OREGON TRAFFIC CONTROL DEVICES COMMITTEE

Meeting Agenda

November 21, 2014

ODOT TLC Bldg., Alsea Conf. Room,
4040 Fairview Industrial Dr., Salem

9:00 – 9:10	Welcome / Building Orientation / Introductions / Approve Previous Minutes	Mike Caccavano
9:10 – 9:15	Business from the Audience *Public Comment on Non-Agenda Topics*	Mike Caccavano
9:15 – 9:45	All Roads Transportation Safety Program Update *Information*	Doug Bish
9:45 – 10:05	FENDER BENDER Sign R16-4 *Discussion / Recommendation*	Jim Rentz/Heidi Shoblom
10:05 – 10:20	Break	
10:20 – 10:40	CARS (Curve Advisory Reporting System) Evaluation Update *Information*	Eric Leaming
10:40 – 11:10	Optional Use of 3-Section FYA Signal Faces *Discussion*	Eric Niemeyer/Craig Black
11:10 – 11:15	Select Chair & Vice-Chair for 2015 / Review Proposed Meeting Schedule for 2015 *Information*	Mike Caccavano
11:15 – 11:30	Roundtable *Local Jurisdiction Issues - Discussion*	All Committee Members
11:30 – 11:40	Not-on-Agenda Items	Mike Caccavano
11:40 – 11:50	Agenda Items for Future Meetings	Mike Caccavano

Proposed 2015 OTCDC Meeting Schedule

Date	*Location*
January 16	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
March 20	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
May 15	(w/ITE), TBD
July 17	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
September 18	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
November 20	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem

Oregon Traffic Control Devices Committee

July 18, 2014

Meeting Minutes

ODOT Technical Leadership Center, 4040 Fairview Industrial Drive SE, Salem, Oregon

Members Present: Mike Caccavano, City of Redmond, Chairperson; Ed Chastain, Lane County, Vice Chair; Bob Pappe, Secretary, ODOT State Traffic Engineer; Brian Barnett, City of Springfield; Alex Georgevitch, City of Medford; Pam O'Brien, DKS Associates; Jim Rentz, OSP; Jeff Wise, ODOT Region 5

Members Absent: Joseph Marek, Clackamas County; Cynthia Schmitt, Marion County

Others Present: Nick Fortey, FHWA; Terry Hockett, Kevin Hottmann, City of Salem; Jabra Khasho, City of Beaverton; Matthew Machado, City of Portland; Sarah Owens, Washington County; Doug Bish, Craig Black, Scott Cramer; Kevin Haas, Katie Johnson, Mike Kimlinger, Justin King, Kathi McConnell, Chris Rowland, Amanda Salyer, Heidi Shoblom, ODOT Traffic/Roadway Section; Bert Hartman, ODOT Bridge Section. *Others present via i-Link:* Scott Beaird, Kittelson & Associates

Introduction – Approval of Minutes – Additional Agenda Items

Chair Mike Caccavano called the meeting to order at 9:00 a.m. and called for introductions from all attending. Brian Barnett then moved, Jeff Wise seconded, and the committee approved the May 2014 OTCDC Meeting Minutes. Two additional agenda items were brought forward: Kevin Haas on "Tattle-Tail" Lights, and Heidi Shoblom on Weight Limit Reduced signs.

Business from the Audience/Public Comment on Non-Agenda Topics

None to report.

NCUTCD Meeting Update

Scott Beaird then gave a summary on events at the June meeting of the NCUTCD in Minneapolis.

For the General Session, there were 253 attendees. Oregon attendees consisted of Peter Koonce, Tom Lancaster, Randy McCourt, Eric Niemeyer, Lee Rodegerdts, Jesse Boudart, and Scott Beaird.

Scott said the National Motorists Association (NMA) has withdrawn their application to be a sponsor of the NCUTCD so this is no longer under consideration. He noted the National Committee has put out an RFQ for redesign of their website to include a searchable database

of council recommendation and the ability to do on-line comments and voting on sponsor applications. Future meetings of the NCUTCD are scheduled as follows: June 2015 – San Antonio, TX; June 2016 – Savannah, GA; and June 2017 – Pittsburg, PA.

Moving on to the FHWA Report: The federal Office of Management and Budget (OMB) has decided the next MUTCD will constitute significant rulemaking and will require an economic analysis. It's not yet clear whether this will include current standards or just changes to the current Manual. Either way, it will be a significant effort.

Scott went over the timeline for the next edition. The June meeting was the last opportunity for the NCUTCD to provide input for the new manual. In August, the feds plan to have a complete final draft of the Notice of Proposed Amendment (NPA), including economic analysis. Then from September 2014 to April of 2015, there will be internal OMB and Secretary of Transportation (OST) reviews, followed by publishing of the NPA in the Federal Register in May of 2015. This will kick off a 6-month docket comment period and they are currently expecting to finalize the MUTCD and final rule notice in October of 2016 and have a final rule take effect in 2017.

FHWA will publish a request for comment on the strategic plan Gene Hawkins has been developing for the MUTCD.

FHWA has issued Revision 1 to the 2012 Supplement to the Standard Highway Signs Manual (SHSM). It doesn't appear to yet be available on line. It reportedly includes all signs, pavement markings, arrows from the 2009 MUTCD. A future full revision is now planned to be concurrent with the (new) 2017 MUTCD.

Among items of interest from the Signals Technical Committee:

- Text on bike signals approved (substantial revision to the interim approval FHWA currently has out) and will go to FHWA as a recommendation on bike signals in the next MUTCD.

- New railroad preemption text with significant changes approved for recommendation to FHWA.

- Yellow change interval formula – STC reaffirmed January vote to remove FHWA recommendation to include formula.

- Bimodal Flashing Yellow Arrow: Motion to allow FYA in green and yellow indications failed. Reverts to January recommendation to only allow in yellow indication to avoid confusion in driver expectation of having two possible locations for the FYA to appear.

- Approved revision to crash warrant based on research and not finding a reason for the current 5 crash requirement. It will be included in the next MUTCD, tied to the Highway Safety Manual research.

In RRFB Research, Kay Fitzpatrick compared circular and Rectangular Rapid Flashing Beacons in daytime and nighttime staged crossings. She found out brightness matters, but you can be too bright and not see pedestrians. Placement of RRFB above the sign performed

better. FHWA will likely adjust flash pattern (wig-wag, dark period, simultaneous) which gets your attention and the dark period makes a pedestrian more visible.

Craig Black asked about the Signal Technical Committee discussion on the FYA regarding using a separate wire in order to be able to monitor the FYA as Oregon does. Scott said this hadn't been discussed by the Committee. He said not running a separate wire makes it easier to retrofit a signal to the FYA.

Kevin Haas asked whether FHWA was looking at more interim approvals given the expected additional delay in issuance of a new MUTCD (in 2017 or possibly later). He's heard the Bike Committee is asking for them. Scott said there has been some discussion about this, related to the strategic plan discussion. In the short term, it's a thought but he doesn't think FHWA has made such a decision.

Bob Pappe noted a question from the AASHTO Subcommittee on Traffic Engineering SCOTE meeting prior to the NCUTCD meeting regarding layout and levels of mandate for standards. Scott said this is still a part of the MUTCD strategic planning Gene Hawkins is working on but it's not going to be included in the next MUTCD.

Brian Barnett asked for more detail about what would be replacing the crash warrant in the next revision to the MUTCD discussed above. Scott said it is varied with rural and urban components, etc. He promised to send a copy of a table with the details from NCHRP rather than try to describe it. The table excerpt is here.

