

Outlook for Green Job Growth in Seattle-King County

CONTENTS

EXECUTIVE SUMMARY	3
INTRODUCTION	3
PRIOR RESEARCH ON JOB GROWTH IN THE GREEN ECONOMY .	4
RESEARCH METHODOLOGY	5
SURVEY RESULTS	5
KEY INFORMANT INTERVIEWS	15
APPENDIX A: METHODOLOGY	20
APPENDIX B: SURVEY QUESTIONS	22
APPENDIX C: PROJECT SPONSORS	24

This report is a project of the Workforce Development Council of Seattle-King County and its Green Workforce Leadership Council. The project was funded by a grant from the U.S. Small Business Administration (SBA). SBA's funding should not be construed as an endorsement of any products, opinions, or services. All SBA-funded projects are extended to the public on a nondiscriminatory basis.

EXECUTIVE SUMMARY

Each of King County's green industry clusters anticipates some growth in green jobs in the next year with the majority of these jobs coming through a combination of economic recovery and government regulation/incentives.

Companies in the green building, manufacturing, energy distribution, and environment industry clusters expect sales of green products or services to increase which will translate into expected growth of green jobs in the industries by between 7.7% and nearly 17%. It is important to recognize that revenues from green products and services will grow at a faster rate than will green jobs in the next year.

During the next 12 months, a greater share of new green jobs will be in the energy distribution sector. In each of the five industry clusters surveyed many of the green jobs in the next year will be filled by existing employees rather than from new hires. Within manufacturing, transportation, and energy distribution green jobs growth will come from both changing how work is done and from an increased consumer demand.

The majority of green jobs that will be created are at entry-level positions within each industry. The highest priority for these new hires will not be green-specific skills or knowledge but rather personal abilities and job performance skills.

INTRODUCTION

The Workforce Development Council (WDC) of Seattle-King County contracted with the Business and Economic Development Center (BEDC) at the University of Washington's Michael G. Foster School of Business to take a short- to mid-term view of the job market in green industries and conduct a study that would highlight issues related to the demand for employees that have "green jobs" skills.

Creating green jobs and green industries has been a significant part of the Puget Sound region's overall effort at job creation in recent years. This region has invested in green jobs training, green building and green energy conferences, and the development of a number of regional strategies to promote these industries and job growth. This effort has largely, though not exclusively, been focused on creating a skilled workforce and a knowledgeable set of entrepreneurs who are focused on the growth in demand for green products and services. Yet, to date there appears to be minimal growth in new jobs due to market conditions.

This report describes the prospects for new job creation in the next year in the five green economy industry sectors that have been identified by the WDC:

- Green Building including residential, commercial, and public
- Manufacturing including production processes and products
- Energy including both distribution (smart grid and storage) and production (renewable energy and alternative energy)
- Transportation including public transportation and fuel-efficient vehicles
- Environment including water conservation and treatment, waste management and protection, remediation and restoration.

Given the demographic shift in the ownership of small businesses, this report also contains information specifically on the hiring prospects and skills training needs for businesses owned by women and minorities.

This report will assist the WDC and other job skills training organizations to ensure that skills training is targeted appropriately and will assist the BEDC and other economic development organizations to target appropriate assistance to companies in the industries that will most likely create new jobs in the next 12 months.

PRIOR RESEARCH ON JOB GROWTH IN THE GREEN ECONOMY

In March 2010, the Washington State Employment Security Department issued a report (*2009 Washington State Green Economy Jobs*) which estimated that total employment in four green core areas among private-sector employers totaled 76,137 jobs and public-sector green jobs employment totaled 23,182. This accounted for 3.3% of all jobs in Washington, up from just 1.6% in the prior year's report. The report cautions about drawing conclusions about the nature and extent of green job growth between 2009 and 2010 as many factors may account for these differences including "greater awareness among employers about what constitutes a green job, new hiring, and changes in the types of products or services offered by employers."

