

## Grade 4 Informative/Explanatory Writing Standard W.4.2

### Grade 4 Informative/Explanatory

W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- c. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).
- d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- e. Provide a concluding statement or section related to the information or explanation presented.

### The Reading/Thinking/Writing Task

As part of a science unit on energy, students participated in a three -part research and writing project: *What different sources of energy can be found in place you researched, and how do they change from one form to another to do work?*

**Research Experience #1** (Full Group Instruction): After hearing the anchor text, Energy at the Sports Arena, read aloud, the class worked together to research, take notes and write a class report on different sources of energy found in a sports arena, and how energy changes forms to do work.

**Research Experience #2** (Guided Practice): Next, the class worked in small groups to research energy in a different setting (factory, home, airport). Using the texts provided (*from the National Geographic Theme Set: Energy*), and at least one additional source, each group researched their assigned topic together. From the group notes, each student wrote an individual essay to answer the research question below.

**Research Experience #3** (Independent): The third research and writing component was done independently. Each student, individually, chose a different setting to study, using the series available and at least one additional source. Applying what they learned from the first two experiences, students researched and wrote a third piece to address the research question. Those final, independent essays are included here.

This complex thinking and writing task requires students to understand and clearly explain scientific concepts (types of energy and transformation of energy), as well as to identify examples from multiple sources to support the reader in understanding the explanations given.

**Focus of the Writing Task**

*What different sources of energy can be found in place you researched, and how do they change from one form to another to do work?*

## The Writing Task in the Curriculum

### *How is it embedded in curriculum/content?*

- ★ *Class:*
  - heterogeneous fourth grade class
- ★ *Curriculum unit*
  - part of a science unit on energy
- ★ *Standards*
  - Science: NGSS: 4-PS3-1, 4-PS3-2, 4-PS3-3, 4-PS3-4
  - Reading: RI.4.1, RI.4.3, RI.4.10
  - Writing: W.4.2, W.4.9, W.4.10

### *How did students build the knowledge they needed?*

- ★ *Texts*
  - National Geographic Theme Set: Energy by Greg Banks
    - Energy at the Sports Arena*
    - Energy in the Factory*
    - Energy at Home*
    - Energy at the Airport*
  - Additional sources from the internet
- ★ *Other Activities*
  - the science unit also included hands-on activities, videos and discussion

### *What instructional approaches were used to teach writing?*

- ★ *Craft lessons*
  - using a shared writing technique, the class wrote a model essay on energy in a sports arena together. The teacher used the group writing experience to introduce elements of strong expository writing, such as providing needed context in the introduction, clearly stating a focus and elaborating with examples from the text. The Painted Essay® was used, along with the model, to explore how ideas and information might be grouped and organized in the essay.
- ★ *Writing approaches*
  - students participated in three very similar research tasks, the first highly guided, the second less guided, and the final, independent. An emphasis on building knowledge, analyzing a model and a gradual release of responsibility enabled students to research and write independently.

### *What was the timeframe?*

Three pieces were researched and written over a period of 6 weeks; each research and writing cycle took approximately two weeks (one 45 minute class period per day).

**Standard W.4.2**  
**Grade 4**  
**Proficient**

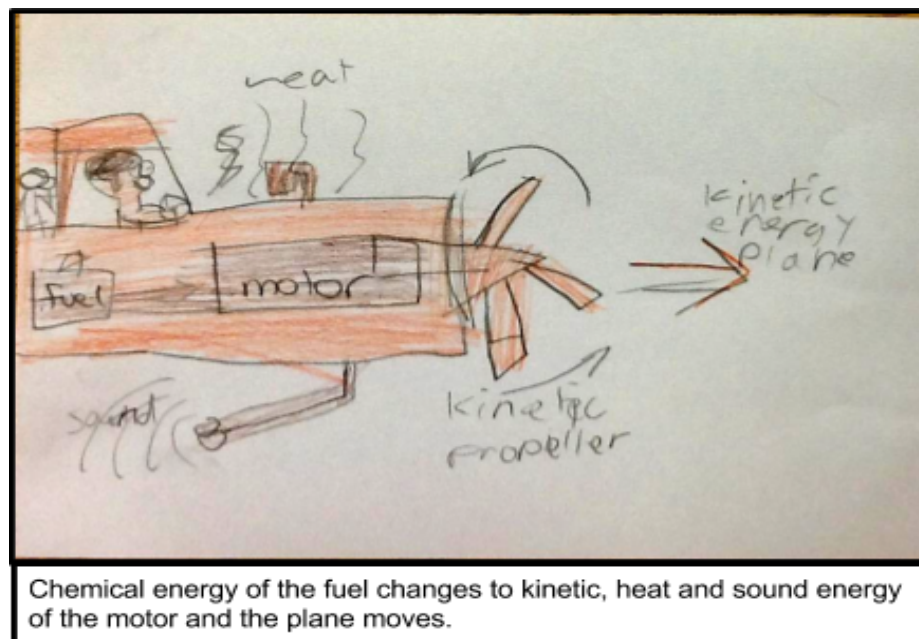
### **Energy in an Airport**

You may have heard that there is a lot of energy in the airport but look closer and you will see that people are small parts of energy . Energy is everywhere and involved in everything that happens here. Energy is the ability to do work in a airport. Some energy is called potential energy,another energy is kinetic energy, [it] is the energy of all the moving things you see . Energy is beings used to run in the air port . many sources of energy can be observed in a airport transforming from one form to another to do work.

