Walk Audit Report

SafeRoutes
Napa County

NAPA VALLEY
LANGUAGE ACADEMY

NAPA VALLEY LANGUAGE ACADEMY

2700 KILBURN AVENUE NAPA, CA

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ACKNOWLEDGEMENTS

NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

Napa County Bicycle Coalition
Madeline Oliver, Program Coordinator
Carlotta Sainato, Program Coordinator
Patrick Band, Executive Director
Kara Vernor, Executive Director

Napa County Office of Education
Grant Dinsdale, Community Programs Site Coordinator, Safe Routes to School
Willow Williams, Community Programs Outreach Coordinator
Christine Wedding, Community Programs Manager
Sara Sitch, Community Programs Director

Napa Valley Transportation Authority
Diana Meehan, Senior Planner

SCHOOL OFFICIALS

Napa Valley Unified School District
Dr. Rosanna Muccetti, Superintendent
Alejandra Uribe, Principal
Gloria Maravilla, Parent Liaison

CITY STAFF

City of Napa Public Works Department
City of Napa Community Development Department
City of Napa Fire Department
City of Napa Police Department

WALK AUDIT PARTICIPANTS

Sarah Gutierrez, Parent
Mick Harvey, Parent
Lorraine Richardson, Parent
Kelli Wall, Parent
Rosie Berger, Administrative Assistant
Dave Kearney-Brown, Teacher
Gloria Maravilla, Parent Liaison
Alejandra Uribe, Principal

REPORT DESIGN

Ana Rizzo, Graphic Design
Amber Manfree, GIS Mapping

EXECUTIVE **SUMMARY**

THE NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

The Napa County Safe Routes to School (SRTS) Program is a partnership between the Napa County Office of Education (NCOE), Napa County Bicycle Coalition (NCBC) and Napa Valley Transportation Authority (NVTA). Since 2008, the Program has provided high-quality bicycle and pedestrian safety education and encouragement programs and has worked closely with the public agency and school stakeholders to make walking and bicycling safer and more accessible for children throughout Napa County.

According to 2015 California Office of Traffic Safety (OTS) data, the data available when the SRTS program was applying for grant funding, Napa County ranked 1st in per capita number of collisions of bicyclists under the age 15, 2nd in total fatal and injury-causing collisions, and 3rd in overall pedestrian collisions. According to the most recent OTS data (2018), Napa County ranked 8th for bicyclist collisions statewide (58 counties), 7th for speed-related collisions, and 6th for total fatal and injury-causing collisions. A decades-long decline in the number of students walking and biking to school, as well as increased awareness of the significant traffic congestion, air pollution, and related issues associated with students being driven to school galvanized local agency partners to expand the existing program.

> The goal of the Walk Audit Report is to **identify, evaluate, prioritize, and offer solutions** to infrastructure and non-infrastructure barriers to students safely walking and biking to school in Napa County.

In 2017, the Napa County SRTS program secured funding through the Caltrans Active Transportation Program (ATP) and One Bay Area Grant (OBAG) Cycle II programs to expand education programs and initiate a series of evaluations at each public school countywide. NCOE has been leading education and engagement programs under the current program, while NCBC has led evaluations of active transportation barriers at all 36 school sites.

WHY SAFE ROUTES TO SCHOOL?

Safe Routes to School is national initiative committed to increasing the number of students who walk or bike to school, and making it safe, convenient, and fun for kids to do so. In doing so, SRTS aims to improve kids' safety and increase health and physical activity. Concerned by the declining number of students walking and biking to school over recent decades and the related long-term health and traffic consequences, Congress made federal funding available for SRTS programs nationwide in 2005. Since then, SRTS programs have been implemented at more than 14,000 schools in all 50 states.

Studies have linked SRTS programs to increased walking and biking to school[ab] and reduced pedestrian-motorist collisions[cd]. This can lead to safer, healthier, and more focused students, while also benefitting local and school communities.

Regularly walking or biking increases children's daily levels of physical fitness and improves their cardiovascular health[e].

Student health has been linked to improved academic performance[fg]. When students walk or bike to school, the fresh air and exercise allow them to arrive refreshed, energized and ready to focus. Children have a greater sense of spatial awareness and knowledge when they are actively engaged in their transportation, allowing them to better recognize and navigate their neighborhoods independently[h]. Families are also provided with a low-cost transportation option that can significantly reduce their annual expenses[i].

When a greater share of students walk or bike to school, local and school communities benefit too. Fewer cars being driven to school can improve the air quality of surrounding neighborhoods by decreasing air pollutant emissions and increase street safety through reduced traffic congestion and noise pollution. This can also improve campus safety and reduce circulation hazards around the school site. Walking or biking is a reliable form of transportation, which can reduce student absence and tardiness. By reducing the number of short-distance school bus trips, increased student walking and biking can also help school districts save funds by decreasing costly bus service.

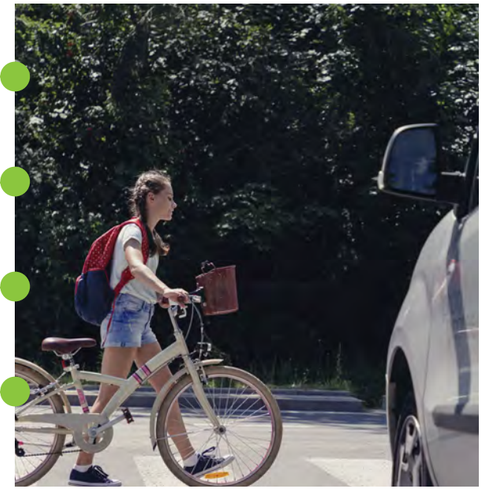
Schools and the community benefit immensely when students choose to walk or bike.

Student health has been linked to improved academic performance.

Walking or biking can provide a reliable form of transportation, leading to reduced student absence and tardiness.

Children arrive ready to learn and are less likely to experience discipline issues.

Fewer cars dropping off and picking up students improves campus safety and reduces circulation hazards.



THE SIX E'S

Safe Routes to School programs originally followed a comprehensive approach that addressed the "Five E's" – education, encouragement, enforcement, evaluation, and engineering. In 2017, when the Napa County SRTS program obtained funding to perform Walk Audit evaluations, the "Five E's" had recently been altered to add a sixth "E" – equity. In June 2020, after a significant portion of the Walk Audit evaluation work had been completed, the "Six E's" framework was again altered, dropping enforcement and adding engagement. These changes were led by the Safe Routes to School National Partnership.

The current "Six E's" framework is described below. Although enforcement is no longer one of the "Six E's", a brief definition of enforcement is included, as it was part of the approach used by the Napa County SRTS program during the majority of the Walk Audit evaluation process. Enforcement statistics are not emphasized in this report, as this element needs more study and review.

Engagement
Listen to community members and work with existing community organizations.

Equity
Recognize the unique barriers that different people face in living healthy, fulfilled lives, and craft policies, programs, and overall approaches with those various challenges and needs in mind.

Engineering
Design streets and schools for walkers and bikers to use safely and conveniently.

Encouragement
Promote walking and biking in the school community through events, programs and incentives.

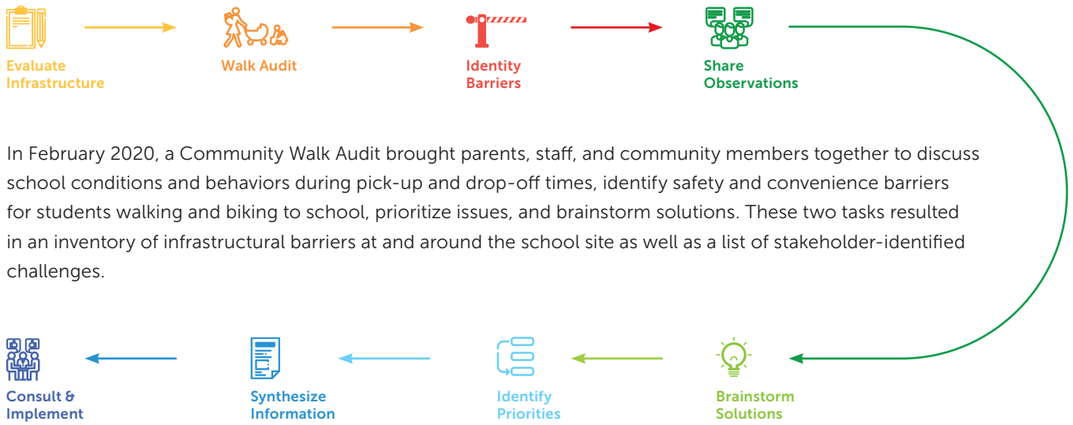
Education
Ensure that everyone learns how to travel safely and why biking and walking are important.

Evaluation
Track progress toward our shared safety goals, develop programs accordingly.

Enforcement (no longer an "E'):
Enforce traffic safety laws and school policies and target risky behaviors. No longer recommended as foundational to the start, maintenance, or growth of Safe Routes to School programs.

REPORT PROCESS

The SRTS team conducted a comprehensive evaluation of the barriers to students walking and biking to and from Napa Valley Language Academy, starting in the summer of 2018. Information on physical and behavioral challenges was collected in two phases. In September 2018, the SRTS team completed an initial infrastructure audit of the school site and the surrounding neighborhood within a half-mile of the school. SRTS team members walked and rode bicycles throughout the school neighborhood, taking photographs of barriers and logging them into Fulcrum, a GPS-enabled data collection smartphone app.



In February 2020, a Community Walk Audit brought parents, staff, and community members together to discuss school conditions and behaviors during pick-up and drop-off times, identify safety and convenience barriers for students walking and biking to school, prioritize issues, and brainstorm solutions. These two tasks resulted in an inventory of infrastructural barriers at and around the school site as well as a list of stakeholder-identified challenges.

A report draft was shared with the Napa Valley Transportation Authority, the Napa County Office of Education, law enforcement, public works and planning representatives from the City of Napa, the local school district, and school stakeholders, and their feedback was incorporated into the final version. As part of the larger countywide project, the SRTS team engaged EMC Research, a national public opinion research firm to conduct a comprehensive survey of parents' perceptions around walking and biking to school (see Appendix A). The Walk Audit report outlines the information gathered during this multi-year process and provides recommendations for improvements.

NAPA VALLEY LANGUAGE ACADEMY
SCHOOL SUMMARY

Principal	Alejandra Uribe
First Bell	8:10 AM (K-5) / 8:00 AM (6)
Last Bell	M, T, R, F: 2:30 PM (K-5) / 3:00 PM (6) W: 1:15 PM (K-5) / 3:00 PM (6)
District	Napa Valley Unified

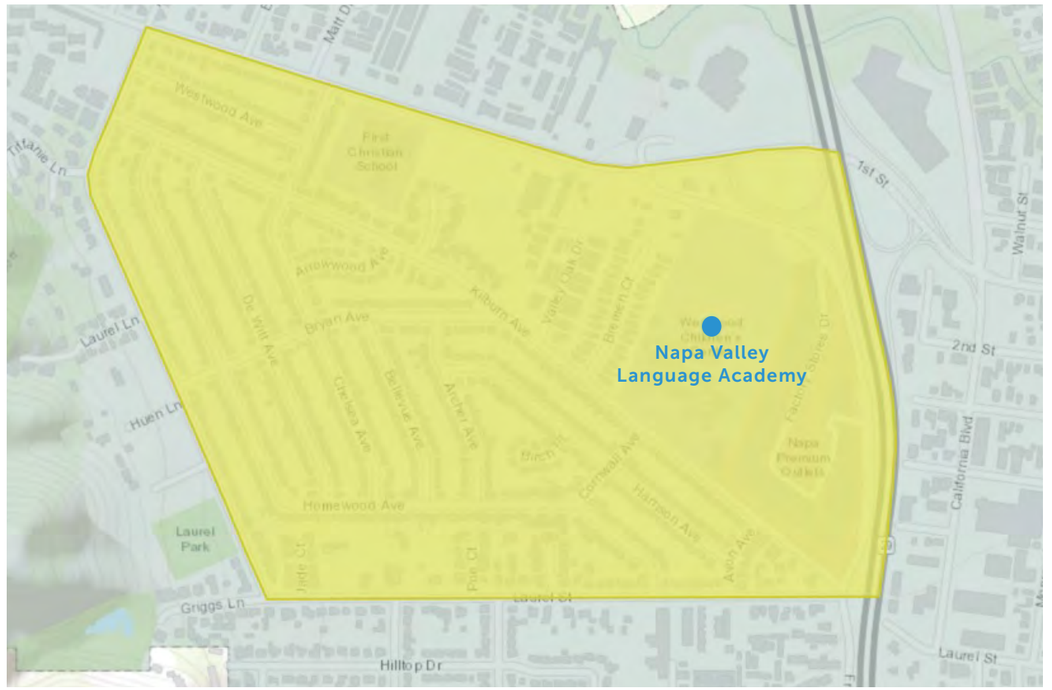
Grades	K-6
Enrollment	658
Street	2700 Kilburn Avenue
City	Napa, CA 94558

Overall Facility Rating[j]: Good

While NVUSD has an open enrollment policy, Napa Valley Language Academy's default enrollment area covers a small area in west Napa, bordered by Laurel Street, First Street, and SR 29.

Through the open enrollment policy, families may apply to NVUSD for their student to attend a school other than their school of residence. Out-of-district students may also apply through the open enrollment process. This often results in students living farther away from school, making them more likely to rely on driving for transportation. At schools where open enrollment students constitute a high proportion of their enrollment, this can cause higher vehicular traffic volumes around the school during pick-up and drop-off.

According to the most recent data (2020-21 school year), 77.2% of students attending Napa Valley Language Academy reside outside of the school's enrollment boundary.



Map 1: Enrollment boundary for Napa Valley Language Academy (blue dot) shaded in yellow.

DATA

No data is currently available regarding the number of students who walk and bike to the school at Napa Valley Language Academy. The school's principal estimates that roughly almost 40% of students walk or bike to school. Most students walk, and very few bike.

According to the results of the countywide EMC Research survey conducted in Spring 2021, 16% of respondents report that their K-8th grade children primarily walk to and/or from school and ~4% primarily bike. While nearly half (43%) say that their child has walked or biked to/from school at some point, 73% report using a single-family vehicle as the primary transportation method to and from school.

