



Protected Bike Lane Feasibility Study Overview

January 18, 2023

Conducted in Partnership With



Presentation

1. Project Background
2. Schedule, Scope of Work, and Approach
 - Input & Discussion
3. Next Steps



Protected Bike Lane (PBL) Feasibility Study

Project Background



Protected Bike Lane (PBL) Feasibility Study

Project Goal: Building from previous plans, mobility objectives, and public input - *Increase the number of protected bike lanes*



Existing Chandler Plans



Mobility Objectives



Public Input

Project Outcome

- Protected bike lane design guidelines
 - *Quicker to build & lower cost*
- Feasibility of converting existing and planned bike lanes to protected bike lanes (arterials & collectors)
- Develop a prioritized list of roadway locations for implementation.



Why Protected Bike Lanes? Building the Right Type of Bike Facilities for Our Residents

During the City's Transportation Master Plan 2019 Update, Chandler residents expressed a strong interest in being able to bike as a form of transportation but indicated that they are not willing to use unprotected bike lanes next to high-speed traffic on arterial streets

Interested but Concerned

Casual & Somewhat Confident

Highly Confident

Low Stress Tolerance

High Stress Tolerance



MOST SEPARATED

LEAST SEPARATED

Shared Use Path

Separated Bike Lane

Bike Boulevard

Buffered Bike Lane

Bike Lane

Shared Roadway



MOST COMFORTABLE

LEAST COMFORTABLE

Project Background

Chandler Transportation Master Plan

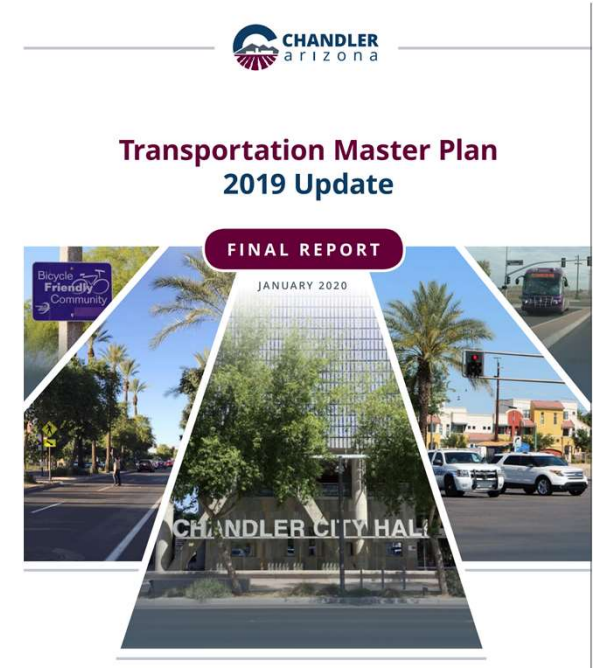
Vision:

Develop an environmentally-friendly, multimodal transportation system that leverages technology and provides choices to make Chandler known as the “Most Connected City”.

Bicycle/Pedestrian Objectives

- a) Provide bicycle and pedestrian facilities along arterial roadways to enhance the safety of bicycling and walking. . .

- e) Provide bicycle facilities at transit connections and population centers.









Project Background

Chandler Transportation Master Plan *Bicycle/Pedestrian Recommendation*

- Prepare bicycle and pedestrian policies and guidelines regarding items such as design standards on shared use path crossings, construction, maintenance, and proper facility amenities
- Improve the visibility, safety, and comfort of non-motorized users through additional improvements such as lighting, shade, and colored bike lanes at conflict points as appropriate;
- Utilize regionally collected bicycle and pedestrian count data to track trends and hotspots that can eventually be used to prioritize funding;