The Employment Security Department report included four green core industries:

- Preventing or reducing pollution accounted for 46% of green jobs with most of these being in agriculture-related industries but some were in construction, waste management and remediation. More than 29% of green jobs in this sector (13,484) were in King County.
- Increasing energy efficiency which included construction-related industries and professional services such as architecture and engineering was the second-largest core area, accounting for 38.9% (38,894) of all green positions. Nearly 40% of these jobs (15,500) were in King County.
- Mitigation and cleanup of environmental pollution accounted for 11.6% of all green jobs with 26.6% of these jobs (3,091) being in King County

- Producing renewable energy accounted for 3.5% of all green jobs with 28% these jobs (972) being in King County.

The report noted that Seattle-King County WDA, with 32,857 green jobs, accounts for the largest share (40 %) of all green jobs in Washington. Green jobs represent 2.7 % of all employment in Seattle-King County.

In a forward-looking analysis the October 2008 US Conference of Mayors report, *U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy*, estimates that by 2038 Washington State will have approximately 100,000 green economy jobs with half of these being in the Seattle-Tacoma-Bellevue region. Assuming that this report is accurate in its predictions, this region could see the addition of between 25,000 and 30,000 green economy jobs over the next 28 years; roughly 1,000 new green economy jobs per year.

RESEARCH METHODOLOGY

The BEDC conducted a phone survey of 194 companies in King County spread across three of the WDC's five green industry clusters:

- Green Building including residential, commercial, and public where 72 companies surveyed
- Energy distribution (smart grid and storage) where 60 companies were surveyed
- Environment including water conservation and treatment, waste management and protection, remediation and restoration where 62 companies were surveyed

In the sectors with a lower concentration of green jobs – manufacturing and transportation - BEDC conducted key informant interviews to collect data and observations.

Additional details on the research methodology for this report are contained in Appendix A.

SURVEY RESULTS

Phone surveys were conducted in the Green Building industry, Environmental and Energy Distribution sectors. This section describes the characteristics of the companies that were surveyed.

Most of the companies that were surveyed had fewer than 10 full time and 10 part time employees. A significant majority of them have been operating for more than 10 years.

Table 1. Number of Full Time Employees Per Company

	Fewer than 10	10 to 19	20 to 50	51 to 100	More than 100	Total
Green Building	57	8	3	3	1	72
Environment	52	3	4	0	2	61
Energy Distribution	33	9	10	4	3	59
Total	142	20	17	7	6	192

Table 2. Number of Part-Time Employees Per Company

	Fewer than 10	10 to 19	20 to 50	51 to 100	More than 100	Total
Green Building	68	0	3	0	1	72
Environment	57	1	2	0	2	62
Energy Distribution	55	1	0	2	0	58
Total	180	2	5	2	3	192

Table 3. Tenure of Business Operations

	Less than 3 years	3 to 5 years	6 to 10 years	11 to 20 years	More than 20 years	Total
Green Building	7	5	11	14	35	72
Environment	5	9	8	15	25	62
Energy Distribution	5	5	4	12	33	59
Total	17	19	23	41	93	193

The survey collected responses from both large and small companies based on their revenues. The average (mean) revenue size in each industry sector exceeded \$2 million while the median (half the companies having higher and half the companies having lower) revenues ranged from \$250,000 to \$925,000.

Given the changing population demographics among business owners, data was collected to ensure that a sufficient number of minority-owned and women-owned businesses were

represented in the sample size to understand if these businesses had different expectations for future job growth. Of the companies that were surveyed 33% were owned by women and 24% were non-Caucasian owned.

Table 4. Gender of Business Ownership

	Male	Female	Total
Green Building	57	15	72
Environment	33	29	62
Energy Distribution	40	20	60
Total	130	64	194

Table 5. Race and Ethnicity of Business Ownership¹

	Asian/Pacific Islander	African American	Hispanic/Latino	Caucasian	Other	Total
Green Building	2	4	7	51	11	75
Environment	3	1	1	49	9	63
Energy Distribution	4	2	0	51	4	61
Total	9	7	8	151	24	199

Green Jobs Prospects and Skills Levels

While in each of the industry sectors that were surveyed a significant portion of the respondents' revenues came from green or environmentally friendly products, only in the energy distribution field did "green" account for more than half of the respondents' revenues.

