Bike Network Plan

Policy Actions and Constraints Report

October 2024

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Chapter 1
Executive Summary

In 2023, The City of San Antonio (the City) began the process of updating its Bike Network Plan (BNP). As part of the BNP update, the City is working to have a comprehensive understanding of all facets of multi-modal transportation in the city, with an emphasis on equity and safety. The purpose of the Policy Actions and Constraints Report is to characterize San Antonio's existing bicycle safety policy landscape, determine gaps or areas for improvement in existing policy, and recommend changes or amendments to the respective policies.

Twenty-three plans, policies, and other documents adopted at the local, regional, and state level were reviewed to understand the existing bicycle policy landscape in San Antonio. Based on this review, 16 policies of interest were identified as candidates for expansion or amendment. Policies were organized based on purpose for the BNP, which were policies for bicycle infrastructure deployment (Chapter 3) and policies for bicycle infrastructure usage (Chapter 4). Each of these chapters includes a summary table with the specific portion of city code or other policy that currently exists, a summary of the policy recommendations, decisionmakers who are responsible for policy development and implementation, policy impact, and time horizon. Most policies must be adopted by the City Council and Mayor, and implementation is the responsibility of, when applicable, departments designated in the Code of Ordinances, such as Departments of Public Works, Planning, Transportation, and/or Public Safety.

Bicycle infrastructure deployment policies regulate the physical infrastructure and design of the public right-of-way (ROW), multi-use trails, and other areas where cyclists might ride. Deployment policies include roadway reallocation, right-of-way (ROW) acquisition, ROW maintenance, utility relocation, cyclist visibility, cyclist detection, speed limits (general), prima facie speed limits, and traffic study requirements. In general, it is recommended that the City amend the language of all ROW policies to include specific callouts for bicycle facility development, maintenance, and repair. Funding is briefly touched upon in policies related to ROW acquisition and repair, but a more in-depth Funding Strategy Plan has been developed separately as part of the BNP. Some policies, such as lowering the citywide prima facie speed limit to 25 miles per hour (MPH), require coordination with the Texas Department of Transportation (TxDOT) and/or the state legislature. Other policies, such as ROW maintenance, may require additional assessments or studies to implement.

Bicycle infrastructure usage policies regulate the behaviors and decisions that cyclists, pedestrians, and motorists make on the roadways. Usage policies include helmet use, sidewalk riding, stop-as-yield (Idaho stops), pedicab permitting, parking in bicycle lanes, safe passing, and bicycle security. Policies meant to regulate driver behavior, such as parking in bike lanes and safe passing policies include recommendations for changes that are most suitable to cyclist safety, such as prohibiting all vehicles from parking obstructing the bicycle lane and requiring a bicycle passing distance of at least five feet.

It is not expected that the City of San Antonio adopt every policy recommendation exactly as written. Rather, the City should use this report as a framework to shape policy decision-making in a way that champions cyclist and pedestrian safety at the local, regional, and state levels.

Chapter 2
Plans and Policies

2.1 Introduction

The purpose of the Policy Actions and Constraints Report is to review existing bicycle (and pedestrian) safety policies applicable to right-of-way (ROW) users in the City of San Antonio (the City), determine gaps in the existing policy framework, develop recommendations for policy changes and alternatives, and identify relevant case studies and examples of bicycle safety policy implementation in peer jurisdictions across the country. This report may be used as a general guideline for the development of policies in conjunction with the City's Bike Network Plan (BNP) (2025), Vision Zero Action Plan (VZAP) (2024), Complete Streets Policy (2024), and any other applicable plan or policy document.

2.2 Policy Review

To understand existing conditions of bicycle safety policies in San Antonio, a total of 23 plans, policy documents, and publications were reviewed to identify policies relevant to bicycle network safety and development. Items reviewed were adopted at the federal, state, regional, and local levels. Some of the documents reviewed, such as the Manual on Uniform Traffic Control Devices (MUTCD), are in the process of being updated or expected to begin that process prior to the publication of this document. The items reviewed are the most up-to-date, publicly available versions as of the time of this report's publication. **Table 2-1** below lists the items reviewed, the adopting jurisdiction, and the year the item was adopted.

TABLE 2-1
PLANS AND POLICIES REVIEWED

Jurisdiction	Policy	Year	Document Type
American Association of State and Highway Transportation Officials (AASHTO)	Guide for the Development of Bicycle Facilities	2012	Guidebook
Federal Highway Administration (FHWA)	Network Screening Methodology	2013	Toolkit
National Highway Traffic Safety Administration (NHTSA)	Bicycle Safety Guidelines	2022	Guidebook
FHWA	MUTCD (11th ed.)	2023	Guidebook
State of Texas	Texas Bicycle Laws	2019	Guidebook
Texas Department of Transportation (TxDOT)	Active Transportation (Roadway Design Manual)	2022	Guidebook
TxDOT	Texas Guide to Safe Bicycling	2022	Online Guide
TxDOT	Bicycle and Pedestrian Safety Laws and FAQ	2024	Publication
Alamo Area Metropolitan Planning Organization (AAMPO)	Complete Streets Policy	2009	Policy
AAMPO	San Antonio-Bexar County Pedestrian Safety Action Plan	2012	Plan
AAMPO	Pedestrian and Bicycle Recommendation for the San Antonio Pedestrian Study	2018	Plan

Jurisdiction	Policy	Year	Document Type
AAMPO	Mobility 2050: Metropolitan Transportation Plan	2022	Plan
AAMPO	2023-2026 Transportation Improvement Plan	2022	Plan
City of San Antonio	Bike Light Ordinance	2010	Policy
City of San Antonio	Safe Passing Ordinance	2010	Policy
City of San Antonio	Complete Streets Policy	2011	Policy
City of San Antonio	Downtown Design Guide	2014	Guidebook
City of San Antonio	SA Tomorrow Multimodal Action Plan	2016	Plan
City of San Antonio	Vision Zero Action Plan	2024	Plan
City of San Antonio	San Antonio Bike High Injury Network	2024	Report
City of San Antonio	Municipal Code of Ordinances	2024	Policy
City of San Antonio	Unified Development Code (UDC)	2024	Policy
City of San Antonio	Complete Streets Policy	2024	Policy

Based on the review of plans, policy documents, and publications related to bicycle safety, 16 policies of interest were identified as applicable to bicycle safety. Policies are organized based on their purpose for the BNP, deployment of or use of bicycle infrastructure. These policies include:

<u>Purpose: Bicycle Infrastructure Deployment</u>

- Right-of-Way Acquisition
- Roadway Reallocation
- Right-of-Way Maintenance
- Utility Relocation
- Cyclist Visibility
- Bicyclist Detection
- Setting Speed Limits
- Prima Facie Speed Limits
- Traffic Study Requirements

<u>Purpose: Bicycle Infrastructure Use</u>

- Helmet Use
- Riding on Sidewalks
- Parking Obstructing Bicycle Lanes
- Pedicab Permitting and Operations
- Stop-as-Yield (Idaho Stops)
- Safe Passing
- Bicycle Security

Each policy was reviewed to identify the plan or document in which the policy was codified, its existing statutory language, and the parties responsible for implementation of of the policy. Policy alternatives were recommended based on federal and state guidance, peer reviewed publications and white papers, and relevant case studies at the state and municipal levels. Most of the recommended policies must be adopted as amendments to the San Antonio Code of Ordinances or UDC. Some policies may require coordination at the regional or state levels to adopt policies or pass legislation. Regional and state stakeholders include the AAMPO and TxDOT or Texas State Legislature, respectively. In addition to adopting and amending policies, some recommendations include implementing programs or projects to support the related policy. When applicable, implementation is the responsibility of departments designated in the Code of Ordinances, such as Departments of Public Works, Planning, Transportation, and/or Public Safety.

Policies were also assigned a planning impact and plannning time horizon. Planning impact was determined based on the City's ability to mobilize human and financial reources, if the policy was already drafted in some capacity, and level of stakeholder collaboration. Low impact policies require limited mobilization of human and

financial resources. Low impact policies may have been previously drafted by the City or some other jurisdiction or only require a minor amendment to exisitng policies.These policies require little to no collaboration with external stakeholders. Moderate impact policies require greater mobilization of human and financial resources than low impact policies. Moderate impact policies are yet to be drafted, and may require collaboration with stakeholders or other jurisdictions. High impact policies require signifiant mobilization of human and financial resources and significant collaboration with stakeholders or other jurisdictions. High impact policies may require additional studies or novel funding mechanisms to be fully realized. **Table 2-2** below summarizes planning impact.

TABLE 2-2
PLANNING IMPACT SUMMARY

Planning Impact	Resource Mobilization	Policy Drafting	Stakeholder Collaboration
Low	Limited mobilization of human and financial resources.	Previously drafted or minor amendment to exisitng policy.	Can be fully implemented without stakeholder collaboration.
Moderate	Moderate mobilization of human and financial resources. May require hiring of additional staff or reallocation of funds.	Yet to be drafted.	May require stakeholder collaboration.
High	Significant mobilization of human and financial resources. Requires hiring of additional staff. May require development of novel funding mechanisms.	Yet to be drafted. May require additional study.	Require significant stakeholder collaboration.

Planning time horizon is the amount of time anticipated for development, adoption, and implementation of the policy. Short term policies may be fully implemented in less than five years. Many short-term (1-5 years) policies may be implemented within a year after adoption of this report. Mid-term policies may take five to ten years to implement. Long-term policies may take over ten years to implements. Because they require the greatest mobilization of resources, policies with greater planning impacts may have longer planning horizons, but that is not always the case. All policies are designed to be fully realized within 15 years of adoption of this report.

Chapter 3
Bicycle Infrastructure Deployment

3.1 Introduction

Deployment policies are policies which regulate the physical infrastructure that cyclists, motorists, and pedestrians utilize. This includes the entirety of the public ROW (the roadway, sidewalk, any protected or unprotected bike lanes, and supplemental zones) as well as developments along or near proposed bicycle facilities. These policies are intended to regulate physical infrastructure and utilize the built environment to guide transportation behaviors rather than directly guiding people.

Table 3-1 includes a summary of policies related to deployment of bicycle infrastructure, recommended changes, and decisionmakers responsible for policy implementation.

TABLE 3-1
INFRASTRUCTURE DEPLOYMENT POLICIES SUMMARY

Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Roadway Reallocation	Varies based on plan or policy.	Implementation of the new Complete Streets Policy is an opportunity to incorporate roadway reallocation recommendations. Require that roadways around civic buildings, (including schools) have complete pedestrian and bicycle infrastructure and leverage funding on this provision.	City Council and Mayor must pass the policy. Public Works Department (PWD) implements the policy. The City's financial arm may withhold money from projects in non-compliance. High Impact, Long-term (10+ years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Right-of-Way Acquisition	Code of Ordinances Sec 37-3. "Permits may not be issued unless the director finds that… The improvement or facility will not create a hazardous condition or obstruction of vehicular travel, pedestrian travel, or drainage on the municipal street."	Include explicit language about protection of existing or provision of new bicycle infrastructure and account for safety in the acquisition process. Require any construction which disturbs bicycle facilities to provide temporary bicycle facilities that adhere to the same standards of safety and accessibility for temporary pedestrian facilities outlined in the MUTCD.	City Council and Mayor must pass the policy. The director of the appropriate agency (PWD or Planning) is responsible for implementation. Low Impact, Short-term (1-5 years).
Right of Way Maintenance	Code of Ordinances Sec. 29-11. "It shall be the duty of the owner of abutting property or any special user, upon receipt of written notification by the director of public works or any of his subordinates, of any defects or dangerous condition of any unsafe and dangerous defect in any sidewalk, curb, gutter, parkway or driveway to repair the same and put it in a safe condition, free from defect and hazard, within thirty (30) days from date of receipt of such notice… Any violation of this section or any provision hereof shall be deemed a misdemeanor."	Keep the existing policy in the short term. Remove the misdemeanor offense for failure to maintain. Perform a comprehensive sidewalk assessment to determine existing conditions and maintenance cost. Create a sidewalk maintenance fund. Adopt a policy for public maintenance of the ROW once the appropriate funds and capacity have been met.	City Council and Mayor must pass the policy. PWD will be responsible for public sidewalk maintenance. High Impact, Long-term (10+ years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Utility Relocation	Code of Ordinances Sec. 29-159. "It is the responsibility of the abutting property owner to maintain the sidewalk. All earth, materials, sidewalks, paving, crossing, or improvements of any kind which are owned or possessed by city and damaged, disturbed, or removed by a right-of-way user shall be fully repaired promptly by the right-of-way user at its sole expense, to the reasonable satisfaction of the director. After any excavation, the right-of-way user shall, at its expense, restore the right-of-way, trench envelope, pavement structure and the surrounding area, to the same or better condition than it was prior to the excavation. The restoration shall be made in accordance with specifications set forth in the [Utility Excavation Criteria Manual (UECM)] and the repair shall endure without failure for the remaining life of the street, as such period is described in this article." Sec. 29-138. - Supervision by city of location of poles and conduits: "All poles in the right-of-way shall be of sound material and straight, and shall not interfere with the flow of water in any gutter or drain, and shall be placed so as not to unduly interfere with either vehicular nor pedestrian travel."	Include explicit language about protection of existing or provision of new bicycle infrastructure alongside improvements to paving, sidewalks, etc., when the ROW is disturbed for utility development or relocation. Conduct a city-wide assessment of existing utilities to determine if there are any poles, storm drains or grates, fire hydrants, or other utilities which obstruct bicycle or pedestrian traffic and designate those utilities for relocation or removal.	City Council and Mayor must pass the policy. The director of the appropriate city department (PWD or Planning) is responsible for implementation. The ROW assessment may be conducted in partnership with a local advocacy organization or university to reduce administrative burden. High Impact, Long-term (10+ years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Cyclist Visibility	Code of Ordinances Sec. 19-295. "While operating a bicycle on a public street a person may not operate a bicycle at nighttime, the period beginning one-half hour after sunset and ending one-half hour before sunrise, unless the bicycle is equipped with: (1) A lamp on the front of the bicycle that emits a white light visible from a distance of at least five hundred (500) feet in front of the bicycle; and (2) On the rear of the bicycle: a. A red reflector that is: 1. Of a type approved by the department of public safety; and 2. Visible when directly in front of lawful upper beams of motor vehicle headlamps from all distances from fifty (50) to three hundred (300) feet to the rear of the bicycle; or b. A lamp that emits a red light visible from a distance of five hundred (500) feet to the rear of the bicycle."	Expand the scope of visibility to include bicycle infrastructure, especially examples included in the BNP and VZAP.	City Council and Mayor must pass the policy. PWD, Planning, and TD must work together to implement any visibility infrastructure. Moderate Impact, Mid-term (5-10 years).
Bicycle Detection	None	Determine the type of bicycle detection that is most feasible and attractive for the community's needs and adopt a policy to install such detection systems at intersections along the bike network.	PWD, the Department of Planning, and TD should work in tandem to determine the appropriate detection systems and deploy them, as necessary. High Impact, Mid-term (5-10 years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Speed Limits	Code of Ordinance Sec. 19- Division 2- Speed and Related Matters. "Where the roadway design speed is greater than 30 MPH, bicycle facilities shall be separated or protected… Design speeds based on roadway type: Alley: 20 MPH Local A: 30 MPH Local B: 30 MPH Local C: 30 MPH Collector A: 30 MPH Collector B: 35 MPH Collector C: 35 MPH Secondary Arterial: 40 MPH Primary Arterial: 45 MPH"	Lower prima facie speed limit to 25 MPH citywide and 20 MPH on residential roads and increase speed limit sign density. Amend UDC to update design speeds, as necessary.	City Council and Mayor must pass the policy. Public Safety officers will need to enforce. High Impact, Mid-term (5-10 years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Prima Facie Speed Limits	Code of Ordinances Sec. 19-131. "As a result of an engineering and traffic investigation by the city department of traffic and transportation, the city council has determined that the prima facie reasonable and safe maximum speed limit on the public streets of the city, except as provided in section 19-132, is thirty (30) miles per hour. No person shall drive a vehicle on a city street at a speed greater than is reasonable and prudent under the circumstances then existing. The limit of thirty (30) miles per hour shall be lawful but any speed in excess of thirty (30) miles per hour, except as provided in section 19-132, shall be prima facie evidence that speed is not reasonable or prudent and that it is unlawful."	Work with other municipalities to advocate for the removal of statewide prima facie speed limit minimums. Lower the prima facie speed limit to 25 MPH and 20 MPH in residential areas. Increase speed limit signage. Look at design guidelines that encourage drivers to drive slower citywide. Citywide educational campaign to raise public awareness about the new speed limit.	City Council and Mayor must pass the policy. PWD and Planning must implement it. The City can partner with a local stakeholder group to distribute materials or run an awareness campaign about the change. The Government Affairs Department (GAD) should work with the state legislature to advocate for policy change at the state level. High Impact, Mid-term (5-10 years).

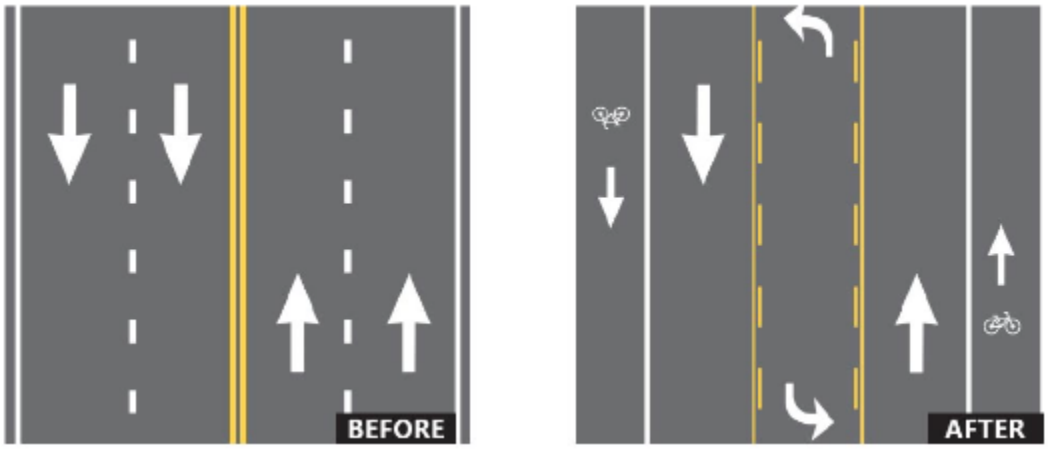
Policy	Existing	Recommendation	Decisionmaker, Impact, and Horizon
Traffic Study Requirements	Unified Development Code Sec 35-209. "Studies shall include trip generation, trip distribution, capacity and level of service based on TxDOT's Highway Capacity Manual. In addition, mitigation shall be required for traffic safety related indicators including, but not limited to parking, pedestrian facilities, bicycle facilities, vehicular safety, and general traffic circulation. Further detail on Traffic Impact Analysis contents can be found in Sec 35-B122."	Require that traffic studies incorporate a data-driven safety analysis based on FHWA's guidance that considers vehicular, cyclist, and pedestrian crash counts (including injury and fatality numbers) as well as identification of whether the project falls along the high-injury network.[1] Traffic studies should be required to ensure adequate connections to existing and planned bicycle and pedestrian facilities. If the development is anticipated to have a significant percentage of bicycle, pedestrian, and transit trips, counts for those modes may be required. Study should also include respective interventions to preserve or improve traffic safety, prioritizing data-driven interventions from among FHWA's Proven Safety Countermeasures.[2]	City Council and Mayor must pass the policy. PWD to review and approve traffic impact analyses when submitted. Low Impact, Short-term (1-5 years).