Table 6-2. Types of Bicycle Facilities for Consideration

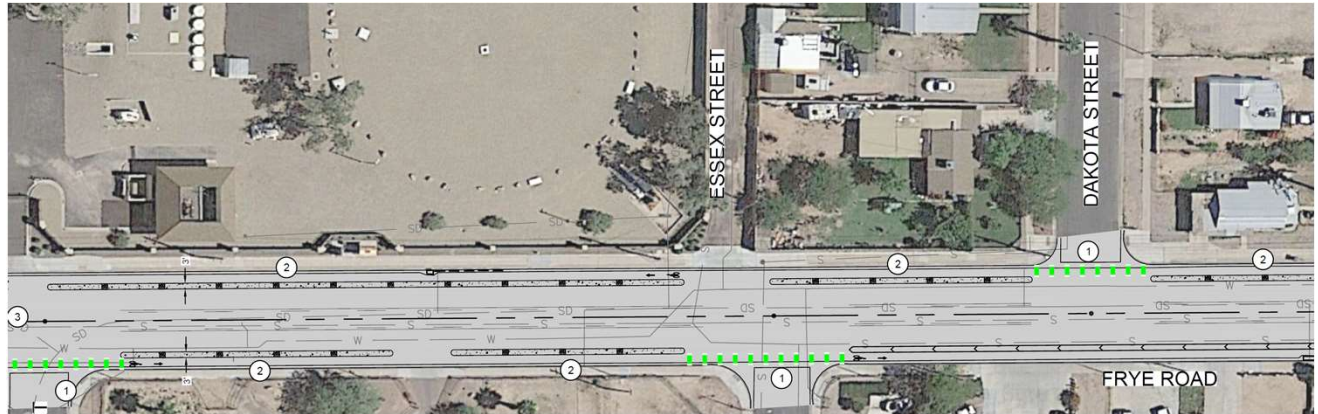
Facility Type	Description	Example
Bike Route	A roadway designated with unique routing designation or with signage indicating vehicles and bicycles to share the lane; often found when streets are not wide enough for dedicated bike lanes but can also be used on roadways that have dedicated bike lanes	
Bike Lane	A portion of the roadway designated for exclusive use by bicyclists, usually established on arterial or collector roadways; created by use of striping and pavement markings in the same direction as the adjacent traffic; includes no physical barrier; should be a minimum of 4 feet wide (excluding the gutter pan)	
Separated/Buffered Bike Lane	A buffered bike lane includes a designated "buffer space" separating the bike lane and the travel lane and/or the parking lane; typically accomplished with horizontal or chevron-style striping, delineators, or rolled curb	
Cycle Track/Protected Bike Lane	An exclusive bike facility that is physically separated from vehicle lanes, parking lanes, and sidewalks, while still located on the roadway; separation accomplished by raised medians, on-street parking, bollards, raised pavement, etc.; cycle tracks can be one-way or two-way	
Bicycle Boulevard	A street segment, or collection of segments, that has been prioritized for bicycle traffic by minimizing through motor traffic via signage, traffic calming implementation, and vehicle restrictions; local neighborhood trips are still accommodated	
Shared Use Path	Paved or unpaved 10 feet to 14 feet wide paths or trails physically separated from vehicles or located off-road (e.g., along canals) for bicyclists, walkers, runners, skaters, etc.; can look similar to a cycle track/protected bike lane but differs in that facility is not exclusively for bicyclists	



Project Background

Frye Road- The City's first PBL!

3' wide raised concrete median



Frye Road Protected Bike Lanes (6TP750)

Description:

Funding is allocated to construct protected bike lanes on Frye Road west of Arizona Avenue to the Paseo Trail.

Project Type:

One-time capital improvement

FY 2022-23 Funding:

\$5,589,000

Funding Source:

Capital Grants
General Government Capital Projects

Impact on Operating Budget:

Ongoing O&M expenses of \$35,000 per year start in FY 2023-24.



Project Background (2023 – 2032 CIP)

City of Chandler
2023-2032 Capital Improvement Program

Bike Lane and Path Improvements

Program # 6TP771

Program Description:

This request is for capital funding to enhance bike lanes and paths in Chandler. The request includes \$20,000 for bike and pedestrian count data, \$5,000 local match from a Congestion Mitigation Air Quality (CMAQ) grant for a study to identify and prioritize candidate locations to convert standard bike lanes into protected bike lanes, and \$190,000 for railing to convert some traditional bike lanes into protected bike lanes every other year, beginning in FY 2023-24. This amount would allow the City to protect about one mile of bike lane in one direction or one-half mile of bike lane in two directions every other year. During the City's Transportation Master Plan 2019 Update, Chandler residents expressed a strong interest in being able to bike as a form of transportation but indicated that they are not willing to use unprotected bike lanes next to high-speed traffic on arterial streets. This funding request would begin to address these concerns by providing a physical barrier between bicyclists and motorists where appropriate.