Total Enrollment by Group (2019-20)

ETHNICITY	NAPA VALLEY LANGUAGE ACADEMY	DISTRICT
Asian	0.8%	2.4%
Hispanic or Latino	80.1%	55.6%
White	17.6%	28.4%
Two or More Races	1.5%	4.0%
EXPERIENCE		
Socioeconomically Disadvantaged	51.5%	51.2%
English Learners	42.7%	20.5%
Students with Disabilities	3.6%	12.5%
Foster Youth	0.2%	0.4%
Homeless	0.9%	1.1%

Figure 2: Enrollment Data by Group

Countywide K-8 Primary Transportation to/from School (EMC Research)

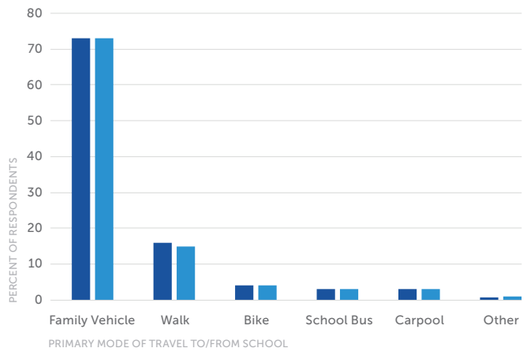


Figure 1: EMC Research Polling Results

***Note:** Data from EMC Research survey represents countywide behaviors, and school or city-level breakdowns are not available. See Appendix A for details on survey methods and respondent profiles.*

Student Enrollment by Grade Level (2019-2020)

	NUMBER OF STUDENTS
Kindergarten	98
Grade 1	100
Grade 2	99
Grade 3	96
Grade 4	93
Grade 5	96
Grade 6	76
Total	**658**

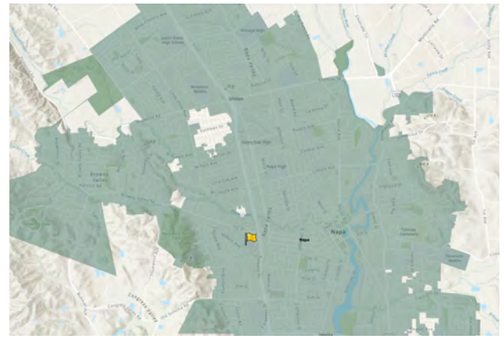
Figure 3: Enrollment Data by Grade

NEIGHBORHOOD CONTEXT

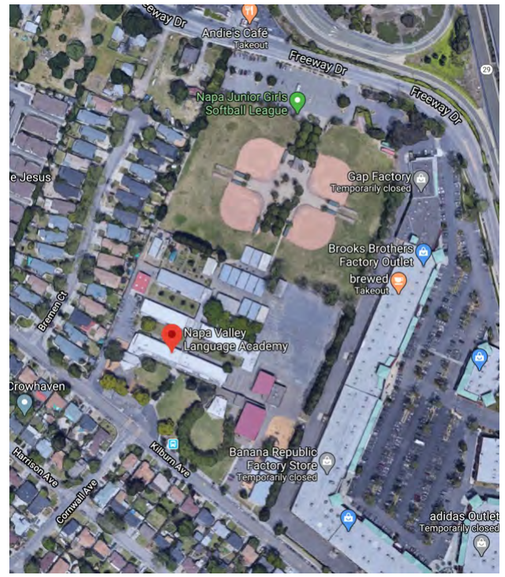
Napa Valley Language Academy is located in southwest Napa on Kilburn Avenue. The school is bordered by Napa Premium Outlets and Freeway Drive, a significant collector, to the east, a softball field and First Street, an arterial, to the north, single-family residences, condominiums, and churches to the west, and primarily single-family housing with some multi-family housing to the south.

Housing to the west was primarily built in the 1990s and 2000s-2010s, while the housing south of the school was mostly built in the 1940s. The street patterns in the area are mostly warped parallel, with several lollipops. Warped parallel roads decrease walkability by limiting pedestrian route choice, and while lollipops reduce traffic speeds and volumes, they also reduce pedestrian interconnectivity.

Destinations of interest around the school include the Boys and Girls Club, which is on the school's campus, the softball field to the north, the Napa Premium Outlets to the east, a street vendor on the corner of Kilburn Avenue and Avon Avenue, and a small family-owned market southeast of the school.



Map 2: School site location in city.



Aerial view of NVLA campus.

Map 2: School Site Location in City.

EXISTING **CONDITIONS**

The Safe Routes to School Team conducted an initial evaluation of the school site and surrounding area prior to conducting the Community Walk Audit. The Fulcrum App software was used to map and record significant point and segment issues within a half-mile range of the school. The team also collected information on local and school transportation policies and programs from conversations with the school's staff and administrators, as well as documents from the school and City websites.

SITE CIRCULATION

Napa Valley Language Academy's official loading zone is a short lane off of Kilburn Avenue in front of the main entrance to the school. Motorists enter through the east entrance on Kilburn Avenue, drop off/pick up students along the curb, and exit out of the west exit on Kilburn Avenue. Signage and paint dictate that left turns onto Kilburn Avenue are prohibited from the loading zone. One-way movement through the loading zone is indicated by white painted arrows. Older student volunteers help circulation move smoothly by guiding motorists to drive all the way forward and opening doors for students, ensuring they exit the vehicle onto the sidewalk. Bus drop-off occurs at the pedestrian island between the drop off lane and Kilburn Avenue. A Vine public bus stop is located on this island. This island also provides pedestrian refuge for students who are approaching the school from Cornwall Avenue and must cross both Kilburn Avenue and the loading lane to reach the school. Students arriving from the east or west of the school can use the sidewalks around the loading lane to safely walk around traffic.

The school is also accessible on its north side through the softball field. Motorists may drop off students in the parking lot off Freeway Drive, and students can walk through the softball field to the back side of the school. Student pedestrians and bicyclists may also enter this way, but they must navigate the parking lot with traffic, as there are no sidewalks around the lot. There are four parking areas on the school's campus: two small staff parking lots, the lot off Freeway Drive adjacent to the softball field and the lot, which is also the circulation zone, off Kilburn Avenue, in front of the main entrance to the school.

Most motorists use the loading lane on Kilburn Avenue to drop off and pick up students. Some motorists use the softball field parking lot, while others park along the street on Kilburn Avenue and walk their students to the school.

There is no formal circulation plan or policy, but a blurb is sent out in the school's newsletter at the beginning of the year recommending but not requiring that parents park at the softball fields and walk students to campus.

The school manages circulation around the school site. In addition to the student volunteers who help in the circulation zone, staff crossing guards are stationed at the crosswalk in the loading zone and the Kilburn Avenue and Cornwall Avenue intersection in both the morning and afternoon. Yard duty is present in the softball parking lot to help direct and regulate traffic and make sure motorists are driving safely.

The front entrance of campus off of Barbara Road.

Left: Left turns are prohibited from the loading zone onto Kilburn Avenue. Right: Bus loading occurs at the pedestrian island on Kilburn Avenue.

A path through the softball fields leads to NVLA campus.

Bus service through NVUSD is not available for Napa Valley Language Academy students. However, students who live beyond 1.25 miles walking distance from school and attend their school of residence may apply for transportation through NVUSD. The Vine transit W line, operated by the Napa Valley Transportation Authority, has many stops in the school neighborhood, including the stop at Kilburn and Cornwall, and provides service in the Westwood neighborhoods as well as neighborhoods on the other side of SR 29 in Old Town Napa/Napa Abajo area

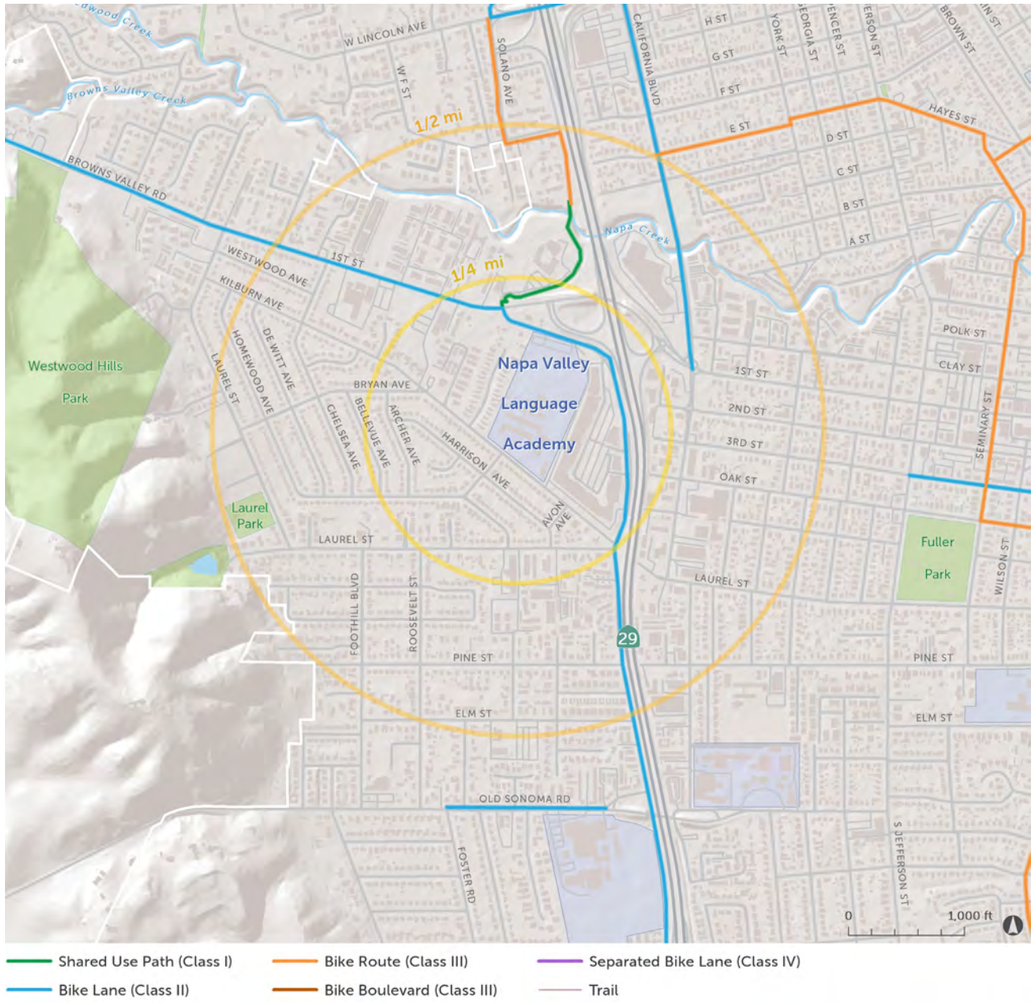
BICYCLE AND PEDESTRIAN INFRASTRUCTURE

The school provides a few bike racks to its students, located just beyond the school's main entrance off Kilburn Avenue. Though the racks are placed well, being easy for students to access but not visible from the street, one of the racks is positioned so that only half of its parking capacity is available.

Crossing guards on Kilburn Avenue help students reach campus.

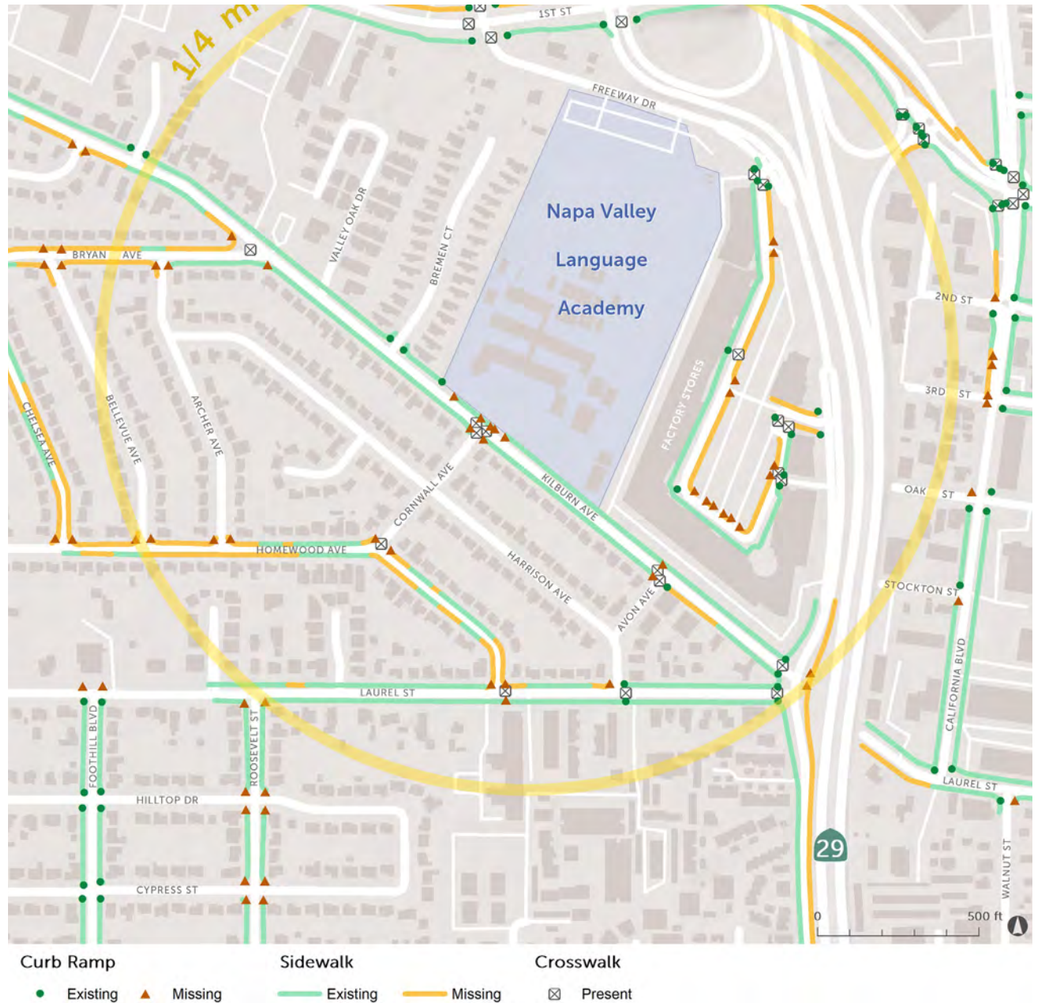
Bus service at Kilburn and Cornwall picks up and drops off at the pedestrian island in front of NVLA.

MAP OF EXISTING BICYCLE FACILITIES



Map 3: Existing Bicycle Facilities
(Map source: Map source: Napa Valley Transportation Authority Napa Countywide Bicycle Plan (2019))

MAP OF EXISTING PEDESTRIAN FACILITIES



Map 4: Existing Pedestrian Facilities
(Map source: Napa Valley Transportation Authority Napa Countywide Pedestrian Plan (2016))

ENCOURAGEMENT AND EDUCATION PROGRAMS

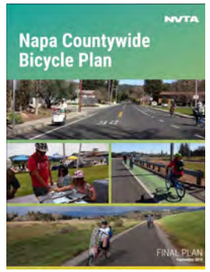
Napa Valley Language Academy has participated in some annual countywide events, such as Bike to School Day; however, the school's encouragement program is limited to these annual events. The school has not provided bicycle/pedestrian safety education to its students.

Bike to School Day 2019 at Napa Valley Language Academy

YEAR	EVENT	STUDENT PARTICIPANTS
2015/16	Bike to School Day	21
2016/17	Bike to School Day	64
2017/18	Bike to School Day	11
2018/2019	Walk and Roll to School Day	98
2018/2019	Bike to School Day	27
2019/20	Walk and Roll to School Day	58
2019/20	Spring bike rodeo cancelled due to COVID	

Figure 4: Encouragement and Education Data

EXISTING PLANS



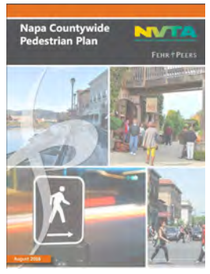
NVTA Napa Countywide Bicycle Plan (2019):

The Napa Countywide Bicycle Plan recommends improving bicycle facilities around the school site. The Bicycle Plan suggests implementing a Class III bike boulevard along Kilburn Avenue. Half of Laurel Street is recommended for a Class II bike lane, and the other half for a Class III bike boulevard, which connects to proposed Class II bike lanes on Old Sonoma Road via a proposed Class III bike boulevard on Foothill Boulevard. First Street is designated as a study corridor, the Class I and Class II facilities off of First Street are recommended to continue to California Boulevard.

NVUSD Facilities Master Plan (2016):

NVUSD's Facilities Master Plan lists several projects for Canyon Oaks. These projects include installation of fencing around the school perimeter and site ADA improvements. School perimeter fencing is planned to provide a single point of entry and wayfinding signage for each elementary school in NVUSD. These projects may impact future circulation around the school.

