

The Greening of Oregon's Workforce

Jobs, Wages, and Training

Presentation to Oregon Workforce Investment Board

June 26, 2009

Support Business & Promote Employment

www.WorkSourceOregon.org



Purpose: to determine workforce implications of green jobs.

- Responding to requests about “clean tech” and “green” from many customers, particularly the Oregon Workforce Investment Board.
- Goals:
 - Identify industries and occupations that contribute to Oregon’s green economy
 - Identify education and skill requirements for green jobs
 - Estimate green employment levels
 - Estimate green wage levels
 - Develop projections of green employment



Perhaps the hardest thing was just defining a green job ...

- Of several competing terms – e.g., green, clean tech, sustainable, and renewable – we chose “green” because it is a widely used term (e.g., WA study)
- There are competing views of “green” in Oregon, such as including high wages, benefits, and job advancement in the definition
 - We decided not to exclude low-wage jobs or those without benefits or advancement opportunities
 - We will collect wage data and track it over time



... but we did it.

- For our survey, a green job is one that provides a service or produces a product in any of the following categories:
 1. Increasing energy efficiency
 2. Producing renewable energy
 3. Preventing, reducing, or mitigating environmental degradation
 4. Cleaning up and restoring the natural environment
 5. Providing education, consulting, policy promotion, accreditation, trading and offsets, or similar services supporting any of the other categories

Note: we wanted one or more of these things to be an “essential function” of the job.



We surveyed Oregon businesses ...

- In early 2009, surveyed 10,500 employers in all industries across the state
- We asked them the following:
 - How many jobs in 2008 included green activities as an essential part of the job
 - The minimum education required for these jobs
 - The types of special training, certification, or other requirements that exist for these jobs
 - The wages associated with these jobs
 - How many of these jobs they expect to have in 2010

