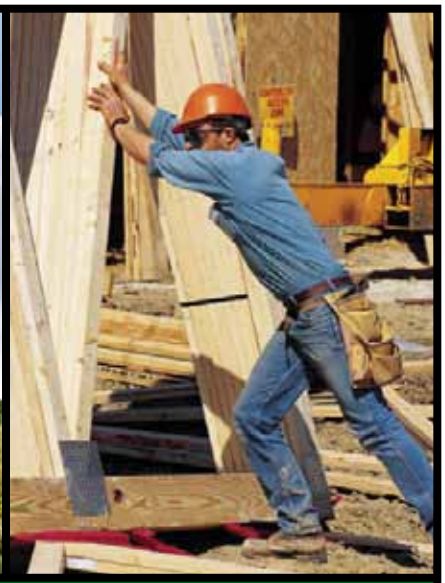

2009 KANSAS Green Jobs Report

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Acknowledgements

We would like to thank all the businesses who voluntarily shared information for our survey.

The *2009 Kansas Going Green Survey* was a substantial undertaking by the Labor Market Information Services (LMIS) division of the Kansas Department of Labor (KDOL). It was indeed a collaborative effort involving various stakeholders in the workforce development arena. Without the support of these generous stakeholders, this survey and publication would not have been possible. We would like to acknowledge the Office of the Governor - State of Kansas, Kansas Department of Commerce, KansasWorks and the state and local workforce development boards for their valuable input from the very inception of this study. We would also like to express our gratitude to the Docking Institute of Public Affairs at Fort Hays State University for helping collect responses to the survey and their input in telephone survey design. We are grateful to KDOL's creative Marketing/ Communications team for their work in compiling the final publication. Finally, we would like to acknowledge the LMIS staff members who helped in all phases of the survey and this report. This publication is a reflection of the hard work that the LMIS/KDOL team invested in this process. A special thanks to Kristen Rottinghaus who led and authored this project to its successful completion.

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Message from the Secretary

Jim Garner
Kansas Secretary of Labor

This report marks an important first step in the effort to gain an understanding of the green economy in Kansas and the promise green employment offers to future economic development in our state. The Kansas Going Green Survey is the first attempt to measure green employment in Kansas through an employer survey.

Kansas is among the forerunners in this effort and we have been able to learn and build upon the best practices of the states that have gone before us in putting together our own survey. The results of the survey will lay a benchmark for Kansas that will help us measure our progress as we build the green economy in our state.

This important first step would not have been possible without the cooperation of all the Kansas employers who took the time to complete the survey and return the results to us. We had a 55 percent response rate to the survey, an extremely good response for a survey of this type. I want to express my appreciation to all the employers who took part in the survey so that we could plan and prepare for a growing green presence in our labor market.

The results of the survey proved to be quite interesting. Kansas had more than 46,000 green jobs in 2009, equivalent to about 3.4 percent of the state's total covered employment. There were a couple of areas that showed significant potential for future growth – renewable energy and energy efficiency. In fact, more than half of the primary green jobs in Kansas were related to increasing energy efficiency.

Along with the potential uncovered by the survey came a few challenges, as well. It was a bit surprising to learn that more Kansas businesses were not participating in basic green practices. I'm hopeful this survey will prove to be a tool to help share effective green practices from one industry to another. Evidence shows a focus on green practices can save money for businesses and improve the bottom line of Kansas employers.

I hope you will find this report useful and informative, and that you will share it with your colleagues. For more information about the survey, contact our division of Labor Market Information Services at 785-296-5000 or Laborstats@dol.ks.gov.

Thank you.

Jim Garner
Kansas Secretary of Labor

Executive Summary

The *2009 Kansas Going Green Survey* was developed and conducted by the Labor Market Information Services (LMIS) division of the Kansas Department of Labor (KDOL). It represents a pioneering effort to identify and measure green jobs in the State of Kansas. Several studies have estimated the extent and composition of Kansas' green economy by analyzing existing databases on a multitude of variables thought to be related to the green economy. However, this signals the first attempt to establish estimates based on information collected directly from Kansas businesses. The ultimate objective is to obtain employment and training information so the Kansas workforce is able to fulfill current and future green employment demands. The survey results are expected to provide a wealth of information to a variety of stakeholders including Kansas businesses, workforce development professionals and state and local government officials.

For the purposes of this study, two types of green jobs were identified. Primary green jobs were defined as jobs which produce a green product or provide a green service in one of five core green-related areas including: producing renewable energy, increasing energy efficiency, agriculture and natural resource conservation, pollution prevention and environmental cleanup, and clean transportation and fuels. Support green jobs were defined as jobs that assist the performance of a primary green job. Counts of the numbers of primary and support green jobs were collected, although greater details about specific job titles, educational requirements and licensure/certification requirements were collected on primary green jobs only.

A sample of 6,003 businesses was randomly selected to participate in the survey from the population of establishments covered under the Kansas Unemployment Insurance Compensation system. The overall response rate at the completion of the study was 55.1 percent.

Key Survey Findings

The following pages review the findings of the study in great detail, but a portion of the most notable findings are highlighted below.

- Kansas had 20,047 primary green jobs and 26,380 support green jobs in 2009. This was equivalent to 1.5 percent and 1.9 percent respectively of Kansas' total covered employment in the fourth quarter of 2008.

- The largest percentage of primary green jobs was in the core green-related area of increasing energy efficiency (52.7 percent). Another 19.4 percent of Kansas' green jobs were in agriculture and natural resource conservation, 16.4 percent were in pollution prevention and environmental cleanup and 7.1 percent were in producing renewable energy. The smallest percentage of primary green jobs was in the core green-related area of clean transportation and fuels (4.4 percent).

- The four industries with the largest numbers of primary green jobs were specialty trade contractors, construction of buildings, administrative & support services, and professional, scientific & technical services. Together, they accounted for more than half (55.0 percent) of all primary green jobs.

- The five occupations with the largest numbers of primary green jobs were carpenters; heating, air conditioning & refrigeration mechanics & installers; construction laborers; landscaping & groundskeeping workers; and assemblers & fabricators, all other. Each occupation accounted for 6.0 percent or more of the total primary green jobs in the state.

- In terms of educational requirements, 1.5 percent of primary green jobs required a graduate degree, 10.5 percent required a bachelor's degree, 10.9 percent required an associate/ vocational degree, 1.8 percent required some college but no degree, 41.5 percent required a high school diploma or GED and 28.0 percent had no educational requirement.

- Two new occupations included in the 2010 Standard Occupational Classification (SOC) system were wind turbine service technicians and solar photovoltaic installers. The former occupation accounted for 1.6 percent of the total primary green jobs in Kansas in 2009 despite having only been added to the SOC in 2010.

- One new and emerging occupation was identified in Kansas. Directors/managers of sustainability were broadly described as employees who were engaged in researching green practices, activities and opportunities for their company. Such a position did not fit well into any of the existing six-digit occupational codes.

- Kansas had 20,047 primary green jobs in 2009 and is projected to have 30,236 primary green jobs by 2012 according to employers' expectations of the next two to three years. Employers projected the largest two-to-three year increase to be in the core area of renewable energy (121.4 percent). They also expected green employment to increase 56.9 percent in increasing energy efficiency, 37.5 percent in clean transportation and fuels, 32.7 percent in agriculture and natural resource conservation and 25.7 percent in pollution prevention and environmental cleanup.

- Of the Kansas employers that had training needs related to green skills and knowledge, 58.6 percent were using on-the-job training to prepare their current workers while 50.3 percent were using in-house training and another 41.8 percent were using vendor training.

- The most common green skills and knowledge that current and future employees needed were related to waste minimization, energy conservation and environmental policies/regulations. The future demand for green skills and knowledge is significantly greater than the current demand.

- Among the employers that did not have any primary green jobs, the most common reason for not having any was that green jobs were not applicable to their business mission. Of the employers that did have primary green jobs, the two most common barriers that prevented them from increasing the number of green jobs were economic conditions and financial costs.

Introduction

The current economic recession has impacted the lives and prosperity of individuals across the United States and around the world. With this new era of high unemployment and expanding budget deficits, policymakers and leaders across the nation have made it a priority to identify and facilitate new opportunities for job creation and growth. Among these ideas is that the emerging green economy bodes great potential for future development. Research and academic entities in many states have taken the initiative to study the green economy and green jobs to determine the reality of this potential. In keeping with this effort, the *2009 Kansas Going Green Survey* is pioneering the efforts to identify and measure green industries and occupations in the Kansas economy through primary data collection.

Defining the green economy and green jobs has proven to be a challenging undertaking as both concepts are still in the developmental stages. Various research studies have established competing definitions. While there are no uniform definitions of the green economy and green jobs, the two terms can be defined in a very general sense. At its broadest, the green economy refers to those economic activities that advance the goals of and/or generate positive outcomes for the environment. Clean energy, energy efficiency, alternative energy, pollution prevention and resource conservation are examples of economic activities related to the green economy. Green jobs, in the broadest sense, refer to jobs in the green economy.

Despite the challenge of varying definitions, many studies agree that green jobs demonstrate strong potential to cross socioeconomic boundaries and generate large numbers of jobs at substantial levels of pay. Some studies also suggest that green jobs are not an entirely new phenomenon. Although a portion of green jobs are new or emerging, perhaps a greater portion actually stem from traditional occupations. A green job can be a traditional occupation that requires a new set of green knowledge, skills or abilities, or it can be a traditional occupation that creates greater employment demand. In light of these findings, many states are beginning to work collaboratively to develop research studies that attempt to generate more valid, accurate and reliable data on green jobs.

Spotlight on Kansas Businesses

Campbell Farms, LLC in Winfield, Kansas has adopted new management practices and technologies that have resulted in a 150.0 percent increase in production per cow since 1970. This efficiency has reduced the carbon footprint of milk production by 40.0 percent per gallon.

In order to gain energy efficiency, Campbell Farms has installed new equipment in their milking facility. A variable speed vacuum pump reduces the energy consumption used to run the milking system by 60.0 percent. A heat recovery system saves another 66.0 percent in energy usage by recovering heat from the process of cooling milk and transferring it to the water that is used to wash equipment. Additionally, the company uses no-till and strip-till conservation practices as well as Global Positioning System (GPS) guidance. These techniques allow for the precise application of fertilizer and herbicide, minimizing the amount of chemical that is applied.

Existing Research on Green Jobs in Kansas

Staff members from Labor Market Information Services (LMIS), the statistical branch of the Kansas Department of Labor (KDOL), conducted a thorough review of the existing research on the green economy and green jobs to ensure comparability with states that had already conducted similar studies. The survey design and methodology utilized in the *2009 Kansas Going Green Survey* was based on a combination of the surveys developed by the states of Washington, Michigan, Oregon and California. A review of this literature revealed numerous attempts to establish and forecast current and future estimates of the number of green jobs in the United States. However, the estimates produced by such studies were not comparable due to the inconsistencies in methodologies and research approaches.

A small number of prior studies attempted to measure green employment in Kansas by analyzing existing data on variables thought to be linked to the green economy. Two of them are listed below.

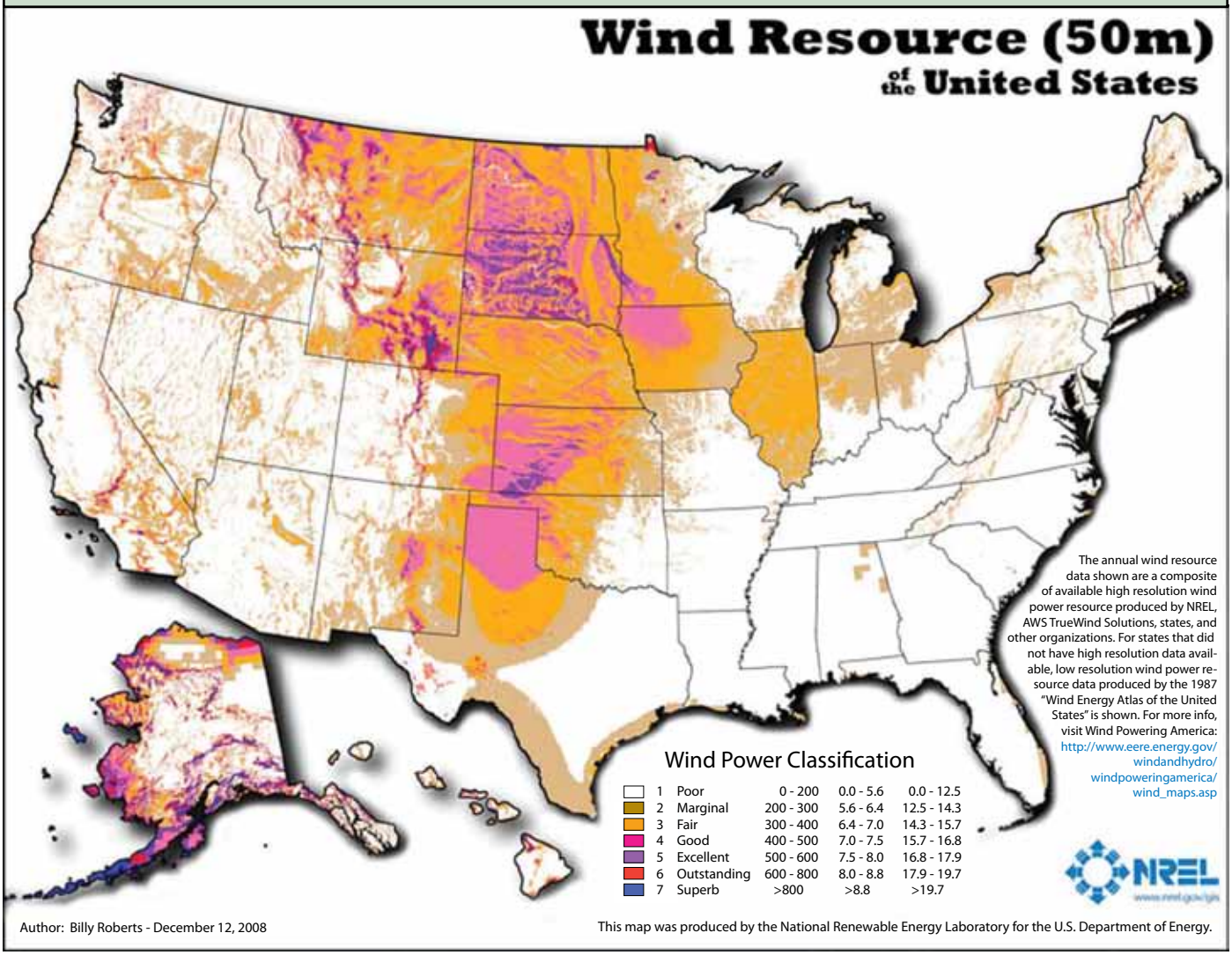
An October 2008 study conducted by Global Insight for the United States Conference of Mayors entitled *U.S. Metro Economies – Current and Potential Green Jobs in the U.S. Economy* estimated that in 2006 there were more than 750,000 green jobs in the United States, 3,968 of which resided in the five metropolitan areas in Kansas. By 2038, they forecasted that more than 4.2 million new green jobs would be created nationwide. Approximately 31,399 of those new green jobs were estimated to be created in the five Kansas metro areas.

A second study entitled *The Clean Energy Economy – Repowering Jobs, Businesses and Investments Across America* was conducted in June 2009 by the Pew Charitable Trusts. Among their most notable findings was that between 1998 and 2007 jobs in the clean energy economy grew 9.1 percent nationwide. During this same time period, the number of total jobs nationwide grew by only 3.7 percent. In Kansas, the number of jobs in the clean energy economy grew 51.0 percent between 1998 and 2007 while the number of total jobs declined 0.3 percent. This comparison indicates that the growth rate for green jobs in Kansas was much faster than the growth rate for green jobs nationwide. The average annual growth rate for Kansas during this period was the sixth highest growth rate in the nation at 4.7 percent. In 2007, the number of clean energy jobs in Kansas accounted for 8,017 of the 770,385 clean energy jobs in the U.S.

A small number of prior research studies have also attempted to measure Kansas' potential for future development in certain sectors of the green economy. Highlights of Kansas' potential in two sources of renewable energy are listed below.

According to 2008 data from the U.S. Department of Energy's Wind Program and the National Renewable Energy Laboratory (NREL), Kansas demonstrates varying levels of potential for wind energy development as shown in Map 1. While portions of eastern Kansas show marginal or fair potential, portions of central and western Kansas demonstrate good to excellent potential for capturing wind energy.

Map 1

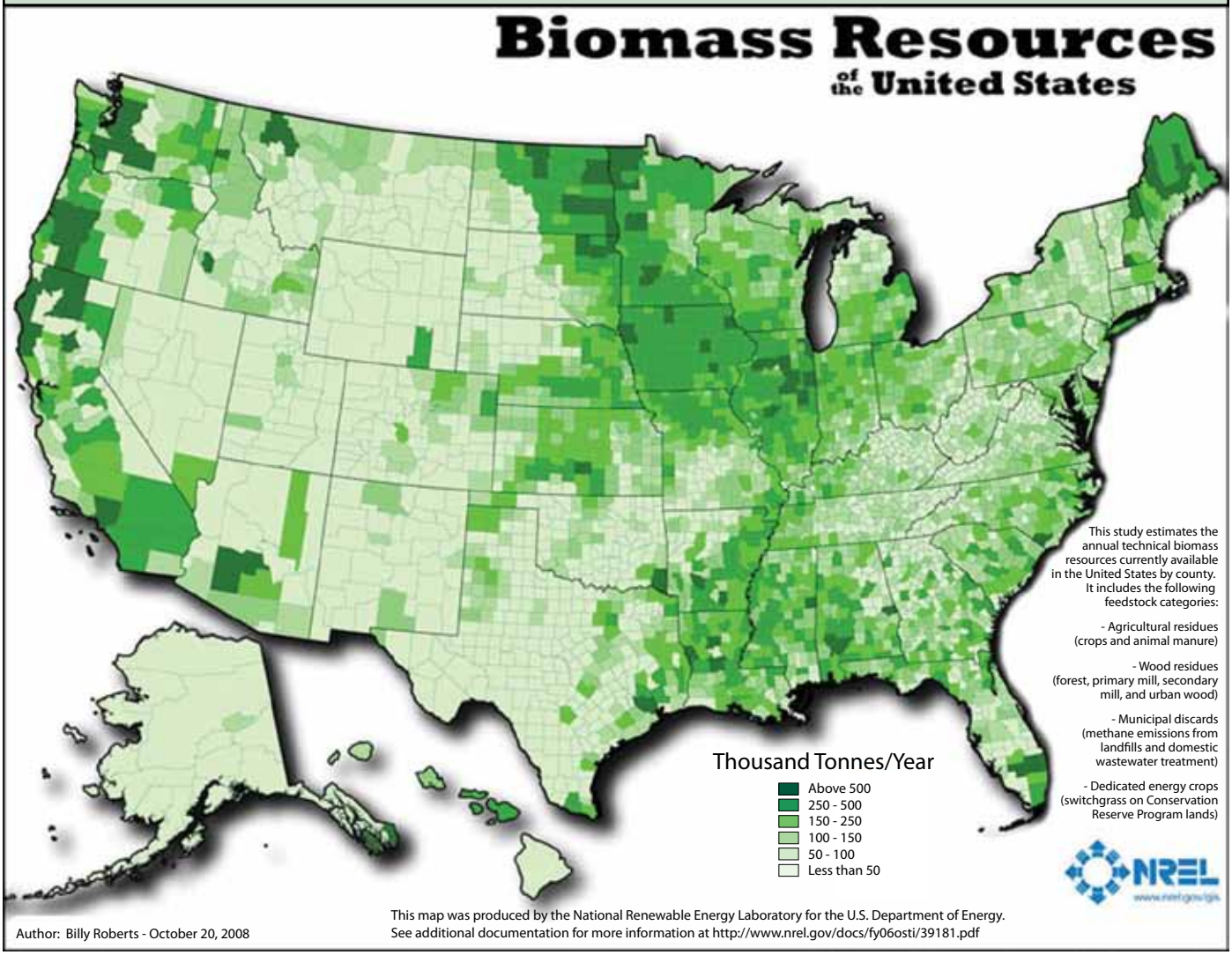


Research conducted by the NREL for the U.S. Department of Energy released in 2008 reveals that Kansas also has strong biomass energy resource potential due to its agricultural base. Biomass is plant matter such as wood, agricultural crops and waste material that can be manipulated and used to generate energy. Central Kansas possesses the strongest biomass potential in the state. Please see Map 2 for further details.

Spotlight on Kansas Businesses

J & S Wood Enterprises, Inc. in Newton, Kansas manufactures wooden stakes that are comprised almost entirely of distressed, scrap and post-consumer materials. The company also ensures that all wood materials that are given away are reused as a source of energy rather than going to the landfill. For example, the company's wood materials are used as fireplace kindling for personal consumption and even campfire kindling for social organizations such as the Boy Scouts of America.

Map 2



In terms of current and future green research, the Bureau of Labor Statistics (BLS) is working to develop comprehensive and universal definitions of the green economy and green jobs so that green industries and occupations can be incorporated in their various programs. Their efforts are based, in part, on the survey findings of the states that have studied green jobs. The Occupational Information Network (O*NET) is also conducting research to identify the sectors of the economy that are specifically green. This includes information on new and emerging occupations as well as the knowledge, skills and abilities associated with green jobs.

Purpose

As green jobs gain popularity among policymakers as a potential economic stimulant, a multitude of secondary research studies have commenced to support this premise. The conflicting operational definitions and methodologies that have been utilized by most prior studies make it difficult to establish a baseline measurement of green jobs for comparison purposes. The LMIS division of KDOL completed the *2009 Kansas Going Green Survey* in an attempt to overcome these drawbacks of secondary research. Although primary research has its own limitations, this is the first attempt to collect a hard-count of the number of green jobs in the Kansas economy directly from Kansas businesses.

