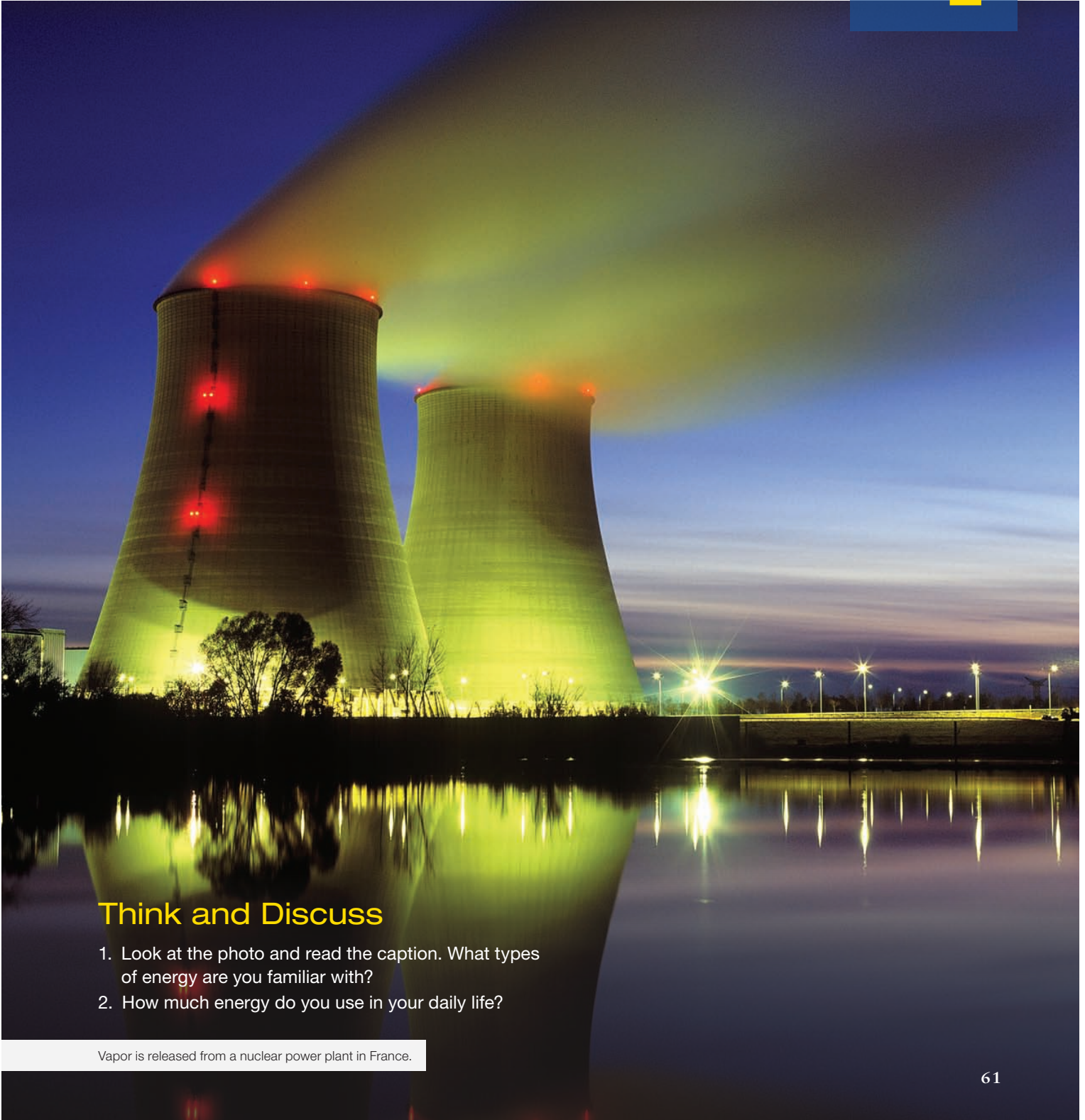


# Energy Issues

## ACADEMIC PATHWAYS

Lesson A: Listening to a Guest Speaker  
Role-Playing a Town Meeting

Lesson B: Listening to a Study Group Discussion  
Creating and Using Visuals in a Presentation



