



Career

Explorer

A green future is in your hands!

Third Edition

Career Explorer, 3rd Edition

© 2017 The Energy Coalition

Published by The Energy Coalition, a 501(c)(3) non-profit. No part of this book may reproduced by any means, except for those portions intended for classroom use by currently enrolled Career Explorer Program educators, without written permission from The Energy Coalition.

The Energy Coalition  
Re: Career Explorer Program  
47 Discovery, Suite 250  
Irvine, CA 92618

Learn more at:  
[www.energycoalition.org](http://www.energycoalition.org) • [www.peakstudents.org](http://www.peakstudents.org)

*The PEAK Student Energy Actions program is funded in part by California utility ratepayers and administered by Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and SoCalGas under the auspices of the California Public Utilities Commission. In addition, the program is brought to schools served by Anaheim Public Utility and the Los Angeles Department of Water and Power through community partnerships.*

## *Introduction: Welcome to the Career Explorer!*

This is an opportunity for you to explore careers in the STEM field. STEM stands for Science, Technology, Engineering, and Mathematics. These are subjects in school, but there are many careers based on them that you can have as an adult. There is a wide range of STEM-based careers already and the field continues to grow! A STEM career could have you helping people solve environmental problems or working with numbers and data to design future solutions...or maybe even both!

Here at The Energy Coalition (TEC) we love our careers mostly because we get to work with students like you! We use STEM skills everyday to understand how we use energy, water, and other resources; how electricity is generated in power plants; where the water we use comes from; and how we can engineer a more sustainable future for our environment!

### **Instructions for Career Explorer:**

Explore the Career Explorer packet at your own pace. Throughout this booklet, you will learn about different STEM professionals who are excited to share a day in their life with you, including favorite parts about their career(s). There are also activities provided for each STEM professional which give you the chance to “try out” their various careers and the skills they apply in doing them.

Be sure to check the back cover for a special time capsule activity you can participate in with your future self...

**The learning goes beyond these pages!** You can also visit the Student's Corner of our website [peakstudents.org](http://peakstudents.org) any time for more career exploration fun, such as:

- Our **video library of “STEM Heroes”**: Watch and learn from people who are working in their dream careers across all types of fields! These are updated regularly so be sure to check back often.
- Take the **“What Shade of Green are You?”** quiz to help identify what might be an ideal career for you! You will discover that there are so many different types of green careers that work to have a positive impact on the planet.
- Test your knowledge about energy with fun trivia. Find out about special contests, campaigns, and ways that you and your families can take action to save energy and water!

**We hope you enjoy the Career Explorer!**

**Energetically yours,**

The Education and Training Team  
The Energy Coalition

## Zac Appleton



### A day in the life of Zac Appleton

#### What is your cool green career?

I help people and large companies find the most environmentally responsible solutions for handling their new and old electronics. I also help different states manage their hazardous wastes. Hazardous wastes can be liquids, solids, or gases that are dangerous or harmful to the environment. Sometimes electronics can pose similar harm to people and the environment when they aren't handled correctly.

#### What's the best part about your career?

I get to help people enjoy a cleaner environment. I also have fantastic coworkers. For example, my boss bicycles to work and spends weekends leading public bicycle tours of parks to promote a healthy environment.

#### How did you get to where you are today?

I completed a Bachelor's degree in Interdisciplinary Studies and a Masters degree in Environmental Sciences.

But really, the path to my job started on an Earth Day in 7th grade when I spent a weekend helping pick up litter in my neighborhood. I was really unhappy with the mess people kept leaving everywhere, and I decided I was going to do something about it for my job!

#### How does your career help the planet?

We promote creating new products with fewer toxic materials while using energy wisely and responsibly reusing and recycling old machines. We also try to buy the goods we need from industries that do not create a danger to people or the environment.

#### What advice can you give a young person considering a career in your field?

Follow your curiosity and have fun doing it. You never know when an algebra equation, song, or a pottery lesson will come in handy.

## Try Being an Environmental Protector on for Size!

Fill in the missing words:

Hazardous waste is a waste with properties that make it dangerous or capable of having a \_\_\_\_\_ effect on the \_\_\_\_\_. Hazardous wastes can be \_\_\_\_\_, solids, or \_\_\_\_\_.

