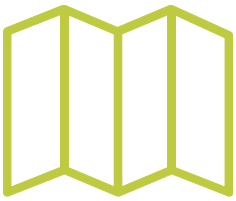

Lesson 4.1
Blackout!

Lesson Overview

Students are introduced to the question that will guide their investigations for Chapter 4: *How does energy get to the devices all over Ergstown?* To start investigating this question, students consider the effect that the failure of one part can have on the system as a whole. First, student groups build a simple electrical system and cause it to fail. Then they identify the part that caused the failure of another group's system. Next, student pairs read *Blackout!*, a book about different electrical system failures, and then return to one article to look for evidence about the cause of that particular electrical system failure. The purpose of this lesson is to build students' understanding of the effect that system parts have on the overall function of the electrical system. This will prepare them to investigate the possible cause of Ergstown's nighttime blackouts in the following lesson.

Anchor Phenomenon: Ergstown has frequent blackouts.
Investigative Phenomenon: A simple electrical system of a solar panel, wires, and a motor attached to a fan can function or fail.

Students learn:

- There are many possible reasons that a system might fail.
- It is unlikely that too many devices or not enough energy in the electrical system could be a reason for a nighttime blackout.

Lesson at a Glance

ACTIVITY 1

Introducing System Failure (10 min)
Students review what they've learned about possible causes for blackouts and they read about system failure in *Systems*.

TEACHER-LED DISCUSSION

2

Building and Analyzing Failing Systems (30 min)
Groups of students build a simple electrical system and cause it to fail. Then they identify why another group's system failed and record evidence of that failure. This activity includes an On-the-Fly Assessment to assess how students are understanding the effect that the failure of parts can have on the system as a whole.

HANDS-ON

3

Reading: Blackout! (20 min)
The teacher introduces *Blackout!* and pairs of students read the book to learn about various causes of system failure. This activity provides an opportunity for an On-the-Fly Assessment of students' developing ability to synthesize information as a reading strategy.

READING

Materials & Preparation

Materials

For the Classroom Wall

- Chapter 4 Question: *How does energy get to the devices all over Ergstown?*
- Partner Reading Guidelines
- Electrical Safety Guidelines

For the Class

- Analyzing a Failing System copymaster
- 1 copy of *Systems*

For Each Group of Three to Five Students

- 1 self-sealing, plastic bag
- 1 solar panel
- 1 motor with fan blades attached
- 2 cables with alligator clips

For Each Pair of Students

- 1 copy of *Blackout!*

For Each Student

- 1 copy of the Analyzing a Failing System student sheet
- *Energy Conversions* Investigation Notebook (pages 64–69)

*teacher provided

VOCABULARY

- failure
- function
- system

UNPLUGGED?

Digital Devices Not Required

Students can complete this lesson without the use of digital devices.

DIGITAL RESOURCES

Analyzing a Failing System copymaster

Preparation

Before the Day of the Lesson

1. **Review *Blackout!*** Familiarize yourself with the book and the various types of system failures that may cause a blackout.
2. **Select a location for the Analyzing a Failing System investigation.** In Activity 2 of this lesson students will again explore solar-powered simple electrical systems. They will need access to both sunlight and shade, so we recommend that they conduct this investigation outdoors.
3. **Form eight groups.** In Activity 2, two groups of students will be paired together so that both groups can take turns presenting failed systems and trying to identify the cause of a system failure. Form eight groups (with from 3 to 5 students each, depending on the size of your class) so that the groups can be evenly paired.
4. **Prepare materials for the Analyzing a Failing System activity.** Each group of 3 to 5 students will need one bag of materials. Each bag should contain the following:
    - 1 solar panel
    - 1 motor with fan blades attached
    - 2 wires with clips
5. **Test a simple electrical system.** Using one bag of student materials (a fan, a solar panel and two wires), set up an electrical system and become familiar with how to make it work—and fail. Be sure to return all materials to the bag when you are done.
6. **Download and copy Analyzing a Failing System copymaster.** Download the copymaster (in Digital Resources) and make one copy for each team to refer to as they complete Activity 2.
7. **Prepare for On-the-Fly Assessments.** There are two On-the-Fly Assessments included in Activity 2 and Activity 4 that provide an opportunity to informally assess students' understanding of systems and their developing ability to apply the reading strategy of synthesizing information. Press the hummingbird icon on the menu bar and then select ON-THE-FLY ASSESSMENT for details about what to look for and how you can use the information to maximize learning by all students.