[1] Federal Highway Administration. (n.d.). *Incorporating Data-Driven Safety Analysis in Traffic Impact Analyses: A How-To Guide*.
[2] Federal Highway Administration. (n.d.) *Proven Safety Countermeasures*. U.S. Department of Transportation. https://highways.dot.gov/safety/proven-safety-countermeasures

3.2 Roadway Reallocation

Roadway reallocation is the process of reallocating portions of the roadway within the existing ROW, often within the existing curb. Roadway reallocation is often, but not always, used to implement road diets, particularly to reallocate portions of the roadway for uses other than driving. A roadway may be reallocated to reduce the number of travel lanes, introduce turn lanes for safer turning movements, and to allow for amenities such as wider sidewalks, bicycle lanes and buffers, and protected medians. Figure Figure 3-1 is an example of a roadway with two travel lanes in either direction that was reallocated to a roadway with one travel lane in either direction, demarcated bicycle lanes, and a center lane for turning.

FIGURE 3-1 BEFORE AND AFTER EXAMPLE OF A ROAD DIET



Source: FHWA, 2021

The FHWA recommends roadway reallocation to reduce vehicle speeds to safer levels, increase bicycle infrastructure, and improve overall safety on the roadways.[3] Often, the provision of a connected system of complete streets across an entire network is difficult for many reasons, including a roadway's number of motor vehicle travel lanes and ROW availability. In situations like the one illustrated in **Figure 3-1**, this concept is closely related to complete streets and roadway reallocation can be used to achieve complete streets.

3.2.1 Existing Roadway Reallocation Policy

The City's current policy on roadway reallocation is varied and exists across multiple plans and policy documents. The City's Complete Streets Policy (2024) includes language and guidance on what complete streets are, how they should be designed, steps to take towards implementation, and the policy also requires the development of design recommendations. The San Antonio Tomorrow Multimodal Transportation Plan includes a toolbox which highlights sixteen elements of the ROW: sidewalks, walkways, parking, travel lanes, side paths, bulb outs, bicycle/protected bicycle lanes, medians, sidewalk furniture, curb zones, turn lanes, pedestrian refuge, trees, bus stops, bus only lanes, and bus rapid transit. The plan suggests determining a dataset to perform ROW analysis, as well as implementing context-sensitive design that evaluate the needs of streets. As part of the BNP, context-sensitive bike network design guidance was developed for roadways and intersections.

[3] Federal Highway Administration. (2021). *Proven safety countermeasures: Bicycle lanes* [Fact Sheet]. U.S. Department of Transportation. https://highways.dot.gov/sites/fhwa.dot.gov/files/Bicycle%20Lanes_508.pdf

3.2.2 Roadway Reallocation Policy Recommendations

Two strategies are recommended to implement roadway reallocation as appropriate. The first recommended policy is to ensure that the implementation of the 2024 Complete Streets Policy includes provisions for bicycle-friendly roadway reallocation. Implementation of the 2024 Complete Streets Policy should include direct refence to context-sensitive bike network design guidance. It is recommended that when implementing the 2024 Complete Streets Policy, the City should ensure that all roadway reallocation projects include new or improved infrastructure for bicyclists, pedestrians, and transit. At the local, state, or federal level, some percentage of public funding should be leveraged in addition to this policy to encourage safety-oriented roadway reallocation practices.

The second recommendation is to adopt thresholds to determine whether a road diet is appropriate to improve the roadway. Road diet thresholds can be used to make roadways safer while providing bike network connections, even when improvements are not currently planned for the roadway. Criteria can include volumes between 8,000 and 15,000 average daily traffic (ADT), history of crashes, transit corridors, being on the BNP network, main streets or in economic districts, or adjacent to pedestrian and bicycle generators.[4] It shall be the responsibility of the Director of PWD to ensure that all roadway work is compliant with the standards set henceforth. The recommended roadway reallocation policy is high impact, as determining road diet thresholds requires additional study of traffic counts. The recommendation can be implemented in the long-term (10+ years).

3.2.3 Roadway Reallocation Policies in Peer Jurisdictions

Two peer jurisdictions' roadway reallocation policies were reviewed as part of this policy analysis.

3.2.3.1 Little Rock, Arkansas

The City of Little Rock adopted a Complete Streets Policy in 2013 that required that all public street projects – including new construction, reconstruction, retrofit, repaving, rehabilitation, and roadway reallocation – to install complete streets infrastructure.[5] The policy defined "Complete Streets Infrastructure" as features that provide for the mobility and safety needs of all users of all ages and abilities and needs of adjacent land users, including sidewalks, shared use paths, bicycle lanes, bicycle parking facilities, and others.[6] In 2015, the policy was ranked as one of the best in the nation in Smart Growth America's *Best Complete Streets Policies of 2015*.[7]

3.2.3.2 Seattle, Washington

The City of Seattle has a Complete Street Ordinance that has been in place for nearly two decades at the time of this report. As part of the policy, the city must consider road diets for roadways identified in the city's complete streets capital projects list, identified in the pedestrian or bicycle master plans, or as requested by

[4] Tan, C. H. (2011). *Going on a road diet. Public Roads – September/October 2011, 75*. Federal Highway Administration. https://highways.dot.gov/public-roads/septemberoctober-2011/going-road-diet.
[5] An Ordinance to Adopt a Complete Streets Policy for the City of Little Rock, Arkansas; and for Other Purposes. Ordinance No. 21029. (April 16, 2013). https://www.littlerock.gov/media/1374/complete_streets_ordinance_21029.pdf
[6] Complete Streets Policy for Little Rock.
[7] National Complete Streets Coalition. (2016). *Best complete streets policies of 2015*. https://smartgrowthamerica.org/resources/best-complete-streets-policies-of-2015/

residents. To approve roadways for road diets, the city's department of transportation (SDOT) considers several roadway characteristics:[8, 9]

- Traffic volumes (<25,000 vehicles per day)
- Number of crashes
- Vehicle speeds
- Number of lanes
- Freight use
- Bus stop and routing
- Travel time
- Accessibility

After constructing road diets or lane reductions on roadways, SDOT conducts follow-up studies to understand the impacts and compare the before and after conditions. After implementing road diets, SDOT found decreases in vehicular travel speeds, modest decreases in traffic volumes, increases in bike use, and an overall decline in crashes especially for pedestrians.[10]

[8] Going on a road diet.
[9] Knapp, K., et al. (2014). *Case studies: Feasibility determination decision-making.* Federal Highway Administration. Road Diet Informational Guide. https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/ch3.cfm#n46
[10] Going on a road diet.

3.3 Right-of-Way Acquisition

Public ROW is the portion of the public space that a public entity may construct transportation infrastructure within. The ROW may include a variety of elements such as the street, sidewalk, the curb, bicycle infrastructure, speed control elements (such as speed tables), transit-only lanes, street and sidewalk furniture, roadway signage, trees and greenery, and other street design elements.

Some developments, particularly those that have large footprints or are minimally set back from the roadway, may disrupt, block, or destroy part of the public ROW during the construction process. Cities may also acquire sections of the public ROW through eminent domain and similar land collection practices or abandon sections upon petition from adjacent property owners or legislative action.

3.3.1 Existing Right-of-Way Acquisition Policy

FHWA recommends that state and local governments should consider installing bikeways on roads to make bicycling safer and more comfortable for most types of cyclists.[11] Public acquisition of the ROW under instances of federal funding (such as by TxDOT for interstate projects) are subject to the standards laid forth in the Uniform Act.[12] Federal guidelines for ROW acquisition are focused on fair treatment of property owners affected, as well as mitigation of displacement and environmental harm. At the federal level, bicycle infrastructure and safety are not enforced like fairness and environmental impact.

The San Antonio Code of Ordinances requires that all developers encroaching upon or disturbing the public ROW acquire a permit. A disturbed ROW must be restored to its original or better condition, contingent upon a traffic study approved by the City. The City may acquire additional ROW from private property owners through the process outlined in Chapter 21 of the Texas Property Code.[13] TxDOT also sets forth guidance related to ROW acquisition for state highways. The MUTCD provides guidance for pedestrian encounters at roadway construction sites.[14] It is recommended to guide pedestrians along the outskirts of or away from construction sites in a manner which is ADA accessible and not in conflict with vehicles, equipment, or construction operations. The MUTCD does not include provisions for cyclists or other non-motorized vehicle users.

3.3.2 Right-of-Way Acquisition Policy Recommendation

It is recommended that the City of San Antonio amend the Code of Ordinances to explicitly include the restoration or improvement of existing bicycle facilities or the development of new bicycle facilities in the case of ROW acquisition and private ROW disturbance. It is also recommended to require any construction which disturbs bicycle facilities to provide temporary bicycle facilities that adhere to the same standards of safety and accessibility for temporary pedestrian facilities outlined in the MUTCD. This policy may be adopted as a line-item amendment to the city code by the City Council and approved by the Mayor. Like other ROW provisions in the city code, it shall be the responsibility of the director of the appropriate permitting agency (PWD or Planning) to implement the policy. As amendments to existing policy, ROW acquisition policy recommendations are low impact and may be implemented in the short term.

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[11] Federal Highway Administration. (2021). *Proven safety countermeasures: Bicycle lanes* [Fact sheet]. U.S. Department of Transportation. https://highways.dot.gov/sites/fhwa.dot.gov/files/Bicycle%20Lanes_508.pdf

[12] Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), 49 CFR Part 24 (1970). https://www.federalregister.gov/documents/2024/05/03/2024-08736/uniform-relocation-assistance-and-real-property-acquisition-for-federal-and-federally-assisted

[13] Texas Constitution and Statues. 4 Texas Property Code § 21. https://statutes.capitol.texas.gov/Docs/PR/htm/PR.21.htm

[14] Federal Highway Administration. (2009). Manual on uniform traffic control devices. *US Department of Transportation*. https://mutcd.fhwa.dot.gov/htm/2009/part6/part6d.htm

3.3.3 Right-of-Way Acquisition Policies in Peer Jurisdictions

ROW acquisition policies vary across jurisdictions, but a key strategy is having adequate funding in place. Most examples of ROW acquisition policies in peer jurisdictions are focused on multi-use trail planning.

3.3.3.1 Atlanta, Georgia

The Atlanta BeltLine recommends securing funding from sources such as the Georgia Department of Transportation, public-private partnerships, local and national land trusts, and other trail and infrastructure interest groups.[15] A common way to acquire ROW for pedestrian and cycle projects is through abandoned rail corridors. Abandoned rail corridors may be set aside for trail projects through a process called railbanking, where local governments or the appropriate stakeholder may negotiate with rail companies to acquire land during the railroad abandonment process. [16,17]

3.3.3.2 Greensboro, South Carolina

Cities such as Greensboro, South Carolina, have used this approach to build multi-use trails that integrate into the citywide bicycle and pedestrian networks.[18]

[15] Atlanta BeltLine, Inc. (2013). *2030 Strategic implementation plan final report*. https://a-us.storyblok.com/f/1020195/1cac42ac3a/beltline_implementation-plan_web.pdf
[16] Rails to Trails Conservancy. (2024). *Railbanking*. https://www.railstotrails.org/trail-building-toolbox/railbanking/
[17] Rails to Trails Conservancy. (2024). *How to railbank*. https://www.railstotrails.org/trail-building-toolbox/how-to-railbank/
[18] Downtown Greenway. (2019, November 8). *City announces final step for completion of downtown greenway* [Press release]. https://downtowngreenway.org/wp-content/uploads/2019/11/11.8.19-press-release-final.pdf

3.4 Right-of-Way Maintenance

Maintenance of the public ROW is necessary for ensuring safe and effective mobility of people and goods from place to place. While the ROW is public property, some cities may require that private property owners abutting the ROW maintain the infrastructure such as curbs, driveways, and sidewalks.

Requiring private maintenance of the public ROW is a regressive policy. Lower income communities often have the greatest need for sidewalk and multimodal transportation infrastructure but have poorer quality sidewalks and less resources to privately manage and maintain sidewalks.[19] Switching from a private to public mechanism of sidewalk maintenance, however, may be costly and burdensome for cities.

3.4.1 Existing Right-of-Way Maintenance Policy

Currently, the City of San Antonio requires abutting property owners to maintain sidewalks, parkways, curbs, and driveways in the public ROW. The abutting property owner assumes any legal liability for any damage to persons on the ROW because of defective or poorly maintained infrastructure. Property owners who are found to be in violation of the city code may face misdemeanor charges and a fine of up to $500. The State of Texas allows local governments to determine maintenance requirements for the ROW.

3.4.2 Right-of-Way Maintenance Policy Recommendations

Based on existing financial and personnel capacity, it is recommended that the City keep the provision requiring abutting property owners to maintain the right of way in the short-term. The City should conduct, either internally or with the help of a local partner, an in-depth assessment of the existing sidewalk infrastructure to understand existing conditions and determine the cost of right-of-way maintenance.

To address potential inequities property owners' capacity for maintenance, the City can identify an additional funding source to offset maintenance costs, like existing programs in peer jurisdictions. Once sufficient funds have been accrued, the City may choose to adopt a policy transferring maintenance responsibilities of the entirety of the public ROW from private property owners to the City.

It is also recommended that the City revise or restructure provisions for noncompliance in ROW maintenance based on the socio-economic context of the affected property. Imposing a fine upon low-income property owners may create an additional financial burden and further economic inequity in the City. Misdemeanor offenses also affect people's criminal background checks and may make it difficult for low-income property owners to apply for jobs or credit.

As additional study is required, ROW maintenance policy recommendations are high impact. It may take several years to complete a citywide assessment and determine the appropriate funding mechanism, so this policy has a long-term (10+ years) planning horizon.

3.4.3 Right-of-Way Maintenance Policies in Peer Jurisdictions

The assumption that private property owners are open or receptive to maintaining portions of the public ROW creates an undue burden of maintenance for property owners, particularly low-income property owners.

[19] Rowangould, G. & Corning-Padilla, A. (2018). Sustainable and equitable financing for infrastructure maintenance. Research Report. United States Department of Transportation. https://rosap.ntl.bts.gov/view/dot/64519

3.4.3.1 Alburquerque, New Mexico

In Albuquerque, New Mexico, total sidewalk repair cost was determined to be approximately $140 per 4x6 foot slab of concrete.[20] The estimated cost of sidewalk repair for the entire city was $26,800,000. The City of Alburquerque explored three funding mechanisms for public sidewalk maintenance: increasing the gross receipts tax, the gasoline excise tax, or the property tax. It was determined that the following rate increases would be required: 0.603% increase in gross receipts tax, $0.037 gasoline excise tax per gallon, and 0.681% increase in property tax.

3.4.3.2 Ithaca, New York

Another policy to support ROW maintenance is public ownership of sidewalks supported by a fee levied on abutting property owners. In 2014, Ithaca, New York, implemented a new sidewalk policy which shifted the burden of sidewalk maintenance from private property owners to five publicly chartered Sidewalk Improvement Districts.[21] The Sidewalk Improvement Districts are governed by the City's Common Council and Board of Public Works, which must identify segments of the sidewalk network and their associated improvements costs on a yearly basis. Each property owner must pay an annual sidewalk development fee of at least $80 in low-traffic areas and at least $150 in high-traffic areas, with additional fees applicable based on the square footage of any buildings on the property. The fees collected cover sidewalk maintenance costs. Sidewalks not included in the Sidewalk Improvement Districts must be maintained by the abutting private property owner.

3.4.3.3 Seattle, Washington

SDOT includes several recommendations for improving bike facility maintenance in its Bicycle Master Plan 2021-2024 Implementation Plan.[22] These recommendations include a multi-use trails upgrade and maintenance plan, creating a life-cycle costs per bicycle facility benchmark to gauge current and future maintenance needs, and integrating maintenance of other portions of the ROW (bicycle facilities, sidewalks, buffer zones) in existing street repaving schemes.

[20] Rowangould, G., & Corning-Padilla, A. (2018). *Sustainable and Equitable Financing for Pedestrian Infrastructure Maintenance* (No. 17PPUNM01). Transportation Consortium of South-Central States. https://rosap.ntl.bts.gov/view/dot/64519/dot_64519_DS1.pdf

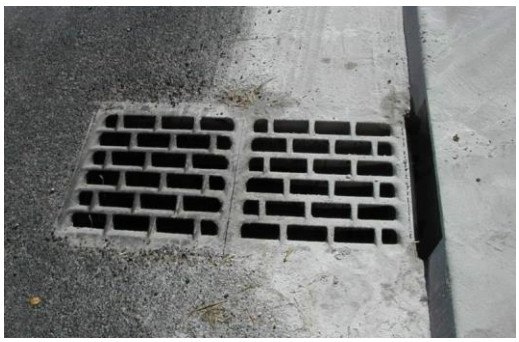
[21] City of Ithaca, New York. (2014). *Sidewalk policy.* Retrieved from: https://www.cityofithaca.org/219/Sidewalk-Policy

[22] Seattle Department of Transportation. (2021). Seattle bicycle master plan: 2021-2024 implementation plan. https://www.seattle.gov/documents/Departments/SDOT/BikeProgram/BMP_Imp_Plan_2021_FINAL.pdf

3.5 Utility Relocation

Utilities in the public ROW, such as storm drains, fire hydrants, and utility poles, may create a potential hazard for cyclists and pedestrians. To address this issue, FHWA recommends regrading roadways and leveling storm drains, replacing unsafe storm drains (such as old-style parallel bar drainage) with bicycle-safe utility infrastructure (such as vane [as seen in **Figure 3-2**] or honeycomb grates), installing curb face inlet drains, or offsetting storm drains from the roadway.[23]

FIGURE 3-2 VANE STYLE STORM DRAIN



Source: Missouri Department of Transportation, 2007

Utility relocation is the process of moving utility infrastructure, such as water lines, telecommunication poles, or power lines. Moving above-ground utilities does not require the disruption of the roadway but may create some disturbances or obstruct bicycle or pedestrian infrastructure. Below-ground utility relocation may require significant reconstruction, repaving, or refinishing of the public ROW.

3.5.1 Existing Utility Relocation Policy

Laws governing utility relocation on local roads are set by local governments. Utility reallocation along state routes in Texas are subject to TxDOT's procedures for utility relocation. Per TxDOT guidelines, the local government is usually responsible for utility relocation unless an agreement is made with TxDOT beforehand.[24] In some instances, coordination with other public agencies may be required, depending on if utilities are privately or publicly held. San Antonio requires that poles in the ROW shall not interfere with the flow of water in any drain or with the flow of pedestrian or vehicular travel.

