#### MULTI-MODAL TRANSPORTATION BOARD THURSDAY, NOVEMBER 7, 2019 6:00 PM CITY COMMISSION ROOM 151 MARTIN STREET, BIRMINGHAM

- 1. Roll Call
- 2. Introductions
- 3. Review of the Agenda
- 4. Approval of Minutes, Meeting of September 5, 2019
- 5. S. Eton Maple Road to Villa

#### 6. Bicycle Infrastructure Priorities

- 7. Meeting Open to the Public for items not on the Agenda
- 8. Miscellaneous Communications
- 9. Next Meeting December 5, 2019
- 10. Adjournment

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#### CITY OF BIRMINGHAM MULTI-MODAL TRANSPORTATION BOARD THURSDAY, September 5, 2019 City Commission Room 151 Martin Street, Birmingham, Michigan

Minutes of the regular meeting of the City of Birmingham Multi-Modal Transportation Board held Thursday, September 5, 2019.

Chairwoman Johanna Slanga convened the meeting at 6:04 p.m.

#### 1. ROLL CALL

**Present:** Chairwoman Johanna Slanga; Vice-Chairwoman Lara Edwards (arrived 6:29 p.m.); Board Members Amy Folberg, Daniel Rontal, Katie Schafer, Doug White, Joe Zane; Alternate Board Member Daniel Isaksen

Absent: Student Representatives Chris Capone, Bennett Pompi

Administration:	Jana Ecker, Planning Director
	Scott Grewe, Police Commander
	Paul O'Meara, City Engineer
	Austin Fletcher, Assistant City Engineer (arrived 6:29 p.m.)
	Laura Eichenhorn, Transcriptionist

Fleis & Vanderbrink ("F&V"):

Julie Kroll

MKSK:

**Brad Strader** 

- 2. Introductions (none)
- 3. Review Agenda
- 4. Approval of MMTB Minutes of June 6, 2019

#### Motion by Ms. Folberg

Seconded by Dr. Schafer to approve the MMTB Minutes of June 6, 2019 as submitted.

Motion carried, 7-0.

VOICE VOTE Yeas: Folberg, Schafer, White, Isaksen, Slanga, Rontal, Zane Nays: None

#### 5. Cranbrook Road – W. Lincoln to W. Maple

City Engineer O'Meara presented the item. He said:

- There will be some issues with the frontage from Lincoln to Northlawn along the east side due to the open ditch drainage system and some fences that are close to the road. There is not a lot of right-of-way. He said the City would endeavor to create the 10-foot shared use path with the least impact to the area. This would not be undertaken until the City knows whether it will be receiving a Transportation Alternatives Program (TAP) grant from the state.
- The pedestrian crosswalk and ADA ramps at Middlebury and Lincoln is be a Bloomfield Twp. project. It may not be complete by the close of 2019, but the hope is that Birmingham could help on its side of the street as necessary and that the Road Commission will ensure that this aspect of the project will be complete by the end of the road resurfacing project.

Dr. Rontal said Midvale at Cranbrook crossing is difficult during Seaholm drop-off and pickup and preschool school drop-off and pick-up. He agreed with Ms. Folberg, however, that Middlebury at Lincoln is a more difficult intersection to cross and should be prioritized before Midvale at Cranbrook.

Police Commander Grewe confirmed for the Board that many people run and jog along the east side of Cranbrook.

Chairwoman Slanga summarized the Board's comments as suggesting that the 10-foot shared use path should run to Lincoln from 14 Mile on the west side, then one or two ways to cross should be added at Lincoln, and then the 10-foot shared use path should go from Midvale to Lincoln on the east side.

Ms. Folberg said she was more in favor of the 10-foot shared use path being on the west side.

Dr. Schafer said she would appreciate the sidewalk on the east side as a resident of the adjacent neighborhood.

Chairwoman Slanga replied to Board comments, stating that this grant application did not necessitate solving the Lincoln and Middlebury intersection challenges entirely within one project. She said the intent of the conversation was to apply for the grant, and then to figure out how to manage the specific intersections and challenges.

Dr. Schafer agreed, saying that if grant application could be submitted with some flexibility as regards to the details, then the Board should move forward with recommending to the Commission that City staff be directed to apply for the TAP grant.

Multi-Modal Transportation Board Proceedings September 5, 2019

Planning Director Ecker confirmed that was the case.

Vice-Chairwoman Edwards stated that the Board might ultimately recommend safety changes beyond what would be funded by the grant.

#### Motion by Mr. Zane

Seconded by Ms. Folberg to recommend submittal of the TAP grant proposal as is, with the exception that from Middlebury until Northlawn, the 10-foot wide shared use path should be moved from the east side to the west side and that the MMTB should make a point of returning to discussion of the Lincoln at Cranbrook intersection.

City Engineer O'Meara said that if there were a clear way to change the intersection of Cranbrook and Lincoln the City would have likely already recommended it.

Mr. Isaksen said it would be worthwhile for the Board to review traffic counts and accident report data for the intersection, even if no further recommendation ultimately results from the study.

Chairwoman Slanga noted that since the intersection was studied thoroughly during the Multi-Modal Master Plan, the Board could use the results of that study to help inform their upcoming discussion. She said it would be worthwhile for the Board to review the intersection to ensure that it is functioning as best it can.

City Engineer O'Meara echoed Mr. Strader's assertion that the planned three lane configuration at the intersection will alter the functioning of the intersection, and so recommended the study be delayed until after the road is rebuilt.

Ms. Folberg concurred with City Engineer O'Meara.

#### Motion carried, 7-0.

ROLL CALL VOTE Yeas: Zane, Folberg, Schafer, White, Edwards, Slanga, Rontal Nays: None

#### 6. Millrace Yield Sign (3 month review)

Police Commander Grewe presented the item.

Ms. Folberg noted that while only one resident polled had said the yield sign made a positive difference, no one in the neighborhood had provided negative feedback. As a result, she recommended the yield sign remain.

