

# Clean Energy: Solar Power

Part of the *Green Careers* series

## Study Guide

Appropriate for grades 9-12 and post-secondary,  
as well as 7-8 with teacher guidance.



In this program, we'll view the entire range of jobs needed to make solar power a reality from research and development, design and marketing, and financial analysis to construction and project management. Engineers, analysts and managers share with us both how they work in this emerging green industry and how they found the opportunity to be part of the clean energy solution.

**Jobs profiled in this program include:**

Research & Development Engineer, Design Engineer, Marketing Manager, Financial Analyst, Construction Manager, and Project Manager.

20 minutes



**The Phoenix  
Learning Group, Inc.**

# Clean Energy: Solar Power

## Study Guide

### Learning Objectives

Following are some sample cross-curricular learning objectives for comprehension questions and activities. Students will be able to:

#### Science

- Determine the benefits solar energy has on the environment.

#### Careers/Guidance

- Evaluate personal interests to determine if green careers are an area in which to pursue further education.
- Compare and contrast the skills and education required for a variety of green careers.
- Identify post-secondary programs that offer green careers and locate courses of study within the programs.
- Determine the appropriate high school courses to enroll in to prepare for a chosen green career.
- Predict the demand for green careers in the future, and develop a plan to experience and prepare for one of these careers, prior to attending trade school or college.
- Elaborate on the importance of cooperative, interdisciplinary work in conjunction with well-designed effective solar energy construction.
- Identify where one can acquire on-the-job training for a career in solar construction.

#### Technology

- Conduct research utilizing a computer and the internet.
- Evaluate the technological advancements in building solar power and the positive effects on the environment.

#### Language Arts Literacy

- Write and conduct interviews to acquire knowledge regarding solar energy construction.
- Create an advertising campaign to inform others about the benefits of utilizing solar energy.

#### Mathematics

- Construct a graph to follow trends in solar power construction over a period of time.

# Questions

## Research and Development Engineer

1. Describe the multiple-step process of generating new solar-powered structures.
2. Explain how creating new designs is a joint effort between manufacturing and research and development engineers.
3. What is the greatest challenge faced by research and development engineers when creating new designs?
4. Why is solar energy power considered a “young field/industry?”

## Design Engineer

1. Describe the role of the design engineer.
2. Differentiate between a design engineer and a research and development engineer.
3. How did the interviewee find his job?
4. What are suggested areas of study to prepare for design engineering?
5. Explain how the design engineer works with other positions within the company in order to create an effective design.
6. List the other entry-point positions cited in the interview.

## Marketing Manager

1. What are the various methods that the company uses to reach its audience?
2. Why do you think online media is stated to be the best way to reach audiences interested in solar energy?
3. Identify the biggest challenges of a successful marketing campaign.
4. List and define the various activities that are included under the title of marketing.

## Financial Analyst

1. What professionals does the financial analyst bring together to address cost-effectiveness of solar energy? Why is it important to have so many people involved from a financial perspective?
2. What challenges do you think the financial analyst faces when trying to demonstrate to the consumer the financial logic of utilizing solar energy as compared to traditional methods?
3. What types of creativity is needed for this position?

## Construction Manager

1. Discuss the difficulties that may be faced by construction managers when trying to locate skilled tradespeople who will work within the given time frame and budget.
2. List the various departments that work in conjunction with construction managers.
3. Explain the importance of developing a contract to outline the details of a construction project.
4. What knowledge do you think a construction manager may need to be effective?
5. Name several ways to determine if a solar construction job is of interest.
6. What type of training is suggested for this field?

## Project Manager

1. Compare and contrast the responsibilities of a project manager and a construction manager.
2. Why is it important to know the building codes?
3. What does the interviewee mean by “Everything ends with you and everything starts with you and you need to be mentally prepared to take that on?”

## Sample Activities

- Research how many solar construction projects have taken place in your state or community over the past five years to identify the amount of growth. Create a graph to demonstrate the growth. Use the data to predict the future of the field and if it is a viable field for where you live.
- Conduct interviews with builders who have begun the transition to solar construction to find out their thoughts about solar energy.
- Research high school vocational programs to determine how many offer specific courses in solar construction.
- Generate a list of all jobs required to build a structure that utilizes solar energy, both those mentioned in the DVD and those that were not discussed. Investigate the training required for each, as well as the salaries.
- Take the role of a marketing manager for a solar energy construction company and create an advertizing campaign to convince private consumers to build solar homes. Include information regarding the expense of building being offset by the benefits solar offers in the long run.

## Related Links

<http://www.bls.gov/audience/students.htm>

Part of the Bureau of Labor Statistics website designed for teachers and students. It includes resources such as the latest statistics on employment, prices, and wages.

<http://www.ases.org/index.php>

Home page of the American Solar Energy Society.

<http://www1.eere.energy.gov/solar/>

U.S. Department of Energy’s Solar Energy Technoloies Program, which includes links numerous sources of information about solar energy.



### The complete *Green Careers* series includes:

Building Green	Clean Energy: Solar Power
Recycling	Environmental Justice
Water Management	Green Design
Sustainable Agriculture	Restoring the Land: Hazardous Waste Management

The Phoenix Learning Group | 2349 Chaffee Dr. | St. Louis, MO 63146-3306

800-221-1274 | [www.PhoenixLearningGroup.com](http://www.PhoenixLearningGroup.com)