3.5.2 Utility Relocation Policy Recommendations

It is recommended that the City of San Antonio amend sections of the Code of Ordinance pertinent to utility relocation to include language requiring the preservation, improvement, or construction of bicycle facilities when disturbing the public ROW. This policy should be codified in other sections of the code pertinent to the public ROW, such as ROW acquisition and roadway reallocation.

The City Council and Mayor could adopt this policy through a line-item amendment. It would be the responsibility of PWD to coordinate with utility providers to make sure that disturbances to the public ROW are properly addressed, and bicycle infrastructure is adequately provided.

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[23] Federal Highway Administration. (1998). *Implementing bicycle improvements at the local level.* (FHWA Publication No. 98-105). U.S. Department of Transportation. https://highways.dot.gov/media/9401

[24] Texas Department of Transportation. (2024). *Utility accommodation for transportation projects* [Toolkit]. https://www.txdot.gov/business/resources/lgp/toolkit/process/row-utilities/utility.html

It is also recommended that the City conducts a thorough assessment of its ROW to determine if there are existing utilities which may be a hazard for cyclists and pedestrians. This assessment may be done simultaneously with the recommended sidewalk assessment suggested earlier in this report. Existing utilities would then be marked for removal or relocation on a case-by-case basis. As this assessment may produce an additional administrative burden for the City, it is recommended to partner with a local advocacy group or university to perform the assessment. Utility relocation, thus, is a high impact policy that must be implemented in the long-term (10+ years).

3.5.3 Utility Relocation Policies in Peer Jurisdictions

Sometimes, utility relocation projects create opportunities to implement safety-oriented improvements to the public ROW.

3.5.3.1 Atlanta, Georgia

In 2022, the City of Atlanta resurfaced a 3.57-mile-long portion of DeKalb Avenue that had undergone multiple utility relocation processes by Atlanta's Department of Watershed Management. DeKalb Avenue was known as a roadway that was unsafe for drivers, cyclists, and pedestrians despite its proximity to pedestrian-friendly uses and transit stations.[25] The proposed improvements to DeKalb Avenue followed complete streets principles and included infrastructure for safe vehicle, bicycle, and pedestrian travel. In conjunction with the DeKalb Ave project, the neighboring Krog Street Tunnel underwent a series of stormwater infrastructure improvements.

3.5.3.2 Washington County, Oregon

Washington County, Oregon has a 2023 memo declaring that utility poles be placed behind the sidewalk and out of the way of pedestrian travel.[26] The City of San Antonio could issue a similar memo and include language for space for people biking, particularly for off-road facilities, and could issue this to take place when new utility poles are installed or when roadways are reconstructed to included new bike facilities.

3.5.3.3 Maryland

The Maryland Department of Transportation recommends moving utilities to a vegetated buffer between sidewalks and the roadway to adhere to both the Americans with Disabilities Act (ADA) and the National Electric Safety Code.[27] It also recommends changing the surface material or texture where utilities are placed close to the sidewalk to comply with ADA. Utility consolidation should take up less space within the public ROW, and lines should be relocated to alleyways and access roads.

[25] PropelATL. (2021) *Finally, DeKalb Ave Phase 1: Reviewing the design and looking ahead.* https://www.letspropelatl.org/dekalbave-review
[26] Washington County, Oregon. (2023, March 7). *Clear zone guidance on utility poles* [Memorandum]. https://www.washingtoncountyor.gov/lut/documents/clear-zone-guidance-utility-poles/download?inline
[27] Maryland Department of Transportation State Highway Administration. (2001). Design guidelines: Utility coordination using thinking beyond the pavement principals. https://roads.maryland.gov/OOC/TBTP-Policy-Guidelines.pdf

3.6 Cyclist Visibility

Increased visibility is key to cyclist safety, as many vehicle-bicycle crashes occur during low-visibility environments such as dawn and dusk.[28] There are two ways to increase visibility for cyclists. The first are interventions that require cyclists to make themselves more visible, such as lights and reflective markings on bicycles. The other type of intervention involves altering the built environment to increase the visibility of cyclists on or near the roadway. These infrastructure improvements may be achieved through methods to redesign intersections to "daylight" cyclists and pedestrians or to color or retro-reflectorize pavement in a manner that makes bicycles more noticeable, such as those illustrated in **Figure 3-3**.

FIGURE 3-3 COLORED BIKE LANE EXAMPLE

Source: National Association of City Transportation Officials (NACTO), 2024

3.6.1 Existing Cyclist Visibility Policy

San Antonio has an existing bike light ordinance that was adopted in 2010. However, policies oriented around making the built environment friendlier for cyclists and pedestrians are limited. The city's existing policies on intersection visibility include basic guidance from NACTO and AASHTO to provide clear vision areas without obstructions such as structures, walls, fences, or vegetation taller than three feet. San Antonio does not require or recommend the use of colored pavement markings for bicycle facilities the Codes of Ordinances, Unified Development Code, or any overlay district plans. The San Antonio Tomorrow Multimodal Transportation Plan briefly recommends including green paint in bicycle facilities but does not present detailed guidance.

[28] National Highway Traffic Safety Administration. (n.d.). *Bicycle safety*. U.S. Department of Transportation. https://www.nhtsa.gov/road-safety/bicycle-safety#:~:text=Wear%20equipment%20to%20protect%20you,or%20when%20visibility%20is%20poor).

3.6.2 Cyclist Visibility Policy Recommendation

It is recommended that the City of San Antonio require that all new or existing bicycle facilities utilize colored roadway markings or colored concrete to increase visibility at intersections, conflict points, and as appropriate under the authority of the Director of PWD. It is also recommended that the city implement intersection and curb "daylighting" policies, such as curb bulb outs, parking prohibitions within 20-25 feet of an intersection, and removal of any obstructions at intersections such as trees and shrubbery or street furniture.[29] San Antonio's Code of Ordinances must be updated through legislation passed by City Council and the Mayor. Depending on the City's ROW acquisition policy, bicycle infrastructure improvements may be the responsibility of developers or PWD. As this is an update to an existing portion of the city code that may require coordination with community members and stakeholders, cyclist visibility is a moderate impact policy that may be adopted in the short term.

3.6.3 Cyclist Visibility Policies in Peer Jurisdiction

The U.S. Department of Transportation (USDOT) suggests using green pavement markings to increase visibility of bike lanes at intersections and high-traffic crossings. Green coloring is used because it reduces confusion with established pavement color conventions in the United States, such as red, yellow, white, and blue. In addition to increasing visibility of bicyclists, colored pavement markings discourage parking in the bike lane, increase motorist yielding behavior, and reduce bicycle conflicts with turning motorists. Some municipalities have had success implementing colored bikeway facilities in colors other than green.

3.6.3.1 Austin, Texas

The City of Austin utilizes red colored concrete to delineate designated bicycle infrastructure as illustrated in **Figure 3-4**. Austin chose red bikeways because the color is mixed directly into the concrete, reducing the need for maintenance, and increasing durability of the bikeway.

FIGURE 3-4 RED BICYCLE FACILITIES IN AUSTIN, TX

[29] National Association of City Transportation Officials. (2013). *Urban street design guide: Visibility/sight distance.* https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/visibility-sight-distance/

Source: City of Austin, TX (2021)

3.6.3.2 Portland, Oregon

In a pilot of blue bikeways in Portland, Oregon there was a 20% increase in motorists yielding to bicyclists in bike lanes after the lanes were painted blue.[30] Portland has since switched over to green bicycle lanes, following USDOT and NACTO guidelines.

[30] City of Portland Office of Transportation. (1999). Portland's blue bike lanes: Improved safety through enhanced visibility. Report. https://nacto.org/wp-content/uploads/2011/01/Portlands-Blue-Bike-Lanes.pdf

3.7 Bicyclist Detection

There are several types of technologies to detect bicycles at intersections. Each type of detection has trade-offs, and the technologies may be most applicable in varying conditions, such as some technologies being more applicable in wet climates compared to sunny climates and vice versa. [31] At signalized intersections with vehicle detection but no bicycle detection, bicyclists may have to push pedestrian buttons to cross at the crosswalk or otherwise cross the intersection on a red light.

3.7.1 Existing Bicyclist Detection Policy

The UDC does not currently have a policy requiring detection for any roadway user at signalized intersections and instead requires that the design and construction of intersections comply with the Texas Manual on Uniform Traffic Control Devices (TMUTCD).[32] The 2011 TMUTCD similarly does not require specific detection types for any mode at signalized intersections, but does allow for pretimed, semi-actuated, and full-actuated signalization.[33]

Many intersections in San Antonio utilize induction loops or video detection.[34] Induction loops can sense the metal in both bicycles and motor vehicles, but intersections may need to be adjusted to use pavement markings to indicate a "detection zone" for bicyclists. Video detection may need to be recalibrated to detect cyclists. **Figure 3-5** is an example of detection zone signage.

FIGURE 3-5 BICYCLE DETECTION SIGNAGE

[31] National Association of City Transportation Officials. (n.d.). *Signal detection and actuation.* https://nacto.org/publication/urban-bikeway-design-guide/bicycle-signals/signal-detection-and-actuation/
[32] San Antonio, TX. Unified Development Code, Transportation and Street Design. 4 UDC § 35-506. https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=ARTVDEST_DIV2INST_S35-506TRSTDE
[33] Texas Department of Transportation. (2014). Chapter 4D. Traffic Control Signal Features. Texas MUTCD, Revision 2. https://ftp.txdot.gov/pub/txdot-info/trf/tmutcd/2011-rev-2/revision-2.pdf
[34] City of San Antonio Department of Transportation. (2011). *San Antonio Bike Plan 2011 + Implementation Strategy*. https://www.sa.gov/files/assets/main/v/1/transportation/documents/san-antonio-bike-plan-2011/04-networksupport.pdf

Source: BikePortland, 2012

3.7.2 Bicyclist Detection Policy Recommendation

San Antonio should determine the type of bicycle detection that is most feasible and attractive for the community's need and adopt a policy to install such detection systems at intersections along the bike network. This recommendation reiterates and builds upon Section III, Recommendation #2 of the City's 2011 Bike Plan Implementation Strategy.[35] Bicycle detection polices require further study and mobilization of significant funding, making them high impact policies. Bicycle detection policies may be realized in the mid-term (5-10 years).

3.7.3 Bicyclist Detection Policies in Peer Jurisdictions

Bicycle detection is utilized across the United States, but California might be the most applicable to San Antonio.

3.7.3.1 California

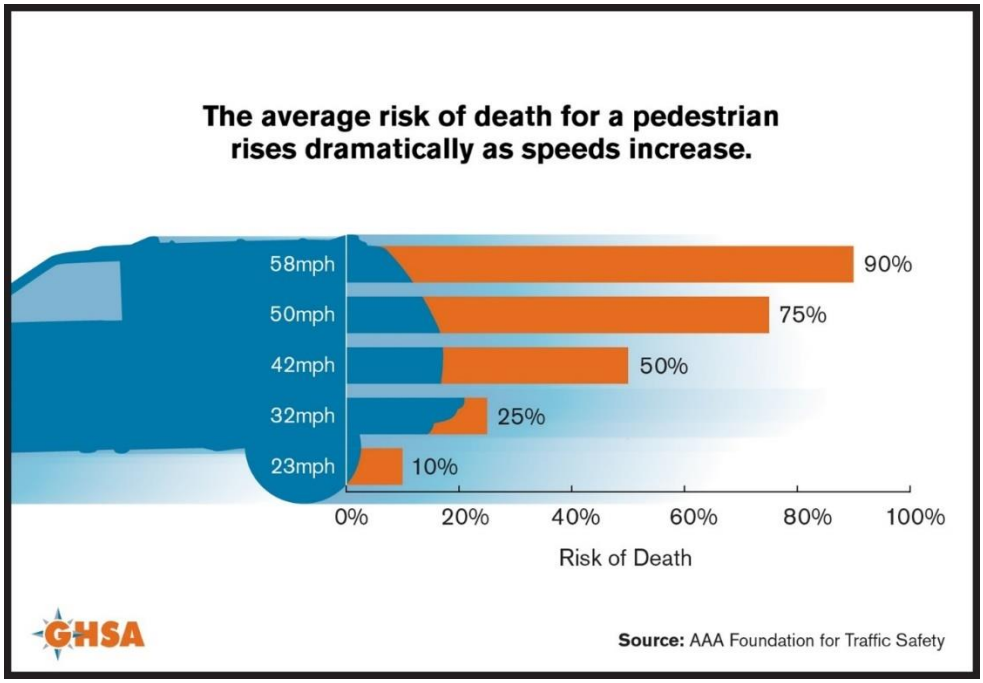
Since 2007, the State of California has required all new and upgraded traffic signal sensors to detect bicycles and motorcycles. As a result, demand-actuated traffic signals are routinely designed and adjusted to detect bicycles on the roadway through "D" quadruple loops.[36,37]

[35] San Antonio Bike Plan 2011 + Implementation Strategy.
[36] Section 4D.105. (2015). California Manual on Uniform Traffic Control Devices. https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/ca-mutcd/rev8/camutcd2014-part4-rev8a-a11y.pdf
[37] BikeWalk NC. (n.d). *Bicycle detection at traffic signals*. https://www.bikewalknc.org/bicycle-detection-at-traffic-signals/

3.8 Speed Limits

Speed limit policies are dependent on several different factors such as engineering, design, safety, and driver behavior. Increased speeds on roadways have been found to increase crash occurrences as shown in **Figure** . Speed limit policies play a key role in traffic safety and higher speeds are associated with greater crash rates.

FIGURE 3-6 AVERAGE RISK OF PEDESTRIAN DEATHS BASED ON SPEEDS



Source: Governors Highway Safety Association, 2019

3.8.1 Existing Speed Limit Policies

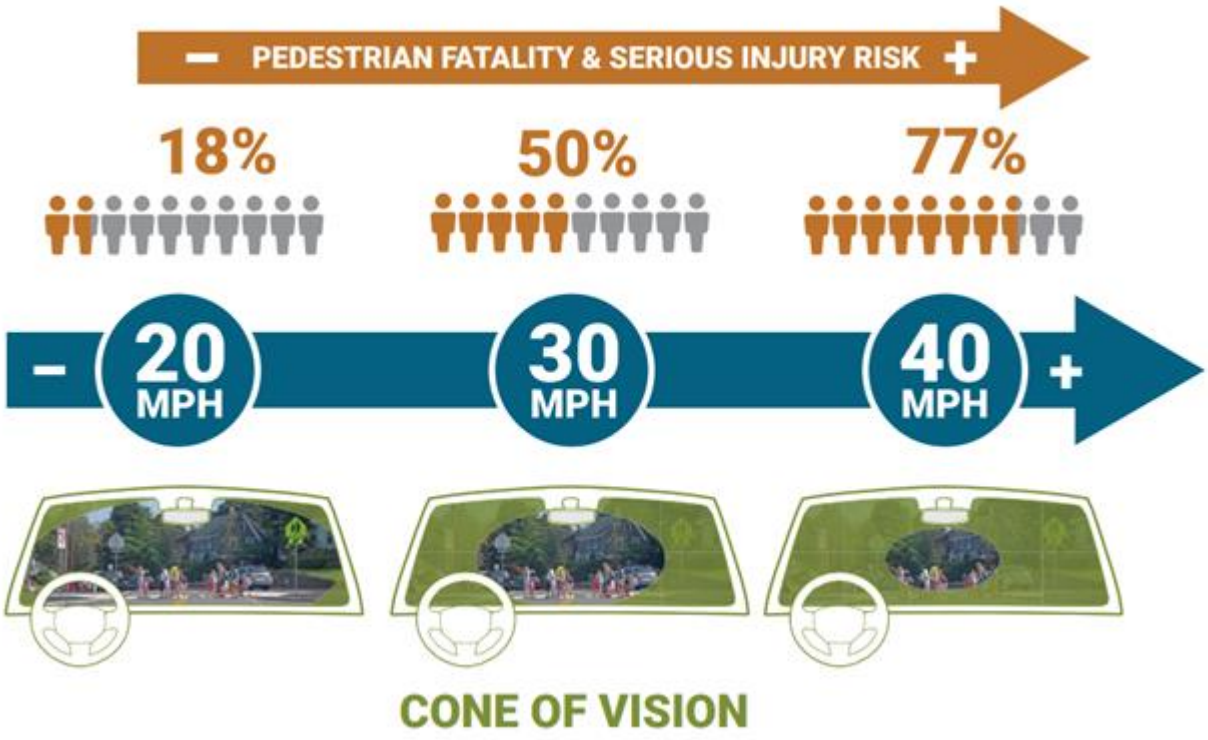
Driving speeds may be categorized as posted speeds, design speeds, and operational speeds. The posted speed limit is the legal upper limit for vehicles traveling on a roadway. The MUTCD recommends considering factors such as the roadway environment, roadway characteristics, geographic context, reported crashes, speed distribution of free-flowing vehicles, and past speed studies.[38] Design speed is the maximum speed that can be maintained along a roadway segment based on the physical characteristics of that roadway segment.[39] FHWA recommends setting the posted speed limit lower than the design speed of the roadway, in anticipation of drivers that may choose to drive faster than the speed limit.[40] Design speed is inferred by the driver given a set of roadway characteristics, such as higher speeds on 35 MPH four-lane roadways and lower speeds on main streets with curb extensions, crosswalks, medians, and reduced lane widths.[41] Setting speed limits is also

[38] Federal Highway Administration. (2023). Manual on Uniform Traffic Control Devices. 11th e.d. U.S. Department of Transportation. https://mutcd.fhwa.dot.gov/pdfs/11th_Edition/mutcd11thedition.pdf
[39] Krammes, R. A., Fitzpatrick, K., Blaschke, J. D., and Fambro, D. B. (1996). Speed: Understanding design, operating, and posted speed. Texas Transportation Institute. Report no. 1465-1. https://static.tti.tamu.edu/tti.tamu.edu/documents/1465-1.pdf
[40] Federal Highway Administration. (2015). Relationship between design speed and posted speed. Memorandum. https://www.fhwa.dot.gov/design/standards/151007.pdf
[41] Federal Highway Administration. (2017). Road safety fundamentals. (FHWA Publication No. NHI-380124A). U.S. Department of Transportation. https://highways.dot.gov/safety/learn-safety/road-safety-fundamentals-html-version

dependent on a generally accepted lawful speed limit – a prima facie speed limit – which is the assumed speed limit on a segment of roadway not clearly delineated with signage. Prima facie speed limits are discussed in further detail in **Section 3.9** of this report.