### **Sources of Energy**

Energy in a airport comes from a variety of sources. one source of energy is the fuel in the airplane. That is chemical energy stored in the chemical bond released when bonds break When the fuel is being used. Another source is electrical energy [it] Involves the movement of small particles called electrons. Many things in the airport like the computers use .Electrical energy.

Heat energy is fast molecules giving energy to the slow-moving molecules. The heat energy



from the stoves Cook food in the food court in the airport.

## **Changes in Energy**

To do work in a airport energy is constantly changing from one form to another. When people are standing in line that's called potential energy. When people are running to get to the plane that's called kinetic energy. The potential energy transforms to kinetic energy. The fuel in the airplane's engine has potential chemical energy. The airplane has kinetic energy when you start the engine. When the engine is running energy changes into heat energy and some of the other energy changes into sound energy.

Energy is constantly changing from one form to another to do work in an airport. Energy is everywhere in a airport just like in the real world. Energy is being released in a factory and used everyday just like everywhere in real world.

### Citations:

Banks, Greg. Energy at the Airport Energy. Washington, D.C.: National Geographic Society, 2005. Print.

What Is Energy? ... for 5th Graders and Everybody Else (Flame Challenge 2017)."

YouTube. This Is Physics, 02 Feb. 2017. Web. 18 Feb. 2017.

<<https://youtu.be/u6PEYsedVsM>>.

*Standard W.4.2*  
*Grade 4*  
*Approaching*

## **Different Forms and Sources of Energy and How They Change in a Factory**

### Introduction

Energy is everywhere in a factory. There are many sources of energy that we will talk about but there are also forms. One of the main forms of energy is potential energy. Potential energy depends on the mass and the height. The heavier the object is and the higher the object is the more potential energy. There is also kinetic energy. Kinetic energy is the motion of all moving objects, like a drill spinning really fast in order to make a hole in the wood, or a hammer falling to bend a piece of metal is kinetic energy. Sources and forms of energy can be converted from one form to another to do work in a factory.

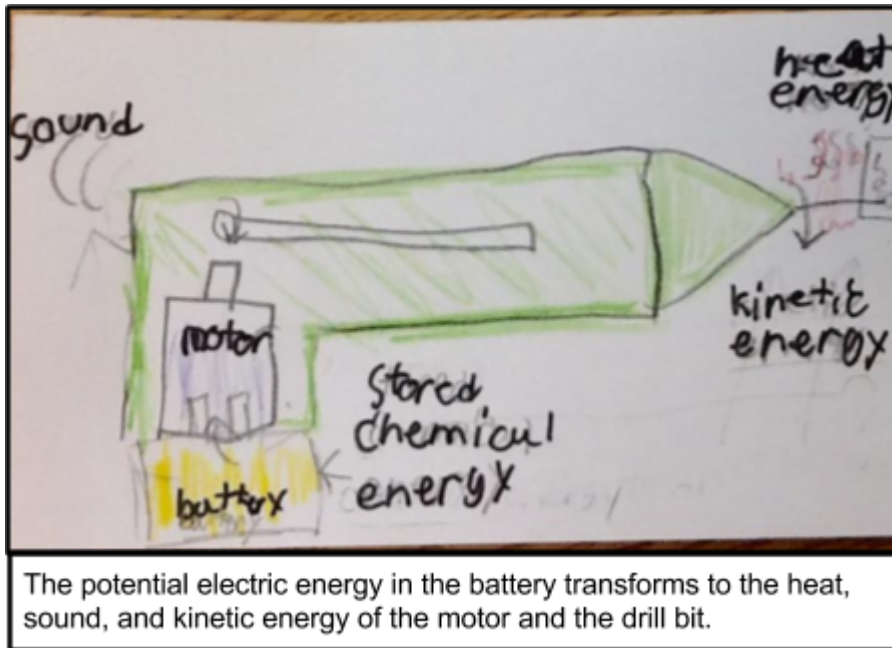
### Energy Sources

Energy in a factory comes from a variety of different sources. First, Light energy, a laser is a very intense light beam. Light energy is the only source of energy you can see. It travels at a very fast speed, up to 186,416 miles per second to be exact. That's fast enough to circle the earth 7 times in one second! It travels in waves, bounces off objects, and lets you see. Next, electrical energy is electrons that move along a closed circuit. Like the electrical energy running the computer. Third, chemical energy is stored in bonds released when the bonds break like the chemical energy in coal and oil. Last, heat energy, heat energy moves one direction warm to cool a furnace has heat energy when the coal burns. Many sources of energy can be found in a factory.

### Energy Changes

Energy rarely stays in one of these forms for long. Energy is constantly changing from one form to another to do work in a factory. Firstly the coal in the ground is potential chemical energy to the people mining it out of the ground kinetic energy to them burning it in a power plant heat energy to power for the factory electricity to the conveyer belt moving which is kinetic energy. Next, gasoline in the gas tank not being used is potential chemical energy to the gasoline

changing into heat, sound, and kinetic energy of the forklift moving the big box, back to potential energy when it sets the box down and the forklift turns off. Lastly, the batteries in the laser pointer potential chemical energy of the laser being off potential light energy to the laser being on light and heat energy.



### Conclusion

In the universe energy has been here since the start of time. It can not be created or destroyed until the end of the universe. Energy can be converted from one form to another, just we always have the same amount of energy it just transforms into different forms and sources, but if we add it all up it always equals the same amount. Many sources and forms of energy can be seen converting from one form to another. Energy is always changing from one form to another to do work in the universe, and the galaxy.

