Volunteer Script

Electrician

Say: Black **Action: Red** **General Info: Blue**

Intro (updated 7/30/25)
Electricians work in many settings and earn a good living.
Can you name places an electrician might work?

Storms are the most common reason we lose power.
Have you lost power during a storm?
What do you think it takes to restore power?

Overview
We'll explore how electricity travels from a power plant to your home.
Use the banner to show how voltage decreases along the way.

Point out the house section of the wall with a light switch.
Ask a student to flip the switch — it won't work.
Power restoration involves multiple steps, not just flipping a switch.
Power plants generate electricity that is delivered to customers through transmission and distribution power lines. High-voltage transmission lines, such as those that hang between tall metal towers, carry electricity over long distances to customers.

Activity:
Step 1: Ask a student to begin generating power at the station with the hand crank.
Electricity is generated at a power plant. **(Never let the crank stop. You don't have to crank it fast, just don't stop.)** You will see the four red and two yellow lights turn on from bottom to top, when all those lights are on you can begin the sequence.
Ask student to read the power plant plate and share level of voltage.

Step 2: (volunteer) Turn the keys and activate power to energize the transmission power lines. In order – left to right. Then, hit the green start button. (All 6 lights need to be on for the power to start, keep cranking!) Reset the keys and start over if you hear the error message,
Just like an actual power plant, we need to follow the sequence.

Step 3: Now we will see how the power lines transmit power through the substation all the way to your home. Keep cranking!!

Step 4: Ask student to read the transmission line overview and voltage on wall,
Do you see a difference in the numbers? Transmission lines carry electricity across long distances. You will (or just have) experienced the linesman working on transmission lines in the VR station.
Choose students to plug in connections for the next few steps, **the wires must be connected in order.** Connect two short wires and two long wires from transmission to the substation, remind students that they need to wait their turn to connect until the set ahead of them has been lit up.

Step 5: Ask student to read substation overview on wall.

Substations regulate voltage in the power grid to ensure safe delivery to distribution lines throughout a town.
Ask students to plug in the two long wires into the next stage, distribution lines.

Step 6: Ask student to read distribution line overview and voltage on wall.
Distribution lines carry electricity through your town. Connect the next set of short wires to the transformer. Many places are now burying these lines now, so you will see

Step 7: Ask student to read transformer and voltage overview on wall.
The transformer reduces the voltage to a safe level for your home.

Step 8: Every home has a circuit breaker box. Electricity flows from the transformer into the circuit breaker box and distributes electricity to all the different electrical lines needed in your house, such as outlets, ceiling lights and appliances. ~~To reset the circuit breaker so electricity can now return, put some pressure into moving the switch from off to on.~~ (These may already be switched on, but if not, choose a student to reset the top 2 switches.)

Step 9: Flip the light switch on and see the lightbulb light up.
This is how electricity flows from a power station to your home.

Follow up discussion, jobs in the electrical field:

- Power plant operators control, operate, and maintain machinery to generate electricity. They use control boards to distribute power among generators and regulate the output of several generators.
- Linesman, residential electrician – both new construction and repairs, commercial electrician, network cabling, telecommunications, building controls, start your own business, so many more…

****reset station for next group by turning keys back, removing connections, ~~flipping circuit breaker switches back to off~~****

Lightbulbs
If time, choose 1 or 2 students to crank the wheel .

Now we will look at lightbulb facts. Does anyone know the type of lightbulb that is mostly used today? Let's see why.

Step 1: (only switch on one bulb at a time) From right to left, turn on the light switch, turn the crank until the light bulb lights up. Then stop cranking and turn off the switch. Move onto the next two lights in the same way.

Was it easier to light up one bulb than the other? Yes, because it takes more power to use an incandescent light than a florescent light or a LED light.

Which bulb uses less power? LED