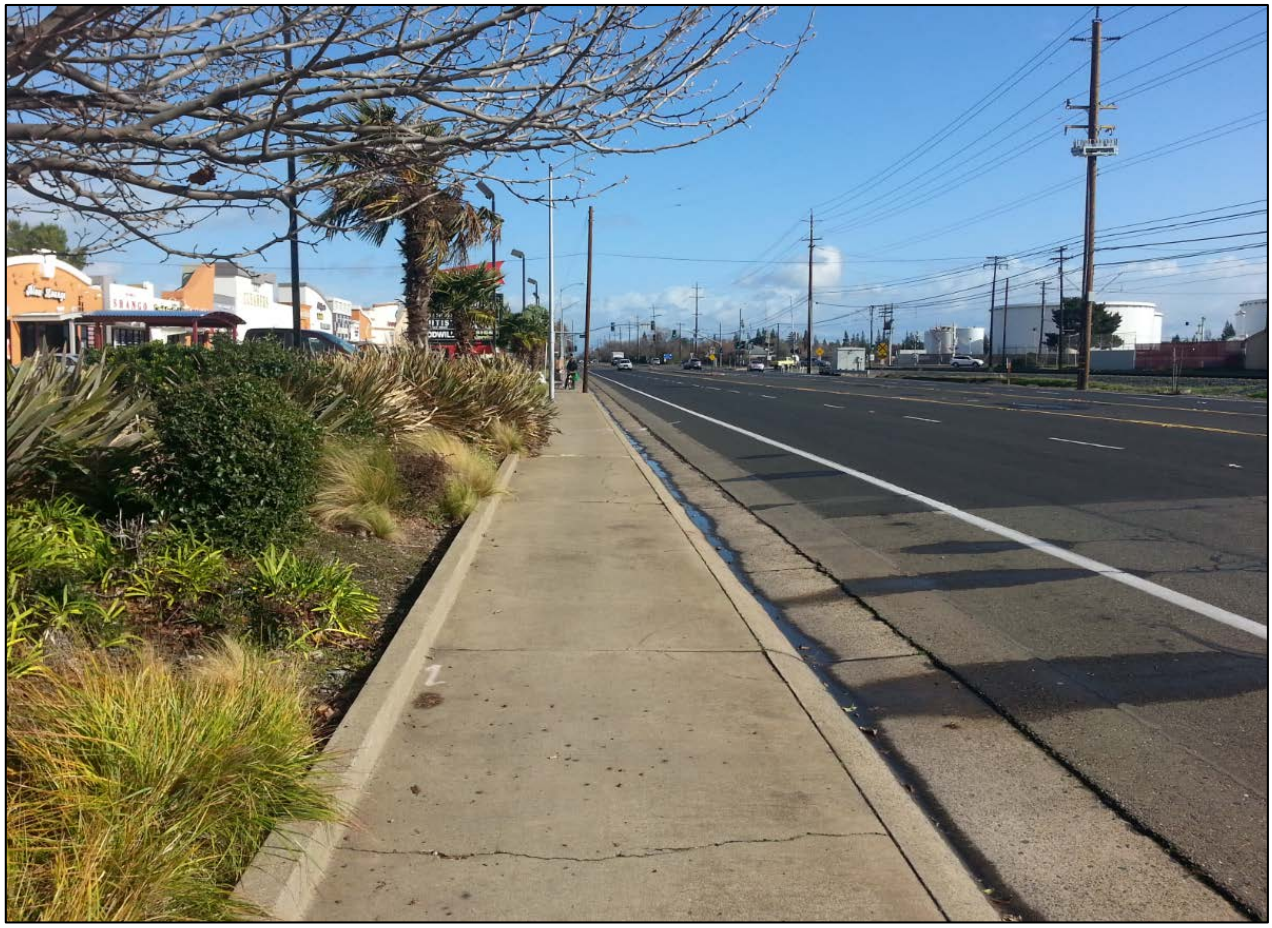
Appendix 5

WALKSACRAMENTO COMMUNITY LIVABILITY ASSESSMENT

FOLSOM BOULEVARD LIVABILITY REPORT



2/26/2016

Community Livability Assessment

Prepared by:
WALKSacramento

WALKSacramento is dedicated to achieving safe, walkable communities – for personal health and recreation, for livable neighborhoods, for traffic safety, and for clear air.

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Folsom Boulevard Livability Report

EXISTING CONDITIONS INTRODUCTION

This report is to inform Sacramento County's master planning effort along the County's portion of Folsom Boulevard. The portions of the corridor relevant to this Mater Plan include Watt Avenue to Bradshaw Road and Hazel Avenue to the US Highway 50 interchange. The Master Plan evaluates opportunities to improve the corridor through a streetscape retrofit that is more inclusive of all roadway users, including motor vehicles, bicycles, pedestrians, and transit users.

WALKSacramento performed the following assessments along the project site to evaluate existing conditions, identify needs, and evaluate opportunities for improvement.

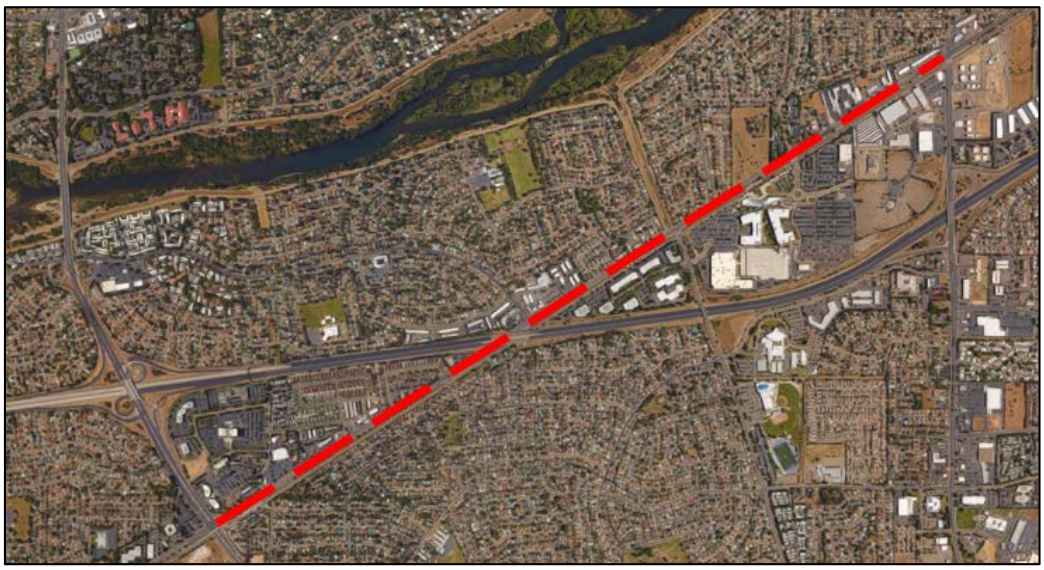
Walk Audit on January 13, 10:00AM to 12:00PM
Walk Audit on January 16, 9:00AM to 11:00PM
CPTED Assessment on January 13, 10:00AM to 12:00PM
CPTED Nighttime Assessment on January 16, 5:30PM TO 7:30PM
CPTED Afternoon Assessment on February 6, 2:30-3:30PM
Health Impact Assessment on January 13, 10:00AM to 12:00PM

HISTORY OF THE CORRIDOR

Folsom Boulevard is a major east-west corridor passing through parts of the City of Sacramento, Sacramento County, and the City of Folsom. The corridor has seen many changes over time. It was originally a wagon and stagecoach route but in the 1850s it expanded to accommodate the Sacramento Valley Railroad from downtown Sacramento to Folsom. With the advent of the automobile, Folsom Boulevard became an auto-centric thoroughfare. In 1926, plans for the construction of the US Highway system included US Interstate 50 which runs parallel with Folsom Boulevard and was used as the highway's alignment until 1973 when the highway was completed. In 1998, Regional Transit's Gold Line was constructed parallel to the corridor between Sacramento and Folsom. In December 2015, Sacramento County began the development of the Folsom Boulevard Complete Streets Master Plan for the two portions of Folsom Boulevard in the unincorporated area of the County. The Master Plan will identify future design guidelines to develop a multi-modal

complete street that benefits all road users: motorists, pedestrians, bicyclists, and transit users.

WATT AVENUE TO BRADSHAW ROAD



The stretch of Folsom Boulevard between Watt Avenue and Bradshaw Road is approximately 2.5 miles long. The corridor includes two 12 ft. wide vehicle lanes in each direction and a continuous left turn lane that provides access to the north and south sides of the road. Unimpeded left turn movements create potential conflicts for head-on motorist collisions and discomfort for pedestrians and cyclists navigating between motorists making turns in and out of driveways. The Average Daily Traffic count varies between around 7,600 and 13,400 vehicles per day along different portions of the corridor. The marked speed limit is 45 miles per hour. There is no on-street parking permitted. Where present, the corridor also accommodates pedestrians on 6 ft. sidewalks (predominantly on the north side of the road) and bicycle traffic along 5 ft. Class II bike lanes on both sides. The grade is consistently flat throughout the entire stretch.

ADJACENT LAND USES

The corridor is bordered to the north by a mix of uses including commercial, retail, residential, and office spaces. Although varied, the land uses tend to cluster along different portions of the corridor. Land uses to the south include four light rail transit centers carrying Regional Transit's Gold Line, large office and industrial parks, and single family homes. The largest employer along this corridor is the State of California's Franchise Tax Board Headquarters with a campus spanning over half of a mile of Folsom Boulevard. Due to the major Union Pacific and Regional Transit railroads, direct access to adjacent land uses is only available through transit centers and via driveways on roads perpendicular to Folsom Boulevard. Residential and industrial areas to the south are either walled or fenced from Folsom Boulevard.

Block Lengths and Sidewalks

On the north side of Folsom Boulevard, block lengths vary between 775 ft. to around 1,600 ft., tending to be shorter along residential sections. Along the northern side, approximately 50 driveways and intersections allow two-way traffic into and out of commercial and residential areas. On the north, aside from a 695 ft. stretch along undeveloped property, Folsom Boulevard accommodates pedestrian travel on attached sidewalks with either rolled or solid curbs. The only portion of the northern stretch with a detached sidewalk is for 180 ft. at the corner of Folsom Boulevard and Watt Avenue On the south side of Folsom Boulevard, the only sidewalks are at the four transit centers and tend to vary between attached and detached. Throughout the corridor, the condition of the sidewalks are less than average with occasional cracks, uneven surfaces, and utilities.

Pedestrian Amenities and Landscaping

There are few pedestrian amenities such as seating, trash cans, or pedestrian scale lighting along this portion of Folsom Boulevard The south side is lined by large utility poles, service boxes, vehicle railings, and other aesthetically unappealing elements. On the north side of the corridor solid walls, wood fences, and large shrubs separate residential areas from the street. These barriers often abut sidewalks, limiting the pedestrian "shy-distance" and diminishing the amount of available walking room. Lighting along the corridor is predominantly vehicle oriented except within transit centers. There are several

Regional Transit bus stops along the corridor that are commonly identified by little more than sign posts. Where present, benches are within the pedestrian right of way, limiting the available walking space. There are no lit or sheltered bus stops other than at transit centers. The landscaping pallet varies tremendously along the corridor with intermittent trees, shrubs, and grassy areas, providing little aesthetic value and limited shading. In several areas landscaping either encroaches into the pedestrian right or way and/or creates potential hiding places and conflict areas.

Intersections

Despite the relatively long block lengths and midblock bus stops, there are no midblock crossings along the entire stretch between Watt Avenue and Bradshaw Road of the 11 larger 4-way or T intersections, only the Watt Avenue and Bradshaw Road intersections have pedestrian crosswalks striped along each leg. Very few of the numerous T-intersections are marked with pedestrian crossings or pedestrian signage. At intersections where not all legs are striped, pedestrian crossings are prohibited at unmarked crosswalks and signage directs pedestrians to cross where striped. At marked locations, pedestrian actuation facilitates crossings. In many cases however, the buttons are not clear as to which direction they actuate.