MEASURE H
BUILDING ON OUR VISION
NVUSD



NVTA Napa Countywide Pedestrian Plan (2016):

The Napa Countywide Pedestrian Plan lists several recommended improvements around the school site. Sidewalks are proposed on Laurel Street from Laurel Manor to Laurel Park. Proposed roundabouts on First and Second Street have been implemented recently (2019). A nearby bicycle and pedestrian undercrossing is recommended under SR 29 at the North Bank of Napa Creek, north of the school, and a new bridge over Napa Creek at Solano Avenue is proposed just west of the undercrossing.

NVTA Napa Valley Countywide Transportation Plan: Advancing Mobility 2045 (2021):

The NVTA Countywide Transportation Plan is a long-range plan of countywide transportation priorities that provides a direction for the four- to five-year plan while considering a 25-year planning horizon. This plan is part of the regional planning process for the Regional Transportation Plan by the Metropolitan Transportation Commission. There are 28 projects by the City of Napa listed in the Plan, several of which, including those cited above within the Pedestrian Plan, are near the school area.

CITY OF NAPA

City of Napa General Plan 2020 (1998) / 2040 (Not Yet Adopted):

The current General Plan for the City of Napa was adopted in 1998; a General Plan update began in 2018 and at the time of this report, is still ongoing. The General Plan update strives to build a more livable, sustainable, and inclusive future for the City of Napa by outlining the City's plan for land use, housing, transportation, climate change, and more. One of the draft guiding principles for the General Plan update is to "increase travel options through enhanced walking, bicycling, and public transportation systems, and promote mobility through increased connectivity and intelligent transportation management."

WALK **AUDIT**

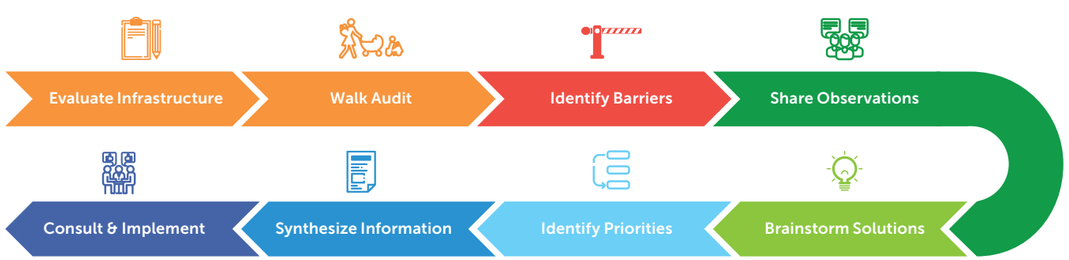
Date: 2/27/20
Day of the Week: Thursday

Meeting Time: 7:45 AM
Weather: Sunny

METHODOLOGY

The Community Walk Audit brought school stakeholders together to observe existing conditions during drop-off time, identify barriers to safe walking or biking, and explore solutions. The Walk Audit team consisted of four parents, three school staff members and the school's principal. The group met 30 minutes prior to the school bell for a brief presentation on the SRTS program and the process and purpose of Walk Audits. The team then walked out to the school's main parking lot on Kilburn Avenue, headed south on Cornwall Avenue, southeast on Kilburn Avenue, South on Avon Avenue to Laurel Street, and back northwest on Kilburn Avenue. During this walk, participants observed and discussed the physical infrastructure around the school as well as the behavior of motorists, pedestrians, and bicyclists in the school site area. They also shared their own experiences traveling to and from school on foot and by car. Fifteen minutes after the bell, the team returned to the classroom to discuss their observations, map issue areas, and record and prioritize the major barriers identified during the exercise.

During the prioritization exercise, participants wrote down three barriers that were of high priority to them on sticky notes, placed them on a poster on the wall, and organized them into sections based on similar topics. Then, participants were given three round stickers to place on issues that they felt were most important and needed to be solved most urgently. Participants could spread their stickers out or put multiple stickers on one issue. The group then reviewed the major barriers and explored potential solutions to each issue. Participants repeated the prioritization process with potential solutions to the barriers identified.



WALK AUDIT FINDINGS

This section of the report lists the barriers and solutions identified by Walk Audit participants during the Walk Audit activity. The barriers and treatments listed in the following tables are the results of the Walk Audit prioritization activities – the content and language used reflect what Walk Audit participants wrote on their sticky notes.

The barrier identification and prioritization exercise resulted in a list of location-specific and geographically general barriers and solutions, organized by Vote Score in the tables below. Vote Score was determined during the prioritization exercise by the number of stickers and sticky notes addressing a particular issue, with a higher number correlating to a higher Vote Score, indicating a higher importance to Walk Audit participants.

Stakeholder-Identified Barriers:

DESCRIPTION	LOCATION	VOTE SCORE
Lack of sidewalks	Neighborhoods around school site (Cornwall Ave, Avon Ave, Homewood Ave, Dewitt Ave, Chelsea Ave, Archer Ave, Bellevue Ave, Harrison Ave)	12
Low pedestrian visibility	All crosswalks on Kilburn Ave	9
Insufficient crosswalks	Kilburn Ave in front of the school	4
Unsafe intersection	Kilburn Ave and Avon Ave	3
Faded paint	Kilburn Ave and Avon Ave	2
Unsafe intersection (no traffic control on Kilburn)	Kilburn Ave and Chelsea	2
Unsafe road	Avon Ave	2
Pedestrians crossing outside of a crosswalk	Kilburn Ave in front of the school	2
Drivers not obeying "school" signs	School site area	2
Unsafe driver behavior (illegal U-Turns)	Kilburn Ave, near outlets	2
Unsafe crosswalk	First St at Browns Valley Road	2
Speeding	Kilburn Ave	1
No sidewalks	Cornwall Ave	1

Figure 5: Walk Audit Stakeholder-Identified Barriers

Stakeholder-Identified Treatments:

DESCRIPTION	BARRIER ADDRESSED	LOCATION	PRIORITY
Rectangular Rapid Flashing Beacons	Poor motorist yielding behavior	Kilburn Ave and Avon Ave	12
Rectangular Rapid Flashing Beacons	Poor motorist yielding behavior	Avon Ave and Laurel St	10
Curb extensions	Poor motorist yielding behavior, low pedestrian visibility, uncontrolled traffic	Kilburn Ave and Avon Ave	6
Extra crosswalk (diagonal across Kilburn)	Busy intersection, high pedestrian volumes	In front of the school on Kilburn Ave	5
Install sidewalks	No sidewalks	Cornwall Ave	5
Install (high-volume) sidewalks	No sidewalks	Neighborhoods around school, school site area	4
High visibility crosswalk	Poor motorist yielding behavior, low pedestrian visibility	All crosswalks on Kilburn Ave and Laurel St	4
Curb extensions or Rectangular Rapid Flashing Beacons	Low pedestrian visibility, poor motorist yielding behavior	School site area	2
Raised crosswalk	Poor motorist yielding behavior, speeding	Avon Ave and Kilburn Ave	1
Increase visibility of crosswalks (Rectangular Rapid Flashing Beacons)	Low pedestrian visibility	School site area	1
Repaint crosswalk striping	Low pedestrian visibility	Neighborhoods around school	1
Speed feedback sign in both directions	Speeding	Kilburn Ave	1
Upgrade striping	Low pedestrian visibility	Avon Ave and Laurel St	1

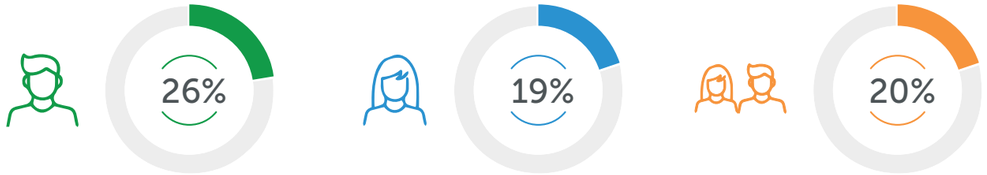
Figure 6: Walk Audit Stakeholder-Identified Treatments

CONTEXT FOR **RECOMMENDATIONS**

IMPACT OF BARRIERS/HAZARDS ON COMMUNITY

Barriers to safe walking and bicycling, both infrastructure and non-infrastructure, can greatly discourage communities from engaging in active transportation. The quality, accessibility, and connectivity of bicyclist and pedestrian travel networks strongly influence the rates of walking and bicycling as a mode of daily transport[1]. Public policies and attitudes, such as traffic-calming measure enforcement and parking limitations, also contribute to the efficacy of pedestrian/bicycle networks. Thus, barriers to accessibility and connectivity must be addressed in order to encourage increased and safe walking and cycling.

Barriers that discourage walking and bicycling prevent communities from gaining the health benefits offered by active transportation. For children, physical activity can improve cognitive function, bone health, cardiorespiratory and muscular fitness, and mental wellness[2]. Adults benefit from lower risk of cardiovascular disease, hypertension, dementia, anxiety, and falls for older adults, as well as improved quality of life, physical function, bone health, and sleep.

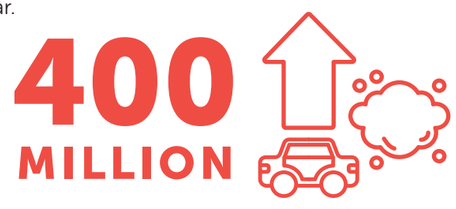


However, only about **26% of men**, **19% of women**, and **20% of adolescents** are meeting the aerobic and muscle-strengthening guidelines developed by the Department of Health. Increased walking and biking to school can help boost that percentage by incorporating physical activity into one's daily routine and encouraging further active transportation choices.

Lack of safe bicycle/pedestrian facilities can also negatively impact the environment, as more people will choose to drive rather than bike or walk. Passenger cars and light-duty trucks produced **over half of the transportation sector emissions in 2017**[3].

The transportation sector produced the most greenhouse gas emission of any economic sector, releasing **up to 29% of total US greenhouse gas emissions** for the year.

Furthermore, **transportation emissions have increased around 400 million metric tons** since 1990 due to increased vehicle demand. Thus, decreasing vehicle use by creating bicycle/pedestrian networks that are safe from potential hazards and barriers can help mitigate these environmental effects.



In addition to the consequences already discussed, barriers to safe walking and bicycling can lead to increased collisions and conflicts between motorists, pedestrians, and bicyclists. Safety barriers can lead to more people choosing to drive, even if the destination is within walking or biking distance, increasing traffic congestion. Children have fewer opportunities to develop their sense of independence through walking and biking to school, and the community is hindered from enjoying the social and economic benefits of bicycling and walking. Safety barriers and hazards that discourage increased walking and bicycling can considerably impact many different parts of a community, which is why it is so crucial to address and resolve them.

[1] Kuzmyak, Richard J., Dill, Jennifer. "Walking and Bicycling in the United States: The Who, What, Where, and Why." TR News May-June 2012: 4-15. Web. [2] U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans, 2nd edition. Washington, DC: U.S. Department of Health and Human Services; 2018. [3] Sources of Greenhouse Gas Emissions, United States Environmental Protection Agency. Web.

RECOMMENDATIONS

Recommendations were determined by Napa County Safe Routes to School staff, taking into account the feedback and results from the Walk Audit activity, Fulcrum data, existing plans, and local stakeholder input. Priority levels for recommendations were calculated through consideration of vehicle, pedestrian, and bicyclist traffic volumes; vehicular traffic speed; collision history; presence of existing bicycle/pedestrian facilities; proximity to major identified routes to school; high-level potential cost/complexity of recommendation; and Walk Audit participant input.

This section outlines and explains high and medium priority recommendations specific to the school site. School site-specific recommendations of all priority levels can be found in the "Table of Recommendations" section. Universal recommendations that apply to all school sites are described in Appendix B. Recommendations that are focused on infrastructure treatments are denoted by "NAI," and recommendations that suggest programmatic treatments are denoted by "NAP." Please note that implementing these recommendations will often require further evaluation and study, as well as design, right-of-way acquisition, compliance checks with existing laws, and coordination with utility, public safety, and other local government departments.

RECOMMENDATIONS #NAI-220 AND NAI-231: HIGH PRIORITY SIDEWALKS

Narrative – Many of the residential streets in the school neighborhood are missing sidewalks, preventing students who live in walkable distance of the school from walking to school. On streets that are part of direct routes to school for many students, like Cornwall Avenue that leads to the school's front entrance and Homewood Avenue that connects many residential streets to Cornwall, high volumes of school-related vehicle traffic combined with other roadway obstructions, such as parked vehicles or trash bins, amplify the sense of discomfort and conflict hazard for pedestrians.

IDENTIFIED BARRIERS

- ***No sidewalks/sidewalk gaps –*** The lack of sidewalks on Cornwall Avenue and sidewalk gaps along Homewood Avenue forces pedestrians to walk in the road or cross the street without a crosswalk and can prevent students from walking to school altogether.

RECOMMENDATIONS

- ***Sidewalks –*** Install sidewalks on both sides of Cornwall Avenue from Kilburn Avenue to Homewood Avenue and fill sidewalk gaps along Homewood Avenue from Kilburn Avenue to Laurel Street to fill the gaps in the pedestrian network along significant routes to the school.

Pedestrians are forced to walk in the street due to the lack of sidewalks on Cornwall Avenue, which can be chaotic with other road users and obstructions such as garbage bins.

RECOMMENDATION #NAI-223: KILBURN AVE BIKE BOULEVARD

Narrative – Kilburn Avenue has no bicycle facilities along the entire corridor. The adopted City of Napa Bicycle Plan recommends Class III bike boulevards for the corridor. As the school's front entrance is located on Kilburn Avenue and the street connects to several branching residential streets in the school's enrollment boundary, this gap in the bicycle network creates a significant barrier for students biking to school. Furthermore, Kilburn Avenue is long, relatively straight corridor with no traffic-calming and little traffic control, which facilitates motorist speeding, particularly during peak school hours when motorists are impatient to get out of traffic around the school site.

IDENTIFIED BARRIERS

- ***No bicycle facilities –*** The lack of bicycle facilities on the corridor fails to provide a dedicated space for bicyclists and indicate to motorists where to expect bicyclists, making the corridor appear unwelcoming to bicyclists.
- ***Motorist speeding –*** Kilburn Avenue is a long and straight corridor serving several neighborhood streets with no traffic-calming and little traffic control, which facilitates frequent motorist speeding.

RECOMMENDATIONS

- ***Class III bike facilities –*** Install Class III bicycle boulevards on Kilburn Avenue from Freeway Drive to Laurel Street with signage, sharrows, and traffic-calming.

There are no bicycle facilities on Kilburn Avenue.

RECOMMENDATION #NAI-237: CORNWALL AND KILBURN INTERSECTION IMPROVEMENTS

Narrative – The Cornwall Avenue and Kilburn Avenue intersection in front of the school's main entrance is highly travelled by all modes of transportation. Students who walk or bike from nearby neighborhoods must navigate this intersection to reach campus, the bus loading zone is located on the island immediately adjacent to the intersection, and many motorists drop off and pick up students along Kilburn Avenue or in the school loading zone around the pedestrian island next to the intersection. During school hours, this intersection becomes congested and chaotic, and can become hazardous when motorists block the intersection or ignore crossing guard instructions in their haste to leave traffic.