### Citations:

Banks, Greg. Energy in the Factory Energy. Washington, D.C.: National Geographic Society, 2005. Print.

**Standard W.4.2**  
**Grade 4**  
**Beginning**

**Energy has the ability to do work in in a home**

At first glance you may think the people have all the energy in a home but anything that is done in a home involves some kind of energy. Energy in a home has the ability to do work. And energy called kinetic energy. Kinetic energy is the energy of motion the way kinetic energy works is the more bigger the object and the faster the object moves. Another type of energy is potential energy. Potential energy is the ability of stored energy. Potential energy depends on the higher something. and is waiting to be used as mechanical energy. Energy in a home comes from a variety of sources changing from one form to another to do work.

Visible sources

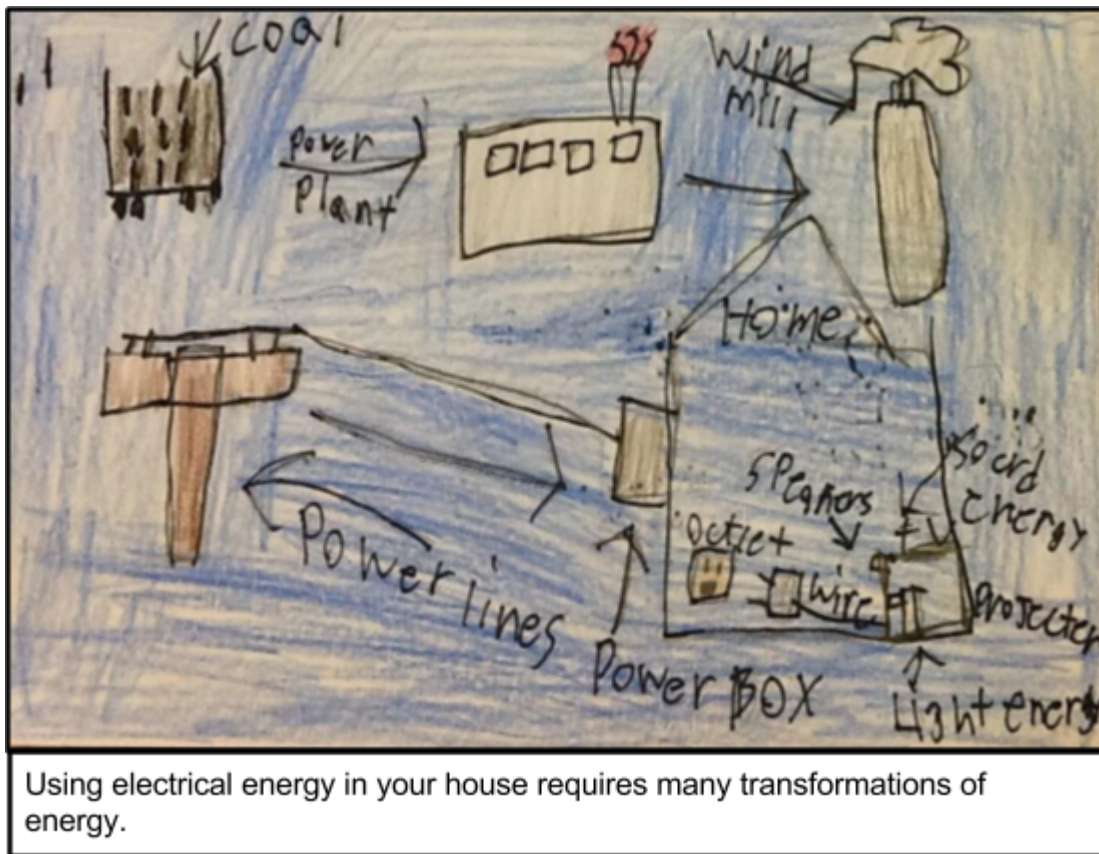
Energy in a home comes from a variety of sources. There are a lot of sources of energy like heat light and electrical energy. Heat and light are used to make light like in a lamp the light bulb makes light and then the light gets hot which is heat. Heat is in a stove and in a toaster and electrical energy is in all of the things that plug into a outlets. Coal makes electrical first coal goes to a power plant then the coal goes into a furnace and then it makes electrical that goes to an outlet and a wire. The electrical then goes to the tv then goes to a projector that makes light and sound. The light comes from the projector. The sound comes from the speaker that projects the sound. Energy in a home is constantly changing and coming from a variety of sources from one form to another to do work.

Energy transforming

Energy in a home can be observed transforming from one form to another to do work. In a home people use light, cars, stoves and lawn mowers. The way a lawn mower works is that is string that you pull that sends a vibration to the motor that turns it on. The way it makes kinetic energy is the blades on the bottom of the lawn mower and spins. The way it has potential is when you are you poll the string which is building up potential then is used to make kinetic energy which is called mechanical energy. The way light works is the light has a filament that heats up and makes the filament glow and makes light. Any energy we see in a home has changed forms



several times.



In a home energy is often changing from one form to another and comes from a variety of sources to do work. One reason we need energy in a home is you need light to see at night. Another reason we need energy is you need heat to cook and stay warm. Energy can never be destroyed, but it can be wasted. Energy is everywhere and in everything we see in and out of our homes.

Citations:

Banks, Greg. Energy in the Home Energy. Washington, D.C.: National Geographic Society, 2005. Print.

"BrainPop - Forms of Energy." SchoolTube. Brain Pop, n.d. Web. 25 Apr. 2017.  
<<https://www.schooltube.com/video/617c60f7739a4a8c53b3/>>.

