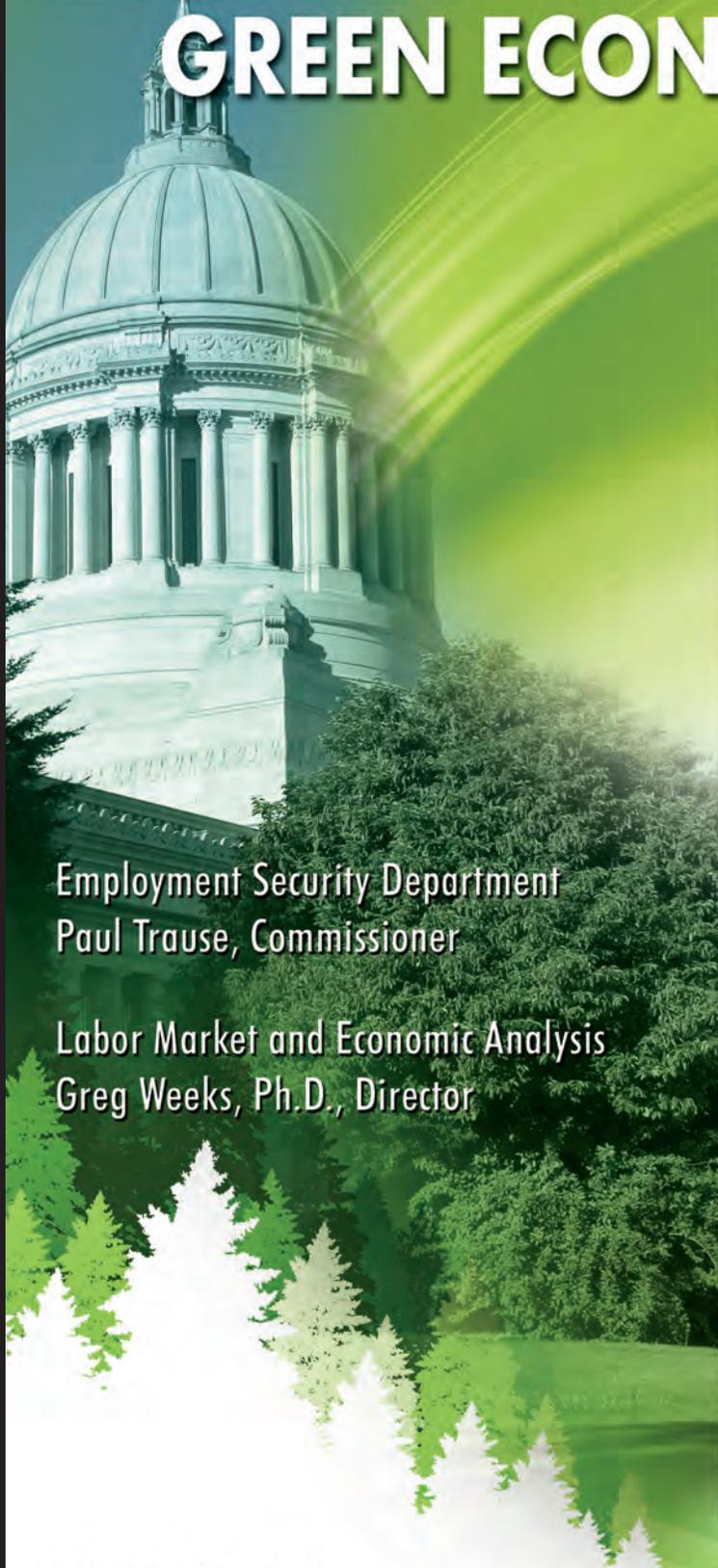


2009 WASHINGTON STATE GREEN ECONOMY JOBS Addendum



Employment Security Department
Paul Trause, Commissioner

Labor Market and Economic Analysis
Greg Weeks, Ph.D., Director

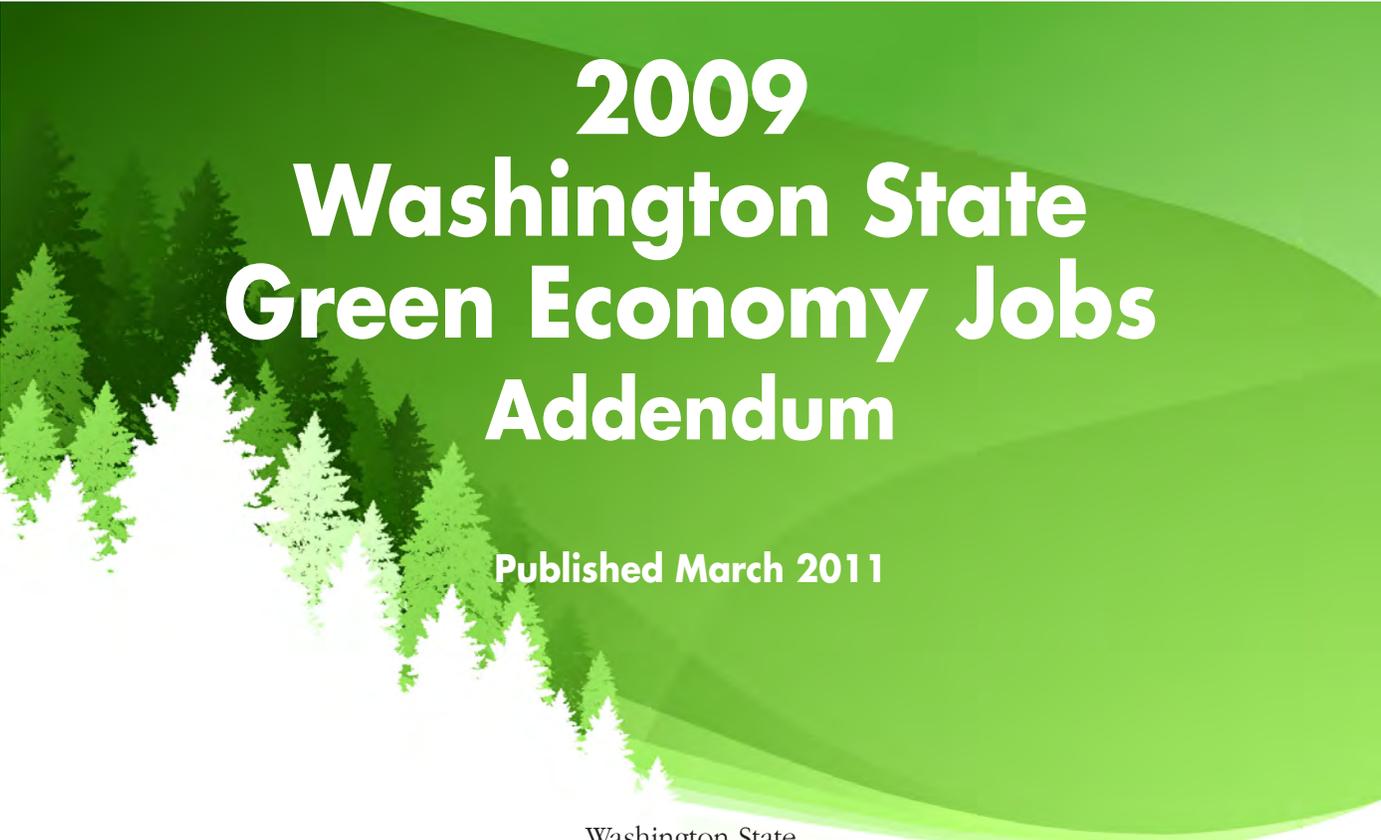


**Washington State
Employment Security Department**

Labor Market and Economic Analysis

March 2011





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This report has been prepared in accordance with:
Engrossed Second Substitute House Bill 2227 – 2009 Regular Session
Substitute House Bill 2420 – 2010 Regular Session

This report and other labor market information are available at www.workforceexplorer.com.

Employment Security Department Labor Market Information Center 800-215-1617

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2009 Washington State Green Economy Jobs Addendum