Police Commander Grewe told Dr. Rontal the issue with providing an unwarranted stop sign is that it will set a precedent for all future signage requests that come into the City from neighborhoods and residents.

Multi-Modal Transportation Board Proceedings September 5, 2019

#### Motion by Dr. Rontal Seconded by Dr. Schafer to maintain the yield sign at Millrace and Randall.

#### Motion carried, 7-0.

VOICE VOTE Yeas: Rontal, Schafer, Folberg, White, Isaksen, Slanga, Zane Nays: None

#### 7. Meeting Open to the Public for items not on the Agenda (none)

#### 8. Miscellaneous Communications

#### 9. Next Meeting – October 3, 2019

#### 10. Adjournment

No further business being evident, the board members adjourned at 7:11 p.m.

Jana Ecker, Planning Director

Paul O'Meara, City Engineer



## **MEMORANDUM**

Engineering Dept. Planning Dept. Police Dept.

DATE:	October 31, 2019
то:	Multi-Modal Transportation Board
FROM:	Jana Ecker, Planning Director Scott Grewe, Police Commander Paul T. O'Meara, City Engineer
SUBJECT:	S. Eton Rd. Maple Rd. to Villa Ave.

#### BACKGROUND

In June of this year, the City installed multi-modal improvements on S. Eton Rd. from Maple Rd. to 14 Mile Rd. The improvements included sharrows south of Maple Rd., bike lanes from Yosemite Blvd. to Lincoln Ave., and a modified cross-section from Lincoln Ave. to 14 Mile Rd. Extensive crosswalk improvements were also installed. More recently, the City Commission approved the modifications to S. Eton Rd. from Maple Rd. to Yosemite Blvd., consisting of a pedestrian island and a widened sidewalk on the west side. That work was scheduled for installation beginning this month.

Traffic and speed counts are currently being collected on S. Eton Rd. to prepare for an evaluation of the changes that have been made. Evaluation data will be tabulated and presented to the Multi-Modal Transportation Board (MMTB) for analysis in the coming months.

Some of the feedback that will be coming will be from the public, including information that we have already received. Comments have been received from bicyclists using the facility that there is a concern with the current transition for northbound bikes at Villa Ave. Currently, bicyclists are expected to stop and walk their bike across the street at the marked crosswalk at Villa Ave., so they can then use the marked bike lane that moves from the west side of the street to the east side of the street. Some bicyclists see this as impractical, and a weakness in the design (it is inherently difficult to cross the street here as a bike, unless one comes to a stop to allow traffic to clear).

Staff reviewed the situation to see if there was any way possible to extend the bike lanes north all the way to Maple Rd. Doing so would allow northbound bikes to cross S. Eton Rd. at the signalized Maple Rd. intersection, rather than at Villa Ave. Doing so would require extensive work, and require redesign of the pedestrian island and road narrowing as it is currently approved. Planned construction of this project was postponed to allow time for conceptual design improvements to be prepared, and reviewed by the MMTB. That design is now presented to you below.

#### CONCEPTUAL DESIGN

F&V has prepared the attached memo and plan for review by the MMTB. The memo can be summarized as follows:

- Modifications to the current conditions could be implemented with relative ease for the block from Villa Ave. to Yosemite Blvd. As shown in the memo, a continuation of the twoway bike lane could be extended north one more block as shown. However, extension of the bike lane could only occur if a complete solution for bikes could be extended north to Maple Rd. (requiring bicyclists to cross S. Eton Rd. at Yosemite Blvd. is <u>not</u> recommended).
- 2. Regarding the block from Yosemite Blvd. to Maple Rd., there is limited right-of-way (50 ft.). Currently, the entire right-of-way is used providing a three lane road with sidewalks immediately adjacent on both sides. Three design options are provided, one using a continuation of the two-way bike path, with a narrow sidewalk, and the other two implementing a shared use path for both bikes and pedestrians:
  - a. The extension of the two-way bike path could be constructed. As designed, it requires a minimum of 54 ft. of space, plus additional space for a retaining wall to build into the existing slope on the west side. The design as shown also reduces the sidewalk back down to five feet, which may be manageable when built adjacent to the bike lane as a buffer, rather than directly abutting the traffic lane.
  - b. Shared Use Path options are also presented, which require either 55 or 56 ft. of right-of-way, plus additional space for a retaining wall built into the existing slope on the west side. The shared use path options would provide a ten foot paved surface where both bikes and pedestrians would have to travel together. The narrower option would include a continuous concrete wall, in addition to a retaining wall on the outside edge. The wider option would include a green space, allowing the option of introducing street trees.

All three options require the acquisition of right-of-way, plus the construction of a retaining wall. It is difficult to predict how negotiations to acquire right-of-way would go, but any of the options would require an expenditure of approximately two-hundred thousand dollars, plus land acquisition costs.

Feedback from the Board is requested at this time, to determine if there is a desire to move into further design detail for this issue. Additional evaluation data will be presented at a later date to the Board for the corridor in general and thus, it may be appropriate to review that information further before exploring this area in more detail.



November 1, 2019

**VIA EMAIL** 

Mr. Paul O'Meara City Engineer City of Birmingham 151 Martin Street Birmingham, MI 48012

#### RE: S. Eton Bike Lane Shared Use Path Evaluation

Dear Mr. O'Meara:

The purpose of this letter is to provide a summary of options that may be considered by the City to provide a continuous separated bike path on S. Eton Street between Maple Road and Lincoln Street. The existing cycle track was recommended by the Multi-Modal Transportation Board in 2017 and approved by the City Commission in 2018. The interim bicycle improvements along the corridor were completed summer 2019.



The City has received feedback from bicyclists regarding the transition at Villa Street, at the cycle track terminus. The current design requires northbound bicyclist to dismount and walk their bike across S. Eton Street in the crosswalk. In order to eliminate this dismounting/crossing process the City has requested that F&V investigate options for providing a continuous bi-directional bike path between Maple Road and Villa Street, connecting with the terminus of the existing cycle track.

