



FLORIDA GREEN JOBS

*The Florida Energy Systems
Consortium*

**Community/State College Energy
Workshop**

Florida Agency for Workforce Innovation

September 26, 2011
Gainesville, FL



Background Leading to Florida's Green Survey

- In 2008, states started joining together to research definitions of green jobs
- A green jobs workgroup was formed with approximately 10 states
- In 2009, the Workforce Information Council formed the USDOL BLS-WIC Green Jobs Study Group
- In May 2009, Workforce Florida, Inc. held a workshop to define green jobs for Florida in preparation for a future survey



Florida Green Jobs Grant

- In 2009, Florida applied for and was awarded a competitive LMI Improvement grant by the U.S. Department of Labor for \$1.25 million to:
 - Conduct a green jobs survey statewide and by workforce region
 - Create a green jobs portal on the state labor exchange system



Florida's Green Jobs Definition by Workforce Florida, Inc.

- “A green job increases the conservation and sustainability of natural resources for the benefit of Floridians. This includes jobs that reduce energy usage or lower carbon emissions, and protect Florida’s natural resources. Green jobs should provide worker-friendly conditions, pay sustainable wages and offer opportunities for continued skill training and career growth.”

Source: Workforce Florida, Inc., Sustainability/Infrastructure Committee, Defining Green Jobs for Florida, June 2009.



Survey Definition of Green Jobs

- A green job is one that directly produces green products or directly provides green services in any of the following five green sectors:
 - Produce or manufacture renewable energy
 - Increase energy efficiency
 - Conserve natural resources
 - Prevent, reduce, and clean up pollution
 - Produce clean transportation and fuels
- *Note: Florida's definition of green jobs excluded indirect and support green jobs; the definition also attempted to exclude "green practices" (e.g. paper recycling by office workers)*



Survey Questions

- Green sectors and subsectors
- Current green employment by occupation and by industry, statewide and by workforce region
- Estimated green establishments
- Planned green employment in 2011
- Green certifications and training required for hiring
- Unmet green training needs
- Green skills, knowledge, and abilities gaps
- Green vacancies



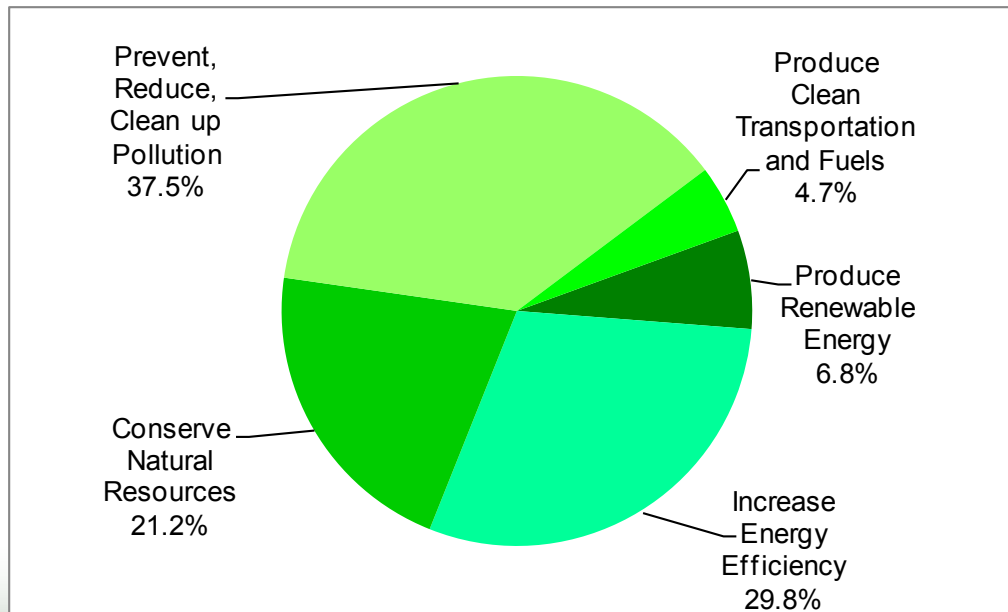
Survey Results

- There are just under 45,000 green jobs in Florida, representing less than 1 percent of total nonagricultural employment.
- Employers expect to add approximately 4,000 green jobs from 2010 to 2011, a growth of 8 percent. In comparison, the Florida economy is expected to gain close to 73,000 jobs from Q42010 to Q42011, an increase of 1 percent.

Florida Green Jobs by Green Sector 2010

- **Prevent, reduce, and clean up pollution** is the largest of the five green sectors, accounting for 37.5 percent of green jobs.
- **Increase energy efficiency** (29.8 percent) is second and **conserve natural resources** (21.2 percent) is third.