In several locations, intersection corners have been upgraded to include vertical curbs, lessening the likelihood that a turning vehicle mounts the curb. However, in several locations, turn radii are particularly high, allowing for high speed right turns. Additionally, many curb ramps are often placed out of congruency with the actual crossing path. Several of the crosswalks are chipped and require repainting. Crossing distances at major intersections average about 90 ft. from north to south and about 82 ft. from east to west. East-west crossing distances at T-intersections from curb ramp to curb ramp average around 85 ft. This distance can be shortened by realigning curb ramps to be more in-line with actual crossing locations.

Bicycle Facilities

The corridor contains nearly continuous unbuffered Class II bike lanes along the entire stretch. In certain locations, on the approaches to a right turn, the bike lanes come to an abrupt stop. In others, the bike lane either breaks into hashed markings or, where space permits such as at Watt Avenue, continues as its own lane to the left of right turning vehicles. Similar to the pedestrian experience, the numerous curb cuts on the north side of Folsom Boulevard make continuous, unimpeded travel difficult. On the south side of the road, the bike lanes tend to be in a worse condition, littered with trash and debris, and can vary in size due to the presence of facilities and/or utilities. Signage for the presence of cyclists and the designation of bike lanes is limited.

HAZEL AVENUE TO HIGHWAY 50 INTERCHANGE

The approximately 1.15 mile stretch of Folsom Boulevard between Hazel Avenue and the Highway 50 interchange follows a similar roadway design as the segment between Watt Avenue and Bradshaw Road. The corridor carries two lanes of traffic in both directions with a semi-continuous left turn lane. In five different locations, the center left turn lane is interrupted with raised medians to limit left turn movements. Also unique to this corridor are the following: an offset midblock crossing providing access to the Hazel Light Rail Station, direct access to the American River Trail at Aerojet Drive, and only 2100 ft. of sidewalk along the entire stretch. The corridor accommodates cyclists on nearly continuous unbuffered class II bike lanes on both sides of the road. The Average Daily Trip count varies between about 6,300 and 10,000 vehicles per day, increasing toward the Highway 50 interchange. The marked speed limit along the corridor is 35 miles per hour. There is no on-

street parking allowed along this stretch. The grade is flat until a slight uphill climb to the Highway 50 interchange.

ADJACENT LAND USES

This portion of Folsom Boulevard is bordered to the north by commercial and residential uses that also tend to cluster together. The majority of the corridor, from Aerojet Drive to the Highway 50 interchange, is an expansive auto mall that contains several different retailers. Between Hazel Avenue and Aerojet Drive, commercial uses tend to be minimally set back from sidewalks, while residential areas are either fenced or walled from Folsom Boulevard The

auto mall buildings are significantly set back and surrounded by large parking lots. Adjacent land uses to the south include open space, commercial, and industrial areas. Aside from additional auto mall facilities, the south side of Folsom Boulevard includes the large Aerojet industrial facility and two smaller office parks including the Folsom Cordova Unified School District offices. Several undeveloped parcels also border the south side of Folsom Boulevard Due to the major Union Pacific and Regional Transit railroads, direct access to adjacent land uses is only available through transit centers and via driveways on roads perpendicular to Folsom Boulevard. Although there is no fencing restricting access to the south, most land uses are vehicle oriented.

Block Lengths and Sidewalks

Along the Hazel Avenue – Highway 50 interchange portion of Folsom Boulevard there are only five marked crossing opportunities, including a single mid-block crossing at the Hazel Light Rail Station. On the north, block lengths average about 940 ft. On the south, the only driveways are at the four 4-way intersections, creating blocks as long as 2,200 ft. Sidewalks are only present between the Hazel Avenue and Aerojet Dr. Intersections on the north side, and briefly at the Hazel Light Rail Station. In certain areas the sidewalk at the light rail station plaza provides separation from traffic via a landscaped buffer. The existing portions of sidewalk are in good condition with minimal cracks and few uneven surfaces.

Pedestrian Amenities and Landscaping

Due to the limited sidewalks, there are few pedestrian amenities such as benches, lighting and trashcans. Pedestrian signage is limited to directing pedestrians to cross at striped locations. The areas adjacent to the pedestrian zone vary from solid walls and fences to grassy areas and other landscaping by residential and commercial areas. Large utility poles and light fixtures encroach upon the pedestrian zone in several areas where sidewalks are present. Similar to the Watt – Bradshaw portion, this corridor is minimally landscaped and provides limited shading of sidewalks, vehicle lanes, or parking lots. The majority of the corridor's landscaping is between Hazel Avenue and Aerojet Dr. within two landscaped medians and along the north side of the road. East of Aerojet Dr. there is minimal landscaping with the only shade being provided by existing oak trees on the undeveloped parcels of land.

Intersections

The Hazel Avenue - Highway 50 interchange corridor contains four major 4-way intersections as well as several T-intersections created by long driveways. The only striped crosswalks are installed at one of the four major intersections or at the midblock crossing near Rocket Circle. At some intersections and driveways, sidewalks and ADA compliant curb ramps have been installed for short distances at corners. At others, such as at Auto Mall Circle, only vertical curbs and curb ramps are present. Finally, at others, no sidewalks, curbs, or ADA facilities have been installed, allowing for motorists to make high speed right turns. Similar to the Watt Avenue – Bradshaw Road corridor, pedestrian actuation is provided at all painted crosswalks. Additionally, at the Aerojet intersection, bicycle actuation facilitates east-west travel.

Bicycle Facilities

The corridor facilitates bicycle travel along continuous class II bike lanes on both sides of the road. On the north side of the road the bike lane is consistently 5 ft. wide except in areas where additional room is provided to facilitate right turns for motor vehicles. Signage for bike lanes includes stand-up signs and roadway markings typically just after each intersection. On the south side of the road, the bike lane is consistently 7 ft. wide and in relatively good condition free of debris. East of Auto Mall Circle, larger cracks begin to appear in the bike lane. Both short term and long term bicycle parking is provided to transit riders at the Hazel Light Rail Station.

RECOMMENDATIONS

INSTALL SIDEWALKS WITH LANDSCAPED BUFFERS

Detached sidewalks with landscaped buffers provide separation between pedestrians and rapidly moving vehicles. The landscaped buffers not only enhance the perceived and actual safety of pedestrians, but can beautify the corridor with attractive planting. Trees lining the corridor will shade sidewalks, travel lanes, and parking lots, reducing the heat island effect and shielding motorists from glare. Additionally, trees within the landscaped buffer would narrow motorists' sightlines and help to slow traffic. A new, continuous sidewalk along the south side of Folsom Boulevard will allow nearly unimpeded travel for pedestrians when compared to the driveway-laden north side of the road.

INSTALL MIDBLOCK CROSSINGS

There are several locations where midblock crossings would enhance pedestrian access across the corridor. Opportunities for midblock crossings should be considered where block lengths are particularly long and midblock transit stops or other accessible destinations are located on the south side of Folsom Boulevard Similar to the midblock crossing at the Hazel Light Rail Station, crossings should be pedestrian actuated, signed indicating pedestrian presence, two-staged, and striped with high visibility markings. Two-staged high visibility crosswalks with pedestrian actuation visually alert motorists to stop for pedestrians as they cross to destinations along Folsom Boulevard The two-staged design will minimally affect traffic flow along Folsom because only one direction of traffic will be required to stop at a time. An example of an appropriate location is at the Butterfield Light Rail station where a new crossing would provide better access to existing and future residential areas to the north.

INSTALL A LANDSCAPED MEDIAN ISLAND

Landscaped median islands narrow motorists' fields of view and provide visual friction, helping to calm traffic. Medians also limit free left turn movements which

helps to reduce the potential for head on collisions. Limited left turns also improve the pedestrian and bicycle environments by creating expectations for where vehicles will be turning from. Landscaped medians with boulevard trees will shade the roadway, helping to reduce glare, reduce the heat island effect, and beautify the corridor. Medians should be landscaped with drought resistant plants and designed to include bio swales and other sustainability features.

INSTALL CURB BULBOUTS

Curb bulb-outs not only reduce the crossing distance for pedestrians, but also reduce vehicle turn radii, requiring right turning vehicles to slow. Curb bulb-outs should be installed throughout the corridor where residential streets meet Folsom Boulevard and especially at higher pedestrian volume areas such as at Mara Del Rio and La Riviera Drives.

NARROW TRAVEL LANES

Narrower travel lanes have been shown to aid in calming traffic. Also, by narrowing lanes through s, additional room is made available for installing a wider and/or buffered bike lane or sidewalk.

INSTALL CROSSWALKS ACROSS T-INTERSECTIONS

In several locations, new east-west crosswalks along Folsom Boulevard would significantly improve pedestrian safety and comfort. With high turn radii, a lack of signage, and rapidly moving traffic, many of the corridor's T-intersections are not designed to safely accommodate pedestrian travel. High visibility and/or textured crosswalks coupled with signage will better alert turning motorists to the presence of pedestrians.

INSTALL ADVANCED CROSS BARS

Advanced stop bars encourage motorists to stop in advance of a crosswalk and provide a buffer zone between the vehicle and pedestrian. According to one study, the use of a "sign alone reduced conflicts between drivers and pedestrians by 67 percent, and with the addition of an advanced stop or yield line, this type of conflict was reduced 90 percent compared to baseline levels." Advanced stop bars along with pedestrian signage should be installed at all crosswalks along the Folsom Boulevard corridor in order to improve pedestrian safety and comfort.

INSTALL ADDITIONAL PEDESTRIAN AND BICYCLE SIGNAGE

Signage indicating pedestrian and bicycle presence conveys important information to motorists to slow down and be more aware of the more vulnerable roadway users. Other than at larger intersections there are few examples of signage indicating bicycle presence along the entire corridor. Additionally, there is no signage indicating pedestrian presence to motorists. New signage should be installed at higher pedestrian and bicycle volume areas, around transit centers, and at T-intersections.

INSTALL BUFFERED BIKE LANES

Buffered bike lanes provide cyclists with an additional level of protection from rapidly moving vehicles. Separation that includes additional striping, Bott's dots, bollards, or curbs can increase the "shy distance" between cyclists and vehicles, in some cases provide additional room for passing other cyclists without entering a travel lane, and appeal to a wider cross-section of bicycle users.

PLANT TREES

More trees along Folsom Boulevard will help to beautify the roadway, dampen traffic noise, reduce glare, and increase roadway shading. Studies also show that traffic tends to move slower on boulevards lined with trees. In addition to the environmental, traffic calming, and aesthetic benefits of landscaping, trees lower temperatures along walkways and bike paths making for a more comfortable alternative transportation environment.

INSTALL PEDESTRIAN SCALE LIGHTING

Pedestrian scale lighting improves actual security and safety concerns while also increasing the perception of safety, helping to encourage more active transportation. Pedestrian scale lighting is situated lower to the ground and spaced closely together to provide even lighting rather than alternating lit and unlit areas. Pedestrian scale lighting better alerts motorists to the presence of pedestrians and cyclists. Additionally, with decorative features, light fixtures can aesthetically improve the corridor. New lighting should include LED bulbs and solar paneling.

INSTALL ADDITIONAL PEDESTRIAN AMENITIES

Pedestrian amenities such as seating, trash cans, art work, and other features help to create a sense of place along the corridor. While seating and art can encourage active transportation by creating visual interest and place to rest, trash receptacles help to reduce litter, especially along sidewalks and in bike lanes.

IMPROVE BUS STOPS ALONG THE CORRIDOR

Particularly along the Watt Avenue – Bradshaw Road portion of the Folsom corridor, there are several bus stops that are either only identified by a sign post, or include a bench with no lighting or shelter within the pedestrian right of way. To aesthetically improve the corridor and improve both personal and traffic safety, bus stops should be improved to include ample pedestrian waiting room, a shelter, and pedestrian oriented lighting.

ADDRESS UTILITY INFRASTRUCTURE

Large utility poles and service boxes are unattractive and can impede upon the pedestrian right of way. Where feasible, utilities should be undergrounded or relocated to beautify the corridor and reduce their impact upon pedestrians. If doing so is infeasible, additional sidewalk room should be created to facilitate comfortable navigation around the poles.