Publishing, DK. How Things Work Encyclopedia. N.p.: DK (Dorling Kindersley), 2009. Print. ScienceJackson. "Sound Energy." YouTube. YouTube, 21 Oct. 2012. Web. 07 June 2017.

<[https://www.youtube.com/watch?v=B5Id-\\_C05CI&feature=youtu.be](https://www.youtube.com/watch?v=B5Id-_C05CI&feature=youtu.be)>.

**Standard W.4.2**  
**Grade 4**  
**Exceeds**

## **Factory**

### **Energy**

In a factory, it's not just the machines and workers that have energy, the whole factory has energy. There are 2 different forms of energy, kinetic and potential energy. Kinetic energy is the energy of motion. An example of Kinetic energy in a factory is the machines. The machines in a factory are in motion which is kinetic energy. Potential energy is energy that's being stored and waiting to be released to do work. An example of potential energy is a hammer in the air waiting to move down so it can hit metal. In a factory all types of energy changes from one form to another to do work.

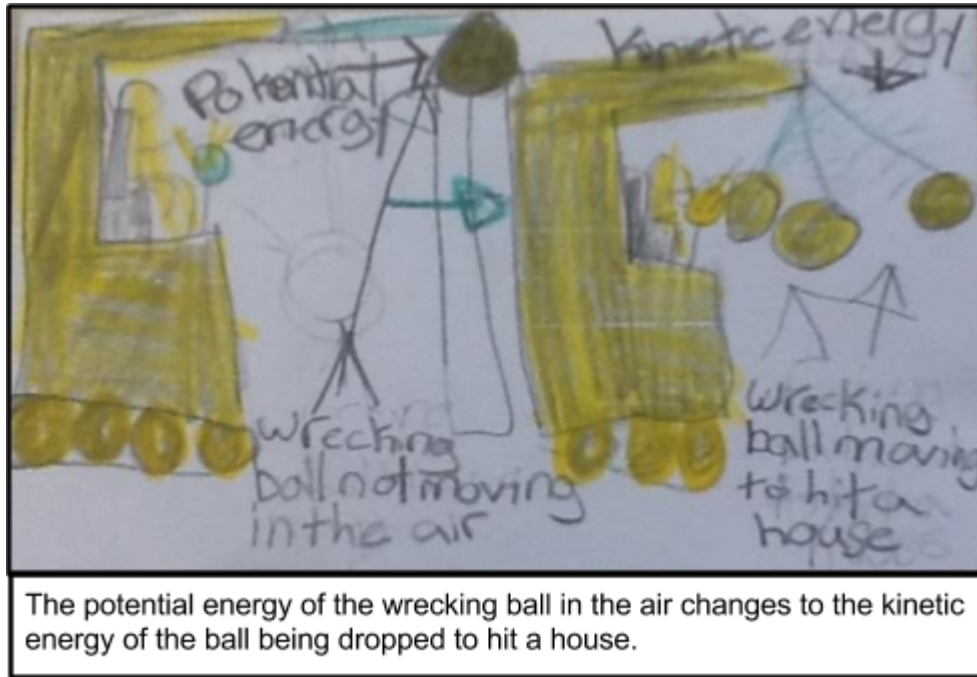
### **Sources**

In a factory energy comes from a variety of sources. One source of energy is light energy. Light energy is the only energy that you can see. Light energy travels in waves and bounces off objects and into your eyes. An example of light energy is lasers. Lasers help cut through metal in a factory. Another source of energy is heat energy. Heat energy is hot to cold fast to slow moving molecules. An example of heat energy is metal being shaped in a furnace by adding heat to the metal. Another source of energy is electrical energy. Electrical energy is electrons moving from one form to another to do work in a factory. An example of electrical energy is the machines. The machines help with doing the heavy lifting. Chemical energy is chemical bonds waiting to be released to do work. An example of chemical energy is the oil. The oil helps all the machines run that helps them hold heavy things like big boxes filled with car parts. These sources never stay in these forms for long.

### **Energy Changing Forms**

Energy changes from one form to another to do work in a factory. One change of energy is the chemical energy of the gasoline changing to the motion of the machine moving. And some of the chemical energy transforms into the heat and sound energy of the motor which is not useful. Another change in energy is when a hammer is in the air, [that's potential energy] starts to move down, [that's kinetic energy] to hit metal to shape it. Another change in energy is when the

electrical energy of the drill starting up converts into kinetic energy of the drill moving and spinning down to drill a hole in the wood.



All types of energy in a factory change from one form to another to do work. Scientists tell us energy can not be destroyed and is never created and that if we did not have any energy we would not exist and the world would cease to exist. Even if you try you can't escape energy, it is impossible. Talking about energy in a factory helps us understand that energy is everywhere and in everything.

#### Citations

Banks, Greg. *Energy in the Factory Energy*. Washington, D.C.: National Geographic Society, 2005. Print.