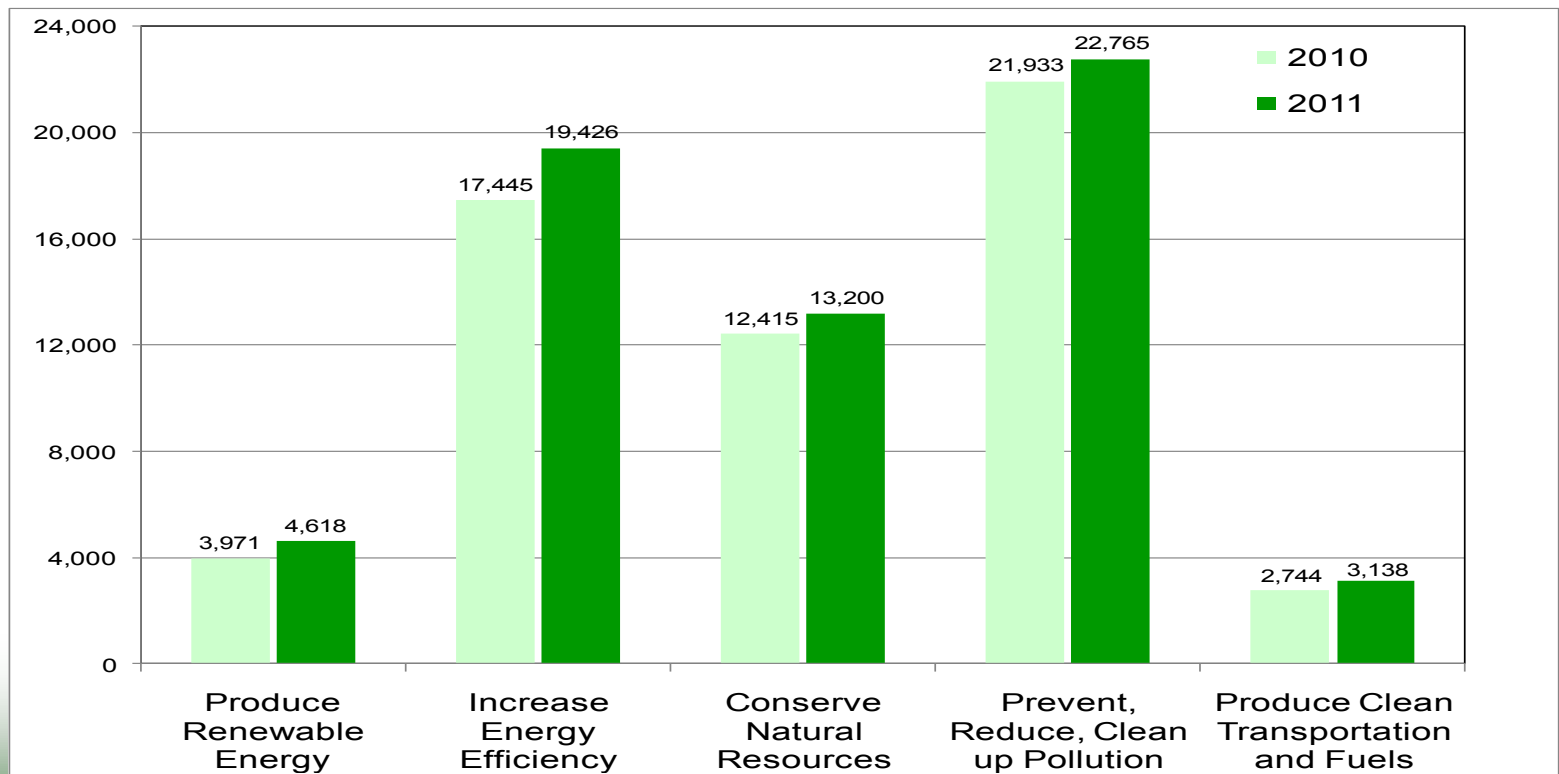
Green Jobs by Green Sector



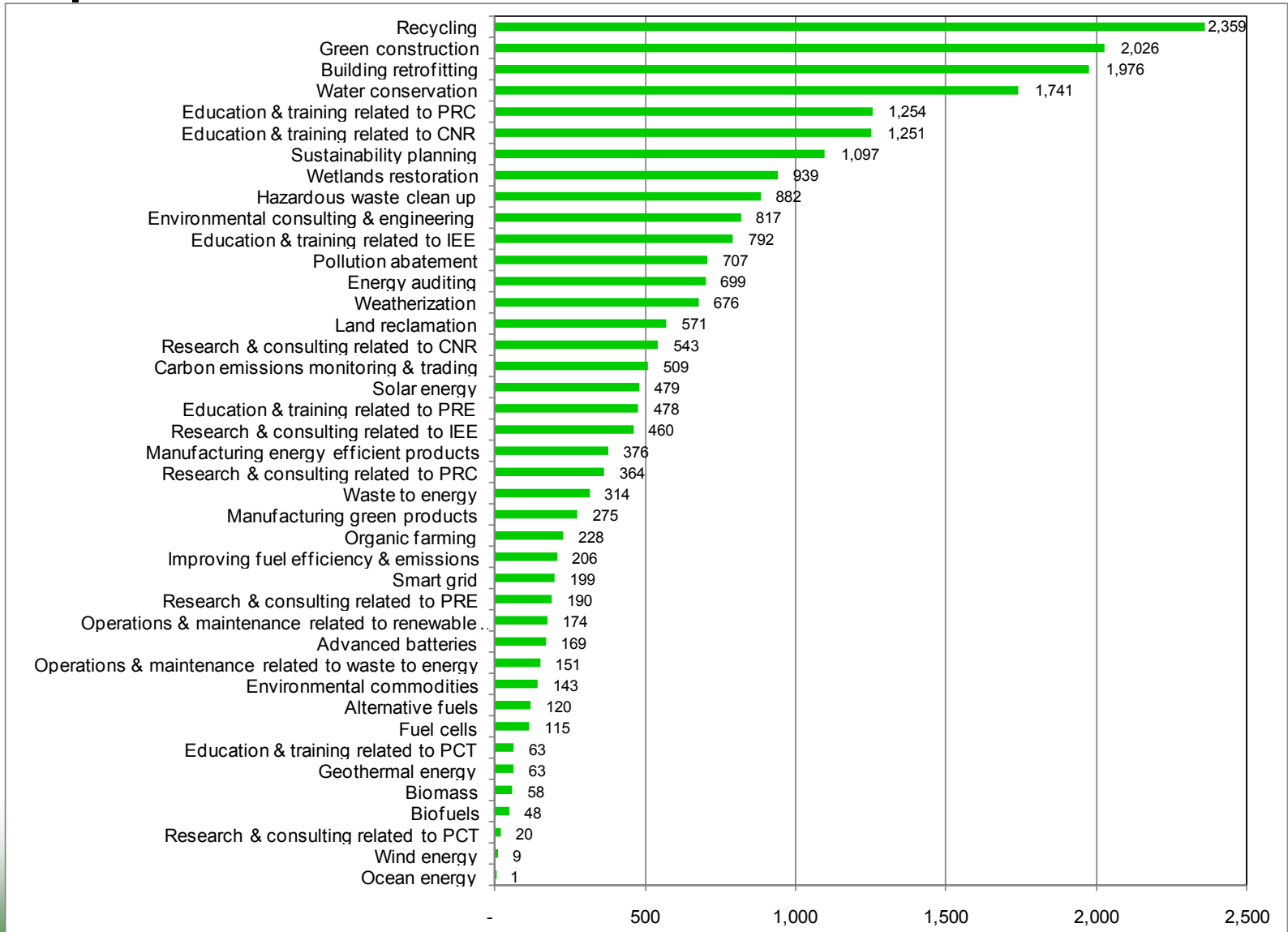
Note: Job estimates across green sectors are not mutually exclusive since employers could mark more than one sector.