Folsom Boulevard Livability Report

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

DISCLAIMER

This Crime Prevention Through Environmental Design (CPTED) assessment has been conducted for Sacramento County. The information contained herein is based on guidelines set by the National Institute of Crime Prevention Training Institute and the observations of the individual members conducting the assessment. The recommendations and strategies suggested here are intended to reduce opportunities for crime, improve quality of life, and provide for a safer environment. Full implementation of the recommendations included in this assessment cannot guarantee that Folsom Boulevard or the surrounding areas will be crime-free or totally safe without risks. Rather, this document is meant to assist in reducing the potential for incidents by providing recommendations for improving staff awareness of potential problems. The recommendations reflect our understanding of safety issues at the time of our assessment. We recognize that security, safety, emergency management and crime prevention and reduction strategies are dynamic processes. As street conditions and activities change some of the assumptions made during this review process will also change. Therefore, security process management, technology, policies and procedures should be routinely reviewed and updated to reflect changes in the environment and the expectations of the community.

STATE CONFIDENTIALITY STATUE

Portions of the CPTED report may contain confidential information that may be privileged pursuant to California Evidence Code Section 1040. Such privileged information may be potentially withheld pursuant to the California Government Code Section 6255.

Prepared by Mihaela Tomuta, WALKSacramento

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN INTRODUCTION

This Crime Prevention Through Environmental Design (CPTED) assessment is intended to inform Sacramento County's Folsom Boulevard Complete Streets Master Plan for the redesign of the County's portion of Folsom Boulevard. The Master Plan project is a partnership between the Sacramento County Department of Transportation, Sacramento County Department of Community Development, Echelon Transportation Group, and WALKSacramento. The focus of this assessment is to make specific recommendations with the goal of changing use patterns that lead to conflict and negative behaviors and hopefully reducing the opportunities for crime.

CPTED STRATEGIES

CPTED is a crime prevention strategy based on the belief that the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, as well as an improvement in the quality of life and the creation of attractive, livable, and safe places. Although CPTED techniques have been used for centuries to help design the built environment, it was not until more recently that a direct relationship between the design of urban spaces and criminal activities has been made. CPTED relies on four main strategies to reduce the fear and incidence of crime.

NATURAL SURVEILLANCE

Natural surveillance is the placement of physical features (windows, lighting, landscaping), activities (waiting for transit, sitting on a bench, walking), and people in a way that maximizes visibility of buildings, people, parking areas, and entrances. The objective is to increase the number of "eyes on the street" and create visual connections between the street, sidewalk, and nearby land uses. Natural surveillance can contribute to a reduction in crime because it increases the risk of being seen or apprehended. It can also reduce the fear of crime by reducing negative activity and increasing positive activity in an area.

NATURAL ACCESS CONTROL

Natural access control is a design strategy focused on decreasing the opportunity for crime by controlling access to and through a site by directing the flow of people. Sometimes physical barriers are used (fences, walls, doors, gates) but more often other features (walkways, fences, lighting, signage, landscaping) are used to clearly guide users. Design elements can direct users to public routes and areas and discourage access to private areas.

TERRITORIAL REINFORCEMENT

Territorial reinforcement uses physical attributes (fences, landscaping, sidewalks, and signage) to express ownership and distinguish between private and public space and define property lines. Natural users are encouraged while offenders are discouraged from using the space.

MAINTENANCE

Finally, maintenance allows the continued use of a space for its intended purpose; it can serve as an additional expression of ownership and can help maximize visibility of a space. Deterioration and debris can indicate lack of concern and control of the space, encouraging unintended uses while proper maintenance of a space can encourage intended uses.

NATURE OF RECORDED CRIME

Crime statistics from the Crime Reports database for the Sacramento County Sheriff's Department show the following crimes have been reported on or within a half mile of the project site.

- Assault-aggravated assault
- Assault- simple assault
- Breaking and entering-dwelling
- Burglary from a vehicle
- Burglary from a dwelling
- Weapons violation
- Theft from vehicle
- Unlawful camping
- Drugs/Narcotics
- Vandalism- Graffiti
- Vandalism- Defacing of property

CPTED FINDINGS AND RECOMMENDATIONS

LIGHT RAIL STATIONS

Five light rail transit centers are located along the southern portion of Folsom Boulevard, four from Watt to Bradshaw Road and one transit center at Hazel Avenue. The design of transit facilities can affect a person's decision to use transit. Several studies of transit users confirmed that safety is the highest priority at transit stops.[1] Issues of safety may arise from known or perceived criminal activity or physical hazards, such as high volumes of vehicle traffic. The former can be addressed by incorporating traffic calming strategies, such as traffic lights, crosswalks, pedestrian islands, and physical barriers between vehicles and bicyclists and pedestrians.

If amenities are provided that improve comfort and safety and reduce the fear of crime, more people will use transit. The transit centers along Folsom Boulevard are located adjacent to the sidewalk and within view of the street but many have overgrown vegetation reducing visibility and natural surveillance and creating areas of concealment. Some sidewalks and decorative paving leading up to the transit center are cracked and missing pieces. Graffiti is found on utility boxes, ticket boxes, signage, and benches. Benches are backless, flat, and solid concrete making them attractive for idling and sleeping. The material and design also makes them an easy target for graffiti and skateboarding. Although, pedestrian-scale lighting is located at each transit center some trees are located next to light fixtures blocking the illumination of the area.

LIGHT RAIL STATIONS CPTED RECOMMENDATIONS

To improve safety at light rail stations, vegetation should be trimmed or planted away from pedestrian paths and sidewalks to avoid creating areas of concealment where a person could potentially hide. No vegetation should be taller than 2 feet above the ground and no tree canopy should be lower than 6 feet from the ground. Benches and seating areas should be designed to be comfortable for sitting so that transit users can observe activities in the immediate vicinity, but not encourage idling, sleeping, or skateboarding. Blank walls and utility boxes that are susceptible to graffiti should be minimized and coated with graffiti-resistant paint.

[1] Taylor, B. D., Iseki, H., Miller, M. A., & Smart, M. (2007). Thinking Outside the Bus: Understanding User Perceptions of Waiting and Transferring in Order to Increase Transit Use. Los Angeles.

Solid concrete seating at Tiber Light Rail Station (WB). January 2016.
Source: WALKSacramento

Overgrown vegetation at Starfire Light Rail Station (WB). January 2016.
Source: WALKSacramento

Graffiti on utility boxes at Tiber Light Rail Station (WB). January 2016.
Source: WALKSacramento

BUS STOPS

Not unlike light rail centers, bus stop design can greatly affect a person's decision to ride the bus. Bus stops are the first impressions passengers get off the bus system. They define the passenger waiting area and call out the bus stop boundary. Although, several Regional Transit bus service lines run along both the north and south side of Folsom Boulevard there is only one covered bus shelter near, the Bradshaw Road intersection. All other bus stops are identified by a sign post or have an uncovered, unshaded advertising bench. Several bus stops located adjacent to light rail centers are illuminated by pedestrian-scale lighting while all other bus stops rely on street lights with no lighting within the pedestrian right of way.

BUS STOPS CPTED RECOMMENDATIONS

Bus stops can be improved by installing covered bus shelters with 360 degree visibility into and around each bus stop to minimize hiding places. Bus shelters should be oriented to ensure a clear line of sight from the direction of the approaching bus. Lighting fixtures should be covered, downward facing, pedestrian-scaled, and placed where they will not be blocked by vegetation or easily vandalize. Lighting levels should be consistent to reduce contrast between light and shadows, especially at night. The design and placement of bus stop amenities such as signage, benches, trashcans, newspaper stands, and advertising should minimize hiding places. Minimize blank walls and utility boxes that are susceptible to graffiti or where possible use graffiti-resistant paint. Vegetation should be planted away from the sidewalk or bus shelters and should be taller than two feet above the ground with tree foliage no lower than six feet so as not to create areas of concealment.

Standard bus stop design along northern segment of Folsom Boulevard.
January 2016.
Source: WALKSacramento

Bus stop design along southern segment of Folsom Boulevard. January 2016.
Source: WALKSacramento

Covered bus stop design at Bradshaw Road and Folsom Boulevard intersection. January 2016.
Source: WALKSacramento

VEGETATION

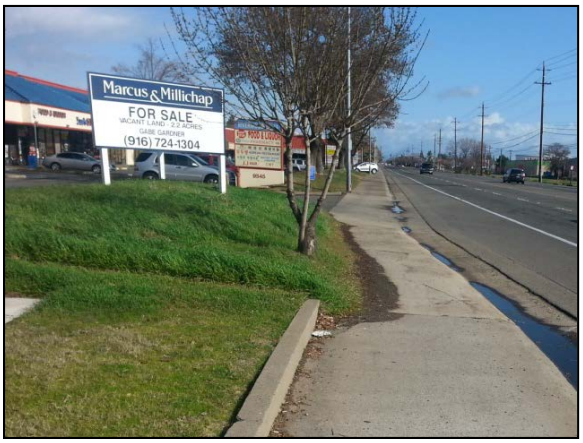
Overgrown trees and bushes were visible throughout the project site. In many areas they obstruct house numbers, business names, street signs, light fixtures, sidewalks, and sightlines. They provide hiding areas being used for camping, illegal dumping, and alcohol and drug use and contribute to a fear of crime and sense of insecurity. Open fencing that would otherwise provide natural surveillance is covered by vines, while vegetation areas adjacent to sidewalks encroach onto the sidewalk narrowing the walking path. In some instances, bushes have grown so tall and dense they completely block the view from the sidewalk, making it harder for patrons to locate businesses they might otherwise frequent and creating hiding areas.

VEGETATION CPTED RECOMMENDATIONS

Landscaping elements throughout the project area should observe the two-foot six-foot rule with no vegetation taller than two feet from the ground and no tree canopy lower than 6 feet from the ground to avoid blocking lights and to ensure clear lines of sight. Replace vegetation near blank walls, utility boxes, and other areas likely to be vandalized with ground level thorny vegetation. Remove vines and other vegetation covering fences to create clear sight lines. Use vegetation to direct foot and vehicle traffic, express ownership, define private and public areas, and reduce opportunities for crime.

Overgrown vegetation creates hiding space. January 2016.
Source: WALKSacramento

Overgrown vegetation obstructs view of storefronts. January 2016.
Source: WALKSacramento



Overgrown vegetation in planter strip encroaches onto pedestrian walkway. January 2016.
Source: WALKSacramento

Overgrown vines block sight lines through chain link fence.
January 2016.
Source: WALKSacramento

SIGNAGE

The project area suffers from a lack of signage including address plaques for businesses, wayfinding and directional signs, and traffic signs. Pedestrian signage is only located at striped pedestrian crossings. Well designed and placed signage orients users, signals a transition from a public to a private space, and reflects the intended uses of a space.

SIGNAGE CPTED RECOMMENDATIONS

To improve signage along Folsom Boulevard, install wayfinding and directional signage near intersections, in parking lots, and on building facades to direct visitors to appropriate entrances and parking lots. Use signage to convey ownership and distinguish private and public areas, deterring would-be offenders. Install prominent signage near bus stops, transit stations, and emergency telephones. Include easy to read signs at all pedestrian crossings to direct pedestrians and caution motorists. Ensure that all signs are appropriately sized and placed so they do not reduce visibility. All signs should be well-lit for nighttime viewing and made of graffiti-resistant materials.

Retail signage at the Eclectic Center. January 2016.
Source: WALKSacramento

Retail signage on windows obstructs sightlines. January 2016.
Source: WALKSacramento

Monument retail signage highlights tenants in a shopping center.
January 2016.
Source: WALKSacramento

ACCESS CONTROL

Various types of access control (fences, gates, walls, architectural barriers) are used throughout the project area to direct users and restrict access. Some chain link fences are covered with vines obstructing the view of the street and creating potential hiding areas. Along a residential segment, wooden fencing is dilapidated and has recess areas that once contained trees but are now possible hiding places. Several vacant lots are enclosed by chain link fences that have not been properly installed, making it easy to trespass and creating hiding areas along tall vegetation. On the walk audit community members expressed concern about two motor vehicle collisions that resulted in damage to residential fencing.

ACCESS CONTROL CPTED RECOMMENDATIONS

Access control features should not obstruct open site lines of the street and adjacent land uses. Where privacy and noise mitigation is not necessary, properly install open fencing with no horizontal features such as chain link or wrought iron at least 6 feet in height to deter trespassing and graffiti. Plant thorny vegetation along walls and solid fencing to prevent trespassing and separate between private and public space. Replace overgrow sidewalk planter strips with low or see-through decorative fencing or other architectural barriers to distinguish between private and public space and avoid the negative effects of overgrown vegetation. Ensure timely replacement or reconstruction of damaged or missing fences and gates to deter trespassing and reduce blight.