#### S. ETON: VILLA TO YOSEMITE

The existing section of S. Eton Street is wide enough to accommodate an extension of the cycle track. However, the existing directional bike lanes would need to be eliminated to accommodate this change and future improvements on this block including widening existing sidewalk and creating a landscape buffer would need to be reevaluated. One option for this block would be to allow parking adjacent to the east side for a portion of the block.



This option was previously considered for this section, however at the time of the initial evaluations the extension of the cycle-track to Maple Road was not an option. Therefore, to provide a safe crossing ending the cycle track at Villa was the best option. Circumstances have now changed, and the extension of the bicycle facilities to Maple Road is now under consideration.

#### S. ETON: YOSEMITE TO MAPLE

The section of S. Eton Street between Maple Road and Yosemite is too narrow to accommodate a continuation of the cycle track without additional improvements and the acquisition of ROW.

#### Cycle Track

A continuation of the cycle track would require 10-feet of road width and a minimum of 5-feet for sidewalk. The extension of the cycle track would require the following improvements and ROW acquisition. The additional ROW and the length of the retaining wall are shown on the attached plan.

- Acquire ROW on the west side of S. Eton.
- Add a retaining wall on the west side of S. Eton.
- Narrow lanes on S. Eton (where feasible).





#### **Shared Use Path**

A shared use path would require either:

• Option 1: A minimum 10 feet width and a 5-foot separation between the back of curb and the shared use path, and a 2-feet recovery zone between the path and a retaining wall.



• Option 2: A shared use path with a barrier requires a 10-feet minimum width and 2-feet recovery zones on both sides of the path for a total width of 14-feet. The separation barrier and any required retaining walls would be on the outer edge of the 14-feet overall width.





#### SUMMARY

The cycle track was ended at Villa to provide a safe crossing location for bicycles. If the cycle track is to be continued between Villa and Maple Road, the following options may be considered.

S. Eton: Yosemite to Maple Options	Minimum Width	ROW Required	Retaining Wall Required
Cycle Track Extension	15-feet	YES	YES
Shared Use Path-Option 1	17-feet	YES	YES
Shared Use Path-Option 1	16-feet	YES	YES

The concerns associated with the extension of the bike lanes includes:

- All of the options will require extensive improvements, including a retaining wall, utility relocation, drainage, ROW acquisition and construction easements.
- ROW acquisition can be a lengthy and expensive process. When ROW is required for a project to move forward, it is difficult to predict outcomes of this process.
- The construction of these improvements, including the necessary retaining wall, will be several hundred thousand dollars.
- Implementing the suggested bike path north of Villa would potentially eliminate the opportunity to install green space on this block in the future.

#### RECOMMENDATIONS

- The Multi-Modal Transportation Board (MMTB) should discuss these options further before any detailed design and cost estimating proceeds.
- Additional options for consideration by the MMTB include adding additional signage for southbound cyclists to advise of crossing at Villa.

If you have any questions or concerns, please contact our office.

Sincerely, FLEIS & VANDENBRINK

Julie M. Kroll, PE, PTOE Traffic Engineering Services Manager

Attachments



City of	Birmingham	MEMORANDUM
		Planning Department
DATE:	October 30, 2019	
TO:	Multi-Modal Transportation	Board
FROM:	Jana L. Ecker, Planning Dire Commander Scott Grewe, Pe Paul O'Meara, City Engineer	ctor olice Department
SUBJECT:	Bicycle Infrastructure Imple	ementation

#### **Background:**

The City adopted the Multi-Modal Transportation Plan (MMTP) in 2013. Since then the Multi-Modal Transportation Board has approved the implementation of several bicycle and pedestrian infrastructure features. Typically, the MMTB considers the implementation of bicycle infrastructure as incidental to scheduled road projects. For phase 1 projects, the MMTP recommended the implementation of several features incidentally with road resurfacing projects, but not all projects were or need to be implemented in this way.

#### Introduction:

The purpose of this memo is to outline all bicycle infrastructure outlined in the MMTP. By outlining and prioritizing possible implementation of bicycle infrastructure, the projects can have funds allocated to them prior to the finalization of plans. Included in the outline of the bicycle infrastructure features are possible implementation timelines.

Bicycle Infrastructure Projects Completed or in Progress							
Infrastructure type	Phase	Street	Betw	Between			
Bike Lane	1	N. Eton	Yorkshire	Derby	2014		
Bike Lane	1	Oak	Chesterfield	Lakeside	2015		
Sharrows – Neighborhood	1	Multiple Streets			2017		
Connector Route	1						
Sharrows	2	E Lincoln	Adams	S. Eton	2017		
Sharrows	1	Derby	N. Adams	N. Eton	2017		
Bicycle Repair Station	3	Shain, Quarton Lake	, Kenning, and B	ooth Parks	2018		
Buffered Bike	2	* S. Eton	E. Maple	14 Mile	2019		
Lanes/Sharrows	Z						
Bike Parking	1	Throughou	it commercial ar	eas	Ongoing		