Immediately Before the Lesson

1. **Write the Investigation Question.** On the board, write "Why might a system fail?"
2. **Have on hand the following materials:**
    - materials for the classroom wall
    - bags with investigation materials
    - copies of the Analyzing a Failing System student sheet

- masking tape
- marker
- *Energy Conversions* Investigation Notebook (pages 64–69)

Differentiation

Embedded Supports for Diverse Learners

Frequent student-to-student discussions. This lesson is intended to get students excited about thinking about the potential causes of blackouts. There are multiple opportunities for students to discuss and share their thinking. Students may have very different experiences and understandings; providing student discussions allows students to learn from one another. As students share, you can listen for misconceptions and can either address them in the moment or make a plan for addressing them during later lessons.

Supportive visuals. The diagram and photos in *Blackout!* provide additional evidence intended to help clarify the cause of each system failure described in the book and convey new information for students to connect to their prior knowledge. Supportive visuals can be helpful for students who might benefit from more support as they work to consider the implications of the evidence.

Potential Challenges in This Lesson

Reading-centered. Reading science texts is challenging and, in particular, the news article format in this book may be unfamiliar to some students. Students who struggle with reading in general may struggle with the reading in this lesson.

Specific Differentiation Strategies for English Learners

Adjust teacher talk. Adjusting your speech according to English learners' proficiency levels will help students understand oral instructions and discussions of concepts. This lesson requires students to follow multi-step directions and to work in pairs and in groups. To help students understand expectations, have them summarize the instructions in English and in their primary language if possible. Other considerations to keep in mind include indicating visual references, such as materials students will use, paraphrasing often and providing clarification about the procedures students are to follow. Other ways to adapt teacher talk include:

- Slow down your rate of speech and enunciate words clearly.
- Limit the use of idiomatic expressions, or, if you use them, explain them fully.
- Simplify complex sentence structure, as appropriate.

Modeling reading with a small group. Reading *Blackout!* with a small group of English learners can help elicit questions and points of confusion about the text in a supportive environment. Before students read with a partner, choose one of the articles in *Blackout!* to read with a small group of English learners. Read the first paragraph aloud,

and model what to do when you don't understand part of what you've read. Think aloud as you notice a break in your understanding, then reread this section slowly. Then, identify an idea you now understand more clearly as well as an unfamiliar word or phrase that you are still confused about. Suggest that students talk to a partner to help them understand what the word or phrase means, and have them practice doing this. Encourage students to use these strategies as they read; then provide time for them to try them out on their own as they finish the article with a partner.

Multiple meaning words. You can help all students, especially English learners, make sense of multiple meaning words by providing explicit instruction. To help avoid confusion, before reading, explain that some words students will encounter in *Blackout!* have more than one meaning. Discuss some examples students will encounter such as *power* and *rolling*. Then, have pairs work together to complete the activity on page 68, Multiple Meaning Words, in the Investigation Notebook.

Specific Differentiation Strategies for Students Who Need More Support

Reading with a small group or as a class. One option for adjusting the lesson for students who need more support is to form small groups of students who would work together to read one of the articles in *Blackout!* with you or another adult. If you think many students in your class will find this text challenging, you can read part of it aloud and ask students to follow along as you read and discuss part of the text together.

Supporting readers by using Anticipation Guides. Students will find the Anticipation Guide for this book on page 65, Getting Ready to Read: *Blackout!*, in their Investigation Notebook. Anticipation Guides are helpful for all students. If you choose to use this optional activity, have students indicate whether they agree or disagree with each statement about blackouts and discuss their responses with a partner. Remember to have students come back to the Anticipation Guide after reading and discuss with their partners any changes they wish to make based on what they read.

