



## THE UNITED STATES CONFERENCE OF MAYORS CLIMATE PROTECTION CENTER



2008 GREEN JOBS REPORT | Current and Potential Green Jobs in the U.S. Economy

# Key Findings

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### **The Mayors/Global Insight Green Jobs Index**

- The U.S. Conference of Mayors and Global Insight have created a national Green Jobs Index that calculates a baseline of current green jobs in the economy devoted to reduction of fossil fuels, the increase of energy efficiency, and the reduction of greenhouse gas emissions. This index will be updated periodically to track the creation of green jobs in the economy.
- The Index estimates that in 2006 there were just more than 750,000 Green Jobs in the U.S. economy.
- Over half of the green jobs were in the Engineering, Legal, Research and Consulting category (418,715 jobs), highlighting the importance of indirect jobs in the green economy.
- The second largest category was Renewable Power Generation (127,246 jobs). Agriculture and Forestry provided a significant contribution of 57,500 jobs.
- Green Jobs in 2006 were well distributed across the country. Approximately 85% were located in metropolitan areas, while the remaining were found in non-metro counties.
- The top ten metros with the highest number of Green Jobs account for 23% of all green jobs nationally. New York ranks first, with 25,021 jobs, followed by Washington D.C. (24,287); Houston (21,250); and Los Angeles (20,136).

### **Green Jobs Forecast**

- For its Green Jobs Forecast, the report assumes the following:
  - by 2038, 40% of the electricity generated in the U.S. will come from alternative fuels (30% from wind; 20% from solar; 10% from incremental hydropower; 10% from geothermal; and 30% from biomass);
  - residential and commercial retrofitting will occur at a level that results in a 35% reduction in electricity use in existing buildings over the next three decades; and
  - by 2038, 30% of gasoline and diesel demand for passenger cars and light trucks is satisfied by alternative fuels.
- Under these scenarios, the Green Jobs Index forecasts that by 2038, the economy will generate 4.2 million new Green Jobs, five times today's total count.
- The report projects that these green jobs could provide as much as 10% of new job growth in the economy over the next 30 years.
- Within this forecast, Renewable Power Generation would reach 407,200 jobs over the next decade, 802,000 jobs in the second decade, and account for 1,236,800 jobs by 2038.
- The 30-year project to retrofit the existing residential and commercial building stock would generate 81,000 jobs. These jobs would retrofit a small percentage of the existing stock of buildings each year and dramatically reduce their energy requirements over the forecast period.
- The push to greatly increase use of alternative transportation fuels would generate nearly 1.5 million jobs by 2038. The trajectory of growth for these jobs follows a similar path to the expansion of renewable fuel production, with faster growth in the early forecast period to reach the federal mandate and slower growth thereafter.
- Associated growth in engineering, legal, research and consulting positions would be more than 1.4 million new jobs (846,900 by 2018 and 1,160,300 by 2028).

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## **Green Job Potential Growth**

### *Renewable Power Generation*

- EPA estimates that in 2006 electricity generation was responsible for 41% of carbon dioxide emissions in the U.S. The Energy Information Administration estimates the electric power sector generated 4,006 billion kilowatt hours of electricity in 2007.
- Of that total, just 319 billion kilowatt hours (8.0%) were generated from renewable sources. Nuclear power made a significant contribution of non-fossil fuel power, generating 806 billion kilowatt hours. Of the renewable fuels, hydroelectric power was by far the largest contributor. Wind energy, though small in magnitude, was the fastest growing from the previous year.
- For wind, the net generation in 2007 was 32.1 billion kilowatt hours, a 21% increase from one year earlier, enough to power 2.9 million homes.
- Wind capacity is expected to increase 45% in 2008, leading to 10% of renewable energy generation in 2008. Still, of total electricity generation for the U.S, wind accounted for just 0.8% of the total for 2007.
- The American Wind Energy Association estimates that total potential generation at 10,777 billion kilowatt hours from wind annually, more than 2.5 times the total U.S. electricity net generation in 2007. North Dakota, Texas, Kansas, South Dakota, and Montana all have the potential to generate more than 1 billion kilowatt hours from wind annually. Opportunities also occur further east, with Maine, New York, and Michigan each in the list of top-twenty states.
- Solar power represents an opportunity for massive job growth. In 2006 approximately 606 million kilowatt hours were generated from photovoltaic and solar thermal devices, representing a 23% growth since 2000. In 2007, investment in solar power capacity jumped 21% in just one year. Solar remains an extremely small part of the overall generation infrastructure, generating just 0.2 percent of alternative-based electricity in 2007.
- Solar manufacturing has surged over the past 10 years. In 1997, domestic producers shipped photovoltaic devices totaling 46,354 peak kilowatts of capacity, employing 1,700 in the industry. By 2006, production had reached 337,268 peak kilowatts of capacity, a more than seven-fold increase, and employment had risen to 4,000 direct jobs.
- In 2007, hydroelectric sources generated 246 billion kilowatt hours of electricity, enough to power more than 22 million homes. Net generation in 2007 accounted for 77% of alternative net electricity generation and 6.1% of U.S. net electricity generation.
- The greatest future growth potential is in “Small Hydro” projects, with capacities ranging from 1 megawatt to 30 megawatts, with locations for projects spread across the country.
- In 2007 geothermal sources yielded net generation of 14.9 billion kilowatt hours, enough to power 1.3 million homes and equaling 4.7% of all renewable generation. The U.S. Geological Survey concluded that total geothermal potential might be ten times higher than current installed capacity.
- In 2007 net generation from biomass sources totaled more than 55 billion kilowatt hours, equivalent of electricity for more than 5 million homes.

### *Energy Efficiency*

- Residential and commercial buildings account for a significant portion of total energy consumption in the U.S. Efforts to increase their efficiency have great potential to generate new employment opportunities.
- One of the key differences between green and conventional energy efficiency renovations is generally the materials used in the process. One problem that currently exists in the industry, however, is a knowledge gap across many contracting firms. Some firms are not fully aware of some green construction techniques or the wide variety of modern materials that can be used in a given renovation project.

### *Renewable Transportation Fuels*

- EPA estimates the transportation sector generated 33% of total carbon dioxide emissions in 2007. Total CO<sub>2</sub> emissions in the sector have increased 16% since 1995, and 25% since 1990.
- In 1997, ethanol made up just 1.09% of the total gasoline pool. By 2007, that had increased to 5.09% with significant growth potential based on legislation at both the Federal and state levels to increase alternative fuels.