

# ADVANCED LEARNING LABS

Collaboration between NC Department of Public Instruction and AIG Teachers across the state

TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES

4-5

## Energy



### ENGLISH LANGUAGE ARTS

Good writing has the ability to energize people and call them to action. What is a topic that you feel strongly about? It often helps to think about something you want people to start doing or that you want them to stop doing.

Once you choose a topic, craft an opinion piece that takes a position on a topic, supporting your opinion with reasons and information that ultimately energizes the readers and encourages them to act.

Your opinion piece could be in the form of a recorded video commentary on a local news channel, vlog, motivational speech or TEDTalk. The topic and format you choose are completely up to you and depend upon your own interests and energy.



### SOCIAL STUDIES

Civic participation is the energy we invest in the health of our community. Research ways citizens can participate in their community as well as signs of a healthy community. Create a civic participation energy scale and corresponding community health scale to show this relationship.



Give examples of minor ways (low energy-10/Red-ex. picking up litter) and major ways (high energy-100/Green ex. volunteering to register voters) that citizens can participate in their community. Chart its corresponding energy impact on the health of the community. Why is energizing levels of civic participation in the U.S. so important?



### SCIENCE

Using wind as a source of energy dates back to 5000BC when early Egyptians used wind to sail boats on the Nile River. The National Energy Education Development (NEED) Project began as a way to educate people about energy efficiency and using renewable resources.

Read more about types of wind, uses of wind, and ways to measure wind in the "Energy from the Wind" student guide developed through NEED: <https://www.need.org/wp-content/uploads/2019/11/Energy-From-The-Wind-Student-Guide.pdf>

On page 17, follow the instructions to learn how to make an anemometer to measure wind speed and gather your own wind data!



### MINDFULNESS

Through the mindful practice of grounding your energy, you can calm your body and return to a neutral state. When you connect with others, whether negatively or positively, you're engaging in some form of energy exchange, and eventually that can zap your energy. One way to ground your energy is to shield it by taking quiet time for yourself to think, reflect and calm yourself.

Find a quiet space and design an "energy shield" for yourself; think of things that replenish your energy and help you to feel calm, safe, secure, supported. Use those things to inform your shield design. Hang it up somewhere in your room and each day this week, take five minutes for yourself to sit and think, focus on your shield, and work to ground your energy. Reflect on your energy levels at the end of that week.



## LOGIC PUZZLE

Harry Spotter Windy Myths Logic Puzzle

Professor Huggdatreaz asked Nevi to take the researchers' reports to Professor Dieseldore. Unfortunately, a gust of wind came up and blew the reports out of Nevi's hands into the lake.

Help match the researcher to their data in this puzzle: [https://docs.google.com/document/d/1E5j\\_ZqgT32-61LA1z\\_UtTGAkfuJkCGRM3tSzZIZOX-o/edit?usp=sharing](https://docs.google.com/document/d/1E5j_ZqgT32-61LA1z_UtTGAkfuJkCGRM3tSzZIZOX-o/edit?usp=sharing)



## FIELD STUDIES

Music has a direct impact on the energy level and mood of many people. Upbeat, fast-paced music gets them pumped up and keeps them energized and quiet music helps them to calm down and relax. Read this article: "4 Remarkable Ways Music Can Enhance Athletic Performance:" <https://thehealthsciencesacademy.org/health-tips/music-can-enhance-athletic-performance/> As you read, look for evidence of music's relationship to energy in terms of mental and/or physical performance.

Create three separate playlists based on information in the article: one to increase an athlete's speed, one to help focus on a task or skill, and one to help calm any pre-competition anxiety. Choose your top song in each category: energize, focus and calm.



## RESEARCH EXPLORATIONS

Renewable energy is energy that does not take away from the earth; it comes from natural sources and is constantly replenishing. Besides wind, water, and solar, Duke University is helping pig farms in NC use pig poop to generate electricity. Read an NPR article about it here: <https://n.pr/3eOd3yV>

View this video for another example of using waste to create electricity: <https://youtu.be/ziS7yYFT6jc>

So just how much energy do we use? <https://www.energy.gov/articles/how-much-do-you-consume>

Brainstorm ways your family could start using less energy. Share your research findings with your family by creating an energy conservation plan for them. Discuss if there are ways you can start using renewable resources.



## MATH

Using energy costs money. The more you use, the more you pay. Use the energy calculator below, to make a list of the top 10 ways your family uses electricity. Add the totals to get your average yearly cost for all ten ways. Divide to see how much the cost is per month, then per week, and finally per day.

Discuss with your family how you can start using less energy in the form of electricity each day. Then calculate the costs again, using the amount your family agreed upon. How much did you save per year, month, week, and day?

Energy Calculator: <https://www.energy.gov/energysaver/maps/appliance-energy-calculator>



North Carolina Department of  
**PUBLIC INSTRUCTION**



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K-12

## Energy Reference Guide

### **6-7 Logic Puzzle:**

Solution: Light both ends of rope A and one end of rope B. After 30 minutes, rope A will be completely burned up and there will be 30 minutes of rope B left. Light the other end of rope B; it will burn up in 15 minutes. Total time elapsed since starting the ropes on fire: 45 minutes.

### **8-9 Logic Puzzle:**

Solution: Number the switches 1, 2 and 3. Switch on number 1 for 1 minute, then switch it off. Switch on number 2. Go upstairs and examine the lights. The light that is on is connected to switch 2. The light that is off and warm is connected to switch 1. The light that is off and cold is connected to switch 3!!

### **8-9 Field Studies:**

If you are interested in learning more about how nuclear energy works, visit:

<https://www.nationalgeographic.org/video/what-nuclear-energ>

### **10-12 Logic Puzzle:**

Solution: 28

Each day he makes it up another meter, and then on the twenty-seventh day he can leap three meters and climb out.

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## Energy NC Standards Alignment

| Grade Span   | English/<br>Language Arts | Social Studies                       | Science                | Math          |
|--------------|---------------------------|--------------------------------------|------------------------|---------------|
| <b>K-1</b>   | RL.1.2                    | 1.G.2.1<br>1.G.2.2<br>K.H.1<br>1.G.2 | 1.L.2                  | NC.1.MD.4     |
| <b>2-3</b>   | W.3.1                     | 3.C&G.2.2<br>3.I.1.11<br>3.G.1.2     | 3.P.3.1                | NC.3.OA.8     |
| <b>4-5</b>   | W.5.1                     | 5.C&G.2.4<br>5.C&G.2.1               | 4.P.3.1                | NC.5.NBT.7    |
| <b>6-7</b>   | W.7.3                     | 6.H.1.1<br>6.G.1.4<br>6.G.1.4        | 7.P.2                  | NC.7.G.4      |
| <b>8-9</b>   | W.9-10.1                  | 8.G.1.3<br>8.G.1                     | EEn.1.1.3<br>EEn.1.1.4 | NC.MI.A-CED.4 |
| <b>10-12</b> | W.11-12.5                 | AH2.H.2                              | EEn.2.2                | NC.M1.A-CED.1 |