Specific Differentiation Strategies for Students Who Need More Challenge

Reading Reflection to reinforce concepts. The Reading Reflection for *Blackout!* (on pages 66–67 of the Investigation Notebook) requires students to return to the text to identify the articles that present information about how a blackout can be caused by storms, high heat, and accidents. Students are then prompted to select one article from *Blackout!* and write a short summary of the article, including the main idea and supportive details.

Standards

Key
Practices Disciplinary Core Ideas Crosscutting Concepts

3-D Statement

Students identify evidence about the causes of electrical system failures (cause and effect, systems and system models) in simple electrical systems they design and make for one another and also about failures—including those caused by natural hazards—described in the book *Blackout*!

Next Generation Science Standards (NGSS)

NGSS Practices

- **Practice 1:** Asking Questions and Defining Problems
- **Practice 2:** Developing and Using Models
- **Practice 4:** Analyzing and Interpreting Data
- **Practice 6:** Constructing Explanations and Designing Solutions
- **Practice 8:** Obtaining, Evaluating, and Communicating Information

NGSS Disciplinary Core Ideas

- **PS3.A: Definitions of Energy**:
  - Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2, 4-PS3-3)
- **PS3.B: Conservation of Energy and Energy Transfer**:
  - Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. (4-PS3-2, 4-PS3-3)
- **PS3.B: Conservation of Energy and Energy Transfer**:
  - Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-2, 4-PS3-4)

- **PS3.D: Energy in Chemical Processes and Everyday Life**:
  - The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use. (4-PS3-4))
- **ESS3.A: Natural Resources**:
  - Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3-1)
- **ESS3.B: Natural Hazards**:
  - A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4-ESS3-2)
- **ETS1.A: Defining and Delimiting Engineering Problems**:
  - Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)
- **ETS1.B: Developing Possible Solutions**:
  - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
- **ETS1.B: Developing Possible Solutions**:
  - At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)
- **ETS1.B: Developing Possible Solutions**:
  - Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3)

NGSS Crosscutting Concepts

- Cause and Effect
- Systems and System Models
- Energy and Matter
- Structure and Function

- Patterns

Common Core State Standards for English Language Arts (CCSS-ELA)

- **CCSS.ELA-LITERACY.RI.4.1:** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- **CCSS.ELA-LITERACY.RI.4.7:** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- **CCSS.ELA-LITERACY.W.4.8:** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
- **CCSS.ELA-LITERACY.SL.4.1.A:** Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- **CCSS.ELA-LITERACY.SL.4.1.B:** Follow agreed-upon rules for discussions and carry out assigned roles.
- **CCSS.ELA-LITERACY.SL.4.4:** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Common Core State Standards for Mathematics (CCSS-Math)

CCSS-Math Practices

- **CCSS.MATH.PRACTICE.MP1:** Make sense of problems and persevere in solving them.

1 TEACHER-LED DISCUSSION
Introducing System Failure

Introducing System Failure

10 MIN

Students review what they've learned about possible causes for blackouts. Then, they review what they read about system failure in *Systems*.

Instructional Guide

1. Review what students have discovered thus far.

In your role as systems engineers for Ergstown, what have you figured out so far about what can cause blackouts?
[We figured out that sometimes too many devices being used at the same time can cause a blackout. We also learned that if the source isn't transferring enough energy into the electrical system, that can cause a blackout.]

2. Present new information about blackouts in Ergstown.

Mayor Joules has been very impressed by your discoveries so far about the possible causes for blackouts!

Today, she has more information to help us understand what might be causing the blackouts. According to a report by the City Planner, the blackouts sometimes occur in the middle of the night.

If some of the blackouts occur very late at night, when most people are asleep, do you think that that's because too many people are using devices? Do you think it's because there isn't enough energy in the system?

Accept student responses. Guide students to conclude that it seems highly unlikely that a blackout could occur in the middle of the night either because too many people are using devices or because there's not enough energy in the system.