Florida Green Jobs Growth by Green Sector 2010 - 2011

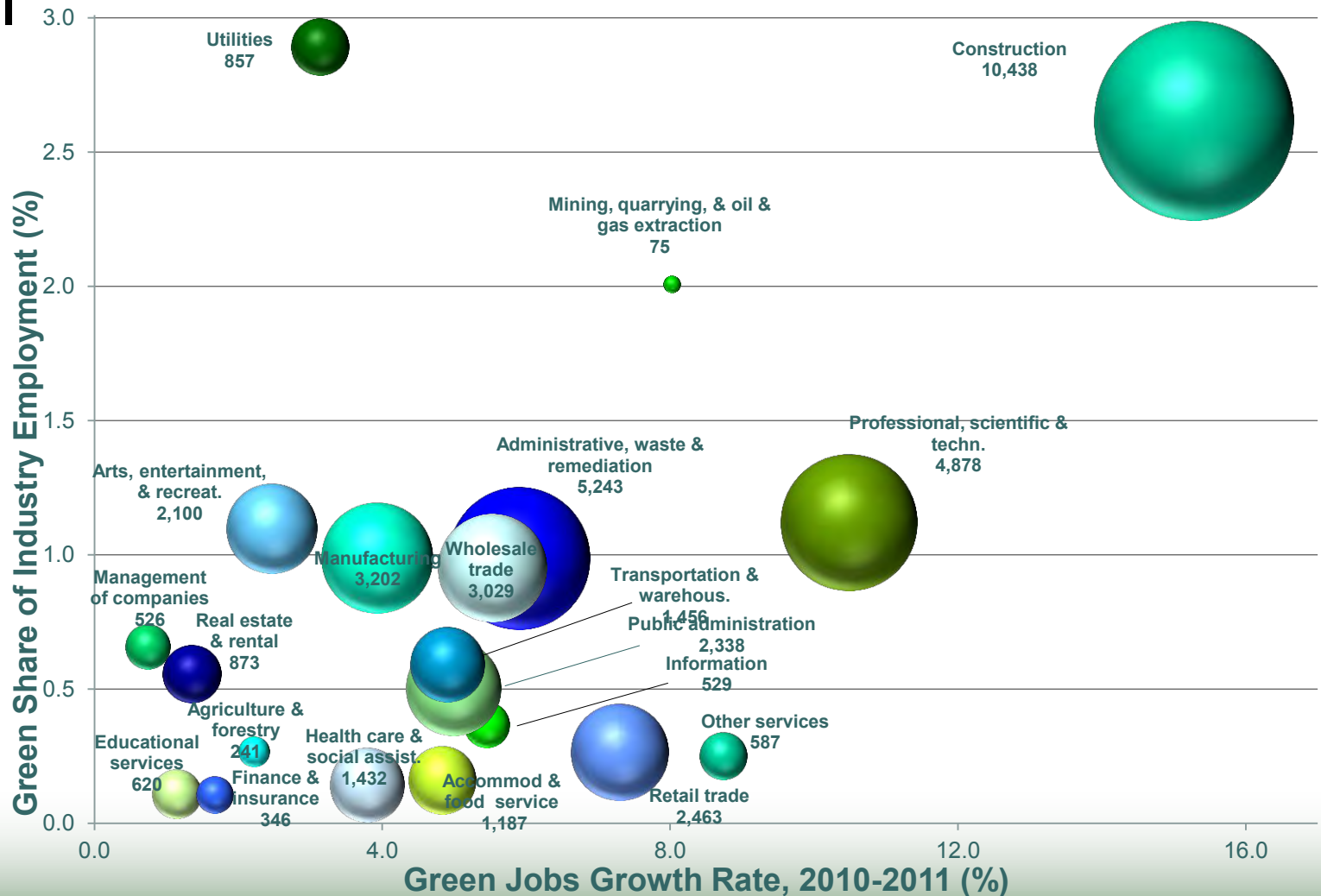
- **Produce renewable energy** (16.3 percent) is estimated to have the fastest growth rate of all green sectors between 2010 and 2011, followed by **produce clean transportation and fuels** (14.4 percent) and **increase energy efficiency** (11.4 percent).