Take a walk around your school and tally the most common types of electronics that you see. Visit classrooms, the gym, and your cafeteria! What are the most common types that you found? When these items become waste, does your school have a way to recycle them?

---



---



---



---

Now, think about “cradle to grave” recycling (when an item that’s been created is safely transported and used until it is ultimately disposed of) with our smartphones. What new and creative programs could you create to recycle and properly dispose of old smartphones at your school? How would you convince people to properly dispose of their old phones? Start planning an e-waste drive at your school for old smartphones.

---



---



---

# LaWanda Davis

## A day in the life of LaWanda Davis

### What is your cool green career?

In my career I get to assist with industrial and mechanical tools and materials, where we maintain the Los Angeles Department of Water and Power (LADWP) infrastructure serving over four million residents!

### What's the best part about your career?

My career has many benefits! With great project versatility and exposure to different trade skills, I'm always excited to go to work! My company provides excellent training and I love learning how to use hand tools.

### How did you get to where you are today?

Beginning in seventh grade, I looked for ways to improve myself! I took classes to enhance my skills which always kept me learning. I started working and I still kept learning. I now have my forklift license, completed boom lift training, and am very proud of having completed the Hayden Course, which helps me in career advancement.

### How does your career help the planet?

Since working at LADWP, I understand how important it is to conserve water and energy. The Home Efficiency Improvement program provides residential and business owners the opportunity to conserve water with installation of low-flow shower heads and weatherizing with added attic insulation, duct blaster testing, plus energy conserving light fixtures. All of these help our community of four million to conserve more!



### What advice can you give a young person considering a career in your field?

Focus early on new possibilities for your career. Decide how you can improve your skills; working on good communication and strong math and reading skills. Check out websites about jobs that interest you and see what skills are required. Most of all, have a plan and take one day at a time in the direction of your goals!

## Try Being an Engineer on for Size!

Can you keep up with LaWanda's math skills?

Calculate how many British Thermal Units (BTUs) you use in a year of showering! BTUs is a way to measure natural gas, a fossil fuel, which is often used as an energy source to heat up the water for our showers and pump water to our homes.

A	16,864	British Thermal Units of gas used during ONE 10 minute shower
B		Number of times you shower per week
C		Number of weeks in a year
D		Number of times you shower per year (B x C)
E		BTUs used each year if you take 10 minute showers (A x D)

What are ways you can save energy and water when you shower?

---



---

Match up the tool with its correct use:

a. drill

b. safety glasses

c. screwdriver

d. hammer

- \_\_\_\_\_ 1. A tool with a heavy metal head used for breaking things and driving in things, such as, nails.
- \_\_\_\_\_ 2. A tool with a flattened, cross-shaped, or star-shaped tip that fits into the head of a screw to turn it.
- \_\_\_\_\_ 3. A tool with a sharp point and cutting edges for making holes in hard materials.
- \_\_\_\_\_ 4. Protective eyewear that you should always wear when operating tools.

If you could take a class on any subject to learn something new, what would it be and why?

---



---

## Brian Olney

### A day in the life of Brian Olney

#### What is your cool green career?

I work for the Environmental Science Associates where I study the impacts that large projects such as pipeline or power line construction can have on endangered species and natural communities. I create environmental impact reports which describe possible negative effects projects may have, and explain how to reduce these impacts or how to make up for them in other ways. I also work outside doing things like protected frog surveys, plant monitoring, or advising construction crews on how to reduce impacts on wildlife and habitats.



#### What's the best part about your job?

The thing I like most about my job is that I get to help people who often do not think about how their actions may affect nature. I also get to spend a lot of time outside, which is fantastic! I have been lucky enough to work closely with endangered species like burrowing owl, California red-legged frog, California tiger salamander, Alameda whipsnake, and steelhead trout.

#### How did you get to where you are today?

I studied wildlife biology in college. The best thing about school is that you learn how to learn, which can help you succeed in any job.

