Willowgrove Project

Transportation Impact Study

Prepared for:
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The City of Davis

REVISED FINAL

September 2025

SA24-0248

FEHR PEERS

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1. Introduction

This study describes existing transportation conditions (environmental and regulatory) and analyzes the potential of the proposed Willowgrove Project to affect the surrounding transportation environment in accordance with the current California Environmental Quality Act (CEQA) Guidelines. The analysis evaluates potential impacts to vehicle miles traveled (VMT) and transit, bicycle, and pedestrian components of the transportation system that may result from the proposed project, as well as impacts during project construction. Where necessary and feasible, mitigation measures are identified to reduce significant impacts to a less than significant level.

An accompanying document, the *Willowgrove Project Local Transportation Analysis (LTA)*, presents an analysis of the potential effects of the proposed project with respect to traffic operations (i.e., vehicle delay) on roadway facilities within the vicinity of the project site. This analysis is deliberately separate from the transportation impact study in accordance with the CEQA Guidelines, which no longer permit the use of vehicle delay or intersection level of service (LOS) for the purposes of identifying environmental impacts for land use projects. The LTA directly addresses the proposed project's consistency with City of Davis General Plan policies related to traffic operations and level of service.

2. Regulatory Setting

This section summarizes key City of Davis, federal, state, and regional regulations, laws, and policies relevant to evaluating the project's potential impacts on transportation and circulation.

Federal

No federal plans, policies, regulations, or laws related to transportation and circulation apply to the analysis of project transportation impacts.

State

The State of California has enacted several pieces of legislation that outline the state's commitment to encourage land use and transportation planning decisions and investments that reduce VMT and contribute to reductions in greenhouse gas (GHG) emissions in line with state climate goals. This legislation includes:

- Assembly Bill (AB) 32 (2006)
- Senate Bill (SB) 375 (2008)
- SB 743 (2013)

Assembly Bill 32

AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires that "(a) the statewide GHG emissions limit shall remain in effect unless otherwise amended or repealed; (b) it is the intent of the Legislature that the statewide GHG emissions limit continues in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020; (c) the CARB shall make recommendations to the Governor and the Legislature on how to continue reductions of GHG emissions beyond 2020."

While AB 32 does not contain specific expectations related to individual land use projects, it does set statewide expectations for GHG reduction that have influenced VMT reduction expectations from land development projects as part of SB 375 and SB 743.

Senate Bill 375

SB 375 requires metropolitan planning organizations (MPO) to prepare a sustainable communities strategy (SCS) as part of their regional transportation plans (RTP). The SCS demonstrates how the region could meet its GHG reduction targets through integrated land use, housing, and transportation planning. Specifically, the SCS must identify land use and transportation strategies that combined with the RTP project list will reduce GHG emissions from automobiles and light trucks in accordance with targets set by the California Air Resources Board (CARB).

Senate Bill 743

SB 743 creates or encourages several statewide changes to the evaluation of transportation and traffic impacts under the CEQA. First, it directs the Governor's Office of Planning and Research (OPR), now known and henceforth referred to in this study as the Office of Land Use and Climate Innovation (LUCI), to amend the CEQA Guidelines to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPA) and allows LUCI to extend use of the new metrics beyond TPAs. In the amended CEQA Guidelines, LUCI selected automobile VMT as the preferred transportation impact metric and applied their discretion to recommend its use statewide. The California Natural Resources Agency certified and adopted the amended CEQA Guidelines in December 2018. The amended CEQA Guidelines state that "generally, VMT is the most appropriate measure of transportation impacts" and the provisions requiring the use of VMT apply statewide as of July 1, 2020. The amended CEQA Guidelines further state that land use "projects within 0.5 mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less-than-significant transportation impact."

SB 743 establishes that aesthetic and parking impacts of residential, mixed-use residential, or employment center projects on an infill site within a TPA are not considered significant impacts on the environment. SB 743 added Section 21099 to the California Public Resources Code, which states that automobile delay, as described by level of service or similar measures of vehicular capacity or traffic congestion, is not considered a significant impact on the environment upon certification of the CEQA Guidelines by the California Natural Resources Agency. Since the amended CEQA Guidelines were certified in December 2018, level of service or similar measures of vehicular capacity or traffic congestion are not considered a significant impact on the environment.

Technical Advisory on Evaluating Transportation Impacts in CEQA

To aid in SB 743 implementation, LUCI released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("*Technical Advisory*") in December 2018. The Technical Advisory provides advice and recommendations to CEQA lead agencies and practitioners on how to implement SB 743. This includes

technical recommendations regarding the calculation of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion.

The *Technical Advisory* identifies screening thresholds to quickly identify when a project is expected to cause a less-than-significant impact without conducting a detailed study. The *Technical Advisory* suggests that projects meeting one or more of the following criteria should be expected to have a less-than-significant impact on VMT.

- Small projects—Projects consistent with an SCS and local general plan that generate or attract fewer than 110 trips per day.
- Projects near major transit stops—Certain projects (residential, retail, office, or a mix of these uses) proposed within 0.5 mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
- Affordable residential development—A project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- Local-serving retail—Local-serving retail development tends to shorten trips and reduce VMT. The *Technical Advisory* encourages lead agencies to decide when a project will likely be local-serving, but generally acknowledges that retail development including stores larger than 50,000 square feet might be considered regional-serving. The *Technical Advisory* suggests lead agencies analyze whether regional-serving retail would increase or decrease VMT (i.e., not presume a less-than-significant impact).
- Projects in low-VMT areas—Residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The *Technical Advisory* also identifies recommended numeric VMT thresholds for residential, office, and retail projects, as described below.

- Residential development that would generate vehicle travel exceeding 15% below existing residential VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as a regional VMT per capita or as city VMT per capita.
- Office projects that would generate vehicle travel exceeding 15% below existing regional VMT per employee may indicate a significant transportation impact.
- Retail projects that result in a net increase in total VMT may indicate a significant transportation impact.

For mixed-use projects, the *Technical Advisory* suggests either evaluating each component independently and applying the significance threshold for each project type included (e.g., residential and retail), or evaluating VMT associated only with the project's dominant use.

The *Technical Advisory* also provides guidance on impacts on transit. Specifically, the *Technical Advisory* suggests that lead agencies generally should not treat the addition of new transit users as an adverse impact. As an example, the *Technical Advisory* suggests that "an infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving proximity and accessibility. Such development also improves regional vehicle flow by adding less vehicle travel onto the regional network."

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining the State Highway System (SHS). The following Caltrans documents are pertinent to this study:

Vehicle Miles Traveled-Focused Transportation Impact Study Guide (TISG)

The VMT TISG (2020) outlines how Caltrans will review land use projects with a focus on supporting state land use goals, state planning priorities, and GHG emissions reduction goals. The VMT TISG endorses LUCI's Technical Advisory as the basis for transportation impact analysis methodology and thresholds including the use of screening to streamline qualified projects because they help achieve the state's VMT reduction and mode shift goals.

Caltrans Safety Impact Guidance

The *Local Development Review (LDR) Safety Review Practitioners Guidance* (Caltrans, 2024) advises practitioners how to evaluate project-related safety impacts on the state highway system. It stops short of including specific thresholds of significance. The analytical approach described in the guidance focuses on vulnerable road users (i.e., bicyclists and pedestrians) and underserved communities; enhancing safety for pedestrians, bicyclists, transit, and vehicular modes; and applying both reactive and systemic perspectives. Lastly, it reiterates Caltrans supports for shifting away from using delay metrics for analysis in CEQA.

Regional

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is the MPO governing the six-county Sacramento region consisting of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties and their 22 cities. SACOG is responsible for preparing the region's MTP/SCS, the most current of which is entitled *2020*

Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) (Sacramento Area Council of Governments 2019). The SACOG 2020 MTP/SCS provides the basis for air quality conformity findings related to the federal Clean Air Act and determinations of whether the region is complying with GHG reduction targets for automobiles and light trucks established under SB 375. Major projects that are inconsistent with the plan could jeopardize the plan's effectiveness for air pollution and GHG reduction. Thus, inconsistency with the MTP/SCS is a potential basis for determining adverse impacts related to these environmental topics.

Local

City of Davis General Plan

The *City of Davis General Plan* Transportation Element was last updated in 2013. The following goals and policies related to transportation and circulation are applicable to the project. Most of the listed goals and policies are relevant at a project-level scale, versus City-wide.

Goal #1: Davis will provide a comprehensive, integrated, connected transportation system that provides choices between different modes of transportation.

