

Empire Avenue and Main Street - Signal Timing Project

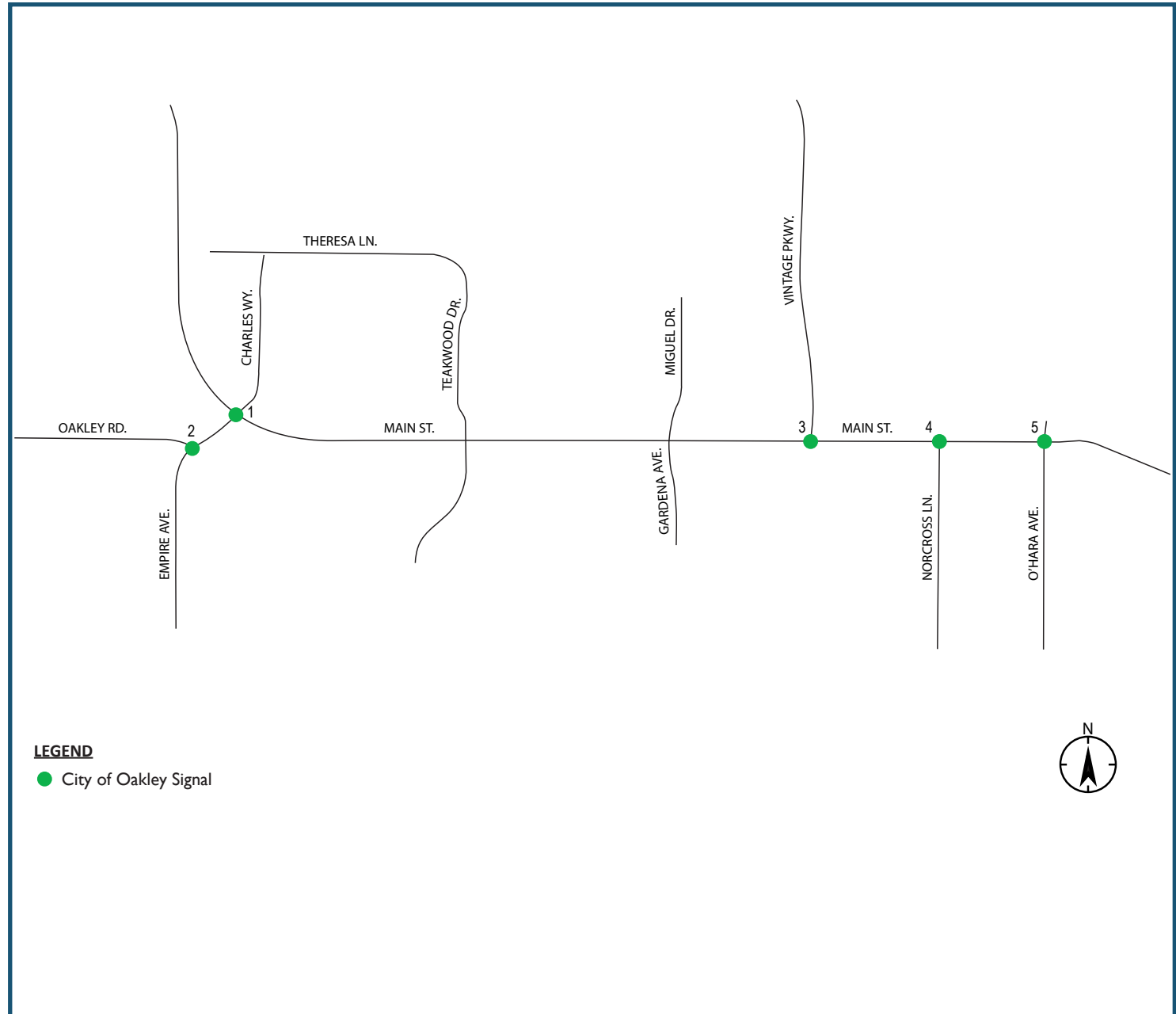
City of Oakley | Metropolitan Transportation Commission

PROJECT OVERVIEW

The City of Oakley received a grant from the Metropolitan Transportation Commission's Program for Arterial System Synchronization (PASS) to conduct a signal timing study for five traffic signals along Empire Avenue and Main Street. Project intersections are owned, operated, and maintained by the City of Oakley.

The goal of the project was to conduct a timing analysis, develop, and implement signal coordination plans during weekday AM, midday, school PM, and PM peak periods.

The PASS project involved the completion of the following tasks: collect turning movement counts, including vehicular, pedestrian, and bicycle counts; conduct field review of the project area; conduct travel time surveys; review actuated settings; review collision history; develop the existing conditions model; develop coordination plans for the typical weekday AM, midday, school PM and PM peaks; implement and fine-tune the recommended timings; conduct the "before" and "after" travel time surveys; and document the analyses/findings for the project.