**Standard W.4.2**  
**Grade 4**  
**Proficient**

## Energy in an Airport

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### Sources of Energy

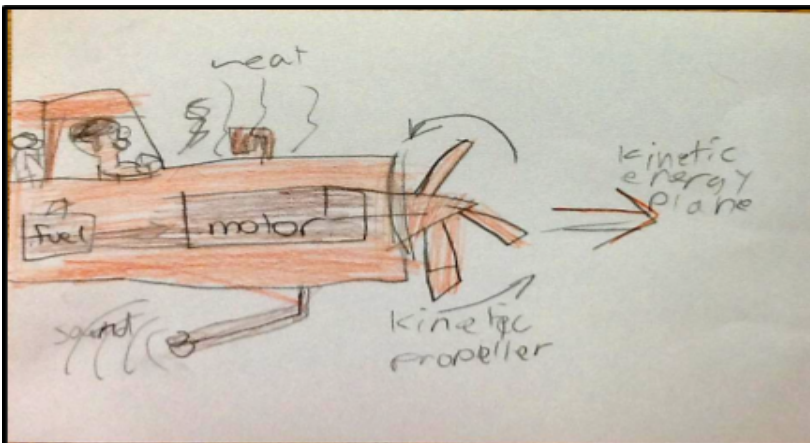
Energy in a airport comes from a variety of sources. one source of energy is the fuel in the airplane. That is chemical energy stored in the chemical bond released when bonds break When the fuel is being used. Another source is electrical energy [it] Involves the movement of small particles called electrons. Many things in the airport like the computers use .Electrical energy. Heat energy is fast molecules giving energy to the slow-moving molecules. The heat energy from the stoves Cook food in the food court in the airport.

An **introduction** provides needed context by defining the term energy and identifying two forms of energy, potential and kinetic.

**Topic/Focus** is clear and maintained.

Information is grouped in **related paragraphs and sections**. Headers clarify what is in each section and help the reader connect the information in the section to the focus.

**Uses transitional words and phrases** (*Another source...*) to link the examples in the paragraph to each other and to the topic of the section (*Sources of Energy*)



Chemical energy of the fuel changes to kinetic, heat and sound energy of the motor and the plane moves.

**A labeled illustration** supports the reader in understanding one of the examples used in the section.

## Changes in Energy

To do work in a airport energy is constantly changing from one form to another. When people are standing in line that's called potential energy. When people are running to get to the plane that's called kinetic energy. The potential energy transforms to kinetic energy. The fuel in the airplane's engine has potential chemical energy. The airplane has kinetic energy when you start the engine. When the engine is running energy changes into heat energy and some of the other energy changes into sound energy.

Energy is constantly changing from one form to another to do work in an airport. Energy is everywhere in a airport just like in the real world. Energy is being released in a factory and used everyday just like everywhere in real world.

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What Is Energy? ... for 5th Graders and Everybody Else (Flame Challenge 2017)." YouTube. This Is Physics, 02 Feb. 2017. Web. 18 Feb. 2017.  
<<https://youtu.be/u6PEYsedVsM>>.

**Uses precise language and domain-specific vocabulary to explain**  
how energy changes in an airport

**Develops the topic with concrete details and examples**

The first sentence in the final paragraph reminds the reader of the main idea of the piece. Although the last line is slightly off topic, all information in the **concluding** paragraph is **related to the** topic of energy.

Provides a list of sources

### Final Thoughts

(Gr 4 Informative: Proficient)

This piece of writing shows a solid understanding of the sources of energy and how they transform to do work. The focus of the piece is clearly stated at the end of the introduction, and the paper is organized into sections directly related to the focus (*Sources of Energy and Changes in Energy*). The writer uses concrete examples from the texts, as well as an illustration, to help the reader understand these science concepts.

At times, sentences can be a bit confusing (*That is chemical energy stored in the chemical bond released when bonds break When the fuel is being used.*), but this is to be expected as fourth graders experiment with expressing increasing complex content in writing. Precise use of domain specific vocabulary, as well as definitions and examples, serve to clarify in places where sentences may be awkward. Overall, the writer addresses the focusing question well and conveys ideas clearly.

### A Word About Language and Conventions

(Gr 4 Informative: Proficient)

Partial Control of Conventions: Although the writer has some control over language and conventions, the student could benefit from instruction in the following skills:

- using periods and commas
- using indefinite articles
- recognizing and correcting run on sentences and fragments

*Standard W.4.2*  
*Grade 4*  
*Approaching*

## Different Forms and Sources of Energy and How They Change in a Factory

### Introduction

Energy is everywhere in a factory. There are many sources of energy that we will talk about but their are also forms. One of the main forms of energy is potential energy. Potential energy depends on the mass and the height. The heavier the object is and the higher the object is the more potential energy. There is also kinetic energy. Kinetic energy is the motion of all moving objects, like a drill spinning really fast in order to make a hole in the wood, or a hammer falling to bend a piece of metal is kinetic energy. Sources and forms of energy can be converted from one form to another to do work in a factory.

**Introduces the topic,** using definitions and examples to provide needed context

The **topic**/focus statement is somewhat unclear, but is clarified by the section headings and examples given.

### Energy Sources

Energy in a factory comes from a variety of different sources. First, Light energy, a laser is a very intense light beam. Light energy is the only source of energy you can see. It travels at a very fast speed, up to 186,416 miles per second to be exact. That's fast enough to circle the earth 7 times in one second! It travels in waves, bounces off objects, and lets you see. Next, electrical energy is electrons that move along a closed circuit. Like the electrical energy running the computer. Third, chemical energy is stored in bonds released when the bonds break like the chemical energy in coal and oil. Last, heat energy, heat energy moves one direction warm to cool a furnace has heat energy when the coal burns. Many sources of energy can be found in a factory.

Although the writer offers **specific detail** about each source of energy, the connection between the source of energy and the factory is vague and often must be inferred.