#### How does your job help the planet?

We assist clients in following California environmental laws that protect endangered species, waterways, and natural areas everywhere. The documents we create outline solutions for reducing negative environmental impacts, raise awareness, and are available for people to learn how projects will affect open spaces near their houses.

#### What advice can you give a young person considering a career in your field?

Enjoy learning! Being open to all different fields and loving to learn more has benefitted my employer and me greatly.

Swenty, Sarah. (2016, October 03). Species Information, California Tiger Salamander. Retrieved April 20, 2017, from [https://www.fws.gov/sacramento/es\\_species/Accounts/Amphibians-Reptiles/es\\_ca-tiger-salamander.htm](https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/es_ca-tiger-salamander.htm)

Swenty, S. (2016, September 16). Kids' Species Information, Alameda Whipsnake. Retrieved April 26, 2017, from [https://www.fws.gov/sacramento/es\\_kids/Whipsnake/es\\_kids\\_whipsnake.htm](https://www.fws.gov/sacramento/es_kids/Whipsnake/es_kids_whipsnake.htm)

## Try Being a Scientist on for Size!

### Guessing Game:

Make an educated guess to match each description with the correct endangered species.

*Hint: First read the list of endangered species; think about how this animal would get around, what it would eat, and what kind of environment it would live in. Now try to find the best match!*

a. burrowing owl 



1. You can find this animal keeping cool in ponds and streams, sometimes croaking to attract mates.

b. California tiger salamander 



2. This animal stands 9 inches tall and uses silent flight to capture insects.

c. Alameda whipsnake 



3. This slippery amphibian crawls on 4 legs and is suffering from habitat loss.

d. steelhead trout 



4. This underwater animal is famous for swimming upstream to spawn.

e. California red-legged frog 



5. This vertebrate grows up to 4 feet long and swallows lizards whole.

Imagine that a new development, such as an apartment building or shopping center, needs electricity. It is located next to a forest full of many plants and animals. Near the forest, there is also natural gas, a fossil fuel, deep underground. Some people involved in the development suggest drilling for natural gas to burn for electricity. If you were a wildlife biologist like Brian, what would your role in this situation be?

---



---

Why might it not be a good idea to drill for natural gas in that area? What is an alternative source of power that be used for the development?

---



---

U.S. Fish and Wildlife Service. (2013, December 03). Burrowing Owls - Umatilla. Retrieved April 20, 2017, from [https://www.fws.gov/refuge/Umatilla/Wildlife\\_Habitat/Burrowing\\_Owls.html](https://www.fws.gov/refuge/Umatilla/Wildlife_Habitat/Burrowing_Owls.html)

U.S. Fish & Wildlife Service. (2011, April 11). California Red-legged Frog Species Profile. Retrieved April 26, 2017, from <https://www.fws.gov/arcata/es/amphibians/crlf/crlf.html>

# Megan Yoo Schneider

## A day in the life of Megan Yoo Schneider

### What kind of green job do you do?

I grew up wanting to make a difference and wanting to help the community around me. When I was in kindergarten our local water district came to our class and showed us how important water is in everything we do. That really sparked an interest in me, so when I was older I decided to study chemical and environmental engineering and that's how I ended up in the environmental water profession working for a water district.



### What can students do?

You can make a difference. Make sure you help your parents by putting in water-efficient sprinkler nozzles and planting native plants that live in your local environment and thrive on the natural water that's available. If you have native plants and succulents, you're already saving a ton of water. But, if you have green grass or a lawn, that's the number one crop in California and it doesn't feed anybody. Over 60% of outdoor watering is considered overwatering so we can really cut back without affecting our personal lifestyles by reducing the amount of outdoor waste that we have.

### Why is saving water important to you?

Did you know that about 60-80% of our water use occurs outdoors? By conserving outdoors we can really save a lot of water that could be used for drinking and growing edible crops.

The western United States is in a serious drought. A drought is when we don't have enough rainfall to sustain the environment around us. We need to make sure there is enough water for everyone to live. When there is not enough rainfall we see crops suffer, food production suffers and we see the amount of water in our lakes decrease. We need to make sure we conserve water to for the essentials like drinking, showering, and cooking.