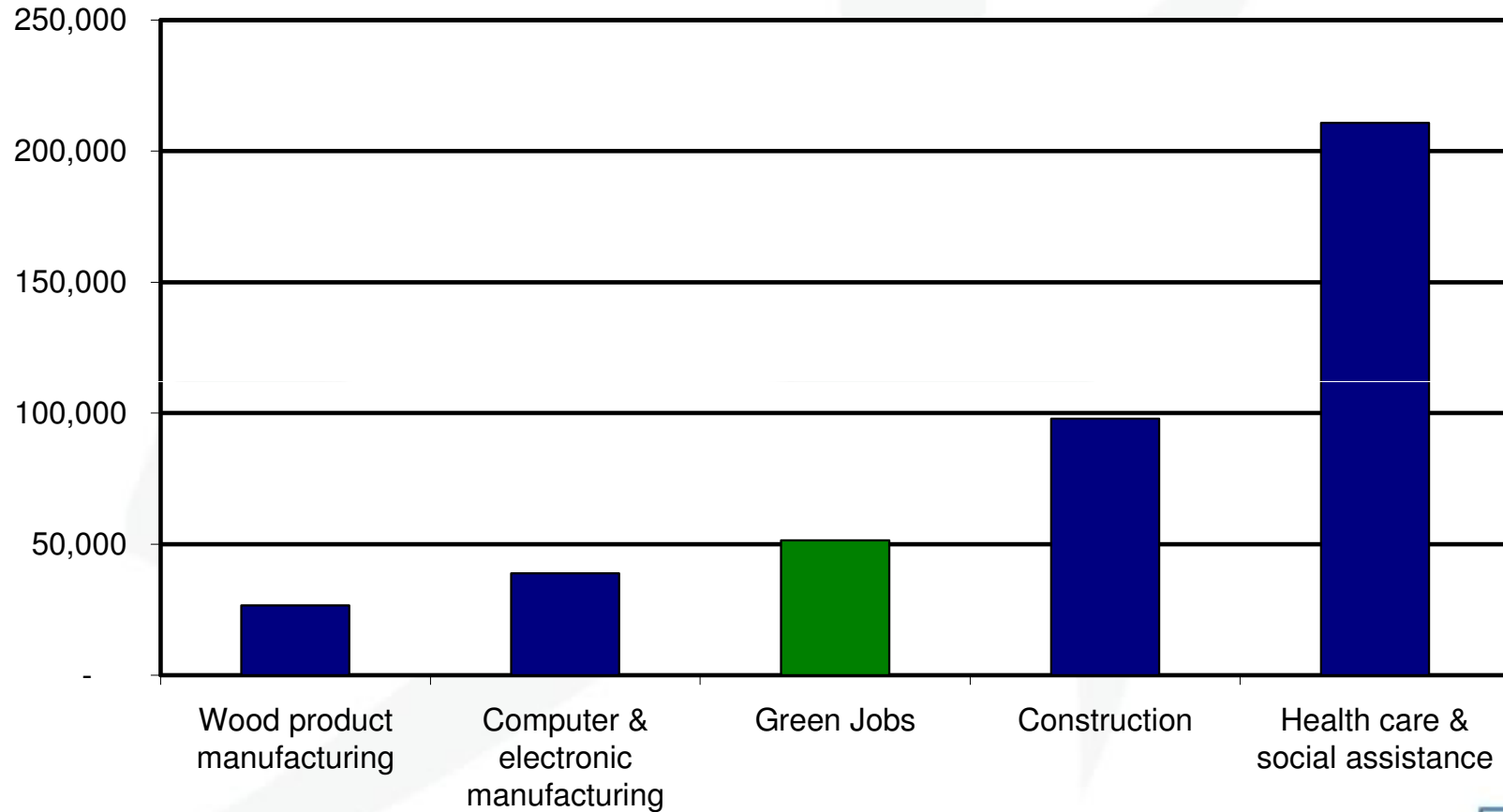


Key Finding: Oregon has roughly 50,000 green jobs.

- 51,402 green jobs in 2008, spread across...
 - 5,025 employers
 - all major industry groups
 - 226 different occupations
- Represents about 3 percent of the employment in the private sector and state and local government
- To give perspective ... this is roughly the same as the number of employees working in Oregon's private hospitals.



Oregon's Green Jobs Relative to Other Industries, 2008



Source: Oregon Employment Department, Quarterly Census of Employment and Wages (QCEW)



Construction, wholesale and retail trade, and administrative and waste services account for about half of Oregon's green jobs.

Industry	Green Jobs	Portion of All Green Jobs
Construction	8,676	17%
Wholesale and Retail Trade	8,315	16%
Administrative and Waste Services	7,074	14%
Natural Resources and Mining	5,762	11%
Professional and Technical Services	5,411	11%
State and Local Government	5,063	10%
Manufacturing	4,228	8%
Leisure and Hospitality	2,260	4%
Other Services	1,555	3%
Educational and Health Services	1,353	3%
Transportation and Warehousing	573	1%
Utilities	403	Less Than 1%
Information	354	Less Than 1%
Management of Companies and Enterprises	252	Less Than 1%
Financial Activities	123	Less Than 1%
Total	51,402	100%



Key Finding: Many green jobs are in blue collar occupations.

Occupational Group	Green Jobs	Portion of All Green Jobs
Construction and Extraction	10,381	20%
Production	6,512	13%
Farming, Fishing, and Forestry	5,838	11%
Transportation and Material Moving	5,255	10%
Architecture and Engineering	4,360	8%
Life, Physical, and Social Science	4,135	8%
Building and Grounds Cleaning and Maintenance	2,877	6%
Sales and Related	2,437	5%
Installation, Maintenance, and Repair	2,233	4%
Management	1,639	3%
Office and Administrative Support	1,570	3%
Protective Service	1,032	2%
Education, Training, and Library	790	2%
Business and Financial Operations	683	1%
Food Preparation and Serving Related	513	1%
Arts, Design, Entertainment, Sports, and Media	480	1%
Other	667	1%
Total	51,402	100%



Eleven occupations had at least 1,000 green jobs.

Top 11 Occupations with More Than 1,000 Green Jobs Examples of Green Work From the Oregon Green Jobs Survey

Occupation	Selected Green Job Description and Employer
Carpenters (4,025 jobs)	"home weatherization" - local community action center "energy efficiency construction" - temp agency
Farmworkers and Laborers (3,189 jobs)	"herbsman" - 100% organic dairy "Assistant grower" - organic nursery
Truck Drivers (2,337 jobs)	"compost truck driver" - waste management company "truck drivers" - biomass company
Hazardous Materials Removal Workers (2,123 jobs)	"asbestos abatement worker" - remediation business "special waste technician" - at county waste center
Landscaping and Groundskeeping Workers (2,044 jobs)	"riparian crew leader" - local watershed restoration "restoration of native plants" - forestry consulting firm
Civil Engineers (1,889 jobs)	"civil inspector" - wind energy firm "LEED AP Project Engineer" - construction company
Production Workers (1,728 jobs)	"paper machine tender" - mill making 100% recycled paper "processing recycling" - oil recycler
Freight, Stock, and Material Movers (1,628 jobs)	"sorter" - recycling company "auto parts dismantler" - auto salvage yard
Retail Salespersons (1,149 jobs)	"sells systems, customer care" - solar panel retailer "retail manager" - organic nursery
Biological Technicians (1,115 jobs)	"Coho life cycle monitoring" - local watershed "fisheries technician" - tribal government
Fire Fighters (1,021 jobs)	"rehab after fires, forest hazard fuel reduction" - environmental consulting firm



