

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:

Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.

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

What do these workers do?

Adjust functional parts of devices and control instruments, using hand tools, levels, plumb bobs, and straightedges.

Assemble, install or repair wiring, electrical and electronic components, pipe systems and plumbing, machinery, and equipment.

Clean and lubricate shafts, bearings, gears, and other parts of machinery.

Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, and parts catalogs as necessary.

Dismantle devices to access and remove defective parts, using hoists, cranes, hand tools, and power tools.

Inspect drives, motors, and belts, check fluid levels, replace filters, or perform other maintenance actions, following checklists.

Inspect, operate, and test machinery and equipment to diagnose machine malfunctions.

Operate cutting torches or welding equipment to cut or join metal parts.

Order parts, supplies, and equipment from catalogs and suppliers, or obtain them from storerooms.

Paint and repair roofs, windows, doors, floors, woodwork, plaster, drywall, and other parts of building structures.

Perform routine preventive maintenance to ensure that machines continue to run smoothly, building systems operate efficiently, or the physical condition of buildings does not deteriorate.

Plan and lay out repair work, using diagrams, drawings, blueprints, maintenance manuals, and schematic diagrams.

Record type and cost of maintenance or repair work.

Repair or replace defective equipment parts, using hand tools and power tools, and reassemble equipment.

Use tools ranging from common hand and power tools, such as hammers, hoists, saws, drills, and wrenches, to precision measuring instruments and electrical and electronic testing devices.

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

How might this job be green?

Maintain water supply, especially reduction of use and reuse

Install energy management systems and occupancy sensors

Repair electrical systems, leaks, etc. for efficiency and to reduce waste

Use environmental friendly chemicals

Works on energy efficiency and recycling programs

Ensure that equipment and containers, etc. are function correctly

Ensure there are no leaks creating environmental risks and that no material ends up outside factory or gutter

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

What are the related occupations that offer jobs for these workers?
Boilermakers
Pipe Fitters and Steamfitters
Plumbers
Structural Iron and Steel Workers
Helpers--Carpenters
Elevator Installers and Repairers
Aircraft Mechanics and Service Technicians
Welders, Cutters, and Welder Fitters

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	N/A
Prescott, AZ	N/A
Tucson, AZ	N/A
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	43	5
Lake Havasu City-Kingman, AZ	16	3
Phoenix-Mesa-Scottsdale, AZ	1273	104
Prescott, AZ	14	0
Tucson, AZ	206	9
Yuma, AZ	26	1
Rest of Arizona	98	3

*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?
Local government
Hotels (except Casino Hotels) and Motels
Residential Property Managers
Lessors of Residential Buildings and Dwellings
State government
General Medical and Surgical Hospitals
Lessors of Other Real Estate Property
Nonresidential Property Managers
Offices of Real Estate Agents and Brokers
Lessors of Nonresidential Buildings (except Miniwarehouses)
Professional Employer Organizations
Federal government, civilian, except postal service
Facilities Support Services
Lessors of Miniwarehouses and Self-Storage Units
Copper Ore and Nickel Ore Mining
Corporate, Subsidiary, and Regional Managing Offices
Temporary Help Services
Golf Courses and Country Clubs
Postal Service
Janitorial 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						N/A
Prescott, AZ						N/A
Tucson, AZ						N/A
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
\$ 34,320	\$ 43,737

*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)**
29,255	31,212	1,957	+ 4,502	= 6,459

*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
11.9%	25.8%	31.9%	21.4%	8.4%	0.3%	0.0%	0.0%	0.0%	0.3%	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)

N/A

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
8.9%	10.3%	4.5%	25.0%	18.3%	32.7%	0.3%

% 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
12.1%	8.4%	5.5%	13.3%	23.8%	18.2%	12.3%	6.3%	0.1%

% 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/>