Performance Objective #1.1: Achieve at least the following mode share distribution for all trips by 2035:

- 10% of trips by walking
- 10% of trips by public transportation
- 30% of trips by bicycle

Performance Objective #1.2: Increase use of walking, bicycling, and public transportation to and from the following places:

- Work
- Schools (elementary, junior high, and senior high)
- UC Davis
- Downtown

Goal #2: The Davis transportation system will evolve to improve air quality, reduce carbon emissions, and improve public health by encouraging usage of clean, energy-efficient, active (i.e. human powered), and economically sustainable means of travel.

Performance Objective #2.1: Reduce carbon emissions from the transportation sector 61 percent by 2035.

Performance Objective #2.2: Reduce vehicle miles traveled (VMT) by 39 percent by 2035.

Performance Objective #2.3: Annually increase funding for maintenance and operation needs of the transportation system, until fully funded.

Goal #3: Davis will provide a safe and convenient Complete Streets network that meets the needs of all users, including children, families, older adults, and people with disabilities.

Performance Objective #3.1: Improve the quality of service for all users of the transportation system.

Performance Objective #3.2: Reduce the total number of collisions between motor vehicles and bicyclists or pedestrians by 50% by 2035.

Goal #4: Davis will strengthen its status as a premier bicycling community in the nation by continuing to encourage bicycling as a healthy, affordable, efficient, and low-impact mode of transportation accessible to riders of all abilities, and by continuously improving the bicycling infrastructure.

Performance Objective #4.1: Commit a minimum amount of funding for bicycle programming and infrastructure as identified in the "Beyond Platinum – Bicycle Action Plan".

Policy TRANS 1.6: Reduce carbon emissions from the transportation system in Davis by encouraging the use of non-motorized and low carbon transportation modes.

Policy TRANS 1.7: Promote the use of electric vehicles and other low-polluting vehicles, including Neighborhood Electric Vehicles (NEV).

Policy TRANS 2.1: Provide Complete Streets to meet the needs of drivers, public transportation vehicles and riders, bicyclists, and pedestrians of all ages and abilities in all transportation planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities and products. The City shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in Davis, and recognizes bicycle, pedestrian, fixed-route transit, and demand-response para-transit modes as integral elements of the transportation system along with motor vehicles.

Action TRANS 2.1(i): Establish a multi-modal Level of Service (LOS) standard to address the needs of all users of the street, including bicyclists and pedestrians, at intersections.

Action TRANS 2.1(k): Work with citizens and technical experts to review the street width and "Greenstreet" standards to reflect pedestrian and bicycle friendly policies in this chapter, including but not limited to the following:

- Design/redesign residential and collector streets to slow vehicular traffic to 25 mph or less.

- Design travel lanes to prioritize pedestrians and bicycles, including provisions for a marked "buffer space" to further separate bicycles from both moving and parked motor vehicles, where right-of-way allows.
- Eliminate intersection standards that allow high speed right turns for motor vehicles.
- Adjust intersection signal operations to smooth traffic flow, reduce automobile idle time, and to adequately service bicycles and pedestrians by giving priority and to maintain momentum.

Roadways within the study area with a Greenstreet designation include East Covell Boulevard, Pole Line Road, F Street, J Street, L Street, and Moore Boulevard.

Action TRANS 2.1(l): Preserve rights-of-way for future transportation use.

Action TRANS 2.1(m): Ensure transit stops have adequate curb space for loading and unloading passengers.

Policy TRANS 2.2: Implement state-of-the-art street design solutions to improve bicycle/pedestrian access, comfort, and safety that may include:

- Bicycle boxes at intersections
- Cycletracks
- Shared lane markings (sharrows)
- Contraflow bicycle lanes
- Improved bicycle detection at intersections
- Two-stage turn queue boxes
- Colored bicycle lanes
- Bicycle route wayfinding

Policy TRANS 2.3: Apply best practices in sustainability to new streets and redesigns of existing streets/corridors.

Policy TRANS 2.4: As part of the initial project review for any new project, a project-specific traffic study may be required. Studies shall identify impacted transportation modes and recommend mitigation measures designed to reduce these impacts to acceptable levels.

Policy TRANS 2.5: Create a network of street and bicycle facilities that provides for multiple routes between various origins and destinations.

Policy TRANS 2.7: Minimize impacts of vehicle traffic on local streets to maintain or enhance livability of the neighborhoods. Consider traffic calming measures along collector and minor arterial streets, where appropriate and feasible, to slow speeds.

Policy TRANS 2.8: Improve the function, safety, and appearance of selected corridors as illustrated.

Action: Develop "corridor plans" for selected streets which warrant special treatment because of existing impact problems or operational issues. Corridor plans should take into consideration adjacent land uses and result in streets that are both functional and aesthetic. The plans should utilize innovative means of slowing traffic, where appropriate, and provide safe access for pedestrians and bicyclists. Mitigation shall be incorporated to protect residences and sensitive receptors from noise, air pollution and other traffic related impacts. The corridor plans may deviate from the standards established in the General Plan, if deviations improve the livability of the area. This program includes the following roadway segments near the project site:

- West Covell Boulevard between the West City Limit and SR 113
- West Covell Boulevard between SR 113 and F Street
- East Covell Boulevard between F Street and Pole Line Road (completed 2014)
- Mace Boulevard between the Mace Curve and I-80
- F Street between East Covell Boulevard and Third Street
- L Street between East Covell Boulevard and Second Street
- Pole Line Road between the North City Limit and East Covell Boulevard
- Pole Line Road between East Covell Boulevard and I-80

Policy TRANS 2.10: Prohibit through truck traffic on streets other than identified truck routes shown in the Transportation Element.

Policy TRANS 3.1: Facilitate the provision of convenient, reliable, safe, and attractive fixed route, commuter, and demand responsive public transportation that meets the needs of the Davis community, including exploring innovative methods to meet specialized transportation needs.

Policy TRANS 3.3: Require new development to be designed to maximize transit potential.

Policy TRANS 4.2: Develop a continuous trails and bikeway network for both recreation and transportation that serves the Core, neighborhoods, neighborhood shopping centers, employment centers, schools and other institutions; minimize conflicts between pedestrians, bicyclists, equestrians, and automobiles; and minimize impacts on wildlife. Greenbelts and separated bike paths on arterials should serve as the backbone of much of this network.

Policy TRANS 4.3: Continue to build transportation improvements specifically targeted at bicycles. Refer to Bicycle Plan and Transportation Implementation Plan for list of bicycle-related projects.

Policy TRANS 4.5: Establish and implement bicycle parking standards for new developments and significant redevelopment.

Policy TRANS 4.7: Develop a system of trails around the edge of the city and within the city for recreational use and to allow pedestrians and bicyclists to reach open space and natural areas.

Policy TRANS 5.1: Use parking management techniques to efficiently manage motor vehicle parking supply and promote sustainability.

Policy TRANS 5.2: Existing and future off-street parking lots in development should contribute to the quality of the urban environment and support the goals of this chapter to the greatest extent possible.

With regard to Policy TRANS 2.1 (Provide Complete Streets), there are several important standards within this policy that are applicable to the project including:

1. The City of Davis shall have a network of vehicle circulation routes consisting of major arterials, minor arterials, collectors, local streets and cul-de-sacs (See Figure 2). The major street classifications are shown in Map 3. Definitions and widths of each type of street are shown in Table 1. Lane widths are shown in Table 2. Planned lane configurations for selected streets are shown in Map 4. *Note: The Transportation element does not determine the roadway configurations needed in 2035 because the Land Use element would need to be updated with a consistent long-term time frame*.
2. Where limited street space exists, priority should be given to non-motorized modes to protect the safety and comfort of these more vulnerable users.
3. In each direction, Davis streets shall have no more than two through automobile lanes plus a single left-hand turning lane, even if this requirement reduces level of service. Additional turning lanes may be added for safety or design considerations.
4. Existing bike lanes shall not be removed to add through traffic lanes.
    5. Prior to implementing the planned street widenings shown in Table 3 and Map 1 in response to a development proposal, the City shall first consider the feasibility and effectiveness of other measures to improve the Level of Service (LOS) to City standards. Such measures could include but would not be limited to Transportation Demand Management (TDM) measures such as requiring businesses to: stagger their hours of operation or employees to a non-peak time; charge for parking; and encourage carpools. The City would implement the street widening only

when the aforementioned measures are determined by City Council to be infeasible and ineffective to improve the LOS to City Standards.

City of Davis 2020-2040 Climate Action and Adaptation Plan (CAAP) (2023)

The CAAP describes achievable, measurable greenhouse gas (GHG) emissions reduction and climate change adaptation actions that align with the City's goals and priorities. When implemented, these actions will reduce GHG emissions by 37% below 2016 levels by 2030 and set the community on a trajectory toward a 2040 carbon neutrality goal. For context, in 2016, the City of Davis generated 567,000 metric tons of carbon dioxide equivalents (MTCO2e), with most of these emissions generated from on-road transportation (74%). Therefore, reducing mobile source emissions associated with vehicle travel (i.e., which is measured by VMT) is of critical importance in achieving these reductions.

