




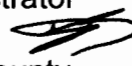
PUBLIC WORKS DEPARTMENT

M E M O R A N D U M

TO: The Honorable Chair and Members of the
Board of County Commissioners

THROUGH:  Mark S. Woodard, County Administrator

FROM: Richard L.V. Coates III, P.E., Director of Public Works

DISTRIBUTION: David E. Scott, P.E., Assistant County Administrator 

SUBJECT: Flashing Yellow Arrow Operation in Pinellas County

DATE: February 10, 2015

This presentation will briefly discuss the operation of the Flashing Yellow Arrow (FYA) as part of the Advanced Traffic Management System installation on Gulf-to-Bay Boulevard (SR 60).

The FYA is a newer left turn phase display and replaces the five section protected/permitted left turn phasing. The FYA was approved by the Federal Highway Administration and has shown to be more intuitive to the left turning motorist than the previous left turn display. In addition, the Florida Department of Transportation District 7 has adopted the installation of the FYA at state signalized intersections that currently have the protected/permitted phase.

Ken Jacobs, Section Manager with the Public Works Traffic Division, will provide a short presentation and discuss the initial operation and refinements that have occurred over the past several months.



Flashing Yellow Arrow Operation



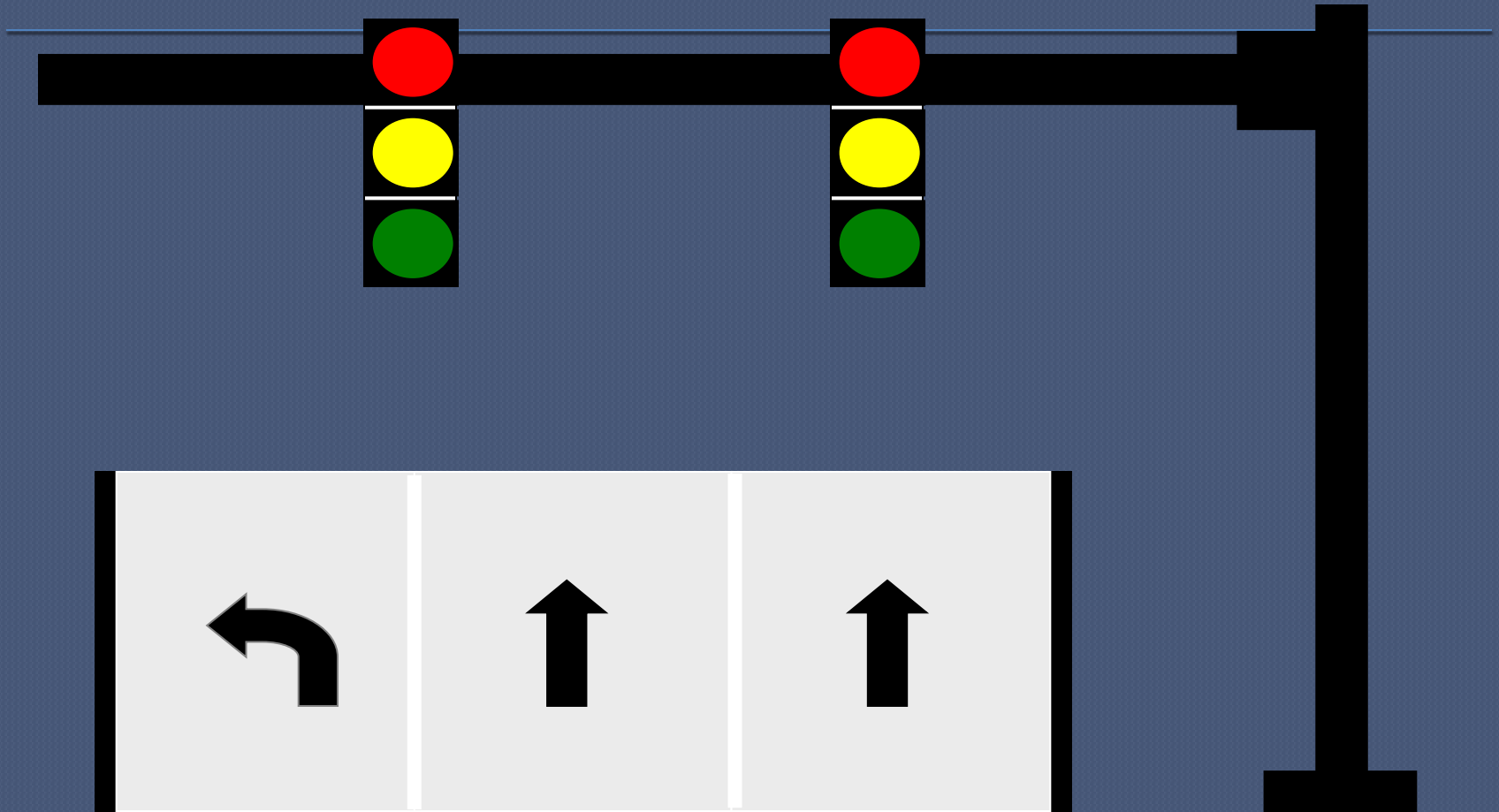
Flashing Yellow Left Turn Arrow (FYA)