Table 6. Percentage of Company Revenue from Green Products or Services

	Percentage of Revenue
Green Building	27.42%
Environment	37.18%
Energy Distribution	51.74%
Total Average	38.16%

Over the next year, companies in the green building sector anticipate significantly less growth in revenues and lower job growth rates than do companies in the environmental and energy distribution sectors.

¹ Businesses can be owned by more than one person and by people from multiple racial and ethnic backgrounds which accounts for the 199 responses to this question.

The data from the phone surveys shows a blurring of distinction between green and non-green jobs in the construction industry. To better understand this blurring the BEDC interviewed Yancy Wright, the Sustainability Director at Sellen Construction. He noted that most of the traditional trades in construction, while they might be involved in building LEED certified buildings, primarily require the use of traditional skills along with the knowledge of green building systems and specific green practices. “Sellen only has a few positions that focus exclusively on sustainable initiatives but the goal of those positions is to continue integrating sustainable thinking throughout the company of 600 employees. The expectation is that green building will continue to evolve into deeper shades of green requiring ongoing support by our staff. Sellen, a national leader in green building, has 90% of its projects pursuing a green building (LEED) certification.”

Companies in the environmental field, which includes water conservation and treatment, waste management and protection, remediation and restoration, expect the highest rates of revenue growth in the next year. Nevertheless, it is in the energy distribution sector where we see the highest potential for green job growth.

Table 7. Industry Wide Green Revenue and Job Growth Estimates

	Estimated Growth in Sales of Green Products or Services in the Next Year Within Industry	Estimated Growth in Value of Environmentally Friendly Business Practices in the Industry in Next Year	Estimated growth in Green Jobs in the Industry in Next Year
Green Building	12.25%	8.75%	7.69%
Environment	211.54%	213.76%	14.69%
Energy Distribution	55.69%	13.43%	16.98%
Total Average	87.10%	76.01%	13.01%

Table 8. Percentage of Firms Expecting to Hire in the Next Year

	Percent of Firms Expecting to Hire	Percent of Firms Not Expecting to Hire
Green Building	20%	80%
Environment	17%	83%
Energy Distribution	33%	67%

Energy Distribution companies expect that more than half of these new employees will be for green jobs.

Table 9. Percent Increase of Employees Hires attributed to Green Economy

	Percent of the Increase Attributable to Green Economy
Green Building	23.80%
Environment	20.80%
Energy Distribution	62.50%

Most of the jobs that will be created in the next year are at the starting rung of the career ladder in each industry.

Summary of the Jobs Outlook

- *Energy Distribution – Companies expect to see a substantial growth in sales of green-classified products or services with one-third of companies expecting to add new employees in the next year.*
- *Environment – Companies expect to grow revenues by more than 200% which will translate into 17% of firms expecting to add new employees.*
- *Green Building – Companies expect to see revenues grow by more than 12% which will translate into workers being hired by 20% of surveyed construction firms.*

Companies reporting that they expect to hire in the next year plan to fill positions at a range of skill levels.

Table 10. Number and Level of Job Creation

	Pre-Apprentice	Apprentice	Journey-person	First-line Supervisor	Manager	Senior Manager	Other	Total
Green Building	1	1	6	0	1	2	2	13
Environment	0	0	2	1	1	1	5	10
Energy Distribution	1	3	5	2	3	1	4	19
Total	2	4	13	3	5	4	11	42

Companies that expect to hire new employees were asked to provide the title of the positions that they would hire for in the next 12 months. They were also asked to list the job titles for the top three green jobs positions for which they hire for entry-level workers even if they don't plan on hire for these positions in the next year.