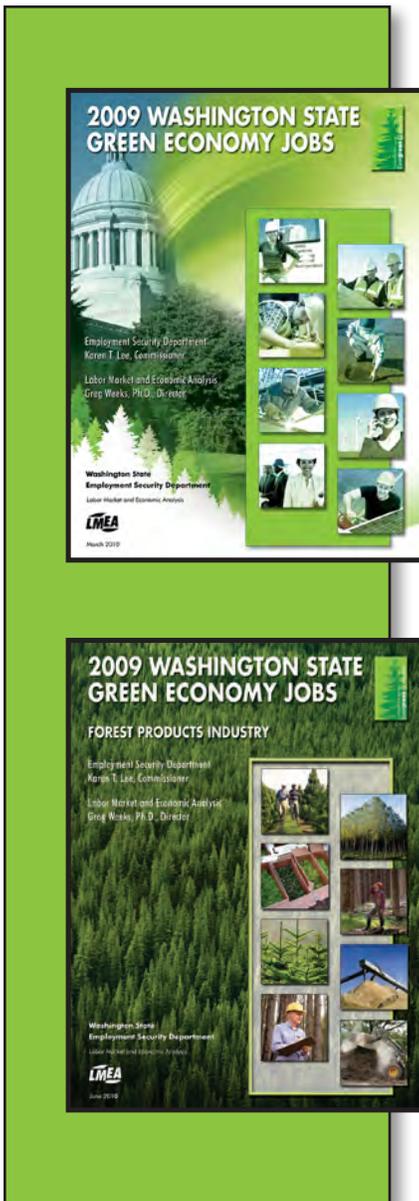
High Demand Industries Current and Projected Recruitment Job Skills

Engrossed Second Substitute House Bill 2227¹, passed in 2009, and Substitute House Bill 2420², passed in 2010, directed the Washington State Employment Security Department to conduct labor market research to analyze green economy jobs in Washington. In response, Employment Security published the *2009 Washington State Green Economy Jobs* report³ and the *2009 Washington State Green Economy Jobs – Forest Products Industry* report.⁴

This addendum addresses three topics not covered in the original reports:

- Proposing which industries should be considered high demand.
- Current and projected recruitment.
- Skill requirements of the green economy.

Information in this report is presented for each of these three topics first for all industries, and then specifically for the forest products industry. Additional information about family-sustaining wages and benefits from the *2009 Washington State Green Economy Jobs* report is also included in this addendum.



¹ Chapter 536, Laws of 2009

² Chapter 187, Laws of 2010

³ This report is available online at: www.workforceexplorer.com/admin/uploadedPublications/10258_Green_Jobs_Report_for_Web_2009.pdf.

⁴ This report is available online at: www.workforceexplorer.com/admin/uploadedPublications/10468_Green_Jobs_ForestProducts_09Wex.pdf.

Green Economy Jobs

High demand green industries

For the period between 2008 and 2018, 15 industries in Washington state are projected to have above average growth rates and significant green presence (more than 250 estimated green jobs in 2009). Electronic equipment manufacturing tops the list with a 10-year annual projected growth rate of 4.2 percent, compared to 0.9 percent estimated annual growth rate⁵ for all industries.

Exhibit 1 lists the top 15 green economy industries with projected high growth in Washington.

Exhibit 1. Top 15 High Growth Potential Green Industries Washington State, 2009

Source: Employment Security Department/LMEA, 2009 Washington State Green Economy Jobs Report

NAICS	INDUSTRY TITLE	2009 ESTIMATED GREEN JOBS	2008-2018 AVERAGE ANNUAL GROWTH
3353	Electrical Equipment Manufacturing	1,429	4.2%
5416	Management and Technical Consulting Services	1,216	3.0%
5617	Services to Buildings and Dwellings	6,771	2.9%
5112	Software Publishers	476	2.9%
5621	Waste Collection	1,025	2.7%
5629	Remediation and Other Waste Services	3,284	2.5%
5417	Scientific Research and Development Services	2,202	2.2%
5413	Architectural and Engineering Services	7,949	1.7%
4251	Electronic Markets and Agents and Brokers	2,575	1.6%
2213	Water, Sewage and Other Systems	363	1.4%
4247	Petroleum Merchant Wholesalers	490	1.2%
6111	Elementary and Secondary Schools	1,852	1.1%
6113	Colleges and Universities	755	1.1%
6112	Community Colleges	581	1.1%
4234	Commercial Equipment Merchant Wholesalers	306	1.0%

List is sorted by projected growth and only includes industries with more than 250 estimated green jobs in 2009. For the educational industries, 6111, 6112 and 6113, the growth rate is for the entire aggregated education sector.



Photo by ©iStock/BartCo

Between 2008 and 2018, 15 industries in Washington are projected to have above average growth and significant green presence.



Photo by ©iStock/gerenme

⁵ 2008 to 2018 growth projections are from the 2010 Washington State Labor Market and Economic Report, published by the Employment Security Department.

