

5. Are Green Jobs the Future?

Structural and cyclical economic forces have had a devastating effect on the labor force across the entire economy and the auto sector especially. The tri-state region lost jobs as early as five years ago due to auto industry restructuring and, more recently, hemorrhaged jobs due to the Great Recession. Where will these displaced workers find jobs?

Many economists, workforce analysts and policymakers across the nation assert that the burgeoning green economy may provide new job opportunities. There is great interest in obtaining information about the quantity and characteristics of jobs produced by the green economy, but traditional sources of information on industries and occupations are not specific enough to accurately measure the number of green jobs in the economy.

There are five important findings in this chapter. First, the tri-state region has a significant number of green jobs. Indiana has an estimated 46,879 direct green jobs and Michigan reported 96,767 direct green jobs. Second, because they are concentrated in industries that are cyclical, green jobs in Michigan and Indiana are more sensitive to economic cycles. Third, employers stated that most green jobs simply required on-the-job training. This comports with the findings in chapters 2 and 3—production green jobs did not require special skills but jobs like engineering did. Fourth, there were significant differences in the green jobs survey results between Michigan and Indiana that can only partially be explained by the different types of production activities in the two states. Fifth, the occupations that are in demand today and poised for high growth in the future are those requiring expanded skill sets and higher levels of education and training.

The three Driving Change states—Indiana, Michigan and Ohio—used a three-pronged approach to study green jobs. Findings from the first approach were discussed in Chapters 2 and 3; this chapter discusses the remaining two approaches.

1. Conduct focus groups and employer surveys to understand the green transformation in the auto sector specifically.
2. Collect primary data by conducting a green jobs employer survey in each state to estimate the current number of green jobs.
3. Analyze secondary data from state and federal sources to determine recent historical employment trends and to report the expected growth of green-related occupations.

5.1 Green Jobs Survey Results

The Michigan Department of Energy, Labor and Economic Growth completed a green jobs survey in the first quarter of 2009 and released the findings in May 2009. In the second quarter of 2010, the Indiana Department of Workforce Development and the Indiana Business Research Center (IBRC) conducted its green jobs survey. The Ohio Department of Job and Family Services conducted its green jobs survey in the first quarter of 2011, too late to be included in this report. To the degree possible, both Indiana and Ohio followed Michigan's green jobs definition and survey methodology to allow for greater comparability.²⁰

“The occupations that are in demand today and poised for high growth in the future are those requiring expanded skill sets and higher levels of education and training.”

²⁰ Several factors militated against the ability to make a one-to-one comparison of the results. In contrast to Michigan, Indiana and Ohio adjusted the sample frame to include the public sector because they wanted to capture the many public establishments that produce green services, for example, fish and game wardens or local transit bus drivers. The timing of the surveys also prevents the results from being directly comparable. Michigan conducted its survey when the economy was still shedding jobs. Indiana's survey was conducted after the bulk of job losses and on the leading edge of an uptick in employment. Ohio conducted its survey after a marginal improvement in the labor situation.

Since a standard definition of green jobs does not yet exist, the Driving Change research team defined the green economy as industries that provide products or services related to five core green areas. Those “core areas” are: renewable energy, increased energy efficiency, clean transportation and fuels, agriculture and natural resource conservation, and pollution prevention and environmental cleanup.

Firms were asked to identify occupations that were green-related and classify them into one of these five green core areas. Based on the survey results, Indiana has an estimated 46,879 direct green jobs (1.7 percent of the state’s total jobs in the second quarter of 2010). Michigan reported 96,767 direct green jobs (3.1 percent of the state’s private-sector employment in the first quarter of 2009).

The survey results also show that an additional 17,400 jobs support green business activities in Indiana and an additional 12,300 jobs support Michigan’s green economy.²¹ Appendix D assesses the survey and provides some explanations for the differences between the states.

Table 10 shows the distribution of those direct jobs among the five core green areas. The jobs in the clean transportation and fuels core area are dominant in Michigan, not surprising considering the dominance of the auto sector in the state. Likewise, with the importance of the auto industry in Indiana, one would have expected this core area to account for a large number of the state’s green jobs, but it accounts for less than 5 percent of the total. In contrast, increasing energy efficiency (most closely associated with the construction industry) accounted for 33.5 percent of green jobs in Indiana.

