

# **APPENDIX 6**

## **INLAND EMPIRE: Green Economic Potential**

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## INTRODUCTION

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“All of these factors, coupled with the proven progressive attitude of the residents of the two-county area, assure that the San Bernardino-Riverside-Ontario Metropolitan Area will continue to be one of California’s most vigorous growth regions for many years to come.”  
(Bank of America, 1963)<sup>1</sup>

Drawn from a study prepared by the Bank of America in 1963, this remark represents a persistently positive attitude toward the Inland Empire’s resilience in the face of daunting economic challenges. Such optimism, although arguably unwarranted, permeates contemporary initiatives which champion green business development in the region. Bolstered by an early history of innovation, Riverside and San Bernardino counties must refocus their regional advantage and endeavor to establish a more sustainable trajectory.

The roots of the Inland Empire grew from the citrus industry. However, because it lies just east of the strong regions of Los Angeles and San Diego, it has expanded as a more affordable area that can both support and benefit from the economic growth and diversity of the coastal counties. This has led to rapid development, especially through the latter part of the twentieth century. New freeways and housing tracts are multiplying across former citrus orchard land, where cheap real estate and vast desert expanses abound.<sup>2</sup>

Although the current recession has served to curb gratuitous growth, current green initiatives may challenge such development trends and institute a new model for green business as usual. Ultimately, prospects for green innovation in the Inland Empire are unique to the region’s historical, political, cultural and economic climate. The hopefulness that pervades the still bleak scenario in the region also stems from the area’s historic precedent as a boom-bust economy, reeling painfully from recession hits, but then recovering to three times the national growth during periods of progress.

The Inland Empire is a regional title frequently associated with the San Bernardino-Riverside-Ontario Metropolitan Area. In this report, Inland Empire is synonymous to the combined Riverside and San Bernardino counties. In an effort to establish a backdrop for green economic innovation in the Inland Empire, this report provides an overview of the region’s history, industries, resources, government and institutional framework, as well as extant green prospects and potential future developments, which reconstruct mid-century optimism.

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<sup>1</sup> Bank of America, 1963: 14.

<sup>2</sup> Alamillo, 2006:4.

Figure 1: Map of the Inland Empire



Source: American Factfinder

## **GEOGRAPHY & RESOURCES**

### *CLIMATE AND WATER*

There are multiple climates within San Bernardino and Riverside Counties, but the vast majority of the area is semi-arid and arid, extending eastward into the Mojave Desert. These climates are characterized by high diurnal temperature swings, low humidity, hot summers and relatively cold winters. The lack of water makes irrigation and water rights important for industries in the region, especially in agriculture.

In this semi-arid climate, water is a precious good. Historically developed opportunistically, southern California now faces serious issues with the management of its water systems. In 1992, the state congress voted on laws that made water a commodity. This created a bias toward housing and factories in zoning and land use decisions, which use less water than agriculture.<sup>3</sup>

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<sup>3</sup> Pincetl, 1999: xvii.

### *AIR*

The Inland Empire is one of the United States' most heavily polluted areas. Many of the area's leading industries, in logistics and manufacturing, are heavy polluters. Furthermore, the geography of the climate traps polluted air from the coastal counties as well, accelerating the Inland Empire's air quality problem. One drawback for new business development in these industries is that heavy polluters would be required to pay large amounts of money for emissions controls, which could adversely affect their contributions to the economy.<sup>4</sup>

### *LAND USE*

The land was originally developed for the citrus industry, but in the twentieth century, fiscal zoning—which encouraged suburban sprawl—proliferated. Urban areas lie primarily in the southwest corner of the two-county region, constituting the Riverside-San Bernardino-Ontario Metropolitan Area, and stretch east to Coachella Valley in central Riverside County. Urban areas are largely comprised of extremely low-density residential development as well as industrial and manufacturing space. Modest tracts of agricultural land span developed areas. In part due to extreme geography, the majority of the region remains unincorporated, subject only to county jurisdiction. Native American lands are scattered throughout Riverside County, particularly in Coachella Valley and the San Geronio Pass, as well as in the easternmost corners of the two counties, where California meets Arizona.

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<sup>4</sup> Kolk, 1981: 7.

## DEMOGRAPHICS

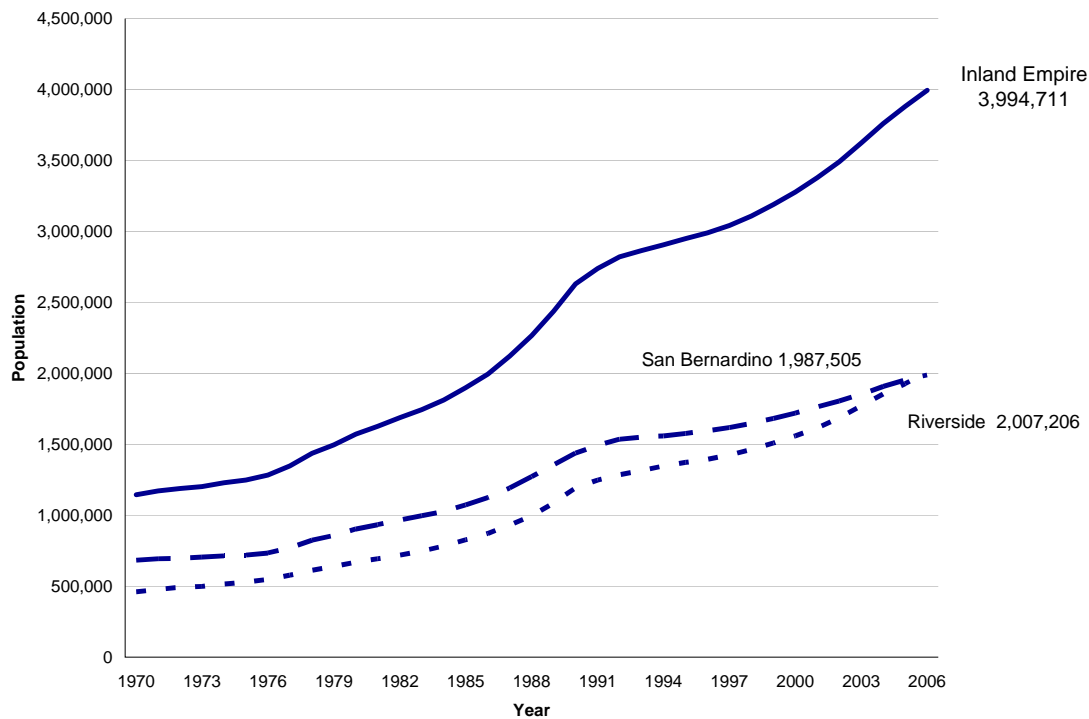
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### POPULATION

Today, the Inland Empire has a population of nearly four million. The two-county region has burgeoned in recent years and both counties have experienced constant population growth since the late 1960s.

As shown in Figure 2 below, in 2006, Riverside County barely outgrew San Bernardino County with a population of just over two million. As a whole, the population trajectory in the two-county region has skyrocketed since 1997. With unprecedented growth rates, the Inland Empire is expected to house nearly five million people by 2015.<sup>5</sup>

**Figure 2: Inland Empire Population Growth, 1970-2006**



Source: Bureau of Economic Accounts CA1-3, Population

It should be noted, however, that high population growth rates primarily stem from immigration to the region, rather than natural growth, which is relatively minimal. For instance, according to the US Census Bureau, the region (Riverside MSA) received a total of 78,154 net migrants in 2000 (610,272 National In Flow – 532,118 Out Flow).

<sup>5</sup> *California's Inland Empire: 2015*. Public Policy Institute of California, [www.ppic.org](http://www.ppic.org), April 2008

### **RACE AND ETHNICITY**

In terms of race and ethnicity, Table 1 below shows that the population in the Inland Empire is predominantly Hispanic, comprising almost 44% of the regional population. With regards to race, 40% of the population identifies as white. Thus the two major racial/ethnic identifiers in the region are white non-Hispanic and Hispanic.

**Table 1: Population by Race and Ethnicity, 2005-2007 (\*)**

	<b>Riverside County</b>		<b>San Bernardino County</b>		<b>Inland Empire</b>		<b>California</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
<b>White</b>	873,342	44%	737,074	37%	1,610,416	40%	15,593,822	43%
<b>Black</b>	115,808	6%	172,498	9%	288,306	7%	2,205,637	6%
<b>Asian</b>	98,657	5%	112,433	6%	211,090	5%	4,369,567	12%
<b>Other</b>	71,519	4%	54,368	3%	125,887	3%	1,140,906	3%
<b>Hispanic</b>	843,337	42%	906,472	46%	1,749,809	44%	12,954,535	36%
<b>Total</b>	<b>2,002,663</b>	<b>100%</b>	<b>1,982,845</b>	<b>100%</b>	<b>3,985,508</b>	<b>100%</b>	<b>36,264,467</b>	<b>100%</b>

(\*) Represents the average characteristics over the 3-year period of time (2005-2007)

Other: American Indian and Alaska Native, NHOPI, some other race, 2 or more races

Source: US Census Bureau 2005-2007 American Community Survey

### **EDUCATIONAL ATTAINMENT**

One of the Inland Empire's greatest challenges is evidenced by its low educational attainment. In 2000, a fifty percent had only a high school diploma, or less. Table 2 below breaks down the levels of education for adults over the age of twenty-five.

**Table 2: Adult (25+) Inland Empire Educational Attainment, 1990-2000**

	<b>1990</b>	<b>2000</b>	<b>% Change</b>
<b>Less than 9th grade</b>	9.5%	10.5%	10.5%
<b>9th-12th grade, no diploma</b>	15.8%	14.9%	-5.7%
<b>High school graduate (incl. equivalency)</b>	26.7%	24.9%	-6.7%
<b>Some college, no degree</b>	25.3%	26.2%	3.6%
<b>Associate degree</b>	8.0%	7.2%	-10.0%
<b>Bachelor's degree</b>	9.7%	10.6%	9.3%
<b>Graduate or professional degree</b>	5.0%	5.7%	14.0%

Source: US Census Bureau 1990-2000

## ECONOMIC HISTORY

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Prior to the arrival of oranges and railroads in the 1870s, the area that now comprises the Inland Empire was only sparsely inhabited, mainly by Native Americans. The arid climate, without means for irrigation, was difficult to settle, and therefore left undeveloped by the Spanish and Mexicans who controlled the area.

### **SETTLEMENT & INCORPORATION**

The first major influx of settlers to the region was in the 1870s and 1880s, when a southern California land boom drew speculators from all over the United States and beyond.<sup>6</sup> The Desert Land Act, passed in 1877, encouraged people to develop semi-arid and desert land, which spurred growth, especially as people began to sprawl east from Los Angeles, and move to inland desert areas. To purchase, they needed to provide proof of irrigation, which was often forged because water was scarce. This established the problem of water management in southern California even at the outset of its development.<sup>7</sup> Despite the government's intent to encourage homesteading, much of the land in the area was parceled out in large swaths. Though the government established a system selling small plots, large scale land ownership was made possible because of the Spanish and Mexican land grants left over from the treaties established U.S. ownership and occupation of the state.<sup>8</sup> This meant that much of the land was privately owned and enabled large sales.

The Wright Irrigation Act of 1887 fostered private water companies, which developed the scarce resource opportunistically, with little regard for the effects of redirecting water. Competing private companies created an economic climate favorable to large land owners, who could pay for mass quantities of water, while the infrastructure to support small scale agricultural enterprises remained underdeveloped. The Newlands Reclamation Act of 1902 was another success for large scale farming. Although private companies had supplied water until then, irrigation required a more integrated effort, and the federal government laid plans for a series of dams and irrigation projects in the west.<sup>9</sup> Following this Act, a series of water projects, including the Central Valley Plan, State Water Project and later acquisition of rights to the Colorado River water from the Boulder Dam were instrumental in the settlement of the area throughout the twentieth century.<sup>10</sup>

As the Inland Empire laid out its plans, zoning standards in California encouraged growth of suburban development, which began to take effect in full force after the Second World War. Previous to that, between 1920 and 1930, two million people came into California, attempting to escape the dustbowl in the Midwest and Southeast, as well as the economic depression in both North and Central America. These migrants followed harvest times up through the state, looking for work. Hundreds of thousands came from the Southeast, along Route 66.<sup>11</sup> The agricultural industries of the Inland Empire could not put to work all the jobless during the Depression, and it wasn't until the onset of the aerospace industry, developing during Second World War, and again during the Korean War, that the economy again began to turn around.

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<sup>6</sup> Alamillo, 2006: 12 .

<sup>7</sup> Pincetl, 1999: 51.

<sup>8</sup> *ibid*, 77.

<sup>9</sup> *ibid*, xvii

<sup>10</sup> *ibid*, xvi

<sup>11</sup> *ibid*, 83



## **AGRICULTURAL ECONOMY**

California's economic and political structure has been shaped to support large-scale agriculture, which primarily plays out in the inland areas. A comparison with the United States shows that by the end of the twentieth century, a significant percent of large scale agriculture industry was present in California.<sup>12</sup> The Central and San Joaquin Valleys account for much of the agriculture in California, but the Inland Empire also maintains a large hold on the citrus industry. This industry, alongside real estate, motion pictures, oil and auto industries has played an important role in California's economy.<sup>13</sup>

The citrus industry began with the introduction of navel oranges to the southern California climate, where they thrived. The presence of the railroad also had an important influence in connecting the region to East Coast markets.<sup>14</sup> An early example of cooperative business strategies within the industry in that region is the California Fruit Growers Exchange (CFGE), at that time the largest marketing cooperative in the world. It formed when citrus growers in southern California pooled together to ship their fruit. They did this in an attempt to avoid exorbitant fees from shippers. It was an attempt to reduce risk, stabilize production and increase profit.<sup>15</sup> The CFGE began in Riverside among orange growers, but quickly spread to multiple citrus fruits in the region.<sup>16</sup> This collective later adopted the name Sunkist Growers, Inc. It has been using this trademarked name since 1907.<sup>17</sup>

As the citrus industry developed, it became increasingly industrial in nature. Advances in two areas had lasting impacts both within the region and around the United States. The first dealt with chemical research and development for growing efficiencies. Luther Burbank and the Citrus Experiment Station at Burbank innovated to create better oranges, and the research here prompted the development and use of pesticides for crops, which proliferated in the farming industries across the United States.<sup>18</sup> Later protests implicated Sunkist as part of this "evil Green Revolution."<sup>19</sup> Initial pesticide use pushed agriculture deeper into industrialization as it moved away from organically based fertilizers and toward petroleum-based fertilizers and pesticides like hydrocyanic acid.<sup>20</sup>

Other major developments within the citrus industry were in worker treatment. The Industrial Relations Department (IRD) was organized in 1920 to provide workers non-salaried benefits like housing, recreation, medical care and schools.<sup>21</sup> These benefits were initiated by a desire of paternalistic ranches to control the lives of their workers and create better habits.<sup>22</sup> It was widely accepted that single men, especially Mexicans, were less likely to be productive, and that they needed to be "domesticated." Therefore, ranches encouraged the hiring of married men, and provided family housing.<sup>23</sup> This model disseminated the structure of the company town throughout the area.