Improperly installed fencing allows access onto private site. January 2016.

Recessed fence design creates areas of concealment. January 2016.

Overgrown trees block sight lines of street. January 2016.

Broken fencing allows access onto private property. January 2016.

Unrepaired fencing allows access onto residential site. January 2016.

LIGHTING

Lighting is one of the most important CPTED elements in any site design. Proper lighting can improve facial recognition, provide a longer time to respond in a dangerous situation, increase the risk of committing a crime, direct movement along the street, and make people feel safer. Lighting fixtures throughout the corridor are primarily street lamps oriented towards vehicles. Light rail transit stations have pedestrian scale lighting, although not all lights are in working order and some are obstructed by trees. Only a few bus stops are illuminated by street lights or nearby properties. Lighting along the corridor is inconsistent and oriented towards vehicles rather than active modes of transportation. Sidewalks and walking paths are generally lit by street lights and adjacent properties with large gaps in lighting near vacant lots or where lighting is obstructed.

LIGHTING CPTED RECOMMENDATIONS

Lighting along the Folsom Boulevard corridor should meet standards set by the Illuminating Engineering Society of North America (IES). Illuminate all exterior areas used by pedestrians with pedestrian scale lighting. Pedestrian scale lighting improves safety and reduces the fear of crime. It can protect pedestrians and cyclists by making them more visible to motorists. Ensure that lighting options allow for clear facial and color recognition up to 20 yards away and reduce contrasts between dark and illuminated areas to avoid creating areas of concealment. Orient lighting towards designated paths of movement, parking lots, and buildings to direct visitors. Avoid lighting isolated areas where pedestrian access is restricted at night to reduce trespassing and other illegal activity. Place lighting fixtures where they are not easily vandalized and use unbreakable material.

Street scale lighting along Folsom Boulevard.
January 2016.
Source: WALKSacramento

Examples of pedestrian-scale lighting. February 2016. Source: Google

PARKING LOTS

Parking lots comprise a large volume of space along the Folsom Boulevard corridor with low levels of activity and few CPTED strategies. The majority of parking lots along the project site are open to the public with improper lighting and overgrown vegetation that creates hiding places for offenders. Parked vehicles and vegetation create areas of concealment and can obstruct lighting fixtures and light distribution creating shadows. The Bureau of Justice estimates that 1 in 10 property crimes takes place in parking lots or garages and violent crime is more likely in a parking facility than other commercial and retail areas. CPTED features are best incorporated into parking lots at the design and construction phases because it is difficult and often expensive to retrofit after construction.

PARKING LOTS CPTED RECOMMENDATIONS

Lighting is the most important safety feature in a parking lot. Lighting can deter crime and reduce the fear of crime, creating a more pleasant and safe environment. Lighting should meet standards set by the Illuminating Engineering Society of North America (IES) and should provide both vertical illuminance for signs and entry ways and horizontal illuminance. Lighting in parking lots should reduce glare and be uniform throughout the site to avoid site users passing from light to dark areas, requiring eyes to adjust. Vegetation should follow the 2 foot-6 foot rule to eliminate hiding places and maintain visibility. Parking lots should be well maintained with trash, graffiti, and alcohol containers promptly removed

to avoid the impression the parking lot is unused or unsafe. Pathways and parking stalls should be clearly marked and signage should clearly direct visitors through the parking lot.

Retail parking lots along Folsom Boulevard, January 2016
Source: WALKSacramento

CPTED RECOMMENDATIONS SUMMARY

NATURAL SURVEILLANCE

Natural surveillance is the placement of physical features, activities, and people in a way that maximizes visibility of buildings, people, parking areas, and entrances.	Light Rail Stations	Bus Stops	Vegetation	Signage	Access Control	Lighting	Parking Lots
1 *Plant vegetation away from light fixture.*	○	○	●	---	---	●	●
2 *Plant vegetation away from pedestrian paths and sidewalks.*	○	○	●	---	○	---	○
3 *Plant thorny vegetation near blank walls, utility boxes, and other restricted areas.*	○	---	●	---	●	---	○
4 *Use open fencing (chain link or wrought iron) where privacy or noise mitigation is not needed to allow for open sight lines.*	---	---	---	---	●	---	○
5 *Maintain open fencing by removing vines and other vegetation that block sight lines.*	---	---	○	---	○	---	●
6 *Replace bushes and trees with low or see through fencing between private buildings and public spaces.*	---	---	---	---	●	---	○
7 *Maintain ground vegetation no taller than 2 feet and tree canopies no lower than 6 feet from the ground.*	●	---	●	---	●	○	○
8 *Install anchored benches at transit stations oriented towards main activity areas.*	○	---	---	---	---	---	---
9 *Install anchored benches and bus shelters with 360-degree visibility at all bus stop.*	---	●	---	---	---	---	---
10 *Relocate bus stops near positive activity area.*	---	●	---	---	---	---	---
11 *Ensure retail signage covers no more than 15% of windows to allow for clear sight line.*	---	---	---	●	---	---	○
12 *Install signage with a light source and visibility from the street.*	---	---	---	●	---	---	○
13 *Provide appropriate lighting for night time visibility of road users.*	---	○	---	---	---	●	○

14	*Ensure signs have a source of light for nighttime viewing.*	---	---	---	●	---	---	○
15	*Ensure that lighting options reduce contrast and allow for clear facial and color recognition up to 20 yards away.*	●	---	---	---	○	●	●
16	*Direct lighting for parking lots, streets, and building facades downward.*	---	---	---	○	---	○	●
17	*Install pedestrian-scaled lighting along pedestrian paths and activity areas.*	●	●	---	---	---	●	●
18	*Place lighting fixtures where they will not be blocked by vegetation or easily vandalized.*	---	○	---	○	---	●	○

NATURAL ACCESS CONTROL

Natural access control is a design strategy focused on decreasing the opportunity for crime by controlling access to and through a site by directing the flow of people. Sometimes physical barriers are used to clearly guide users.		**Light Rail Stations**	**Bus Stops**	**Vegetation**	**Signage**	**Access Control**	**Lighting**	**Parking Lots**
1	*Install open fencing (chain link or wrought iron) that does not obstruct visibility, is not easily climbed, and is less susceptible to graffiti.*	○	○	---	---	●	---	●
2	*Fences, walls, and gates should be at least 6 feet tall.*	○	---	---	---	●	---	●
3	*Locate bus shelters away from parking lot entrances and exits to avoid conflicts between motorists and pedestrians.*	---	●	---	---	---	---	---
4	*Locate bus shelters at least six feet from the street so they are not barriers to bus boarding, sidewalk use and waiting areas.*	---	●	---	---	---	---	---
5	*Plant trees and bushes at ground level along sidewalks and not in raised planter beds.*	---	---	●	---	○	---	---
6	*Plant thorny vegetation along walls and utility boxes.*	●	○	●	---	○	---	---
7	*Include easy to read and well-lit signs at all pedestrian crossings.*	○	---	---	●	---	---	○
8	*Install way finding signs along the project area that call out major land marks or popular destinations.*	---	---	---	●	---	---	○

9	*Use signage to guide pedestrians through parking lots to building entrances.*	---	---	---	---	○	---	●
10	*Install signage where it is easily seen but difficult to vandalize.*	○	---	---	●	---	---	○
11	*Avoid lighting isolated areas where pedestrian access is restricted at night.*	---	---	---	---	○	●	○
12	*Use lighting to direct the movement of vehicles and people through the site.*	---	---	---	---	○	●	○

TERRITORIAL REINFORCEMENT

Territorial reinforcement uses physical attributes to express ownership and distinguish between private and public space and define property lines.		**Light Rail Stations**	**Bus Stops**	**Vegetation**	**Signage**	**Access Control**	**Lighting**	**Parking Lots**
1	*Design benches and seating areas to be comfortable for sitting but not for idling, sleeping, or skateboarding. Use materials that discourage graffiti.*	●	●	---	---	---	---	---
2	*Use thorny vegetation, T-walls, bollards, textured pavement or see-through fencing to distinguish between restricted and public areas.*	○	○	○	---	●	---	●
3	*Use blank walls and utility boxes as "blank canvases" for the art community.*	●	●	---	---	---	---	○
4	*Install posters and signs as a public outreach campaign to encourage transit riders to be aware of their surroundings and to report suspicious behavior.*	●	●	---	---	---	---	---
5	*Use signage to identify businesses and public entry points.*	---	---	---	●	○	---	○
6	*Address signage should be located at intersections, in parking lots, and on building facades to direct visitors.*	---	---	---	●	○	---	○

MAINTENANCE

	Maintenance allows for the continued use of a space for its intended purpose; it can serve as an additional expression of ownership and can help maximize visibility of a space.	**Light Rail Stations**	**Bus Stops**	**Vegetation**	**Signage**	**Access Control**	**Lighting**	**Parking Lots**
1	*Minimize blank walls and utility boxes that are susceptible to graffiti.*	●	●	---	---	---	---	●
2	*Use anti-graffiti sign materials or remove graffiti from signs in a timely manner.*	○	○	---	●	○	---	---
3	*Remove faded posters, broken signs, and other outdated displays.*	●	---	---	●	---	---	---
4	*Install signs where they are not easily vandalized.*	●	●	---	●	---	---	○
5	*Maintain tree canopies at least 6 feet above ground and maintain lower ground cover to two feet or less in height.*	●	○	●	---	---	---	○
6	*Schedule regular transit center site visits to keep up with repair, replacement, landscaping, and trash removal needs.*	●	○	---	---	---	---	---
7	*Remove non-operating vending machines from transit centers.*	●	---	---	---	---	---	---
8	*Ensure proper and regular maintenance of newspaper and vendor boxes. Restrict vendor boxes with free material, they contribute to littering and trash problems.*	●	●	---	---	---	---	---
9	*Properly install fencing and gates to prevent misuse (illegal dumping and camping and scavenging).*	---	---	---	---	●	---	●
10	*Ensure timely replacement or reconstruction of damaged or missing fences and gates.*	---	---	---	---	●	---	●
11	*Ensure that that lighting fixtures are protected from vandalism by placement, use of unbreakable materials and tamperproof hardware.*	●	○	---	---	---	●	○
12	*Ensure that lighting fixtures are properly maintained and replaced.*	●	○	---	---	---	●	○

Folsom Boulevard Livability Report

HEALTH IMPACT ASSESSMENT INTRODUCITON

The two study areas that are included in this HIA include the segments of Folsom Boulevard from Watt to Bradshaw and Hazel to Highway 50. In its current configuration Folsom boulevard has 4 lanes and a middle travel/turning lane. On the Watt/Bradshaw section there are sidewalks on the north side with some missing pavement but few sidewalks on the southern side. Bike lanes are present on both sides of the street along this segment. On the Hazel to Highway 50 section there are sidewalks and bike lanes on the north side of the road from Hazel to Aerojet but no bike lanes or sidewalks on the southern side.

The complete streets plan includes removing the semi-continuous center turn lane to add a 12 foot landscaped median, adding a 4 foot buffered bike lane on both sides, adding a 6 to 8 foot landscape strip and a 6 to 8 foot sidewalk on both sides of the road. In addition to the streetscape design there are Specific Plans for Transit Oriented Design (TOD) improvements around transit stations in order to create areas of high density that mix commercial, residential and employment areas. However, the goal of this Health Impact Assessment (HIA) is to examine the health implications of turning Folsom Boulevard into a complete street.

HEALTH IMPACT ASSESSMENT BACKGROUND

HIA is “a systematic process that uses an array of data sources and analytical methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program or project on health of a population and the distribution of those impacts within the population. HIA provides recommendations on monitoring and managing those effects”
(National Research Council, 2011). While HIAs are similar to Environmental Impact Assessments (EIA), EIAs only examine limited mandated health aspects, whereas in a HIA, health outcomes are extensively evaluated and are the main focus of a comprehensive evaluation.

An HIA provides information on how a project or policy might affect health, and where possible quantifies the magnitude and probability of these impacts. Thus, HIA can

objectively evaluate potential health impacts in advance and lead to recommendations to increase positive and minimize adverse health outcomes. A major benefit of HIA is in their ability to bring public health issues to the attention of decision-makers in areas where they may not have been considered before.