### Any advice for students interested in STEM?

I work in a male-dominated industry where there are not a lot of female engineers. It's important to support each other, because we all do our work better when we help each other out.

There's a lot of jobs related to water. If math and science aren't your favorite, you could do a public education job where you talk about how water is important to the rest of the community. There are also jobs related to operations and field maintenance, you could be the person who helps operate the treatment plants that help treat the water that everyone drinks. There are so many things you can do whether you like being outside or inside, on a computer doing graphic design, or video production-we need all sorts of people to help understand how important water is!

## Try Being an Engineer on for Size!

Based on Megan's suggestions, and your own ideas, design a cool new backyard space below that conserves water.

Identify 3 actions that **YOU** can take to reduce your water use.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Why is saving water so important for people living in the western United States?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Arpen Shah



### A day in the life of Arpen Shah

#### What kind of green job do you do?

My company is focused on energy consumption. We work with homeowners to switch from local utilities, which uses fossil fuels, to using solar panels on their roofs. Burning fossil fuels creates a lot of problems for people and animals.

#### How can I save energy?

One way you can save energy is by using electricity at night. That saves a lot of energy, has a lower impact on the environment, and saves your family money!

Another way you can help the environment is look at the food you eat. The food we consume is the biggest carbon footprint we have. The less meat you eat, the smaller your carbon footprint is.

#### Any career advice for the future generation?

I think one thing that is important, is that what we study and where we start out in our careers isn't where we will be for the rest of our lives. I started out as a chemical engineer and now I work in business development where I get to talk and interact with people. It's very different what I did day-to-day as an engineer. But being an engineer gave me the building blocks and knowledge that help me in this business.

#### What did you enjoy as a student?

Growing up I loved math and science. I liked tinkering with things, taking things apart, and playing with them. Basically learning how things work. In college, I learned I could use those skills to make a great career. I also learned the impact I have on the environment.

Science is more than a specific subject. It's a way of thinking. The skills I learned in college gave me a specific skill set, to know how to approach a problem to solve it. School gave me the building blocks and foundation to be whatever I want.

#### Why are STEM careers important?

I think it's important for everyone to consider STEM careers. I've seen a big shift in the past few years in terms of more diverse and more gender-equal work environments. There's still a lot of work for us to do, but there has been a big improvement.

For any of you who feel like you don't fit the mold, I'm here to tell you that's not true. I don't fit any mold, and I seem to be doing pretty well. And those are the people who make the biggest differences, they break the mold, and they change the world for the better.

## Try Being an Analyst on for Size!

What is one question you would like to ask Arpen?

---

---

---

---

Match the vocabulary word with the correct definition:

STEM



1. includes people from many backgrounds

carbon footprint



2. natural resources including oil, natural gas, and coal

fossil fuels



3. Science-Technology-Engineering-Math

diverse



4. amount of carbon released into the atmosphere based on one person's use of fossil

Solar power is an alternative source of energy to fossil fuels. Below, design a device that is powered using solar! It can be anything that is typically powered up using electricity and fossil fuels.

# Megan Toth

## A day in the life of Megan Toth

### What is your cool green/energy career?

I teach people how to save energy. For most of my day, I work on the Flex Your Power website. I research the best ways to save energy and I write about them, so that homeowners, business owners, and anyone else who wants to save energy can find helpful information on our website. My company also creates advertisements to remind people to save energy, and these advertisements are seen all across California.



### What's the best part about your job?

I love that by teaching people to save energy, I help them save money and live more efficiently while contributing to the fight to help the environment. This is the most rewarding aspect of my job. My job has helped me learn a lot about energy and the potential consequences of using energy unwisely. This knowledge has helped me make positive choices in my own life.

### How did you get to where you are today?

I knew I wanted to work to better the environment and chose to major in Environmental Studies in college. My studies gave me a good foundation about environmental issues and I learn everyday how smart energy use goes hand-in-hand with helping the environment.

### How does your job help the planet?

By teaching people to save energy, we help them reduce their greenhouse gas emissions and cut down on pollution. Generating electricity can create a lot of pollution, so the more efficient your home is, the less electricity you will use, and the less pollution you will create.