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<sup>12</sup> 30% of cotton farms, 41% of dairies, 53% of poultry farms, 60% of truck farms were in California. Pincetl, 51

<sup>13</sup> *ibid*, 3

<sup>14</sup> Alamillo, 17

<sup>15</sup> *ibid*, 19

<sup>16</sup> Sackman, 2005: 86.

<sup>17</sup> Alamillo, 22

<sup>18</sup> Sackman, 76

<sup>19</sup> *ibid*, 81

<sup>20</sup> Sackman, 77

<sup>21</sup> Alamillo, 25

<sup>22</sup> *ibid*, 26

<sup>23</sup> *ibid*, 27

## **INDUSTRIALIZATION**

Large scale agriculture led to industrialized landscapes, factories in the field and an approach that was referred to as the business of oranges.<sup>24</sup> As the citrus production developed and industrialized, zoning policies also began to incentivize the takeover of former citrus orchard land for suburban housing development tracts, housing the burgeoning Los Angeles area population.

According to the SourcePoint report by Marney Cox, “physical resources and fertile soils in the Riverside area have historically attracted basic industries, as has its proximity to other major metropolitan areas that provide markets for goods produced.”<sup>25</sup> It was this proximity that drew in the home building industry. Home building in southern California involved laying out subdivisions and linking them with industrial centers.<sup>26</sup> In this method, Riverside and San Bernardino were prime counties for development, because they could set up basic industry that would support Los Angeles and San Diego at a lower price than if the industries were housed within those cities. In the 1930s, the Federal Housing Administration (FHA) further encouraged suburban development by subsidizing suburban tract houses.<sup>27</sup>

Although the two counties operate relatively interdependently as the Inland Empire, there are some key differences between their industry make up. San Bernardino’s economy has historically focused on manufacturing, while Riverside’s primary industry has been agriculture.<sup>28</sup> However, both were affected by the influx of suburban subdivisions used to support the growing L.A. population. Kaiser Steel was once a major employer in the region, particularly in San Bernardino County. The Fontana plant had 5,500 workers in 1977. In that year, Kaiser made up 11% of total employment in region, 12% of total county income and 14% of total county input.<sup>29</sup> In 1981, Kaiser was the largest industry in San Bernardino County. But as international competition increased, even the cheap Inland Empire land was no match for the low cost of labor overseas and Kaiser collapsed, leaving a shaking economy to deal with the loss.

Following the recession of the 1970s, the unprecedented boom of the 1980s gave hope back to the residents and employers of the Inland Empire. Riverside and San Bernardino counties increased its population rapidly, even at higher rates than Southern California.<sup>30</sup> The construction industry doubled in size, because of house building as well as industry expansion in other sectors. Services increased as well.<sup>31</sup> Perhaps the major reason for economic expansion and population increase in the 1980s was a dramatic increase in employment, as the Inland Empire became a support economy for the Los Angeles region. Manufacturing growth rates were higher as well, which describe a shift eastward of the manufacturing region of southern California.<sup>32</sup> Los Angeles County lost manufacturing jobs, and Orange and San Diego counties decreased in manufacturing growth rate, while Riverside and San Bernardino counties increased their manufacturing operations.

By the end of the 1980s, Riverside-San Bernardino were hosting many support industries, as well as much of the workforce, for Los Angeles and San Diego. Many of the residents commuted (and still

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<sup>24</sup> Sackman, 77

<sup>25</sup> Marney Cox, 1989.

<sup>26</sup> Pincetl, 124

<sup>27</sup> *ibid*, 122

<sup>28</sup> Kolk, 1-2

<sup>29</sup> *ibid*, 1

<sup>30</sup> Riverside increased most rapidly, but both counties led the state. Cox

<sup>31</sup> Cox

<sup>32</sup> *ibid*.

commute) to L.A. for work, as the employment base was, and still is, smaller than the labor force population. Today, the strong industries in the area are industrial: manufacturing, logistics and energy production.

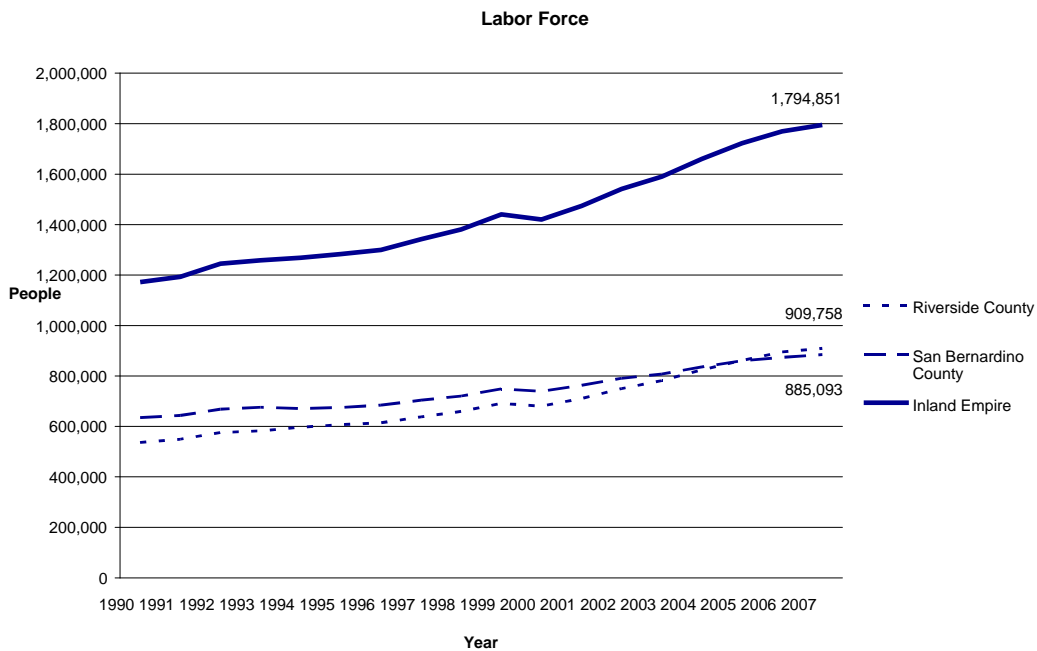
## CURRENT ECONOMIC STRUCTURE

### ECONOMIC INDICATORS

#### LABOR MARKET

The Inland Empire’s labor force has steadily increased in the new millennium, and currently consists of a mix of white collar, blue collar and service sector occupations.<sup>33</sup> According to the Bureau of Statistics, the 2007 labor force in the region totaled nearly two million people. The current economic conditions have no doubt decreased this figure substantially, as manufacturing and construction jobs dwindle.

**Figure 3: Inland Empire Labor Force, 1990-2007**



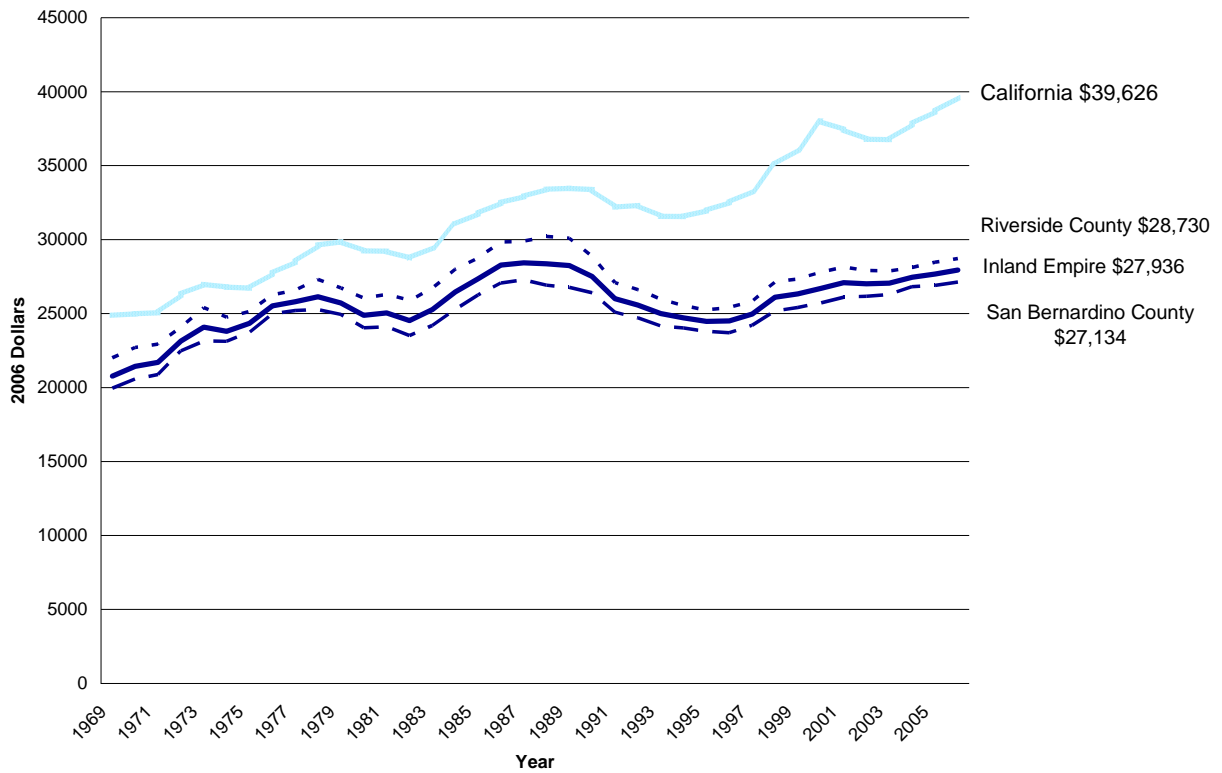
Source: Bureau of Labor Statistics

#### INCOME

The Inland Empire’s per capita income has long been much lower than the California average. Additionally, it has seen a much slower climb over the past thirty-five years. As of 2006, the region’s per capita income was just 70.4% of California’s. Riverside County has a slightly higher per capita income than San Bernardino County.

<sup>33</sup> *ibid*, 18

**Figure 4: Per Capita Income in the Inland Empire and California, 1969-2006 (in \$2006)**



Source: Bureau of Labor Statistics

*POVERTY AND UNEMPLOYMENT*

Poverty rates have crept up in the latter part of the twentieth century. Table 3 shows that in 1989, the Inland Empire’s poverty rates matched those of California overall, near 12%, while by 1999, the Inland Empire had increased to 15% and California also increased, but to only 14%.

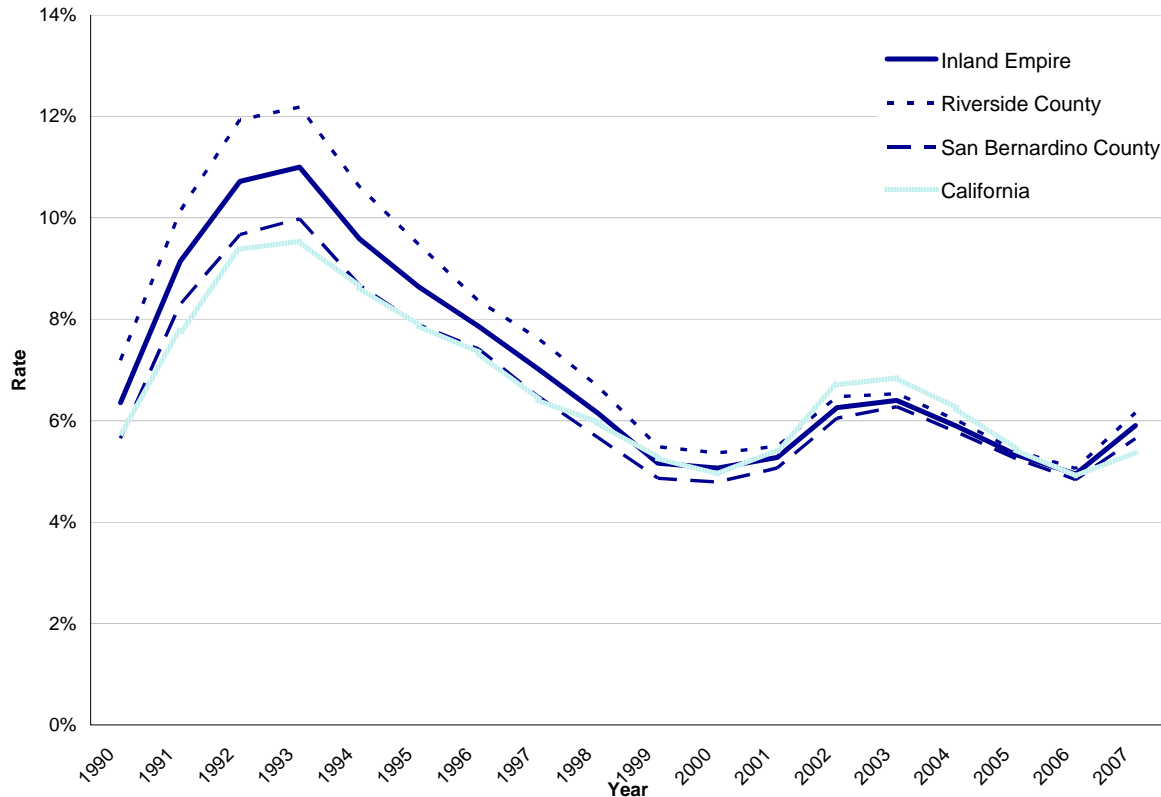
**Table 3: Poverty Rates, 1989-1999**

	<b>1989</b> <b>Poverty Rate</b>	<b>1999</b> <b>Poverty Rate</b>
<b>Riverside County</b>	11.5%	14.2%
<b>San Bernardino County</b>	12.7%	15.8%
<b>Inland Empire</b>	12.2%	15.0%
<b>California</b>	12.5%	14.2%

Source: US Census 1990, 2000

Despite lower per capita income and recent low population growth rates, San Bernardino County has historically had a lower unemployment rate than Riverside County. Over the past ten years, combined regional rates have started to converge with statewide rates. In 2007, California’s unemployment rate was 5.4% while the Inland Empire had an unemployment rate of 5.9%.