Green building companies reported in the next year they expect to hire for these green jobs:

- Concrete Finisher
- Foreman
- Construction Laborer
- Journey Level Carpenter
- Landscape Technician
- Manager
- Project Manager
- Supervisor

Green building companies report hiring a broad range of entry-level positions that relate to green products or techniques:

- Trades Apprentice
- Carpet and Flooring Installer
- Concrete Resurfacing Technician
- Energy Savings Analyst
- Estimator
- General Laborer
- Granite Fabricator
- HVAC Service Mechanic
- Insulation Installer
- Landscape Technician
- Building Maintenance Engineer
- Project Manager
- Roofer
- Service Technician
- Warehousing Technician

Environmental companies plan, in the next year, to hire for these jobs which they classified as green:

- Account Manager
- Green Project Associate
- Intern Architect
- Masonry Restorer
- Painter
- General Manager
- Solar PV Installer
- Trainer
- Landscape Technician
- Waterproofer

Environmental companies reported hiring a broad range of entry-level positions that relate to green projects:

- Architecture Intern
- Carpenter
- Customer Service Specialist
- Draftsperson
- Field and Landscape Technician
- Inspector
- Designer
- Masonry Restorer
- Materials Resource Specialist
- Trainer
- Waterproofer

Energy distribution companies plan, in the next year, to hire for these green-related jobs:

- Carpenter
- Chemist
- Consultant
- Hazardous Waste Technician
- Laborer
- Meter Reader
- Plumber
- Project Manager
- Quality Control Inspector
- Service Technician
- Tower Inspector
- Water Quality Sampler and Inspectors
- Wind Analyzer

Energy distribution companies reported that they would hire the following at the entry level:

- Assembler
- Engineering Support Technician
- Energy Consultant
- Environmental Technician
- General Laborer
- Inspector
- Installer
- Landscape Technician
- Mechanical Installer
- Meter Reader
- Project Manager
- Service Technician
- Skilled Labor
- Solar Installer
- Tower Maintenance Technician
- Truck Driver

Sources of New Employees and Training

As a significant source of funding for job skills training in this region, the Workforce Development Council is interested in knowing whether the expected increase in green jobs will come from new hires or retraining existing workers. Additionally, the WDC is

interested in knowing where companies look when they hire new employees and the resources they use when retraining current workers for green jobs.

Table 11. Sources of Employees for Green Jobs

	Only Hiring New Workers	Hiring Some New Workers and Training Some Current Workers	Only Training Current Workers
Green Building	15%	32%	53%
Environment	10%	30%	60%
Energy Distribution	29%	29%	42%
Total	18%	31%	51%

The majority of current workers have the necessary skills to fill green jobs in each of the industry sectors.

Table 12. Green Skills for Existing Employees

	Possess All Necessary Skills	Don't Possess All Necessary Skills
Green Building	78%	22%
Environment	61%	39%
Energy Distribution	62%	38%
Total	67%	33%

When companies hire new employees with green jobs skills or train existing employees on new green jobs skills, they use a diverse set of resources with the majority of employers using resources offered by non-degree or certificate granting institutions. In fact, companies cite the use of “other” resources more than the ones suggested during the phone surveys. Key informant interviews identified that this “other” training comes from three sources:

- Labor unions
- On-the-job training
- Training programs developed by private training providers

Table 13. Sources of Training for New Hires

	Industry Associations	Community or Technical Colleges	Online Education	Four Year Colleges	Other	All of the Above
Green Building	21%	11%	4%	2%	59%	4%
Environment	39%	4%	0%	20%	37%	0%
Energy Distribution	29%	2%	0%	12%	50%	8%
Total	29%	6%	1%	10%	49%	4%

Table 14. Sources for Existing Employees

	Industry Associations	Community or Technical Colleges	Online Education	Four Year Colleges	Other	All of the Above
Green Building	41%	6%	5%	3%	45%	0%
Environment	37%	2%	12%	12%	35%	2%
Energy Distribution	45%	7%	4%	7%	36%	2%
Total	41%	5%	6%	7%	39%	1%

Roughly 20% of environment and energy distribution companies note that their employees need specific green skills, while green building companies estimated 12%. The job skills reported most needed were communication, hands-on experience, and basic education.