The purpose of the study was multi-faceted. It was intended to identify the green occupations and green industries present in Kansas as well as to identify the green knowledge and green skills that employees need to perform these jobs. The study also aimed to collect data that would help develop the training programs necessary for preparing a Kansas workforce that is qualified to fulfill current and future green employment needs. Through these objectives, the ultimate goal of the survey was to facilitate a more informed foundation for future policy, workforce and economic decisions in Kansas.

Defining a Green Job

Due to the lack of a universal definition of the green economy and green jobs, key stakeholders were involved in the process of defining these terms as they apply to Kansas. The Office of the Governor, Kansas Department of Commerce and state and local workforce development boards were asked to provide feedback on the definition and scope of the green economy. LMIS staff also reviewed the definitions of a green job adopted by the four states previously mentioned. By consensus of this group, modifications were made to fit the unique economy in Kansas.

This study identified two types of green jobs, primary and support. Primary green jobs were defined as those jobs which produce a green product or provide a green service in one of the following five core green-related areas: producing renewable energy, increasing energy efficiency, agriculture and natural resource conservation, pollution prevention and environmental cleanup, and clean transportation and fuels. Support green jobs were defined as jobs that assist the performance of a primary green job. Each of the core areas are briefly presented below.

Five Core Green-Related Areas

1. Producing renewable energy – employees who work to produce energy that comes from natural and sustainable resources. These resources can often be regenerated by the natural environment in a relatively short amount of time.
2. Increasing energy efficiency – employees who provide, or produce products that provide, a given level of energy service using less energy.
3. Agriculture and natural resource conservation – employees who produce products or provide services that are designed to help conserve, maintain and improve the natural environment.
4. Pollution prevention and environmental cleanup – employees who produce products or provide services that minimize or prevent the adverse impacts of pollution on the natural environment and human health.
5. Clean transportation and fuels – employees who are engaged in the research, development and production of new technologies for energy storage and alternative fuels. Individuals working on improved fuel efficiencies and emissions reductions are also included in this area.

These five core green-related areas were chosen because they were broad enough to cover all areas of the Kansas economy, yet they allowed for a more detailed categorization of occupations. The core area into which each job was classified helped to provide deeper insight into precisely how it was green.

The survey was designed to collect numeric counts of both primary and support green jobs. However, specific occupational data was collected on primary green jobs only. Information about the types of green practices utilized by Kansas businesses was also gathered. These green practices refer to the environmental activities of the company and include such things as their recycling activities and conservation policies. For a complete description of primary green jobs, support green jobs and the core green-related areas, please refer to the informational flier in Appendix A.

Methodology

A written survey instrument was used to collect the information for this study. The survey can be found in Appendix B. Businesses were randomly selected from the population of establishments covered under the Kansas Unemployment Insurance Compensation system in the fourth quarter of 2008. A paper copy of the survey was mailed to the 6,003 selected employers in August 2009. Respondents had the ability to return their completed response by mail, fax, telephone or the Internet. Businesses that had not responded to the survey by October were contacted by telephone. Data collection was conducted from August through December 2009.

The sampling process used to select participants for the employer survey was, in part, dictated by their three-digit North American Industrial Classification System (NAICS) code[1]. Two samples were formed, a sample of businesses in green industries and a second sample of businesses in non-green industries. LMIS staff identified those industries within the existing list of three-digit NAICS with the highest probability of fostering green occupations based on an extensive review of the literature and other states' experiences. All remaining industries were considered non-green. A random stratified sampling procedure was used to draw both samples. The first sample, the green sample, was stratified by local area, size class and three-digit NAICS code while the second sample, the non-green sample, was stratified by local area and size class. For more detailed information about the methodology used, please refer to Appendix C. Furthermore, a list of all of the green and non-green industries included in the sample can be found in Appendix D.

After data collection was completed, LMIS staff used existing industry, occupational and wage data to supplement the survey data. This approach allowed LMIS to analyze the green economy in even further detail and to project such things as future industry and occupational growth and employment.

There are a number of caveats that should be recognized with this study. First, the sharp economic downturn that began in 2008 and continued into 2009 may have impacted the responses of some employers. Due to their uncertainty of the future, employers may have underestimated their future employment in certain green jobs or simply chosen not to respond to questions about the future. Second, the popularity of green initiatives and the amount of funding attached to the 2009 American

Did you know? • • •

There are around 99 unique three-digit NAICS codes into which an industry can be classified. Each of these industries can be further refined into a six-digit code. NAICS contains approximately 1,175 unique six-digit codes which provide the highest level of detail about an industry.

[1] NAICS is an industry classification system that groups industries based on similarities in production processes. Distinctions between industries are based on differences in production processes.

Recovery and Reinvestment Act (ARRA) may have impacted the responses of some employers to the opposite effect. Some employers may have inflated their predictions of future green employment because of the current green trend among private and public institutions. The complexity of the subject may have also influenced the study results. An exact guide to what is green and what is not has eluded even those individuals having spent ample time and effort studying the green economy. It can, therefore, be expected that the survey participants experienced some difficulty in determining which, if any, of their employees occupied green jobs. Furthermore, because the data was collected through sampling techniques, the results may be subject to sampling error. For more details, please refer to Appendix C.

There is no way to know the exact impact of these caveats on the survey results. To the furthest extent possible, LMIS attempted to minimize these impacts through a number of precautionary measures and procedures. More than one month of time was dedicated to following up with survey participants whose responses raised additional questions or concerns.

Participation Rate

Of the 6,003 employers selected for the sample, 3,088 provided usable responses. Another 232 of the establishments sampled were out of business and 166 were out of scope. In computing the overall response rate, the number of businesses that were closed or out of scope were subtracted from the total number of establishments sampled as it was not feasible to obtain a usable response from those employers. The resulting overall response rate for the *2009 Kansas Going Green Survey* was 55.1 percent.

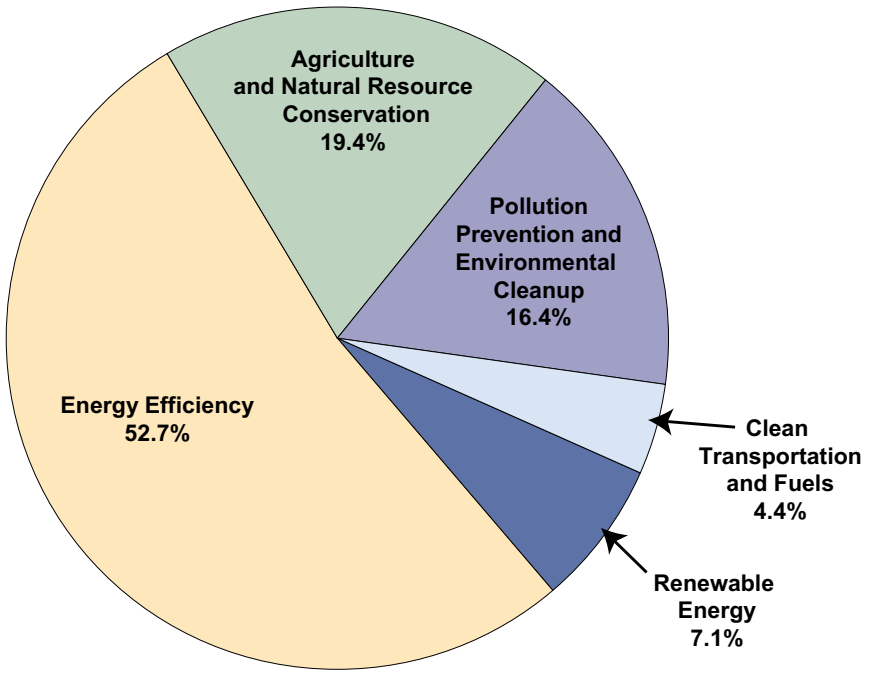
Primary Green Jobs and Support Green Jobs in Kansas

Kansas had 20,047 primary green jobs out of the 1,357,342[2] private, state and local government jobs in the fourth quarter of 2008. The number of employees with primary green jobs was equivalent to 1.5 percent of Kansas' total covered employment at this same time. The state also had 26,380 support green jobs. This was equal to 1.9 percent of the total covered employment in Kansas in the fourth quarter of 2008. Combined, there were 46,426 primary and support green jobs, which accounted for 3.4 percent of Kansas' total covered employment.

In terms of the actual sample of Kansas employers selected to participate in the survey, 7.1 percent indicated that they had primary green jobs, 10.4 percent indicated that they had support green jobs, and 87.0 percent indicated that they had neither primary nor support green jobs.

Also noteworthy, the survey results revealed that primary green jobs were present in the industries that had been identified by LMIS staff as green and also in the industries that had been identified as non-green. Analysis of the green industries showed that the majority of primary green jobs, 15,753, were in green industries, while 4,294 primary green jobs were in non-green industries.

Figure 1
Primary Green Jobs by Core Green-Related Area



Core Green-Related Areas

The percentage of primary green jobs within each of the five core green-related areas is shown in Figure 1. Of the 20,047 primary green jobs, more than 10,500, or 52.7 percent, were in the core green-related area of increasing energy efficiency. Agriculture and natural resource conservation accounted for 19.4 percent of the primary green jobs in Kansas and pollution prevention and environmental cleanup accounted for 16.4 percent of primary green jobs. The smallest numbers of primary green jobs were in the core green-related areas of clean transportation and fuels and producing renewable energy at 4.4 percent and 7.1 percent respectively.

[2] This number excludes approximately 9,500 establishments that could not be assigned a specific county code.

Core Green-Related Areas by Local Area

The State of Kansas is divided into five local areas for the purpose of workforce development as seen below. The dispersion of primary green jobs in each of the five core green-related areas is presented across these five local areas in Figure 2. It reveals that jobs in increasing energy efficiency accounted for the largest number of primary green jobs in overall terms and within each of the local areas. It also shows that more than half of the primary green jobs in producing renewable energy were in local area four and that more than half of the primary green jobs in pollution prevention and environmental cleanup were in local area three. Similarly, the largest numbers of green jobs in increasing energy efficiency and agriculture and natural resource conservation were also in local area three. Local area one had the most green jobs related to clean transportation and fuels.

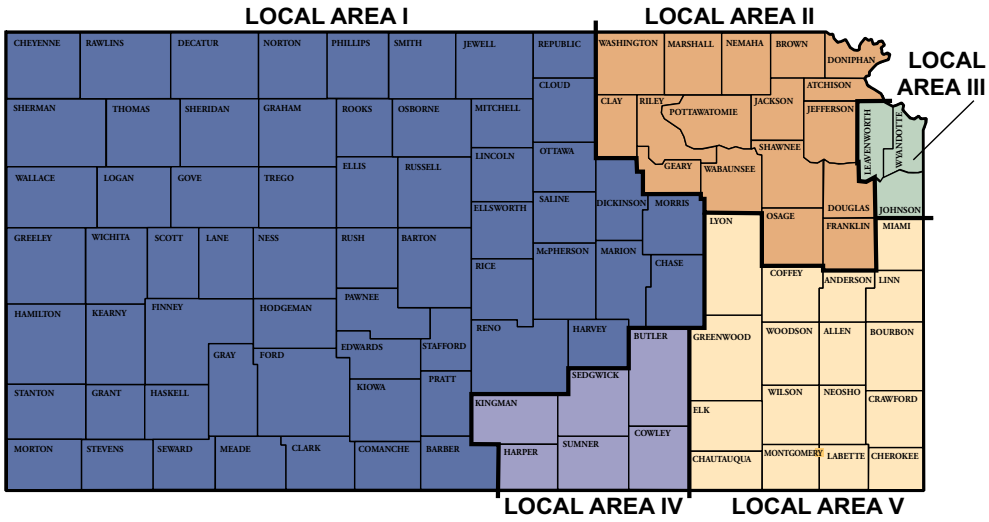
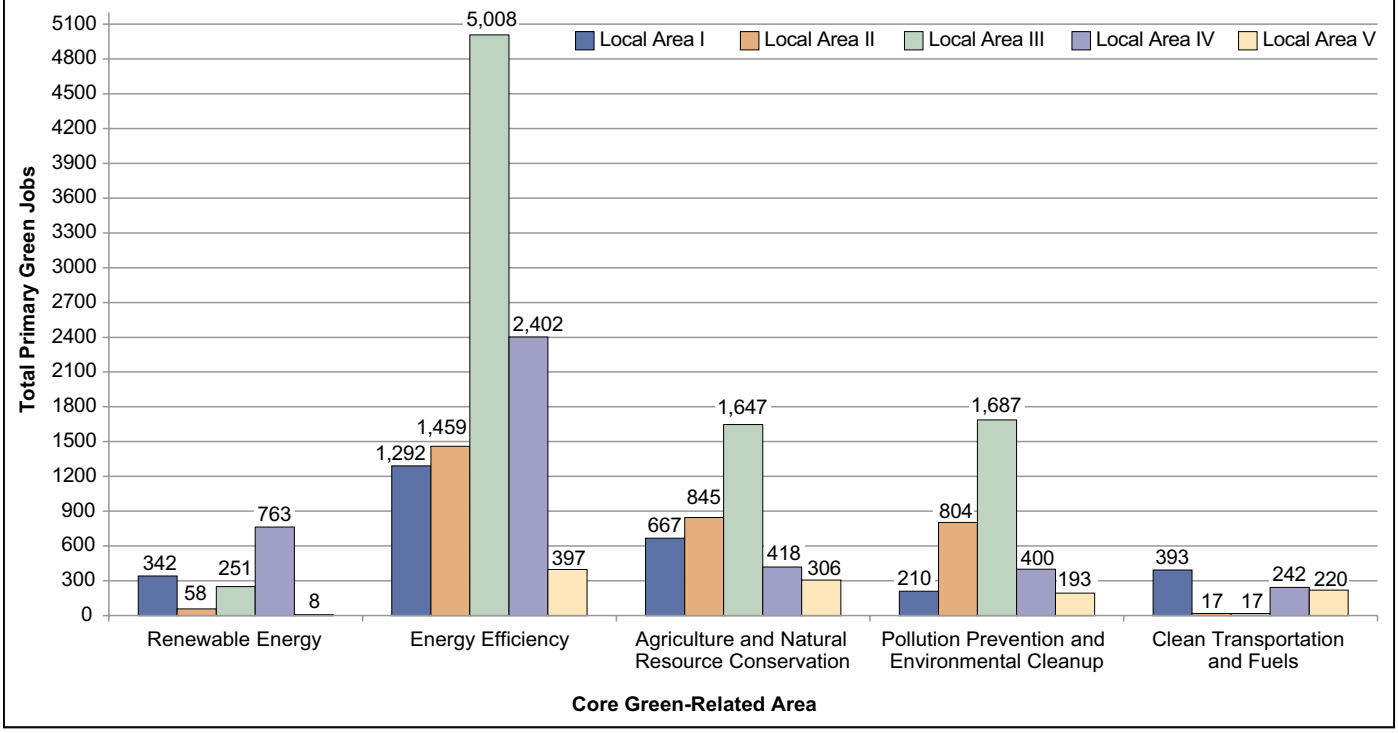


Figure 2
Distribution of Primary Green Jobs by Core Green-Related Area and Local Area

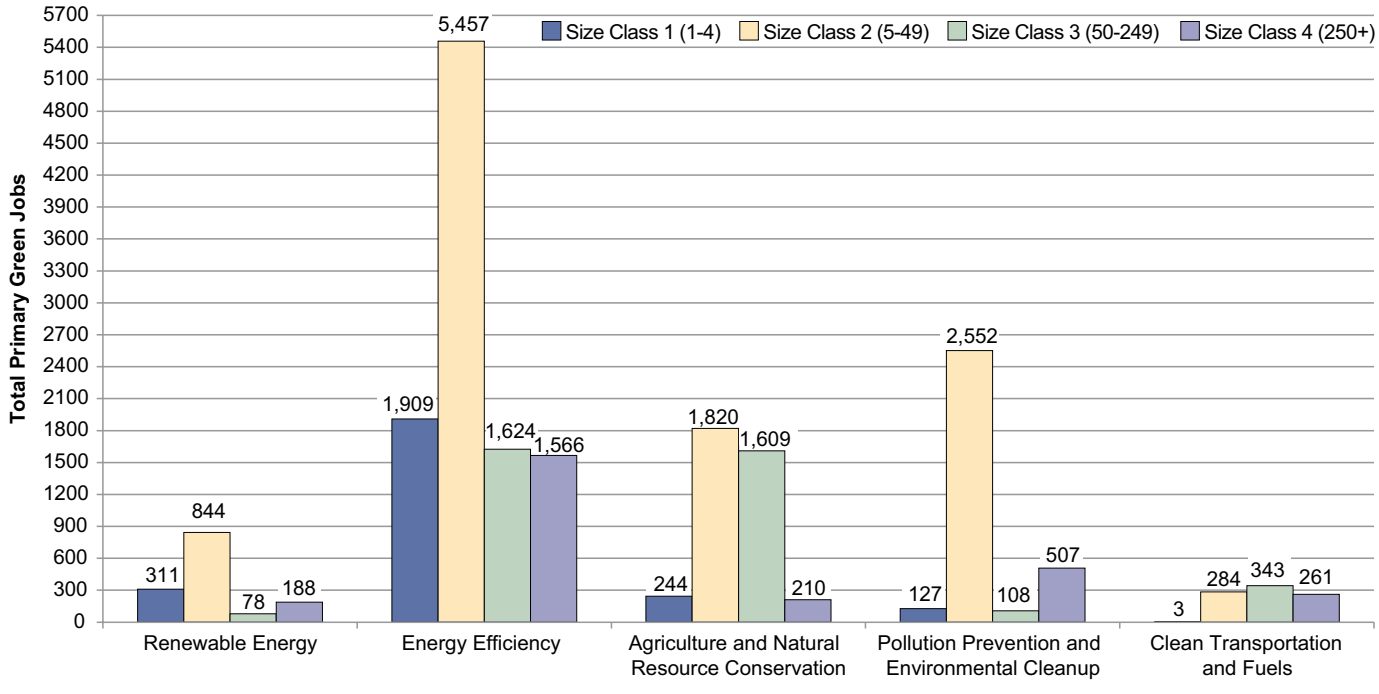


Also significant, the number of primary green jobs in local area five accounted for the lowest percentage of total green jobs in producing renewable energy (0.6 percent), increasing energy efficiency (3.8 percent), agriculture and natural resource conservation (7.9 percent), and pollution prevention and environmental cleanup (5.9 percent). Only in the core green-related area of clean transportation and fuels did local area five not account for the smallest portion of primary green jobs. Rather, local area two and local area three each comprised just 1.9 percent of the total number of primary green jobs in clean transportation and fuels. Additional information can be found in Appendix E.

Core Green-Related Areas by Size Class

The sample of Kansas businesses selected to participate in the survey was divided into four size classes which are enumerated in Appendix C, Table C2. Figure 3 displays the number of primary green jobs within each of the core green-related areas and size classes in Kansas. Similar to the results with local areas, increasing energy efficiency accounted for the largest amount of primary green jobs within each size class. Overall, size class two (5-49 employees) had the most primary green jobs. Green jobs in the second size class accounted for more than 50.0 percent of the total number of green jobs in renewable energy (59.4 percent), energy efficiency (51.7 percent), and pollution prevention and environmental cleanup (77.5 percent). Businesses in size class two also made up the majority of the green jobs in agriculture and natural resource conservation, although they were closely followed by businesses in size class three. Green jobs in clean transportation and fuels were relatively evenly distributed across the size classes with the largest amount in size class three (50-249 employees). The exception was businesses in size class one (1-4 employees), which accounted for only 0.3 percent of those jobs. Appendix F provides more detailed information about the primary green jobs in Kansas as they relate to the core green-related areas and size classes.

Figure 3
Distribution of Primary Green Jobs by Core Green-Related Area and Size Class



Core Green-Related Areas

Table 1 shows the 20 industries with the largest number of primary green jobs as they are distributed across the five core green-related areas. As a percentage of total green employment, the specialty trade contractors industry[3] was the largest at 21.1 percent. Moreover, the four industries with the most green jobs accounted for more than half (55.0 percent) of all of the primary green jobs in the state. The remaining 45.0 percent of green jobs were distributed among 44 different industries.

Manufacturing industries encompassed eight of the top 20 industries with the largest numbers of green jobs. Despite this apparent majority, the number of primary green jobs in manufacturing industries accounted for just 19.5 percent of the total number of primary green jobs in Kansas. However, construction had only three industries that ranked amid the top 20 industries with the largest number of primary green jobs, yet their primary green employment accounted for 38.5 percent of the total green jobs in the state.

Spotlight on Kansas Businesses

The Ellsworth County Conservation District in Ellsworth, Kansas promotes green activities and educates others about the importance of green practices such as water conservation. One of their most recent projects was to construct rain barrels and disperse them throughout their watershed. [The rain barrels collect rain water which can then be used for purposes for which tap water would otherwise have been required.]

Only three industries in the public administration sector had primary green jobs. The executive, legislative & other general governmental support industry had the largest green employment (450 primary green jobs) of all three industries in the public administration sector.

Table 1 also reveals that of the top five industries with the greatest number of green jobs, three have employment that is concentrated in the core green-related area of energy efficiency. Nearly 78.0 percent of the primary green employees in the specialty trade contractors industry, nearly 98.0 percent of the primary green employees in the construction of buildings industry and nearly 67.0 percent of the primary green employees in the professional, scientific & technical services industry[4] produced a green product or provided a green service related to energy efficiency. More than 64.0 percent of the administrative & support services industry was tied to agriculture and natural resource conservation. The majority of the employees with primary green jobs in the chemical manufacturing industry worked on projects related to agriculture and natural resource conservation (40.8 percent) or renewable energy (32.0 percent).

Did you know? • • •

The construction of energy efficient homes may include, but is not limited to, the installation of solar panels, heat pumps, additional insulation, advanced windows and the use of a mastic sealant on all joints and connections.

[3]Establishments in the specialty trade contractors industry are primarily engaged in performing the specific tasks of a building construction project such as painting, plumbing or electrical work. Examples include framing contractors, masonry contractors and glass and roofing contractors.

[4]Establishments in the professional, scientific & technical services industry are primarily engaged in providing services to clients. These services are based on the knowledge and skills of the employees. Examples include architectural services, engineering services and environmental consulting services.

