



2nd AMENDED

***REMOVED LIVESTREAM INFORMATION. MEETING IS HELD IN-PERSON.
** REMOVED ORIGINAL ITEM #5 "OTHER TRANSPORTATION PROJECTS AND PROGRAMS STATUS"**

**CITY OF SCOTTSDALE
TRANSPORTATION COMMISSION
PATHS & TRAILS SUBCOMMITTEE
Notice and Agenda**

Date: Tuesday, April 5, 2022
Time: 8:30 A.M.
Location: One Civic Center
7447 E. Indian School Rd Suite 205
Scottsdale, AZ 85251

Call to Order

Roll Call

Don Anderson, Chair, Transportation Commission
Kyle Davis, Subcommittee Member
Teresa Kim Hayes-Quale - Commissioner, Parks and Recreation Commission
B. Kent Lall, Commissioner, Transportation Commission
William Levie, Subcommittee Member

One or more members of the Paths & Trails Subcommittee may be attending the meeting by telephone, video, or internet conferencing, pursuant to A.R.S. §38-431(4)

Public Comment

Only written comments submitted electronically are being accepted. To be considered, please submit your written Public Comment on an agenda item at least 90 minutes before the meeting's scheduled time to the following link:

<https://www.scottsdaleaz.gov/boards/transportation-commission/public-comment>

However, Arizona State Law prohibits the Path and Trails Subcommittee from discussing or taking action on an item that is not on the prepared agenda.

- Approval of Meeting MinutesAction**
Approval of the Regular Meeting minutes of February 1, 2022

2. [Federal Highway Administration Proven Safety Countermeasures](#).....**Presentation and Discussion**
New safety countermeasures for pedestrians and bicyclists – Kiran Guntupalli, Principal Traffic Engineer
3. [Bicycle Education Program](#)..... **Presentation and Discussion**
Update on Laws and Education - Susan Conklu, Senior Transportation Planner
4. [Bike Month Update](#)..... **Information**
Information on Bike Month - Susan Conklu, Senior Transportation Planner
5. [Subcommittee Identification of Future Agenda Items](#).....**Discussion**
Subcommittee members may identify items or topics of interest for future Subcommittee meetings
6. **Adjournment**



Persons with a disability may request a reasonable accommodation by contacting Kyle Lofgren at 480-312-7839. Requests should be made 24 hours in advance, or as early as possible, to allow time to arrange the accommodation. For TYY users, the Arizona Relay Service (1-800-367-8939) may also contact Frances Cookson at 480-312-7637.



DRAFT SUMMARIZED MINUTES

CITY OF SCOTTSDALE TRANSPORTATION COMMISSION PATHS & TRAILS SUBCOMMITTEE

TUESDAY, FEBRUARY 1, 2022

Meeting Held Electronically

CALL TO ORDER

The meeting of the Paths & Trails Subcommittee was called to order at 8:30 a.m. A formal roll call confirmed the presence of Subcommittee members as noted below.

ROLL CALL

PRESENT: Donald Anderson, Chair – Transportation Commission
Kyle Davis, Subcommittee Member
Teresa Kim Hayes-Quale, Commissioner – Parks and Recreation Commission
Kent Lall, Commissioner – Transportation Commission
William Levie, Subcommittee Member

STAFF: Nathan Domme, Senior Transportation Planner
Dave Meinhart, Transportation Planning Manager
Susan Conklu, Senior Transportation Planner
Greg Davies, Senior Transportation Planner
Kyle Lofgren, Staff Coordinator
Elaine Mercado, Project Manager
Devin Giordano
Garrett Smith, Technology Coordinator

PUBLIC COMMENT

There were no public comments.

1. APPROVAL OF MEETING MINUTES

Chair Anderson called for modifications and approval of the minutes. A typographical correction was made.

SUBCOMMITTEE MEMBER LEVIE MOVED TO APPROVE THE MINUTES OF DECEMBER 7, 2021 MEETING AS AMENDED. SUBCOMMITTEE MEMBER LALL SECONDED THE MOTION, WHICH CARRIED 5-0 WITH CHAIR ANDERSON, SUBCOMMITTEE MEMBERS DAVIS, HAYES-QUALE LALL AND LEVIE VOTING IN THE AFFIRMATIVE WITH NO DISSENTING VOTES.

2. APPROVAL OF THE PATHS & TRAILS SUBCOMMITTEE ANNUAL REPORT

There was a clarification discussed regarding Commissioner Hayes-Quale's first meeting attendance being in the capacity of a member of the public and second meeting as an appointed member of the Committee.

SUBCOMMITTEE MEMBER LEVIE MOVED TO APPROVE THE PATHS & TRAILS SUBCOMMITTEE ANNUAL REPORT AS PRESENTED. SUBCOMMITTEE MEMBER DAVIS SECONDED THE MOTION, WHICH CARRIED 5-0 WITH CHAIR ANDERSON, SUBCOMMITTEE MEMBERS DAVIS, HAYES-QUALE LALL AND LEVIE VOTING IN THE AFFIRMATIVE WITH NO DISSENTING VOTES.

3. GRANT PROCESS

Susan Conklu, Senior Transportation Planner, provided an overview of the federal grant funding process, which is managed through the Maricopa Association of Governments (MAG). Two types of funding are available: Congestion Mitigation and Air Quality Improvement Program (CMAQ) and Transportation Alternatives (TA-MAG). A 5.7 percent local match is required, and funding is for construction. The most recent call was issued on August 2, 2021, with \$14 million available for construction projects in 2025. Agencies can apply for closeout funds on an annual basis in fall/winter. In the past, Scottsdale has successfully acquired bicycle and pedestrian funding from previous calls for projects.

The Design Assistance Program is another call for projects program issued each summer. No local match is required for this program. It provides agencies with a study and design concept utilizing a design consultant from MAG's approved on-call list.

Projects utilizing this program include:

- Downtown Pedestrian Mobility Study
- Loop 101/ CAP Canal Path Crossing
- Bicycle Station Study
- 70th Street Neighborhood Bikeway from Continental to Old Town
- Old Town Scottsdale Bicycle Master Plan

Ms. Conklu reviewed the project details for the following recent Scottsdale submittals:

- Indian Bend Wash Path (IBW) Extension: McDowell Mountain Ranch Road to Bell Road
- Central Arizona Project (CAP) Canal Path from Scottsdale Road to Northsight Boulevard

An overview was provided of the MAG project scoring, ranking, and approval process:

- Air Quality Technical Advisory Committee
- Active Transportation Committee
- Transportation Review Committee (TRC)
- Management Committee reviews the prioritized listing and approves proposed Transportation Improvement Program (TIP) listings.
- Regional Council makes final approval of the prioritized listings and recommend proposed TIP listings.

Commissioner Lall asked about the committee structures. Ms. Conklu stated that MAG has both technical and policy committees. They typically meet monthly and each agency has a representative. Technical committees make recommendations to the Transportation Review Committee with follow-up by Management Committee and Regional Council.

Ms. Conklu stated that MAG received 17 project requests totaling more than \$38 million in federal aid. The MAG Management Committee approved the top three CMAQ projects to be funded, with the fourth ranked project to be partially funded. The CAP Canal Path project ranked third on the CMAQ list. MAG recommended that the highest ranked transportation alternatives project that was not already funded on the CMAQ list would be partially funded. For next steps, City Council will approve grant acceptance for the CAP Canal Path project and it will be added to the CIP for design and construction. The Indian Bend Wash Path project was not approved, scoring 9th and 10th on the lists.

Subcommittee Member Levie asked if the Indian Bend Wash Path project will be revised for resubmission. Ms. Conklu stated that the projects may be submitted two to three times before funding is received. Project submission materials are evaluated for optimum scoring potential

Chair Anderson asked if the City receives feedback from the committees in terms of improvement of applications. Ms. Conklu stated that the City is free to request feedback.

4. CIP UPDATE

Ms. Conklu stated the CIP Program funds bicycle, pedestrian and equestrian projects. Transportation staff currently implements projects from the 2016 Transportation Master Plan, but will transition to the Transportation Action Plan, once adopted. New project types included ADA Transition Plan and buffered bike lanes. Funding is derived from: Bonds, federal grants, regional funding and local 0.2 percent Transportation Sales Tax. On an annual basis, City Council approves the amount of funding for each program, as opposed to approving a specific project list. Funds are used for design and construction with a budget up to \$250,000. Staff evaluates and prioritizes projects throughout the year. Public outreach is implemented at the design phase. Several projects are currently in the design or construction phase. Brief updates were provided for the following projects: Priority Area 1 ADA improvements and ramps in Old Town; Camelback sidewalk from Miller to 73rd Street, and; Indian Bend Wash Path renovation. Buffered bike lanes are coordinated with the five-year paving plan. Next candidate projects will be evaluated for the potential of moving to the active list. These include new and updated ramps on Granite Reef and

Joe Foss Way; curb ramps in Priority Area 2 and 3; path restriping at various locations and Pinnacle Vista and 70th Street neighborhood trails.

Chair Anderson inquired as to the physical locations of Priority Areas 2 and 3. Dave Meinhart, Transportation Planning Manager, stated that Priority Area 2 is in the Camelback Road Corridor from 68th Street to Miller Road. Priority Area 3 is the Saguaro High School vicinity from Indian Bend to Jackrabbit, Hayden Road and Pima Road. Most projects are designed in house in conjunction with Capital Project Management staff; this provides significant savings in upfront costs. Construction is performed via on-call construction contracts or partnerships with the paving program and its contractor.

Ms. Conklu stated that staff welcomes input on the list for the current fiscal year. Transportation staff will continue to evaluate projects and move them to the active list, including working with Capital Management staff on design and construction. After the adoption of the TAP, staff will use the implementation program for ranking and prioritizing projects. She noted that this presentation topic can become an annual update to the Paths and Trails Subcommittee, if desired. Chair Anderson welcome inclusion of the presentation as an annual update.

5. OTHER TRANSPORTATION PROJECTS AND PROGRAM STATUS

Ms. Conklu provided an update on the following projects:

- McDowell Road Bike Lanes
- Dynamite/Rio Verde Bike Lanes
- Paving Project: Restriping for bike lanes, ADA and safety improvements

Mr. Meinhardt commented that staff works with the traffic engineering department to determine which repaving and restriping projects are feasible. Concepts are in place for nearly every segment of roadway in the City that is a minor collector or above and does not already have a five to six foot bike lane.

6. SUBCOMMITTEE IDENTIFICATION OF FUTURE AGENDA ITEMS

Subcommittee members identified the following topics for future agenda items:

- Pavement restriping and bike lane safety measures
- Bike month recap
- Bicycle education program

7. ADJOURNMENT

With no further business to discuss, being duly moved by Commissioner Hayes-Quale and seconded by Subcommittee Member Levie, the meeting adjourned at 9:48 a.m.

AYES: Chair Anderson, Subcommittee Members Davis, Hayes-Quality control, Lall and Levie and Commissioner Hayes-Quale.

NAYS: None

Paths & Trails Subcommittee
February 1, 2022
Page 5

SUBMITTED BY:
eScribers, LLC

***NOTE:** These are summary action meeting minutes only. A complete copy of the audio/video recording is available at <http://www.scottsdaleaz.gov/boards/Transp.asp>

SCOTTSDALE PATHS & TRAILS SUBCOMMITTEE REPORT



To: Paths and Trails Subcommittee
From: Kiran Guntupalli, Principal Traffic Engineer
Susan Conklu, Senior Transportation Planner
Subject: Federal Highway Administration Proven Safety Countermeasures
Meeting Date: April 5, 2022

Action: Information and discussion

Purpose:

Provide information from the Federal Highway Administration regarding proven safety countermeasures for bicycle and pedestrian activity for discussion and potential application in the city of Scottsdale.

Information:

The Federal Highway Administration (FHWA) has published twenty-eight (28) proven countermeasures to improve safety on our streets and highways, eight of these are specifically noted to improve safety for pedestrians and bicyclists. These eight, along with three other countermeasures that help address pedestrian and bicycle safety, are discussed below.