Table 15. Skills Needed for Green Jobs

	Communications	Hands-on Experience	Basic Education	Interpersonal	Workplace Discipline	Technical Skills	Computer Skills	Green-Jobs Specific Skills	Other
Green Building	74%	78%	58%	62%	66%	62%	44%	41%	17%
Environment	74%	72%	81%	70%	66%	74%	79%	37%	25%
Energy Distribution	84%	70%	75%	71%	70%	62%	55%	40%	18%
Total	77%	73%	70%	67%	67%	66%	58%	39%	20%

Companies desire additional skills training at community and technical colleges as well as four year universities. The skills most in demand are business skills, writing skills, and energy system concepts.

Based on information gained from key informant interviews in the construction industry, much of the green-specific job skills training to date have been conducted internally in companies rather than through outside training programs to insure that the current workforce has the necessary skills. Recent ARRA funding is intended to support additional green building training to better prepare the workforce for when the job market recovers.

More than half of the new green jobs will be filled by existing workers who are trained to perform new work. Much of the needed training will be provided internally or through established union apprenticeship programs with employer interest now growing in programs provided by two and four year colleges. The energy distribution sector has the highest likelihood of hiring new workers for green jobs in the near term with 29% of firms expecting to fill green positions only from external hires and 29% of the firms filling green jobs with a mix of new hires and retrained workers.

KEY INFORMANT INTERIEWS

Three industry sectors were selected for key informant interviews rather than for phone surveys Three industry sectors were selected for key informant interviews rather than for phone surveys either because significant employers dominated the hiring in a particular sector or because the behavior of a select few companies combined with industry association interviews could be considered as representative of the performance of the entire industry. The industries that participated in key informant interviews were:

- Transportation including public transportation and fuel-efficient vehicles
- Manufacturing including production processes and products
- Energy production

Transportation

Key informant interviews were conducted with representatives of Sound Transit and a spokesperson for ECotality North America.

Sound Transit was created by the state legislature to build a mass transit system that connects major regional job and housing centers in King, Pierce and Snohomish counties. Sound Transit carries more than 18 million riders a year on trains and buses. ST Express buses connect the region's major job and population centers. Sounder commuter trains run 74 miles between Everett and Tacoma. Tacoma Link light rail runs in downtown Tacoma and Link light rail runs between downtown Seattle and SeaTac Airport.

ECotality North America is a leading provider of infrastructure for on-road electric vehicles and plug-in hybrid electric vehicles. Working with major automotive manufacturers, national utilities, international research institutes and the U.S. Department of Energy (DoE) for its Advanced Vehicle Testing Activity (AVTA) program, ECotality North America has been involved in every North American EV initiative to date.

ECotality is expecting to install 2,000 electric vehicle charging stations in the Central Puget Sound. This will lead to 46 "new jobs," but they expect that 40 of them will be existing licensed electrical contractors who will be contracted with to do the installations. Should the company reach the 2,000 installation goal, they will hire up to six staff members to do project management work. The number of installations, and thus the number of jobs created or supported, will be dependent on the number of people who purchase electric vehicles and plug-in hybrid electric vehicles. Such vehicles will not be available until late 2010 and in late July 2010 Chevrolet announced that its plug-in vehicle, the Volt, will retail for a base of \$41,000. The Nissan Leaf has a suggested retail price of nearly \$33,000. There will be rebates of up to \$7,500 per vehicle which will reduce the cost of acquisition.

In terms of Sound Transit, while people will continue to be employed to complete the light rail construction through Seattle, the work they will do is traditional civil engineering and infrastructure construction work that in-and-of itself will not be "green" beyond what was

done in the initial construction phases related to environmental mitigation. Sound Transit anticipates that there will be little to no additional jobs created beyond the people who are currently working on constructing the system. The potential new job growth will come when the line to the University District is completed in 2016 and additional personnel will be needed to drive the trains.