General guidance on setting speeds varies based on the decision makers involved. TxDOT recommends that the maximum speed along a roadway be based on traffic behaviors on the road, and speed limits shall be set at the 85th percentile of traffic speeds. While percentile-based speed limits are a common practice outlined in the MUTCD, sometimes the recommended speeds may not be safe for vulnerable road users, as the system only considers vehicle traffic.[42] NACTO recommends utilizing alternative methodologies that incorporate more variables, such as FHWA's USLIMITS2, to determine speeds safe for all roadway users.[43] The Texas Transportation Code requires a traffic study be done when altering the speed limit on any road and prohibits lowering the speed limit below the statewide minimum. **Figure** illustrates research regarding the relationship with pedestrian fatalities and injuries and vehicular speed.

FIGURE 3-7 PEDESTRIAN FATALITY AND SERIOUS INJURY RISK



Source: AAA Foundation for Traffic Safety, 2011

The Texas Transportation Commission Code gives TxDOT the authority to set speed limits on highway routes both inside and outside of cities. The code may be written and amended by the members of the State Legislature based on the governor's approval. It is the responsibility of TxDOT to implement the regulations set forth by the Texas Transportation Commission. The Transportation Code gives cities the same authority to set

[42] Bronin, S. C., & Shill, G. H. (2021). Rewriting our nation's deadly traffic manual. *Harv. L. Rev. F.*, *135*, 1. https://heinonline.org/HOL/P?h=hein.journals/forharoc135&i=1

[43] National Association of City Transportation Officials. (2020). *Designed to fail*. https://nacto.org/publication/city-limits/the-need/designed-to-fail/

maximum and prima facie speed limits within their jurisdictions. Usually, TxDOT will make the necessary speed studies and recommend “the most appropriate zoning” to the city.[44] The City may also conduct its own study if it is reviewed and approved by TxDOT.

The City of San Antonio bases maximum speeds off roadway types following a design-centered approach. The speed limit varies based on the type of roadway, width, and expected traffic volumes. The City requires that bicycle facilities on streets with design speeds above 30 MPH be separated or protected. This information is available in Section 35-506 of the City’s UDC in Table 506-3 Street Design Standards.[45] **Table 3-2** below summarizes the maximum design speeds and bike lane requirements for each roadway type.

TABLE 3-2
STREET TYPES AND DESIGN SPEED

Street Type	Design Speed (MPH)	Bicycle Facilities
Alley	20	Not Required
Local A	30	Not Required
Local B	30	Allowed[1]
Local C	30	Allowed[1]
Collector A	30	Required
Collector B	35	Required[2]
Collector C	35	Required[2]
Secondary Arterial	40	Required[2]
Primary Arterial	45	Required[2]

[1] Shall be required if identified on adopted Bike Master Plan.
[2] Where the roadway design speed is greater than thirty (30) mph, bicycle facilities shall be separated or protected. The minimum pavement widths shown assume bicycle facilities will be accommodated behind the curb. If bicycle facilities are proposed in the street, wider pavement and protection is required.

3.8.2 Speed Limit Policy Recommendation

It is recommended that the City amend its maximum design speeds in the UDC based on updated prima facie speeds and follow an approach that centers engineering, design, and safety. The City may also utilize a context-centered approach rather than a roadway-centered approach and set speed limits based on abutting land uses and ROW utilization rather than ROW size.

Once speeds have been amended, the City must update affected speed limit signage, particularly in residential neighborhoods and areas where speeds have decreased. This would be the responsibility of PWD, but the City could utilize community-led campaigns to identify streets where signage would have to be added or replaced.

To amend the UDC, the City Council and Mayor would have to pass an ordinance. As this would be a significant change to the zoning code, stakeholders throughout the City such as neighborhood groups, businesses, and residents would likely be involved in the decision-making process. Making sure that roadway

[44] Texas Department of Transportation. (2015). *Procedures for establishing speed zones*. https://onlinemanuals.txdot.gov/TxDOTOnlineManuals/txdotmanuals/szn/szn.pdf
[45] City of San Antonio UDC. *Table 506-3 Street Design Standard.* https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=ARTVDEST_DIV2INST_S35-506TRSTDE#:~:text=Table%20506%2D3-,Street%20Design%20Standards,EXPAND,-Street%20Type%0A%26%20Context.

additions or improvements follow the recommended changes would be the responsibility of PWD. Enforcing speed limits would be up to Public Safety officers.

As assessment is needed to determine the appropriate thresholds for revised speed limits and significant community engagement is needed to replace signage, so speed limit policy is high impact and may be implemented in the mid-term (5-10 years).

3.8.3 Speed Limit Policies in Peer Jurisdictions

Jurisdictions across the U.S. have varying speed limit policies, but the following were chosen as they could be applicable to San Antonio.

3.8.3.1 Seattle, Washington

A study of speed zones in Seattle found that when the speed limit was reduced from 30 MPH to 25 MPH, the 85th percentile remained above the posted speed limit (29 MPH) even though the reduction led to a 22% reduction in crashes.[46] Seattle has lowered speed limits to 25 MPH across the city and has tracked the impacts of doing so, finding a reduction of up to 39% in crashes. In 2016, Seattle changed its municipal code to reduce citywide default speed limits for non-arterial streets from 25 to 20 MPH.[47]

3.8.3.2 Oregon

Oregon state law allows cities to implement a 20 MPH speed limit in business districts. The Portland City Council approved an ordinance to lower speed limits on residential streets to 20 MPH in 2018.[48] Of the approximately 2,100 miles of street in Portland, 76% of roadways have a speed limit of 20 MPH.[49]

3.8.3.3 Minnesota

The Minnesota Department of Transportation (MnDOT) suggests eight best practices for reducing speed limits which include 1) Document Existing Conditions, 2) Survey Residents and Elected Officials, 3) Analyze your Data, 4) Partnering with Local Law Enforcement, 5) Evaluate Alternative Approaches/Make a Decision, 6) Prepare a Policy Statement, 7) Develop a Plan to Implement, and 8) Conduct a Follow-Up Assessment. MnDOT suggests incorporating bicycle and pedestrian safety data in the speed-limit decision making process.[50]

[46] Seattle Department of Transportation. (2020 July). *Speed limit case studies*. https://www.seattle.gov/Documents/Departments/SDOT/VisionZero/SpeedLimit_CaseStudies_Report.pdf
[47] Seattle Department of Transportation. (2020). *Speed limits*. https://www.seattle.gov/transportation/projects-and-programs/safety-first/vision-zero/speedlimits
[48] National Association of City Transportation Officials. (2020). *City limits case study: Portland*. https://nacto.org/city-limits-case-study-portland/
[49] Portland, Oregon. (2024). *Speed limits*. https://www.portland.gov/transportation/vision-zero/speed-limits
[50] Miner, K., & Arvidson, T. (2023). *Guidelines for Determining Speed Limits on Municipal Roadways* (No. 2023RIC07). Minnesota. Department of Transportation. Office of Research & Innovation. https://rosap.ntl.bts.gov/view/dot/67154

3.9 Prima Facie Speed Limit

Prima facie speed limits are the assumed speed limit along stretches of roadway where a speed limit is not clearly designated through visible speed limit signage or speed zones. According to the FHWA, which provides a technical definition, a prima facie speed limit is “one above which drivers are presumed to be driving unlawfully but, if charged with a violation, they may contend that their speed was safe for conditions existing on the roadway at that time. And, therefore, that they are not guilty of a speed limit violation.”[51]

3.9.1 Existing Prima Facie Speed Limit

The prima facie speed limit in San Antonio is 30 MPH in areas where there is not a clearly marked maximum speed limit. The Texas Transportation Code also sets prima facie speed limits as follows: 30 MPH in an urban district and 15 MPH in alleys, 70 MPH on an interstate highway outside of an urban area, and 60 MPH on a non-interstate highway outside of an urban area.[52]

While 30 MPH is a safe and acceptable speed for urban roadways, some studies have found that reducing urban speeds to 25 MPH has a significant impact on driver, pedestrian, and cyclist safety by decreasing crash number and severity.

In 2023, a bill to lower the minimum prima facie speed limit from 25 MPH to 20 MPH statewide, SB 1663,[53] was introduced in the Texas Legislature. SB 1663 passed the State Senate, but did not go up for vote in the State House. The version of the bill supported in the State Senate included removing traffic study requirements to reduce prima facie speed limits.

3.9.2 Prima Facie Speed Limit Policy Recommendation

It is recommended that San Antonio lower the citywide prima facie speed limit to 25 MPH and 20 MPH in residential areas. Since the 30 MPH speed limit is codified in the Texas Transportation Code, the City may have to work with policymakers at the state level to ensure that this change is not superseded by the state code. It is recommended that the City partner with other municipalities in Texas that have attempted to reduce prima facie speeds, like Austin. The City should support state lawmakers’ efforts to pass SB 1663 to reduce statewide prima facie speed limit minimums to 20 MPH.

If the prima facie speed limit cannot be lowered, then the City may be able to implement design-oriented solutions to encourage drivers to use slower speeds. These may be amended into the UDC or through a planning document such as the BNP.

The prima facie speed policy should be passed by the City Council and approved by the Mayor. Public Safety officers should be responsible for speed limit enforcement. As prima facie speed limits are often “unwritten” because signage is limited, the City should consider adopting a public awareness campaign to notify drivers of the change.

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[51] Federal Highway Administration. (n.d.). *Speed Limit Basics*. U.S. Department of Transportation. https://highways.dot.gov/safety/speed-management/methods-and-practices-setting-speed-limits-informational-report/speed-limit#:~:text=A%20prima%20facie%20speed%20limit,of%20a%20speed%20limit%20violation

[52] Texas Transportation Code, TRANSP § 545.352. Prima Facie Speed Limits (2015). https://statutes.capitol.texas.gov/Docs/SDocs/TRANSPORTATIONCODE.pdf

[53] S.B. 1663, 88th Congress, Reg. Sess. (Tex. 2023). Texas Legislature Online - 88(R) History for SB 1663

3.9.3 Prima Facies Speed Limit Policies in Peer Jurisdictions

Several cities are lowering the prima facie speed limit, particularly in areas where there is a higher presence of pedestrians and cyclists. Some have had more success than others.

3.9.3.1 Austin, Texas

The City of Austin attempted to lower the prima facie speed limit in residential areas from 30 MPH to 25 MPH in 2021. However, this measure was superseded by Texas Transportation Code, which sets the minimum speed limit on roads statewide at 30 MPH.[54]

3.9.3.2 Boston, Massachusetts

In Boston, the City Council successfully lowered the citywide prima facie speed limit to 25 MPH as part of the city's Vision Zero Action Plan.[55] Additional efforts were made to lower the speed in residential parts of the city to 20 MPH, but those efforts were unsuccessful because of existing policy at the state level.[56]

3.9.3.3 Seattle, Washington

In Seattle, reducing the prima facie speed limit from 30 MPH to 25 MPH and adding adequate signage decreased median driver speeds from 25.6 MPH to 23.1 MPH. The crash rate was reduced 22% overall, and the crate of crashes with injury saw an 18% decrease.[57]

[54] Jankowski, P. (2021, January 16). Bill would lower speed limits in Texas neighborhoods to 25 MPH. https://www.statesman.com/story/news/2021/01/16/bill-would-decrease-speed-limits/4143997001/
[55] Boston, MA. (2017). 25 in Boston. https://www.boston.gov/departments/transportation/25-boston#:~:text=Boston's%2025%20mph%20default%20speed,serious%20injuries%20on%20their%20streets .
[56] Schmitt, A. (2016, April 29). *Boston wants to lower its speed limit to 20 MPH – but can't.* Streetsblog USA. https://usa.streetsblog.org/2016/04/29/boston-wants-to-lower-its-speed-limit-to-20-mph-but-cant
[57] Seattle Department of Transportation. (2020 July). Speed limit case studies. https://www.seattle.gov/Documents/Departments/SDOT/VisionZero/SpeedLimit_CaseStudies_Report.pdf

3.10 Traffic Study Requirements

Traffic studies, including traffic impact analysis (TIA), are conducted when new developments or projects are proposed and have the potential to impact or disrupt traffic patterns. Traditionally, TIAs focus on capacity and operation impacts of increased traffic volumes based on the assumption that mitigating operational impacts would also provide safety benefits. These assumptions, in addition to misconceptions about the level of effort required to conduct a safety analysis, means studies typically lack independent safety analysis. As a result, these studies overlook safety impacts and opportunities for enhancement. Incorporating the FHWA's data-driven safety analysis (DDSA) into the traffic study process can help highlight safety issues before construction begins and benefits developers and users alike with safer roadways that have fewer costly crashes.[58] Using a data-driven process can educate decision makers and help them select which projects to fund to best improve safety outcomes.

3.10.1 Existing Traffic Study Requirement Policy

In San Antonio, traffic studies are required to include traffic safety mitigation related indicators including, but not limited to, parking, pedestrian facilities, bicycle facilities, vehicular safety, and general traffic circulation.[59] TIAs are required to examine existing conditions as well as a no build condition (future conditions if no improvements are made) and a total traffic condition with the improvements to better understand capacity and level of service impacts and ultimately propose mitigation improvements. If the City (or County) identifies a safety concern during the scoping meeting, the TIA must also include accident data at locations adjacent to the site and at nearby major intersections and driveways in an appendix with other transportation data.[60] Otherwise, regulations include no mention of safety in traffic studies.

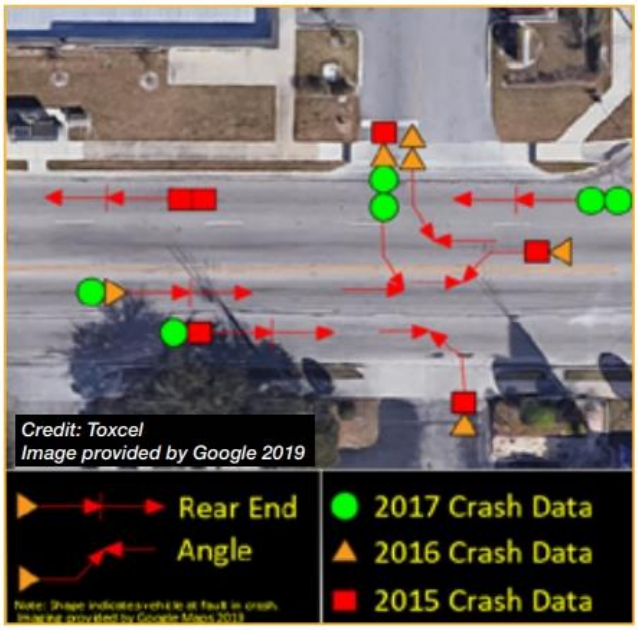
3.10.2 Traffic Study Requirement Policy Recommendations

It is recommended that the City of San Antonio incorporate a DDSA portion into their traffic study requirements. The analysis should be based on FHWA guidance and should require all traffic studies to incorporate both systemic and predictive analysis that considers multimodal travel, if applicable.[61]

Systemic analysis summarizes historic crash and roadway data to identify high risk locations that may need safety countermeasures applied. A predictive analysis, run on each design alternative, can be used to estimate crash frequencies associated with each option. Analysts should consult the latest FHWA Guidebook and DDSA toolbox to incorporate the most up-to-date methods and tools into their studies. [62,63] A collision diagram is one example of a systemic analysis. An example of a collision diagram is shown in **Figure** .

[58] Federal Highway Administration. (2022, June). *Incorporating Data-Driven Safety Analysis in Traffic Impact Analyses: A How-To Guide*. https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa19026.pdf
[59] San Antonio, Texas – *Unified Development Code* § 35-209 (5). *https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=ARTIIUSPA_S35-209FOBADE*
[60] San Antonio, Texas – Unified Development Code § 35-502. https://library.municode.com/tx/san_antonio/codes/unified_development_code?nodeId=APXBAPSU_S35-B122TRIMAN
[61] FHA. *Incorporating Data-Driven Safety Analysis in Traffic Impact Analyses: A How-To Guide*.
[62] FHA. *Incorporating Data-Driven Safety Analysis in Traffic Impact Analyses: A How-To Guide*.
[63] Federal Highway Administration. (n.d.). *Data-Driven Safety Analysis Resources.* U.S. Department of Transportation. https://highways.dot.gov/safety/data-analysis-tools/rsdp/data-driven-safety-analysis-resources#toolbox

FIGURE 3-8 EXAMPLE COLLISION DIAGRAM USED TO IDENTIFY SAFETY ISSUES



Source: FHWA

As part of the systemic analysis, language should also be included in the code update to require that traffic studies identify whether the project falls along the high-injury network or not. Additionally, adequate connections to existing and planned bicycle and pedestrian facilities should be confirmed through the traffic study analysis.

If the development is anticipated to have a significant percentage of bicycle, pedestrian, and transit trips, counts for those modes may be required. The review may also require inventory and analyses of transportation demand management strategies, bicycle and pedestrian infrastructure (including any gaps), analysis of biking and walking routes to nearby destinations, ADA compliance, transit route capacity and performance, transit stops and amenities, transit route development/service plan (if there is existing transit service that could serve the development), curb cuts, and street trees, and lighting along corridors accessing the development. Respective interventions to preserve or improve traffic safety, prioritizing data-driven interventions from among FHWA's Proven Safety Countermeasures, should also be required to be discussed in traffic studies.[64] The City can also consider adding requirements for a walk/bike comfort analysis, requirements to develop BNP projects, or requirements for a justification of rational nexus for bike projects. However, more research on such policies will be required before adoption.

The City Council and Mayor will be responsible for passing the new legislation. PWD will be responsible for reviewing and approving traffic impact analyses. This is a low impact policy that may be adopted in the short-term (1-5 years).

[64] Federal Highway Administration. (n.d.). *Proven Safety Countermeasures.* U.S. Department of Transportation. https://highways.dot.gov/safety/proven-safety-countermeasures

3.10.3 Traffic Study Requirements in Peer Jurisdictions

Currently, 75% of states apply DDSA in one or more of their project development processes.[65] There is both federal and state support for incorporating safety analyses in traffic studies. The FHWA released a how-to guide on incorporating DDSA into TIAs while TxDOT released its own user guide on DDSA.[66,67]

3.10.3.1 Baltimore, Maryland

The City of Baltimore allows for bicycle, pedestrian, and transit improvements as traffic impact mitigation measures recommended as part of the traffic impact assessment.[68]

3.10.3.2 Georgia

The Georgia Regional Tollway Authority (GRTA) Development of Regional Impact (DRI) program allows for a percentage of reduced trip generation numbers if the development site is expected to have a high number of trips from people walking, biking, or taking other non-driving modes; taking advantage of an alternative mode reduction requires that the development make accommodations for such modes upon condition of approval of development. Regardless of utilizing alternative mode trip reductions, all sites that go through the DRI program are expected to provide pedestrian and bicycle facilities to the greatest extent practicable, including connections to networks abutting the site.[69]

[65] Federal Highway Administration. (n.d.). *Data-Driven Safety Analysis (DDSA).* U.S. Department of Transportation. https://highways.dot.gov/safety/data-analysis-tools/rsdp/data-driven-safety-analysis-ddsa
[66] FHA. *Incorporating Data-Driven Safety Analysis in Traffic Impact Analyses: A How-To Guide*.
[67] Robert Wunderlich, Karen Dixon, Lingtao Wu, Srinivas Geedipally, & Eva Shipp. (2020). *Data-Driven Safety Analysis: A User Guide*. https://library.ctr.utexas.edu/hostedpdfs/tti/5-9052-01-p1.pdf
[68] Baltimore City Department of Transportation. (2007). Procedures and *Requirements for Conducting A Traffic Impact Study in Baltimore City Pursuant to Ordinance 06-345*. https://nacto.org/wp-content/uploads/2015/04/traffic_impact_study_baltimore.pdf
[69] Georgia Regional Transportation Authority. (2021). Development of Regional Impact procedures. Retrieved from https://srta.ga.gov/wp-content/uploads/2021/11/GRTA-DRI-Review-Procedures_Adopted-20210310.pdf

Chapter 4
Bicycle Infrastructure Use

4.1 Introduction

Infrastructure use (or usage) policies are policies which regulate the way that cyclists, motorists, and pedestrians are expected to utilize bicycle infrastructure. Usage policies are designed to regulate behaviors in the public ROW to create a safe environment for cyclists, pedestrians, and motorists.