Bicycle Lanes

Bicycle lanes have been included in the standard street cross sections for arterial and collector streets since 1991. The standard bicycle lane width has been widened from four feet to five feet. Also, the City of Scottsdale has been actively installing bicycle lanes throughout the city via pavement overlay projects and small capital projects for the past ten years. The effort has expanded from adding narrowing vehicle lanes to incorporate bike lanes to removal of travel lanes and installing buffered bike lanes. The FHWA data shows that installing bike lanes can reduce collisions by up to forty-nine (49) percent on four-lane undivided collectors and thirty (30) percent on two-lane undivided collector and local roads. These factors come from a study completed in 2021.



Crosswalk Visibility Enhancements

Installing enhanced crosswalk components at intersections can improve pedestrian safety. Using high-visibility crosswalk marking can reduce pedestrian collisions by up to forty (40) percent; intersection lighting can reduce pedestrian collisions by up to forty-two (42) percent; and adding advance yield or stop markings and signs can reduce pedestrian collisions by up to twenty-five (25) percent. Traffic Engineering staff utilize these three applications for locations where enhanced pedestrian crossings are provided such as Pedestrian Hybrid Beacons and Reflective Rapid Flashing Beacons, which are discussed below.



Road Diets

Road diets are a term that refers to a reduction in the number of vehicle travel lanes. This is typically accomplished by removing travel lanes and adding a center turn lane, on-street parking, and/or bike lanes. City of Scottsdale Transportation staff have been actively removing center turn lanes and adding bicycle lanes or buffered bicycle lanes. In some cases where traffic volumes are lower than the capacity of the street, travel lanes have been removed and replaced with bicycle lanes or buffered bicycle lanes. This provides a better environment for bicycling and pedestrians and improves safety by providing separate bicycle facilities.



Medians and Pedestrian Refuge Islands

Providing a raised median with a refuge area for pedestrian crossings can reduce pedestrian collisions forty-six (46) percent. Pedestrian refuge islands, which also provide a safe area between travel directions, can reduce pedestrian collisions by fifty-six (56) percent. In Scottsdale raised medians are included in the standard street cross sections for arterials and major collectors, and pedestrian refuge islands are a tool that is used for pedestrian crossing enhancement.



Rectangular Rapid Flashing Beacons

Rectangular Rapid Flashing Beacons (RRFBs) are signs with flashing beacons that are installed at midblock pedestrian crossings to increase driver awareness of pedestrian activity. The signs are activated by pedestrians when they want to cross a street. They are also used at pedestrian crossing locations on multi-lane roundabouts. Studies show that the RRFBs can reduce pedestrian collisions by up to forty-seven (47) percent. The signs increase yielding rates by up to ninety-eight (98) percent. They are only recommended on streets with speed limits less than 40 miles per hour however. Traffic Engineering staff have been installing these signs at appropriate locations since they have been approved for use by the MUTCD.



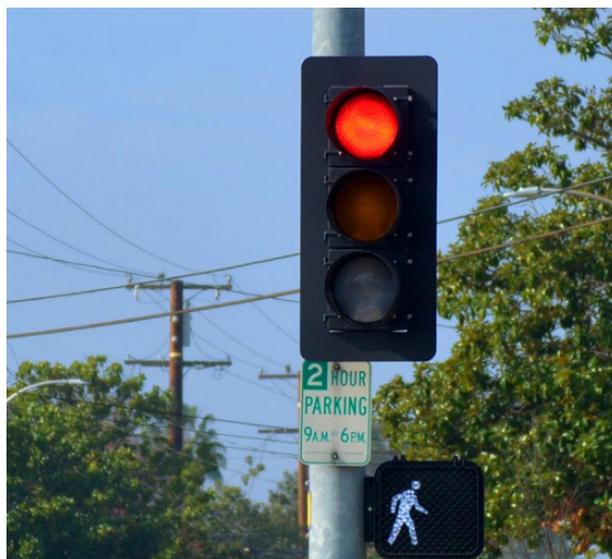
Pedestrian Hybrid Beacons

Pedestrian hybrid beacons (PHBs) provide traffic control for midblock pedestrian crossings on higher volume and higher speed roadways where there is demonstrated pedestrian crossing demand. The City of Scottsdale Traffic Engineering group has actively been installing PHBs for pedestrian crossing locations since they were included in the Manual on Uniform Traffic Control Devices (MUTCD) in 2009. There are currently nine active PHBs in Scottsdale, with two more under construction. The PHBs reduce pedestrian collisions by fifty-five (55) percent, with a total collision reduction of twenty-nine (29) percent, and a reduction of serious and fatal collisions by fifteen percent.



Leading Pedestrian Interval

A Leading Pedestrian Interval (LPI) is signal timing modification that allows pedestrians to enter the crosswalk three to seven seconds before vehicles receive a green ball for travel in the same direction. This helps to increase the visibility of the pedestrians, which in turn improves the likelihood that drivers yield to them. Traffic Engineering evaluate the need for LPIs based upon pedestrian volume, collision history, and proximity to land uses like schools and churches. LPI can reduce pedestrian collisions by thirteen percent.



Walkways/Sidewalks

Providing a sidewalk facility for pedestrians to walk outside of vehicle lanes can reduce pedestrian collisions by sixty-five (65) to eight-nine (89) percent. Paved shoulders along streets without sidewalks can reduce pedestrian collisions by seventy-one (71) percent. Scottsdale standard street cross sections include sidewalks along all arterial and collector streets, as well as most local collector and local residential streets. Some local streets with large residential lot sizes and rural character are not required to have sidewalk. Scottsdale has a “complete street policy” which requires that all modes of travel be accommodated when streets are improved. Our sidewalk standards also have evolved over time to require wider sidewalks and to emphasize separating sidewalk from the back of curb adjacent to higher volume and higher speed streets.



Lighting

Visibility of pedestrians and bicycles at intersections is important for safe crossings during nighttime conditions with low visibility. Streetlights are typically provided at signalized intersections, but not at all minor intersections that are not signalized. The City of Scottsdale provides streetlights along urban and suburban arterial and collector street corridors and at major intersections. There are limits to how much streetlighting can be provided due to costs, maintenance, and a preference for dark skies in our rural areas of the city. Increased lighting can reduce pedestrian collisions up to forty-two percent.



Photo Enforcement

Photo enforcement is utilized in the city of Scottsdale to address safety concerns associated with high travel speeds and red light running on our streets. There are eleven fixed camera locations, two mobile vans, and two towers. The vans are often used along collector streets where there is higher pedestrian and bicycle activity. The two towers are primarily utilized near school crossings and near park sites. One study showed a reduction of speeding in school zones up to sixty-three percent when photo enforcement was applied.



Speed Limits

There has been a great deal of research recently that documents that lowering the speed of a vehicle at impact with a pedestrian or bicyclist is directly proportional to the injury severity. Studies have shown that approximately ninety (90) percent of pedestrians survive a collision with a vehicle traveling at 20 miles per hour; sixty (60) percent of pedestrians survive a collision with a vehicle traveling at 30 miles per hour; and only twenty (20) percent of pedestrians survive a collision with a vehicle traveling at 40 miles per hour. Some efforts to modify the criteria to determine speed limits are taking place on a national level, reducing the emphasis on the recorded 85th percentile speed. Traffic Engineering staff support this effort and consider the reduction of current speed limits during all speed limit studies.

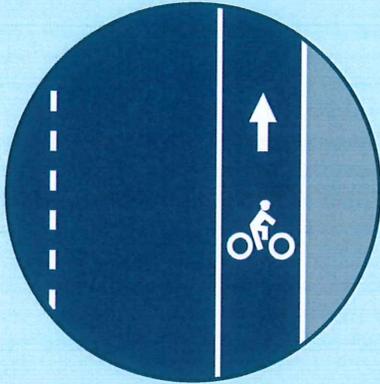


Next Steps:

Some of these safety countermeasures have been presented and discussed with the Paths and Trails subcommittee and the Transportation Commission, including the Pedestrian Hybrid Beacons and our “Guidelines to Identify Pedestrian Crossing Treatments.” If there is interest in any of these specific applications these can be agenized for further discussion.

Staff Contact: Kiran Guntupalli, 480-312-7623, KGuntupalli@ScottsdaleAZ.gov
Susan Conklu, 480-312-2308, SConklu@ScottsdaleAZ.gov

Attachments:
FHWA Safety Countermeasures - Flyers



Safety Benefits:

Bicycle Lane Additions can reduce crashes up to:

49%

for total crashes on urban 4-lane undivided collectors and local roads.⁶

30%

for total crashes on urban 2-lane undivided collectors and local roads.⁶



Separated bicycle lane in Washington, DC.
Source: Alex Baca, Washington Area Bicyclist Association

Separated bicycle lanes may provide further safety benefits. FHWA is anticipating completion of research in Fall 2022.

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf.

Bicycle Lanes

Most fatal and serious injury bicyclist crashes occur at non-intersection locations. Nearly one-third of these crashes involve overtaking motorists¹; the speed and size differential between vehicles and bicycles can lead to severe injury. To make bicycling safer and more comfortable for most types of bicyclists, State and local agencies should consider installing bicycle lanes. These dedicated facilities for the use of bicyclists along the roadway can take several forms. Providing bicycle facilities can mitigate or prevent interactions, conflicts, and crashes between bicyclists and motor vehicles, and create a network of safer roadways for bicycling. Bicycle Lanes align with the Safe System Approach principle of recognizing human vulnerability—where separating users in space can enhance safety for all road users.

Applications

FHWA's [Bikeway Selection Guide](#) and [Incorporating On-Road Bicycle Networks into Resurfacing Projects](#) assist agencies in determining which facilities provide the most benefit in various contexts. Bicycle lanes can be included on new roadways or created on existing roads by reallocating space in the right-of-way.

In addition to the paint stripe used for a typical bicycle lane, a lateral offset with painted buffer can help to further separate bicyclists from vehicle traffic. State and local agencies may also consider physical separation of the bicycle lane from motorized traffic lanes through the use of vertical elements like posts, curbs, or vegetation.² Based on international experience and implementation in the United States, there is potential for further safety benefits associated with separated bicycle lanes. FHWA is conducting research on separated bicycle lanes, which includes the development of crash modification factors, to be completed in 2022 to address significant interest on this topic.

Considerations

- City and State policies may require minimum bicycle lane widths, although these can differ by agency and functional classification of the road.
- Bicycle lane design should vary according to roadway characteristics (e.g., motor vehicle volumes and speed) in order to maximize the facility's suitability for riders of all ages and abilities and should consider the travel needs of low-income populations likely to use bicycles. The [Bikeway Selection Guide](#) is a useful resource.
- While some in the public may oppose travel lane narrowing if they believe it will slow traffic or increase congestion, studies have found that roadways did not experience an increase in injuries or congestion when travel lane widths were decreased to add a bicycle lane.³
- Studies and experience in US cities show that bicycle lanes increase ridership and may help jurisdictions better manage roadway capacity without increased risk.
- In rural areas, rumble strips can negatively impact bicyclists' ability to ride if not properly installed. Agencies should consider the dimensions, placement, and offset of rumble strips when adding a bicycle lane.⁴
- Strategies, practices, and processes can be used by agencies to enhance their ability to address equity in bicycle planning and design.⁵

¹ Thomas et al. Bicyclist Crash Types on National, State, and Local Levels: A New Look. Transportation Research Record 673(6), 664-676, (2019).

² [Separated Bike Lane Planning and Design Guide](#). FHWA-HEP-15-025, (2015).

³ Park and Abdel-Aty, "Evaluation of safety effectiveness of multiple cross sectional features on urban arterials". Accident Analysis and Prevention, Vol. 92, pp. 245-255, (2016).

⁴ FHWA Tech Advisory [Shoulder and Edge Line Rumble Strips](#), (2011).

⁵ Sandt et al. [Pursuing Equity in Pedestrian and Bicycle Planning](#). FHWA, (2016).

⁶ Avelar et al. Development of Crash Modification Factors for Bicycle Lane Additions While Reducing Lane and Shoulder Widths. FHWA, (2021).