Both of the transportation sector respondents identified two factors that would be necessary for future growth in green jobs:

- Overall economic recovery
 - For electrical vehicles this would lead to increased demand by individuals, and corporate and government fleet managers. Fleet managers are especially unlikely to adopt electrical vehicle (ECOtality expects only 5% of users of their charging stations to be fleets) while public sector budgets and corporate profits are constrained.
 - For Sound Transit an economic recovery might lead to additional tax revenues that could fund additional infrastructure spending
- Increased government incentives
 - To increase adoption of the use of electrical vehicles governments will need to stimulate their purchase through either tax incentives or regulation in order to generate substantial new jobs in this region
 - For major infrastructure projects actions such as increasing gasoline taxes or adding tolls would provide incentives to individuals to choose public transportation which could lead to additional investments in this area

There appears to be little potential for new job creation in the transportation industry in this region until there is a significant upswing in the overall economy. When jobs are created they will not require “green-specific” skills but rather tradition skills that lead to green behavior by residents of this region.

Manufacturing

The BEDC conducted three key informant interviews within the manufacturing sector. We interviewed representatives of the Center for Advanced Manufacturing Puget Sound (CAMPS); Greenbridge International; and Kvichak Marine Industries.

CAMPS is a resource center that supports its members' success through innovation, supply chain positioning, and business development. Greenbridge International, LLC (Greenbridge) offers ISO 14001 Environmental Management System (EMS) training services to manufacturers throughout the United States and internationally. Kvichak Marine has been recognized as a worldwide leader in the design and construction of high quality, hardworking aluminum vessels for the last 20 years. They received the first annual Manufacturer of the Year Award (large company category) from Seattle Business Magazine in 2010.

As new government regulation has come on line, Kvichak Marine has been able to grab market share which has led to new hires. The main driver of environmental innovation in the boat and ship building industry is federal (EPA) or local regulations related to reducing carbon footprint. The EPA is implementing a 4-Tier Marine Emissions Regulation system. Currently, vessels are mandated to perform at a Tier 2 level while Kvichak Marine is producing vessels that are just shy of the Tier 4 standards (they expect to be able to produce Tier 4 standard vessels by the end of this year) which are not mandated to go into effect until 2014. By moving more quickly than other firms they have been able to win projects from ports around the world that they would not have otherwise won.

Likewise, in other manufacturing arenas the adoption of government standards or goals and goals set by major manufactures such as Boeing are driving the development of green manufacturing processes and green products through their supply chain. ISO 14001 is the internationally recognized environmental management system and is equivalent to the ISO 9001 quality management system. Large US manufacturers are moving toward adopting these systems with their own production facilities and in the next year or two will begin to drive the adoption of this standard through their supply chain. While not likely to produce net new jobs the adoption of these standards, according to both Greenbridge International and CAMPS, will transform existing jobs into “green jobs.”

The driver of green job creation in manufacturing is the overall health of the economy. As the economy improves there will be increased demand for products and the companies have been able to reduce costs through reducing waste and those that can help end-users reduce their carbon footprint will be those that grow and create new jobs.

Energy Production

Key informant interviews were conducted with contacts at Puget Sound Energy (PSE) and Seattle City Light.

Puget Sound Energy is Washington's oldest local energy utility, serving more than 1 million electric customers and nearly 750,000 natural gas customers, primarily in the Puget Sound region. Seattle City Light was created by the citizens of Seattle in 1902. As a municipally owned public power system, Seattle City Light is governed by elected Seattle officials and primarily supported by customer revenues as well as surplus power sales. Seattle City Light provides electric power to approximately 395,000 customers in Seattle and neighboring suburbs. It is the ninth-largest public power system in the United States.

As more and more power is being produced through solar and wind power in addition to the hydropower it is difficult to accurately describe which jobs are green and which are not. The “purest” green jobs, from PSE’s perspective are those in the Energy Efficiency Services division and from Seattle City Light’s perspective are those in the Energy Conservation Division. Since both of these institutions have green jobs disbursed throughout the organization as well as highly concentrated in one division, the BEDC conducted two key informant interviews with two people at each institution. This allowed us to get both a broad perspective across each company and a deeper analysis in the division that is most clearly the producer of green jobs.

There has been some steady growth within PSE’s Energy Efficiency Services division (5-8 employees each year) but there is little expected growth going forward. There will be some additional growth in call-center positions to respond to customer needs with a significant portion of these responding to requests for information on energy efficiency. Outside of these new jobs PSE will have more employees working on projects that could be called green such as the work done by energy management engineers but this is work that had already been done within PSE. So while employees will be performing different tasks this will not result in a net creation of new jobs. Likewise, while employees continue to string transmission lines that will increasingly carry energy produced by solar or wind farms, there won’t be any strung that wouldn’t have been strung otherwise and the skills needed will be the same regardless of what source produces the power.