**Figure 5: Unemployment Rate, 1990-2007**



Source: Bureau of Labor Statistics

In spite of the rise in income levels and fall in unemployment rates in the Inland Empire over the past fifteen years, U.S. Census data indicates the poverty rates for both counties have increased. Significantly, approximately 25% of the population of Riverside and San Bernardino counties has below a high school education. Only 5% of Inland Empire residents have graduate or professional degrees. These largely low education levels result in a local workforce that is predominantly low-skilled and subsequently low-paid.<sup>34</sup>

**PREDOMINANT INDUSTRIES**

The Inland Empire currently has over 1.1 million square feet of speculative office space, and a regional capacity of about 30 million. The Inland Empire Economic Partnership (IEEP) praises the strong connection between universities and industries in the area as a driver for innovation.

<sup>34</sup> *Green Valley Initiative Comprehensive Economic Development Strategy*, 24. See Table 4, p.6.

### *DEVELOPMENT & CONSTRUCTION*

The construction industry has been the staple industry of the Inland Empire as it has grown to house bedroom communities for Los Angeles. Water rights and the advantage of cheap land near Los Angeles have pushed the growth of suburban development. However, the current situation of the construction industry does not look good. It is the hardest hit of all industries, decreasing by 32% in winter 2009. The remaining 90,000 jobs are expected to rapidly dwindle as ongoing construction projects wrap up. Predictions estimate that the industry will not bounce back until at least 2011, if not 2012.<sup>35</sup>

### *MANUFACTURING & LOGISTICS*

Because the Inland Empire operates in many ways as a support system for the Los Angeles region, both the manufacturing and logistics industries, which include the production, transportation and storage of goods, are important to the area economy. Proximity to the Port of Los Angeles, combined with low land costs, has attracted all areas of manufacturing and logistics, including trucking, rail and air infrastructure, as well as manufacturing, warehouse and distribution centers. Two major players are Catellus Development Corporation and ProLogis, both of whom have built a huge number of distribution and manufacturing facilities in the area.

Many Fortune 500 companies have set up operations here as well, due to the relatively inexpensive overhead costs and fiscal zoning. The IEEP highlights such Fortune 500 companies as Wal-Mart, Home Depot, Target, Costco Wholesale, Walgreens, United Parcel Service, Lowe's, FedEx, Anheuser-Busch, Staples, Kohl's, Toys "R" Us, Black & Decker, Fisher Scientific International, and Big Lots and Ross Stores.<sup>36</sup> The leading trucking companies in the Southern California, JB Hunt Transport, Inc., Swift Transportation, Yellow Freight Systems, Roadway Express, UPS and Federal Express, operate throughout the Inland Empire, and there are also four cargo-focused airports to alleviate pressure from Los Angeles International Airport.<sup>37</sup>

### *AEROSPACE & DEFENSE*

This industry has a long history in the Inland Empire, beginning with testing and manufacturing as early as the Second World War. Currently, the aerospace industry in the area includes manufacturers, testers, suppliers of aircraft parts, weapons engineering centers and electronics developers. As of 2004, the enterprise was still growing, at a 6% growth rate in Riverside and a 25% growth rate in San Bernardino. Major companies located within the two county area include Kelly Space & Technology Inc, Goodrich Corp., The Deutsch Co. Electronic Component Division, Gentex Western Operations, GE Aircraft Engines, JCM Engineering and Bourns, Inc.<sup>38</sup> The IEEP attributes the strong aerospace industry to the deep talent pool of the area's local universities, and cites innovative industry crossovers in areas such as the transfer of piezoelectric technologies to aircraft wings.<sup>39</sup>

### *FILM*

The region bills itself as "Hollywood's largest backlot," because of all the opportune landscape often used in Hollywood films.<sup>40</sup> Indeed, the area's 27,000 square miles includes the "world in a nutshell ..." with look-a-like locations for the Pacific Ocean (Salton Sea), Middle Eastern Sand Dunes, Northwest

<sup>35</sup> "Inland Empire Economic Report," San Bernardino, CA: Inland Empire Economic Partnership, January 2009

<sup>36</sup> IEEP, "Logistics" [http://www.ieep.com/ieep-files/10\\_industry.pdf](http://www.ieep.com/ieep-files/10_industry.pdf), 2005

<sup>37</sup> *ibid.*

<sup>38</sup> IEEP, "Defense/Aerospace" [http://www.ieep.com/ieep-files/9\\_industry.pdf](http://www.ieep.com/ieep-files/9_industry.pdf), 2004

<sup>39</sup> IEEP, "Defense/Aerospace"

<sup>40</sup> IEEP, "Film" [http://www.ieep.com/html/industries.php?industry\\_id=5](http://www.ieep.com/html/industries.php?industry_id=5)

forests, New England towns, Western towns, Midwestern farms, French vineyards, Arizona deserts, mines and lakes.<sup>41</sup> Though this industry is not as large as others, it does bring an economic boost to the region, and it certainly attracts public attention as a way to identify with Hollywood.

#### *HIGH TECH*

The high tech industry also benefits from university links. Leading high tech companies located within the region include Alcoria, Apex Digital Inc., AVID, Business Engine Software, Environmental Systems Research Institute, I/O Software, Luminex, Robinson Software, and Surado Solutions, Inc.<sup>42</sup> The IEEP cites fastest job growth in areas relating to computer software engineering and network systems in both Riverside and San Bernardino counties. The region is anxious to attract business, green or not. So despite all the talk of green, the economics of the matter win out. The economic development agencies of the region promote any business that could lead to new jobs. According to one leader in the business, "Right now the county is looking for any businesses that we can get. If it's a green business then all the better. It's more along the lines of them coming here, Green Valley Initiative is certainly driving it to an extent, but as far as I know there isn't any real focus on attracting green jobs to the area. Our economic development efforts right now are just focused on making sure that the vacant buildings get filled."

#### *HEALTH CARE*

Health care services act as a huge employer in the area, with a strong connection to the Loma Linda University, located in Redlands, CA. Palm Desert, located in the Coachella Valley, is also working to distinguish itself as one of the top health centers of the United States. Its hospital is currently ranked fifth in the country.

#### *ENERGY PRODUCTION*

The vast desert regions in the Inland Empire have provided ample space for energy production, which now brings opportunity for green change with solar powered plants like that of BrightSource Energy, located in San Bernardino County.<sup>43</sup> With sunshine to spare, the Inland Empire is currently seeing significant expansion in the alternative energy industry. Existing alternative energy generation systems include the Kramer Junction Solar Electric Generating System (SEGS), the San Geronio Pass Wind Farm, and the Inland Empire Utility Agency's anaerobic digester. Southern California Edison is simultaneously sponsoring a project that "aims to place 250 megawatts of photovoltaic panels on 65 million square feet of unused commercial rooftops," the equivalent of 1,100 football fields according to Governor Arnold Schwarzenegger.<sup>44</sup>

#### *INDUSTRY DATA*

According to shift share analysis for 2000-2008, competitive industries fall within the surprisingly generous bounds of construction, trade, services, health care, education, engineering, electronics, logistics, hospitality as well as finance, insurance and real estate. In most instances, location quotients are correspondingly high for competitive industries, indicating disproportionately high representation in comparison to California. Industries with opportunity and weak opportunity for the same period relate to employment in mining, animal production, healthcare, hospitality and the arts, including motion pictures. Location quotients are high for opportunity industries within the realm of hospitality,

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<sup>41</sup> *ibid.*

<sup>42</sup> IEEP, "High Tech," [http://www.ieep.com/ieep-files/6\\_industry.pdf](http://www.ieep.com/ieep-files/6_industry.pdf)

<sup>43</sup> California Energy Commission, [www.energy.ca.gov/siting/solar/](http://www.energy.ca.gov/siting/solar/)

<sup>44</sup> David Ehrlich, "California Dreamin' of Miles of Solar," Cleantech Group LLC, March 28, 2008. <http://cleantech.com/news/2637/california-dreamin-of-miles-of-solar>

healthcare and animal production, though markedly low for motion pictures. It is important to note that although these trajectories seem promising, they come in the midst of regional growth and do not take into account the current recession and its dire effect on the Inland Empire economy.

### ***SHIFT-SHARE ANALYSIS***

Before addressing specific details of the green economy in the Inland Empire, it is important to establish a general understanding of the regional economy more broadly. In order to do so, this section resorts to two instruments widely used in regional economic analysis: location quotients and shift-share analysis.

- *Location Quotient* (LQ). This report calculated location quotients for all economic sectors in order to determine whether or not the Inland Empire has a relatively greater ( $LQ > 1$ ) or lesser ( $LQ < 1$ ) concentration of employment in that sector than California averages. Although LQ are useful for showing the sectors in which the region specializes, they do not explain the sources of change over time. They do not describe either how the performance of the regional economy differs from that of the state. Shift-share analysis indicators address these issues better.
- *Shift-Share Analysis* is a technique used in regional economics to measure the performance of a region compared to a larger geographic entity (state or nation, for instance). This section compares the performance of the regional economy with that of California. The shift-share analysis featured in Table 5 below decomposes changes in employment levels in three categories in order to identify whether the sources of employment growth or decline in the region are specific to the state's overall employment growth trend (Economic Growth Factor), the sector performance (Proportional Shift), or the region's competitiveness (Differential Shift). Because sector effects and California growth rate are subtracted, the Differential Shift (DS) gives us a measure of the share of employment growth that is specific to the region's competitive advantage. The higher the DS, the more competitive is the region in that specific sector.

Location quotients (LQs) and Differential Shifts (DS) are therefore indicators of the specialization and competitiveness, respectively, of the region in specific economic sectors (2-digit NAICS industries) or sub-sectors (3-digit NAICS industries).

Table 4 below provides a specific breakdown of the various industries in the Inland Empire at the 2-digit NAICS industry sectors. Industry growth and decline in employment levels will give us a broad picture of Inland Empire economy and will provide hints about economic sectors and industries that could offer competitive advantages in the emerging green economy.

In 2008, the largest providers of employment in the Inland Empire were Retail Trade (170,681 jobs), Accommodation and Food Services (116,417), Health Care and Social Assistance (114,276), and Manufacturing (110,361). Among the economic sectors that created more jobs in the region, five stand out: Retail Trade (with 70,481 more jobs in 2008 than in 1990), Administrative and Waste Services (+57,182), Health Care and Social Assistance (+56,392), Accommodation and Food Services (+50,056), and Transportation and Warehousing (+44,048). The only sector that lost jobs in that period of time is Agriculture (6,704 jobs less than in 1990) and Mining (-168).



