**Will African-American Workers Benefit from the Green Revolution?**

Valerie R. Wilson
National Urban League Policy Institute

## Introduction

As the United States economy nears the end of what has been the longest recession in post-World War II history[1], the question on everyone's mind seems to be, what will be the engine that drives economic expansion into the future? Put differently, what will be the next impetus for innovation, a force that has commonly propelled the evolution of the American economy from one generation to the next? Much like what information technology (minus the bubble) did for job growth during the 1990s, already some are hoping that the "greening of America" will offer a much needed post-millenial boost to the American economy, particularly as it pertains to jobs.

The term "green" is used to define products or services that have a positive impact on energy and/or environmental sustainability[2]. Though the idea of green living was once reserved primarily for die hard environmentalists, today the green lifestyle is promoted in almost every facet of mainstream American society, including our First Lady's White House garden and national economic policy. In fact, the American Recovery and Reinvestment Act (ARRA) of 2009 included $85 billion in direct spending and tax cuts for energy and transportation-related programs intended to jump start America's transition to a green economy by creating jobs and encouraging private investment in a more energy-efficient economy.

This report considers some of the estimates and projections from an ever-growing body of literature on the green economy and green jobs in order to evaluate employment opportunities for African American workers, a group that has persistently experienced

[1] When this analysis was done, the economy was in the 20th month of the recession that began in December 2007. The recession of the 1980s lasted 16 months from July 1981 to November 1982. These are the official dates reported by the Business Cycle Dating Committee of the National Bureau of Economic Research.

[2] Workforce Information Council Green Jobs Study Group (2009).

unemployment rates twice that of their white counterparts. We begin with a working definition of green jobs as outlined by the Workforce Information Council (WIC) Green Jobs Study Group. Using Current Population Survey data, we evaluate trends in unemployment over the past two years for a previously defined set of representive green economy occupations and explore these trends in light of national and state-level growth projections for the green economy. Based on this information, we examine the role of the National Urban League in facilitating the transition to a green economy for the communities we serve and conclude with a discussion of current legislation and policies.

**Defining Green Jobs and the Green Economy**

Despite extensive usage of the term "green" to define all things (even remotely) eco-friendly or energy efficient, the discussion about what constitutes a green job continues to be ongoing and a definitive answer remains a work in progress. In October 2009, the WIC Green Jobs Study Group released its Final Report on *Measurement and Analysis of Employment in the Green Economy*. In this report they propose the following working definition of green jobs based on a review of existing green concepts and definitions from 43 studies:

*A green job is one in which the **work is essential** to products or services that improve energy efficiency, expand the use of renewable energy, or support environmental sustainability. The job involves work in any of these green economic activity categories:*

- *Renewable Energy and Alternative Fuels*
- *Energy Efficiency and Conservation*
- *Pollution, Waste and Greenhouse Gas (GHG) Management, Prevention, and Reduction*
- *Environmental Cleanup and Remediation and Waste Cleanup and Mitigation*
- *Sustainable Agriculture and Natural Resource Conservation*

- *Education, Regulation, Compliance, Public Awareness, and Training and Energy Trading*[3].

In 2010, the Bureau of Labor Statistics started its green jobs initiative to develop information on (1) the number of and trend over time in green jobs, (2) the industrial, occupational, and geographic distribution of the jobs, and (3) the wages of the workers in these jobs. BLS defines green jobs as either:

A. Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources.
B. Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources.

Data will be collected through the green process survey which is currently under development. Data collection is planned to begin in Summer 2011, and data publication is planned in Summer 2012.

Though the exact categories used to identify different types of green jobs vary from one study to the next, each of them describes a green job as being connected to a green economic activity. There is also general consensus among researchers that many of the "new" jobs will involve a restructuring of currently existing occupations and skills to meet the demands of a more energy efficient economy. Additionally, some green job definitions characterize the quality of jobs as "good", "family-supporting" or "well-paid career track"[4], suggesting a focus on new jobs that are both environmentally- and economically-sustainable.

For the purpose of this analysis, Current Population Survey (CPS) data are used to identify representative green occupations according to the methodology used in the Political Economy Research Institute's (PERI) report titled *Job Opportunities for the Green Economy* which involved using data from the Bureau of Economic Analysis and the Bureau of Labor Statistics (BLS) to identify currently existing industries and occupations that would be "most

[3] Ibid
[4] Pollin and Wicks-Lim (2008); Center on Wisconsin Strategy, Workforce Alliance and Apollo Alliance (2008); Apollo Alliance, Green for All, Center for American Progress and Center on Wisconsin Strategy (2008).

affected" by investments in six strategies for attacking global warming. These six strategies are: **building retrofitting, mass transit, energy-efficient automobiles, wind power, solar power and cellulosic biofuels**. Based on these six strategies, PERI researchers identify forty-five currently existing occupations as representative green economy jobs[5]. Table 1 provides a listing of these six green strategies along with the corresponding representative occupations. While this is by no means an exhaustive list of all green economy activities and jobs (for example, the list excludes support occupations), each of these representative activities and jobs are all included in at least one of the Green Economic Activity categories outlined by the WIC Green Jobs Study Group. It is important to note that because the measurement and classification of green jobs is evolving along with the green economy, CPS data currently does not include a green industry classification. Therefore, any related statistics are representative of all employment in these occupations, not just green employment.