Table 1 Distribution of Top 20 Green Industries by Core Green-Related Area							
NAICS	Industry Title	Total Primary Green Jobs	Renewable Energy	Energy Efficiency	Agriculture & Natural Resource Conservation	Pollution Prevention & Environmental Cleanup	Clean Transportation & Fuels
-	**Total Green Industries**	**20,047**	**1,422**	**10,557**	**3,883**	**3,295**	**890**
238	Specialty Trade Contractors	4,228	46	3,288	217	660	17
236	Construction of Buildings	2,685	59	2,626	0	0	0
561	Administrative & Support Services	2,428	0	98	1,571	759	0
541	Professional, Scientific & Technical Services	1,682	224	1,126	0	314	17
325	Chemical Manufacturing	1,192	382	63	486	53	208
423	Merchant Wholesalers, Durable Goods	892	368	257	14	253	0
237	Heavy & Civil Engineering Construction	815	297	468	49	1	0
327	Nonmetallic Mineral Product Manufacturing	752	0	711	0	7	35
441	Motor Vehicle & Parts Dealers	693	0	0	0	483	210
326	Plastics & Rubber Products Manufacturing	485	0	404	81	0	0
336	Transportation Equipment Manufacturing	483	10	354	15	45	59
921	Executive, Legislative & Other General Government Support	450	15	5	185	246	0
111	Crop Production	379	5	2	372	0	0
444	Building Material & Garden Equipment & Supplies Dealers	331	0	221	110	0	0
333	Machinery Manufacturing	307	0	74	3	42	189
321	Wood Product Manufacturing	304	0	220	80	4	0
562	Waste Management & Remediation Services	246	0	0	78	168	0
311	Food Manufacturing	224	0	128	72	24	0
332	Fabricated Metal Product Manufacturing	171	0	7	160	4	0
611	Educational Services	156	5	36	72	30	13
-	All Other Green Industries Combined	1,143	10	471	317	204	141

NOTE: Numbers may not add due to rounding.

The data in Table 1 indicates that the construction industry sector and the core green-related area of energy efficiency were prominent features of Kansas' green economy. This suggests that the recent emphasis the ARRA and other state and local initiatives have placed on energy efficiency may have impacted the green economy in Kansas.

Primary Green Jobs as a Percent of Total Covered Industry Employment

Table 2 shows the number of primary green jobs in the top 20 green industries as a proportion of the total covered employment within that industry in the fourth quarter of 2008. While the construction of buildings industry made up 13.4 percent of total green employment, the proportion of green employment accounted for 21.5 percent of total covered employment within that industry. This was the largest ratio of green employment to total employment of any industry. It was followed by the chemical manufacturing, wood product manufacturing and crop production industries, each of whose green employment comprised 15.0 percent or more of that industry's total covered employment. This may indicate that the construction industry incorporated green products and services more than any other industry in the state.

Spotlight on Kansas Businesses

Terracon Consultants, Inc. in Topeka, Kansas has taken several steps to initiate a corporate culture which appreciates sustainability and conservation efforts. For example, some of the company's routine practices include using on-site construction debris for engineered fill, applying pervious pavements to reduce storm water, using recycled materials like crushed concrete in mix designs, and using recycled asphalt and/or fly ash to improve soil stabilization. Additionally, the company has identified and implemented efforts which effectively reduced the waste concrete generated annually by the company by two-thirds.

Table 2 Top 20 Green Industries as a Percent of Total Covered Industry Employment				
NAICS	Industry Title	Total Primary Green Jobs	Total Industry Employment *	Primary Green Jobs as a Percent of Industry Employment
-	**Total Green Industries**	**20,047**	**1,357,342**	**1.5%**
238	Specialty Trade Contractors	4,228	39,328	10.8%
236	Construction of Buildings	2,685	12,510	21.5%
561	Administrative & Support Services	2,428	68,138	3.6%
541	Professional, Scientific & Technical Services	1,682	61,753	2.7%
325	Chemical Manufacturing	1,192	7,070	16.9%
423	Merchant Wholesalers, Durable Goods	892	28,098	3.2%
237	Heavy & Civil Engineering Construction	815	11,057	7.4%
327	Nonmetallic Mineral Product Manufacturing	752	5,990	12.6%
441	Motor Vehicle & Parts Dealers	693	17,747	3.9%
326	Plastics & Rubber Products Manufacturing	485	9,513	5.1%
336	Transportation Equipment Manufacturing	483	52,914	0.9%
921	Executive, Legislative & Other General Government Support	450	51,487	0.9%
111	Crop Production	379	2,469	15.4%
444	Building Material & Garden Equipment & Supplies Dealers	331	11,733	2.8%
333	Machinery Manufacturing	307	18,568	1.7%
321	Wood Product Manufacturing	304	1,936	15.7%
562	Waste Management & Remediation Services	246	3,246	7.6%
311	Food Manufacturing	224	31,177	0.7%
332	Fabricated Metal Product Manufacturing	171	15,648	1.1%
611	Educational Services	156	145,223	0.1%
-	All Other Green Industries Combined	1,143	761,736	0.2%

* Industry employment is based on Kansas' total covered employment in the fourth quarter of 2008. Excluded are approximately 9,500 establishments that could not be assigned a specific county code.

NOTE: Numbers may not add due to rounding.

Top Five Green Industries by Core Green-Related Area

The top five green industries in each of the core green-related areas are listed in Table 3. Chemical manufacturing[5] accounted for the largest percentage of primary green jobs in producing renewable energy. Specialty trade contractors, on the other hand, comprised the largest percentage of primary green jobs in increasing energy efficiency. Administrative & support services accounted for the largest percentage of primary green jobs in two core areas—agriculture and natural resource conservation and pollution prevention and environmental cleanup. Finally, motor vehicle & parts dealers accounted for the largest percentage of primary green jobs in clean transportation and fuels.

Table 3 also shows that the chemical manufacturing; professional, scientific & technical services; and specialty trade contractors industries were among the top five industries with the largest number of primary green jobs in three core green-related areas. Chemical manufacturing accounted for the largest percentage of primary green jobs in renewable energy and the second largest percentage

Rapid Refill Ink in Pittsburg, Kansas recycled seven tons of toner cartridges and produced more than 5,000 inkjet cartridges for 10.0 percent of the businesses in their area in 2008. The company has taken a unique approach to the construction of their facilities. The carpet is made from 52.0 percent post-consumer content including ground up milk cartons; the countertops are made from recycled sunflower stocks; the shelves are comprised of black polymer plastic which is derived from ground up toner cartridges; and the walls are made from recycled wood pulp. Additionally, the majority of the furniture and printers in the store have been salvaged and refurbished.

[5]Establishments in chemical manufacturing are primarily engaged in transforming raw materials through chemical processing. Examples include industrial gas manufacturing, ethyl alcohol manufacturing and petrochemical manufacturing.

of green jobs in agriculture and natural resource conservation and clean transportation and fuels. Professional, scientific & technical services made up the third largest portion of green jobs in energy efficiency and the fourth largest portion of green jobs in renewable energy and pollution prevention and environmental cleanup. Lastly, the specialty trade contractors industry comprised the largest percentage of primary green jobs in energy efficiency, the second largest percentage of green jobs in pollution prevention and environmental cleanup and the fourth largest percentage of green jobs in agriculture and natural resource conservation.

Table 3 also reveals that three of the five industries with the most primary green jobs in increasing energy efficiency were in construction. The same was true of manufacturing industries in clean transportation and fuels.

Table 3
Top 5 Green Industries by Core Green-Related Area

NAICS	Industry Title	Total Primary Green Jobs	Percent of Total Primary Green Jobs Per Core Area
Producing Renewable Energy			
325	Chemical Manufacturing	382	26.9%
423	Merchant Wholesalers, Durable Goods	368	25.9%
237	Heavy & Civil Engineering Construction	297	20.9%
541	Professional, Scientific & Technical Services	224	15.8%
236	Construction of Buildings	59	4.1%
Increasing Energy Efficiency			
238	Specialty Trade Contractors	3,288	31.1%
236	Construction of Buildings	2,626	24.9%
541	Professional, Scientific & Technical Services	1,126	10.7%
327	Nonmetallic Mineral Product Manufacturing	711	6.7%
237	Heavy & Civil Engineering Construction	468	4.4%
Agriculture & Natural Resource Conservation			
561	Administrative & Support Services	1,571	40.5%
325	Chemical Manufacturing	486	12.5%
111	Crop Production	372	9.6%
238	Specialty Trade Contractors	217	5.6%
921	Executive, Legislative & Other General Government Support	185	4.8%
Pollution Prevention & Environmental Cleanup			
561	Administrative & Support Services	759	23.0%
238	Specialty Trade Contractors	660	20.0%
441	Motor Vehicle & Parts Dealers	483	14.7%
541	Professional, Scientific & Technical Services	314	9.5%
423	Merchant Wholesalers, Durable Goods	253	7.7%
Clean Transportation & Fuels			
441	Motor Vehicle & Parts Dealers	210	23.6%
325	Chemical Manufacturing	208	23.4%
333	Machinery Manufacturing	189	21.2%
811	Repair & Maintenance	84	9.4%
336	Transportation Equipment Manufacturing	59	6.6%

Top Five Green Industries by Local Area

Table 4 shows the five industries within each local area that had the largest number of primary green jobs. The only industry that made the top five green industries across all five local areas was the specialty trade contractors industry. Its primary green employment was 13.0 percent of the total number of green jobs in local area one, 20.0 percent of green jobs in local area two, 19.4 percent of green jobs in local area three, 28.2 percent of green jobs in local area four and 31.4 percent of green jobs in local area five. This indicates that the supply of and demand for green products and services in the specialty trade contractors industry was spread across the state.

There were also a number of industries that were unique to the top five industries in one local area. For instance, the merchant wholesaler, durable goods industry and the building material & garden equipment & supplies dealers industry each accounted for more than 11.0 percent of the total number of green jobs in local area one. However, neither of those two industries made it into the top five green industries in the other local areas.

Table 4
Top 5 Green Industries by Local Area

NAICS	Industry Title	Total Primary Green Jobs	Percent of Total Primary Green Jobs Per Local Area
	Local Area I		
423	Merchant Wholesalers, Durable Goods	435	15.0%
238	Specialty Trade Contractors	376	13.0%
444	Building Material & Garden Equipment & Supplies Dealers	331	11.4%
237	Heavy & Civil Engineering Construction	228	7.9%
325	Chemical Manufacturing	213	7.3%
	Local Area II		
561	Administrative & Support Services	655	20.6%
238	Specialty Trade Contractors	636	20.0%
441	Motor Vehicle & Parts Dealers	483	15.2%
326	Plastics & Rubber Products Manufacturing	230	7.2%
541	Professional, Scientific & Technical Services	210	6.6%
	Local Area III		
236	Construction of Buildings	2,163	25.1%
238	Specialty Trade Contractors	1,672	19.4%
561	Administrative & Support Services	1,622	18.8%
541	Professional, Scientific & Technical Services	1,374	16.0%
327	Nonmetallic Mineral Product Manufacturing	711	8.3%
	Local Area IV		
238	Specialty Trade Contractors	1,190	28.2%
237	Heavy & Civil Engineering Construction	537	12.7%
336	Transportation Equipment Manufacturing	383	9.1%
325	Chemical Manufacturing	378	8.9%
236	Construction of Buildings	307	7.3%
	Local Area V		
238	Specialty Trade Contractors	353	31.4%
562	Waste Management & Remediation Services	168	14.9%
332	Fabricated Metal Product Manufacturing	165	14.7%
111	Crop Production	100	8.9%
811	Repair & Maintenance	84	7.5%

Did you know? • • •

The specialty trade contractors subsector comprises establishments whose primary activity is performing specific activities (e.g., pouring concrete, site preparation, plumbing, painting and electrical work) involved in building construction or other activities that are similar for all types of construction but that are not responsible for the entire project.

New and Emerging Occupations

LMIS staff used the 2010 Standard Occupational Classification (SOC) system[6] to assign occupational codes to the job titles provided by survey respondents. This most recent edition includes the addition of two new green occupational codes, one for wind turbine service technicians (49-9081) and another for solar photovoltaic installers (47-2231). Despite these additions, the current SOC does not allow for the differentiation between many other green and non-green occupations that involve comparable work. The current SOC is not likely to include other "new" occupations, green or otherwise, for several more years.

Did you know? • • •

Wind turbine service technicians inspect, diagnose, adjust or repair wind turbines and perform maintenance on wind turbine equipment including resolving electrical, mechanical and hydraulic malfunctions.

Although the majority of the primary green jobs reported by employers fit within the 2010 SOC, LMIS staff identified a few job titles that did not. The occupations that did not fit well into the current system were classified as new and emerging occupations in the Kansas economy. Such analysis revealed that although the specific job titles of the new and emerging occupations varied, the actual job duties were overwhelmingly similar. For instance, managers of corporate social responsibility, community development directors and directors of green building & sustainable development were some of the specific job titles provided by survey respondents. When asked to describe the position, however, each was described in much the same way. Based on these descriptions, LMIS staff grouped the above positions under the same basic new and emerging occupational group of directors/managers of sustainability. Individuals in this occupation are generally engaged in researching green practices, activities and opportunities for their company. While directors/managers of sustainability are a known occupation in Kansas based on the survey results, they are excluded from any occupational analysis at the six-digit level. Because they do not fit into the current SOC, the above positions cannot be assigned a six-digit occupational code and were instead placed into the 11-0000 major occupational group of management occupations.

Residual Occupations

Aside from the new and emerging occupations, another set of occupations presented coding challenges. Some of the primary green jobs reported by employers fit into a broad occupational group but did not fit in any of the distinct detailed occupational codes. As a result, these jobs were classified in residual occupations. Residual occupations are part of an "all other" category which includes all occupations that cannot be classified separately. Therefore, the level of detail for occupations in residual codes is much less. For example, a green team coordinator does not fit into an existing detailed code so it was placed in the business operations specialists, all other code (13-1199) as a result. Additional examples include weatherization directors and wind site managers. Neither occupation fit into any of the detailed codes so they were assigned to the managers, all other code (11-9199) group as a result.

[6]The SOC system is a system for classifying all occupations. It allows for comparison across states and agencies by grouping similar occupations based on job description.

Examples of How Traditional Occupations are Green

Green jobs, as previously stated, can originate from one of several sources. The first source was described previously. A green job can be a new and emerging occupation meaning that the knowledge, skills or abilities required are altogether new. Alternatively, green jobs can stem from more traditional occupations. For example, a carpenter may be required to possess special green training and skills to install or design environmentally conscious products. Though carpentry is a traditional occupation that requires many non-green skills, a new green component has developed due to the expanding green economy. A green job can also refer to an occupation that has always been green, but hasn't been designated as such until recently. For instance, the job duties of manufacturers of reconstituted wood are the same as they have been in the past, but the growing green economy has impacted the demand for such services. Table 5 highlights the job description of 10 of the occupations that reported the largest number of primary green jobs and is an example of how such traditional occupations can be green.

Spotlight on Kansas Businesses

Sterling Water Systems, LLC in Wichita, Kansas produces chemical-free water conditioner and water filtration products for residential and commercial applications. [These products help conserve water by eliminating the need for regeneration or backwashing.]

Table 5
Top 10 Green Occupations and Selected Job Descriptions

SOC	Occupational Title	Total Primary Green Jobs	Employer	Selected Job Description
-	**Total Green Occupations**	**20,047**	-	-
47-2031	Carpenters	2,419	Residential siding	Installing energy efficient windows & siding
			Manufactured home	Constructing product that is energy star certified
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	1,361	Plumbing & heating & air	Installing energy efficient heating & cooling units
47-2061	Construction Laborers	1,315	Residential finishing	Erosion control installer
			Fabricated pipe mfg.	Redirecting wasted heat back through building
37-3011	Landscaping & Groundskeeping Workers	1,252	Local city government	Park maintenance worker
			Landscaping	Planting trees, grasses & shrubs
51-2099	Assemblers & Fabricators, All Other	1,199	Glass manufacturing	Fabricating glass for solar windows
			Metal manufacturing	Fabricating product used in green projects
47-2152	Plumbers, Pipefitters & Steamfitters	1,114	Plumbing & heating & air	Installing water softeners & reverse osmosis
			General contracting	Installing low flush toilets
49-3023	Automotive Service Technicians & Mechanics	777	Car dealership	Installing energy efficient materials on vehicles per customer request
37-2012	Maids & Housekeeping Cleaners	698	Janitorial services	Using only green certified cleaning products
47-2073	Operating Engineers & Other Construction Equipment Operators	577	Water & sewer construction	Installing solar panels & geothermal systems
			Mining	Loader operator - agro rocks
47-2131	Insulation Workers, Floor, Ceiling & Wall	469	Local city government	Weatherizing homes
			Drywall contracting	Installing insulation
-	All Other Green Occupations Combined	8,864	-	-

NOTE: Numbers may not add due to rounding.

Primary Green Jobs as a Percent of Total Green Employment

The 20 occupations with the largest numbers of primary green jobs are listed in Table 6. This table shows both the total number of primary green jobs in each of the occupations as well as the percentage of the total number of primary green jobs for which it accounts. Carpenters topped the list with more than 2,400 green jobs or 12.1 percent of the total number of primary green jobs in Kansas. Heating, air conditioning & refrigeration mechanics & installers; construction laborers; landscaping & groundskeeping workers; and assemblers & fabricators, all other[7] rounded out the top five. Each of these four occupations made up 6.0 percent or more of the total number of green jobs in the state. It is also notable that occupations in the construction & extraction major occupational group comprised six of the top 20 occupations with the greatest number of green jobs. Together, those six occupations had 6,141 primary green jobs or just more than 30.0 percent of the total primary green jobs in the state.

Table 6
Top 20 Green Occupations and Percent of Total Primary Green Jobs

SOC	Occupational Title	Total Primary Green Jobs	Percent of Primary Green Jobs
-	**Total Green Occupations**	**20,047**	**100.0%**
47-2031	Carpenters	2,419	12.1%
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	1,361	6.8%
47-2061	Construction Laborers	1,315	6.6%
37-3011	Landscaping & Groundskeeping Workers	1,252	6.2%
51-2099	Assemblers & Fabricators, All Other	1,199	6.0%
47-2152	Plumbers, Pipefitters & Steamfitters	1,114	5.6%
49-3023	Automotive Service Technicians & Mechanics	777	3.9%
37-2012	Maids & Housekeeping Cleaners	698	3.5%
47-2073	Operating Engineers & Other Construction Equipment Operators	577	2.9%
47-2131	Insulation Workers, Floor, Ceiling & Wall	469	2.3%
37-3013	Tree Trimmers & Pruners	408	2.0%
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	376	1.9%
17-2141	Mechanical Engineers	372	1.9%
17-1011	Architects, Except Landscape & Naval	361	1.8%
49-9081	Wind Turbine Service Technicians	327	1.6%
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	300	1.5%
51-9023	Mixing & Blending Machine Setters, Operators & Tenders	278	1.4%
51-6091	Extruding & Forming Machine Setters, Operators & Tenders, Synthetic & Glass Fibers	252	1.3%
49-9071	Maintenance & Repair Workers, General	247	1.2%
47-2111	Electricians	247	1.2%
-	All Other Green Occupations Combined	5,697	28.4%

NOTE: Numbers may not add due to rounding.

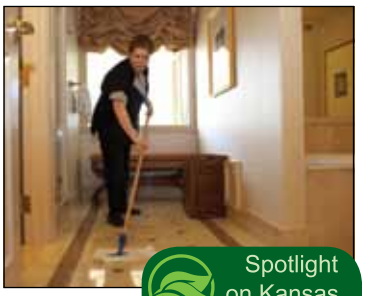
Core Green-Related Areas

Table 7 shows the 20 occupations with the largest number of primary green jobs distributed across the five core green-related areas. Nearly 97.0 percent of carpenters produced a green product or provided a green service related to energy efficiency. The same can be said for 100.0 percent of the heating, air conditioning & refrigeration mechanics & installers, 51.6 percent of the construction laborers and 50.9 percent of the

[7]Assemblers & fabricators, all other are part of the 51-2090 miscellaneous assemblers & fabricators broad occupational group. This broad occupation also includes fiberglass laminators & fabricators; team assemblers; and timing device assemblers, adjusters & calibrators. Examples include barrel raisers; automobile assemblers, except engines; and doll makers.

assemblers & fabricators, all other. Of the top five green occupations, the only one that was not related to energy efficiency was landscaping & groundskeeping workers. Over 99.0 percent of these employees worked on projects related to agriculture and natural resource conservation.

As displayed in Table 7, several occupations were specific to one core green-related area entirely while others were spread across several core areas. For instance, all of the green maids & housekeeping cleaners were categorized in the area of pollution prevention and environmental cleanup. All of the green tree trimmers & pruners and farmworkers & laborers, crop, nursery & greenhouse were categorized in the area of agriculture and natural resource conservation. Similarly, the entire number of green insulation workers, floor, ceiling & wall; architects, except landscape & naval; and aircraft structure, surfaces, rigging & systems assemblers[8] worked on projects related to increasing energy efficiency. Wind turbine service technicians were categorized solely in the area of producing renewable energy. The remaining occupations in the top 20 green occupations were spread across two or more core green-related areas.



Spotlight on Kansas Businesses

The Cleaning Authority in Lenexa, Kansas uses only green-certified cleaning products when cleaning customers' houses.

[8]According to the 2010 SOC manual, aircraft structure, surfaces, rigging & systems assemblers, "assemble, fit, fasten, and install parts of airplanes, space vehicles, or missiles, such as tails, wings, fuselage, bulkheads, stabilizers, landing gear, rigging and control equipment, or heating and ventilating systems."