Overall, Seattle City Light anticipates hiring few if any new staff in large part because of the economy and the desire to control costs. This continues the trend over the last two years. While some minimal new jobs have been added and may be added in the future across City Light divisions, these are only for positions that are deemed critical for business operations. That said, in 2007 Seattle City Light set targets for energy savings and this will require 91 FTEs up from the current 72 in the Energy Conservation Division. While the Seattle City Council has the final say in determining the timing of these new hires when they pass the next city budget, City Light is expecting to meet its targets set three years ago. The positions in this department often require an undergraduate degree and in the future

will likely be concentrated in marketing, communication, and creating a conservation infrastructure through planners, evaluators, and program managers.

City Light and PSE have seen an increase in demand for evaluating energy consumption by business customers. City Light, for example, has a target of increasing energy savings among business clients by 50% and they are meeting these targets. PSE attributes a good bit of this increased demand to federal stimulus money supporting such work. The increase in demand for energy efficiency reviews and audits is the first step toward a company or homeowner hiring a contractor to implement the improvements. At this time, PSE and City Light have not estimated the number of new jobs that are being created in the green building sector from homeowners and businesses implementing the recommendations from the efficiency reviews.

Other energy production jobs in Washington will come from the construction of new wind and solar farms. These developments, however, are not expected to impact job creation in King County for two reasons:

- (1) Most of these facilities will be constructed outside of Western Washington
- (2) The typical construction period is less than a year and once they are operational there are fewer than 10 people required to manager these new facilities

Both PSE and Seattle City Light hire people with a range of skills from skilled trades to engineers with masters' degrees. Employees are recruited from community and technical colleges and four-year institutions, primarily.

In Energy Production, green-specific skills needed are in engineering positions, call center jobs to provide customer information, community education positions related to energy conservation, and positions that audit energy use and recommend conservation measures.

APPENDIX A

Research Methodology

The BEDC contracted data collection with Washington State University's Social and Economic Sciences Research Center (SESRC). The sampling frame for this survey came from two sources:

- The first source was a sample of minority owned small businesses located in King County, taken from a survey conducted for the University of Washington Foster School of Business in spring 2010. This sample was screened to include only those that are in one of the three industry clusters for this study. A total of 62 of the 490 businesses in that study were selected for the present study.
- The second source was samples of businesses purchased from Dunn & Bradstreet. The sample specification indicated that businesses had to be located in King County, and had to have one of the following SIC codes:
 - Green Building
 - NAICS codes = 2332, 2333, 235
 - SIC codes = 1521, 1522, 1531, 1541, 1542, 1711 thru 1799
 - Environment
 - NAICS codes = 562910, 541620, 541330, 2213 (water & sewage)
 - SIC codes = 1799, 4959, 4953, 8711, 4941, 4971, 4952, 4961
 - Energy distribution/smart grid
 - NAICS codes = 237130, 23492, 221 (utilities except water & sewage)
 - SIC codes = 4911 thru 4939, 1623

A total of 1,646 businesses were included in the sample set for this survey (600 were in the green building cluster, 600 were environment cluster, and 446 were in the energy distribution cluster). The calling on the full study commenced on June 17, 2010 and calling was completed on July 30, 2010.

Approximately 4,900 calls were made during the calling period in order to obtain the 206 interviews/questionnaires. A total of 194 interviews were completed. The average length for a completed interview was 15 minutes. Interviewers made an average of 27 calls per hour during the calling period. Approximately one interview was completed per hour.

In July, the BEDC and WDC requested SESRC to re-contact some businesses to ask two additional questions. SESRC staff re-contacted 62 businesses between July 12 and July 19 to obtain responses to these questions, which are included in the full survey dataset.

The overall response rate was 20% which yields an overall sample error of +/- 7%.

