What makes up the Energy and Utilities Sector?
The Energy and Utilities industries are engaged in developing, implementing, and managing technologies related to the generation, distribution, storage, and efficient use of energy. The sector represents a mix of three industry clusters:

- **Power utilities** that are primarily focused on generating, transmitting, and delivering electric power, and act as a link between the other two clusters.
- **Energy efficiency** that encompasses firms engaged in energy planning and management with the purpose of making new and existing buildings more energy efficient.
- **Renewable energy** that combines activities aimed at developing, introducing and installing the technologies, which harness renewable sources of energy, such as solar, wind, geothermal, and biomass.

Why Energy and Utilities?
With the rapid growth of California’s population in recent decades, the demand for energy has been steadily increasing. At the same time, the concern over greenhouse gas (GHG) emissions as a result of using fossil fuels for power generation has been gaining momentum. The Energy & Utility sector plays a critical role in reconciling these two trends. By utilizing renewable energy sources, using power more efficiently in homes and buildings, and implementing smart grid technologies, these industries are working together towards a more sustainable energy future in California. As the state’s legislation and policy move in the direction of requiring more energy generated from alternative sources as well as more efficient use of energy, utility, renewable energy, and energy efficiency jobs that perform this work will be in great demand.

Quick Facts
- There are about 48,200 energy utility and energy efficiency related businesses in California.
- UC Berkeley forecasts about $11.2 billion of public and private investments in energy efficiency in California by the year 2020.
- Employment in renewable energy generation grew by 21% over the last five years and is estimated at 46,600 in 2010.
- Energy efficiency & utility industries account for more than 461,200 jobs and are projected to add almost 18,100 new jobs by 2015.
- Average 2012 earnings per worker in energy utilities were $113,000, double the state’s average annual earnings per worker.

What is Driving Growth?
The growth of renewable energy and energy efficiency can mainly be attributed to legislation and policies:

- Passed in November 2012, Proposition 39 is estimated to raise $2.5 billion for energy efficiency projects.
- The utilities industry has the highest proportion of baby-boomers, with almost 3 of every 5 workers between ages 41 and 59 in 2005.
- The CPUC’s “Long-Term Energy Efficiency Strategic Plan” prescribes using policy tools to drive growth in energy efficiency, including customer incentives and consumer education.
- Smart grid deployment will transform the electrical power system and empower consumers with information, choices and control.
What is the Industry Outlook?

Utilities and energy efficiency clusters combined account for over 461,200 jobs, with roughly 95% of employment (436,500 jobs) in energy efficiency and 5% in utilities (24,700 jobs). Among the industries that comprise the two clusters, the largest industries by employment are engineering services (123K jobs), HVAC contractors (97K), electrical contractors (97K), and commercial & institutional building construction (59K). The utilities and energy efficiency clusters are projected to add over 18,100 new jobs by 2015, a growth of about 4%. Most job gains are expected in engineering services (4% growth), HVAC contractors (7%), and commercial & institutional building construction (5%).

According to the “Many Shades of Green” report by Next 10 and Collaborative Economics, green energy generation accounted for about 46,600 jobs in 2010. Despite the economic downturn, this segment has been adding jobs at a rate of 21% from 2006-2010. Almost three-fourths of all green energy generation jobs were in installation (18,400 jobs) and manufacturing (16,400), followed by services (7,500). Among the renewables, wind and solar have been rapidly increasing their share in California’s power mix. Thus, the amount of power generated using wind has increased by 252% from 2006-2010, making it the number one source of renewable energy in the state. Utilization of solar energy grew by 156%, but it still lags behind other alternative power sources, such as wind, geothermal, and biomass.
What Clusters are Driving Economic Activity?

The energy and utilities sector generated nearly $115 billion in sales revenue in 2010. Industrial and institutional/commercial building construction cluster produced the most revenue ($45 billion), followed by electrical, plumbing, and HVAC contractors ($30 billion), engineering, architectural, and drafting services ($25 billion), and energy utilities ($7 billion). A healthy energy & utilities sector is critical for the California’s economy. Not only does revenue generated in the clusters contribute to the state through sales and corporate taxes, it also stimulates investments into industries hard hit by the recent recession helping them rebound and grow. In addition, this also results in more direct and indirect jobs across the value chain.

Where are the “Hot Spots”?

In both the energy efficiency and utilities clusters the Los Angeles/Orange region outpaces all other regions in the state, accounting for about one-third of the businesses. Other regions with a large number of businesses related to the sector are San Diego & Imperial, Inland Empire, Central Valley, and East Bay. In the energy efficiency cluster, the Los Angeles/Orange region is also at the top of the list by number of employees (133,000) and sales revenues ($33.8 billion). The San Francisco region leads in the utility cluster employment, followed closely by the Central Valley region. This could be explained by the significant role that Pacific Gas and Electric plays in these regions.
How Much Does It Pay?

