

San Diego Region

Green Economy Profile

State Energy Sector Partnership (SESP) and Training Grants



October 2010

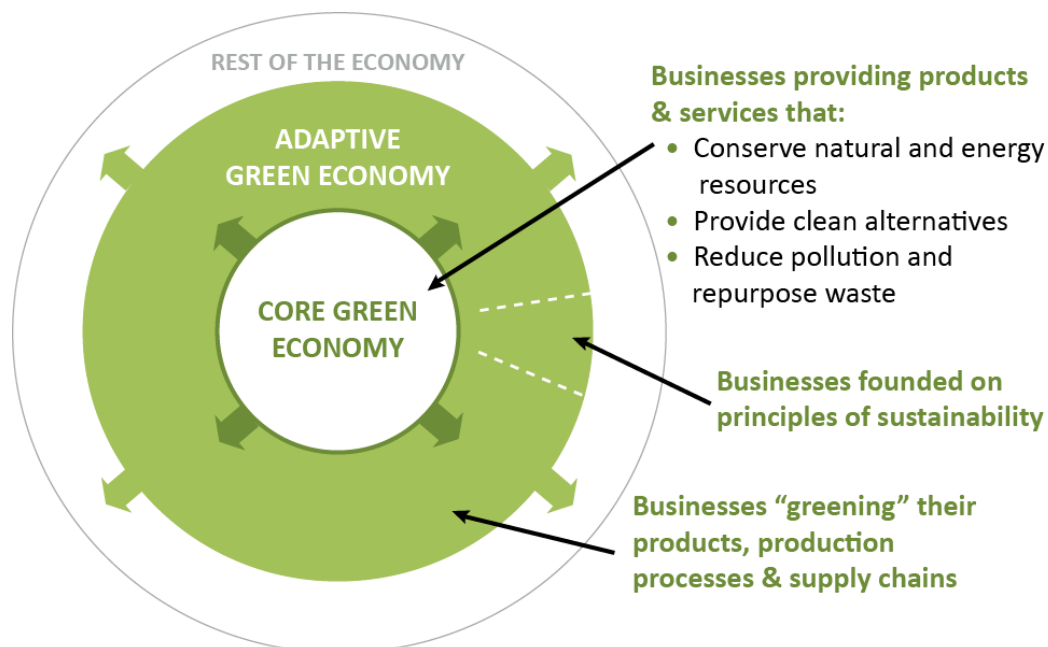
San Diego's Core Green Economy

California's economy is transforming. Globally the demand is rising for vital resources, like energy and fresh water, as the world's population grows and the standard of living in developing countries rises. In addition, volatile fuel costs and the real impacts of climate change such as diminishing sources of fresh water, threatened coastlines and changing weather patterns are driving changes in what products we use and how we live and run our businesses.

California's green economy is growing, diverse and distributed across the state. Between 1995 and 2008, green businesses increased 45 percent in number and 36 percent in employment while total jobs in the state expanded only 13. Even in rural areas with a smaller economic base, green jobs are growing faster than the overall economy. Just between 2007 and 2008, green jobs grew five percent while total jobs dropped one percent. Different regions have different specializations that are building off of existing strengths that relate to the growing fields of the green industries. Across the value chain, California's Core Green Economy consists largely of high-value services and manufacturing and also enjoys a strong base of research and development in multiple fields.

The green economy offers broad occupational opportunity. Jobs in the green economy offer opportunities across the spectrum of skills levels and earnings potential. For the most part, the jobs in the Core Green Economy represent occupations that already exist but are in new demand such as Electricians or are seeing an expansion of skills and tasks such as Operations & Building Managers. Also, entirely new occupations are emerging such as Fuel Cell Technicians and Energy Auditors.

The Core Green Economy provides the products and services that enable the transformation toward a cleaner, more efficient and more competitive economy. The Core Green Economy consists of businesses that provide the products and services that leverage clean energy sources, conserve energy and all natural resources, reduce pollution, and repurpose waste. These companies represent the core, because they provide the means for all other businesses as well as households and public entities to transition to a cleaner and more resource efficient economy. The Core Green Economy is made up of fifteen industry segments (see table below).