**Table 4: Inland Empire Economic Structure: Location Quotients and Shift-Share Analysis**

Industry Title (2-digit NAICS)	Inland Empire Employment			Inland Empire Location Quotient			California Employment			Shift-Share 1990-2000				Shift-Share 2000-2008			
	1990	2000	2008	1990	2000	2008	1990	2000	2008	Econ. Growth Factor	Prop. Shift	Differential Shift/Competitive Component	Job Growth	Econ. Growth Factor	Prop. Shift	Differential Shift/Competitive Component	Job Growth
	11 Agriculture, forestry, fishing and hunting	22,116	20,340	15,412	1.45	0.97	0.63	280,936	319,020	306,727	11.6%	1.9%	-21.6%	-8.0%	5.7%	-9.6%	-20.4%
21 Mining, quarrying, and oil and gas extraction	1,423	1,294	1,255	0.70	0.89	0.61	37,455	22,025	25,678	11.6%	-52.8%	32.1%	-9.1%	5.7%	10.9%	-19.6%	-2.99%
22 Utilities	4,568	4,458	5,293	1.26	1.19	1.13	66,502	56,791	58,584	11.6%	-26.2%	12.2%	-2.4%	5.7%	-2.6%	15.6%	18.73%
23 Construction	68,392	74,576	95,590	1.82	1.66	1.50	692,291	682,072	799,846	11.6%	-13.1%	10.5%	9.0%	5.7%	11.6%	10.9%	28.18%
31-33 Manufacturing	82,678	118,223	110,361	0.74	0.98	0.97	2,059,262	1,830,809	1,423,273	11.6%	-22.7%	54.1%	43.0%	5.7%	-28.0%	15.6%	-6.65%
42 Wholesale trade	26,553	36,357	55,899	0.79	0.87	0.99	618,668	636,648	709,499	11.6%	-8.7%	34.0%	36.9%	5.7%	5.7%	42.3%	53.75%
44-45 Retail trade	100,200	125,230	170,681	1.23	1.25	1.29	1,495,330	1,527,619	1,650,261	11.6%	-9.5%	22.8%	25.0%	5.7%	2.3%	28.3%	36.29%
48-49 Transportation and warehousing	16,801	38,837	60,850	0.93	1.35	1.77	330,565	438,163	429,401	11.6%	20.9%	98.6%	131.2%	5.7%	-7.7%	58.7%	56.68%
51 Information	15,383	12,558	15,506	0.69	0.37	0.42	412,306	519,849	463,001	11.6%	14.5%	-44.4%	-18.4%	5.7%	-16.7%	34.4%	23.48%
52 Finance and insurance	21,721	21,341	28,547	0.65	0.61	0.61	617,510	532,039	584,404	11.6%	-25.5%	12.1%	-1.7%	5.7%	4.1%	23.9%	33.77%
53 Real estate and rental and leasing	11,994	14,142	19,577	0.85	0.83	0.89	259,926	259,876	274,938	11.6%	-11.6%	17.9%	17.9%	5.7%	0.1%	32.6%	38.43%
54 Professional and technical services	24,918	22,119	42,220	0.62	0.37	0.49	733,850	918,781	1,079,218	11.6%	13.6%	-36.4%	-11.2%	5.7%	11.7%	73.4%	90.88%
55 Management of companies	865	10,170	9,374	0.34	0.47	0.57	46,728	329,758	207,230	11.6%	594.1%	470.0%	1075.7%	5.7%	-42.9%	29.3%	-7.82%
56 Administrative and waste services	29,693	62,043	86,875	0.86	0.99	1.15	636,334	950,818	949,066	11.6%	37.8%	59.5%	108.9%	5.7%	-5.9%	40.2%	40.02%
61 Educational services	8,391	9,348	13,415	0.91	0.70	0.61	169,118	202,073	273,063	11.6%	7.9%	-8.1%	11.4%	5.7%	29.4%	8.4%	43.50%
62 Health care and social assistance	57,885	91,076	114,276	1.16	1.20	1.03	916,984	1,150,609	1,394,541	11.6%	13.8%	31.9%	57.3%	5.7%	15.5%	4.3%	25.47%
71 Arts, entertainment, and recreation	13,653	20,803	17,965	1.24	1.46	0.92	202,532	216,414	243,156	11.6%	-4.8%	45.5%	52.4%	5.7%	6.6%	-26.0%	-13.65%
72 Accommodation and food services	66,361	86,725	116,417	1.29	1.21	1.13	942,753	1,086,367	1,293,794	11.6%	3.6%	15.5%	30.7%	5.7%	13.4%	15.1%	34.24%
81 Other services, except public administration	22,851	36,276	51,804	0.93	1.00	0.90	451,706	554,226	723,092	11.6%	11.1%	36.1%	58.7%	5.7%	24.8%	12.3%	42.80%
99 Unclassified	N/A	N/A	4,491	N/A	N/A	0.81			69,714	11.6%	N/A	N/A	N/A	5.7%	N/A	N/A	N/A
Total, all industries	597,038	806,134	1,035,809	1.00	1.00	1.00	10,980,978	12,257,882	12,958,485	11.6%	0.0%	23.4%	35.0%	5.7%	0.0%	22.8%	28.49%

Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2008. Calculations by UC Berkeley Center for Community Innovation

**Table 5: Top 5 Economic Sectors in the Inland Empire (2-digit NAICS), 1990-2008**

Industry Title (2-digit NAICS)	Inland Empire Employment			Location Quotient			Inland Empire		California Employment			Shift-Share 1990-2000				Shift-Share 2000-2008			
	1990	2000	2008	1990	2000	2008	Emp. Change (90-08)	% Emp. Change (90-08)	1990	2000	2008	Econ. Growth Factor	Prop. Shift	Differential Shift/Competitive Component	Job Growth	Econ. Growth Factor	Prop. Shift	Differential Shift/Competitive Component	Job Growth
<i>Top 5 Sectors by Total Employment in 2008</i>																			
44-45 Retail trade	100,200	125,230	170,681	1.23	1.25	1.29	70,481	70.3%	1,495,330	1,527,619	1,650,261	11.6%	-9.5%	22.8%	25.0%	5.7%	2.3%	28.3%	36.3%
72 Accommodation and food services	66,361	86,725	116,417	1.29	1.21	1.13	50,056	75.4%	942,753	1,086,367	1,293,794	11.6%	3.6%	15.5%	30.7%	5.7%	13.4%	15.1%	34.2%
62 Health care and social assistance	57,885	91,076	114,276	1.16	1.20	1.03	56,392	97.4%	916,984	1,150,609	1,394,541	11.6%	13.8%	31.9%	57.3%	5.7%	15.5%	4.3%	25.5%
31-33 Manufacturing	82,678	118,223	110,361	0.74	0.98	0.97	27,682	33.5%	2,059,262	1,830,809	1,423,273	11.6%	-22.7%	54.1%	43.0%	5.7%	-28.0%	15.6%	-6.7%
23 Construction	68,392	74,576	95,590	1.82	1.66	1.50	27,198	39.8%	692,291	682,072	799,846	11.6%	-13.1%	10.5%	9.0%	5.7%	11.6%	10.9%	28.2%
<i>Top 5 Sectors by Total Employment Change (1990-2008)</i>																			
44-45 Retail trade	100,200	125,230	170,681	1.23	1.25	1.29	70,481	70.3%	1,495,330	1,527,619	1,650,261	11.6%	-9.5%	22.8%	25.0%	5.7%	2.3%	28.3%	36.3%
56 Administrative and waste services	29,693	62,043	86,875	0.86	0.99	1.15	57,182	192.6%	636,334	950,818	949,066	11.6%	37.8%	59.5%	108.9%	5.7%	-5.9%	40.2%	40.0%
62 Health care and social assistance	57,885	91,076	114,276	1.16	1.20	1.03	56,392	97.4%	916,984	1,150,609	1,394,541	11.6%	13.8%	31.9%	57.3%	5.7%	15.5%	4.3%	25.5%
72 Accommodation and food services	66,361	86,725	116,417	1.29	1.21	1.13	50,056	75.4%	942,753	1,086,367	1,293,794	11.6%	3.6%	15.5%	30.7%	5.7%	13.4%	15.1%	34.2%
48-49 Transportation and warehousing	16,801	38,837	60,850	0.93	1.35	1.77	44,048	262.2%	330,565	438,163	429,401	11.6%	20.9%	98.6%	131.2%	5.7%	-7.7%	58.7%	56.7%
<i>Top 5 Sectors by % Total Employment Change (1990-2008)</i>																			
55 Management of companies	865	10,170	9,374	0.34	0.47	0.57	8,509	983.7%	46,728	329,758	207,230	11.6%	594.1%	470.0%	1075.7%	5.7%	-42.9%	29.3%	-7.8%
48-49 Transportation and warehousing	16,801	38,837	60,850	0.93	1.35	1.77	44,048	262.2%	330,565	438,163	429,401	11.6%	20.9%	98.6%	131.2%	5.7%	-7.7%	58.7%	56.7%
56 Administrative and waste services	29,693	62,043	86,875	0.86	0.99	1.15	57,182	192.6%	636,334	950,818	949,066	11.6%	37.8%	59.5%	108.9%	5.7%	-5.9%	40.2%	40.0%
81 Other services, except public administration	22,851	36,276	51,804	0.93	1.00	0.90	28,953	126.7%	451,706	554,226	723,092	11.6%	11.1%	36.1%	58.7%	5.7%	24.8%	12.3%	42.8%
42 Wholesale trade	26,553	36,357	55,899	0.79	0.87	0.99	29,346	110.5%	618,668	636,648	709,499	11.6%	-8.7%	34.0%	36.9%	5.7%	5.7%	42.3%	53.8%
<i>Top 5 Sectors by Location Quotient in 2008 (Sectors with more than 10,000 employees only)</i>																			
48-49 Transportation and warehousing	16,801	38,837	60,850	0.93	1.35	1.77	44,048	262.2%	330,565	438,163	429,401	11.6%	20.9%	98.6%	131.2%	5.7%	-7.7%	58.7%	56.7%
23 Construction	68,392	74,576	95,590	1.82	1.66	1.50	27,198	39.8%	692,291	682,072	799,846	11.6%	-13.1%	10.5%	9.0%	5.7%	11.6%	10.9%	28.2%
44-45 Retail trade	100,200	125,230	170,681	1.23	1.25	1.29	70,481	70.3%	1,495,330	1,527,619	1,650,261	11.6%	-9.5%	22.8%	25.0%	5.7%	2.3%	28.3%	36.3%
56 Administrative and waste services	29,693	62,043	86,875	0.86	0.99	1.15	57,182	192.6%	636,334	950,818	949,066	11.6%	37.8%	59.5%	108.9%	5.7%	-5.9%	40.2%	40.0%
72 Accommodation and food services	66,361	86,725	116,417	1.29	1.21	1.13	50,056	75.4%	942,753	1,086,367	1,293,794	11.6%	3.6%	15.5%	30.7%	5.7%	13.4%	15.1%	34.2%
<i>Top 5 Sectors by Differential Shift (DS) in 2008 (Sectors with more than 10,000 employees only)</i>																			
54 Professional and technical services	24,918	22,119	42,220	0.62	0.37	0.49	17,302	69.4%	733,850	918,781	1,079,218	11.6%	13.6%	-36.4%	-11.2%	5.7%	11.7%	73.4%	90.9%
48-49 Transportation and warehousing	16,801	38,837	60,850	0.93	1.35	1.77	44,048	262.2%	330,565	438,163	429,401	11.6%	20.9%	98.6%	131.2%	5.7%	-7.7%	58.7%	56.7%
42 Wholesale trade	26,553	36,357	55,899	0.79	0.87	0.99	29,346	110.5%	618,668	636,648	709,499	11.6%	-8.7%	34.0%	36.9%	5.7%	5.7%	42.3%	53.8%
56 Administrative and waste services	29,693	62,043	86,875	0.86	0.99	1.15	57,182	192.6%	636,334	950,818	949,066	11.6%	37.8%	59.5%	108.9%	5.7%	-5.9%	40.2%	40.0%
51 Information	15,383	12,558	15,506	0.69	0.37	0.42	123	0.8%	412,306	519,849	463,001	11.6%	14.5%	-44.4%	-18.4%	5.7%	-16.7%	34.4%	23.5%

Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2008. Calculations by UC Berkeley Center for Community Innovation

According to *The Wall Street Journal*, Manufacturing was one of the strongest sectors in the Inland Empire in 2004, with job growth rates that dwarfed the nationwide average. Unfortunately this is no longer the case. While in 2000 there were 43% more manufacturing jobs in the region than in 1990, in 2008 there was a decrease of 7% in total manufacturing employment compared to 2000 level. Yet, the number of manufacturing jobs in the Inland Empire in 2008 is still higher than in 1990 (110,361 jobs in 2008 compared to 82,678 jobs in 1990). This contrasts with the sharp decline in manufacturing jobs in California (2,059,262 in 1990 compared to 1,423,237 jobs in 2008). Despite losing 7,862 jobs between 2000 and 2008, Manufacturing remains a competitive sector in the Inland Empire, with a Differential Shift of 15.6% in the period between 2000 and 2008.

More specifically, at the three-digit NAICS level, the Inland Empire has several sub-sectors with location quotients of 1.50 or higher. The Warehousing and Storage industry is particularly concentrated in the region, with a location quotient of 3.02. As shown in Table 6 below, these industries are not necessarily “green” at first sight. However, apparently non-green industries could largely benefit from green innovation and research. In addition to high location quotients, all these industries had positive Differential Shift coefficients, showing a competitive position.

**Table 6: Economic Sub-sectors (3-digit NAICS) with Higher LQs in the Inland Empire<sup>45</sup>, 1990- 2008**

Industry Sector (3-digit NAICS)	Inland Empire Total Employment		Inland Empire Location Quotients		Shift-Share 2000-2008			
	2000	2008	2000	2008	Economic Growth Factor	Prop. Shift	DS	Job Growth
493 Warehousing and storage	6,764	17,399	1.68	<b>3.02</b>	5.72%	12.06%	139.44%	157.21%
484 Truck transportation	17,431	22,826	2.30	<b>2.55</b>	5.72%	-8.73%	33.96%	30.95%
326 Plastics and rubber products manufacturing	12,601	10,614	2.64	<b>2.54</b>	5.72%	-33.63%	12.15%	-15.77%
237 Heavy and civil engineering construction	9,861	12,467	1.95	<b>1.84</b>	5.72%	4.75%	15.96%	26.43%
452 General merchandise stores	25,182	38,954	1.63	<b>1.67</b>	5.72%	18.96%	30.01%	54.69%
238 Specialty trade contractors	52,296	66,419	1.78	<b>1.59</b>	5.72%	11.57%	9.72%	27.00%

Source: US Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2008. Calculations by UC Berkeley Center for Community Innovation

In response to nationwide decreases in manufacturing jobs, the largely industrial Inland Empire has diversified to some extent, incorporating transportation and warehousing economies while increasing retail and service jobs. New logistics infrastructure, however, does not indicate rising production and distribution from within the region but rather positions the Inland Empire as a way station as goods move through the area, providing little tax revenue or particularly quality jobs. Industrial expansion is further stymied by endless environmental concerns which come as a result of irresponsible development patterns.<sup>46</sup>

In light of difficult times, certain groups have begun to examine the plight of industry in the region. The *Inland Empire Green Vision Statement* attributes the current economic crisis in the region to the 1990s

<sup>45</sup> Sub-sectors with 10,000 employees or more in 2008 only

<sup>46</sup> “Green Valley Initiative Comprehensive Economic Development Strategy,” Prepared by the USC Center for Economic Development, School of Policy, Planning, and Development, University of Southern California, [www.greenvalleynow.org](http://www.greenvalleynow.org), [www.greenvalleynow.org/newsroom/articles/stimulus.pdf](http://www.greenvalleynow.org/newsroom/articles/stimulus.pdf), <http://www.greenvalleynow.org/projects/GreenValley.html>, 26-7

Base Realignment and Closure Act, a federal policy which shut down at least three Air Force bases, eliminating tens of thousands of jobs. Rough economic conditions are also attributable to the problematic role of the Inland Empire as the self-branded “goods movement gateway” of Southern California to the rest of America. This poor positioning proves prohibitive in the attraction of green high-technology economic investment to the region. Finally, a frontier mentality—the misconception of endless land ripe for development—contributed to the Inland Empire as today’s “foreclosure capital of America” and “California’s parking lot,” a vast expanse of economically and environmentally irresponsible speculative subdivisions. Additional challenges which face the region include a relatively low educational attainment in the region, which tends to discourage new business investment.<sup>47</sup>

An imbalance between housing and jobs in the Inland Empire is also problematic. This dichotomy is problematic in part due to increased traffic congestion and air pollution caused by commuters, but also because it discourages inland entrepreneurial investment. Indeed, the coastal counties see greater job growth rates, particularly in new industry sectors. In order to buck this trend, local leaders have proposed a regional hike in investment in higher education and airport promotion, as well as the establishment of high technology business parks and incubation centers.<sup>48</sup>

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<sup>47</sup> *ibid*, 24

<sup>48</sup> *ibid*, 25

## THE GREEN ECONOMY IN NUMBERS

### GREEN EMPLOYMENT AND ESTABLISHMENTS

This section provides figures on green employment and establishments in the Inland Empire for 1990, 2000, and 2008. For each year, employment levels, average annual growth rates (AAGR), and location quotients (LQ) are presented for six different green sectors: energy research and services, environmental services, green building, green transportation, green manufacturing, and recycling/remediation.

