Transportation & Economic Development Appropriations Subcommittee

Wednesday, April 13, 2011
8:30 AM – 8:45 AM
Morris Hall

Meeting Packet

Dean Cannon
Speaker

Mike Horner
Chair

Committee Meeting Notice

HOUSE OF REPRESENTATIVES

Transportation & Economic Development Appropriations Subcommittee

Start Date and Time: Wednesday, April 13, 2011 08:30 am

End Date and Time: Wednesday, April 13, 2011 08:45 am

Location: Morris Hall (17 HOB)
Duration: 0.25 hrs

Consideration of the following bill(s):

CS/HB 149 Traffic Control Signals by Transportation & Highway Safety Subcommittee, Ahern

NOTICE FINALIZED on 04/11/2011 16:24 by MRI

HOUSE OF REPRESENTATIVES STAFF ANALYSIS

BILL #: CS/HB 149 Traffic Control Signals
SPONSOR(S): Ahern and others
TIED BILLS: **IDEN./SIM. BILLS:**

REFERENCE	ACTION	ANALYST	STAFF DIRECTOR or BUDGET/POLICY CHIEF
1) Transportation & Highway Safety Subcommittee	15 Y, 0 N, As CS	Johnson	Brown
2) Transportation & Economic Development Appropriations Subcommittee		Davis	Davis
3) Economic Affairs Committee			

SUMMARY ANALYSIS

The bill amends s. 316.075, F.S., to specify an engineering standard for minimum yellow signal durations. When an engineering analysis of a signal display duration is conducted, the minimum yellow signal duration on traffic control signals must be based on the 85th percentile approach speed. The minimum yellow signal display duration is to be three seconds for traffic control signals where the 85th percentile approach speed is 25 miles per hour or less. The minimum yellow signal duration is to increase by one-half second for each increase of five miles per hour, not to exceed six seconds.

The bill requires intersections with a speed limit or 85th percentile approach of 55 miles per hour or greater to have signs alerting drivers to the approaching intersection.

The bill requires intersections to have a minimum red light clearance interval.

The bill provides that traffic infractions related to red light running are unenforceable if the intersection does not meet the minimum yellow-light interval requirements. This provision has an indeterminate, negative impact on general revenue and state trust funds.

The Department of Transportation (DOT) and local governments are required to set the minimum yellow signal duration at each intersection when performing an engineering analysis of the intersection. As a result, there does not appear to be an additional cost associated with the bill's requirements. The costs associated with signs warning drivers of approaching traffic control signals on high-speed roads is expected to be minimal.

The bill has an effective date of July 1, 2011.

FULL ANALYSIS

I. SUBSTANTIVE ANALYSIS

A. EFFECT OF PROPOSED CHANGES:

Federal Rules on Traffic Control Devices

Since 1971, the Federal Highway Administration (FHWA) has published and administered a Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD defines standards "used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic."[1] It is updated periodically to "accommodate the nation's changing transportation needs and address new safety technologies, traffic control tools and traffic management techniques."[2] A federal rule adopting the 2009 Edition of the MUTCD was published in the Federal Register on December 16, 2009, and states must adopt the 2009 National MUTCD as their legal standard for traffic control devices within two years.[3]

Traffic Control Devices in Florida

Traffic control devices are installed and operated by the state and local governments pursuant to section 316.0745, F.S. This statute requires FDOT to adopt a "uniform system of traffic control devices for use on the streets and highways of the state."[4] The system can be revised to include changes necessary to conform to a uniform national system (see discussion of MUTCD, above) and also to meet local and state needs. FDOT is required to publish this uniform system[5] and does so by referencing the MUTCD. Additionally, FDOT publishes a Traffic Engineering Manual, which makes the MUTCD specific to Florida, clarifies the MUTCD, or imposes standards stricter than the MUTCD. [6]

According to the FDOT,

> [t]he purpose of the FDOT Traffic Engineering Manual (TEM) is to provide traffic engineering standards and guidelines to be used on the State Highway System. The manual covers the process whereby standards and guidelines are adopted, as well as chapters devoted to highway signs and markings, traffic signals, traffic optimization through the use of computer models..., and links to information on our mature driver/pedestrian program.[7]