Beyond Platinum – City of Davis Bicycle Action Plan

This document included discussions regarding goals and objectives, bicycle facility guidelines, engineering standards, and implementation and funding. The Plan was heard before and adopted by the City Council in February 2014. This document includes numerous goals and policies regarding enforcement, education, and engineering design. The following goals are particularly relevant to this study:

Goal: Provide bike lanes along arterial and collector streets. Provide separated bike paths adjacent to arterial and collector streets only where justified, with full consideration of the potential safety problems this type of facility can create.

Goal: Consider bicycle-operating characteristics in the design of bikeways, intersections, and traffic control systems.

Appendix C of the plan document shows various planned facilities along Covell Boulevard over three-quarters of a mile to the west of the project (i.e., west of Birch Lane). However, no new bicycle facilities are shown in the vicinity of the project.

3. Environmental (Existing) Setting

This section describes the existing environmental setting, which is the baseline scenario upon which project-specific impacts are evaluated. The environmental setting components include roadway, pedestrian, bicycle, and transit networks in the vicinity of the project site. Additionally, it describes the two schools in the project vicinity and presents the collision history along East Covell Boulevard near the site.

Project Location

The project site is located on an approximately 232-acre vacant parcel situated in the northeast area of the City of Davis. It is situated north of East Covell Boulevard and east of the existing Wildhorse Community. Other nearby uses include agricultural land to the north and east, residential to the south, Frances Harper Junior High School to the southeast. Immediately west of the project site is the Palomino Place residential property, which was approved for development by the City in late 2024.

The project site is located outside of the City of Davis City Limits and Sphere of Influence.

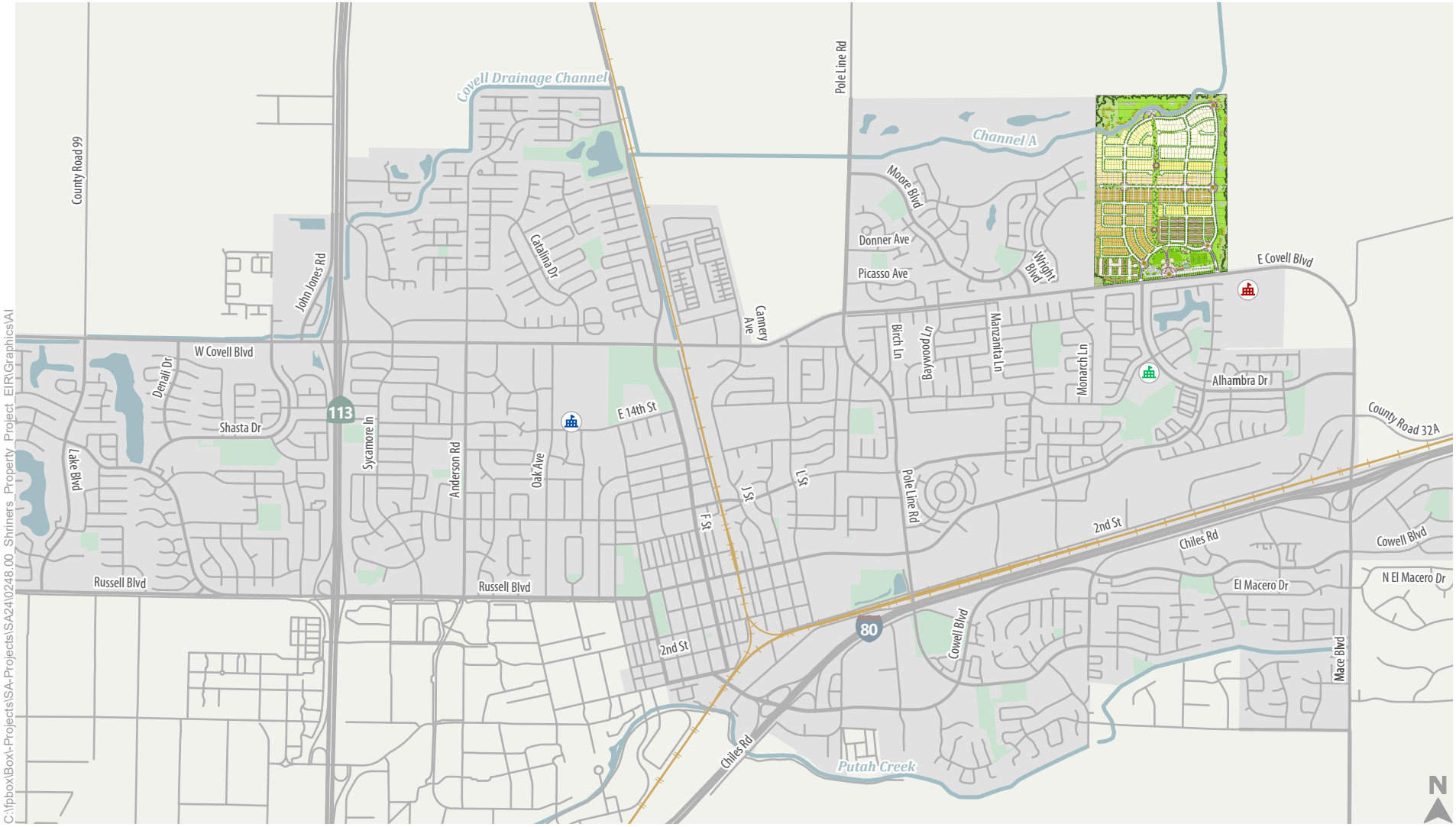
Approximate travel distances between the project site and other local activity centers (as measured from the center of the project site) are as follows:

- Frances Ellen Watkins Harper Junior High School ("Harper Junior High School") – 0.8 mile
- Fred T. Korematsu Elementary School ("Korematsu Elementary School") – 0.8 mile
- Oak Tree Plaza Shopping Center – 1.7 miles
- Target Shopping Center – 2.0 miles
- El Macero Shopping Center – 2.2 miles
- Davis Senior High School – 2.9 miles
- Downtown Davis – 3.3 miles
- UC Davis (Memorial Union Building) – 3.8 miles

Figure 1 displays the location of the project site and the surrounding roadway network.

Roadway System

Vehicular access to the project site is provided via East Covell Boulevard from the west and Mace Boulevard from the southeast. Access is also possible via Alhambra Drive. These roadways are described in detail below, along with the freeways that provide regional access.



Railroad
Parks
Davis City Limits
Davis Senior High School
Harper Junior High School
Korematsu Elementary School

Figure 1

Study Area

East/West Covell Boulevard is an east-west major arterial that traverses the City of Davis. It begins west of State Route (SR) 113, has an interchange with SR 113, and intersects several primary north-south roads in the City including Anderson Road, F Street, J Street, and Pole Line Road. The following describes the number of lanes and posted speed limits in each direction of East Covell Boulevard east of Pole Line Road:

- Eastbound: it consists of two travel lanes for a distance of 1.75 miles, narrowing to a single lane at the east property boundary of Harper Junior High School. It continues as a single lane for another 1,575 feet to County Road 104 where it becomes Mace Boulevard. It has a posted speed limit of 35 miles per hour (mph) east of Pole Line Road. The posted speed limit increases to 40 mph east of Wright Boulevard. On-street parking is prohibited along this segment of roadway.
- Westbound: it consists of a single travel lane for about one mile starting at County Road 104. It widens to include a second lane starting along the frontage of the Wildhorse development and continuing to Pole Line Road, a distance of about 5,160 feet. It has a posted speed limit of 40 mph west at County Road 104 with the speed decreased to 35 mph west of Wright Boulevard.

The eastbound and westbound lanes are generally separated by either a landscaped median or left-turn lane at an intersection. However, the most easterly 1,575 feet section consists of an approximately 12-foot wide swath of pavement delineated by a pair of double-yellow lines. This configuration was implemented in 2024. Bicycle/pedestrian facilities along this roadway are described in the next section. Specialty signage, vehicular access and other treatments to Harper Junior High School are discussed later in this chapter. Similarly, the East Covell Boulevard/Alhambra Drive intersection, which would be the project's main access, is also discussed in detail later in this chapter.

Mace Boulevard is a two- to four-lane major arterial. It begins at County Road 104, extending southerly to connect with Interstate 80 (I-80), and continuing into South Davis, and beyond. Starting at County Road 104, the southbound direction features one travel lane. A second lane is added 410 feet north of Alhambra Drive and continues to and across I-80. The northbound direction has two lanes over I-80 to Second Street, with the outside lane dropping 250 feet north of Second Street. It has a posted speed limit of 35 mph immediately north of I-80 and 40 mph north of Second Street. Its north and south travel lanes are separated either by a landscaped median or a left-turn lane.