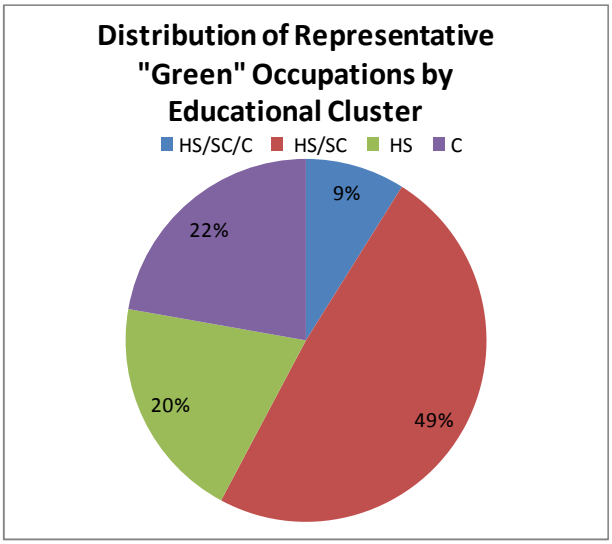
**Table I. Green Strategies and Representative Occupations**

| | | | |
|---|---|---|---|
| Building Retrofitting | Electricians<br>Heating/Air Conditioning Installers<br>Carpenters<br>Construction Equipment Operators<br>Roofers<br>Insulation Workers<br>Carpenter Helpers<br>Industrial Truck Drivers<br>Construction Managers<br>Building Inspectors | Energy-Efficient Autos | Computer Software Engineers<br>Electrical Engineers<br>Engineering Technicians<br>Welders<br>Transportation Equipment Painters<br>Metal Fabricators<br>Computer-controlled Machine Operators<br>Engine Assemblers<br>Production Helpers<br>Operations Managers |
| Mass Transit | Civil Engineers<br>Rail Track Layers<br>Electricians<br>Welders<br>Metal Fabricators<br>Engine Assemblers<br>Production Helpers<br>Bus Drivers<br>First-Line Transportation Supervisors<br>Dispatchers | Wind Power | Environmental Engineers<br>Iron & Steel Workers<br>Millwrights<br>Sheet Metal Workers<br>Machinists<br>Electrical Equipment Assemblers<br>Construction Equipment Operators<br>Industrial Truck Drivers<br>Industrial Production Managers<br>First-Line Production Supervisors |
| Solar Power | Construction Managers<br>Electrical Engineers<br>Laborers<br>Construction Equipment Operators<br>Electricians<br>Industrial Machinery Mechanics<br>Installation Helpers<br>Electrical Equipment Assemblers<br>Metal Fabricators<br>Welders | Cellulosic Biofuels | Farm Product Purchasers<br>Chemical Engineers<br>Chemists<br>Chemical Technicians<br>Agricultural and Forestry Supervisors<br>Agricultural Inspectors<br>Agricultural Workers<br>Chemical Equipment Operators<br>Mixing and Blending Machine Operators<br>Industrial Truck Drivers |

[5] Pollin and Wicks-Lim (2008).

This definition provides a good framework for evaluating labor market conditions and opportunities that will likely be available to today's workforce because the strategies the PERI researchers emphasize are geared toward opportunities for near-term economic growth and include familiar jobs accessible to individuals with a wide range of skills and levels of education. For example, according to the Bureau of Labor Statistics, 20% of the occupations identified as representative green economy occupations are currently accessible to individuals with only a high school diploma; 49% are accessible to individuals with a high school diploma or some college; and 22% require a college degree (Figure A). While some specialized training will be required to convert many of these occupations to their specific green economy applications, BLS estimates that the majority of occupations accessible to those with a high school diploma or some college already require some short- to moderate-term on-the-job training.

