City of San José
San José Fire Department
CEVP Data Story

Studying the impact of San José Fire Department's Centralized Emergency Vehicle Pre-Emption system on fire vehicle travel time

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In October of 2018, the City of San José, Department of Transportation introduced a centralized emergency vehicle pre-emption system into their traffic signal management system.[1] As an emergency vehicle approaches an intersection, the traffic light will turn green for the emergency vehicle, and red for the opposing traffic to clear the intersection for the emergency vehicle to pass through when responding to an emergency. The Centralized Emergency Vehicle Pre-Emption (CEVP) system is designed to get vehicles to emergencies faster. Anecdotally, this system was described as a "game-changer" by Fire Department emergency responders, but there was no supporting analysis on time saved from the traffic light pre-emption system. This data story analyzes and answers that question.

In 2018, passing through an intersection would add 6-8 seconds to a fire vehicle's travel time. Once CEVP was fully implemented, an intersection only added, on average, one (1) second. Data indicate the CEVP system reduces average travel time by 5-7 seconds per intersection (Figure 1).

[1] "San Jose Integrates Emergency Vehicle Pre-Emption with CAD System." *Radio Resource*, 1 Oct. 2018, www.rrmediagroup.com/News/NewsDetails/NewsID/17424.

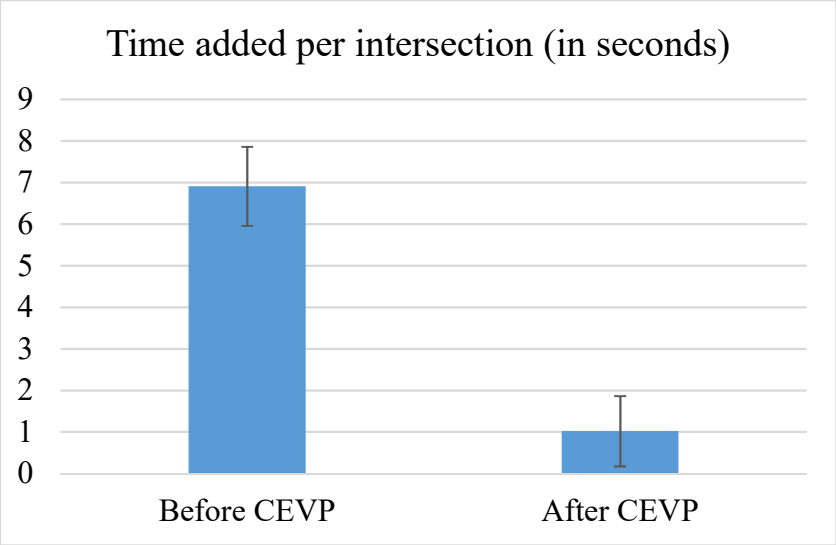

Figure 1: Seconds added to overall travel time for each city managed intersection before and after CEVP was fully implemented.

One of the more common fire emergency response routes is from the Fire Station near Tully and Senter Rd to the area near Little Orchard and Cimino Street (Figure 2). This trip's distance is 1.5 miles, and includes six (6) CEVP-enabled intersections. This particular trip was taken 455 times as a code 3 (red lights and siren) trip from January 1, 2018, to April 31, 2019, with 451 verified start and end times. Before CEVP, this trip averaged 8 minutes and 38 seconds. After CEVP was fully implemented, this trip averaged 6 minutes and 51 seconds, a reduction of 107 seconds.

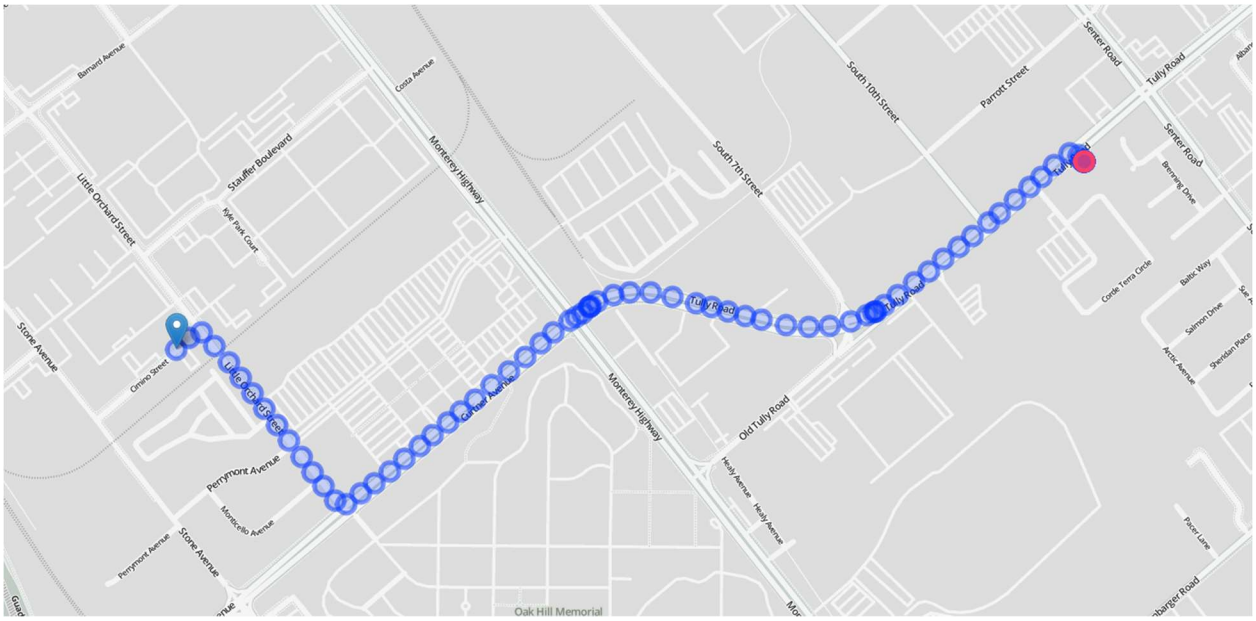

Figure 2: The route from the Fire Station near Tully and Senter Rd to the area near Little Orchard and Cimino Street. This trip took, on average, a minute less after full implementation of CEVP.

The San José Fire Department has been pleased with the results of the new CEVP system, and for good reason. Intersections that took substantial time to pass through are now faster to pass through. With the average fire vehicle trip passing through 4 intersections, an average of 20-28 seconds is saved per trip because of CEVP. A fire can engulf a house within 2 minutes after the smoke alarm goes off, [2,3,4] so 24 seconds saved can be critical to saving a house on fire. For medical calls, 24 seconds saved can lead to a 1-2% decrease in mortality rate for heart attack victims.[5] For trips that cover substantially more intersections, the reduced travel time can save even more lives, property, and the environment.

[2] "Home Fires." Home Fires | Ready.gov, www.ready.gov/home-fires.
[3] "How Quickly Does Fire Spread?" *Disaster Company*, 3 Oct. 2017, www.disastercompany.com/quickly-fire-spread/.
[4] Robert, Crandall. "How Fast Is Fire?" *Fire Event Timeline | Home Fire Drill | Prevention 1st Foundation*, 2005, www.homefiredrill.org/?p=fire-event-timeline.
[5] Based on research by Anupam et al (2017).