Safety Benefits:

High-visibility crosswalks can reduce pedestrian injury crashes up to:

40%¹

Intersection lighting can reduce pedestrian crashes up to:

42%²

Advance yield or stop markings and signs can reduce pedestrian crashes up to:

25%³

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/ped_bike/step/docs/tech_sheet_VizEnhancemnt2018.pdf.

Crosswalk Visibility Enhancements

Poor lighting conditions, obstructions such as parked cars, and horizontal or vertical roadway curvature can reduce visibility at crosswalks, contributing to safety issues. For multilane roadway crossings where vehicle volumes are in excess of 10,000 Average Annual Daily Traffic (AADT), a marked crosswalk alone is typically not sufficient. Under such conditions, more substantial crossing improvements could prevent an increase in pedestrian crash potential.

Three main crosswalk visibility enhancements help make crosswalks and the pedestrians, bicyclists, wheelchair and other mobility device users, and transit users using them more visible to drivers. These include high-visibility crosswalks, lighting, and signing and pavement markings. These enhancements can also assist users in deciding where to cross. Agencies can implement these features as standalone or combination enhancements to indicate the preferred location for users to cross.

High-visibility crosswalks

High-visibility crosswalks use patterns (i.e., bar pairs, continental, ladder) that are visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks. They should be considered at all midblock pedestrian crossings and uncontrolled intersections. Agencies should use materials such as inlay or thermoplastic tape, instead of paint or brick, for highly reflective crosswalk markings.

Improved Lighting

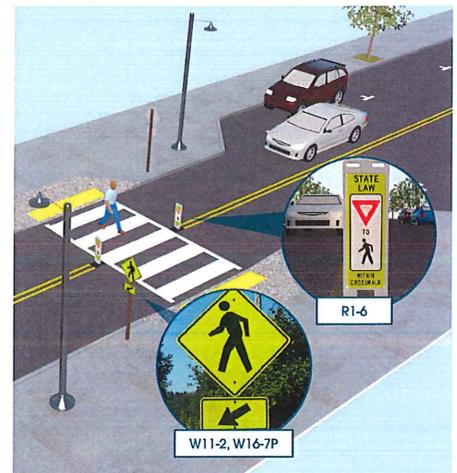
The goal of crosswalk lighting should be to illuminate with positive contrast to make it easier for a driver to visually identify the pedestrian. This involves carefully placing the luminaires in forward locations to avoid a silhouette effect of the pedestrian.

Enhanced Signing and Pavement Markings

On multilane roadways, agencies can use "YIELD Here to Pedestrians" or "STOP Here for Pedestrians" signs 20 to 50 feet in advance of

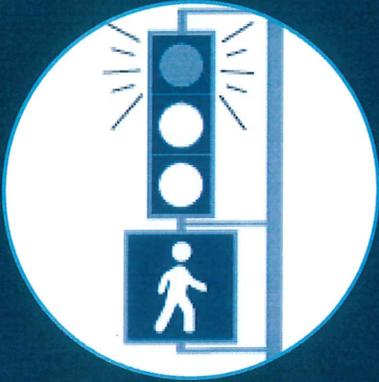
a marked crosswalk to indicate where a driver should stop or yield to pedestrians, depending on State law. To supplement the signing, agencies can also install a STOP or YIELD bar (commonly referred to as "shark's teeth") pavement markings.

In-street signing, such as "STOP Here for Pedestrians" or "YIELD Here to Pedestrians" may be appropriate on roads with two- or three-lane roads where speed limits are 30 miles per hour or less.



Source: FHWA

¹ Chen, L., C. Chen, and R. Ewing. The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections - Lessons from a New York City Experience. (2012).
² Elvik, R. and Vaa, T. Handbook of Road Safety Measures. Oxford, United Kingdom, Elsevier, (2004).
³ Zeeger et al. Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, FHWA, (2017).



Safety Benefits:

13%

reduction in pedestrian-vehicle crashes at intersections.¹

Leading Pedestrian Interval

A leading pedestrian interval (LPI) gives pedestrians the opportunity to enter the crosswalk at an intersection 3-7 seconds before vehicles are given a green indication. Pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn right or left.

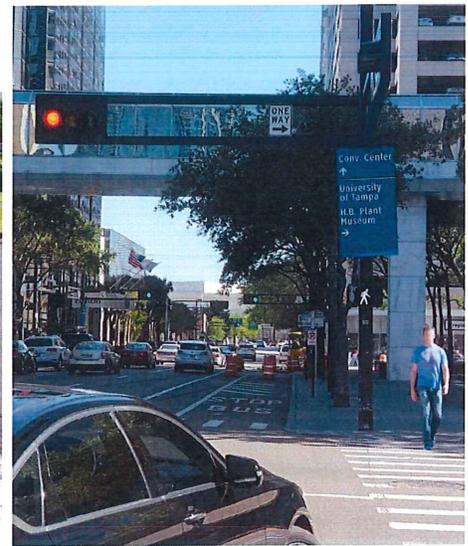
LPIs provide the following benefits:

- Increased visibility of crossing pedestrians.
- Reduced conflicts between pedestrians and vehicles.
- Increased likelihood of motorists yielding to pedestrians.
- Enhanced safety for pedestrians who may be slower to start into the intersection.

FHWA's Handbook for *Designing Roadways for the Aging Population* recommends the use of the LPI at intersections with high turning vehicle volumes. Transportation agencies should refer to the *Manual on Uniform Traffic Control Devices* for guidance on LPI timing and ensure that pedestrian signals are accessible for all users. Costs for implementing LPIs are very low when only signal timing alteration is required.



An LPI allows a pedestrian to establish a presence in the crosswalk before vehicles are given a green indication. Source: FHWA



LPIs reduce potential conflicts between pedestrians and turning vehicles. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/ped_bike/step/resources/docs/fhwas19040.pdf.

¹ Goughnour, E., D. Carter, C. Lyon, B. Persaud, B. Lan, P. Chun, I. Hamilton, and K. Signor. "Safety Evaluation of Protected Left-Turn Phasing and Leading Pedestrian Intervals on Pedestrian Safety." Report No. FHWA-HRT-18-044. Federal Highway Administration. (October 2018)



Safety Benefits:
Lighting can reduce crashes up to:

42%

for nighttime injury pedestrian crashes at intersections.¹

33-38%

for nighttime crashes at rural and urban intersections.¹

28%

for nighttime injury crashes on rural and urban highways.¹



Source: WSDOT

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/roadway_dept/night_visib/roadwayresources.cfm.

Lighting

The number of fatal crashes occurring in daylight is about the same as those that occur in darkness. However, the nighttime fatality rate is three times the daytime rate because only 25 percent of vehicle miles traveled (VMT) occur at night. At nighttime, vehicles traveling at higher speeds may not have the ability to stop once a hazard or change in the road ahead becomes visible by the headlights. Therefore, lighting can be applied continuously along segments and at spot locations such as intersections and pedestrian crossings in order to reduce the chances of a crash.

Adequate lighting (i.e., at or above minimum acceptable standards) is based on research recommending horizontal and vertical illuminance levels to provide safety benefits to all users of the roadway environment. Adequate lighting can also provide benefits in terms of personal security for pedestrians, wheelchair and other mobility device users, bicyclists, and transit users as they travel along and across roadways.

Applications

Roadway Segments

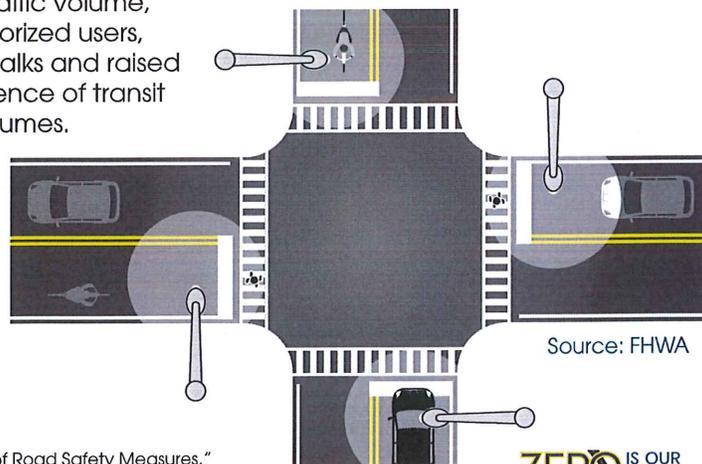
Research indicates that continuous lighting on both rural and urban highways (including freeways) has an established safety benefit for motorized vehicles.¹ Agencies can provide adequate visibility of the roadway and its users through the uniform application of lighting that provides full coverage along the roadway and the strategic placement of lighting where it is needed the most.

Intersections and Pedestrian Crossings

Increased visibility at intersections at nighttime is important since various modes of travel cross paths at these locations. Agencies should consider providing lighting to intersections based on factors such as a history of crashes at nighttime, traffic volume, the volume of non-motorized users, the presence of crosswalks and raised medians, and the presence of transit stops and boarding volumes.

Considerations

Most new lighting installations are made with breakaway features, shielded, or placed far enough from the roadway to reduce the probability and/or severity of fixed-object crashes. Modern lighting technology gives precise control with minimal excessive light affecting the nighttime sky or spilling over to adjacent properties. Agencies can equitably engage with underserved communities to determine where and how new and improved lighting can most benefit the community by considering their priorities, including eliminating crash disparities, connecting to essential neighborhood services, improving active transportation routes, and promoting personal safety.



Source: FHWA

¹ Elvik, R. and Vaa, T., "Handbook of Road Safety Measures." Oxford, United Kingdom, Elsevier, (2004).



Safety Benefits:

Median with
Marked Crosswalk

46%

reduction in
pedestrian crashes.²

Pedestrian Refuge
Island

56%

reduction in
pedestrian crashes.²

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

A **median** is the area between opposing lanes of traffic, excluding turn lanes. Medians in urban and suburban areas can be defined by pavement markings, raised medians, or islands to separate motorized and non-motorized road users.

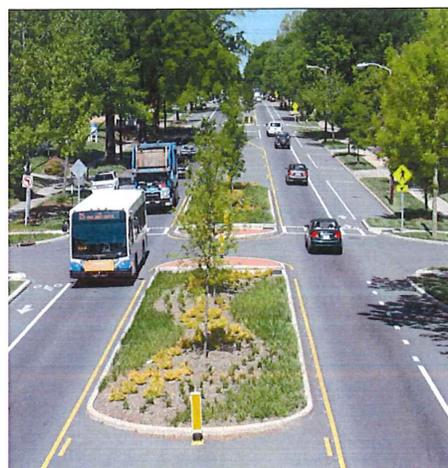
A **pedestrian refuge island** (or crossing area) is a median with a refuge area that is intended to help protect pedestrians who are crossing a road.

Pedestrian crashes account for approximately 17 percent of all traffic fatalities annually, and 74 percent of these occur at non-intersection locations.¹ For pedestrians to safely cross a roadway, they must estimate vehicle speeds, determine acceptable gaps in traffic based on their walking speed, and predict vehicle paths. Installing a median or pedestrian refuge island can help improve safety by allowing pedestrians to cross one direction of traffic at a time.

Transportation agencies should consider medians or pedestrian refuge islands in curbed sections of urban and suburban multilane

roadways, particularly in areas with a significant mix of pedestrian and vehicle traffic, traffic volumes over 9,000 vehicles per day, and travel speeds 35 mph or greater. Medians/refuge islands should be at least 4-ft wide, but preferably 8 ft for pedestrian comfort. Some example locations that may benefit from medians or pedestrian refuge islands include:

- Mid-block crossings.
- Approaches to multilane intersections.
- Areas near transit stops or other pedestrian-focused sites.



Example of a road with a median and pedestrian refuge islands. Source: City of Charlotte, NC



Median and pedestrian refuge island near a roundabout. Source: www.pedbikeimages.org / Dan Burden

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/ped_bike/step/docs/techSheet_PedRefugeland2018.pdf.

¹ National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts, Report No. DOT HS 812 850). National Highway Traffic Safety Administration
² Desktop Reference for Crash Reduction Factors, FHWA-SA-08-011, September 2008, Table 11.



