

EXECUTIVE SUMMARY

The new green economy provides Michigan a dynamic opportunity to rebuild the state's job base, attract new investment, and diversify the state's economy. We may be at a tipping point of awareness, understanding, and opportunities that a green economy can provide for Michigan's workforce, businesses, and communities.

But what exactly is the green economy, and what is a green job? How many presently exist, and what are the prospects for growth? This report represents Michigan's first attempt to provide rigorous, empirical answers to these questions so important to our economic future.

Michigan defines **green jobs** as jobs directly involved in generating or supporting a firm's green-related products or services. The state's **green economy** is defined as being comprised of industries that provide products or services in **five areas**:

1. Agriculture and natural resource conservation;
2. Clean transportation and fuels;
3. Increased energy efficiency;
4. Pollution prevention or environmental cleanup; and
5. Renewable energy production.

The Michigan Green Jobs Study used a three-pronged methodology that included quantitative, analytical and qualitative research. The quantitative work involved a survey sent to thousands of employers to uncover private sector green job trends. **This marks the first attempt in Michigan to survey employers directly in order to measure the current number of Michigan green jobs.** The analytical work involved merging labor market information and economic intelligence with survey results to uncover industry and occupational trends. The qualitative approach involved using focus groups to enhance our understanding of green-related workforce issues.

These three research methods were integrated into the findings and conclusions contained in this report.

We plan to produce a series of reports over time to track developments in Michigan's green economy.

What we found:

Michigan boasts 109,067 total green jobs—both direct and support positions—among private sector employers. There are 96,767 direct green jobs and 12,300 support green jobs. This is big news, but it also shows the potential for growth of the green economy. Michigan's overall private sector employment is 3.2 million; green jobs are currently 3 percent of that total.¹

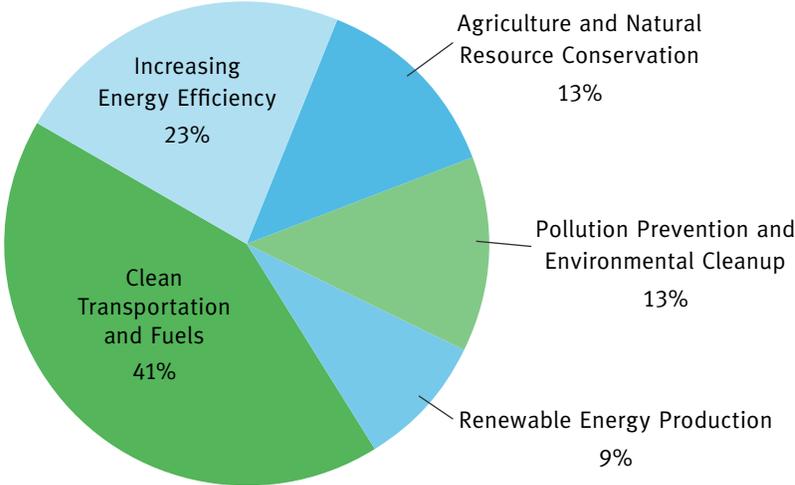
Employer Survey Results

Through the employer survey, we categorized direct green jobs in Michigan into five core areas. The Clean Transportation and Fuels area comprises just over 40 percent — close to 40,000 jobs — of all green jobs. Nearly one quarter of green jobs were attributable to the Energy Efficiency core area, and most of the positions were associated with the state's construction industry. This distribution reflects Michigan's large automotive and construction sectors. Green jobs were most common in these specific industries: *Transportation Equipment Manufacturing (25,780 jobs)*, *Professional, Scientific, and Technical Services (22,178 jobs)*, *Specialty Trade Contractors (9,825 jobs)*, and *Construction of Buildings (3,571 jobs)*.

¹ As of February 2009, seasonally unadjusted private jobs for Michigan totaled 3,227,600 according to data from the Michigan Department of Energy, Labor & Economic Growth, Bureau of Labor Market Information and Strategic Initiatives, Current Employment Statistics program.