\* S. Eton improvements made on a trial basis

	Additional Bicycle Infrastructure Recommendations in the MMTP								
Year	Туре	Phase	Street	Betw	/een	2013 Estimate	Implementation	Notes	
	Policy	2016	Require a mir parking space family develo	nimum number es at commercia pments.	of bike al or multi-				
2019	Policy	2016	Require mult of the bicycle	-family units to parking spaces	have some be covered.	\$0	Draft ordinance la Planning Board fo	nguage; Ask the r consideration	
	Policy	2016	Incentivize pr bike parking f units.	oviding secured or commercial/	d/covered /multi-family				
-	Bike Lane	1	W. Maple	Waddington	Southfield		As soon as	City Commission	
2020	Sharrows	1	W. Maple	Cranbrook	Waddington	Incidental	possible	voted not to proceed	
	Sharrows	2	Maple	Southfield	Old Woodward	\$1,890	With 2020 reconstruction		
	Bike Lane	2	Cranbrook	Lincoln	Maple	\$8,553	2020	Could win TAP grant;	
	Bike Lane	3	Cranbrook	Lincoln	W. 14 Mile	-		RCOC ROW	
	Bike Parking garages: Pierce, N. Old					\$30,000			
	Parking	Z	Woodward, C	odward, Chester, Park, and Peabody					
	Sharrows	2	Oak	Lakeside	Woodward	\$3,220			
2021 -	Neighbor. Connector	2	Multiple Streets	See attached map of compl planned portion	color coded eted or ons.				
2021	Bike Lane	2	N. Adams	Evergreen	Madison	\$8,250	Prop. For 2021		
- 2022	Sharrows	2	Adams	Madison	Woodward	\$6,300			
2022	Colored sharrows	1	W. Lincoln	Ann	S. Adams	\$10,000		White sharrows painted in 2017	
	Colored sharrows	1	Bowers	S. Old Woodward	Woodward	\$5,000	Old Woodward Phase 2 (2022)		
	Sharrows	1	N. Old Woodward	Willits	W. Maple				
	Sharrows	1	S. Old Woodward	W. Maple	E. Brown	Incompatible with front-in angle parking; recon if parking is reoriented			
	Sharrows	1	S. Old Woodward	E. Brown	Landon				
	Signage		Trails	1	1	DPS			
TRD	Buffered Bike Lane		Woodward	Quarton	14 Mile	MDOT RO	W		
	Shared- Use Path	2	Woodward	Oak	Poppleton Park path	With park	improvements	MDOT ROW	
	Unspecified	4	Coolidge	Derby	Maple	Share RO\	N w/ Troy	Repaved 2019 – no multi-modal improvements	
	Unspecified	4	E. Maple	Woodward	Coolidge	Consider r when road	multi-modal improv d is scheduled for re	ements in the future econstruction	
	Unspecified	4	Quarton		Woodward	Consider multi-modal improvements in the future when road is scheduled for reconstruction			

	Unspecified	4	14 Mile			Consider multi-modal improvements in the future when road is scheduled for reconstruction
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#### Suggested Recommendation:

To use the above chart as a guide for the implementation of bicycle infrastructure, and to request any needed funding during the 2020-2021 budget cycle for the multi-modal recommendations highlighted in tan on the above chart.

#### PHASE 2: PROPOSED NEIGHBORHOOD CONNECTOR ROUTES

The following map displays the neighborhood connector routes that should be implemented first. Initially, implementation along these routes is as simple as providing wayfinding signage identifying the direction of the route and key destinations. Eventually, other enhancements such as rain gardens, traffic calming measures, and street art may be incorporated. Please note that some of these routes are dependent on road crossings which are proposed in Phase 1 and Phase 2.



In Phase 2 only wayfinding signage is proposed. In the future, the City may consider adding some additional enhancements such as mini traffic circles, pavement markings, chicanes, street diverters, and pedestrian street lighting.

EXISTING OR PLANNED SEGMENTS



# **CITY OF BIRMINGHAM** OAKLAND COUNTY, MICHIGAN **NEIGHBORHOOD CONNECTOR ROUTE**

# **CONTRACT #9-16(M) AUGUST 2016**

# **INDEX OF DRAWINGS**

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NEIGHBORHOOD CONNECTOR ROUTE PLANS SHEET NO.

- **COVER SHEET**



FLEIS&VANDENBRINK DESIGN. BUILD. OPERATE. 27725 Stansbury Blvd, Suite #150 Farmington Hills, MI 48334 P: 248.536.0080 F: 248.536.0079 BIRMINGHAM, MI NEIGHBORHOOD CONNECTOR ROUTE

> AUGUST, 2016 F&V PROJECT NO. 823800

> > 1

#### PHASE 3: RECOMMENDED NEIGHBORHOOD CONNECTOR ROUTES

This phase focuses on completing the neighborhood connector routes. While the neighborhood connector routes are relatively easy and economical to implement some are dependent on the construction of proposed pathways and road crossing improvements. It will be important to prioritize the implementation of the neighborhood connector routes in this phase based on the progress of pathways implementation and road crossing improvements.



# 7 Reasons to Fund Bicycle Infrastructure

#### AUTHOR

Bloomingrock@bloomingrock, Smart Cities Dive, smartcitiesdive.com

The Phoenix City Council has tabled approving the Bicycle Master Place until the end of the summer. The Phoenix Bicycle Master Plan is not complete yet, but aims to connect currently disjointed bicycle lanes, shared roads and bicycle boulevards and ultimately earn the Platinum rating for bicycling friendliness awarded by the <u>League of American</u> <u>Bicyclists</u>.

Phoenix is one of the first handful of cities nationwide to get **<u>bike share</u>**. But experts are scratching their heads at this step toward bicycle friendliness because it's happening in relative isolation. If the city isn't bicycle friendly on the whole, how successful will a bike share program be? "It's only when bicycles are coupled with safe and more ubiquitous biking facilities that bike share is likely to get a large following," warns walkability expert, architect and urban planner **Jeff Speck**.

Recently, the City Council approved spending \$1.5 million towards **<u>bicycle projects</u>** in this years budget. But this is only a drop in the bucket when you consider that building one mile of a protected bike lane costs approximately half a million dollars. Spending \$1.5 million on bicycles compared to The Netherlands \$665 million yearly on bicycles shows how insignificant that number really is.

But you have to start somewhere and even including <u>bicycle infrastructure</u> in the budget discussion as a serious line item is a big step in the right direction for Phoenix. But Phoenix leaders need a push from residents to make the leap to pass the Bicycle Master Plan at the end of the summer AND then to take the important step to fund it. The key is to begin to change the <u>car culture</u> in the city, which is starkly reflected in the Department of Transportation and to take steps to promote bicycling on the roads of Phoenix.