**Figure A.**



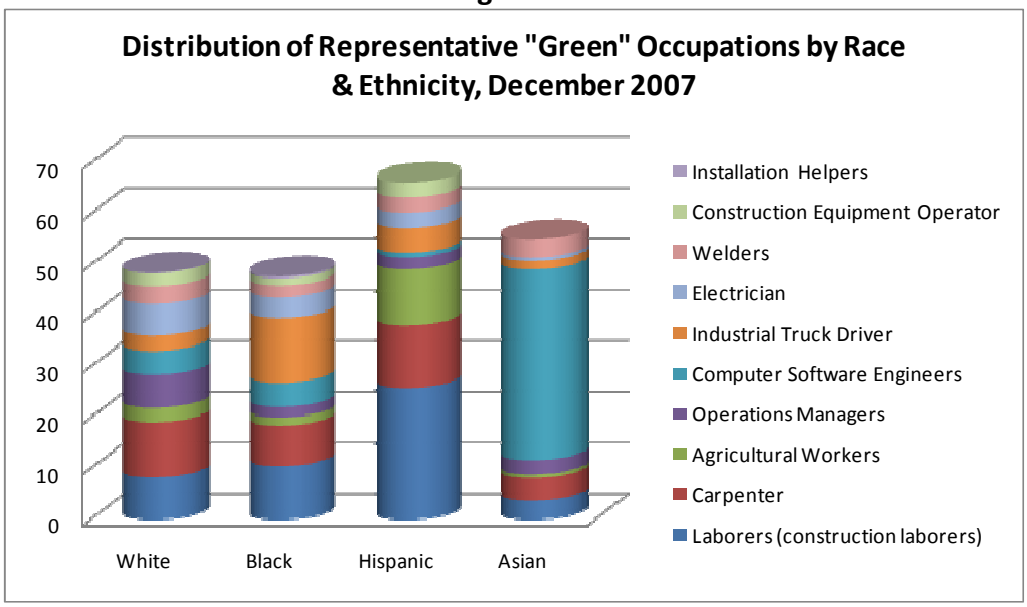

*Source: Author's analysis of 2006-2016 Occupational Employment Projections, Bureau of Labor Statistics*

**Recent Trends in Employment and Wages**

Applying the above green job identification strategy to the December 2007 Current Population Survey, which corresponds with the peak of the last economic expansion, we find that 7.7% of the labor force was in a representative green economy occupation. Males were more likely than females to be employed in representative green economy jobs – 14% compared to 2%, respectively – as most of these occupations are in the construction (42%) and

manufacturing (22%) industries which tend to be male dominated. A racial breakdown of these occupations reveals that Hispanics had the largest concentration at 11.4%, followed by Asians (7%), whites (7.4%) and African Americans (5.5%). As Figure B illustrates, racial and ethnic minorities also tend to be less evenly distributed across representative green economy occupations than whites.

**Figure B.**




*Source: Author's analysis of 2006-2016 Occupational Employment Projections and Current Population Survey, December 2007, Bureau of Labor Statistics*

Among the ten green economy related occupations projected by BLS to grow the most between 2006 and 2016, Hispanics were most heavily concentrated in construction laborer occupations (26%) while African Americans were highly concentrated in industrial truck driving (13%) and construction labor (11%), and Asians are widely represented in computer software engineering (38%). These racial and ethnic breakdowns are important because they also have implications in terms of wages. For example, the highest hourly wages are paid to operations managers ($51.91/hour) and computer software engineers ($42.26/hour), followed by the more skilled trades such as electricians ($23.98/hour) and carpenters ($20.64/hour)[6]. Relative to each group's distribution across all representative green economy occupations, nearly 28% of whites

[6] Bureau of Labor Statistics, Occupational Employment Statistics, May 2008.

were in one of these higher paying occupations compared to 19% of African Americans and Hispanics. While these differences may be partially reflective of differences in educational attainment and training, research published in *The State of Black America 2006* offers evidence of patterns of exclusion from more desired and higher paying occupations even for African Americans with the requisiste educational qualifications[7].

**Representative Green Jobs during the Recession**

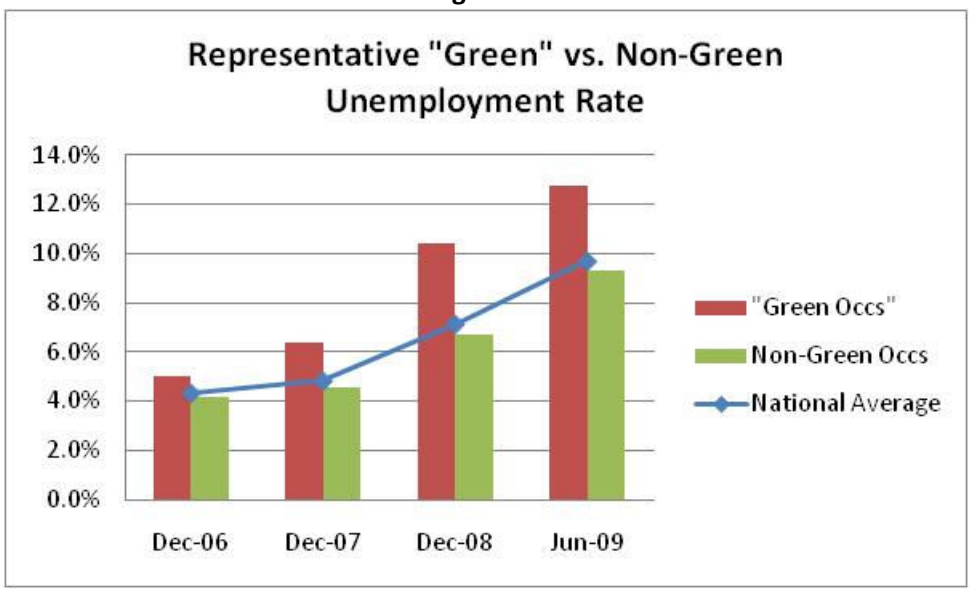
Between the start of the recession in December 2007 and the end in June 2009, the construction industry lost a net of 1.5 million jobs while the manufacturing industry shed 2 million jobs[8]. Given the high concentration of green economy jobs within these industries, unemployment rates among representative green economy occupations exceeded that of all other occupations throughout the duration of the recession (Figure C). While private job losses began to moderate in the spring, going from an average of nearly -670,000 economy-wide between January 2009 and April 2009 to -438,000 in June 2009, unemployment in representative green occupations still exceeded the national unemployment rate by 3 percentage points, representing 2.2 million unemployed people and an additional 1.2 million who were marginally attached or working part-time for economic reasons[9]. Between December 2007 and May 2009, unemployment among representative green occupations accelerated faster than the national average because job losses were occurring predominantly in construction and manufacturing in response to the rapidly deflating housing bubble. By comparison, the difference in the unemployment rate was less than one percentage point at the end of 2006 when unemployment was at its lowest level.

