



Local Operational Research Assistance (OPERA) Program

Winter Weather Monitoring System

Traditional methods of evaluating road conditions, such as road weather information system (RWIS) units and field verification by staff, can be costly and time-consuming, making them difficult to deploy countywide on a limited budget. In search of a more cost-effective and efficient solution, the St. Louis County Public Works Department implemented the use of remote cameras to monitor road conditions and manage responses over its vast 6,800-square-mile area.

The department received a \$20,000 grant through the Local OPERA Program to identify a suitable remote-monitoring camera and evaluate its performance in the field as part of a winter weather monitoring system. The original plan included the installation of four remote cameras capable of providing real-time images of current road conditions and air temperature data. The cameras also needed to be durable and function reliably in winter conditions, including subzero temperatures.

Remote image capture of winter road conditions

The research project team settled on the relatively low-cost and sturdy Barn Owl camera system, which is solar-powered, capable of capturing still images and short video clips, and compatible with virtually any cellular network. But the team scrapped plans for the installation of hinged mounting poles because parts had become unavailable. Instead, they mounted the cameras on existing structures such as utility poles, light poles, and trees — and used the unspent money to buy 47 more cameras.

County public works staff members manage a network of 51 strategically placed cameras through the Barn Owl website as part of ongoing efforts to improve the maintenance and snow removal of approximately 3,000 miles of county roads. The cameras have undergone periodic testing to ensure proper operation, and technical difficulties have been promptly addressed.

Project Leader

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Agency

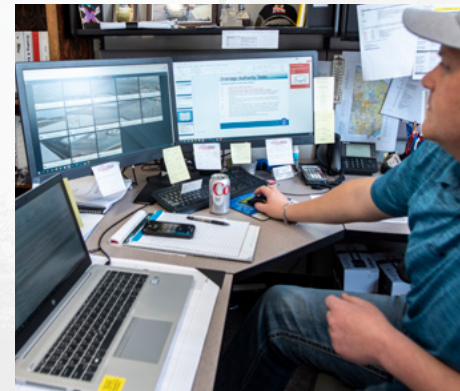
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OPERA Funding

\$20,000



County public works staff members manage a network of strategically placed cameras through the Barn Owl website.



The remote camera system provides an affordable and efficient way to monitor road conditions and manage responses over a large and geographically diverse area.

Better prediction of and response to weather-related road hazards

In addition to providing valuable information on road conditions, the camera system also can identify microclimates or areas where weather conditions tend to change frequently, as well as monitor remote locations that are difficult to access. This allows the department to predict and respond to weather-related road hazards more accurately. Moreover, because of its partnership with St. Louis County, the Barn Owl company enhanced its operating system and user interface with options to classify cameras by location and district as well as assign user roles and access levels.

Overall, the implementation of the camera system has been a success for the St. Louis County Public Works Department, providing an affordable and efficient way to monitor road conditions and manage responses over a large and geographically diverse area. The department plans to continue using the camera system and to explore potential future applications, including for monitoring the security of remote facilities.

About OPERA

The Local OPERA Program encourages maintenance employees from all cities and counties to get involved in operational, “hands-on” research. OPERA helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide.

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