Table 7
Distribution of Top 20 Green Occupations by Core Green-Related Area

SOC	Occupational Title	Total Primary Green Jobs	Renewable Energy	Energy Efficiency	Agriculture & Natural Resource Conservation	Pollution Prevention & Environmental Cleanup	Clean Transportation & Fuels
-	**Total Green Occupations**	**20,047**	**1,422**	**10,557**	**3,883**	**3,295**	**890**
47-2031	Carpenters	2,419	59	2,344	15	0	0
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	1,361	0	1,361	0	0	0
47-2061	Construction Laborers	1,315	297	679	7	332	0
37-3011	Landscaping & Groundskeeping Workers	1,252	0	0	1,241	12	0
51-2099	Assemblers & Fabricators, All Other	1,199	8	610	578	3	0
47-2152	Plumbers, Pipefitters & Steamfitters	1,114	0	983	16	114	0
49-3023	Automotive Service Technicians & Mechanics	777	0	0	0	483	294
37-2012	Maids & Housekeeping Cleaners	698	0	0	0	698	0
47-2073	Operating Engineers & Other Construction Equipment Operators	577	0	228	188	144	17
47-2131	Insulation Workers, Floor, Ceiling & Wall	469	0	469	0	0	0
37-3013	Tree Trimmers & Pruners	408	0	0	408	0	0
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	376	0	0	376	0	0
17-2141	Mechanical Engineers	372	0	319	0	8	46
17-1011	Architects, Except Landscape & Naval	361	0	361	0	0	0
49-9081	Wind Turbine Service Technicians	327	327	0	0	0	0
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	300	0	300	0	0	0
51-9023	Mixing & Blending Machine Setters, Operators & Tenders	278	11	230	22	12	3
51-6091	Extruding & Forming Machine Setters, Operators & Tenders, Synthetic & Glass Fibers	252	0	252	0	0	0
49-9071	Maintenance & Repair Workers, General	247	60	174	0	14	0
47-2111	Electricians	247	46	141	0	60	0
-	All Other Green Occupations Combined	5,697	614	2,107	1,033	1,414	530

NOTE: Numbers may not add due to rounding.

Top Five Green Occupations by Core Green-Related Area

The top five green occupations in each of the core green-related areas are listed in Table 8. Wind turbine service technicians, although new to the 2010 SOC, accounted for the largest percentage of primary green jobs in producing renewable energy. Carpenters, on the other hand, comprised the largest percentage of primary green jobs in increasing energy efficiency. The same was true of landscaping & grounds keeping workers in agriculture and natural resource conservation, maids & housekeeping cleaners in pollution prevention and environmental cleanup, and automotive service technicians & mechanics in clean transportation and fuels.

Also noteworthy, Table 8 shows that construction laborers were the only occupation to appear among the top five occupations with the largest number of primary green jobs in three core green-related areas. They accounted for nearly 21.0 percent of the primary green jobs in producing renewable energy, 6.4 percent of the green jobs in increasing energy efficiency and 10.1 percent of the green jobs in pollution prevention and environmental cleanup. This suggests that the skill sets for this occupation are versatile and may have contributed to its appearance across various core green-related areas.

Table 8
Top 5 Green Occupations by Core Green-Related Area

SOC	Occupational Title	Total Primary Green Jobs	Percent of Total Primary Green Jobs Per Core Area
Producing Renewable Energy			
49-9081	Wind Turbine Service Technicians	327	23.0%
47-2061	Construction Laborers	297	20.9%
17-2071	Electrical Engineers	191	13.4%
11-1021	General & Operations Managers	102	7.2%
51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	102	7.2%
Increasing Energy Efficiency			
47-2031	Carpenters	2,344	22.2%
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	1,361	12.9%
47-2152	Plumbers, Pipefitters & Steamfitters	983	9.3%
47-2061	Construction Laborers	679	6.4%
51-2099	Assemblers & Fabricators, All Other	610	5.8%
Agriculture & Natural Resource Conservation			
37-3011	Landscaping & Groundskeeping Workers	1,241	32.0%
51-2099	Assemblers & Fabricators, All Other	578	14.9%
37-3013	Tree Trimmers & Pruners	408	10.5%
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	376	9.7%
47-2073	Operating Engineers & Other Construction Equipment Operators	188	4.8%
Pollution Prevention & Environmental Cleanup			
37-2012	Maids & Housekeeping Cleaners	698	21.2%
49-3023	Automotive Service Technicians & Mechanics	483	14.7%
47-2061	Construction Laborers	332	10.1%
53-7081	Refuse & Recyclable Material Collectors	220	6.7%
17-2081	Environmental Engineers	164	5.0%
Clean Transportation & Fuels			
49-3023	Automotive Service Technicians & Mechanics	294	33.0%
51-2092	Team Assemblers	193	21.7%
51-9012	Separating, Filtering, Clarifying, Precipitating & Still Machine Setters, Operators & Tenders	135	15.2%
47-5099	Extraction Workers, All Other	50	5.6%
17-2141	Mechanical Engineers	46	5.2%

In addition, this table demonstrates that three of the five occupations with the most primary green jobs in increasing energy efficiency were in the construction & extraction occupational group. This was the only core area that showed such a large concentration of jobs in one major occupational group.

Top Five Green Occupations by Local Area

Table 9 shows the five occupations within each local area that had the largest number of primary green jobs. Carpenters accounted for the most primary green jobs in local area one and local area three. Landscaping & groundskeeping workers comprised the largest percentage of primary green jobs in local area two. The largest percentage of primary green jobs in local area four were insulation workers, floor, ceiling & wall, and in local area five were operating engineers & other construction equipment operators.

This table also shows that carpenters were among the top five green occupations in all local areas except local area five. Many green carpenters were responsible for installing energy efficient items such as windows and doors or other energy star certified products. This may explain the popularity of green carpenters across the state. Moreover, wind turbine service technicians were only recently added as a detailed occupational code and it already accounted for more than 11.0 percent of the total green employment in local area one. A possible explanation for this finding is that the majority of the wind farms in Kansas are in local area one, which covers all of western Kansas.

Table 9
Top 5 Green Occupations by Local Area

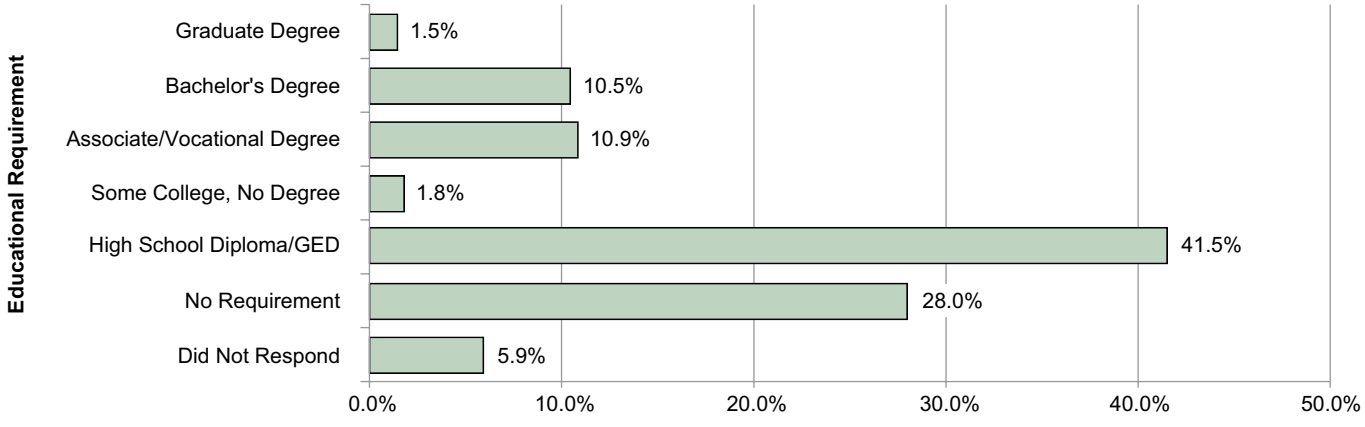
SOC	Occupational Title	Total Primary Green Jobs	Percent of Total Primary Green Jobs Per Local Area
Local Area I			
47-2031	Carpenters	483	16.6%
49-9081	Wind Turbine Service Technicians	327	11.3%
47-2073	Operating Engineers & Other Construction Equipment Operators	228	7.9%
51-2092	Team Assemblers	142	4.9%
51-9012	Separating, Filtering, Clarifying, Precipitating & Still Machine Setters, Operators & Tenders	135	4.7%
Local Area II			
37-3011	Landscaping & Groundskeeping Workers	564	17.7%
49-3023	Automotive Service Technicians & Mechanics	483	15.2%
47-2031	Carpenters	400	12.6%
51-9023	Mixing & Blending Machine Setters, Operators & Tenders	230	7.2%
47-2021	Brickmasons & Blockmasons	159	5.0%
Local Area III			
47-2031	Carpenters	1,113	12.9%
47-2061	Construction Laborers	1,011	11.7%
47-2152	Plumbers, Pipefitters & Steamfitters	855	9.9%
51-2099	Assemblers & Fabricators, All Other	769	8.9%
37-2012	Maids & Housekeeping Cleaners	698	8.1%
Local Area IV			
47-2131	Insulation Workers, Floor, Ceiling & Wall	436	10.3%
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	360	8.5%
47-2031	Carpenters	352	8.3%
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	300	7.1%
47-2061	Construction Laborers	297	7.0%
Local Area V			
47-2073	Operating Engineers & Other Construction Equipment Operators	171	15.2%
51-2099	Assemblers & Fabricators, All Other	141	12.5%
47-2152	Plumbers, Pipefitters & Steamfitters	134	11.9%
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	134	11.9%
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	95	8.5%

Previous sections highlighted the occupations with the largest numbers of green jobs only. For a complete list of the primary green jobs in Kansas and the total green employment within each occupation, please see Appendix G.

Educational Requirements

The educational requirements for primary green jobs range from no requirement to a graduate degree. As Figure 4 depicts, most primary green jobs did not necessitate the need for education beyond a high school diploma or GED. The majority of primary green jobs (41.5 percent) required a high school degree/GED and another 28.0 percent did not have an educational requirement. This means that 69.5 percent of primary green jobs did not require any college training, while 24.7 percent required some college education or more.

Figure 4
Primary Green Jobs by Educational Requirement



Licenses, Certificates and Training Requirements

Many primary green jobs in Kansas require specific licenses, certificates and/or training. In most cases, although not all cases, these licensing requirements were in addition to specific educational requirements. A sample of the licensure, certification and training requirements that employers provided is shown in Table 10. As the table illustrates, many of the licenses and certificates that were required of employees with primary green jobs were not unique to the green economy. For instance, a plumber, whether or not it is a green position, must possess a plumbing license. However, there are several licenses, certificates and training requirements that applied specifically to the green economy. Environmental Protection Agency Certification and Leadership in Energy and Environmental Design (LEED) Accredited Professionals are two examples.

Did you know? • • •

Most occupations related to heating, air conditioning & refrigeration mechanics & installers require training in vocational schools, related on-the-job experience or an associate's degree.

Table 10
Licenses, Certificates and/or Training Required for Primary Green Jobs

- Backflow Prevention Technician Certificate
- Certification for Welding Expertise
- Certified Hazardous Materials Manager (CHMM)
- Certified Landscape Irrigation Auditor
- Commercial Pesticide Applicator License
- Commerical Arborist License
- Electrical Certification
- Environmental Protection Agency (EPA) Certification
- Erosion & Sediment Control (E&SC) Inspector Certification
- Groundwater Certification
- Heating, Ventilation, Air Conditioning (HVAC) License
- Home Energy Rating System (HERS) Certification
- International Erosion Control Association (IECA) Certification
- International Standards Organization (ISO), Occupational Safety & Health Administration (OSHA)
- Journey Mechanical License
- Journey Plumbing License
- Kansas Department of Agriculture (KDA) Commercial Pesticide Certification
- Kansas Department of Health & Environment (KDHE) Class 2 Wastewater Operator Certification
- KDHE Class 4 Wastewater Operator Certification
- KDHE Lead Hazard Reduction, Reduction Lead Inspector, Risk Assessor
- Leadership in Energy & Environmental Design Accredited Professionals (LEED AP)
- Master Mechanical License
- Mine Safety & Health Administration (MSHA) Certification
- Pesticide Applicator License
- Pipeline Qualification Certification
- Plumbing License
- Powder Coat Paint Technology
- Powered Industrial Vehicle Certifications
- Professional License (Engineer, Geologist, Architect)
- Quality Pro Green Accreditation
- Safety Ceritification
- Sanitary Sewer Certification
- State of Kansas Teaching Certificate
- Supervisors Work Zone Safety Certification
- Training on Solar Panels, Goethermal Heating, etc.

Time Spent on Primary Green Job Activities

A common finding throughout much of the existing literature is that an occupation is not always all green or all non-green. Rather, many studies have found that there are different shades of green ranging from light to dark, or green to greenest. In order to capture this information, the survey asked respondents to indicate how many of their current employees with primary green jobs spent 50.0 percent or more of their time producing a green product or providing a green service. Those employees who spent more than 50.0 percent of their time on primary green job activities were considered darker green, while those employees who spent less than 50.0 percent of their time on primary green job activities were considered lighter green.

Spotlight on Kansas Businesses

Hallmark Cards, Inc. in Topeka, Kansas recycles solid waste by providing it to a company which uses it as fuel for their cement kilns.

Table 11 reveals the shades of green for the 20 occupations with the most primary green jobs. Across all primary green occupations, 66.7 percent of employees spent 50.0 percent or more of their time on primary green job activities. Seventeen of the 20 occupations indicated that more than half of the total number of primary green employees spent 50.0 percent or more of their time on primary green job activities. It is interesting that while carpenters were the most frequent primary green job in Kansas with more than 2,400 primary green employees, only 1,064, or 44.0 percent, spent 50.0 or more of their time on those green activities. Alternatively, there were only 469 green insulation workers, floor, ceiling & wall in Kansas and all 469 spent 50.0 or more of their time on primary green job activities. This indicates that while the number of green employees within an occupation may not account for a large percentage of total employment, the small number that is green can be among the greenest of all occupations. Because the transition to green activities is largely driven by demand, this also suggests that the demand for primary and support green employees within certain occupations may be lacking or is just beginning to emerge.

Spotlight on Kansas Businesses

Central Fiber, LLC in Wellsville, Kansas manufactures cellulose insulation, industrial cellulose fibers, hydroseeding mulches, erosion control mulches and alternative daily landfill cover from recycled newspapers and magazines.

Table 11
Top 20 Green Occupations by Time Spent on Primary Green Activities

SOC	Occupational Title	Primary Green Jobs Spending 50 Percent or More Time on Green Activities	Total Primary Green Jobs	Percent of Primary Green Jobs Spending 50 Percent or More Time on Green Activities
-	**Total Green Occupations**	**13,372**	**20,047**	**66.7%**
47-2061	Construction Laborers	1,312	1,315	99.8%
51-2099	Assemblers & Fabricators, All Other	1,199	1,199	100.0%
37-3011	Landscaping & Groundskeeping Workers	1,073	1,252	85.7%
47-2031	Carpenters	1,064	2,419	44.0%
37-2012	Maids & Housekeeping Cleaners	698	698	100.0%
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	661	1,361	48.6%
49-3023	Automotive Service Technicians & Mechanics	567	777	73.0%
47-2131	Insulation Workers, Floor, Ceiling & Wall	469	469	100.0%
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	376	376	100.0%
49-9081	Wind Turbine Service Technicians	327	327	100.0%
47-2073	Operating Engineers & Other Construction Equipment Operators	313	577	54.2%
47-2152	Plumbers, Pipefitters & Steamfitters	291	1,114	26.1%
51-6091	Extruding & Forming Machine Setters, Operators & Tenders, Synthetic & Glass Fibers	252	252	100.0%
49-9052	Telecommunications Line Installers & Repairers	240	240	100.0%
53-7081	Refuse & Recyclable Material Collectors	220	220	100.0%
53-7062	Laborers & Freight, Stock & Material Movers, Hand	209	209	100.0%
49-9071	Maintenance & Repair Workers, General	194	247	78.5%
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	187	193	96.9%
19-2041	Environmental Scientists & Specialists, Including Health	184	184	100.0%
17-2081	Environmental Engineers	183	185	98.9%
-	All Other Green Occupations Combined	3,352	6,431	52.1%

NOTE: Numbers may not add due to rounding.

Future Green Employment by Occupation

Table 12 displays the 20 occupations that are forecasted to have the largest growth in green employment based on employers' projections of the next two to three years. Overall, Kansas had 20,047 green jobs in 2009 and is projected, by employers, to have 30,236 primary green jobs in the next two to three years. It is important to note that these projections are based on responding employers' expectations of the future and the numbers may be overestimated or underestimated as a result. One of the largest two-to-three year increases in green employment was projected for industrial production managers. There were 12 green industrial production managers in 2009 and there is projected to be more than 40 in 2011 or 2012. This equates to a 250.0 percent growth rate over that time period. The projected growth in green employment among secondary school teachers was the highest at 300.0 percent, but can be attributed to the fact their primary green employment was so small.

Table 12
Top 20 Green Occupations by Future Growth in Green Employment

SOC	Occupational Title	Current Primary Green Jobs	Percent of Current Primary Green Jobs	Future Primary Green Jobs*	Percent of Future Primary Green Jobs*	Growth of Primary Green Jobs
-	**Total Green Occupations**	**20,047**	**100.0%**	**30,236**	**100.0%**	**50.8%**
25-2031	Secondary School Teachers, Except Special & Career/Technical Education	1	0.0%	4	0.0%	300.0%
11-3051	Industrial Production Managers	12	0.1%	42	0.1%	250.0%
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	193	1.0%	671	2.2%	247.7%
47-2031	Carpenters	2,419	12.1%	6,429	21.3%	165.8%
51-6031	Sewing Machine Operators	14	0.1%	36	0.1%	157.1%
25-1191	Graduate Teaching Assistants	6	0.0%	14	0.0%	133.3%
43-5111	Weighers, Measurers, Checkers & Samplers, Recordkeeping	13	0.1%	29	0.1%	123.1%
19-4093	Forest & Conservation Technicians	5	0.0%	11	0.0%	120.0%
49-9044	Millwrights	20	0.1%	44	0.1%	120.0%
53-7063	Machine Feeders & Offbearers	35	0.2%	77	0.3%	120.0%
51-4052	Pourers & Casters, Metal	7	0.0%	15	0.0%	114.3%
11-9021	Construction Managers	21	0.1%	42	0.1%	100.0%
11-9141	Property, Real Estate & Community Association Managers	11	0.1%	22	0.1%	100.0%
13-1199	Business Operations Specialists, All Other	4	0.0%	8	0.0%	100.0%
47-5099	Extraction Workers, All Other	50	0.2%	100	0.3%	100.0%
49-9052	Telecommunications Line Installers & Repairers	240	1.2%	480	1.6%	100.0%
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	300	1.5%	600	2.0%	100.0%
51-9111	Packaging & Filling Machine Operators & Tenders	48	0.2%	96	0.3%	100.0%
41-1011	First-Line Supervisors of Retail Sales Workers	39	0.2%	77	0.3%	97.4%
37-1012	First-Line Supervisors of Landscaping, Lawn Service & Groundskeeping Workers	32	0.2%	62	0.2%	93.8%
-	All Other Green Occupations Combined	16,579	82.7%	21,379	70.7%	29.0%

* Future primary green jobs are defined as the number of primary green workers that employers expect they will need in the next two to three years.
NOTE: Data is for only those employers who had primary green jobs in 2009. Numbers may not add due to rounding.

Of the 20 occupations that had the largest number of primary green jobs in 2009, only two—carpenters and aircraft structure, surfaces, rigging & systems assemblers—were among the top 20 occupations projected to have the largest growth in green jobs in the near future. Not only was the number of green carpenters projected to increase nearly 166.0 percent overall in the next two to three years, it was also projected to change quite dramatically as a percentage of the total number of primary green jobs. The number of green carpenters accounted for 12.1 percent of the total primary green jobs in Kansas in 2009, and in the next two-to-three years is projected to account for 21.3 percent of total primary green jobs. Only four occupations of the top 20 with the most green jobs—carpenters; assemblers & fabricators, all other; aircraft structure, surfaces, rigging & systems assemblers; and electricians—are projected to increase both in overall terms and as a percentage of the total number of green jobs in Kansas. The rest of the top 20 green occupations, such as heating, air conditioning & refrigeration mechanics & installers, are expected to increase overall in two to three years, yet as a proportion of the total number of primary green jobs in Kansas are expected to decline.

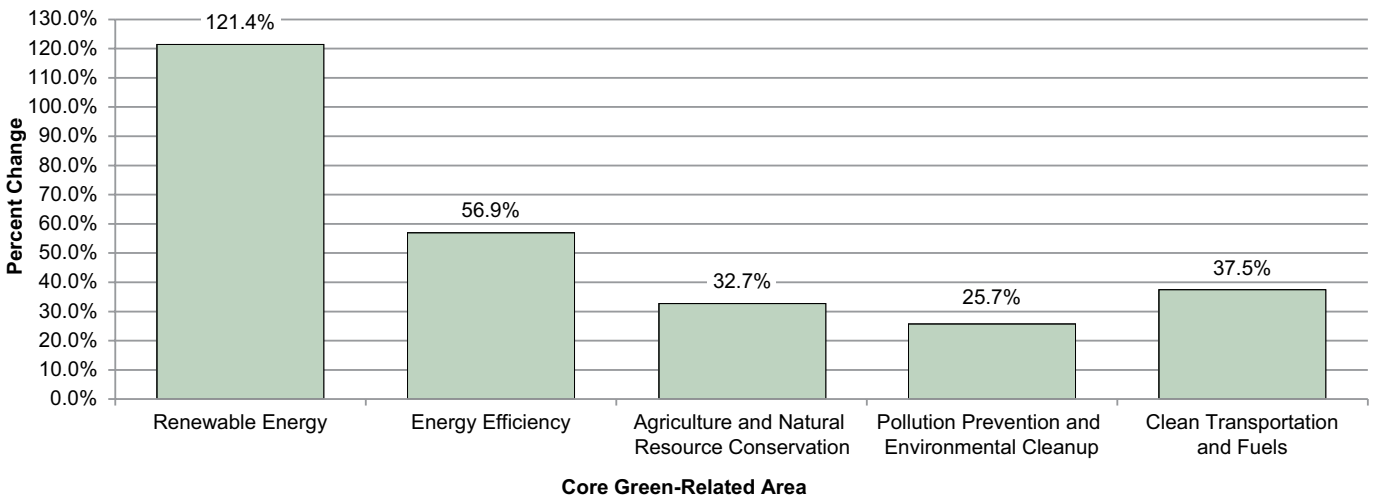
Spotlight on Kansas Businesses

Hiland Dairy Company in Wichita, KS regenerates 92.0 percent of the heat expended during the pasteurization process. The company also reclaims organic compounds using lactose, which it then sends to companies making biofuels.