IDENTIFIED BARRIERS

- ***Busy intersection –*** As this intersection is located in front of the school's main entrance, the intersection is highly travelled by all modes of transportation to access the school, which can feel chaotic and challenging during peak school hours.
- ***Low-visibility crosswalks –*** The existing crosswalks in the intersection are painted with a standard, parallel line pattern, despite being located in a highly-travelled school zone.
- ***Vehicles obstructing visibility –*** The lack of "no parking" red zones around the intersection allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.

Motorists block the crosswalk at the Kilburn and Cornwall intersection during school arrival and dismissal times.

RECOMMENDATIONS

- ***High-visibility crosswalks –*** Upgrade crosswalks to be high-visibility school-zone patterns to increase pedestrian visibility and motorist yielding behavior.
- ***Curb extensions –*** Install curb extensions at the two corners of Cornwall Avenue and the pedestrian island in front of the school to improve motorist yielding behavior, reduce pedestrian crossing distance, and prevent motorists from parking adjacent to crosswalks. Relocate stop signs to curb extensions to improve visibility of signs.

RECOMMENDATION #NAP-031: BIKE/PEDESTRIAN SAFETY EDUCATION

Narrative – Bicycle and pedestrian safety education is a crucial component of increasing biking and walking mode share at a school site, as it teaches students rules of the road and safe biking and pedestrian behaviors, such as scanning and signaling before turns for bicyclists. This understanding not only improves bicyclist and pedestrian safety, but also increases confidence and comfort for young bicyclists and pedestrians. Common unsafe behaviors that are done unknowingly due to lack of education, such as riding against traffic or failing to stop at stop signs on a bike, are hazardous to students, as this behavior is unpredictable to motorists and can increase risk of collisions. While many of these behaviors can be addressed by improved infrastructure, such as clearly marked bicycle facilities, implementing annual education on bicyclist and pedestrian safety within the school system raises awareness of rules of the road and encourages safe behavior.

IDENTIFIED BARRIERS

- ***Students crossing midblock outside of crosswalks –*** Unpredictable pedestrian behaviors, such as crossing midblock outside of crosswalks during pick-up and drop-off times, may increase risk of road user conflict.
- ***No bicycle/pedestrian safety education –*** The lack of regular bicycle/pedestrian safety education can result in unintentional unsafe student bicyclist/pedestrian behavior and a sense of discomfort riding a bike.

RECOMMENDATIONS

- ***Bicycle and pedestrian safety education –*** Provide annual in-school bicycle and pedestrian safety education for all students to ensure that all students are familiar with rules of the road and best safety practices.

Bike rodeos, like the one photographed above at Browns Valley Elementary, are one form of bike safety education that teach kids rules of the road and safe biking practices.

RECOMMENDATION #NAP-034: GROUP ENCOURAGEMENT PROGRAMS

Narrative – Vehicle congestion in the school zone was a significant barrier to students walking and biking to school, especially when paired with bicycle and pedestrian infrastructure gaps. While infrastructure recommendations are underway, establishing group encouragement programs, such as walking school buses, bike trains, or carpool networks, can help reduce the number of vehicles in the school zone while improving road user comfort by establishing a greater bicyclist/pedestrian road presence through numbers and providing adult supervision that can be a shared responsibility amongst families.

IDENTIFIED BARRIERS

- ***Congestion in school zone –*** High volumes of vehicle traffic in the school zone during pick-up and drop-off can make the school zone feel chaotic and unwelcoming to bicyclists and pedestrians.

RECOMMENDATIONS

- ***Walking bus/bike train/carpool program –*** Develop a walking school bus/bike train program to increase the number of students who walk and bike to school while improving sense of safety by forming an adult-supervised group. A carpool program can also be developed for to reduce the number of cars in the school zone and may be more feasible for students who live outside of the school's enrollment boundaries.

An example of a bike train group led by parent volunteers at El Roble Elementary School in Gilroy. (Photo by Ihui Lopez, Silicon Valley Bicycle Coalition).

RECOMMENDATION #NAI-221: CORNWALL AVENUE LIGHTING

IDENTIFIED BARRIERS

- ***Low lighting –*** Low lighting can be a significant barrier to students walking and biking, especially during the winter season when days are shorter, as it reduces visibility of pedestrians and bicyclists as well as sense of safety for active transportation users.

RECOMMENDATIONS

- ***Install streetscape lighting –*** Install additional streetscape lighting on Cornwall Avenue from Kilburn Avenue to Homewood Avenue to improve visibility for bicyclists, pedestrians, and motorists.

Increased streetscape lighting on Cornwall would be particularly helpful during the winter season when days are shorter.

RECOMMENDATION #NAI-222: AVON AVE NORTHBOUND SIDEWALK GAP

IDENTIFIED BARRIERS

- ***Sidewalk obstruction –*** The existing parking stalls on northbound Avon Avenue approaching Kilburn Avenue block sidewalk access and force students to walk in the road in a higher-conflict area (due to vehicles pulling into and out of parking stalls) or cross the street in an unmarked location.

RECOMMENDATIONS

- ***Fill sidewalk gap –*** Fill the northbound sidewalk gap by relocating the parking stalls to on-street parking.

Vehicle parking on northbound Avon Avenue blocks the only sidewalk.

RECOMMENDATIONS #NAI-226 AND NAI-245: CAMPUS IMPROVEMENTS

IDENTIFIED BARRIERS

- ***High conflict-risk crosswalk –*** The existing crosswalk between the Kilburn Avenue pedestrian island and campus is a primary pedestrian access route to campus, but crosses the motorist loading zone, creating a high risk of conflict between pedestrians, bicyclists, and motorists.

- ***Staff lot drop-off –*** Motorists use the east staff parking lot to turn around on Kilburn Avenue despite such use being prohibited, creating conflict with student pedestrians on Kilburn Avenue.

RECOMMENDATIONS

- ***NAI-226 Crosswalk improvements –*** Straighten the crosswalk between the Kilburn Avenue island and campus entrance to reduce pedestrian crossing distance (this may require relocation of the ADA-accessible parking stall), and either install a raised crosswalk or install a curb extension on the island side (could use vertical delineators).

- ***NAI-245 East staff parking lot –*** Install simpler, more visible signage prohibiting use of east staff parking lot for pick-up and drop-off and close the driveway exit side gate to deter use of parking lot for drop-off while maintaining access for staff parking.

The crosswalk to campus requires a crossing guard due to high pedestrian and motorist use.

RECOMMENDATIONS #NAI-229 AND NAI-230: FIRST STREET CROSSINGS

IDENTIFIED BARRIERS

- ***Long crossing distances –*** The long crossing distance across First Street at both Laurel Street and Chelsea Avenue requires pedestrians to be in the roadway for a longer time than necessary, increasing the risk of collisions, and pushes pedestrians further out of the range of vision of motorists.
- ***High-speed/volume traffic –*** 1st Street (from Freeway Drive to Laurel Street) is a high-volume arterial corridor and is long, straight, and wide, facilitating frequent motorist speeding.
- ***No traffic control –*** The lack of traffic control for First Street traffic at the Laurel Street intersection allows motorists to drive through the crosswalk without slowing down and reduces motorist yielding behavior.

Vehicles parking adjacent to the crosswalk, shown above at 1st Street and Laurel Street intersection, reduce pedestrian visibility at an uncontrolled crosswalk.

- ***Faded, low-visibility pattern –*** The faded, low-visibility pattern crosswalk across First Street at Laurel Street further reduces pedestrian visibility and motorist yielding behavior.
- ***Vehicles obstructing visibility –*** The lack of "no parking" red zones around the First and Laurel intersection allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.
- ***Wide curb radii -*** Wide curb radii at the Chelsea Avenue intersection facilitate fast motorist turning motions through the intersection.

RECOMMENDATIONS

- ***NAI-229 First Street and Laurel Street***
  - ***High-visibility crosswalks –*** Upgrade crosswalks to be high-visibility school-zone patterns to increase pedestrian visibility and motorist yielding behavior.
  - ***Curb extensions –*** Install curb extensions on all crosswalk curbs to increase motorist yielding behavior, reduce pedestrian crossing distance, and provide a traffic-calming effect.
  - ***Rectangular Rapid Flashing Beacons –*** Install Rectangular Rapid Flashing Beacons for the crosswalk across First Street to increase pedestrian visibility and improve motorist yielding behavior.
- ***NAI-230 First Street and Chelsea Avenue***
  - ***Curb extensions –*** Install curb extensions on all crosswalk curbs and relocate existing Rectangular Rapid Flashing Beacons onto curb extensions upon installation to increase motorist yielding behavior, reduce pedestrian crossing distance, and provide a traffic-calming effect. Maintain the existing high-visibility crosswalk pattern across 1st Street.
  - ***Green conflict markings –*** Paint green conflict markings for the bicycle facilities through the intersection and at gas station driveways to improve motorist awareness of bicyclists.

RECOMMENDATIONS #NAI-232, NAI-233, AND NAI-236: MEDIUM PRIORITY SIDEWALK GAPS

IDENTIFIED BARRIERS

- ***Sidewalk gaps –*** Sidewalk gaps along significant streets around the school (Dewitt Avenue from Kilburn Avenue to Homewood Avenue, Chelsea Avenue from First Street to Homewood Avenue, and Harrison Avenue from Archer Avenue to Avon Avenue) create gaps in the pedestrian network that force pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk (if present). Large sections of missing sidewalks can prevent students from walking to school altogether.

No sidewalks on Harrison Avenue.

RECOMMENDATIONS

- ***Fill sidewalk gaps –*** Fill sidewalk gaps on Dewitt Ave (NAI-232), Chelsea Ave (NAI-233), and Harrison Ave (NAI-236) to provide a continuous pedestrian network and reduce unnecessary pedestrian road crossings.

RECOMMENDATION #NAI-238: CORNWALL AND KILBURN NEW CROSSWALK

IDENTIFIED BARRIERS

- ***One crosswalk in high-pedestrian area –*** As this intersection is located in front of the school's main entrance, the intersection is highly travelled by all modes of transportation to access the school, which can feel chaotic and challenging during peak school hours. However, despite high school-related pedestrian volumes, there is only one crosswalk across Kilburn Avenue.

There is only one crosswalk across Kilburn Avenue at the Cornwall intersection.

RECOMMENDATIONS

- ***Second crosswalk –*** Add a second crosswalk across Kilburn Avenue on the west side and push back the vehicle stop line to improve pedestrian connectivity and reinforce motorist yielding behavior in the school zone.

RECOMMENDATIONS #NAI-239 – NAI-241: KILBURN AVE INTERSECTIONS

IDENTIFIED BARRIERS

- ***Kilburn and Avon Ave***
  - ***Faded low-visibility pattern crosswalks –*** The existing crosswalks are faded and painted with a low-visibility pattern, reducing pedestrian visibility.
  - ***Vehicles obstructing visibility –*** The lack of "no parking" red zones around the intersection allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.
- ***Kilburn and Bryan Ave***
  - ***Long crossing distance –*** The long crossing distance across Bryan Avenue requires pedestrians to be in the roadway for a longer time than necessary, increasing the risk of collisions, and pushes pedestrians further out of the range of vision of motorists.

Long crossing distance at the Kilburn Avenue and Bryan Avenue intersection.

  - ***Wide curb radii –*** Wide curb radii facilitate fast motorist turning motions through the intersection.
- ***Kilburn and Chelsea Ave***
  - ***No crosswalks –*** There are no crosswalks at the intersection, reducing pedestrian visibility and sense of comfort.
  - ***No traffic control –*** Traffic is uncontrolled on Kilburn Avenue approaching the intersection, allowing motorists to drive through the intersection without slowing down and reducing motorist yielding behavior.

RECOMMENDATIONS

- ***NAI-239 Kilburn Ave and Avon Ave***
  - ***High-visibility crosswalks –*** Upgrade crosswalks with high-visibility pattern to increase pedestrian visibility and motorist yielding behavior.
  - ***Red zones or curb extensions –*** Paint red zones or install curb extensions on all crosswalk curbs to improve pedestrian visibility by deterring parking adjacent to crosswalks.
- ***NAI-240 Kilburn Ave and Bryan Ave***
  - ***Realign intersection –*** Push out the south curb to make Bryan Avenue hit Kilburn Avenue at a 90-degree angle and T-up intersection. This can be done with quick-build materials in the interim, and in the long-term can provide an opportunity to create a small neighborhood park space with built-out curb.
- ***NAI-241 Kilburn Ave and Chelsea Ave***
  - ***Crosswalks –*** Install crosswalks across Chelsea Avenue and Kilburn Avenue to improve pedestrian visibility and motorist yielding behavior.
  - ***Curb extensions –*** Install curb extensions to reinforce parking restrictions and provide traffic-calming effect.

RECOMMENDATION #NAP-033: ENCOURAGEMENT EVENTS

Narrative – Napa Valley Language Academy has frequently participated in the annual encouragement events facilitated by Napa County Safe Routes to School: Bike to School Day and Walk and Roll to School Day. While annual programming can remind and excite students about the option of using active transportation to travel to school, the infrequency of these events makes them less effective at encouraging students to adopt active transportation as an everyday form of transportation. Increasing the frequency of encouragement events, in conjunction with infrastructure improvements, can help increase mode shift towards active transportation.

IDENTIFIED BARRIERS

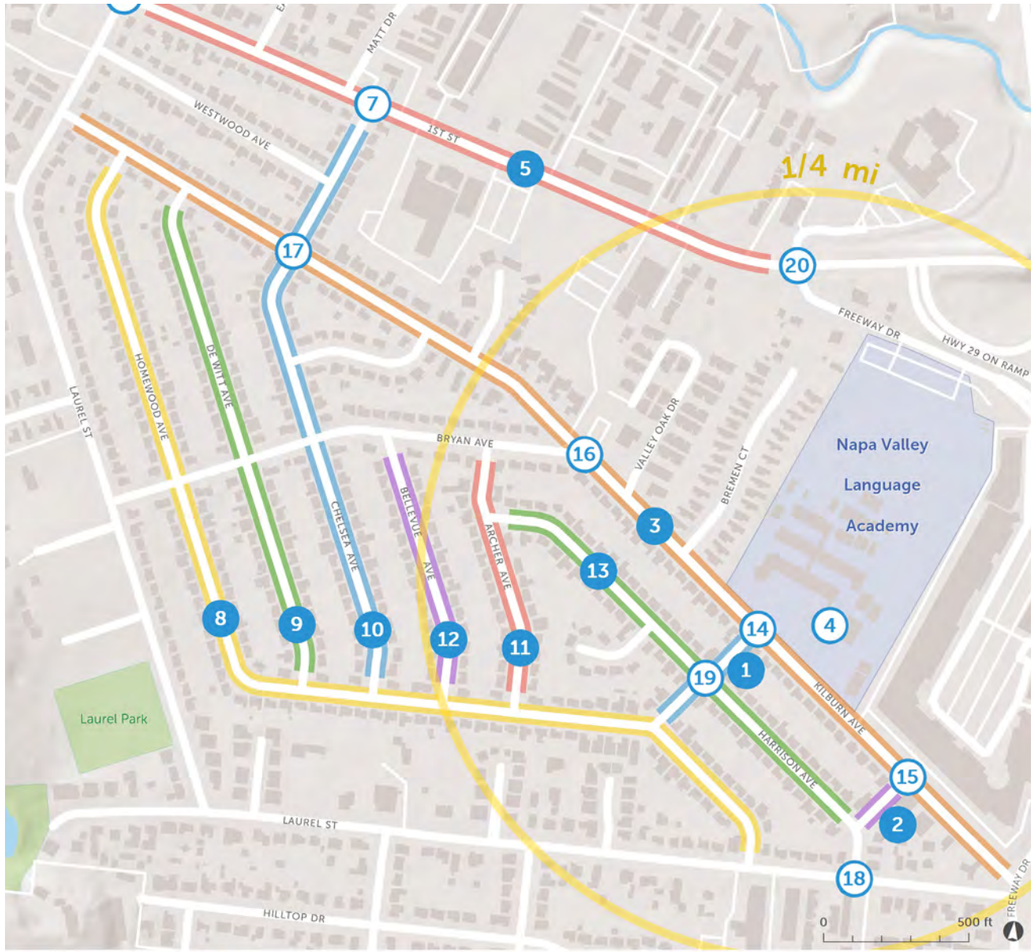
- ***Congestion in school zone –*** High volumes of vehicle traffic in the school zone during pick-up and drop-off can make the school zone feel chaotic and unwelcoming to bicyclists and pedestrians.
- ***Infrequent encouragement programs –*** While annual countywide encouragement events are a great place to start, infrequent encouragement events are not effective enough in normalizing active transportation as an everyday mode of transportation.

