



Idaho Green Projections and Economic Impact 2011

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Idaho Green Projections and Economic Impact

The economic impact of Idaho's green economy was twice as great as the percentage of Idaho jobs with a direct environmental focus in 2010.

The projected green jobs and occupations identified through research under the State Labor Market Information Improvement Grant secured from the federal government in 2010 are spread throughout Idaho's entire economy and workforce. Nineteen of the 20 major industries include some level of a green workforce.



When those broad industrial sectors are disaggregated into more individual descriptive sectors, subsectors with higher concentrations of green workers emerge so their economic impact in Idaho in terms of jobs and earnings can be measured.

Having determined the level of concentration and developed a hierarchy of greenness, the greenest industries in Idaho are expected to grow by 23 percent over the next decade, significantly faster than the rest of Idaho's economy, which is only expected to grow about 16 percent. Those very green industries alone are expected to produce over 20,000 jobs in the next 10 years.

Green Industry Projections				
Green Taxonomy	Estimated 2008	Projected 2018	Projected Total Growth	Percentage Growth
	Jobs for Industries with Green Jobs	Jobs for Industries with Green Jobs		
Minimally Green*	299,535	353,112	53,577	18%
Modestly Green	172,476	198,289	25,813	15%
Moderately Green	57,033	59,756	2,724	5%
Very Green	88,155	108,835	20,680	23%
Idaho All Industry	714,540	825,847	111,307	16%

~ Official Idaho industry projections are conducted at the three-digit NAICs level.

*The Minimally Green category includes the occupations that reported green jobs in the survey, but had lower concentration than the statewide average.

Ten specific industries were identified as Idaho's greenest. They alone will produce an estimated 7,500 additional jobs over the next decade, and 970 of them will be green jobs. Another 1,000 green jobs will open up due to attrition through promotions, retirements and for other reasons. Those 2,000 green jobs and the other 5,500 jobs in those top 10 industries alone will directly inject over \$68 million in new earnings into Idaho's economy in today's dollars.

TOP 10 Industries Producing Most Jobs in Very Green Occupations 2008 - 2018	2010 Existing Jobs		Industry Earnings		Green Jobs Projections	
	Estimated Total Jobs in Entire Industry in 2010	Estimated GREEN Jobs in Industry in 2010	2010 Earnings Per Worker	Green Workers 2010 Total Annual Earnings	New Very Green Jobs by 2018	Additional Earnings Per Green Worker
Research and Development in the Physical, Engineering and Life Sciences	7,800	2,200	\$92,800	\$204,160,000	350	\$32,480,000
Administrative Mgt. and General Mgt. Consulting Services	3,100	100	\$53,800	\$5,380,000	200	\$10,760,000
Hazardous Waste Collection	770	30	\$106,200	\$3,186,000	100	\$10,620,000
Solid Waste Landfill	140	140	\$41,300	\$5,782,000	100	\$4,130,000
Remediation Services	350	160	\$53,200	\$8,512,000	50	\$2,660,000
Janitorial Services	8,000	230	\$11,800	\$2,714,000	50	\$590,000
Engineering Services	4,200	1,600	\$74,200	\$118,720,000	50	\$3,710,000
Other Scientific and Technical Consulting Services	1,000	50	\$47,000	\$2,350,000	50	\$2,350,000
Environmental Consulting Services	900	10	\$59,300	\$593,000	10	\$593,000
Solid Waste Collection	900	10	\$38,100	\$381,000	10	\$381,000
Totals (May not add due to rounding)	27,160	4,530	N/A	\$351,778,000	970	\$68,274,000

- Subindustry data incorporate EMSI projections.

But measuring the total economic impact on Idaho's workforce requires accounting for all green jobs in Idaho's economy and those created because of green. Idaho has an estimated 17,000 green jobs today under the state's official green jobs definition. (See report at [http://labor.idaho.gov/publications/Idaho Green Jobs Survey 2010.pdf](http://labor.idaho.gov/publications/Idaho_Green_Jobs_Survey_2010.pdf)). These green workers are estimated to earn an average wage of \$20.50 an hour, generating total earnings of \$725 million, or around 3.5 percent, of Idaho's total economy. Applying multipliers developed by Economic Modeling Specialists Inc. to the direct jobs shows another \$407 million in indirect and induced earnings have been created in Idaho's green economy for almost \$1.3 billion in earnings, about 5.4 percent, of total state wages and salaries.