Current and projected green jobs recruitment

Using data from the Spring 2010 Job Vacancy Survey report⁶ and occupational projections, we can gauge current and future needs for workers in various occupations in Washington state. *Exhibit 2* identifies the top 25 occupations with green jobs showing the most growth potential between 2008 and 2018.

Market research analysts, while having relatively few green jobs (104), is the occupation with the highest projected growth rate, followed by landscapers and groundskeeping workers, and radiologic technolo-

Exhibit 2. Top 25 Washington State Green Jobs in Terms of Potential Job Growth Washington State, 2009

Source: Employment Security Department/LMEA, 2009 Washington State
Green Economy Jobs Report, Spring 2010 Job Vacancy Survey Report

SOC	OCCUPATION TITLE	ESTIMATED GREEN JOBS 2009	SPRING 2010 VACANCIES	PERCENT OPEN BEYOND 60 DAYS	2008-2018 AVERAGE ANNUAL GROWTH
193021	Market Research Analysts	104	0	0%	2.4%
373011	Landscaping and Groundskeeping Workers	1,099	153	38%	2.4%
292034	Radiologic Technologists and Technicians	417	69	28%	2.2%
474041	Hazardous Materials Removal Workers	719	8	0%	2.2%
537081	Refuse and Recyclable Material Collectors	375	37	0%	2.2%
339021	Private Detectives and Investigators	153	0	0%	2.0%
151032	Computer Software Engineers, Systems Software	287	1,929	23%	1.9%
151031	Computer Software Engineers, Applications	138	448	14%	1.9%
273042	Technical Writers	148	15	13%	1.7%
372011	Janitors and Cleaners	486	268	10%	1.6%
192042	Geoscientists, Except Hydrologists and Geographers	228	5	100%	1.6%
194091	Environmental Science and Protection Tech.	1,074	11	9%	1.5%
172051	Civil Engineers	5,772	74	6%	1.5%
119151	Social and Community Service Managers	156	75	0%	1.4%
171012	Landscape Architects	122	3	0%	1.4%
192041	Environmental Scientists and Specialists	2,222	0	0%	1.4%
151041	Computer Support Specialists	366	179	16%	1.4%
171022	Surveyors	205	0	0%	1.2%
151051	Computer Systems Analysts	139	212	12%	1.2%
193091	Anthropologists and Archeologists	100	3	0%	1.2%
192031	Chemists	246	18	30%	1.2%
192043	Hydrologists	156	0	0%	1.2%
171011	Architects, Except Landscape and Naval	2,232	13	0%	1.2%
119121	Natural Sciences Managers	108	0	0%	1.2%
537062	Laborers and Freight, Stock and Material Movers	616	262	11%	1.1%

List produced by sorting on 10-year growth and filtering out occupations with 100 or fewer green jobs.

⁶ Published by the Employment Security Department. The survey is available online at: www.workforceexplorer.com/admin/uploadedPublications/10467_JVSApril_2010Rep.pdf.

gists and technicians. Among these three occupations, employers had the most difficulty recruiting for landscapers and groundskeeping workers – 38 percent of positions were vacant for more than 60 days.

Employers reported having the most difficulty filling positions for computer software engineers. In spring 2010, there were 1,929 vacancies for systems software engineers and 448 vacancies for software applications engineers.

Skill requirements of the green economy

The most important skills for the top 25 green occupations are listed in *Exhibit 3*. Critical thinking, science and complex problem solving are among the skills required for many of these occupations.⁷

Exhibit 3. Most Important Skills for Top Green Jobs

Washington State, 2009

Source: Employment Security Department/LMEA, 2009 *Washington State Green Economy Jobs Report*, online.onetcenter.org