Safety Benefits:

55%

reduction in pedestrian crashes.²

29%

reduction in total crashes.³

15%

reduction in fatal and serious injury crashes.³

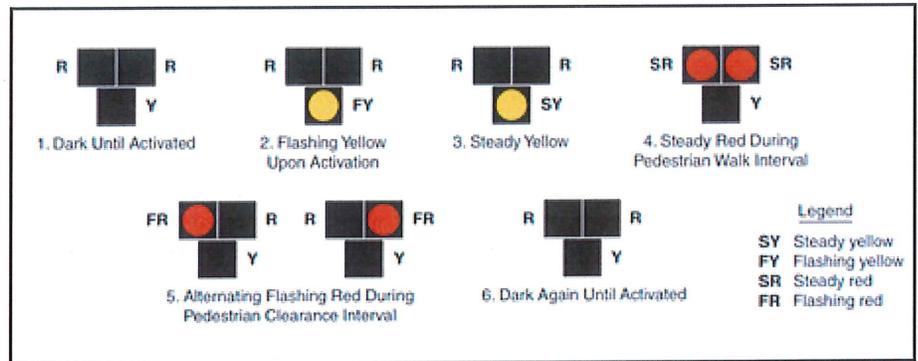


Example of PHBs mounted on a mast arm. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/ped_bike/step/resources/docs/fhwasa18064.pdf.

Pedestrian Hybrid Beacons

The pedestrian hybrid beacon (PHB) is a traffic control device designed to help pedestrians safely cross higher-speed roadways at midblock crossings and uncontrolled intersections. The beacon head consists of two red lenses above a single yellow lens. The lenses remain "dark" until a pedestrian desiring to cross the street pushes the call button to activate the beacon, which then initiates a yellow to red lighting sequence consisting of flashing and steady lights that directs motorists to slow and come to a stop, and provides the right-of-way to the pedestrian to safely cross the roadway before going dark again.



Sequence for a PHB. Source: MUTCD 2009 Edition, p. 511, FHWA

Nearly 74 percent of pedestrian fatalities occur at non-intersection locations, and vehicle speeds are often a major contributing factor.¹ As a safety strategy to address this pedestrian crash risk, the PHB is an intermediate option between a flashing beacon and a full pedestrian signal because it assigns right of way and provides positive stop control. It also allows motorists to proceed once the pedestrian has cleared their side of the travel lane(s), reducing vehicle delay.

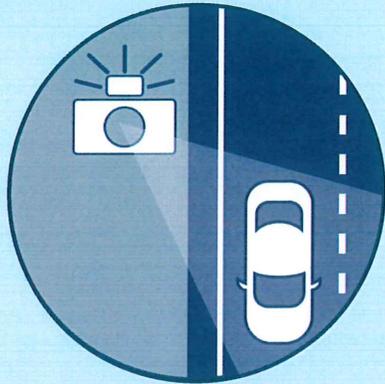
Transportation agencies should refer to the *Manual on Uniform Traffic Control Devices* (MUTCD) for information on the application of PHBs.

In general, PHBs are used where it is difficult for pedestrians to cross a roadway, such as when gaps in traffic are not sufficient or speed limits exceed 35 miles per hour. They are very effective at locations where three or more lanes will be crossed or traffic volumes are above 9,000 annual average daily traffic. Installation of a PHB must also include a marked crosswalk and pedestrian countdown signal. If PHBs are not already familiar to a community, agencies should conduct appropriate education and outreach as part of implementation.

¹ National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts, Report No. DOT HS 812 850). National Highway Traffic Safety Administration

² Zegeer et al. NCHRP Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments. TRB, (2017).

³ Fitzpatrick, K. and Park, E.S. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment, FHWA-HRT-10-042, (2010).



Speed Safety Cameras

Safe Speeds is a core principle of the Safe System Approach since humans are less likely to survive high-speed crashes. Enforcing safe speeds has been challenging; however, with more information and tools communities can make progress in reducing speeds. Agencies can use speed safety cameras (SSCs) as an effective and reliable technology to supplement more traditional methods of enforcement, engineering measures, and education to alter the social norms of speeding. SSCs use speed measurement devices to detect speeding and capture photographic or video evidence of vehicles that are violating a set speed threshold.

Applications

Agencies should conduct a network analysis of speeding-related crashes to identify locations to implement SSCs. The analysis can include scope (e.g., widespread, localized), location types (e.g., urban/suburban/rural, work zones, residential, school zones), roadway types (e.g., expressways, arterials, local streets), times of day, and road users most affected by speed-related crashes (e.g., pedestrians, bicyclists).

SSCs can be deployed as:

- **Fixed units**—a single, stationary camera targeting one location.
- **Point-to-Point (P2P) units**—multiple cameras to capture average speed over a certain distance.
- **Mobile units**—a portable camera, generally in a vehicle or trailer.

The table below describes suitable circumstances for SSC deployment.¹

Considerations

- SSCs can produce a crash reduction upstream and downstream, thus generating a spillover effect.²

- Public trust is essential for any type of enforcement. With proper controls in place, SSCs can offer fair and equitable enforcement of speeding, regardless of driver age, race, gender, or socio-economic status. SSCs should be planned with community input and equity impacts in mind.

- Using both overt (i.e., highly visible) and covert (i.e., hidden) enforcement may encourage drivers to comply with limits everywhere, not only at sites they are aware are enforced.

- Agencies should conduct evaluations regularly to determine if SSCs are accomplishing safety goals and whether changes in strategy, scheduling, communications, or public engagement are necessary.

- Agencies should conduct a legal and policy review to determine if SSCs are authorized within a jurisdiction and how the authorization and other traffic laws will affect a SSC program.

- Agencies should develop an SSC program plan with consideration of the USDOT SSC guidelines for planning, public involvement, stakeholder coordination, implementation, maintenance, evaluation, etc.³

Safety Benefits:
Fixed units can reduce crashes on urban principal arterials up to:

54% for all crashes.⁴

47% for injury crashes.⁴

P2P units can reduce crashes on urban expressways, freeways, and principal arterials up to:

37%

for fatal and injury crashes.²

Mobile units can reduce crashes on urban principal arterials up to:

20%

for fatal and injury crashes.⁵

In New York City, fixed units reduced speeding in school zones up to 63% during school hours.⁶

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and <https://safety.fhwa.dot.gov/speedmgt/>.

The contents of this Fact Sheet do not have the force and effect of law and are not meant to bind the public in any way. This Fact Sheet is intended only to provide clarity regarding existing requirements under the law or agency policies.

Considerations for Selection	Fixed	P2P	Mobile
Problems are long-term and site-specific.	X	X	—
Problems are network-wide, and shift based on enforcement efforts.	—	—	X
Speeds at enforcement site vary largely from downstream sites.	—	X	X
Overt enforcement is legally required.	X	X	X
Sight distance for the enforcement unit is limited.	X	X	—
Enforcement sites are multilane facilities.	X	X	—

¹ Thomas et al. Speed Safety Camera Program Planning and Operations Guide. FHWA, (2021).

² Montella et al. "Effects on speed and safety of point-to-point speed enforcement systems". Accident Analysis and Prevention, Vol. 75, (2015). Note that this is an international study.

³ Speed Enforcement Camera Systems Operational Guidelines. NHTSA, (2008).

⁴ Shin et al. "Evaluation of the Scottsdale Loop 101 automated speed enforcement demonstration program." Accident Analysis and Prevention, Vol. 41, (2009).

⁵ Li et al. "A Before-and-After Empirical Bayes Evaluation of Automated Mobile Speed Enforcement on Urban Arterial Roads." Presented at the 94th Annual Meeting of the Transportation Research Board, Paper No. 15-1563, Washington, D.C., (2015).

Note that this is an international study.

⁶ Automated Speed Enforcement Program Report 2014-2017. New York City DOT, (2018).



Safety Benefits: RRFBs can reduce crashes up to:

47%

for pedestrian crashes.⁴

RRFBs can increase motorist yielding rates up to:

98%

(varies by speed limit, number of lanes, crossing distance, and time of day).³



RRFBs used at a trail crossing.
Source: LJB

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/ped_bike/step/docs/techSheet_RRFB_2018.pdf.

Rectangular Rapid Flashing Beacons (RRFB)

A marked crosswalk or pedestrian warning sign can improve safety for pedestrians crossing the road, but at times may not be sufficient for drivers to visibly locate crossing locations and yield to pedestrians. To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign. RRFBs consist of two, rectangular-shaped yellow indications, each with a light-emitting diode (LED)-array-based light source.¹ RRFBs flash with an alternating high frequency when activated to enhance conspicuity of pedestrians at the crossing to drivers.

For more information on using RRFBs, see the Interim Approval in the *Manual on Uniform Traffic Control Devices (MUTCD)*.¹

Applications

The RRFB is applicable to many types of pedestrian crossings but is particularly effective at multilane crossings with speed limits less than 40 miles per hour.² Research suggests RRFBs can result in motorist yielding rates as high as 98 percent at marked crosswalks, but varies depending on the location, posted speed limit, pedestrian crossing distance, one- versus two-way road, and the number of travel lanes.³ RRFBs can also accompany school or trail crossing warning signs.

RRFBs are placed on both sides of a crosswalk below the pedestrian crossing sign and above the diagonal downward arrow plaque pointing at the crossing.¹ The flashing pattern can be activated with pushbuttons or passive (e.g., video or infrared) pedestrian detection, and should be unlit when not activated.

Considerations

Agencies should:²

- Install RRFBs in the median rather than the far-side of the roadway if there is a pedestrian refuge or other type of median.
- Use solar-power panels to eliminate the need for a power source.
- Reserve the use of RRFBs for locations with significant pedestrian safety issues, as over-use of RRFB treatments may diminish their effectiveness.

Agencies shall not:²

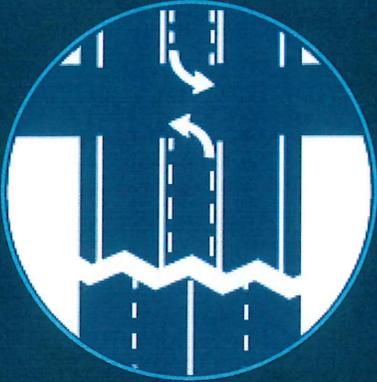
- Use RRFBs without the presence of a pedestrian, school or trail crossing warning sign.
- Use RRFBs for crosswalks across approaches controlled by YIELD signs, STOP signs, traffic control signals, or pedestrian hybrid beacons, except for the approach or egress from a roundabout.

¹ *MUTCD Interim Approval 21 - RRFBs at Crosswalks*.

² "Rectangular Rapid Flash Beacon" in PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System. FHWA, (2013).

³ Fitzpatrick et al. "Will You Stop for Me? Roadway Design and Traffic Control Device Influences on Drivers Yielding to Pedestrians in a Crosswalk with a Rectangular Rapid-Flashing Beacon." Report No. TTI-CTS-0010. Texas A&M Transportation Institute, (2016).

⁴ NCHRP Research Report 841 Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, (2017).



Safety Benefits:

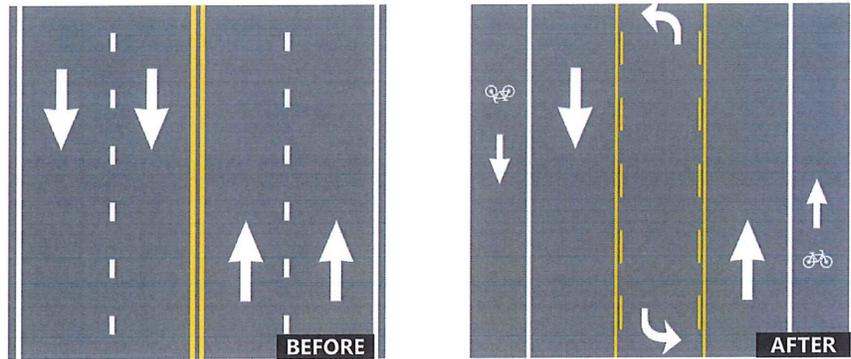
4-Lane to 3-Lane
Road Diet Conversions

19-47%

reduction in total crashes.¹

Road Diets (Roadway Reconfiguration)

A Road Diet, or roadway reconfiguration, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. A Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane (TWLTL).