Sign Policy and Guidelines for the State Highway System Update – Roll-up Signs

Justin King reviewed for the committee the SP&G Chapter 6 Edits for Chapter 6, adding guidance language for roll-up sign use. They can be used for any sign type in accordance with the SP&G, Standard Specifications, QPL and the MUTCD unless otherwise stated. They may be used when needed at a single location for no more than 48 consecutive hours, should be mounted on both sides of traffic when used with two or more lanes going in the same direction and should not be mounted on vehicles in most cases. Individual signs removed the roll-up reference as follows: CW11-1, CW11-1a, CW11-2, CW11-2a, CW15-5, CW15-5a, CW15-5b, and CW20-7b.

For some individual signs the roll-up reference is being maintained (CR1-1, CW 20-1a, CW21-9).

In the case of Sign No. CW23-14 (CONSTRUCTION VEHICLE - DO NOT FOLLOW) there is instruction added the sign shall be mounted on a rigid substrate.

In addition there is some proposed housekeeping to include "fluorescent" with orange and "retroreflective" with various sheeting and clarifying the sign legend is not referred to as sheeting on Sign No. CG20-8.

Decision: Brian Barnett moved, Alex Georgevitch seconded and the committee agreed with these changes to the Sign Policy and Guidelines.

Distracted Driving and Rumble Strips

Mike Kimlinger reviewed his request at the last meeting for feedback on the topic of rumble strips and distracted driving. Designed to make noise to caution drifting drivers and get them to correct course before there is a crash, the noise is enough to seriously bother houses in the areas where they are installed, which causes complaints and may end up with the rumble strips having to be removed if sufficient complaints become a political issue. He had asked members to report back on what they're observing in terms of driver behavior and possible methods of installing rumble strips.

Alex Georgevitch said he noted vehicles moving about within their lane and onto rumble strips mostly by commercial truck on four lane roads, county roads and I-5.

Mike Caccavano said he saw very little of it on new rumble strips between Redmond and Bend, possibly because they're new in his area. There aren't any within the City of Redmond.

Bob said it might be there is a better effect when there aren't too many of the rumble strips in use because they're not used to them.

Mike said he was interested in what people are seeing whether or not there are rumble strips because there is research showing there may be more distracted driving everywhere in the last 15-20 years. He noted there is a new version of the grinding treatment which resemble a wave in shape as opposed to the discreet cylindrical milled in rumble strips currently used. These new rumble strips (called sinusoidal, or "mumble strips") reportedly make less sound outside a **vehicle** and still seem to be audible inside a vehicle. ODOT intends to take a closer look at those in the next year to determine if they are a good alternative. A YouTube video at this link gives some idea of the difference. Mike would still like to get feedback from others on distracted driving and the effect rumble strips seem to be having.

Lieutenant Jim Rentz agreed there is more distracted driving now and said he likes the rumble strips because they do seem to work, especially if there are passengers hearing them and telling the driver to stay in the lane.

Mike said he had concerns about a recent project where the construction crew left big gaps in the strips around houses because vehicles do leave the road there too. He understands the concern about public backlash but hopes the sinusoidal strips can be an effective replacement. Alex agreed with that assessment.

Bob said especially after hearing about "mumble strips", we are advising our construction crews to leave bigger gaps in residential areas in hopes of not generating a backlash and we can come back next year with something that's quieter. There have been states taking the rumble strips out because of the backlash from the public (including Oregon) and we'd like to avoid having to take out more ourselves. This is mostly dealing with edge lines as opposed to center-lines to help prevent head-on collisions although where there are passing lanes we may also be more conservative about the rumble strips in the centerlines.

Notching for recessed reflector installations do provide some noise but they are much more expensive to maintain and, like raised durable striping with the notches on them, the cost is prohibitive. Mike is still interested in more feedback on this subject.

NOA – Single-Unit-Vehicle Weight Limit Signs

Heidi Shoblom presented information on new Single Vehicle Max Weight Signs which would replace Specialized Single-Unit Truck Weight Limit Signs approved by the committee in January. The replacements are due to feedback from the trucking industry (Oregon Trucking Association). They say these signs are too complicated, hard to read and they'd prefer to just have the one weight for all special vehicles with 4-plus axles.

The committee had some concern the lower total weight would reduce the payload of these trucks and might cause concern for some truckers who can't carry as much at one time. Oregon Bridge Engineer Bert Hartman said you would think the single-unit vehicle drivers would prefer the flexibility of the current signs but this isn't the case. There was concern it wouldn't be long before we'd be getting pressure to revert back to the current signs. After some discussion, it was clarified this weight limit applies only to specialized single-unit trucks and the committee was generally reassured. The weight limit shown on the sign is an example only. The actual weight will vary with each individual bridge.

Decision: Ed Chastain moved, Pam O'Brien seconded and the committee agreed with the new signs.

Action Item: Bert Hartman will see to notifying the affected members of the trucking industry local industry owners, OTA and the Bridge Section website of the change and who exactly it applies to, with a copy to Heidi. Heidi will work with Bert to develop and add an additional note in the SP&G to make it clear this sign change applies only to these special multi-axle, single unit vehicles so nobody is confused and local agencies don't misuse the signs.

ODOT's Safety Division Program/Grant Opportunities for 2015

Troy Costales discussed Oregon's Highway Safety Program for the committee beginning with some statistics on Oregon's average traffic fatalities per year in two three year periods – 2003-2005 and the most recent available, 2009-2011. The statistics focus on three select crash factors: speed, alcohol and no seat belts. The statistics have gone down significantly in the last six years, both in terms of the selected crash factors and in fatal crashes/total deaths. In fact the 2013 total death rate of 315 is the lowest since 1944.

Troy went over the 2014 Public Education Campaigns Calendar which includes elements for Bike/Ped Safety, Driver Education, Impaired Driving, Motorcycle Safety, Occupant Protection, Safe Routes to School Speed, Work Zone, and Youth Safety.

Next Troy reviewed training available which include:

- Teen driver education program (not required) – those who go through it have lower citation, crash and suspension rate than those who are taught by their parents. They also don't have to take the behind-the-wheel test in order to get their driver's license.

- Motorcycle training (required for new bikers) – after taking the training, Motorcycle riders don't have to take the driving test in order to get their motorcycle license.

Finally, Troy discussed local grants available in 2015:

- Bicycle Transportation Alliance Jumpstart Program – provides the JumpStart Bicycle Feet program to communities demonstrating readiness to establish a bike safety program in local schools

- Local PD DUII Overtime – DUII overtime enforcement grants for city police departments participating in High Visibility Enforcement events

- County DUII Overtime – DUII overtime enforcement grants for county sheriff's offices participating in High Visibility Enforcement events

- Local Safety Belt Overtime – Safety Belt overtime enforcement grants for city police departments that conduct three two-week enforcement blitzes, coordinate with media and acquire related training

- County Safety Belt Overtime – Safety Belt overtime enforcement grants for county sheriff's offices that conduct three two-week enforcement blitzes, coordinate with media and acquire related training

- Local Pedestrian Safety Enforcement – Pedestrian safety enforcement mini-grant program to include operations, training and evaluation, and diversion classes

- Safe Routes to School – Safe Routes to School mini-grant program for the administration of SRTS action plan development.
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NOA – Red-Signal Enforcement (Tattletale) & Bike Detection Indication Lights

Kevin Haas said Joel McCarroll alerted him the City of Bend and Redmond have installed "tattle-tale" lights for enforcement of red light runners. The same kind of light is also being used by the City of Portland as part of bicycle detection notification (See this link). The former allows police officers downstream of a traffic signal to tell when a light has turned red and thus, when a driver has run a red light. The latter lights up after a bicyclist stops their bike on top of the bike detector stencil so the bicyclist can tell they've been detected and will get a green light in due course. FHWA has not formally declared the former not a traffic control device although their Intersection Safety unit has said *"There are no compliance issues with the Manual on Uniform Traffic Control Devices, as Red-Signal Enforcement Lights are not traffic-control devices."* (See http://safety.fhwa.dot.gov/intersection/resources/techsum/fhwasa09005/).