SOC	OCCUPATION TITLE	FIRST SKILL	SECOND SKILL	THIRD SKILL
119121	Natural Sciences Managers	Science	Critical Thinking	Reading Comprehension
119151	Social and Community Service Managers	Active Listening	Speaking	Social Perceptiveness
151031	Computer Software Engineers, Applications	Programming	Critical Thinking	Complex Problem Solving
151032	Computer Software Engineers, Sys. Software	Complex Problem Solving	Technology Design	Troubleshooting
151041	Computer Support Specialists	Active Listening	Speaking	Reading Comprehension
151051	Computer Systems Analysts	Active Learning	Reading Comprehension	Complex Problem Solving
171011	Architects, Except Landscape and Naval	Active Listening	Critical Thinking	Complex Problem Solving
171012	Landscape Architects	Time Management	Coordination	Active Listening
171022	Surveyors	Reading Comprehension	Mathematics	Writing
172051	Civil Engineers	Mathematics	Critical Thinking	Complex Problem Solving
192031	Chemists	Science	Complex Problem Solving	Reading Comprehension
192041	Environmental Scientists and Specialists	Reading Comprehension	Speaking	Critical Thinking
192042	Geoscientists	Reading Comprehension	Active Listening	Speaking
192043	Hydrologists	Science	Reading Comprehension	Writing
193021	Market Research Analysts	Reading Comprehension	Time Management	Writing
*193091	Anthropologists and Archeologists	Science	Reading Comprehension	Critical Thinking
194091	Environmental Science and Protection Techs	Reading Comprehension	Active Listening	Writing
273042	Technical Writers	Reading Comprehension	Writing	Time Management
*292034	Radiologic Technologists and Technicians	Speaking	Active Listening	Operation and Control
339021	Private Detectives and Investigators	Active Listening	Writing	Critical Thinking
372011	Janitors and Cleaners	Reading Comprehension	Active Listening	Speaking
373011	Landscaping and Groundskeeping Workers	Equipment Maintenance	Active Listening	Speaking
474041	Hazardous Materials Removal Workers	Operation Monitoring	Active Listening	Critical Thinking
537062	Laborers and Freight, Stock, Material Movers	Active Listening	Reading Comprehension	Instructing
537081	Refuse and Recyclable Material Collectors	Active Listening	Coordination	Equipment Maintenance

*The skill ranking was determined by a matching the combined O*NET detailed skill ranking by importance from the top six skills from both O*NET codes 19-3091.01; 19-3091.02 and 29-2034.01; 29-3091.02.*

⁷ Education and training requirements for these occupations are listed in Table 10 of the 2009 *Washington State Green Economy Jobs* report. The report is available online at: www.workforceexplorer.com/admin/uploadedPublications/10258_Green_Jobs_Report_for_Web_2009.pdf.

Green Economy Jobs in the Forest Products Industry

High demand green forest products industries

Industry projections for 2008 to 2018 show the top five forest products industries with green jobs will grow slower than the state average of .09 percent, and four of the five industries are projected to contract (*Exhibit 4*). This negative projected growth rate makes identifying high demand forest products industries challenging.

Though the growth rates are low, two of these industries could be strategically targeted because they show stronger growth relative to the other three industries. Support activities for forestry was the only green industry to see positive projected growth, adding an average 0.4 percent to its employment base annually over the 10-year projection period. Sawmills could also be considered strategic as it has the largest estimated green employment, and annual projected employment losses are as high as the other three industries combined.

Exhibit 4. Top 5 Forest Products Industry High Growth Potential Green Industries

Washington State, 2009

Source: Employment Security Department/LMEA, 2009 Washington State Green Economy Jobs Report

NAICS	INDUSTRY TITLE	2009 ESTIMATED GREEN JOBS	2008-2018 AVERAGE ANNUAL GROWTH
115310	Support Activities for Forestry	283	0.4%
321113	Sawmills	482	-1.1%
113310	Logging	321	-1.6%
321920	Wood Container and Pallet Manufacturing	151	-1.8%
321999	All Other Misc. Wood Product Manufacturing	49	-1.8%



Projections for 2008 to 2018 show the top five forest products industries with green jobs will grow slower than the state average.



Photo by ©iStock/Ligonography

Current and projected green jobs recruitment in the forest products industry

Using data from the Spring 2010 Job Vacancy Survey report and occupational projections, we can gauge current and future needs for workers in the forest products industry in Washington state. Janitors and cleaners and production workers were the two occupations with green jobs showing the highest projected growth.

Based on the amount of time positions remained vacant, three occupations in the forest products industry showed signs of being difficult to fill: truck drivers, heavy and tractor-trailer; water and liquid waste treatment plant and system operators; and carpenters. Vacancies in each of these occupations were more likely to be open for more than 60 days.