## Think and Discuss

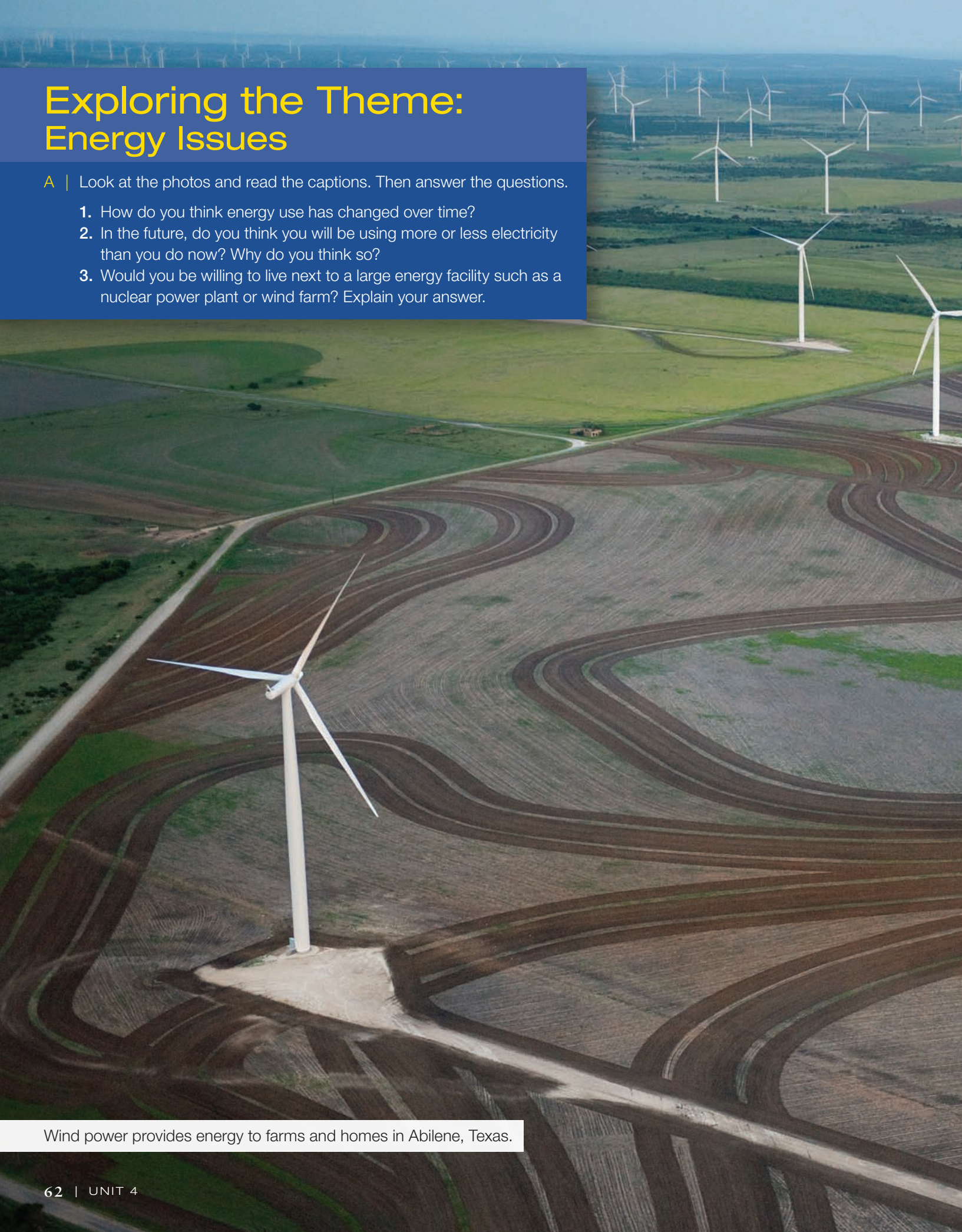
1. Look at the photo and read the caption. What types of energy are you familiar with?
2. How much energy do you use in your daily life?

Vapor is released from a nuclear power plant in France.

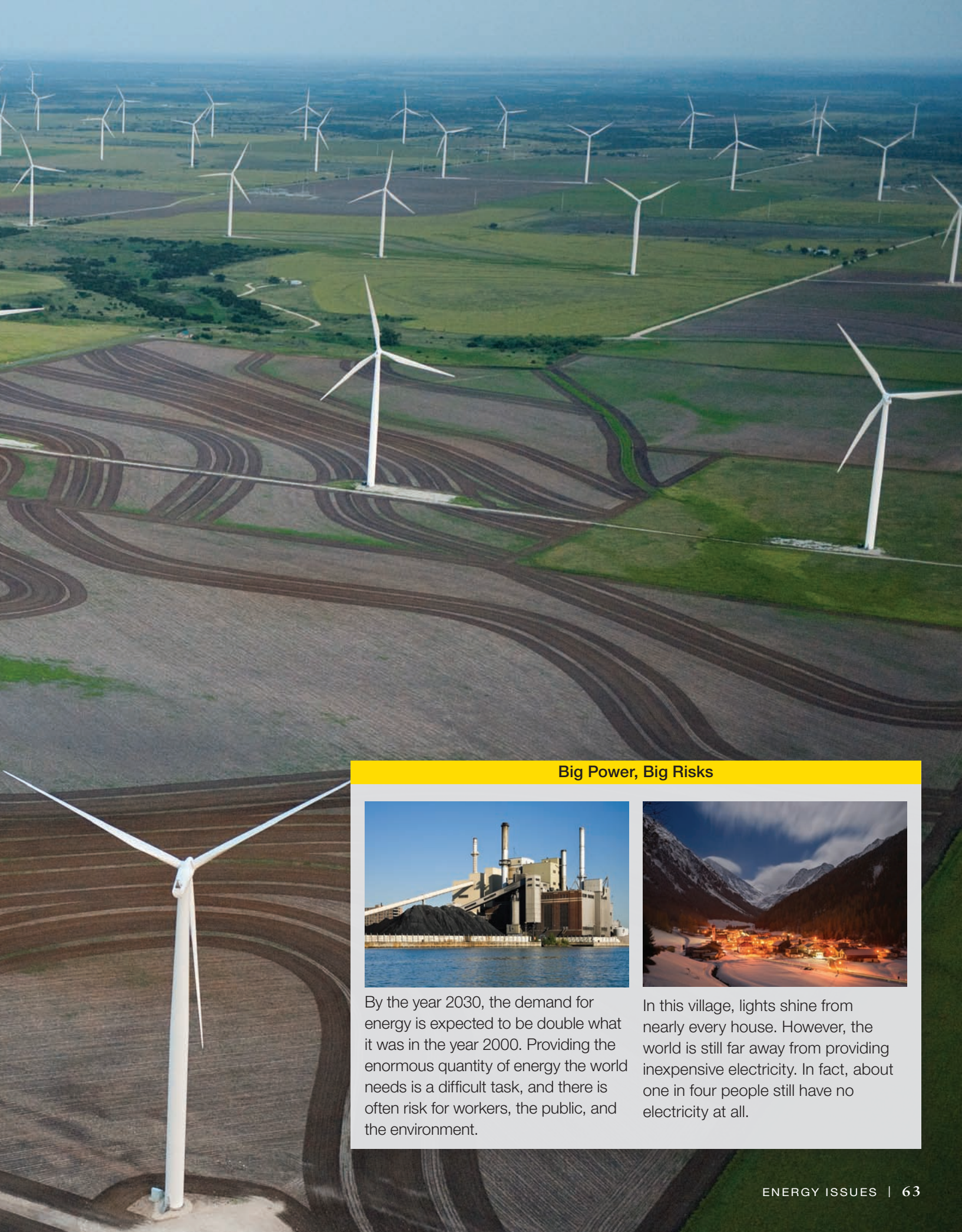
# Exploring the Theme: Energy Issues

A | Look at the photos and read the captions. Then answer the questions.