Pole Line Road is a two-lane north-south major/minor arterial that connects East Davis and South Davis across I-80. North of the City limits, Pole Line Road becomes County Road 102, which continues north to the City of Woodland and Interstate 5 (I-5). Pole line Road has a posted speed limit of 40 mph and 25 mph north and south of East Covell Boulevard, respectively.

Alhambra Drive is a two-lane minor arterial that extends in a southeast direction from East Covell Boulevard to Mace Boulevard, a distance of about 1.1 miles. About halfway, it intersects 5th Street, which extends westerly from that location into Downtown Davis where it becomes Russell Boulevard. Its travel lanes are separated by a raised median, the posted speed limit is 30 mph, and on-street parking is prohibited.

State Route 113 (SR 113) is a four-lane, north-south freeway that extends from Interstate 80 (I-80) at the Yolo/Solano County line north to Interstate 5 (I-5) in Woodland. SR 113 serves Davis via interchanges at Covell Boulevard and Russell Boulevard. Additional SR 113 interchanges within the vicinity of Davis include the Hutchison Drive interchange at the UC Davis campus and the County Road 29 interchange in Yolo County. SR 113 and its interchanges are owned and operated by Caltrans.

Interstate 80 (I-80) is an east-west interstate freeway that connects the San Francisco Bay Area to the west and Sacramento and the Lake Tahoe Basin to the east and beyond. I-80 provides three travel lanes per direction in the vicinity of the project site. I-80 serves Davis via interchanges at Mace Boulevard and Richards Boulevard. Additional I-80 interchanges within the vicinity of Davis include the Old Davis Road interchange at the UC Davis campus and the County Road 32A interchange in Yolo County. I-80 and its interchanges are owned and operated by Caltrans.

East Covell Boulevard/Alhambra Drive Intersection

This signalized T-intersection would be the primary access serving the project site. The eastbound approach consists of two through lanes and one right-turn lane featuring a yield-controlled channelized movement. The westbound approach consists of one through lane and a 120-foot left-turn lane (that permits u-turns). The northbound approach consists of an approximately 20-foot wide single lane that allows motorists to either turn left onto westbound East Covell Boulevard or use the yield-controlled channelized right-turn to head eastbound. The only crosswalk present is on the south leg. Bicycle detection is provided on all approaches. The signal operates with protected left-turn phasing (i.e., green arrow for the protected westbound left-turn).

Refer to **Images 1 and 2** for recently taken photos of this intersection.

Image 1: View from eastbound East Covell Boulevard approaching Alhambra Drive

Image 2: View from northbound Alhambra Drive of East Covell Boulevard

Directionality and Volume of Traffic During Peak Hours

Fehr & Peers retained a count vendor, NDS, to perform a traffic count on Thursday, October 26, 2023 at East Covell Boulevard/Alhambra Drive Intersection. The count revealed the following information:

- The peak hours of travel are 7:45 – 8:45 AM and 4:30 – 5:30 PM.
- During the morning peak hour, East Covell Boulevard east of Alhambra Drive carried 648 eastbound vehicles and 395 westbound vehicles.
- During the evening peak hour, East Covell Boulevard east of Alhambra Drive carried 705 eastbound vehicles and 516 westbound vehicles.

The traffic flow characteristics of this roadway are atypical in that the eastbound direction is busier during both periods. This is most likely attributable to directional congestion on Interstate 80 through Davis (i.e., congested in the eastbound direction much more often than in the westbound direction).

Traffic volumes on Alhambra Drive (in both directions) total about 300 AM peak hour vehicles and 275 PM peak hour vehicles.

Vehicle Miles Traveled

Pursuant to CEQA Guidelines Section 15064.3, VMT is the primary metric used to identify transportation impacts under CEQA. VMT is a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. VMT does not directly measure traffic operations or congestion. Instead, VMT is a measure of transportation network use and efficiency, especially when expressed as a function of population (i.e., VMT per capita).

This study utilizes the "residential VMT per capita" metric to analyze potential impacts to VMT associated with the project. **Figure 2** illustrates and defines this key VMT metric used in the analysis.

This study utilizes the SACOG travel demand model to evaluate potential project impacts on VMT. The SACOG model, known as SACSIM19, produces base year forecasts derived from the 2020 MTP/SCS. The SACSIM model is an activity/tour-based model that simulates individuals' daily travel, accounting for land use, transportation, and demographic factors that influence travel behavior. SACOG recently updated SACSIM as part of its 2020 MTP/SCS. As part of this update, SACOG conducted a validation and calibration of the SACSIM 2016 base year travel model that included using household travel surveys, transit boarding data, on-board transit surveys, traffic count data, and VMT estimates from annual Highway Performance Monitoring Systems data to verify the SACSIM model reasonably replicated observed travel behavior.

Metric	Definition	Visualization
Residential VMT per Capita	All automobile (i.e., passenger cars and light-duty trucks) vehicle-trips that start or end at the home are traced, as are non-home-based trips made by residents elsewhere on the network.	

Figure 2. VMT Metric Definition and Visualization

According to SACSIM19 model outputs, the existing average residential VMT per capita for the City of Davis and the SACOG region is 30.1 and 21.7 VMT per capita, respectively. Residential VMT per capita generated by existing residential uses within the project vicinity is about 31 VMT per capita, 3 percent above the existing City average and 43 percent above the existing SACOG average. VMT per capita in the project vicinity is greater than in more centrally located Davis neighborhoods such as Central Davis and Old East Davis, which have VMT values in the range of 25 to 27 VMT per capita. This indicates that placement of residential land use relative to employment, schools, and goods and services has a major influence on per capita VMT.

Nearby Schools

The following two schools are located in close proximity to the project site:

Korematsu Elementary School

This school is about a one-third mile walk south along Alhambra Drive from the south edge of the project site. Bike lanes and sidewalks are provided on both sides of Alhambra Drive from the project site to the school. A School Crossing advisory sign and 25 MPH sign When Children Are Present speed limit sign are located on southbound Alhambra Drive approaching the school. Similar treatments are present in the northwest direction of Alhambra Drive approaching the school. The school provides instruction for students in grades pre-kindergarten through 6th grade. On all weekdays except Wednesdays, grades 1 - 6 begin instruction at 8:30 AM. Instruction ends for grades 1 – 3 at 2:35 PM and grades 4 – 6 at 3:05 PM. Kindergarten (and pre-K) have shorter instruction periods.

Harper Junior High School

This school is about a 0.37-mile walk easterly along East Covell Boulevard from the south edge of the project site at Alhambra Drive. The school is served by a westerly full-access signalized intersection that is located about 160 feet east of the proposed project's east property line. A right in/out driveway is provided 470 feet east of the full access driveway. Signs are posted on the north side of East Covell Boulevard indicating that parking is prohibited, while signs are posted along the school frontage on the south side indicating that vehicles may not stop. The signalized access driveway does not have a crosswalk across East Covell Boulevard. The next section describes bicycle and pedestrian facilities in the school vicinity. A School Crossing advisory sign and 25 MPH School When Children Are Present speed limit signs are located in both directions of East Covell Boulevard approaching the school. The school provides instruction for students in grades 7 – 9. On all weekdays except Wednesdays, instruction begins at 8:30 AM and ends at 3:25 PM.

Bicycle Facilities

The project site is situated on the edge of the City of Davis bicycle network, which consists of an extensive network of on- and off-street bicycle facilities. The *California Manual on Uniform Traffic Control Devices* (CA MUTCD, 2014) identifies the following four types of bikeway facilities:

- **Class I Multi-Use Off-Street Paths** (also known as shared-use paths) are paved trails that are separated from roadways and allow for shared use by both bicyclists and pedestrians.
- **Class II On-Street Bike Lanes** are designated for use by bicycles by striping, pavement legends, and signs.
- **Class III On-Street Bike Routes** are designated by signage for shared bicycle use with vehicles but do not necessarily include any additional pavement width for bicyclists.
- **Class IV Separated Bikeways** (also known as protected bikeways or cycle tracks) are separated bikeways improve upon buffered bike lanes by providing vertical separation between bike lanes and the adjacent travel lanes. Vertical separation can be provided with concrete curb and gutter, bollards or on-street parking.

Figure 3 displays existing bicycle facilities in the project site vicinity.