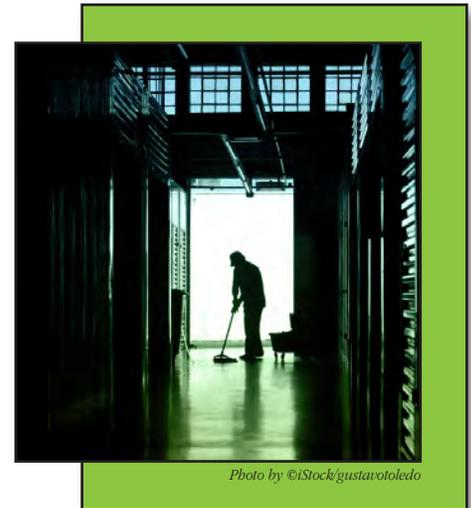


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Exhibit 5. Top 10 Washington State Green Jobs in the Forest Products Industry in Terms of Potential Job Growth Washington State, 2009

Source: Employment Security Department/LMEA, 2009 Washington State Green Economy Jobs Report

SOC	OCCUPATION TITLE	ESTIMATED FOREST PRODUCTS GREEN JOBS 2009	SPRING 2010 VACANCIES	PERCENT OPEN BEYOND 60 DAYS	2008-2018 AVERAGE ANNUAL GROWTH
372011	Janitors and Cleaners	35	268	10.0%	1.6%
519199	Production Workers, All Other	125	277	10.0%	1.0%
332011	Fire Fighters	30	5	0.0%	0.8%
518031	Water and Liquid Waste Treatment Plant and System Operators	30	12	66.0%	0.8%
533032	Truck Drivers, Heavy and Tractor-Trailer	56	226	69.0%	0.5%
191031	Foresters	89	0	0.0%	0.1%
472073	Operating Engineers and Other Construction Equip. Operators	122	3	0.0%	0.0%
517041	Sawing Machine Setters, Operators and Tenders, Wood	88	5	0.0%	-0.4%
454011	Forest and Conservation Workers	143	0	0.0%	-0.9%
472031	Carpenters	23	77	33.0%	-0.9%

Skill requirements of the green economy in the forest products industry

Skill sets are available for nine of the top 10 green forest product industry occupations. As shown in *Exhibit 6*, active listening is the most common skill requirement, necessary in nine of the 10 occupations. Equipment maintenance and equipment selection were skills common to five of the 10 occupations with green jobs in the forest products industry.⁸

Exhibit 6. Most Important Skills for Top Green Jobs in the Forest Products Industry Washington State, 2009

Source: Employment Security Department/LMEA, *2009 Washington State Green Economy Jobs Report*, online.onetcenter.org

SOC	OCCUPATION TITLE	FIRST SKILL	SECOND SKILL	THIRD SKILL
191031	Foresters	Time Management	Coordination	Science
332011	Fire Fighters	Equipment Maintenance	Active Listening	Judgment and Decision Making
372011	Janitors and Cleaners	Reading Comprehension	Active Listening	Speaking
454011	Forest and Conservation Workers	Equipment Selection	Active Listening	Coordination
472031	Carpenters	Mathematics	Time Management	Critical Thinking
472073	Operating Engineers and Other Construction Equipment Operators	Active Listening	Equipment Maintenance	Equipment Selection
517041	Sawing Machine Setters, Operators and Tenders, Wood	Operation and Control	Equipment Maintenance	Operation Monitoring
518031	Water and Liquid Waste Treatment Plant and System Operators	Reading Comprehension	Operation and Control	Troubleshooting
519199	Productions Workers, All Other	Skills data NOT available on O*NET		
533032	Truck Drivers, Heavy and Tractor-Trailer	Equipment Maintenance	Active Listening	Time Management

The skill ranking was determined by a matching the combined ONET detailed skill ranking by importance from the top six skills from both ONET codes 19-3091.01; 19-3091.02 and 29-2034.01; 29-3091.02.

⁸ Education and training requirements for these occupations are listed in Table 4 of the *2009 Washington State Green Economy Jobs – Forest Products Industry* report. The report is available online at: www.workforceexplorer.com/admin/uploadedPublications/10468_Green_Jobs_ForestProducts_09Wex.pdf.

Family-sustaining Wages and Benefits

Occupations with green jobs have a wide range of earnings, from a low of \$33,309 for construction laborers to a high of \$102,417 for construction managers. Most occupations, including green jobs, are between these two extremes. Benefits data are not available at the occupation level.

Exhibit 7 shows the distribution of statewide median annual earnings for the top 25 occupations with private- and public-sector green jobs.⁹ The large employment numbers and associated earnings for these occupations suggest that green jobs provide considerable economic benefits to citizens and the state. The top 25 green occupations account for more than an estimated \$3.5 billion in average annual earnings. Estimated annual earnings for all green jobs are \$5.1 billion.

