

ARIZONA GREEN OCCUPATIONAL PROFILES

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Occupational Profiles: Growth Jobs Requiring Green Skills

The following profile is one of several profiles created to provide background on emerging employment opportunities for key green occupations. Occupations were defined based on Standard Occupational Classification (SOC) code used to define occupations within the Occupational Employment Statistics program of the Bureau of Labor Statistics (<http://www.bls.gov/soc/home.htm>). The profiles can be useful to a variety of user groups, including job seekers, new graduates, new-to-career adults, career counselors and others as they seek to understand growing occupations that frequently support green activities or require green skills. For each occupation, wherever data are available, these profiles describe:

I. **What is the job?**

This section provides a description of the job, background on the activities involved, what types of green activities might be performed, and a list of comparable jobs.

II. **Where are the jobs currently?**

This section shows how many people were employed in this occupation (including those green and non-green jobs), how many green positions were available recently, and what industries typically employ workers in this occupation.

III. **What could workers earn in this occupation?**

This section shows the historical average wages associated with all jobs (green and non-green) in these occupations in different parts of the state, as well as the median green wage as advertised in recent online job postings.

IV. **What is the outlook for jobs in this occupation?**

This section shows the extent to which there is projected long-term demand for workers in these occupations. Recognizing that long-term projections data about jobs requiring green skills are not available, the projections include information about all jobs in the occupation.

V. **How do workers prepare for jobs in this occupation?**

This section provides details on the training, certifications, education and work experience required for these occupations. Whenever possible, certifications tied to green-related activities are highlighted.

Occupations profiled were selected using quantitative and qualitative data obtained through research efforts under the Arizona State Labor Market Information Improvement Grant Initiative. Various data sources were used in creating the occupational profiles as outlined below.

- Occupational Information Network (O*NET) data were used as a measure of the skills, knowledge, and abilities required for the occupations. Certification, training, and education related information was also obtained from O*NET (<http://www.onetonline.org/>)
- The Arizona Green Jobs Survey was used to identify and classify the components of the job that are green and common certifications held by green workers within an occupation (<http://azstats.gov/>)
- Employment and wage estimates are from the Occupational Employment Statistics (OES) program. These are estimates of the number of people employed in certain occupations, and estimates of the wages paid to them. Self-employed persons are not included in the estimates. These estimates are for the state, and for metropolitan and nonmetropolitan areas (<http://www.bls.gov/oes/>)
- Postings and wage estimates from advertised online jobs were provided by Burning Glass, a private company. It is to be noted that these are advertised positions and wages that reflect the vacancies

within the occupations and are not necessarily realized employment or earnings (<http://www.burning-glass.com/>)

- Data on the industries employing the workers within respective occupations were obtained from Economic Modeling Specialists Inc. (EMSI) (<http://www.emsinet.com/>)
- Long term employment projections were from the Office of Employment and Population Statistics (<http://azstats.gov/>)
- Focus groups with industry leaders and stakeholders
- Input from the Arizona Project Steering Committee and Green Economy Advisory Committee

Occupations included in these profiles were selected based on anticipated positive job growth. Efforts were made to include a diversity of job types to meet the needs of a variety of job seekers, employers, and trainers. Whenever unique information is available for green occupations, disaggregated data for both green and non-green occupations are provided. Where green data are not available, information provided is an aggregate of both green and non-green (with this data gap noted in the profile). The goal is to provide job seekers, employers, and trainers with the most complete picture available of the status of the occupation and related career opportunities.

General Table Note: Cases where fields are marked N/A indicate that no data were available for the occupation.

I. What is the job?

The focus of this section is to provide a description of the job; background on the activities involved; types of green activities that might be performed within this job; and a list of comparable jobs.

Job description:

Design, plan, or perform engineering duties in the prevention, control, and remediation of environmental health hazards utilizing various engineering disciplines. Work may include waste treatment, site remediation, or pollution control technology.

Source: O*Net OnLine occupational database, <http://www.onetonline.org/>

What do these workers do?

Advise corporations and government agencies of procedures to follow in cleaning up contaminated sites to protect people and the environment.

Advise industries and government agencies about environmental policies and standards.

Assess the existing or potential environmental impact of land use projects on air, water, and land.

Assist in budget implementation, forecasts, and administration.

Collaborate with environmental scientists, planners, hazardous waste technicians, engineers, and other specialists, and experts in law and business to address environmental problems.

Coordinate and manage environmental protection programs and projects, assigning and evaluating work.

Design and supervise the development of systems processes or equipment for control, management, or remediation of water, air, or soil quality.

