



Flashing Yellow Left-Turn Vehicular Indication – Pilot Project

Public Works Department

Transportation Committee
September 8, 2016

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BACKGROUND

1. Increased traffic volumes create fewer gaps for safe and efficient left-turns.
2. Protected / permissive signal phasing is utilized at select locations to improve efficiency and reduce delays.
3. The City's standard calls for use of 5-section cluster signal heads with protected / permissive phasing.



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LIMITATIONS OF PROTECTED/PERMISSIVE PHASING

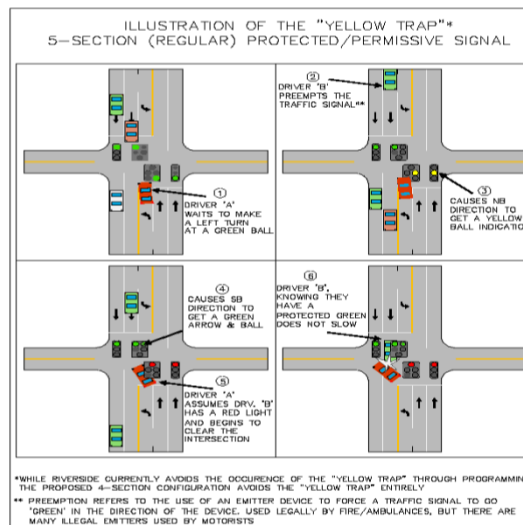
- Limitations of this type of phasing include:
 1. Peak hours often experience fewer gaps in traffic impacting the ability to make permissive left-turns.
 2. May cause motorists confusion.
 3. Some motorists will not make left-turns during the permissive phase.
 4. Requires costly signal modifications.



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ILLUSTRATION OF 5-SECTION INDICATION

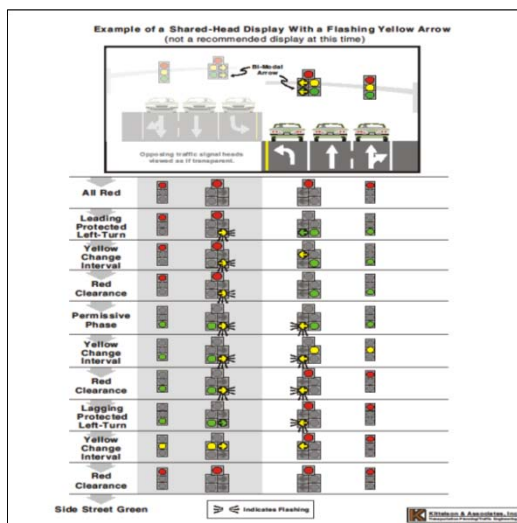


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ILLUSTRATION OF SHARED-HEAD DISPLAY – NOT RECOMMENDED



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NATIONAL COOPERATIVE HWY RESEARCH PROGRAM (NCHRP)

1. NCHRP conducted a 7-year study of protected / permissive phasing focused on human factors and reaction times due to their critical role in accident avoidance.
2. Study also tested various experimental vehicular indications .
3. Results lead to the recommended use of a flashing yellow arrow display.

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BENEFITS OF FLASHING YELLOW LEFT-TURN INDICATION

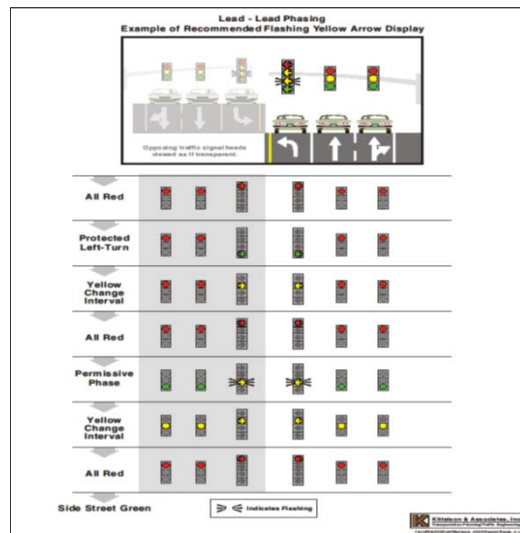
- Benefits over 5-Section Indications:
 1. Elevated motorist comprehension
 2. Improved safety
 3. Enhanced operations
 4. Reduced delays
 5. Easier adaptation of traffic signals with existing protected left-turn phasing
 6. Flexibility to disable flashing yellow arrow during peak traffic hours



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ILLUSTRATION OF RECOMMENDED FLASHING YELLOW ARROW DISPLAY



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ILLUSTRATION OF A BENEFIT OF FLASHING YELLOW ARROW DISPLAY

ILLUSTRATION OF CORRECTING THE "YELLOW TRAP"*
USING 4 SECTION HEAD & FLASHING YELLOW ARROWS

*WHILE RIVERSIDE CURRENTLY AVOIDS THE OCCURENCE OF THE "YELLOW TRAP" THROUGH PROGRAMMING, THE PROPOSED 4-SECTION CONFIGURATION AVOIDS THE "YELLOW TRAP" ENTIRELY
 **PREEMPTION REFERS TO THE USE OF AN EMITTER DEVICE TO FORCE A TRAFFIC SIGNAL TO GO "GREEN" IN THE DIRECTION OF THE DEVICE. USED LEGALLY BY FIRE/AMBULANCES, BUT THERE ARE MANY ILLEGAL EMITTERS USED BY MOTORISTS

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OTHER AGENCY PRACTICES

- The NCHRP Study prompted many states and local agencies to implement flashing yellow indications including these cities:
 1. Pasadena
 2. Fullerton
 3. Montclair
 4. Indio
 5. La Habra
 6. El Cajon
 7. Encinitas, etc.



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PROPOSED 1-YEAR PILOT PROJECT

1. Public Works recommends a 1-year pilot project to test up to 7 traffic signal with flashing yellow indications.
2. The pilot would enable further evaluation of impacts to safety, operations, delay, and motorist comprehension prior to considering implementation on a broader scale.



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TRANSPORTATION BOARD CONSIDERATION

1. On June 1, 2016, the Transportation Board considered the proposed 1-year pilot project.
2. Board members voted unanimously in favor of recommending the proposed project.



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RECOMMENDATION

- That the Committee recommend that the City Council approve the proposed 1-year flashing yellow left-turn vehicular indication pilot project for initial use at up to 7 select traffic signals.



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