As shown, median annual earnings are generally highest for professional or technical occupations requiring long-term, post-secondary education and degrees. Managers, all other, command the highest median earnings at \$102,417, and engineers and architects account for the second-highest earnings level (\$71,000 to \$85,000) among the top 25 occupations.

The next tier of earnings includes a variety of skilled-trades jobs, such as carpenters, electricians and operating engineers. As a group, skilled-trades occupations related to the construction industry represent the largest employment in green jobs, with median annual earnings ranging from approximately \$40,000 to \$55,000.



Photo by ©iStock/Josh Hodge

Median annual earnings are generally highest for professional or technical occupations requiring long-term, post-secondary education and degrees.



Photo by ©iStock/Endopack

⁹ This information is from the 2009 *Washington State Green Economy Jobs* report.

Exhibit 7. Statewide Median Annual Earnings** for the Top 25 Occupations with Private- and Public-Sector Green Jobs, 2009
 Washington State, 2009
 Source: Employment Security Department/LMEA, 2009 Washington State Green Economy Jobs Report, Occupational Employment Statistics Survey

OCCUPATION TITLE	MEDIAN ANNUAL EARNINGS**	PRIVATE- AND PUBLIC-SECTOR GREEN JOBS WITHIN OCCUPATIONS
Managers, All Other*	\$102,417	2,020
Engineers, All Other*	\$94,362	1,262
Electrical Engineers	\$82,524	1,333
Environmental Engineers	\$78,251	2,057
Civil Engineers	\$75,362	5,772
Architects, except Landscape and Naval	\$71,228	2,232
Farm, Ranch and Other Agricultural Managers	\$70,231	1,206
Urban and Regional Planners	\$64,466	1,148
Environmental Scientists and Specialists, including Health	\$61,649	2,222
Electricians	\$56,961	5,467
Operating Engineers and Other Construction Equipment Operators	\$54,132	1,436
Plumbers, Pipefitters and Steamfitters	\$53,230	1,377
Heating, Air Conditioning and Refrigeration Mechanics and Installers	\$49,747	3,012
Carpenters	\$47,037	4,963
Bus Drivers, Transit and Intercity	\$43,491	4,626
Roofers	\$42,518	1,380
Truck Drivers, Heavy and Tractor-Trailer	\$40,909	2,659
Maintenance and Repair Workers, General	\$38,430	3,282
Agricultural Workers, All Other*	\$34,922	7,292
Bus Drivers, School	\$34,697	1,731
Painters, Construction and Maintenance	\$33,354	1,851
Construction Laborers	\$33,309	3,812
Production Workers, All Other*	\$26,809	1,983
Packers and Packagers, Hand	\$20,342	1,674
Retail Salespersons	N/A	1,106
Total of Private- and Public-Sector Green Jobs within Top 25 Occupations		66,901
Total of All Other Private- and Public-Sector Green Jobs, All Occupations		32,418
Total of All Private- and Public-Sector Green Jobs		99,319

*Occupational titles ending with “All Other” are considered residual and combine occupations which don’t fit into other detailed codes.

**The earnings data are derived from all occupations, not just occupations with green jobs. Estimated total wages for the top 25 occupations with green jobs are \$3.519 billion dollars and for all occupations with green jobs are \$5.133 billion dollars.

N/A - Data are not available.

Conclusion

Fifteen Washington industries with green jobs have 10-year growth projections above the state average. Electrical equipment manufacturing, management and technical consulting services and services to buildings and dwellings are projected to have the most growth. Current and projected recruitment for green jobs is highest for market research analysts, landscaping and groundskeeping workers and radiologic technologists and technicians. Employers had the most difficulty filling positions for software engineers. Critical thinking, science and complex problem solving are among the skills required for the top 25 green occupations.

For the period between 2008 and 2018, forest products industries with green employment are expected to contract 1.5 percent annually. The only forest products industry with projected growth is support activities for forestry. Occupations with the most projected growth include janitors and cleaners and production workers. Employers had the most difficulty recruiting heavy truck and tractor-trailer drivers and water and liquid waste treatment plant and system operators. Skills for green economy jobs in the forest products industry include equipment maintenance and selection and active listening.



Photo by ©iStock/WoodenDinosaur

Current and projected recruitment for green jobs is highest for:

- Market research analysts
- Landscaping and groundskeeping workers
- Radiologic technologists and technicians