²¹ The presence of direct green jobs (those employees whose primary function is the production of green-related products or services) may also generate additional jobs to support those direct green activities. These support jobs may range from accounting staff to human resources staff to clerical staff. For example, a manufacturing firm may have 20 machinists building wind turbine blades, as well as one accountant and two clerical positions that support the wind turbine business. Without the wind turbine blade revenue, the three support jobs would not exist.

Table 10: Share of Direct Green Jobs by Core Area

Core Area	Indiana	Michigan
Total Direct Green Jobs	46,879	96,767
Increasing Energy Efficiency	33.5%	23.0%
Agriculture and Natural Resource Conservation	22.0%	12.4%
Pollution Prevention and Environmental Cleanup	19.2%	12.8%
Renewable Energy Production	8.9%	9.1%
Clean Transportation and Fuels	4.8%	40.6%
Green Jobs Not Assigned to a Core Area	11.6%	2.1%

Source: Indiana and Michigan Green Job Surveys

5.1.1 Direct Green Jobs by Detailed Industry

Beyond the broader core areas identified by the survey, a key next step was to examine the primary industry sectors that generate large numbers of green jobs. **Table 11** presents survey results on select industries that generate significant numbers of green jobs and the relative concentration of green jobs in those industries.

In contrast to Michigan, a majority of Indiana green jobs were not in manufacturing. Of the 15 industries presented in **Table 11**, only six were engaged in manufacturing in Indiana, accounting for a mere 6,660 of the 40,160 jobs represented in the table. Michigan reported 25,780 green jobs in transportation equipment manufacturing (TEM) alone, whereas Indiana posted a modest 1,700 in TEM. This may be attributed to the fact that many of the Michigan green jobs in this industry are involved in engineering and design, occupations that are focused on improving fuel economy and developing new electric vehicles. Indiana, on the other hand, produces many auto parts that may or may not be a component of a “green vehicle.” These green jobs span a wide range of industries. The professional, scientific and technical services and specialty trade contractors were in the top three industries for green jobs in both Michigan and Indiana.

5.1.2 Green Jobs by Detailed Occupation

The survey asked companies to specify the detailed occupational titles and employment estimates for employees working in any of the green core areas. There does not appear to be a common theme among the more prominent green occupations in the two states, although 12 of the top 26 green occupations are common in the two states. In Indiana, landscaping and groundskeeping workers have the largest share of green-related jobs, accounting for more than 6 percent of all green employment in Indiana (see **Table 12**). In Michigan, mechanical engineers comprise the greatest share at 7 percent.

Contrary to intuition, occupations that are obviously green, such as environmental scientists and specialists and environmental engineers, are relatively few on the occupation ledger. This may be explained by the fact that these positions are taken up by more highly

educated and specialized individuals and represent a tiny fraction of the overall workforce.

5.1.3 Other Survey Results

Expectations of employers regarding current and future green-related workforce needs are critical elements to understanding the development of the green economy. Accordingly, the survey asked employers about expected future job gains in green occupations and the potential need for formal versus informal training for existing and new green workers.

With the possible exception of groundskeeping workers and construction laborers, employers expect that occupations with special requirements—such as engineering degrees or heating, ventilation and air conditioning (HVAC) certifications—are poised for growth. Employer expectations in both states appear to be similar.

Table 11: Select Industries[§] Generating Direct Green Jobs: Direct Green Jobs by Industry and Green Jobs as a Percent of Industry Employment

NAICS	Industry	IN Direct Green Jobs	Indiana Percent*	MI Direct Green Jobs	Michigan Percent*
111	Crop Production	781	13.1%	3,503	22.0%
221	Utilities	295	1.7%	2,608	12.7%
236	Construction of Buildings	1,872	6.1%	3,571	10.4%
238	Specialty Trade Contractors	10,411	13.6%	9,825	9.6%
321	Wood Product Manufacturing	592	5.2%	982	10.2%
325	Chemical Manufacturing	1,947	6.6%	1,024	3.7%
332	Fabricated Metal Product Manufacturing	1,350	3.0%	1,995	2.5%
333	Machinery Manufacturing	687	1.9%	1,664	2.4%
336	Transportation Equipment Manufacturing	1,709	2.2%	25,780	14.6%
423	Merchant Wholesalers, Durable Goods	4,483	6.4%	2,793	2.9%
541	Professional, Scientific, and Technical Services	5,322	5.6%	22,178	9.2%
561	Administrative and Support Services	5,826	4.4%	2,698	1.0%
811	Repair and Maintenance	919	3.6%	656	1.8%
921	General Government Administration**	704	0.8%	n/a	n/a
924	Administration of Environmental Quality Programs**	2,809	62.8%	n/a	n/a

