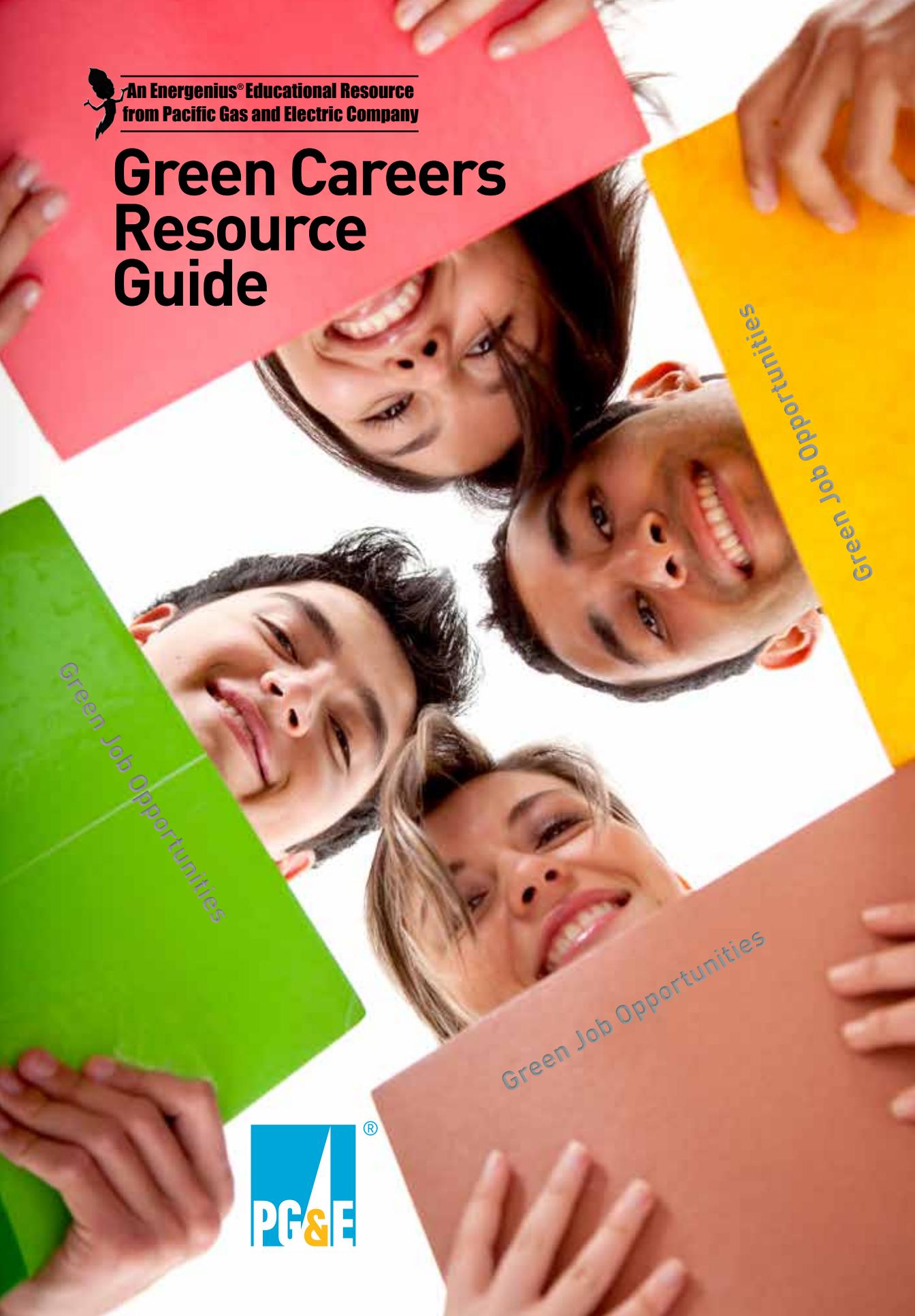




An Energenius® Educational Resource
from Pacific Gas and Electric Company

Green Careers Resource Guide



Green Job Opportunities

Green Job Opportunities

Green Job Opportunities





Green Careers Resource Guide

This Green Careers Resource Guide has been developed for high school counselors, teachers, career advisors, and other educators who want to introduce students to a world of green jobs and careers.

Table of Contents

1	What Are Green Jobs?
2-3	Introduction and Overview
4-5	Let's Define It!
6-7	The Green Sectors
8-13	Let's Do a Search—Student Scenarios
14	Websites and Books
15-18	California Government Websites Training Programs and Higher Education
19	U.S. Government Websites
20-24	Private and Nonprofit Websites
25-27	Read On: A Selection of Books



What Are Green Jobs?

“...Green jobs are jobs that contribute to meeting the goal of achieving environmental sustainability. Green jobs presently exist in every sector of the economy, from energy conservation, manufacturing, and green construction to transportation, land management, agriculture, and forestry. “

A Green Career Pathways Framework, The Corps Network, 2011



Copies of the Green Careers Resource Guide can be downloaded at www.pge.com/Energenius

Remember: Websites are continually updated and redesigned. Some addresses may have changed. If you find that an address no longer works, try this:

Go to the site's home page. You may find a link there to the resource you are looking for, or the page may include a search box. You can also search for the material you want by entering its name into a search engine such as Google (www.google.com) or Yahoo! (www.yahoo.com).

Pacific Gas and Electric Company does not necessarily endorse the specific websites or books cited in this guide, or the programs or materials provided by the various authors, organizations, or agencies. Educators should evaluate the websites and books and select those that best meet the needs of their own students.

© 2014 Pacific Gas and Electric Company Energenius® is part of the Pacific Gas and Electric Company's Energenius® Educational Program.

This program is funded by California utility customers and administered by Pacific Gas and Electric Company under the auspices of the California Public Utilities Commission.

No part of the Energenius Program may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by an information storage and retrieval system, without prior express permission from Pacific Gas and Electric Company.



Introduction and Overview

“In recent years, a movement has flourished in the United States to create an economy robust with green jobs.”

A Green Career Pathways Framework,
The Corps Network, 2011

Historically, it is not easy to determine exactly when the word green came to be defined as much more than a color. Green economy, green schools, green careers, green washing, green tech, green collar, green schools, green parties, and even green travel. Each day we hear and see a myriad of green terms about a range of green services and products spanning eco-friendly vacation travel to nontoxic cleaning products.

Green jobs and careers, in broad terms, are ones that contribute directly to preserving or enhancing the quality of our environment. Green jobs are associated with conserving energy and other natural resources and with avoiding pollution and waste. Although there is not a consensus on how green jobs are defined, the **Let’s Define It** pages will provide a sampling of these definitions.