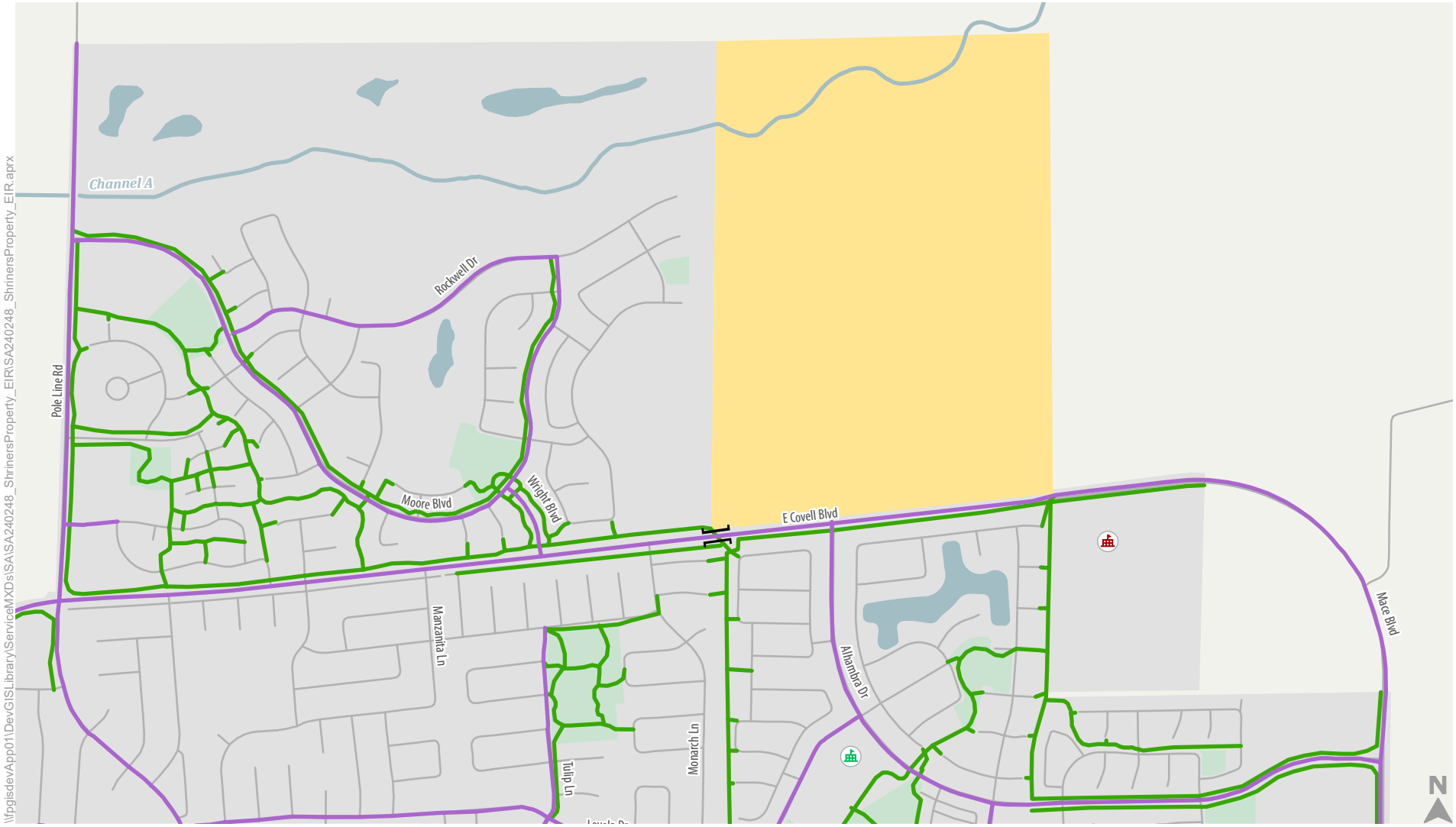


Figure 3

Existing Bicycle Lanes and Shared-Use Paths

The following bicycle facilities exist near the project site:

- Class I shared-use path on the north side of East Covell Boulevard beginning just west of the project's westerly boundary and extending westerly for one mile to Pole Line Road.
- Class I shared-use path on the south side of East Covell Boulevard that extends for 0.9 miles from just east of Manzanita Lane to Harper Junior High School.
- Class II bike lanes in both directions of East Covell Boulevard and Alhambra Drive.
- Bicycle underpass under East Covell Boulevard near the southeast corner of the project site.

Refer to **Image 3** for Class I and II facilities in the eastbound direction of East Covell Boulevard east of Alhambra Drive.

Image 3: View of Class I Shared-Use Path and Class II (Buffered) Bike Lane on eastbound East Covell Boulevard east of Alhambra Drive

Bicyclists using the Class I Shared-Use path on the south side of East Covell Boulevard must enter the street and wait at a pair of channelized right-turn islands at the signal at Alhambra Drive. These islands are visible in Images 1 and 2.

Pedestrian Facilities

The City of Davis has an extensive system of off-street shared-use paths and sidewalks available for use by pedestrians, including the following existing facilities near the project site vicinity:

- Pedestrians may use the shared-use paths described previously.
- Sidewalks are situated on both sides of Alhambra Drive.
- Pedestrians may cross from one side of East Covell Boulevard to the other via the aforementioned pedestrian/bicycle underpass located at the westerly edge of the project site.
- The East Covell Boulevard/Alhambra Drive intersection has a crosswalk (with push button activation) on the south leg only. Pedestrians may not cross East Covell Boulevard at Alhambra Drive.

Transit Service and Facilities

Transit serving the project site includes local bus service connecting the project site to destinations throughout the City of Davis (e.g., Downtown Davis, the Davis Train Depot, etc.) and the UC Davis campus. Additionally, the project site is served by an intercity bus service that is primarily oriented towards serving Davis residents commuting to and from work in Downtown Sacramento.

Transit service providers include Unitrans (local bus), Yolobus (intercity bus), and Davis Community Transit (local paratransit). Each service is described below. **Figure 4** displays the locations of bus stops and routes in the project vicinity.

Unitrans provides local fixed route bus service in the project vicinity. Jointly operated between the Associated Students, UC Davis (ASUCD) and the City of Davis, Unitrans offers 21 lines serving the UC Davis campus and City of Davis neighborhoods, shopping centers, schools, and medical centers. Unitrans operates as a radial bus system with the UC Davis campus serving as the central hub. The main terminals on the UC Davis campus are at the Memorial Union on Howard Way and at the Silo on Hutchison Drive.

Routes L, P, and Q each have stops near the project site. Each route is described below:

- Route L – is an 'out and back' route that begins/ends at the Silo on the UC Davis campus. It runs along East 8th Street to Pole Line Road, with the nearest stop to the project site being at Monarch Lane (700 feet west of the project site).
- Routes P and Q – are city-wide, perimeter loop routes that operate in counterclockwise and clockwise configurations, respectively. They operate along Covell Boulevard, Mace Boulevard, and run south of I-80 and west of SR 113.