However there is complete silence regarding whether the same kind of light, used for bike detection notification is a traffic control device. And since the bike community is highly communicative, we expect to see more requests for bike detection indication lights to be installed. Because of their location aimed at traffic, they may be seen by the public more than a pedestrian push button lighting up or the red light indication use typically aimed downstream from traffic and this – along with increased use of red light "tattletale" lights – may finally bring pressure for a definitive proclamation by the feds. This is a head's up item, no action needed at this time.

Local Jurisdiction Issues - Discussion

Lieutenant Jim Rentz asked about a report of flashing yellow lights which may cycle back to green and then directly to red without warning. It was clarified this should not be the case and if it is happening, it should be brought up with the agency who maintains the light in question.

There was some discussion on the fatality rate for the last three years of 71 people who weren't wearing seat belts even though we have a 98% compliance rate in the state – are they risky drivers in other ways? There is some indication this is the case. Lieutenant Rentz also noted while fatality rates are dropping, crash rates are staying pretty constant at about 36,000 crashes a year. So some combination of safer roadways, safer vehicles must be having a good effect, not just better driving behavior.

Agenda Items for Future Meetings

Bicycle Detection Lights (eventually), 3-section vs 4-section signal head for FYA

Adjournment

Mike adjourned the meeting at 11:14 a.m.

All Roads Transportation Safety (ARTS) Program

Doug Bish
Traffic Services Engineer
Oregon Department of Transportation
November 2014

"About half the fatal and serious injuries in Oregon occur on non-state roadways"

The Oregon Department of Transportation (ODOT) is moving towards a safety program for addressing all public roads in Oregon.

ODOT met with representatives from the League of Oregon Cities (LOC) and the Association of Oregon Counties (AOC) to discuss the need for addressing safety on all roads in Oregon. The outcome of the meetings was a memorandum of understanding detailing the principles and purpose of the program. The result is the All Roads Transportation Safety (ARTS) program.

The ARTS program is intended to address safety needs on all public roads in Oregon. About half of the fatal and serious injuries occur on non-state roadways. By working collaboratively with local road jurisdictions (cities, counties, MPO's and tribes) can ODOT expect to increase awareness of safety on all roads, promote best practices for infrastructure safety, complement behavioral safety efforts and focus limited resources to reduce fatal and serious injury crashes in the state of Oregon. The program will fund all public roads and be data driven to achieve the greatest benefits in crash reduction.

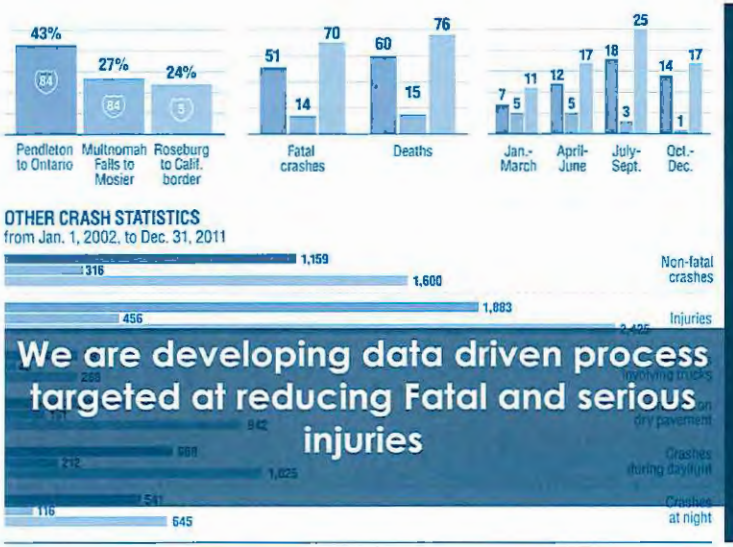
"there are 1700 fatalities and serious injuries in Oregon per year"

The principles and purpose of ARTS and HSIP are:

- The program goal is to reduce fatal and serious injury crashes.
- The program must include all public roads.
- The program is data driven and blind to jurisdiction.
- Both traditional "hot spot" methodology and systemic methodology will be used

The process will be overseen by ODOT Regions.

The ARTS program primarily uses federal funds from the Highway Safety Improvement Program (HSIP).

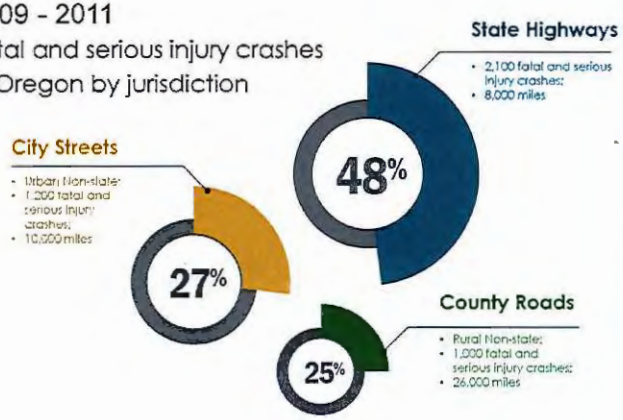


"safety can mean many things to different people"

MAP 21 stresses that the Highway Safety Improvement Program (HSIP) is a data driven process that reduces fatalities and serious injuries. Most highway projects incorporate or improve one or more design features or elements that relate to highway safety, such as guardrail, intersection geometry, signing and pavement markings or other similar elements. HSIP is not meant as a tool to bring roadways up to standard, improve the perceived safety of the roadway or to repair deferred maintenance. HSIP funds are only for locations or corridors where it is determined that the specific project action can, with confidence, produce a measurable and significant reduction in fatalities or serious injuries.

HSIP requires a data driven process that focuses on identifying safety problems through data analysis, identifying effective countermeasures to address the problems and prioritizing the projects. HSIP funds are used to deliver focused benefits for safety within the realities of constrained funding. To achieve the maximum benefit, the focus of the program is on cost effective use of the funds, priority will be given to projects having better returns on the investment in terms of reducing fatalities and serious injuries.

2009 - 2011
Fatal and serious injury crashes in Oregon by jurisdiction



"ODOT, cities and counties agreed on principles for the program"

Fatal and serious injury crashes in Oregon by jurisdiction (2009-2011)

ODOT, the Association of Oregon Counties and the League of Oregon Cities agree that developing a safety program for all public roads can increase awareness of safety on local roads, promote best practices for infrastructure safety, compliment behavioral safety efforts and focus limited resource to reduce fatal and serious injury crashes in Oregon.

Using proven Safety Countermeasures and prioritizing based benefit/cost, most good for dollar spent

"criteria are standards, rules or tests on which a judgment or decision can be based"

The objective of ARTS and HSIP is to significantly reduce the occurrence of fatalities and serious injuries.

A data-driven approach uses crash data, risk factors, or other data supported methods to identify possible locations to achieve the greatest benefits.

All Projects shall:

- Address a specific Safety problem contributing to fatalities and serious injuries
- Use proposed countermeasures that correct or substantially improve the fatal and serious injury problem
- Use ODOT crash data to establish the Benefit/Cost ratio
- Use ODOT Benefit Cost method
- Be prioritized or categorized based on the Benefit/Cost Ratio for developing the 150% list
- Use only countermeasures from the approved ODOT Crash Reduction Factor list (a written process will be developed for considering new measures)
- Projects must include written support from the Road Jurisdiction if the project is proposed by another agency
- Benefit Costs will be based on the most recent available three to five years of crash data

"traditional approach to safety"

The traditional approach to safety is to identify "hot spot" locations, and then identify measures to implement by diagnosing the "hot spot".