[§] Industries both prominent and common to both Michigan and Indiana. Because there were large differences in the number of direct green jobs by industry between the two states, the table presents industries sorted on NAICS code and not the total number of green jobs in each industry.

* Percentage is based on the number of direct green jobs in the industry divided by total employment in that industry.

** Indiana included public establishments, for example state agencies, whereas Michigan did not.

Source: Indiana and Michigan Green Job Surveys

Table 12: Prominent Green Occupations[§] in Indiana and Michigan, Occupations as a Percent of Total Direct Green Jobs

SOC	Occupation	Indiana	Michigan
n/a	Total, All Green Occupations	46,879	96,767
11-9021	Construction managers	1.1%	1.2%
17-2051	Civil engineers	3.2%	0.8%
17-2071	Electrical engineers	1.1%	1.6%
17-2081	Environmental engineers	1.0%	1.0%
17-2141	Mechanical engineers	1.9%	7.0%
19-2041	Environmental scientists and specialists, including health	1.0%	1.6%
37-3011	Landscaping and groundskeeping workers	6.4%	2.3%
45-2092	Farmworkers and laborers, crop, nursery, and greenhouse	2.3%	3.4%
47-2031	Carpenters	1.2%	1.2%
47-2111	Electricians	4.1%	1.8%
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	2.9%	3.6%
49-9042	Maintenance and repair workers, general	1.3%	1.9%
51-1011	First-line supervisors/managers of production and operating workers	2.0%	1.2%

[§]Largest number of direct green jobs reported by occupation that were common across both states.
Source: Indiana and Michigan Green Job Surveys

The survey also asked about the likely mix of training for their green-related workforce. To keep the survey simple, the survey asked only if green employee training would be formal or informal-on-the-job. A majority of survey respondents indicated that future employee training could be conducted on the job. These results square with the findings from the automaker survey and interviews, namely that production-type green jobs did not require special skill sets or training. Positions like engineering and systems design, on the other hand, did require special skill sets and subject area expertise.

The survey results presented above are just a sample of the information the green jobs surveys collected. For a detailed analysis of the green occupations in the three states, view the state-level green job reports at www.drivingworkforcechange.org.

5.2 Recent Trends in Green-Related Industries

A green-related industry is one that produces parts, components, products or services in one of the five core green areas. The research team used the five core

areas to identify 118 green-related industries based on the industry's output.²²

It is important to note that the NAICS classification system was not designed to identify specific green industries. There is no single NAICS code or set of codes to capture all firms involved in wind energy, solar energy or research into alternative fuels. The NAICS classification system is based on how a product is made, not on who the customer is. As a result, the research team attempted to identify some potential industries that appeared to contain some jobs related to the green economy. Since these green-related industries were often only partially related to green activities, employment trends in these sectors can be affected by many factors beyond the growth of the green economy. For example, many of these green-related industries are particularly sensitive to economic cycles, and the changes in their overall employment may have little to do with changes in their green employment.

²² The individual state green jobs reports, available at www.drivingworkforcechange.org, contain much greater detail about green-related industries.

5.2.1 Job Change in Green-Related Industries

Over the last few years, the tri-state region has hemorrhaged jobs in manufacturing, and many green-related manufacturing industries were not immune to these job cuts. That said, in Michigan, employment in agriculture and natural resource and the miscellaneous green manufacturing segments declined more slowly than total jobs. Michigan's bright spot was renewable energy production, recording a growth rate of 7.1 percent from 2004 to 2008, while total jobs fell by 5.4 percent in the state.

