

# Clean Energy Careers

Choose a growth sector for your future!

## MVWIB Clean Energy Careers Workshop Series

*Supported by the Massachusetts Clean Energy Center's  
2014 Capacity Building and Youth Pipeline Program*

*And the United States Environmental Protection Agency's  
Environmental Workforce Development and Job Training Program*

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## **SUMMARY**

Welcome to the Merrimack Valley Workforce Investment Board's Clean Energy Careers Workshop Series! This has been developed to introduce youth and adults to the exciting opportunities available in the emerging clean energy industry. This series was made possible through funding from the Massachusetts Clean Energy Center and the United States Environmental Protection Agency.

The series is comprised of one 30 minute and four 60 minute sessions, each with a teacher's guide, handouts, and worksheets. All are available electronically to the general public. Workshops have been developed to be used in the following sequence:

- **"Clean Energy Careers Overview"** Ppt Presentation. This is used in conjunction with our clean energy careers brochure and ISEEK energy career pathway sheets.
- Workshop 1: **"Clean Energy Careers: Why should I care?"** Ppt Presentation. Explains why clean energy is important and why careers in this industry are relevant to students. Vocabulary sheet and exercises included.
- Workshop 2: **"Green Jobs, Clean Energy Jobs and where do you find them?"** Ppt Presentation. With "Looking for Clean Energy Job Opportunities" worksheet.
- Workshop 3: **"Mastering the BASIC job requirements, and using these as a foundation to climb the career ladder"** Ppt Presentation. "Are you a Professional?" worksheet included.
- Workshop 4: **"Clean Energy Career Pathways"** Ppt Presentation. To be followed by student presentations showcasing the research they've done on a clean energy career of their choice.



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## TEACHER'S GUIDE

### Workshop I: Clean Energy Careers: Why should I care?

**Total time:** 60 minutes

**Contents:**

**1. Learning Goals:**

- a. Cite the 4 reasons that clean energy careers may be important to them. (This sector has job growth, innovation, social inclusion, and environmental protection – it's aim is creating sustainable development)
- b. Be able to explain why developing clean energy sources is important. (Burning fossil fuels is creating more Carbon Dioxide than the Earth can absorb, so it is remaining in the atmosphere and playing a significant role in human produced Greenhouse Effect, which is contributing to climate change).
- c. Understand that energy is a big sector of the economy, and we are transitioning from using fossil fuels to renewable energy.

**2. Learning Activities**

- a. Introduction to Clean Energy Careers Workshops
  1. Tell class that there will be 2 workshops with 3 35 min classes in each, with a little break between the sessions. The purpose is to introduce them to this whole new area of clean energy, and the jobs that are coming as a result. Ask the following questions and give class chance to respond
    - i. What do we mean by clean energy?
    - ii. Have you heard of any jobs coming up as a result of clean energy?
    - iii. Is this an area that interests any of you? Why? (If no – then say that perhaps after these workshops they'll be interested)
    - iv. How many of you have been thinking about maybe pursuing careers that require some knowledge of science or math? (If yes or no – tell them that after learning about clean energy careers they might see the great variety of interesting jobs available that do include math and science – and they'll also see also that there are jobs in clean energy that don't require these skills.
  2. Tell class - Before getting into an overview of all the clean energy careers – it's important to talk about why this is growing right now. Ask – why do you think clean energy is an area that is having such growth now? (Reasons students could give: 1. Global warming – since traditional fossil fuels emit so much CO<sub>2</sub>, 2. Fossil fuels are running out and clean energy is renewable, 3. Want to produce our own energy and not be dependent on foreign sources, 4. We are innovators, 5. Keep up with the rest of the world, 6. Businesses want to make money selling new products, 7. Because federal and state governments are giving financial

initiatives to consumers to buy these technologies, and to businesses so they will develop and sell them.

- b. Let's look at a power point presentation that talks about some of the reasons why the clean energy sector is growing. And then we'll have a short online quiz to check your knowledge.
  - 1. Show Power Point Presentation "Clean Energy Careers, Why Should I Care?" and follow the explanations on the bottom of the presentation.
- c. Quiz – and discuss the answers to the questions at the bottom of slide 15.