Funding bicycle infrastructure makes a lot of **business sense** for any city in the 21st century. Below are 10 reasons Phoenix should not only pass the Bicycle Master Plan, but actually fund it as well. It will not only help its national reputation, but it will help its own bottom line. Here's why:

**1. Bikeways make places more valuable.** A 2006 study found that in Minneapolis, median home values rose \$510 for every quarter-mile they were located closer to an off-street bikeways. In Washington D.C., 85% of nearby residents say the 15th Street bike lane is a valuable community asset. By mapping real estate transactions,

researchers have been able to show that bike facilities can have positive, statistically significant impacts on home values. A study of home values near the Monon Trail in Indianapolis, Ind. measured the impact of the trail on property values. Given two identical houses, with the same number of square feet, bathrooms, bedrooms, and comparable garages and porches – one within a half mile of the Monon Trail and another further away – the home closer to the Monon Trail would sell for an average of 11 percent more.

**2. Bikeways help companies attract talent.** Several recent studies have shown that younger people are increasingly disenchanted with driving. The percentage of people age 16 to 24 with driver's license is lower than at any point since 1963. And among people 16 to 34, bike trips have increased 24 percent.

**3. Bike commuters are healthier and more productive.** According to a 2003 study by the U.S. Department of Health and Human Services, "workplace physical activity programs can reduce short-term sick leave by six to 32 percent, reduce health care costs by 20 to 55 percent, and increase productivity by 2 to 52 percent." While we don't know how much of those effects are due to biking, the benefits of integrating physical activity into daily routines are indisputable. A study of 30,604 people in Copenhagen showed that people who commuted to work by bike had 40 percent lower risk of dying over the course of the study period than those who didn't and bike commuters average a day fewer absences due to illness each year than non-bike commuters.

**4. Bike facilities increase retail stores' visibility and sales.** There's plenty of evidence that bike infrastructure gives retail businesses a boost. According to a San Francisco State University study, 66 percent of shops on San Francisco's Valencia Street reported business improved after the city reduced the width for cars, and widened sidewalk and added bike infrastructure. A 2008 Australian study showed that per square foot, bike parking produced more than three times the revenue for businesses than car parking in an hour.

**5. Bicycling saves a city money.** Researcher Todd Litman of the Victoria Transport Policy Institute has attempted to quantify the benefits of switching from driving to bicycling. He looked at the benefits of congestion reduction, roadway cost savings, vehicle cost savings, parking cost savings, air pollution reduction, energy conservation, and traffic safety improvements. Litman estimated that replacing a car trip with a bike trip saves individuals and society \$2.73 per mile.

#### 6. It reduces congestion and therefore reduces the need for more

**freeways**. According to the Texas Transportation Institute, "Gridlock costs the average peak period traveler almost 40 hours a year in travel delay, and costs the United States more than \$78 billion each year...**traffic jams** are wasting 2.9 billion gallons of gas every year." There is reason to believe, however, based on the recent decline in driving, that a relatively small shift from cars to other modes could have an outsized impact on congestion. According to the Federal Highway Administration, there was a 3 percent drop in traffic on "urban interstates" from 2007 to 2008. This has translated to a nearly

30 percent reduction in peak hour congestion, indicating that "when a road network is at capacity, adding or subtracting even a single vehicle has disproportionate effects for the network. And in urban areas, where cars and bicyclists travel at similar speeds, bike lanes can accommodate 7 to 12 times as many people per meter of lane per hour than car lanes and bicycles cause less wear on the pavement.

**7. Bicycling saves in health related costs.** There are many different ways to estimate the health cost savings of bicycling. The values vary depending on study design, medical conditions attributed to inactivity, cost data availability, and other variables, but all studies show positive outcomes. The health savings resulting from physical activity, measured in 10 different studies, range up to \$1,175 per person, per year. The median annual per capita value of the ten studies was \$128.

These reasons alone justify spending on bicycle facilities. A 2009 study in England found that, because of health improvements, congestion reduction, and environmental benefits, a small number of additional regular riders are needed to pay for new cycling infrastructure. For example, the study's Cycling Planning Model suggests that an investment of \$16,521 U.S. requires just one additional cyclist riding three times a week over the thirty year life of the project. With the proper investments, it is possible to increase the **share of bicycling trips** and lead to the economic benefits described above. The results of a study of 33 large U.S. cities, (excluding New York City, which is considered an outlier in much transportation research because of its size and high use of public transportation) showed that each additional mile of bicycle lane is associated with an approximate one-percent increase in the share of bike-to-work trips.

Essentially, bike infrastructure pays for itself and brings cities economic growth. And this is what the Phoenix City Council needs to consider when approving and funding the Bicycle Master Plan.

#### [Source: Streetsblog and League of American Bicylists]

Photo credit: Photo by Gary Mark Smith [CC-BY-SA-3.0], via Wikimedia Commons



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LISTEN TO STORY

## **Bettering Bike Infrastructure for U.S. Cities**

A look at U.S. bicycle infrastructure to determine where it lags behind other parts of the world.

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Unfortunately, for those of us in the U.S., bike infrastructure is seriously lacking. Not a single U.S. city made it onto the top 20 list of the

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017, billed as the "world's most comprehensive of bicycle-friendly cities," but also one of the few



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With five times as many bikes as there are cars, Copenhagen is considered the biking capital of the world. It's a city where 17 percent of families with kids even have a cargo bike, with a large storage section attached to the front. (Image courtesy of City IO.)

So, why is the U.S. so far behind the rest of the world in terms of bikability and what can it do to improve? In addition to compiling existing research, we spoke to Ken McLeod from the League of American Bicyclists to learn more.