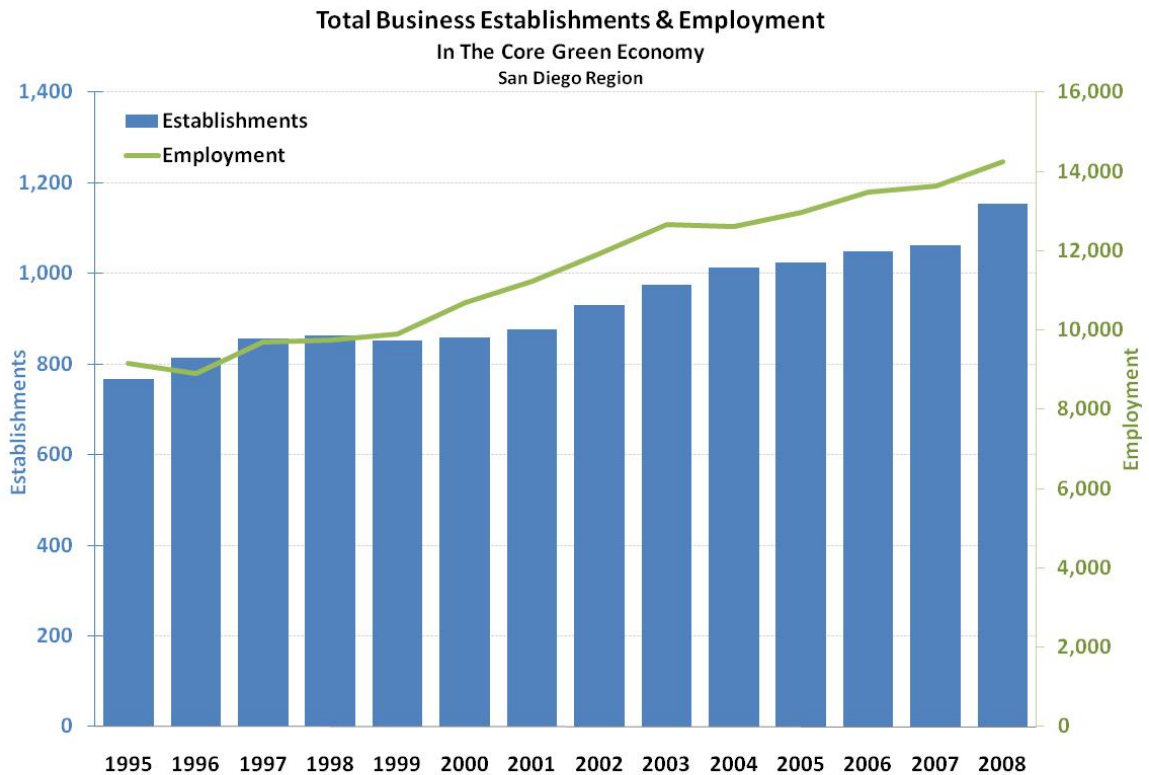
Fifteen Segments of the Green Economy
 (As published in Next 10's Many Shades of Green, 2009)