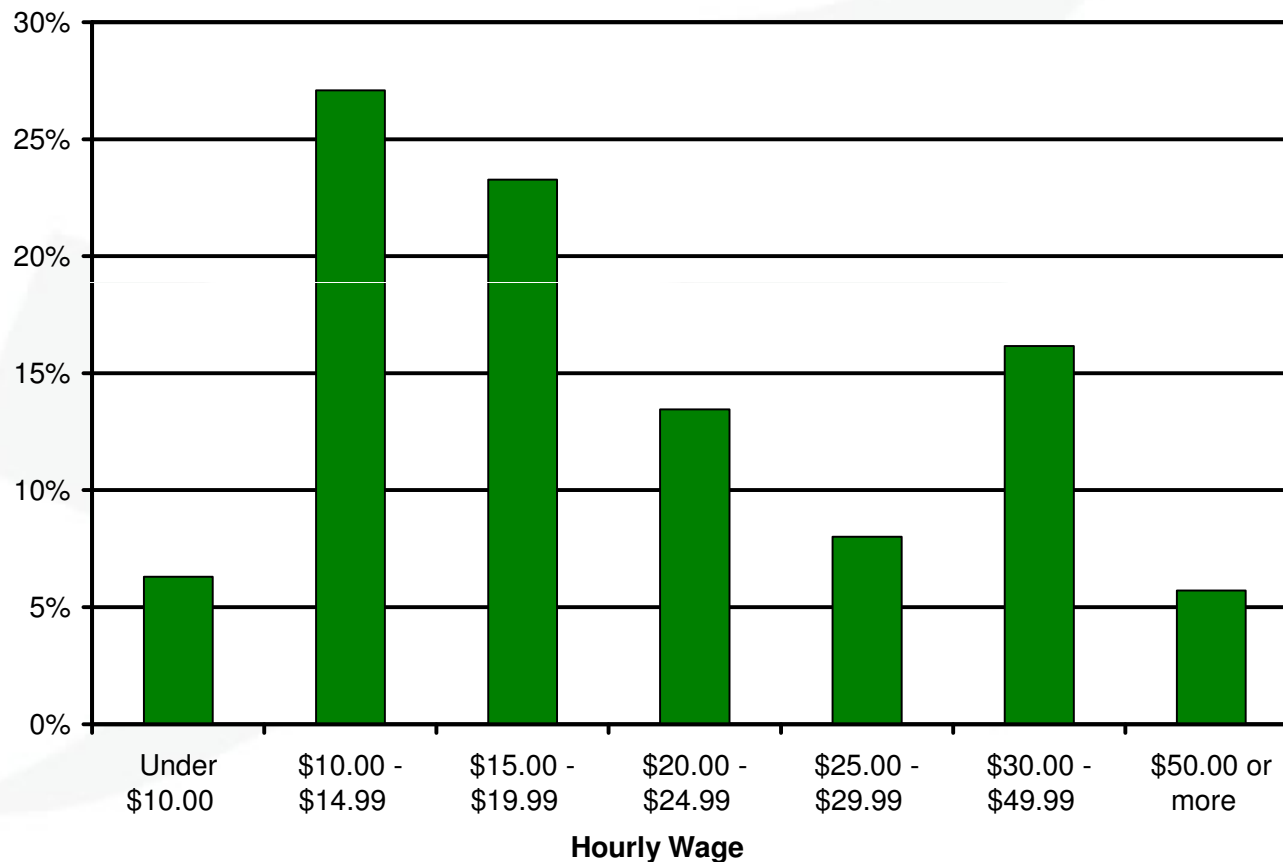
You haven't mentioned solar panel installers or wind turbine technicians!

- Currently no standard occupation code for solar panel installers or wind turbine technicians, thus...
- Solar panel installers
 - Electricians if working with photovoltaic panels
 - Plumbers if installing solar thermal units
 - Otherwise construction laborers or related workers
- Wind turbine technicians
 - Usually coded as installation, maintenance, and repair workers...
 - But could be electricians or engineers



Green wage levels are spread across a wide spectrum, just like wages of all jobs.

Percent of Green Jobs by Wage Group



But very few green jobs pay very low wages ...

Percent of Green Jobs and All Jobs by Wage Group



Source: Oregon Employment Department



Key Finding: “On average, green jobs tended toward slightly higher wages than jobs across the entire economy.”