### 3. Assessment and Evaluation

- a. Small group discussion following presentation
- b. Quiz

### 4. Materials and Equipment

#### 4.1 Handouts

Clean Energy Careers "Why Should I Care?" vocabulary words  
Unit Outline

#### 4.2 Materials

PowerPoint Presentation "Clean Energy Careers: Why Should I Care"  
How much do you know about Energy

Quiz: [http://www.iseek.org/iseek/media/quiz/energy/energy\\_quiz.html](http://www.iseek.org/iseek/media/quiz/energy/energy_quiz.html)

#### 4.3 Equipment

Laptop/Computers

Projector

Screen

At least 5 computers so groups of 4 students can work together

### 5. Extension Activities

Slide 16 Small Group Exercise – Calculate your Ecological

Footprint <http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/>



## TEACHER'S GUIDE

### Workshop 2 – Green Jobs, Clean Energy Jobs; & Where do you find them?

**Total time:** 60 minutes

**Contents:**

#### **1 Learning Goals:**

- a. Be able to define a green job.
- b. Be able to describe the relationship between green jobs and clean energy jobs. (there are 5 green job clusters, and clean energy jobs make up 2 of those clusters)
- c. Be able to describe the various categories of jobs available in most green/clean energy industries. (Management/Professional, Research/Development, Administrative/Sales, Technical/ Design (including manufacture, installation, operations, maintenance)
- d. Name at least 3 clean energy sources that are spurring growth in Massachusetts.
- e. Learn a few of the websites that list clean energy jobs. This will include indeed.com, idealist.com, Jobquest, and the Mass CEC jobs board. Also find the NECEC business members to find businesses in the area.

#### **2 Learning Activities**

- a. Powerpoint “**Green Jobs, Clean Energy Jobs & where do you find them?**”
- b. Short discussion. Teacher ask open ended questions to reinforce learnings of presentation.
  1. What is a green job?
  2. What is the difference between a clean and a green job?
  3. Are clean energy jobs only in the trades – like installing solar panels or building an energy efficient house?
  4. What are a few of the clean energy sources that are developing, where jobs are starting to be available?
- c. Use the worksheet listed below. Have students search clean energy job listings online to find a clean energy job in MA that interests each one of them. Have students each tell the class which job it is, why it is interesting to them, and how it is a clean energy job. Students should look at a few of the websites on the worksheet.
- d. Short student report out of the job they found available.

#### **3 Assessment and Evaluation**

- a. Class participation in discussion; completion of worksheet; quality of report out.

## **4 Materials and Equipment**

### 4.1 Handout

“Looking for clean energy job opportunities” worksheet

### 4.2 Materials

Powerpoint

Worksheet handout and pens

### 4.3 Equipment

Computers – sufficient for 1 for every 2 students.



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## TEACHER'S GUIDE

### Workshop 3: Mastering the BASIC job requirements, and using these as a foundation to climb the career ladder

**Total time:** 60 minutes

**Contents:**

**1 Learning Goals:**

- a) Become acquainted with the Career One Stop Renewable Energy Competency Model. Understand it has foundational, industry, and occupation related competencies.
- b) Understand that personal effectiveness, academic, and workplace competencies are the basis of all other competencies. Without these, it is very hard to be successful. Learn that careers are organized in pathways depending on educational attainment.
- c) Learn about behaving professionally on the job.
- d) Find out where to research education and training for clean energy jobs.