| GREEN SEGMENT | DESCRIPTION |
|---|---|
| 1. Energy Generation | <ul style="list-style-type: none"> • Renewable energy generation (all forms of solar, wind, geothermal, biomass, hydro, marine & tidal, hydrogen, co-generation) • Associated equipment, controls, and other management software and services • Renewable energy consulting services • Research & Testing in renewable energy |
| 2. Energy Efficiency | <ul style="list-style-type: none"> • Energy conservation consulting and engineering services • Building efficiency products and services • Alternative energy appliances (solar heating, lighting, etc.) • Energy efficiency research • Energy efficiency meters & measuring devices |
| 3. Transportation | <ul style="list-style-type: none"> • Alternative fuels (biodiesel, hydrogen, non-corn-based ethanol) • Motor vehicles & equipment (electric, hybrid, and natural gas vehicles, diesel technology) |
| 4. Energy Storage | <ul style="list-style-type: none"> • Advanced batteries (Li-Ion, NiMH) • Battery components & accessories • Fuel cells |
| 5. Air & Environment | <ul style="list-style-type: none"> • Emissions monitoring & control • Environmental consulting (environmental engineering, sustainable business consulting) • Environmental remediation |
| 6. Recycling & Waste | <ul style="list-style-type: none"> • Consulting services • Recycling (paper, metal, plastics, rubber, bottles, automotive, electronic waste and scrap) • Recycling machinery manufacturing • Waste treatment |
| 7. Water & Wastewater | <ul style="list-style-type: none"> • Water conservation (control systems, meters & measuring devices) • Development and manufacturing of pump technology • Research and testing • Consulting services • Water treatment and purification products and services |
| 8. Agriculture Support | <ul style="list-style-type: none"> • Sustainable land management and business consulting services • Sustainable supplies and materials • Sustainable aquaculture |
| 9. Research & Advocacy | <ul style="list-style-type: none"> • Organizations and research institutes focused on advancing science and public education in the areas of: renewable energy and alternative fuels and transportation. |
| 10. Business Services | <ul style="list-style-type: none"> • Environmental law legal services • Green business portals • Green staffing services • Green marketing and public relations |
| 11. Finance & Investment | <ul style="list-style-type: none"> • Emission trading and offsets • Venture capital and private equity investment • Project financing (e.g. solar installations, biomass facilities, etc.) |
| 12. Advanced Materials | <ul style="list-style-type: none"> • Bioplastics • New materials for improving energy efficiency |
| 13. Green Building | <ul style="list-style-type: none"> • Design & construction • Building materials • Site management • Green real estate & development |
| 14. Manufacturing & Industrial Support | <ul style="list-style-type: none"> • Advanced packaging • Process management • Industrial surface cleaning |
| 15. Energy Infrastructure | <ul style="list-style-type: none"> • Consulting and management services • Cable & equipment |

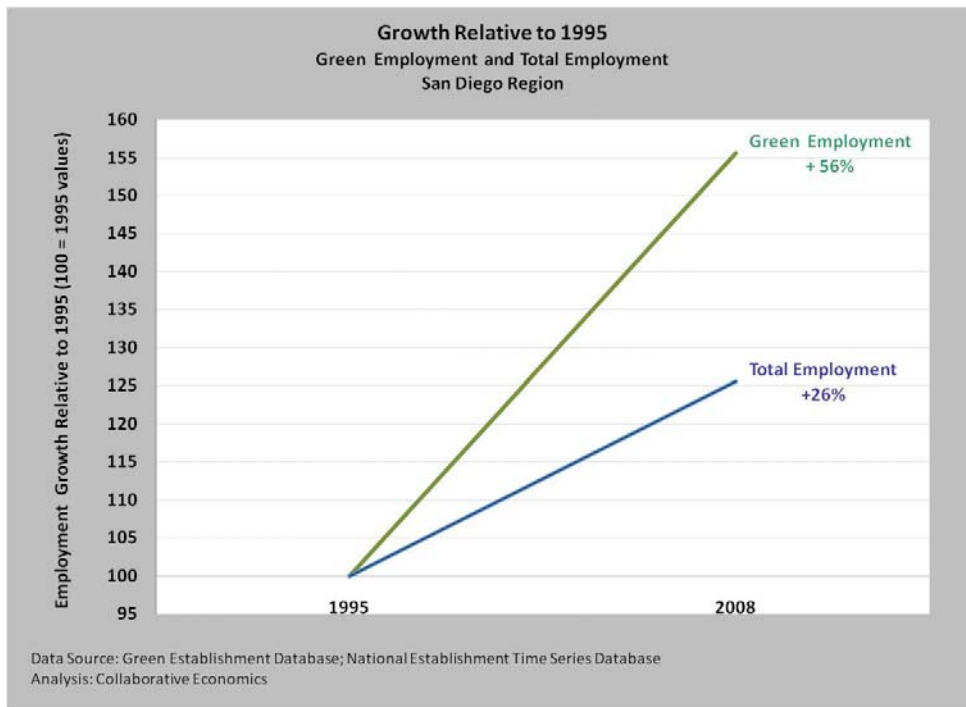
Regional Overview

San Diego’s green economy is diverse and growing. For the purposes of this analysis, the San Diego Region consists of Imperial County and San Diego County. Green employment has grown at twice the rate of total employment growth in the region. Air & Environment is the most prominent segment in the green economy with the largest number of jobs and establishments in the region. There is a high concentration of green jobs and establishments in Energy Infrastructure in the San Diego. Energy Infrastructure is also the segment where employment is growing the fastest, with a 5,500 percent increase from 1995 to 2008. Green employment in the region is also growing rapidly in Transportation.

