

Career Pathways for Green Jobs in Georgia

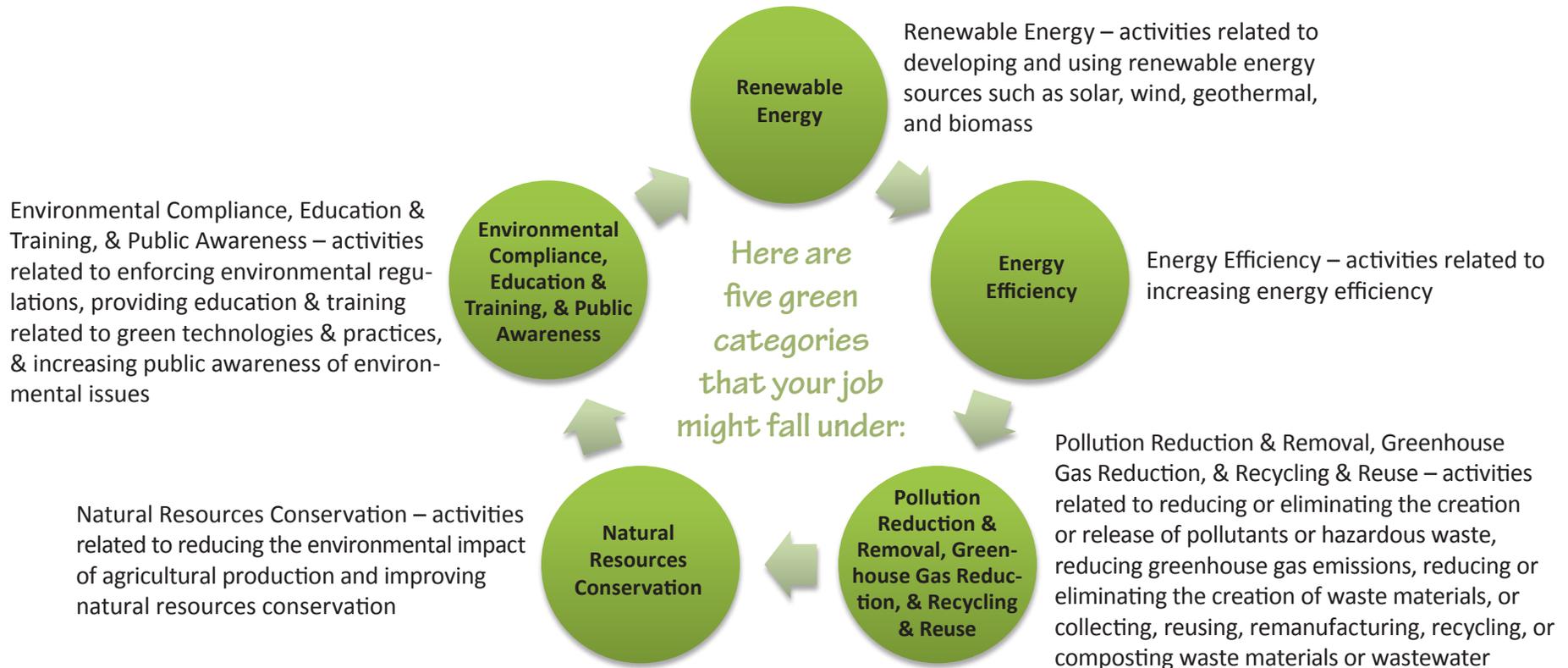


**Georgia Department of Labor
Workforce Statistics & Economic Research Division**

Mark Butler, Commissioner

Energize Your Pathway to a New Green Career!

You would be surprised at what types of jobs might utilize green skills...including yours!



To begin your path to greening your career, or to find a green job near you, visit

www.greenjobs4georgia.com.

Career Pathways for Green Jobs in Georgia was created by the Georgia Department of Labor's Workforce Statistics & Economic Research Division, with funds from a Labor Market Information Improvement Grant from the U.S. Department of Labor's Employment and Training Administration. The principal component of the grant was the Green Jobs Survey, which was conducted to determine current levels of green employment in Georgia.

The survey of 10,000 Georgia businesses began in October 2010 and ended in April 2011. Businesses from nearly all major industry sectors were selected to participate. With a 78 % response rate, preliminary survey results reveal that there are currently almost 40,000 green jobs in the state. Although we are just beginning to interpret and analyze the major findings of the survey, the research has proved encouraging. We are gaining a better understanding of what "green" means for Georgia, its economy, and its workforce, and we look forward to being able to report more information as it is uncovered.