Walk and Roll Wednesdays, such as the one photographed above at Shearer Elementary School in Napa, are an example of fun and easy encouragement events that schools can hold independently.

RECOMMENDATIONS

- ***Encouragement programs –*** Continue to grow participation in annual encouragement events and organize additional encouragement events throughout the year (ex: Walk and Roll Wednesdays).

MAP OF RECOMMENDATIONS



Map 5: Recommendations

TABLE OF RECOMMENDATIONS

Infrastructure:

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
1	Cornwall Avenue from Kilburn Avenue to Homewood Avenue	NAI-220	No sidewalks	Install sidewalks on both sides of the street*	$$	**High**
		NAI-221	Low lighting	Install streetscape lighting	$$	**Medium**
2	Avon Avenue from Kilburn Avenue to Harrison Avenue	NAI-222	No southbound sidewalk, parking stalls block sidewalk on northbound side at corner of Avon Avenue and Kilburn Avenue	Fill northbound sidewalk gap* by relocating parking stalls to on-street	$	**Medium**
3	Kilburn Avenue from Freeway Drive to Laurel Street	NAI-223	No bicycle facilities, speeding (long, straight corridor with no traffic-calming and little traffic control)	Install Class III bicycle boulevards* with signage and sharrows and traffic-calming	$$	**High**
		NAI-224	Eastbound sidewalk blocked by parking stalls from Avon Avenue to Mi Familia Market	Push parking stalls back six feet and install sidewalk around parking stalls in front of market	$	**Low**
4	School campus	NAI-225	Narrow sidewalk from Kilburn Avenue to school main entrance path	Widen sidewalk	$	**Low**
		NAI-226	Crosswalk between Kilburn Ave island and campus has high pedestrian and motorist use, high risk of conflict	Straighten crosswalk between island and campus entrance, relocate ADA parking stall. Install raised crosswalk between island and campus entrance or curb extension on island side (could use delineator)	$	**Medium**
		NAI-227	Motorists turning left out of drop-off area where prohibited, contributing to congestion on Kilburn Avenue	Make existing signage more visible at circulation zone exit, repaint "No Left Turn" paint near exit. Install K-71 bollards along hashed area to prevent people turning left.	$	**Low**
		NAI-245	Motorists using east staff lot to turn around, conflict with student pedestrians	Install more visible, simpler signage prohibiting use of parking lot. Close gate to block exit side of driveway to deter use for drop-off but maintain access for staff parking.	$	**Medium**
5	1st Street from Laurel to Freeway Drive*	NAI-228	High volume, high speed corridor. No traffic control at crosswalks and no traffic-calming along corridor	Continue traffic-calming recommended for BVR onto 1st St from Laurel to Freeway. Install bicycle facilities that connect to those recommended for BVR; recommended bike facilities for 1st St are Class IVs or Class Is on both sides. Narrow travel lanes where more ROW is necessary. Fill sidewalk gaps.	$$-$$$	**Low**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
6	1st Street and Laurel Street intersection	NAI-229	Long crossing distance, cars parking close to crosswalks, faded paint, low-visibility crosswalk pattern, motorist speeding reduces field of vision, no traffic control for 1st St traffic	Update existing crosswalks to high-visibility pattern; install Rectangular Rapid Flashing Beacons for crosswalk across First Street; install curb extensions on all crosswalk curbs	$$	**Medium**
7	1st Street and Chelsea Avenue intersection	NAI-230	Long crossing distance across 1st Street, wide curb radii facilitate fast motorist turning movement, uncontrolled traffic on 1st Street has high speeding potential, reducing motorist yielding behavior and pedestrian visibility	Install curb extensions on all crosswalk curbs and relocate existing Rectangular Rapid Flashing Beacons onto curb extensions upon installation, maintain existing high-visibility crosswalk pattern across 1st St, paint green conflict markings for bicycle facilities through intersection at gas station driveways	$$	**Medium**
8	Homewood Avenue from Kilburn Avenue to Laurel Street	NAI-231	Sidewalk gaps	Fill sidewalk gaps*	$$	**High**
9	Dewitt Avenue from Kilburn Avenue to Homewood Avenue	NAI-232	Sidewalk gaps	Fill sidewalk gaps*	$$	**Medium**
10	Chelsea Avenue from 1st Street to Homewood Avenue	NAI-233	Sidewalk gaps	Fill sidewalk gaps*	$$	**Medium**
11	Archer Avenue from Bryan Avenue to Homewood Avenue	NAI-234	Sidewalk gaps	Fill sidewalk gaps*	$$	**Low**
12	Bellevue Avenue from Bryan Avenue to Homewood Avenue	NAI-235	Sidewalk gaps	Fill sidewalk gaps*	$$	**Low**
13	Harrison Avenue from Archer Avenue to Avon Avenue	NAI-236	Sidewalk gaps	Fill sidewalk gaps*	$$	**Medium**
14	Cornwall Avenue and Kilburn Avenue intersection	NAI-237	Busy intersection, low-visibility crosswalk pattern in school zone, vehicles parking adjacent to crosswalks and obstructing visibility	Install sidewalks on both sides of Barbara Road. Improve bicycle access to campus from Kathleen Drive.	$$	**Low**
		NAI-238	Only one crosswalk across Kilburn Avenue	Add second crosswalk across Kilburn Avenue on west side, push back stop lines	$	**Medium**
15	Avon Avenue and Kilburn Avenue intersection	NAI-239	Low pedestrian visibility – faded crosswalks, low-visibility pattern, cars parking close to the intersection, pedestrian visibility reduced due to market parking stalls	Repaint crosswalks with high-visibility pattern; paint red zones or install curb extensions on all crosswalk curbs	$-$$	**Medium**
16	Kilburn Avenue and Bryan Avenue intersection	NAI-240	Extremely long crossing distance, wide curb radii	Push out south curb to make Bryan hit Kilburn at 90-degree angle and T up intersection. Can be done with quick-build materials in the interim – in the long-term, opportunity to create small neighborhood park space with built-out curb	$-$$	**Medium**
17	Kilburn Avenue and Chelsea Avenue intersection	NAI-241	No crosswalks, no traffic control on Kilburn Avenue	Install crosswalks across Chelsea Avenue and Kilburn Avenue, install curb extensions to reinforce parking restrictions and provide traffic-calming effect	$$	**Medium**
18	Laurel Street and Avon Avenue intersection	NAI-242	Low pedestrian visibility, cars park adjacent to crosswalks and obstruct visibility, faded crosswalks, no crosswalk across Avon Avenue	Paint crosswalk across Avon Avenue and repaint crosswalk across Laurel Street with high-visibility pattern; paint red zones along crosswalk curbs. Install curb extension on northeast corner and address accessibility and conflict issues on the south end of the Laurel crosswalk	$$	**Low**
19	Harrison Avenue and Cornwall Avenue intersection	NAI-243	Faded crosswalks, cars parked on curbs, no crosswalks across Cornwall Avenue	Paint high-visibility crosswalks across Cornwall Avenue and repaint existing crosswalks across Harrison Avenue with high-visibility pattern, paint red zones on all curbs around crosswalks. Narrow curb radii with future concrete work.	$	**Low**
20	First Street and Freeway Drive intersection	NAI-244	Long crossing distance, faded crosswalks, lack of traffic-calming	Install roundabout* with fully separated Class I bike facilities. Include following elements: narrow lanes to 10-11 feet, eliminate free right turn from eastbound 1st St to southbound Freeway, provide pedestrian refuge mid-block across 1st St on leg, continue protected facility through SB 29 on/off ramps	$$$$	**Low**

** = projects included in Napa Countywide Pedestrian Plan (2016) or Napa Countywide Bicycle Plan (2019)*

Programmatic Improvements:

	ISSUE	ID #	RECOMMENDATION	LOCATION	FREQUENCY	COST	PRIORITY
1	Students crossing midblock outside of crosswalks (in front of the school and in front of the Boys and Girls Club); no bicycle/ pedestrian safety education	NAP-031	Provide regular bike and pedestrian safety education to all students	School site	Annually	$	**High**
2	Congestion in front of school (77% of enrollment is from outside school boundaries. This school may be effectively served by carpool programs and park and walk programs); infrequent encouragement programming	NAP-032	Develop and distribute a circulation policy and/ or map; encourage increased use of back parking lot off of Freeway Drive and emphasize no left turn onto Kilburn and prohibition of staff parking lot for drop-off	School zone	Develop once and update as needed; distribute annually or as needed	$	**Low**
		NAP-033	Continue growing participation in annual countywide encouragement events, hold additional independent encouragement events between annual events	School site	Varies per encouragement program; begin Walking School Bus weekly and develop into daily program	$	**Medium**
		NAP-034	Develop regular walking school bus and bike train program for students in surrounding neighborhoods; develop carpool program, particularly for transfer students, to reduce traffic in school zone	School site and surrounding neighborhoods		$	**High**
3	Motorists parking on and obstructing sidewalks	NAP-035	Neighborhood resident education and enforcement regarding parking blocking sidewalks	Surrounding neighborhood	As-needed on an ongoing basis	$	**Low**

COLLISION MAP AND DATA

Map 6: Collision Map (2016-2020) (Source: UC Berkeley Transportation Injury Mapping System: SRTS Collision Map Viewer)

Summary Statistics

RADIUS	FATAL	SEVERE INJURY	VISIBLE INJURY	COMPLAINT OF PAIN	PEDESTRIAN	BICYCLE	TOTAL
< .25 mi.	1	1	2	1	3	2	5
.25-.5 mi.	1	1	0	5	5	2	7
Total	2	2	2	6	8	4	12

Collision List

DATE	TIME	PRIMARY	SECONDARY	BIKE/PED
2017-07-31	23:07	RT 29	1st St	Yes/No
2018-08-19	17:12	Dewitt Av	Dewitt Av	No/Yes
2018-11-03	17:25	1st St	Freeway Dr	Yes/No
2018-12-06	12:13	Freeway Dr	Pine St	No/Yes
2019-09-13	07:47	Elm St	Freeway Dr	No/Yes
2017-10-01	22:10	SR 29 S/B	1st St	No/Yes
2019-04-13	20:55	SR 29	1st St	No/Yes
2020-02-21	22:30	SR 29 S/B	Old Sonoma Rd	No/Yes
2017-09-17	16:07	1st St	Freeway Dr	No/Yes
2017-11-21	15:16	1st St	Freeway Dr	Yes/No
2018-04-13	18:52	Homewood Av	Homewood Av	No/Yes
2018-05-03	17:14	2ns St	California Bl	Yes/No

Figure 7: Collision Data (2016-2020) (Source: UC Berkeley Transportation Injury Mapping System: SRTS Collision Map Viewer)

APPENDICES

FIGURES & MAPS

FOOTNOTES

[a] Noreen McDonald, Ruth Steiner, Chanam Lee, Tori Rhoulac Smith, Xuemei Zhu and Yizhao Yang (2014). "Impact of the Safe Routes to School Program on Walking and Bicycling." Journal of the American Planning Association. Vol 80, Iss 2, p 153-167.

[b] Orion Stewart, Anne Vernez Moudon, and Charlotte Claybrooke (2014) Multistate Evaluation of Safe Routes to School Programs. American Journal of Health Promotion: January/February 2014, Vol. 28, No. sp3, pp. S89-S96.

[c] Peter A Muennig et al., 'The Cost-Effectiveness Of New York City's Safe Routes To School Program', American Journal Of Public Health, iss 0 (2014): 1-6.

[d] David Ragland, S Pande, J Bigham and FJ Cooper. (2014, January). Ten years later: examining the long-term impact of the California Safe Routes to School program. Presented at the Transportation Research Board 93rd Annual Meeting, Washington DC. Available at http://docs.trb.org/prp/14-4226.pdf.

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APPENDIX A

EMC Survey Toplines

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

Evaluation: Research & Methodology

- **Purpose: Gain insight into parent practices, perceptions, and attitudes around children walking and riding bicycles to and from school; explore barriers to behavior change**
- **Quantitative survey of 459 parents of K-8 students in Napa County**
  - Conducted online and by telephone, offered in English and Spanish
  - Conducted March 11 – April 12, 2021
  - Participants recruited via communications from school districts and targeted online and telephone contacts
  - *Survey methods were designed to include as many participants as possible; not a random sample*
- **Qualitative follow-up research**
  - One online focus group with 7 participants in English; 4 in-depth telephone interviews in Spanish
  - Conducted May 20 – 28, 2021
  - Targeted parents who lived within two miles of their school site and would like their children to walk or bike to school

Survey of Parents/Guardians of at least one child in K-8th Grade
Napa County, California
Hybrid Email-to-Web/Text-to-Web/Live Telephone Survey
Conducted March 11-April 12, 2021
n=459
EMC Research #21-6420

All numbers in this document represent percentage (%) values, unless otherwise noted.
Please note that due to rounding, percentages may not add up to exactly 100%.

INTRO: Your opinions are important! Thank you for participating in this survey EMC Research is conducting on behalf of the Napa County Safe Routes to School program in partnership with local school districts. You may have been contacted previously to complete this survey via telephone and we ask each individual only complete the survey once.

Your responses will remain completely confidential. Please try to answer every question even if you're not sure. If you need to, you may skip a question.

1. Are you the parent or guardian of any children currently attending kindergarten through eighth grade in one or more of the school districts located in Napa County below? *Please select the District(s) that your K-8th grade student(s) is/are currently enrolled in, check all that apply.* **(MULTIPLE RESPONSES ACCEPTED)**

Calistoga Joint Unified School District	0
Howell Mountain Elementary School District	-
Napa Valley Unified School District	97
Pope Valley Union Elementary School District	0
Saint Helena Unified School District	2
Another District or school in Napa County (please specify)	1
None of the above → **TERMINATE**	-
(No response) → **TERMINATE**	-

2. Please indicate below what grade(s) your child/children are in. *Please select all that apply.* **(MULTIPLE RESPONSES ACCEPTED)**

Kindergarten	22
1st grade	17
2nd grade	15
3rd grade	20
4th grade	15
5th grade	15
6th grade	14
7th grade	12
8th grade	9
9th through 12th grade → **TERMINATE IF ONLY RESPONSE SELECTED**	14
(No response) → **TERMINATE**	-

(IF MORE THAN ONE K-8 STUDENT: "Although you have multiple children in K-8, we ask that you please think about your **oldest K-8** child when answering the next questions."**)**

For these next few questions, please think back to when your **(**child was**/**children were**)** attending school **before** the COVID-19 pandemic.