[7] Hamilton (2006).

[8] Bureau of Labor Statistics, *Current Employment Statistics*, December 2007 and June 2009.

[9] Bureau of Labor Statistics, *Current Employment Statistics*, August 2009 (preliminary).

**Figure C.**

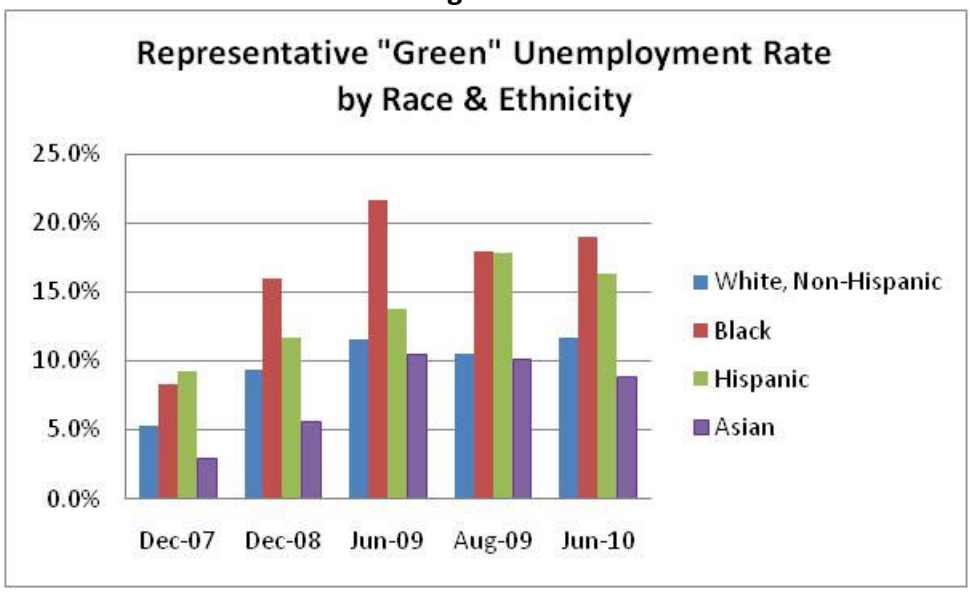



*Source: Author's analysis of Current Population Survey, December 2006-2008, and June 2009*

When we observe trends in representative green job unemployment by race and ethnicity during the recession, some interesting patterns emerge (Figure D). For example, at the start of the recession, the unemployment rates of African Americans and Hispanics in these occupations were similar (8.4% and 9.2%, respectively). However, the gap widened considerably over the course of the recession with the African American unemployment rate increasing by 91% between December 2007 and December 2008, compared to a 27% increase for Hispanics. By June 2009, the unemployment rate gap between African American and Hispanic workers had grown to nearly 8 percentage points – 21.6% for African Americans versus 13.8% for Hispanics -- before converging again at 18% in August 2009, when GDP began to increase again. The unemployment rates of Asians and Whites in representative green economy occupations had also converged by August 2009 – 11% for whites and 10% for Asians -- as a result of unemployment rates for Asians rising much faster than those of their white counterparts, despite the fact that Asians in these professions had much lower unemployment rates than whites throughout the earlier months of the recession. By June 2010, a year after

the end of the recession, the unemployment gaps between racial and ethnic groups were again evident.