Again using EMSI multipliers, those 17,000 direct green jobs in 2010 are estimated to have generated another 14,700 jobs for 31,700 jobs in all resulting from Idaho's green industrial sector, about around 5 percent of total jobs.

ALL GREEN Economic Impact (Level 0,1,2,3)

EMSI Total Mult.	Sales	Earnings	Jobs	TOTAL Green Base and Supported Industries Economic Impact			
				JOBS	Avg. Wage	Annual Earnings	Mode
Inside Cluster	1.31	1.32	1.48	17,000	\$ 20.50	\$ 724,880,000	Existing Green Cluster
Outside Cluster	0.6	0.56	0.86	14,620	\$ 18.22	\$ 554,062,912	Outside Cluster
Total Impact	1.91	1.87	2.34	31,620		\$ 1,278,942,912	Total Cluster and Support
Impact of Direct Investment in Green							
Input JOBS below	Avg. Wage	Annual Earnings	Mode				
100	\$ 20.50	\$ 4,264,000	Direct Investment				
48	\$ 20.50	\$ 2,046,720	Inside Cluster				
86	\$ 18.22	\$ 3,259,194	Outside Cluster				
234		\$ 9,569,914	Total Impact of Investment				

VERY GREEN Economic Impact (Level 3)

EMSI Total Mult.	Sales	Earnings	Jobs	Very Green Base and Supported Industries Economic Impact			
				JOBS	Avg. Wage	Annual Earnings	Mode
Inside Cluster	1.30	1.29	1.53	5,154	\$ 20.50	\$ 219,766,560	Existing Green Cluster
Outside Cluster	0.63	0.53	0.96	4,948	\$ 18.22	\$ 187,511,261	Outside Cluster
Total Impact	1.93	1.82	2.49	10,102		\$ 407,277,821	Total Cluster and Support
Impact of Direct Investment in Green							
Input JOBS below	Avg. Wage	Annual Earnings	Mode				
100	\$ 20.50	\$ 4,264,000	Direct Investment				
53	\$ 20.50	\$ 2,259,920	Inside Cluster				
96	\$ 18.22	\$ 3,638,170	Outside Cluster				
249		\$ 10,162,090	Total Impact of Investment				

TOP TEN GREEN Sub-industries Economic Impact (Level 3 GROWTH)

EMSI Total Mult.	Sales	Earnings	Jobs	Top Ten Green Base and Supported Industries Economic Impact			
				JOBS	Avg. Wage	Annual Earnings	Mode
Inside Cluster	1.30	1.28	1.65	4,470	\$ 20.50	\$ 190,600,800	Existing Green Cluster
Outside Cluster	0.63	0.5	1.13	5,051	\$ 18.22	\$ 191,424,567	Outside Cluster
Total Impact	1.93	1.78	2.78	9,521		\$ 382,025,367	Total Cluster and Support
Impact of Direct Investment in Green							
Input JOBS below	Avg. Wage	Annual Earnings	Mode				
100	\$ 20.50	\$ 4,264,000	Direct Investment				
65	\$ 20.50	\$ 2,771,600	Inside Cluster				
113	\$ 18.22	\$ 4,282,429	Outside Cluster				
278		\$ 11,318,029	Total Impact of Investment				

And for future direct investment in green jobs, for every one new job created in the defined green industries another 1.34 jobs are created beyond that direct investment both inside and outside the green cluster. Those figures are even more significant the greener the industry. Those jobs are created across the full industry spectrum from government and high technology to retail and other service industries. This direct investment in the green economy not only is a driver in Idaho's economy for creating jobs and earnings but also puts Idaho's workforce and industry in a better strategic position for competing in the global economy where the stakes are high in many of the sectors that make up the green economy.

INVESTMENT

Additional jobs created for every one job created in the defined green industries.