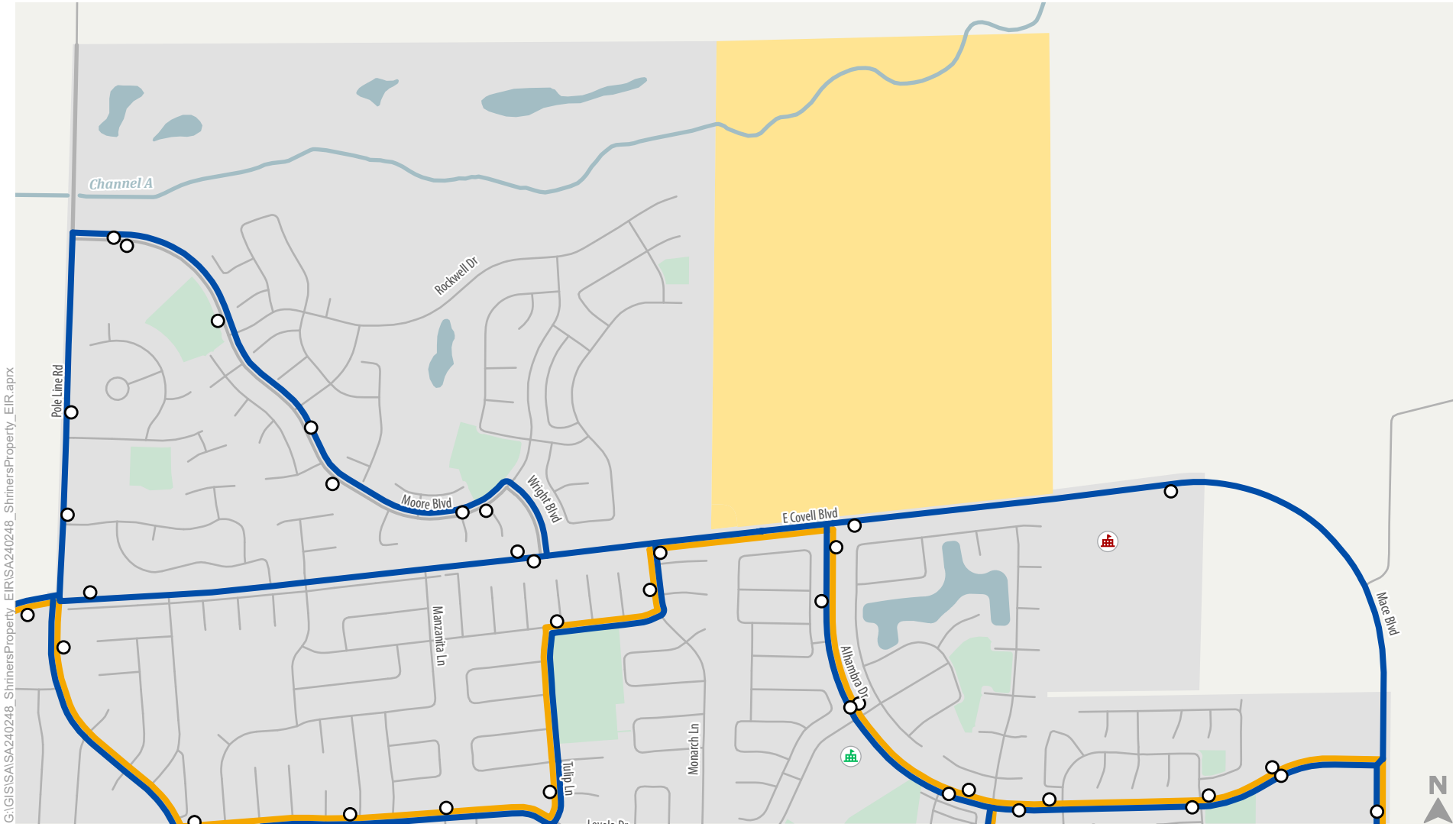


Figure 4

Existing Transit Service & Facilities

Table 1 summarizes the weekday and weekend frequency and span for Unitrans bus routes operating near the project site.

Table 1: Unitrans Route Summary – Project Site Vicinity

Route	Weekday (M-Th)		Friday		Weekend	
	Peak Frequency (min)	Span	Peak Frequency (min)	Span	Peak Frequency (min)	Span
L – E 8th/Pole Line/Moore/Loyola	30 [1]	6:30 a.m. to 11 p.m.	30 [1]	6:30 a.m. to 9 p.m.	--	--
P – MU/Davis Perimeter (Counter Clockwise)	30 [1]	6:30 a.m. to 11 p.m.	30 [1]	6:30 a.m. to 9 p.m.	60	8 a.m. to 7 p.m.
Q – MU/Davis Perimeter (Clockwise)	30 [1]	6 a.m. to 11 p.m.	30 [1]	6 a.m. to 9 p.m.	60	8 a.m. to 7 p.m.

Notes:
[1] Frequency becomes hourly starting at 7 p.m.
Source: Unitrans, 2025. Source: Routes | ASUCD Unitrans

The following compares the travel time using each route to travel to and from the UC Davis campus.

Morning Commute from Covell/Wright Bus Stop to Memorial Union

- Route P: 7:09 AM pick-up and 7:50 AM arrival = 41 minutes
- Route Q: 7:17 AM pick-up and 7:50 AM arrival = 33 minutes
- Route L = 7:14 AM pick-up and 7:50 AM arrival (at the Silo) = 36 minutes

Evening Commute from Memorial Union to Covell/Wright Bus Stop

- Route P: 5:10 PM pick-up and 5:24 PM arrival = 14 minutes
- Route Q: 5:10 PM pick-up and 5:32 PM arrival = 22 minutes
- Route L: 5:10 PM pick-up (from the Silo) and 5:29 PM arrival = 19 minutes

Based on the above, to reach the campus, proposed project residents (who value shortest travel time) would be more likely to take Route Q or Route L (if destined for the south area of the campus). Project residents would be most likely to use Route P for the return trip (and Route L for same reasons as inbound). Other factors such as bus crowding and walk distance to stop could also influence the bus route chosen.

A Route Q stop on eastbound East Covell Boulevard is immediately downstream of the Alhambra Drive intersection. In contrast, the Route P stop on westbound East Covell Boulevard is just beyond Wright Boulevard (i.e., nearly one-half mile west of Alhambra Drive).

The current Unitrans one-way fare is $1.50, with monthly, quarterly, and annual passes available at a discounted price. Free rides are available to UC Davis undergraduate students showing a valid AggieCard, seniors, and disabled passengers, and students age 5 to 18.

Yolobus provides fixed route bus and paratransit service throughout Yolo County, as well as commuter bus service to downtown Sacramento. Yolobus Express Route 43 operates between the Memorial Union within UC Davis and Downtown Sacramento, with a stop near the site. The route runs through East Davis along Covell Boulevard, Alhambra Drive, and Mace Boulevard. On weekdays, eastbound buses (heading toward Sacramento) stop on Alhambra Drive (550 feet south of East Covell Boulevard) at 7:10, 7:30, and 8:00 AM. On weekdays, westbound buses stop on Alhambra Drive (150 feet south of East Covell Boulevard) at 5:13, 5:53, and 6:13 PM. Single rides are available for $2.00, $2.25, and $3.25 for local, intercity, and express services, respectively. Discounted daily and monthly passes are available.

Davis Community Transit is a form of paratransit for customers who qualify under the Americans with Disabilities Act (ADA). It provides service within the Davis City limits in areas within one mile of regular service fixed route bus lines. Fares are $3.00 each way, with premium fares costing $4.50 each way.

Collision History

The collision history along East Covell Boulevard from Wright Boulevard to the Harper Junior High School full access driveway was analyzed using the Transportation Injury Mapping System (TIMS) database. This is a free and publicly available dataset of reported injury collisions on local and state roadways. TIMS data was obtained for the 4-year period from January 1, 2021 through December 31, 2024. This dataset provides numerous variables associated with each injury collision including time of day, day of week, date, primary collision factor, collision type, number of involved parties, collision severity, weather conditions, lighting, pavement conditions, involvement of bicyclist, pedestrian, or motorcycle, driver impaired, driver age and gender. The TIMS database classifies collisions as either fatal, severe, or injury-only. Key findings from this four years of collision data are:

- Injury collisions were reported on East Covell Boulevard at Wright Boulevard (2), Monarch Lane (2), Alhambra Drive (1), and Harper JHS Signalized Driveway (1), plus two mid-block locations.
- The collision at the East Covell Boulevard/Alhambra Drive intersection was a rear-end collision in the westbound direction.
- A collision at the East Covell Boulevard/Monarch Lane intersection involved an eastbound bicyclist who was struck by a vehicle turning from East Covell Boulevard under dark conditions.
- A collision on East Covell Boulevard east of Monarch Lane involved a bus hitting a fixed object, resulting in several injuries.
- None of the eight total collisions resulted in fatality, and none involved a pedestrian.

Emerging Transportation Technology and Travel Options

Transportation and mobility are being transformed through a number of forces ranging from new technologies, different personal preferences, and the unique effects of the COVID-19 pandemic, the combination of which could alter traditional travel demand relationships in the near- and long-term. These disruptive trends increase uncertainty in forecasting future travel conditions, especially considering that new technologies such as automated vehicles (AVs) may be operating on future transportation networks once the project would be complete and operational. Information about how technology is affecting and will affect travel is accumulating over time.

- **COVID-19 pandemic**. The COVID-19 pandemic and subsequent actions by federal, state, and local governments to curtail mobility and encourage physical distancing (i.e., limit in-person economic and social interactions) temporarily but profoundly changed travel conditions. While travel activity has returned to some form of normality after the pandemic subsided, it is possible that some of these temporary changes will influence people's travel choices into the future, including either accelerating or diminishing some of the emerging trends in transportation that were already underway prior to the pandemic. Some of the emergent changes already influencing travel behavior that could accelerate in the future include the following:
    - Substituting telework for in-office work/commute travel.
    - Substituting internet shopping and home delivery for some shopping or meal-related travel.
    - Substituting participating on social media platforms for social/recreational travel.
    - Substituting telemedicine appointments for eligible in-person medical appointments.
- **Using new travel modes and choices.** Transportation network companies such as Uber and Lyft, car sharing, bicycle/scooter sharing, and on-demand microtransit services have increased the options available to travelers in the Sacramento area and have contributed to changes in traditional travel demand relationships. For example, combined bus and rail ridership on SacRT declined by approximately 19 percent between 2016 and 2019 (prior to the COVID-19 pandemic) and by approximately 54 percent between 2016 and 2022 (after the COVID-19 pandemic). The SACSIM model was calibrated to 2016 conditions and may not fully capture all the factors influencing transit ridership declines today or in the future.
- **Automation of vehicles**. Both passenger vehicles and commercial vehicles and trucks are evolving to include more automation. Research, development, and deployment testing is proceeding on AVs; AVs do not require an operator and navigate roadways autonomously. Forecasts of how quickly research, development, and deployment testing will transition to full deployment and marketing of AVs vary widely both on the pace of the transition and the market acceptance of fully automated operation. More uncertainty exists around the behavioral response

to AVs. In terms of VMT impacts on the transportation system and the environment, the worst-case scenario would be one in which AVs are privately owned, as they are now, but the automated function of AVs would cause them to be used more as described below.