Due to the concentration of employment in two industry sectors two key informant interviews were conducted in each of the following sectors:

- Manufacturing/Industry including production processes and products
- Energy Production (renewable energy and alternative energy)
- Transportation including public transportation and fuel-efficient vehicles

Finally, to better understand some of the issues in the Green Building and Environment clusters two additional key informant interviews were conducted.

APPENDIX B

Survey Questions

1. What is the firm's primary line of business?
2. How many full-time employees do you have that are employed to work 40 plus hours per week in King, Pierce, Snohomish, or Kitsap Counties?
3. How many part-time employees do you have that are employed to work less than 40 hours per week in King, Pierce, Snohomish, or Kitsap Counties?
4. What was your approximate gross revenue or sales in the last completed fiscal year?
5. What percentage of your company's revenue has come from the sale of environmentally friendly products or services in the last year?
6. What are the prospects for your business over the next year?
7. Thinking about the sales of green products or services in your industry, what do you estimate will be the percent change in these sales over the next twelve months?
8. Thinking about the demand for new green jobs in your industry, what do you estimate will be the percent change in demand over the next twelve months?
9. Does your firm expect to hire any employees for green jobs in the next 12 months?
10. Which types of employees does your firm expect to hire the most in the next 12 months?
11. In the next year does your firm expect to increase or decrease the total number of employees, or will the number of employees stay about the same?
12. In your opinion, what percent of this change in the total number of employees can be attributed to the green economy?
13. When you look to improve the green skills of your employees, where do you mostly look for training?
14. When you look to hire new people with green skills where do you mostly look to find them?
15. Over the next year, which types of jobs that relate to the green economy will be most in demand for your company?

16. What are the top three green related jobs your firm fills with entry level candidates?
17. If there is an increase in demand related to the green economy, how will you mainly meet this demand?
18. Do your current employees have all of the skills they need to meet the demands of the green economy?
19. Do you expect your current workers to receive skills training?
20. What types of skills training do you expect your current workers to get?
21. Which skills are most needed by your employees?
22. Are there any other skills or knowledge sets related to green jobs that are most needed by your employees?
23. Which green training programs are most needed at local two and four-year colleges?
24. What type of green training is most needed on-the-job?
25. What would make your company more competitive in the green economy?

APPENDIX C

Project Sponsors

The Workforce Development Council of Seattle-King County (WDC) is a nonprofit workforce “think tank” and grant-making organization whose mission is to support a strong economy and ensure the ability of each person to achieve self-sufficiency.

Established in 2000 by the King County Executive and the Mayor of Seattle, the WDC is led by a board of directors with a private-sector majority. We oversee a wide range of employment-related programs and initiatives, serving thousands of King County youth, adults and businesses each year.

The Business and Economic Development Center (BEDC) at the Michael G. Foster School of Business at the University of Washington links students, faculty, and staff from the Foster School of Business with a racially and ethnically diverse business and nonprofit community to expand students' knowledge and skills, help small businesses grow, create and retain jobs, open educational opportunities for under-represented minority students, and stimulate innovative economic development research.

The University of Washington is one of the nation’s leading research universities and the Foster School of Business is a significant contributor to this research quality.

The BEDC has the largest group of faculty at any business school in the US that focuses on issues of diversity in business. Headed by William Bradford, the Endowed Professor of Business and Economic Development, this research team includes faculty in the disciplines of management, entrepreneurship, finance, and marketing.

Michael Verchot is the founding director of the University of Washington’s Business & Economic Development Center (BEDC) and a Lecturer in the Marketing and International Business Department at the Michael G. Foster School of Business.

Morela Hernandez, Ph.D., is an assistant professor of Management at the Michael G. Foster School of Business. She received her Ph.D. from Duke. She has been a leadership development coach at the Foster School, Duke University, and the London Business School.

© 2010

Workforce Development Council of Seattle-King County
2003 Western Ave Ste 250
Seattle WA 98121-2162
206.448.0474

The WDC is an Equal Opportunity Employer and provider of employment and training programs
Auxiliary aids and services available upon request to persons with disabilities · WTRS 800.833.6384 or 711