Error! Not a valid bookmark self-reference. includes a summary of policies related to use of bicycle infrastructure, recommended changes, decisionmakers responsible for policy implementation, and examples of similar policies in peer jurisdicitions.

TABLE 4-1
INFRASTRUCTURE USE POLICIES SUMMARY

Policy	Existing	Recommendation	Decisionmaker, Impact, and Time Horizon
Helmet Use	None	Adopt a campaign to encourage all individuals operating bicycles or shared micromobility devices which are electronically assisted up to speeds of 25 MPH to wear a helmet. Create a Bicycle and Pedestrian Advisory Committee that can do further research, outreach, and advisement to City Council on important but delicate issues such as helmet use policies and other issues affecting pedestrians and cyclists.	City Council and Mayor must pass the policy. The City can partner with Bird and Veo to make helmets accessible for shared micromobility users. The Bicycle and Pedestrian Advisory Committee shall be designated by and report to City Council. High Impact, Mid-term (5-10 years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Time Horizon
Sidewalk Riding	Code of Ordinances Sec. 19-286. "It is unlawful to drive, propel, park, or stand any vehicle upon a sidewalk. Exceptions include on duty emergency medical personnel or law enforcement and people parking [at] bike racks along the sidewalk." Code of Ordinances Sec. 19-661. Motor-assisted scooters, electric bicycles, and bicycles equipped with GPS must always yield to pedestrians. These riders may not ride on sidewalks and must use bike lanes when available. Texas Transportation Code Sec. 551.101. "A person operating a bicycle has the rights and duties applicable to a driver operating a vehicle under this subtitle"	Allow bicycle riding on sidewalks except where signs prohibiting the action are present. Key corridors, where biking on sidewalks is not safe, should be identified and appropriately signed to inform cyclists of the prohibition. Completing the bike network and providing cyclists a safe space to ride is the most effective measure to reduce riding on sidewalks.	City Council and Mayor must pass the policy. PWD will deploy increased signage. Public Safety officers are responsible for enforcement. Moderate Impact, Short-term (1-5 years).
Stop-as-Yield (Idaho Stops)	SB 2506 (did not pass). Bicyclists may treat stop signs, steady red signals, or flashing red signals as a yield sign. Texas Transportation Code Sec. 551.101. "A person operating a bicycle has the rights and duties applicable to a driver operating a vehicle under this subtitle"	Advocate for the passage of SB 2506, the proposed state bill to legalize Idaho stops in Texas which failed to pass in 2023. When adopted, implement the policy with robust public awareness and education campaigns for drivers and bicyclists alike.	GAD will be responsible for advocating for the passage of SB 2506. Public Safety officers are responsible for enforcement. Moderate Impact, Mid-term (5-10 years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Time Horizon
Pedicab Permitting and Operations	Code of Ordinances Section 33-620. The total number of vehicle permits issued among all operating permit holders shall not exceed fifteen (15) without the approval of City Council. Code of Ordinances Section 33-630. Pedicab hours of operation shall be established by the director. Pedicab Rules and Regulations Section 2005. A driver may only operate a pedicab during the following hours. M-F: 9 am – 4 pm, 6 pm – 2 am, S-Su: 9 am – 2am, City Holidays: 9 am – 2 am. Pedicab Rules and Regulations Section 2006. No pedicab shall pick-up a passenger(s) after 1:00 am. Pedicab Rules and Regulations Section 2000. Pedicabs shall operate only in the downtown area. Pedicab Rules and Regulations Section 2001. Pedicabs shall not operate on the following streets: Cesar Chavez, Market, and Commerce.	In alignment with the VZAP, amend the Code of Ordinances to increase the number of pedicab operating licenses. Amend the Code of Ordinances to allow pedicabs to operate at all times and to expand the pedicab operating area. The operating area expansion should lift restrictions on pedicab operation on Commerce, Market, and Cesar Chavez.	City Council and Mayor must pass the policy. PWD to deploy increased signage. Public Safety officers are responsible for enforcement. Low Impact, Short-term (1-5 years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Time Horizon
Vehicles Obstructing Bike Lanes	Ordinance 2014-05-29-0370 prohibits vehicle parking in existing and future bicycle lanes on streets that can accommodate both on-street parking and bicycle lanes. Code of Ordinances Sec. 19-286. "It is unlawful to drive, propel, park, or stand any vehicle, upon a sidewalk… Exceptions include emergency medical personnel or law enforcement officers on duty and people parking [at] bike racks that fall along the sidewalk." Code of Ordinances Sec. 19-191. Official signs that prohibit parking must be heeded.	Prohibit motor vehicles from parking, idling, or driving in all bike lanes city-wide. Launch a press release to inform drivers of the new law. Enforce new restriction with a bike patrol unit that utilizes progressive ticketing.[70] Enforcement should include an education period where only warnings are given out. First time offenders should be given the option to waive their penalty by completing an education course. The 311 system should be updated to allow residents to report violations. Data from 311 reports should be used to identify corridors that require more intervention. Install quick build protections from the updated traffic calming toolkit recommended by the Vision Zero action plan in these corridors. Also require "No Parking" signage be installed with new bike lanes.	City Council and the Mayor must pass the policy. PWD to deploy quick build protections and signage. Public Safety officers provide enforcement. Moderate Impact, Short-term (1-5 years).

[70] City of San Antonio. 2011. "San Antonio Bike Plan 2011 + Implementation Strategy." https://www.sa.gov/files/assets/main/v/1/transportation/documents/san-antonio-bike-plan-2011/05-bikeprograms.pdf.

Policy	Existing	Recommendation	Decisionmaker, Impact, and Time Horizon
Safe Passing	Sec. 19-9. - Vulnerable road users. "An operator of a motor vehicle passing a vulnerable road user operating on a highway or street shall: (1) Vacate the lane in which the vulnerable road user is located if the highway has two (2) or more marked lanes running in the same direction; or (2) Pass the vulnerable road user at a safe distance."	Advocate to increase the safe passing distance in the Texas Transportation Code from three feet to five feet for bicyclists traveling on roadways where the speed limit is above 25 MPH. Consider adopting a recommendation ordinance that focuses on educating and encouraging drivers to leave bicyclists five feet of space when passing.	GAD must advocate for the state level policy change. City Council and the Mayor must pass the recommendation ordinance. Low Impact, Short-term (1-5 years).

Policy	Existing	Recommendation	Decisionmaker, Impact, and Time Horizon
Bicycle Security	Sec. 35-526. Parking and Loading Standards. "Bicycle spaces shall, at a minimum, equal ten (10) percent of the number of the minimum required vehicle spaces required for a given use, but no more than twenty four (24) shall be required… may be short or long term in nature, and shall not create any obstruction to public walkways, bus stops and/or entrances and exits to buildings… bicycle racks or lockers shall be located within fifty (50) feet of a building entrance… The recommended bicycle rack design is an inverted U…" Texas Penal Code Sec. 31.03. "an offense under this section is… misdemeanor if the value of the property stolen is… less than $2,500… a state jail felony if… the value of the property stolen is $2,500 or more but less than $30,000…"	Start an educational campaign to teach residents how to properly lock their bikes and what to do when their bike is stolen. The campaign at a minimum should include bike theft educational material on an easy to find and accessible website. Consolidate all bicycle parking regulations in a single section of the City's Code of Ordinances, Unified Development Code, or other policy documents and encourage building more bike parking facilities. The City should add specifications for bike rack installations on sidewalks to maintain a pedestrian through zone and extra requirements for the approval of non-inverted U bike rack installations. Consider partnering with a bike registry such as 529 Garage to improve their ability to locate and return stolen bikes. Finally, continue to explore recommendations from the 2011 Bike Plan and consider incentives for developers to provide secure bike parking as well as other end-of-trip facilities for cyclists.	City Council and the Mayor must pass the policy. TD to create and publish educational content online. San Antonio Police Department to partner with 529 Garage. High Impact, Long-term (10+ years).

4.2 Helmet Use

Policies that mandate helmet use ("helmet laws") require some or all persons to wear a helmet when riding a bicycle, scooter, or other non-pedestrian transportation mode. Helmets provide protection to cyclists to mitigate head injuries in event of a crash by up to 11%.[71] Non-helmeted cyclists have been attributed to risky riding behavior, endangering themselves to more severe crashes. Children and young adult cyclists are more likely to forego wearing a helmet.[72] While helmets reduce the impact of head injuries, drivers may perceive helmeted cyclists as less human than those not wearing helmets.[73] New modes of transportation, such as shared dockless mobility devices, also make mandating helmet use a challenge. The majority of shared dockless mobility users do not wear helmets.[74] Shared dockless mobility users, however, do not face a greater risk of serious injury than bicyclists and e-bicyclists.[75]

4.2.1 Existing Helmet Use Policy

Helmet laws may be adopted at the state or local level. In the United States, there are 22 states with helmet laws, and over 200 local helmet laws.[76] Texas does not have a statewide helmet law, but there are nine cities that require riders under a certain age to wear helmets (Arlington, Austin, Bedford, Benbrook, Coppell, Dallas, Fort Worth, Houston, Southlake). The City of San Antonio does not currently have a helmet law, nor does it fall under the authority of a larger governing body with one. The nearby City of Austin, however, requires all cyclists under the age of 18 to wear a helmet.

4.2.2 Helmet Use Policy Recommendations

During BNP public engagement events in May and July of 2024, members of the public were asked "Should the City require bike users to wear (sic) helmets?" Responses were mixed, but overall, the public did not support mandatory helmet laws for bicyclists. Some suggested the City strongly recommend helmet use without mandating it, while others thought that driver behavior and bicycle infrastructure should be improved to increase cyclist safety. Some members of the public suggested the requiring bicyclists to wear helmets while motorcyclists are not required to do so is an inequitable policy.

Peer reviewed sources and bicycle safety advocacy organizations recommend all-ages helmet laws for bicyclists to encourage safe cycling behaviors and reduce the risk of fatalities or injuries in bicycle-involved crashes. In practice, however, it is evident the helmet laws are inequitably enforced in ways that hurt communities of color.[77] Furthermore, mandating helmet usage may be an inequitable policy for black San

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[71] National Transportation Safety Board. (2019). Bicyclist safety on US roadways: Crash risks and countermeasures. Safety Research Report NTSB/SS-19/01. https://www.ntsb.gov/safety/safety-studies/Documents/SS1901.pdf

[72] Bambach, M. R., Mitchell, R. J., Grzebieta, R. H., & Olivier, J. (2013). The effectiveness of helmets in bicycle collisions with motor vehicles: A case–control study. *Accident Analysis & Prevention*, *53*, 78-88. https://doi.org/10.1016/j.aap.2013.01.005

[73] Limb, M., & Collyer, S. (2023). The effect of safety attire on perceptions of cyclist dehumanisation. *Transportation research part F: traffic psychology and behaviour*, *95*, 494-509. https://doi.org/10.1016/j.trf.2023.05.008

[74] Mooney, S. J., Lee, B., & O'Connor, A. W. (2019). Free-floating bikeshare and helmet use in Seattle, WA. *Journal of community health*, *44*, 577-579. https://doi.org/10.1007/s10900-018-00599-1

[75] Younes, H., Noland, R., & Von Hagen, L. A. (2023). *Are e-scooter users more seriously injured than e-bike users and bicyclists?* Blog post. https://policylab.rutgers.edu/are-e-scooter-users-more-seriously-injured-than-e-bike-users-and-bicyclists/#:~:text=NEISS%20data%20shows%20that%20e,than%20other%20injured%20micromobility%20users.

[76] Bicycle Helmet Safety Institute. (2024). Bicycle helmet laws. https://www.helmets.org/mandator.htm

[77] Wisniewski, M. (2019, September 23). Bike tickets drop citywide — but most are still issued in majority black areas *Chicago Tribune*. https://www.chicagotribune.com/2019/09/23/bike-tickets-drop-citywide-but-most-are-still-issued-in-majority-black-areas/

Antonians as helmets are rarely designed to fit textured hair.[78] Since consensus on the efficacy of helmet use policies varies from research to implementation, it is recommended that the City, with support from local and statewide bicycle and safety stakeholders, form a Bicycle and Pedestrian Advisory Committee who can do further research, outreach, and advisory to City Council on important but delicate community issues such as this helmet policy and other issues facing people walking and bicycling.

In developing the policy, the Bicycle and Pedestrian Advisory Committee should include representatives from TxDOT, the Texas Department of State Health Services, local bicycle safety advocacy organizations, and members of communities across San Antonio to draft a helmet law the aligns with the City's priorities of safety, public health, and equity. The policy must be codified by the City Council and the Mayor. Once the policy is codified, the City's Public Safety officers are responsible for enforcing the policy in an effective and equitable manner.

The City may also choose to restructure the scope of any potential helmet policies to be based off maximum cycling speeds rather than cyclist characteristics. It is recommended that the City of San Antonio adopt a campaign to encourage all individuals operating bicycles or shared micromobility devices which are electronically assisted up to speeds of 25 MPH to wear a helmet. To make helmets more accessible to shared dockless mobility device users, San Antonio can partner with the City's dockless mobility providers, Veo and Bird, to make helmets readily available to the public. That could be done through a free helmet giveaway program for riders or through a system of rentable helmets.

The City should also employ education campaigns and community partnerships for encouraging helmet use and making helmets available to children and young adults. These efforts should be targeted towards younger cyclists (under 18 years of age) who are the most likely group to not wear a helmet and engage in risky cycling behaviors.[79,80]

Since determining the appropriate helmet use policy requires further consideration and significant collaboration with local stakeholders, it is a high impact policy that can be implemented in the mid-term (5-10 years).

4.2.3 Helmet Use Policies in Peer Jurisdictions

Helmet laws, in general, are targeted towards younger cyclists. This may be attributed to the correlation of bicycle safety with general children's public health movements starting as early as 1991.[81] While wearing a helmet significantly reduces the risk of head injury for bicyclists of all ages, mandatory helmet laws may lead to inequitable outcomes. Some communities may be more susceptible to behavioral policing than others.[82]

[78] Porter Jason Maurice. (2022). Helmets, Public Safety, and Black Biking Culture in Chicago. https://www.aaihs.org/helmets-public-safety-and-black-biking-culture-in-chicago/
[79] Finch, C. F. (1996). Teenagers' attitudes towards bicycle helmets three years after the introduction of mandatory wearing. *Injury Prevention*, *2*(2), 126-130. https://doi.org/10.1136%2Fip.2.2.126
[80] Feenstra, H., Ruiter, R. A., Schepers, J., Peters, G. J., & Kok, G. (2011). Measuring risky adolescent cycling behaviour. *International journal of injury control and safety promotion*, *18*(3), 181-187. https://rdcu.be/dTr5L
[81] Bachynski, K., & Bateman-House, A. (2020). Mandatory Bicycle Helmet Laws in the United States: Origins, Context, and Controversies. *American journal of public health*, *110*(8), 1198–1204. https://doi.org/10.2105/AJPH.2020.305718
[82] Kasakove, S. (2022, February 18). Seattle Bike Helmet Rule Is Dropped Amid Racial Justice Concerns. *The New York Times.* https://www.nytimes.com/2022/02/18/us/seattle-bicycle-helmet.html#:~:text=In%20Seattle%2C%20home%20to%20one,people%20and%20people%20of%20color.

4.2.3.1 Seattle, Washington

In 2022, the City of Seattle overturned its universal helmet law which was passed in 2003. When the City first passed the law, bicycle helmet use in the city reached up to 86% for all riders.[83] The City ultimately repealed the law after it was found that Black and Native American cyclists were 3.3 and 1.7 times more likely, respectively, to face helmet-related infractions than while cyclists.[84]

4.2.3.2 Dallas, Texas

Other cities that face similar cyclist policing issues, such as Dallas, changed blanket helmet laws to only require riders under a certain age (in Dallas's case, 18 years old) to wear helmets.

4.2.3.3 Santa Monica, California

Cities have partnered with hared dockless mobility providers to giveaway free helmets or offer riders rentable helmets for a small fee. The City of Santa Monica worked with Veo to distribute free helmets to riders in the city, and incentivized recipients to donate their helmets for a future community project.[85]

4.2.3.4 Washington, D.C.

Cities can also have programs where residents may request a free helmet to be delivered to them, like in Washington, D.C.[86]

[83] Mooney, S. J., Lee, B., & O'Connor, A. W. (2019). Free-floating bikeshare and helmet use in Seattle, WA. *Journal of community health*, *44*, 577-579. https://doi.org/10.1007/s10900-018-00599-1

[84] Central Seattle Greenways. (2021). Technical report on bicycle infractions in Seattle (2003-2020): Methodology and preliminary findings on racial disparities. https://drive.google.com/file/d/13ekBA4sDUS5H8JmQ_EQIi60fAfx55DDR/view

[85] City of Santa Monica. (2023, February 6). Santa Monica Travel & Tourism partners with Veo on helmet distribution and donations. Press Release. https://www.santamonica.com/smtt-veo-partnership/

[86] National League of Cities. (2019). Micromobility in cities: A history and policy overview. https://www.nlc.org/wp-content/uploads/2019/04/CSAR_MicromobilityReport_FINAL.pdf

4.3 Sidewalk Riding

Bicycle riding on sidewalks can be a safety risk to all users. Poor sidewalk maintenance and the presence of debris, tree uprooting, and other obstacles can make certain sidewalks dangerous to bike. Pedestrians and bicyclists are at risk of colliding with each other when sharing the same facilities, especially when several pedestrians are present or when the pedestrians are users that may present unpredictable behavior—like small children, dog walkers, visually impaired individuals, or senior citizens. Finally, riding on sidewalks with numerous curb cuts and intersections puts bicyclists at a higher risk of colliding with vehicles as drivers entering or leaving sidewalk approaches may not expect individuals to move faster than a jogging pace.[87]

Still, there are instances when riding on a sidewalk may be the safer alternative for a bicyclist, such as children biking to school like in **Figure** below. A 2020 study in Orlando found that cyclists had the lowest risk of crashing with a motorist when riding on the sidewalk compared to in a bike lane or on the edge of the travel lane. That is because for two of the main motorist-caused crash types, right hook and left cross crashes, cyclists had more time to react. A right hook crash occurs when a driver turns right in front of a cyclist on their right, and a left cross occurs when a driver in the opposite direction turns left in front of the cyclist.[88] Bicyclists have more time to avoid these kinds of crashes because they generally ride slower on the sidewalk and have more distance between them and the vehicle.