Sustainable Ways of Working

Today’s students will enter a world of work with green jobs and careers emerging in every sector of the U.S. economy. Green jobs such as a wind turbine technician or an installer of charging stations for electric vehicles (EVs) are relatively new jobs. However, many green jobs are in existing occupations where men and women gain new skills and practice more sustainable ways of working, doing business, and providing goods and services for the economy.

The building trades, for example, are being retooled to identify green, sustainable materials and to build more energy-efficient homes and businesses. Auto mechanics are being retrained to work on electric vehicles, hybrids, and other non-petroleum-fueled

The Greening of Occupations

“The greening of occupations refers to the extent to which green economy activities and technologies increase the demand for existing occupations, shape the work and worker requirements needed for occupational performance, or generate unique work and worker requirements.”

From *Greening of the World of Work*, a report for the U.S. Department of Labor, Employment and Training Administration, Washington, DC. <http://www.onetcenter.org/reports/Green.html>

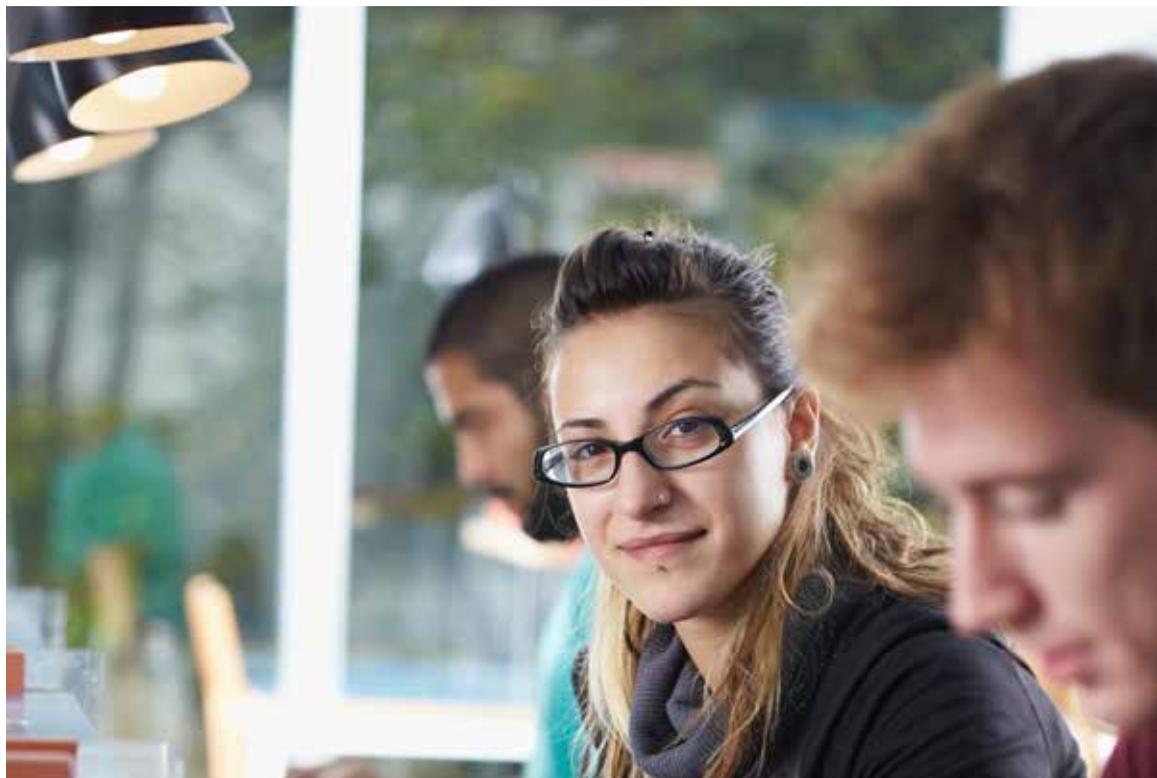


vehicles. Waste management operators are adapting new practices to decrease the final amount of materials sent to landfills. Designers are creating eco-packaging for products, house painters are using non-toxic paints and cleaners, and across the U.S. there are people in agriculture adopting more sustainable farming practices. Integral to the greening of the workforce are employees who have both knowledge and skills related to the conservation of energy and all natural resources.

Let's Do a Search

In this booklet, you will meet Anya, Collin, Javan, and other high school students as they do their research on training opportunities and possible green jobs and careers in their own futures. These hypothetical searches cover internships for high school students, certificate and degree programs at community colleges in California, post-secondary school training opportunities, and the state's partnership academies that focus on green careers.

This Green Careers Resource Guide from Pacific Gas and Electric Company provides online Web resources and print materials to introduce students to this ever-growing world of green jobs and careers. With every click on a Web resource in this guide, you and your students will discover a myriad of other links and green paths to explore.



Let's Define It!

A Working Definition of Green Jobs

“Any activity or service that performs or produces at least one of the following:

- **Generation and storing renewable energy**
- **Recycling existing materials**
- **Energy-efficient products, manufacturing, distribution, construction, installation, and maintenance**
- **Education, compliance, and awareness**
- **Natural and sustainable product manufacturing”**

Source: California Employment Development Department. www.edd.ca.gov/

Green jobs are defined as either:

- **Jobs in businesses that produce goods and/or provide services that benefit the environment or conserve natural resources**
- **Jobs in which workers' duties involve making their establishment's production process more environmentally friendly or use few natural resources**

Source: U.S. Department of Labor, Bureau of Labor Statistics. www.bls.gov/green



G
A

GREEN
AREEW

The U.S. Department of Commerce has defined green jobs as those associated with products or services whose “predominant function serves one or both of the following goals:

- Conserve energy and other natural resources...or
- Reduce pollution: This includes products or services that provide clean energy or prevent, treat, reduce, control, or measure environmental damage to air water and soil...”

Source: U.S. Department of Labor’s Occupational Informational Network (O*NET).
www.onetonline.org/

“A green career can be any occupation that is affected by activities such as conserving energy, developing alternative energy, reducing pollution or recycling.”

Source: U.S. Department of Labor’s Occupational Informational Network (O*NET).
www.onetonline.org/

United Nations Environmental Program:

“We define green jobs as work in agriculture, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to the preserving or restoring of environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency strategies, de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution.”

Source: United Nations Environmental Program. www.unep.org

“I really believe that almost any job can be a green job.”

Source: Anonymous job seeker at a green jobs fair.