The energy utilities cluster is one of the highest paying sectors in California. With the annual earnings per worker at $113,200, utilities pay double the state average wage across all sectors. Annual earnings per worker in energy efficiency industries are significantly less than those in utilities ($73,100), but still above the California average. Among the specific industries within the energy efficiency cluster, the highest wages and salaries are paid by engineering services firms and heating equipment manufacturing firms.

What Jobs are in Demand?

Energy and utilities sector jobs that are expected to be in high demand in the next three years represent various levels of required education and skills. However, half of the top ten occupations in this sector require either on-the-job training or a vocational award. Although projected job growth among these occupations is fairly low (on average), the number of job openings due to replacement is significant. Civil engineers and electricians will have the most opportunities over the next three years. Data provided in the table below is sorted by the number of job openings, which includes new and replacement jobs. Between November 2012 and February 2013, energy and utilities firms posted more than 12,000 online job advertisements. If available, individual occupational totals are shown in the column on the far right. Not shown in the table but deserving honorable mention were first-line supervisors of construction trades and cost estimators, with 234 and 102 postings, respectively.

<table>
<thead>
<tr>
<th>Job Title</th>
<th>2012 Jobs</th>
<th>3-year Change</th>
<th>% Change</th>
<th>Openings</th>
<th>Median Hourly Wage</th>
<th>Minimum Education Level</th>
<th>Online Job Postings</th>
</tr>
</thead>
<tbody>
<tr>
<td>General and Operations Managers</td>
<td>243,800</td>
<td>48</td>
<td>.02%</td>
<td>14,960</td>
<td>$52.08</td>
<td>Bachelor’s &amp; work experience</td>
<td>81</td>
</tr>
<tr>
<td>Architectural/Engineering Managers</td>
<td>30,246</td>
<td>123</td>
<td>.41%</td>
<td>2,158</td>
<td>$68.34</td>
<td>Bachelor’s &amp; work experience</td>
<td>252</td>
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<tr>
<td>Architects</td>
<td>22,050</td>
<td>(278)</td>
<td>(1.3%)</td>
<td>1,597</td>
<td>$31.45</td>
<td>Bachelor’s degree</td>
<td>84</td>
</tr>
<tr>
<td>Civil Engineers</td>
<td>40,910</td>
<td>1,471</td>
<td>3.6%</td>
<td>4,042</td>
<td>$42.97</td>
<td>Bachelor’s degree</td>
<td>728</td>
</tr>
<tr>
<td>Engineers, All Other</td>
<td>23,976</td>
<td>131</td>
<td>.55%</td>
<td>1,854</td>
<td>$43.70</td>
<td>Bachelor’s degree</td>
<td>NA</td>
</tr>
<tr>
<td>Architectural and Civil Drafters</td>
<td>15,240</td>
<td>(677)</td>
<td>(4.4%)</td>
<td>926</td>
<td>$25.19</td>
<td>Associate degree</td>
<td>106</td>
</tr>
<tr>
<td>Carpenters</td>
<td>128,284</td>
<td>57</td>
<td>.04%</td>
<td>10,089</td>
<td>$19.50</td>
<td>Long-term OJT</td>
<td>NA</td>
</tr>
<tr>
<td>Electricians</td>
<td>56,013</td>
<td>1,278</td>
<td>2.3%</td>
<td>6,516</td>
<td>$26.76</td>
<td>Long-term OJT</td>
<td>109</td>
</tr>
<tr>
<td>Plumbers and Steamfitters</td>
<td>39,418</td>
<td>1,201</td>
<td>3.1%</td>
<td>4,763</td>
<td>$23.78</td>
<td>Long-term OJT</td>
<td>90</td>
</tr>
<tr>
<td>HVAC/R Mechanics and Installers</td>
<td>25,804</td>
<td>1,152</td>
<td>4.5%</td>
<td>2,569</td>
<td>$21.69</td>
<td>Postsecondary non-degree award</td>
<td>83</td>
</tr>
</tbody>
</table>

1Earnings data referenced here represents payroll averages for the sector. Payroll wages/earnings are calculated from quarterly aggregate payroll totals divided by the number of employees in a sector, regardless of occupational classification (job title).2Data for occupations shown here represents level of employment in the energy and utilities industries only, usually referred to as staffing pattern totals, and does not represent occupational employment across all industry sectors.