FIGURE 4-1 CHILDREN RIDING ON THE SIDEWALK IN AN AREA WITH NO BIKE FACILITIES

Source: Dan Burden, n.d.

4.3.1 Existing Sidewalk Riding Policy

Current San Antonio regulations prohibit bicyclists from riding their bicycles on sidewalks in the City boundaries. Section 19-286 of the Code of Ordinances states that “it shall be unlawful for any person to drive

[87] Godwin, A. (March 10, 2016). *Bicyclists on sidewalks: Why they’re not going away, and what we can do about it*. Planetizen Features. https://www.planetizen.com/node/84910/bicyclists-sidewalks-why-theyre-not-going-away-and-what-we-can-do-about-it

[88] Wilson, M. (2020, July 17). *Orlando’s better data can make you safer on your own bike*. CyclingSavvy. https://cyclingsavvy.org/2020/07/bike-lane-sidewalk-roadway-safety/

or propel or park or stand any vehicle upon any sidewalk". These vehicles include bicycles, as Texas Transportation Code Section 555.101 specifies that "a person operating a bicycle has the rights and duties applicable to a driver operating a vehicle under this subtitle." Regarding the operation of electric bicycles and bicycles equipped with GPS, section 19-661(b) of the Code of Ordinances also specifies that "riders must always yield to pedestrians" and "riders may not ride on sidewalks and must use bike lanes when available". These regulations are intended to protect cyclists and pedestrians from the safety hazards discussed at the beginning of this section. Many cities across the United States implemented similar sweeping bans on bikes on the sidewalk.

Even with these restrictions in place, many bicyclists can still be found on sidewalks. Surveys in Valdosta, Georgia and Philadelphia, Pennsylvania show that many residents simply are not aware of restrictions around bicycling on sidewalks.[89,90] Many cyclists choose to ride on sidewalks because they feel safer. It could be that the cyclist is still learning to control a bike, that they are along a roadway with many lanes of fast-moving traffic, are trying to circumvent an obstruction in the roadway, or a motorist is telling them to get off the road.[91] With so many factors encouraging cyclists to ride on sidewalks, it should be noted that regulation alone will not stop cyclists from riding on the sidewalks.

4.3.2 Sidewalk Riding Policy Recommendations

San Antonians recognized the need to allow bicyclists use the sidewalk, at least in the interim, before a complete and safe bike lane network is developed. An overwhelming majority of participants in the BNP public engagement meetings agreed that riding in sidewalks should be allowed with exceptions based on factors such as the number of pedestrians present, the presence of bike facilities, sidewalk width, and adjacent car traffic flow and clearance.

It is recommended that the City of San Antonio update their Code of Ordinances to allow bicycle riding on sidewalks except where signs are posted to indicate that sidewalk riding is prohibited. Bike riding on sidewalks should be prohibited in key locations where potential bike/pedestrian or bike/motor vehicle conflicts are likely. The City should identify these locations—which can be high foot traffic areas or segments with many curb cuts—and add signage to prohibit cyclists from sidewalk riding and to inform them of the prohibition. San Antonio may also consider expanding the rights and duties of cyclists on sidewalks. From requiring cyclists to provide an audible signal when passing a pedestrian, to introducing a bicycle speed limit, the City of San Antonio can borrow from regulations already in place in other states.[92]

While increased enforcement could also be utilized to reduce biking on sidewalks in key locations, it may only be treating symptoms. As stated in the 2011 Bike Plan, "if the majority of users practice unsafe behavior, there may be a problem with the physical design, and it would be ineffective to station an officer at the site and issue citations. When [most] users are breaking the law, an analysis of the physical environment may reveal that changes should be made to the infrastructure."[93] San Antonio should treat the root cause of biking on sidewalks by providing a safe and connected bike network. Turning to infrastructure buildout as a solution to

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[89] *Bicyclists on Sidewalks*.
[90] Rinde, M. (July 3, 2018). Sidewalk cycling: Illegal, unsafe, and one argument for more bike lanes. WHYY. https://whyy.org/articles/sidewalk-cycling-illegal-unsafe-and-one-argument-for-more-bike-lanes/
[91] *Bicyclists on Sidewalks.*
[92] The League of American Bicyclists. (2021, July). *Sidewalk Riding Laws*. https://bikeleague.org/sites/default/files/SidewalkRiding_7_2021.pdf
[93] City of San Antonio. (2011). *San Antonio Bike Plan 2011 + Implementation Strategy* (p. 101). https://www.sa.gov/files/assets/main/v/1/transportation/documents/san-antonio-bike-plan-2011/05-bikeprograms.pdf

biking on the sidewalk reinforces the Safe System Approach and facilitates the safe travel of vulnerable users.[94]

The City Council and the Mayor will be responsible for drafting and passing the updated sidewalk riding policy. TD will be responsible for identifying key sidewalk segments to prohibit biking on. The PWD will be responsible for installing no biking signage along the identified corridors. These interventions are expected to have a moderate impact on planning activities with a short-term (1-5 years) planning horizon.

4.3.3 Sidewalk Riding Policies in Peer Jurisdictions

Building more dedicated bike infrastructure is a proven method to reduce the amount of bike riding on sidewalks.

4.3.3.1 Philadelphia, Pennsylvania

Data from the Bicycle Coalition of Greater Philadelphia shows that the city experienced a decrease in the percentage of bicycle riders on the sidewalk from 2012-2016, even as bicycling has increased overall, largely on roads with dedicated bike lanes.[95]

4.3.3.2 Cambridge, Massachusetts

Similar results were found in Cambridge where the total miles of bicycle facilities nearly doubled from 2004 to 2022. One 2023 study found that in two corridors where separated bike and bus lanes were installed, bicycle ridership on sidewalks dropped by roughly 80% while overall bicycle ridership increased. [96]

4.3.3.3 Austin, Texas

In Austin, bicycle riding is allowed on sidewalks so long as riders yield to pedestrians and do not hinder or endanger the movement of sidewalk users with limited mobility or other users.[97] Riders however may not operate bicycles on sidewalks where riding is prohibited.[98]

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[94] *U.S. Department of Transportation*. (n.d.). *What Is a safe system approach?.* https://www.transportation.gov/NRSS/SafeSystem

[95] Sidewalk cycling: Illegal, unsafe, and one argument for more bike lanes.

[96] Cambridge Environmental & Transportation Planning Division. (2023). *Bicycling in Cambridge: Data Report*. https://www.cambridgema.gov/-/media/Files/CDD/Transportation/Bike/bikereports/20231023bicyclingincambridgedatareport_final.pdf

[97] Austin Code of Ordinances § 12-2-13. (1992). https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT12TRRE_CH12-2MIBIDEBI_ART2MIBIDEBITRRE_S12-2-13USSI

[98] Austin Code of Ordinances § 12-2-17. (1992). https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT12TRRE_CH12-2MIBIDEBI_ART2MIBIDEBITRRE_S12-2-17RIREPRST

4.4 Stop-as-Yield

Bicyclist stop-as-yield laws (Idaho stops) allow cyclists to treat stop signs as yield signs and red or flashing red light signals as stop or yield signs. These laws are often referred to as Idaho stop laws because Idaho was the first state to pass such a law in 1982.[99] When Delaware adopted a similar yield law that only applied to stop signs in 2017, they saw traffic crashes involving bicyclists at stop signs drop 23% in the 30 months after adoption (compared to the 30 months before).[100] Advocacy group Bike Delaware credits the improved safety performance to the Delaware Yield and its ability to increase cyclist visibility in intersections while also reducing cyclist exposure to danger by reducing the amount of time cyclists spent in intersections. When cyclists can retain a modest amount of forward momentum, they become easier for drivers to see as human visual perception is more sensitive to moving objects than stationary ones.[101]

While Connecticut DOT found that current research is too limited to conclusively determine if the laws produce a measurable safety benefit, it did find that the research available does suggest that Idaho stops are not associated with an increase in bicyclist injuries and fatalities.[102] Advocates argue that it is safe for bikes to yield at stop signs rather than come to a full stop. Bikes travel at slower speeds than cars and have better visibility and hearing sensitivity than car drivers approaching intersections. Bike riders are also not incentivized to behave dangerously when approaching an intersection. If a crash were to occur between a bicyclist and a car, the person on the bike will fare much than the one in the car.[103] Codifying the behavior of a bicycle rolling stop that most cyclists already exhibit will make intersections safer for cyclists by clarifying expected bicyclist and driver behavior at intersections. [104]

4.4.1 Existing Stop-as-Yield Policy

In 2023, Texas senator Carol Alvarado introduced SB 2506 into state legislature to allow bicyclists to treat stop signs, red signals, and flashing red signals as yield signs.[105] The bill ultimately died in committee but can be used as a template for San Antonio to implement. Texas Transportation Code Section 555.101 specifies that “a person operating a bicycle has the rights and duties applicable to a driver operating a vehicle under this subtitle.” Because neither San Antonio nor Texas have regulations that permit Idaho stops, it is assumed that bicyclists must treat stop signs and signalized intersections the same way as motor vehicles and may not yield to them.

4.4.2 Stop-as-Yield Policy Recommendations

Given that the City cannot preempt or preclude state law, it is recommended that San Antonio advocate for the passage of SB 2506 at the state level. The policy should be implemented with a robust public awareness and

[99] Idaho State Legislature. (n.d.). Section 49-720. https://legislature.idaho.gov/statutesrules/idstat/title49/t49ch7/sect49-720/
[100] National Highway Traffic Safety Administration. (March 2022). *Bicyclist “Stop-As-Yield” Laws and Safety Fact Sheet*. https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-03/Bicyclist-Yield-As-Stop-Fact-Sheet-032422-v3-tag.pdf
[101] Delaware Yield Crash Data. (n.d.). *Bike Delaware*. https://www.bikede.org/delaware-yield-crash-data/
[102] Connecticut Department of Transportation. (2024, January). *Idaho Stop Study*. https://portal.ct.gov/dot/-/media/dot/documents/dvisionzero/idaho-stop-study.pdf
[103] Claxton, K. (June 5, 2023). *Bicycle Safety Stop FAQs*. CalBike. https://www.calbike.org/bicycle-safety-stop-faqs/
[104] Caldwell, J. (December 12, 2016), *Policies For Pedaling. Managing the Tradeoff between Speed & Safety for Biking in Chicago* (Policy). Chaddick Institute for Metropolitan Development at DePaul University. https://las.depaul.edu/centers-and-institutes/chaddick-institute-for-metropolitan-development/research-and-publications/Documents/PoliciesForPedaling-120816-FNL.pdf
[105] *88(R) SB 2506* https://capitol.texas.gov/tlodocs/88R/billtext/html/SB02506I.htm

education campaign for drivers, bicyclists, pedestrians, and law enforcement. Cyclists are more likely to adopt Idaho stop behavior if they know it is legal and will need to be educated on compliant yielding behavior and safe practices to mitigate risk that comes with moving through potential conflict areas at higher speeds[106]. Campaigns also need to target driver education programs to teach drivers to anticipate or look for cyclists at such intersections. Signage can also be added at stop signs to inform drivers of potential bicycle presence, and the allowance of Idaho stops.

GAD will be responsible for advocating for the passage of SB 2506. Once enacted, the PWD can put up educational signs. An Idaho stop policy has a moderate impact and can be implemented in the mid-term (5-10 years).

4.4.3 Stop-as-Yield Policies in Peer Jurisdictions

Currently 10 states (Arizona, Arkansas, Delaware, Idaho, Minnesota, North Dakota, Oklahoma, Oregon, Utah, and Washington) have adopted stop-as-yield laws. Four of these states (Arkansas, Idaho, Oklahoma, and Oregon) have also allowed bicyclists to treat red lights as stop signs.[107]

[106] Woodside, J., Jashami, H., Hurwitz, D. S., Young, R., & Chang, K. (2024). Safety relevant driver and bicyclist behaviors resulting from bicycling rolling stops observed in a networked driving and bicycling simulator. *Transportation Research Part C: Emerging Technologies*, *166*, 104754. https://doi.org/10.1016/j.trc.2024.104754
[107] Connecticut DOT. Idaho Stop Study.

4.5 Pedicab Permitting and Operations

Pedicabs are bicycles that have a carriage attached to the back that taxi passengers around for a fee such as the one in **Figure 4-2**. These pedal-powered tricycles are often popular around tourist attractions, as they offer another non-motorized mode choice packaged with a novel experience. As the popularity of the pedicab increased, many local governments began regulating the industry due to concerns over safety, predatory pricing schemes, and pressure from competing industries.[108,109] Regulations can include requiring standard safety equipment and operating permits and liability insurance. These sorts of restrictions all improve public safety and improve the pedicab industry. However, other regulations—like those that restrict pedicab operating areas or the number of pedicabs that are allowed to operate—are burdensome and "contrary to the goal of increasing the public welfare; they instead merely benefit competing forms of transportation—namely, the taxicab."[110]

FIGURE 4-2 PEDICAB IN THE STREET

Source: San Antonio Pedicabs, 2021

4.5.1 Existing Pedicab Permitting and Operations Policy

City Council supports reforming current pedicab policy, as current restrictions are so severe that most of the City is left completely underserved by pedicabs. Currently, the San Antonio Code of Ordinances restricts the total number of operating pedicabs in the City to 15 vehicles—unless otherwise approved by City Council—through vehicle permits.[111] The code also gives the director the agency to establish hours of operation for all pedicabs.[112] A supplementary document listing pedicab rules and regulations further specifies pedicab operating limits. Pedicabs may only operate in the downtown area with restrictions on Cesar Chavez, Market, and Commerce Streets. Pedicab operating hours are limited to Monday-Friday: 9 am – 4 pm, 6 pm – 2 am,

[108] *City of San Diego considers crackdown on pedicabs after complaints*. (2024, July 29). ABC 10 News San Diego KGTV. https://www.10news.com/news/san-diego-considers-crackdown-on-pedicabs-after-complaints
[109] Rebling, B. W. (n.d.). The Rise of the Pedicab: Municipal Regulation of an Emerging Industry. *Arizona Law Review*, *53*. https://www.arizonalawreview.org/pdf/53-1/53arizlrev255.pdf
[110] The Rise of the Pedicab.
[111] San Antonio, Texas—Code of Ordinances, Sec. 33-620. - Number of ground transportation vehicles authorized. https://library.municode.com/tx/san_antonio/codes/code_of_ordinances?nodeId=PTIICO_CH33VEHI_ARTVIPESE_DIV2OPAU_S33-620NUGRTRVEAU
[112] San Antonio, Texas—Code of Ordinances, Sec. 33-630. – Hours of operation. https://library.municode.com/tx/san_antonio/codes/code_of_ordinances?nodeId=PTIICO_CH33VEHI_ARTVIPESE_DIV3SERE_S33-630HOOP

Saturday-Sunday: 9 am – 2 am, and City Holidays: 9 am – 2 am. There is a stipulation however that no pedicab shall pick up a passenger(s) after 1 am.[113]

4.5.2 Pedicab Permitting and Operations Policy Recommendations

It is recommended that San Antonio update its Code of Ordinances to align with VZAP recommendations. The VZAP seeks to encourage more pedicab usage as a transportation alternative to driving. The action plan recommends that section 33-620 be amended to no longer limit the number of pedicab permits available. Section 33-630 should be amended to allow pedicabs to operate at all hours. At a minimum, pedicabs should be allowed to operate until at least 2:30 am to offer late night bar patrons a safe alternative to get home after the last open establishments close at 2 am. The supplemental pedicab rules and regulations should be amended to reflect the changes listed above and to remove the restrictions on the pedicab service area. The City Council and the Mayor will be responsible for codifying the updated policy. Pedicab permitting and operations policies are low impact and can be implemented in the short term, as many of the policy recommendations have already been drafted.

4.5.3 Pedicab Permitting and Operations Policies in Peer Jurisdictions

San Antonio has strict pedicab laws in comparison to its Texan peers.

4.5.3.1 Dallas, Texas

In Dallas, pedicabs are required to offer service citywide.[114] There are also no regulations written about hours of operation or the number of permits available.