Focus Area to Achieve Council Strategic Goals:



Estimated Total Program Cost:

Prior spending (10 years of actuals and current year estimates including carryforward)
New 10-year appropriation

\$0

\$975,000

\$975,000

Financial Information:

Expenditures	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	Total
Study	\$25,000	0	0	0	0	0	0	0	0	0	\$25,000
Equipment	\$0	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$950,000
Total	\$25,000	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$975,000

Funding Source:	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	Total
Gen Govt Capital Projects (401)	\$25,000	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$975,000
Total	\$25,000	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$975,000



Project Background (2023 – 2032 CIP)

City of Chandler
2023-2032 Capital Improvement Program

Bike Lane and Path Improvements

Program Description:

This request is for capital funding to enhance bike lanes and paths in Chandler. The request includes \$20,000 for bike lane study, \$5,000 local match from a Congestion Mitigation Air Quality (CMAQ) grant for a study to identify and convert bike lanes into protected bike lanes, and \$190,000 for railing to convert some traditional bike lanes into protected bike lanes in FY 2023-24. This amount would allow the City to protect about one mile of bike lane in one direction every other year. During the City's Transportation Master Plan 2019 Update, Chandler residents expressed a preference for protected bike lanes over other forms of transportation but indicated that they are not willing to use unprotected bike lanes next to high-speed traffic. This request would begin to address these concerns by providing a physical barrier between bicyclists and motorists who

Focus Area to Achieve Council Strategic Goals:



Estimated Total Program Cost:

Prior spending (10 years of actuals and current year estimates including carryforward)
New 10-year appropriation

Financial Information:

Expenditures	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	Total
Study	\$25,000	0	0	0	0	0	0	0	0	0	\$25,000
Equipment	\$0	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$750,000
Total	\$25,000	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$975,000

Funding Source:	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	Total
Gen Govt Capital Projects (401)	\$25,000	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$750,000
Total	\$25,000	190,000	0	190,000	0	190,000	0	190,000	0	190,000	\$975,000

Responding to the public's interests, CIP Program to convert bike lanes to PBLs

\$950,000 in total - \$190,000 per every other year

- FY2023/24
- FY2025/26
- FY2027/28
- FY2029/30
- FY2031/32

Estimated = 2.5 miles in total – ½ mile per every other year



Funding and Programming



- November 2021 – Application submitted to MAG for funding - \$80,000 Total Project Costs, Chandler share is \$4,560



- December 2021/January 2022 - approval



Protected Bike Lane (PBL) Feasibility Study

Scope of Work



Scope of Work



Task 1: Community
Engagement



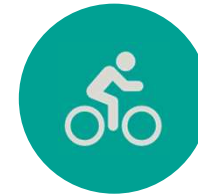
Task 2: Protected Bike
Lane Design Guidelines



Task 3: Data Collection
& Analysis



Task 4: Protected Bike Lane
Feasibility Analysis



Task 5: Study Report &
Implementation



Project Schedule – 9 Months

2023
9 Months

Winter

Spring

Summer

Protected Bike Lane
Design Guidelines

Protected Bike Lane Feasibility
Analysis

Data Collection & Analysis

Project Webpage & Use of City Communications Outlets



Transportation
Commission



In Person & Online
April 1st Family Bike Ride

Study Report &
Implementation



Stakeholder & Community Engagement





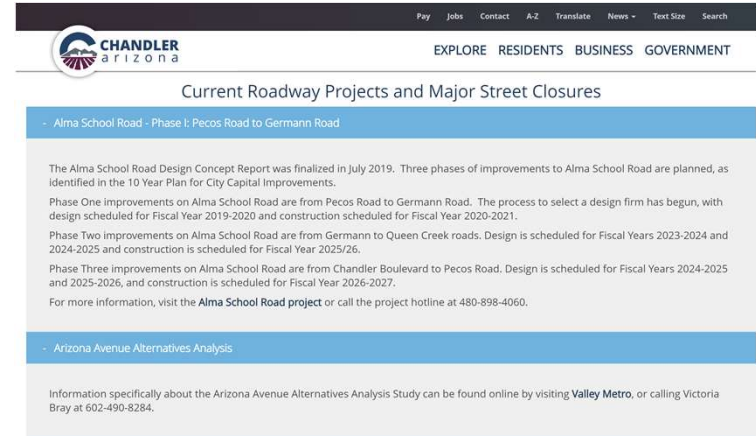
Task 1 - Community Engagement

Inform & Educate – *Continuous*

- Project website
- Chandler newsletters & social media
- E-mails (existing lists)

Input & Engage – *Spring*

- Meet people where they are at
- Online survey
- Feedback on
 - *Draft Analysis Results*
 - *Prioritization Approach*



April 1, 2023

7:30 a.m.