Green sectors employed in 2008 a total of 11,781 people in the Inland Empire. This represents 7.2% of all green employment in California.<sup>49</sup> In the same year, the number of green establishments in the region reached 1,077 (up from 762 in 2000).<sup>50</sup> The Inland Empire's green economy showed an excellent performance in both green employment and establishment indicators. The region has had significantly higher average annual growth rates than the state from 1990 until 2008 in all green sectors.

**Table 7: Green Economy Summary in the Inland Empire, 1990, 2000, 2008**

	Green Employment						Green Establishments										
	1990		2000		2008		Region		State		Avg. Est. Size		Region R				
	LQ		LQ		LQ		AAGR	AAGR	LQ		LQ		AAGR	90-08			
<b>Energy Research and Services</b>	53	0.1	272	0.2	241	0.2	8.8%	1.7%	14	0.6	42	0.9	58	0.8	4.2	8.7%	4.7%
<b>Environmental Services</b>	838	0.8	1,607	0.8	2,187	0.8	5.5%	3.9%	81	0.7	220	0.7	313	0.8	7.0	8.3%	5.9%
<b>Green Building</b>	620	1.2	565	0.9	1,330	1.2	4.3%	2.3%	82	1.4	75	1.4	136	1.4	9.8	3.0%	1.4%
<b>Green Manufacturing</b>	1,199	1.1	1,835	1.2	1,778	1.2	2.2%	0.0%	52	1.1	74	1.2	91	1.1	19.5	3.3%	2.0%
<b>Green Transportation</b>	1,475	0.9	2,988	1.2	2,626	1.0	3.3%	0.8%	50	1.3	96	1.2	157	1.1	16.7	7.0%	5.8%
<b>Recycling / Remediation</b>	2633	1.8	3022	1.3	3,619	1.4	1.8%	1.1%	129	1.0	255	1.2	322	1.1	11.2	5.5%	3.3%
<b>Total Green</b>	6,818		10,289		11,781		3.1%	1.6%	408		762		1,077		10.9	5.9%	4.2%

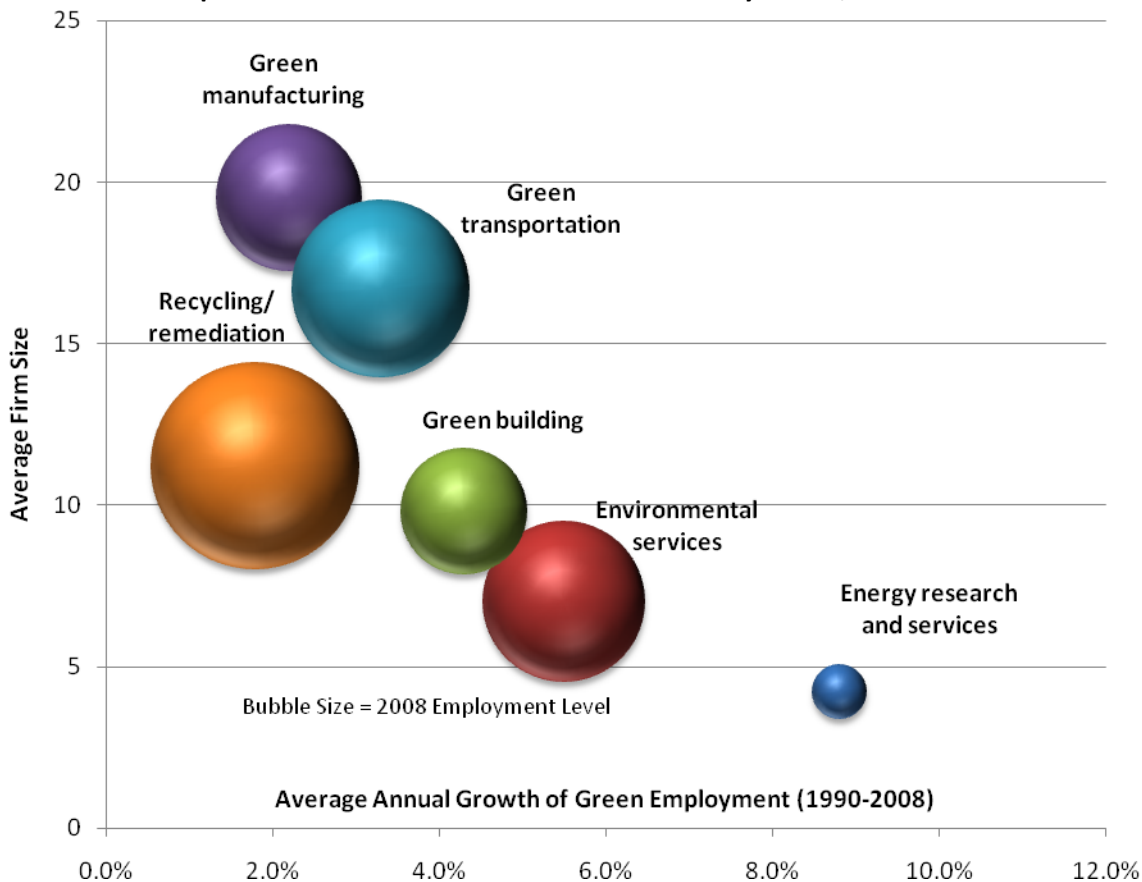
Source: NETS; UC Berkeley Center for Community Innovation.

In terms of the statewide economy, the green sectors that are more concentrated in the region (highest location quotients) by number of establishments are, by order of size, Recycling/Remediation, Green Manufacturing, and Green Building. On the other hand, the sectors with lower presence in the region relative to state figures are Environmental Services, and Energy Research and Services. The relatively high percentage of green manufacturing firms seems reasonable due to the predominance of the manufacturing sector in the Inland Empire at large. Interestingly, location quotients for Energy, Green Building, and Green Transportation *employment* are significantly lower than those for *establishments*, indicating a small average firm size of green companies in the region with the exception of Green Manufacturing (See Figure 6 below).

<sup>49</sup> National Establishment Time Series (Dun & Bradstreet) data

<sup>50</sup> Data compiled from multiple databases including the National Establishment Time Series (Dun & Bradstreet) database and the Build it Green directory

**Figure 6: Inland Empire Green Economic Growth and Firm Size by Sector, 1990-2008**



Source: NETS; UC Berkeley Center for Community Innovation.

In light of the small numbers which contribute to the green data, it is necessary to break down the results to understand how a few companies offset the trends. For instance, the loss of 700 jobs at Contain-a-way Inc., a waste management company in Redlands, caused a drop in 1991 green employment levels. That year, the firm shrank from 1200 to 500 employees. While all other employment changes among firms were at a much smaller scale, Contain-a-way Inc. was the driving force in that year's net job loss. In 1998, a big spike in green jobs reflected the creation of Morbark Inc, a wood chip grinding company in Indio which added 700 new jobs into the Inland Empire's green economy labor pool. Three or four other additional firms were started that year, but Morbark Inc. was by far the company that contributed the most to the increase in green jobs in 1998. Later, in 1999, the closing of Contain-a-way, among other firms in Corona and Ontario, caused a significant drop in green employment. Finally, the 2005 significant loss of green jobs was primarily caused by the relocation of Morbark Inc. from Indio. The firm size went from 700 to 2 between 2004 and 2005. There were also a number of smaller firm closures that contributed to the overall job loss.

Green Building, Environmental Services, and Green Transportation are the green economic sectors with the most solid competitive performance in the region in the period from 1990-2008. Green

Transportation is especially remarkable in the Inland Empire both by the number of people employed and its positive rates of growth.

Smaller firms seem to be growing fastest in the Inland Empire. For instance, Environmental Services and Energy Research and Services are the sectors with the lowest average firm size but the highest average annual growth rate in the period from 1990 to 2008.

**GREEN INNOVATION AND INVESTMENT INDICATORS**

Further figures on green innovation prove less heartening with respect to green activity in the two counties of the Inland Empire, particularly in comparison to other California regions. In the period between 2000 and 2008, only 14 clean tech patents were issued in the Inland Empire. According to the composite innovation ranking elaborated for this report, the region ranks eighth in green innovation in California, due mostly to its performance in startups and gazelles, indicating late-stage innovation.

**Table 8: Inland Empire Green Innovation and Investment Indicators, 2000-2008**

Patent Activity, 2000-08 <sup>1</sup>			Venture Capital Investments 2000-08 (\$millions) <sup>2</sup>			SBIR/STTR Grants, 2000-08 <sup>3</sup>			Green Startups, 2000-07 <sup>4</sup>			Green Gazelles 2008 <sup>4</sup>		
Clean-tech	% of State Overall	% of State Clean-tech	Clean-tech (\$)	% of State Overall	% of State Clean-tech	Clean-tech Grants	% of State Overall	% of State Clean-tech	Green Start-ups	% of State Overall	% of State Green	Green Gazelles	% of State Overall	% of State Green
14	1.3	1.3	0	0.3	0	-	1	0	704	8.8	9.7	266	7.7	7.3

Sources: 1) USPTO, 2) VentureExpert; 3) US Small Business Administration, 4) NETS. CCI Calculations

## **THE GREEN ECONOMY ON THE GROUND: INSTITUTIONS, NETWORKS, AND INITIATIVES**

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### ***REGIONAL COMPETITIVE ADVANTAGE IN THE GREEN ECONOMY***

Local business leaders and politicians are heavily invested in both Riverside and San Bernardino counties. They see great potential for growth, once this blip in the economy is over, and expect the economy to bounce back. These views are cultivated by the tendency of the Inland Empire to boom again after crisis, and in the hope for a greener future that will set them apart from their coastal counterparts. There are a number of assets in the region that give it a competitive advantage for the development and application of new clean technologies. First, there is a lot of sun. The desert can handle power plants run on solar power, so local leaders are working to get these projects in the ground. One such deal is the new BrightSource Energy power plant slated for Ivanpah, in San Bernardino County. This is the largest contract ever cut for solar power, and it was just announced in mid May 2009.<sup>51</sup>

Other assets highlighted by many regional leaders relate to land prices. There is cheap land, for residential development, but more importantly for commercial and manufacturing activity. This cheap land could foster growth for startup companies with small budgets. Furthermore, not only is the land cheap, it is located within in close proximity to one of the main ports of the United States and its logistics facilities, and to the large economies of Los Angeles and San Diego.

### ***NATURAL RESOURCES & PROJECTS***

Conversations about the future of green and the future of the economy in the Inland Empire revolve around natural resources. Abundant solar radiation and above average wind levels make renewable resources a powerful proposition for new projects that can uplift the faltering economy. The BrightSource and PG&E deal in Ivanpah is one such project that will utilize the region's resource, and has potential to create jobs. However, as currently situated, with headquarters in Oakland, research and development in Israel, and simple manufacturing systems dependent on cheap products produced around the globe, it does not leave much room for new local jobs.

Other efforts to capitalize on the solar market are underway, but not yet realized. According to an area economist, there is interest on the part of major players in solar energy production in both Germany and Spain, and they are taking interest in California, because the combination of open space and sunshine are ripe for harvest in a yet untapped market. UC Riverside is also playing a role in the development of technologies for harnessing renewable resources. There are a number of different projects going on at the university, especially in the areas of solar and biomass research.

Not all resources are as abundant as the sun, unfortunately. The geothermal potential at the Salton Sea actually has only twenty years of capacity, according to a renewable energy entrepreneur in the Coachella Valley, and the San Geronio Pass wind farms are currently reaping as much wind power as possible from the area. The only increases will come from increased efficiency in the windmills themselves.

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<sup>51</sup> David R. Baker, "PG&E expands solar power plans," *San Francisco Chronicle*, Thursday, May 14, 2009.



Despite limited capacity for geothermal and wind power, they are often cited as regional assets. This speaks to a problem nagging the region: there is not enough knowledge of what is going on. According to a local economic leader:

There needs to be a much deeper database or understanding of what the opportunities are. First, an inventory of what's here. We really don't know what's happening, and what might accelerate those companies' growth. We need to have a realistic look at where we are going to be in the next five, ten or fifteen years and then see where the opportunities are.

#### *REGIONAL DIFFERENCES: THE EMPIRE AND THE DESERT ISLAND*

It is important to note the regional disparity that afflicts Riverside and San Bernardino counties. Specifically, there exists a well-articulated distinction between the San Bernardino-Riverside-Ontario Metropolitan Area in the southwest corner of the two-county region and the easterly Coachella Valley, including the tourism-driven cities of Palm Springs, Palm Desert and Thousand Palms. To the west lies what some refer to as the Inland Empire, largely a support economy and bedroom community in relation to the coastal counties of San Diego and Los Angeles. To the east in Riverside County lies Coachella Valley, resource-rich and fiercely independent. While interviewees associated with the Inland Empire rarely reference the divide, Coachella Valley representatives were adamantly proud of their self-sufficient economy, valley-specific sustainable initiatives, and local abundance of renewable resources.