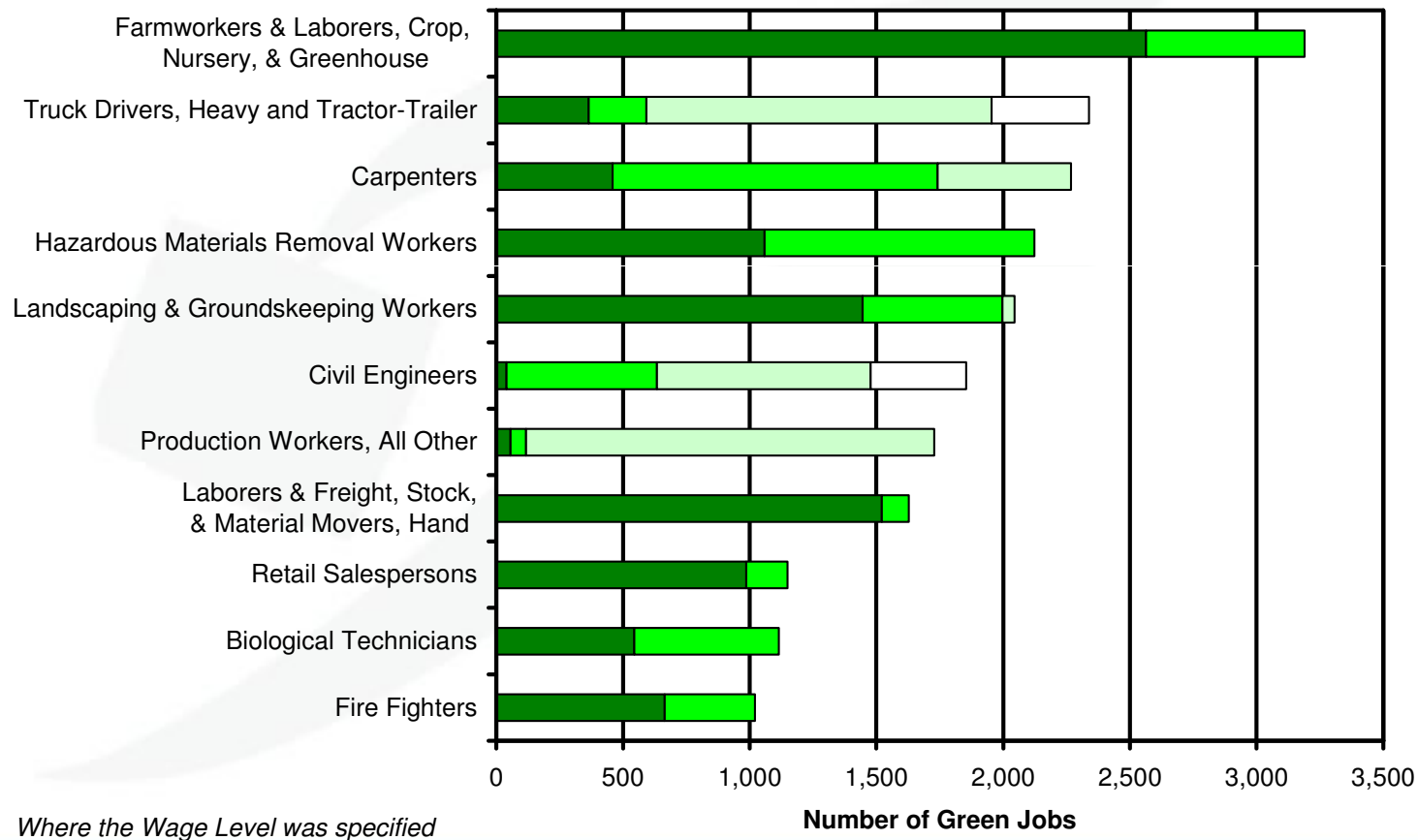
- Average wage for all jobs: \$19.92 per hour
- Average wage for green jobs: \$22.61 per hour
- Half of all jobs pay \$15.22 or more per hour
- About 2/3 of all green jobs pay \$15.00 or more per hour
- Occupation mix explains some of the difference, but not all