In Indiana, by way of contrast, overall employment fell 5.9 percent from 2005 to 2009, but green employment losses registered 17.3 percent over the same period. These losses, however, merely reflect that many green-related jobs are in the manufacturing and construction sectors, where the Great Recession hit hardest. In both Indiana and Michigan, a majority of green job losses stemmed from the two core areas of clean transportation and fuels and increasing energy efficiency. Given that there is a high concentration of manufacturing and construction industries in these two green areas, one can conclude that green-related industry jobs in Indiana and Michigan appear to be more sensitive to economic cycles.

5.2.2 Wages in Green-Related Industries

Green-related industries can be measured not only in terms of their direct employment, but also in terms of the compensation these jobs garner. Assuming a competitive labor market and wage structure, industry wages can provide insight into future demand for workers. In terms of worker disposable income and spending, industry wages also gauge the size of the economic footprint an industry has on its regional economy.

Here the news about green jobs is more upbeat. In Michigan, the average payroll per worker for the 10 largest detailed green-related industries greatly exceeds the state average. All but one of Indiana's top 10 green-related industries exceeded the state average for payroll per worker. This is an important indicator. These dominant industries, which have greater than average union representation, tend to pay well-above average wages.

5.3 Occupational Prospects for the Future

While the green jobs surveys asked employers about their green jobs hiring expectations in the next two years, the research team needed a richer and more complete data set to assess the future of green and growing jobs. To analyze current job opportunities in the green economy, the research team used the Help Wanted Online (HWOL) database from The Conference Board to get a snapshot of current hiring activity in the tri-state region. In the fourth quarter of 2010, HWOL recorded 620,102 postings in the tri-state region. These postings represented a wide range of occupations in the three states and provided researchers with a sense of what occupations were currently in demand. The research team used BLS and O*NET data to assess long-term occupational prospects in the tri-state region.

The definition of green jobs used in the surveys was developed for the audience who were completing the survey, namely human resource or operations managers. In contrast, the classification of green jobs in this section and subsequent chapters relies upon the "official" slate of green occupations from O*NET. O*NET identified 202 green occupations and categorized them based on the extent of the greening:²³

- **Green New and Emerging:** The output of the green economy and green technologies is sufficient to create the need for unique work and worker requirements. These are entirely novel occupations arising from the green economy, but could be an outgrowth of an existing occupation.
- **Green Enhanced Skills:** The requirements of green economic output and technologies change an existing occupation. This effect may or may not result in an increase in employment demand for the occupation. For example, architecture now requires increased knowledge about energy

²³ Out of 1,110 occupations in the 2010 vintage of the standard occupational code, 202 are defined as green by O*NET. See Erich C. Dierdorff, Jennifer J. Norton, Donald W. Drewes, Christina M. Kroustalis, David Rivkin, and Phil Lewis, "Greening of the World of Work: Implications for O*NET-SOC and New and Emerging Occupations," February 2009, www.onetcenter.org/reports/Green.html.

efficient materials and construction, as well as the capability to integrate green technology into the aesthetic design of buildings. The essential purpose of the occupation remains the same, but tasks, skills,²⁴ knowledge and external elements (such as credentials) have expanded.

- **Green Increased Demand:** Expanding green economic output simply increases the employment demand for an existing occupation. It does not entail significant changes in the work and worker requirements. The work context may change, but the tasks themselves do not. An example is the increased demand for heating and ventilation installers that replace the energy efficient furnaces and air conditioning units more frequently because these units are not as durable as the older furnaces.

While O*NET categorizes green economic activities into 12 industry sectors, the research team boiled this down to five sectors. In order to maintain the focus on the automotive sector, the research team divided the O*NET manufacturing sector into two parts: automotive and non-automotive manufacturing. Most of the remaining 11 O*NET green sectors fit well into two industry groupings: energy-related and environmental services.²⁵ The miscellaneous industry group is a hodgepodge of O*NET industries that did not fit elsewhere, including green construction and transportation.

The tables in the following sections present the current number of postings (using the HWOL), the projected occupation growth from 2008 to 2018, the relative strength of current demand for the occupation, the occupation's 2009 mean wage, as well as the industry groups that will be hiring these occupations. Additional tables that explore the three

O*NET green categories individually are available in Appendix E.