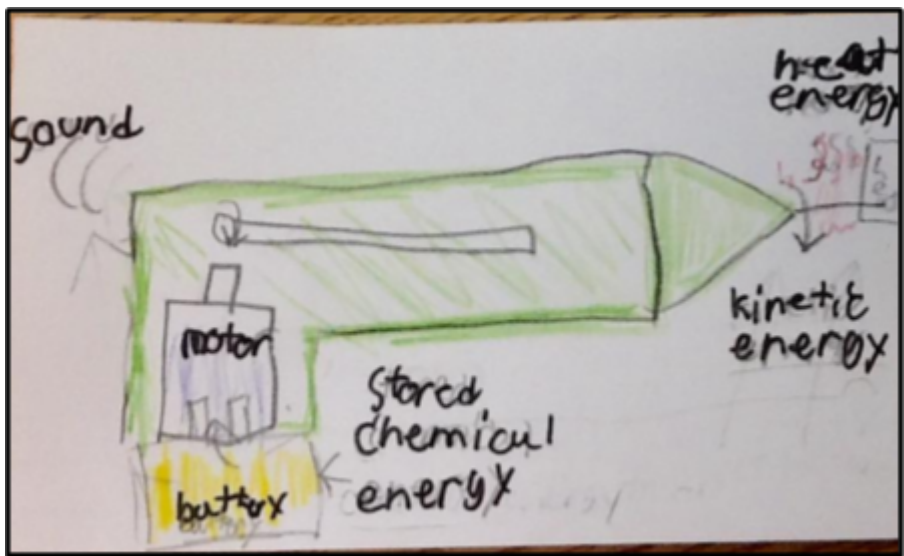
**Uses general academic and domain-specific vocabulary to explain ideas and examples**

**Information is grouped in related sections,** each clearly labeled with a heading.

### Energy Changes

Energy rarely stays in one of these forms for long. Energy is constantly changing from one form to another to do work in a factory. Firstly the coal in the ground is potential chemical energy to the people mining it out of the ground kinetic energy to them burning it in a power plant heat energy to power for the factory electricity to the conveyor belt moving which is kinetic energy. Next, gasoline in the gas tank not being used is potential chemical energy to the gasoline changing into heat, sound, and kinetic energy of the forklift moving the big box, back to

**Facts and details from the text support the general idea** that energy changes form to do work: the writer attempts to describe a chain of energy transfer from coal in the ground to a moving conveyor belt, but often the connections between ideas are unclear.



The potential electric energy in the battery transforms to the heat, sound, and kinetic energy of the motor and the drill bit.

Although not directly related to the examples in the text, the **illustration supports the reader in understanding** how energy transforms in a factory.

potential energy when it sets the box down and the forklift turns off. Lastly, the batteries in the laser pointer potential chemical energy of the laser being off potential light energy to the laser being on light and heat energy.

The writer is beginning to use **linking words**, but the words chosen are imprecise (firstly, next, lastly) and do not clearly express the relationship between the ideas in the section.

### Conclusion

In the universe energy has been here since the start of time. It can not be created or destroyed until the end of the universe. Energy can be converted from one form to another, just we always have the same amount of energy it just transforms into different forms and sources, but if we add it all up it always equals the same amount. Many sources and

**The conclusion is generally related to the topic**, but does not return to the specific focus on how energy transforms to do work in a factory.

forms of energy can be seen converting from one form to another. Energy is always changing from one form to another to do work in the universe, and the galaxy.

Citations: Banks, Greg. Energy in the Factory Energy. Washington, D.C.: National Geographic Society, 2005. Print.

Lists source

**Final Thoughts**  
**(Gr 4 Informative: Approaching)**

This piece approaches proficiency. The writer shows a general understanding of the sources of energy and how energy transforms to do work. The piece has a focus that is mostly maintained and supported with evidence from the text, as well as a clear organizational structure.

Even though this piece seems to have all the required “parts”, those parts do not come together to solidly support the focus. The writer uses information from the text, but the details included are not always well chosen or clearly explained. Linking words are often imprecise and do not clarify the relationship between ideas. The writing has a detailed concluding section, but the final paragraph adds new information rather than summarizing and reflecting on the information given.

Writing is a complex task that requires students to bring together craft and content in a meaningful way. This is a common area of challenge for elementary writers. Developing writers, like this one, will need practice, instruction and many models if they are to combine these elements proficiently.

**A Word About Language and Conventions**  
**(Gr 4 Informative: Approaching)**

Partial Control of Conventions: Although the writer has some control over language and conventions, the student could benefit from instruction in the following skills:

- using periods and commas
- recognizing and correcting run on sentences and fragments



**Standard W.4.2**  
**Grade 4**  
**Beginning**

**Energy has the ability to do work in in a home**

At first glance you may think the people have all the energy in a home but anything that is done in a home involves some kind of energy. Energy in a home has the ability to do work. And energy called kinetic energy. Kinetic energy is the energy of motion the way kinetic energy works is the more bigger the object and the faster the object moves. Another type of energy is potential energy. Potential energy is the ability of stored energy. Potential energy depends on the higher something and is waiting to be used as mechanical energy. Energy in a home comes from a variety of sources changing from one form to another to do work.

Visible sources

Energy in a home comes from a variety of sources. There are a lot of sources of energy like heat light and electrical energy. Heat and light are used to make light like in a lamp the light bulb makes light and then the light gets hot which is heat. Heat is in a stove and in a toaster and electrical energy is in all of the things that plug into a outlets. Coal makes electrical first coal goes to a power plant then the coal goes into a furnace and then it makes electrical that goes to an outlet and a wire. The electrical then goes to the tv then goes to a projector that makes light and sound. The light comes from the projector. The sound comes from the speaker that projects the sound. Energy in a home is constantly changing and coming from a variety of sources from one form to another to do work.