Green wage levels depend on the occupation

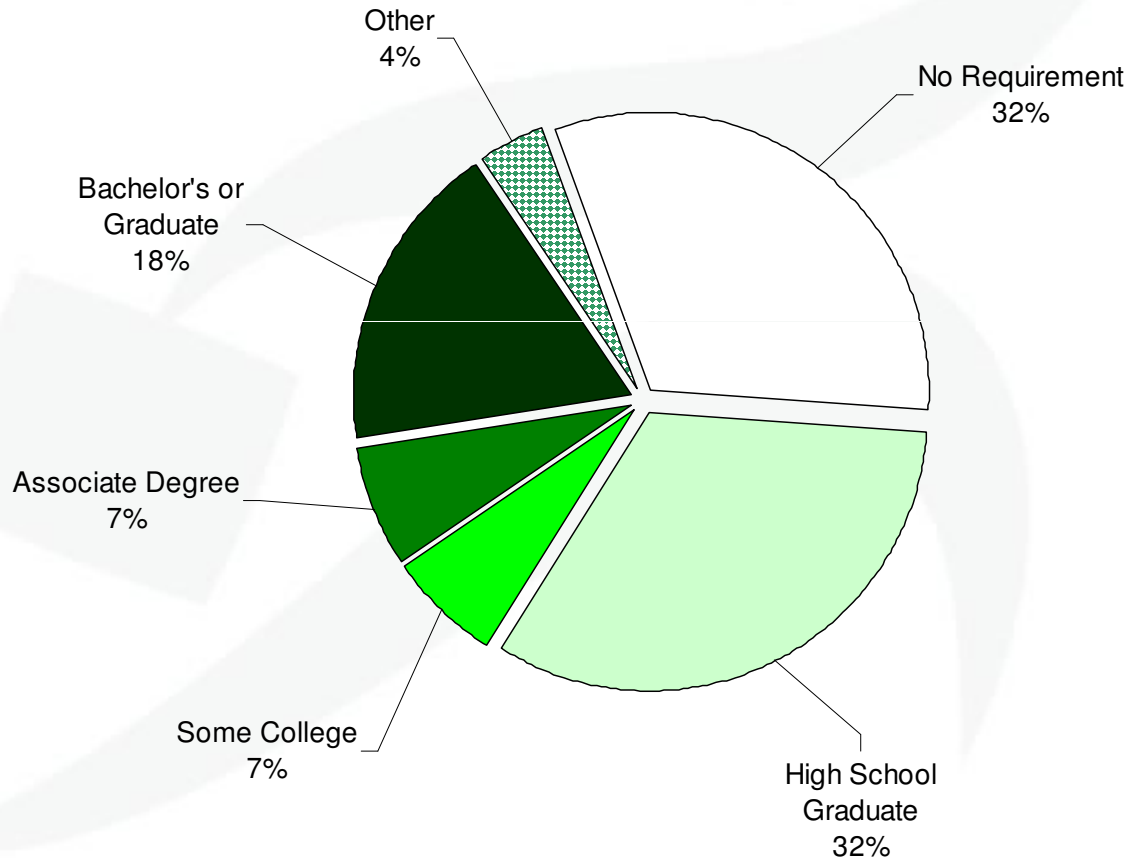
Top 11 Green Occupations by Hourly Wage

Less Than \$15
 \$15 to \$24.99
 \$25 to \$49.99
 \$50 or More



Key Finding: Two-thirds of green jobs require no education beyond high school.