**Figure D.**



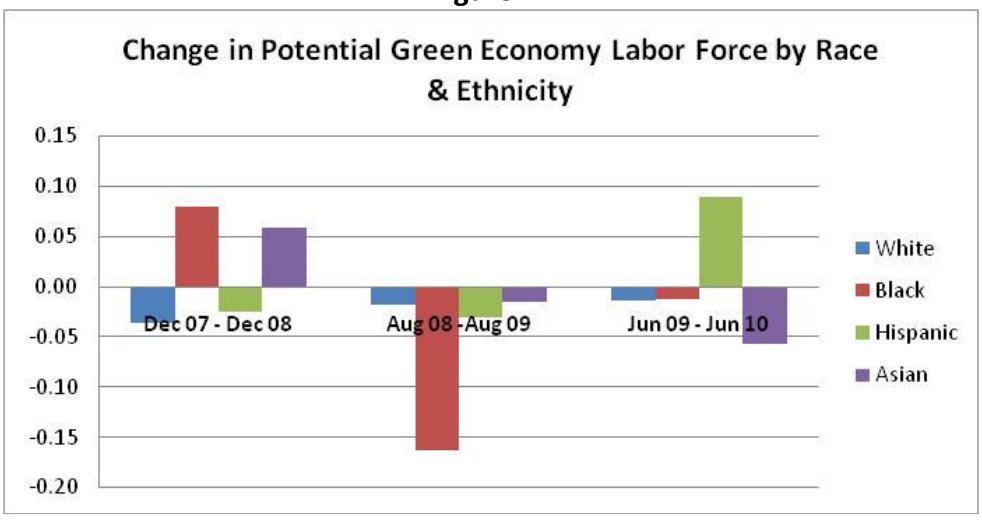

*Source: Author's analysis of Bureau of Labor Statistics, Current Population Survey, December 2007, 2008, June 2009, 2010 and August 2009*

As Figures E and F show, these changes in unemployment rates coincide with the fact that for both African Americans and Asians, the number of persons vying for these jobs increased between December 2007 and December 2008 as the number of jobless persons in this segment of the labor force increased over this period of time. For whites and Hispanics, people were actually leaving this segment of the labor force. Between August 2008 and August 2009, all groups saw a decline in the number of people in this segment of labor force. However, African Americans were exiting at a 5-8 times faster rate than other groups while the number of jobless African Americans increased at a much slower pace, suggesting that the majority of those leaving the labor force were people without jobs. On the other hand, the number of unemployed Asians increased dramatically between August 2008 and August 2009 relative to the rate of decline in the number of people seeking employment. In the year following the end of the recession (June 2009 – June 2010), the rate at which whites were exiting this segment of the labor force was essentially unchanged, while the rate declined for African Americans and increased for Asians. During this time, only Hispanics showed increased participation in the

potential green economy labor force. For all groups, the change in unemployed people was minimal.

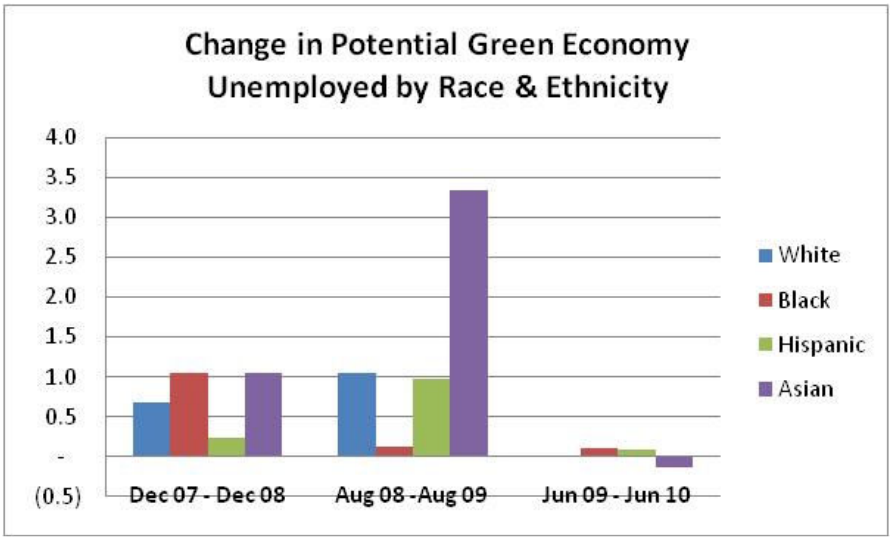
The excessively high rates of unemployment for persons in representative green economy occupations, particularly among African American and Hispanic workers, suggest an available pool of skilled workers who can fill jobs created by the emerging green economy that must not be overlooked. In fact, as workers with relatively recent experience in the jobs that are likely to be in high demand for the green economy, these workers should be among the easiest to employ quickly.

**Figure E.**




*Source: Author's analysis of Current Population Survey, December 2007, 2008, August 2008, 2009 and June 2009, 2010*

**Figure F.**




*Source: Author's analysis of Current Population Survey, December 2007, 2008, August 2008, 2009 and June 2009, 2010*

**Job Growth Projections for the Green Economy**

The discussion about what has happened to employment during the recession leads naturally to a discussion about what can be expected for the recovery. Pew and Global Insight/U.S. Conference of Mayors estimate that currently, the green or clean energy economy includes over 750,000 jobs[10]. This section summarizes green economy-related job growth projections from three sources – PERI and the Center for American Progress, Global Insight (for the U.S. Conference of Mayors), and the President's Council of Economic Advisers (CEA). It is important to remember that each of these employment projections are estimates based on a specific set of assumptions and conditions; any of which could change as the economy transitions from recession to recovery. As such, they are only intended as markers by which to measure future growth.