3. Introduce new Chapter Question and Investigation Question.

When blackouts happen in the middle of the night, something else must be causing them. In order to figure out what this could be, we need to understand how the electrical energy gets to the devices all over town.

Point to the Chapter 4 Question: *How does energy get to the devices all over Ergstown?*

First, let's take a look at why different kinds of systems might fail. This might help us to understand what makes the Ergstown electrical system work—or not work.

Point to and read the Investigation Question:

Why might a system fail?

4. Prepare students to read about system failure.

Think about the systems we've investigated or read about so far: the cherry pitter system, a bicycle system, a simple electrical system. Why might these systems fail, or stop functioning?

Collect student responses. At this point students may not have a clear answer to this question, and that is acceptable.

5. Project System Failure (pages 20–21 in *Systems*). Let students know that you will revisit two pages from *Systems* in order to better understand why systems might fail.

6. Read pages 20–21 aloud. As you read, refer to the photos and captions.

Why does this bicycle (on page 20) still work but the bicycle on the next page (page 21) not work?

[In the first bicycle, the parts were moved around and designed in a new way, but the parts still work, so the whole system works. In the second bicycle, some parts—such as the wheels and tires—look broken.]

Think about this information and how it might help us understand the electrical system. Does anyone have any new ideas about why a system might fail?

[If it changes in the wrong way, or if there is an important part taken out, it will fail.]

7. Introduce the next activity. Inform students that they are going to work in groups to investigate what happens when systems fail. Explain that they will build functioning simple electrical systems using the solar panel, wires, motors, LEDs, and buzzers, and that they will get to experiment with system changes and failures.

8. Project Analyzing a Failing System. Let students know that after their group builds a failing system, they will be paired with another group. Explain that each group will try to figure out what caused the failure of the other group's system. Read the activity instructions with the class.

Analyzing a Failing System

1. **Team A** shows their failing system to **Team B**. (**Team A** holds the system. **Team B** should look at it but not touch it.)
2. **Team B** discusses what might be wrong with the system. (**Team A** should not give away what is wrong!)
3. If **Team B** can't tell what is wrong by looking, **Team A** can let them hold the system.
4. **Team B** decides what they think is wrong with the system. **Team A** tells them if they are correct. If they aren't, **Team B** should keep trying to figure out what's wrong.
5. **Team B** predicts what change will make the system function. They make the change to test their prediction. They can make another prediction if the system still doesn't work.
6. Teams switch roles and repeat these steps.

9. Project the notebook. Have students turn to page 69, Parts of the System That Failed: Simple Electrical System, in the notebook. Review the instructions and let students know that they should complete this page as they investigate the other group's system.

Teacher Support

Instructional Suggestion

Providing More Experience: System Failure
As you read from *Systems* and have students identify changes that do or don't cause a system failure, you may wish to record these in a T-chart on the board. You can label one column on the chart "Causes system failure" and the other "Does not cause system failure." This will give students a visual reference to refer to as they explain why different parts of the system fail. To encourage students to support their ideas with evidence, ask, "How does that cause the system to fail?" or "Why doesn't that cause the system to fail?"

Background

Crosscutting Concept: Systems and System Models Throughout Chapter 4
In Chapter 4, students investigate how energy is transferred through the electrical system and discover the function of wires. Students investigate and reflect on why systems may fail and discover that if one part of an electrical system fails, then the whole system may also fail. Groups build a simple electrical system and cause it to fail. They identify how

a failure of one part can cause the whole system to fail in their own systems, those of classmates, and in historical examples they read about. Students conclude the chapter by using what they have learned about systems to argue for the best improvements to the Ergstown electrical system.

2 HANDS-ON
Building and Analyzing Failing Systems

Building and Analyzing Failing Systems

30 MIN

Students build simple electrical systems and cause them to fail. Then they try to figure out why another group's system failed.

Instructional Guide

1. Move to the outdoor activity area. Bring one bag of materials for each group, and have students bring their notebooks and pencils outside. Define the area where groups may work.