5.3.1 Green Automotive Occupations

While several definitions of the auto sector exist, this section uses the list of 43 occupations directly related to the automotive industry from the Center for Automotive Research (CAR) because CAR has direct contact and experience with the industry and is attuned to many of the finer details associated with hiring practices.

Table 13 presents the top 15 green occupation employment opportunities in the tri-state region's auto industry as of the fourth quarter of 2010. To understand the strength of the number of postings for each occupation, the research team calculated the ratio of postings to the average 2009 employment.²⁶ For example, in the fourth quarter of 2010, there was one posting for every four electrical engineering jobs. This indicates relatively high demand for the occupation.

Industrial engineers rank first among all green auto jobs in the tri-state region and command over two-fifths (44.4 percent) of the postings in the green increased demand category. According to the BLS projections, the industrial engineer position will grow 14 percent between 2008 and 2018. However, according to CAR's research, automakers and their suppliers rarely, if ever, mention this occupation as having growth potential. The reason is that automakers expect all their engineers to have industrial engineering skills as a foundation for the other specialized skill sets required by the industry—much like how all engineers are expected to have a high school diploma. Moreover, the BLS projections reflect demand for occupations across all industries, not just auto. It may well be that automaker demand for industrial engineers will be flat, while job demand for this occupation will occur in other industries.

²⁴ In contrast to the common vernacular, O*NET uses the term skills in a more narrow and technical sense. O*NET skills are more akin to the capacity to perform a type of task, in contrast to knowledge in a subject area or a credential that may also be required for an occupation.

²⁵ Energy-related includes: renewable energy generation, energy efficiency, energy trading, and energy and carbon capture and storage. Environmental services include: research, design, and consulting services, environment protection, agriculture and forestry, recycling and waste reduction, and governmental and regulatory administration.

²⁶ For example, if HWOL reports an occupation in Indiana had 25 postings and the total number of workers in that occupation is 100, the postings to employment ratio is 1:4. Thus, the number of postings for electrical engineers is a large proportion of all electrical engineers working in the state in 2009, in contrast to the postings for machinists which represent a small proportion of those working in this occupation.

Table 13: Tri-State Top 15 Green Auto Occupation[§] Postings and Expected Job Change to 2018

Rank	Description	HWOL Green Postings ¹	10-Year Expected Growth ²	Postings-to-Employment Ratio ³	Mean Wage ⁴
1	Industrial Engineers	10,960	14.2%	1 : 3	\$75,476
2	Mechanical Engineers	6,626	6.0%	1 : 7	\$78,759
3	First-Line Supervisors/Managers of Production and Operating Workers	6,525	-5.2%	1 : 12	\$55,964
4	Maintenance and Repair Workers, General	5,004	10.9%	1 : 25	\$36,712
5	Electrical Engineers	2,901	1.7%	1 : 4	\$76,464
6	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	2,677	4.3%	1 : 15	\$59,704
7	Machinists	2,307	-4.6%	1 : 28	\$38,823
8	Computer-Controlled Machine Tool Operators, Metal and Plastic	1,713	6.6%	1 : 16	\$35,287
9	Electronics Engineers, Except Computer	1,444	0.3%	1 : 6	\$81,587
10	Inspectors, Testers, Sorters, Samplers, and Weighers	1,368	-3.6%	1 : 43	\$35,354
11	Industrial Machinery Mechanics	878	7.3%	1 : 37	\$48,450
12	Electrical and Electronic Equipment Assemblers	856	-14.7%	1 : 16	\$28,369
13	Industrial Engineering Technicians	801	6.6%	1 : 14	\$48,006
14	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	534	-14.1%	1 : 80	\$32,306
15	Team Assemblers	330	0.0%	1 : 467	\$31,731

[§] Auto occupations as defined by CAR.

¹ Source: HWOL, Quarter 4, 2010, N= 620,102; All green jobs, N=131,248; Green auto, N=45,232.

² Source: BLS; Projections from 2008 to 2018 are for the parent, six-digit SOC. HWOL and O*NET now report occupations at the eight-digit SOC level. As a result, those occupations listed in this table are at the more detailed, eight-digit SOC while the projection figures are for the parent six-digit SOC. Hence the projection is for a group of similar occupations and not the specific occupation listed in the table.

