

Electrical Transmission

Energy Production and Transmission

Description

Help light up Ridgetown! A new North Dakota town needs electricity and it's your student's job to find a path for electrical transmission lines. While the shortest path between substations is always a straight line, students will have to follow real-world regulations and rules before constructing transmission towers. Can they find the shortest, cheapest route? [View the online activity here.](#)

In the second optional part of this activity, students will build their own transmission towers to place on the maps they build in the first part of the activity.

Grade Levels

3rd - 12th grade

Subjects

Science & Math

Supplies

The list below is for a class of 26 students, broken into pairs.

Supplies	Quantity	Notes
Handout A	1 copy per group	
Handout B	1 copy per group	
Handout C	1 copy per group	
File Folders	13 folders	
Clear tape	1 dispenser per group	
Scissors	1 per group	
Coloring utensils	4 colors per group	
Straws	104 straws	4 per group
Index cards	26 cards	1 per group
Paperclip	1 box	about 5 per group
Dental floss	4 containers	String can be substituted for floss.
Playdough	4 containers	4 oz containers

Activity Prep: Part 1

- Make 1 copy per group of handouts A, B and C.
- Break students into groups. Two students per group is preferred if possible.
- Preview the activity at learn.lignite.com/trainings/electrical-transmission.
- If completing the activity as a class, set up a computer and projector.
- If students are completing the activity on individual devices, post the link to the activity for easy access (Google Classroom, class webpage, etc).
- Set out the following supplies for the activity:
 - Handouts A, B and C
 - File Folders
 - Tape
 - Scissors
 - Coloring utensils

Activity Prep: Part 2

- Set out the following supplies for the activity:
 - Straws - 4 per group
 - Index cards - 1 per group
 - Paperclips - 5 per group
 - Dental Floss - 1 yard per group
 - Playdough - 1 golf-ball sized ball per group
 - Clear tape - 1 dispenser per group

Other Information

- Transmission lines can go straight or diagonally through a square.
- There are multiple correct paths between the two substations.
- Constructing the transmission towers is optional. If time doesn't allow, the steps below can be skipped in Lesson 2 of the online course.
 - Supplies
 - Substation Construction
 - Tower Construction
 - Tower Construction cont'd.
 - Cross Arm Construction
 - Power Line Construction

Discussion Questions

1. Ask students to share the path they found between substations. Were there different solutions in the class? Do any paths have advantages over others?
2. Ask students whether they think the regulations for placing transmission lines are too strict, too lenient, or just right. Would they change the regulations if they could?