1.34

Green Projections

The Green Job Survey developed a taxonomy for the occupations identified as green. The taxonomy levels are based on a higher-than-average concentration of green jobs within the state and secondary sources. Very Green occupations have the highest concentration of green employment followed by Moderately Green while Modestly Green occupations have just a slightly higher-than-average concentration of green employment. Those with a lower-than-average concentration were not categorized as green but do include at least some green jobs. For this paper, they were put under a Minimally Green category so they could be added to the analysis.

The Very Green and the residual Minimally Green categories had a fractionally higher annualized growth rate than all non-green jobs. Overall, the lower annualized growth rate for the other two categories brings down the total green jobs growth rate to 1.15 percent, almost a third of a percentage point less than the growth rate of all jobs.

Green Jobs Projections				
Green Taxonomy	Estimated 2008 Green Jobs	Projected 2018 Green Jobs	Projected Growth	Annualized Growth
Minimally Green*	1,115	1,297	182	1.52%
Modestly Green	3,382	3,800	418	1.17%
Moderately Green	6,566	7,095	529	0.78%
Very Green	5,154	5,995	841	1.52%
Total Green Jobs	16,217	18,187	1,970	1.15%
Total Non-Green Jobs	698,322	807,655	109,333	1.47%

*The Minimally Green category includes the occupations that reported green jobs in the survey, but had lower concentration than the statewide average

When looking at the total employment for occupations that included some green jobs, only the residual Minimally Green category is growing faster than all occupations. But since this category contains almost 30 percent of the state's jobs and has a below-average green concentration, it means little.

Projections for Occupations with Green Jobs

Green Taxonomy	Estimated 2008 Total Jobs in Occupations w/Green Jobs	Projected 2018 Total Jobs in Occupations w/Green Jobs	Total Growth	Annualized Growth
Minimally Green*	197,184	230,928	33,744	1.59%
Modestly Green	89,138	100,949	11,811	1.25%
Moderately Green	62,316	68,066	5,750	0.89%
Very Green	31,021	34,116	3,095	0.96%
Total Green Occupations	379,659	434,059	54,400	1.35%
Total All Occupations	714,539	825,842	111,303	1.46%

*The Minimally Green category includes the occupations that reported green jobs in the survey, but had lower concentration than the statewide average

Only the Very Green category is growing faster than the occupations encompassing it. The Very Green category is projected to grow half again as fast as total employment in those occupations.

Green Jobs v. Green Occupations

Education or Training Level	Green Jobs	Occupations with Green Jobs
Short-term on-the-job training	1.65%	1.49%
Moderate-term on-the-job training	0.58%	1.42%
Long-term on-the-job training	0.71%	0.42%
Work experience in a related occupation	0.99%	1.20%
Postsecondary vocational training	1.25%	1.44%
Associate degree	1.36%	1.12%
Bachelor's degree	1.31%	1.54%
Bachelor's or higher degree, plus work experience	1.07%	1.33%
Master's degree	1.90%	1.90%
Doctoral degree	1.52%	2.13%
Minimally Green*	1.52%	1.59%
Modestly Green	1.17%	1.25%
Moderately Green	0.78%	0.89%
Very Green	1.52%	0.96%
All Green Levels	1.15%	1.35%
All Occupations	1.46%	

*The Minimally Green category includes the occupations that reported green jobs in the survey, but had lower concentration than the statewide average

The result is much the same when green jobs are broken down by education and training requirements. Only green jobs requiring short-term on-the-job training, long-term on-the-job training or associate degrees are projected to grow faster than occupations as a whole. Green jobs requiring master's degrees are projected to grow at the same rate to all jobs in those occupations, but the rest of the categories are projected to grow more slowly.

The Very Green category, having both the highest concentration of green jobs and the highest projected annualized growth, will be the focus of this analysis.

The fastest growing green job by percentage change is hazardous materials removal worker at 42 percent by 2018. That is followed by environmental engineer at 37 percent and water and liquid waste treatment plant and system operator at 35 percent. Four of the five fastest growing green jobs had a median wage above the Idaho statewide median of \$14.43 an hour in 2008.