Introduction

Georgia's green economy is growing. Even though the term "green jobs" sounds like something new and mysterious, the majority of occupations likely to flourish in the green economy are already well established. The only thing that makes them green is that they are in businesses that produce goods or provide services that benefit the environment or conserve natural resources.

The growth of the green economy means the growth of green jobs. Green economy activities increase the demand for certain goods and services, alter the skill sets of existing jobs, or create completely new jobs with unique skills and tasks. For example, investment in more energy-efficient buildings creates more demand for carpenters, insulation workers, and heating & air conditioning installers. Investment in pollution reduction and recycling creates demand for the services of hazardous materials removal workers, recyclable material collectors, and environmental engineers who have acquired additional training and/or certification in "green" skills. And investment in renewable energy results in additional jobs for biomass plant technicians, solar photovoltaic installers, and wind turbine service technicians—occupations that did not exist ten years ago.

The Georgia Department of Labor's Workforce Statistics & Economic Research Division has identified five core areas of green business activities and green jobs. Green activities and jobs fall under one or more of the following five core areas:

- **Renewable Energy** – activities related to developing and using renewable energy sources such as solar, wind, geothermal, and biomass, as well as traditional, non-renewable sources of energy undergoing significant green technological changes (e.g., oil, coal, gas, and nuclear)
- **Energy Efficiency** – activities related to increasing energy efficiency (broadly defined), making energy demand response more effective, constructing "smart grids", and other energy efficient activities
- **Pollution Reduction & Removal, Greenhouse Gas Reduction, & Recycling & Reuse** – activities related to reducing or eliminating the creation or release of pollutants or hazardous waste from the environment,

reducing greenhouse gas emissions through methods other than renewable energy generation and energy efficiency, such as electricity generated from nuclear sources, or reusing, remanufacturing, composting, or avoiding creation of waste materials or wastewater

- **Natural Resources Conservation** – activities related to reducing the environmental impact of agricultural production and improving natural resources conservation, including the use of chemical fertilizers and pesticides, soil and water conservation, sustainable forestry, land management, and wildlife preservation
- **Environmental Compliance, Education & Training, & Public Awareness** – activities related to enforcing environmental regulations, providing education & training related to green technologies & practices, & increasing public awareness of environmental issues

Preliminary labor market data on green jobs in Georgia show that green jobs are accessible to a broad group of workers. These jobs range from those that do not require any education beyond high school to positions that require advanced degrees and extensive job experience. This means that workers can begin a career in a relatively semi-skilled entry-level position and have the opportunity to advance into a better-paying, more rewarding career by getting additional training or attending college at a later time.

Subsequent pages of this brochure present the most common green jobs in each of the five core green economic areas. They are arranged by Standard Occupational Classification (SOC) code within the job preparation level (education/training/experience) usually required for employment. Each core area also includes an example of a viable career pathway in the green workforce. For example, if you are interested in the energy efficiency field, you might start off as an electrician, and later train to become an electrical engineering technician, before going to college and studying to become an electrical engineer.

Start planning your green career path today by exploring the green jobs and sample career pathways shown within this brochure.

Green Career Pathways in Renewable Energy

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Now requires on-the-job training, work experience, and/or a high school diploma or less				
11-3051	Industrial Production Managers	Work Exp in a Related job	130	\$40.26
11-3071	Transportation, Storage, & Distribution Managers	Work Exp in a Related job	120	\$41.41
41-4011	Sales Reps, Wholesale & Manufacturing, Technical & Scientific Products	Work Exp in a Related Job	500	\$38.08
47-2211	Sheet Metal Workers	Long-term O-J-T	150	\$19.71
49-9071	Maintenance & Repair Workers, General	Moderate-term O-J-T	610	\$17.17
51-4041	Machinists	Long-term O-J-T	140	\$18.44
51-8011	Nuclear Power Reactor Operators	Long-term O-J-T	*	*
51-8012	Power Distributors and Dispatchers	Long-term O-J-T	10	\$31.80
51-8013	Power Plant Operators	Long-term O-J-T	60	\$28.74
51-9012	Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators, & Tenders	Moderate-term O-J-T	20	\$16.00
Next requires an associate's degree or postsecondary vocational training				
19-4041	Geological & Petroleum Technicians	Associate's Degree	0	\$23.15
19-4051	Nuclear Technicians	Associate's Degree	0	*
Later requires a bachelor's degree or more				
11-9041	Engineering Managers	Bachelor's or Higher + Work Exp	100	\$53.60
17-2051	Civil Engineers	Bachelor's or Higher + Work Exp	130	\$35.45
17-2071	Electrical Engineers	Bachelor's or Higher + Work Exp	80	\$40.69
17-2141	Mechanical Engineers	Bachelor's or Higher + Work Exp	100	\$37.55