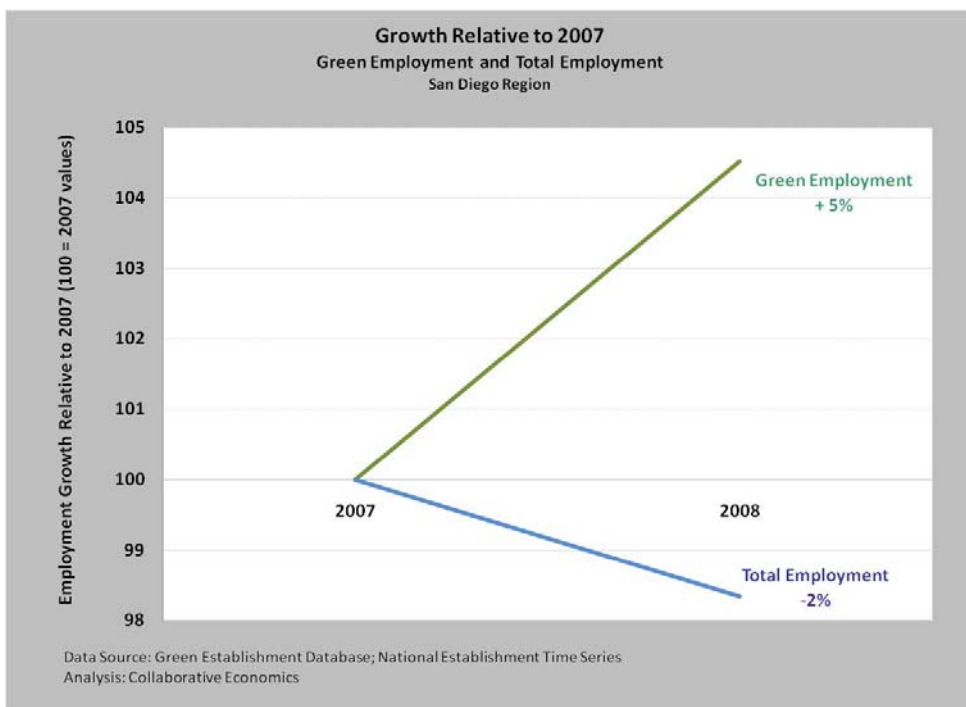
The green economy in San Diego has expanded from 1995 to 2008 with an increasing trend in both green business establishments and green employment. Green establishments increased 44 percent from 1995 to 2008 in the region. Roughly 390 establishments were added during that time period, bringing the total to about 1,150 establishments in 2008. In green employment, roughly 5,100 jobs were added, representing a 56 percent increase. Notable gains in both establishments and employment have taken place in recent years. From 2007 to 2008, green establishments grew by nine percent, adding roughly 90 establishments. During the same time period, green employment grew five percent, adding about 620 jobs in the region.