Fastest Growing Occupations												
SOC Code	Statewide	2008	2018	2008-2018							Education or Training Level	Green Level
	Occupational Title	Employment		Net Change	Annual Openings*	Percent Change	Green Median	Green Mean	OES Median	OES Mean		
47-4041	Hazardous Materials Removal Workers	307	437	130	21	42.35%	\$27.48	\$25.50	\$22.82	\$22.11	Moderate-term on-the-job training	Very Green
17-2081	Environmental Engineers	203	277	74	12	36.45%	\$34.00	\$33.89	\$30.50	\$34.18	Bachelor's degree	Very Green
51-8031	Water and Liquid Waste Treatment Plant and System Operators	179	241	62	10	34.64%	\$16.50	\$17.44	\$15.98	\$16.47	Long-term on-the-job training	Very Green
29-9011	Occupational Health and Safety Specialists	25	33	8	2	32.00%	\$34.62	\$36.89	\$30.67	\$29.15	Bachelor's degree	Very Green
37-3013	Tree Trimmers and Pruners	22	29	7	1	31.82%	\$13.00	\$12.74	\$14.53	\$13.41	Short-term on-the-job training	Very Green

*Annual Openings include openings due to growth and replacement needs.

The top five green occupations with the most projected green employment account for 36 percent of all the Very Green jobs and 12 percent of total green employment in 2018. The occupation with the most projected green employment is heating, air conditioning and refrigeration mechanic and installer at 538 jobs in 2018. Environmental scientist and specialist including health is next with 487 jobs followed by hazardous materials removal worker with 437.

Highest Employment Occupations												
SOC Code	Statewide	2008	2018	2008-2018							Education or Training Level	Green Level
	Occupational Title	Employment	Net Change	Annual Openings*	Percent Change	Green Median	Green Mean	OES Median	OES Mean			
49-9021	Heating, Air Conditioning and Refrigeration Mechanics and Installers	471	538	67	14	14.23%	\$14.00	\$14.72	\$16.45	\$17.33	Postsecondary vocational training	Very Green
19-2041	Environmental Scientists and Specialists,	391	487	96	20	24.55%	\$21.58	\$27.45	\$27.22	\$30.85	Master's degree	Very Green
47-4041	Hazardous Materials Removal Workers	307	437	130	21	42.35%	\$27.48	\$25.50	\$22.82	\$22.11	Moderate-term on-the-job training	Very Green
53-7081	Refuse and Recyclable Material Collectors	282	349	67	15	23.76%	\$15.00	\$14.74	\$13.58	\$13.81	Short-term on-the-job training	Very Green
19-4091	Environmental Science and Protection Technicians, Including Health	278	336	58	18	20.86%	\$11.00	\$15.51	\$12.67	\$15.23	Associate degree	Very Green

*Annual Openings include openings due to growth and replacement needs.

The green occupations with the most annual openings represent good opportunities for those seeking work in a green field. For Idaho, hazardous materials removal workers, environmental scientists and specialists including health and environmental science and protection technicians including health account for the most annual green job openings with a combined 59 openings.

Highest Demand Occupations

SOC Code	Statewide	2008	2018	2008-2018							Education or Training Level	Green Level
	Occupational Title	Employment	Net Change	Annual Openings*	Percent Change	Green Median	Green Mean	OES Median	OES Mean			
47-4041	Hazardous Materials Removal Workers	307	437	130	21	42.35%	\$27.48	\$25.50	\$22.82	\$22.11	Moderate-term on-the-job training	Very Green
19-2041	Environmental Scientists and Specialists, Including Health	391	487	96	20	24.55%	\$21.58	\$27.45	\$27.22	\$30.85	Master's degree	Very Green
19-4091	Environmental Science and Protection Technicians, Including Health	278	336	58	18	20.86%	\$11.00	\$15.51	\$12.67	\$15.23	Associate degree	Very Green
53-7081	Refuse and Recyclable Material Collectors	282	349	67	15	23.76%	\$15.00	\$14.74	\$13.58	\$13.81	Short-term on-the-job training	Very Green
49-9021	Heating, Air Conditioning and Refrigeration Mechanics and Installers	471	538	67	14	14.23%	\$14.00	\$14.72	\$16.45	\$17.33	Post-secondary vocational training	Very Green

*Annual Openings include openings due to growth and replacement needs.