📍 Chandler Park & Ride
Hamilton Street & Germann
Road
Chandler, AZ 85286

💰 FREE





Task 2 – Protected Bike Lane (PBL) Design Guidelines

A critical step of determining the feasibility of installing protected bike lanes is developing a set of agreed upon design options for protected bike lanes.

This will establish the needed width and space within a roadway to install a protected bike lane.

The Envelope

DESIGN CRITERIA

- 1 1-WAY PROTECTED LANE DIMENSIONS: 5 FEET MINIMUM WIDTH**
In areas with high bicycle volumes or uphill sections to facilitate safe passing behavior, the minimum desired width is 7 feet.
- 2 PHYSICAL SEPARATION**
Vertical separation treatments such as parking lanes, bollards, movable planters or raised curbs may be utilized.
- 3 BICYCLE LANE SYMBOL MARKINGS**
Should be placed at the beginning and end of a protected bicycle lane and at periodic intervals along the facility based on engineering judgment to define the bike direction.
- 4 BUFFER DIMENSIONS: 1.5 FEET MINIMUM WIDTH**
The desired minimum width is 3 feet and should be marked with 2 solid white lines with interior diagonal cross hatching. For clarity at driveways or loading zones, consider a dotted line for the buffer boundary where cars are expected to cross.
- 5 BARRIER PLACEMENT**
Where possible, physical barriers such as bollards or removable curbs should be oriented towards the inside edge of the buffer to provide as much extra

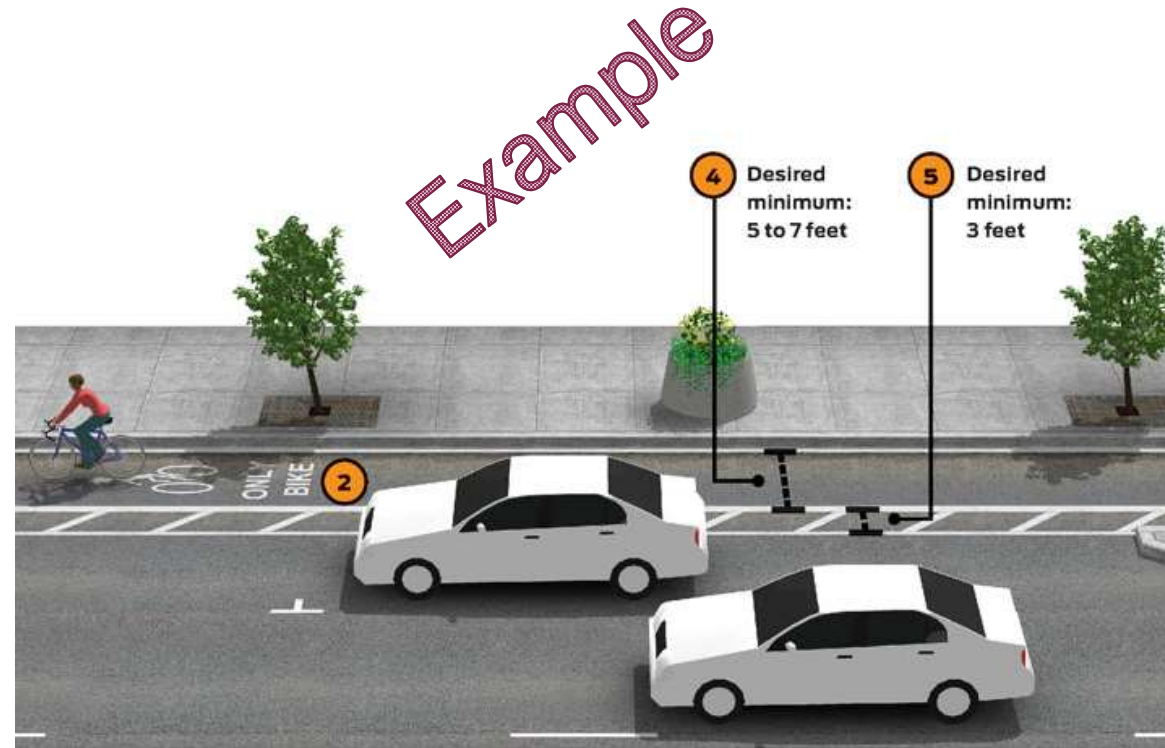




Task 2 –PBL Design Guidelines

Minimum and Maximum Widths for:

- Bike Lane
 - Acknowledge gutter pan
- Buffer
- Physical barrier options
 - High Protection
 - Lower cost options
 - Replicate
- Total facility dimensions

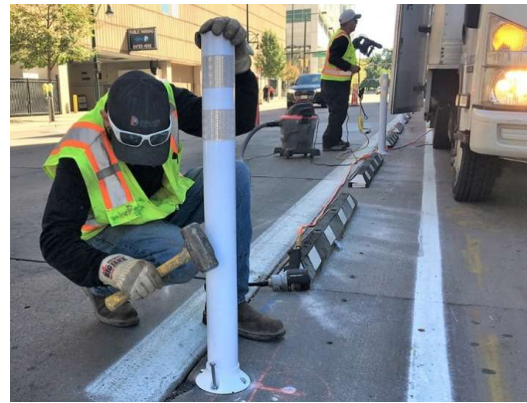
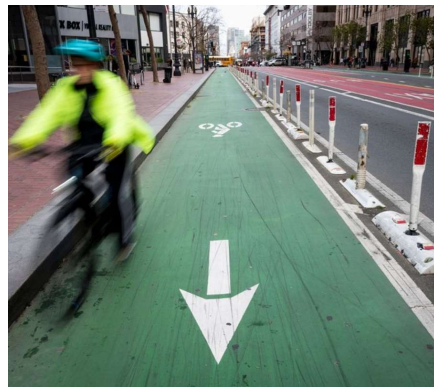




Task 2 –PBL Design Guidelines

Vertical Barriers:

- Delineator Posts
- Bollards
- Parking Stops
- Armadillos
- Mix of applications





Task 2 –PBL Design Guidelines

Modular Barriers:

- Pre-cast
- Mix applications with other vertical elements





Task 2 – PBL Design Guidelines

Parking Protected:

- Striping
- Colored paint
- Vertical

Elements can
be mixed in





Task 3 - Data Collection & Analysis

Step 1
Inventory &
Screening



Step 2
Feasibility



Step 3
Aligning with
PBL Design
Guidelines
Options

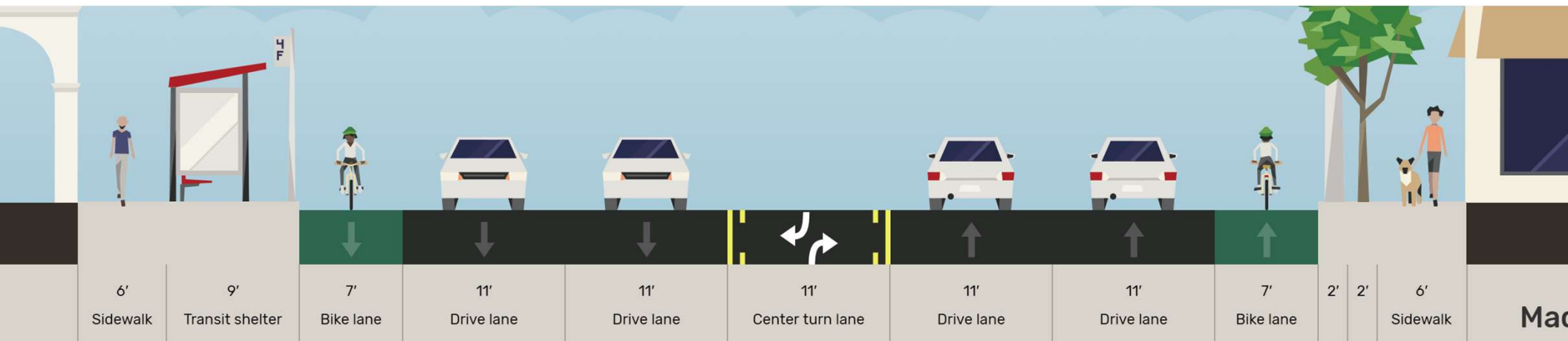




Task 3 - Data Collection & Analysis

Step 1 – Inventory & Screening:

