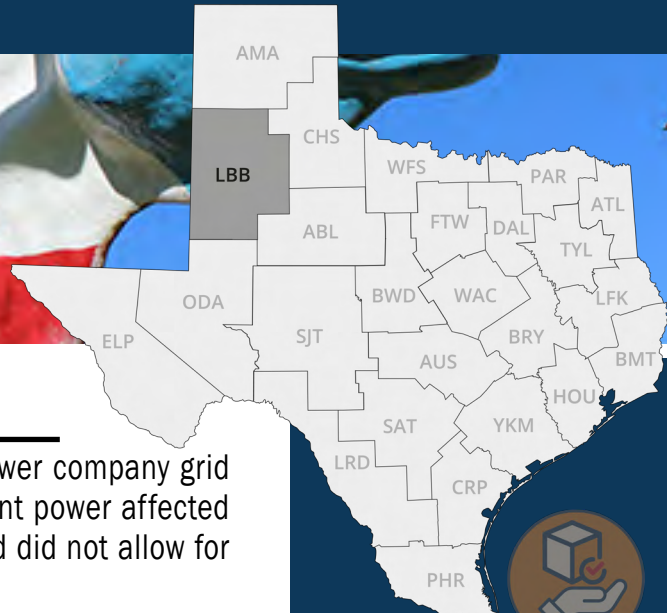


# TxDOT Innovations and Technology Deployment Briefs

## CCTV on Solar Power



### PROBLEM

An intermittent power supply issue was observed where one power company grid ended, and another began. At this location, the lack of consistent power affected the reliability of the closed-circuit television cameras (CCTV) and did not allow for consistent monitoring of the roadways for safety.

### SOLUTION

Two separate solar powered systems, A & B, were installed for this CCTV location. Each with two sets of batteries (one set 120 Amp-hours (AH) and one set 90 AH). The batteries are recharged with two sets of solar panels. Combining the two solar panels allowed for faster battery charging as the overall capacity of the panels had been increased. There are six batteries per system. Each set of batteries has an additional technology that helps with extending the battery life and reducing corrosion. Each system also has a solar charge controller that regulates the voltage output. While the direct current (DC) voltage is regulated through the charge controller, there are two separate inverters to convert 12-volt DC power into 120-volt alternating current (AC) power. These two inverters supply power to the equipment within the CCTV cabinet to monitor video on these roadways for improved safety practices.

### BENEFITS

Cost is reduced after the initial investment of batteries because there is no meter charge for electricity. The uptime percentage for this camera averages 95 percent to 100 percent. The camera runs 24-7, and streaming video is available through all supported platforms for monitoring.

This location is a small interchange that has been improved with multiple projects, one consisting of the solar CCTV. TxDOT is now equipped to monitor this area more efficiently and make appropriate adjustments as needed. This innovation could be applied in areas without power and areas that need to strengthen radio signals.



PROJECT DELIVERY



CUSTOMER FOCUS



FOSTER STEWARDSHIP



PRESERVE ASSETS



OPTIMIZE PERFORMANCE



PROMOTE SAFETY



VALUE EMPLOYEES



### **KEY EQUIPMENT**

- Each solar system, A and B, consists of an inverter that converts 12-volt DC to 120-volt AC.
- System A runs a video encoder, a radio, and a network switch.
- System B runs a CIP and camera.

### **DATA SOURCES**

This CCTV provides data for safety monitoring.

### **PROACTIVE APPROACH**

All materials are commonly used for TxDOT projects. The cabinets and batteries are from regular school beacons and standard CCTV cabinets.



*Six batteries are used per system and are wired in parallel for greater capacity.*



*Pole with 2 solar panels and 2 battery cabinets.*



*Inside solar CCTV cabinet. Shows standard TxDOT CCTV cabinet with two inverters to convert 12-volt DC power to 120-volt AC power for all components. Each solar system runs one inverter with specific equipment powered from each inverter to equally balance the electrical demand (load).*



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