Sample Green Career Pathway: Renewable Energy

51-9012 Separating, Filtering, Clarifying, Precipitating, & Still Ma- chine Setter, Operator, or Tender

2010 Employment: 760

2018 Projected Employment: 740

2011 Mean Hourly wage: \$16.00

Annual Job Openings: 20

Job Preparation Level
Moderate-term on-the-job Training

51-4041 Machinist

2010 Employment: 6,190

2018 Projected Employment: 6,580

2011 Mean Hourly wage: \$18.44

Annual Job Openings: 140

Job Preparation Level
Long-term on-the-job Training

17-2051 Civil Engineer

2010 Employment: 4,000

2018 Projected Employment: 4,270

2011 Mean Hourly wage: \$35.45

Annual Job Openings: 130

Job Preparation Level
Bachelor's Degree

Green Career Pathways in Energy Efficiency

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Now requires on-the-job training, work experience, and/or a high school diploma or less				
47-2031	Carpenters	Long-term O-J-T	610	\$17.17
47-2061	Construction Laborers	Moderate-term O-J-T	560	\$13.10
47-2111	Electricians	Long-term O-J-T	310	\$20.85
47-2131	Insulation Workers, Floor, Ceiling, & Wall	Moderate-term O-J-T	30	\$12.54
47-2152	Plumbers, Pipefitters, & Steamfitters	Long-term O-J-T	190	\$20.63
47-3012	Helpers--Carpenters	Short-term O-J-T	60	\$13.05
47-4011	Construction & Building Inspectors	Work Exp in a Related Job	70	\$22.94
49-9051	Electrical Power-Line Installers & Repairers	Long-term O-J-T	120	\$23.07
49-9071	Maintenance & Repair Workers, General	Moderate-term O-J-T	610	\$17.17
49-9098	Helpers--Installation, Maintenance, & Repair Workers	Short-term O-J-T	140	\$11.64
51-2022	Electrical & Electronic Equipment Assemblers	Short-term O-J-T	50	\$16.87
51-4041	Machinists	Long-term O-J-T	140	\$18.44
53-3021	Bus Drivers, Transit & Intercity	Moderate-term O-J-T	90	\$14.43
53-7051	Industrial Truck & Tractor Forklift Operators	Short-term O-J-T	770	\$13.79
Next requires an associate's degree or postsecondary vocational training				
17-3011	Architectural & Civil Drafters	Postsec Voc-Tech Training	40	\$22.90
17-3023	Electrical & Electronic Engineering Technicians	Associate's Degree	80	\$28.35
17-3024	Electro-Mechanical Technicians	Associate's Degree	10	\$27.07
17-3026	Industrial Engineering Technicians	Associate's Degree	50	\$24.48
17-3027	Mechanical Engineering Technicians	Associate's Degree	10	\$22.82

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Next requires an associate's degree or postsecondary vocational training (Continued)				
49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	Postsec Voc-Tech Training	130	\$23.35
49-3023	Automotive Service Technicians & Mechanics	Postsec Voc-Tech Training	520	\$17.40
49-9021	Heating, Air Conditioning, & Refrigeration Mechanics & Installers	Postsec Voc-Tech Training	130	\$19.13
51-4121	Welders, Cutters, Solderers, & Brazers	Postsec Voc-Tech Training	430	\$16.20
Later requires a bachelor's degree or more				
11-9021	Construction Managers	Bachelor's Degree	450	\$44.76
13-1151	Training & Development Specialists	Bachelor's Degree	390	\$27.56
17-1011	Architects, Except Landscape & Naval	Bachelor's Degree	40	\$36.34
17-2051	Civil Engineers	Bachelor's Degree	130	\$35.45
17-2071	Electrical Engineers	Bachelor's Degree	80	\$40.69
17-2072	Electronics Engineers, Except Computer	Bachelor's Degree	140	\$40.21
17-2141	Mechanical Engineers	Bachelor's Degree	100	\$37.55
19-2032	Materials Scientists	Bachelor's Degree	30	\$43.26