The green recovery program proposed by PERI and the Center for American Progress combines a $100 billion fiscal stimulus with an additional credit stimulus – through a federal loan guarantee program to boost private-sector investment in energy efficiency and renewable energy – to create 2 million jobs over two years[11]. Global Insight projects a similar number of

[10] These estimates were obtained from private micro-level establishment data available in the NETS database that allows for identification of individual businesses by detailed industry sector.

jobs, but over a longer time horizon – 2.5 million jobs by 2018, 3.5 million by 2028 and 4.2 million by 2038[12]. At the October 2009 levels of labor force particpation and unemployment, the creation of 2 million jobs would bring the unemployment rate back to less than 9%[13]. If these jobs were distributed according to the current distribution of representative green occupations by race, the resulting rates of unemployment would be 8.4% for whites (compared to 9.5%); 14.9% for blacks (compared to 15.7%); 11.3% for Latinos (compared to 13.1%) and 6.2% for Asians (compared to 7.5%)[14].

Using BLS Occupational Employment Projections, CEA projects 52% growth between 2000-2016 for a smaller category of "environment-related occupations"[15], relative to a growth rate of 14% for all other occupations[16]. It is important to note that although the BLS projections do not reflect recent economic fluctuations, CEA reports that since ARRA investments to support "green" initiatives represent a boost to an industry that was already growing, ARRA should help to move the industry back toward its pre-recession growth path. Similarly, though not offered as a projection of future growth, Pew researchers report that between 1998 and 2007, the fastest rates of clean energy economy job growth occurred in the environmentally friendly production (67%) and clean energy (23%) sectors. Additionally, 83% of all venture capital invetments made between 2006 and 2008 were made in these two sectors. Assuming this pattern of growth continues into the future, these sectors represent a range of jobs, including those related to solar- and wind-power generation (which dominate the clean energy category) and could have an impact on a wide range of existing industries -- including

---

[11] Pollin, et al (2008).

[12] These projections were made based upon a chosen set of assumptions regarding the share of electricity to be generated from alternative resources, the extent of retrofitting and the share of transportation fuels from renewable sources. See Global Insight (2008) for details.

[13] Author's calculations based on analysis of BLS's October 2009 Employment Situation report.

[14] Ibid

[15] The environment-related occupations considered included environmental engineering technicians, environmental engineers, environmental scientists and specialists (including health), and environmental science and protection technicians (including health).

[16] Council of Economic Advisers. (2009).

transportation, manufacturing/industrial, construction, agriculture, energy production and materials – as demand for more environmentally friendly products continues to grow. In fact, most of the occupations listed in Table 1 are representive of the types of jobs critical to clean energy and environmentally-friendly production.

Next, we turn our discussion to the construction industry which has experienced more losses during this recession than any other industry. However, given the high concentration of representative green occupations within this sector, it is also reasonable to expect that the construction industry would be positively affected by the transition to a green economy. This expectation is supported by revised industry projections released by the President's Council of Economic Advisers in July 2009 that indicate that for the period since the recession (2008-2016), construction industry jobs are projected to grow by more than 2 million jobs. This is up from the 780,000 jobs (2006-2016) originally projected by BLS. Again, the CEA attributes this to ARRA direct investments and incentives for private investment in infrastructure, the construction of power and communication structures and the weatherization of homes. Even with this more positive outlook, time is of the essence when it comes to investing in the green economy and creating much needed jobs. Based on CEA projections and holding all else constant, at the current pace of job losses in the construction industry (averaging -67,000 per month during the last six months), it would take only six more months to reduce the job growth potential implied by these projections to zero. In other words, two million jobs would only bring the construction industry back to its pre-recession level of employment.

Finally, while the construction industry as a whole stands to benefit greatly from a "green recovery", several other non-construction-related green jobs have been projected to experience large or fast growth over the next decade. Three representative green economy occupations are listed among BLS's 30 largest growth occupations for 2006-2016 -- computer software engineers, applications (# 15 and 226,000 jobs), truck drivers (# 20 and 193,000 jobs) and carpenters (# 23 and 150,000 jobs). Computer software engineers, with specialties in applications (#4 and 44.6% growth) and systems software (#25 and 28.2% growth), are also on

the list of the 30 *fastest* growing occupations for 2006-2016[17]. Again, these projections were made prior to the start of the recession and should be referenced with caution.