Hot Spot projects shall:

- Address a location with a crash history of at least one fatal or serious injury crash within the last five years.

Using the Systemic approach half the funding will be used for low cost measures that can be widely implemented

"this approach may identify locations or corridors not typically identified through traditional hot spot analyses"

The systemic approach identifies a few proven low-cost measures to be widely implemented, then implements the measures where there is evidence that they would be most useful. The systemic measures have been proven to successfully reduce the occurrence of fatal and serious injury crashes. The sites may be selected from ODOT's list of priority corridors for Roadway Departure, Intersections or Pedestrian/Bicycle crashes.

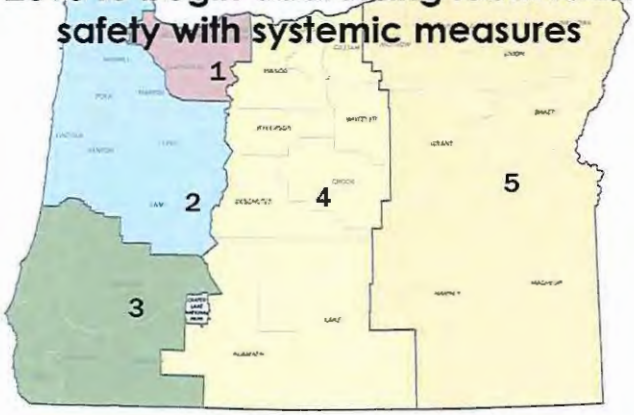
Systemic Projects shall:

- Use only approved "Systemic" countermeasures as listed in the Crash Reduction factors list
- Not require the acquisition of significant amounts of right of way (more than 10% of project costs), preferably no right of way.
- For the Pedestrian and Bicycle Benefit Cost Analysis, use Highway Safety Manual methods to estimate predicted crashes for pedestrians and bicycles.

Systemic Projects should:

- Have a history of fatal or serious injury crashes or a risk of high severity crashes and preferably used on priority corridors from systemic plans.

ODOT rolled out a Transition program in 2013 to begin addressing local road safety with systemic measures



"bridging the gap between no funding for non-state roads and the ARTS program"

To bridge the gap between no funding for non-state roads and the ARTS program, $16 million in funding for the "Transition" (2014-2016) was allocated, primarily to focus on a few systemic low cost fixes that can be implemented in the shorter timeframe on non-state roads.

Regional splits for non-state roads transition 2013-2016:

Region	Splits*	2013 - 2016
1	46.6%	$7,461,665
2	27.3%	$4,370,457
3	14.6%	$2,333,411
4	7.5%	$1,207,972
5	3.9%	$626,495
Total		**$16,000,000**

*Splits based on fatal and serious injury crashes on non-state roads

Funding will be split 50/50 between hot spot and systemic

"funds are split to each region based on the amount of fatalities and serious injuries occurring in the region on all public roads"

The safety funds are split to each region based on the amount of fatalities and serious injuries occurring in the region on all public roads. Regions will be required to spend a minimum of 50% of their funding on systemic projects.

Systemic funding is intended to be used for roadway departure, intersections and pedestrian/bicycle type projects. At the statewide level the split in fatalities and serious injuries between roadway departure, intersections and pedestrian/bicycle is about 40%/40%/20% respectively. ARTS will give regions the flexibility to determine the appropriate splits between systemic types of projects for their regions.

It is suggested :

- That at least one project per year be developed for each systemic type, if possible.
- Region splits of systemic funds for each systemic type be roughly equivalent to the proportion of fatal and serious injury crashes occurring in the region.

HSIP Funds	Per year
2017-2018	$35 million
2019-2021	$32 million

Hot Spot lists will be developed by ODOT and shared with local agencies who will give input into the selection of the hot spot projects

"there will be two separate processes for selecting projects, one for hot spots and one for systemic"

Process for project selection: Hot Spots

There will be two separate processes used, one for hot spot projects and a different one for systemic projects. ODOT Regions will meet with local jurisdictions within the Region and share the program purpose and the details of both processes. ODOT will distribute data on hot spots and systemic plans to help determine potential locations for improvement.

Selecting hot spot projects will consist of each ODOT region developing a draft list of potential hot spot projects for all public roads. The number of submittals should be limited because of limited funds. The regions will share the draft list with the local jurisdictions to look for gaps or missing potential projects.

Regions will also give local jurisdictions the opportunity to submit hot spot projects with justification that it meets the program purpose.

Regions will categorize hot spot projects based the project's ability to reduce fatal and serious injury crashes and the benefit cost of the project, and finalize a draft list for field scoping.

Systemic selection will be through an application process, funding for each emphasis area will be split roughly proportional to the amount of F&A

"there will be two separate processes for selecting projects, one for hot spots and one for systemic"

Process for project selection: Systemic

The process for systemic projects will be an application process. Each jurisdiction, including ODOT, will be invited to submit projects for systemic improvements from a large list of low cost proven countermeasures. These submittals will be for three systemic categories of funding, roadway departure, intersections and pedestrian/bicycle.

Regions will check all applications for program purpose and correctness, working with the submitting agencies when necessary in order to develop a potential list of projects. The intent is that the ODOT regions will refine the list of submitted projects and desk scope about a 150% list. Regions will prioritize the project list based on program purpose of reducing fatal and serious injuries and benefit cost in order to finalize a draft list for field scoping.

Once a refined list of projects are selected for each area and multi-disciplinary assessment will assure the right measure for the location

"all projects will go through a multi-discipline assessment to verify the solution"

Developing a list of prioritized projects

Once the refined lists are ready, all projects (both hot spot and systemic) will go through a multi-discipline assessment to verify the solution. A multi-disciplinary team, including the owner of the facility, will assure the best countermeasure is chosen to mitigate fatal and serious injury crashes. The projects will also be scoped to verify the costs and any possible barriers to implementation. A finalized list of prioritized projects can then be produced with the best solution and the best cost.

Once the list is prioritized and a final 100% list is produced region's will work with local jurisdictions to determine the delivery methods, delivering agency and timelines (applicable funding year). For project involving local agencies, the ODOT Regions will work with jurisdictions to develop an Intergovernmental Agreement. The delivering agency will be accountable for timely and fiscally responsible delivery.

The process for ARTS project selection will run concurrently with the new Statewide Transportation Improvement Program (STIP) development process for the 2018-2021 STIP scheduled to begin in late 2014. The process will include funding for 2017-2018 projects (in the current STIP) as well as 2019-2021 funding (in the new STIP), five years' of funding in all. The draft STIP list should be complete by the end of March 2015.

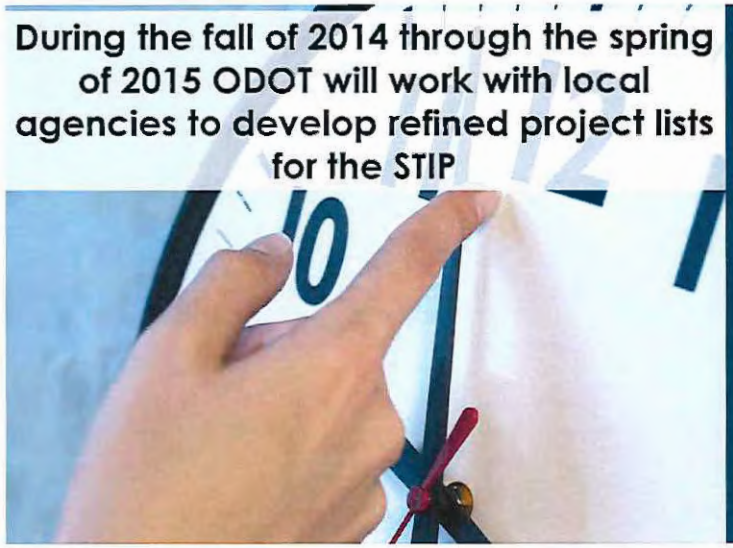
Federal funds requires matching funds currently 7.78% for HSIP

"the federal funding source currently requires a match"

The Federal Highway Safety Improvement Program (HSIP) currently requires a 7.78% match for projects. During the transition ODOT committed to 100% funding for most projects to assist local agency participation in the program because of a lack of advance notice.