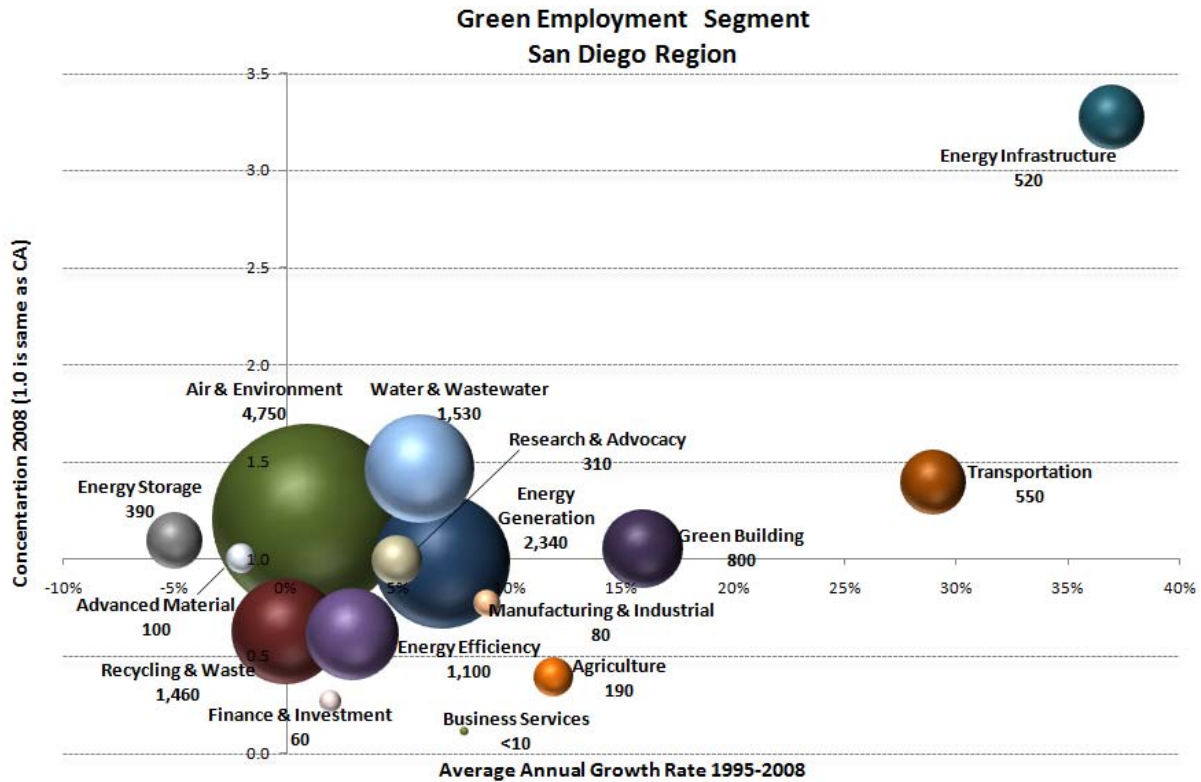
Data Source: Green Establishment Database; National Establishment Times Series
Analysis: Collaborative Economics



Growth in green employment in the San Diego is far outpacing growth in total employment. From 1995 to 2008 green employment grew 56 percent. This growth is over double that of total employment growth during the same time period, which was 26 percent.



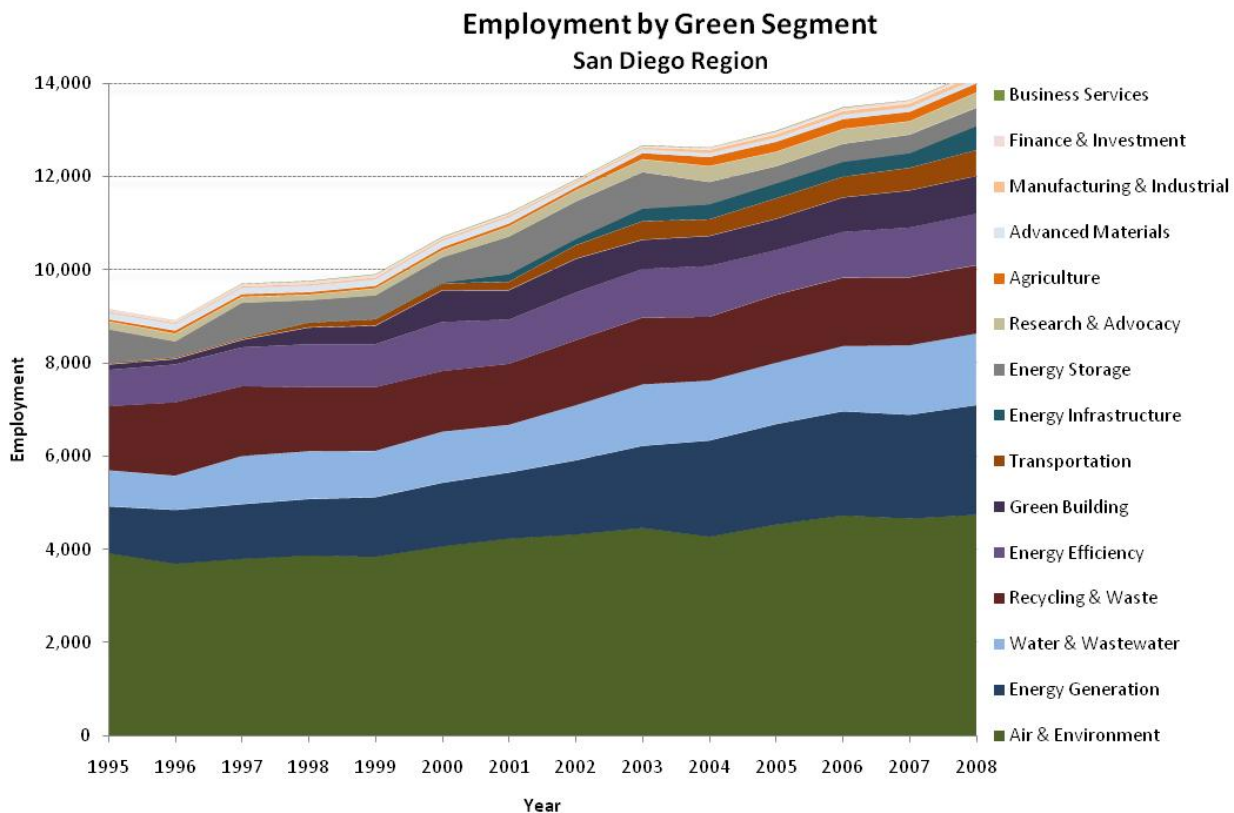
In more recent years, the discrepancy between green employment growth and total employment growth in San Diego is even greater. From 2007 to 2008, green employment grew and total employment contracted. Total employment in the region decreased by 2 percent and green employment grew five percent in San Diego.