Energy transforming

Energy in a home can be observed transforming from one form to another to do work. In a home people use light, cars, stoves and lawn mowers. The way a lawn mower works is that is string that you pull that sends a

The writer may have some misunderstandings about the science content. For example, energy in a home *is* (not has) the ability to do work and bigger objects do not fall faster. The context provided in the **introduction** is a bit confusing.

The wording of the **topic**/focus statement is unclear.

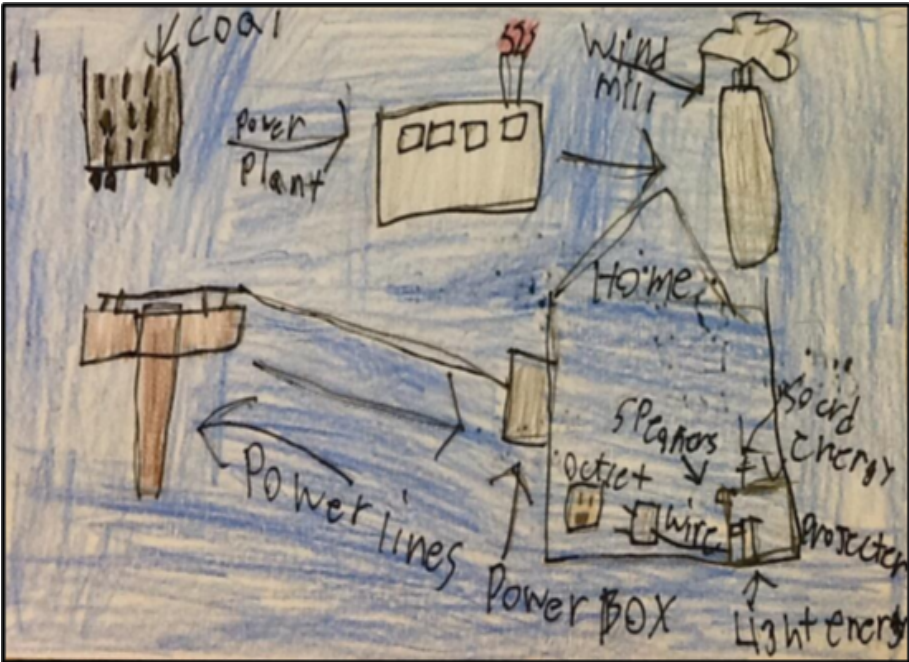
**Information is grouped in related paragraphs and sections**, but the section head (*Visible Sources*) is misleading.

The expression of ideas is vague. Some supporting **facts and details** are incorrect or incorrectly used.

vibration to the motor that turns it on. The way it makes kinetic energy is the blades on the bottom of the lawn mower and spins. The way it has potential is when you are you poll the string which is building up potential then is used to make kinetic energy which is called mechanical energy. The way light works is the light has a filament that heats up and makes the filament glow and makes light. Any energy we see in a home has changed forms several times.

Uses a repetitive sentence structure (*The way...*)

**Uses domain-specific vocabulary to inform about the topic**



Section heads and **illustrations** are confusing and do not **aid comprehension**.

Using electrical energy in your house requires many transformations of energy.

In a home energy is often changing from one form to another and comes from a variety of sources to do work. One reason we need energy in a home is you need light to see at night. Another reason we need energy is you need heat to cook and stay warm. Energy can never be destroyed, but it can be wasted. Energy is everywhere and in everything we see in and out of our homes.

**Conclusion** shifts topic from sources and forms of energy to reasons we need energy

Citations:

Banks, Greg. Energy in the Home Energy. Washington, D.C.: National Geographic Society, 2005. Print.

"BrainPop - Forms of Energy." SchoolTube. Brain Pop, n.d. Web. 25 Apr. 2017.

<<https://www.schooltube.com/video/617c60f7739a4a8c53b3/>>.

Provides a list of sources

Publishing, DK. How Things Work Encyclopedia. N.p.: DK (Dorling Kindersley), 2009. Print. ScienceJackson. "Sound Energy." YouTube. YouTube, 21 Oct. 2012. Web. 07 June 2017.

<[https://www.youtube.com/watch?v=B5Id-\\_C05CI&feature=youtu.be](https://www.youtube.com/watch?v=B5Id-_C05CI&feature=youtu.be)>.

**Final Thoughts**  
**(Gr 4 Informative: Beginning)**

This piece does not show a clear understanding of the topic, and contains some evidence of misunderstanding. The expression of ideas is often vague (*The light comes from the projector.*) and some supporting details are inaccurate (Heat and light are used to make light). The writer uses many domain specific words, but sentence structure is repetitive and sometimes confusing. The piece includes formatting and illustrations, but these offer little support to the reader. The first section heading (Visible Sources) does not reflect the main idea of the section (sources of energy) and the labels on the illustration are unclear. Overall, this piece shows a beginning level of proficiency.

This writer would benefit from more time spent discussing and understanding this complex content before writing.

**A Word About Language and Conventions**  
**(Gr 4 Informative: Beginning)**

Partial Control of Conventions: Although the writer has some control over language and conventions, the student could benefit from instruction in the following skills:

- using commas
- spelling
- recognizing and correcting run on sentences

**Standard W.4.2**  
**Grade 4**  
**Exceeds**

### **Factory Energy**

In a factory, it's not just the machines and workers that have energy, the whole factory has energy. There are 2 different forms of energy, kinetic and potential energy. Kinetic energy is the energy of motion. An example of Kinetic energy in a factory is the machines. The machines in a factory are in motion which is kinetic energy. Potential energy is energy that's being stored and waiting to be released to do work. An example of potential energy is a hammer in the air waiting to move down so it can hit metal. In a factory all types of energy changes from one form to another to do work.