1. How do you think energy use has changed over time?
2. In the future, do you think you will be using more or less electricity than you do now? Why do you think so?
3. Would you be willing to live next to a large energy facility such as a nuclear power plant or wind farm? Explain your answer.



Wind power provides energy to farms and homes in Abilene, Texas.



### Big Power, Big Risks



By the year 2030, the demand for energy is expected to be double what it was in the year 2000. Providing the enormous quantity of energy the world needs is a difficult task, and there is often risk for workers, the public, and the environment.



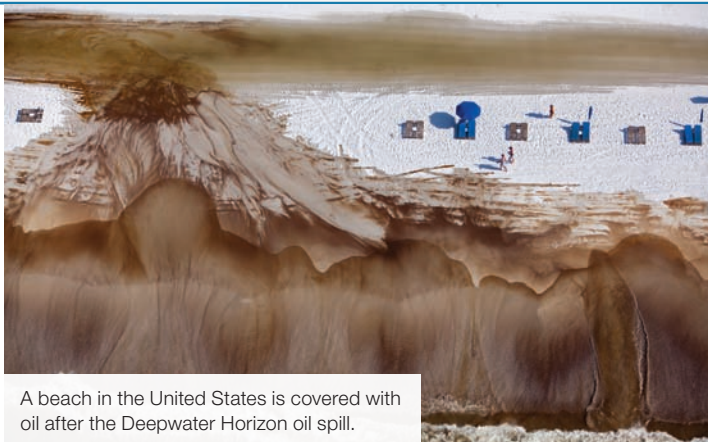
In this village, lights shine from nearly every house. However, the world is still far away from providing inexpensive electricity. In fact, about one in four people still have no electricity at all.



track 2-2

**A | Meaning from Context.** Read and listen to the news report about the Deepwater Horizon oil spill. Notice the words in **blue**. These are words you will hear and use in Lesson A.

On April 20, 2010, one of the worst oil spills in history began in the Gulf of Mexico. The spill occurred at an oil rig, called the Deepwater Horizon, which is owned by the BP company. A buildup of pressure caused natural gas to shoot up suddenly from the ocean floor. The gas **triggered** a terrible explosion and a fire on the oil rig. After the explosion, the crew **abandoned** the platform and escaped in lifeboats. Unfortunately, eleven workers were never found.



A beach in the United States is covered with oil after the Deepwater Horizon oil spill.

For weeks, no one was sure just how much oil was being **released** into the Gulf of Mexico. Gradually, information about the damage from the oil spill **emerged**. It was discovered that between 50,000 to 60,000 barrels of oil a day were flowing into the Gulf. **Experts** from BP and other organizations tried to stop the spill, but it continued for nearly three months. By the time the leak was stopped, the beautiful blue waters of the Gulf had been **contaminated** with nearly 5 million barrels of oil.



The disaster did serious harm to the fishing and tourism industries in the southern United States. Pictures of birds that had been **exposed** to the thick oil appeared daily in the news. The American public **reacted** angrily, and the spill created a huge **controversy**. Some people even wanted to stop oil companies from drilling in the Gulf of Mexico. BP set aside 20 billion dollars to **compensate** fishermen, hotel owners, and store owners whose businesses were impacted by the spill.

**B |** Match each word in **blue** from exercise **A** with its definition. Use your dictionary to help you.

- |                      |       |  |
|----------------------|-------|--|
| 1. triggered (v.)    | _____ | a. to pay someone to replace lost money or things  |
| 2. abandoned (v.)    | _____ | b. became known; appeared  |
| 3. released (v.)     | _____ | c. responded to  |
| 4. emerged (v.)      | _____ | d. caused an event to begin to happen  |
| 5. experts (n.)      | _____ | e. left a place, thing, or person permanently  |
| 6. contaminated (v.) | _____ | f. people who are very skilled or who know a lot about a particular subject                        |
| 7. exposed (v.)      | _____ | g. entered the surrounding atmosphere or area; freed   |
| 8. reacted (v.)      | _____ | h. a disagreement, especially about a public policy or moral issue that people feel strongly about |
| 9. controversy (n.)  | _____ | i. made something dirty, harmful, or dangerous because of chemicals or radiation                   |
| 10. compensate (v.)  | _____ | j. placed in a dangerous situation   |

## USING VOCABULARY

**A** | Read the interview and fill in each blank with the correct form of the word from the box. Use each word only once.

abandon

controversy

expert

react

trigger

**Q:** Can mining for energy sources such as coal and oil cause natural disasters?

**A:** Some people think so. For example, in 1989, there was an earthquake in the city of Newcastle, Australia. Some (1) \_\_\_\_\_ said it was (2) \_\_\_\_\_ by coal mining in the area. Others thought there was no way that mining 2297 feet (700 meters) down could cause an earthquake 6 miles (10 kilometers) beneath the surface of the earth.

**Q:** How did the public (3) \_\_\_\_\_ to the experts' opinion?

**A:** Well, it created a great deal of (4) \_\_\_\_\_. A lot of people called for an end to coal mining in Newcastle. John Tate, the Lord Mayor of the city at the time, said there was no chance Newcastle would (5) \_\_\_\_\_ coal mining.