The Green Sectors

There are green jobs and careers to be found in many sectors of the U.S. economy. There is not a consensus on how these green sectors are defined; however, the following 12 categories provide a way to identify where green jobs and careers can be found. These sectors are identified in a report, *Greening of the World of Work*,¹ prepared for the U.S. Department of Labor. Within this report are summaries of the amount of activity within each sector. Renewable energy generation, recycling, and waste reduction are the sectors identified with the highest level of job activity.

These brief descriptions on the various sectors have been adapted from the *Greening of the World of Work* report.

Renewable energy generation—The development and use of energy sources such as wind, solar, geothermal, and biomass.

Recycling and waste reduction—This sector includes the management, treatment, and reduction of waste and wastewater. The processing of recyclable materials is also included in this sector.

Energy efficiency—This sector, broadly defined, includes activities that increase energy efficiency.



Transportation—This sector includes increasing efficiency and/or reducing environmental impacts of various modes of transportation.

Green construction—This includes the construction of new green buildings and the retrofitting of existing commercial and residential structures.

Agriculture and forestry—Includes efficient land management, use of natural products, and aquaculture.

Environmental protection—Activities related to ensuring air quality, climate change adaptation, and remediation of environmental issues.

Governmental and regulatory administration—Work activities related to conservation and pollution prevention, advocacy and environmental policy analysis. Work in this sector can be conducted by both private and public agencies.

Research, design, and consulting—This sector includes those “indirect jobs” as energy consulting and other business services.

Manufacturing—This sector includes using energy-efficient processes and also activities related to the manufacturing of green technologies.

Energy trading—This sector includes financial services related to the buying and selling of energy as an economic commodity. This green sector also includes carbon-trading projects.

Energy and carbon capture and storage—Activities include those related to capturing and storing energy and/or carbon emissions.



¹Greening of the World of Work, a report for the U.S. Department of Labor, Employment and Training Administration, Washington, DC, 2011. Submitted by the National Center for O*NET Development. www.onetonline.org/



Let's Do a Search

Student Scenarios

Sasha and Sustainability

Meet Sasha, a high school junior who lives in Northern California. She started a green club at her school and has been active in organizing students to follow the three Rs' of reducing, reusing, and recycling. Sasha sees in her future a career that involves reclaimed materials and sustainable living. Her research begins with [greenoccupia.com](https://www.greenoccupia.com) to get an idea of a range of fields related to sustainability. Sasha discovers on this site some ways that sustainability is defined. She moves ahead to look for green service-learning information and finds waste-reduction resources and service-learning project ideas at the [U.S. Environment Protection Agency's education website](https://www.epa.gov/education) and [community service resources](#).



Future Education for Sasha

Sasha hopes to attend a local community college. The [community colleges website](#) addressing green technology could help her. Using the community college website, she identifies school programs that interest her. The [Los Rios Community College District \(LRCCD\)](#) in Sacramento offers a range of green courses and certificate programs. She also discovers a number of “green tech” programs at [Butte College](#) in Oroville.

You can find the actual websites with the links highlighted in blue on pages 12 and 13.





Ricardo and His Exploration

Ricardo is a senior and is thinking about work in sustainable buildings or with an energy utility. He is thinking about a certificate program or a two-year degree program and researches course offerings at two community colleges that are close to his home.

Ricardo also hopes to attend a state university in the future. He reviews requirements for a program at California State University, Sacramento's [California Smart Grid Center](#). He also reviews the course offerings at the [Energy Institute](#) at the University of California, Berkeley in the Haas School of Business.

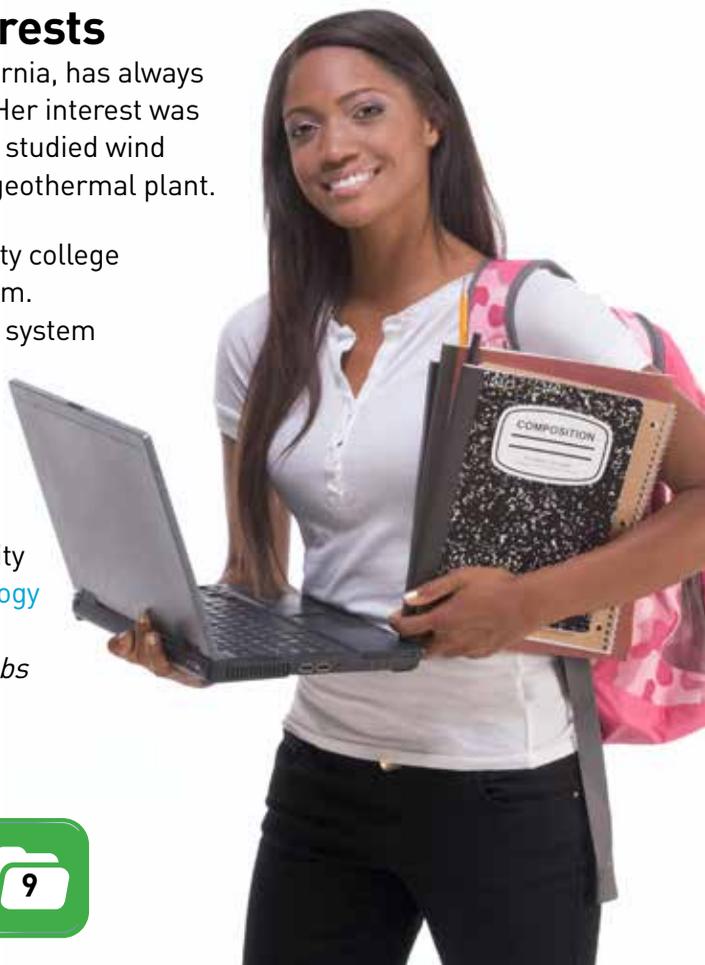
Anya and Her Energy Interests

Anya, a junior in the Central Valley of California, has always wanted a job related to renewable energy. Her interest was piqued ever since middle school, when she studied wind energy and took a trip with her family to a geothermal plant.

Preparation: She plans to attend community college and hopes to transfer to a four-year program.

Anya wonders what the community college system offers and what sort of job opportunities there are after studies are completed.

One is the system's [Green Economy website](#). At this site she learns about the free video podcasts she can download that describe jobs. Another is the community college's [Advanced Transportation Technology and Energy program](#). Additional sites, such as [Next 10](#), and books like *Your Guide to Jobs in Renewable Energy* (see page 27) provide Anya with ideas and more resources.





Jenna Wants Hands-On Training

Jenna is in the 10th grade and lives near San Luis Obispo. She isn't sure whether she's more interested in working in construction or working with technology, but wants to get hands-on job training while in high school. She knows that one possibility is to take courses via a [Regional Occupational Program \(ROP\)](#). Each county department of education has a listing of schools and districts with ROP offerings for high school students.