Green Jobs by Minimum Education Level Oregon, 2008

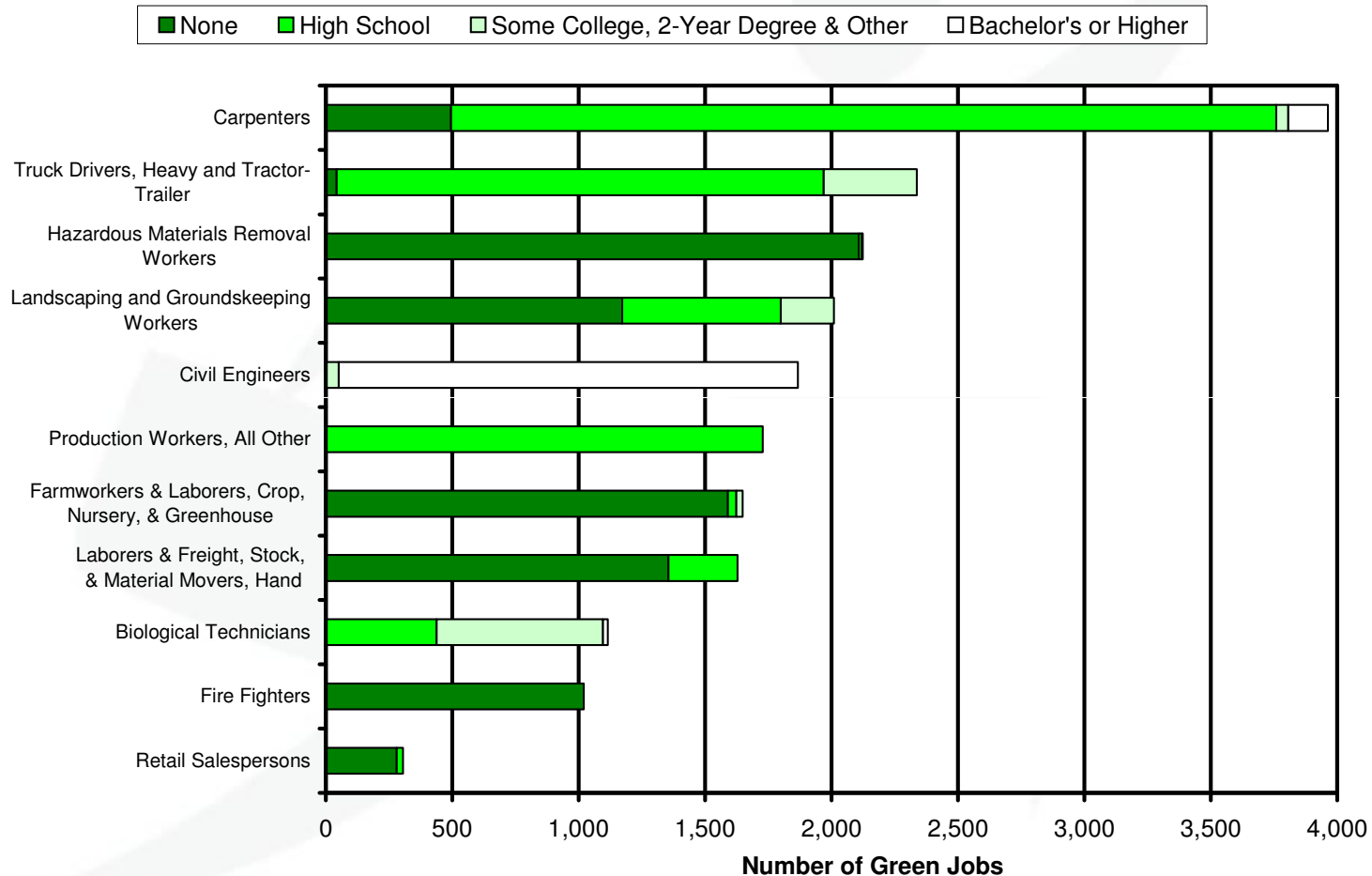


Where the Minimum Education Level was specified



Education requirements vary widely by occupation.