Newcastle, Australia

**B** | With a partner, practice the interview from exercise **A**. Then switch roles and practice again.

**C** | **Discussion.** Form a group with two or three other students and discuss the questions.

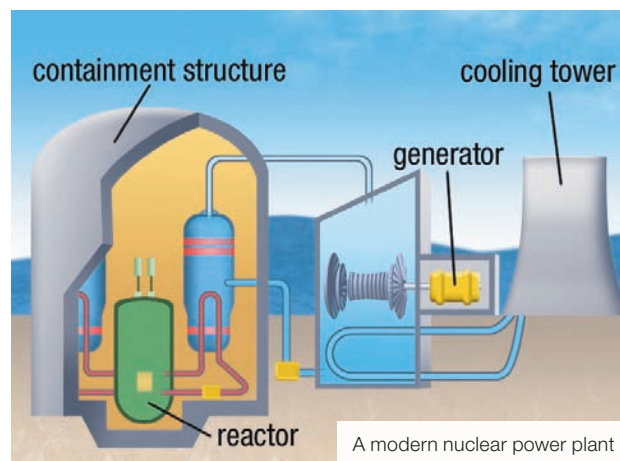
1. Eleven people died in the 1989 Newcastle earthquake. Should the coal-mining companies of Newcastle **compensate** the families of the workers who died? Explain your opinion.
2. What is your reaction when photos of an environmental disaster are **released**? Give an example.
3. The Deepwater Horizon oil spill **contaminated** the ocean and seashore. In your opinion, who is responsible for cleaning up the oil spill?
4. What could happen to animals, fish, and plants that are **exposed** to oil spills or dangerous gases from coal mines?
5. Following an environmental disaster, what do you think should happen if information **emerges** that shows the accident was caused by a company's or a government's negligence?<sup>1</sup>

<sup>1</sup>If someone is guilty of **negligence**, they have failed to do something that they ought to do.

## Before Listening

 **Predicting Content.** Work with a partner. Look at the map and diagram. Discuss the questions.

1. Use your dictionary and look up these terms: *containment*, *radiation*, *radioactive*, *half-life*. How do you predict these words will be used in the lecture?
2. Locate the containment structure in the diagram. Why do you think this structure is important? Explain your ideas.



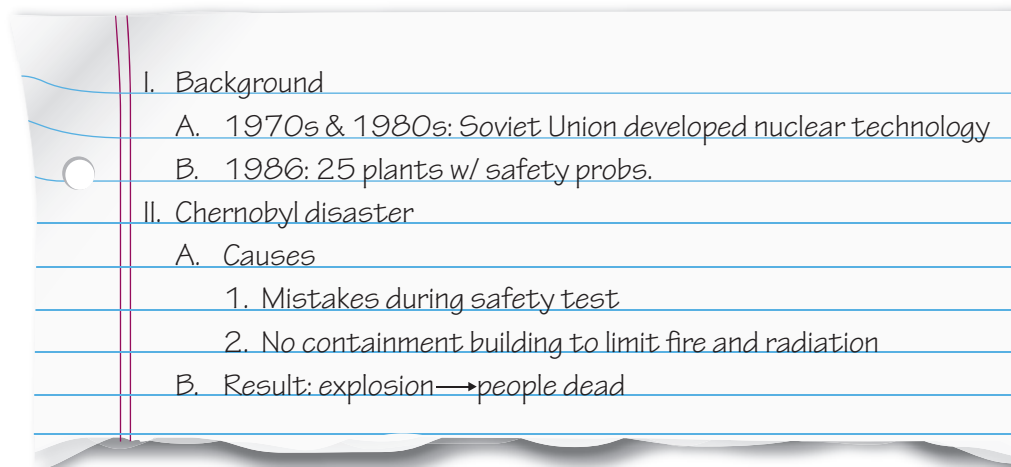
## Listening: A Guest Speaker


### Critical Thinking Focus: Using an Outline to Take Notes

Using an outline can help you take organized and clear notes. In an outline, indicate main ideas with Roman numerals (I, II, III) and capital letters (A, B, C). Indicate details with numbers. As information becomes more specific, move it to the right.




- A** | Listen to the introduction to a lecture about the Chernobyl nuclear disaster. Read the outline as you listen.




 **B | Discussion.** With a partner, discuss the questions. Refer to the outline in exercise **A**.

1. What topics did the introduction cover?
2. Which items are main ideas? Which items are details?

 **track 2-4** **C | Listening for Main Ideas.** Listen to the entire lecture and answer the questions.

1. Check (✓) each effect of the explosion that the speaker mentions.  
\_\_\_ a. People were forced to leave their homes.  
\_\_\_ b. Animals died from exposure to radiation.  
\_\_\_ c. Young people became ill with thyroid cancer.  
\_\_\_ d. Billions of dollars were spent on health and cleanup costs.  
\_\_\_ e. Modern nuclear power plants are built with containment structures.
2. What happened to the town of Pripjat?
  - a. It was abandoned.
  - b. It burned to the ground.
  - c. It was turned into a tourist attraction.
3. What is surprising about Chernobyl today?
  - a. The residents of Pripjat have returned.
  - b. Many animals have come back to the area.
  - c. The radiation from the explosion has disappeared.

 **track 2-4** **D | Outlining.** Listen again. Continue the outline from exercise **A** on page 66. Complete the outline with details from the lecture. (See page 206 of the *Independent Student Handbook* for more information on outlining.)

C. The Chernobyl plant today

1. Still extremely \_\_\_\_\_
2. There are plans to build a \_\_\_\_\_

D. Radioactivity

1. Many areas still contaminated with cesium \_\_\_\_\_
2. Half-life of \_\_\_\_\_ years

E. The exclusion zone today

1. \_\_\_\_\_ people live there
2. Animals have returned, for ex., \_\_\_\_\_

## After Listening

 **Discussion.** With a partner, answer the questions. Use your notes as well as your own ideas.

1. Describe the town of Pripjat before and after the disaster.
2. These days, a small number of tourists travel to Chernobyl. Would you go there if you had the opportunity?

## Language Function

### Emphasizing Important Information

Here are some expressions used to emphasize important information.