³ Source: IBRC using HWOL and BLS/OES data

⁴ Source: 2009 data from BLS. Mean wage calculated for tri-state using a weighted average.

Green auto occupations can be categorized using the O*NET method, and the top five occupations in green enhanced skills and green increased demand are presented in Appendix E. Of the green enhanced skills occupations that will require expanded knowledge, skills, expertise and/or credentials of their workers, mechanical engineers dominate, accounting for 32.2 percent of all job postings in this category. One might note that for the O*NET category of green new and emerging, there are no auto sector occupations (as currently defined by CAR) that register. This reflects, primarily, that data collection, processing and demand projections for these types of occupations is lagging.²⁷

The distribution of demand by occupation differed across the three states, according to HWOL postings. Ohio had the most green auto postings (20,004), followed by Michigan (17,210) and Indiana (8,018). In all three states, industrial engineers is the most sought-after occupation. After that, however, the state demand patterns diverge. In Michigan, mechanical engineers occupy the number two spot. In both Indiana and Ohio, first-line supervisors of production workers were in greater relative demand than mechanical engineers. The differences in the occupational opportunities in the states—for example, more than twice the percentage of postings for electronics engineers in Indiana relative to Ohio—highlight the need to break down the demand for skill sets and training by state, and even sub-state,

²⁷ O*NET classifies all green new and emerging occupations using an eight-digit SOC code for which occupational projections are not yet available.

since industry demand for particular occupations is geographically based.

5.3.2 Green and Growing Occupations

Since growth in green auto occupations is not large enough to absorb the displaced auto workforce, what

other opportunities exist in the green economy?

Table 14 presents the top 15 green occupation vacancy postings from HWOL in the fourth quarter of 2010, but without the automobile occupations already presented above to avoid repetition. BLS projects that many of these will continue to grow through 2018.

Table 14: Tri-State Top 15 Green and Growing Non-Automotive Occupation Postings and Expected Job Change to 2018

Rank	Description	HWOL Green Postings ¹	10-Year Expected Growth ²	Industry Group ³	Postings-to-Employment Ratio ⁴	Mean Wage ⁵
1	Truck Drivers, Heavy and Tractor-Trailer	16,343	13.0%		1 : 10	\$39,190
2	Customer Service Representatives	13,767	17.7%		1 : 13	\$32,898
3	Marketing Managers	5,919	12.5%		1 : 2	\$106,051
4	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	5,194	9.7%		1 : 8	\$80,298
5	General and Operations Managers	4,038	-0.1%	 	1 : 22	\$108,057
6	Laborers and Freight, Stock, and Material Movers, Hand	3,131	-0.8%		1 : 75	\$25,930
7	Automotive Specialty Technicians	2,745	4.7%		1 : 20	\$37,297
8	Public Relations Specialists	1,826	24.0%		1 : 9	\$51,630
9	Training and Development Specialists	1,794	23.3%	 	1 : 10	\$53,051
10	Engineering Managers	1,638	6.2%		1 : 11	\$109,392
11	Welders, Cutters, and Welder Fitters	1,574	-1.6%	 	1 : 21	\$35,842
12	Computer Software Engineers, Systems Software	1,377	30.4%		1 : 14	\$81,926
13	Production, Planning, and Expediting Clerks	1,365	1.5%		1 : 20	\$41,314
14	Aerospace Engineers	1,353	10.4%		1 : 1	\$86,484
15	Heating and Air Conditioning Mechanics and Installers	1,323	28.1%	 	1 : 16	\$45,441

¹ Source: HWOL, Quarter 4, 2010; Green jobs total, N=131,248.

² Source: BLS; Projections from 2008 to 2018 are for parent, six-digit SOC. HWOL and O*NET now report occupations at the eight-digit SOC detail. As a result, those occupations listed in this table are at the more detailed, eight-digit SOC while the projection figures are for the parent six-digit SOC. Hence the projection is for a group of similar occupations and not the specific occupation listed in the table.

³ Source: O*NET; O*NET categorizes green industries into 12 sectors. For the purposes of this report, the research team recast those 12 sectors into five categories.