All public bodies or officials that purchase and install traffic control devices in Florida must ensure that such devices conform to the manual and specifications published by FDOT.[8]

Yellow Lights

The federal MUTCD and the Florida TEM each provide basic functional information[9] about yellow lights, referred to in engineering terms as "steady circular yellow" signals. The MUTCD discusses the underlying concept behind the yellow signal, explaining that "the exclusive function of the yellow change interval shall be to warn traffic of an impending change in the right-of-way assignment."[10] As

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[1] *See* http://mutcd.fhwa.dot.gov/ (January 26, 2011).
[2] *Id.*
[3] *Id.* The relevant text of the Federal Register can be accessed online at http://edocket.access.gpo.gov/2009/pdf/E9-28322.pdf (January 26, 2011).
[4] S. 316.0745(1), F.S.
[5] S. 316.0745(2)(a), F.S.
[6] DOT's Traffic Engineering Manual is only available electronically. It is available at http://www.dot.state.fl.us/trafficoperations/Operations/Studies/TEM/TEM.shtm (April 1, 2011).
[7] *Id.*
[8] S. 316.0745(3), F.S.
[9] For example, MUTCD section 4D.05 requires a steady circular yellow signal to be displayed following a steady green signal and that the yellow signal to be followed by a red signal. TEM Section 3.6.1 provides that "[t]he purpose of the yellow change and all-red clearance intervals is to provide a safe transition between two conflicting signal phases."
[10] S. 4D.26(2)-(3), FHWA *Manual on Uniform Traffic Control Devices* (December 2009).

specific guidance for the length of a yellow signal, the MUTCD says only that "the duration of the yellow change interval shall be determined using engineering practices."[11]

Such engineering practices are provided in the TEM. FDOT's manual provides overall minimum and maximum yellow-light durations as well as an algebraic formula to be applied by the traffic engineer for each specific intersection. Section 3.6.1 of the TEM states that a "yellow change interval should have a minimum duration of 3 seconds and a maximum duration of 6 seconds." The specific formula is explained in the image below, along with a chart calculating the formula's results for a hypothetical intersection on level ground.[12]

Table 3.6-1. Florida Yellow Change Interval (0.0 % Grade)*

APPROACH SPEED (MPH)	YELLOW INTERVAL (SECONDS)
25	3.0
30	3.2
35	3.6
40	4.0
45	4.3
50	4.7
55	5.0
60	5.4
65	5.8

* For approach grades other than 0%, Use ITE Formula.

Formula 3.6-1

$$Y = t + \frac{1.47v}{2(a + Gg)}$$

Where:

Y = length of yellow interval, sec.
t = perception-reaction time, (Use 1 sec.).
v = speed of approaching vehicles, in mph.
a = deceleration rate in response to the onset of a yellow indication. (Use 10 ft/sec^2)
g = acceleration due to gravity. (Use 32.2 ft/sec^2)
G = grade, with uphill positive and downhill negative. (percent grade /100)

All of the variables in the equation have assumed or fixed values except the approach speed, *v*. As a result, the speed of vehicles as they approach an intersection is the critical input an engineer must consider when solving the formula for *Y* – an appropriate length in seconds for the yellow light.

With respect to determining the correct approach speed, the TEM provides additional guidance, stating that "Approach speed... is the posted speed or the 85th percentile approach speed, whichever is greater." The phrase "posted speed" refers to the speed limit applied to the road pursuant to ss. 316.187 or 316.189, F.S. The phrase "85th percentile approach speed" is a commonly-used statistical measurement describing the speed at or below which 85 percent of free-flowing traffic is moving.[13]

The TEM also contains a provision allowing traffic engineers to modify yellow-light intervals as appropriate. Section 3.6.2(5) states that "yellow change... intervals specified herein are minimums, and

[11] *Id.*
[12] "Table 3.6-1." is reproduced directly from s. 3.6.2.1 of the TEM and can be seen in context at the hyperlink identified in footnote 6.
[13] "According to a Federal Highway Administration study, all states and most local agencies use the 85th percentile speed of free flowing traffic as the basic factor in establishing speed limits." *Speed Zoning Information*, Institute of Transportation Engineers, available at http://www.ite.org/standards/speed_zoning.pdf, last accessed January 26, 2011. Though not specifically related to yellow-light intervals, this document notes another important aspect of the 85th percentile speed: "Studies have shown [that] crash rates are lowest at around the 85th percentile speed. Drivers traveling significantly faster OR slower than this speed are at a greater risk for being in a crash. It is not high speeds alone that relate to crash risk; it is the variation of speed within the traffic stream," that creates greater risk for being in a crash.

should be increased as necessary, based on professional engineering judgment, to fit site conditions at any particular intersection." The TEM does not contain language regarding the shortening of a yellow-light interval to an amount of time less than those provided in the manual.