*Don't forget that . . .*

*Let me stress that . . .*

*I want to emphasize that . . .*

*I would like to stress that . . .*

*I would like to point out that . . .*

*You need to remember that . . .*

*It is important to note/remember that . . .*



track 2-5


**A** | In the lecture about Chernobyl, the speaker used a number of useful expressions to emphasize her point. Listen to the excerpts and fill in the missing expressions.

- \_\_\_\_\_ Chernobyl had no containment structure. This building would have limited the fire and contained the radioactivity.
- Thyroid cancer can be cured, but \_\_\_\_\_ survivors must spend a lifetime taking medication.
- \_\_\_\_\_, however, that it will be decades before large numbers of people are allowed to come back and live in the exclusion zone.

Wild horses, called Przewalski horses, walk through the Chernobyl exclusion zone. These horses are extinct in the wild and can only be found in a few nature reserves and in the Chernobyl exclusion zone.





-  **B** | Form a group with two other students. Choose one of the types of energy below and read the facts. Then tell the members of your group what you know about your energy source. Add your own ideas. Emphasize the fact that you think is the most interesting.

Oil prices are rising. For example, it cost me almost \$60 to put gas in my car yesterday. Last year, it would have cost me only \$40. Still, it is important to remember that . . .



### Oil

- The price of oil is rising.
- Oil spills pollute the environment.
- The top three oil-producing countries in the world are Saudi Arabia, Russia, and the United States.



### Coal

- Coal deposits in the United States contain more energy than all the world's oil reserves combined.
- Coal is a relatively inexpensive energy source.
- Coal mining is dangerous. Between 1969 and 2000, more than 20,000 coal miners were killed.



### Wind

- Wind power is clean, but is sometimes very noisy.
- The world will never run out of wind.
- Denmark gets 20 percent of its electricity from wind power.

## Grammar

### The Future Perfect

The future perfect describes a state or a completed action in the future. We use this tense when the state or action will be completed by a specified future time or event. The future perfect is formed with *will + have + the past participle*.


*If you start saving your money now, in ten years you **will have saved** enough money to retire.*

With the future perfect, a time expression is often used with *by* or *by the time*.

***By my 30th birthday, I will have graduated** from college.*

 **A** | With a partner, complete these predictions about energy use in the future. Fill in each blank with the future perfect form of the verb in parentheses. Then take turns saying each sentence.

- 2025** 1. By 2025, the capacity of batteries \_\_\_\_\_ (increase) by 1000 percent.
- 2030** 2. By 2030, oil production \_\_\_\_\_ (return) to the level it was in 1980.
- 2040** 3. By 2040, we will still be using oil, but its role \_\_\_\_\_ (change) significantly.
- 2050** 4. By 2050, electric cars \_\_\_\_\_ completely \_\_\_\_\_ (replace) gasoline-powered cars.
- 2060** 5. By 2060, corporations \_\_\_\_\_ (build) wind farms along the coasts of most nations.


 **B** | **Self-Reflection.** Form a group with two or three other students. Use *by* or *by the time* and the future perfect to make predictions about your future. Respond to your classmates' sentences. Use the topics listed below to help your discussion.

- graduate from college
- get a job
- buy my first house
- buy a car
- learn to drive
- learn a new language

By next year my husband and I will have bought a house.

That's nice. Where would you like to live?

## Role-Playing a Town Meeting

-  **A** | Form a group with three other students. You will role-play a city council meeting about building a nuclear power plant. Read the situation and the role cards. Assign two students to each role.

**Situation:** The city council has approved a plan to build a nuclear power plant in your city. A small group of residents are against the plan. They are going to meet with city council members to discuss their concerns.

### Role #1: Residents against the Nuclear Power Plant

1. Nuclear power plants aren't safe. We don't want a nuclear accident to happen here.
2. Nuclear power plants produce waste that is dangerous for many years.
3. People who live near a nuclear power plant might get cancer.


### Role #2: City Council Members

1. Nuclear safety technology has greatly advanced in recent years.
2. France, Belgium, and Slovakia rely on nuclear power for more than 50 percent of their electricity. There have been no big nuclear accidents in those countries.
3. Nuclear power could help us stop using oil.

-  **B** | Work with the group member who shares your role. Think of more arguments to support your point. In addition, try to think of responses to the other side's arguments.

I think they will say that . . .

If they say that, we should emphasize that . . .

-  **C** | **Role-Playing.** Role-play the discussion in your group. Use expressions of emphasis when appropriate.

Thank you for meeting with us. We have a few concerns about this nuclear power plant.

I understand. First of all, let me stress that we will do everything possible to make this power plant safe.

### Student to Student: Conceding a Point

In a debate or discussion, people often argue from different points of view. If an argument is very convincing to you, you can let the other person know that you agree with their point or that you accept that their point is true. Here are some expressions to concede a point.

*Good point.*

*Fair enough.*

*I'll give you that.*

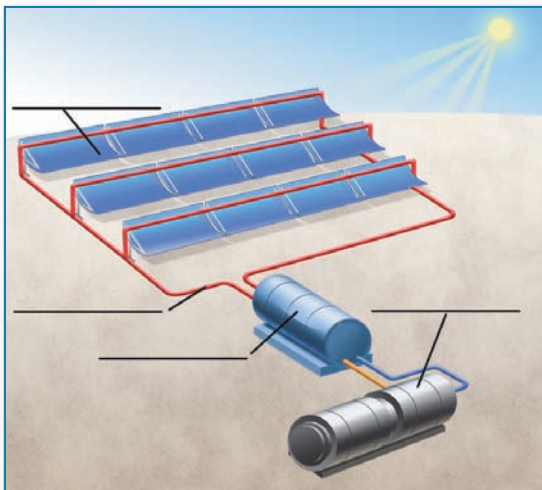
Solar cells turn sunlight into electricity.



# SOLAR POWER

## Before Viewing

**Understanding Visuals.** Read the information. Use the words in **blue** to label the diagram.



There are many different kinds of solar power systems. This diagram shows how parabolic trough solar power works.