- What is a Flashing Yellow Arrow?
- What is the history?
- How does it operate?
- What are the advantages?
- Using FYA with Lead / Lag Left Turn Phasing
- What is the current status?

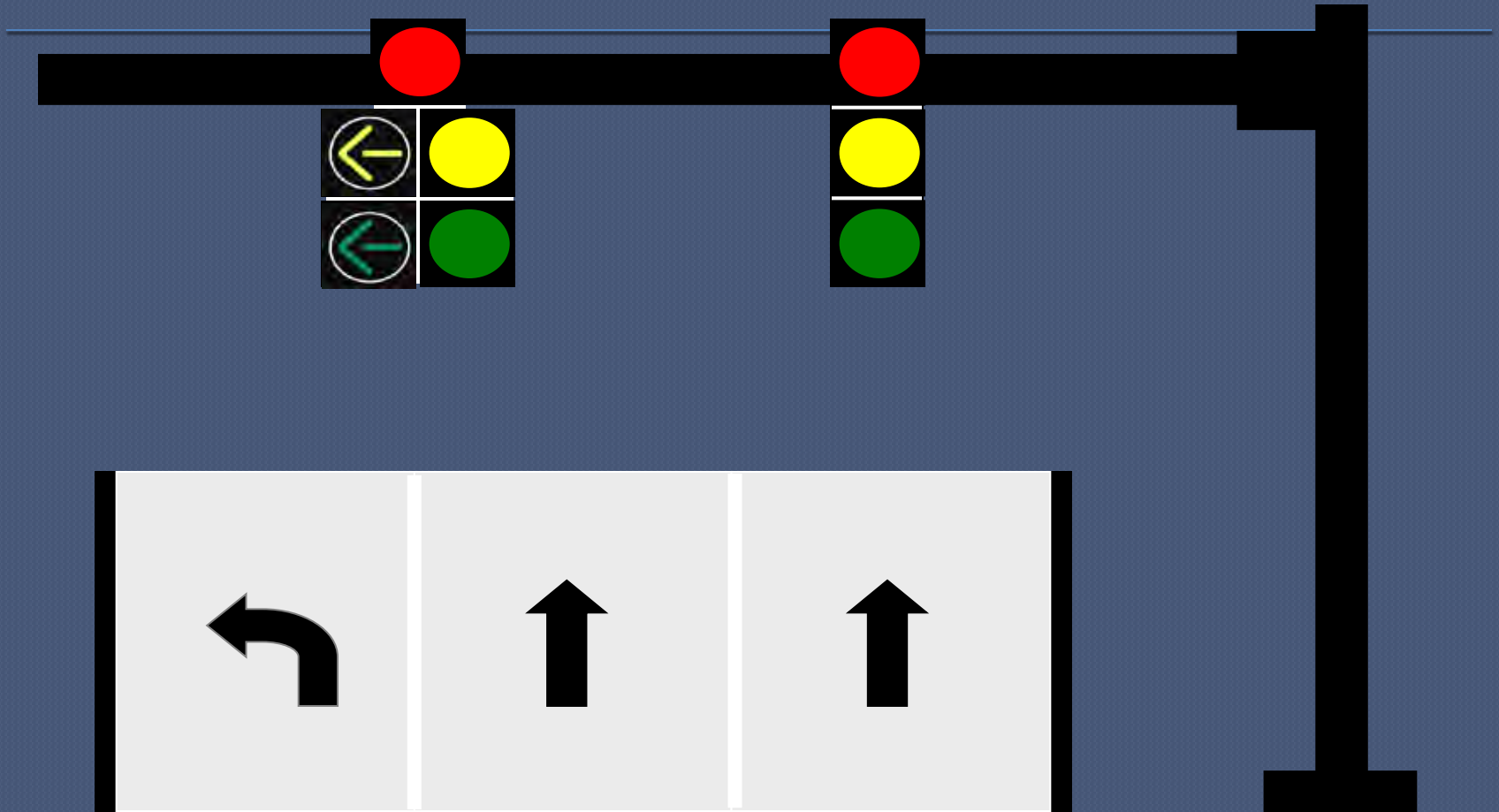
Left Turn Signal Displays

The left-turn signal displays used in Florida include:

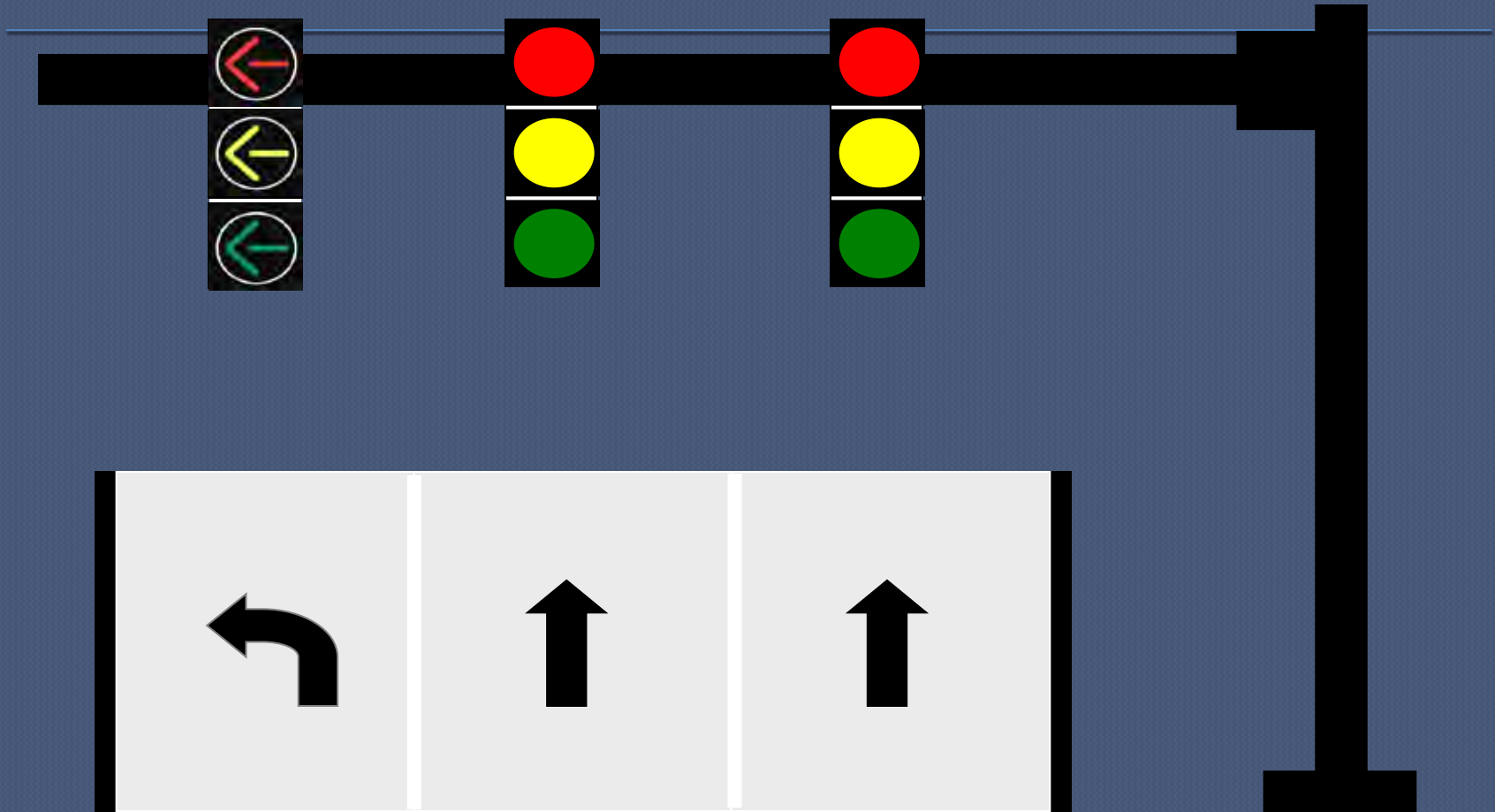
Permissive Only Left Turns



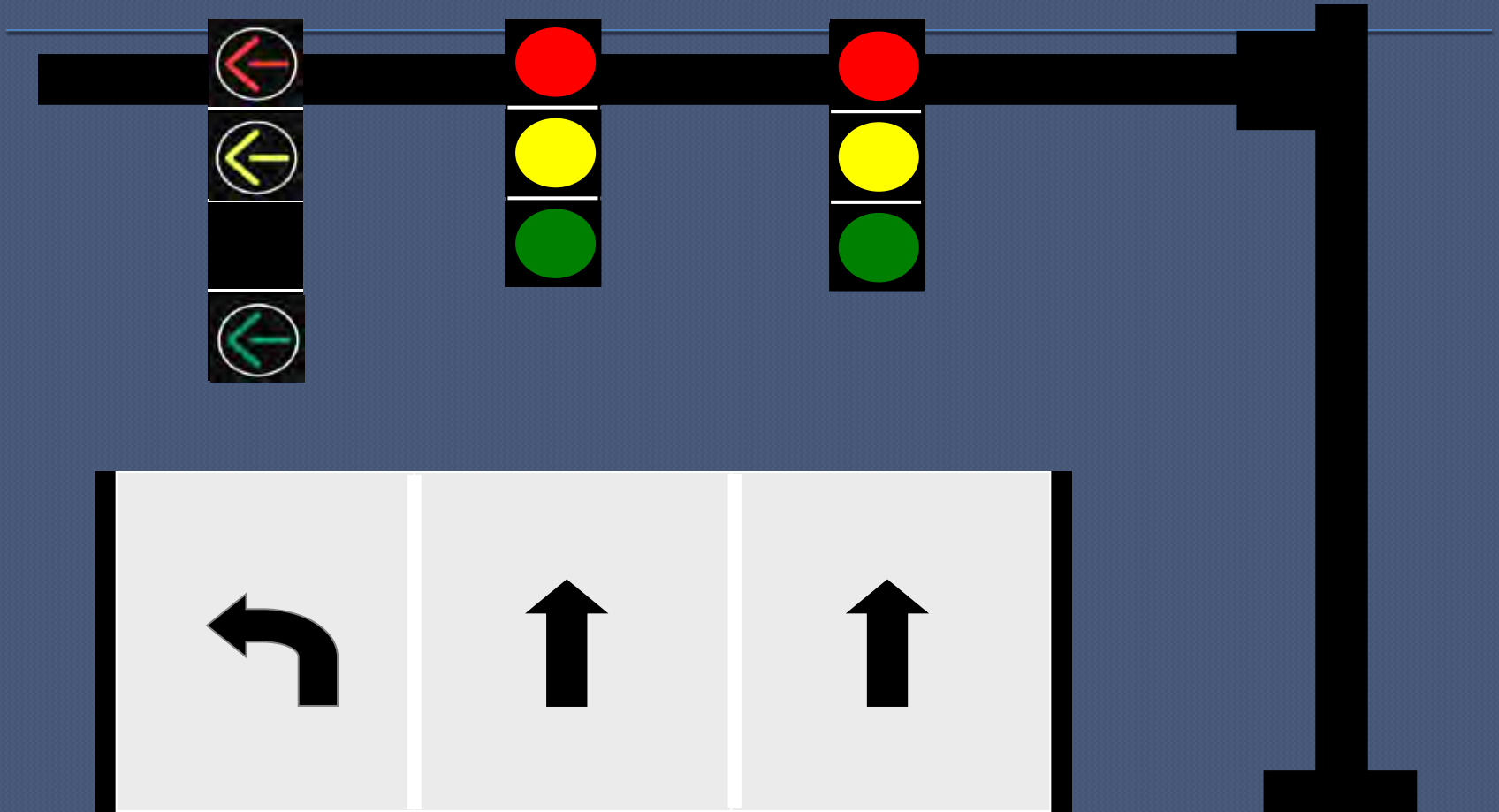
Protected/Permitted Left Turns



Protected or Restricted Only Left Turns



FYA Sequence: Protected/Permissive Left Turns



New Traffic Signal Displays

- Innovations are rare in vehicular signal displays
- The last significant innovation in vehicular signal displays was the red left-turn arrow introduced in 1971
- Pedestrian displays changed from words to symbols and then again adding the countdown pedestrian displays

New Traffic Signal Displays

- Many states were using non-standard left turn displays
- Operational issues limited existing displays
- The Federal Highway Administration (FHWA) approved the Flashing Yellow Arrow Display in 2009
- Pinellas installed the first FYA Display in November 2009 in Palm Harbor

FYA Advantages

- Direct replacement for a Protected / Permitted Left Turn Phase
- The FHWA study found the FYA was better understood by the motoring public
