SMART GRANTS PROGRAM

Safer, Faster, Smarter: Pairing Cloud Based Vehicle Preemption

Regional Transportation Commission of Southern Nevada

PROJECT PARTNERS

City of Las Vegas
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Derq USA
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PROJECT CHALLENGE

This project aims to update outdated infrastructure, including a 20-year-old infrared emergency vehicle preemption (EVP) system that relies on hard-wiring. Inconsistent EVP technology across jurisdictions can delay emergency responses. A uniform cloud-based EVP system utilizing CAD-AVL data will enhance efficiency. Also, improving transit signal priority (TSP) with real-time bus data will prevent signal drops. AI-driven intersection video analytics will shift jurisdictions to proactive strategies, allowing faster identification of trends, reducing crashes, and improving funding for capital projects. The Las Vegas Metropolitan Police Department can also use this technology for targeted traffic enforcement.

IMPACT

The Stage 1 pilot project covers UMC hospital and downtown Las Vegas, bounded by Jones Boulevard, Lake Mead Boulevard, Fremont St/Boulder Highway, and Sahara Avenue. It includes 35 census tracts, with 31 as Historically Disadvantaged Communities (HDCs). The area features five fire stations with the highest emergency call density and UMC hospital, Nevada's only Level 1 Trauma Center. Transit Signal Priority will be implemented along RTC Route 206, which has low on-time performance. Findings will aid the City and police in targeting enforcement and addressing infrastructure needs.

CURRENT STATE OF THE ISSUE

During an initial evaluation at two signalized intersections located in the project limits, the signal was in transition an average of 212 seconds per preemption. Reducing the amount of time an intersection is in transition, will greatly assist in maintaining corridor signal operations to provide better traveler reliability. RTC Transit Route 206 has one of the lowest on time performance (OTP) ratings of all transit routes in southern Nevada. Meeting the 5-minute OTP approximately 85% of the time and this rating has been consistent for several years.

STAGE 1 OUTCOMES

Successful project outcomes may include developing transit signal priority rules for additional routes. Accurate intersection analytics that include vehicle and multimodal counts and safety insights (such as regarding speeding, red light running, and near-misses) can help agencies respond swiftly to roadway safety and enforcement needs, enabling timely engineering changes. Trust in AI technology as a reliable data source would mark a significant achievement.

STAGE 2 VISION

RTC will implement cloud-based TSP technology at the Traffic Management Center, collaborating with Transit to refine parameters for additional routes. RTC-FAST plans to develop an AI video analytics program, aiming for implementation at about 30 intersections each year. Currently, 75% of managed intersections are fiber-connected. Initial efforts will focus on City of Las Vegas and Unincorporated Clark County intersections.