3. On most days, what was the primary way your **(**K-8 child**/**oldest K-8 child**)** travelled **to** school?

Family vehicle (only children in your family)	73
Carpool (children from other families)	3
School bus	3
Other public transportation	0
Bike	4
Walk	16
Other (scooter, skateboard, inline skates, etc.)	0
(No response)	0

4. And on most days, what was the primary way your **(**K-8 child**/**oldest K-8 child**)** travelled **from** school?

Family vehicle (only children in your family)	73
Carpool (children from other families)	3
School bus	3
Other public transportation	1
Bike	4
Walk	15
Other (scooter, skateboard, inline skates, etc.)	0
(No response)	0

5. How long did it normally take your **(**K-8 child**/**oldest K-8 child**)** to get to/from school?

Less than 5 minutes	18
5-10 minutes	42
11-15 minutes	22
16-20 minutes	8
More than 20 minutes	9
(No response)	0

6. Has your **(**K-8 child**/**oldest K-8 child**)** ever walked or biked to/from school?

Yes	43
No	56
(No response)	0

7. **(ONLY ASKED IF Q6=1, 'Yes, has walked/biked to/from school')** In what grade did your child begin to walk or bike to/from school? **(n=199)**

Pre-school	7
Kindergarten	30
1st grade	9
2nd grade	6
3rd grade	10
4th grade	8
5th grade	9
6th grade	13
7th grade	6
8th grade	1
9th through 12th grade	1
(No response)	2

8. Thinking generally, what grade would you feel comfortable with a child walking or biking to/from school?

Pre-school	1
Kindergarten	5
1st grade	2
2nd grade	2
3rd grade	5
4th grade	14
5th grade	12
6th grade	16
7th grade	10
8th grade	7
9th through 12th grade	13
I would not feel comfortable at any grade	14
(No response)	1

9INT. Continuing to think about times **before** the COVID-19 pandemic, please indicate how comfortable **you** were with your **(**K-8 child**/**oldest K-8 child**)** doing each of the following.

SCALE:	Very Comfortable	Somewhat Comfortable	Not too Comfortable	Not at all Comfortable	(No Response)	Total Comfort.	Total Not Comfort.
(RANDOMIZE)							
9. Taking a bus to school	32	33	17	15	3	**65**	**32**
10. Walking to school without an adult	8	18	19	54	1	**26**	**73**
11. Riding a bike to school without an adult	7	17	22	53	2	**23**	**75**
12. Walking to school with an adult	66	19	6	8	1	**85**	**14**
13. Riding a bike to school with an adult	45	29	11	13	2	**74**	**24**
(END RANDOMIZE)							

14. **(ONLY ASKED IF Q10=3 OR 4, 'not comfortable')** What would you say is the **main** reason you were not comfortable with your **(**K-8 child**/**oldest K-8 child**)** **walking** to school without an adult?
(VERBATIM RESPONSES CODED INTO BELOW CATEGORIES) (n=335)

Worry for child's safety/Crime	28
Not old enough	19
Live too far away	17
Traffic/Busy streets	11
Street crossing/Intersections	6
Not enough sidewalks	5
Crossing Highway 29	3
Other	8
Don't know	1

15. **(ONLY ASKED IF Q11=3 OR 4, 'not comfortable')** What would you say is the **main** reason you were not comfortable with your **(**K-8 child**/**oldest K-8 child**)** **riding a bike** to school without an adult?
(VERBATIM RESPONSES CODED INTO BELOW CATEGORIES) (n=324)

Worry for child's safety/Crime	29
Not old enough	18
Traffic/Busy streets	13
Live too far away	9
Street crossing/Intersections	5
Crossing Highway 29	4
Can't ride a bike	4
Not enough sidewalks	3
No bike lanes	3
Other	10
Don't know	1

For these next few questions, please think back to when your **(**child was**/**children were**)** attending school **before** the COVID-19 pandemic.

16INT. Please indicate whether you agree or disagree with each of the following statements.

SCALE:	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	(No Response)	Total Agree	Total Disagree
(RANDOMIZE)							
16. I would generally like my K-8 **(**child**/**children**)** to be able to walk or bike to/from school.	43	32	12	12	0	**76**	**24**
17. My K-8 **(**child enjoys**/**children enjoy**)** walking and/or biking places.	57	31	8	4	0	**88**	**12**
18. I would never let my K-8 **(**child**/**children**)** walk or bike to/from school.	20	24	27	28	0	**44**	**55**
19. It is safe for children to walk or bike in my area.	13	45	22	20	-	**58**	**42**
20. There are enough bike paths and sidewalks for my K-8 **(**child**/**children**)** to walk or bike to/from school.	13	27	20	39	1	**40**	**60**
21. I am concerned about speeding or distracted drivers if/when my **(**child**/**children**)** walk or bike to/from school.	81	15	2	2	0	**96**	**4**
22. The school is too far away for my K-8 **(**child**/**children**)** to walk or bike there.	37	19	15	29	0	**55**	**45**
23. My K-8 **(**child**/**children**)** cannot bike to and from school because of their before- or after-school commitments.	13	26	25	35	1	**39**	**60**
24. Walking or biking to and from school is a good way for my K-8 **(**child**/**children**)** to get physical exercise.	69	25	3	3	1	**93**	**6**
25. Walking or biking to and from school is a good way for me to spend quality time with my K-8 **(**child**/**children**)**.	55	30	7	6	1	**85**	**14**
26. I would only allow my K-8 **(**child**/**children**)** to walk or bike to and from school if I, or another adult, can accompany them.	54	25	12	8	0	**79**	**21**
(END RANDOMIZE)							

27INT. Next, you will see some things that local schools and other organizations could do that may affect how you feel about your **(**K-8 child**/**oldest K-8 child**)** biking to school once the COVID-19 pandemic has ended. For each, please indicate if the item would make you feel more comfortable about allowing your **(**K-8 child**/**oldest K-8 child**)** to walk or bike to school once the COVID-19 pandemic has ended.

SCALE:	Much More Comfortable	Somewhat More Comfortable	A Little More Comfortable	(No Difference)	(Don't Know)
(RANDOMIZE)					
27. Limit how much children have to carry in their backpacks	36	25	14	24	1
28. Provide children and parents with information and maps on safe routes to and from school	37	24	16	22	1
29. Offer free bicycle safety courses for children to learn how to ride safely on local streets	43	21	21	15	0
30. Provide opportunities for children to practice biking in a car-free environment	42	23	14	20	-
31. Offer free pedestrian safety classes for children	39	20	21	19	1
32. Provide crossing guards at major intersections	62	22	10	6	-
33. Organize groups of students to walk or bike to/from school together	42	26	17	14	1
34. Provide a local parent or adult volunteer to walk or bike with children to/from school	36	27	15	20	1
35. Add designated bike lanes to roads	46	24	15	14	-
36. Improve the condition of existing bike lanes	47	23	14	16	1
37. Add more bike paths that are separated from the road	62	17	11	9	0
38. Add more sidewalks	53	21	13	12	1
39. Fix missing or broken sidewalks	56	19	15	10	1
40. Increase the visibility and safety of crosswalks	61	20	11	8	0
41. Increase the police presence on routes that lead to schools	52	23	13	12	1
42. Reduce the speed of traffic on streets that kids use to walk or bike to school	53	21	15	11	1
(END RANDOMIZE)					

43. Is there something else that could be done that would make you feel more comfortable about allowing your **(**K-8 child**/**oldest K-8 child**)** to walk or bike to school once the COVID-19 pandemic has ended? **(VERBATIM RESPONSES CODED INTO BELOW CATEGORIES)**

Nothing/No additional comments	42
Add or improve bike paths/Sidewalks/Crosswalks	15
Increase crossing guards/Supervision/Police presence	11
School is too far away/Can't use active modes	9
Speeding concerns/Increased road law enforcement	5
Increase safety related to Highway 29	2
Already walks/bikes/etc.	2
Provide bikes/Equipment/Storage	2
Other	10
Don't know/Refused	2

44. About how far does your **(**K-8 child**/**oldest K-8 child**)** live from school? If you're not sure, give your best guess.

Less than ½ mile	14
½ mile up to 1 mile	19
1 mile up to 2 miles	21
2 miles up to 3 miles	14
3 miles up to 5 miles	15
5 miles or more	16
(No response)	1

45. Does your **(**K-8 child**/**oldest K-8 child**)** currently have their own working bicycle?

Yes	79
No	21
(No response)	-

46. Did you ride a bicycle when you were your K-8 **(**child's**/**children's**)** age?

Yes	78
No	21
(No response)	0

These last questions are for statistical purposes only. Your responses will remain completely confidential.

47. Do you identify as…

Male	14
Female	83
Non-binary	-
Another gender identity	-
Prefer not to respond	3

48. What year were you born? **(YEARS CODED INTO CATEGORIES)**

18-29 (2003-1992)	5
30-39 (1982-1991)	36
40-49 (1972-1981)	45
50-64 (1957-1971)	12
65 or older (1956 or earlier)	1
Prefer not to respond	1

49. Do you consider yourself to be…

Hispanic or Latino	38
White or Caucasian	41
African American or Black	1
Asian or Pacific Islander	7
Something else	3
Prefer not to respond	10

50. Do you…

Own or are buying the home or apartment where you live	55
Rent or lease	35
Prefer not to respond	10

THANK YOU!

APPENDIX B

Universal Recommendations

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

Appendix B
Napa County SRTS Walk Audit Report
Universal Recommendations

The Napa County Safe Routes to School (SRTS) Walk Audit Report Universal Recommendations apply to all public schools in Napa County, which reflects the schools served under the SRTS program. Universal recommendations are meant to supplement site-specific recommendations and address common barriers in the bicycle/pedestrian network around schools in a concise and consistent manner.

Universal Recommendation 1: High-Visibility School Zone Crosswalks

Federal Highway Administration data[1] indicates that high-visibility crosswalk striping improves the visibility of crosswalks compared to standard parallel lines and can improve yielding behavior by drivers[2]. Additionally, crosswalk visibility enhancements, which include but are not limited to high-visibility crosswalks, can reduce crashes by 23-48%[1].

- Recommendation: High-visibility (continental or ladder pattern) crosswalks should be implemented at the following locations:
    - Utilizing the California Vehicle Code (CVC) §21368 requirements for designating crosswalks as "school zone" crosswalks (painted yellow), all school zone crosswalks;
    - And, all marked crosswalks at an intersection with a designated collector or arterial roadway within 1320 feet (0.25 miles) of a school (following the same measuring method as CVC §21368)

This recommendation applies to existing and future crosswalks. It does not provide guidance for new crosswalk warrants; it is primarily focused on the improvement of crosswalks within the roughly ¼ mile radius examined through the Walk Audit process.

Universal Recommendation 2: Intersection Daylighting

Daylighting is the practice of removing visual barriers, including parked vehicles, within a certain distance of a crosswalk or intersection to greatly improve visibility for pedestrians, bicyclists, and motorists. The National Association of City Transportation Officials recommends removing parking within 20-25 feet of an intersection. Daylighting can be accomplished through permanent infrastructure, such as concrete curb extensions, or more cost-effective materials, such as paint and bollards.

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[1] https://safety.fhwa.dot.gov/ped_bike/step/docs/TechSheet_VizEnhancemt_508compliant.pdf

2 Pulugartha, S. S., V. Vasudevan, S. S. Nambisan, and M. R. Dangeti. Evaluating the Effectiveness on Infrastructure-Based Countermeasures on Pedestrian Safety. Presented at the 91st Annual Meeting of the Transportation Research Board, Washington, D.C., 2012.

- Recommendation: Daylighting strategies should be implemented at the following intersections:
    - Those that are in the school zone as defined by CVC §21368;
    - Those that are intersections with a designated collector or arterial roadway within 2640 feet (0.5 miles) of a school (following the same measuring method as CVC §21368).

Universal Recommendation 3: Sidewalk Width Adjacent to School Campus

A barrier frequently identified during Walk Audits throughout the county was that sidewalks immediately adjacent to the school were too narrow for the high volumes of pedestrians generated during school arrival and dismissal times. Most of these sidewalks were roughly 4 feet wide, including space for utility and signage poles. While these sidewalks may meet specific municipal standards, they do not accommodate high volumes of school-related pedestrians and can deter or prevent students from walking to school if they travel with their families, in groups, or use a mobility assistance device. This is especially so when sidewalks are obstructed by utility poles, signal boxes, and other objects.

- Recommendation: All sidewalks that lead to a school campus entrance should be a minimum of 6 feet wide within at least 250 feet of the school entrance; if a school has only one entrance, the sidewalk leading to that entrance should be a minimum of 8 feet wide within 250 feet of that entrance.

Universal Recommendation 4: Class III Bike Boulevard Traffic-Calming

Class III bicycle boulevards are on-street bicycle facilities that have traditionally been marked by signage and share-the-road stencils ("sharrows") painted in the vehicle travel lane. Class III facilities do not provide any separation between bicyclists and motorists and instead indicate to road users that bicyclists and motorists must share the road. Such facilities are intended to be installed on low-speed (25 mph or less*) and low-volume (<3,000 vehicles/day*) roadways; however, the current practice of implementing only signage and sharrows for Class III routes frequently does not meet the comfort and safety perception needs of the "Interested but Concerned" user profile of bicyclists, which includes an estimate of 51%-56% of the population and is typically the profile assumed for most school-age children. To create a lower stress bicycle network, the Federal Highway Administration describes improving bicycle boulevards by "slowing motor vehicle speeds and implementing other speed management measures."

- Recommendation: All Class III bicycle boulevards should be marked with sharrows and signage and must be treated with traffic-calming strategies to enforce the desired speed limit and prevent motorist speeding. Class III bicycle boulevards adjacent to school campuses or along roadways that facilitate

motorist speeding (long, straight, and/or minimal traffic control) should be prioritized for traffic-calming treatments.

* Metrics established by the Federal Highway Association in their 2019 Bikeway Selection Guide.

Universal Recommendation 5: Curb Ramps (Americans with Disabilities Act)

Some of the early Walk Audit reports specifically call out intersections or other pedestrian access points where curb ramps compliant with the Americans with Disabilities Act were missing, which creates a significant connectivity barrier for pedestrians who use mobility assistance devices. However, following these reports, the Napa County Safe Routes to School team recognized that many intersections and pedestrian access points were missing these curb ramps and that individually identifying each missing curb ramp would be redundant, particularly given data from the Napa Countywide Pedestrian Plan (2016). Consequently, though some early reports do mention lack of accessible curb ramps, a universal recommendation was created to address this important pedestrian barrier while avoiding redundancy in reports.

- Recommendation: In alignment with the Americans with Disabilities Act, when implementing recommendations made in Napa County Safe Routes to School reports that impact the curb at intersections, pedestrian crossings, or other pedestrian access points, curb ramps that are compliant with the Americans with Disabilities Act should be installed.

APPENDIX C

Quick Build Brochure

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

QUICK-BUILD BIKEWAY NETWORKS FOR SAFER STREETS

Delivering Safer Streets in Weeks or Months, Instead of Years

How to Meet Public Demand for Safe Bikeway Networks—Affordably, Quickly, and Inclusively

Photo credit: Alta Planning + Design

CASE STUDY

Adeline Street in Berkeley got protected bike lanes 20 years ahead of schedule, when Bike East Bay worked closely with the city to incorporate planned lanes into the repaving schedule, saving time and money by simply adding bike infrastructure to an existing project, one funded through a local infrastructure bond measure. The City of Berkeley garnered extensive public input on the Adeline Corridor, making this a great example of quick-build speeding up existing bike infrastructure planning, bringing bike lanes to Berkeley in 2019 instead of 2039.