Note: Employment values are rounded
 Data Source: Green Establishment Database; National Establishment Time Series
 Analysis: Collaborative Economics

San Diego’s diverse and growing green economy is represented by the above bubble chart. The size of the bubbles in the chart represent the employment in a particular segment in 2008. The vertical position of the bubble along the y-axis represents the concentration of employment in a particular segment relative to the state as a whole. A value of one on the y-axis means the concentration value is the same as in California, and a value above one suggests that the region hosts a higher degree of specialization and possibly value added in a particular industry. The position of the bubble along the x-axis represents the average annual growth rate of employment in a particular segment from 1995 to 2008.

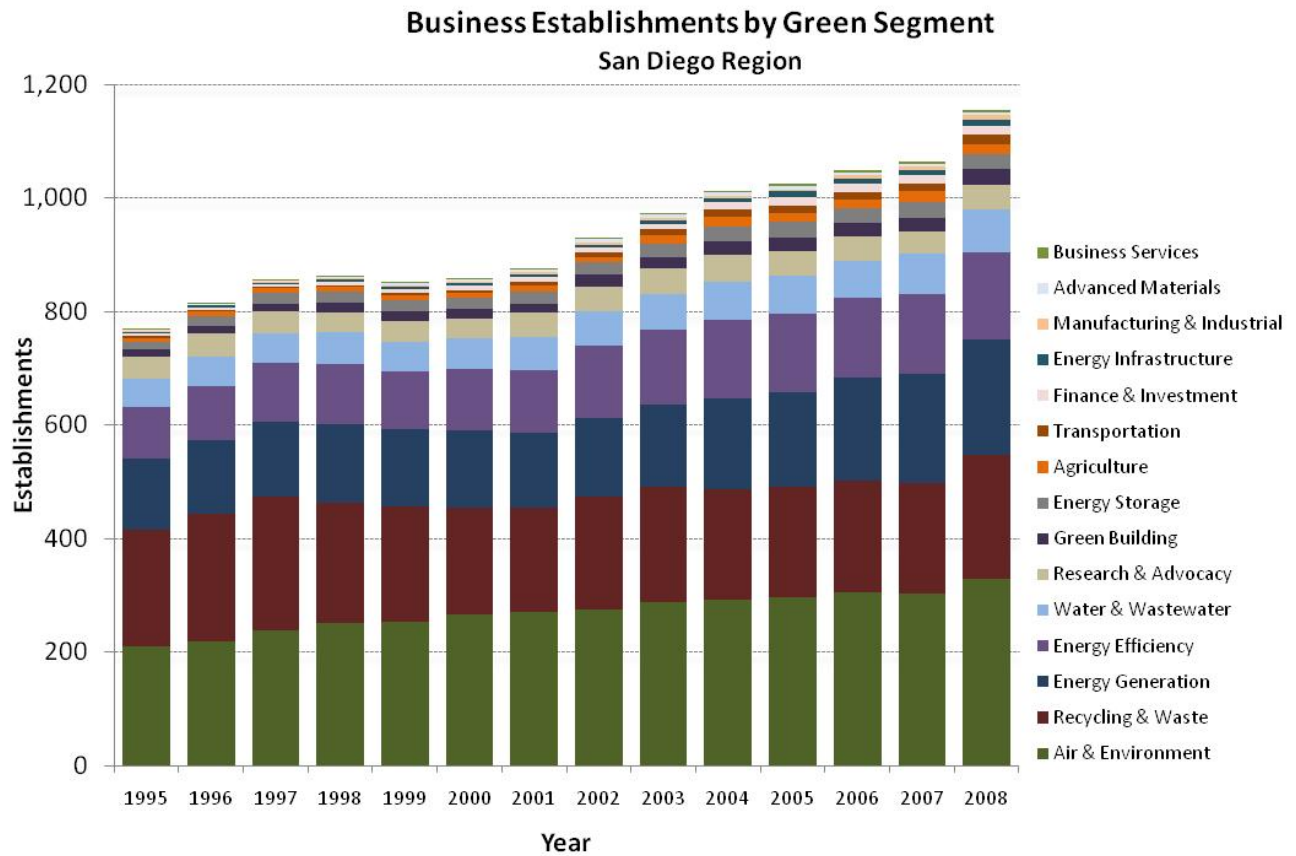
In San Diego, Air & Environment (4,750 jobs), Energy Generation (2,340 jobs), and Water & Wastewater (1,530 jobs) contributed the most to green employment in 2008. In the same year, Energy Infrastructure had the highest concentration of employment, over three times more concentrated than the state as a whole. Additionally, Energy Infrastructure grew the fastest with an average annual growth rate of 37 percent from 1995 to 2008. Water & Wastewater was not only one of the largest segments in 2008, but employment was almost 1.5 times more concentrated than in the state as a whole. Employment in Transportation was more concentrated in San Diego than in the state as a whole in 2008 and had an average annual growth rate of 29 percent from 1995 to 2008. During the same time period, jobs in Green Building also experienced notable growth at an average annual rate of 16 percent.