Future Primary Green Jobs by Core Green-Related Area

Employers' projections of primary green employment by core green-related area are presented in Figure 5. These projections reveal that employers expect the number of green workers in occupations related to renewable energy to increase more than 121.0 percent by 2012. This is twice the growth rate of any of the other core green-related areas. Employers anticipate green employment to increase nearly 57.0 percent in energy efficiency, 37.5 percent in clean transportation and fuels and almost 33.0 percent in agriculture and natural resource conservation. They project the number of green employees in pollution prevention and environmental cleanup to increase the least at 25.7 percent over the next two to three years.

Figure 5
Percent Change in Primary Green Jobs by Core Green-Related Area*



* Percentages reflect employers' expectations of green job growth in the next two to three years.
NOTE: Data is for only those employers who had primary green jobs in 2009.

Future Green Jobs of Employers Without Green Employment

The survey also gathered information about the future expectations of the employers who did not have any primary or support green jobs. Of those employers who did not have any primary or support green jobs, more than 61.0 percent indicated that they had no future plans to have green jobs. However, just less than 3.0 percent of this same group of respondents indicated that they did plan to have green jobs in the next two to three years. Based on these employers' responses, it is projected that businesses that do not currently have any primary or support green jobs will add 2,605 green jobs in the next two to three years. A breakdown of this information by three-digit NAICS code is provided in Table 13.

Spotlight on Kansas Businesses

Wallace Energy, Inc. in Plainville, Kansas purchases, processes and cleans crude oil tank bottoms. They have effectively cut the environmental footprint of oil field exploration and production wastes by 95.0 percent.

Table 13
Top 20 Green Industries by Future Growth in Green Employment

NAICS	Industry Title	Future Primary Green Jobs*	Percent of Future Primary Green Jobs*
-	**Total Green Industries**	**2,605**	**100.0%**
335	Electrical Equipment, Appliance & Component Manufacturing	427	16.4%
238	Specialty Trade Contractors	334	12.8%
722	Food Services & Drinking Places	306	11.8%
561	Administrative & Support Services	233	8.9%
424	Merchant Wholesalers, Nondurable Goods	227	8.7%
236	Construction of Buildings	160	6.1%
237	Heavy & Civil Engineering Construction	148	5.7%
213	Support Activities for Mining	115	4.4%
333	Machinery Manufacturing	77	3.0%
522	Credit Intermediation & Related Activities	64	2.4%
423	Merchant Wholesalers, Durable Goods	50	1.9%
541	Professional, Scientific & Technical Services	44	1.7%
451	Sporting Goods, Hobby, Book & Music Stores	43	1.7%
442	Furniture & Home Furnishings Stores	37	1.4%
321	Wood Product Manufacturing	37	1.4%
452	General Merchandise Stores	30	1.2%
921	Executive, Legislative & Other General Government Support	29	1.1%
221	Utilities	25	0.9%
331	Primary Metal Manufacturing	21	0.8%
485	Transit & Ground Passenger Transportation	20	0.8%
-	All Other Green Industries Combined	178	6.8%

* Future primary green jobs are defined as the number of primary green workers that employers expect they will need in the next two to three years.

NOTE: Data is for only those employers who had no primary green jobs and no support green jobs in 2009. Numbers may not add due to rounding.

Training Methods Used to Prepare Current Workers

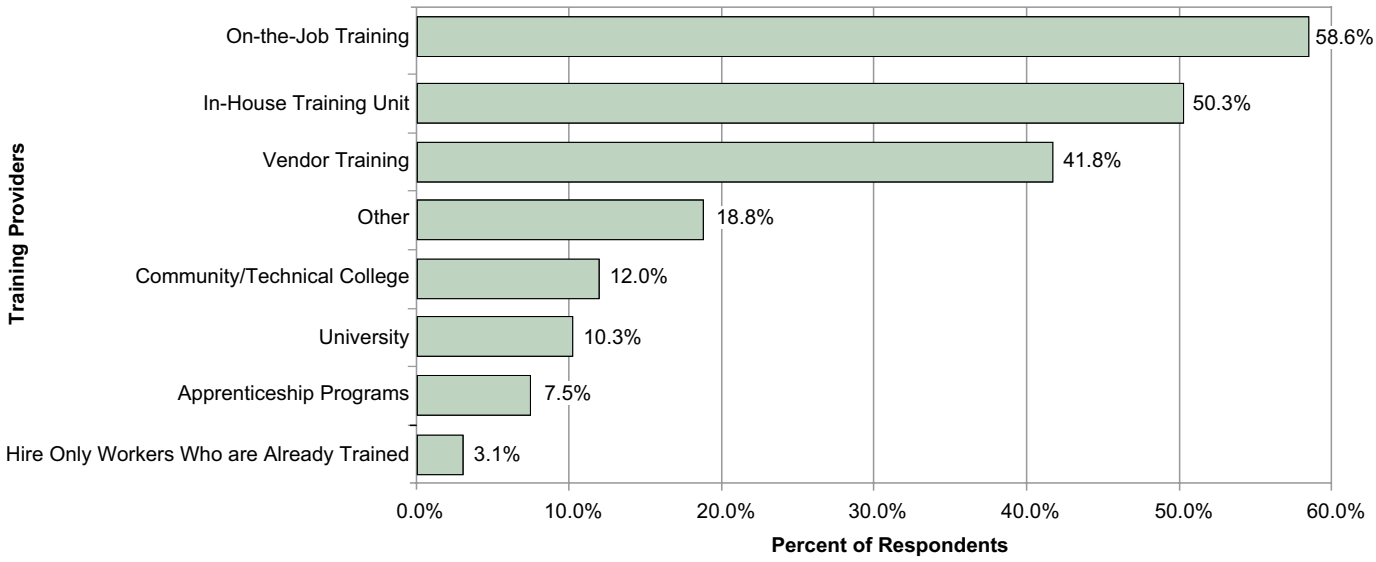
Of the Kansas employers who responded to the survey, 2,562, or 83.0 percent, indicated that they did not have any training needs related to green skills or knowledge. However, of the 292 employers that did have training needs, 58.6 percent were using on-the-job training to prepare their current workers. This was followed closely by in-house training (50.3 percent) and vendor training (41.8 percent) as shown in Figure 6. Another 18.8 percent of these employers indicated that they used a training provider other than what was listed as a response option. In this instance, the most common training provider listed was conference training, closely followed by LEED/ U.S. Green Building Council training. Employers also indicated that state/government and online training providers were utilized.

Regardless of the provider used, it appears in most cases that employers that did have training needs related to green skills or knowledge would fill the position regardless of a candidate's skill set. If a candidate did not possess the green knowledge or skills upon application, the majority of employers indicated they would provide the necessary training to relay the green skills and knowledge relevant to the position. Slightly more than 3.0 percent of employers said that they would only hire workers who were already trained.

Spotlight on Kansas Businesses

Mies Auto Repair, LLC in Garden Plain, KS uses waste oil as a source of heat for their repair shop. As part of their recycling efforts, the company also returns used automobile cores to the company that manufactured the part(s).

Figure 6
Training Providers Used to Prepare Current Employees with Green Skills and Knowledge*



* Percentages are calculated as a proportion of employers who do have training needs related to green knowledge and skills.

Green Skills and Knowledge Needed by Current and Future Employees

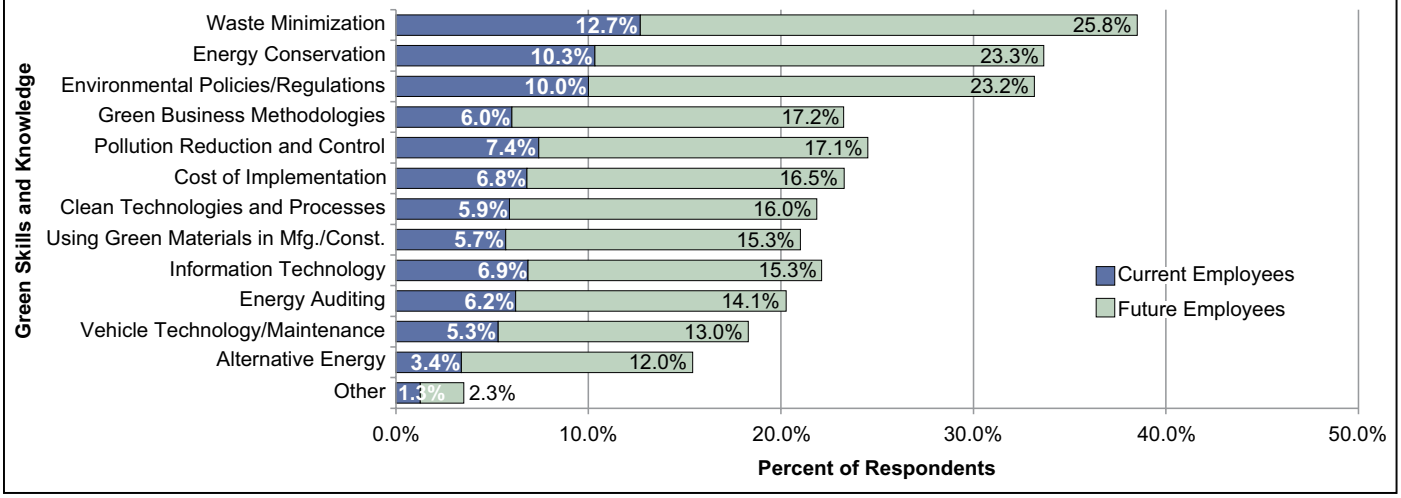
Figure 7 shows the percentage of employers who indicated that their employees need a certain set of new skills or knowledge to perform green activities both currently and in the future. Of the new skills or knowledge that current employees needed, waste minimization was the most common response, followed by principles of energy conservation and knowledge of environmental policies/regulations. This same trend was observed for future employees although in larger percentages. While 12.7 percent of respondents indicated that their current employees needed waste minimization skills or knowledge, nearly double, or 25.8 percent, indicated that their future employees would need this same set of skills or knowledge. This trend appeared across all of the skill and knowledge sets identified illustrating that the future demand for green skills and knowledge is significantly greater than the current demand.

Spotlight on Kansas Businesses

Whole Foods Market Southwest, LP in Overland Park, Kansas composts all organic material. As an entire chain, Whole Foods Market is the first Nationally Certified Organic Grocer. Since 2006, the company has purchased wind power credits to offset their power consumption. In 2009, Whole Foods Market purchased enough renewable energy credits from wind farms to offset 100.0 percent of the company's North American electricity usage for the year.

Of the survey respondents, 3.4 percent indicated that their current employees needed skills or knowledge related to alternative energy. Of these, the three most common types of alternative energy specified were wind energy, solar energy and biofuels, from greatest to least. Similarly, 12.0 percent of respondents indicated that their future employees would need skills or knowledge related to alternative energy. The same three types of alternative energy skills and knowledge needed by current workers were also the most common types needed by future workers. However, solar energy was a more common response than wind energy by a slight margin.

Figure 7
Green Skills and Knowledge Needed by Current and Future Employees



Barriers to Creating or Increasing Primary Green Jobs

Figure 8 shows the barriers that prevented employers without primary green jobs from producing green products or providing green services. This table also shows the barriers that hindered employers with primary green jobs from producing more green products or providing more green services. Among

employers without primary green jobs, the most common reason they were not producing green products or providing green services was that doing so was simply not applicable to their business, as stated in the "other" option. In other words, for businesses not engaged in production or service provision, there were not any barriers that prevented them from producing green products or providing green services; rather, it was the nature of their business that prevented such activities.

Of those employers with primary green jobs, the most common barrier that prevented them from increasing the number of green jobs was economic conditions. Economic conditions were also identified as a barrier by 19.6 percent of the employers without primary green jobs. This suggests that the current economic environment is largely responsible for hindering Kansas businesses from entering the green economy or participating in a larger way.

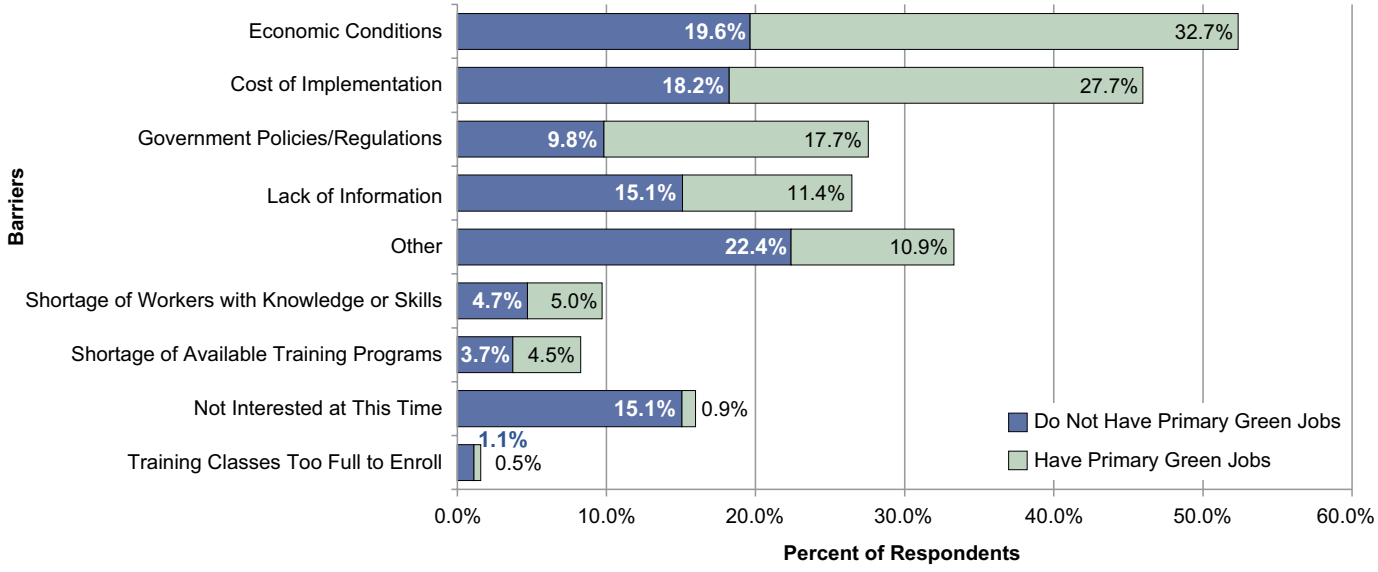
The second most common barrier identified by green employers was the financial cost of implementing green jobs. More than 18.0 percent of employers without primary green jobs and nearly 28.0 percent of employers with primary green jobs felt that cost was a barrier. This indicates that as the cost of producing green products and providing green services decreases, the number of Kansas businesses having green employees may increase.

Furthermore, almost 11.0 percent of the employers that had primary green jobs selected the "other" option and then described in their own words what barriers prevented them from producing more green products or services. The majority of these responses fit into the cost of implementation and economic conditions categories. However, employers indicated a variety of barriers that did not fit into the predefined response options provided on the survey. These barriers included internal awareness, customer demand, time constraints, staffing considerations and zoning issues.

Spotlight on Kansas Businesses

WCA Management Company, LP in Arcadia, Kansas is using landfill methane gas to power an engine that in turn powers a generator that produces electricity. At peak production, the company produces enough power for up to 6,000 homes daily.

Figure 8
Barriers to Creating or Increasing Primary Green Jobs



Green Practices, Services or Products Used On Site

In addition to, or in place of, producing green products and/or providing green services, many businesses utilized green practices, services or products as shown in Figure 9. Green practices include activities such as recycling, printing double-sided on paper and/or using energy efficient light bulbs. When asked which of these practices, services or products were used, the largest number of employers, 52.3 percent, reported that recycling was a part of their business activities. A large percentage of employers were also using recycled products and practicing energy efficiency/conservation.

Less than 4.0 percent of employers indicated that their company was using a green practice, product or service other than those listed. Of these, the two most common green practices cited were waste reduction/ minimization, which included companies' electronic efforts and printing policies, and composting. Just more than 11.0 percent of employers were not utilizing any green practices, services or products.

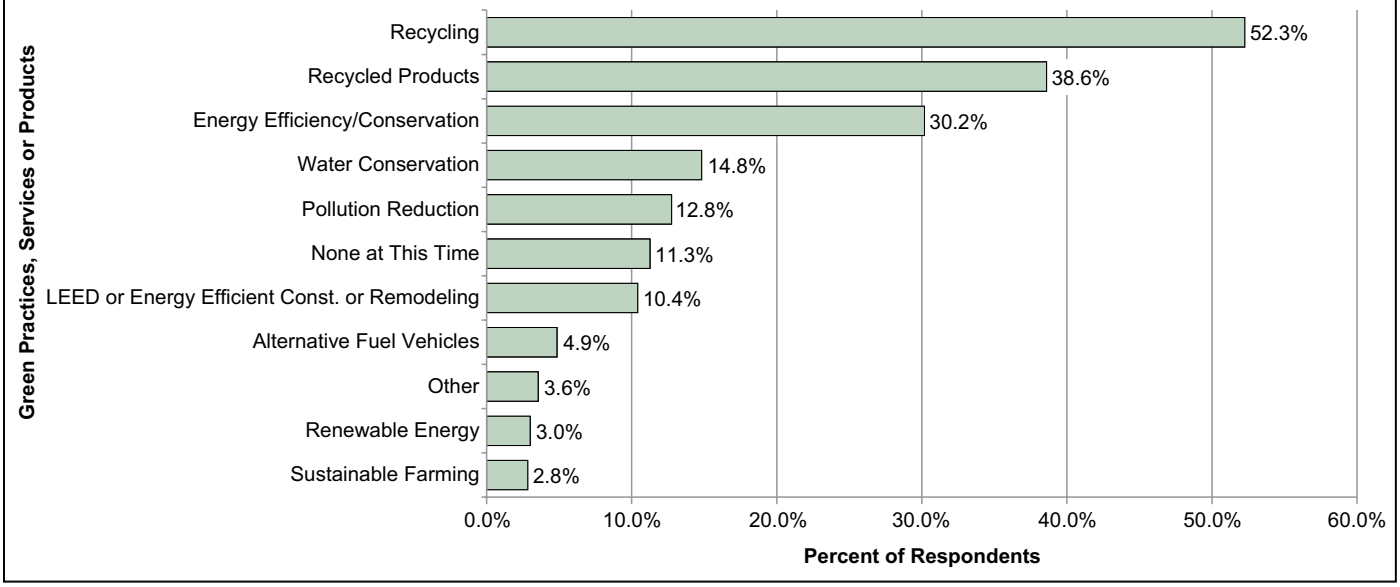
In addition, 36.3 percent of survey respondents expected their company to increase its use of green practices over the next two to three years, while another 43.8 percent expected their company's green practices to remain the same. A very small number of employers, less than 1.0 percent, expected the use of green practices to decline in the near future. The remaining 19.5 percent of survey respondents did not answer this specific question regarding future green practices.

Spotlight on Kansas Businesses

Custom Cupboards, Inc. in Wichita, Kansas makes use of their wood/plywood by-product rather than letting it go to waste. The by-product is used to create a combustible fuel, which is in turn utilized throughout the facility as ambient climate air. It is also used in the drying ovens of the company's finishing department. When the wood/plywood by-product is not needed as a fuel source, it is transported to outside facilities in need of animal bedding.

Custom Cupboards is also certified through the Environmental Stewardship Program (ESP). This program mandates that the company meet and exceed five areas of environmental compliance in order to keep their certification. Every two years, the certification criteria and compliancy ratings are raised one percentage in order to stimulate continued improvements and environmental enhancements. Additionally, the company challenges all of their vendors and suppliers to be actively involved in environmental stewardship.

Figure 9
Green Practices, Services or Products Utilized by Kansas Employers



Resources to Help Companies Reduce Environmental Impact

Figure 10 illustrates what resources respondents felt would be helpful in getting their company to adopt environmentally friendly practices. All of the response options garnered some support, although recognition and awards was the least likely to do so. Information about specific actions to take to cost effectively reduce environmental impact was considered helpful by 32.7 percent of employers, the largest percent of any option. The resource next likely to help employers was specific instructions regarding how to implement environmentally friendly practices. Almost 30.0 percent of respondents felt that specific instructions would be a helpful resource for their company. This indicates that sharing information and knowledge on how to effectively and efficiently reduce environmental impact would help many Kansas employers increase their green practices.