AVs could be repositioned to serve different members of a household (e.g., have an AV drop a worker at their workplace, then drive back home empty to serve another trip such as taking a student to school). The repositioning of AVs could add significantly to traffic volumes and VMT.

AVs could reduce the value travelers place on time spent in a vehicle, resulting in an increase in willingness to make longer trips. For example, if a person could read or do work in an AV instead of focusing on driving, they might be willing to commute longer distances to work. Conversely, a worker who would prefer to live in a rural area but is unwilling to drive far enough to act on that preference in a conventional vehicle may be willing to do so using an AV.

AVs could increase willingness to drive more to avoid parking costs or tolls. For example, a person going to a sporting event in an area that charges for parking might use an AV to be dropped off at the venue, and then re-position and park the AV in an area that does not charge for parking.

- **Connected vehicles** (CVs) can communicate wirelessly with its surroundings, including other vehicles, bicyclists, pedestrians, roadway infrastructure (i.e., traffic signals, toll facilities, and traffic management facilities), and the internet. The influence that CVs may have is still speculative but includes potential for reductions in collisions and congestion and greater overall network performance optimization.
- **Navigation apps.** The increased prevalence and use of navigation apps (e.g., Google Maps, WAZE, etc.) in recent years provides motorists with real-time and predictive travel time information that can influence route selection. The use of navigation apps can result in changes to travel patterns and traffic volumes during different times of the day and days of the week, particularly during recurrent congested time periods or when incidents occur that affect travel times (e.g., a crash on the freeway that requires lane closures). Diverted local and regional traffic can occur on roadways near the project site during extended periods of very low travel speeds on eastbound I-80 from the causeway, through Davis, and into Solano County. During congested conditions, low mainline travel speeds substantially increase travel times for motorists on eastbound I-80. Hence, diverting off of I-80 onto local roadways such as Covell Boulevard and Mace Boulevard often provides a faster alternative to remaining on the freeway through Davis. Similarly, locally generated traffic utilizing eastbound I-80 can experience faster travel times by accessing I-80 as far east as possible (e.g., motorists departing Downtown Davis for Sacramento accessing I-80 at Mace Boulevard or CR 32A instead of Richards Boulevard).

4. Project Travel Characteristics

This section describes the proposed project including its access points. It then presents the project's expected travel characteristics.

Project Description

According to the project description (*Willowgrove Project Description*, January 2025), the proposed project would consist of the following land uses:

- A total of 1,250 dwelling units, comprised of both affordable and market-rate single- and multi-family residences.
- 19.5 acres of parks, including a community park, mini-park, and dog park. The community park would include a playground, recreation center, two lighted softball fields, one multi-purpose (soccer/lacrosse) field, six lighted pickleball courts, bike repair station, and outdoor community gathering area.
- A 1.5-acre site for neighborhood retail, yielding 5,000 square feet.
- 43.9 acres of urban agricultural transition area.
- 7.3 acres of neighborhood greenbelts.
- A daycare facility (within the High Density Residential parcel) with approximately 6,300 square feet of building space and 2,700 square feet of playing area.

Vehicle Access

According to *Willowgrove Project Description,* access to the project site would be provided from East Covell Boulevard as follows:

- Westerly Project Access: new north leg to signalized East Covell Boulevard/Alhambra Drive intersection.
- Easterly Project Access New right-in/right-out street that intersects East Covell Boulevard at 1,560 feet[1] east of Alhambra Drive and 380 feet west of the Harper Junior High School signalized driveway.

Both access streets would consist of one lane in each direction separated by a 16-foot landscaped median.

[1] Referenced from the centerline of each intersection.

Bicycle and Pedestrian Access

According to *Willowgrove Project Description,* the following bicycle and pedestrian facilities would be constructed to provide access to the site from East Covell Boulevard:

- Extension of Class I shared-use path along the entirety of the project frontage, which would connect to the existing path to the west and the existing underpass of East Covell Boulevard at the project's westerly boundary.
- Multiple shared-use path extensions into the project from the proposed east-west shared-use path along East Covell Boulevard.
- Protected, marked crosswalks across East Covell Boulevard at signalized Alhambra Drive/Westerly Project Access intersection

Transit Facilities

The *Willowgrove Project Description* describes the following two proposed transit stops to be constructed by the project along its frontage on East Covell Boulevard:

- New bus stop in the southwest corner of the project site (west of Alhambra Drive).
- New "enhanced"[2] bus stop situated about 560 feet east of Alhambra Drive (see **Image 4** for its location as well as community park amenity locations).

[2] The Project Description does not list any specific features of this facility aside from having a real-time bus arrival board. To qualify as a bus stop, it would also need to have a bus pullout, bench, and likely a shelter.

Image 4: View of portion of project site plan showing on-site transit station adjacent to East Covell Blvd.

Modifications to the East Covell Boulevard/Alhambra Drive/Westerly Project Access Intersection

Although the *Willowgrove Project Description* does not describe the specific types of improvements to be made at this intersection, review of similar intersections along the East Covell Boulevard corridor offers some direction. That, along with input provided by City of Davis staff, led to the following anticipated intersection improvements for analysis purposes:

- The Westerly Project Access would consist of one left-turn and one shared through/right lane approaching the intersection and one lane receiving lane.[3]
- The northbound Alhambra Drive approach would be modified to consist of one left-turn and one shared through/right lane. The pair of triangular medians in the southwest and southeast corners of the intersections would be removed in favor of signal-controlled right-turn lanes.
- Crosswalks would be added to the west, east, and north legs, and maintained on the south leg.
- The northbound and southbound approaches would operate with protected left-turn phasing.
- A dedicated left-turn lane would be created in the currently landscaped median on eastbound East Covell Boulevard.

[3] The 16-foot landscaped median proposed as part of the Entry Street cross-section would be used for the dedicated southbound left-turn lane.

Final decisions have not been made regarding precisely how this intersection would be operated if it were to be modified. To provide a conservative analysis approach (in terms of vehicle queuing), the following assumptions were made at the intersection for the traffic operations analysis:

1. A 15-second non-vehicular signal phase was assumed during all cycle lengths to replicate the additional time that would be necessary for a north-south bicycle-only signal phase. Note that the SimTraffic software used in the analysis cannot model an actual bike signal.
2. Vehicles are prohibited from turning right on red (similar to what is in place at nearby intersections such as East Covell Boulevard/L Street).

Trip Generation and Distribution

Appendix A to this report is a detailed memorandum describing how the project's trip generation was derived. **Table 2** (taken from that memo) summarizes the estimated weekday and peak hour trip generation for the Willowgrove Project using the methods described in the memorandum.

After accounting for internal trips and external trips made by walking, biking, and transit use, the project would generate an estimated 10,422 new daily trips with 774 occurring during the AM peak hour, and 1,045 occurring during the PM peak hour. Among AM peak hour trips, 70% would be outbound. Among PM peak hour trips, 61% would be inbound.

At the time the project's trip generation was estimated, it was not known whether crosswalks would be added across East Covell Boulevard at Alhambra Drive. It has since been determined that they would be constructed, which would provide the project's elementary and junior high school age residents a much more direct route to walk or bike to Harper Junior High School and Korematsu Elementary School (than alternatively traveling out of direction to use the underpass situated west of the project site). Because this pedestrian facility was not assumed in place when the trip generation estimate was performed, the majority of nearby school trips were assumed to be made via private vehicle. This suggests t hat the project's external vehicle trip generation during the AM peak hour is slightly overstated. As students are released before this intersection's peak hour of travel (4:30 – 5:30 PM), the number of vehicle trips would not be affected.

Trips generated by the Community Park component of the project are reflected by the individual community center, softball/multi-use fields, and pickleball courts land uses. These uses are expected to be used primarily by project or nearby residents. Although it is conceivable that the uses could attract trips from throughout Davis and other nearby cities such as Woodland (e.g., softball or pickleball tourney, or gathering at community center), such activities are typically infrequent and occur during off-peak hours.