1. Sunlight hits **curved mirrors** that direct all the light and heat to the middle of the mirror.
2. In the middle of the mirror, a **tube** filled with synthetic<sup>1</sup> oil is heated to about 700°F.
3. The oil runs into a **boiler** where it turns water into steam.
4. The steam spins an **electric turbine**, which turns and makes electricity.

<sup>1</sup>**Synthetic** products are made from chemicals or artificial substances rather than from natural sources.

## While Viewing

 **A** | Watch the video. Fill in the blanks with the word or words you hear.

The most powerful source of (1) \_\_\_\_\_ on the planet is actually out in space. It's (2) \_\_\_\_\_. More energy falls as sunlight on the United States in a single day than it uses in a (3) \_\_\_\_\_. But it's been difficult to turn that sunlight into (4) \_\_\_\_\_. Many people already use some (5) \_\_\_\_\_. But the world's need for power is great, and for solar power to be an alternative to other energy sources, it has to be both affordable and (6) \_\_\_\_\_.

**B** | Watch the video again. Check (✓) the five true statements.

1. \_\_\_ Sacramento doesn't use much solar power.
2. \_\_\_ Many new homes have solar cells.
3. \_\_\_ Many people drive solar-powered cars.
4. \_\_\_ Solar panels shade parking lots.
5. \_\_\_ Solar panels shade city buildings.
6. \_\_\_ Sacramento gets lower prices by buying a lot of solar panels at one time.
7. \_\_\_ Solar power is very expensive to residents of Sacramento.
8. \_\_\_ People can sell electricity back to the power company.

**C** | **Viewing for Specific Information.** Watch the video again. Circle the best answer to each question.

1. Where is the Kramer Solar Junction facility located?
  - a. In the mountains
  - b. In a desert
  - c. By the sea
2. How many people can the facility provide power for?
  - a. Half a million
  - b. Five million
  - c. Eight and a half million
3. What happens on days when there is no sun?
  - a. The facility buys back power from customers.
  - b. The facility uses power from batteries.
  - c. The facility uses backup natural gas generators.
4. What does the facility produce a lot of?
  - a. Power
  - b. Carbon dioxide
  - c. Smog



Ladybug robots crawl down a leaf. The robots are powered by solar power collectors attached to their backs.

## After Viewing

**Critical Thinking.** With a partner, discuss the questions.

1. What are some problems that could occur when using solar power?
2. In general, do you think the government should be responsible for developing alternative energies? Or, should it be left to private corporations to develop alternative energies? Explain your answer.
3. Mirrors now cover 1000 acres of the Mojave Desert at the Kramer Solar Junction power facility. What impact could this have on the local environment there?



track 2-6

**A** | **Meaning from Context.** Read and listen to the information. Notice the words in **blue**. These are words you will hear and use in Lesson B.



People wait in line for gasoline.

When oil was inexpensive and **abundant**, people learned to depend on it for heat and fuel. More recently, oil has been more difficult to find, as it is hidden deep beneath the earth under many **layers** of solid rock. There have even been oil **shortages**, and we have had to wait in long lines and pay high prices for gasoline. A serious **disadvantage** of oil, coal, and similar fuels is the pollution they create around our cities.



Water is released at a hydroelectric dam.

Today, researchers are focusing on energy sources beyond oil. Countries and companies are **pursuing** alternative energy. They are looking for energy sources that are **renewable** and can never be used up. These alternative energies follow the **principle** that energy production should be sustainable, not temporary. People are showing a lot of **enthusiasm** for new energy technologies such as wind and hydroelectric power. Government **incentives** in the form of money or tax breaks have helped convince some companies to develop alternative energy technologies. Experts think that in the future the world will **utilize** alternative energy for a larger percentage of its total energy needs.

**B** | Write each word in **blue** from exercise **A** next to its definition.

1. \_\_\_\_\_ (adj.) present or existing in large quantities
2. \_\_\_\_\_ (n.) the feeling of being very interested in or excited about something
3. \_\_\_\_\_ (n.) things that encourage you to want to work hard or take action
4. \_\_\_\_\_ (n.) pieces of a material or substance that cover a surface or are between two other things
5. \_\_\_\_\_ (v.) making an effort to achieve a goal
6. \_\_\_\_\_ (n.) a factor which makes a person or a thing less useful or successful than other people or things
7. \_\_\_\_\_ (n.) a general belief about the way something should behave
8. \_\_\_\_\_ (v.) to use
9. \_\_\_\_\_ (adj.) resources that are natural and always available, such as wind and sunlight
10. \_\_\_\_\_ (n.) conditions in which there is not enough of something

## USING VOCABULARY

- A** | What do you know about geothermal energy? Work with a partner and take the quiz. Circle **T** for *true* and **F** for *false*. Then check your answers at the bottom of the page. Which of these facts surprised you? Explain.

### GEOTHERMAL ENERGY: What do you know?

- |   |          |          |
|---|----------|----------|
| 1. Geothermal energy is a type of <b>renewable</b> energy.  | <b>T</b> | <b>F</b> |
| 2. Geothermal energy is found in the <b>layers</b> of rock beneath the earth's surface.   | <b>T</b> | <b>F</b> |
| 3. Geothermal energy is the most <b>abundant</b> energy source on earth.  | <b>T</b> | <b>F</b> |
| 4. The U.S. government offers <b>incentives</b> to homeowners to install geothermal systems in their homes.                       | <b>T</b> | <b>F</b> |
| 5. Geothermal energy works on the same <b>principle</b> as the steam engine: when water is converted to steam, it produces force. | <b>T</b> | <b>F</b> |
| 6. Geothermal energy has been <b>utilized</b> for cooking and heating only in the past 50 years.                                  | <b>T</b> | <b>F</b> |



Visitors swim in a hot spring created by geothermal energy. Geothermal energy is derived from the earth's internal heat.

