Alternate Vehicular Traffic Direction System Utilizing Solar Energy

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There are many vehicular intersections traffic lights that stop working due to the lack of electrical energy caused by natural disasters and/or blackouts (Dávila, 2017). As an alternative to this situation, a portable solar system was designed to direct vehicular traffic configured with the open source electronic system Arduino. To build the alternate system the following materials were used: a solar panel, a 12V battery and light emission diode (LED) lights due low electricity consumption. The system was coded using programming under the Arduino system with a particular time for each color. The color pattern displayed, for the direction of traffic are green, yellow, red, blue, on each side of the system. The blue color was added to indicate the turn signal only. As part of the research process, the time it takes to charge the battery using solar energy and its energy consumption at night was measured. The data obtained indicates that the system needs 6 hours to charge during the day (if it is sunny) and stays on for 12 hours during the whole night, consuming 2.1watts. A Photoresistor was installed in the system, that makes the intensity of LED lights lower during the night to reduce energy consumption. The system managed to work independently with solar energy, it could stay on for 24 hours (day and night). Therefore, in the future, this traffic management system can be an alternative to direct traffic in the absence of electric power.