Special consideration for HIAs of built environment projects may include impacts on the economic vitality of the area, impacts on natural ecosystems, quality-of-life, transportation for the region as a whole, and fit with other development plans. Without considering the distribution of impacts, a decision may unintentionally result in an unequal distribution of benefits and/or burdens. With an HIA it is especially important to gauge the health impacts across different groups since those most affected by the changes often come from marginalized communities and usually have fewer resources and options for coping with negative health impacts. HIA practitioners recognize the importance of identifying vulnerable populations and developing recommendations to promote equity. Involving these groups in the process can help raise awareness of how decisions can lead to health impacts and prevent exclusion of certain stakeholder groups.

The HIA process allows for the integration of science-based methods and input from the population affected by the decision so that pragmatic solutions can be developed to address common issues. The information collected during the HIA may come from a variety of sources and levels of certainty. HIA practitioners use the best available evidence and science-based methods to manage and present the information in an ethical and transparent manner.

HIA PROCESS

There are six major steps in the HIA process: Screening, Scoping, Assessment, Recommendations, Reporting and Monitoring and Evaluation. (North American HIA Practice Standards Working Group 2010, Human Impact Partners 2011, 2012, NRC 2011, R. Bhatia 2011).

STEP	Description
Screening	Determines whether HIA is an appropriate approach to evaluate the pending decision and whether the HIA will provide information useful to the stakeholders and decision-makers. The proposal, any decision alternatives and the anticipated added value of the HIA are explicitly identified.
Scoping	Establishes the purpose, goals and team that will perform the HIA. Boundaries of the assessment are defined, including the geographic area, timeframe the HIA will be completed, health impacts that will be appraised and the population and vulnerable sub-groups that will be

	impacted by the proposal.
Assessment	Involves a two-part process that a) describes the existing (baseline) status of health and related factors, and b) forecasts potential impacts that may result from the decision. A variety of data sources and analytical methods are used.
Recommendations	Identifies actions or strategies to manage the health impacts of the decision, if any are predicted. Recommendations are developed to maximize potential benefits and minimize or avoid potential adverse impacts.
Reporting	Documents the HIA activities, materials developed and communicates the findings and recommendations of the HIA to stakeholders and the public.
Monitoring and Evaluation	Involves (or provides a plan for) follow-up activities that track how the HIA was implemented, the result of the decision and impacts of the decision. Evaluations should be included that assess the HIA's impact on the decision and/or decision-making process (i.e., impact evaluation), whether the HIA met its intended goals/objectives and practice standards (i.e., process evaluation), and whether decision affected health (i.e., outcome evaluation).

SCREENING

Folsom Boulevard was selected for a HIA because of its currently underutilized auto-centric design, lack of bike and pedestrian facilities, access to public transit, and expected growth which will likely have a significant impact on the people who currently live and work along Folsom Boulevard or who move or work there in the future. Due to the several potential health impacts that may be expected, an HIA was warranted.

SCOPING

The geographic area assessed includes the portions of Folsom Boulevard from Watt to Bradshaw and Hazel to Highway 50. The health impacts analyzed include physical activity, perceived safety, injury, social capital, air pollution, water pollution, noise pollution, access to greenspace, social capital, access to services, goods and jobs, and economics.

ASSESSMENT

In addition to field assessments, this HIA analyzed previous HIAs of similar scope, planning documents for this area, and a range of qualitative and quantitative data. All health

outcomes were scored based on six criteria, direction, likelihood, magnitude, permanence, distribution and strength of evidence. Direction can either be positive such that the potential change to the health determinant will benefit health, negative in that the potential change to the health determinant will detract from health or both positive and negative impacts are expected.

Likelihood refers to whether it is highly likely the project will impact health outcomes, plausible that it will impact health outcomes or unlikely that it will impact health outcomes. Magnitude is rated as high where the project will impact many people beyond those on the street, moderate where the project will impact mostly the people using the street or low such that the project will impact only a very few number of people. Permanence is rated as long lasting (many years); moderate (a few years) or the effects can be quickly and easily reversed. The distribution examines if vulnerable populations benefit or are harmed by the project. The strength of evidence is considered strong when there are many consistent studies or a cause-effect pathway is generally accepted, limited where there are a few good studies showing an association between the factors but some controversy exists or rated as lacking where the health impacts only follow a logical order. For each outcome examined 3 questions were asked 1) What influences the outcome examined 2) how does the outcome examined influence health 3) What will the proposed project do to the outcome examined.

PHYSICAL ACTIVITY

WHAT INFLUENCES PHYSICAL ACTIVITY?

Many factors influence physical activity including individual factors, social factors, the physical environment and policy. This review will focus mainly on the built environment factors that will impact transportation related physical activity. Research has shown that people will walk on average of ½ mile to reach a destination (Schlossberg et al, 2007; Yang & Diex-Roux, 2012). However, when destinations such as grocery stores, schools and restaurant are too far away, walking is not a convenient choice (McCormack & Shiell, 2012; Bauman & Bull, 2007; Ewing & Cervero, 2010; Saelens & Handy, 2008). Land-use, connectivity and density all affect people's abilities to walk to destinations (McCormack & Shiell, 2012; Saelens, Sallis & Frank, 2003). Compact, mixed-use developments with short blocks encourage walking, cycling and taking public transportation which are all associated with higher levels of physical activity. Among workers In the San Francisco Bay area people living in transit oriented neighborhoods made 70% more transit trips and 120% more pedestrian/cycling trips than people living in automobile centric neighborhoods (Cervero & Gorham, 1995). On average people who take public transportation get an additional 21 minutes of physical activity a day (Freeland, Banerjee & Dannenberg, 2013).

While driving has been shown to be related to decreased physical activity and an increase in BMI, street design is also a key element to increasing active transportation (McCormack &

Verk, 2014). The presence of sidewalks, a gridded street pattern, crosswalks, traffic calming measures, lighting and aesthetics are all increase the likelihood that someone will walk, cycle or take public transportation (Heath et al., 2006). A 5% increase in walkability was found to be associated with a 32% increase in time spent engaging in physically active travel, a .23 point reduction in BMI and 6.5% fewer vehicle miles traveled in King County, WA (Frank et al., 2006). Saelens and colleagues (2003) found that people living in walkable neighborhoods averaged an additional 30 minutes of walking for transportation each week. Khattic and Rodriguez (2005) determined that people in neo-traditional neighborhoods made 17.2% of their trips by walking compared to 7.3% in conventional neighborhoods.

In addition, The Task Force on Community Preventive Services, which is an objective review by a panel of experts, determined that two environmental and policy approaches have sufficient evidence to increase physical activity. Those two approaches are (1) community-scale urban design and (2) street-scale urban design. Community-scale urban design is defined as design and land use policies and practices that support physical activity in geographic areas, generally several square kilometers in area or more. Street-scale urban design is defined as design and land use policies that support physical activity in small geographic areas, generally limited to a few blocks. Street-scale and community-scale urban design interventions are expected to have a greater effect on walking and or biking for transportation as opposed to other types of physical activity.

HOW DOES PHYSICAL ACTIVITY IMPACT HEALTH?

One out of every two adults in the U.S. suffers from a chronic disease such as diabetes, heart disease or cancer (Ward, Shiller & Goodman, 2014). Physical activity can both help prevent and help treat chronic disease (Physical Activity Guidelines Advisory Committee, 2008; Centers for Disease Control and Prevention, 1996). Physical activity is associated with improved quality of life, emotional well-being and academic achievement. Physical activity is also associated with reduced mortality; individuals who are active have a 30% lower chance of premature death (Physical Activity Guidelines Advisory Committee, 2008). Reviews of 30 modeling studies have shown that the benefits of walking and cycling outweigh the risks of exposure to air pollution or crashes (Doorley et al., 2015; Mueller et al., 2015; Teschke et al., 2012).

WHAT WILL THE PROPOSED PROJECT MEAN FOR PHYSICAL ACTIVITY?

Many aspects of the plan are highly likely to increase physical activity including adding a green median, sidewalks, bike lanes, lighting, and a green buffer. The magnitude will be moderate and will likely only impact people who live or work adjacent to Folsom Boulevard The permanence will be long lasting as long as the improvements are maintained. Vulnerable populations such as children, the elderly, people with disabilities, and low

income individuals will likely benefit the most from the improvements. The evidence base for many of the improvements is strong and have been considered sufficient for increasing physical activity by the Task Force for Community Preventive Services.

STRATEGIES CRITERIA	SCALE
Likelihood	Highly likely
Direction	Positive
Magnitude	Moderate
Permanence	Long lasting
Distribution	Vulnerable populations will benefit
Strength of evidence	Strong

ACCESS TO GREENSPACE

WHAT INFLUENCES ACCESS TO GREENSPACE?

Access to greenspace is highly dependent on where people live and work. Both quality and availability of greenspace must be taken into consideration, especially in low income communities. Several equity issues have been found with access to parks and greenspace. The National Housing Federation found that those in less affluent areas had only one-fifth the access to local parks compared to those in more affluent areas (Wheeler, 2011). In addition to access, the quality of greenspace can also influence the utilization of that space (Lee & Maheswaran, 2010). This is critical since the relationship between access to greenspace and health has been found to be stronger in children, the elderly and those with lower incomes, most likely because they spend more time closer to home and in their neighborhoods (Maas, van Dillen, et al. 2009). This is an important issue to address, considering those who would stand to benefit the most from high access to greenspace are typically those who also have the least access (Lachowycz & Jones 2014).

HOW DOES ACCESS TO GREENSPACE IMPACT HEALTH?

Researchers are finding increasing evidence that the amount of nature or greenness in an area is linked to health status, especially among certain groups. Researchers believe that the natural environment provides a form of involuntary attention requiring effortless interest, a sense of escape from one's usual settings, a sense of being part of a greater

system, and compatibility with one's individual needs from that environment (Wilson, 1984, Frumkin, 2001). Aesthetically pleasing urban landscape with trees and greenness encourages social interaction and healthy behaviors and attitudes. The natural environment has been shown to have an independent influence on mental health and health behaviors (Mitchell & Pompham, 2008).

Lack of access to greenspace has been linked to mortality, morbidity and mental health in several studies. A study performed in urban areas of Canada found that individuals who lived in areas that were more green had lower mortality rates over two decades than those living in less green areas (Villevue et al., 2012). Five year survival for senior citizens improved when there was space for taking a stroll near their home and that space had parks and tree lined streets (Takano, Nakamura & Watanabe 2002). Maas et al. (2009) looked at morbidity data from primary care physicians in the Netherlands and found that those living in an area with a higher percent of greenness had lower prevalence of certain diseases (e.g., coronary heart disease, depression. anxiety disorder, upper respiratory tract infection, asthma, migraine/severe headache, etc.) than those living in less green areas. In their study, they found that increasing greenness by 1 percentage point yielded an effect of 1 year lowered age on physician-assessed morbidity.

Both running and walking in greener settings has been linked to reduced mental fatigue and increased recovery from mental fatigue (Bodin & Hartig, 2003; Hartig, Mang & Evans, 1991). Reported populations particularly sensitive to the benefits of the natural environment include those with lower income and lower educational attainment, youth, and the elderly (Lee and Maheswaran 2010).

Greenspace has also been linked to an increased utilization of public space and higher perceived safety and security. In a public housing development in Chicago, where residents were randomly assigned to apartments, researchers found that those living in buildings with more vegetation felt safer and had higher rates of attentional restoration, less overall aggression and psychological aggression, less cases of mild violence and severe violence, and used fewer aggressive actions against their partners and children, than residents living in buildings with less vegetation (Kuo & Sullivan, 2001). The use of public space and improved attitudes encourages a social atmosphere of friendliness and being physically active outdoors.

WHAT WILL THE PROPOSED PROJECT DO TO ACCESS TO GREENSPACE?

While the strength of the evidence linking green space to health is strong, exposure to the green space will depend on how much time people are exposed. It is plausible that the additional green infrastructure proposed within the Master Plan will have a positive impact

on health. The health benefits of the Project are expected to last the life of the green infrastructure element as long as routine maintenance is performed. The people most affected will be those that work and live along Folsom Boulevard and people who will have the greatest benefit include low-income earners young children, and older adults.