2. Briefly demonstrate system changes. Build a simple electrical system using a solar panel, wires, and a motor attached to a fan.

- Demonstrate a change that does not cause a failure: Ask students what they think will happen if the motor and fan are not in the sunlight. Collect students' ideas, then use your hand to shade the motor and fan. Ask students to observe and share what happened [The system did not fail—it does not matter if the motor is in the sunlight or in the shade.]
- Demonstrate a change that causes a failure: Ask students what they think will happen if the top of the solar panel is not in the sunlight. Collect student responses. Then turn the panel so that the back of it is facing the sun. Ask students why the system is not functioning. [The system is not getting power because the solar panel is not about to convert energy from the sun.]

3. Form eight groups. Distribute one bag of materials and one Analyzing a Failing System student sheet to each group. Let students know that there are many ways to cause a system to fail, and encourage them to explore. Remind them that first they should make a functioning system and then cause it to fail. Point out that students should not cause the system to fail permanently (i.e, they should not break any part of the materials).

4. Circulate among the teams. If a team has found a way to make their system fail, encourage them to look for other ways, especially ways that involve different parts of the system. A minute before it is time to share their failing systems, tell teams to settle on which failing system they will present to their peers.

5. Pair groups together. Designate one group in each team as Group A and one as Group B. Review the steps of the activity on the Analyzing a Failing System student sheet, if necessary.

6. Have teams present their systems and complete the notebook. Remind students to complete the first part of page 69 in the notebook, Parts of a System That Failed: Simple Electrical System, after they identify the cause of failure of the other team's system, and to answer the second question after they make and test predictions about whether or not a particular solution will make a system function properly.

- **Team A presents their failing system to Team B.** Circulate as groups work to provide support as needed.
- **Team B presents to Team A.** Provide a signal indicating that it is time to switch roles.

7. On-the-Fly Assessment: System Failure. Circulate—listen to student discussions and review students' notebook pages to assess their understanding of how systems can fail.

8. Have students clean up materials. Have students gently disassemble their simple electrical systems and carefully place them back in the bags.

9. Return to the classroom.

Embedded Formative Assessment

On-the-Fly Assessment 16: System Failure

Look for: At this point in the unit, students should have a solid understanding of parts and their functions within a system. They should be able to indicate which parts failed in both the simple electrical systems they built and those they observed; they should also be able to identify how that affected the overall function of each system. By now, they should be able to explain the basic function of nearly every part of the simple electrical system.

Now what? If students are still struggling to understand the connection between a part of the simple electrical system and the function of the system as a whole, revisit a functioning system. Build a functioning simple electrical system (solar panel, wires, motor, and fan). As you build the system, hold up each part and ask students to name the part and its function as part of the overall system. Once the simple electrical system has been constructed, show students that it is able to function. Part by part, ask students to predict what might happen to the function of the system if the part were changed. Then, demonstrate removing or changing a part of the system, one at a time, so that students may see each individual part's effect on the system as a whole. For example, you might ask students what would happen if you were to unclip one of the wires from the solar panel. Accept their predictions and then unclip the wire. (The system will fail because energy will not get to the motor.)

Teacher Support

Rationale

Pedagogical Goals: Fixing Failures
One way to build students' conceptual understanding of electrical systems is to encourage problem solving around a system that failed. This provides a way to test some of the ideas students discussed in their Peer Review (Lesson 3.5). It also reinforces the concept of the design cycle in which students might return to a system to redesign and re-test.

Instructional Suggestion

Providing More Challenge: Presenting an Analysis of a Failing System
Being able to communicate orally how a particular system is failing can help students build not only their analytical skills, but their communication skills as well. You can extend this lesson by asking students to prepare a brief oral presentation explaining how a system failed. You may want students to base this on one of the failures described in *Blackout!*, or they could choose another situation where a system has failed. Students could include reasons why the system failed and ideas for how the system could be redesigned to function properly. Students can present their ideas to others in the class or an outside audience.