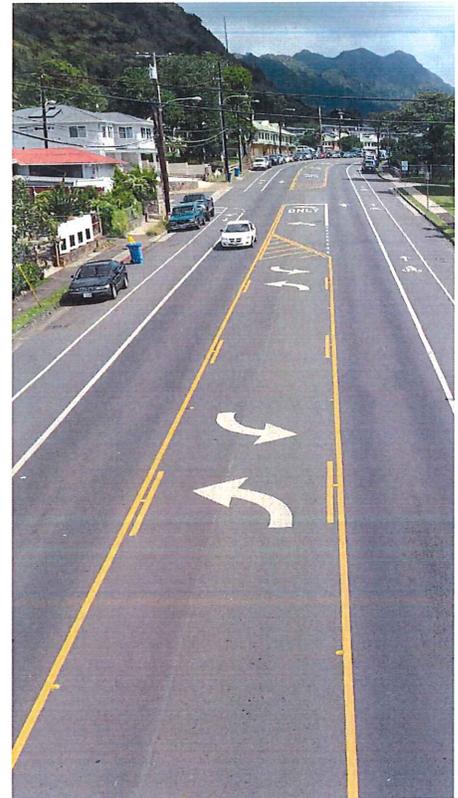


Before and after example of a Road Diet. Source: FHWA

Benefits of Road Diet installations may include:

- Reduction of rear-end and left-turn crashes due to the dedicated left-turn lane.
- Reduced right-angle crashes as side street motorists cross three versus four travel lanes.
- Fewer lanes for pedestrians to cross.
- Opportunity to install pedestrian refuge islands, bicycle lanes, on-street parking, or transit stops.
- Traffic calming and more consistent speeds.
- A more community-focused, Complete Streets environment that better accommodates the needs of all road users.

A Road Diet can be a low-cost safety solution when planned in conjunction with a simple pavement overlay, and the reconfiguration can be accomplished at no additional cost. Typically, a Road Diet is implemented on a roadway with a current and future average daily traffic of 25,000 or less.



Road Diet project in Honolulu, Hawaii. Source: Leidos

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/road_diets/.

¹ Evaluation of Lane Reduction "Road Diet" Measures on Crashes, FHWA-HRT-10-053, (2010).



Safety Benefits:

Traffic fatalities in the City of Seattle decreased 26 percent after the city implemented comprehensive, city-wide speed management strategies and countermeasures inspired by Vision Zero. This included setting speed limits on all non-arterial streets at 20 mph and 200 miles of arterial streets at 25 mph.⁵

One study found that on rural roads, when considering other relevant factors in the engineering study along with the speed distribution, setting a speed limit no more than 5 mph below the 85th-percentile speed may result in fewer total and fatal plus injury crashes, and lead to drivers complying closely with the posted speed limit.⁶

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and https://safety.fhwa.dot.gov/speedmgmt/ref_mats/.

Appropriate Speed Limits for All Road Users

There is broad consensus among global roadway safety experts that speed control is one of the most important methods for reducing fatalities and serious injuries. Speed is an especially important factor on non-limited access roadways where vehicles and vulnerable road users mix.

A driver may not see or be aware of the conditions within a corridor, and may drive at a speed that feels reasonable for themselves but may not be for all users of the system, especially vulnerable road users, including children and seniors. A driver traveling at 30 miles per hour who hits a pedestrian has a 45 percent chance of killing or seriously injuring them.¹ At 20 miles per hour, that percentage drops to 5 percent.¹ A number of cities across the United States, including New York, Washington, Seattle and Minneapolis, have reduced their local speed limits in recent years in an effort to reduce fatalities and serious injuries, with most having to secure State legislative authorization to do so.

States and local jurisdictions should set appropriate speed limits to reduce the significant risks drivers impose on others—especially vulnerable road users—and on themselves. Addressing speed is fundamental to the Safe System Approach to making streets safer, and a growing body of research shows that speed limit changes alone can lead to measurable declines in speeds and crashes.²

Applications

Posted speed limits are often the same as the legislative statutory speed limit. Agencies with designated authorities to set speed limits, which include States, and sometimes local jurisdictions, can establish non-statutory speed limits or designate reduced speed zones, and a growing number are doing so. While non-statutory speed limits must be based on an engineering study, conducted in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD) involving multiple factors and engineering judgment, FHWA is also encouraging agencies to use the following:³

- Expert Systems tools.
 - [USLIMITS2](#).
 - [NCHRP 966: Posted Speed Limit Setting Procedure and Tool](#).
- Safe System approach.

Based on international experience and implementation in the United States, the use of 20 mph speed zones or speed limits in urban core areas where vulnerable users share the road environment with motorists may result in further safety benefits.⁴

Considerations

When setting a speed limit, agencies should consider a range of factors such as pedestrian and bicyclist activity, crash history, land use context, intersection spacing, driveway density, roadway geometry, roadside conditions, roadway functional classification, traffic volume, and observed speeds.

To achieve desired speeds, agencies often implement other speed management strategies concurrently with setting speed limits, such as self-enforcing roadways, traffic calming, and speed safety cameras. Additional information is in the following FHWA resources:

- [FHWA Speed Management website](#).
- [Self-Enforcing Roadways: A Guidance Report](#).
- [Noteworthy Speed Management Practices](#).
- [Jurisdiction Speed Management Action Plan Development Package](#).
- [Traffic Calming ePrimer](#).

¹ Reducing the speed limit to 20 mph in urban areas: Child deaths and injuries would be decreased.

² Lowering the speed limit from 30 to 25 mph in Boston: effects on vehicle speeds.

³ FHWA's *Methods and Practices for Setting Speed Limits: An Informational Report*. (2012).

⁴ *Recommendations of the Academic Expert Group for the 3rd Global Ministerial Conference on Road Safety*.

⁵ https://safety.fhwa.dot.gov/speedmgmt/ref_mats/fhwasa20047/sec8.cfm#foot813

⁶ *Safety and Operational Impacts of Setting Speed Limits below Engineering Recommendations*.



Safety Benefits:

Sidewalks

65-89%

reduction in crashes involving pedestrians walking along roadways.³

Paved Shoulders

71%

reduction in crashes involving pedestrians walking along roadways.³

For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures/> and http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=1.

Walkways

A walkway is any type of defined space or pathway for use by a person traveling by foot or using a wheelchair. These may be pedestrian walkways, shared use paths, sidewalks, or roadway shoulders.

With more than 6,200 pedestrian fatalities and 75,000 pedestrian injuries occurring in roadway crashes annually,¹ it is important for transportation agencies to improve conditions and safety for pedestrians and to integrate walkways more fully into the transportation system. Research shows people living in low-income communities are less likely to encounter walkways and other pedestrian-friendly features.²

Well-designed pedestrian walkways, shared use paths, and sidewalks improve the safety and mobility of pedestrians. Pedestrians should have direct and connected network of walking routes to desired destinations without gaps or abrupt changes. In some rural or suburban areas, where these types of walkways are not feasible, roadway shoulders provide an area for pedestrians to walk next to the roadway, although these are not preferable.

Transportation agencies should work towards incorporating pedestrian facilities into all roadway projects

unless exceptional circumstances exist. It is important to provide and maintain accessible walkways along both sides of the road in urban areas, particularly near school zones and transit locations, and where there is a large amount of pedestrian activity. Walkable shoulders should also be considered along both sides of rural highways when routinely used by pedestrians.



Example of a sidewalk in a residential area. Source: pedbikeimages.org / Burden



Paved shoulder used as a walkway. Source: pedbikeimages.org / Burden

1 National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts, Report No. DOT HS 812 850). National Highway Traffic Safety Administration.

2 Gibbs, et al. Income Disparities in Street Features that Encourage Walking. Bridging the Gap, (2012, March).

3 Gan et al. Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects. Florida DOT, (2005).



Paths and Trails Sub-Committee Meeting

Federal Highway Administration Proven Safety Countermeasures

April 5, 2022

Agenda

- Introduction
- Bicyclist and Pedestrian Safety
 - Bicycle Lanes
 - Crosswalk Visibility Enhancements
 - Road Diets
 - Median and Pedestrian Refuge Islands
 - Rectangular Rapid Flashing Beacons
 - Pedestrian Hybrid Beacons
 - Lead Pedestrian Interval
 - Walkways/Sidewalks
- Other Safety Measures
 - Lighting
 - Speed Limits
 - Photo Enforcement
- Discussion

Introduction

FHWA Home / Safety / Proven Safety Countermeasures | Federal Highway Administration



Proven Safety Countermeasures

FHWA's Proven Safety Countermeasures initiative (PSCi) is a collection of countermeasures and strategies effective in reducing roadway fatalities and serious injuries on our Nation's highways. Transportation agencies are strongly encouraged to consider widespread implementation of PSCs to accelerate the achievement of local, State, and National safety goals.

PROVEN SAFETY
COUNTERMEASURES
(PSC) TOOLS **NEW**



[FILTER TOOL »](#)

Filter countermeasures by focus area, crash type, problem identified, and area type.



SEARCH PSCs

- Twenty-eight(28) Published Proven Countermeasures
- Eight are noted to improve Pedestrian and Bicyclist safety
- Three Other Safety Countermeasures that also improve Pedestrian and Bicyclist safety

Bicyclist and Pedestrian Safety Countermeasures

Bicycle Lanes

- 49% Crash Reduction on four lane collectors
- 30% Crash Reduction on two lane collectors
- Included in Standard cross-sections since 1991
- Active installation as part of pavement overlay



Bicyclist and Pedestrian Safety Countermeasures

Crosswalk Visibility Enhancements

- 40% Reduction in Pedestrian Crashes
- 25% Crash Reduction with addition of advance Yield and stop marking
- Used with other Crosswalk enhancements



Bicyclist and Pedestrian Safety Countermeasures

Road Diets

- Reduction in number of travel lanes
- Accomplished with addition of a center turn lane, on-street parking, and/or bike lanes.



Bicyclist and Pedestrian Safety Countermeasures

Medians and Pedestrian Refuge Islands

- Medians – 46% reduction in pedestrian collisions
- Pedestrian Refuge Islands – 56% reduction in pedestrian collisions
- Raised medians are a standard in COS cross sections



Bicyclist and Pedestrian Safety Countermeasures

Rectangular Rapid Flashing Beacons

- 47% reduction in pedestrian collisions
- 98% increase in vehicles yielding to pedestrians



Bicyclist and Pedestrian Safety Countermeasures

Pedestrian Hybrid Beacons

- 55% reduction in pedestrian collisions
- 29% reduction in all collisions
- 15% reduction in all serious and fatal collisions



Bicyclist and Pedestrian Safety Countermeasures

Leading Pedestrian Interval

- 3 to 7 second lead to pedestrians
- 13% reduction in pedestrian collisions



Bicyclist and Pedestrian Safety Countermeasures

Walkways/ Sidewalks

- 65% to 89% second lead to pedestrians
- 71% reduction in pedestrian collisions when paved shoulders are provided in rural sections



Other Safety Countermeasures

Lighting

- Improve visibility of vulnerable road users during night
- 42% reduction in pedestrian collisions



Other Safety Countermeasures

Photo Enforcement

- 63% reduction of speeding in school zones
- Tower are used for enforcement near schools and parks
- Vans and fixed cameras are used for collector, arterial streets and red-light running



Other Safety Countermeasures

Speed Limits

- Vulnerable road user fatality risk increases exponential with speeds when involved in collision
- Efforts underway to consider to reduce emphasis on 85th percentile and consider roadside character in establishing speed limits as part of speed study updates



Questions ?

SCOTTSDALE PATHS AND TRAILS SUBCOMMITTEE REPORT



To: Paths and Trails Subcommittee
From: Susan Conklu, Senior Transportation Planner
Subject: Bike Education Program
Meeting Date: April 5, 2022

Action: Information and discussion

Purpose:
Provide update on the Bike Education Program

Information:
Education is one of the "5 E's" in the Bicycle Friendly Community designation through the League of American Bicyclists. Scottsdale has held the Gold designation since 2011. Each award includes a report card and opportunities for continual improvements.