Within the ARTS program ODOT will require participating agencies to contribute match to the project.

This will require local agencies to come up with the 7.78% non-federal cash match. If the local agency fails to identify local matching funds, the local agency and ODOT Region staff should work together to develop a funding plan for local match subject to Highway Administrator approval.


During the fall of 2014 through the spring of 2015 ODOT will work with local agencies to develop refined project lists for the STIP

Thank You

For more info, please contact:

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ODOT Traffic Services Engineer
Douglas.W.Bish@odot.state.or.us
503-986-3594

Section 2B.65 FENDER BENDER Sign (R16-4)

Option:

01 A FENDER BENDER MOVE VEHICLES FROM TRAVEL LANES (R16-4) sign (see Figure 2B-32) may be installed to require motorists to move their vehicle out of the travel lanes if they have been involved in a crash.

Section 2B.66 Seat Belt Symbol

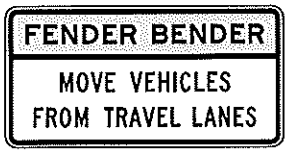
Standard:

01 **When a seat belt symbol is used, the symbol shown in Figure 2B-32 shall be used.**

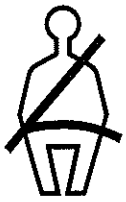
Guidance:

02 *The seat belt symbol should not be used alone. If used, the seat belt symbol should be incorporated into regulatory sign messages for mandatory seat belt use.*

Figure 2B-32. Other Regulatory Signs and Symbols



R16-4



Seat Belt Symbol

Section 2B.67 Barricades

Option:

01 Barricades may be used to mark any of the following conditions:

A. A roadway ends,
B. A ramp or lane closed for operational purposes, or
C. The permanent or semi-permanent closure or termination of a roadway.

Standard:

02 **When used to warn and alert road users of the terminus of a roadway in other than temporary traffic control zones, barricades shall meet the design criteria of Section 6F.68 for a Type 3 Barricade, except that the colors of the stripes shall be retroreflective white and retroreflective red.**

Option:

03 An end-of-roadway marker or markers may be used as described in Section 2C.66.

Guidance:

04 *Appropriate advance warning signs (see Chapter 2C) should be used.*

Section 2B.68 Gates

Support:

01 Gates described in this section used for weather or other emergency conditions are typically permanently installed to enable the gate to be immediately deployed as needed to prohibit the entry of traffic to the highway segment(s).

02 A gate typically features a gate arm that is moved from a vertical to a horizontal position or is rotated in a horizontal plane from parallel to traffic to perpendicular to traffic. Traffic is obstructed and required to stop when the gate arm is placed in a horizontal position perpendicular to traffic. Another type of gate consists of a segment of fence (usually on rollers) that swings open and closed, or that is retracted to open and then extended to close.

03 Gates are sometimes used to enforce a required stop. Some examples of such uses are the following:

A. Parking facility entrances and exits,
B. Private community entrances and exits,
C. Military base entrances and exits,
D. Toll plaza lanes,
E. Movable bridges (see Chapter 4J),
F. Automated Flagger Assistance Devices (see Chapter 6E), and
G. Grade crossings (see Part 8).

04 Gates are sometimes used to periodically close a roadway or a ramp. Some examples of such uses are the following:

A. Closing ramps to implement counter-flow operations for evacuations,
B. Closing ramps that lead to reversible lanes, and
C. Closing roadways for weather events such as snow, ice, or flooding, or for other emergencies.

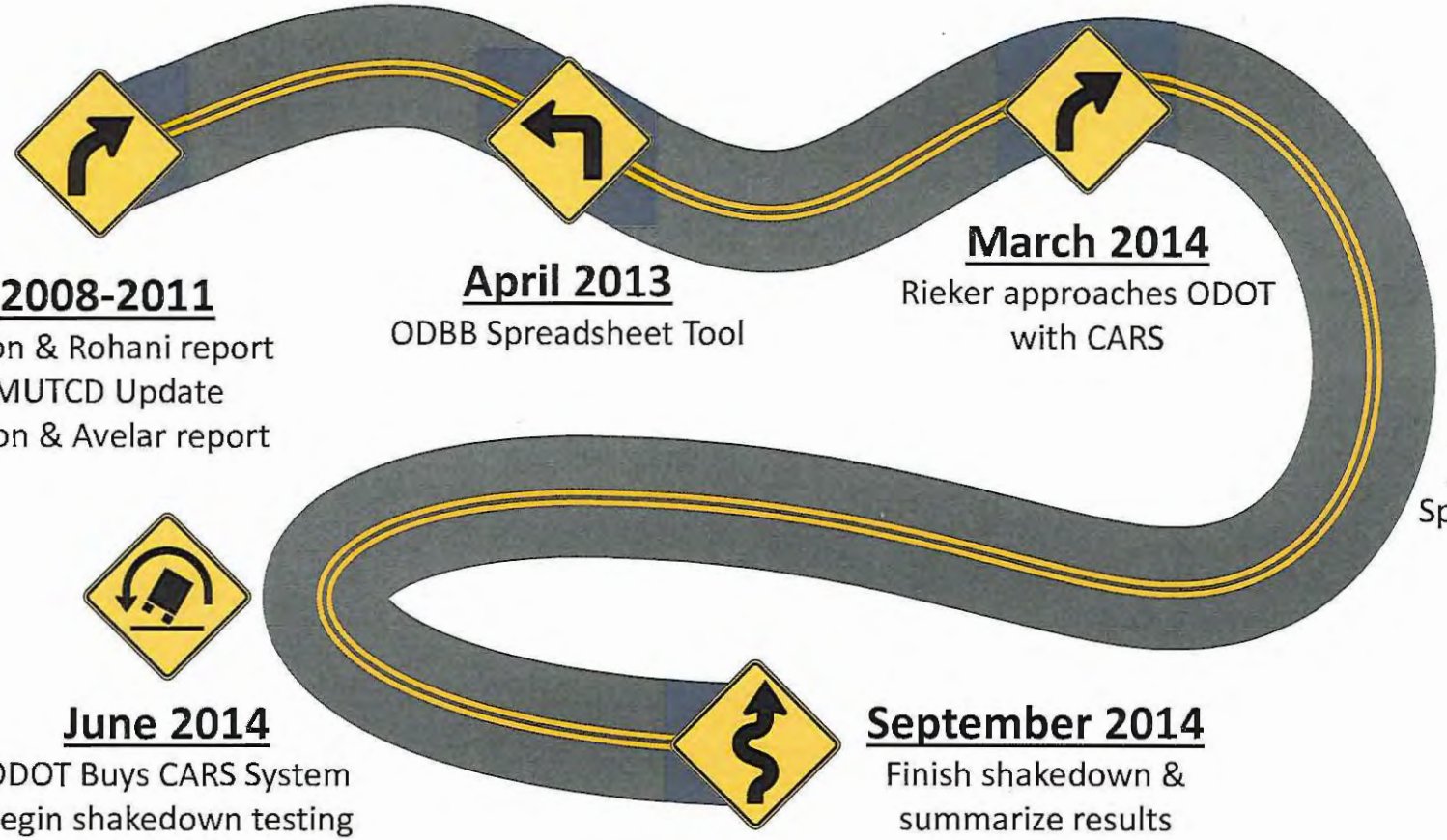
Rieker CARS Evaluation

Curve Advisory Speed Tools

Oregon Department of Transportation
Traffic-Roadway Section
Traffic Standards Unit