While the divide is largely nominal in nature, a lack of regional camaraderie stymies green economic development efforts. With fifty incorporated cities, over one hundred unincorporated communities and at least a dozen Indian reservations, a cohesive regional drive toward sustainability is imperative. In the words of a locally preeminent green developer, "it's easy to talk about regionalism but it's very hard to implement. That's going to be a challenge for us... it's not a traditional approach here. Historically we've been fragmented..." The two-county region requires a regional strategic plan in order to achieve economic recovery and simultaneously reap the benefits of a newly green business model. One organization that is making a strident effort toward regional collaboration is the Green Valley Initiative.

#### *GREEN VALLEY INITIATIVE*

Created in 2007 by the Green Institute for Village Empowerment, the Green Valley Initiative (GVI) is an ambitious program that aims to establish the Riverside-San Bernardino region as a center for green technology. According to their website, GVI "is a regional business and economic development initiative to promote investment in both counties and to establish the region as a leader in green and clean technologies. Its mission: to create jobs, greater opportunities and a higher quality of life for the region."<sup>52</sup> Promotional materials further boast that more than five hundred regional leaders are involved in the initiative and more than thirty regional cities and towns have formally signed onto GVI's mission.

GVI's efforts thus far have resulted in the completion of a Comprehensive Economic Development Study, which facilitates federal funding from the U.S. Department of Commerce Economic Development Administration and the previously-mentioned study on the greening of the logistics industry. GVI has also joined with Collaborative Economics in order to identify clusters of opportunity and green action plans for the region. Three subcommittees meet periodically to address issues pertaining to policy issues, economic development and education opportunities as they relate to local green innovation.

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<sup>52</sup> Green Valley Initiative, [www.greenvalleynow.org](http://www.greenvalleynow.org)

Principal participants include community stakeholders as well as prominent members of the regional government, economic agencies, environmental groups and educational institutions.<sup>53</sup>

In all interviews undertaken for this report, respondents referenced GVI as a major player in the drive for green economic development in the two counties. While some regional leaders revere GVI as a green savior, others view the organization with skepticism, citing business attraction as a primary motivator that may eclipse sustainable sensibilities. Regardless, GVI has gathered widespread support throughout both Riverside and San Bernardino counties, which is not small feat. On the other hand, the region has yet to see tangible results from GVI's substantial efforts, and strides toward green development remain to be taken. An economic leader involved with GVI acknowledges: "We created a lot of expectations and I think what [GVI] is trying to manage now is how you actually deliver something." Ultimately, it seems as though GVI is best positioned to operate as a clearinghouse for green information and serve as a regional advisor and representative—a liaison to the state and resource to the region.

#### ***INSTITUTIONAL FRAMEWORK: KEY REGIONAL PLAYERS***

Although the area is large and its cities operate independently, there are fairly strong institutional connections that link these disparate entities (see network analysis below). University of California at Riverside (UCR), located in the city of Riverside with a campus in Palm Desert, is the main research engine for the area, so local businesses and economic development agencies at the city and county level are keen to associate themselves. The city of Riverside is most actively linked with the university, largely because of its mayor's former years as a professor there, and his dedication to promoting educational development.

#### ***EDUCATIONAL INSTITUTIONS***

In total, the Inland Empire boasts seventeen institutions of higher education. Among them, UC Riverside, California State Polytechnic Institute Pomona (Cal Poly Pomona) and California State University San Bernardino (Cal State San Bernardino) stand out as forerunners in regional research and development. In particular, two research institutes at UC Riverside champion green innovation. The Bourns College of Engineering Center for Environmental Research & Technology (CE-CERT) supports research related to transportation systems, emissions, environmental policy and sustainable energy.<sup>54</sup> Established in 2003, the Edward J. Blakely Center for Sustainable Suburban Development provides research on wide-ranging issues related to suburbs, with a primarily policy-based analytical lens. Ideally located, the Center for Sustainable Suburban Development relishes fieldwork and prioritizes sustainable growth patterns. Additionally, the Richard J. Heckmann International Center for Entrepreneurial Management, located in Palm Desert, unites UC Riverside students with regional business leaders.<sup>55</sup>

At Cal Poly Pomona, the Master of Science degree in Regenerative Studies (MSRS) "prepares students to find successful solutions to environmental problems in the 21st century."<sup>56</sup> Research efforts of the Center for Regenerative Studies include the Habitat 21 Sustainable Habitat Project focusing on sustainable settlement strategies. Finally, the Inland Empire Center for Entrepreneurship (IECE) in the

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<sup>53</sup> *ibid.*

<sup>54</sup> CE-CERT: UC Riverside, [www.cert.ucr.edu](http://www.cert.ucr.edu)

<sup>55</sup> "Leadership Plus Focused Giving Yields the International Center for Entrepreneurial Management." *Entrepreneurship*. <http://www.entrepreneurship.org/>

<sup>56</sup> Pomona University, [www.csupomona.edu/~crs](http://www.csupomona.edu/~crs)

College of Business and Public Administration at Cal State Bernardino acts as “breeding ground for entrepreneurial ideas,” catering to students and business professionals alike.<sup>57</sup>

#### *BUSINESS & GOVERNMENT NETWORKS*

A relatively dense network of government agencies, environmental nonprofits, business leaders and community stakeholders has arisen in recent years. This network suggests the promise of regional collaboration, particularly with regard to green economic development. A handful of other business networks support this common cause.

The Inland Empire Small Business Development Center (SBDC) provides business consulting and training for existing and potential business owners. The SBDC reaches over 5,000 business prospects each year and aspires to build better regional businesses. Furthermore, according to their webpage, the SBDC has consultants who “work with a number of emerging green technology types of start ups and so on.”<sup>58</sup>

Established in 1923, the Building Industry Association of Southern California (BIA) is a nonprofit trade association that includes more than 1,800 member companies. BIA targets homebuyers and consumers as well as industry professionals. The Riverside County Chapter also includes the RED Team, a coalition of political and business leaders that supports regional initiatives to recruit and retain jobs, address the current foreclosure crisis, and rebuild regional economic competitiveness.<sup>59</sup>

Finally, two Angel Networks operate in the Inland Empire. The Coachella Valley Angel Network (CVAN) is a group of entrepreneurs and investors that focuses on early-stage funding to startup companies in the Coachella Valley. The mission of CVAN is to improve the economy by developing new jobs and businesses as well as a broader economic base in the region. CVAN collaborates with the Richard J. Heckmann International Center for Entrepreneurial Management. The Tech Coast Angels operates on a larger scale, investing throughout Southern California, including the Inland Empire. The group does not limit itself to technology investments and contributes to the recognition of the Inland Empire as a regional economic player, connecting Riverside and San Bernardino counties with business ventures afield.

#### *ECONOMIC DEVELOPMENT AGENCIES*

Though government players and planning departments have the capacity to implement green measures, local economic development agencies often serve as barometers for economic innovation. A number of economic development groups are at work in Riverside and San Bernardino counties, attempting to attract new business investment. These agencies are fiercely competing to draw in businesses of any sort to fill the gap created by massive losses in both the manufacturing and construction industries.

The County of San Bernardino Economic Development Agency is a networking mechanism for local businesses and supports efforts to improve the economic output of the region. Business opportunity information attempts to attract new investment.<sup>60</sup> Similarly, the Riverside County Economic Development Agency acts as a resource for businesses, developers and individuals. In terms of green incentives, the Riverside County organization’s website advertises *Recycling Market Development Zones*,

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<sup>57</sup> Inland Empire Center for Entrepreneurship, CSU San Bernardino, [iece.csusb.edu](http://iece.csusb.edu)

<sup>58</sup> Inland Empire Small Business Development Center, [www.iesbdc.org](http://www.iesbdc.org)

<sup>59</sup> Riverside County Chapter, BIA Southern California, [www.riversidebia.org](http://www.riversidebia.org)

<sup>60</sup> San Bernardino County, [www.co.san-bernardino.ca.us/eda/](http://www.co.san-bernardino.ca.us/eda/)

which cater to manufacturing businesses using recycled inputs. In these zones, which are a common tool across California regions, the state subsidizes a low-interest revolving loan fund which facilitates land and equipment purchases as well as leasehold improvements and working capital.<sup>61</sup>

Inland Empire Economic Partnership is another regional organization offering resources for businesses and economic development data in a period of population growth and volatile economic times.<sup>62</sup> The IEEP is a uniquely rich resource among economically-inclined organizations. It is a private non-profit that prioritizes “the expansion and relocation of business to the Inland Empire” in order to increase economic output. An alliance of 180 public and private sector organizations comprise the partnership, which serves both Riverside and San Bernardino counties and provides a leading example for regional cooperation. The IEEP provides businesses with up-to-date real estate, as well as incentive and tax information and workforce statistics. The IEEP also makes available demographic and economic data, business profiles and major industry information. Major players at the IEEP are regionally well-connected.

A handful of additional economic development organizations are at work in the Inland Empire. While the Hemet-San Jacinto Valley Economic Development Corporation focuses on business attraction in the San Jacinto Valley, boasting low property taxes, lease rates and wages, the Coachella Valley Economic Partnership (CVEP) is a non-profit organization concerned with stimulating the desert economy while maintaining a resort-friendly environment. CVEP also devotes attention to new industry clusters, including healthcare and high-technologies. The Pass Economic Development Association (PassEDA) and the Economic Development Corporation of Southwest California (EDC) represent a regional set of diverse stakeholders and encourages the establishment of positive business climates through public-private partnerships.<sup>63</sup>

#### *GREEN INNOVATION NETWORKS*

Given the variety of different education and economic development institutions and organizations active in the Inland Empire, it is perhaps not surprising that among the six regions analyzed, the Inland Empire’s social network map was one of the densest. Figure 7 below maps networks of social relationships among relevant persons and organizations in the region’s green economy. The social network map is based on the names of individuals and organizations that came up in the different interviews conducted for this project. The map consists essentially of two distinct clusters, one around Riverside and the other around Coachella Valley.

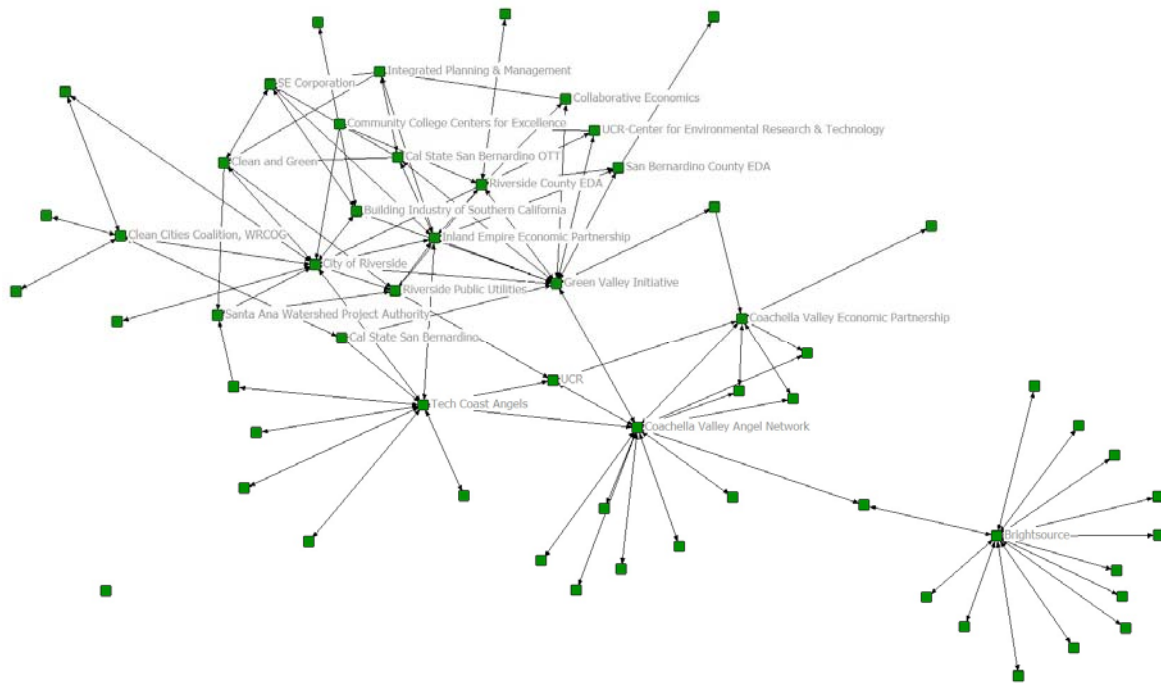
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<sup>61</sup> Riverside County Economic Development Agency, [www.rivcoeda.org](http://www.rivcoeda.org)

<sup>62</sup> Inland Empire Economic Partnership, <http://www.ieep.com/>

<sup>63</sup> *The Green Valley Initiative Comprehensive Economic Development Strategy*, 35-6

**Figure 7: Social Network Map of the Green Economy in the the Inland Empire**



Source: UC Berkeley Center for Community Innovation based on responses of interviewees in this project

**GREEN ECONOMIC DEVELOPMENT OPPORTUNITIES**

In the Inland Empire, many are looking toward green resources as a potential to remake their faltering economy. Although history has shown the region’s ability to bounce back from deep recession, and local leaders speak in those terms, the route to success may be slightly different this time. The overall effects of the recession are already hinting at a “vast remaking of the economy” at a national scale.<sup>64</sup> In the context of the Inland Empire, this may mean severe losses in all major arenas: manufacturing, logistics and construction. Hence, they are searching for a new engine to drive the economy, which some believe will be found in the green economy.

Many local leaders express similar optimism with regard to the forthcoming green economy as a major player in regional economic recovery efforts. As one highly involved economic leader articulated: “I think it’s an opportunity for us to differentiate ourselves from other parts of the state we compete with... to have the area of focus be on environmentally friendly kinds of business efforts. I think where the skepticism comes in is because we don’t have enough information... hope is not a strategic plan.”

The final remark here is highly revealing. Although by most accounts there is substantial potential in both greening existing industries as well as attracting new green businesses to the region, advances in either arena remain to be seen. Indeed, the same economic leader also remarked: “Green economic development... I think that’s a nice idea. I think it is yet to play out.” Despite daunting challenges, green

<sup>64</sup> Peter S. Goodman, and Jack Healy, “Job Losses Hint at Vast Remaking of Economy,” *New York Times*, March 7, 2009

logistics and building, as well as alternative energy generation, emerge as the most promising sectors with regard to existing and future green industry infrastructure.