### What advice can you give a young person considering a career in your field?

Going to college was very important for developing skills and for learning how to succeed. It doesn't matter too much what you choose to study, as long as you work hard and keep trying. Knowing how to use the computer and writing skills are extremely important.

## Try Being an Environmental Protector on for Size!

Brainstorm THREE actions that you can take to be an energy saver in your own home and with your family!

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Megan says working hard and always trying are the keys to success. Name one activity or subject in which you work very hard. Then name another one in which you'd like to work harder.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

In marketing, you need to be creative to convince or persuade people of your ideas. In this case, Megan wants to convince people to save energy! Create a poster that illustrates one energy-saving action that you would persuade people to adopt as a behavior.

## Andrea Cook



### A day in the life of Andrea Cook

#### What are some opportunities you have had in your career as a Scientist?

Science has opened so many doors for me. I moved out of Michigan, I then went to Alaska, Iceland, Antarctica, Japan, Italy... I've been all over the world using the lense of science!

#### What has one of your favorite experiences while working in the field been?

One of my favorite experiences was camping out in Alaska for ten weeks. We were camping on the tundra, and saw bears and wolves. We were measuring the tundra, how climate change was impacting it, and it was melting away.

#### Why should students living in California have special opportunities in green careers?

California leads our nation in environmental laws. We've got more strict laws governing energy and climate change. We've got cleaner air, cleaner water. We set the model for the United States and we need to keep that up. It's important we keep these laws going and that people work to protect the environment.

Students are our future. They keep dreams alive. I followed my dreams to create a career. And I've changed careers four times to get there. I believe in making planet Earth a better place to live. I've done that by working with climate change, working with energy, and helping people understand these things.

Students are so important, they are the next generation. They will change the world. Stick to your dreams, stick to your goals and don't stop.

 *Andrea's Science Travels*

*- These are just some of the countries Andrea has traveled to all over the world conducting climate research.*



# Try Being a Scientist on for Size!

## CLIMATE CHANGE SCIENTIST CROSSWORD

T	N	T	C	F	B	M	L	K	M
U	O	N	M	L	E	O	R	H	E
N	D	E	W	L	I	O	H	S	A
D	F	M	T	P	W	M	J	W	S
R	W	I	O	D	Z	T	A	K	U
A	N	R	L	E	V	A	R	T	R
G	R	E	S	E	A	R	C	H	E
W	I	P	T	C	E	T	O	R	P
F	Q	X	P	U	B	L	I	S	H
L	T	E	Y	G	R	E	N	E	R

### WORD BANK

CLIMATE	MEASURE	RESEARCH
ENERGY	MELTING	TRAVEL
EXPERIMENT	PROTECT	TUNDRA
FIELDWORK	PUBLISH	

What country has a climate that YOU would like to travel to and research? How would you have to get there...by hiking, automobile, plane, ship?

---



---

Identify one skill that it would be important to have as a climate scientist. Why is this important? How do YOU use this skill in your life?

---



---

# Nancy Sutley

## A day in the life of Nancy Sutley

### What is your cool green career?

My career keeps me responsible for managing energy efficiency, water conservation, plus environmental concerns and compliance for the Los Angeles Department of Water and Power (LADWP). Because LADWP is the largest metropolitan-owned utility in the US, my job is to keep an eye on how well the company is doing, and overseeing the electrical power supply of the city's buses, trains, and transportation methods. They are big responsibilities, but I love it!



### What's the best part about your job?

I get to administer some very interesting and exciting programs that are making our utility cleaner and greener, while helping Los Angeles (LA) be more sustainable. Working for four million LA residents, I get to see the results of our efforts and the impact it has on improving the quality of life in my community. This makes my job quite satisfying.

### How did you get to where you are today?

My college work is in Public Policy, where I found my passion for public service. In a public service job, you are working to help improve the lives and serve other people! Since college I have worked primarily in the federal, state, and local levels of the government, in the areas of energy, water, environment, and sustainability. Now I work at a city-owned utility, which belongs to all LA residents, and I really enjoy my work!