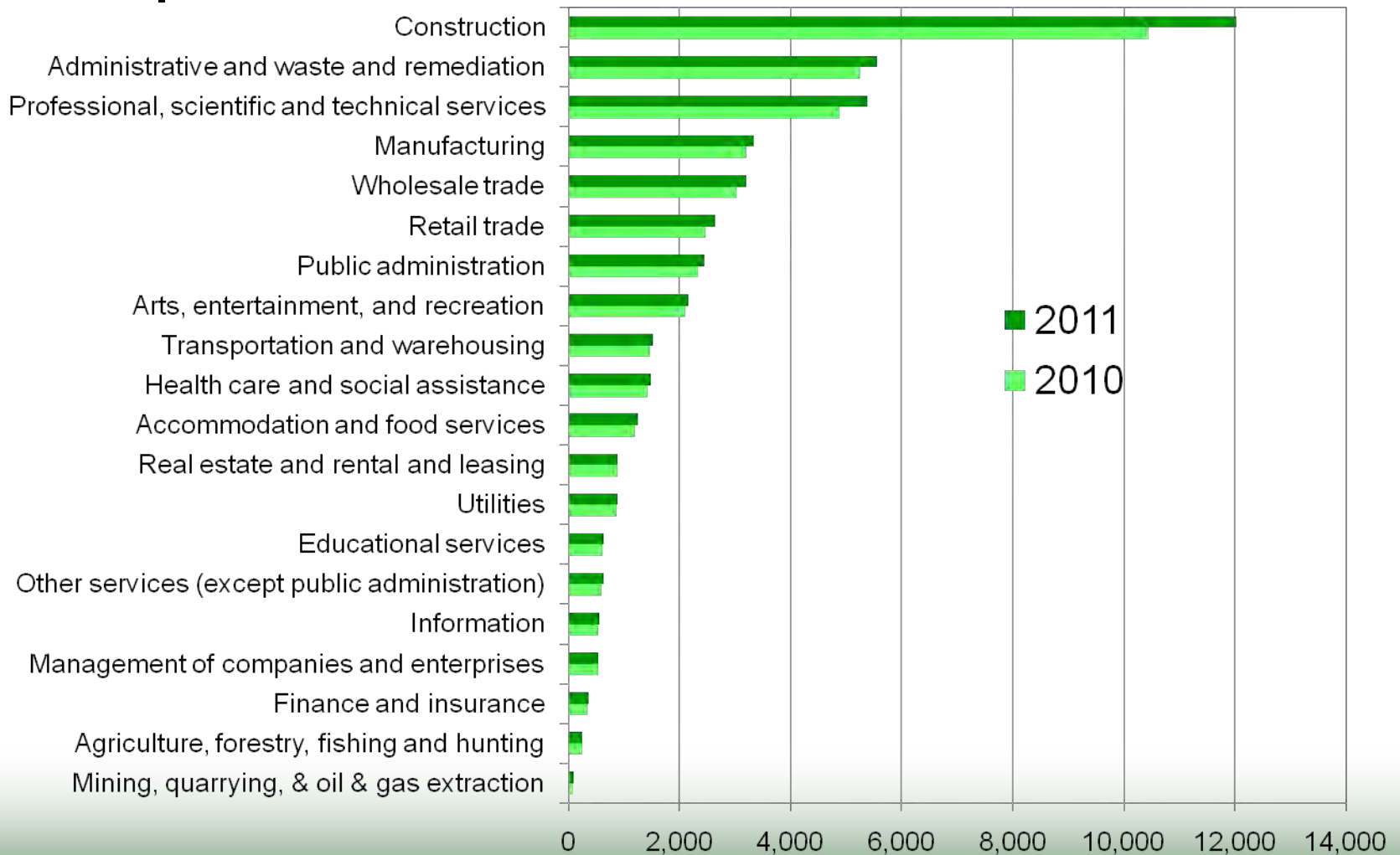
Establishments Engaged in Green Subsectors



Number of Green Jobs, Green Job Growth, and Share of Total Employment



Green Jobs by NAICS Industry Sector 2010 – 2011





Top Green Occupations Ranked by Number of Green Jobs

Occupational Title	2010	2011	Growth 2010-2011		Share of Occupational Employment
			Level	Percent	
Heating, Air Cond., & Refrig. Mechanics and Installers	3,676	4,045	369	10	16.3
Environmental Scientists and Specialists	1,650	1,654	4	0.3	25.5
First-Line Supervisors/Manag. of Constr. and Extr. Workers	1,519	1,810	291	19.1	3.5
Production Workers, All Other	1,297	1,306	9	0.7	30.0
Electricians	1,215	1,470	256	21	4.0
Truck Drivers, Heavy and Tractor-Trailer	1,065	1,115	50	4.7	1.5
Solar Photovoltaic Installers	1,059	1,518	459	43.3	100.0
Janitors and Cleaners, except Maids and Houskp.	1,041	1,164	123	11.8	0.9
Packers and Packagers, Hand	1,033	1,033	0	0	3.6
Hazardous Materials Removal Workers	1,018	1,050	32	3.1	100.0

Shades of Green by Occupation

Florida Top 25 Greenest Occupations (as % of Total Jobs)