Photo: Google

Timeline



2008-2011
Dixon & Rohani report
MUTCD Update
Dixon & Avelar report

April 2013
ODBB Spreadsheet Tool

March 2014
Rieker approaches ODOT with CARS

May 2014
Spreadsheet v2.0

September 2014
Finish shakedown & summarize results

June 2014
ODOT Buys CARS System
Begin shakedown testing
Eric's son is born ☺

Curve Advisory Reporting System (CARS)

- Ball-banking system
- Inclination + GPS + website
- 1-pass in each direction
- Collect data with traffic
- Quick in-office analysis + reporting

Photo: Rieker, Inc.

Shakedown Goals

- Explain tool methodology
- Sensitivity Testing
  - Driving Method
  - Minimum Number of Runs
- Spreadsheet vs. CARS
- Other issues as needed

Photo: Lawrence Technological University

Sensitivity Testing

- Goals
  - Variety of curve speeds
  - High curve density (minimize collection efforts)
  - Curves tested with Spreadsheet v2.0
  - Segments with heavy foliage/against hillsides
- Test Highways
  - 428 curve approaches
  - 3 Rivers Highway No. 032 (OR 22)
  - Oregon Coast Highway No. 009 (US 101)
  - Mist-Clatskanie Highway No. 110 (OR 47)
  - Siletz Highway No. 151 (OR 229)
  - Cascade Highway No. 160 (OR 213)
  - Yamhill-Newberg Highway No. 151 (OR 240)

Findings

- Significant time savings for field collection
- Software + connectivity issues (fixable)
- Drive slow + very smooth
- Speed from run-to-run can vary
- Inexperienced investigator OK with training + practice

Findings (continued)

- Margin of error = 3.5% at 3 runs (95% C.I.)
- Model fit >99% best; >96% OK
- Spreadsheet vs. CARS
  - Same at 50% of 76 curve approaches
  - Within 5 mph at 91% of 76 curve approaches
  - If different, CARS generally higher than spreadsheet

Method Differences

- Data Collection
  - Driving Style
  - Body Roll
- Post Processing
  - Weighted moving average of 1 variable
  - Parabolic best-fit of 3 variables
- CARS more
  - Precise + Repeatable
  - Time efficient (field)
  - Safe for investigators
  - Defendable

Recommendations

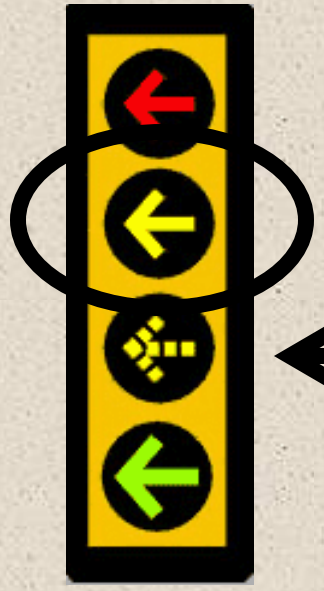
- Use CARS method for curve advisory investigations
- Use average calculated advisory speed of ≥3 runs
- Collect CARS data on all highways (consistency)
- Projects already designed: OK if used spreadsheet

Questions

Eric Leaming, P.E.
Traffic Devices Engineer
eric.s.leaming@odot.state.or.us
503-986-3610

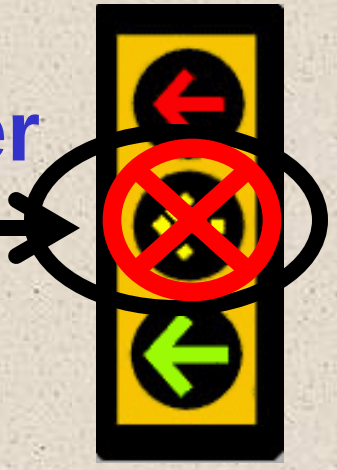
Flashing Yellow Arrow (FYA) for Protected/Permissive Left Turns (PPLT)

One or Two Yellow Arrows?



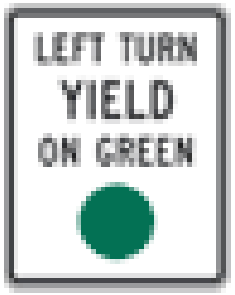
Eric Niemeyer, Traffic Engineer

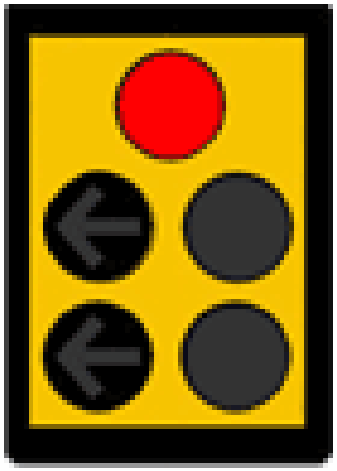
Medford, Oregon

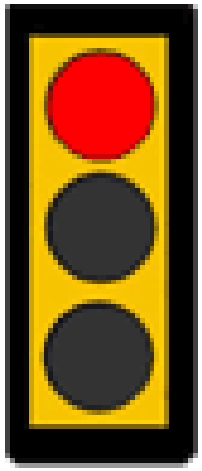


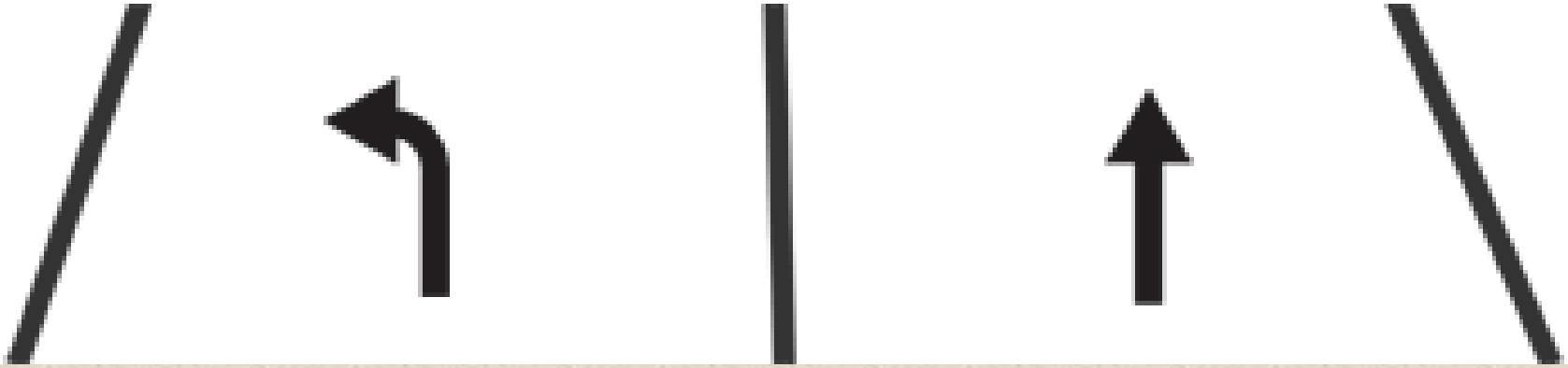
OTCDC MEETING – November 21, 2014

Doghouse – Shared Head









Problems With Doghouse

- Installed signal due to crash history - 1995
- First doghouse in Jackson County
- Crashes 5 years before signal - 12
- Crashes 5 years after signal - 42
- Left turn crashes 5 years before signal - 1
- Left turn crashes 5 years after signal - 32
- Traffic volumes after signalization similar
  - Single left turn lane - 470 PM peak hour
  - Two opposing lanes - 275 per lane