- Arterials & Collectors with existing and planned bike lanes
- Identify curb-to-curb width, and median to curb width
- # of vehicle lanes
- Existing bike facility

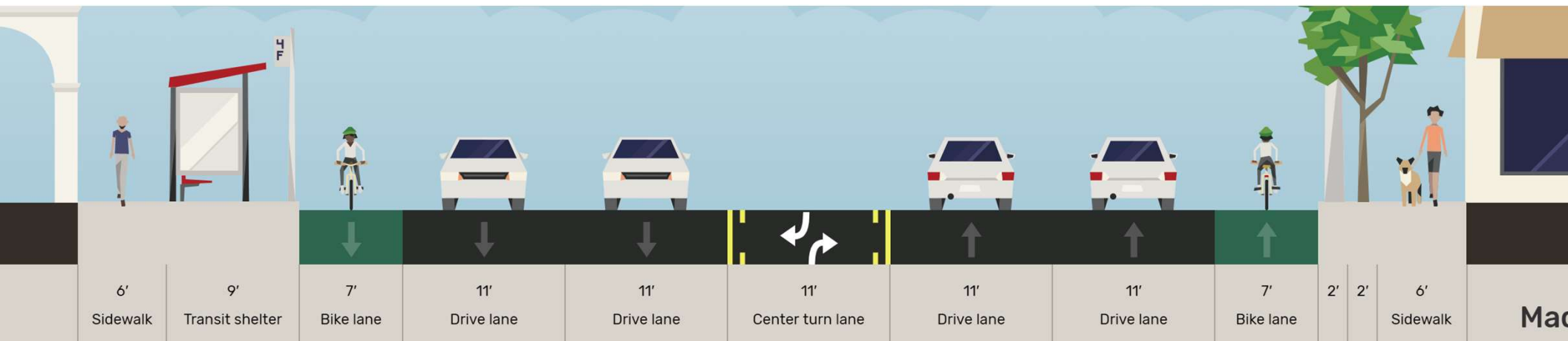




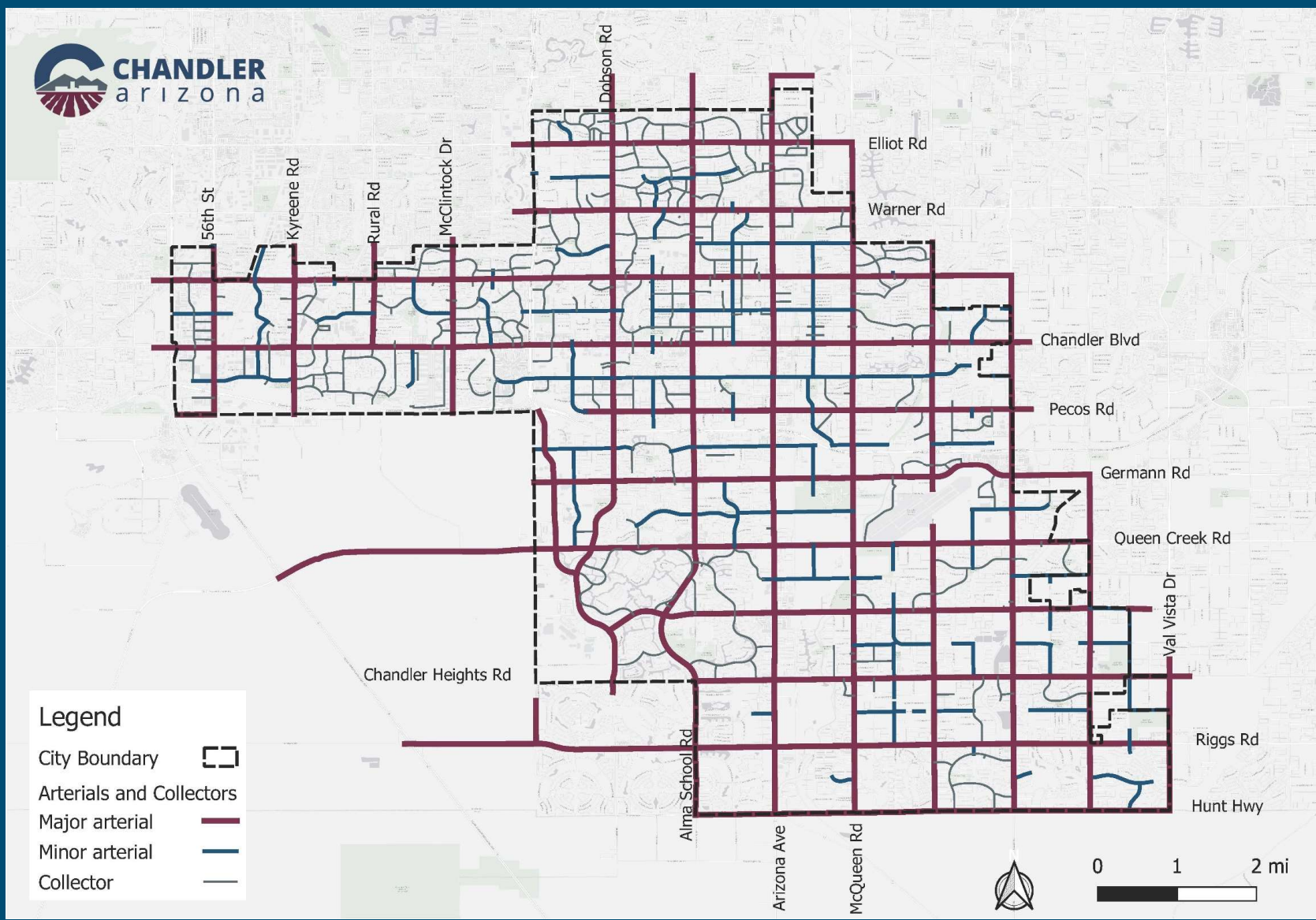
Task 3 - Data Collection & Analysis

Working Within Constraints:

- *Do not* remove a vehicle lane
- *Do not* widening the roadway
- *No removal of concrete medians*
 - Project goals are to implement lower cost protection options