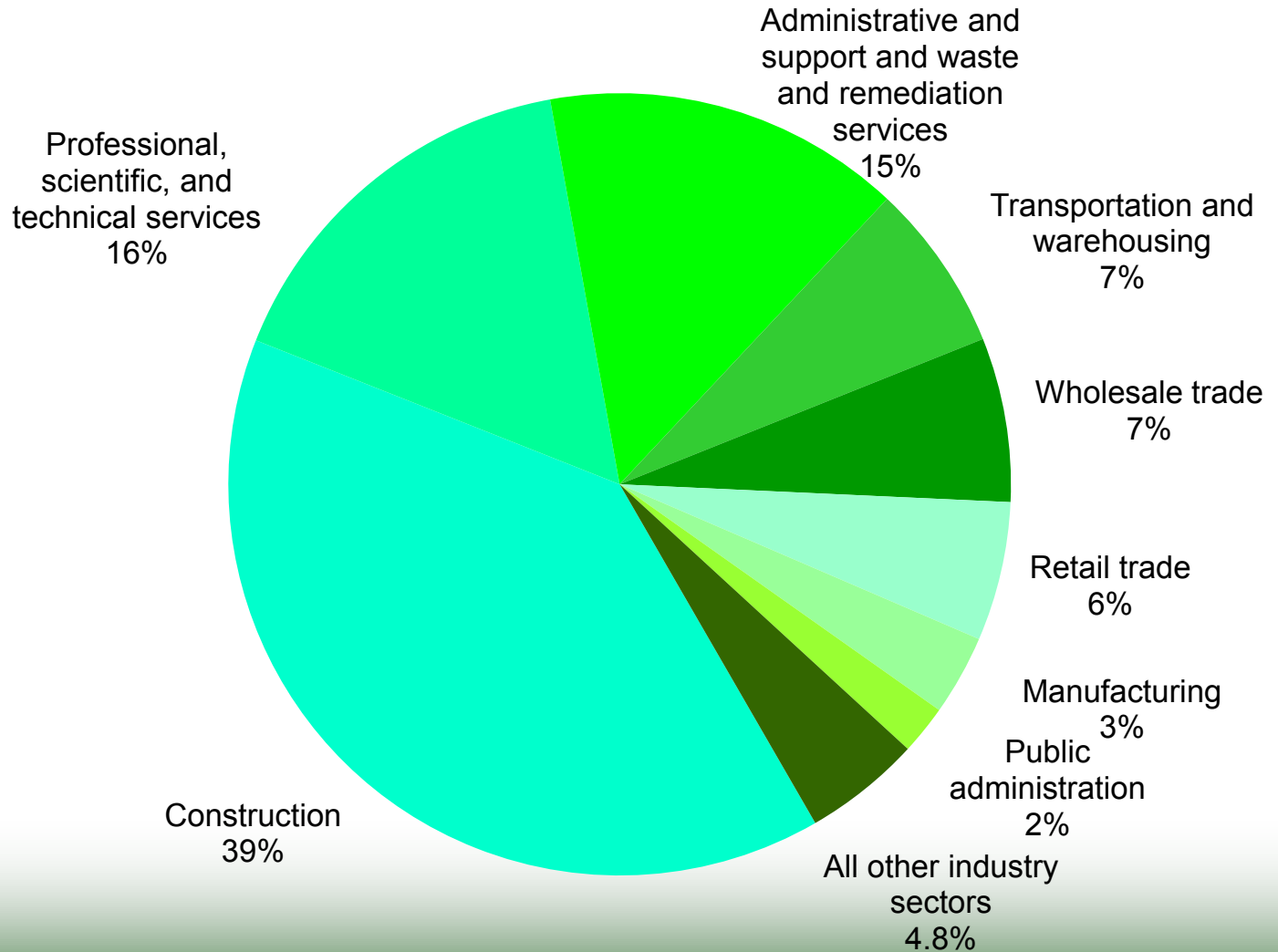
Occupational Title	Green Jobs as a Percent of Total Jobs (%)
Solar Photovoltaic Installers	100.0
Conservation Scientists	100.0
Hazardous Materials Removal Workers	100.0
Biochemists and Biophysicists	37.7
Foresters	35.5
Textile, Apparel, and Furnishings Workers, All Other	32.3
Production Workers, All Other	30.0
Plant and System Operators, All Other	26.8
Environmental Scientists and Specialists, Including Health	25.5
Environmental Science and Protection Technicians, Including Health	25.2
Insulation Workers, Floor, Ceiling, and Wall	24.2
Environmental Engineers	19.9
Geoscientists, Except Hydrologists and Geographers	17.4
Natural Sciences Managers	16.8
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	16.3
Environmental Science Teachers, Postsecondary	15.7
Environmental Engineering Technicians	14.9
Forest and Conservation Technicians	14.8
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	13.7
Computer-Controlled Machine Tool Operators, Metal and Plastic	12.9
Soil and Plant Scientists	12.9
Microbiologists	12.8
Architects, Except Landscape and Naval	10.7
Chemical Equipment Operators and Tenders	10.7
Mining Machine Operators, All Other	10.4