Proposed Changes

The bill amends s. 316.075, F.S., to require minimum yellow signal display durations at intersections. The bill provides that when an engineering analysis is done for the purpose of evaluating or reevaluating yellow and red signal display durations for a new or existing traffic signal, DOT and local authorities are required to adhere to the following:

- The minimum yellow signal display duration on traffic control signals is to be based on the posted speed limit or the actual 85th percentile approach speed, whichever is greater. The bill defines the 85th percentile approach speed as the speed at or below which 85 percent of the free-flowing traffic is traveling. The bill further provides that for streets with "actual 85th percentile approach speeds of 25 miles per hour or less," the minimum yellow-light interval shall be 3 seconds, and that for each increase of 5 miles per hour in the 85th percentile approach speed above 25 miles per hour, the minimum yellow-light interval shall be increased one-half second. However, the yellow light interval is not to exceed 6 seconds.
- For intersections with a speed limit or an actual 85th percentile approach speed of greater than 55 miles per hour are required to have, on approach, a sign posted to alert drivers of the upcoming traffic control signal. The sign is to be posted in accordance with DOT's Manual on Uniform Traffic Control Devices.

In order to provide additional time between conflicting traffic movements, the bill requires that the yellow signal display must be followed by an all-red clearance interval delaying the change of opposite red light signals. The duration of the clearance interval is to be determined by engineering practices provided for in DOT's Manual on Uniform Traffic Control Devices. The duration of the red clearance interval may be extended from its predetermined value for a given cycle based upon the detection of a vehicle that is predicted to violate the red signal indication.[14]

The bill provides that a citation for a violation of the red light statute[15] committed at an intersection where the traffic signal device does not meet all of the yellow signal display duration requirements above is unenforceable. The court, clerk of the court, designated official, or authorized operator of a traffic violations bureau is required to dismiss the citation without penalty or assessment of points against the driver's license of the person cited. However, the dismissal of this citation does not affect the validity of any other citation or charge for a violation of law and the dismissal may not be used as evidence in any other civil or criminal proceeding.

The bill has an effective date of July 1, 2011.

B. SECTION DIRECTORY:

Section 1 Amends s. 316.075, F.S., relating to traffic control signal devices requiring traffic control signals to maintain certain signal intervals and display durations based on approach speeds; providing that a citation for specified violations shall be dismissed if the traffic control signal does not meet specified requirements.

Section 2 Provides an effective date.

[14] This requirement is currently provided in the Manual on Uniform Traffic Control Devices, as well.
[15] S. 316.075(1)(c)1., F.S.

II. FISCAL ANALYSIS & ECONOMIC IMPACT STATEMENT

A. FISCAL IMPACT ON STATE GOVERNMENT:

1. Revenues:

   Indeterminate. To the extent citations are dismissed pursuant to the provisions of this bill, there will be an indeterminate, negative fiscal impact on general revenue and various state trust funds.

2. Expenditures:

   While there are costs associated with setting the minimum yellow display durations, the bill provides that this may be done when an engineering analysis is done on the traffic control signal; therefore, there will be no additional costs to DOT.

   DOT will incur costs in placing signs at intersections with 85th percentile speeds of 55 miles per hour or greater, but DOT expects to do so within its existing budget.

B. FISCAL IMPACT ON LOCAL GOVERNMENTS:

1. Revenues:

   None

2. Expenditures:

   While there are costs associated with setting the minimum yellow display durations, the bill provides that this may be done when an engineering analysis is done on the traffic control signal; therefore, there will be no additional costs to local governments.

   DOT will incur costs in placing signs at intersections with 85th percentile speeds of 55 miles per hour or greater, but the cost is expected to be minimal.

