

## **Riverside Bus Stop Shelter Solar-powered LED Light & Sign**



The Riverside bus stop shelter solar-powered LED light and sign was developed for RTA by the City of Riverside, Ohio. It includes two LED light modules. One illuminates the seating area; the second illuminates the body of a standing rider for safety. He/she can be more easily seen by a vehicle on the street.

The system's solar powered light and sign uses high efficiency LEDs, an efficient solar-power charging and discharging circuit, and a microcontroller to maximize the light's performance during extended dark or rainy periods.

Energy from the sun is gathered by a solar panel and stored in a special deep cycle battery. Microcontroller circuitry monitors the condition of the battery and the ambient light; it also modulates the power consumption and intensity of the LED light modules. Under normal circumstances, during typically sunny daylight periods, the microcontroller turns the LED modules ON to full intensity at dusk. The lights remain at full intensity till the last bus runs; typically at midnight. The light is then reduced

in intensity to conserve battery power. At about 5:00 am, the microcontroller turns the lights back up to full intensity for early morning bus riders. During several consecutive cloudy days, or when the solar panel is snow covered, the microcontroller lowers the intensity of the lights to conserve battery power. If the battery condition goes below a certain threshold, the lights are turned off completely to prevent battery damage. When the solar panel is again able to recharge the battery, the lights resume normal operation.



The sun naturally illuminates the "Riverside" lettering during daytime.

The bus stop shelter LED light and sign can optionally be externally AC powered. The system consumes less than \$10 of electricity per year. External power significantly reduces initial system cost, as well as operation and maintenance costs.