Data Source: Green Establishment; National Establishment Time Series
Analysis: Collaborative Economics

Green employment encompasses a diverse set of industries represented by the fifteen segments described earlier. Each of the fifteen segments is represented by San Diego’s workforce and nearly all segments have experienced growth from 1995 to 2008. From 1995 to 2008, Air & Environment grew 21 percent and was the largest contributor to green employment, with 4,750 jobs in 2008. The second and third largest segments in San Diego’s green economy are Energy Generation and Water & Wastewater, contributing 2,340 jobs and 1,540 jobs respectively. Between 1995 and 2008, employment in Energy Generation grew 134 percent and Water & Wastewater more than doubled. The segments with the strongest employment growth from 1995 to 2008 were Energy Infrastructure, growing 5,770 percent and adding about 520 jobs, and Transportation, growing 2,660 percent and adding about 530 jobs. In more recent years, employment growth has been strongest in Research & Advocacy where 40 jobs were added from 2007 to 2008, a 15 percent increase.

In Transportation and Energy Infrastructure, employment is growing at a much faster pace than establishments. From 1995 to 2008, jobs in Transportation grew 2,700 percent while establishments in Transportation grew 325 percent. During the same time period, jobs in Energy Infrastructure grew approximately 5,770 percent while establishments grew by approximately 270 percent.



Data Source: Green Establishment; National Establishment Time Series
 Analysis: Collaborative Economics

Similar to trends in employment, Air & Environment is the largest segment in establishments, with 330 establishments in 2008, a 58 percent increase from 1995. Energy Generation grew 65 percent from about 120 establishments in 1995 to about 200 establishments in 2008. Approximately 60 new establishments opened in Energy Efficiency from 1995 to 2008, a 67 percent increase. Eleven of the new establishments in Energy Efficiency were added in the short period of 2007 to 2008. Establishments in Recycling & Waste grew 12 percent from 2007 to 2008, adding roughly 20 establishments. From 1995 to 2008, establishments in Energy Storage grew 86 percent while employment declined 46 percent.