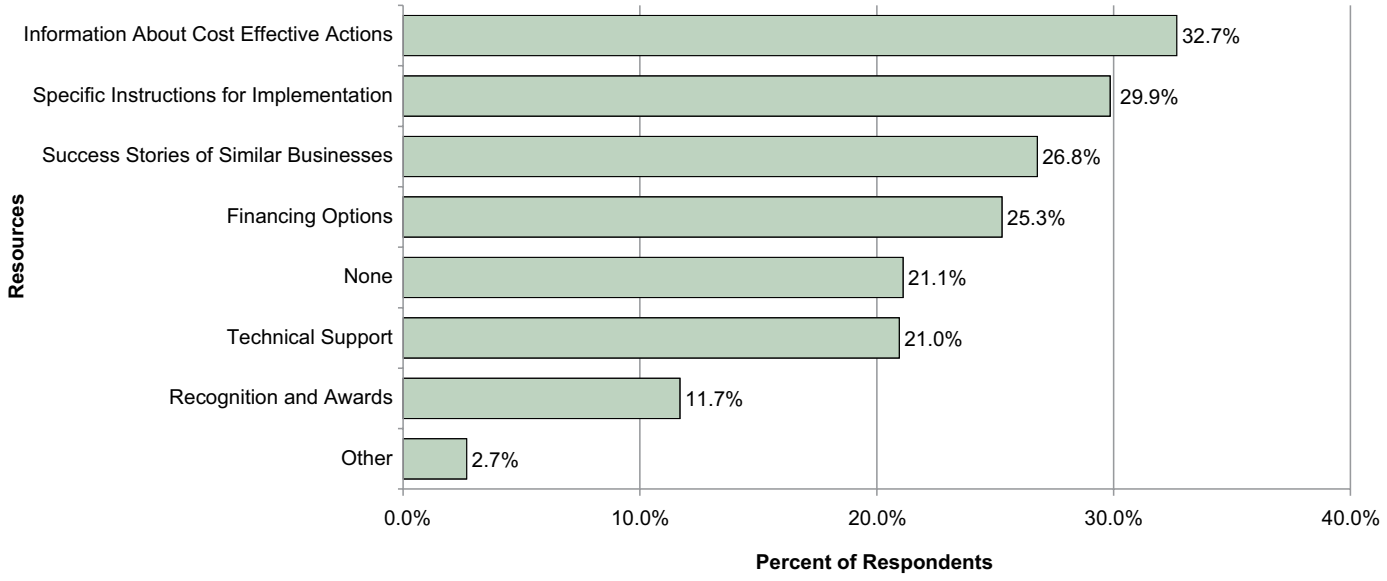
Spotlight on Kansas Businesses

Able Manufacturing & Assembly, LLC in Pittsburg, Kansas encourages their employees to bring home-recyclables to work. Employee teams have been formed to take on various projects such as organic gardens and an environmental poster contest for kids.

Figure 10 also shows that 21.1 percent of respondents felt that nothing would help their company reduce its environmental impact. It is significant to note that of the employers who were not currently using any green practices, services or products, 55.7 percent also indicated that there were not any resources that would help their company implement environmentally friendly practices.

Of the respondents that selected the "other" option (2.7 percent), many of the resources identified fit into one of the predefined response options listed on the survey. However, these respondents did list several helpful resources that were not acknowledged on the survey. Among the most popular were financial and tax incentives as well as an increased availability of recycling bins/centers.

Figure 10
Resources to Help Employers Implement Environmentally Friendly Practices

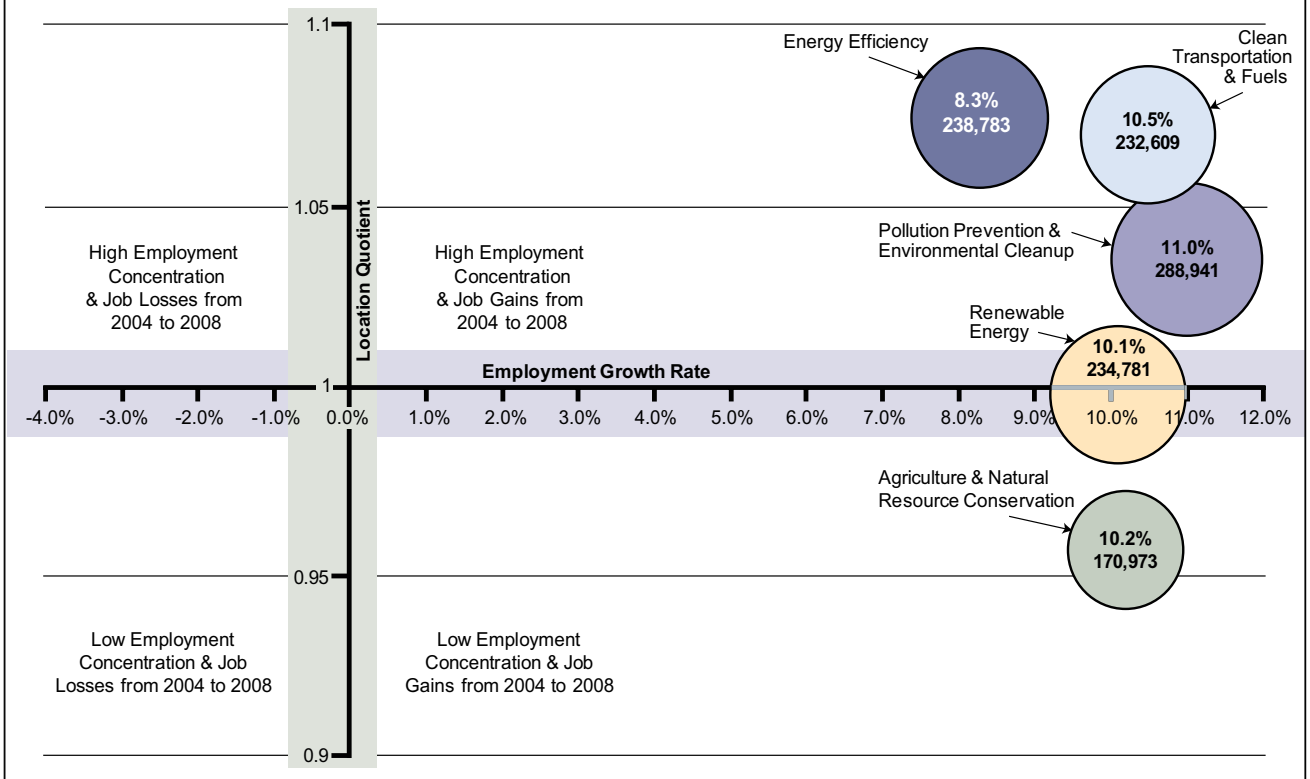


The information provided throughout the remainder of this publication was not collected through the survey. In order to reduce the burden on the employers who responded to the study, LMIS staff utilized data collected through other LMIS programs to supplement the survey data. A precautionary note is that these statistics reflect the information for all employees in an occupation or industry and not just those employees with green jobs. Therefore, the information provided in the secondary analyses section may not directly reflect the green economy.

Core Green-Related Areas, Employment Change and Location Quotients

In order to put into perspective the previous analyses of Kansas' green economy, it is useful to compare this state's concentration and growth of employment in the five core green-related areas to the nation. Such a comparison is made in Figure 11. The location quotient reflects the share of employment in each core

Figure 11
Employment Growth and Location Quotient by Core Green-Related Area*



* Growth was calculated from the five year period between 2004 and 2008. Location quotient and employment were derived using 2008 annual average data. Government industries were excluded.

green-related area in Kansas as it compares to the share of employment in each core green-related area in the United States. A location quotient larger than 1.0 for any given core green-related area indicates that it has a concentration of jobs above the national average in that same core green-related area. The size of the circle reflects the number of employees in that core green-related area. The larger the circle, the larger

the employment is in that core area. Please recognize that the employment, projected growth and location quotient are inclusive of all employees in industries related to each of the five core areas and are not restricted to green employees only. The exception is government industries, which are excluded altogether.

As illustrated in Figure 11, three of Kansas' core green-related areas have a concentration of employment greater than the nation's. Additionally, jobs in the areas of increasing energy efficiency, clean transportation and fuels, and pollution prevention and environmental cleanup experienced positive employment growth between the years of 2004 and 2008. Employment also grew in the areas of producing renewable energy and agriculture and natural resource conservation over the same five-year time period. However, the concentration of jobs in these areas was equal to or below the concentration of jobs nationally. In terms of size, the greatest number of jobs in Kansas was in pollution prevention and environmental cleanup (288,941 employees) while the smallest number of jobs was in agriculture and natural resource conservation (170,973 employees).

Green Occupations and Median Hourly Wages

The median hourly wage for the 20 occupations with the largest number of primary green jobs is presented in Table 14. Of the top 20 occupations with the greatest number of primary green jobs, 12 have a median hourly wage higher than $14.48, the median hourly wage for all occupations. Mechanical engineers & architects, except landscape & naval, have the highest median hourly wage at more than $31.00. Farm workers & laborers and maids & housekeeping cleaners have the lowest median hourly wages at $9.77 and $8.29 respectively. Carpenters, the occupation with the largest number of primary green jobs, have a median hourly wage of $17.69.

Table 14
Top 20 Green Occupations and Median Hourly Wage

SOC	Occupational Title	Statewide Median Hourly Wage	Total Primary Green Jobs
-	Total Green Occupations	$14.48	20,047
47-2031	Carpenters	$17.69	2,419
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	$19.22	1,361
47-2061	Construction Laborers	$13.13	1,315
37-3011	Landscaping & Groundskeeping Workers	$10.46	1,252
51-2099	Assemblers & Fabricators, All Other	$19.95	1,199
47-2152	Plumbers, Pipefitters & Steamfitters	$20.66	1,114
49-3023	Automotive Service Technicians & Mechanics	$15.85	777
37-2012	Maids & Housekeeping Cleaners	$8.29	698
47-2073	Operating Engineers & Other Construction Equipment Operators	$15.95	577
47-2131	Insulation Workers, Floor, Ceiling & Wall	$14.22	469
37-3013	Tree Trimmers & Pruners	$11.97	408
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	$9.77	376
17-2141	Mechanical Engineers	$31.52	372
17-1011	Architects, Except Landscape & Naval	$31.45	361
49-9081*	Wind Turbine Service Technicians	N/A	327
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	$19.81	300
51-9023	Mixing & Blending Machine Setters, Operators & Tenders	$14.30	278
51-6091	Extruding & Forming Machine Setters, Operators & Tenders, Synthetic & Glass Fibers	$20.54	252
49-9071*	Maintenance & Repair Workers, General	$15.01**	247
47-2111	Electricians	$20.86	247
-	All Other Green Occupations Combined	$19.21	5,697

* Code is new to 2010 SOC.
** Wage information from 49-9042 in 2000 SOC was used as a substitute because description was largely unchanged.
N/A: Wage information is not available.
NOTE: Numbers may not add due to rounding.

Green Occupations and 2016 Employment Projections

Table 15 reveals the employment projection for the year 2016 for each of the 20 occupations with the largest numbers of primary green jobs. Again, this information relates to total employment, and is not specific to green job growth alone. As the table illustrates, the annual growth rate among carpenters, the occupation that has the largest number of primary green jobs, is 1.3 percent. This is just slightly above the 1.1 percent annual growth rate projected across all occupations. In all, the annual growth rate of 12 of the top 20 green occupations exceeds the average annual growth rate for all occupations. The largest annual growth rate is for farmworkers & laborers, crop, nursery & greenhouse at 2.8 percent, and the smallest annual growth rate is for assemblers & fabricators, all other. The total employment for this occupation is actually projected to decline 0.6 percent annually through 2016.

Spotlight on Kansas Businesses

National Beef Packing Company, LP in Liberal, Kansas recovers excess hay and feed from the rumen (stomach) for composting at the city landfill. The compost is used as fertilizer by farmers and gardeners. The company also recovers methane gas from pond water to fire boilers and produce steam for plant production. Additionally, National Beef Packing Company encourages employees to carpool or bicycle to work by accommodating and recognizing those employees who do so.

Table 15
Top 20 Green Occupations and Projected Employment and Annual Growth Rate

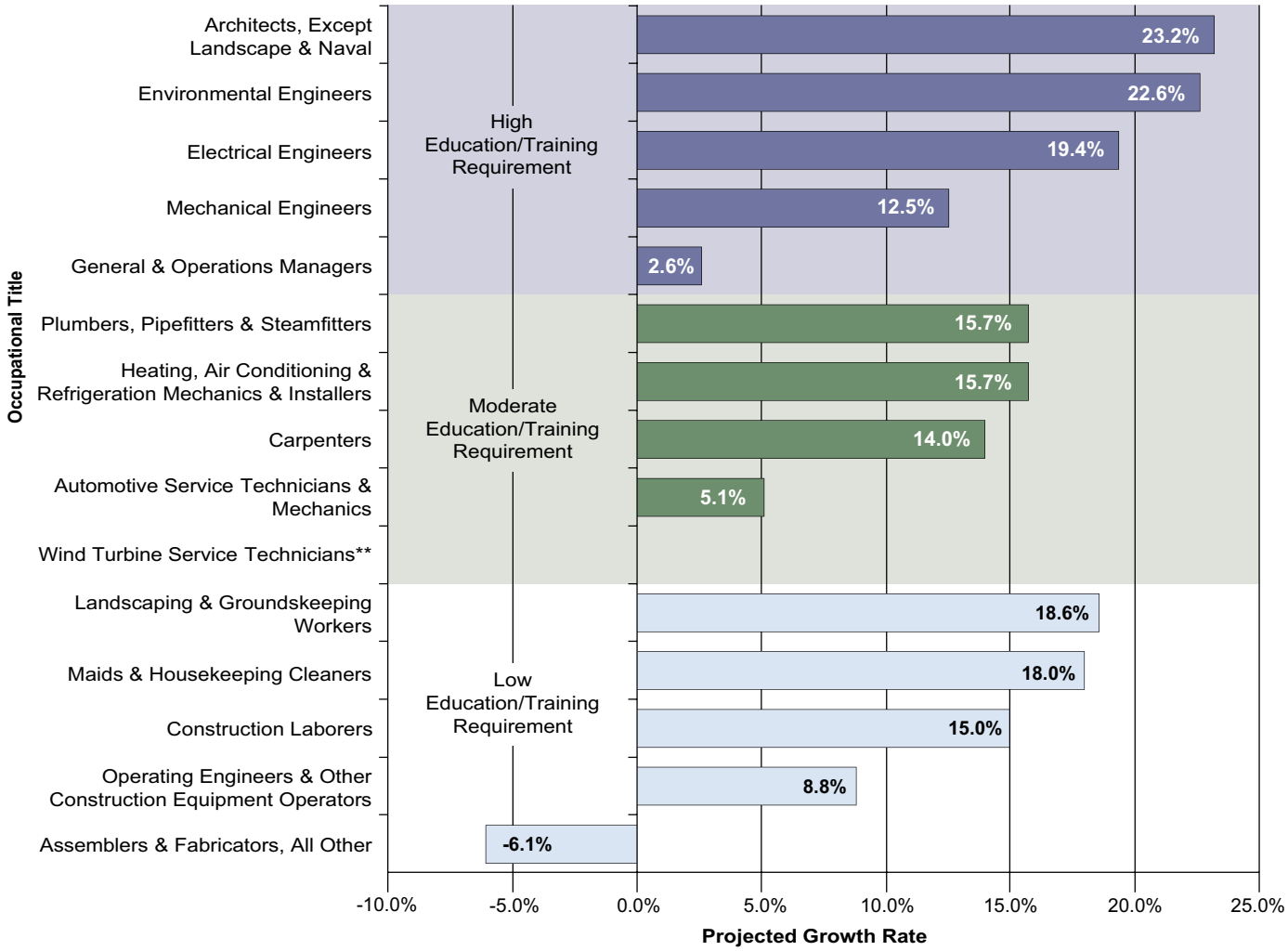
SOC	Occupational Title	Current Primary Green Jobs	Occupational Employment 2006	Projected Occupational Employment 2016	Annual Growth Rate
-	**Total Green Occupations**	**20,047**	**1,468,555**	**1,644,158**	**1.1%**
47-2031	Carpenters	2,419	11,226	12,797	1.3%
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	1,361	2,386	2,760	1.5%
47-2061	Construction Laborers	1,315	12,558	14,445	1.4%
37-3011	Landscaping & Groundskeeping Workers	1,252	9,462	11,221	1.7%
51-2099	Assemblers & Fabricators, All Other	1,199	4,150	3,897	-0.6%
47-2152	Plumbers, Pipefitters & Steamfitters	1,114	3,964	4,588	1.5%
49-3023	Automotive Service Technicians & Mechanics	777	6,319	6,643	0.5%
37-2012	Maids & Housekeeping Cleaners	698	10,576	12,479	1.7%
47-2073	Operating Engineers & Other Construction Equipment Operators	577	7,553	8,221	0.9%
47-2131	Insulation Workers, Floor, Ceiling & Wall	469	238	274	1.4%
37-3013	Tree Trimmers & Pruners	408	N/A	N/A	N/A
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	376	4,131	5,422	2.8%
17-2141	Mechanical Engineers	372	2,614	2,942	1.2%
17-1011	Architects, Except Landscape & Naval	361	1,241	1,529	2.1%
49-9081*	Wind Turbine Service Technicians	327	N/A	N/A	N/A
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	300	4,232	4,807	1.3%
51-9023	Mixing & Blending Machine Setters, Operators & Tenders	278	1,693	1,661	-0.2%
51-6091	Extruding & Forming Machine Setters, Operators & Tenders, Synthetic & Glass Fibers	252	115	110	-0.4%
49-9071*	Maintenance & Repair Workers, General	247	11,843**	12,962**	0.9%**
47-2111	Electricians	247	5,512	6,191	1.2%
-	All Other Green Occupations Combined	5,697	1,368,742	1,531,209	1.1%

* Code is new to 2010 SOC.
** Projections data from 49-9042 in 2000 SOC was used as a substitute because description was largely unchanged.
N/A: Data for this occupation is not available.
NOTE: Numbers may not add due to rounding.

Green Occupations and Projected Employment by Educational Requirement

As previously discussed, green jobs are thought to provide opportunities to a wide range of individuals with various skill sets, knowledge bases and educational backgrounds. In Kansas, this theory was supported by the educational requirements of the green jobs that Kansas employers identified. Figure 12 highlights the projected growth rate of five of the occupations with the largest numbers of green jobs in three distinct educational groups. The table is meant to show the educational requirements and growth rates of the entire occupation, of which only a portion may actually be green. The projected growth rate is based on the 2006-2016 Occupational Projections produced by LMIS, while the education information is based on information produced by the BLS. The occupations in the low education/training requirement group include occupations which require short term on-the-job training or moderate term on-the-job training. The occupations in the moderate education/training requirement group require long term on-the-job training, an associate degree, postsecondary vocational training or work experience in a related occupation. The

Figure 12
Projected Growth Rate of Top 5 Green Occupations by Education*



* Projected growth rate based on 2006-2016 Occupational Projections by Labor Market Information Services, Kansas Department of Labor. Education and training requirement based on information from the Bureau of Labor Statistics.
** Code is new to 2010 SOC. Data for this occupation is not available.

occupations in the high education/training requirement group require a bachelor's degree, master's degree, doctoral degree or bachelor's or higher degree plus work experience.

As Figure 12 demonstrates, the three highest projected growth rates are for occupations in the high education group. On average, the growth rate of the five occupations in the high education group is higher than the average growth rate of the four occupations in the moderate education group, which is in turn higher than the average growth rate of the five occupations in the low education group. Assemblers & fabricators, all other accounted for the third highest amount of primary green jobs in the low education group, yet the occupation is projected to decline overall by 2016. It is the only occupation of the 15 highlighted in Figure 12 that is projected to decline. Information on wind turbine service technicians is unavailable because it is new to the 2010 SOC. Among all green occupations, this data suggests that those with moderate to high education and training requirements should experience higher growth through 2016.

Sample Career Progressions by Core Green-Related Area

The strong growth rates projected for potentially green occupations and the range of education and training they require make green jobs accessible to a vast group of people. The data also suggests that green jobs offer workers potential for future career advancement. Employees in entry-level positions within the green economy have an opportunity to move on to more advanced positions that require higher skills or education or a combination of both. Figures 13 through 17 illustrate the potential career progression of occupations in each of the five core green-related areas. These are meant to be just one example of many potential career progressions in each core area.

The career progression of an electrical & electronics engineering technician is shown in Figure 13. This illustration shows that an engineering technician can advance to an electrical engineer with further education and to an architectural & engineering manager with further education plus work experience. With each advance, the mean hourly wage increases. However, the projected growth rate is the highest in the middle of the career progression. Similar information on careers in increasing energy efficiency, agriculture and natural resource conservation, pollution prevention and environmental cleanup, and clean transportation and fuels is presented in Figures 14 through 17.