C. DIRECT ECONOMIC IMPACT ON PRIVATE SECTOR:

None

D. FISCAL COMMENTS:

Some traffic violations may be invalid if committed at an intersection whose yellow light interval does not meet the requirements of the bill; however, the number of invalid violations and the fiscal impact of those violations cannot be determined at this time. While indeterminate , this will have a negative impact on general revenue and various state trust funds.

III. COMMENTS

A. CONSTITUTIONAL ISSUES:

1. Applicability of Municipality/County Mandates Provision:

   Not Applicable. This bill does not appear to require counties or municipalities to spend funds or take action requiring the expenditures of funds; reduce the authority that counties or municipalities have to raise revenues in the aggregate; or reduce the percentage of state tax shared with counties or municipalities.

2. Other:

   None

B. RULE-MAKING AUTHORITY:

None

C. DRAFTING ISSUES OR OTHER COMMENTS:

None

IV. AMENDMENTS/ COMMITTEE SUBSTITUTE CHANGES

On April 4, 2011, the Transportation & Highway Safety Subcommittee adopted a strike-all amendment to the bill, creating a Committee Substitute. The strike-all amendment:

- Requires traffic control signals to meet minimum yellow signal display durations.
- Requires warning signs before traffic control signals at certain intersections.
- Requires an all red clearance interval at intersections.
- Provides that certain traffic citations are unenforceable if the intersection does not meet the yellow light interval requirements required by the bill.

The analysis is drafted to the Committee Substitute.

A bill to be entitled

An act relating to traffic control signals; amending s. 316.075, F.S.; requiring traffic control signals to maintain certain signal intervals and display durations based on approach speeds; providing that a citation for specified violations shall be dismissed if the traffic control signal does not meet specified requirements; providing an effective date.

Be It Enacted by the Legislature of the State of Florida:

Section 1. Section 316.075, Florida Statutes, is amended to read:

316.075 Traffic control signal devices.—

(1) Except for automatic warning signal lights installed or to be installed at railroad crossings, whenever traffic, including municipal traffic, is controlled by traffic control signals exhibiting different colored lights, or colored lighted arrows, successively one at a time or in combination, only the colors green, red, and yellow shall be used, except for special pedestrian signals carrying a word legend, and the lights shall indicate and apply to drivers of vehicles and pedestrians as follows:

(a) Green indication.—

1. Vehicular traffic facing a circular green signal may proceed cautiously straight through or turn right or left unless a sign at such place prohibits either such turn. But vehicular traffic, including vehicles turning right or left, shall yield

the right-of-way to other vehicles and to pedestrians lawfully within the intersection or an adjacent crosswalk at the time such signal is exhibited.

2. Vehicular traffic facing a green arrow signal, shown alone or in combination with another indication, as directed by the manual, may cautiously enter the intersection only to make the movement indicated by such arrow, or such other movement as is permitted by other indications shown at the same time, except the driver of any vehicle may U-turn, so as to proceed in the opposite direction unless such movement is prohibited by posted traffic control signs. Such vehicular traffic shall yield the right-of-way to pedestrians lawfully within an adjacent crosswalk and to other traffic lawfully using the intersection.

3. Unless otherwise directed by a pedestrian control signal as provided in s. 316.0755, pedestrians facing any green signal, except when the sole green signal is a turn arrow, may proceed across the roadway within any marked or unmarked crosswalk.

(b) Steady yellow indication.—

1. Vehicular traffic facing a steady yellow signal is thereby warned that the related green movement is being terminated or that a red indication will be exhibited immediately thereafter when vehicular traffic shall not enter the intersection.

2. Pedestrians facing a steady yellow signal, unless otherwise directed by a pedestrian control signal as provided in s. 316.0755, are thereby advised that there is insufficient time

to cross the roadway before a red indication is shown and no pedestrian shall start to cross the roadway.

