ELECTRICAL PLANNING ENGINEER

STUDENT NAME: **CLASS:** **DATE:**

NEWSFLASH! The governor has declared that all energy consumed in your state must be 100% clean and carbon-free by 2050. And the deadline is fast approaching. To jumpstart this, your community was selected to be the first one to transition to 100% renewable energy. But what kind of **electric energy system** would it take to do that? This is what your team will uncover …

Okay, **Electrical Planning Engineer.** Your mission is to decode the parts of the electric transmission system that will deliver electricity to your community. Unlike others on your team, you understand that transmission systems are expensive … and take up space, which can have lasting impacts on the public and the environment. So your team must choose a transmission path with care …

To design an electric transmission system that balances the monetary costs with the needs of the public and environment, consider researching the following:

- Begin your research by checking out the info and video at: http://intotheoutdoors.org/topics/**decoding-the-electrical-transmission-system/**
- What are the main parts of an electrical transmission system? _____
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  _____
- What equipment will you need to connect electric power from your generation sources to your community?
  _____
  _____
  _____
- What technical components must you include on your equipment to make sure your electricity is not lost to the ground? _____
  _____
  _____
- What is electric voltage? _____
  _____
  _____
- How will you make your electric transmission system safe? _____
  _____
  _____
- View an aerial map of your community and ask the Power Engineer where the generation source will go. Now plan a path for your electrical transmission system to travel and connect with your community.

- What environments and public spaces do your paths travel through? _____
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  _____
- Which path is the least expensive and requires the least amount of equipment? _____
  _____
- What impacts would it have to the public? _____
  _____
  _____
- Which other paths will minimize impacts to people? _____
  _____
- Which paths will minimize impacts to the environment? Collaborate with your environmental manager.
  _____
  _____
- Which electronic equipment may be vulnerable to attacks? Collaborate with your security manager. _____
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  _____
- What personnel and technology will you need on stand-by to repair and monitor the equipment? Include these in your energy system diorama. _____
  _____
  _____

Next, discuss your findings with your team members and plan out an electrical energy system that will generate and deliver renewable, safe, efficient, reliable power to your community. As a group, use all of your discoveries to design and craft a diorama of your energy system on top of a sheet of cardboard. First, paint an aerial view of your landscape on the cardboard. Then let your inner genius out and construct your electrical energy system on the landscape. You may mold clay or use construction paper to build houses and transmission equipment … or even glue in natural resources like sticks, pebbles, moss, grasses, or sand to recreate the landscape. Your team will pitch your renewable energy system diorama to the class with supporting research. The group who receives most of the community's support wins the challenge!