Top 11 Green Occupations by Minimum Education

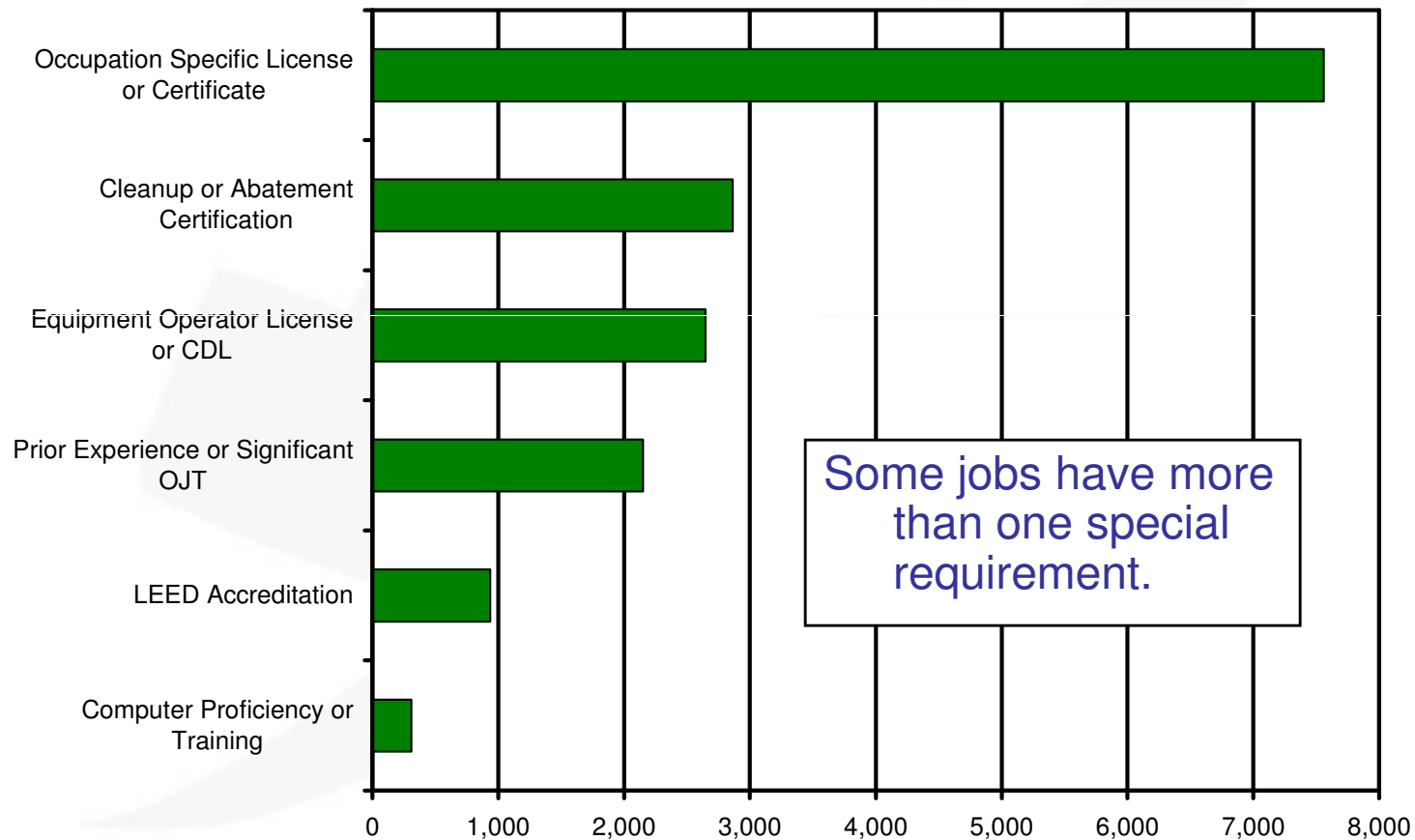


Where the Minimum Education Level was specified



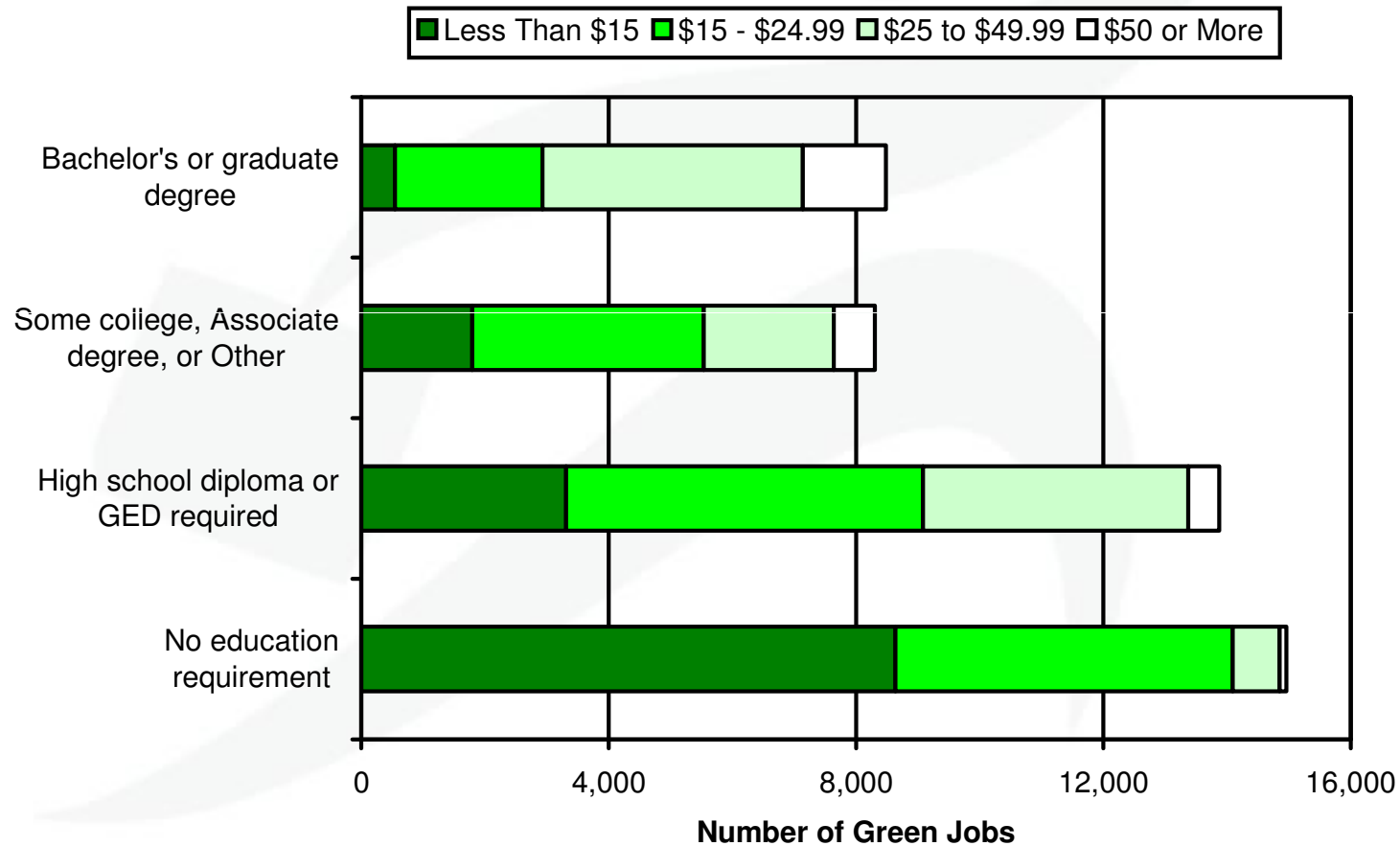
Key Finding: About one-third of green jobs require some kind of special license / certificate.

Green Jobs by Required License or Certificate



As is true with the whole economy ... jobs requiring more education usually pay higher wages.

Green Jobs Requiring Education Pay Higher Wages



Where the Minimum Education Level was specified



Key Finding: Almost two-thirds (32,746) of Oregon's green jobs meet the state's criteria for "high wage".