## The State of U.S. Bike Infrastructure

As we learned in <u>our coverage of high-speed rail infrastructure</u>, the U.S. has been a very personal-vehicle-obsessed nation since large business interests influenced infrastructure design in the middle of the last century. McLeod explained that, just as the federal government's priority on interstate highways thwarted the development of mature railways, so too did walking and biking get neglected.

"Certainly, if you look at our federal transportation policy, our big push was for the interstate highway system and then arterials and collector roads to funnel people to that [highway system]," McLeod said. "Really our federal policy from about 1955 until the 70s was just [highways]. Then, we brought in transit in I think the 70s and it wasn't until 1991 when we got some dedicated funding for biking and walking. There was a good almost 40-year period where our federal policy totally ignored the needs of people biking and walking."

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case with high-speed rail, the tradition of neans of transportation in other countries has that entire highways (referred to as "cycling e freeways") are in the process of being built. '5-mile bike network has been established, and in

beigium, אכל miles of cycle superhighway has been built.



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These highways, which first started appearing around the 1980s, are filled with bicycles, recumbent bikes, cargo bikes and velomobiles. In some cases, mopeds, Segways and pedestrians are permitted at certain speeds. In most cases, the intent is to prevent as much stopping for automobile traffic as possible. For instance, in the <u>UK's National Cycle Network</u>, 5,273 miles are completely free of traffic.



Infrastructure in the U.S. has been improving since the early 80s, however. In <u>a study</u> for *Transportation Research A*, researchers note that federal spending has increased from just \$5 million per year in 1991 to

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ar in 2009. The authors explain "it is clear that king and cycling infrastructure and programs has over the past two decades. That infusion of estrian and cycling infrastructure and programs raged local and state governments to construct

new and improved cycling facilities."

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1977 and 2009, and the number of workers cycling to work increasing 11 percent between 2009 and 2012, totaling 865,000 people (just 0.6 percent of the total population). Bike sharing programs are on the rise as well, with the number of "shared micromobility" trips (bikes, e-bikes and scooters) <u>doubling</u> from 2017 to 2018 at 84 million trips.

To increase these numbers and, therefore, decrease the environmental impact of human travel, the U.S. will still have to catch up. In Denmark, the biking capital of the world, 16 percent of all trips are made by bike. This number shoots up to 25 percent for trips of less than three miles. <u>Copenhagen</u> has a bike commuting rate of about 41 percent.

"Nationwide, the national average is about 0.6 percent of people biking to work, which is a very low percentage," McLeod said. "Most people don't bike to work and most people, if you ask them to describe a safe route from their house to their work, would probably be unable to describe such a route."

## What Makes a City Bikable?

As a part of its Bicycle Friendly America program, the League of American Bicyclists ranks communities, universities, states and businesses within the United States in terms of their bikability. Five cities in particular have achieved a "Platinum Award" under this program: Davis, Calif.; Boulder, Colo.; Fort Collins, Colo.; Madison, Wis.; and Portland, Oreg.

What makes these cities bike-friendly? The organization breaks the criteria down into "Five E's":

• Engineering: Physical infrastructure that gives bikers safe and easy ways to ride and park, such as well-connected biking networks, dedicated and protected bike lanes, and places to lock up one's bike.

• Education: Methods for engaging and teaching to the community, including online and physical presentations to make diverse groups of people aware of their rights and responsibilities on the road.

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vating a healthy bike culture, from local bikevay to public bike-sharing programs.

fficers who ensure that proper biking and traffic

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According to League of American Bicyclists, Davis has good bike paths, a robust network of paths on arterial and major streets, and very good public outreach. This has led to the highest bike commuting rate in the country, with 21.8 percent of all commuters biking to work.

#### DAVIS, CA MUNIT

TOTAL POPULATION POPULATION DENSITY 6,356

Darris

# OF LOCAL BICYCLE FRIENDLY BUSINESSES # OF LOCAL BICYCLE

FRIENDLY UNIVERSITIES

#### A BICYCLE FRIENDLY COMMUNITY

TOTAL AREA (10 mile)

66,742

10.5

THE LEAGUE

PLATINUM

**10 BUILDING BLOCKS OF** 

Arterial and Major Collector Streets with Bike Lanes	90%	100%
Total Bicycle Network Mileage to Total Road Network Mileage	70%	76%
Public Education Outreach	EXCELLENT	VERY GOOD
Share of Transportation Budget Spent on Bicycling	INSUFFICIENT DATA	20%
Bike Month and Bike to Work Events	EXCELLENT	EXCELLENT
Active Bicycle Advocacy Group	YES	YES
Active Bicycle Advisory Committee	YES	MONTHLY
Bicycle-Friendly Laws & Ordinances	EXCELLENT	GOOD
Bike Plan is Current and is Being Implemented	YES	SOMEWHAT
Bike Program Staff to Population	PER 10K	PER 14,832

#### **CATEGORY SCORES**

ENGINEERING Bicycle network and connecticity	5/10
EDUCATION Motorist assurences and hicycling skills	4/10
ENCOURAGEMENT Mainstreaming bigaling culture	5/10
ENFORCEMENT Primoting safety and protecting bicyclius' rights	5/10
EVALUATION & PLANNING Stating surgers and bacing a plan	4/10

EY OUTCOMES	dr. Dianand	Derti
RIDERSHIP locentage of Commuters who hile	20%	21.8%
AFETY MEASURES CRASHES Souther per sek hisyale communers	50	18
AFETY MEASURES FATALITIES intellities per sole bicycle commuters	0.2	0



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Ensure that there is sufficient bike parking to support the high level of bicycling in Davis. Increasing and improving bicycle parking should also include increasing the diversity of bicycle parking types, particularly to accommodate cargo bicycles, e-bikes, and long-term and short-term parking at transit and nercial districts.

Continue efforts to implement your "Beyond Platinum" Bicycle Action Plan adopted in 2014. Davis is a leader for the bicycling community in the United States and we hope to continue to see that leadership.