The city provides bike education in several ways. The city's current education efforts on bicycling and safety include webpage postings, printed materials and Active Transportation Maps that are distributed to the public. Transportation staff also provide education and materials at public events.

The Bicycle and Related Devices Ordinance No. 4372 clarifies and regulates how bicycles, motorized bikes, stand-up electric mini-scooters and related devices can be safely ridden and parked in Scottsdale. The ordinance was adopted November 13, 2018 and took effect December 13, 2018. The revised ordinance has been available for review on the city's website at <https://www.scottsdaleaz.gov/codes/bike-scooters>, where it has been posted since January 10, 2020.

Update:
Transportation staff have been researching and evaluating education in other cities. Updated signage and markings will be added along the paths starting in summer 2022. This includes replacing the existing green signage along the path and installing new Wayfinding and Directional Signage. There will be regulatory information on signage such as "Bikes Yield to Pedestrians", "Users Keep Right Except to Pass" and which types of motorized vehicles are allowed on the paths.

Updated path graphics and guidelines are being drafted for the new Active Transportation Maps, webpage and events. The draft guidelines include:

- Travel in the right half of the path, keep the left half open for two-way traffic and passing
- Bicyclists yield to pedestrians
- Dog walkers yield to bicyclists and pedestrians
- All users yield to equestrians
- Announce "Passing on left", use a bike horn or bell
- Set a reasonable speed
- Look both ways, yield to oncoming traffic
- Mini-scooters, e-bikes, and mobility assistive devices ARE allowed on pathways*
 - * Class 1 (pedal-assist only, up to 20 mph) and Class 2 (no pedaling required, up to 20 mph) e-bikes are allowed on paved pathways
- Motorized vehicles ARE NOT allowed on paved pathways**

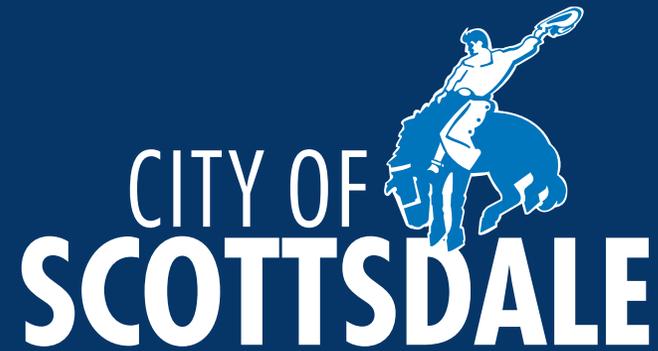
- ** Class 3 (pedal-assist only, up to 28 mph) e-bikes, gas-powered bikes, motorcycles and ATV's ARE NOT allowed on paved pathways; riders are encouraged to use designated city bike lanes for travel
 - Helmets are recommended for bike riders and skateboarders
 - Earphones are not recommended
 - Approach horses with caution, speak softly and alert the horse and rider of your presence
 - Dispose of trash properly
 - Do not disturb wildlife or collect plant material
 - Keep pets on a leash and clean up after them
 - Walk with a flashlight, equip bikes and scooters with lights
 - Hydrate before, during and after your walk, run or ride
 - Do not enter paths that are flooded

Public outreach will inform the public on the regulations, laws and alternate routes available for people riding bicycles, motorized bicycles and scooters. This will be distributed on social media and the Scottsdale Video Network. City videos are also posted to YouTube, which can reach a wider audience.

Next Steps:

Transportation staff will finalize the proposed graphics and social media messaging. Staff will also work with the Scottsdale Video Network to create and post the bike education video.

Staff Contact: Susan Conklu, 480-312-2308, sconklu@scottsdaleaz.gov



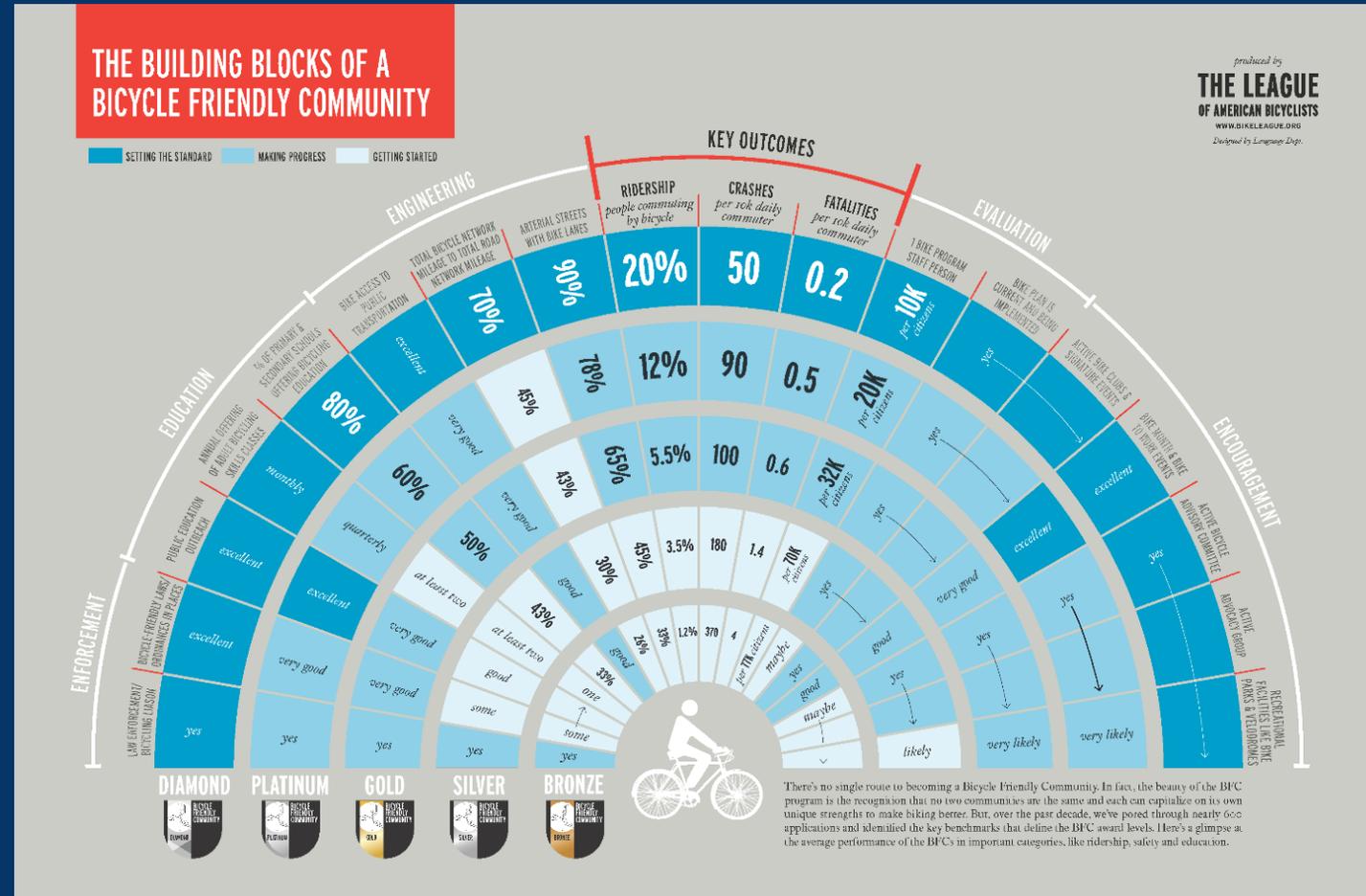
Bike Education Program

Paths and Trails Subcommittee

April 5, 2022

OVERVIEW

- Education is one of the “5 E’s” in the League of American Bicyclists Bicycle Friendly Community program
 - Gold since 2011
 - Each award includes a report card and opportunities for continual improvements



CURRENT BIKE EDUCATION

- Webpage
- Printed materials
- Active Transportation Maps
- During events



CITY OF SCOTTSDALE BIKE & TRAILS MAP NORTH OF FRANK LLOYD WRIGHT BLVD

FOR DETAILED PRESERVE TRAIL MAPS:
Visit ScottsdaleAZ.gov, search "preserve maps"

FOR THE MOST UP-TO-DATE CITYWIDE BIKEWAY,
PATH AND TRAIL INFORMATION:
Visit ScottsdaleAZ.gov, search "public amenities"

SHARED USE PATH & TRAIL RESPONSIBILITIES

Scottsdale's paths and trails are designed for a variety of transportation modes. Keep paths safe and enjoyable for everyone by being courteous, sharing the path and following simple, common-sense rules. Motorized vehicles*, including ATVs and motorcycles, are prohibited on paths and trails.

Know the Right of Way Before the right-of-way, yield to pedestrians and other users on the path.	Yield Yield to pedestrians, equestrians, and other users on the path.	Signaling Signaling should be used to alert others of your presence and intentions.	Responsibility The user should maintain the path and avoid any damage to the path.
Use the Path Use the path for its intended purpose.	Respect the Path Respect the path's boundaries and do not use the path for other purposes.	Right of Way Respect the path's boundaries and do not use the path for other purposes.	Sharing Share the path with other users and be courteous.
Signaling Signaling should be used to alert others of your presence and intentions.	Use the Path Use the path for its intended purpose.	Right of Way Respect the path's boundaries and do not use the path for other purposes.	Responsibility The user should maintain the path and avoid any damage to the path.

*ATVs and motorcycles are prohibited on paths and trails.

SCOTTSDALE EZ

Scottsdale EZ is a single, mobile-optimized system that lets you quickly report issues and provides the city with a consolidated tracking and reporting system.

- Using Scottsdale EZ is just that – easy!
- Visit ScottsdaleAZ.gov/EZ on your desktop or mobile device, or search online for "Scottsdale EZ" to find the application link.
- Enter the request or issue in the search box, select a top request or browse by category.
- Choose an address related to the request, or use your device's GPS to pinpoint the location of the issue.
- Provide details and submit a photo, if applicable.
- Review your information and submit it.
- City staff will get back to you to confirm they've received your request. The more accurate information you provide when submitting a request, the more quickly it can be assigned to staff and resolved.

Next time you notice something the city needs to take a look at or fix, don't hesitate – Scottsdale EZ makes it simple to report those issues and get them taken care of.

BIKE DETECTION AT INTERSECTIONS

Bicycle detection is used at signalized intersections to alert the signal system that a bicycle is approaching and will need to cross the intersection. These intersections also offer extended crossing time for bicyclists.

Look for these signs, as well as pavement markings, at various locations around Scottsdale.

BIKES, SKATEBOARDS, MOTORIZED SKATEBOARDS AND MULTIUSE PATHS

Scottsdale's Bicycle and Related Devices Ordinance (No. 43-72) addresses operation and parking of bike-share and electric scooters. The ordinance makes the rules and expectations clear for the companies that own the devices and individuals who operate them. Go to ScottsdaleAZ.gov, search "bike share ordinance" to review these rules.

CITY OF SCOTTSDALE BIKE & TRAILS MAP SOUTH OF FRANK LLOYD WRIGHT BLVD

FOR DETAILED PRESERVE TRAIL MAPS:
Visit ScottsdaleAZ.gov, search "preserve maps"

FOR THE MOST UP-TO-DATE CITYWIDE BIKEWAY,
PATH AND TRAIL INFORMATION:
Visit ScottsdaleAZ.gov, search "public amenities"

TOUR OLD TOWN ON THE MOUNTAIN VISTA BIKE ROUTE

The Mountain Vista Bike Route is a 2.3 mile loop that begins and ends at Main Street and Brown Avenue at the famous Banyan Tree. Follow green bike route signs to two more informative stops where mountain views are framed with interpretive panels that tell stories of the mountains on display. The frame that views the McDowell Mountains is located along the south bank of the Arizona Canal between the Marshall Way and Soley bridges. The Camelback Mountain View Frame is located at 65th Street and the Arizona Canal.

MOUNTAIN VISTA ROUTE

ROUTE STOPS

- The Banyan Tree**
- Camelback Mountain View**
- McDowell Mountains View**

ON-STREET BIKEWAYS – SHARE THE ROAD

Do your best to ride defensively, prepare for the unexpected and plan an alternate maneuver to avoid conflict. Bikes alone do not always protect bicyclists from injury. Stay alert, make yourself visible and ride predictably.