Figure 13
Career Progression of Producing Renewable Energy

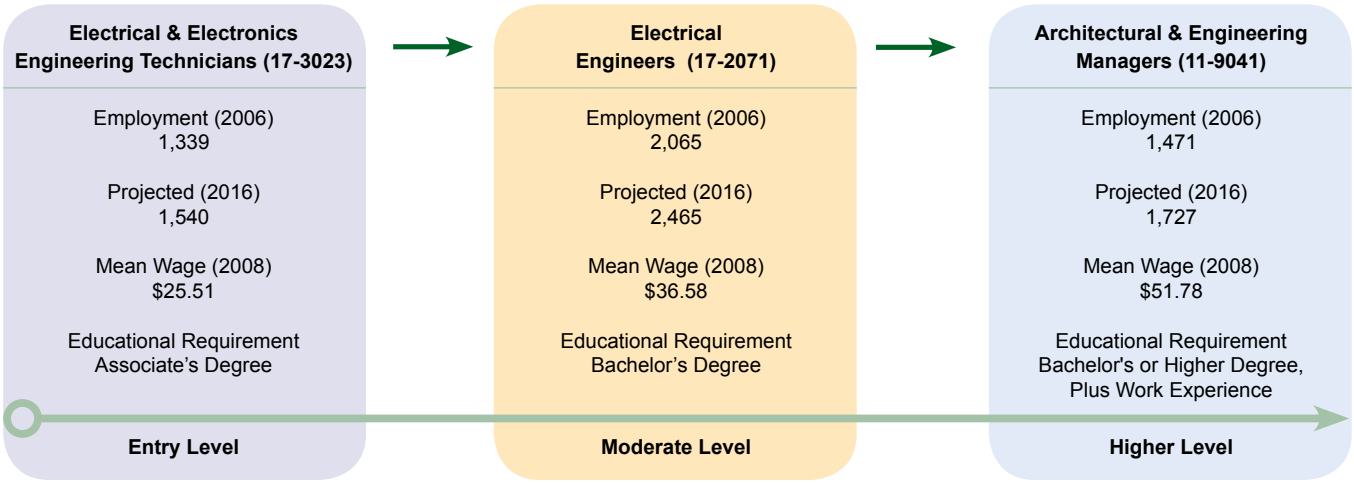


Figure 14
Career Progression of Increasing Energy Efficiency

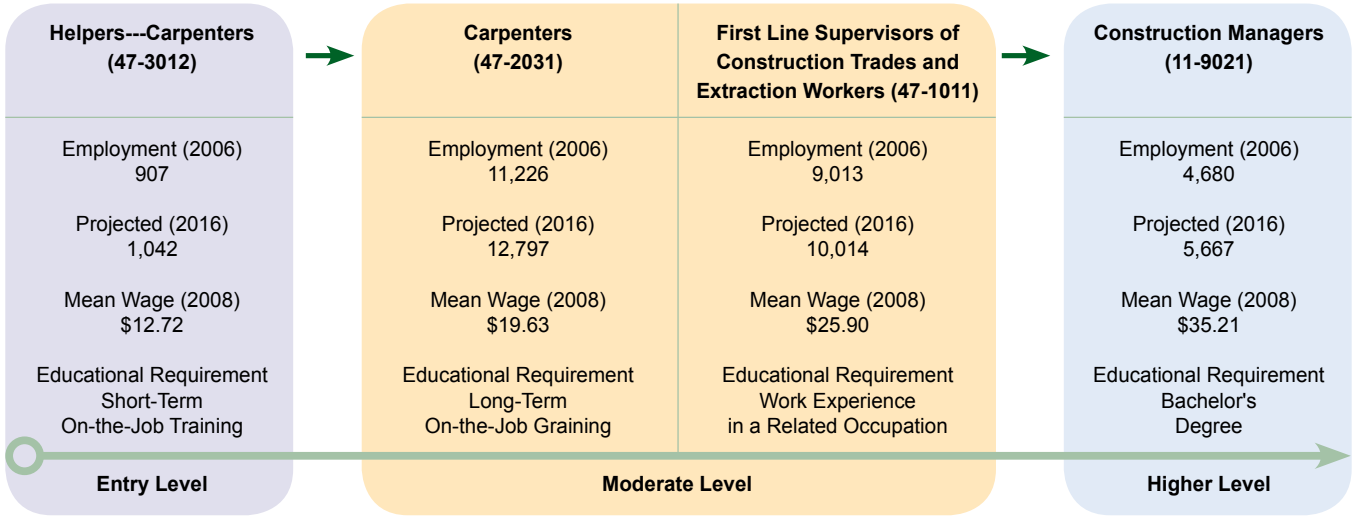
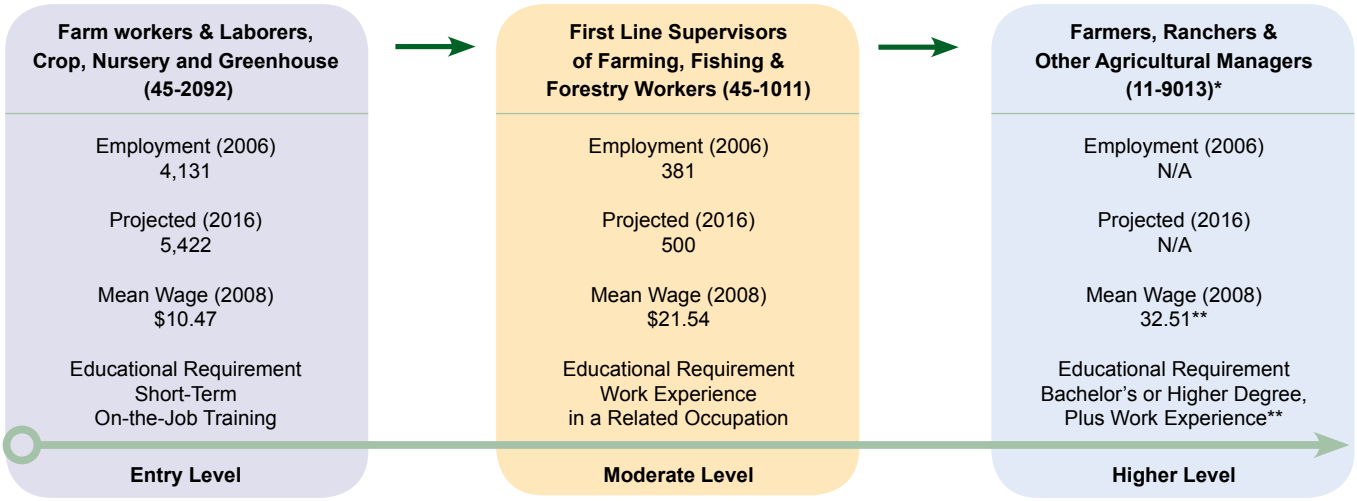


Figure 15
Career Progression of Agriculture and Natural Resource Conservation



* Code is new to 2010 SOC.
** Wage and education data from 11-9011 in 2000 SOC was used a substitute because description was largely unchanged.
N/A: Information is not available.

Did you know? • • •

Electrical engineering technicians apply electrical theory and related knowledge to test and modify developmental or operational electrical machinery and electrical control equipment and circuitry in industrial or commercial plants and laboratories. Electrical engineers design, develop, test or supervise the manufacturing and installation of electrical equipment, components or systems.

Figure 16
Career Progression of Pollution Prevention and Environmental Cleanup

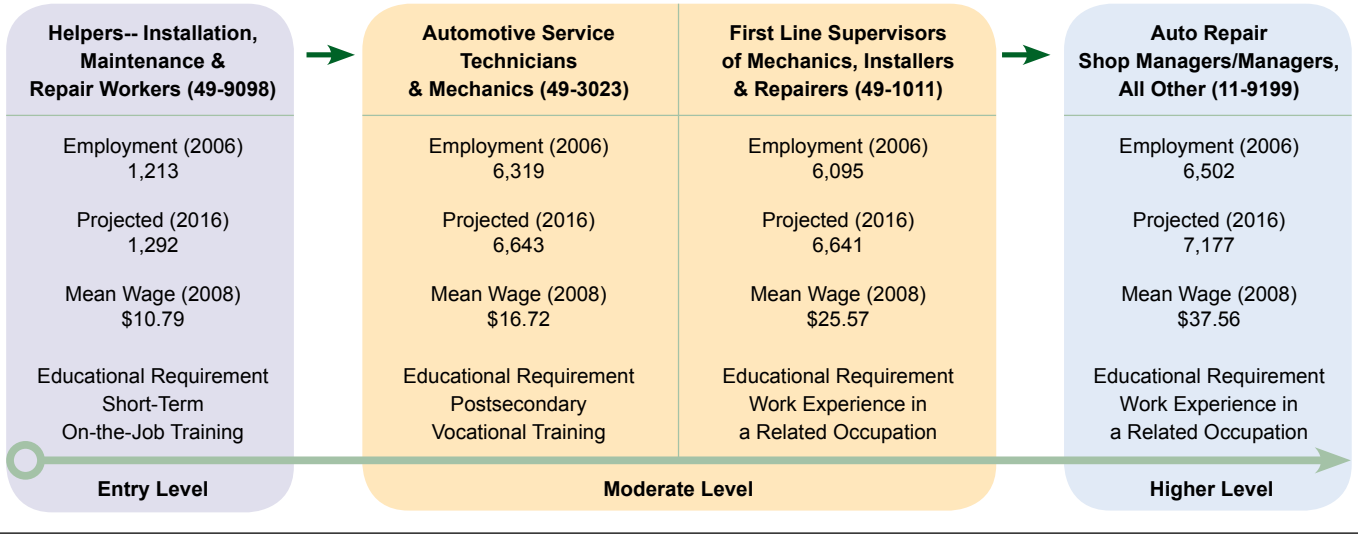
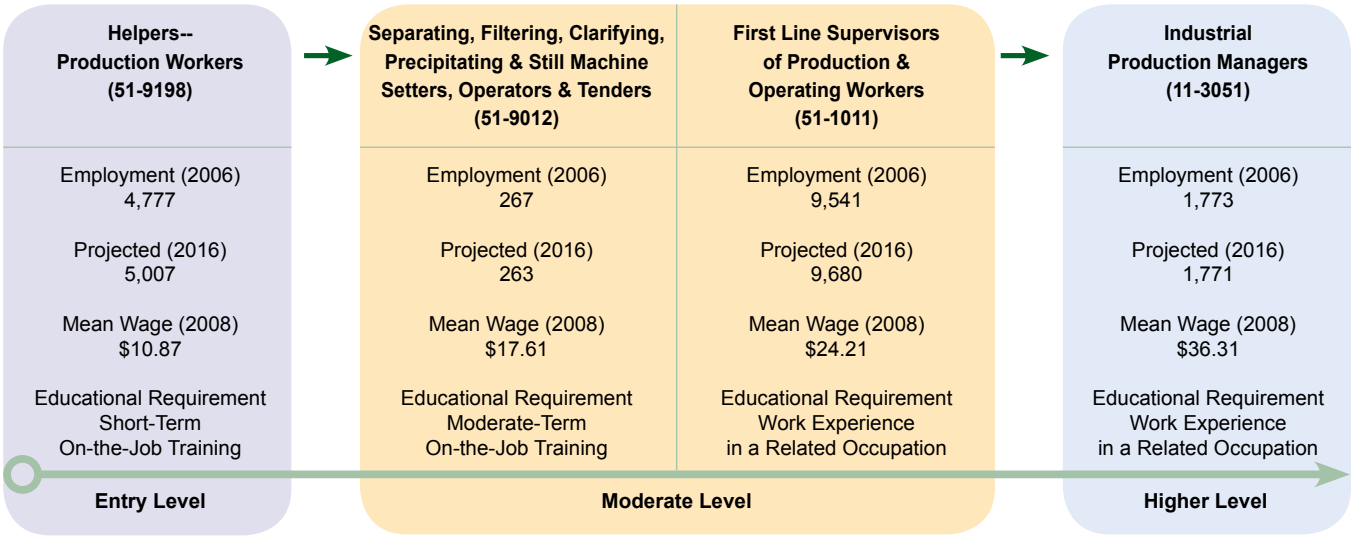


Figure 17
Career Progression of Clean Transportation and Fuels



Did you know? • • •

Helpers—production workers assist production workers by performing duties of lesser skill such as supplying or holding materials or tools, and cleaning work area and equipment. Industrial production managers plan, direct or coordinate the work activities and resources necessary for manufacturing products in accordance with cost, quality and quantity specifications.

Appendix A
Definition of Green Jobs and Core Green-Related Areas Sent to Employers

KANSAS
DEPARTMENT OF LABOR

2009 *Kansas Going Green* Survey

Important: What We Mean by "GREEN"

Introduction

You have received this survey as part of our efforts to identify green jobs and green job growth in Kansas. The results of this survey are very important to the Kansas economy and the Kansas workforce. Unemployment in Kansas is rising as many industries are declining. It is important, now more than ever, to identify areas of potential future growth so that we can help fund training and education programs that will prepare Kansans for the occupational demands that lie ahead.

Because this is a relatively new and emerging area of the economy, some of the terms used in this survey may be unfamiliar to you. Definitions and examples of the five core green-related areas are provided below in order to address this issue. However, you may still have questions after you've read these definitions. Please feel free to call us toll-free at **(866) 270-2873** and we will be happy to assist you. It is important that you complete the survey to the best of your ability and provide the most accurate information possible.

All responses to this survey are confidential. Data will only be presented in aggregate; no individual business' responses will be identifiable.

Instructions for Completing the Survey

One important distinction for this survey is what is meant by the term "job". A job is defined as an occupation, such that it conveys a count of people. For example, a foreman at a construction firm that builds homes which meet or exceed environmental standards counts as one green "job". The number of building contracts the construction firm has is a count of green "projects". This survey is only interested in green jobs.

Another important distinction is that of primary and support green jobs. In Section 3 of this survey, only information related to primary green jobs should be conveyed. Primary green jobs are jobs that produce a green product and/or provide a green service. The recipients of these services can be internal or external customers of the company. Support jobs are defined as jobs that help the performance of a green job.

Examples of Primary Green Jobs

- Individuals who conduct research to develop wind turbines, solar panels, geothermal heat pumps, etc.
- Individuals whose primary function is to increase green practices and activities within a company
- Individuals who manufacture and/or install solar panels, energy efficient windows, low-flush toilets, etc.

Examples of Support Green Jobs

- Individuals who teach courses and/or training programs that relate to green knowledge or skills
- Individuals who provide financial, legal, personnel or other products and services to companies engaging in green activities
- Individuals who sell solar panels, energy efficient windows, low-flush toilets, etc.

Examples of Jobs Unrelated to Green Business Activities

Individuals who recycle, print double-sided on paper, use energy efficient light bulbs, etc. are NOT considered primary or support green jobs. Any job that does not produce a green product, provide a green service or support these activities is considered a job that is unrelated to green business activities.

30%
Contains 30% Post-Consumer Waste

Core Green-related Areas

1. **Producing Renewable Energy –**
energy that comes from natural and sustainable resources that can be regenerated within a relatively short time period by the natural environment. Examples of renewable energy include:
   - Biomass
   - Geothermal
   - Hydropower
   - Solar power
   - Wind power

2. **Increasing Energy Efficiency –**
using less energy to provide the same level of energy service. Examples of energy efficiency include:
   - Insulating homes and businesses
   - Manufacturing energy efficient household appliances
   - Green building and retrofitting

3. **Agriculture and Natural Resource Conservation –**
products or services designed to help conserve, maintain and improve natural resources and the environment. Examples of agriculture and natural resource conservation include:
   - Organic farming
   - Forest and land management
   - Water conservation
   - Planting trees or grasses

4. **Pollution Prevention and Environmental Cleanup –**
products or services designed to minimize or prevent the adverse impacts of pollution on the natural environment and human health. Examples of pollution prevention and environmental cleanup include:
   - Recycling center operation
   - Carbon emissions monitoring
   - Hazardous waste cleanup

5. **Clean Transportation and Fuels –**
research, development and production of new technologies for energy storage and alternative fuels, as well as the engineering of improved fuel efficiencies and emissions reductions. Examples of clean transportation and fuels include:
   - Advanced batteries
   - Fuel cells
   - Alternative fuels (e.g., biodiesel, ethanol, hydrogen, etc.)
   - Activities related to meeting fuel efficiency standards

Appendix B
Survey Instrument

2009 *Kansas Going Green* Survey

KANSAS DEPARTMENT OF LABOR
Labor Market Information Services
401 S.W. Topeka Boulevard
Topeka, KS 66603-3182

ABOUT THE SURVEY

The Kansas Department of Labor is interested in obtaining employment and training information about green jobs in Kansas. For the purposes of this survey, a green job is a job which produces a green product and/or provides a green service in one of the following five core green-related areas:

1. ***Producing renewable energy***
2. ***Increasing energy efficiency***
3. ***Agriculture and natural resource conservation***
4. ***Pollution prevention and environmental cleanup***
5. ***Clean transportation and fuels***

As an integral part of the Kansas economy, your input on this survey will help to develop a more informed foundation for future policy, workforce and economic decisions. **Please refer to the enclosed informational flier for a more detailed explanation of this survey and relevant definitions**. All individual responses are confidential; data will only be presented in aggregate.

SURVEY RESPONSE OPTIONS

- Save money, save paper and save time! Respond online at **www.dol.ks.gov/GreenSurvey2009.html**
- Call us toll-free at **(866) 270-2873**
- Tear at perforation and fax all pages of the survey to Labor Market Information Services at **785-296-5286**
- Mail in the enclosed postage-paid envelope

Please respond

Your Survey ID number is:

Thank you for your participation!

CONTACT PERSON

Name: _____

Title: _____

Phone: _____

E-mail: _____

Would you like to be notified when the survey results are available on our Web site?

☐ YES ☐ NO

SECTION 1

1. Do you or any of your staff have a **primary function** of producing products and/or providing services related to any of the five core green-related areas?

   ☐ YES (Please complete all remaining sections of the survey.)

   ☐ NO (Please complete Section 2 and Section 4 only.)

SECTION 2

2. How many employees do you currently have **at this specific location**? ..... _____
3. How many employees have a **primary function** in producing green-related products and/or providing green-related services? ..... _____
4. How many employees hold **support jobs** for your green-related business activities? ..... _____
5. How many employees engage in business functions **unrelated** to your green business activities? ..... _____

NOTE: Items 3 through 5 should add up to the number given in Item 2. For an explanation of "primary" and "support" jobs, please see the informational flier provided with this survey.

30%
Contains 30% Post-Consumer Waste

PAGE 1 of 4

Kansas Department of Labor
LABOR MARKET INFORMATION SERVICES

2009 *Kansas Going Green* Survey

Survey ID #:

SECTION 3 – ENTER PRIMARY GREEN JOB TITLES ONLY

INSTRUCTIONS

- Enter the total number of workers currently employed for each job title in each core area and the total number of workers needed for each job title in the next two to three years.
- **Choose only one core area per employee**. For employees responsible for more than one core area, choose the one that accounts for the most time on the job.
- Exclude consultants, outside contractors, vendors and others not considered employees.
- Only report information for employees working **at this specific location**.

EDUCATION/LICENSE

Enter one of the following education codes:
1 = No requirement
2 = High School Diploma/GED
3 = Some college, no degree
4 = Associate/Vocational degree
5 = Bachelor's degree
6 = Graduate degree

List any special licenses, certificates or other training **required** for this position

CORE AREAS FOR GREEN JOBS

1. Producing Renewable Energy
2. Increasing Energy Efficiency
3. Agriculture and Natural Resource Conservation
4. Pollution Prevention and Environmental Cleanup
5. Clean Transportation and Fuels

TIME

Of the number of people currently employed with this job title, how many spend 50% or more of their time producing a green product and/or providing a green service?

Job Title Related to Core Area	Educ. Code	Required License/Certificate	1 Current Employ.[1]	1 Future Need [2]	2 Current Employ.[1]	2 Future Need [2]	3 Current Employ.[1]	3 Future Need [2]	4 Current Employ.[1]	4 Future Need [2]	5 Current Employ.[1]	5 Future Need [2]	# of Current Employees
Example: Electrical Engineer	*6*	*Professional Engineer License*	*2*	*4*	*1*	*3*	*0*	*1*	*0*	*0*	*2*	*2*	*3*

[1] Current Employment is defined as the number of individuals that you currently have working at this specific location.
[2] Future Need is defined as the number of individuals that you will need at this specific location in the next two to three years.

Need more space? Make a photocopy of this page OR call (866) 270-2873.

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Kansas Department of Labor
LABOR MARKET INFORMATION SERVICES

2009 *Kansas Going Green* Survey

Survey ID #:

SECTION 4

Every survey respondent, those that do and do not have green jobs, **should complete this section**.

6. Do you have any training needs related to green knowledge or skills?

☐ YES ☐ NO

6a. If YES, what providers are used to prepare current workers? (*check all that apply*)

- ☐ In-house training unit
- ☐ On-the-job training
- ☐ Vendor training
- ☐ Apprenticeship programs
- ☐ Community/technical college
- ☐ University
- ☐ Other _____
- ☐ Hire only workers who are already trained

7. What new skills or knowledge will current and future employees need in order to perform green activities at your firm? (*check all that apply*)

	Current Need	Future Need
Principles of energy conservation	☐	☐
Waste minimization	☐	☐
Pollution reduction and control	☐	☐
Vehicle technology/maintenance	☐	☐
Information technology	☐	☐
Knowledge of environmental policies/regulations	☐	☐
Cost of implementation	☐	☐
How to use green materials in manufacturing/construction process	☐	☐
Energy auditing	☐	☐
Knowledge of green business methodologies	☐	☐
Knowledge of innovative clean technologies and processes	☐	☐
Alternative energy (specify)_____	☐	☐
Other _____	☐	☐

8. If you **do not** currently have green jobs, do you plan to have green jobs in the next two to three years?

☐ YES ☐ NO

8a. If YES, approximately how many green jobs do you plan to have in the next two to three years?

_____ jobs

9. If you **do not** currently produce green-related products and/or provide green-related services, what barriers prevent you from doing so? If you **do** currently produce green-related products and/or provide green-related services, what barriers prevent you from increasing these activities? (*check all that apply*)

- ☐ Not interested in implementing green production at this time
- ☐ Shortage of workers with knowledge or skills
- ☐ Shortage of available training programs
- ☐ Training classes too full to enroll
- ☐ Economic conditions
- ☐ Government policies/regulations
- ☐ Cost of implementation
- ☐ Lack of information
- ☐ Other _____

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Kansas Department of Labor
LABOR MARKET INFORMATION SERVICES

2009 *Kansas Going Green* Survey

Survey ID #:

SECTION 4 (Continued)

10. If your business currently utilizes green practices, services or products, what does your firm currently **use** on site? (*check all that apply*)

- ☐ Alternative fuel vehicles
- ☐ Energy efficiency/conservation
- ☐ Sustainable farming
- ☐ Recycled products
- ☐ LEED or energy efficient construction or remodeling
- ☐ Pollution reduction
- ☐ Water conservation
- ☐ Recycling
- ☐ Some form of renewable energy such as solar, water, wind, etc.
- ☐ None at this time
- ☐ Other _____

11. During the next two to three years, do you expect your firm's green practices to:

☐ Increase ☐ Decrease ☐ Remain the same

12. Please identify any occupations **declining** due to implementation of green practices:

_____

_____

_____

_____

_____

13. What resources would help your company reduce its environmental impact by adopting environmentally friendly practices? (*check all that apply*)

- ☐ Information about specific actions to take to cost effectively reduce environmental impact
- ☐ Success stories showing how similar businesses reduced their environmental impact
- ☐ Financing options available for businesses trying to reduce environmental impact
- ☐ Recognition and awards given to businesses for reducing environmental impact
- ☐ Specific instructions detailing how to reduce environmental impact
- ☐ Technical support (e.g., training, online questions and answers, etc.)
- ☐ None
- ☐ Other _____

14. We want to know what you're doing to be **GREEN**. Please list any **special** products that you produce, services that you provide or behaviors that you engage in at your company in an effort to reduce environmental impact:

_____

_____

_____

_____

_____

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Appendix C
Survey Methodology

Sample Selection

The Labor Market Information Services (LMIS) division of the Kansas Department of Labor (KDOL) chose the Quarterly Census of Employment and Wages (QCEW) database as the sampling frame for the *2009 Kansas Going Green Survey*. The sampling frame, as seen in Table C1, was specifically comprised of Kansas businesses with at least one employee and that were covered under the Unemployment Insurance Compensation system in the fourth quarter of 2008. Approximately 9,500 establishments were excluded from the sampling frame because they could not be assigned a specific county code.