An **introduction** provides needed context by defining kinetic and potential energy and providing an example of each.

**Topic/Focus** is clear and maintained

### **Sources**

In a factory energy comes from a variety of sources. One source of energy is light energy. Light energy is the only energy that you can see. Light energy travels in waves and bounces off objects and into your eyes. An example of light energy is lasers. Lasers help cut through metal in a factory. Another source of energy is heat energy. Heat energy is hot to cold fast to slow moving molecules. An example of heat energy is metal being shaped in a furnace by adding heat to the metal. Another source of energy is electrical energy. Electrical energy is electrons moving from one form to another to do work in a factory. An example of electrical energy is the machines. The machines help with doing the heavy lifting. Chemical energy is chemical bonds waiting to be released to do work. An example of chemical energy is the oil. The oil helps all the machines run that helps them hold heavy things like big boxes filled with car parts. These sources never stay in these forms for long.

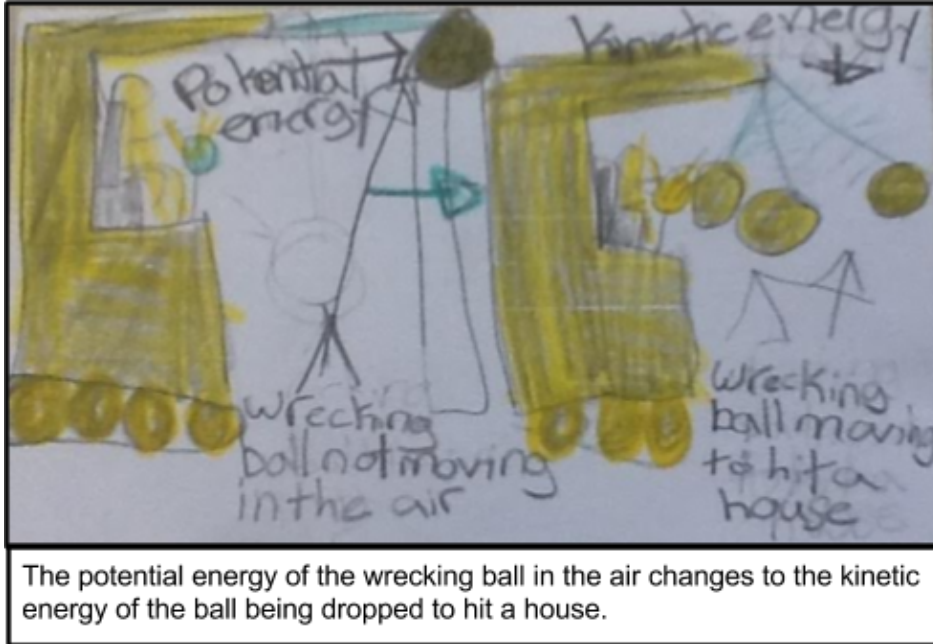
**Information is grouped in related sections**, each clearly labeled by an appropriate heading.

**Transitional phrases** (*An example of...*) **link examples** to the sources of energy being discussed.

**Uses precise language and domain-specific vocabulary to explain** ideas clearly

## Energy Changing Forms

Energy changes from one form to another to do work in a factory. One change of energy is the chemical energy of the gasoline changing to



Although not directly related to the examples in the text, the **illustration supports the reader in understanding** how energy transforms in a factory.

the motion of the machine moving. And some of the chemical energy transforms into the heat and sound energy of the motor which is not useful. Another change in energy is when a hammer is in the air, [that's potential energy] starts to move down, [that's kinetic energy] to hit metal to shape it. Another change in energy is when the electrical energy of the drill starting up converts into kinetic energy of the drill moving and spinning down to drill a hole in the wood.

Effectively uses several elaboration techniques; **developing the topic with accurate facts, definitions, concrete details, and examples**

All types of energy in a factory change from one form to another to do work. Scientists tell us energy can not be destroyed and is never created and that if we did not have any energy we would not exist and the world would cease to exist. Even if you try you can't escape energy, it is impossible. Talking about energy in a factory helps us understand that energy is everywhere and in everything.

**The concluding section** is clearly **related to the information presented** and reflects upon its significance. The last line connects the broader reflection back to the topic of the piece, energy in a factory.

### Citations

Banks, Greg. *Energy in the Factory Energy*. Washington, D.C.: National Geographic Society, 2005. Print.

Lists source

**Final Thoughts**  
**(Gr 4 Informative: Exceeds)**

In this piece, the writer does an exceptional job of communicating complex science content clearly. Word choice is precise and includes both academic and domain specific vocabulary. The piece is strongly focused and ideas are developed through a variety of elaboration techniques, including the strategic use of facts, definitions and examples. Information is organized in sections and the relationship between ideas is clarified with transitional words and phrases. Formatting and a labeled illustration enhance the reader's understanding of important scientific concepts. The concluding section not only repeats the focus (All types of energy in a factory change from one form to another to do work), but also reflects on why it is important to learn about energy in a factory. This fourth grade writer combines a strong understanding of content with skill in expository writing to very clearly convey ideas and information.

**A Word About Language and Conventions**  
**(Gr 4 Informative: Exceeds)**

Control of Conventions: Although there are some errors, the writer shows *overall control* over grade-level language and conventions.