Stay Traffic Signal & Stop Always stop at the traffic signal or stop sign at the intersection.	Make the Right When making a right turn, you must yield to all vehicles in the lane you are turning into.	Don't Open Doors Check for bikes before opening your car door.
Be Visible Use your lights and wear reflective gear to make yourself visible to others.	Don't Drink and Ride Don't drink and ride. It's illegal and dangerous.	Don't Drink and Drive Don't drink and drive. It's illegal and dangerous.
Don't Drink and Ride Don't drink and ride. It's illegal and dangerous.	Don't Drink and Drive Don't drink and drive. It's illegal and dangerous.	Don't Drink and Ride Don't drink and ride. It's illegal and dangerous.

BRING YOUR BIKE ON THE SCOTTSDALE TROLLEY

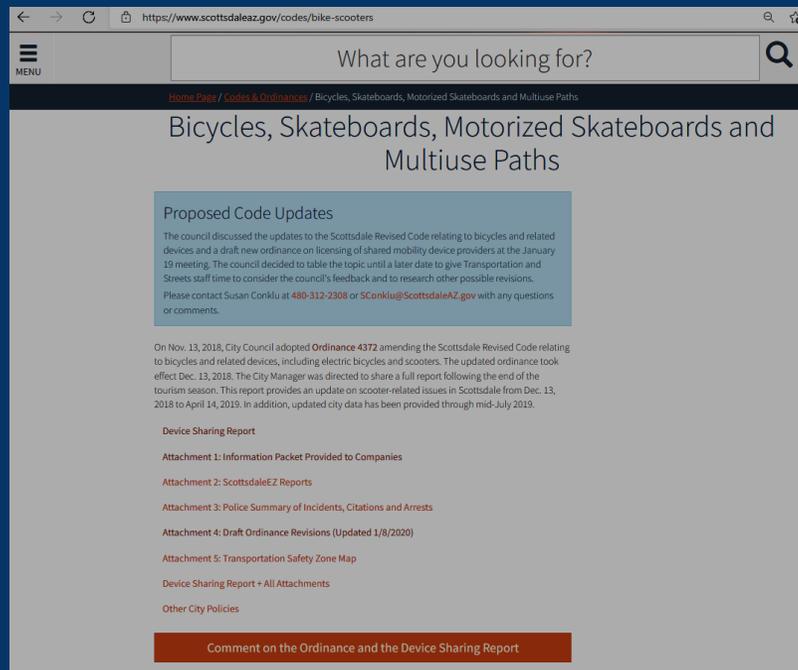
Scottsdale's free trolley system links residents and visitors to entertainment, shopping, schools, parks and health services. Riders can transfer between our trolley routes and the regional transit system. To plan your trip, visit ValleyMetro.org. To request a bike on the trolley, visit ScottsdaleTrolley.com.

Signal driver before loading your bike.	Signal driver before pulling your bike.
Place bike in rack slot.	Group support arms and pull over the vehicle.

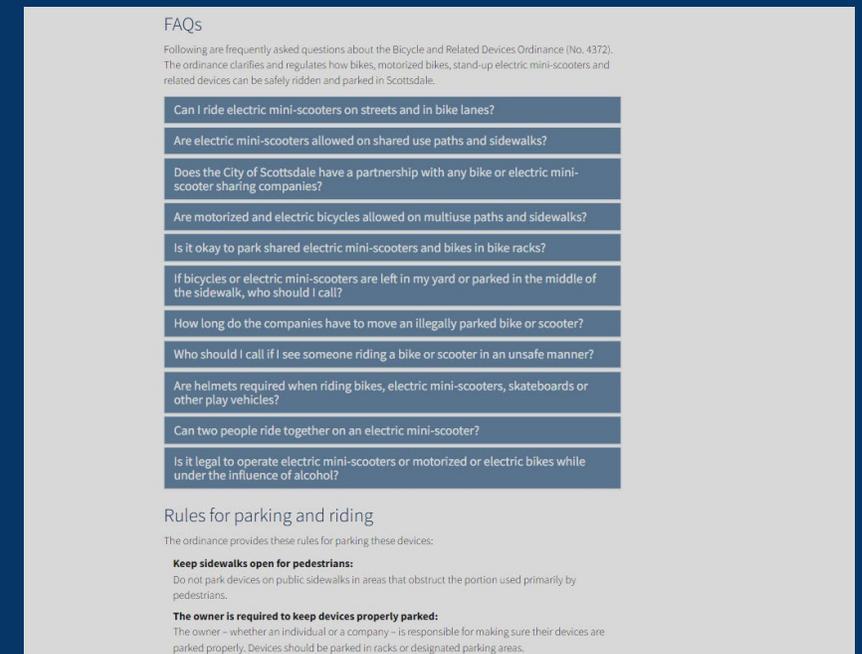
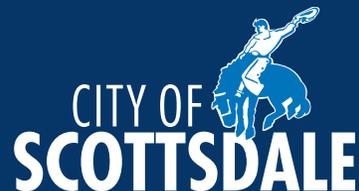
Passenger assumes all liability for loading, unloading, unhooking, unhooking, theft or damage of bicycle.

CURRENT BIKE EDUCATION

- The Bicycle and Related Devices Ordinance (No. 4372) clarifies and regulates how bikes, motorized bikes, electric scooters and related devices can be safely ridden and parked in Scottsdale.
 - Adopted November 13, 2018
- Webpage
 - <https://www.scottsdaleaz.gov/codes/bike-scooters>, posted since January 10, 2020



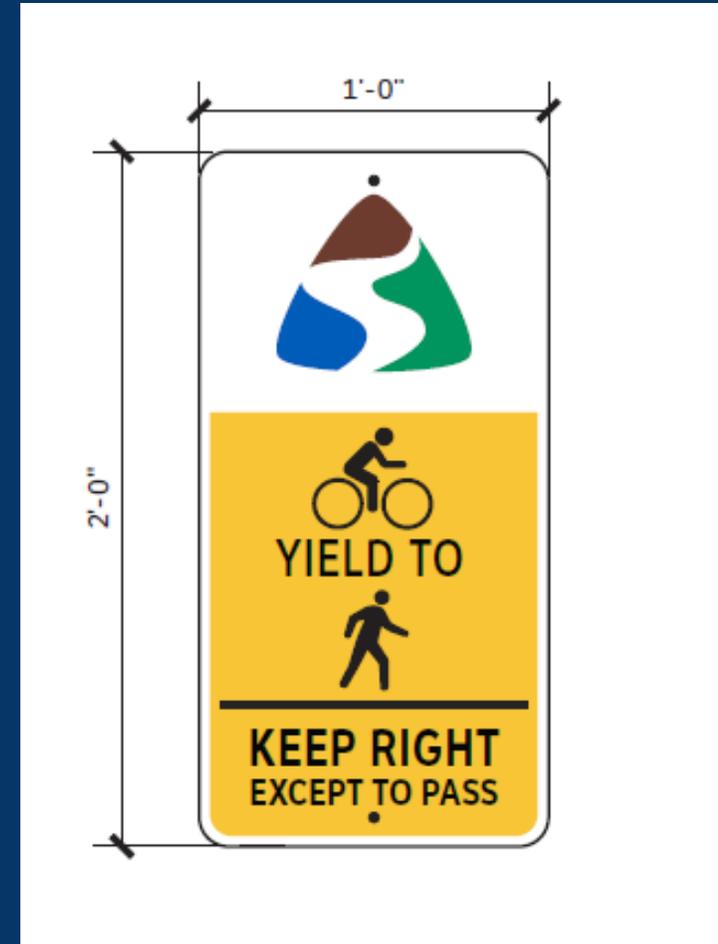
The screenshot shows a web browser window with the URL <https://www.scottsdaleaz.gov/codes/bike-scooters>. The page title is "Bicycles, Skateboards, Motorized Skateboards and Multiuse Paths". The main content area features a "Proposed Code Updates" section with a text box containing information about council discussions and a link to contact Susan Conklu. Below this, there is a paragraph about the adoption of Ordinance 4372 on November 13, 2018. A list of attachments follows, including "Attachment 1: Information Packet Provided to Companies", "Attachment 2: ScottsdaleEZ Reports", "Attachment 3: Police Summary of Incidents, Citations and Arrests", and "Attachment 4: Draft Ordinance Revisions (Updated 1/8/2020)". At the bottom, there is a "Comment on the Ordinance and the Device Sharing Report" button.



The screenshot shows the "FAQs" section of the website. It includes a list of frequently asked questions about the Bicycle and Related Devices Ordinance (No. 4372). The questions are: "Can I ride electric mini-scooters on streets and in bike lanes?", "Are electric mini-scooters allowed on shared use paths and sidewalks?", "Does the City of Scottsdale have a partnership with any bike or electric mini-scooter sharing companies?", "Are motorized and electric bicycles allowed on multiuse paths and sidewalks?", "Is it okay to park shared electric mini-scooters and bikes in bike racks?", "If bicycles or electric mini-scooters are left in my yard or parked in the middle of the sidewalk, who should I call?", "How long do the companies have to move an illegally parked bike or scooter?", "Who should I call if I see someone riding a bike or scooter in an unsafe manner?", "Are helmets required when riding bikes, electric mini-scooters, skateboards or other play vehicles?", and "Can two people ride together on an electric mini-scooter?". Below the list, there is a section for "Rules for parking and riding" which states that the ordinance provides rules for parking these devices and includes a "Keep sidewalks open for pedestrians" rule and a "The owner is required to keep devices properly parked" rule.

PLAN FOR ADDITIONAL EDUCATION

- Evaluating other cities
- Signage and markings
 - Replacing the green signage along the path system and adding new Wayfinding Signage
 - Display regulatory information such as “Bikes Yield to Pedestrians,” “Keep Right Except to Pass,” and which types of motorized vehicles are allowed on paths.



PLAN FOR ADDITIONAL EDUCATION

- Updated graphics and guidelines for maps, webpage and events
 - Travel in the right half of the path, keep the left half open for two-way traffic and passing
 - Bicyclists yield to pedestrians
 - Dog walkers yield to bicyclists and pedestrians
 - All users yield to equestrians
 - Announce “Passing on left”, use a bike horn or bell
 - Set a reasonable speed
 - Look both ways, yield to oncoming traffic
 - Mini-scooters, e-bikes, and mobility assistive devices ARE allowed on pathways*
 - * Class 1 (pedal-assist only, up to 20 mph) and Class 2 (no pedaling required, up to 20 mph) e-bikes are allowed on paved pathways
 - Motorized vehicles ARE NOT allowed on paved pathways**
 - ** Class 3 (pedal-assist only, up to 28 mph) e-bikes, gas-powered bikes, motorcycles and ATV’s ARE NOT allowed on paved pathways; riders are encouraged to use designated city bike lanes for travel

PLAN FOR ADDITIONAL EDUCATION

- Updated graphics and guidelines for maps, webpage and events
 - Helmets are recommended for bike riders and skateboarders
 - Earphones are not recommended
 - Approach horses with caution, speak softly and alert the horse and rider of your presence
 - Dispose of trash properly
 - Do not disturb wildlife or collect plant material
 - Keep pets on a leash and clean up after them
 - Walk with a flashlight, equip bikes and scooters with lights
 - Hydrate before, during and after your walk, run or ride
 - Do not enter paths that are flooded

PLAN FOR ADDITIONAL EDUCATION

- Public outreach on regulations, laws and alternate routes
 - Social media
 - Scottsdale Video Network
 - YouTube

NEXT STEPS

- Finalize the proposed graphics and social media messaging
- Create and post video

SCOTTSDALE PATHS AND TRAILS SUBCOMMITTEE REPORT



To: Paths and Trails Subcommittee
From: Susan Conklu, Senior Transportation Planner
Subject: Bike Month
Meeting Date: April 5, 2022

Action: Information and discussion

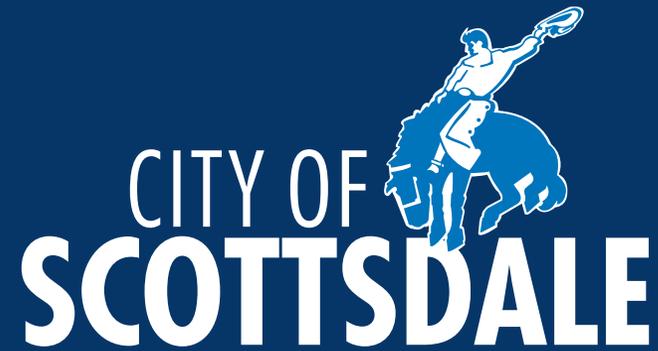
Purpose:
Provide update on 2022 April Bike Month activities.