4.5.3.2 Houston, Texas

Similarly, Houston does not have written regulations limiting the hours of operation, number of pedicab permits, or areas of service. They do specify however that pedicabs need to "provide evidence that the applicant has a place of business within the metropolitan area from which the applicant's pedicab service will be operated and that such use of the location is in compliance with any applicable deed restrictions" to get a permit.[115]

4.5.3.3 Austin, Texas

In Austin, there is no restriction on the number of pedicab permits available. Pedicabs are allowed to operate 24 hours a day and seven days week "unless otherwise directed by the director, the department, a police officer, or other official emergency personnel".[116] Licensed pedicabs also have service area restrictions.[117]

Austin can be used as a case study in how to expand pedicab service while managing the public reception of the service. Austin expanded its pedicab service offerings to include electric pedal assist pedicabs in 2018 through an 18-month pilot program. 72 pedicabs participated in the pilot and no collisions, injuries, or ride complaints were reported. Data showed that the pilot effectively expanded pedicab service as drivers were

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[113] City of San Antonio Pedicab Rules and Regulations, Section 2000. https://www.sanantonio.gov/portals/0/files/sapd/gtu/PedicabsR-R.pdf
[114] The Dallas City Code, SEC. 47A-2.4.3. CITY-WIDE SERVICE. https://codelibrary.amlegal.com/codes/dallas/latest/dallas_tx/0-0-0-123177
[115] Houston, Texas – Code of Ordinances, Sec. 46-151.- Permit required. https://library.municode.com/tx/houston/codes/code_of_ordinances?nodeId=COOR_CH46VEHI_ARTIIIPE_DIV2PE_S46-151PERE
[116] Austin, Texas – Code of Ordinances, § 13-2-366 - ADDITIONAL REQUIREMENTS. https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT13TRSE_CH13-2GRTRPASE_ART2GRTRSE_SPLPESE_S13-2-366ADRE
[117] City of Austin. (n.d.). Pedicabs. https://www.austintexas.gov/page/pedicabs

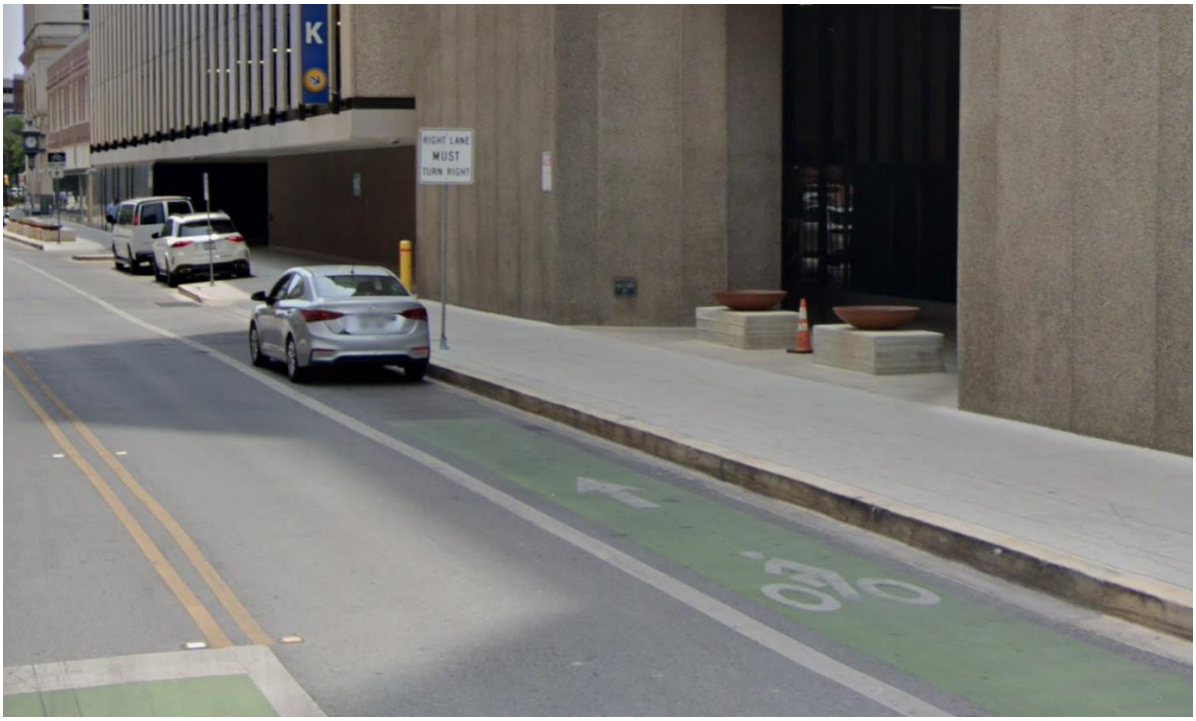
able to ride longer and further in one night and were thus able to provide more rides. Ride quality was also improved because the extra assistance meant drivers could choose better, rather than easier, routes. The pilot garnered unanimous support and led Austin to expand the program to include all currently permitted pedicabs and to study expanding the pedicab service area boundaries.[118] If there is initial negative pushback on expanding pedicab service in San Antonio, the City could follow Austin's lead and consider first launching service changes as a pilot to collect data and feedback.

[118] City of Austin Transportation Department. (n.d.). *Electric-Assist Pedicab Pilot Program Results & Recommendations*. https://services.austintexas.gov/edims/document.cfm?id=324947

4.6 Vehicles Obstructing Bicycle Lanes

Parked or idling cars in bike lanes force bicyclists to merge into mixed traffic to pass. Bicycle lane obstructions add an unnecessary potential point of conflict between bicyclists and motorists, increasing the odds of a collision occurring between the two modes. **Figure 4-3** is an example of how a vehicle can impede the bicycle lane.

FIGURE 4-3 VEHICLE OBSTRUCTING THE BIKE LANE WEST OF CITY TOWER



Source: Google Streetview, 2024[119]

4.6.1 Existing Policy on Vehicles Obstructing Bicycle Lanes

While section 19-286 of the Code of Ordinances prohibits any person “to drive or propel or park or stand any vehicle upon any sidewalk”, specific language that prohibits driving or idling in a bike lane is lacking.[120]

Ordinance 2014-05-29-0370 prohibits vehicles from parking in existing and future bike lanes only on streets that can accommodate both on-street parking and bike lanes. Streets that meet these requirements are to be identified on a case-by-case basis by the then-Transportation and Capital Improvements (TCI) department and to have the appropriate “No Parking” signage installed. Signage is enough to restrict vehicle parking in these bike lanes because section 19-191 of the Code of Ordinances prohibits parking “at any time upon any of the streets designated as ‘no parking zones’ by separate ordinance of the city”. This policy was adopted to balance the safety needs of bicyclists and the impacts of losing on-street parking on adjacent property owners.

[119] Retrieved from https://www.google.com/maps/@29.4263517,-98.4937616,3a,75y,192.47h,90.15t/data=!3m6!1e1!3m4!1sPxW3qWIR-nTULdLtPJu8Kg!2e0!7i16384!8i8192?coh=205409&entry=ttu&g_ep=EgoyMDI0MTAwOC4wIKXMDSoASAFQAw%3D%3D

[120] City of San Antonio, Public Works Department. (n.d.). *Pavement Markings: Bicycle Lanes*. https://www.sanantonio.gov/PublicWorks/FAQs/Traffic/Traffic-Calming/Bicycle-Lanes.

4.6.2 Vehicles Obstructing Bicycle Lanes Policy Recommendations

It is recommended that the City of San Antonio amend section 19-286 of the Code of Ordinances to include specific language that mentions bicycle lanes. In addition, ordinance 2014-05-29-0370 should be updated to prohibit parking in all existing and future bicycle lanes. The restriction that limits the prohibition to streets with adequate width to support both on-street parking and bicycle lanes should be removed.

Education about and enforcement of this policy update should align with the strategies and actions recommended in the 2024 City of San Antonio VZAP. The action plan recommends the City write press releases to inform drivers about the law prohibiting parking, driving, or idling in bike lanes. Building off the San Antonio 2011 Bike Plan, public safety officers should utilize progressive ticketing to enforce against cars in the bike lane. Progressive ticketing focuses first on educating and warning the public about new enforcement before ticketing.[121] Using existing policy in Houston and Austin (see next section for more detail) as a model, the City of San Antonio should include an educational period to acquaint drivers with the new rules. First time offenders should be given the opportunity to waive their penalty by successfully completing an educational course.

In addition, the ordinance should provide a means for residents to report vehicle violations in bike lanes to the City through 311. Citizens should be able to make 311 reports by phone call or through the online portal. The City press release mentioned earlier should be used to inform the public of this new policy. The City of San Antonio should also maintain records of the locations of these reports and take extra precautions to prevent cars from entering bicycle lanes in the corridors where offences are common. In these corridors, the City can test out quick build versions of protected bike lanes using the updated traffic calming toolkit recommended in the VZAP.

The 311 report volumes from before and after the installation of quick build barriers can be used to determine if more permanent barriers should be installed. Adding protection to separate vehicles from the bike lane should be encouraged as “converting traditional or flush buffered bicycle lanes to a separated bicycle lane with flexible delineator posts can reduce [bicycle/vehicle] crashes up to 53%”.[122]

As mentioned in ordinance 2014-05-29-0370, signage should be used to inform drivers that parking is not allowed in the bike lanes. Approved “No Parking” signs shall be installed in all existing and future bike lanes.

The City Council, the PWD, Public Safety/Police, and the 311 City Info and Help Department should all partner with local bicycle advocacy groups to draft a policy around enforcing a vehicle prohibition in designated bike lanes. Given political concerns with policing in the past few years, the City of San Antonio should also consider identifying and including other types of community groups such as minority interest groups when drafting the policy.

The policy must be codified by the City Council and the Mayor. Once codified, the City’s Public Safety officers are responsible for enforcing the policy in an effective and equitable manner. This is a moderate impact policy, as mobilization of personnel for education and enforcement is needed. The policy may be fully implemented in the short-term (1-5 years).

[121] City of San Antonio. (2011). *San Antonio Bike Plan 2011 + Implementation Strategy*. https://www.sa.gov/files/assets/main/v/1/transportation/documents/san-antonio-bike-plan-2011/05-bikeprograms.pdf
[122] USDOT FHWA. (n.d.). *Bicycle Lanes*. https://highways.dot.gov/sites/fhwa.dot.gov/files/Bicycle%20Lanes_508.pdf

4.6.3 Vehicles Obstructing Bicycle Lane Policies in Peer Jurisdictions

Ordinances prohibiting parking in bike lanes may be established at the state or local level. There are currently no regulations that restrict parking in bike lanes at the state level. However, ordinances prohibiting parking in bike lanes may be established at the state or local level.

4.6.3.1 Houston and Austin, Texas

Fellow Texan cities, Houston and Austin, have adopted city-wide restrictions on parking in bike facilities within the last 4 and 1 years, respectively.[123] The Houston Dedicated Bike Lane Ordinance prohibits cars from parking in any bike lane that is separated from traffic by striping or a physical barrier for any amount of time. Citizens can report parking violations through the existing 311 system. First time violators can complete a Bike Friendly Driver Training program to waive their ticket, otherwise they will receive a $100 base fine.[124] Austin's resolution is based off Houston's ordinance and includes a six-month grace period after implementation where parking offenders will be issued warnings and educational content instead of citations.[125]

4.6.3.2 Montreal, Canada

San Antonio can look to Montreal and other peer cities for guidance on how to manage public opposition against street parking removal to accommodate bike facilities.[126] In 2005, Montreal had plans to construct a new bikeway. Part of those plans included the removal of 300 parking spaces for one of the first segments of protected bike lanes. Instead of focusing on the amount of parking removed from the street itself, the planners analyzed the total number of parking spaces within walking distance (200 meters) of the project. The planners found that there were 11,000 parking spaces in the walkshed and that removing 300 of these spaces would remove about 3% of parking. By reframing the parking impact, planners changed the conversation they had with hesitant residents and business owners and were able to proceed with constructing their new signature bikeway.[127]

[123] Sullivan, Aaron. (2024, April 22). *City of Austin bans parking in bike lanes, provides extra enforcement*. The Daily Texan (blog). https://thedailytexan.com/2024/04/22/city-of-austin-bans-parking-in-bike-lanes-provides-extra-enforcement/.
[124] City of Houston, Texas. (n.d.). Dedicated Bicycle Lane Ordinance. https://www.houstontx.gov/parking/bike-lanes.html.
[125] Sullivan, A. (n.d.). City of Austin bans parking in bike lanes, provides extra enforcement.
[126] Andersen, Michael. (2015, April 14). *10 Tips for cities ready to replace car parking with safe space for biking.* Streetsblog USA. https://usa.streetsblog.org/2015/04/14/10-tips-for-cities-ready-to-replace-car-parking-with-safe-space-for-biking
[127] Litman, Todd. (2014, April 29). *How to justify converting parking lanes into bike lanes*. Planetizen. https://www.planetizen.com/node/68554

4.7 Safe Passing

Passing distance is the amount of space that drivers allow for when overtaking cyclists traveling on the roadway. A passing distance of three feet is the standard policy across over 40 states in the United States.[128] In practice, passing distance relies on factors such as roadway lane widths, existing bicycle infrastructure (or lack thereof), and attitudes towards cyclist appearance.[129,130] One study found that vehicles maintained a significantly greater passing distance when overtaking cyclists in areas where the law requires a 5-foot passing distance compared to a 3-foot distance. Increasing the clearance between a bicyclist and a passing vehicle can help reduce the likelihood of a sideswipe or collision and can help make cyclists feel safer.[131]

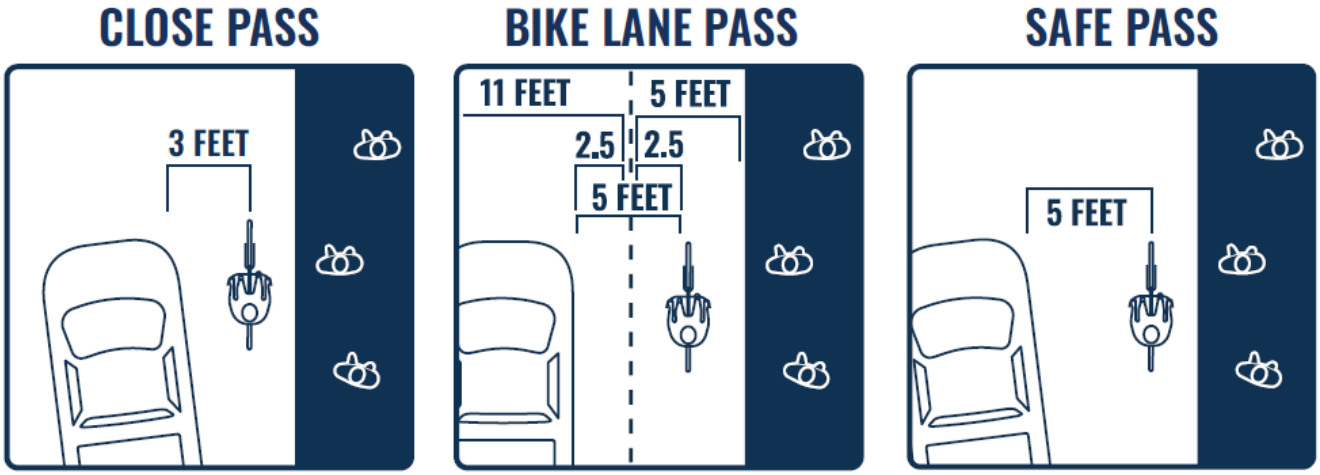
4.7.1 Existing Passing Policy

The existing bicycle passing policy in the State of Texas is only defined as a "safe distance" to the left of the vehicle.[132] San Antonio city code requires a passing distance of three feet if the vehicle is a passenger vehicle or light truck, and six feet for any larger vehicle.

4.7.2 Safe Passing Policy Recommendation

It is recommended that the City of San Antonio advocate to increase the safe passing distance in the Texas Transportation Code from three feet to five feet for bicyclists traveling on roadways where the speed limit is above 25 MPH (the recommended prima facie speed) as illustrated in **Figure 4-4**.

FIGURE 4-4 SAFE PASSING GUIDANCE, NEW BRAUNFELS STREET SAFETY ACTION PLAN



Source: City of New Braunfels, 2024

[128] League of American Bicyclists. (2018). Bicycle friendly: State safe passing laws. https://bikeleague.org/sites/default/files/Safe_Passing_Laws_07_2018.pdf
[129] Love, D. C., Breaud, A., Burns, S., Margulies, J., Romano, M., & Lawrence, R. (2012). Is the three-foot bicycle passing law working in Baltimore, Maryland?. *Accident Analysis & Prevention*, *48*, 451-456.
[130] Walker, I. (2007). Drivers overtaking bicyclists: Objective data on the effects of riding position, helmet use, vehicle type and apparent gender. *Accident Analysis & Prevention*, *39*(2), 417-425.
[131] Kirley, B., Robison, K., Goodwin, A., Harmon, K. J., O'Brien, N. P., West, A., ... & Brookshire, K. (2023). *Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 2023* (No. DOT HS 813 490). United States. Department of Transportation. National Highway Traffic Safety Administration. Office of Behavioral Safety Research.
[132] Texas Transportation Code, 545 § 053 (1995). https://statutes.capitol.texas.gov/Docs/TN/htm/TN.545.htm

In the meantime, the City may pass an ordinance that focuses on educating and encouraging, rather than enforcing, drivers to leave bicyclists five feet of space when passing. GAD will be responsible for advocating for state policy change while City Council and the Mayor will be responsible for drafting and adopting the recommendation ordinance.

4.7.3 Safe Passing Policies in Peer Jurisdictions

There are several instances of safe passing policies in peer jurisdictions.

4.7.3.1 New Braunfels, Texas

The City of New Braunfels recommends a safe passing distance of at least five feet in its Street Safety Action Plan. The 5-foot passing distance was chosen to recreate the distance a car overtaking a cyclist in a separated bike lane would leave.[133]

4.7.3.2 South Dakota

The State of South Dakota requires all motorists overtaking cyclists at a speed of greater than 35 MPH to maintain a passing distance of six feet. The regulation also allows a motor vehicle overtaking a bicycle riding in the same direction to partially cross the centerline between two lanes of travel in the same direction when it is safe to do so.[134]

[133] City of New Braunfels. (2024). *Street safety action plan.* Retrieved from https://newbraunfels.gov/3908/Street-Safety-Action-Plan#:~:text=The%20City%20of%20New%20Braunfels,for%20all%20ages%20and%20abilities.
[134] South Dakota State Legislature. 173 SL § 1. (2015).

4.8 Bicycle Security

Bicycle security policies are policies which protect bicycles from theft or damage when left unattended. Secure bicycle parking, such as shared bicycle cages, individual bicycle lockers, or indoor bicycle facilities, can reduce bicycle theft and damage. A diversity of bicycle parking options, including outdoor bicycle racks in the ROW for short-term parking and secure long-term bicycle parking facilities, can also encourage cycling as a mode for different types of trips across the City.

Some estimates show that the financial impact of bike theft in North America is at least 500 million dollars annually.[135] Even though bicycle theft is such a pervasive problem, it is often brushed aside as a cost of urban living and often goes unpunished.[136] Bike theft is a difficult offense for police to punish because most victims do not report stolen bicycles.[137] Even if a police report is filed, most stolen bikes are not recovered. Police require a bike serial number, that most cyclists do not record, to use in their registry system. The current registry system is also antiquated, slow, and non-extensive; often leaving theft victims in a digital purgatory. The system has limited cross-jurisdictional data sharing and does not scan unregulated online marketplaces where stolen bikes are often resold. If a stolen bike happens to be recovered, it is still difficult to prosecute the thief. It is hard to prove in court that the person the bike was recovered from knew the bike was stolen. These cases require more investigation, but investigation into bike theft cases is often not prioritized by law enforcement because they are busy with other cases that have larger dollar values.[138]

Bike security is a multi-layered issue that needs to be addressed to maintain and encourage a robust cycling community. One Montreal study found that a little over 7% of bicycle theft victims did not replace their stolen bicycles.[139] Providing plentiful bike parking options is the first step to creating a more secure biking environment for cyclists.

4.8.1 Existing Bicycle Security Policies

Currently, bicycle parking policies are distributed across different sections of the City's Code of Ordinances and limited in scope.

Bicycle parking is only required on properties that have off-street parking, and bicycle parking must equal at minimum 10% of vehicle parking spots required for a given use although no more than 24 total spots are required. In "D" downtown zoning districts and all "IDZ" infill development districts, bicycle parking minimum requirements are increased to 25% of total vehicle parking spaces required for the proposed use as if it were in a nonresidential zoning district requiring minimum off-street parking. Parking space requirements by use in residential and non-residential districts are defined in Table 526-3a and Table 526-3b respectively.