D Continue to work collaboratively with UC Davis, Davis Bicycles! and non-profit Cool Davis to establish a City and UC Davis joint trip reduction program. Consider whether this collaboration can

>> Continue efforts to create a ticket diversion program

be used as a model for other bicycle-related programs

for bicyclists. This would allow bicyclists who may not have previously received safety training to learn about proper riding techniques and correct poor behavior.

» Continue efforts to create a pump track and consider what other mountain bike-oriented facilities might be helpful to provide safe and accessible off-road recreation

pre-eminent bicycling community in the United States through a signature community bicycling event.

#### LEARN MORE >> WWW.BIKELEAGUE.ORG/COMMUNITIES

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Davis's Bicycle Friendly America report card. (Image courtesy of the League of American Bicyclists.)

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ting place because, for years, it had the highest n America and it's been a long-time leader in at there is bicycle infrastructure," McLeod said. 7 to experiment with separated bike lanes. They path system that supplements those separated

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instantly improving the bikability of a community.

McLood said d 🛞 engineering.com NEW

"Typically, there's a state-of-the-art for how to build a bicycle-friendly community," McLeod explained. "That is going to include putting bike lanes on lower speed roads or lower traffic volume roads. Then, when you get a higher speed road or higher traffic volumes—like a 35-mile-perhour road and as soon as you have traffic volume—the leading edge guidelines are saying to put separate protected bike lanes there, figure out how to make a raised or separated path for that road. The more separation or protection you can provide for people biking when you have higher speed or volume, the better."



A combined bike and turn lane in Eugene, Oregon. (Image courtesy of NACTO.)

In addition to conventional bike paths and barrier-protected cycle tracks, other infrastructure pieces—from <u>the National Association of City</u> <u>Transportation Officials (NACTO)</u> —that can be used to improve the rider experience are the following:

• Intersection treatments: Intersection designs that raise bicycle awareness and communicate right-of-way, such as bike boxes that allow riders to move before cars as the light turns from red to green or median refuge islands placed in the center of a street to protect bikes from traffic.

· Bike signale: Signs and lights to allow bicycle traffic at intersections,

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ls at traffic lights.

is and markings to denote the presence of ind their way. Colored areas on bike lanes, for risibility. Wayfinding signs can help riders ed path route.

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The key is providing the bicyclist with a "continuous safe experience," which means not just a major bike path, but safe arterial streets and main streets that might lead to that path.



This bike lane in Austin, Tex., features a buffer between car and bike traffic, as well as colored bike facilities that both increase rider visibility and provide path markings for wayfinding. (Image courtesy of NACTO.)

"It's very rare that a path leads people directly from residential areas to job centers, and sometimes there's just not that last connecting infrastructure that helps people access their jobs," McLeod said. "When you have a long path like that, it's also really important to make sure that it has those connections to get that person from that path to where they want to go, whether that's a half-mile or three miles from that path."

NACTO performed <u>a study</u> that discovered that, not only do protected bike lanes improve safety, but they also encourage more people to ride bicycles. Interestingly, bike share programs do the same by increasing the visibility of biking, thereby increasing the alertness of drivers.

NACTO also found that these benefits were of particular importance for low-income bikers and riders of color, due to the fact that 49 percent of people who commute on bike have an income of less than \$25,000 and that "Black and Hispanic bicyclists have a fatality rate 30% and 23%

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lists, respectively."

ture improvements <u>are cheap, compared to other</u> there is little argument against including them in 5 budgets. Below, the costs of common bicycle ents are laid out.

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Bicycle Lane	\$89,470	\$133,170	\$5,360	\$536,680	Mile	6 (6)
Bicycle Rack	\$540	\$660	\$64	\$3,610	Each	19 (21)
Concrete Sidewalk	\$27	\$32	\$2.09	\$410	Linear Foot	46 (164)
Curb and Gutter	\$20	\$21	\$1.05	\$120	Linear Foot	16 (108)
Curb Extension/ Choker/ Bulb-Out	\$10,150	\$13,000	\$1,070	\$41,170	Each	19(28)
Flashing Beacon	\$5,170	\$10,010	\$360	\$59,100	Each	16 (25)
High Visibility Crosswalk	\$3,070	\$2,540	\$600	\$5,710	Each	4(4)
Multi-Use Trail - Paved	\$261,000	\$481,140	\$64,710	\$4,288,520	Mile	11 (42)
Multi-Use Trail - Unpaved	\$83,870	\$121,390	\$29,520	\$412,720	Mile	3 (7)
Pedestrian Crossing	\$310	\$360	\$240	\$1,240	Each	4 (6)
Pedestrian Hybrid Beacon	\$51,460	\$57,680	\$21,440	\$128,660	Each	9 (9)
Pedestrian Rail	\$95	\$100	\$7.20	\$690	Linear Foot	29 (83)
Pedestrian Signal	\$980	\$1,480	\$130	\$10,000	Each	22 (33)
Raised Crosswalk	\$7,110	\$8,170	\$1,290	\$30,880	Each	14 (14)
Rapid Rectangular Flashing Beacon	\$14,160	\$22,250	\$4,520	\$52,310	Each	3 (4)
Shared Lane/Bicycle Marking	\$160	\$180	\$22	\$600	Each	15 (39)
Signed Bicycle Route	\$27,240	\$25,070	\$5,360	\$64,330	Mile	3 (6)
Speed Bump	\$1,670	\$1,550	\$540	\$2,300	Each	4 (4)
Speed Hump	\$2,130	\$2,640	\$690	\$6,860	Each	14 (14)
Speed Table	\$2,090	\$2,400	\$2,000	\$4,180	Each	5 (5)
Speed Trailer	\$9,480	\$9,510	\$7,000	\$12,410	Each	6 (6)
Stop/Yield Signs	\$220	\$300	\$210	\$560	Each	4 (4)
Streetlight	\$3,600	\$4,880	\$310	\$13,900	Each	12 (17)
Striped Crosswalk	\$340	\$770	\$110	\$2,090	Each	8 (8)
Wheelchair Ramp	\$740	\$810	\$89	\$3,600	Each	16 (31)

Definitions of infrastructure types and additional costs available in the full version of the paper. Download the full document at: www.walkinginfo.org/download/PedBikeCosts.pdf.