Not all green jobs are growing. The occupations with the greatest decline in green employment by 2018 include forest and conservation worker, fisher and related fishing worker and floor, ceiling and wall insulation worker. These occupations are projected to lose 13 jobs by 2018, which accounts for 9 percent of all the projected green job losses.

Declining Occupations												
SOC Code	Statewide	2008	2018	2008-2018						Education or Training Level	Green Level	
	Occupational Title	Employment	Net Change	Annual Openings**	Percent Change	Green Median	Green Mean	OES Median	OES Mean			
45-4011	Forest and Conservation Workers	74	69	-5	2	-6.76%	\$10.65	\$12.78	*	*	Moderate-term on-the-job training	Very Green
45-3011	Fishers and Related Fishing Workers	93	88	-5	3	-5.38%	*	*	*	*	Moderate-term on-the-job training	Very Green
47-2131	Insulation Workers, Floor, Ceiling and Wall	91	88	-3	3	-3.30%	\$20.00	\$18.75	\$13.88	\$14.20	Moderate-term on-the-job training	Very Green
47-2031	Carpenters	151	147	-4	2	-2.65%	\$21.00	\$19.08	\$15.80	\$17.57	Long-term on-the-job training	Very Green
19-4093	Forest and Conservation Technicians	108	106	-2	5	-1.85%	\$20.00	\$18.30	*	*	Associate degree	Very Green

*Information suppressed due to confidentiality.

**Annual Openings include openings due to growth and replacement needs.

The top green occupations by education include physicist, hydrologist and geoscientist and geographers. These occupations usually require either doctorates or master's degrees with a projected increase of 31 jobs by 2018.

Occupations by Education or Training												
SOC Code	Statewide	2008	2018	2008-2018							Education or Training Level	Green Level
	Occupational Title	Employment	Net Change	Annual Openings*	Percent Change	Green Median	Green Mean	OES Median	OES Mean			
19-2012	Physicists	43	54	11	3	25.58%	\$47.21	\$48.24	\$52.17	\$54.73	Doctoral degree	Very Green
19-2043	Hydrologists	136	149	13	5	9.56%	\$40.00	\$35.29	\$33.29	\$34.88	Master's degree	Very Green
19-2042	Geoscientists, Except Hydrologists and Geographers	27	34	7	1	25.93%	\$26.44	\$29.13	\$30.76	\$32.70	Master's degree	Very Green
19-2041	Environmental Scientists and Specialists, Including Health	391	487	96	20	24.55%	\$21.58	\$27.45	\$27.22	\$30.85	Master's degree	Very Green
11-9011	Farm, Ranch and Other Agricultural Managers	177	227	50	9	28.25%	*	*	\$29.42	\$31.06	Bachelor's or higher degree, plus work experience	Very Green

*Annual Openings include openings due to growth and replacement needs.

Methodology

As part of the American Recovery and Reinvestment Act of 2009, the Idaho Department of Labor received a competitively awarded grant to develop tools to effectively identify and measure jobs in renewable energy and alternative fuels, energy efficiency and conservation, sustainable agriculture and natural resource conservation and pollution and waste prevention, reduction and management and environmental cleanup. A by-product of this effort was the ability to model occupational projections to determine the potential outlook for Idaho businesses, job seekers and students.

Projection modeling was based on applying occupational concentration ratios developed during the 2010 Idaho Green Jobs Survey to the department's 2008-2018 long term occupation projections. Specifically, the 2010 Idaho Green Jobs Survey identified 211 unique occupations using 2010 Standard Occupational Classifications. A crosswalk was used to convert the data back to 2000 SOCs, leaving a total of 206 unique green occupations.

This list of 206 green occupations was used to calculate concentration ratios of green jobs to all jobs within a green occupation. These concentration ratios were then applied to the 2008-2018 occupation projections. This allows the green projections to mirror the department's standard projections in terms of variables available for analysis – base period, projection period, net change, percentage change, annual openings and education or training levels.

Using this approach assumes a constant growth rate between green and non-green jobs within an identified green occupation. It also assumes the concentration ratio remains static over the 10-year period. Further research will be necessary to determine whether these assumptions hold true.