DISTRIBUTION OF DIRECT GREEN JOBS BY CORE AREA



Source: Michigan Department of Energy, Labor & Economic Growth

From an occupational perspective, over 70 percent of direct green workers fall into three broad categories:

- Production occupations (28 percent)
- Engineering occupations (24 percent)
- Construction occupations (19 percent)

Over one-third of the positions in the Clean Transportation and Fuels Core area were engineers, and a large portion of the remainder were production positions such as assemblers or machinists. In Energy Efficiency, the two most common occupations were related to construction: *HVAC installers* and *General maintenance workers*. *Farmworkers* made up a quarter of green jobs in Agriculture and Natural Resource Conservation, while various kinds of engineers and environmental specialists were important in the Pollution Prevention and Environmental Cleanup core area. The Renewable Energy Production core area has the most diverse mix of green occupations, employing engineers, technicians, mechanics, and production staff.

The survey asked employers to outline their expected hiring needs for the next two years. Growth occupations most frequently cited include engineers, skilled trades, and certain technical specialist job titles. The occupations cited span a variety of education and skill levels.

Despite the need for some specialized green skills, employers in the focus groups stressed that workers still need the basics. Green skills are an overlay of new skills and knowledge; and learners cannot access the new knowledge without the requisite foundation. **Skills in science, technology, engineering and math will be important, and positions with these skills may be most difficult to fill.** Nearly 70 percent of employers in the survey said training their green-related workers would be workplace-based as they looked to upgrade or enhance current workers’ knowledge. This finding reinforces the importance of career ladders for current and incoming workers.

Green Related Industry Trend Analysis

To gather additional information not captured by the employer survey, Michigan identified over 100 industries considered to be green related. Not all jobs in these industries are green jobs, but these are sectors that could potentially benefit from an expansion of the Michigan green economy. Green related industries have recorded job losses since 2004, like the rest of the Michigan economy, but several specific green related industries have added jobs: *Semiconductor Manufacturing, Recyclable Material Wholesalers, and Environmental Consulting Services.*

A handful of detailed green-related sectors in Michigan are not only relatively highly concentrated in terms of jobs, but also managed to record employment growth from 2004 to 2008. *Process & logistics consulting* firms, which offer operating advice and assistance in areas such as manufacturing operations improvement, productivity, production planning, and quality assurance, were 44 percent more concentrated in Michigan than in the United States in the second quarter of 2008. Employment in this industry was up nearly four percent since 2004. Firms in the business of *Industrial design services* have also recorded employment expansion since 2004, and are highly concentrated in the Michigan economy. Taken as a whole, the green-related industries selected for this study comprise a higher share of total jobs in Michigan than is true of the national economy.

Not all jobs in these green-related sectors are currently generated by the green economy. *However, if green business expands in the state, many existing Michigan firms in these sectors could have the expertise to diversify into green business activities.*

Green Related Firm Trends

Michigan analyzed a small sample of 358 green related firms' trends over a three year period to shed light on potential employment trends. While findings from this analysis are intriguing, they are indicators only and cannot be generalized to the health of all green-related firms in Michigan given the sample size. Firms in the **Renewable Energy Production** cluster added nearly 1,900 jobs from 2005 to 2008, a growth rate of 30 percent. This finding is an indicator that firms in this cluster are the most likely to experience job growth, even though they represent less than 10 percent of the overall green jobs in Michigan. Renewable Energy Production includes areas like wind and solar manufacturing and installation.

The sample also suggests that green-related firms may be a significant source of entrepreneurial activity. Of the 358 sample firms, 70 appear to have been newly created since 2005, creating 600 jobs – a much higher rate of startups than is seen in the overall Michigan economy. In all, the sample firms added more than 2,500 jobs, an impressive employment expansion of 7.7 percent (the total Michigan average was negative 5.4 percent). This small segment of the green economy far outpaced employment trends for the Michigan economy as a whole.