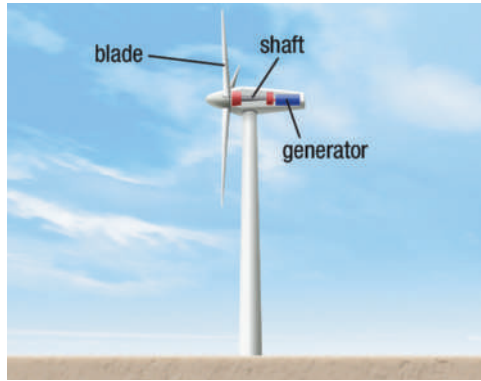
- B** | **Self-Reflection.** With your partner, discuss the questions.

1. Do you plan to **pursue** more education sometime in the future? Explain.
2. What is a hobby or activity that you are **enthusiastic** about? Why do you enjoy it?
3. There is a **shortage** of nurses in the world. Would you ever consider becoming a nurse? Explain.
4. Do you have an **incentive** for learning English? What is it?
5. Do you think that people who avoid technology are at a **disadvantage** compared to people who use technology often? Explain.

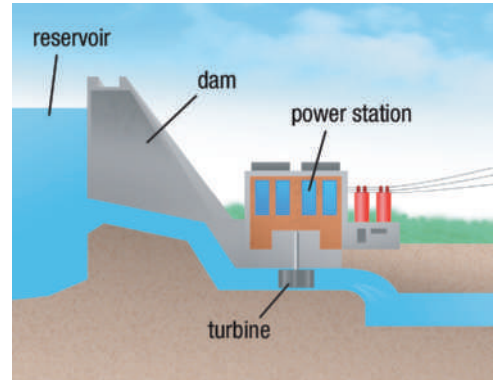
**ANSWERS:** The false statements are #3 (Other sources such as coal are more abundant.); #4 (The government offers incentives to install solar systems, but not geothermal.); and #6 (Geothermal energy has been used for thousands of years.)

### Before Listening

**Understanding Visuals.** Work with a partner. Look at the diagrams. How do wind and hydroelectric systems generate electricity? Share some ideas with your partner. (See page 216 of the Independent Student Handbook for more information on understanding visuals.)



Wind Power



Hydroelectric Power

### Listening: A Study Group Discussion



**A | Listening for Key Concepts.** Listen to a student speaking at the beginning of a study group meeting. Are these statements true or false? Circle **T** for *true* or **F** for *false*.

- |  |          |          |
|--|----------|----------|
| 1. The group is meeting for the first time.        | <b>T</b> | <b>F</b> |
| 2. The group is preparing for a presentation.      | <b>T</b> | <b>F</b> |
| 3. The presentation is about renewable energies.   | <b>T</b> | <b>F</b> |
| 4. The first speaker will talk about fossil fuels. | <b>T</b> | <b>F</b> |



**B | Using a Graphic Organizer.** Listen to students presenting their research on solar, wind, and hydroelectric power. Complete the notes in the T-charts below and on page 77.

Solar Power Advantages	Solar Power Disadvantages
1. No fire = no _____	1. Cost of _____
2. Free	2. _____ cut off energy supply
3. 100% _____	3. _____ technology isn't good enough yet

Wind Power Advantages	Wind Power Disadvantages
1. Clean, renewable	1. Look _____
2. No emissions = no _____	2. Turbines make _____
3. Costs _____	3. No wind = no _____
4. Many govts. offer _____	4. Tech. for _____ hasn't been developed yet



### Hydroelectric Power Advantages

1. Water is \_\_\_\_\_
2. Once built, doesn't need \_\_\_\_\_
3. No \_\_\_\_\_
4. Cost: \_\_\_\_\_

### Hydroelectric Power Disadvantages

1. Damage to \_\_\_\_\_
2. Destroys \_\_\_\_\_
3. Forces people \_\_\_\_\_

## After Listening

 **Critical Thinking.** Using your notes from pages 76 and 77, discuss the questions with a partner.

1. Which advantages do all three forms of energy share?
2. Imagine that your community has decided to build a renewable energy facility. Which energy source is best for your area? Consider the advantages and disadvantages of solar, wind, and hydroelectric power. Also consider the environment and weather in your area.

## Pronunciation

### Stressing Two-Word Compounds

In many two-word compounds, the stress is on the first word.

**book** review    **foot**print    **green**house    **living** room    **moving** van

Stressing both words in these situations can sound strange or can change the meaning of the sentence.

*The peas were grown in a **greenhouse**.* (a glass building for growing plants)

*I saw you standing in front of a **green house**.* (a house painted the color green)




track 2-9



track 2-10

**A** | Listen to each sentence and check (✓) the correct meaning of the underlined phrase.

1. I met an English teacher.  
 a teacher of the English language       a teacher who is English
2. I had a glass of orange juice.  
 juice made from oranges       orange-colored juice, maybe mango
3. The police spotted a moving van.  
 a van in motion       a large van for moving furniture
4. Where should I put this hot plate?  
 a plate that is hot       a small stove for keeping food warm
5. That's a beautiful yellow jacket.  
 a flying insect       a coat

 **B** | With a partner, take turns saying the sentences from exercise **A**. Stress either the first underlined word or both of the underlined words. Your partner will tell you the meaning of the word or phrase he or she hears.

## Language Function

### Expressing Approval and Disapproval

Here are some expressions you can use to express approval or disapproval.

#### Approval

*It's OK that . . .*  
*I think it's fine to (verb) . . .*  
*I (strongly) approve of (noun) . . .*  
*It's OK (for someone) to (verb) . . .*

#### Disapproval

*It's wrong to (verb) . . .*  
*It's not right that . . .*  
*I (strongly) disapprove of (noun) . . .*  
*It's not right (for someone) to (verb) . . .*



track 2-11

**A** | In the study group discussion, there were a number of expressions for expressing approval and disapproval. Listen and fill in the missing expressions you hear.