WHY QUICK-BUILD? WHY NOW?

Biking is up in many communities in California, including those that started with low rates of bicycling, as people seek out healthy and safe transportation and recreation. Californians are discovering they can be healthier and happier simply by getting out on two wheels.

Meanwhile, agency budgets are down. Plans to spend millions on infrastructure may no longer be realistic. More than ever, the public demands that transportation projects are equitable and responsive to the needs of neglected communities.

Quick-build is a method of building bike and pedestrian safety improvements—protected bike lanes, pedestrian crossings, slow streets, parklets, and more—now, within your budget. In challenging times, quick-build projects are crucial to building trust in the government's ability to deliver public benefit. And quick-build infrastructure can engage the public better than ever, and be more inclusive and equitable than traditional infrastructure.

> *"We as transportation experts need to be thinking strategically about whether or not we need to spend three years talking about doing something important, or three weeks to just try something."*
>
> — Warren Logan
>
> *Transportation Policy Director of Mobility and Interagency Relations at Oakland Mayor's Office*

WHAT IS QUICK-BUILD?

The Basics

- Quick-build projects use materials that can be installed quickly and at low cost. Build projects from posts, planters, and stripes of paint, not new pavement or curb alignments.
- **Quick-build projects are installed on a trial basis.** Temporary installations allow for adjusting or removing elements in response to public feedback. Successful projects may become permanent, exactly as installed, or upgraded with more durable materials.
- **Quick-build should incorporate rigorous community engagement.** A project on the ground can serve much more effectively than a PowerPoint or rendering for trying something out and allowing community residents to respond. Gather feedback and input, and change designs accordingly.

Materials

From paint, traffic cones, and A-boards to concrete curb barriers, planters, and temporary raised crosswalks, a wide variety of materials work well for creating quick-build projects. The full Quick-Build Toolkit provides thorough, detailed descriptions of materials that can make for an effective and inexpensive project to meet your community's needs.

Photo credits, top to bottom: Alta Planning + Design; Real Hartford; Alta Planning + Design; Street Plans Collaborative

CASE STUDY

In August of 2020, the City of San Luis Obispo converted one of the three motor vehicle lanes of downtown Higuera Street into a buffered bike lane, as part of Open SLO, the city's pilot program to expand the use of public spaces (with parklets and bike/ped spaces) during the COVID-19 pandemic. The project was installed with paint, took less than a week to install, and cost a mere $15K instead of the more than $150K it would have taken to put in a traditional bike lane by sealing and restriping the whole street as the city would normally do.

Photo credit: Bike SLO County

WHO?

Your Quick-Build Project Team

Team leader. Quick-build projects need a "chief" (usually city staff) tasked with project facilitation, keeping the momentum going, establishing lines of communication, and accepting and evaluating feedback.

Community leaders. Because evaluation and adjustment are essential for successful quick builds, make sure community leaders are on board from the beginning. Look to businesses, residential associations, places of worship, and nearby schools. Bring in bike/ped advocacy organizations and other CBOs, including those based in disadvantaged communities and led by people of color.

Department liaisons. Your project may impact transit, street sweeping, parking enforcement, maintenance, waste management and recycling, and emergency response. Involve other agencies as necessary to ensure you don't forget a critical aspect.

Elected Officials. They have the power to marshal funding for quick-build projects. They will hear from constituents, so communication channels between the project team and electeds must be open for effective project evaluation.

Communications. Ideally, include a dedicated communications person on your team. Because this is a new method, and people are used to years of discussion, publicize quick-build's temporary nature. Talk about the project's intended benefits, and listen to feedback about the actual impacts.

Community Engagement

Community engagement is essential and also very effective, because it's easy to engage people in providing feedback on real-world solutions that they can see and use. Here are the keys:

- Start engaging with the community before you install the project so that residents' opinions are included from the get-go.
- Be inclusive in your outreach, including perspectives from disadvantaged communities and people of color.
- Emphasize the project's temporary nature, and the ability to change the project after it's installed.
- Implement effective feedback mechanisms during the project, making sure to plan and budget for project adjustments in response to input.

CASE STUDY

The El Cajon Boulevard Business Improvement Association ("The Boulevard") got city councilmembers and the mayor on board to fund a pilot bus and bike lane along a 3-mile stretch of San Diego's El Cajon Boulevard. The Boulevard staff brought in diverse stakeholders and built on longstanding relationships to push the city to dedicate a lane for El Cajon Boulevard's new bus rapid transit line, and got bikes included on this Vision Zero corridor. The entire three-mile project, which launched in January 2020, cost $100K, funded by San Diego's general fund.

Photo credit: Holly Raines

WHERE?

Which Projects are Best for Quick-Build?

Some projects are better than others for the quick-build method.

- **Look to existing plans.** Your community's current active transportation plan already identifies key improvements and priorities. Most such plans will take decades to complete with traditional methods and funding. Quick-build can take those plans to reality much sooner.
- **Fill gaps in the bikeway network, especially now when more people are bicycling.** Look to improve intersections that are dangerous to navigate, short sections of crosstown routes that use busy streets, or long sections of streets that could become "slow streets" to connect neighborhoods.
- **Put disadvantaged communities first.** If your plan doesn't already incorporate an equity analysis to set priorities, this is your chance. Look at a model plan like Oakland's "Let's Bike Oakland" bicycle plan which incorporates a framework of equity and a focus on improving well-being for the city's most vulnerable groups.

If a project is funded and on schedule to be built within a year or two, turn your attention to projects that will take years without quick build. Projects that require expensive modifications—new traffic signals, bridges, reconfigured curbs—are not good quick-build candidates.

Photo credit: Alta Planning + Design

Funding for Quick-Build

POTENTIAL FUNDING SOURCES IN CALIFORNIA

Available funding for quick-build projects varies a lot from one municipality to the next. But here are a few ideas.

- Public works departments' essential repaving and repair projects are great opportunities to put in quick-build projects at low cost.
- Local and regional funds such as general fund, sales tax revenue, and Air Quality Management District funds can be used for quick-build projects.
- Tack on costs to another publicly-funded transportation project, or even a private project. For example, a development project that is required to repave and stripe new bike lanes might install a protected bike lane using quick-build materials instead.
- In 2020, the **Active Transportation Program** piloted a special quick-turnaround funding pot for quick-build projects, with an earlier (summer) deadline. Keep an eye on the ATP to see if they continue to offer this funding in future years. CalBike will be pushing them to do so.
- PeopleForBikes has a **small grant program** for infrastructure projects.
- AARP's **Community Challenge grant** could fund a quick-build project.

This resource was prepared in partnership with Alta Planning + Design. For more information see our complete **Quick-Build Guide**.

CALIFORNIA BICYCLE COALITION

APPENDIX D

Bike Parking Guidance

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

ESSENTIALS OF

BIKE PARKING

Selecting and installing bicycle parking that works

apbp

Association of Pedestrian and Bicycle Professionals

Expertise for Active Transportation

Essentials of Bike Parking
Revision 1.0, September 2015

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Lead author - Nathan Broom

Contributors - Eric Anderson, Vince Caristo, Ryan Dodge, Jennifer Donlon-Wyant, Sarah Figliozzi, Elco Gauw, Dan Jatres, David Loutzenheiser, Heath Maddox, Brian Patterson, Cara Seiderman

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Cover image: *Sign D4-3 from Standard Highway Signs, 2004 Edition, http://mutcd.fhwa.dot.gov/ser-shs_millennium_eng.htm*

APBP is an association of professionals who plan, implement and advocate for walkable and bicycle-friendly places.

Association of Pedestrian and Bicycle Professionals

bikeparking@apbp.org
www.apbp.org

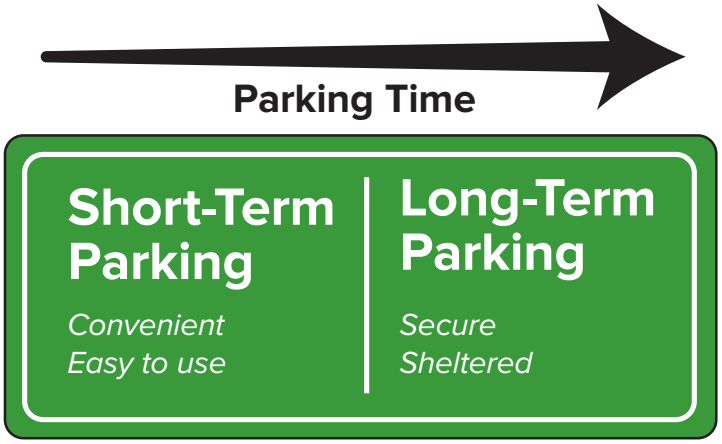
TABLE OF CONTENTS

INTRODUCTION

Among the necessary supports for bicycle transportation, bike parking stands out for being both vital and easy. Still, it requires some attention to get it right. Bike parking may go unused if it's not more appealing to users than the nearest sign post. A minor mistake in installation can make a quality rack unusable. The variety of bicycle sizes, shapes, and attachments continues to increase, and good bike parking should accommodate all types.

The Association of Pedestrian and Bicycle Professionals (APBP) prepared this guide for people planning to purchase or install bike parking fixtures on a limited scale. It is a brief overview of APBP's comprehensive *Bicycle Parking Guidelines* handbook, available at www.apbp.org.

This guide divides bike parking into short-term and long-term installations. These two kinds of parking serve different needs, and the starting point for most bike parking projects is recognizing whether the installation should serve short-term users, long-term users, or both. If users will typically be parking for two hours or longer, they are likely to value security and shelter above the convenience and ease that should characterize short-term parking.



SHORT-TERM PARKING

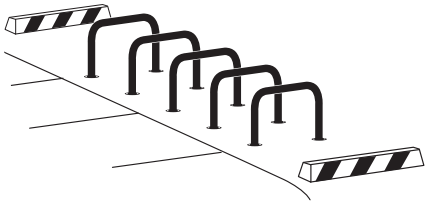
Effective bike parking for short-term users depends on two main factors: 1) proximity to the destination and 2) ease of use.

Short-term parking is designed to meet the needs of people visiting businesses and institutions, and others with similar needs—typically lasting up to two hours. Short-term users may be infrequent visitors to a location, so the parking installation needs to be readily visible and self-explanatory.

INVERTED U

POST & RING

CORRAL



SITE PLANNING

Location

Short-term bike parking should be visible from and close to the entrance it serves—50' or less is a good benchmark. Weather-protected parking makes bicycle transportation more viable for daily and year-round use, and it can reduce the motivation for users to bring wet bicycles into buildings. Area lighting is important for any location likely to see use outside of daylight hours.

Security

All racks must be sturdy and well-anchored, but location determines the security of short-term parking as much as any other factor. Users seek out parking that is visible to the public, and they particularly value racks that can be seen from within the destination. Areas with high incidence of bicycle theft may justify specific security features such as specialty racks, tamper-proof mounting techniques, or active surveillance.

Quantity

Many jurisdictions have ordinances governing bike parking quantity. APBP's full *Bicycle Parking Guidelines* offers complete recommendations for the amount and type of parking required in various contexts. In the absence of requirements, it's okay to start small—but bear in mind that perceived demand may be lower than the demand that develops once quality parking appears.

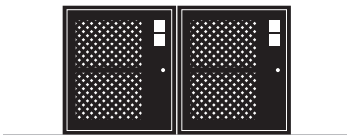
BIKE CORRALS

Some cities with limited sidewalk space and strong bicycle activity place bike parking in on-street "bike corrals" located in the street area adjacent to the curb. Bike corrals can sometimes make use of on-street areas that are unsuitable for auto parking. When replacing a single auto parking space, a corral can generally fit 8 to 12 bicycles. APBP's full *Bicycle Parking Guidelines* provides details about designing and siting bike corrals. **apbp.org**

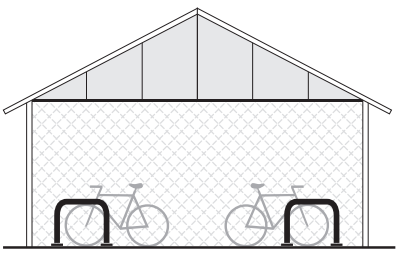
LONG-TERM PARKING

Users of long-term parking generally place high value on security and weather protection. Long-term parking is designed to meet the needs of employees, residents, public transit users, and others with similar needs. These users typically park either at home or at a routine destination such as a workplace. They often leave their bicycles unmonitored for a period of several hours or longer, so they require security and weather protection that let them park without unreasonable concern for loss or damage.

Long-term parking can take a variety of forms, including a room within a residential building or workplace, a secure enclosure within a parking garage, or a cluster of bike lockers at a transit center. Some long-term parking is open to the public—such as a staffed secure enclosure at a transit hub—and some of it is on private property with access limited to employees, residents, or other defined user groups.



BIKE LOCKERS



SHELTERED SECURE ENCLOSURE

SITE PLANNING

Location

Appropriate locations for long-term parking vary with context. Long-term parking users are typically willing to trade a degree of convenience for weather protection and increased security. Long-term installations emphasize physical security above public visibility. Signage may be needed for first-time users.

Security

Security is paramount for quality long-term parking. Access to parked bicycles can be limited individually (as with lockers) or in groups (as with locked bike rooms or other secure enclosures). Options for access control include user-supplied locks, keys, smart cards, and other technologies.

Quantity

Refer to local ordinances or the comprehensive APBP *Bicycle Parking Guidelines* to determine the amount and type of parking required for various contexts.

SPECIAL CONSIDERATIONS FOR LONG-TERM PARKING

In many ways, short-term and long-term parking function similarly and are served by the same guidelines. Some exceptions are noted below.

Density

The competition of uses for high-security and sheltered locations creates particular pressure on long-term parking to fit more bicycles in less space. When parking needs cannot be met with standard racks and spacing recommended in this guide, consider rack systems designed to increase parking density. See the high-density racks table on page 7. Note that increasing density without careful attention to user needs can create parking that excludes people because of age, ability, or bicycle type. This may result in people parking bicycles in other less desirable places or choosing not to bike at all.

Bicycle design variety

Long-term parking facilities should anticipate the presence of a variety of bicycles and accessories, including—depending on context—recumbents, trailers, children's bikes, long-tails, and others. To accommodate trailers and long bikes, a portion of the racks should be on the ground and should have an additional 36" of in-line clearance.

Performance criteria

The bike rack criteria in the next section apply to racks used in any installation, regardless of its purpose. Long-term installations often use lockers and group enclosures not discussed in this guide. Such equipment raises additional considerations that are discussed in detail in APBP's full *Bicycle Parking Guidelines*. **apbp.org**

INSTALLATION

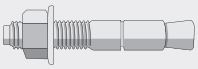
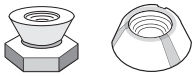
Selecting an appropriate installation surface and technique is key to creating bicycle parking that remains secure and attractive over time.

INSTALLATION SURFACE

A sturdy concrete pad is an ideal surface for installing bicycle parking. Other surfaces often encountered include asphalt, pavers, and soft surfaces such as earth or mulch. These surfaces can accommodate in-ground mounting or freestanding bike racks such as inverted-U racks mounted to rails. See APBP's *Bicycle Parking Guidelines* for details. **apbp.org**

INSTALLATION FASTENERS

When installing racks on existing concrete, consider the location and select appropriate fasteners. Drill any holes at least three inches from concrete edges or joints. Some locations benefit from security fasteners such as concrete spikes or tamper-resistant nuts on wedge anchors. Asphalt is too soft to hold wedge and spike anchors designed for use in concrete. Installing bike parking on asphalt typically requires freestanding racks and anchor techniques specific to asphalt.