Career One Stop

Jenna discovers another great resource at the U.S. Department of Labor's [CareerOneStop](#) section specifically aimed at helping students and their counselors research jobs and the training/education needed to obtain them.

Nicolas and His Search for Green Apprenticeships

Nicolas will be a senior next semester and is now considering his options after high school. He does not plan on attending college right after graduation. Nicolas likes sports, being active, working with his hands, and for as long as he can remember, "building things." He believes that right out of high school an apprenticeship in a construction trade could be right for him. While learning a skilled trade, Nicolas will make some money and also continue "exploring" other green career educational paths to follow in the future.

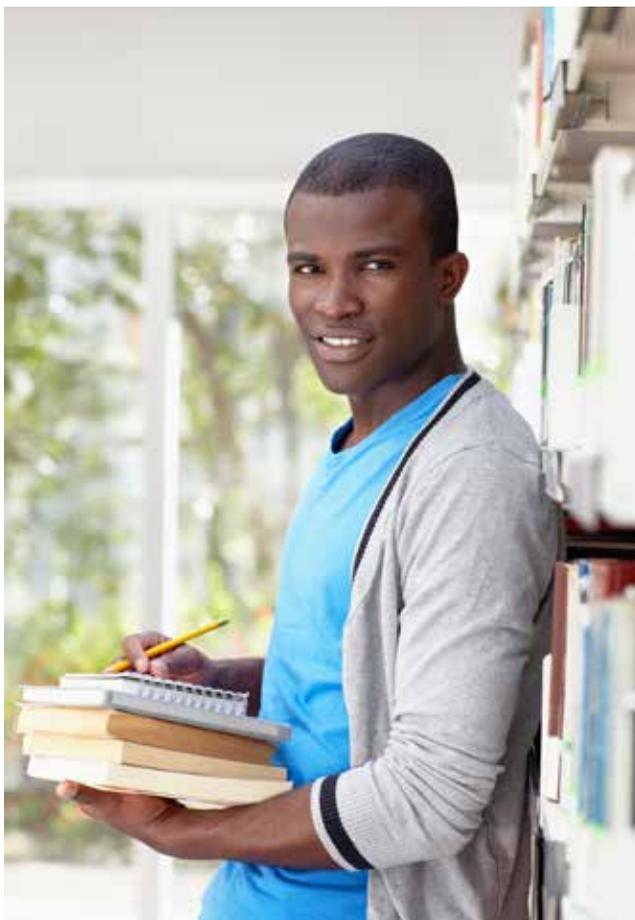
His search begins at the [California Department of Industrial Relations, Division of Apprenticeship Standards](#). This state government site has a wealth of information for those interested in becoming apprentices, those offering apprenticeships, and for educators to assist students. Of interest to Nicolas on this website is a video: **I Built It—Green!** The video explores how building construction trades are the original green jobs.

Another site that Nicolas researched is that of the [California Apprenticeship Coordinators Association](#). At this site Nicolas can explore specific fields, make contact with the association office that is closest to where he lives, and explore the site's Q and A page for detailed information.



A Career Fair Project for Javan

Javan is in an environmental club that is planning the annual career fair at his high school. The theme this year will be “Working in the Green Economy.” His starting point is the website [Get Into Energy](#) where the “Youth” menu has a lot of helpful information for him. [California Green Jobs](#) offers a directory of green jobs as well as a search engine and a calendar of events, some of which Javan thinks he should share with other students. As part of the job fair, he thinks students should learn about summer internships. He does his research beginning with government agencies such as the [Job Corps](#), which offer summer high school internships; Javan finds another resource for internships at the pages of a U.S. government website, [CareerOneStop](#).



Collin and His Quest

Collin will complete the 10th grade this June and he wants to gain some “real-world” work experiences this summer. He knows that any summer job for students his age is not easy to find and he wants a green one. Still, Collin hopes to either find paid work, an internship, or an opportunity to volunteer in an agency or organization.

He first tries the [Job Corps](#) website, where there is a listing of internships for high school students. His friend suggests he search the Sacramento Works website for youth that is sponsored by the [Sacramento Workforce Investment Board](#). Collin also found some useful information through [FourEnergy](#).

Links to the Search “Links”

Sasha

- Greenoccupedia www.greenoccupedia.com/
- U.S. Environment Protection Agency’s education website & community service resources
www.epa.gov/osw/education/teens/reduce.htm
and www.epa.gov/students/communityservice.html
- California Community Colleges
www.californiacommunitycolleges.cccco.edu/ProgramstoWatch/MoreProgramstoWatch/GreenTechnology.aspx
- Los Rios Community College District
www.losrios.edu/
- Butte College www.butte.edu

Ricardo

- California Smart Grid Center
www.ecs.csus.edu/CASmartGrid/index.php
- Energy Institute <http://ei.haas.berkeley.edu/curriculum.html>

Anya

- Green Economy www.cccewd.net/green_economy.cfm
- Advanced Transportation Technology and Energy program
<http://attecolleges.org/html/about.html>
- Next 10 <http://next10.org>

Jenna

- Regional Occupational Program
www.acoe.org/acoe/Home/Districts-Schools/List
- U.S. Department of Labor’s CareerOneStop
www.careeronestop.org/StudentsandCareerAdvisors/StudentsandCareerAdvisors.aspx