### How does your job help the planet?

We work to transform LADWP into a cleaner and greener utility. We are reducing pollution and our affect on the environment, while using energy and water more efficiently. We are also using more renewable sources of energy, like wind and solar. My cool green career helps me manage our utility with sustainability in mind.

### What advice can you give a young person considering a career in your field?

If you are interested in the environment and sustainability, in energy and water, or utilities, you have lots of opportunities to make a difference! So much is happening in these fields: research, construction, project development, operations and management, and the list goes on! You only need to think about what you are interested in doing. The environmental and sustainability challenges we face demand new thinking, new actions, innovation, new technologies, new businesses and new solutions. The sky's the limit!

## Try Being an Analyst on for Size!

Imagine managing sustainability efforts in a city of 4 million people! What are 4 BIG ACTIONS that residents of a big city can take to become a greener as a whole? (Think about energy, transportation, water, etc.!)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

Now, design your own powerful device that can provide electricity to a large city using clean, green technology. Think renewable resources! Consider where it should be placed in relation to the city.

Finish the following thought:  
I could be successful at this career because...

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## *The Energy Future is in Your Hands!*

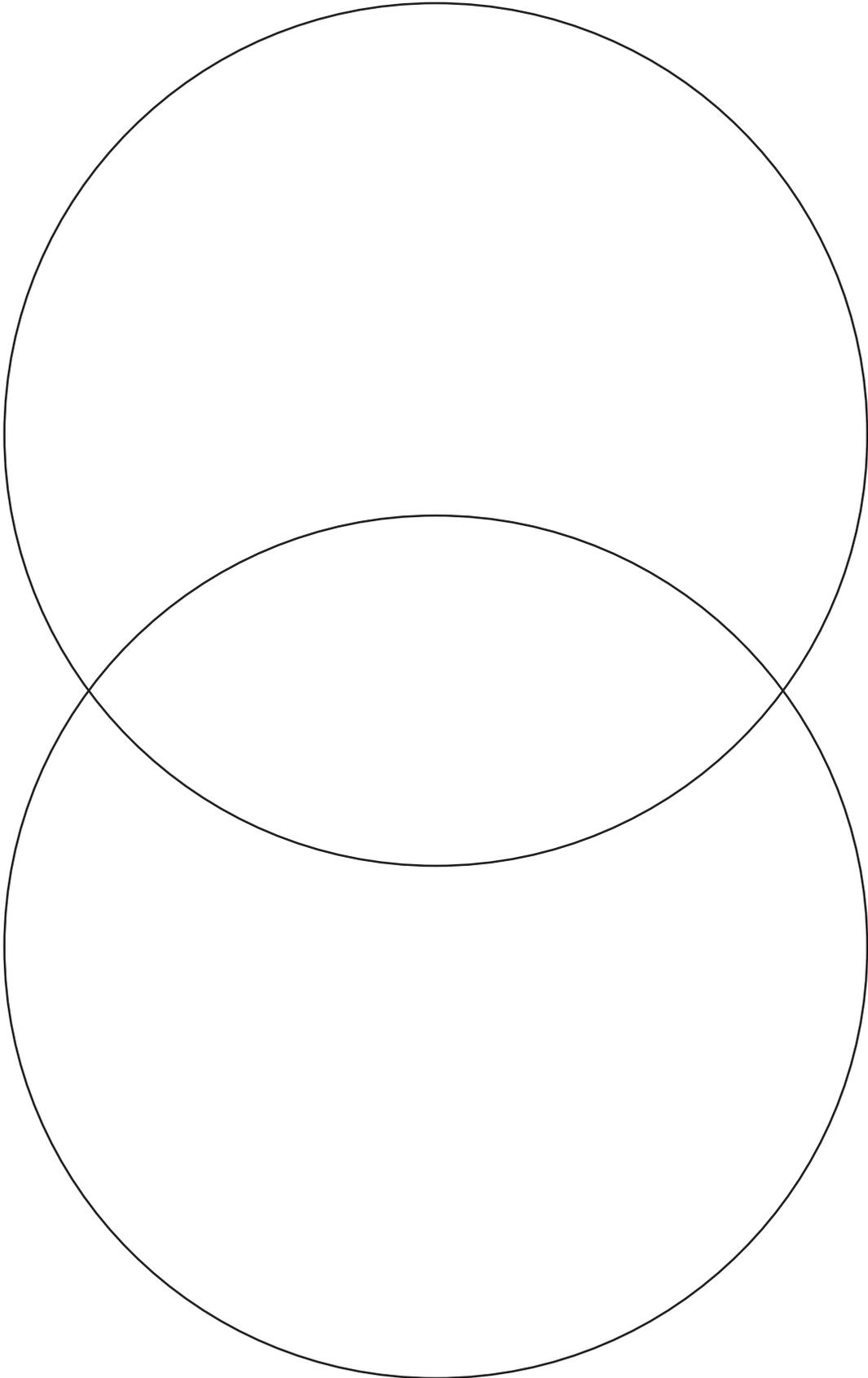
In the top bubble: List parts of the STEM careers in the Career Explorer that sound fun and exciting to you. Was it working outside like Brian? Maybe it was working with other people like Megan does in her career? Or even working with data and numbers like Nancy? Did the tools that LaWanda used sound cool? Include all the things you could see yourself doing.