**Geographic Distribution of Green Jobs**

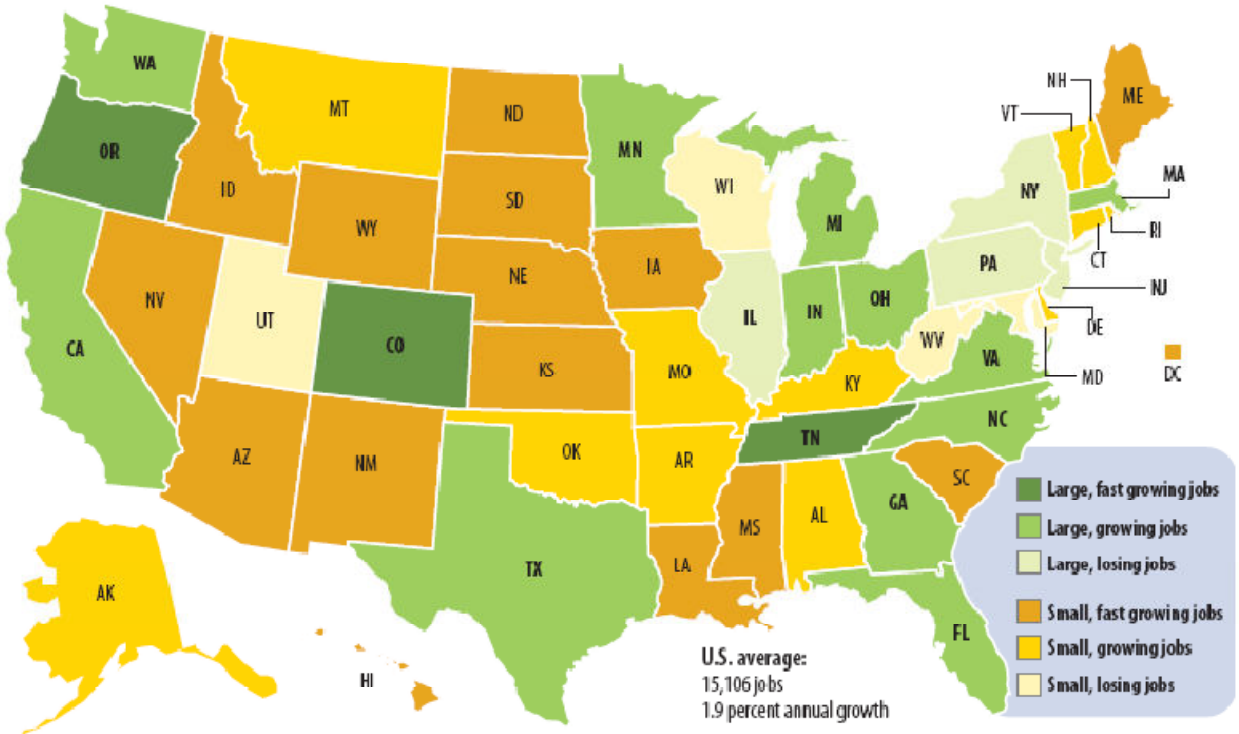
Aside from the issue of when and how many green jobs will be created is the issue of where this growth will occur. While an important feature of most green economy jobs is that they tend to be domestic by nature (i.e. in the U.S. as opposed to abroad), it is also important to consider whether patterns of job growth and job placement will simply reinforce existing patterns of inequality or offer true mobility. Pew Charitable Trusts provides a state-by-state analysis of the current clean energy economy, including current jobs, businesses, job growth (1998-2007) and venture capital investments (2006-2008), in their report titled, *The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America*. Choosing to focus solely on producers and suppliers in the clean energy economy, they acknowledge that their analysis is conservative relative to others because they only count actual clean energy economy businesses and jobs rather than entire occupations (such as all jobs in mass transit, or all electricians). However, this narrower definition is referenced for this portion of the analysis because it provides a good framework for analyzing where growth can reasonably be expected to occur based on the current size of an identifiable clean energy economy, and trends in job growth and private investment.

Figure G, originally published in Pew (2009), categorizes states based on the size of their clean energy economy as well as the rate of growth in this industry from 1998 to 2007. States identified as having a "large" clean energy economy are those with more clean energy jobs than the national average of 15,106 jobs and those identified as "small" have less than the national average. Similarly, states with "fast growing" jobs are those with an annual job growth rate than exceeds the national average of 1.9%, those with "growing" industries are those with a

[17] Historically, BLS projections have tended to underestimate growth in higher skilled occupations while overestimating growth in lower skilled occupations. See Bishop and Carter (1991).

positive rate of growth that was less than the national average, and those that are "losing" jobs have experienced negative growth. As of December 2010, five states with rates of unemployment that were significantly higher than the national average[18] – California, Florida, Georgia, Michigan and Oregon -- also had large clean energy economies. Three high unemployment states – Nevada, Oregon, and South Carolina – have fast growing clean energy economies. Eight of the states with large or fast-growing clean energy economies – California, Florida, Illinois, Michigan, Mississippi, North Carolina, Ohio and South Carolina – and the District of Columbia also have rates of African American unemployment that exceed the national average (above 15.8% during the fourth quarter of 2010). This suggests that with timely and targeted investments in the green economy, including necessary investments in workforce development, the nation's transition to a green economy could have a significant impact on some of the most economically depressed areas of the country.

**Figure G. Where are the Jobs in the Clean Energy Economy?**
(Source: Pew Charitable Trusts, 2009)




[18] Bureau of Labor Statistics, Local Area Unemployment Statistics, Regional and State Employment and Unemployment (Monthly), August 2009.