Nicolas

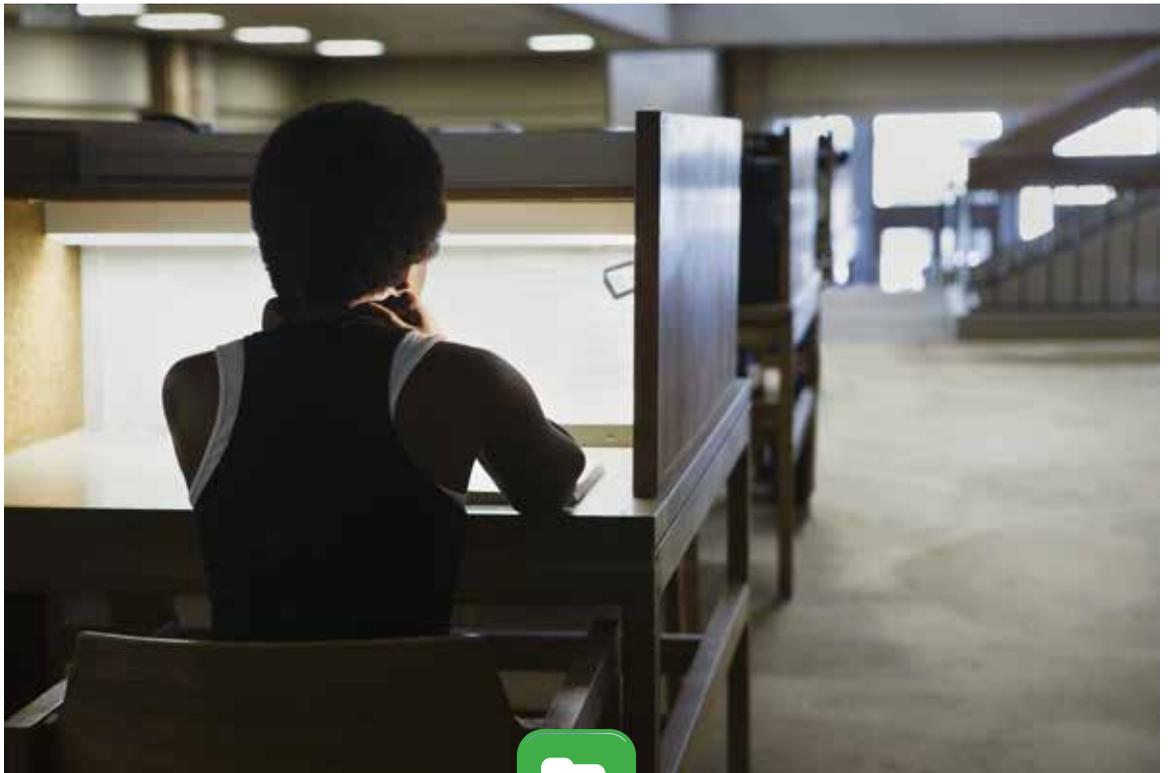
- California Department of Industrial Relations, Division of Apprenticeship Standards
www.dir.ca.gov/das
- California Apprenticeship Coordinators Association
www.calapprenticeship.org

Javan

- Get Into Energy www.getintoenergy.com/index.php
- California Green Jobs
<http://california.greenjobs.net/>
and www.greenjobspider.com/
- Job Corps www.jobscorps.gov/centers/ca.aspx
- CareerOneStop www.careeronestop.org/StudentsandCareerAdvisors/StudentsandCareerAdvisors.aspx

Collin

- Job Corps www.jobscorps.gov/centers/ca.aspx
- Sacramento Works <http://sacramentoworks.org/youth/>
- FourEnergy www.fourenergy.org/index.html



Websites and Books

A challenge in creating this educators' resource guide on green careers is what to include in an introductory booklet on the subject. Among the myriad of websites related to green careers and jobs, the following were selected as ones to help introduce students to research and entice them to learn more.

Going Green in California and the U.S.

This section begins with California government sites that include state agencies and educational institutions. A number of websites in this section will demonstrate the role that community colleges in California are playing in preparing students for work in the green economy.

Websites sponsored by the federal government provide a national view of green careers and the rate of growth of this sector in the economy. Also included among these sites are the opportunities offered by the U.S. Job Corps and green apprenticeship programs sponsored by the Environmental Protection Agency (EPA).

Websites of agencies, organizations, and businesses complete this section on websites. In this section are nonprofit organizations, including the Environmental Defense Fund, GRID Alternatives, Next 10, Many Shades of Green, and the Foundation for Environmental Education.

Remember:

Websites are continually updated and redesigned. Some addresses listed here may have changed. If you find that an address no longer works, try this:



Go to the site's home page. You may find a link there to the resource you are looking for, or the page may include a search box. You can also search for the material you want by entering its name into a search engine such as Google (www.google.com) or Yahoo! (www.yahoo.com).

California Government Websites

California Association of Regional Occupational Centers and Programs

www.carocp.org/carocps.html

The California Regional Occupational Centers, which are publicly funded, offer a wide range of career technical education (CTE) and courses to high school students and post-high school adults. There are many green-related courses that are offered by these centers. To find an ROP program in your county, visit the California Association of Regional Occupational Centers and Programs website.

See also: www.cde.ca.gov/ci/ct/sf/

The California Department of Education's Standards and Framework for Career Technical Education can be ordered or downloaded from this website.

California Department of Education, Partnership Academies

www.cde.ca.gov/ci/g/hs/cpagen.asp

California supports the pursuit of green vocational, academic, and professional interests at the high school level through Partnership Academies. The California Department of Education website links to a directory of California Partnership Academies. Academies are listed by county, school district, and industry sector. "The CPA model is a three-year program (grades 10–12) structured as a school-within-a-school. Academies incorporate integrated academic and career technical education, business partnerships, mentoring, and internships."

California Department of Fish and Game

www.dfg.ca.gov/jobs/

This department, manager of the outdoors, animals, fish, habitat, and the sciences that support its work, lists jobs, volunteer opportunities, internships, and study, for a variety of green jobs.

California Department of Industrial Relations, Apprenticeship Programs

www.dir.ca.gov/das/ibuiltit/IbuiltitGreen.html

See also: www.dir.ca.gov/databases/das/aigstart.asp

Apprenticeships, in which participants learn by doing, are a time-honored entry point for students interested in the building trades. California has introduced minimum standards throughout the state to make sure that green principles and opportunities are incorporated into apprenticeships. California Department of Industrial Relations (DIR) offers basic information about apprenticeships through its "I Built It—Green!" portal.

California Employment Development Department

www.labormarketinfo.edd.ca.gov/cgi/databrowsing/GreenTrainingPortal.asp

See also: www.labormarketinfo.edd.ca.gov/?Pageid=1013

www.edd.ca.gov/jobs_and_training/More_Job_Seeker_Information.htm

www.labormarketinfo.edd.ca.gov/ocguides/

The State of California's Occupational Guides provide detailed information on specific green jobs. This California agency offers a portal to lists of academic programs (see "Green Training" website) that offer green certificates and green study, as well as broader training, study, apprenticeship, and job-finding resources.



California Energy Commission

www.energy.ca.gov

The California Energy Commission is the states primary energy and planning agency. Information can be found on this site on green jobs in the economy, links to green job training sites, and general labor market information. Reports on workforce education and training focusing on energy efficiency and related job activities can be downloaded at this site.

California Green Jobs Corps

www.californiavolunteers.org/index.php/GreenJobsCorps/

The California Green Jobs Corps is a state-sponsored pilot training program for “at-risk” youth to enter green occupations. The California Green Jobs Corps works in close partnership with the Labor and Workforce Development Agency and its Employment Development Department and Workforce Investment Board. NOTE: This program was initially funded in the 2009 budget year; please check with the appropriate pilot program grantee-partners, found on the website(s), to learn more about its current status.