STRATEGIES CRITERIA	SCALE
Likelihood	Plausible
Direction	Positive
Magnitude	Moderate
Permanence	Long lasting
Distribution	Vulnerable populations benefit
Strength of evidence	Strong

NOISE POLLUTION

WHAT INFLUENCES NOISE POLLUTION?

Environmental features affect the amount of ambient noise and there are typically high levels of noise in areas with high levels of traffic and/or industrial complexes. In addition, noise generated at the street can be reflected off buildings and hard surfaces (e.g., pavement and concrete) and projected out into the nearby residential areas. Traffic noise is a major contributor to environmental noise pollution. The level of highway traffic noise depends on three factors: (1) traffic volume, (2) traffic speed, and (3) number of trucks in the flow of traffic (Federal Highway Administration, 2004). Generally, noise levels increase with heavier traffic volumes, higher vehicle speeds, and a greater numbers of trucks.

One way to reduce noise pollution is with vegetated barriers which block sound waves from moving out through a neighborhood (Bolund & Hunhammar, 1999). Greening urban areas has been found to influence traffic noise-related health problems among residents. Researchers have found that greener areas had fewer residents who perceived traffic noise as a neighborhood problem (Gidlöf-Gunnarsson & Öhrström 2007). Residents in Sweden who were lived by noisy streets and had no access to a “quieter side” of a residence benefited more from greener areas, reporting less symptoms of being very tired, irritated/angry, and feeling stressed (Gidlöf-Gunnarsson & Öhrström, 2007). Designing residences with more grass or lawn between the residence and the street, compared to

using pavement or concrete, can reduce the reflection of road sounds towards the residence (SOU, 1993).

HOW DOES NOISE POLLUTION IMPACT HEALTH?

According to the Commission of the European Communities (1996), ambient noise levels above 65 decibels are considered unacceptable by health experts due to the adverse impacts to behavior and attitudes, sleep disturbance, cardiovascular and psycho-physiological systems. Levels above 70 decibels have been found to induce hearing impairment, high blood pressure, and changes in the cardiovascular system, interfere with communication and social behavior, increase annoyance and sleep disturbance and lower performance and productivity (Passchier-Vermeer & Passchier 2000, Berglund & Lindvall 1995). Berglund and Lindvall (1995) concluded that "to protect the majority of people from being seriously annoyed," sound pressure from steady, continuous noise in outdoor living areas should not exceed 55 decibels during the day and 45 decibels s at night.

Noise pollution has also been shown to have significant impacts in children. Lercher and colleagues (2002) found a significant association between GIS-modeled noise exposure at home and mental health indicators among those who had pre-existing birth complications (e.g., pre-term and low birth weight). Exposure to constant ambient noise or periodic levels of noise above 55 decibels have been associated with changes in behavioral and mental activities, as well as lowered cognitive performance among school-aged children (Shield & Dockrell 2003, WHO, 2009).

Ambient noise has also been linked to the serenity or peacefulness of a community. A lack of that peacefulness or ability to find a quiet place for rest and relaxation has been closely tied to noise-related health problems. Gidlöf-Gunnersson and Öhrström (2007) revealed in their study that residents in urban neighborhoods with higher traffic noise reported that noise frequently diminished their desire to stay outdoors.

WHAT WILL THE PROPOSED PROJECT DO TO NOISE POLLUTION?

Traffic speed is expected to decrease since the new streetscaping will create a sense of enclosure for drivers. The number of trucks on Folsom Boulevard will likely depend on what new businesses relocate to the area, which is difficult to estimate. The vegetative plantings and landscaping will provide a buffering effect against noise traveling from the street out into the community, which may reduce the ambient noise levels. However, it is unclear whether noise coming from the street is currently an issue for current residents.

It is important to note that noise pollution will be generated from construction however those effects will be short term. Most of the benefits from the expected noise abatement

are anticipated to be felt by those on the street and living and working in properties that are in close proximity to Folsom Boulevard. Persons who are more sensitive to traffic noise, such as young children and those with pre-existing conditions will benefit more from the predicted noise abatement.

Over the long term it is expected the changes to Folsom Boulevard might reduce exposure to environmental noise pollution emanating from vehicular traffic, which would translate into positive changes in the health of residents and workers who spend a substantial amount of time in the area. However, there are several uncertainties such as the current level of noise pollution, the increase in vehicular traffic and the change in the vehicle fleet. The likelihood is plausible since there are many uncertainties but the literature linking noise pollution to health is robust. Vulnerable populations would benefit most from the reduction in noise pollution.

STRATEGIES CRITERIA	SCALE
Likelihood	Plausible
Direction	Positive
Magnitude	Moderate
Permanence	Both short and long lasting impacts
Distribution	Positive impact for vulnerable populations
Strength of evidence	Strong

AIR POLLUTION

WHAT INFLUENCES AIR POLLUTION?

Sources of air pollutants can be natural and/or from human activities (U.S. EPA, 2012). Most air pollutants are from human made sources, including mobile sources (e.g., motor vehicles, trains, etc.) and stationary sources (e.g., factories, refineries, power plants, etc.) (U.S. EPA, 2014). Motor vehicle emissions contribute approximately 56% of total carbon monoxide emissions in the U.S. (U.S. EPA, 2012). According to the Sacramento County Climate Action Plan Strategy and Framework (2011), on-road transportation accounts for 41.4% of greenhouse gas (GHG) emissions, including emissions of carbon dioxide, the most prevalent GHG.

Greenspace also influences air quality. Plants, such as grasses, bushes and trees, can influence the levels of ambient air pollutants in multiple ways. Trees are the most efficient at filtering the air, followed by shrubs, then grasses (Givoni, 1991). One mechanism, in which plants remove pollutants from the air, is the filtration of the ambient air via gas exchange through leaf stoma. Another mechanism involves small particles falling on to the surface of plants. From there, pollutants can be washed to the ground by precipitation or re-suspended in the air. Plants can also offer a physical barrier to the dispersal of pollutants in the ambient air.

With respect to development, Schweitzer and Zhou (2010) examined neighborhood emissions and exposures in 80 metropolitan areas across the United States to determine whether air quality outcomes are better in compact regions or in regions characterized by sprawl. They found that ozone concentrations are significantly lower in compact regions but human exposures to ozone were higher. Fine particulate concentrations did not correlate significantly with compactness but exposures to fine particulates were higher in compact regions. Schweitzer and Zhou (2010) concluded that compact development does not necessarily solve air quality problems for a particular region.

HOW DOES AIR POLLUTION IMPACT HEALTH?

There is sufficient evidence that supports the causal relationship between the quality of outdoor air and specific health outcomes. Air pollution has been linked to both morbidity and mortality in numerous studies. A study in Europe found that daily death rates rose by 0.3% overall and by 0.4% for deaths related to heart disease per 10 µg/m3 increase in ozone exposure (WHO, 2006). The U.S. EPA performed an extensive review of the literature and found a positive link between short-term exposure to PM2.5 and a number of health outcomes, including cardiovascular disease, respiratory symptoms and pre-mature deaths. Ozone has been linked to breathing problems and exacerbates symptoms of chronic respiratory diseases and reduced lung function (WHO, 2006). Exposure to ozone for 6 to 7 hours, even at relatively low concentrations, significantly reduces lung function and induces respiratory inflammation in normally healthy people (U.S. EPA, 2012; WHO, 2006). Nitrogen dioxide (NO2) reduces lung function growth and can lead to increased trips to the emergency room or hospital for difficulty breathing (U.S. EPA, 2014). Carbon monoxide (CO) can lead to reduced oxygen delivery to the body and vital organs. The loss of oxygenated blood can lead to headaches, dizziness, nausea, and oxygen starved muscle. Long term exposure or high exposures over a short amount of time can even cause death (U.S. EPA, 2012). Persons most vulnerable to the effects of air pollutants are those with pre-existing respiratory conditions, pregnant women, the elderly and young children (U.S. EPA, 2012).

WHAT WILL THE PROPOSED PROJECT DO TO AIR POLLUTION?

Air pollution is expected to increase during the construction phase of the project. Much of this can be mitigated with appropriate technologies such as water misting and plastic covers on rubble piles. More difficult to control and probably more harmful are the diesel emissions produced by construction machinery. Especially of concern are the small particulates (PM_{10}) found in diesel exhaust that has been linked to both morbidity and mortality (Dockery & Pope, 1994; Kunzli et al., 2000; South Coast Air Quality Management District, 2001). Ambient levels of these particulates quickly decrease to background even several hundred meters from the source, therefore they are of most concern in the immediate project area (Zhu, Hinds, Kim & Siotus, 2002).

The added trees, bushes and grasses provide natural mechanisms that will filter some air pollutants from the adjacent street. However, the efficiency in removal of air pollutants depends on the species, number, and placement of the plants along the proposed project site. The ability of the plants to capture and/or filter pollutants form the air will last a long time if the vegetation is healthy and well maintained. There is strong causal evidence on the pathways of impact between the different air pollutants and health outcomes.

In addition, after construction, Folsom Boulevard will become more walkable which will likely lead to an increase in walking and cycling (Federal Highway Administration, 2014; Mumford et al., 2011). The Nonnotarized Transportation Pilot Project concluded that shifting mode share could potentially result in lower emissions of carbon dioxide, hydrocarbons, nitrogen oxide, carbon monoxide and particulate matter. Air pollution could also be affected by the percentage of the regional vehicle fleet that, overtime, shifts to include more hybrid or electric cars. The impact is expected to be moderate, impacting mainly the people who live or work adjacent to Folsom Boulevard. Impacts will both be short term (during construction) and long term (after construction). Improving local air quality will have the greatest benefit for vulnerable populations including asthmatics those with pre-existing respiratory health conditions, the elderly and youths.

STRATEGIES CRITERIA	SCALE
Likelihood	Highly likely
Direction	Both positive and negative
Magnitude	Moderate
Permanence	Both short and long term
Distribution	Vulnerable populations benefit
Strength of evidence	Strong

SOCIAL CAPITAL

WHAT INFLUENCES SOCIAL CAPITAL?

Social capital refers to "the benefit that individuals and communities derive from having social contacts and networks throughout their communities and is based on the notion that individuals who interact with each other will support each other to the benefit of the entire community" (ENTRIX, Inc. 2010). Social capital has been defined by two categories – bridging and bonding social capital. Bridging capital is the existence of community linkages while bonding capital concerns the trust, mutual help, and reciprocity in the community (Wind, Fordham & Komproe, 2011).

There is an increase in research that ties economic development, economic inequality, and geopolitics as having direct effects on social capital as it relates to large-scale cooperation (Robbins 2013). An increase in social capital can also be attributed to an increase in vegetation and green spaces through the 'high road' approach, which is a scalable economic development strategy to build a society characterized by environmental sustainability, shared prosperity, and democratic governance (ENTRIX, Inc. 2010). High road standards result in substantial, measurable, and long-term economic, environmental, and social benefits (Gordon et al., 2011).

HOW DOES SOCIAL CAPITAL INFLUENCE HEALTH?

There are some contradictions in the literature regarding the effect of social capital on health outcomes. Some research shows that social capital acts as a buffer during economically difficult times regardless of social status of the public but there is not enough evidence upon which to make predictions. While the literature expresses the need for further research in aspects of social capital, the existing contradictions point to the complexity of social capital and how health outcomes may be dependent upon other variables. Although there is research that directly links social capital to health outcomes, some research has found that social capital has less direct contribution on health than other variables. For example, when social capital is considered with greening the environment, the changes in health outcomes are more a result of the change in environment (Modie-Moroka, 2009). Vegetation is also associated with reduced crime rates, potentially due to increased social capital or potentially due to a direct effect on behavior (ENTRIX, Inc,. 2010). The effect of social capital on health has been repeatedly proposed to be mediated through health behaviors, specifically physical activity (Nieminen, et al. 2013). Nieminen et al. (2013) found "that the direct effect of social capital on health becomes weaker if physical activity is included in the model." Efforts that support more sustainable transport modes, including walking and bicycling, increase the opportunity for residents and visitors in the community to interact and develop social ties and bonds and be more physically active outside.

WHAT WILL THE PROPOSED PROJECT DO TO SOCIAL CAPITAL?