**2 Learning Activities**

- a) Discussion about the Renewable Energy Competency Model. Use the following discussion guide.
  - **Teacher:** So what are the foundational skills? Here we're going to identify what they are by looking at what is called the **Renewable Energy Competency Model**. This comes from the US Department of Labor – and it is an online tool to help you learn about careers and how to job hunt. Has anyone used “My Next Move?” That is one of the web-based products they have created – just for teens.
  - **Teacher referring to the model on the PPT:** Ok, can someone explain to us what we have here? (*6 levels of skills needed to climb up the ladder in the renewable energy industry*). What are the different levels? (*Ask someone to read them.*) Let's go over the different foundational skills – (*Give an example of what each of these skills are and where they are used.*) I want everyone to give at least one example of what skills are – so speak up early to make sure you get a chance with a skill you understand!
  - Let's focus on the **foundational skills**. Which levels are they? (*Ask someone to read off which ones are the foundational skills*)
  - **Teacher:** The first most basic level of skills is the **personal effectiveness competencies**. Can anyone give us an example of what each of these skills is? Tell us in the context of your life in school or out of school. Interpersonal skills come into play when..... (*Examples: dealing with your friends, integrity – school tests*); professionalism – (*how you present your school work*); initiative – (*raising your hand and asking a question*); dependability – (*show up and do your work*); lifelong learning – (*always interested*). Where do you learn these skills? (*By example, the golden rule – do unto others as you would have them do unto you*) If you don't know how to do these things, who should you turn to? (*School guidance counsellor, parent, advisory teacher*) Don't ignore these things or think it's cool to not have them – it will cost you now and in the future.
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- Teacher: Second – **academic competencies**. That says it all – What are they? (*Someone read them off*). Where do we get these skills (*school mostly*). Any surprises? (*Listening and speaking – always communicating – learn it now*). Critical and analytical thinking – for what? (*Think of this like when a teacher asks you do to a book report – but not just repeat what you read. This is trying to understand why the author presented the character as he or she did, why used the settings and the dialogue as the author did – for what message. This is being analytical.*) Need this on the job – let’s say you’re analyzing where to site a wind farm – have to analyze data. And information literacy – what does that mean? (*Know where to find information. Know which is relevant and reliable. You need medical advice – which would you think is more reliable – witchdoctor.com or webmd.com? Look at the sites. And know where to find things. The best academic information isn’t on Google or Wikipedia – have to learn to use the academic search engines like Gale.*)
  - Teacher: What’s next? **Workplace competencies**. (*Have the students read off each one and give an example of each one.*) Business basics – (*the different tasks required to make a business work – marketing, product, etc.*). Teamwork – (*make sure every part is working and knows they’re valuable*); Flexibility/adaptability – (*like being on a team and playing a new position when someone is out sick*). Marketing – (*online, in a store, have you ever sold candy or other things for a team or school?*) Planning and organizing – (*school project due – have to think about scheduling, etc.*) - Problem solving and decision making – (*like when you miss your bus – have to problem solve.*) Tools and technology – (*maybe hand tools – but esp. technology – including computers and all kinds of mobile devices – think doctor’s office, and cash register*). Checking and recording – (*like on a science experiment. Think about what you put in a patient’s record, inventory for a store*). Sustainable practices – (*making sure using the least energy and materials, and doing it the most efficient way – recycling at home or school, walking not always waiting for a ride*). Where do we get these skills? (*Some may just be good at – others – need to take a course or get a certificate or even a whole academic program to get up to speed. Like marketing*).
  - Teacher: How do we obtain the higher level skills – the industry wide and industry sector technical competencies? (*Higher education – certificates, associates and bachelor’s degree*).
- b) Emphasize the importance of foundational skills on the job. To do this, read “Are you a professional” together. Then with the class pick 2 role plays to act out. Pick volunteers willing to perform in front of the group. Act out the role plays. Conduct a group discussion on whether the employee acted in a professional manner, and what could have been done to do better.
- c) Have the students discover the skills and education needed for the jobs they selected in the last session.
- Go back and look for the job in one of the three websites listed on the worksheet. They are:
    - Mass Clean Energy Council Jobs Board <http://www.masscec.com/jobs>
    - Massachusetts Job Quest – Green Jobs <http://mass-green.jobs/>
    - Indeed.com – MA jobs in renewable energy <http://www.indeed.com/jobs?q=Renewable+Energy&l=Massachusetts>
  - Find the education or training required for that job. Also find where that education or training could be found. See if you can figure out the personal effectiveness, academic and workplace competencies required.



c) Each student should be ready report to the class the education/training/competencies required for their job, and where this could be obtained. Students should report whether they would like to actually pursue this position in their own career.

### **3 Assessment and Evaluation**

Participation in class discussion, computer research, presentation to class.

### **4 Materials and Equipment**

#### 4.1 Handouts

Students will use the worksheets received in the previous session. They will write their findings on the back. Each student will also need the “Are you a Professional?” handout.

#### 4.2 Materials

Short PowerPoint

#### 4.3 Equipment

Projector and computer for PPT presentation  
Computers for students to work on.



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## TEACHER'S GUIDE

### Workshop 4: Clean Energy Career Pathways

**Total time:** 60 minutes

**Contents:**

**1 Learning Goals:**

This is the last in the series of Clean Energy Workshops. The majority of this class period will be spent in student presentations on the jobs that they have researched and that they may be interested in pursuing. Making this personal connection to a clean energy job should assist students in understanding how they may have a role in this emerging industry. Reviewing career ladders will help students understand the better paid opportunities available through additional education and experience in the clean energy field.

In summary, students will:

- a) Become acquainted with career pathways in the most common clean energy industries. Students will learn how clean energy jobs are connected in career pathways in many different types of work – such as administrative/management/sales; research & development; manufacture, and installation & maintenance.
- b) Be able to present the clean energy job selected for research in Workshop 2. Discuss training required, skills utilized on the job, where this job is situated on a career pathway, and why it was chosen.

**2 Learning Activities**

- a) Discussion about the career pathways in the Powerpoint presentation.
- b) Have students take turns presenting the jobs they selected to research in Workshop 2. Each student should use the “Looking for Clean Energy Job Opportunities” worksheet as a guide. Presentations should be 5 minutes each and include:
  - Job title and where job was found.
  - Why the job interests you
  - What are the responsibilities of this job?
  - A description of the education requirements for the job.
  - Where training could be obtained, and the website where you got that information.
  - What foundational skills are required for the job?

### **3 Assessment and Evaluation**

Participation in class discussion, presentation to class.

### **4 Materials and Equipment**

#### 4.1 Handouts

Students will use the worksheets received in Workshop 2.

#### 4.2 Materials

Short PowerPoint

#### 4.3 Equipment

Projector and computer for PPT presentation