Top 10 High Education Green Occupations*

Occupations Where At Least Half the Green Jobs Require Education Beyond High School

Occupation Title	Green Jobs	Average Hourly Wage	Some College, 2-year Degree, or Other	Bachelor's Degree or Higher	Some Jobs Have Special Requirements
Civil Engineers	1,889	\$32.70	3%	97%	✓
Biological Technicians	1,115	\$16.59	59%	2%	
General and Operations Managers	913	\$40.85	48%	32%	✓
Architects, Except Landscape and Naval	882	\$33.85	0%	100%	✓
Electricians	658	\$30.04	60%	18%	✓
Zoologists and Wildlife Biologists	639	\$30.05	0%	100%	✓
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	601	\$35.50	86%	0%	
Executive Secretaries and Administrative Assistants	542	\$16.38	61%	7%	
Installation, Maintenance, and Repair Workers, All Other	539	\$25.13	93%	0%	✓
Welders, Cutters, Solderers, and Brazers	382	\$15.82	86%	0%	✓

* Where the minimum education level was specified



There are 190 high-wage green occupations.

- In these, at least half of the green jobs paid \$15.00 or more per hour
- These occupations accounted for 94 percent of the green jobs requiring education beyond high school
- 23 percent of the jobs in high-wage green occupations required a bachelor's degree or higher (compared to 2 percent of the jobs in low-wage green occupations)



We updated our “green occupations” table for the Occupational Prioritization work ...

Oregon Statewide Occupational Prioritization for Training Top 20 Green Jobs Occupations

Occupation Title	Total Openings 2006-2016	Final Rank
Welders, Cutters, Solderers, and Brazers	2,104	2
Plumbers, Pipefitters, and Steamfitter	2,011	5
Machinists	1,149	7
Fire Fighters	1,461	10
General and Operations Managers	7,141	13
Wholesale and Manufacturing Sales Representatives Non-technical and Scientific	6,577	17
Industrial Machinery Mechanics	1,025	17
Water and Liquid Waste Treatment Plant and System Operators	563	17
Supervisors and Managers of Office and Administrative Support Workers	6,407	23
Bus and Truck Mechanics and Diesel Engine Specialists	1,637	23
Computer Programmers	1,322	23
Postsecondary Teachers, Except Graduate Teaching Assistants	6,887	31
Wholesale and Manufacturing Sales Representatives; Technical and Scientific	2,236	31
Supervisors and Managers of Mechanics, Installers, and Repairers	1,843	31
Operating Engineers and Other Construction Equipment Operators	1,556	31
Cost Estimators	1,297	31
Construction Managers	1,170	31
Mechanical Engineers	1,108	31
Executive Secretaries and Administrative Assistants	5,829	42
Carpenters	4,763	42
Business Operations Specialists, All Other	3,999	42
Managers, All Other	2,744	42
Computer Software Engineers, Applications	1,675	42
Civil Engineers	985	42
Hazardous Materials Removal Workers	669	42

Note: Ranks reflect where an occupation's final score falls in the overall list of 235 high-wage, high-demand occupations. When occupations' scores are tied, more than 20 occupations can rank in the top 20.



Key Finding: Employers project a 14% increase in green jobs between 2008 and 2010.

Employer Projections of Green Jobs by Occupation

Occupational Group	Total Workers 2008	Projected Workers 2010	Change	Percent Change
Farming, Fishing, and Forestry	5,838	7,960	2,122	36%
Transportation and Material Moving	5,255	7,025	1,770	34%
Production	6,512	7,625	1,113	17%
Architecture and Engineering	4,360	5,243	883	20%
Construction and Extraction	10,381	11,077	696	7%
Protective Service	1,032	1,543	511	50%
Life, Physical, and Social Science	4,135	4,338	203	5%
Installation, Maintenance, and Repair	2,233	2,402	169	8%
Education, Training, and Library	790	952	162	21%
Management	1,639	1,791	152	9%
Building and Grounds Cleaning and Maintenance	2,877	3,026	149	5%
Business and Financial Operations	683	797	114	17%
Community and Social Services	157	263	106	68%
Computer and Mathematical	244	301	57	23%
Healthcare Practitioners and Technical	165	178	13	8%
Personal Care and Service	20	27	7	35%
Food Preparation and Serving Related	513	514	1	0%
Legal	81	81	0	0%
Arts, Design, Entertainment, Sports, and Media	480	465	-15	-3%
Office and Administrative Support	1,570	1,376	-194	-12%
Sales and Related	2,437	1,827	-610	-25%
Total	51,402	58,811	7,409	14%



**Thanks ... from the Employment
Department's "Green Team".**

**Our "Greening" report will be available on-line at
9 am Monday, June 29, 2009**

<http://www.qualityinfo.org/pubs/green/greening.pdf>

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New Standard Occupational Classification titles are coming ... but not tomorrow.

- Two new occupations in the 2010 SOC:
 - 47-2231 Solar photovoltaic installers
 - 49-9081 Wind turbine service technicians
- Data collection on these starts in late 2009
- First estimates likely to be in 2013 (for 2012)