Targeted Occupations List

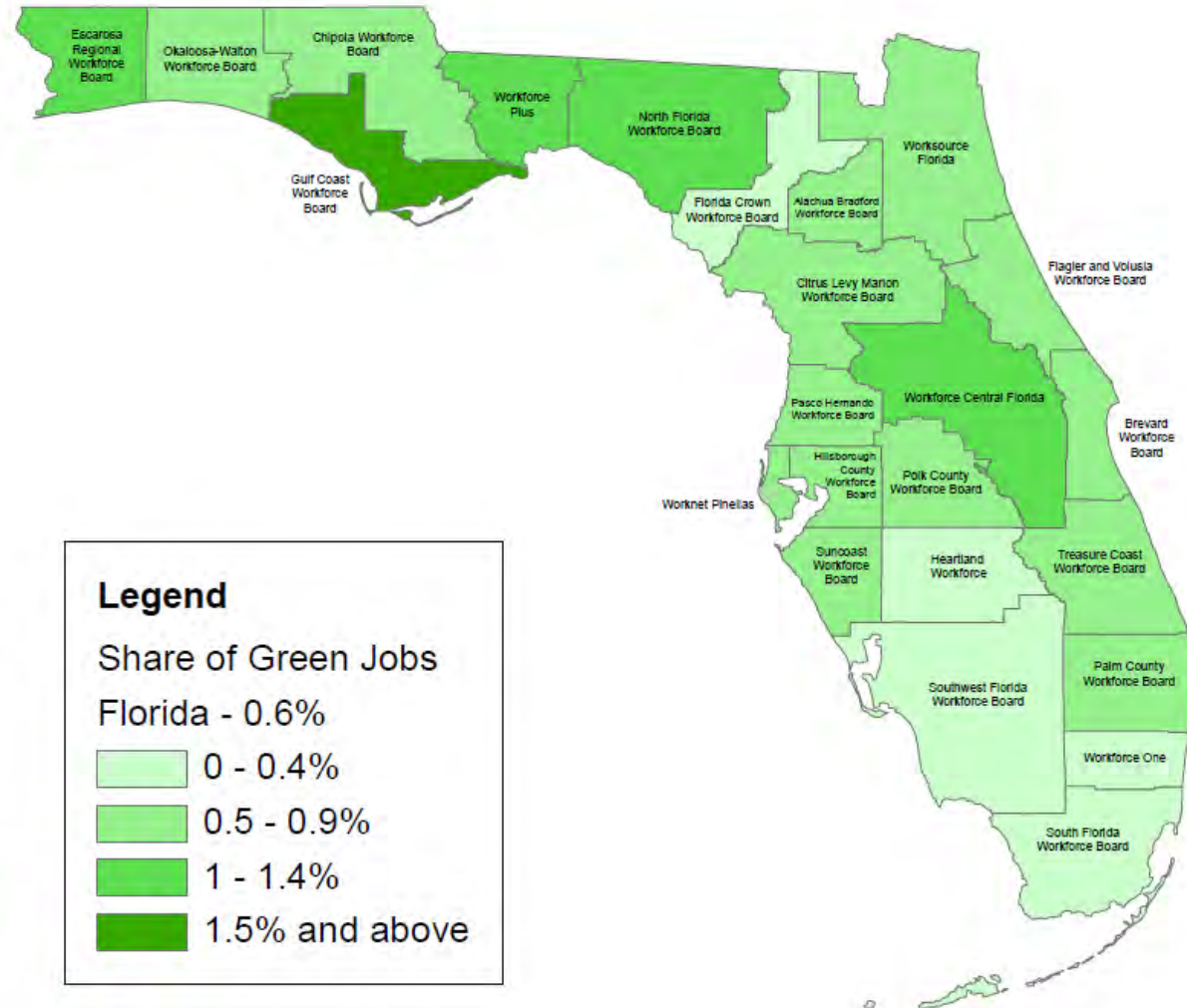
- 50 out of 97 occupations on the TOL 2012-13 list (PSAV/CC) are green
- 25 out of 38 occupations on the high demand Bachelor's list are green

Green Vacancies by Industry Sector



Green Jobs by Workforce Region

WFR	Green Jobs	Total Jobs	Share of Total Jobs (%)
4	1,199	76,654	1.6
5	2,174	157,889	1.4
6	364	29,130	1.3
1	1,783	149,998	1.2
12	9,912	974,057	1.0
9	1,156	123,528	0.9
16	1,117	131,700	0.8
17	1,499	192,109	0.8
18	1,714	238,184	0.7
11	1,208	169,253	0.7
8	3,947	575,964	0.7
2	634	95,279	0.7
3	197	29,660	0.7
10	767	131,996	0.6
15	3,139	572,403	0.5
14	2,099	391,268	0.5
13	998	189,833	0.5
20	856	175,624	0.5
21	2,303	495,731	0.5
7	105	31,195	0.3
22	2,268	686,107	0.3
24	1,162	359,428	0.3
19	108	44,245	0.2
23	1,714	985,550	0.2
Florida	42,422	7,176,801	0.6





Top Workforce Regions by Number of Green Jobs

Region	Green Jobs Estimate 2010
Workforce Central Florida	9,912
WorkSource	3,947
Tampa Bay Workforce Alliance, Inc.	3,139

- The top three workforce regions by number of green jobs accounted for 40.0 percent of all green jobs in the state
- These three regions accounted for less than 30 percent of all jobs in Florida