About the Resource The paper and database were created by the University of North Carolina at Chapel Hill's Highway Safety Research Center (HSRC). The HSRC has been a leading research institute that has helped shape the field of transportation safety. The Center's mission is to improve the safety, security, access, and efficiency of all surface transportation modes through a balanced, interdisciplinary program of research, evaluation and information dissemination. These resources were prepared for the Federal Highway Administration and supported by the Robert Wood Johnson Foundation through its Active Living Research program. For more information on Active Living Research, visit <u>www.aetivelivingresearch.org</u>

The cost of common bicycle infrastructure components. (Image courtesy of HSRC.)

### **Urban Planning for Bikable Cities**

We've laid out a number of specific infrastructure tools that cities can cheaply deploy to improve the rider experience and encourage more biking. However, there is a broader view one can take to improve biking through urban planning, when more large-scale reconstruction is occurring.

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and bike-friendly cities is connecting arterial
cessible roads. This means fewer dead ends and
all traffic onto just a handful of key streets.

# DOD STRATEGY:

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Walkable (less than 1,000 meters), it is suggested that none of the sides of an urban block in the community measure more than 250 meters.

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To ensure a high degree of connectivity, compliance with a minimum index of 1.4 is recommended<sup>1</sup>. This index is calculated by dividing the number of segments (road links between intersections) by the number of nodes (intersections) within the surface of the neighborhood. A score of 1.4 implies more direct connections to travel between two points, as on average, there will be more paths available from each intersection.

An example of CTS Mexico's approach to making city blocks walkable and bikable. (Image courtesy of CTS Mexico.)

Additionally, car-free or limited-traffic roads that link to important destinations (schools, businesses, public transportation) give both pedestrians and bicyclists safe, streamlined routes to reach their destinations.

## NEIGHBORHOOD STRATEGY: PUBLIC SPACE NETWORKS

With the objective of creating public spaces that are planned as part of an interconnected system of spaces, access to a variety of open consolidated spaces with different types and sizes from any point within the urban community should be provided. It is important to at least comply with the following:

- A neighborhood garden that is, at most, a 400 meter walking or bicycle trip.
- B. A neighborhood park that is, at most, an 800 meter walking or bicycle trip.
- C. A public sports venue that is, at most, a 1,200 meter walking or bicycle trip.



How to integrate green spaces to make a city walkable or bikable. (Image courtesy of CTS Mexico.)

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<u>a specific guide</u> for urban design (written for

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bicycling and walking planning above as well as numerous others.

## The Benefits of Bicycle Infrastructure

There are obvious benefits from improved bicycle infrastructure for riders, most notably fewer <u>traffic accidents</u>. However, these benefits actually extend into the larger population. For instance, <u>traffic</u> can be reduced in some areas, as can <u>air quality</u> and equitable <u>access to work</u>.

According to the U.N. Intergovernmental Panel on Climate Change (IPCC), we have <u>about 11 years</u> to cut global greenhouse gas (GHG) emissions by roughly 45 percent if we want to prevent climate collapse without resorting to untested and undeveloped technologies. The IPCC's most recent report, however, does not take into account <u>feedback cycles</u>, such as melting permafrost (which releases methane and carbon dioxide) or shrinking albedo from melting glaciers (leading to more sunlight absorption by the oceans), that are widely believed to accelerate the climate crisis. Because atmospheric methane, a GHG that is 25 to 30 times more potent than carbon dioxide, is <u>increasing more quickly</u> than researchers previously estimated, there is a possibility that the permafrost is melting quickly. As a result, we may have even fewer than 11 years to cut even more emissions.

While shifting to "sustainable technology" like electric cars could make a dent in mitigating climate change, the dire outlook in the report only takes climate change into account, and does not even look at the impact that <u>rapid species loss</u>, <u>water acidification</u>, <u>soil erosion</u> and myriad other life-ending impacts industrialization is causing worldwide.

This raises the question: is sustainable technology really sustainable enough? In terms of transportation, are electric cars really a sufficient means of addressing our ecological collapse? Or could making life more walkable and bikable aid in addressing these issues?

#### **Continuing Improvement**

Even Davis still has a mod deal of room to grow, according to the

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all five E categories, the city ranks 5s and 4s out ng. To improve its Engineering scores, for raged to enhance its bike parking, including at areas, for a more diverse set of vehicles, such as tes. Sign up

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believes that we're headed in the right direction, though. "We've been building on 30 years of federal support for biking and walking. So, a lot of conversations that were unaddressed for a long period of time have been addressed," McLeod reflected. "I think there's a good understanding of what tools we have to make things better for people biking and walking. At the same time, we saw an uptick in people biking to work earlier this decade—it peaked around 2014 and it's slowly been ebbing since then."

Because the solutions to improving bikability are comparatively simple and inexpensive, McLeod sees political leadership as a key to pushing momentum forward again.

"There hasn't been the same great political leadership in a broad sense to say that biking and walking are important things," he said, highlighting that automobiles are still prioritized in terms of urban planning. "There's kind of this ingrained thing that we have back from the 1950s about the best transportation system is the system that gets you somewhere quickly, and there's still an evolving mindset that incorporates having really great communities where people want to be, where people are safe, and where people can bike and walk."

There are plenty of resources available for cities interested in learning how to improve bicycling and pedestrian infrastructure for their communities, some in the form of free tools and guides and others in the form of expertise and consulting. Some examples include the League of American Bicyclists, NACTO, HUB Cycling and Copenhagenize.



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