Information:
Valley Bike Month started as a single Bike to Work Day event in the late 1980s. With support of Valley employers, cities and towns, it soon transformed to a week and, by 2005, it had evolved into a month-long bicycle celebration. Every year, the number of participating cities and events grows. Valley Bike Month is a regional effort of cities, towns, employers, community organizations, and Valley Metro. Private and public partners join to plan events valley-wide. The events are promoted on Valley Metro's Share the Ride webpage and printed materials, individual city webpages, social media, NextDoor, listservs such as Scottsdale Update, and e-blasts.

Update:
In 2020, in-person events were cancelled due to the COVID-19 pandemic. In 2021 a self-guided Cycle the Arts route was developed and promoted for April Bike Month. The route was available for the remainder of the year and was downloaded by over 90 people. We received Bike Selfies from over 15 people who went on their own tour, for a chance to receive a t-shirt.

We are returning to an in-person event on Sunday April 3, 2022. There has been an overwhelming response from the public, with 130 people registered for the ride. The event was promoted in Phoenix New Times and Scottsdale Independent. The 8.6-mile ride features 13 art stops and Augmented Reality features. Volunteers from Scottsdale Transportation, Scottsdale Arts, Old Town Ambassadors and the cycling community made the event possible. More information on the event will be provided at the meeting. Cycle the Arts self-guided route will continue to be available throughout 2022.

Next Steps:
Transportation staff will hold a Bike Month debrief meeting with staff and volunteers to evaluate the events and begin planning for next year. This will include a plan for expanded communication and promotion of Bike Month to city employees and the public. Planning for Bike Month 2023 will begin this fall. Events will include Cycle the Arts, Bike to Work Day and Bike to School Day. Transportation staff are also exploring options for additional family-friendly neighborhood rides.



Bike Month

Paths and Trails Subcommittee

April 5, 2022

OVERVIEW

- April is Valley Bike Month
 - Began as single Bike to Work Day in 1980s
 - Grew to a full month in 2005
- Valley Metro partnership with cities
 - Event promotion on www.ShareTheRide.com
 - Printed materials
 - Bike Month Challenge with prizes
 - “Sweet Deals” for bicyclists at valley businesses
 - Free t-shirts designed by artists
- City events
 - Scottsdale Cycle the Arts
 - Bike to Work Day



CYCLE THE ARTS

- Began in 2005 – Annual Bike Month activity.
- Partner with Scottsdale Public Art staff, board members, artists
- Promote Public Art and Bikeways to all ages:
 - Education on bike skills – pre-ride safety talk
 - Percent for Art Program and extensive art collection
 - Capital Improvement Program
 - Highlight new projects
 - Encourage bike riding for all experience levels
 - Small groups with ride leaders and sweepers



BIKE TO WORK DAY

- In 2018 and 2019 expanded event
- Stops at Vista del Camino Park, ReGroup Coffee, One Civic, Mountain View Park
- Drinks, breakfast snacks, t-shirts
- Sponsors
- Bike Selfie contest



UPDATE

- 2020 – Cancelled in-person events
- 2021
 - In lieu of in-person event, offered self-guided option
 - Over 90 people downloaded the route map throughout the year
 - 15 people sent Bike Selfies to request a t-shirt



CYCLE THE ARTS 2022

- Promoted in Phoenix New Times and Scottsdale Independent
- Sunday April 3rd
- 8.6-miles long, 13 art stops
- 130 attendees registered
- Volunteers from Scottsdale Transportation, Scottsdale Arts, Old Town Ambassadors and bicycling community
- Augmented Reality features
- Received t-shirts and breakfast snacks
- Promoted self-guided option



CYCLE THE ARTS 2022

CYCLE THE ARTS 2022



Public Art Stops and Links

- [Western Spirit: Scottsdale's Museum of the West](#) ★
- [Diamond Bloom | Scottsdale Public Art](#) 1
- [Jack Knife | Scottsdale Public Art](#) 2
- [Horseshoe Falls | Scottsdale Public Art](#) 3
- [One-Eyed Jack | Scottsdale Public Art](#) 4
- [Bronze Horse Fountain | Scottsdale Public Art](#) 5
- [Passing the Legacy | Scottsdale Public Art](#) 6
- [Soleri Bridge and Plaza | Scottsdale Public Art](#) 7
- [Goldwater Bell | Scottsdale Public Art](#) 8
- [The Doors and Sound Passage | Scottsdale Public Art](#) 9
- [Copper Falls | Scottsdale Public Art](#) 10
- [Industrial Pipe Wave | Scottsdale Public Art](#) 11
- [Water Mark | Scottsdale Public Art](#) 12
- [Terraced Cascade | Scottsdale Public Art](#) 13
- [Imagination Give Us Wings | Scottsdale Public Art](#) 14



NEXT STEPS

- Bike Month debrief meeting
- Begin planning 2023 Bike Month this fall
 - Cycle the Arts
 - Bike to Work Day
 - Bike to School Day
- Promote events widely to citizens and city employees
- Explore options for family friendly neighborhood rides



TENTATIVE FUTURE AGENDA ITEMS

Rev.03-18-2022

All Items Subject to Change

TRANSPORTATION COMMISSION

MEETING DATE: April 21, 2022

REPORTS/PRESENTATIONS DUE April 13

- **Approval of Meeting Minutes** **Action**
Approval of Regular meeting minutes March 17, 2022
- **Recent and Projected CIP Cost Increases** **Presentation and Discussion**
Review of cost increases for current and upcoming capital projects – Dave Meinhart, Transportation Planning Manager and Greg Davies, Senior Transportation Planner
- **Construction Management Plan Requirement for Old Town Development**..... **Discussion and Action**
Discussion on requirement of a construction management plan for Old Town – Walt Brodzinski, Right-of-Way Manager
- **Other Transportation Projects and Programs Status**..... **Information**
Information on projects and programs status – Mark Melnychenko, Transportation & Streets Director
- **Commission Identification of Future Agenda Items**..... **Discussion**
Commissioners may identify items or topics of interest for future Commission meetings

FUTURE ITEMS:

INFORMATION ITEMS

- **Urban Air Mobility** **Information**
Information on Urban Air Mobility as Mode of Transportation
- **Electric Car Movement**..... **Information**
Information on the electric car movement – Hong Huo, Traffic Engineer Principal
- **Shea and 124th Street Underpass** **Information**
Update on underpass – Susan Conklu, Senior Transportation Planner
- **Utilities Causing Project Delays**..... **Information**
Update on the delay's utility projects and how they are holding up project schedules and budgets- Mark Melnychenko, Transportation & Streets Director
- **Federal Highway Administration's Safety Countermeasures**..... **Information**
Update on the FHWA's new safety countermeasures for pedestrians and bicycles – Dave Meinhart, Transportation Planning Manager
- **Review of Travel Demand Patterns**..... **Information**
Information on how travel demand patterns effects roadway improvements – Kiran Guntupalli, Principal Traffic Engineer

TRANSPORTATION & STREETS DEPARTMENT ACTIVITIES

- **Loop 101 Mobility Project**..... **Presentation and Discussion**
Discuss USA's Transportation Research Department regarding connected vehicle technology -Kristin Darr, consultant and Mark Melnychenko, Transportation & Streets Director
- **Impact on Parking**..... **Presentation and Discussion**
Latest parking study, Walter Brodzinski, Right-Way Supervisor
- **Smart City**..... **Presentation and Discussion**
Discussion on the City's participation in Smart City applications as well as ITS strategic plan and ITS vehicle detection – Hong Huo, Traffic Engineer Principal

- **Alternate Modes of Transportation.....Presentation and Discussion**
Discuss alternative modes of transportation including electric bicycles, scooters, and pedestrian improvements – Susan Conklu, Senior Transportation Planner
- **Bus Stop Lighting.....Discussion**
Discuss future plans to light bus stop shelters – Ratna Korepella, Transit Manager
- **Expanding Maintenance Needs.....Presentation and Discussion**
Maintenance of current infrastructure – Mark Melnychenko, Transportation & Streets Director
- **Noise Walls.....Presentation, Discussion and Possible Action**
Discuss noise wall locations, including FHWA DBE levels – Mark Melnychenko, Transportation & Streets Director
- **Linking the Five-Year Paving Plan to Restriping Efforts.....Presentation and Discussion**
Discussion around linking the five-year paving plan and restriping along with the Transportation Action Plan (TAP) – Shayne Lopez, Paving Manager
- **2020 Traffic Volume and Collision Manual..... Presentation and Discussion**
Summarize the information in the recently published 2020 Traffic Volume and Collision Manual – Kiran Guntupalli, Traffic Engineer Principal and Parker Murphy, Traffic Engineer
- **No Engine Braking Ordinance Update.....Presentation and Discussion**
Discuss the recently approved no engine braking ordinance and its application -Phil Kercher, Traffic Engineering and Ops Manager and Walt Brodzinski, Right-of-Way Manager
- **Sensagrate Pilot Project.....Presentation and Discussion**
Discuss Sensagrate Pilot Project in Scottsdale and how the results can be utilized – Darryl Keeton, Sensagrate
- **Leading Pedestrian Interval Policy.....Presentation and Discussion**
Discuss Leading Pedestrian Interval Policy and how the city applies it – Hong Huo, Traffic Engineer Principal
- **Roundabout Education.....Presentation and Discussion**
Discuss benefits of Roundabouts and how success is evaluated – Phil Kercher, Traffic Engineer & Ops Manager
- **Speed Limit Study Update Project.....Presentation and Discussion**
Present Traffic Engineering’s recent effort to update speed limit studies in Scottsdale- Phil Kercher, Traffic Engineering and Ops Manager and Kiran Guntupalli, Traffic Engineer Principal

PATHS & TRAILS SUBCOMMITTEE

MEETING DATE: April 5, 2022

REPORTS/PRESENTATIONS DUE March 28

- **Approval of Meeting Minutes Action**
Approval of Regular meeting minutes of February 1, 2022
- **Federal Highway Administration Proven Safety Countermeasures Presentation and Discussion**
Information on how bike lanes improve safety – Kiran Guntupalli, Principal Traffic Engineer
- **Bicycle Education Program Presentation and Discussion**
Update on Laws and Education – Susan Conklu, Senior Transportation Planner
- **Bike Month Update..... Information**
Information on Bike Month – Susan Conklu, Senior Transportation Planner
- **Other Transportation Projects and Programs Status..... Information**
Status of projects and programs – Susan Conklu, Senior Transportation Planner
- **Subcommittee Identification of Future Agenda Items.....Discussion**
Subcommittee members may identify items or topics of interest for future Subcommittee meetings

FUTURE ITEMS:

INFORMATION ITEMS

- **Vision Zero**..... **Information**
Information on Vision Zero (Tempe) – Susan Conklu, Senior Transportation Planner

TRANSPORTATION & STREETS DEPARTMENT ACTIVITIES

- **Access to Indian Bend Wash** **Presentation and Discussion**
Better access and how the Parks Dept. can assist. – Susan Conklu, Senior Transportation Planner
- **Path and Trail Gap Analysis** **Presentation and Discussion**
Information on gaps in the citywide path and trails network – Greg Davies, Senior Transportation Planner
- **Equestrian Connectivity** **Presentation and Discussion**
Panel – Susan Conklu, Senior Transportation Planner
- **Pavement Restriping** **Presentation and Discussion**
Information on the coordination of re-paving and re-striping – Dave Meinhart, Transportation Planning Manager