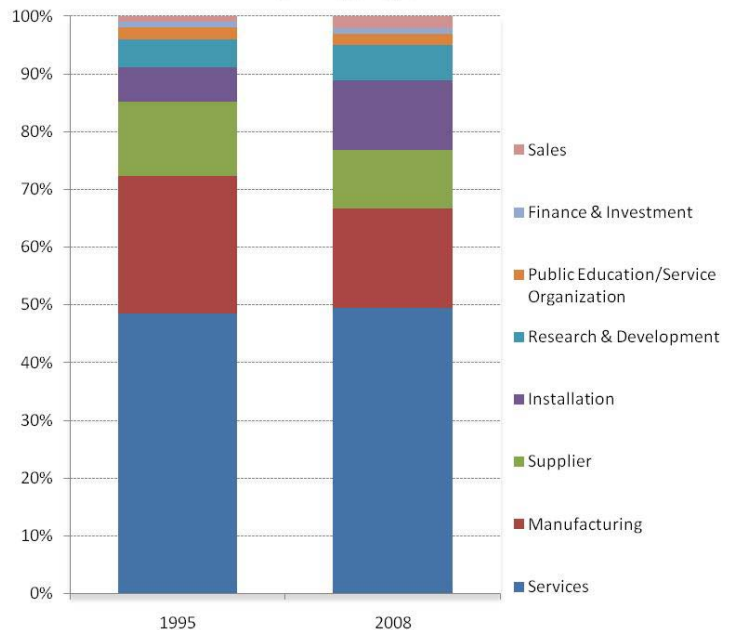
The Value Chain

California’s Core Green Economy reflects a strong business base representing all elements of the value chain. Consisting largely of high-value services and manufacturing, California’s green economy includes a strong base of research and development in multiple fields.

Green employment can also be viewed by the activity in Value Chain with which it is associated. In San Diego, Services represented almost 50 percent of green employment in 1995 and 2008. Air & Environment is the largest green segment in Services representing 60 percent of the Service jobs in San Diego’s green economy in 2008. Employment in Installation more than tripled from 1995 to 2008, increasing from about 570 jobs to about 1770 jobs. Energy Generation contributed the most to Installation jobs in 1995 and 2008. Jobs in Research & Development nearly doubled from 1995 to 2008 from approximately 440 jobs to approximately 860 jobs.

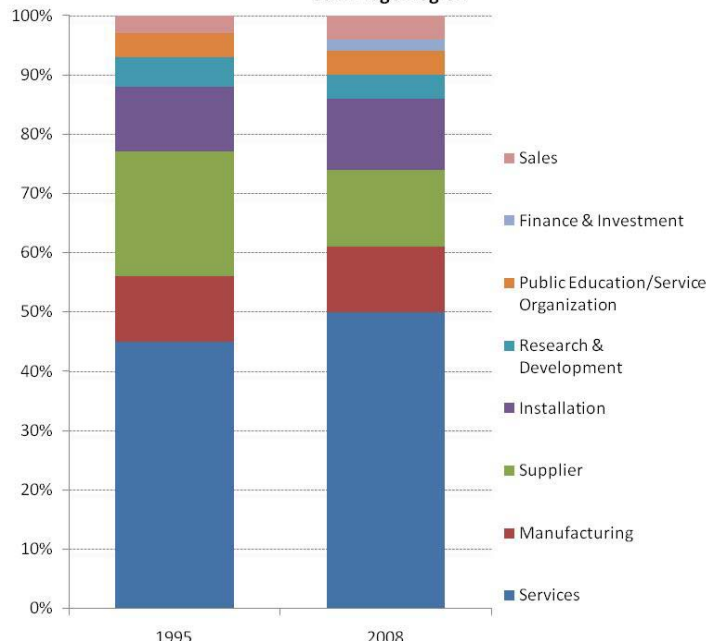
Services represented an overwhelming portion of green establishments in San Diego. About 50 percent of the green establishments were in Services in both 1995 and 2008, a 62 percent increase during that time period. Green establishments in the Supplier category decreased from 1995 to 2008. Establishments in Sales grew 145 percent from 1995 to 2008. Energy Efficiency and Energy Generation are the largest green segments with Sales. Although representing a small portion of green establishments Finance & Investment establishments in 2008 were six times greater than in 1995.

Green Employment Across the Value Chain
San Diego Region



Data Source: Green Establishment Database; National Establishment Time Series
Analysis: Collaborative Economics

Green Establishments Across the Value Chain
San Diego Region



Data Source: Green Establishment Database; National Establishment Time Series
Analysis: Collaborative Economics