Develop proposed project objectives and targets, and report to management on progress in attaining them.

Inform company employees and other interested parties of environmental issues.

Inspect industrial and municipal facilities and programs to evaluate operational effectiveness and ensure compliance with environmental regulations.

Maintain, write, and revise quality assurance documentation and procedures.

Monitor progress of environmental improvement programs.

Obtain, update, and maintain plans, permits, and standard operating procedures.

Prepare, review, and update environmental investigation and recommendation reports.

Provide administrative support for projects by collecting data, providing project documentation, training staff, and performing other general administrative duties.

Provide environmental engineering assistance in network analysis, regulatory analysis, and planning or reviewing database development.

Provide technical-level support for environmental remediation and litigation projects, including remediation system design and determination of regulatory applicability.

Request bids from suppliers or consultants.

Serve on teams conducting multimedia inspections at complex facilities, providing assistance with planning, quality assurance, safety inspection protocols, and sampling.

Source: O*Net OnLine occupational database, <http://www.onetonline.org/>

How might this job be green?
Provide consulting services, specializing in feasibility studies, baseline studies, environmental impact assessments, planning, and permitting
Consulting for soil remediation, waste water, and other environmental projects
Consult storm water management and prevent pollution
Engineer renewable technologies
Manage waste disposal
Manage environmental code
Indoor environmental quality investigations
Hazardous material consulting
Develop city environmental program
Oversee all environmental projects, including regulation and law
Oversee field technicians regarding soil remediation projects
Performs underground storage tank assessments
Maintain soil and groundwater remediation systems
Reduction of waste, air emissions, water pollution and use
Work on conserving natural resources and habitat restoration
Storm water pollution prevention planning and inspections
Air quality compliance consulting

Source: Arizona LMI Green Jobs Survey, <http://azstats.gov/>

What are the related occupations that offer jobs for these workers?
N/A

Source: O*Net OnLine occupational database, <http://www.onetonline.org/>

II. Where are these jobs currently?

This section shows how many people were employed in this occupation (including both green and non-green jobs); how many green positions were available recently; and what industries typically employ workers in this occupation.

How many people do this job? (Data are not available for green jobs within the occupation so this total is based on data that include both green and non-green jobs. Employment numbers do not include self-employed and unpaid family members.)	
Area	Employment Total (May 2010)
Flagstaff, AZ	N/A
Lake Havasu City-Kingman, AZ	N/A
Phoenix-Mesa-Scottsdale, AZ	520
Prescott, AZ	N/A
Tucson, AZ	150
Yuma, AZ	N/A
Rest of Arizona	N/A

Source: OES Employment Estimates, Bureau of Labor Statistics, (May 2010), <http://www.bls.gov/oes/>

How many green jobs were advertised as available recently? (Based on online job advertisements, April 1 - June 30, 2011)

MSA	All Job Postings	Green* Job Postings
Flagstaff, AZ	4	1
Lake Havasu City-Kingman, AZ	0	0
Phoenix-Mesa-Scottsdale, AZ	69	39
Prescott, AZ	1	1
Tucson, AZ	19	15
Yuma, AZ	1	0
Rest of Arizona	12	7

**Green jobs identified using green definitions from O*Net and refined using a combination of green skills, certifications, and keywords from the advertised job descriptions.*

Source: Burning Glass, <http://www.burning-glass.com/>

Which industries employ workers in this job?

Copper Ore and Nickel Ore Mining
Other Management Consulting Services
Testing Laboratories
Human Resources Consulting Services
Corporate, Subsidiary, and Regional Managing Offices
Environmental Consulting Services
Process, Physical Distribution, and Logistics Consulting Services
Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)
Remediation Services
Guided Missile and Space Vehicle Manufacturing
Other Scientific and Technical Consulting Services
Water Supply and Irrigation Systems
Surveying and Mapping (except Geophysical) Services
Fossil Fuel Electric Power Generation
Engineering Services
State government
Local government
Administrative Management and General Management Consulting Services
Federal government, civilian, except postal service
Marketing Consulting Services

Source: EMSI (Economic Modeling Specialists Inc.), <http://www.emsinet.com/>

III. What could workers earn in this occupation?

This section shows the average wages associated with this occupation in different areas of the state, as well as the median green wage as advertised in online job postings.