California Workforce Investment Board, California Green Jobs Council

www.cwib.ca.gov/sc_green_collar_jobs_council.htm

This site provides counselors a way to keep up to date on California’s commitment to green jobs development. The Green Collar Jobs Act established the Green Collar Jobs Council (GCJC) under the purview of the California Workforce Investment Board (CWIB). The CWIB is charged with developing a comprehensive workforce development plan for the state as described in the Workforce Training Act of 2008. Useful links can be found for the state’s community colleges’ economic development effort and other state labor agencies and initiatives.

Training and Higher Education

California Community Colleges

www.californiacommunitycolleges.cccco.edu/ProgramstoWatch/MoreProgramstoWatch/GreenTechnology.aspx

Green job training is integral to the broad spectrum of offerings within the California Community Colleges System. This training can be found in degree, certificate, and special programs for areas ranging from agriculture to energy. The Community Colleges System also maintains a number of partnerships and related, semi-autonomous programs under its purview.

Did you Know?
California has 112 community colleges. Most offer green job training found in certificate, degree, and special programs.



California Community Colleges, Advanced Transportation Technology & Energy Program (ATTE)

<http://atteccolleges.org/html/about.html>

For students wondering which community colleges are focused on what green technologies, this website can help answer those questions. The program maintains major educational centers for transportation and energy-related careers at seven community colleges around the state, focused on everything from light rail to plug-in vehicles to motorized bikes.

The goal of these centers is to keep California competitive as a national leader in advanced transportation and energy technologies and to transform the workforce in the developing, technology-driven transportation and energy industries while improving the environment and stimulating the economy.

At Cerritos College, Norwalk auto dealers invested in a \$5.1 million facility to ensure there will be technicians trained to fix the hybrid and all-electric cars they sell. Designed to resemble a dealer showroom, the facility trains both students and industry mechanics and houses the college's Advanced Transportation Technology and Energy (ATTE) program. That program offers training in alternative fuels and other advanced transportation careers.

California Community Colleges, Economic and Workforce Development, Green Economy

www.ccewd.net/green_economy.cfm

Resources at this site include articles, reports, and links to resources related to the Community College System, its ties to industry's needs, and the green economy.

California Community Colleges Foundation, Smog Referee Program

www.foundationccc.org/

Meeting California's exacting clean air standards starts at the garage, where older cars must be tested according to the state's automobile smog standards. The California Community College Foundation, a private endowment, supports the state's Smog Testing Technician program at select community colleges around the state.

California State University System, Commitment to Sustainability

www.calstate.edu/cpdc/sustainability/

This website is a useful portal to the California State University system's green-focused programs, degrees, certificates, and studies—from climate change to green energy generation to sustainable building design and operation.

California State University, Sacramento: Smart Grid Workforce Clearinghouse

<http://sgworkforce.ecs.csus.edu/>

See also: www.ecs.csus.edu/csgc/index.html

The smart-grid—the highly networked power infrastructure now taking shape using innovative technology—will provide many new jobs and careers over the next decades. CSU Sacramento (CSUS) provides a locus for smart-grid research and training.



FourEnergy, California Community College Economic and Workforce Development Initiative

www.fourenergy.org/greenacademies/index.html

FourEnergy is a partnership of the California Community College Economic and Workforce Development Initiative programs and associated community colleges, universities, and high schools. The site provides links to a variety of educational materials and programs related to solar, wind, geothermal, and bio-energy, as well as a calendar of green events that educators and students may find useful. FourEnergy requires registration on the website.

San Jose/Evergreen Community College District, Workforce Institute

www.ibpadvantage.com/AboutUs.html

See also: <http://workforceinstitute.biz>

This nonprofit organization is a workforce intermediary between Evergreen and San Jose City Colleges, and the employers that create courses and programs to train and funnel workers to companies and organizations in the district's service area. Although not focused exclusively on green jobs, the institute models college-employer partnerships and the meeting of the employment challenges of lower-socioeconomic-status job seekers.

State Center Consortium, State Center Community College District

<http://statecenter.com/>

And: <http://statecenter.com/resources/industry-sectors>

<http://statecenter.com/resources/programs-of-study>

The State Center Consortium (SCC) is a grant-funded organization that provides career technical education (CTE) and training and resources to CTE educators. The consortium helps aggregate information in this area for the State Center Community College District in California's Central Valley. The consortium also includes information about green academic pathways that may be available at other institutions throughout the state.

The Consortium's Programs of Study page links to various secondary and post-secondary sample programs of study for California students, including agriculture and natural resources, photovoltaic technology, and wind technology.



U.S. Government Websites

U.S. Department of Agriculture (USDA), U.S. Forest Service, Central California Consortium, and Generation Green Clubs

www.fs.fed.us/r5/ccc/generation-green/ggclub.shtml

See also: www.fs.fed.us/r5/ccc/

The U.S. Forest Service and the Central California Consortium (CCC) have established green-focused clubs at several high schools in California's Central Valley. The CCC and the Generation Green Clubs (GCG) work to help diversify the Forest Service employee corps.

U.S. Department of Labor, Bureau of Labor Statistics

www.bls.gov/green/greencareers.htm

The U.S. government continually measures and redefines green jobs to keep pace with the latest developments. This data-collection effort can be accessed through the U.S. Department of Labor's Bureau of Labor Statistics (BLS) website, where a wide range of jobs are now classified as green.

The BLS's Green Career Information staff offers information about green job wages, expected job prospects, what jobs entail, working conditions, and the necessary education and training needed. Information is available for job sectors such as green construction, recycling, electric vehicles, solar power, and wind energy.

U.S. Department of Labor, Employment and Training Administration

www.careeronestop.org/

See also: www.careeronestop.org/GreenCareers/GreenCareers.aspx

www.careeronestop.org/StudentsandCareerAdvisors/StudentsandCareerAdvisors.aspx

This portal to both green careers and youth career services offers a wide range of national information, resources, and referrals. The "Explore Green Careers" menu, as well as a special section for "Students and Career Advisors," is accessible from these U.S. government career one-stop sites.

U.S. Department of Labor, Job Corps

www.jobcorps.gov/centers/ca.aspx

The Job Corps currently offers three different training career pathways with a "green" focus—advanced manufacturing, automotive and machine repair, and construction. Students who enter these training pathways will develop specific knowledge and skills related to green technology and industry practices.

A list of Job Corps Centers in the State of California is located at this site. The addresses of the centers and other contact information are provided, along with links to each individual center where further information can be found.

U.S. Environmental Protection Agency (EPA), Student Internships

www.epa.gov/internships/

The U.S. EPA offers a variety of opportunities for students at its offices around the country, including internships and eco-ambassadorships. The EPA also hosts a variety of relevant events and partnerships with other organizations, which may provide information for students seeking work experiences and study opportunities.