#### *LOGISTICS*

Currently, the Inland Empire is a major transit hub and significant player in Southern California's trade and logistics system.<sup>65</sup> A prominent local politician emphasizes: "We're sort of the trading center for the world here." In that regard, the Green Valley Initiative, a leading green organization, and trade and logistics industries met in late 2008 to set a greener course for regional transportation infrastructure. Suggestions developed in the Green Valley Initiative study highlight increased resource efficiency in terms of both energy consumption and material recycling. In particular, the resultant action plan promotes the documentation of industry "success stories" in resource efficiency, the development and implementation of a "resource efficiency audit," and the transformation of local logistics operations into a laboratory for industry innovation. The study also projects job growth as a potential outcome of a greener logistics industry.<sup>66</sup> However, though opportunities abound in the greening of trade and logistics operations in the region, such action plans have not yet materialized.

#### *CONSTRUCTION*

Although the building industry is at the nadir of a recession-induced crisis, the sector also offers much room for green innovation. From financing, planning, materials, maintenance and construction processes, green building practices boast massive potential for growth. A selection of green building projects exhibit efforts already underway that aim to green the building sector. Local experts insist that upon the recovery of the economy, "residential and commercial construction will have more of a green bent, a lot more LEED-certified commercial buildings, a lot more energy efficiency built into the new homes." Currently, however, due to high foreclosure and office vacancy rates, the construction industry is idle, including green efforts. Yet in a hopeful showing of regional trends toward green, a political leader notes, "the building industry is very self conscious about green. People are beginning to understand construction cost, lifecycle cost, and we're beginning to have our first green buildings." Leaders in the building industry corroborate and further this claim. One interviewee well-established in the Inland Empire building industry identifies the links between the Building Industry Association of Southern California in the area and research conducted at nearby universities, stressing information transfer. Importantly, in the face of seemingly inevitable future growth, the same individual highlights the importance of improving the existing buildings in terms of resource efficiency, rather than just pushing to green new development projects. Green retrofitting possesses potential for growth in the region.

#### *RENEWABLES*

Renewable energy as an industry remains a stalwart hope for the region. With increased government spending and focus on the industry, and the area's wealth of sun and wind, the Inland Empire is primed for expansion. Whether it can compensate for the losses in the construction industry remains to be seen, particularly since many large-scale solar and wind projects are owned by international corporations and import service technicians and installation crews, rather than hire local labor.

Regardless, both economic and political leaders are setting bets on renewable energy generation—particularly solar projects—as a promising sector by which to secure jobs and profit. As multiple local

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<sup>65</sup> Doug Henton, *Clusters of Opportunity & The Green Economy, Green Valley Initiative Phase 1 Report*. <http://www.greenvalleynow.org/newsroom/studies-and-reports.html>

<sup>66</sup> "Green Valley Initiative Draft Action Plans," December 9, 2008, 12-13

experts attest, Southern California Edison has played a major role in the promotion of energy generation and the proposed expansion of the green economy. A San Bernardino County representative reports: “The biggest willing investor in the green economy that I’ve seen so far is Edison, they’ve put in a lot of money and made a huge investment in putting solar panels onto industrial roof tops.” Further potential can be found in complementary incentives that encourage industrial businesses and warehouses to install and maintain solar panels, creating lasting jobs. And yet, such potential has yet to be actualized. A leading solar researcher in the area indicates that the capacity to install photovoltaic systems on industrial rooftops has now been in place for two years, yet remains unimplemented due to organizational hurdles. In the realm of renewables, as in other sectors, “a lot of people have great ideas but there’s not always something to back it up.”

### **INNOVATION**

Solar technology provides a guiding light in terms of research and development in the two-county region. Not surprisingly, economic innovation in the Inland Empire largely originates within the auspices of local universities, particularly UC Riverside. However, a number of forthcoming incubator spaces also offer potential for green innovation. While respondents did not report any extant incubator spaces, a handful of informal incubators came to light. In Palm Desert, a new office building intends to provide space for green businesses under one roof. Nearby, the Center for Entrepreneurial Management at UCR Palm Desert acts as a “virtual incubator,” sans physical space. With investors, entrepreneurs, policymakers and academics collaborating, the Center effectively incubates green endeavors. In Riverside itself, the Inland Empire Economic Partnership and Office of Technological Transfer and Commercialization (OTTC) are working together to establish two more incubators, one of which “might be environmental.” Another organization that most interviewees champion in reference to both incubation and technology transfer—and that offers the greatest hope for solar innovation—is the Center for Environmental Research and Technology in the Bourns College of Engineering at UCR.

According to a Riverside-based economic development agent, “CE-CERT is the public interface for environmental issues with UCR.” Established in 1992, the research center is a collaborative endeavor that unites local governments, industry and academia in an effort “to improve the understanding of the environment and develop future environmental technologies.”<sup>67</sup> Laboratories at CE-CERT include: Intelligent Transportation Systems & Vehicle Technology Research Lab, Emissions and Fuels Research Lab, Atmospheric Processes Research Lab, Renewable Energy and Waste Conversion, and Environmental Modeling and Policy Lab. Additionally, CE-CERT, in coordination with regional economic development agencies and municipalities, has recently launched The Riverside Solar Innovation Center, which seeks to “facilitate the development and application of solar energy.”<sup>68</sup> The new Center will offer training at all levels, oversee technology development, perform energy audits, and invest in cutting-edge research. Importantly, this research and development will operate in an interdisciplinary context, which connects industry, political, academic and economic leaders region-wide. An economic advisor in Riverside adds that, “hopefully the Solar Innovation Center will serve as the nexus between their research and the industry,” facilitating technology transfer and the implementation of solar research.

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<sup>67</sup> CE-CERT.

<sup>68</sup> “The Riverside Solar Innovation Center,” CE-CERT, UC Riverside (September 25, 2008).

## **GREEN JOBS**

As a liaison between academia and industry, CE-CERT is further important to the regional economy in that the organization stresses on-the-ground application of new technologies. As one of the main players involved in the Solar Initiative Center relates, “Most universities work on the technology side, increasing efficiency... but our initiative wanted to expand on that so it’s not just research but also application.” This differentiation is highly relevant for the two-county region. Indeed, “the Inland Empire’s green economy is more on the application side.” Many local leaders emphasize the importance of green jobs over research and development firms.

Acknowledging that research and technology are focused elsewhere in the state, regional economic leaders call for green jobs in order to reverse the downward trends in which the Inland Empire currently finds itself. A dominant economic leader states simply: “it is very clear here... it is the green jobs that are going to be our salvation.” Given high unemployment rates and low educational attainment levels, as well as available land and warehouses, the Inland Empire “is still a great place for manufacturing, not a great place for R&D.” Though political leaders still hail “high growth, high value jobs” as the ticket to success, the region is in dire need of jobs. To reiterate, “It would be great to have all the R&D and all that other fancy stuff but what we really need here is middle class kind of jobs which we really don’t have at the moment.” According to many, such jobs include installation and maintenance of solar units, from residential to industrial in scale, as well as manufacturing and sales of similar products.

In an effort to prepare the largely-unemployed workforce for the green jobs for which the region pines, a number of training programs have been initiated. In addition to workshops offered with organization such as the Clean Cities Coalition and CE-CERT, local and statewide community colleges have taken strides forward in green job education. In 2008, the Centers for Excellence and the California Community Colleges Economic and Workforce Development Program initiated a study of green employment opportunities in the state economy. This study has identified a number of green jobs ripe for training programs; most are technical in nature and none require a bachelor’s degree.<sup>69</sup> A functional example of community college green job preparatory courses can be found at Victor Valley College, located in San Bernardino County. Here, students can pursue “green certification,” which advances opportunities for green jobs, such as solar installation, green building and the like. As a political representative in the county poetically posits, “I think that community colleges are where the green economy is really going to hit the ground in terms of training people and getting them certificates. The guys at UCR are more like the wizards behind the curtain.” However, yet again, “there is a call for green jobs, but it is not yet operationalized.”

## **GREEN POLICIES**

The current economic situation has cast a great shadow over the Inland Empire. The area’s unemployment and foreclosure rates are the highest in the state. According to a major political figure there, “we’re not doing well. The economy has been buoyed by people coming in from the coast. Construction has flat lined, which affects other parts of the economy.” This challenge will be difficult to overcome, but in the Inland Empire, optimism abounds. The RED team, local coalition of political and business leaders, “was dealing with foreclosures, looking at how can you keep people out, keep things looking halfway decent...also trying to spend \$15 million buying homes and rehabbing them, and putting them back on the market.” This attitude toward amending a problematic situation—though it does not

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<sup>69</sup> “Green Industries & Jobs in California,” Centers of Excellence, Economic and Workforce Development California Community Colleges, Research Briefing, 2009.



question the current paradigm of development—does attempt to deal with the aftermath of a huge construction boom and subsequent recession.

In terms of regional green policies and incentives, the Inland Empire has yet to make a concerted cross-jurisdiction effort. Beyond state and nation led initiatives, these policies follow a fragmented course, varying from city to city across the region. Riverside and Palm Desert lead the pack, implementing policies to improve living conditions and decrease energy use.

#### *RIVERSIDE & PALM DESERT*

The cities of Riverside, located in the western portion of the county, and Palm Desert in Coachella Valley, lead the two-county area in green policies, incentives and initiatives. Riverside, however, is certainly the model city of the region. Palm Desert has begun to develop campaigns to decrease energy use and take advantage of the desert's solar radiation, but Riverside has both initiated and followed through on operations to improve the environment that have been recognized by the state.

Palm Desert is reducing its energy consumption "...one pool pump at a time," according to local officials. This refers to Palm Desert's AB811 program that requires its residents to switch to more efficient pool pumps whenever they sell their homes, before closing escrow. The city has tried to implement other programs, like incentives for photovoltaics, which they recently rescinded due to a lack of budget.

Riverside's story is a bit more fruitful. Riverside leaders credit city ownership of the public utility for their green leap forward. This, along with a concerted effort to create citizen involvement, has given them the power to make significant changes in the way the city functions. Riverside Mayor Ronald O. Loveridge enacted a "Clean & Green Task Force" that produced an extensive report detailing regulatory and incentive programs, infrastructural assets, renewable energy objectives, green building practices and green government and business models. These efforts came as a result of the mayor's ambitions to re-brand suburban Riverside as the "Clean & Green City."<sup>70</sup> His effort has thus far been successful. Thirty-four of thirty-eight "Clean and Green" goals have already been accomplished. By 2013 the municipal utility will be at 50% renewable energy. They plan to plant 100,000 trees in this decade through a public coupon program. There is also an aggressive program targeting alternative energy for the city fleet, which aims for one hundred percent renewable energy. It is currently at sixty percent. They have built infrastructure for obtaining natural gas or even hydrogen fuel, and required LEED certification standards for new buildings. They have also done a number of things in house with the public utility. They use solar power, grease power and fuel cells, and are currently working to figure out how to avoid using potable water for landscape purposes.

The city's green initiatives are boosted by Riverside's February 2009 designation as an Emerald City, part of the California Department of Conservation's Emerald City Pilot Project. Emerald City status recognizes sustainable initiatives and environmental commitment. Riverside will benefit from state-funded projects and expertise in the realization of the city's Green Action Plan. The project aims to create a best-practices guide for other California cities.<sup>71</sup> The current plan is that they will take the Clean and Green Action Plan and develop and fund it further. Since Riverside is the first Emerald City, it is an interactive process of development. According to a local politician, "we're making it up as we go along."

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<sup>70</sup> Green Riverside, [www.greenriverside.com](http://www.greenriverside.com)

<sup>71</sup> Water Efficiency, [www.waterefficiency.net/the-latest/riverside-emerald-pilot.aspx](http://www.waterefficiency.net/the-latest/riverside-emerald-pilot.aspx)

#### *STIMULUS PACKAGE*

Since the announcement of the stimulus package, leaders from the Building Industry Association of Southern California have approached the federal government in an effort to secure stimulus money in order to salvage the region's construction industry. Similarly, Representative Joe Baca has urged local political leaders to swiftly organize projects which qualify for federal funding. Ideally, the stimulus package and similar efforts will focus upon green business development in the Inland Empire because at this moment in history as Redlands Mayor Jon Harrison puts it, "there is an opportunity to create a full spectrum of jobs and create a new green economy of jobs."<sup>72</sup>

However, within the region, the main question about stimulus money is still how to get it. Many local business and political leaders are looking for a chance to use the money, but it is as yet unclear how they can obtain grants. A few projects have been successful at a small scale, such as a solar installer training class in Palm Desert, but many have yet to see the fruits of the promised money. The Green Valley initiative is currently developing projects for which the Inland Empire could potentially apply for stimulus money as a region, but none have yet been publicized.

#### *OTHER INITIATIVES*

Outside Riverside, other utilities are making their mark on the landscape. A far-reaching and far-sighted municipal water district, the Inland Empire Utilities Agency (IEUA) works "to supply imported and recycled water; collect, treat, and dispose of wastewater; and provide other utility-related... services to the communities it serves."<sup>73</sup> The agency fulfills this mission in a regionally-planned operation that prioritizes the provision of recycled water, compost, and renewable energy. In coordination with seven cities and San Bernardino County, CEO Richard Atwater and Manager of Strategic Policy Development Martha Davis advocate innovation and conservation at IEUA, which in turn practices progressive wastewater and sewage treatment processes.<sup>74</sup>

In 1997, the Western Riverside Council of Governments (WRCOG) initiated the Clean Cities Coalition, a public-private partnership "dedicated to achieving air quality, energy security, economic development, and transportation goals."<sup>75</sup> The Clean Cities Coalition is sponsored by the U.S. Department of Energy (DOE) and aims to empower local stakeholders to increase the consumption of alternative fuels and the use of vehicles that operate on alternative fuels and advanced technologies. Clean Cities also campaigns for legislation for improved air quality, focusing on the regional transportation economy. WRCOG, representing 16 cities and 2 water districts, further spearheads the Regional Air Quality Task Force, created in 2001 in an effort to initiate measures by which to improve the air quality of Western Riverside County, particularly with regard to the detrimental health impacts of diesel particulate.