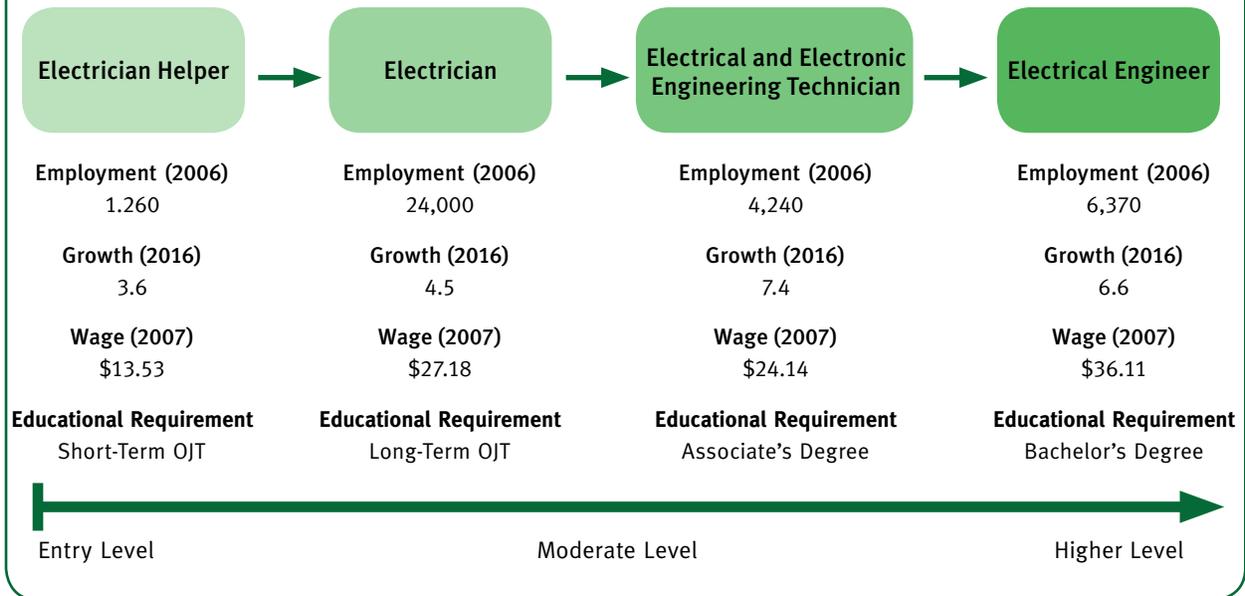
Occupational Trends

Green jobs can be found across the spectrum of broad occupational categories, such as professional workers with specific skill sets directly needed by green-related firms; production, maintenance, and transportation occupations; critical occupations for small start-up green-related firms, such as sales engineers or technical sales representatives; and jobs in teaching or training that will be needed to prepare

GREEN JOBS IN MICHIGAN—

The opportunity to create new Michigan jobs rests overwhelmingly with the clean energy, green-collar economy. We know the combination of these targeted efforts, coupled with the determination of Michigan's workers' to embrace the green economy, will help transform our state.

SAMPLE CAREER PROGRESSION: RENEWABLE ENERGY



the future green-related workforce. Green-related occupations with above average expected job growth rates include engineering, professional and mid-skill mechanic and laborer positions. Careers in green-related occupations exist at all levels of educational attainment. This sample career progression in the renewable energy area illustrates the job potential in green.

Green-related industries hold the potential for workers to earn above average wage rates. Thirteen of the top 15 broad industries in terms of green jobs paid more than the private sector average weekly wage of \$811, while ten were well above this average (at least \$100 per week more). Furthermore, eight of the top 15 green industries paid more than \$1,000 per week, or over \$50,000 per year.

What the Future Holds: The opportunity to create new Michigan jobs rests overwhelmingly with the clean energy, green-collar economy. With our advanced manufacturing expertise, our depth of engineering talent, and our local access to original equipment manufacturers (OEMs) and suppliers, we are poised to create tens of thousands of good-paying green jobs for Michigan workers. In the renewable energy sector, Michigan has the potential to become a regional and global powerhouse in wind turbine

manufacturing with Michigan's engineering expertise and modernized machining. Investments in energy efficiency represent a major opportunity for Michigan to create jobs, save money, and reduce our reliance on fossil fuels. By replacing traditional fossil fuel energy, Michigan's energy efficiency program will save Michigan over \$3 billion in electricity costs over the next 20 years. Advanced energy storage, and in particular the production of lithium ion batteries for cars, holds enormous potential for job creation in Michigan. Michigan is rapidly becoming a center for advanced energy storage innovation aimed at, among other things, electrifying the automobile.

We know the combination of these targeted efforts, coupled with the determination of Michigan's workers to embrace the green economy, will help transform our state.

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