(c) Steady red indication.—

1. Vehicular traffic facing a steady red signal shall stop before entering the crosswalk on the near side of the intersection or, if none, then before entering the intersection and shall remain standing until a green indication is shown; however:

a. The driver of a vehicle which is stopped at a clearly marked stop line, but if none, before entering the crosswalk on the near side of the intersection, or, if none then at the point nearest the intersecting roadway where the driver has a view of approaching traffic on the intersecting roadway before entering the intersection in obedience to a steady red signal may make a right turn, but shall yield the right-of-way to pedestrians and other traffic proceeding as directed by the signal at the intersection, except that municipal and county authorities may prohibit any such right turn against a steady red signal at any intersection, which prohibition shall be effective when a sign giving notice thereof is erected in a location visible to traffic approaching the intersection.

b. The driver of a vehicle on a one-way street that intersects another one-way street on which traffic moves to the left shall stop in obedience to a steady red signal, but may then make a left turn into the one-way street, but shall yield the right-of-way to pedestrians and other traffic proceeding as directed by the signal at the intersection, except that municipal and county authorities may prohibit any such left turn

as described, which prohibition shall be effective when a sign giving notice thereof is attached to the traffic control signal device at the intersection.

2.a. The driver of a vehicle facing a steady red signal shall stop before entering the crosswalk and remain stopped to allow a pedestrian, with a permitted signal, to cross a roadway when the pedestrian is in the crosswalk or steps into the crosswalk and is upon the half of the roadway upon which the vehicle is traveling or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.

b. Unless otherwise directed by a pedestrian control signal as provided in s. 316.0755, pedestrians facing a steady red signal shall not enter the roadway.

(2) In the event an official traffic control signal is erected and maintained at a place other than an intersection, the provisions of this section shall be applicable except as to those provisions which by their nature can have no application. Any stop required shall be made at a sign or marking on the pavement indicating where the stop shall be made, but in the absence of any such sign or marking the stop shall be made at the signal.

(3)(a) A ~~No~~ traffic control signal device may not ~~shall~~ be used unless it exhibits ~~which does not exhibit~~ a yellow or "caution" light between the green or "go" signal and the red or "stop" signal. Whenever an engineering analysis is undertaken for the purpose of evaluating or reevaluating yellow and red signal display durations of a new or existing traffic control

signal, the department and local authorities shall adhere to the following:

1. The minimum yellow signal display duration on traffic control signals shall be based on the speed limit or the actual 85th percentile approach speed, whichever is greater. The 85th percentile approach speed is the speed at or below which 85 percent of free-flowing traffic is traveling. The minimum yellow signal display duration shall be 3 seconds for traffic control signals on streets with a speed limit or actual 85th percentile approach speed of 25 miles per hour or less. The minimum yellow signal display duration shall be increased one-half second for each increase of 5 miles per hour in the speed limit or actual 85th percentile approach speed, whichever is greater, above 25 miles per hour, not to exceed 6 seconds.

2. Intersections with a speed limit or actual 85th percentile approach speeds greater than 55 miles per hour shall have, on approach, a sign posted in accordance with the Department of Transportation's manual of uniform traffic control devices to alert drivers to the traffic control signal.

(b) No traffic control signal device shall display other than the color red at the top of the vertical signal, nor shall it display other than the color red at the extreme left of the horizontal signal.

(c) To provide additional time before conflicting traffic movements proceed, the yellow signal display shall be followed by an all red clearance interval delaying the change of opposing red light signals. The duration of the clearance interval shall be determined by engineering practices as provided for in the

Department of Transportation's manual of uniform traffic control devices required under s. 316.0745. The duration of a red clearance interval may be extended from its predetermined value for a given cycle based upon the detection of a vehicle that is predicted to violate the red signal indication.

(4) A violation of subsection (1) or subsection (2) ~~this section~~ is a noncriminal traffic infraction, punishable pursuant to chapter 318 as either a pedestrian violation or, if the infraction resulted from the operation of a vehicle, as a moving violation. However, a citation for a violation of subparagraph (1)(c)1. committed at an intersection where the traffic signal device does not meet all requirements under subsection (3) is unenforceable and the court, clerk of the court, designated official, or authorized operator of a traffic violations bureau shall dismiss the citation without penalty or assessment of points against the license of the person cited. Dismissal of the citation under this subsection does not affect the validity of any other citation or charge for a violation of law and the dismissal may not be used as evidence in any other civil or criminal proceeding.

Section 2. This act shall take effect July 1, 2011.