With the mixed literature it is plausible, but not highly likely that the proposed project may improve social capital by making Folsom Boulevard a more pleasant place to walk, cycle and take public transportation as well as increasing vegetation. The proposed project could also help lead revitalization, which encourages further investment into the community. Strengthening social capital could have a positive health impact because a strong presence of social capital can protect individuals and a collective community against hardships and build capacity to address issues. Increasing the opportunity to develop social capital will affect a moderate number of people, specifically those who live in the proposed project site. The social benefits of the proposed project are expected to be long lasting as long as the infrastructure is maintained. Vulnerable populations who are more sensitive to social conditions and connectivity to other people and services, such as children and the elderly are expected to benefit.

STRATEGIES CRITERIA	SCALE
Likelihood	Plausible
Direction	Positive
Magnitude	Moderate
Permanence	Moderate
Distribution	Vulnerable population benefit
Strength of evidence	Limited

PERSONAL SAFETY

WHAT INFLUENCES FEELINGS OF PERSONAL SAFETY?

Although physical activity interventions which encourage walking are often successful, barriers exist that may affect physical activity levels for some populations. One commonly cited barrier is the concern for personal safety when walking in neighborhoods with high crime levels and social disorder such as blight. Regardless of whether these perceptions are true, they have a profound impact on an individual's activities. Women, people of color, and

the elderly are populations whose walking levels have been impacted by fears of crime and neighborhood disorder (Loukaitou-Sideris, 2003).

In one study, researchers observed a higher prevalence of inactivity among those who perceived their neighborhoods as unsafe (Weinstein et al., 1999). Another study showed that environmental barriers to walking such as concern for safety are higher among lower-income neighborhoods (Craig et al., 2002). Although fear of crime can act as a barrier to walking, in some neighborhoods residents continue to walk out of necessity or because of other walkability components of the built environment (such as high densities or mixed-use) in their neighborhood.

In recognition that crime and perceived insecurity can act as a barrier to walking for physical activity, interventions which seek to increase social and physical order in high crime neighborhoods through physical design and/or infrastructure change have become popular. For example, Crime Prevention through Environmental Design (CPTED) goals are to increase community accountability and to reinforce the boundaries of public and private space in order to discourage criminal activity and encourage safe, social interaction. The management of natural elements can be an important aspect to crime prevention. CPTED is thought to help differentiate between public and private property and enhance the pedestrian environment (Carter, Carter & Dannenberg, 2003). Not maintaining natural elements in an urban community, however, can provide opportunities for crime. Tall, overgrown bushes provide cover for assailants. Low visibility from the road greatly reduces the number of people who can observe pedestrians and businesses on the sidewalk. Routine landscaping can ensure the green infrastructure elements and prevent opportunities for crime.

Jane Jacobs (1961) was the first to describe the concept of “eyes on the street,” where a greater density of residents and different land uses may enhance feelings of safety and deter criminal activity by increasing the presence of pedestrians and everyday visual surveillance. Ross and Mirowski (2000) found that people who lived in the city of Chicago were more likely to walk than were residents of the suburbs, small towns, and rural areas. She hypothesized that increased density allows for walking for transport and applied Jacobs’ concept of “eyes on the street” to describe how an organic process of community interaction and involvement works to counteract fear for personal safety. By decreasing crime and feelings of vulnerability, CPTED and similar design features encourage alternative forms of transportation.

Leyden’s (2004) research on social capital and walkable neighborhoods found that people living in walkable, mixed-use neighborhoods had higher levels of social capital than those in car-oriented suburban areas. The residents in more walkable communities were more likely to trust others, be socially engaged, be politically active, and know their neighbors. Increased levels of walking reinforce social capital by facilitating neighborhood social interaction which decreases perceptions of danger.

The amount of greenness in an urban community has also been linked to the amount of crime that is committed in that area (Snelgrove, et al., 2004). Greenness of common spaces has been linked to decreased aggression and violence, lower mental fatigue, higher resiliency to stressful life events and the ability to adjust. Mental fatigue and aggression are precursors to conflict behavior. Preventing or reducing these behaviors may improve perceived safety/security and reduce the amount of crime.

HOW DOES PERCEIVED SAFETY INFLUENCE HEALTH?

Crime levels and insecurity are social factors that can influence mental stress which affects many physical and mental health outcomes. Increased social disorder has been linked to increased fear of crime, risk of mental health disorders, and the severity of depression among adults (Ross, 2000; Kim, 2008). Over time, the stress from crime or fear of crime in a community can cause poor physical health (e.g., hypertension, cardiovascular disease, immune dysfunction) (Latkin & Curry, 2003, McEwen 2008; Glaser & Kiecolt-Glaser, 2005). Fear of crime can also lead to decreased levels of physical activity for people who don't feel safe walking or cycling in their neighborhood, further compounding the negative health impacts related to chronic diseases.

Youth and young children, who are often the recipients of violent crimes, are highly susceptible to the influences of the social environment and stress (Administration on Children Youth and Families, 2012). Persons who have been victims of a crime in the past are also more likely to be affected by perceived safety/security and actual crime rates than non-victims.

WHAT WILL THE PROPOSED PROJECT MEAN FOR SAFETY?

It is plausible that the proposed project will reduce the risk of crime by improving behaviors and attitudes through enhanced walkability, improved aesthetics, reducing surface temperatures and providing an appealing and natural landscape. Implementing measures to prevent crime and improve perceived security will promote health by reducing the risk of injury from crime, reduce stress and stress-related illness from a lack of security, and improve perceived overall wellness. Improvements in actual and perceived crime will affect a moderate number of people, specifically those who pass along Folsom Boulevard and can visibly see the changes made to the area. If the plants are allowed to overgrow (not properly maintained) or CPTED measures are not implemented, the benefits of reducing crime can be quickly and easily reversed. Persons who are more vulnerable to crime are more likely to benefit from a reduction in crime.

STRATEGIES CRITERIA	SCALE
Likelihood	Plausible
Direction	Positive
Magnitude	Moderate
Permanence	Long lasting
Distribution	Benefit vulnerable populations
Strength of evidence	Limited

INJURY

WHAT INFLUENCES INJURY?

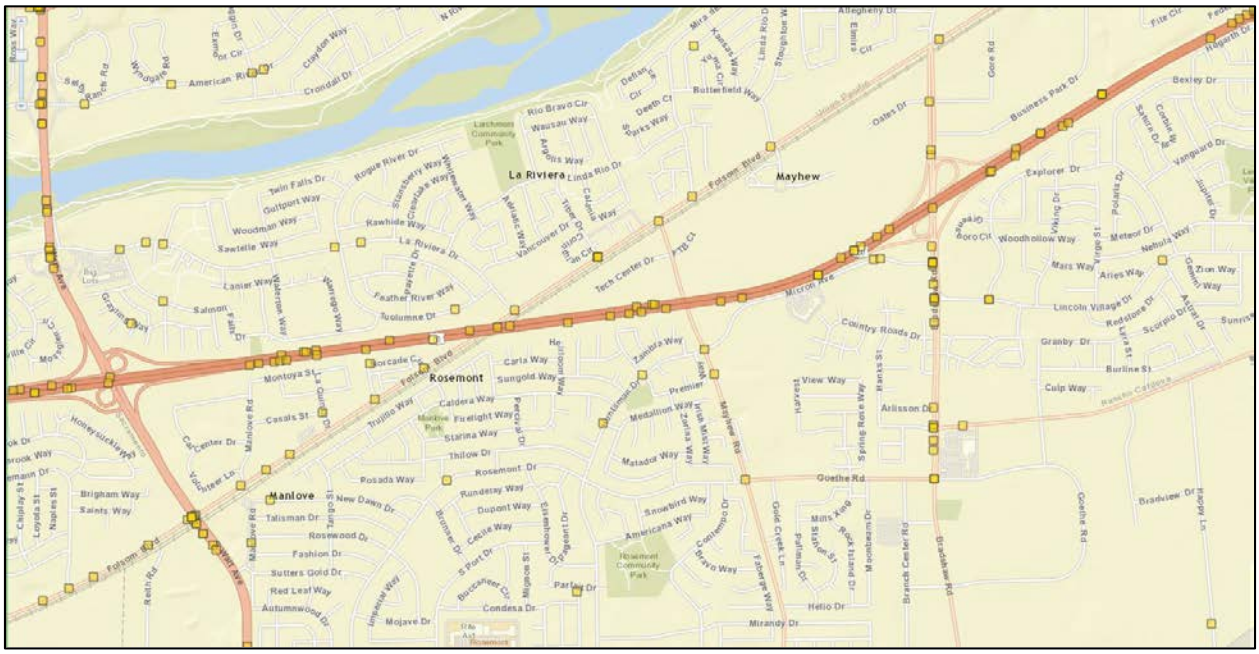
Transportation routes are traditionally designed to move people and goods efficiently, which may or may not include the safest measures for pedestrians and cyclists. The National Highway Traffic Safety Administration (NHTSA) conducted a national telephone survey in 2012, which found that poor quality of street facilities was the leading cause of pedestrian injury. There is growing awareness that transit corridors need to meet the needs of all modes of transit. Researchers and city planners are finding that streets can be designed to help minimize adverse impacts to health and increase safety in addition to meeting transportation needs (CDC, 2011). The more cyclists and pedestrians in an area has also been linked to increased safety. This has been called the "safety in numbers" effect and is likely due to the fact that motorists are more likely to pay attention in areas where there are larger number of people walking and cycling (Jacobson, 2003; Pucher & Handy, 2010; Elvik, 2009). In addition, reducing the lane width can also serve to slow down traffic. USDOT (2007) found that decreasing a lane from 12 feet to 10 feet results in a 6.6 mph decrease in speed.

The current speed limits along Folsom Boulevard are 45 mph from Watt to Bradshaw and 35 mph from Hazel to Highway 50. Additional proven safety measures include reduced speed limits, speed bumps, pedestrian crossing infrastructure (e.g., painted crossing zones, crossing counters, street lighting, etc.), reducing the number of driveways, separated bike lanes, safety signage, and traffic calming practices (Heath, et al., 2006).

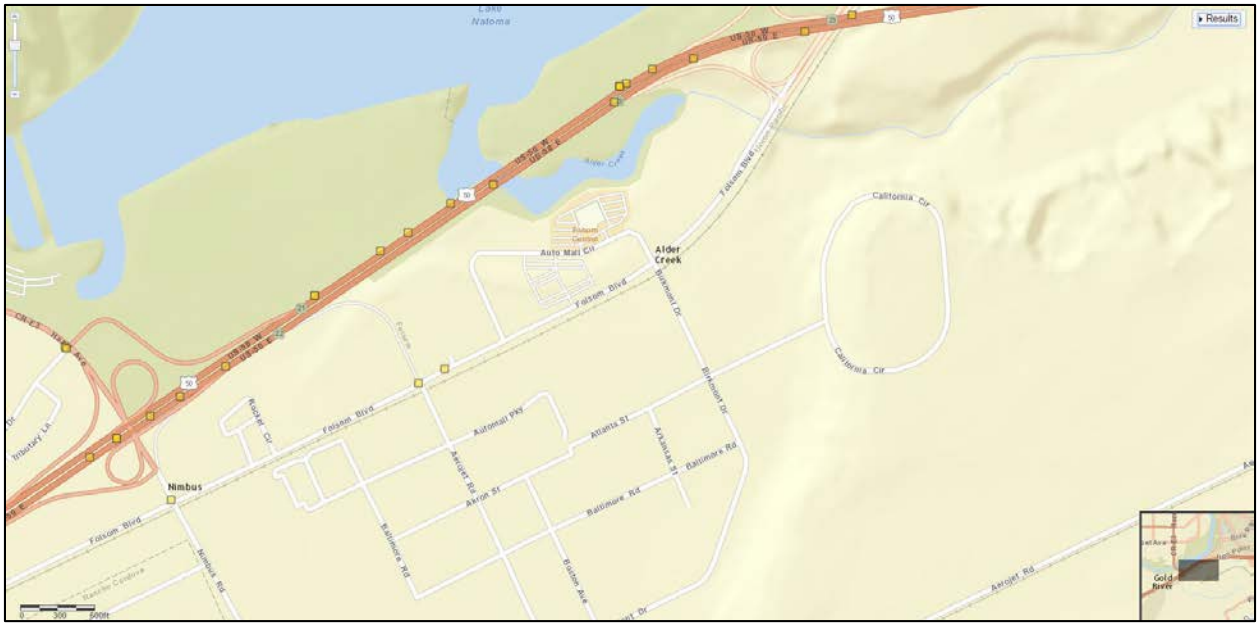
COLLISION REDUCTION FACTORS

IMPROVEMENT MEASURE	COLLISION REDUCTION FOR ALL COLLISIONS	COLLISION REDUCTION FOR PEDESTRIAN COLLISIONS
Replacement of two way left turn lane with raised median	25% – 45%	55%
Sidewalk	1%	65% - 75%
Added/improved pedestrian crosswalks	13% - 25%	19%
Access control: service road/frontage road	5% - 12%	10% - 30%

Hamilton & Associates (2004)



Collisions from Watt to Bradshaw
January 2016
Source: http://tims.berkeley.edu



Collisions from Hazel to Highway 50
January 2016
Source: http://tims.berkeley.edu

HOW DO INJURIES INFLUENCE HEALTH?