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[135] Allard, J. (January 31, 2017). *Our next step in attacking bike theft.* Medium. https://medium.com/@Project_529/project529-acquires-nationalbikeregistry-8bec72108bbc

[136] Babin, Tom. (April 21, 2017). *Opinion: Why are cities allowing bicycle theft to go virtually unpunished?*. Los Angeles Times. https://www.latimes.com/opinion/livable-city/la-ol-bicycle-theft-20170421-story.html

[137] Portland Police Bureau. (2014). *Bicycle theft trend report 2014*. https://bikeportland.org/wp-content/uploads/2014/12/Bicycle-report-2014-YTD.pdf

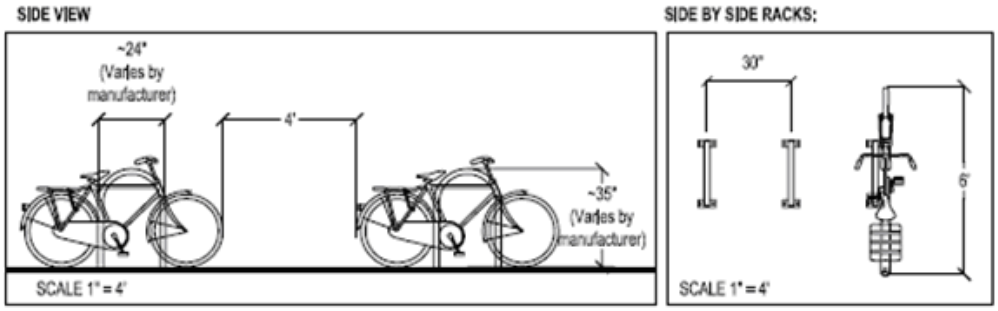
[138] Brosseau, Carli. (February 26, 2015). *Bike theft booming in Portland: Even in Bike City USA, thieves are rarely caught, data show*. The Oregonian. https://www.oregonlive.com/portland/2015/02/bike_theft.html

[139] van Lierop, D., Grimsrud, M., & El-Geneidy, A. (2015). Breaking into bicycle theft: Insights from Montreal, Canada. *International Journal of Sustainable Transportation*, 9(7), 490-501. https://tram.mcgill.ca/Research/Publications/Cycling_theft.pdf

The City has robust regulations that specify that bicycle parking must be clearly visible, within 50 feet of a building entrance, and made of metal mounted in concrete. Bicycle racks must be spaced either 30 inches or 4 feet apart, depending on orientation, to ensure adequate spacing between bicycles, as illustrated in **Figure 4-5**[140] In Form Based Zoning (FBZ) districts, bicycle parking is required in sub-urban, general urban, urban center, and urban core zones. This parking shall be convenient, secure and visible and consist of short- and long-term parking as specified in tables 209-14D and 209-14E.[141]

The recommended bicycle rack shape is the inverted-U, but other shapes may be approved if they provide for supporting the bicycle frame, allow for at least one wheel to be locked, allow the use of "U-type" or cable locks, and support bicycles equipped with water bottle cages. In River Improvement Overlay (RIO) districts, bicycle parking requirements "can be met through indoor bicycle storage facilities in lieu of outdoor bike rack fixtures."[142]

FIGURE 4-5 BICYCLE PARKING EXAMPLE IN THE UDC



Source: City of San Antonio, 2024

Bicycle parking is also used as a development incentive in Arts and Entertainment (AE) Districts. In these districts, developers are allowed to reduce their minimum off-street parking requirements by one space for every five bicycle parking spaces provided.[143]

Bicycle theft is not regulated in the City's code, but the Texas Penal Code (TPC) defines theft of property as a misdemeanor if the value of the property stolen is worth less than $2,500 and a state jail felony if the value of the property stolen exceeds $2,500 but is less than $30,000.[144] There is no opportunity to register or track bicycles with the City or any other organization.

4.8.2 Bicycle Security Policy Recommendations

The best way to prevent bicycle theft is to practice good bike locking hygiene. One study found that over 15% of bikes parked in Portland were secured so poorly that a thief would need no more than a $15 set of bolt cutters to ride away with the bike.[145] The City of San Antonio should begin educational campaigns to teach residents how to properly secure their bicycles and what to do in the case their bike is stolen. The City should start by making a website that maintains this sort of educational material in an easy to find location. Portland's Bike Theft page can be used as a guide for what information to include in materials, such as the poster design

[140] City of San Antonio. 35 UDC § 526. (2022).
[141] City of San Antonio. 35 UDC § 209. (2015).
[142] City of San Antonio. 35 UDC § 673. (2022).
[143] City of San Antonio. 35 UDC § 358. (2012).
[144] State of Texas. 31 TPC § 3. (2023).
[145] Allard, J. (November 15, 2015). *Dear Portland, please stop making things so easy for bike thieves*. https://medium.com/endbiketheft-stories/portland-is-making-it-too-easy-for-bike-thieves-17297f0ccc6d

in **Figure 4-6**.[146] Other elements of the educational campaign could include workshops at local schools, billboard campaigns, and announcements at various group rides or bike events. Part of the educational campaign should also spread awareness of the importance of tracking bicycle serial numbers.

FIGURE 4-6 EXAMPLE BIKE THEFT PREVENTION EDUCATIONAL MATERIAL

Source: City of Portland, 2024

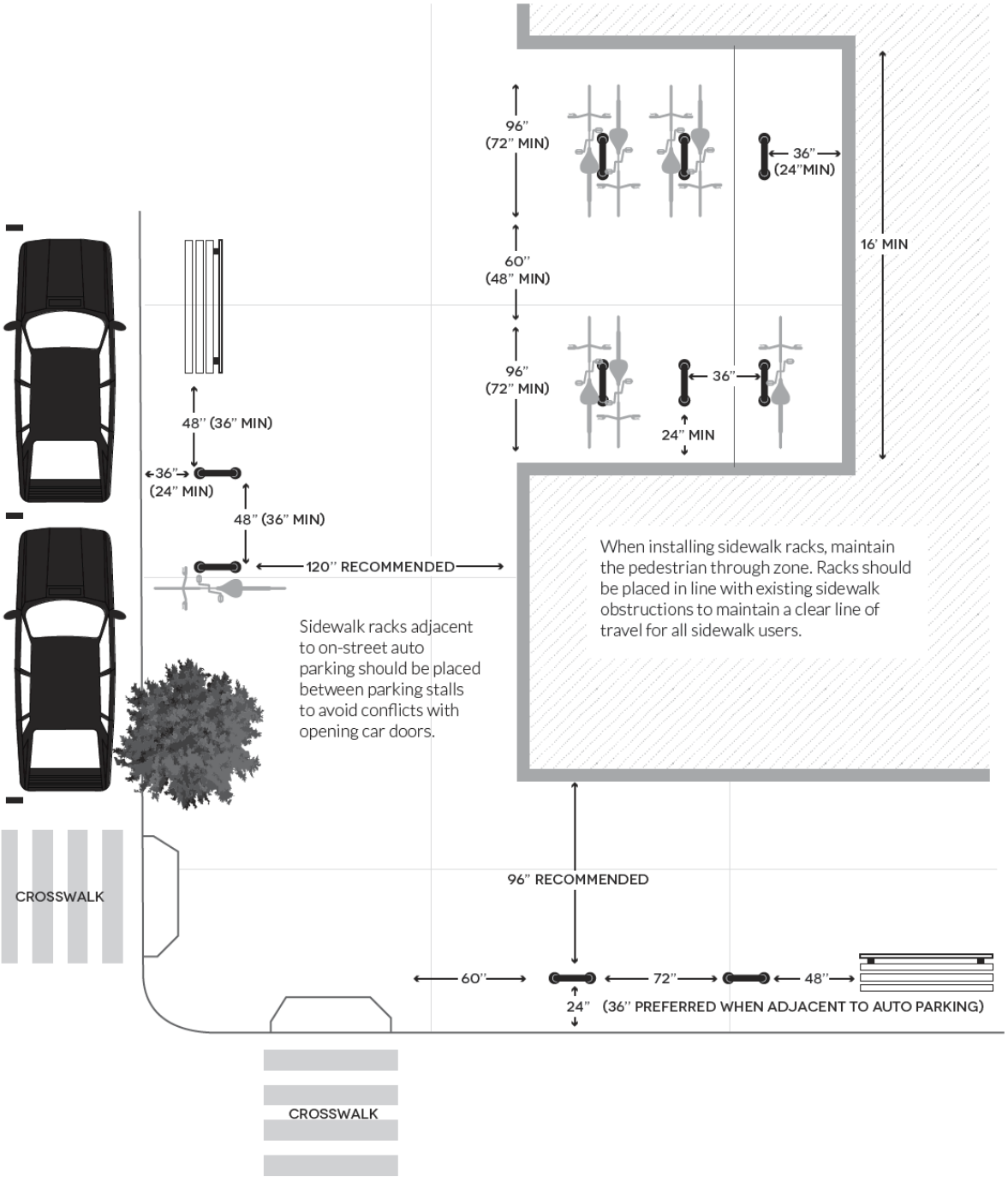
The City should support educational efforts by providing residents with more bike parking facilities to secure their bikes. It is recommended that the City of San Antonio consolidate all bicycle parking regulations in a single section of the City's Code of Ordinances, Unified Development Code, or other policy document. The consolidated regulations could live in a new section specifically for bicycle parking standards in the UDC under Division 6.

The current section of City code which houses the bulk of bicycle parking policy, Section 35-526(l), may be expanded to include additional bicycle parking requirements that align with industry best practices.
For instance, a clause should be added to the first sentence to specify that parking should be "visible from and close to the entrance it serves". The City should also expand on their bicycle rack spacing requirements to establish minimum setbacks for rack installations on sidewalks to maintain a pedestrian through zone. It is recommended that eight feet of clearance is kept between the end of a bicycle rack and building if the rack is parallel to the building and ten feet of clearance if it is perpendicular. **Figure 4-7** is a diagram that visually displays the spacing between bicycle racks recommended by the Association of Pedestrian and Bicycle Professionals that can be added to the UDC for clarity. The diagram includes some spacing requirements already codified in COSA law but will need to be adjusted to accurately reflect all current regulations. The City of San Antonio regulations should include requirements for bike parking spacing in various contexts, as spacing requirements will likely differ between development patterns such as suburban office parks, urban residential areas, commercial districts, etc. The City should also clarify that bicycle rack designs other than the

[146] City of Portland. (n.d.). Bike theft and how to prevent it. *https://www.portland.gov/transportation/walking-biking-transit-safety/safe-routes/bike-theft-and-how-prevent-it#toc-what-if-your-bike-is-stolen-*

inverted U may be approved by variance and add to the criteria that rack use must be intuitive and should accommodate a variety of bicycle styles and attachments.[147]

FIGURE 4-7 EXAMPLE OF BIKE RACK SPACING SPECIFICATIONS



Source: Association of Pedestrian and Bicycle Professionals, 2015

[147] Association of Pedestrian and Bicycle Professionals. (2015). Essentials of Bike Parking. https://www.apbp.org/assets/docs/EssentialsofBikeParking_FINA.pdf

Facilities such as public bicycle lockers or storage cages may be made available by the City through a public bicycle parking program. Additionally, the City can require that all nonresidential developments provide a minimum of two bicycle parking spaces per site like in Davis, CA.[148] The City can borrow from the Minneapolis, MN Code of Ordinances and set bike facility (parking spaces, showers, and full-sized lockers) requirements for developments. The City should work with property owners and managers, business owners, educational campuses, and other high-traffic destinations to determine an appropriate mechanism for long-term bicycle parking.

It is also recommended that the City partner with a bike registry service, such as 529 Garage, to improve their capacity to respond to bicycle theft reports. 529 Garage is the largest and most advanced anti-theft bike service in North America.[149] The company already partners with 1,383 agencies and claims that "cities that actively use 529 Garage have seen up to a 40% decline in bike theft." The service would help San Antonio Police extensively search for and find stolen bikes from a multitude of jurisdictions and platforms. Additionally, officers would gain the ability to publish impounded bike notices, to track bike registrations in the area, and to access a cross-agency forum where they can learn best practices from other agencies.[150] Regardless of what registry service San Antonio chooses, the City should ensure that bike registry is free and optional for residents to avoid potential equity issues.

Lastly, the City should amend its UDC to provide incentives to encourage the construction and provision of shower and changing facilities in new developments or significant redevelopments. The City can consider trade-offs for providing these facilities, such reducing off-street parking requirements. The 2011 Bike Plan recommended an amendment to the UDC to provide bike parking, which has since been implemented, but the exploration of incentives for more secure bike facilities, as well as other end-of-trip facilities for cyclists, is reiterated by this current BNP as well.[151]

Bicycle security policies require significant coordination with stakeholders and the public, additional study, and determination of novel funding sources, making them high impact and implementable in the long-term (10+ years).

4.8.3 Bicycle Security Policies in Peer Jurisdictions

There are several peer jurisdictions that have different policies in place to advance bicycle security through parking, registration, and other initiatives.

4.8.3.1 Austin, TX

The City of Austin has consolidated regulations for bicycle parking infrastructure into Section 9 of Austin's Transportation Criterion Manual (TCM).[152] Bicycle parking is split between short- and long-term, and percentage distribution depends on land use classification. Long-term bicycle parking is required to be covered, easily accessible for people walking a bicycle, and provide charging opportunities for electric bicycles. Long-term bicycle parking must be available in the form of bicycle lockers or locked storage rooms and cages for increased security.

[148] City of Davis Code of Ordinances § 40.25A.040. (2013). https://ecode360.com/44652420#44652417
[149] Our next step in attacking bike theft.
[150] 529 Garage. (n.d.). How we help cities, police and transit services. https://project529.com/garage/law_enforcement#what
[151] City of San Antonio. (2011). *San Antonio Bike Plan 2011 + Implementation Strategy* (p. 87-88). https://www.sa.gov/files/assets/main/v/1/transportation/documents/san-antonio-bike-plan-2011/05-bikeprograms.pdf
[152] City of Austin. 9 TCM § 8. (2021).

Austin's Active Transportation Program, allows citizens to apply online for additional bicycle parking infrastructure to be installed throughout Austin's core. The city will not install parking on private property, but it will install U-type bike racks on the sidewalk or bike corrals in on-street parking locations, supporting up to two or fourteen bicycles, respectively.[153] Bicycle parking is installed by city staff in the public ROW near participating businesses free of charge.

4.8.3.2 San Diego, CA

The San Diego Association of Governments (SANDAG) – San Diego's Metropolitan Planning Organization – offers a secure bike parking program with around 600 secure bicycle parking spaces at over 60 locations across the San Diego region. Bicycle parking is provided as lockers for individual bicycles or in secure bicycle parking facilities. Parking is available at a small fee for participants enrolled in the program. SANDAG offers instructions on how to utilize bicycle parking facilities on their website. The MPO also provides free bicycle education for employers and schools covering topics such as safe bicycle commuting, e-bikes, bicycle maintenance, and bicycle-friendly driving.

4.8.3.3 Minneapolis, MN

Minneapolis, MN maintains all bike parking and bike facility requirements in § 555.230 and § 555.240 of its Code of Ordinances.[154] The bicycle parking requirements include standards for which the installed parking spaces and racks must meet and minimum parking requirements which list the number of bike parking spaces required per development based on use. The bike facility requirements specify that all developments with 200,000 or more square feet are required to include bike parking spaces, shower facilities, and clothing storage areas. The requirements include a table that describes how many of each of the facilities are required per development based on square footage. A small portion of this table is included below for reference below in **Table 4-2**.

TABLE 4-2
PORTION OF MINNEAPOLIS MINIMUM BIKE PARKING REQUIREMENT TABLE

Use	Minimum Bicycle Parking Requirement	Notes (see 555.230)
Minimum bicycle parking requirement, in general. Nonresidential uses having one thousand (1,000) sq. ft. or less shall be exempt from minimum bicycle parking requirements. Multiple-tenant or multiple-use buildings may exempt no more than four (4) uses of one thousand (1,000) sq. ft. or less from the minimum off-street bicycle parking requirement.		
COMMERCIAL USES	All commercial uses having one thousand (1,000) sq. ft. or more shall provide three (3) short-term spaces or the amount listed below, whichever is greater.	
General retail sales and services (except as otherwise noted in this table)	1 space per 5,000 sq. ft. of GFA	1
Hospital	As approved by CUP	2
Office	1 space per 4,000 sq. ft. of GFA	2
…		

[153] City of Austin. (2018). FAQ: Bicycle parking. [Factsheet]. https://www.austintexas.gov/sites/default/files/files/Transportation/Bicycle_Parking_FAQ.pdf
[154] City of Minnesota Code of Ordinances § 555.230. (2021). https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=MICOOR_TIT20ZOCO_CH555OREPALOMO_ARTIIISPOREPARE_555.230BIPARE

4.8.3.4 Vancouver, Canada

Vancouver, Canada, is known as a hotspot for bicycle theft in North America. The city partnered with a local organization, 529 Garage, to create an online portal where residents can register their bicycles. The city also distributes free decals denoting the bicycle's registration status to deter thieves from attempting to steal registered bicycles.[155] Since launching the program, over 100,000 bicycles have been registered.[156] Project 529 offers bicycle registration across North America.

[155] City of Vancouver. (n.d.) Register your bike to reduce theft. https://vancouver.ca/streets-transportation/register-your-bike-to-reduce-theft.aspx

[156] Coulon, J. (October 27, 2020). *Bike thefts are on the rise. Here's how to fight back.* Bicycling. https://www.bicycling.com/news/a28846575/project-529-bike-theft-data/

Chapter 5
Conclusion

The Policy Actions and Constraints Report is designed to be used in tandem with all other elements of the Bicycle Network Plan -- including the Funding Strategy Plan and Vision Zero Action Plan – and the 2024 Complete Streets Policy. The policies and recommendations presented in this report were determined to lead to meaningful improvements in bicycle, pedestrian, and vehicular safety. Policies were selected based on feedback from the public, priorities identified across different BNP elements, and salient bicycle and pedestrian safety issues at the local, state, and national levels.

The analysis in this report is generalizable, and while comprehensive in scope, is not exhaustive of every policy which may improve bicycle and pedestrian safety. The City should utilize this document as a starting point for the development of such policies and may choose to alter or supplement recommendations as needed. This document also assumes the most suitable course of adoption for recommendations to be through legislation and codification into an existing policy, such as the City's Code of Ordinances or Unified Development Code. It may be determined, upon further investigation, that certain policies would be more impactful or better received if restructured as programs or initiatives done in partnership with local stakeholders, including interest groups, advocacy organizations, or higher education institutions.

Most of these policies include line-item changes to existing sections of the Code of Ordinances or adoption of policies already drafted at the local, regional, and state level. These policies may be adopted in a short-term time horizon (1-5 years). Some policies, such as ROW maintenance, require further study or assessment to determine the appropriate course of action for the City to implement the most appropriate recommendation. All policies in this document may reasonably be implemented within 10-15 years based on availability of funding and personnel.

The recommendations outlined in this document should be integrated into a holistic approach that includes street and bikeway design, public engagement and education, and other bike-safety measures. Care should be given to ensure that the policies and programs implemented based on this document are being monitored to determine safety and equity impacts across the City, and any necessary amendments or reconsiderations should be made as needed. Ultimately, implementing these policies is only one step towards making San Antonio more safe, accessible, and connected for cyclists and pedestrians.