Description of Electrical DEMONSTRATION Board by MEA

The board is used as a visual depiction of the wire, wire connectors, colors, and typical routing for simple circuitry needed for two receptacles, one SPST switch and a lamp.

Activities: Dependent on age and abilities of participants, adapt for interactive learning.

- Explain concepts of electrical circuit with the circuit breaker as the monitor of flowing electricity
  - Typical household circuits: 15A, 20A @ 120V
  - Typical size of wires: AWG 14 , AWG 12 , etc.
  - Commercial or industrial: more current= larger wires

- Explain that electric circuits have a 1) source (supply) 2) a path for current, 3) a switch or controlling device, and 4) a load and a 5) return path to the source

- The receptacles have hot and neutral connections and need the correct colors connected.

- Green grounding wire are needed for safety but do not normally carry current.

- The switch makes/ breaks the hot conductor and the neutral is carried through the box.

- The lamp is the load. Explain that LED and incandescent lamps produce light from electric current.

- Show how the wires carry current through the pathways. Use a non-contact indicator to show how to trace the hot conductors.

- If possible, connect a load to a receptacle and use a clamp on ammeter to measure current at different point of the wiring.

- Have participants trace power to the lamp. Have students turn away and break the circuit. Have student diagnose the problem

- Switches and receptacles can be changed.

  - Participants would be interested if you want to show two 3-ways wired for the light.

    - A switched receptacle can be installed at one of the receptacle locations and show how the switch is used for control

    - Change the lamp from LED to compact fluorescent or incandescent to show changes in current.

    - Use a GFCI or AFCI receptacle if students understand grounding

- Handouts include a “blueprint” of the wiring example. “what the electrician is given”
- Handouts include a wiring diagram of all the components and the individual wire needed to make the circuit work. “what the electrician needs to know”