Private and Nonprofit Organizations Websites

American Federation of Labor-Congress of Industrial Organizations (AFL-CIO)

Center for Green Jobs

www.workingforamerica.org/documents/greenjobs.asp

Information is available on this site about the AFL-CIO's Center for Green Jobs program, which assists "union leaders in training workers for new careers in a clean energy economy." The center is working with the National Labor College to develop a green workplace certificate. This certificate will be modeled on a program that certifies health and safety workplace representatives.

Bay Area Green Tours

www.bayareagreentours.org/

Often, the best way to form a picture of the future is to get a glimpse of it. This nonprofit organization provides tours to a range of "green" locations, including solar and wind sites and energy-efficient buildings.

Beyond.com, Energy Utilities Jobs

www.utilitiesjobs.com/jobsearch/ca/public-utilities/

A job search tool for utilities industry jobs in the State of California can be found at this website.

California Center for Sustainable Energy

<http://energycenter.org/>

Although its educational programs serve mostly San Diego County and Southern California, the center provides a wealth of information about sustainable energy development, initiatives, and other related resources.

California Green Jobs Network

<http://california.greenjobs.net/>

See also: <http://www.greenjobspider.com/>

The California Green Jobs Network, based in Berkeley, provides both a jobs listing, and a search engine (greenjobspider.com) for green jobs. It also tracks green job fairs, networking events, and related resources in California.

Center for Energy Workforce Development, GetIntoEnergy.com

www.getintoenergy.com

Who will install solar panels ten years from now? Make field changes to smart-grid apparatus? Perform safety audits at power plants and make highly technical adjustments to the equipment? The goal of the Center for Energy Workforce Development (CEWD) is to answer these questions. According to the website: "It is the first partnership between utilities, their associations, contractors, and unions to focus on the need to build a skilled workforce that will meet future industry needs. CEWD is teaming with secondary and post-secondary educational institutions and the workforce system to create workable solutions to address the need for a qualified, diverse workforce."

The website provides pathways information for adult job seekers. Searching from the job seeker's address within Northern and Central California will pull up featured employers, such as major utilities, campus-based training programs for utility workers, and related employment, along with a plethora of California-based online education options.

Environmental Defense Fund (EDF), Green Jobs California

<http://greenjobscalifornia.org/>

This nonprofit advocacy organization lobbies at the local, state, and federal levels for environmentally friendly policies and laws. The group also sponsors a number of educational initiatives, which can be useful to students and young adults. In their pursuit of green work and activities, the EDF's Green Jobs California website provides information and resources on green jobs.

See also: www.edf.org/sevensectors

This comprehensive report by Environmental Defence Fund outlines the major business sectors that are most prominent in California's green and clean economy. The major sectors of advanced materials, clean transportation, energy efficiency, energy generation, energy infrastructure, energy storage, and finance and investment are each described and analyzed.

Green 360

<http://Green360.net>

See also: www.green360careers.net/catalyst

Green 360 is an online course and online community for high school students. The online course introduces green jobs through environmental sustainability challenges and changemaker roles. The online community provides a way for students to interact with green gurus (practicing professionals) who volunteer to share their green career perspectives through blogs, interviews, and group discussions.

The Career Catalyst is an online career profile system to start students on a green path. Using the results of a personal interest inventory, students explore green jobs that complement their talents and skills.



Greenoccupedia

www.greenoccupedia.com

This comprehensive green careers resource is a companion to, but not duplicative of, the book *Green Careers: Choosing Work for a Sustainable Future* by Jim Cassio and Alice Rush (see page 25). It includes first-person accounts of work in the green economy that provide descriptions of jobs in solar installation, energy auditing, and a variety of careers involved in sustainability, recycling/reusing, environmental remediation, and related fields.

Green Jobs Blog

www.greencollarblog.org/oakland-green-jobs/

This blog provides a method of accessing some face-to-face and online green jobs events, as well as other relevant links.

Green Technology

www.green-technology.org/

See also: www.green-technology.org/ccsummit-09/directory.html

A nonprofit organization, Green Technology holds conferences and events and maintains a wealth of information for students and job seekers who want to take part in the green economy.

GRID Alternatives

www.gridalternatives.org/green-jobs-partnerships

This non-profit provides local job training programs with a “classroom in the field” on actual solar installations, where their trainees can gain hands-on experience under the training and supervision of experienced solar installation staff. GRID Alternatives also helps students connect with local solar companies via the Single-Family Affordable Solar Homes (SASH) Subcontractor Partnership Program.

Jobs for the Future and Greenforce and Greenways Initiatives

www.jff.org/projects/current/workforce/greenforce-initiative%E2%84%A2/1131

Greenforce is a joint effort by Jobs for the Future and the National Wildlife Federation. The Greenforce Initiative website describes the program and provides information about the ongoing activities of its partners. The focus is on aligning employment needs with community college programs.

See also: www.jff.org/projects/current/workforce/greenways/1410

Greenways: The Greenways initiative provides high-quality workforce services to employers and to workers seeking to advance their careers in the green economy. The initiative invests in 20 workforce partnerships across six diverse industry sectors in eight metropolitan labor markets in California.



Net Impact, San Francisco

www.netimpactsf.org/

Net Impact San Francisco Professional Chapter focuses upon business, sustainability, social impact, and building community in the Bay Area. For job seekers, this resource could be used for networking, internships, or volunteer opportunities.



Next 10, Many Shades of Green ...

www.next10.org/

See also: www.next10.org/2012-many-shades-green-california%E2%80%99s-shift-cleaner-more-productive-economy

This nonprofit offers a range of green-focused publications that can help readers understand the direction of the California economy. “Many Shades of Green: Regional Distribution and Trends in California’s Green Economy” focuses on fifteen separate green sectors—from wastewater to green buildings. These sectors are analyzed in terms of their history, growth, impact, and job-generation potential for both the State of California and various regions of the state. Also useful are statistics about specific green jobs—for example, brown-field redevelopment specialists, sustainability managers, fuel technicians— of various kinds are provided, including average salaries and types of educational degrees and training that are required.

Oakland Green Jobs Program

www.cypressmandela.org/our_programs/green_jobs_program

The Oakland Green Jobs Corps is a job-training program providing green pathways for young adults in Oakland facing barriers to employment. The program will provide job-readiness training, ongoing support services, and on-the-job training, enabling trainees to pursue careers in green industries.