Table C1
Sample Summary

	Number of Establishments
Population of Establishments	77,445
Sample Size	6,003

Two sample groups were created, a green sample and a non-green sample. The green sample was stratified by five local areas, four size classes and 38 industries at the three-digit North American Industrial Classification System (NAICS) level. The non-green sample was stratified by five local areas and four size classes. For more detailed information about the counties included in each of the five local areas and the range of employees included in each of the four size classes please refer to Table C2 and the map on page 16.

Table C2
Size Classes

Size Class	Number of Employees
1	1 to 4
2	5 to 49
3	50 to 249
4	250 and greater

Based on an intense literature review and other states' experiences, LMIS staff identified 38 industries at the three-digit NAICS level likely to contain green jobs. Firms in these 38 green industries were randomly sampled to achieve an estimated relative standard error of 2.98 percent and a targeted response rate of 50.0 percent. The final sample size within the green sample was 3,703.

The second sample, the non-green sample, included a random sample of firms in the 60 remaining industries not thought to contain green jobs. Firms in this sample were chosen under the parameters that the relative standard error equal 8.49 percent and the targeted response rate equal 50.0 percent. This resulted in a final sample size of 2,300. Appendix D shows a breakdown of those industries included in the green sample and those included in the non-green sample.

A random sample was used to select firms within each stratum of both the green and non-green samples using the Neyman allocation method. According to this method, firm selection is based on the number of establishments per stratum and the standard deviation of employment. Firms with 250 employees or greater were selected with certainty.

Survey Data Collection

The survey instrument was mailed to 6,003 public and private Kansas employers on August 3, 2009. Firms that did not respond to the first survey mailing were mailed a second copy of the survey instrument on August 19, 2009. Firms that did not respond to either survey mailing were then sent reminder postcards on September 9, 2009 and September 22, 2009. Employers had the option to submit their survey response by mail, fax, phone or the Internet. Those that did not respond via any of the previously mentioned methods by October 2009 were contacted by telephone in order to increase the number of responses in strata with

response rates less than 50.0 percent. A portion of the non-response calls were handled by LMIS staff and another portion were handled by the Docking Institute of Public Affairs at Fort Hays State University in Hays, Kansas. Data collection was conducted over a five-month period, from August 2009 through December 2009.

Of all 6,003 establishments included in the sample, only a portion supplied usable responses. LMIS was not able to collect responses from some of the firms sampled, and another portion of responses were not usable because the business closed or was out of scope. Businesses that had zero employees, as of the day their response was submitted, were included in the count of establishments that were out of business. Businesses classified as out of scope included those firms that changed size class, local area and/or three-digit NAICS code. Tolerance levels were devised by LMIS staff in order to allow for employment fluctuations within a certain range. Responses were still considered usable providing that the employment did not change by more or less than a certain percentage. The allowable percentage for each respective size class was selected to ensure that the employment within a given size class did not exceed the upper quartile of the preceding size class or the lower quartile of the following size class. A final portion of the returned surveys were unusable because information was supplied for the incorrect location or because the detailed occupational information related to primary green jobs was not obtainable. A complete breakdown of this information can be seen in Table C3.

Table C3
Total In and Out of Sample, by Reason

Reason Code	Number of Establishments
Usable Response	3,088
Out of Business	232
Out of Scope	166
Refusal	385
Unusable Response	44
Non-Response	2,088

Table C4 shows the overall response rate to the survey which was calculated by taking the number of usable responses and dividing by the total number of establishments in the sample universe minus the number of establishments that were out of business and out of scope. Of these usable responses, 7.1 percent had primary green jobs, 10.4 percent had support green jobs, and 87.0 percent had no green jobs as shown in Table C5.

Table C4
Overall Response Rate

Response Rate	55.1%

Table C5
Percent of Establishments With or Without Green Jobs

With Primary Green Jobs	7.1%
With Support Green Jobs	10.4%
Without Green Jobs	87.0%

At the statewide level, the response rate by all five local areas and four size classes met or exceeded 50.0 percent. All of the 92 three-digit industries that were sampled also achieved or surpassed a 50.0 percent response rate except for 13 industries. Table C6 illustrates the response rate by local area and size class at the statewide level, while Appendix D, Table D1 lists the response rate by three-digit NAICS.

Table C6
Statewide Response Rate by Local Area and Size Class

Strata	Response Rate
Local Area I	58.3%
Local Area II	55.3%
Local Area III	51.9%
Local Area IV	53.8%
Local Area V	58.5%
Size Class 1	54.7%
Size Class 2	55.6%
Size Class 3	52.6%
Size Class 4	60.0%

Estimate Production

Survey respondents reported their primary green employment by job title by core green-related area. Using the Standard Occupational Classification (SOC) system, the primary green job titles enumerated by employers were coded by occupation. LMIS staff then weighted the survey responses based on the total number of establishments in a stratum's population relative to the total number of firms that responded within that stratum. This process of coding and weighting converted survey counts of green jobs by job title into estimates of total green jobs by occupation.

Appendix D
NAICS in Sample

Table D1 Three-Digit NAICS in Sample			
NAICS	**Industry Title**	**Sample**	**Response Rate (Statewide)**
111	Crop Production	Green	52.7%
112	Animal Production	Green	50.0%
115	Support Activities for Agriculture & Forestry	Green	54.2%
211	Oil & Gas Extraction	Green	54.7%
212	Mining (except Oil & Gas)	Green	49.0%
213	Support Activities for Mining	Green	51.6%
221	Utilities	Green	49.4%
236	Construction of Buildings	Green	48.5%
237	Heavy & Civil Engineering Construction	Green	52.3%
238	Specialty Trade Contractors	Green	53.1%
311	Food Manufacturing	Green	50.5%
312	Beverage & Tobacco Product Manufacturing	Green	63.2%
313	Textile Mills	Green	57.1%
314	Textile Product Mills	Green	67.5%
315	Apparel Manufacturing	Green	53.3%
321	Wood Product Manufacturing	Green	56.6%
322	Paper Manufacturing	Green	55.2%
323	Printing & Related Support Activities	Non-Green	64.3%
324	Petroleum & Coal Products Manufacturing	Green	48.6%
325	Chemical Manufacturing	Green	48.6%
326	Plastics & Rubber Products Manufacturing	Green	56.6%
327	Nonmetallic Mineral Product Manufacturing	Green	50.7%
331	Primary Metal Manufacturing	Green	56.4%
332	Fabricated Metal Product Manufacturing	Green	58.2%
333	Machinery Manufacturing	Green	57.0%
334	Computer & Electronic Product Manufacturing	Green	50.8%
335	Electrical Equipment, Appliance & Component Manufacturing	Green	60.0%
336	Transportation Equipment Manufacturing	Green	59.3%
337	Furniture & Related Product Manufacturing	Green	65.2%
339	Miscellaneous Manufacturing	Green	59.7%
423	Merchant Wholesalers, Durable Goods	Green	54.4%
424	Merchant Wholesalers, Nondurable Goods	Non-Green	56.1%
425	Wholesale Electronic Markets & Agents & Brokers	Non-Green	57.1%
441	Motor Vehicle & Parts Dealers	Non-Green	54.0%
442	Furniture & Home Furnishings Stores	Non-Green	61.9%
443	Electronics & Appliance Stores	Non-Green	50.0%
444	Building Material & Garden Equipment & Supplies Dealers	Non-Green	59.5%
445	Food & Beverage Stores	Non-Green	53.2%
446	Health & Personal Care Stores	Non-Green	63.2%
447	Gasoline Stations	Non-Green	53.3%
448	Clothing & Clothing Accessories Stores	Non-Green	48.5%
451	Sporting Goods, Hobby, Book & Music Stores	Non-Green	50.0%
452	General Merchandise Stores	Non-Green	66.7%
453	Miscellaneous Store Retailers	Non-Green	53.8%
454	Nonstore Retailers	Non-Green	57.1%
481	Air Transportation	Non-Green	N/A
484	Truck Transportation	Non-Green	50.0%
485	Transit & Ground Passenger Transportation	Non-Green	61.5%

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Table D1 - continued Three-Digit NAICS in Sample			
NAICS	**Industry Title**	**Sample**	**Response Rate (Statewide)**
486	Pipeline Transportation	Non-Green	66.7%
487	Scenic & Sightseeing Transportation	Non-Green	100.0%
488	Support Activities for Transportation	Non-Green	54.5%
491	Postal Service	Non-Green	50.0%
492	Couriers & Messengers	Non-Green	28.6%
493	Warehousing & Storage	Green	50.0%
511	Publishing Industries (except Internet)	Non-Green	61.1%
512	Motion Picture & Sound Recording Industries	Non-Green	50.0%
515	Broadcasting (except Internet)	Non-Green	60.0%
517	Telecommunications	Non-Green	83.3%
518	Data Processing, Hosting & Related Services	Non-Green	75.0%
519	Other Information Services	Non-Green	60.0%
522	Credit Intermediation & Related Activities	Non-Green	56.7%
523	Securities, Commodity Contracts & Other Financial Investments & Related Activities	Non-Green	50.0%
524	Insurance Carriers & Related Activities	Non-Green	58.3%
525	Funds, Trusts & Other Financial Vehicles	Non-Green	66.7%
531	Real Estate	Non-Green	60.5%
532	Rental & Leasing Services	Non-Green	52.4%
533	Lesors of Nonfinancial Intangible Assets (except Copyrighted Works)	Non-Green	100.0%
541	Professional, Scientific & Technical Services	Green	51.6%
551	Management of Companies & Enterprises	Non-Green	52.8%
561	Administrative & Support Services	Non-Green	47.2%
562	Waste Management & Remediation Services	Green	49.1%
611	Educational Services	Green	59.4%
621	Ambulatory Health Care Services	Non-Green	56.4%
622	Hospitals	Non-Green	66.3%
623	Nursing & Residential Care Facilities	Non-Green	58.6%
624	Social Assistance	Non-Green	63.6%
711	Performing Arts, Spectator Sports & Related Industries	Non-Green	75.0%
712	Museums, Historical Sites & Similar Institutions	Non-Green	75.0%
713	Amusement, Gambling & Recreation Industries	Non-Green	50.0%
721	Accommodation	Non-Green	50.0%
722	Food Services & Drinking Places	Non-Green	51.9%
811	Repair & Maintenance	Green	49.5%
812	Personal & Laundry Services	Non-Green	56.8%
813	Religious, Grantmaking, Civic, Professional & Similar Organizations	Green	48.8%
814	Private Households	Non-Green	73.3%
921	Executive, Legislative & Other General Government Support	Non-Green	65.5%
922	Justice, Public Order & Safety Activities	Non-Green	56.5%
923	Administration of Human Resource Programs	Non-Green	62.5%
924	Administration of Environmental Quality Programs	Green	48.1%
925	Administration of Housing Programs, Urban Planning & Community Development	Green	63.0%
926	Adminisration of Economic Programs	Non-Green	52.4%
928	National Security & International Affairs	Non-Green	50.0%

N/A: This response rate cannot be computed because only one firm in this industry was sampled and it was out of scope.

Appendix E
Primary Green Jobs by Core Green-Related Area and Local Area

Table E1
Primary Green Jobs by Core Green-Related Area and Local Area

Local Area	Renewable Energy		Energy Efficiency		Agriculture & Natural Resource Conservation		Pollution Prevention & Environmental Cleanup		Clean Transportation & Fuels		Total Primary Green Jobs	Total Local Area Employment*	Green Jobs as a Percent of Local Area Employment
	Primary Green Jobs	Percent of Total Renewable	Primary Green Jobs	Percent of Total Efficiency	Primary Green Jobs	Percent of Total Agriculture	Primary Green Jobs	Percent of Total Pollution	Primary Green Jobs	Percent of Total Transportation			
TOTAL	**1,422**	**100.0%**	**10,557**	**100.0%**	**3,883**	**100.0%**	**3,295**	**100.0%**	**890**	**100.0%**	**20,047**	**1,357,342**	**1.5%**
I	342	24.1%	1,292	12.2%	667	17.2%	210	6.4%	393	44.2%	2,903	265,232	1.1%
II	58	4.1%	1,459	13.8%	845	21.8%	804	24.4%	17	1.9%	3,183	250,222	1.3%
III	251	17.7%	5,008	47.4%	1,647	42.4%	1,687	51.2%	17	1.9%	8,611	419,742	2.1%
IV	763	53.7%	2,402	22.8%	418	10.8%	400	12.1%	242	27.2%	4,226	307,826	1.4%
V	8	0.6%	397	3.8%	306	7.9%	193	5.9%	220	24.7%	1,124	114,321	1.0%

* Local area employment is based on Kansas' total covered employment in the fourth quarter of 2008. Excluded are approximately 9,500 establishments that could not be assigned a specific county code.

Note: Numbers may not add due to rounding.

Appendix F
Primary Green Jobs by Core Green-Related Area and Size Class

Table F1
Primary Green Jobs by Core Green-Related Area and Size Class

Size Class	Renewable Energy		Energy Efficiency		Agriculture & Natural Resource Conservation		Pollution Prevention & Environmental Cleanup		Clean Transportation & Fuels		Total Primary Green Jobs	Total Size Class Employment*	Green Jobs as a Percent of Size Class Employment*
	Primary Green Jobs	Percent of Total Renewable	Primary Green Jobs	Percent of Total Efficiency	Primary Green Jobs	Percent of Total Agriculture	Primary Green Jobs	Percent of Total Pollution	Primary Green Jobs	Percent of Total Transportation			
TOTAL	**1,422**	**100.0%**	**10,557**	**100.0%**	**3,883**	**100.0%**	**3,295**	**100.0%**	**890**	**100.0%**	**20,047**	**1,357,342**	**1.5%**
1	311	21.9%	1,909	18.1%	244	6.3%	127	3.9%	3	0.3%	2,595	73,576	3.5%
2	844	59.4%	5,457	51.7%	1,820	46.9%	2,552	77.5%	284	31.9%	10,957	425,947	2.6%
3	78	5.5%	1,624	15.4%	1,609	41.4%	108	3.3%	343	38.5%	3,762	401,249	0.9%
4	188	13.2%	1,566	14.8%	210	5.4%	507	15.4%	261	29.3%	2,732	456,570	0.6%

* Size class employment is based on Kansas' total covered employment in the fourth quarter of 2008. Excluded are approximately 9,500 establishments that could not be assigned a specific county code.

Note: Numbers may not add due to rounding.

Appendix G
Primary Green-Related Occupations

Table G-1
All Reported Primary Green Occupations

SOC	Occupational Title	Total Primary Green Jobs
11-0000	Management Occupations	8
11-3011	Administrative Services Managers	16
11-3051	Industrial Production Managers	12
11-9021	Construction Managers	21
11-9033	Education Administrators, Postsecondary	1
11-9141	Property, Real Estate & Community Association Managers	11
11-9199	Managers, All Other	93
11-1021	General & Operations Managers	185
13-1022	Wholesale & Retail Buyers, Except Farm Products	8
13-1041	Compliance Officers	28
13-1051	Cost Estimators	34
13-1111	Management Analysts	175
13-1199	Business Operations Specialists, All Other	4
15-1121	Computer Systems Analysts	2
17-1011	Architects, Except Landscape & Naval	361
17-1012	Landscape Architects	53
17-2011	Aerospace Engineers	15
17-2021	Agricultural Engineers	12
17-2041	Chemical Engineers	24
17-2051	Civil Engineers	124
17-2071	Electrical Engineers	234
17-2081	Environmental Engineers	185
17-2112	Industrial Engineers	11
17-2141	Mechanical Engineers	372
17-2144	Mechanical Engineers, Research & Development	14
17-2171	Petroleum Engineers	2
17-2199	Engineers, All Other	4
17-3012	Electrical & Electronics Drafters	11
17-3013	Mechanical Drafters	30
17-3019	Drafters, All Other	16
17-3025	Environmental Engineering Technicians	4
19-1013	Soil & Plant Scientists	109
19-1022	Microbiologists	3
19-1031	Conservation Scientists	83
19-1032	Foresters	11
19-2031	Chemists	10
19-2041	Environmental Scientists & Specialists, Including Health	184
19-2042	Geoscientists, Except Hydrologists & Geographers	83
19-2043	Hydrologists	16
19-3051	Urban & Regional Planners	1
19-4011	Agricultural & Food Science Technicians	17
19-4021	Biological Technicians	1
19-4031	Chemical Technicians	37
19-4093	Forest & Conservation Technicians	5
21-1021	Child, Family & School Social Workers	1
25-1042	Biological Science Teachers, Postsecondary	18

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Table G-1 - continued All Reported Primary Green Occupations		
SOC	Occupational Title	Total Primary Green Jobs
25-1043	Forestry & Conservation Science Teachers, Postsecondary	1
25-1053	Environmental Science Teachers, Postsecondary	17
25-1191	Graduate Teaching Assistants	6
25-1199	Postsecondary Teachers, All Other	6
25-2031	Secondary School Teachers, Except Special & Career/Technical Education	1
25-9021	Farm & Home Management Advisors	73
27-1025	Interior Designers	89
29-9011	Occupational Health & Safety Specialists	7
37-1012	First-Line Supervisors of Landscaping, Lawn Service & Groundskeeping Workers	32
37-2011	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	30
37-2012	Maids & Housekeeping Cleaners	698
37-3011	Landscaping & Groundskeeping Workers	1,252
37-3013	Tree Trimmers & Pruners	408
41-1011	First-Line Supervisors of Retail Sales Workers	39
41-3099	Sales Representatives, Services, All Other	116
43-5111	Weighers, Measurers, Checkers & Samplers, Recordkeeping	13
43-9071	Office Machine Operators, Except Computer	6
43-9199	Office & Administrative Support Workers, All Other	24
45-1011	First-Line Supervisors of Farming, Fishing & Forestry Workers	40
45-2092	Farmworkers & Laborers, Crop, Nursery & Greenhouse	376
45-2093	Farmworkers, Farm, Ranch & Aquacultural Animals	57
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	193
47-2021	Brickmasons & Blockmasons	159
47-2031	Carpenters	2,419
47-2042	Floor Layers, Except Carpet, Wood & Hard Tiles	78
47-2061	Construction Laborers	1,315
47-2073	Operating Engineers & Other Construction Equipment Operators	577
47-2111	Electricians	247
47-2131	Insulation Workers, Floor, Ceiling & Wall	469
47-2152	Plumbers, Pipefitters & Steamfitters	1,114
47-2211	Sheet Metal Workers	142
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters & Steamfitters	45
47-4041	Hazardous Materials Removal Workers	33
47-4099	Construction & Related Workers, All Other	5
47-5099	Extraction Workers, All Other	50
49-1011	First-Line Supervisors of Mechanics, Installers & Repairers	24
49-3023	Automotive Service Technicians & Mechanics	777
49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	108
49-9021	Heating, Air Conditioning & Refrigeration Mechanics & Installers	1,361
49-9041	Industrial Machinery Mechanics	68
49-9043	Maintenance Workers, Machinery	59
49-9044	Millwrights	20
49-9051	Electrical Power-Line Installers & Repairers	15
49-9052	Telecommunications Line Installers & Repairers	240
49-9071	Maintenance & Repair Workers, General	247
49-9081	Wind Turbine Service Technicians	327
49-9098	Helpers--Installation, Maintenance & Repair Workers	3
49-9099	Installation, Maintenance & Repair Workers, All Other	95
51-1011	First-Line Supervisors of Production & Operating Workers	117
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	300
51-2092	Team Assemblers	193
51-2099	Assemblers & Fabricators, All Other	1,199
51-3091	Food & Tobacco Roasting, Baking & Drying Machine Operators & Tenders	11
51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	123
51-4021	Extruding & Drawing Machine Setters, Operators & Tenders, Metal & Plastic	80

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Table G-1 - continued All Reported Primary Green Occupations		
SOC	**Occupational Title**	**Total Primary Green Jobs**
51-4041	Machinists	12
51-4052	Pourers & Casters, Metal	7
51-4072	Molding, Coremaking & Casting Machine Setters, Operators & Tenders, Metal & Plastic	14
51-4121	Welders, Cutters, Solderers & Brazers	47
51-6031	Sewing Machine Operators	14
51-6064	Textile Winding, Twisting & Drawing Out Machine Setters, Operators & Tenders	16
51-6091	Extruding & Forming Machine Setters, Operators & Tenders, Synthetic & Glass Fibers	252
51-7011	Cabinetmakers & Bench Carpenters	99
51-8021	Stationary Engineers & Boiler Operators	5
51-8031	Water & Wastewater Treatment Plant & System Operators	179
51-9012	Separating, Filtering, Clarifying, Precipitating & Still Machine Setters, Operators & Tenders	138
51-9021	Crushing, Grinding & Polishing Machine Setters Operators & Tenders	41
51-9023	Mixing & Blending Machine Setters, Operators & Tenders	278
51-9031	Cutters & Trimmers, Hand	21
51-9041	Extruding, Forming, Pressing & Compacting Machine Setters, Operators & Tenders	7
51-9061	Inspectors, Testers, Sorters, Samplers & Weighers	17
51-9111	Packaging & Filling Machine Operators & Tenders	48
51-9122	Painters, Transportation Equipment	3
51-9196	Paper Goods Machine Setters, Operators & Tenders	66
51-9199	Production Workers, All Other	41
53-1021	First-Line Supervisors of Helpers, Laborers & Material Movers, Hand	3
53-3032	Heavy & Tractor-Trailer Truck Drivers	93
53-7062	Laborers & Freight, Stock & Material Movers, Hand	209
53-7063	Machine Feeders & Offbearers	35
53-7064	Packers & Packagers, Hand	29
53-7081	Refuse & Recyclable Material Collectors	220

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