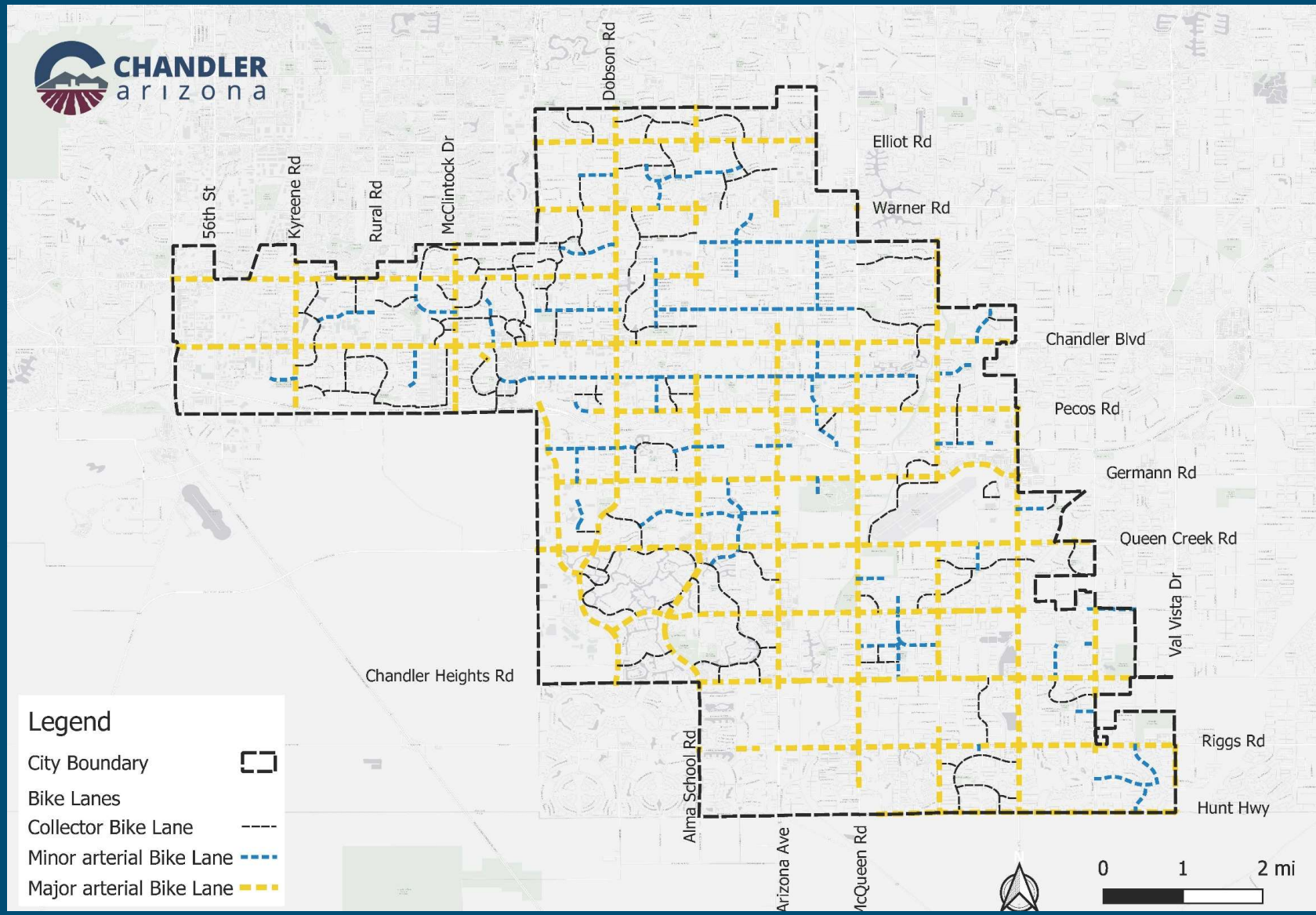


The Roadways that are being Evaluated



Starting Point for Evaluation for PBL's

Existing bike lanes (arterials and collectors)





Task 3 - Data Collection & Analysis

Step 2 – Feasibility:

Corridors/segments that made it through Step 1, evaluate the feasibility of the PBL:

- Speed (posted and measured) – provided by the City
- Average daily traffic (ADT) – provided by the City
- Connected bike facilities (network perspective)
- Number of driveway spacing/ intersections in a mile
- Underground utility consideration/coordination
- Transit stops
- Bicycle crashes in a five-year period
- Adjacent land use





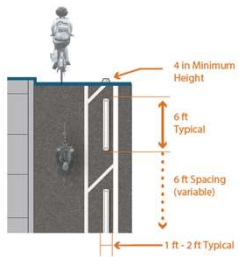
Task 3 - Data Collection & Analysis

Step 3 –Aligning with PBL Option

- Using the PBL Guidelines, determine which type of PBL aligns best with the corridor

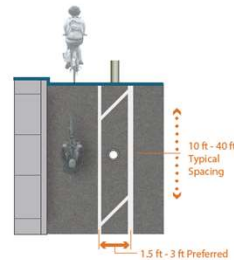
FORMS OF SEPARATION

Parking Stops

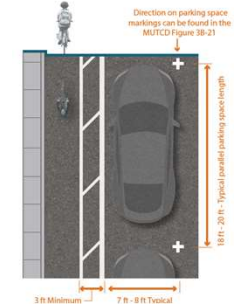


Baseline Road separated bike lane in Boulder, CO. (Source: City of Boulder)

Bollards



Parked Cars



Parked cars provide separation in Seattle, WA. (Source: Seattle DOT)

While not a barrier type on its own, parked cars can provide an additional level of protection and comfort for bicyclists. A minimum buffer width of 3 feet is required to allow for the opening of doors and other maneuvers.





Task 4 – PBL Feasibility Study

Evaluate existing opportunities to implement projects

Prioritize corridors for PBL, *considerations:*

- land use
- demographic information,
- proximity to transit,
- bicycle activity (Strava, bike to bus, bicycle counts, etc.),
- bicycle and pedestrian safety metrics,
- public feedback, and
- other metrics and/ or qualitative considerations.

Planning level cost estimates

- per mile,
- per unsignalized intersection,
- per signalized intersection
- up to 4 vertical design elements





Task 5 – Regional Significance Executive Summary

Explain the regional significance of the project and lessons learned that could be applied to the other areas of the region to help improve the pedestrian/bicycle environment.



Chandler Transportation Master Plan

Vision

Bicycle/Pedestrian Objectives



Discussion, Questions & Feedback



Contact Info:

Jason Crampton

Transportation Planning Manager

480-782-3402

Jason.crampton@chandleraz.gov

Sasha Pachito

Transportation Planning Coord.

480-782-3440

Sasha.Pachito@chandleraz.gov