While almost 6% of African American workers were in occupations that will be critical to building a green economy at the peak of the last economic expansion, the next logical question at this point is to what extent African Americans can expect to benefit from newly created jobs based on where these jobs are likely to be located. According to Pew's estimates regarding the clean energy economy, 72% of this country's total African-American population lives in a state with a large clean energy economy, while only 16% of all African Americans live in a state with a fast-growing clean energy economy[19]. Three states with fast-growing, albeit small, clean energy economies – Mississippi, South Carolina and Louisiana – and the District of Columbia have significant African-American populations (over 25% of the state's total population). Out of these, none are in the top ten for jobs in environmentally friendly production (the fastest growing segment of the clean energy economy between 1998 and 2007) and only the District of Columbia is in the top ten for jobs in clean energy (the second fastest growing segment). Furthermore, of these four areas, two (South Carolina and Louisiana) received no venture capital investments between 2006 and 2008. Therefore, the pattern of new investments and new job growth – be they predominantly in areas with an established green economy infrastructure or those with the most rapid growth – will prove to be a crucial element in the accessibility of these new jobs.

**Policy Recommendations for Bringing Green Recovery to the Chronically Unemployed**

Recognizing the dire need for jobs throughout the nation as a whole, and particularly in urban communities, the National Urban League has proposed a comprehensive ***Plan for Putting Americans Back to Work*** that includes a green jobs component as well as an accompanying workforce development plan. Specifically, this plan includes the creation of Green Empowerment Zones in areas where at least 50 percent of the population has an unemployment rate that is higher than the state average. Manufacturers of solar panels and wind turbines that open plants in high unemployment areas will for a period of three years, be

[19] The distribution of African-American workers in representative green economy occupations follows a similar pattern – 70% in large green economy states and 17% in fast-growing states.

eligible for a zero federal income tax rate and a zero capital gains tax under the condition that they hire and retain for a minimum of three years at least half of their workforce from the local area. In response to critics who argue that the supply of labor in disadvantaged communities often lacks the skills necessary to obtain and maintain employment, NUL also proposes the creation of 100 Urban Jobs Academies to Implement an Expansion of the Urban Youth Empowerment Program (UYEP) to employ and train the chronically unemployed. UYEP, a four year demonstration project created in partnership with the U.S. Department of Labor in 2004, is a youth career preparation initiative designed for at-risk, out-of-school, and adjudicated youth and young adults between the ages of 18 and 24. With 27 Urban League affiliate sites and a total of $29.3 million, the program served 3,900 youth, 65 percent of whom either had job placements (paying an average wage of $9.32/hour) or completed their high school diploma or GED. Two hundred participants were placed in postsecondary schools or college upon completion of their secondary education. Scaling this program up to 100 sites would more than triple the program at a cost of $108.5 million.

In addition to these National Urban League recommendations, both the *Clean Energy Jobs and American Power Act*, introduced by Senators John Kerry (MA) and Barbara Boxer (CA), and the *American Clean Energy and Security Act* (ACES), passed by the House of Representatives in June, include two key provisions that could be beneficial for workers and communities that have been especially hard hit by the recession. *The Green Construction Careers Demonstration Project* creates middle class careers in the green economy for low-income Americans, and the *Funding the Green Jobs Act* helps train workers, particularly those from disadvantaged communities, for jobs in the clean energy economy.

**Conclusion**

While so-called green jobs will not be sufficient alone to bring this economy out of recession and spur the type of private job creation needed to fuel sustained economic growth, they will unquestionably be important in providing a foundation. As such, it is crucial that the

National Urban League and other minority-serving community based organizations be at the forefront of preparing their constituents to participate in and reap the benefits of the emerging green economy, not only as employees, but also as business owners and employers. As this paper has demonstrated, this goal is well within reach, but will require diligence and persistence both in terms of securing available funding to provide needed training as well as staying informed of new developments and opportunities in this rapidly changing new segment of our economy.

## References


Apollo Alliance, Green for All, Center for American Progress and Center on Wisconsin Strategy. "Green Collar Jobs in America's Cities." 2008.

Bishop, John H. and Shani Carter. "How Accurate Are Recent BLS Occupational Projections?" *Monthly Labor Review, 1991, 114*(10): 37-43.

Center on Wisconsin Strategy, Workforce Alliance and Apollo Alliance. "Greener Pathways." 2008.

Council of Economic Advisers. "Preparing the Workers of Today for the Jobs of Tomorrow." Executive Office of the President, July 2009.

Global Insight for the United States Conference of Mayors and the Mayors Climate Protection Center. "U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy." 2008.

Hamilton, Darrick. "The Racial Composition of American Jobs." In The State of Black America 2006, edited by George E. Curry and Stephanie Jones, 77-115. New York: National Urban League, 2006.

Pew Charitable Trusts. "The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America." 2009.

Pollin, Robert, Heidi Garrett-Peltier, James Heintz and Helen Scharber. "Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy." Political Economy Research Institute and Center for American Progress, September 2008.

Pollin, Robert and Jeannette Wicks-Lim. "Job Opportunities for the Green Economy: A State by State Picture of Occupations that Gain from Green Investments." Political Economy Research Institute, University of Massachusetts, Amherst. June 2008.

Workforce Information Council Green Jobs Study Group. "Measurement and Analysis of Employment in the Green Economy." 2009.