⁴ Source: IBRC using HWOL and BLS/OES data

⁵ Source: BLS. Mean wage calculated for tri-state using a weighted average.

Industry Group Legend

-  Automotive Manufacturing
-  Energy-Related Industries
-  Environmental Services
-  Non-Auto Manufacturing
-  Miscellaneous Industries Not Elsewhere Classified

Occupations in the green enhanced skills category account for 56.4 percent of all green job postings in the tri-state region. While those occupations that fall into the green new and emerging category make up a very small share of green jobs currently in demand (they are new and emerging after all), they tend to

have higher average wages and stronger expected growth through 2018. The top three occupations in this category for the tri-state region include manufacturing engineers, securities and commodities traders, and energy engineers. A finding related to new and emerging jobs is that there are no training

Table 15: Tri-State Top 15 Non-Green Occupation Postings and Expected Growth to 2018

Rank	Description	HWOL Postings ¹	10-Year Expected Growth ²	Industry Group ³	Postings-to-Employment Ratio ⁴	Mean Wage ⁵
1	Registered Nurses	23,415	22.2%		1 : 11	\$60,750
2	Retail Salespersons	16,233	8.4%		1 : 23	\$23,938
3	Occupational Therapists	14,728	25.6%		1 : 1	\$68,962
4	Physical Therapists	12,620	30.3%		1 : 1	\$73,557
5	First-Line Supervisors/Managers of Retail Sales Workers	12,003	5.3%		1 : 8	\$38,589
6	Computer Systems Analysts	10,422	20.3%		1 : 4	\$77,109
7	Executive Secretaries and Administrative Assistants	9,971	12.8%		1 : 10	\$41,237
8	Web Developers	8,790	13.4%		1 : 2	\$68,394
9	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	7,895	6.6%		1 : 17	\$58,906
10	Medical and Health Services Managers	7,796	16.0%		1 : 4	\$82,542
11	Computer Support Specialists	7,740	13.8%		1 : 6	\$42,408
12	First-Line Supervisors/Managers of Office and Administrative Support Workers	7,662	11.0%		1 : 13	\$48,399
13	Speech-Language Pathologists	7,352	18.5%		1 : 1	\$72,655
14	Sales Agents, Financial Services	6,041	9.3%		1 : 4	\$72,610
15	Office Clerks, General	5,970	11.9%		1 : 44	\$26,764

¹ Source: HWOL, Quarter 4, 2010; Non-green jobs comprised 77.9 percent of all HWOL postings, N=463,988.

² Source: BLS; Projections from 2008 to 2018 are for parent, six-digit SOC. HWOL and O*NET now report occupations at the eight-digit SOC detail. As a result, those occupations listed in this table are at the more detailed, eight-digit SOC while the projection figures are for the parent six-digit SOC. Hence the projection is for a group of similar occupations and not the specific occupation listed in the table.

³ Source: O*NET; O*NET categorizes green industries into 12 sectors. For the purposes of this report, the research team recast those 12 sectors into five categories.

⁴ Source: IBRC using HWOL and BLS/OES data

⁵ Source: BLS. Mean wage calculated for tri-state using a weighted average.

Industry Group Legend

 Automotive Manufacturing	 Energy-Related Industries	 Miscellaneous Industries Not Elsewhere Classified
 Environmental Services	 Non-Auto Manufacturing	

programs in the tri-state region associated with these opportunities (see **Chapter 7**).

5.3.3 Other Growing Occupations

Even though many career opportunities exist in the green economy, the demand for non-green jobs (as evidenced by the more favorable postings-to-employment ratios in this section) indicate that non-green jobs should also be explored as career alternatives for the displaced auto workforce.

Table 15 presents the region's top 15 non-green occupation job vacancy postings from HWOL in the fourth quarter of 2010. The top 15 occupations

account for more than 25 percent of all non-green postings. Medical and health-related occupations dominate the list. None of the non-green occupations that top the list are in manufacturing.

Whether one is a new entrant to the labor force or a worker affected by the Great Recession and wishing to transition to another occupation, the process of winnowing down the hundreds of occupations into a manageable and realistic set of target occupations can be daunting. The next two chapters present new resources for workers in transition to find those target occupations. 