- Provided similar safety benefits while providing more flexibility in how it operates

Why is Pinellas County installing FYA?

- Requests from school crossing guards for restricted left turn arrows
- Requests from citizens for flexibility in left turn operation and protection
- Operational flexibility can benefit progression and reduce delay
- The Florida Department of Transportation has adopted the FYA and is actively installing and replacing on state roads (including SR 60)

FYA – Flexibility

- Can change operation by time of day
 - From Permissive Only
 - To Protected / Permitted
 - To Protected Only
- Added safety during parts of the day or reduce delay when restricted arrow is not needed – school crossings
- Can operate in a Lead / Lag Phasing which can provide benefits to progression

What Is Lead / Lag Phasing



Leading Left Turn
and Through



Through
movements



Lagging Left Turn
and Through

Advantages to Lead / Lag Phasing

- Lead / Lag Phasing has been used for 20+ years, but only with restricted left turns
- Provides better progression on the main street resulting in less stops
- Can reduce delay to the lagging left turn movement
- Sometimes required by the geometrics of the intersection

Issues with FYA Display when used with Lead / Lag Phasing

- Combining the FYA, the lagging display has caused some questions and confusion
- Some questions were whether Traffic Engineering was replacing the green arrow with ONLY the flashing yellow arrow
- Additional research has been conducted and staff has implemented a change that addresses this issue

Standard Lagging FYA Left Turn



Standard Lagging FYA Left Turn WITH DELAY



Take Aways For The FYA

- Anytime there is a flashing yellow arrow, the opposing through movement IS GREEN
- FYA is the FDOT District 7 standard and will be the predominant left turn display in the future
- Traffic Engineering has made modifications to the FYA operation that will eliminate issues that may cause concerns

Questions and Comments?