FASTENERS		
CONCRETE SPIKE		Installs quickly in concrete with a hammer. Tamper-resistant. Removal may damage concrete and/or rack.
CONCRETE WEDGE ANCHOR		Allows for rack removal as needed. Not tamper-resistant, but can accommodate security nuts (below).
SECURITY NUTS		Use with concrete wedge anchors. Security nuts prevent removal with common hand tools.

INSTALLATION TECHNIQUES

When installing racks on existing concrete, choose those with a surface-mount flange and install with a hammer drill according to the specifications of the mounting hardware selected. When pouring a new concrete pad, consider bike parking fixtures designed to be embedded in the concrete. Because replacing or modifying an embedded rack is complicated and costly, this installation technique requires particular attention to location, spacing, rack quantity, and material.

BICYCLE RACK SELECTION

PERFORMANCE CRITERIA FOR BIKE PARKING RACKS

These criteria apply to any rack for short- or long-term use.

CRITERIA	DETAILS
Supports bike upright without putting stress on wheels	The rack should provide two points of contact with the frame—at least 6" apart horizontally. Or, if a rack cradles a bicycle's wheel, it must also support the frame securely at one point or more. The rack's high point should be at least 32".
Accommodates a variety of bicycles and attachments	The racks recommended on page 6 ("racks for all applications") serve nearly all common bike styles and attachments—if installed with proper clearances (see placement section). Avoid designs and spacing that restrict the length, height, or width of bicycles, attachments, or wheels.
Allows locking of frame and at least one wheel with a U-lock	A closed loop of the rack should allow a single U-lock to capture one wheel and a closed section of the bike frame. Rack tubes with a cross section larger than 2" can complicate the use of smaller U-locks.
Provides security and longevity features appropriate for the intended location	Steel and stainless steel are common and appropriate materials for most general-use racks. Use tamper-resistant mounting hardware in vulnerable locations. Rack finish must be appropriate to the location (see materials and coatings section).
Rack use is intuitive	First-time users should recognize the rack as bicycle parking and should be able to use it as intended without the need for written instructions.

RACK STYLES

The majority of manufactured bike racks fall into one of the categories on pages 6-8. Within a given style, there is wide variation among specific racks, resulting in inconsistent usability and durability. APBP recommends testing a rack before committing broadly to it.

RACKS FOR ALL APPLICATIONS

When properly designed and installed, these rack styles typically meet all performance criteria and are appropriate for use in nearly any application.

INVERTED U
also called staple, loop

Common style appropriate for many uses; two points of ground contact. Can be installed in series on rails to create a free-standing parking area in variable quantities. Available in many variations.

POST & RING

Common style appropriate for many uses; one point of ground contact. Compared to inverted-U racks, these are less prone to unintended perpendicular parking. Products exist for converting unused parking meter posts.

WHEELWELL-SECURE

Includes an element that cradles one wheel. Design and performance vary by manufacturer; typically contains bikes well, which is desirable for long-term parking and in large-scale installations (e.g. campus); accommodates fewer bicycle types and attachments than the two styles above.

This guide analyzes the most common styles of bike racks, but it is not exhaustive. Use the performance criteria on page 5 to evaluate rack styles not mentioned. Custom and artistic racks can contribute to site identity and appearance, but take care that such racks don't emphasize appearance over function or durability.

HIGH-DENSITY RACKS

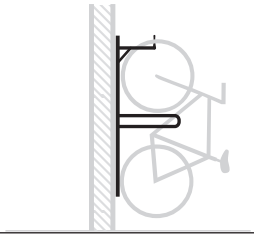
These rack styles do not meet all performance criteria but may be appropriate in certain constrained situations.

High-density rack systems can maximize the use of limited parking space, but they don't work for all users or bicycles. If installing these racks, reserve additional parking that accommodates bicycles with both wheels on the ground for users who are not able to lift a bicycle or operate a two-tier rack, or for bikes that are not compatible with two-tier or vertical racks.

STAGGERED WHEELWELL-SECURE

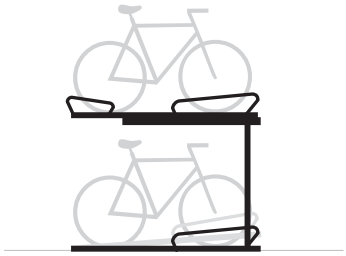
Variation of the wheelwell-secure rack designed to stagger handlebars vertically or horizontally to increase parking density. Reduces usability and limits kinds of bikes accommodated, but contains bikes well and aids in fitting more parking in constrained spaces.

VERTICAL



Typically used for high-density indoor parking. Not accessible to all users or all bikes, but can be used in combination with on-ground parking to increase overall parking density. Creates safety concerns not inherent to on-ground parking.

TWO-TIER



Typically used for high-density indoor parking. Performance varies widely. Models for public use include lift assist for upper-tier parking. Recommend testing before purchasing. Creates safety concerns not inherent to on-ground parking, and requires maintenance for moving parts.

RACKS TO AVOID

Because of performance concerns, APBP recommends selecting other racks instead of these.

WAVE
also called undulating or serpentine

Not intuitive or user-friendly; real-world use of this style often falls short of expectations; supports bike frame at only one location when used as intended.

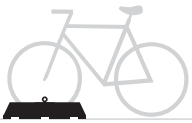
SCHOOLYARD
also called comb, grid

Does not allow locking of frame and can lead to wheel damage. Inappropriate for most public uses, but useful for temporary attended bike storage at events and in locations with no theft concerns. Sometimes preferred by recreational riders, who may travel without locks and tend to monitor their bikes while parked.

COATHANGER

This style has a top bar that limits the types of bikes it can accommodate.

WHEELWELL



Racks that cradle bicycles with only a wheelwell do not provide suitable security, pose a tripping hazard, and can lead to wheel damage.

BOLLARD

This style typically does not appropriately support a bike's frame at two separate locations.

SPIRAL

Despite possible aesthetic appeal, spiral racks have functional downsides related to access, real-world use, and the need to lift a wheel to park.

SWING ARM SECURED

These racks are intended to capture a bike's frame and both wheels with a pivoting arm. In practice, they accommodate only limited bike types and have moving parts that create unneeded complications.

RACK MATERIALS & COATINGS

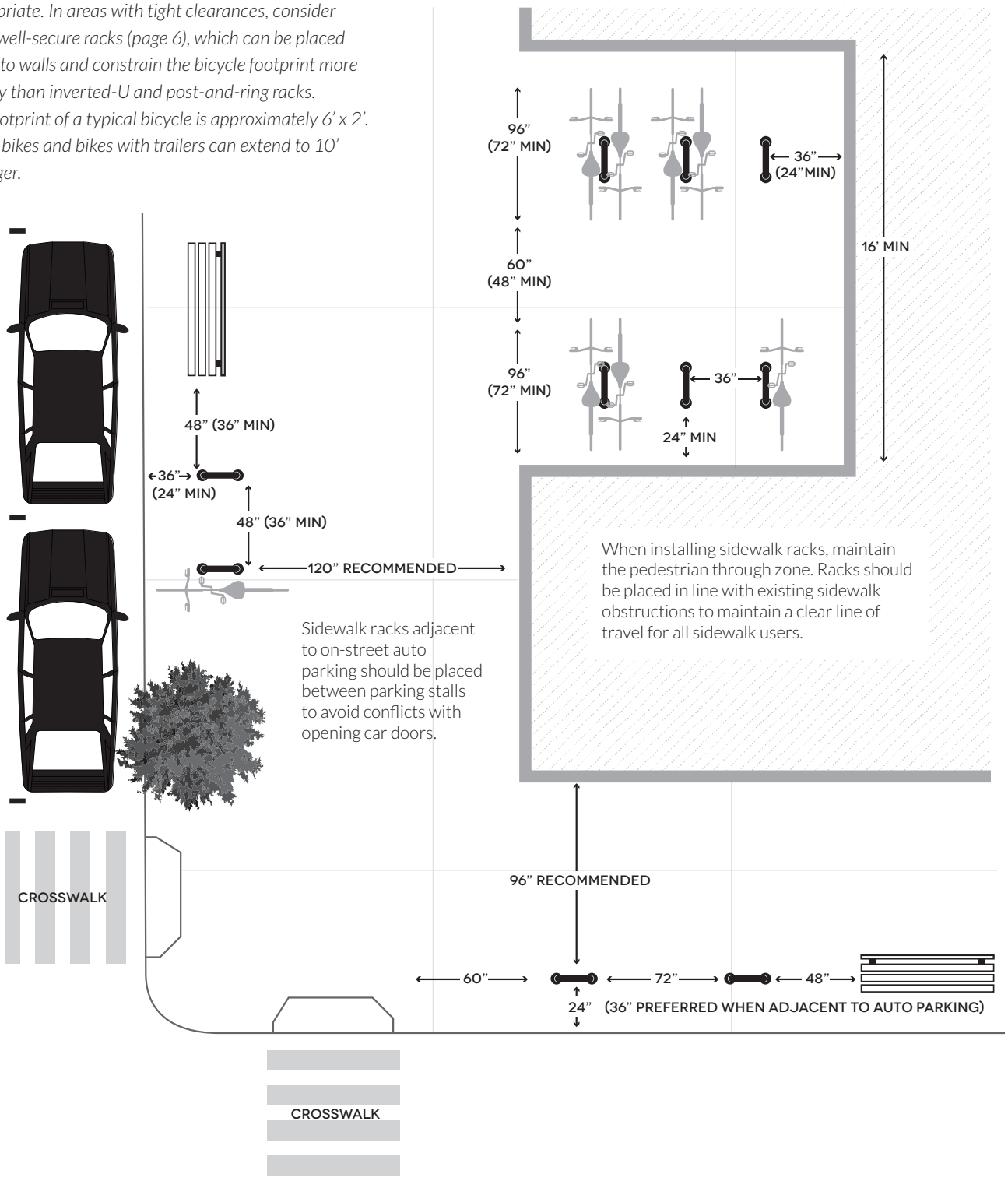
Most bicycle parking racks are made of carbon steel or stainless steel. Carbon steel requires a surface coating to resist rust while appropriate grades of stainless steel need no coating. Not all materials and coatings with the same name perform equally. Square tubing provides a security advantage as round tubing can be cut quietly with a hand-held pipe cutter. Before purchasing racks, talk to suppliers about your particular conditions and choose a material and coating that suit your needs. The following are common choices, depending on local considerations and preferences.

RACK MATERIAL – COATING	RELATIVE PURCHASE COST	DURABILITY	CAUTIONS
Carbon steel - galvanized	Usually lowest	Highly durable and low-maintenance; touch-up, if required, is easy and blends seamlessly	Utilitarian appearance; can be slightly rough to the touch
Carbon steel - powder coat* (TGIC or similar)	Generally marginally higher than galvanized	Poor durability	Requires ongoing maintenance; generally not durable enough for long service exposed to weather; not durable enough for large-scale public installations
Carbon steel - thermoplastic	Intermediate	Good durability	Appearance degrades over time with scratches and wear; not as durable as galvanized or stainless
Stainless steel - no coating needed, but may be machined for appearance	Highest	Low-maintenance and highest durability; most resistant to cutting	Can be a target for theft because of salvage value; maintaining appearance can be difficult in some locations

** When applied to carbon steel, TGIC powder coat should be applied over a zinc-rich primer or galvanization to prevent the spread of rust beneath the surface or at nicks in the finish.*

PLACEMENT

The following minimum spacing requirements apply to some common installations of fixtures like inverted-U or post-and-ring racks that park one bicycle roughly centered on each side of the rack. Recommended clearances are given first, with minimums in parentheses where appropriate. In areas with tight clearances, consider wheelwell-secure racks (page 6), which can be placed closer to walls and constrain the bicycle footprint more reliably than inverted-U and post-and-ring racks. The footprint of a typical bicycle is approximately 6' x 2'. Cargo bikes and bikes with trailers can extend to 10' or longer.



APPENDIX E

Recommendation
Cost Range Estimates

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

Appendix E: Recommendation Cost Range Estimates

Cost estimate was one of many factors considered when prioritizing recommendations for Napa County Safe Routes to School Walk Audit reports. Recommendations in which a high cost estimate would considerably delay implementation of the recommendation may have been given a lower priority level in order to prioritize recommendations that are lower cost and therefore more likely to be installed more quickly. Cost was considered on a high-level scale; real cost ranges of recommendations may differ from cost range estimates included in Walk Audit reports.

Cost range estimates for Safe Routes to School Walk Audit recommendations are as follows:

$	< $25,000
$$	Between $25,000 and $250,000
$$$	$250,000 to $1 million
$$$$	> $1 million

APPENDIX F

Next Steps

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

From Recommendations to Action: Next Steps

Napa County Bicycle Coalition (NCBC) has concluded the final task under the Napa County Safe Routes to School Program in coordination with the Napa County Office of Education, funded under the One Bay Area Grant and the Active Transportation Program.

Evaluation of active transportation barriers at school sites are complete and final reports of recommendations for each school in Napa County will be published in the spring of 2022. The NCBC team is already planning the next phase of Safe Routes to School that will help bring these recommendations into reality. Supported by a "Quick Strike" grant through the Metropolitan Transportation Commission (MTC), NCBC will continue its SRTS work over the course of this next year.

NCBC SRTS Quick Strike Program Elements (2022-2023):

- Engage parents in advocating for implementing the recommendations. Hold safety summits at various school sites that raise awareness of the recommendations and provide a forum for parents to discuss strategies and to plan next steps. Work with schools and other stakeholders to implement recommendations. Build a Safe Routes to School (SRTS) Advisory Committee, including "parent champions" from key school sites, to help guide the SRTS program into the next phase of growth and engagement and to help ensure the long-term viability of the program, providing a structure both for stakeholder feedback and input, as well as for increased local investment in future program activities.
    - Action Steps:
        - Hold up to seven safety summits at various school sites
        - Form SRTS advisory committee
- Provide education and encouragement programming at elementary and middle schools that includes bike rodeos throughout the year, Bike Month (and Bike to School Day) in the spring, and Walk and Roll to School Day in the fall. This programming aims to increase the number of students who walk or bike to school and to ensure that, as barriers are removed and facilities are improved, youth have the skills and confidence to take advantage of improvements.
    - Action Steps:
        - Hold up to 14 Bike Rodeos at elementary and middle schools
        - Provide outreach and support for Walk and Roll to School Day and Bike Month activities at up to seven school sites
        - Support local Agricultural & Hospitality Industry workers with bicycle safety education
- Conduct community-based safety education programming that reaches identified populations of concern. Through bilingual Family Biking Workshops, community rides in partnership with other local organizations, and safety education outreach to agricultural

and hospitality workers, NCBC will tailor our programming to help engage the full spectrum of our community.

    - Action Steps:
        - Conduct up to nine bilingual Family Biking Workshops
        - Conduct up to six community events and rides

- Secure future funding for the Safe Routes to School Partnership (SRTS). We believe that every student should be able to safely walk or ride a bike to school. The SRTS program provides vital safety education, encouragement, and community engagement programs to thousands of students annually while advocating for facilities that make active transportation safe and accessible. SRTS will be a key force in helping to make the Walk Audit recommendations a reality. Napa County is one of the only counties in the region that lacks dedicated, long-term funding for these programs and efforts, and without that support implementing the recommendations will face more barriers.
    - Action Steps:
        - Apply for competitive and discretionary grant funding
        - Seek funding support from jurisdictions
        - Seek funding support from community health
        - Provide annual program reports to stakeholders