having a Career Fair for Men and Women

Location:
Electrical Training Institute
6023 S Garfield Ave
City of Commerce, CA 90040
Contact: Jane Templin 323-221-5881
www.laett.com or janet@laett.com

ETI is located on Garfield south of Slauson,
between the 710 and the 5 freeways.
Refer to Thomas guide pages 675 & 676

When:
April 18, 2008
10 am to 1 pm

* Drywall Finishers * Cement Masons * Electricians * Floor Covering * Glaziers * Fire Sprinklers * Insulators & Asbestos Workers * Ironworkers * Operating Engineers * Painters & Allied Trades * Pavement Stripers * Plasterers * Plumbers * Pipefitters * Air Conditioning * Refrigeration Fitters * Roofers * Sheet Metal Workers * Surveyors * Many Others *

The Southern California Coordinators Association have members representing union apprenticeship programs in the building trades covering Southern California. We are holding a career fair to provide valuable information on entering various high pay construction building trades apprenticeship programs. These crafts have excellent pay and benefit packages.

We are equal opportunity organizations