In the bottom bubble: List the things you love to do now! Include your favorite subjects, from Science to Art. Add in what sports you like and hobbies you do. Are there clubs at schools that you participate in or activities that you enjoy doing at home with your family? The things you love to do now can help you figure out what could be the best career for you later!

Once you've filled in both bubbles, compare and contrast your answers. Do you see any similarities in both of the bubbles? Any differences?

For those things that you see in both bubbles, think about what kind of career might include those activities. Flip back through the Career Explorer to see if any of the careers featured match up and list them in the center bubble. This could be the career path that you follow one day!

# Energy Future Venn Diagram



## ANSWER KEY

Try being an Engineer on for size! Tool Matching: Try being an Analyst on for size! Vocabulary

1. - *d. hammer*
2. - *c. screwdriver*
3. - *a. drill*
4. - *b. safety glasses*

Match:  
STEM - 3  
carbon footprint - 4  
fossil fuels - 2  
diverse - 1

Try being a Scientist on for size! Guessing Game:

- 1 - *California red-legged frog*
- 2 - *burrowing owl*
- 3 - *California tiger salamander*
- 4 - *steelhead trout*
- 5 - *Alameda whipsnake*

## Send a Time Capsule Postcard to Yourself!

What would you want to tell your future self about being green? What advice would you give yourself about how to pursue a STEM career? Now, you can have a conversation between you...and your future self!

If you'd like to participate, cut the back cover page off completely. Complete the postcard with the careers you listed in the center bubble of the Venn diagram of *The Energy Future is in YOUR Hands!* activity. Include some advice on what you think your future self should be doing. This is a great time to give yourself a pep talk about what energy career path to follow. Include a drawing of yourself on the front of the postcard.

When you're done, add your name and mailing address. Make sure you get permission from your parent or guardian and have them sign, date, and complete the information under Permission.

Find an envelope and send this entire page to the address below. Our team at The Energy Coalition will send it back to you in a few years! Keep an eye out!

The Energy Coalition  
Attn: Education & Training  
47 Discovery, Suite 250  
Irvine, CA, 92618

CAREERS:

---



---



---

*Write advice to your future self:*

---



---



---



---



---



---



---

STAMP  
WILL  
BE  
PLACED

YOUR NAME

YOUR MAILING ADDRESS

---



---



---

## Permission

This is a special campaign from The Energy Coalition available to students. The class has explored potential careers paths that may interest them in the future. They will fill out a postcard - that will be mailed back to them in the future - as a reminder of what they learned and what career path they thought they should pursue. Please sign and date below and on the postcard to authorize your permission to have your child participate in this activity by submitting their postcard:

\_\_\_\_\_

Signature

\_\_\_\_\_

Date

Student's school: \_\_\_\_\_

Teacher's name: \_\_\_\_\_

Grade: \_\_\_\_\_

*Permission to send back* \_\_\_\_\_

*Draw yourself in your future career. Include action drawings of what you will be doing!*