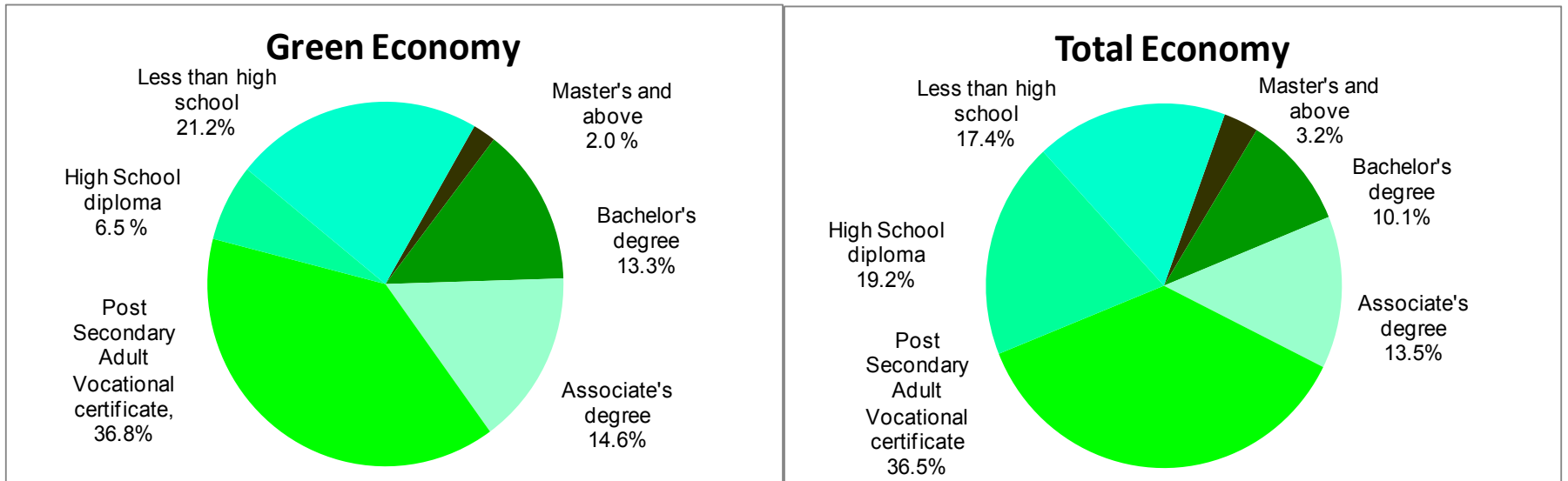


Top Workforce Region by Expected Green Job Growth Rate

Region	Estimated Growth 2010 - 2011	
	Level	Percent
Jobs Plus Workforce Board	300	45.5
Heartland Workforce	21	19.3
Chipola Regional Workforce Development Board	37	18.5

- Two regions were estimated to lose jobs over the year:
 - Brevard Workforce
 - North Florida Workforce Development Board

Florida Educational Requirements





Florida Green Occupations Compared to O*NET Green Occupations

- Over 60 percent (217 occupations) of the reported green occupations by Florida employers were not listed on the O*NET lists
- The green economy in Florida is much more pervasive than initially thought and a much wider number of occupations have a green aspect of their jobs
- The greenness of an occupation may vary from employer to employer
- The process may be best described with O*NET's term "greening of the world of work"

List Type	O*NET	Florida	Florida Prevailing Occupational Groups
Increased Demand	64	45	Environmental, construction, and production
Enhanced Skills	62	43	Construction, waste/recycling, and engineering
New & Emerging	91	33	Solar and other renewable energy, energy conservation, and alternative fuels



Top Occupations in Green Emerging Industries

Increase Energy Efficiency

Heating, Air Cond., and Refrig. Mechanics and Installers

General and Operations Managers

Electricians

First-Line Supervisors/Managers of Construction Trades

Architects, Except Landscape and Naval

Training and Development Specialists

Construction Managers

Construction Laborers

Roofers

Electrical and Electronic Equipment Assemblers

Plumbers, Pipefitters, and Steamfitters

Produce Renewable Energy

Solar Photovoltaic Installers

Electrical and Electronic Equipment Assemblers

Heating, Air Cond. and Refrig. Mechanics and Installers

General and Operations Managers

Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products

Plumbers, Pipefitters, and Steamfitters

Sales Managers

Engineers, All Other

Furnace, Kiln, Oven, Drier, and Kettle Operators

Maintenance and Repair Workers, General

Laborers and Freight, Stock, and Material Movers, Hand



Top 15 Florida Increased Demand O*NET Occupations

Green Increased Demand			
O*NET Code	O*NET Title	Green Jobs	
		2010	2011
192041	Environmental Scientists and Specialists Including Health	1,498	1,503
472111	Electricians	1,165	1,435
191023	Zoologists and Wildlife Biologists	359	362
472131	Insulation Workers Floor Ceiling and Wall	344	405
472073	Operating Engineers and Other Construction Equipment Operators	342	385
512022	Electrical and Electronic Equipment Assemblers	287	300
512092	Team Assemblers	218	224
511011	First-Line Supervisors of Production and Operating Workers	215	235
192031	Chemists	207	213
514011	Computer-Controlled Machine Tool Operators Metal and Plastic	192	192
491011	First-Line Supervisors of Mechanics Installers and Repairers	176	199
537062	Laborers and Freight Stock and Material Movers Hand	153	153
119121	Natural Sciences Managers	126	126
519011	Chemical Equipment Operators and Tenders	112	118
473012	Helpers--Carpenters	98	98



Top 15 Florida Enhanced Skills O*NET Occupations

Green Enhanced Skills			
O*NET Code	O*NET Title	Green Jobs	
		2010	2011
499021	Heating and Air Conditioning Mechanics and Installers	2,108	2,218
474041	Hazardous Materials Removal Workers	1,075	1,121
533032	Heavy and Tractor-Trailer Truck Drivers	1,003	1,054
499042	Maintenance and Repair Workers, General	858	865
472061	Construction Laborers	827	834
119021	Construction Managers	662	937
172081	Environmental Engineers	655	680
171011	Architects Except Landscape and Naval	635	635
537081	Refuse and Recyclable Material Collectors	618	619
472181	Roofers	607	795
111021	General and Operations Managers	447	524
172051	Civil Engineers	406	438
194091	Environmental Science and Protection Technicians	377	399
472152	Plumbers	301	313
172071	Electrical Engineers	229	271