Instructional Suggestion

Providing More Experience: Opportunities for Students to Share Their Writing
Students have many opportunities throughout the unit to write about the science ideas they are learning, from writing open-ended and informal reflections to more structured design arguments. Writing allows students to reflect on and integrate the key science concepts of the unit, while also giving them practice using science words in context. In this lesson, you might give students the chance to share the ideas they recorded while building a failed system with a partner, a small group, or even the whole class. When students read their writing aloud, it can showcase excellent peer models, highlight incomplete or unclear ideas that might need revision, and have a positive effect on student engagement and accountability.

Possible Responses

Investigation Notebook
Parts of the System That Failed: Simple Electrical System (page 69)

Simple Electrical System
Converter circled

What evidence makes you think this?
The solar panel was not facing the sun so ti could not convert light energy to electrical energy for the system. My evidence is when we turned the solar panel around, the electrical system worked.

3 READING
Reading: Blackout!

Reading: Blackout!

20 MIN

The teacher introduces *Blackout!* and pairs of students read the book to learn about various causes of system failure.

Instructional Guide

1. Refer back to the Investigation Question. Remind students that they are trying to answer the question *Why might a system fail?* Explain that the book they are about to read will give them ideas about many different possible causes of blackouts.

2. Hold up *Blackout!* Inform students that they are going to read a book that includes six different news articles about real blackouts that have happened all over the world. Reading the book will help them understand what can cause an electrical system to fail.

3. Distribute books. Provide one copy of *Blackout!* to each pair of students.

4. Set the purpose for reading.

As you read about the different blackouts, look for information that may help you answer the question *Why might a system fail?*

- Remind students that paying attention to text features such as titles, photos, and captions will help them understand what system failure occurred to cause each blackout.

5. Partners read. Students read the book with their partners. Circulate to monitor progress and provide support.

6. Share ideas. Regain attention when students have finished reading. Ask volunteers to share what they read that relates to the question *Why might a system fail?* Accept all responses, encouraging students to refer to specific pages in the text as they share their ideas.

7. On-the-Fly Assessment: Students practice synthesizing. Ask students to reflect on what they read. Ask students to think about the following question, then talk about it with their partners:

What new understanding have you come to about how systems can fail?

8. Conclude the lesson. Let students know that they will discuss the book further in the following lesson.

Embedded Formative Assessment

On-the-Fly Assessment 17: Synthesizing Information from a Text

Look for: At this point in the unit, students have had several opportunities to synthesize ideas from their reading with other information. In this activity, students will discuss their understanding of the reasons that systems can fail, based on connecting different ideas from the book. As students discuss, circulate and make note of whether students are able to connect different ideas to draw conclusions that can answer the Investigation Question about the different ways that a system can fail.

Now what? If students are having difficulty describing these connections between ideas, return to page 42 of the Investigation Notebook. Have students use these sentence frames to help them construct descriptions of their understanding. Call on students to share the ideas they construct and point out to the class when a student has connected together different pieces of information from the book (and/or other sources) to come to a broader understanding of how systems can fail. If many students in the class still need support with this practice, model the practice yourself, thinking aloud about why each idea is important and having students help you connect the ideas together.

Teacher Support

Background

About the Book: *Blackout!*
Blackout! is formatted like a series of news articles about real-life blackouts that have occurred around the world. Each blackout has a different cause, from a runaway truck crashing into utility poles to an overburdened electrical grid failing in a heat wave. The articles encourage students to think about energy sources, energy transfer, and what happens when one part of a system fails. The readings reinforce the role of the electrical grid and plant the idea that grid failure is not the only reason for electrical blackouts to occur. Different parts of the system, including sources and converters, are vulnerable to failure. These ideas support students' thinking and provide secondhand evidence as they investigate the causes and remedies for the blackouts occurring in Ergstown.

Background

Literacy Note: Text Features
Text features guide students to navigate and comprehend informational text. While reviewing the text features you may want to call out the headings, captions and images. Invite a few students to find and read a heading, caption, and describe an image, and then explain how they are helpful when looking for information. Another option is to have students find and discuss these text features with a partner.