Vehicle Collisions have a significant impact on public health and pedestrians and cyclists are disproportionately affected. In 2013, nationally, there were 30,057 fatal crashes, 1,591,000 injurious crashes and 4,066,000 property damage crashes. Of those 4,735 pedestrians and 743 cyclists were killed. In addition 66,000 pedestrians and 48,000 cyclists were injured.

HOW WILL THE PROPOSED PROJECT INFLUENCE INJURIES?

From Watt to Bradshaw there were 15 crashes in 2012. Five victims had visible injuries and 10 had complaints of pain. Three of the crashes involved alcohol and three of the crashes were hit and run. Two of the accidents involved cyclists but there were no fatalities. No unusual road conditions were reported with 9 of the crashes occurring in daylight, 1 at dusk/dawn and 5 were at night with street lights. In 2012 from Hazel to Highway 50 there were 4 collisions, none of them included a cyclist or pedestrian, there was 1 severe injury and 3 injuries with a complaint of pain. Three of the crashes were due to unsafe speeds and 1 was for traffic signals/signs. None of the crashes involved alcohol or were hit and run. There were no unusual road conditions with 2 crashes occurring at daylight, 1 at dusk/dawn and 1 at night with street lights.

The proposed project is very likely to reduce risk of crashes because road diets, streetscaping, adding medians, adding sidewalks with buffers and adding bicycle infrastructure are effective ways to improve traffic safety; provided that the reduced lanes can handle the traffic volume and not increase congestion. The proposed project is expected to have a moderate impact affecting the people who live and work in the area as well as for individuals who use Folsom Boulevard to commute. Vulnerable people (cyclists, pedestrians, transit users, children, the elderly and those who do not rely on cars) will have the greatest benefit from the complete street retrofit. The strength of the evidence is strong and the changes are expected to be long lasting if the infrastructure is maintained.

STRATEGIES CRITERIA	SCALE
Likelihood	Highly likely
Direction	Positive
Magnitude	Moderate
Permanence	Long lasting
Distribution	Vulnerable populations benefit
Strength of evidence	Strong

ACCESS TO SERVICES, GOODS, AND JOBS

WHAT INFLUENCES ACCESS TO SERVICES, GOODS AND JOBS?

Bertolini, le Clercq and Kapoen (2005) defined accessibility as "the amount and the diversity of places of activity that can be reached within a given travel time and/or cost." Barriers to accessibility can be three-fold, including physical barriers that prevent mobility, perceived barriers that reserve a person's utilization of a space and financial barriers that economically strain or burden a person. In a systematic review of case studies and other reviews of environment and policy strategies to promote physical activity, researchers found that community-scale and street-scale urban planning and land use policies and practices were the most effective interventions for increasing active transport (Heath et al., 2006). Travel burden, both perceived and actual, was found to be a key element in conceptualizing geographic access to goods and services. The time it takes to reach a destination was found to be more influential than the distance between the place of origin and destination.

It is assumed that by having a better-connected network, improved public transit and increased safety access to important destinations such as doctors, grocery stores and jobs

will improve. There are very few scientific studies, however, that have found a connection between features of the built environment and access to healthcare. This is due to the many additional factors that play a role in a person's ability to seek healthcare (e.g., affordability, employment status, network provider, etc.). Individuals without access to an automobile, the elderly and children often have limited access. Without a walkable/bikeable community with access to transit they are often limited with respect to getting to important destinations.

Some studies have shown that economically-disadvantaged and ethnic minority populations were disproportionately affected by travel burdens. A national sample from the National Household Travel Survey (NHTS) showed that the average trip for care in the U.S. in 2001 entailed 10.2 road miles and 22.0 minutes of travel with African Americans spending more time traveling to care than non-African Americans (Probst, et al. 2007). Children have reportedly been impacted by transportation-related access to healthcare in numerous studies (Syed, Gerber and Sharp 2013).

HOW DOES ACCESS TO SERVICES, GOODS AND JOBS INFLUENCE HEALTH?

Accessibility impacts individuals' ability to get to jobs, acquire healthy food and access healthcare all of which can have significant impacts on health. Increased travel time has been related to negative health outcomes (e.g., blood pressure, cholesterol levels, etc.) and fewer visits to pharmacies and general practitioners (Hiscock, et al. 2008).

WHAT WILL THE PROPOSED PROJECT DO TO ACCESS TO SERVICES GOODS AND JOBS?

It is plausible that the converting Folsom Boulevard to a complete street will increases access and thereby support increased mobility and access to destinations. The project is expected to have a moderate magnitude mainly benefiting those that live and/or work in the area. The permanence of the project is long lasting given that adequate maintenance is continued.

STRATEGIES CRITERIA	SCALE
Likelihood	Plausible
Direction	Positive
Magnitude	Moderate
Permanence	Long lasting
Distribution	Vulnerable populations benefit
Strength of evidence	limited

ECONOMIC IMPACTS

WHAT INFLUENCES ECONOMIC IMPACTS?

Walkable communities attract business which can help local economies thrive (US EPA, 2012; US EPA, 2014; Smart Growth America, 2015). Pedestrian friendly street, mixed land-use and access to transit have all been associated with economic benefits to communities and local governments (US EPA, 2012; US EPA, 2014; Smart Growth America, 2015). Some of these benefits include higher levels of retail, employment, neighborhood revitalization and lower costs of delivering services (US EPA, 2012; US EPA, 2014; Smart Growth America, 2015). Communities designed to promote walking and cycling have been shown to have more successful businesses than those designed mainly for motorized traffic. The increased foot and bike traffic brings in more regular patronage and attracts new businesses, entrepreneurs, and customers to the area. When businesses do well in a community, it improves economic growth by creating new jobs and increasing access to amenities and services. This, in turn, can improve health in a community (i.e. access to healthcare and nutritious foods, mental health status, and the prevalence of chronic disease). Additionally, further emerging research (People for Bikes and Alliance for Biking & Walking, 2014) shows how bike lanes specifically can improve business performance, as people who arrive by bike to a business spend less money but visit more often resulting in more money spent overall. A 1 point increase in walkability on Walkscore.com was associated with an increase in property values form $700 to $3,000 and this effect is amplified when walkable neighborhoods are located close together (CEO for cities, 2009; The Brookings Institute, 2012).

The amount of green infrastructure has also been shown to be related to higher property values. Clemants and colleagues (2006) showed that green redevelopment has been linked with reduced costs related to urban sprawl and infrastructure, increased investment and tourism, higher property values, avoided flood damage, and protected environmental quality. According to the advocacy group, Alliance for Community Trees (2014), as a result of the shade afforded by green infrastructure vegetation, an increase in the number of trees and greener streets can also significantly reduce roadway maintenance, saving up to 60% on repaving costs over 30 years. A study by Dill et al. (2010) evaluated the economic benefits of green street projects and found that each additional green street treatment within 500 feet of a single family home was associated with a $968 increase in sales price. In Philadelphia they found curbside tree planting attributed 2% of the observed price increase in the intrinsic value of the homes in neighborhoods (Wachter 2008).

Construction of road projects that include bike and pedestrian facilities can also lead to economic benefits as they create more jobs during construction than road expansion projects alone (Political Economy Research Institute, 2011). Complete streets also spur

private investment. In Washington D.C. a ¾ mile corridor was redeveloped with patterned sidewalks and traffic signal which lead to 40 new businesses relocating to the area, the creation of 200 new jobs and increases in sales and increases in foot traffic (Barracks row Main Street, 2005). Another redevelopment in Mountain View, California which included sidewalk cafes and adding pedestrian infrastructure lead to a private investment of $150 million dollars (Local Government Commission; center for Livable Communities)

Transportation is the second largest expense for most Americans, middle income families spend 22% of their income on transportation while the poorest fifth of Americans spend 40% (CNN Money). People can save a substantial amount of money by switching from driving to taking public transit, walking or cycling. On average people in Dallas saved $9,026 a year and $9,576 in Chicago by switching from driving to active transportation (American Public Transportation Association, 2012). Providing alternate modes of transportation can also lead to traffic congestion reduction. In San Francisco employees stuck in traffic cost $2 billion a year and $1.1 billion in Los Angeles (Local Government Commission Center for Livable Communities).

HOW DO ECONOMIC IMPACTS EFFECT HEALTH?

The cost of owning a motor vehicle is often quite high and can encompass a large portion of a family or individual's spending. Communities that are built to promote and enable alternative transportation such as walking, biking, and regular transit use can help individuals make the decision to use their car less or forego ownership.

Additionally, chronic diseases including obesity, asthma, cardiovascular disease, and diabetes, as well as injuries from traffic collisions cost Americans a tremendous amount of money annually. Improvements to communities that improve safety, encourage physical activity, and reduce exposure to poor air quality not only significantly improve health, but can reduce economic burdens related to health care. Lower personal economic burdens improve quality of life, thus improving physical, emotional, and financial health.

Improvements to communities that positively impact local economies have a number actual and tangential health impacts. Several studies show correlations between increased property values and local tax revenue with safety, quality of life, and overall livability in an area.

WHAT WILL BE THE ECONOMIC IMPACTS OF THE PROJECT?

The landscaping, aesthetics, and improved biking and walking infrastructure are expected to positively impact business performance, which in turn can enhance economic growth and development and the creation of new jobs. Job creation will lead to improved health for

people who are employed and will have the greatest benefit for those that earn low incomes or are currently unemployed. Improved business performance can, in turn, improve health in the community.

It is plausible that retrofitting Folsom Boulevard from an auto-centric road to be a complete street with sidewalks, bike lanes, and green infrastructure will have a positive impact on economic factors in the area. There are numerous studies that have found a correlation between walkability, green infrastructure and economic development. The impacts are likely to be moderate and affect the individuals who live in the area and the businesses along Folsom Boulevard.

STRATEGIES CRITERIA	SCALE
Likelihood	Plausible
Direction	Positive
Magnitude	Moderate
Permanence	Long lasting
Distribution	Vulnerable populations benefit
Strength of evidence	Strong

RECOMMENDATIONS

Overall the health benefits of redeveloping Folsom Boulevard are positive and grant funding should be secured to implement the complete streets plan. Funding should also be established and set aside for maintenance of the new infrastructure. In order to implement the plan the County should work with partners to maximize advantages and improvements such as working with property owners to promote shared parking and reduce the number of driveways along Folsom Boulevard

Specific improvements should also be made to enhance the pedestrian and cyclist experience along Folsom Boulevard in order to increase the ability to walk to destinations. In addition, benches and trash cans should be installed along the corridor to encourage active transportation and cleanliness of the corridor. Wayfinding should also be added to encourage walking and cycling to destinations.

Safety can also be enhanced along the corridor by ensuring that all of the trees and green infrastructure that is added complies with CEPTED principles. Lighting should be at a pedestrian scale, mid-block pedestrian crossings should be considered where block lengths

are greater than 800 feet, and adequate crossing times for the elderly and those with disabilities should be incorporated at all signalized intersections. To enhance the safety of cyclists, additional signage should be added to alert drivers to the presence of bike lanes along the corridor. Additionally, when the right of way permits, buffered bike lanes should be added to increase safety.

To enhance future projects' impacts on the local economy, local residents should be hired and trained for the construction and maintenance of the complete street, especially those that are currently unemployed or living below the poverty level. In order to reduce noise pollution during the construction of the project construction should only be during daylight hours to minimize noise pollution in the evening. Mitigation measures should also be taken to reduce air pollution during construction including water misting and plastic covers on rubble piles. If available use non diesel construction machinery.

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