Sample Green Career Pathway: Energy Efficiency

49-9098 Installation, Maintenance, & Repair Workers' Helper

2010 Employment: 4,730

2018 Projected Employment: 4,960

2011 Mean Hourly wage: \$11.64

Annual Job Openings: 140

Job Preparation Level
Short-term on-the-job Training

49-9071 General Maintenance & Repair Worker

2010 Employment: 50,130

2018 Projected Employment: 54,070

2011 Mean Hourly wage: \$17.17

Annual Job Openings: 610

Job Preparation Level
Moderate-term on-the-job Training

17-3027 Mechanical Engineering Technicians

2010 Employment: 350

2018 Projected Employment: 370

2011 Mean Hourly wage: \$22.82

Annual Job Openings: 10

Job Preparation Level
Associate's Degree

Green Career Pathways in Pollution Reduction & Removal, Greenhouse Gas Reduction, and Recycling & Reuse

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Now requires on-the-job training, work experience, and/or a high school diploma or less				
45-1011	Supervisors of Farming, Fishing, & Forestry Workers	Work Exp in a related Job	60	\$23.64
45-4011	Forest & Conservation Workers	Moderate-term O-J-T	20	\$11.97
47-4041	Hazardous Materials Removal Workers	Moderate-term O-J-T	20	\$13.71
49-9071	Maintenance & Repair Workers, General	Moderate-term O-J-T	610	\$17.17
53-1021	Supervisors of Helpers, Laborers, & Material Movers, Hand	Work Exp in a related Job	250	\$22.10
53-7081	Refuse & Recyclable Material Collectors	Short-term O-J-T	120	\$13.32
Next requires an associate's degree or postsecondary vocational training				
17-3025	Environmental Engineering Technicians	Associate's Degree	30	\$19.56
19-4091	Environmental Science & Protection Technicians, Incl Health	Associate's Degree	30	\$20.71
19-4093	Forest & Conservation Technicians	Associate's Degree	10	\$20.07
29-9012	Occupational Health & Safety Technicians	Associate's Degree	0	\$20.06
33-3031	Fish & Game Wardens	Associate's Degree	20	\$16.08
Later requires a bachelor's degree or more				
17-1012	Landscape Architects	Bachelor's Degree	10	\$26.45
17-2051	Civil Engineers	Bachelor's Degree	130	\$35.45
17-2081	Environmental Engineers	Bachelor's Degree	60	\$38.10
19-1031	Conservation Scientists	Bachelor's Degree	10	\$29.90
19-2041	Environmental Scientists & Specialists, Incl Health	Master's Degree	60	\$27.17
29-9011	Occupational Health & Safety Specialists	Bachelor's Degree	20	\$32.19

*Sample Green Career Pathway:
Pollution Reduction & Removal, Greenhouse
Gas Reduction, and Recycling & Reuse*

**47-4041 Hazardous Materials
Removal Worker**

2010 Employment: 670

2018 Projected Employment: 670

2011 Mean Hourly wage: \$13.71

Annual Job Openings: 20

Job Preparation Level
Moderate-term on-the-job Training

**19-4091 Environmental Science
& Protection Technician,
Including Health**

2010 Employment: 580

2018 Projected Employment: 670

2011 Mean Hourly wage: \$20.71

Annual Job Openings: 30

Job Preparation Level
Associate's Degree

**19-2041 Environmental Scientist
or Specialist, Including Health**

2010 Employment: 1,530

2018 Projected Employment: 1,650

2011 Mean Hourly wage: \$27.17

Annual Job Openings: 60

Job Preparation Level
Master's Degree

Green Career Pathways in Natural Resources Conservation

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Now requires on-the-job training, work experience, and/or a high school diploma or less				
13-1021	Purchasing Agents & Buyers, Farm Products	Long-term O-J-T	0	\$30.78
45-1011	Supervisors of Farming, Fishing, & Forestry Workers	Work Exp in a Related Job	60	\$23.64
45-2011	Agricultural Inspectors	Work Exp in a Related Job	20	\$19.08
45-4011	Forest & Conservation Workers	Moderate-term O-J-T	20	\$11.97
Next requires an associate's degree or postsecondary vocational training				
19-4011	Agricultural & Food Science Technicians	Associate's Degree	20	\$15.70
19-4093	Forest & Conservation Technicians	Associate's Degree	10	\$20.07
Later requires a bachelor's degree or more				
11-1021	General & Operations Managers	Bachelor's or Higher + Work Exp	2,090	\$49.72
11-9013	Farm, Ranch, & Other Agricultural Managers	Bachelor's or Higher + Work Exp	180	\$28.20
17-1012	Landscape Architects	Bachelor's Degree	10	\$26.45
19-1031	Conservation Scientists	Bachelor's Degree	10	\$29.90
25-9021	Farm & Home Management Advisors	Bachelor's Degree	20	*