GPS SIGNAL COMMUNICATIONS

To provide a common time-source and enable communication between the signals, five GPS clocks were installed as a part of the project. These GPS clocks enable the signal controllers to regularly synchronize their clocks, efficiently deploy the timing plans at the same time, and thus help maintain the efficiency of signal coordination.

BENEFITS TO VARIOUS MODES



BENEFITS TO PEDESTRIANS:

The Walk timing and Flash Don't Walk clearance-timing parameters were reviewed and updated where required

at the five intersections to provide adequate time for children and seniors to safely cross the study intersections to accommodate the new walking speed of 3.5 feet/second, as specified in the 2014 California MUTCD standards.



BENEFITS TO TRAFFIC SAFETY:

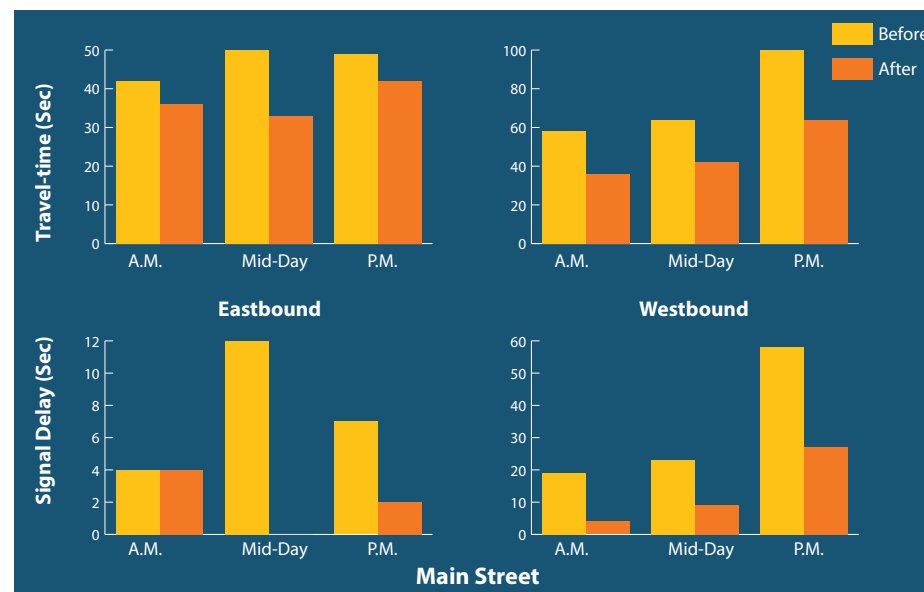
The yellow clearance timing parameters were reviewed and updated where required based on posted speed limits

along the study corridors at the five project intersections and no changes were made to all red clearance-timing parameters.

Project Costs	
Consultant Costs (Basic Services/Plans)	\$26,500
Consultant Costs (Additional Plans, TSP, IM Flush Plans, etc.)	\$0
Other Project Costs (GPS Clocks, Communications equipment, etc.)	\$2,500
Agency Staff Costs (Estimate)	\$6,625
Total Costs	\$35,625

Project Benefits				
Measures	First Year		Lifetime (5 Years)	
	Savings	Monetized Savings	Savings	Monetized Savings
Travel Time Savings	9,965 hrs.	\$200,985	26,006 hrs.	\$539,154
Fuel Consumption Savings	13,594 gal.	\$41,814	36,468 gal.	\$112,168
ROG Emissions Reduction	0.05 tons	\$62	0.13 tons	\$165
NOx Emissions Reduction	0.03 tons	\$601	0.09 tons	\$1,612
PM2.5 Emissions Reduction	0.00 tons	\$582	0.00 tons	\$1,561
CO Emissions Reduction	0.39 tons	\$32	1.05 tons	\$85
Total Lifetime Benefits				\$654,746

Overall Project Benefits	Auto
Average Decrease in Travel Time	34%
Average Speed Increase	89%
Average Fuel Savings	27%
Average Reduction in Signal Delay	67%
Average Reduction in Number of Stops	50%
Overall Benefit-Cost Ratio	18:1



PROJECT BENEFITS SUMMARY



Average Reduction in Auto Signal Delay: 67%

Average Reduction in Number of Stops: 50%

Auto Fuel Consumption Savings: 27% or 36,468 gallons



Total Emissions Reduced (ROG, NOx, PM2.5, CO): 1.27 tons

Auto Travel Time Savings: 34% or 26,006 hours



Overall Project Benefit-cost Ratio = 18:1



For more info, please contact:

Linda Lee (MTC)

Arterial Operations Program Manager

Phone: 415.778.5225 • Email: llee@mtc.ca.gov

Kevin Rohani (City of Oakley)

Public Works Director / City Engineer • Tel: 925.625.7003

Email: rohani@ci.oakley.ca.us

Project Consultant:

TJKM Transportation Consultants