Top 15 Florida New & Emerging O*NET Occupations

O*NET Code	O*NET Title	Green Jobs	
		2010	2011
519199.01	Recycling and Reclamation Workers	1,650	1,665
474099.01	Solar Photovoltaic Installers	1,050	1,277
474099.02	Solar Thermal Installers and Technicians	222	511
531021.01	Recycling Coordinators	186	198
131199.05	Sustainability Specialists	156	156
131199.01	Energy Auditors	97	222
151099.07	Geographic Information Systems Technicians	82	84
173029.06	Manufacturing Engineering Technologists	79	84
172199.04	Manufacturing Engineers	55	71
173029.1	Fuel Cell Technicians	50	50
173029.09	Manufacturing Production Technicians	50	50
474099.03	Weatherization Installers and Technicians	50	50
471011.03	Solar Energy Installation Managers	43	56
173029.02	Electrical Engineering Technologists	37	37
192041.02	Environmental Restoration Planners	36	39
414011.07	Solar Sales Representatives and Assessors	30	34
119121.02	Water Resource Specialists	27	26
192041.03	Industrial Ecologists	27	27
112011.01	Green Marketers	27	27
172051.02	Water/Wastewater Engineers	23	23
172199.03	Energy Engineers	23	23
518099.02	Methane/Landfill Gas Generation System Technicians	15	15
518099.03	Biomass Plant Technicians	12	12
518099.01	Biofuels Processing Technicians	9	9
499099.01	Geothermal Technicians	7	7
173029.08	Photonics Technicians	5	5
111011.03	Chief Sustainability Officers	4	4
119199.04	Supply Chain Managers	3	3



Most Frequently Required Training and Certifications for Green Jobs

- Approximately half of estimated green jobs were reported to require specific green certification or training.

Leadership in Energy and Environmental Design
HAZWOPER/HAZMAT
Florida Green Building Council
Solar certifications by Florida Solar Energy Center or North American Board of Certified Energy Practitioners or Solar Source Institute
Indoor air quality training
Association of Construction Industry Certified Professionals
Electrical License
Resource Conservation and Recovery Act
Construction Trades licenses
Journeyman
Apprenticeship
American Institute of Certified Planners
ISO (International Standardization Organization) 14001
Heating, Ventilation, and Air Conditioning



Identified Construction and Energy Efficiency Related KSA Gaps

- Geothermal and heat pump technology for heating, air conditioning, and refrigeration mechanics and installers
- Building retrofitting skills were identified for operating engineers and construction equipment operators
- Energy and natural resources conservation for equipment mechanics and quality control technicians
- Energy and natural resources conservation skills for construction trades
- Designing and installing energy efficient windows and knowledge of their environmental impact
- Identify and correct energy waste problems.
- Training in photovoltaic system converter repairs ,copper recycling , and lighting retrofitting for electricians.
- Recommending types of green cartridges for printers for manufacturing sales representatives
- Certified Global Business Professional program
- Energy monitoring and energy efficiency for construction supervisors
- Swimming pool hydraulics and programming for variable speed pumps for first-line supervisors of mechanics
- LEED, North American Board of Certified Energy Practitioners (NABCEP) certification
- Photovoltaic fundamentals, thermal fundamentals, basic hydraulics system sizing principals, and basic plumbing for solar installers and electrical assemblers.
- Energy conservation programs and sealing, fitting, and weatherproofing methods and principles for green carpenters
- Solar photovoltaic installation and sizing and solar water heating systems, basic plumbing, wiring, and sizing principles for engineers, electricians, and installers
- Generalized knowledge of construction tools, methods and safety for weatherization employees
- Proper roof flashing techniques, plumbing, and electrical knowledge and skills for solar installation jobs
- Energy auditing for plumbers, pipefitters, and steamfitters



Florida Green Jobs Portal

Link:

- Job seekers can search for green jobs by keyword or geographic area
- The portal will use the results of the survey to help populate the new system
- Identified green occupations by the survey will be used to finetune tagging of green jobs
- Since the portal's soft launch in November 2010, initial website analytics show that the green jobs portal draws more traffic than any other portal on the Florida labor exchange site



Welcome to Florida's online career resource for individuals seeking information on green jobs, green training and green jobs survey results.

JOB SEEKERS

EMPLOYERS

WHAT IS A GREEN JOB?

GREEN JOBS SURVEY RESULTS

OTHER FL GREEN INITIATIVES

ABOUT FLORIDA



To get started, simply enter your zip code and/or keyword in the search boxes to the right to look for the latest green jobs available in that area.



If you'd like to learn more about the Employ Florida website, click on one of the tabs above.



Need assistance? Email your questions or call our Help Desk toll-free at 800-438-4128.

SEARCH FOR A GREEN JOB

Keyword (e.g. Environmental Engineer)

environmental scientist

OR

Zip Code

with

Radius

10 miles



SEARCH FOR GREEN JOBS >

Green Jobs links

- Green jobs reports: <http://labormarketinfo.com/pubs/index.htm#18>

- Summary reports



Green Jobs Survey Report

Select Release

The Florida Green Jobs Survey is designed to inform local workforce, education, and economic development partners of the dynamics of the green economy. [\(top\)](#)

- Detailed reports



Green Jobs Detailed Reports

Select Release

The Florida Green Jobs Survey detailed reports provide in-depth analysis of the green economy statewide and by workforce region. [\(top\)](#)

- Statewide report: http://www.labormarketinfo.com/library/pubs/green/gj_long_survey/statewide.pdf
- Green jobs portal: <http://greenjobs.employflorida.com>



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Labor Market Statistics Center**

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<http://www.whatpeopleareasking.com/index.shtm>**