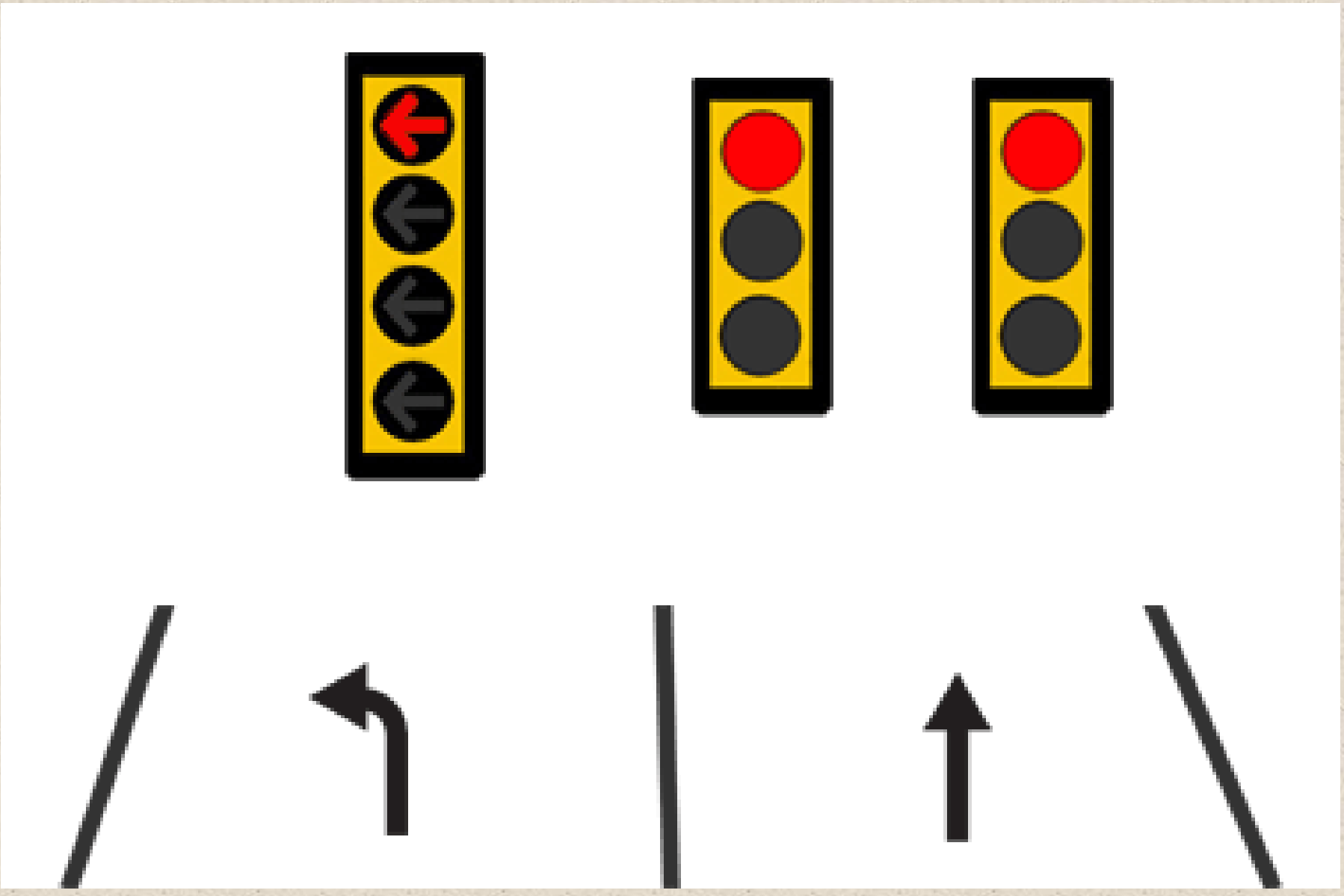
Problem Statement

- **Drivers crash because they do not understand green ball means "yield to oncoming traffic"**
  - **Even with supplemental sign "yield on green ball"**

Not the Problem Statement

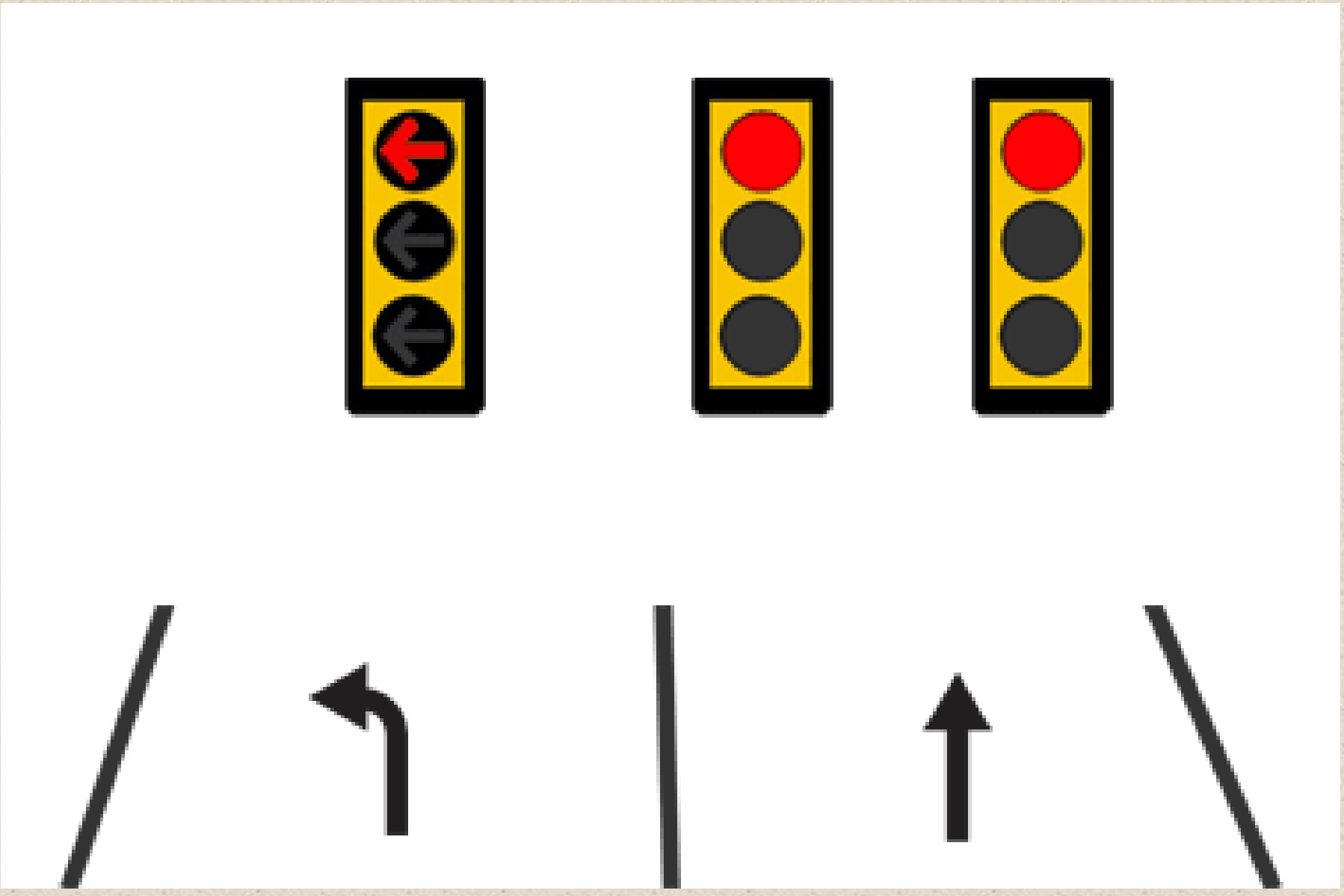
- **Drivers crash because they do not recognize the beginning of the solid yellow clearance interval in PPLT signal heads**
  - **Use a second yellow arrow?**
  - **Use two yellow balls?**