* Data Suppressed

Sample Green Career Pathway: Natural Resources Conservation

45-4011 Forest & Conservation Worker

2010 Employment: 480

2018 Projected Employment: 510

2011 Mean Hourly wage: \$11.97

Annual Job Openings: 20

Job Preparation Level
Moderate-term on-the-job Training

19-4093 Forest & Conservation Technician

2010 Employment: 290

2018 Projected Employment: 310

2011 Mean Hourly wage: \$20.07

Annual Job Openings: 10

Job Preparation Level
Associate's Degree

19-1031 Conservation Scientist

2010 Employment: 270

2018 Projected Employment: 290

2011 Mean Hourly wage: \$29.90

Annual Job Openings: 10

Job Preparation Level
Bachelor's Degree

Green Career Pathways in Environmental Compliance, Education & Training, and Public Awareness

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Now requires on-the-job training, work experience, and/or a high school diploma or less				
13-1041	Compliance Officers	Long-term O-J-T	80	\$29.70
43-4051	Customer Service Representatives	Moderate-term O-J-T	4,620	\$15.94
43-5071	Shipping, Receiving, and Traffic Clerks	Short-term O-J-T	600	\$14.49
45-2011	Agricultural Inspectors	Work Exp in a Related Job	20	\$19.08
47-4011	Construction and Building Inspectors	Work Exp in a Related Job	70	\$22.94
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	Moderate-term O-J-T	200	\$15.37
53-6051	Transportation Inspectors	Work Exp in a Related Job	60	\$33.34
Next requires an associate's degree or postsecondary vocational training				
17-3024	Electro-Mechanical Technicians	Associate's Degree	10	\$27.07
19-4041	Geological and Petroleum Technicians	Associate's Degree	0	\$23.15
29-9012	Occupational Health and Safety Technicians	Associate's Degree	0	\$20.06
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	Postsec Voc-Tech Training	130	\$23.35
Later requires a bachelor's degree or more				
13-1151	Training and Development Specialists	Bachelor's Degree	390	\$27.56
17-2041	Chemical Engineers	Bachelor's Degree	10	\$39.31
17-2081	Environmental Engineers	Bachelor's Degree	60	\$38.10
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	Bachelor's Degree	20	\$35.03
17-2161	Nuclear Engineers	Bachelor's Degree	10	*

* Data Suppressed

SOC Code	Occupation	Job Preparation Level	Annual Openings	2011 Hourly Wages
Later <i>requires a bachelor's degree or more (Continued)</i>				
19-1031	Conservation Scientists	Bachelor's Degree	10	\$29.90
19-2031	Chemists	Bachelor's Degree	40	\$35.07
19-2042	Geoscientists, Except Hydrologists and Geographers	Bachelor's Degree	0	\$30.73
19-3051	Urban and Regional Planners	Bachelor's Degree	20	\$28.01
27-1021	Commercial and Industrial Designers	Bachelor's Degree	30	\$28.49
27-3031	Public Relations Specialists	Bachelor's Degree	260	\$26.67
29-9011	Occupational Health and Safety Specialists	Bachelor's Degree	20	\$32.19

**Sample Green Career Pathway:
Environmental Compliance,
Education & Training, and Public Awareness**

**13-1041 Compliance Officer, Exc
Agriculture, Construction, Health
& Safety, and Transportation**

2010 Employment: 6,670

2018 Projected Employment: 6,650

2011 Mean Hourly wage: \$29.70

Annual Job Openings: 80

Job Preparation Level
Long-term on-the-job Training

53-6051 Transportation Inspector

2010 Employment: 1,180

2018 Projected Employment: 1,360

2011 Mean Hourly wage: \$33.34

Annual Job Openings: 60

Job Preparation Level
Work Experience in a Related Occupation

17-2111 Health & Safety Engineers

2010 Employment: 730

2018 Projected Employment: 740

2011 Mean Hourly wage: \$35.03

Annual Job Openings: 20

Job Preparation Level
Bachelor's Degree

This workforce solution was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. This solution is copyrighted by the institution that created it. Internal use by an organization and/or personal use by an individual for non-commercial purposes is permissible. All other uses require the prior authorization of the copyright owner.