Redfish Technology

www.redfishtech.com/?utm_source=web&utm_medium=adler&utm_campaign=j%26efair

Redfish is a private employment recruiter for clean and green jobs whose website can be used as a resource to understand the job-scape and to give students and young job-seekers a sense of what kinds of education, training, and job experience they need to reach various levels of clean tech and green employment.

Sustainable Business Alliance (SBA)

<http://sustainablebusinessalliance.org/>

See also: <http://oaklandgrown.org/>

The SBA, an alliance of businesses, offers businesses a network focused on sustainability. Some businesses may offer internships or volunteer opportunities that could expand the horizons of young people interested in issues around sustainability.



Triple Pundit

www.triplepundit.com/

This blog serves as a clearinghouse for information about the green economy and often covers events, efforts, and initiatives in California, whether it's touring a new cellulosic ethanol plant in the Bay Area or publicizing a green jobs forum. This is a source of information for the green job seeker—both to get ideas about what sorts of jobs are available and to gather resources for the search.

U.S. Green Building Council, Northern California Chapter

www.usgbc-ncc.org/index.php?option=com_content&task=view&id=230&Itemid=260

The U.S. Green Building Council, Northern California Chapter (USGBC-NCC) recruits employers to participate in the Green Employers Council. Members provide green-collar job opportunities for the Oakland Green Jobs Corps—a job-training program providing “green pathways” for young adults in Oakland. The council consists of businesses and nonprofits working in the energy efficiency, renewable energy, and green building sectors in the Oakland/East Bay area.

Read On: A Selection of Books

McNamee, G. (2008)

Careers in Renewable Energy

Masonville, CO: PixyJack Press, LLC

ISBN-10: 097737243X

ISBN-13: 978-0977372430

Job sectors covered in this book include solar and wind energy, biofuels, hydrogen fuel cells and geothermal energy, hydroelectric energy, green building, climate study, and energy management and efficiency.

Cassio, J. & Rush, A. (2009)

Green Careers: Choosing Work for a Sustainable Future

Gabriola Island, BC, Canada: New Society Publishers

ISBN-10: 0865716439

ISBN-13: 978-0865716438

Green Careers offers personal insights by green practitioners into 90 different occupations in 12 different career groups. A large number of resources, including many websites, make this tome a useful companion to any real investigation of the kinds of work people are doing. Resources and short interviews with people who have specific green jobs are included.



McClelland, C. (2010)

Green Careers for Dummies

Indianapolis: Wiley Publishing, Inc.

ISBN-10: 0470529601

ISBN-13: 978-0470529607

With characteristic humor, this green guide from the "... for Dummies" series provides tips on finding a green job based on one's interests, goals, and skills. It also explores newly emerging green jobs. This book covers green career opportunities in environmental science, smart grid, green/sustainable building, transportation, and manufacturing and it has a section on emerging green jobs that will be created. Job search 2.0 offers techniques using social media, networking, and electronic communication.

Deitche, S. M. (2010)

Green Collar Jobs: Environmental Careers for the 21st Century

Santa Barbara, CA: Praeger

ISBN-10: 0313380147

ISBN-13: 978-0313380143

This book contains an overview of green jobs from various perspectives; individual chapters are devoted to specific types of jobs and career paths, including a chapter on environmental jobs outside of the U.S. It's a simple, easy-to-reference guide that will help students, recent graduates, job seekers, and career changers at all levels find the latest information and job resources in this burgeoning new field.

From Amazon: "This exceptionally timely book examines all aspects of green careers, beginning with an overview discussing green jobs from environmental, economic, and political perspectives. The core of the book is comprised of chapters that describe specific types of green jobs and career paths. These include jobs related to alternative energy, water resources, green marketing, green business, green building, and environmental law. For those willing to leave home, there is a chapter on global environmental jobs, and there is information on niche green careers such as ecotourism and green interior design. Each chapter includes job sources, education and training resources, and a listing of companies involved in the particular business."

Llewellyn, A. B. (2008)

Green Jobs: A Guide to Eco-Friendly Employment

Avon, MA: Adams Media

ISBN-10: 1598698729

ASIN: B002YX0B2S

This book discusses the "greening world: how we got where we are and where we're headed." Jobs in green energy, transportation, building, and natural resource management are covered.



Editors, various (2010)

Your Guide to Jobs in Renewable Energy, Green Careers in Energy

Lawrenceville, NJ: Peterson's. Print and digital

ISBN-10: 0768928605

ISBN-13: 978-0768928600

Editors, various (2010)

Energy-Related Jobs in Construction and Building Operations, Green Careers in Energy

Lawrenceville, NJ: Peterson's. Digital

ASIN: B0042JSPS4

Editors, various (2010)

25 Two-Year Schools with Great Green Energy-Related Programs, Green Careers in Energy

Lawrenceville, NJ: Peterson's. Digital

ASIN: B0042JSPSY

This series of three print and e-books for Kindle provides students and job seekers with information specific to renewable energy jobs, green construction jobs, and community colleges with green energy-related programs. The guide on renewable energy also contains a wealth of information about educational programs and training programs in a variety of green fields.

Doyle, K. L. (1999)

The Complete Guide to Environmental Careers in the 21st Century

Washington, DC: Island Press

ISBN-10: 155963586X

ISBN-13: 978-1559635868

This reference book addresses environmental trends and likely future career opportunities in the environmental professions. Updated to reflect ongoing changes in environmental fields, this text is a resource for anyone seeking information about environmental career opportunities and how to get started in one. Highlights include trends in employment opportunities and additional material on careers in the energy field. Offering case studies and individual profiles of a variety of environmental professions, this book also has further information sources referenced, including over 100 of the top environmental websites. Tips on career research strategies along with education, voluntary work, and internship suggestions are also given.



Notes on Websites and Books

A Commitment to Environmental Excellence

Pacific Gas & Electric Company (PG&E) delivers safe, reliable, and environmentally responsible electricity and natural gas to approximately 40 percent of Californians. At PG&E, we are committed to being an environmental leader and demonstrating this through our actions. We pledge to think creatively, work cooperatively, and be results-oriented in our environmental stewardship efforts. To learn more about PG&E's environmental commitment, visit www.pge.com/environment.

Sustainability

Reflecting PG&E'S environmental commitment, this resource guide provides educators with information on green careers and jobs that contribute to environmental sustainability. As students are introduced to this guide, they will learn about jobs that conserve energy and other natural resources. They will discover new jobs created by the growing use of renewable energy sources, and the use of alternative-fueled vehicles, as well as in sectors where existing occupations are following sustainable and "greener" practices. Training opportunities, educational programs, and institutions listed in this guide are a window for students into a myriad of green jobs and careers that can promote an environmentally sustainable future.