1. On the downside, some people \_\_\_\_\_ wind turbines because they're ugly. They also complain about the noise the machines make, although most people think \_\_\_\_\_ put up wind turbines on farmlands.
2. A lot of people think \_\_\_\_\_ to destroy animal habitats this way. They also believe \_\_\_\_\_ that people are forced to leave their homes.

**B** | Read the statements. Use the ratings below to indicate your approval or disapproval of each topic.

1 = strongly approve   2 = approve   3 = neither approve nor disapprove   4 = disapprove   5 = strongly disapprove

Statements	My Rating
a. The city council has voted to raise taxes by one percent in order to put solar energy systems in all government buildings. Do you approve or disapprove of raising taxes?	
b. A dam will provide cheap hydroelectric power to millions of people. However, it will require hundreds of people to leave the valley where they have been living for many years. Do you approve or disapprove of building the dam?	
c. A proposed geothermal plant near your town will reduce your energy bills. However, the steam that is released contains a gas that smells like rotten eggs. Do you approve or disapprove of building the geothermal plant?	
d. Your neighbor wants to install a wind turbine in his backyard. Do you approve or disapprove?	



**C** | **Discussion.** Form a group with three other students and compare your ratings from exercise **B**. One student should read each statement. Then group members should take turns giving and explaining their ratings. Discuss whether you agree or disagree with your classmates' ratings.

## Grammar

### The Future Perfect Progressive

The future perfect progressive is used to talk about actions that will be in progress before a specific time in the future. This tense is formed with *will + have + been + the present participle*.

*By 2020, we **will have been drilling** oil wells for over 160 years.*

The future perfect progressive emphasizes the duration of an action up to a specific future time. Often, this tense is used with a time expression and *for*.

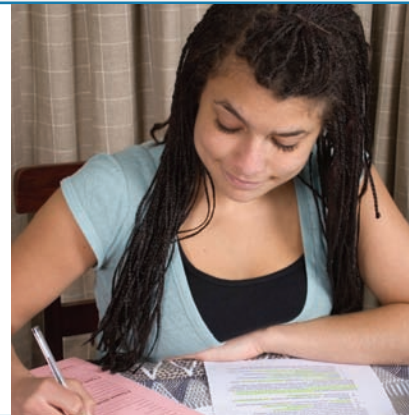
*In just two weeks, we will have been meeting **for three months**.*

**A** | Complete the sentences with the future perfect progressive form of the verb in parentheses.

1. In June of next year, my father \_\_\_\_\_ (living) in Brazil for 10 years.
2. In November, that company \_\_\_\_\_ (sell) wind turbines for six months.
3. On his next birthday, John \_\_\_\_\_ (drive) for 15 years.
4. In 2025, France \_\_\_\_\_ (produce) electricity with nuclear power for 60 years.
5. Next February, Sally \_\_\_\_\_ (work) as a nurse for 25 years.
6. In 2030, Iceland \_\_\_\_\_ (use) geothermal energy to heat homes for 100 years.
7. By next year, my book club \_\_\_\_\_ (meeting) for 5 years.

**B** | Fill in the blanks with the future perfect or the future perfect progressive form of the verb in parentheses.

I've been thinking about going to college for a while. In fact, by the end of June I (1) \_\_\_\_\_ (work) for two years. At that point, I'd like to quit my job and start studying. I have decided to get a degree in business at City University. By January 30, I (2) \_\_\_\_\_ (submit) my application. I hope that by May I (3) \_\_\_\_\_ (received) their answer. I hope to study with Professor Morse. He is very experienced. By next year, he (4) \_\_\_\_\_ (teach) business courses for more than 20 years. The local government wants people to study, so they began giving financial incentives to students last year. By the time I graduate, they (5) \_\_\_\_\_ (give) financial incentives for five years.



**C** | **Discussion.** With a partner, discuss the questions.

Which of these inventions and technologies do you use? When did you start using them? By 2025, how long will you have been using them? Talk about additional technologies that you use often.

- video games
- personal computer
- smart phone
- high-definition television


I started using a cell phone in 2003. By 2025, I will have been using a cell phone for 22 years!

# ENGAGE: Creating and Using Visuals in a Presentation

## 4

Your group is going to deliver a presentation to the class about an unusual source of energy. To support your presentation, your group will make a poster or a slide presentation with pictures, graphs, or other visual information. Your visual should include answers to these questions:


1. What is an unusual source of energy?
2. How does this energy source work?
3. What are the advantages and disadvantages of using this energy source?

-  **A | Discussion.** Form a group of two or three students. Examine the list of unusual energy sources and select one to research.


biodiesel	hydrogen fuel cells
biomass	methane from landfills
energy-generating floors	sugar
ethanol	tidal or ocean power


This biomass plant burns rice to generate electricity.



-  **B | Researching.** Outside of class, research your topic online or in the library. Use the outline below as a guide while you take notes about your topic. Find several images that relate to your energy source. (See pages 211–212 of the *Independent Student Handbook* for more information on doing research.)

- I. Type of energy
  - A. Description
  - B. Source
- II. Examples of how the energy is used
  - A. Places
  - B. Purposes
- III. Advantages
- IV. Disadvantages
- V. Future of this form of energy

-  **C | Planning a Presentation.** As a group, use your notes from exercise **B** and your images to create a poster or slide presentation about your energy source. Be sure that your poster or slide presentation answers the three questions in the box at the top of the page.

-  **D | Presentation.** When you give your presentation, all group members should speak. Be sure to explain the images you present, and answer any questions from your audience.

### Presentation Skills: Fighting Nervousness

It is normal to be a little nervous at the beginning of a presentation. However, the first impression you make on your audience is very important. Make an effort to speak slowly and calmly at the beginning of your presentation. Memorizing the first few sentences you plan to say can sometimes help. Soon you will begin to feel more comfortable and gain confidence.