A program initiated in 2007 by the San Bernardino County Board of Supervisors, Green County San Bernardino seeks to align economic development with environmental efforts. Ostensibly, the initiative aims to encourage the use of green practices and technologies in residential, business and development ventures. Green County San Bernardino also promotes public awareness regarding resource conservation and energy efficiency. The County of San Bernardino also claims to champion green

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<sup>72</sup> Green Valley Initiative, [www.greenvalleynow.org/newsroom/articles/Stimulus.pdf](http://www.greenvalleynow.org/newsroom/articles/Stimulus.pdf), [www.biasc.org/article.cfm?id=873](http://www.biasc.org/article.cfm?id=873)

<sup>73</sup> Inland Empire Utilities Agency, [www.ieua.org](http://www.ieua.org)

<sup>74</sup> Metro Investment Report, [www.metroinvestmentreport.com](http://www.metroinvestmentreport.com)

<sup>75</sup> Clean Cities Coalition, [www.wrcog.cog.ca.us/content/cleancitiescoalition.asp](http://www.wrcog.cog.ca.us/content/cleancitiescoalition.asp)

building practices as well as responsible growth patterns. The associated website directs builders, homeowners and business leaders to relevant green standards and best practices.<sup>76</sup>

### ***GREEN ZEITGEIST: THE GREEN MARKET***

In a land frequently associated with subdivisions and strip malls, some studies show that Inland Empire residents recognize the imperative for “going green.” Consumer demand with respect to the green economy is represented in the 2007 Inland Empire Annual Survey conducted by the Institute of Applied Research and sponsored in part by the Green Valley Initiative. Contrary to common perception, very few respondents mention smog as a negative factor in both Riverside and San Bernardino counties; even fewer respondents mention traffic as a negative factor.<sup>77</sup> Regardless, environmental concerns emerge as critical for many Inland Empire residents.

In addition to personal measures for reducing energy consumption, recycling and conserving water, regional survey results also indicate that green practices are likely advantageous to an Inland Empire business, as 86% of respondents would be more inclined to purchase from green businesses, frequently despite additional associated costs. Significantly, 90% of respondents in the region would support the allocation of taxes toward investment in green technologies. The population largely looks to the government to lead environmental initiatives and protect environmental quality in the Inland Empire. Finally, and perhaps more importantly, more than half of the respondents reported that they prioritize the environment over economic growth.<sup>78</sup> Ideally economic growth and environmental measure need not be at odds and green businesses may offer hope for the Inland Empire. However, upon interviewing a number of political and business leaders in the area, the willingness of individuals to “buy green” seems to be far lower than survey results indicate.

Indeed, by many accounts, consumer demand for green products and services is tempered in the face of the struggling economy. Green business makeovers reflect this trend as well. According to one industry expert, “there is a demand [for green products], but quantifying that demand is next to impossible.” He, like others, points to local government as the leader for green initiatives encouraging consumer awareness and business practices that recognize a sense of stewardship. The City of Riverside has led a particularly instrumental consumer awareness campaign. However, this effort is limited to the municipal boundary, and similar consumer responsibility regarding best green practices does not yet thrive throughout the two-county region. Generally, there is some resistance to renewable energy efforts due to NIMBY tendencies and the supposed eyesore that solar and wind projects suggest.

However, the region has demonstrated increased public interest in green services which enhance energy and water efficiency—and simultaneously promise cost savings. Resource conservation, when coupled with bill reductions, act as an incentive to go green. The region is additionally inclined toward more sustainable practices due to an ongoing struggle with appalling air quality. As one economic expert reported, decades of public attention to air quality issues—attributable to local as well as coastal emissions—has contributed a more conscientious consumer. Indeed, the notion of a green economy “resonates with people who have had to live with polluted air for so many years... people are friendlier toward more green policies than in other places...”

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<sup>76</sup> Green San Bernardino County, [www.sbcounty.gov/greencountysb](http://www.sbcounty.gov/greencountysb)

<sup>77</sup> *2007 Inland Empire Annual Survey*, prepared by the Institute of Applied Research, 11

<sup>78</sup> *ibid*, 36-38

Despite challenges in the marketplace, local economic leaders remain optimistic, particularly with regard to business opportunity in the forthcoming green sector. An exceptionally eager economic development stakeholder relayed the following:

I think this is an industry that everybody can look forward to and say: Oh this is going to create jobs here and boy do we ever need jobs. This is going to clean the air and boy do we ever need our air clean. This is going to reduce our dependence on foreign oil and boy do we need that. It is an industry—a cluster of industries—that really seems to be right on time.

Unfortunately, relevant action remains to be taken, and the recession continues to take a toll. Even as LEED-certified buildings go up, they remain vacant, as is the case with the new office building in Dos Lagos, “a master-planned, mixed-use development that balances nature and community.”<sup>79</sup>

The dismal business climate presents further challenges given the lack of investment in green ventures. Indeed, between the two active Angel Networks, there is no involvement with cleantech or otherwise green startup companies. Though both the Coachella Valley Angel Network and the Tech Coast Angels profess avid interest in local green business ventures, good intentions remain fruitless. A major player in the regional building industry emphasizes that in order to see success, additional costs associated with green products and processes must add value to a project and ultimately benefit investors, businesses and consumers alike—particularly in the current economy.

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<sup>79</sup>Dos Lagos, <http://doslagos.net>

## CONCLUSION

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As discussed, the Inland Empire largely acts as a bedroom community and support economy for Los Angeles and San Diego Counties. Primary industries include logistics, manufacturing and construction, all of which have seen significant challenges in recent decades. In particular, the construction industry, which has forever been boosted by the rampant development of the region, faces stagnation in the current recession, as population growth rates lessen and foreclosure rates rise. Indeed, the recession threatens the fecundity of the Inland Empire as speculation and investment wane.

However, the Inland Empire retains a set of indisputable assets which inspire optimism for future economic development, particularly in the green sector. Primarily, affordable land and a wealth of natural resources make the now-struggling region ripe for renewable energy generation projects as well as related manufacturing, service and sales jobs in the forthcoming green sector. Increasing green opportunities also run rampant in the logistics and construction industries, upon the economic recovery of the downtrodden region. Additionally, as detailed in this report, a number of nonprofit, governmental, economic and academic organizations are investing substantial energy and resources in green economic development research and strategy. State and local regulations and incentives strengthen this sustainable support network. Finally, regional precedents for innovation and economic resilience abound.

The major stories that emerge from this examination of the capacity for green economic development in the Inland Empire include the need for green collar jobs over technology firms, the importance of regional collaboration, the prioritization of indexing green assets, and the urgent drive to take action. Indeed, while there is much purported potential for green economic development in the two-county region, talk must turn to implementation in order to both rescue the economy and green operations. Area leaders are more than ready to join the green conversation; however, turning talk into concrete action has been much more difficult. Ideally, implemented efforts will operate on a regional scale, thus attracting attention and funding at the state and federal level. GVI is well-positioned to facilitate regional associations. Furthermore, collaboration between industry, academia and the government is critical for success. Indeed, the most promising initiatives currently on the table originate at CE-CERT, a fundamentally interdisciplinary endeavor. With a wealth of resources and willpower within reach, the Inland Empire could transform itself into a leader of California's green economy.

## REFERENCES

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- 2007 *Inland Empire Annual Survey*, prepared by the Institute of Applied Research, June 10, 2007.
- Air Resources Board, <http://www.arb.ca.gov/ba/omb/ombstaff.htm>.
- Alamillo, Jose, M. *Making Lemonade Out of Lemons: Mexican American Labor and Leisure in a California Town, 1880-1960*. Urbana, Chicago: University of Illinois Press, 2006.
- Baker, David R. "PG&E backs 3 solar plants in the Mojave: Oakland firm will design, build installations; sunlight, groundwater will generate power for 375,000 homes." *San Francisco Chronicle*, April 1, 2008.
- Baker, David R. "PG&E expands solar power plans." *San Francisco Chronicle*, Thursday, May 14, 2009.
- Building Industry Association of Southern California. [www.biasc.org](http://www.biasc.org)
- California Congressional District summaries, 1992/2001
- California Energy Commission, [www.energy.ca.gov/siting/solar/](http://www.energy.ca.gov/siting/solar/)
- California Solar Initiative, <http://www.gosolarcalifornia.org/csi/index.html>
- California's Inland Empire: 2015*. Public Policy Institute of California. [www.ppic.org](http://www.ppic.org). April, 2008.
- CE-CERT: UC Riverside, [www.cert.ucr.edu](http://www.cert.ucr.edu)
- CEQA Summary. [http://ceres.ca.gov/topic/env\\_law/ceqa/summary.html](http://ceres.ca.gov/topic/env_law/ceqa/summary.html)
- Cleantech, [cleantech.com/news/2637/california-dreamin-of-miles-of-solar](http://cleantech.com/news/2637/california-dreamin-of-miles-of-solar)
- Cox, Marney. "Current Trends vs. State Share: Evaluation of two alternative patterns and rates of growth for the riverside region," SourcePoint, 1989.
- Dos Lagos, <http://doslagos.net>
- Ehrlich, David. "California Dreamin' of Miles of Solar." Cleantech Group LLC, March 28, 2008. <http://cleantech.com/news/2637/california-dreamin-of-miles-of-solar>.
- Entrepreneurship, [www.entrepreneurship.org/Resources/Detail/Default.aspx?id=11030](http://www.entrepreneurship.org/Resources/Detail/Default.aspx?id=11030)
- EPA, "Green Toolkit," <http://www.epa.gov/greenkit/finance.htm>.
- Focus on the San Bernardino-Riverside-Ontario metropolitan area: an economic study*. prepared by the Bank of America, 1963.
- The Frontier Project, [www.frontierproject.com](http://www.frontierproject.com)
- Green County San Bernardino, [www.sbcounty.gov/greencountysb](http://www.sbcounty.gov/greencountysb)
- "Green Industries & Jobs in California." Centers of Excellence, Economic and Workforce Development California Community Colleges. Research Briefing, 2009.

Green Riverside, [www.greenriverside.com](http://www.greenriverside.com)

“Green Valley Initiative Comprehensive Economic Development Strategy,” Prepared by the USC Center for Economic Development, School of Policy, Planning, and Development, University of Southern California.

[www.greenvalleynow.org/newsroom/articles/stimulus.pdf](http://www.greenvalleynow.org/newsroom/articles/stimulus.pdf).

<http://www.greenvalleynow.org/projects/GreenValley.html>.

“Green Valley Initiative Draft Action Plans,” December 9, 2008, 12-13.

Goodman, Peter S. and Jack Healy. “Job Losses Hint at Vast Remaking of Economy.” *New York Times*, March 7, 2009.

Henton, Doug. *Clusters of Opportunity & The Green Economy*, Green Valley Initiative Phase 1 Report.

<http://www.greenvalleynow.org/newsroom/studies-and-reports.html>.

“Leadership Plus Focused Giving Yields the International Center for Entrepreneurial Management.” *Entrepreneurship*. <http://www.entrepreneurship.org/>

Loma Linda University, [www.ci.loma-linda.ca.us](http://www.ci.loma-linda.ca.us)

Inland Empire Center for Entrepreneurship, CSU San Bernardino, [iece.csusb.edu](http://iece.csusb.edu)

Inland Empire Economic Development, [www.inlandempire.us/business/economic\\_development.php](http://www.inlandempire.us/business/economic_development.php)

Inland Empire Economic Partnership, <http://www.ieep.com>

“Inland Empire Economic Report,” San Bernardino, CA : Inland Empire Economic Partnership, January 2009.

Inland Empire Small Business Development Center, [www.iesbdc.org](http://www.iesbdc.org)

Inland Empire Utilities Agency, [www.ieua.org](http://www.ieua.org)

Kolk, David X. *The Economic Impact of the Kaiser Steel Corporation upon Riverside and San Bernardino Counties*, Riverside, Calif.: University of California, Riverside, Dry- Lands Research Institute, 1981.

Metro Investment Report, [www.metroinvestmentreport.com](http://www.metroinvestmentreport.com)

Million Solar Roofs, [www.environmentcalifornia.org/energy/million-solar-roofs](http://www.environmentcalifornia.org/energy/million-solar-roofs).

Pincetl, Stephanie S. *Transforming California: A Political History of Land Use and Development*. Baltimore; London: The Johns Hopkins University Press, 1999.

Pomona University, [www.csupomona.edu/~crs](http://www.csupomona.edu/~crs)

Riverside County Economic Development Agency, [www.rivcoeda.org](http://www.rivcoeda.org)

Riverside County Chapter, BIA Southern California, [www.riversidebia.org](http://www.riversidebia.org)

“The Riverside Solar Innovation Center,” CE-CERT, UC Riverside (September 25, 2008).

Sackman, Douglas Cazaux. *Orange empire: California and the fruits of Eden*. Berkeley: University of California Press, c2005.

San Bernardino County, [www.co.san-bernardino.ca.us/eda/](http://www.co.san-bernardino.ca.us/eda/).

Southern California Gas Company, <http://www.socalgas.com/business/rebates/>.

“State declares Riverside an Emerald City.” *Water Efficiency: the journal for water conservation professionals*. [www.waterefficiency.net/the-latest/riverside-emerald-pilot.aspx](http://www.waterefficiency.net/the-latest/riverside-emerald-pilot.aspx)

Title 24, <http://www.energy.ca.gov/title24/>.

United States Patent and Trademark Office. [www.uspto.gov](http://www.uspto.gov).

Warren Alquist Act, [http://www.energy.ca.gov/reports/Warren-Alquist\\_Act/index.html](http://www.energy.ca.gov/reports/Warren-Alquist_Act/index.html).

Watershed Protection, [www.arb.ca.gov/ba/ba.htm](http://www.arb.ca.gov/ba/ba.htm)

WRCOG Environment, [www.wrcog.cog.ca.us/content/cleancitiescoalition.asp](http://www.wrcog.cog.ca.us/content/cleancitiescoalition.asp)