What are the wages paid to workers in this field? (Data are not available for green jobs within the occupation so this section is based on data that include both green and non-green jobs. Wage estimates do not include self-employed and unpaid family members.)						
MSA	10th Percentile	25th Percentile	Median	Mean	75th Percentile	90th Percentile
Flagstaff, AZ	N/A					
Lake Havasu City-Kingman, AZ	N/A					
Phoenix-Mesa-Scottsdale, AZ	\$48,080	\$54,990	\$70,010	\$74,510	\$86,950	\$102,420
Prescott, AZ	N/A					
Tucson, AZ	\$37,150	\$53,810	\$66,610	\$67,520	\$75,510	\$89,620
Yuma, AZ	N/A					
Rest of Arizona	N/A					

Source: OES Employment Estimates, Bureau of Labor Statistics, (May 2010), <http://www.bls.gov/oes/>

What is the median wage advertised for green workers in this occupation? (Statewide median wages based on advertised salaries in online job postings between March 2010 and March 2011.)	
Median Advertised Wage for All Jobs	Median Advertised Wage for Green* Jobs
\$ 64,870	\$ 50,327

*Green jobs identified using green definitions from O*Net and refined using a combination of green skills, certifications, and keywords from the advertised job descriptions.

Source: Burning Glass, <http://www.burning-glass.com/>

IV. What is the outlook for jobs in this occupation?

This section shows the long-term projected outlook for this occupation.

What is the long term outlook for jobs in this occupation? (Data are not available for green jobs within the occupation so this section is based on data that include both green and non-green jobs. Employment numbers include self-employed and unpaid family members as well as wage and salary workers.)				
2008 Employment (Estimated)	2018 Employment (Projected)	Change (2008-2018)	Estimated Replacement Needs (2008-2018)*	Estimated Total Openings (2008-2018)**
737	786	49 +	153 =	202

*Replacement jobs are estimated by applying a ratio of total national job changes anticipated over the next decade (derived by BLS) to the estimated Arizona 2008 employment

**Openings represent the sum of growth (change) and replacement

Source: Arizona Office of Employment and Population Statistics, <http://azstats.gov/>

V. How do workers prepare for jobs in this occupation?

Training, certification, education, and required work experience information for the occupation, based primarily upon survey results provided by the national O*Net OnLine occupational database.

What are the minimum education levels that employers expect for workers in this occupation? (Required level of education reported by current workers, including green and non-green, in this occupation)

Less than HS	HS Diploma/GED	Post-Secondary Certificate	Some College Courses	Associate's Degree	Bachelor's Degree	Post-Baccalaureate Certificate	Master's Degree	Post-Master's Certificate	Professional Degree	Doctoral Degree
0.0%	0.0%	0.0%	0.3%	0.0%	90.1%	0.0%	9.6%	0.0%	0.0%	0.0%

% represents the proportion of all workers in the occupation who have attained that education level

*Source: O*Net OnLine occupational database, <http://www.onetonline.org/>*

What green or other credentials might be expected? (Common certifications held by green workers in this occupation)

Department of Energy Lead Auditor Certification - Certified in accordance with the American National Standards Institute (ANSI) QA-1

American Council for Accredited Certification - Council-certified Microbial Investigator/Consultant

Certified AHERA (Asbestos Hazard Emergency Response Act) Building Inspector

Certified Hazardous Materials Manager - Institute of Hazardous Materials Management

Certified Indoor Environmental Consultant

Certified Inspector of Sediment and Erosion Control, Engineer's Certificate of Completion

Commercial Driver's License

DOT HAZMAT Certification

EPA Lead Inspector/Risk Assessor Certification

EPA Lead Risk Assessor Certification

ISO 9000 Auditor Certification

Licensed Engineer

OSHA - HAZWOPER Certification

Professional Engineer

Source: Arizona LMI Green Jobs Survey, <http://azstats.gov/>

What experience levels are employers expecting? (Experience reported by current workers, including green and non-green, in this occupation)

None	<6 Months	6 Months - 1 Year	1 - 2 Years	3 - 4 Years	5 - 10 Years	> 10 Years
0.0%	0.0%	0.0%	15.6%	25.5%	49.5%	9.3%

% represents the proportion of all workers in the occupation who have attained that experience level

*Source: O*Net OnLine occupational database, <http://www.onetonline.org/>*

How much training will employers likely provide? (Training reported by current workers, including green and non-green, in this occupation)

None	<1 Month	1 - 3	3 - 6	6 Months - 1 Year	1 - 2 Years	3 - 4 Years	5 - 10 Years	> 10 Years
29.3%	15.3%	15.3%	9.9%	0.0%	10.6%	9.0%	10.6%	0.0%

% represents the proportion of all workers in the occupation who have attained that training level

*Source: O*Net OnLine occupational database, <http://www.onetonline.org/>*