“Be an Electrical Engineer”

Job Task:
You are the engineer! A small community uses a series circuit design to power their street lights. The problem is that since the circuits are in series, when one street light goes out, all of the street lights go out too! Can you create another circuit design to help the community solve their street light problem? They are spending lots of money hiring technicians to fix their street lights whenever they go out.

Timeframe: 1 – 2 hours

Materials List:

- Two set-ups for each group of students, each consisting of:
    - 6 pieces of bell wire (6" each) with ends stripped
    - Battery holder
    - Socket
    - Three or more 1.5 volt bulbs
    - Size D batteries

Procedure:

1. Review the definitions of series and parallel circuits with the class.
2. Divide students into small groups of 3-4 students and distribute materials, accordingly.
3. Ask the groups to examine the schematic of a series circuit and draw their own plan for a parallel circuit.
4. Have each student group make a series and parallel circuit using batteries, wires, and bulbs.
5. Once the circuits are complete, ask student groups to make predictions as to how the circuits will function if a light bulb is removed. Also discuss whether the bulbs might burn brighter in one set up than another. Students should record their predictions.
6. Have each student group test their predictions using their circuits, and compare their results to their predictions.
7. Bring the student groups together to discuss their findings.

Adapted from *Series and Parallel Circuits* provided by TryEngineering.com