2001 - 4 Section FYA



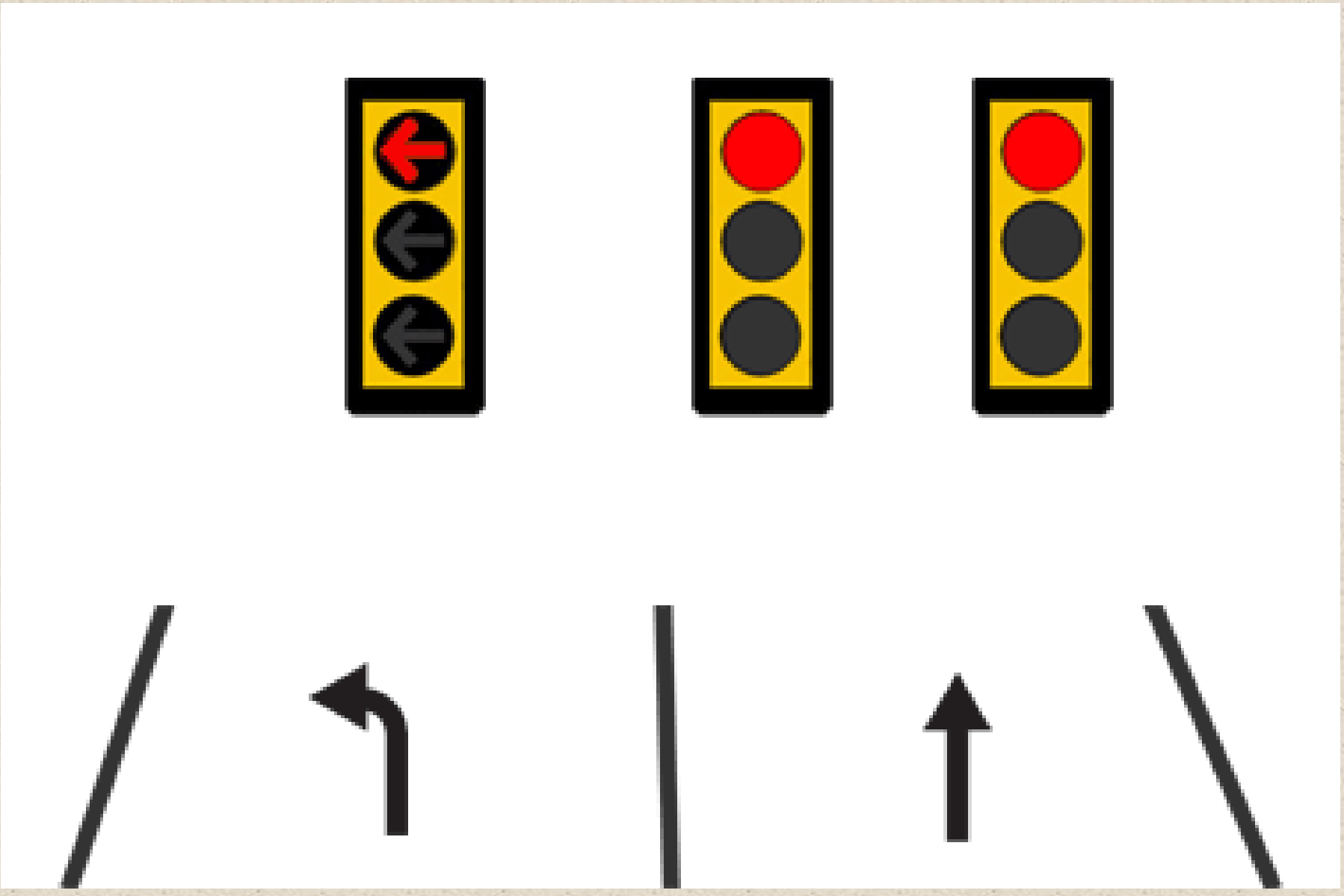
2001 - 4 Section FYA

3 Section FYA – Bi Modal



2004 - 3 Section - Bi Modal

2001 - 3 Section FYA



2001 - 3 Section FYA – lag / lead

2001 - 3 Section FYA – lead / lag

Current Research Addressed a Problem that Did Not Exist

- **Most effective way to terminate a FYA indication?**
  - **One or Two Yellow Arrows?**
- **Research completed:**
  - **Evaluation of the Flashing Yellow Arrow (FYA) Permissive Left-Turn and Yellow Arrow Change Indications in [PPLT] Control: The Impact of Separate and Shared Yellow Signal Sections and Head Arrangements - Project No. 20-07 / Task 283, Prepared for [NCHRP/TRB] Of The National Academies**

Selected Research Results

- **“[T]here was not a significant difference in driver comprehension when the FYA indication is located in the middle section.” *Id.* at 52.**
- **“[M]any participants did not realize that the FYA indication was being presented in different signal display sections.” *Id*. at 64.**
- **“38% [of the drivers surveyed] preferred the FYA indication in [the] middle section, 9% preferred the bottom.” *Id*. at 66.**
- **“[T]he FYA indication can be effectively used in a three-section traffic signal display ONLY when used bimodally with the steady YA indication.” *Id*. at 74 (emphasis added).**

Request to OTCDC

- **Allow statewide use of the 3-section FYA pursuant to FHWA interim approval (1A-17)**
  - **Submit a written request to the Office of Transportation Operations**
  - **A State may request Interim Approval for all jurisdictions in that State**
  - **Maintain an inventory list of all locations where three-section FYA signal faces are installed**
- **Question or Comments?**
  - **trafficguru@hotmail.com**
  - **541-840-2840**

OREGON TRAFFIC CONTROL DEVICES COMMITTEE

Chair / Vice Chair History

January 2014

Year	Chair	Vice-Chair
1999	Gary Ludeke	Tom Lancaster
2000	Gary Judd	Gary Ludeke
2001	Steve Wilson	Robert Burchfield
2002	Charles Radosta	Joe Marek
2003	Joe Marek	Eric Niemeyer
2004	Robin Lewis	Eric Niemeyer
2005	Eric Niemeyer	Joel McCarroll
2006	Joel McCarroll	Randall Wooley
2007	Randall Wooley / Alan Hageman *	Alan Hageman / Cynthia Schmitt *
2008	Cynthia Schmitt	Ed Chastain
2009	Brian Barnett	Ed Chastain
2010	Ed Chastain	Massoud Saberian
2011	Massoud Saberian / Joe Marek **	Joe Marek
2012	Joe Marek	Alex Georgevitch
2013	Pamela O'Brien	Cynthia Schmitt
2014	Mike Caccavano	Ed Chastain

* Randall Wooley retired 3/07; Alan Hageman took over chair for the remainder of 2007.
**Massoud Saberian resigned from City of Lake Oswego 9/11; Joe Marek took over chair for remainder of 2011.