Table 2: Proposed Project – Vehicle Trip Generation

Land Use	ITE LUC	Units	Quantity	Daily Trips [1]	AM Peak Hour [1]			PM Peak Hour [1]		
					Inbound	Outbound	Total	Inbound	Outbound	Total
Total Trips Generated by Proposed Land Uses										
Single-Family Detached	210	Dwelling Units	712 DU's	6,714	129	369	498	421	248	669
Multifamily Housing (Low Rise)	220	Dwelling Units	288 DU's	1,941	28	87	115	93	54	147
Affordable Housing	223	Dwelling Units	250 DU's	1,203	36	89	125	68	47	115
Recreational Community Center	495	1,000 Sq. Ft. GLA	9.5 KSF	274	12	6	18	11	13	24
Softball/Multi-Use Fields	488	Fields	3 fields	215	2	2	4	33	15	48
Pickleball Courts	490	Courts	6 courts	182	3	3	6	18	7	25
Neighborhood Retail	822	1,000 Sq. Ft. GLA	5 KSF	272	7	5	12	17	17	33
Daycare Center	565	1,000 Sq. Ft. GLA	6.3 KSF	300	37	32	69	33	37	70
			Raw External Vehicle Trips	*11,101*	*254*	*593*	*847*	*694*	*438*	*1,131*
Reductions for Internal Capture and External Walking, Biking, and Transit use										
			Internal Capture [2]	-568	-14	-34	-48	-36	-24	-60
			External Walk, Bike, and Transit [3]	-111	-4	-21	-25	-21	-5	-26
			Total Reductions	*-679*	*-18*	*-55*	*-73*	*-57*	*-29*	*-86*
			Net New External Vehicle Trips	**10,422**	**236**	**538**	**774**	**637**	**409**	**1,045**

Notes: [1] Trips generated based on trip rates from 11th Edition of *Trip Generation Manual* (Institute of Transportation Engineers, 2021).
[2] Internal capture reductions based on application of MXD+ model: Daily = 5.1%, AM Peak Hour = 5.9%, PM Peak Hour = 5.3%.
[3] External walk, bike, and transit trip reductions are derived from MXD+ model for daily trips and US Census Bureau ACS journey to work data. See Appendix A.
Values may be sum perfectly due to rounding.
KSF = Thousand square feet. GLA – Gross Leasable Area.
Sources: Fehr & Peers, 2025.
.

The project would construct two new bus stops along its frontage. However, there are no known agreements with Unitrans or Yolobus indicating that buses would stop at either location. If Unitrans' P Route were to stop at one of the new stops along the project frontage, a project resident would no longer have to walk the one-third mile distance to the nearest Route P stop at Wright Boulevard. This change could make use of the P Route more convenient to access destinations such as Oak Tree Plaza Shopping Center, Davis Senior High School, Sutter Davis Hospital. This was not explicitly considered in the trip generation estimates as agreements have not been reached with transit providers to stop in front of the project.

The project's daily new trips generated can be classified as follows:

- 91% or 9,473 new daily trips are associated with the residential land uses
- 9% or 949 new daily trips are associated with the non-residential land uses

The expected spatial distribution of new trips generated by the project was derived using a combination of resources. Project trips were added to the City of Davis base year travel demand model. The model was then run and the spatial distribution of trips from the Traffic Analysis Zone (TAZ) that represents the project area was tracked. It was also possible to approximate the distribution of trips generated by the Wildhorse Project located west of the project site (by reviewing travel patterns at its access points on East Covell Boulevard and Pole Line Road). The two methodologies yielded comparable results, which are shown in **Table 3.**

Table 3: Expected Project Trip Distribution Percentages

Direction of Project Trips	To/From the West on East Covell Boulevard	To/From the East on East Covell Boulevard	To/From the South on Alhambra Drive
Inbound	52%	38%	10%
Outbound	48%	40%	12%

Notes: Separate percentages are shown for inbound versus outbound. Inbound trips, which occur to a larger degree in the afternoon/evening have different trip purposes than outbound trips.
Source: Fehr & Peers, 2025.

Table 3 indicates that about half of all project trips would be distributed to/from the west on East Covell Boulevard. This information is utilized when analyzing turn lane needs and other design features at the East Covell Boulevard/Alhambra Drive/Westerly Project Access intersection.

5. Environmental Impacts

This section describes the evaluation of potential transportation impacts associated with the implementation of the project and, in instances where the project would cause a significant impact, identifies potential mitigation measures that would lessen the severity of the impact. This section provides separate impact analyses and significance determinations for the proposed project under existing and cumulative conditions.

Thresholds of Significance

The project would have a significant impact if it would result in any of the conditions listed below.

Vehicle Miles Traveled Criteria

The City of Davis has not formally adopted guidance or thresholds related to VMT impact analysis (i.e., tailored screening criteria, preferred metrics and calculation methods, and use-specific thresholds). However, both the City of Davis General Plan and its Climate Action and Adaptation Plan (CAAP) include policies and performance objectives for reducing VMT. This analysis relies on guidance from the LUCI *Technical Advisory*. Per guidance from the *Technical Advisory*, the project would result in a significant VMT impact if it would cause the following:

- The project residential component would generate residential VMT per capita exceeding 15% below baseline local or regional residential VMT per capita for residential uses.

The project's residential uses represent the dominant uses and would be responsible for most external daily vehicle trips (over 90%) and VMT that would be generated by the project. Therefore, per the *Technical Advisory*, it is appropriate to evaluate project VMT impacts associated with the project's residential component.

Bicycle and Pedestrian Facility Criteria

The project is considered to result in a significant impact to bicycle or pedestrian facilities if:

- The project would conflict with existing, planned, or possible future bicycle or pedestrian facilities; or
- The project would otherwise decrease the performance or safety of such facilities.

Transit Service and Facilities Criteria

The project is considered to result in a significant impact to transit facilities and services if:

- The project would conflict with existing, planned, or possible future transit facilities and services; or
- The project would otherwise decrease the performance or safety of such facilities and services.

Other Transportation Considerations

The project is considered to result in a significant impact if any of the following conditions occur:

- The project would substantially increase hazards due to a geometric design feature or incompatible uses;
- The project would not provide for adequate emergency vehicle access and on-site circulation; or
- Construction-related traffic would cause adverse effects as defined by the transportation system criteria described above.

Analysis Methods and Results

The transportation impact analysis methodology includes a combination of quantitative and qualitative evaluations of the transportation system. The specific analysis methods are described below.

Vehicle Miles Traveled

The VMT impact assessment relies on guidance provided in the LUCI *Technical Advisory*. Specifically, this analysis considers the following.

- Does the project meet one or more of the screening thresholds identified in the *Technical Advisory* such that a detailed analysis is not necessary?
    - If so, what information or data are available to support the conclusion that the project meets the screening threshold and should be considered to have a less-than-significant transportation impact?
- If the project does not meet one or more of the screening thresholds, this analysis would proceed to a detailed analysis of the project's VMT impact. This includes quantifying the project's VMT generation rate and determining whether it would exceed the criteria established in the Thresholds of Significance.

Vehicle Miles Traveled Impact Screening

The *Technical Advisory* identifies screening thresholds to quickly identify, without conducting a detailed study, when a project should cause a less-than-significant transportation impact. As described in the Regulatory Setting, the *Technical Advisory* suggests the following projects should have a less-than-significant impact on VMT.

- Small projects
- Projects near major transit stops
- Affordable residential development
- Local-serving retail
- Projects in low-VMT areas

Of these project types, only the criterion for projects near major transit stops is codified in the updated CEQA Guidelines. A major transit stop is defined as "the intersection of 2 or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods". Although four bus routes stop within ½ mile of the project site, none operate with 15 minute headways. Therefore, the project does not qualify as being near a major transit stop.

The project would not screen out as a small project, an affordable residential development (given that only 20% of the units would be affordable) or as local-serving retail. As is discussed in Section 3, residential VMT per capita generated by existing residential uses within the project vicinity is slightly above the existing City average and substantially above the existing SACOG average. So, the project would also not screen out as being in a low-VMT area. Therefore, a quantitative VMT analysis is necessary.

Vehicle Miles Traveled Analysis

SACOG's SASCIM19 travel demand model was utilized to develop VMT estimates for the proposed project. The SACSIM19 model is a sophisticated activity-based model that predicts the travel demand and travel patterns for residents, workers, students, visitors, and commercial vehicles throughout the SACOG region. The model requires inputs such as population and employment to represent the land use and transportation network associated with each scenario. For the purposes of this study, the base year SACSIM19 model was refined to include traffic analysis zone (TAZ) splits, land use inputs, and centroid connectors that align with the various land use components and vehicular accesses associated with the proposed project. Proposed project land uses were incorporated by adding the parcel, household, and synthetic population inputs in the SACSIM19 model.

For the project residential component VMT analysis, the SACSIM19 model was utilized to estimate residential VMT per capita that would be generated by the project residential component. Residential VMT includes all automobile (i.e., passenger cars and light-duty trucks) vehicle-trips, which are traced back to the residence of the trip-maker. Residential VMT includes all vehicle "tours" (both work/commute vehicle tours and non-work vehicle tours) that are associated with the residential unit including non-home-based travel. VMT for each home is then summed by TAZ and divided by the total population in that TAZ to arrive at residential VMT per capita. From the SACOG guidelines, residential VMT includes trips #1-7 from **Figure 5**.

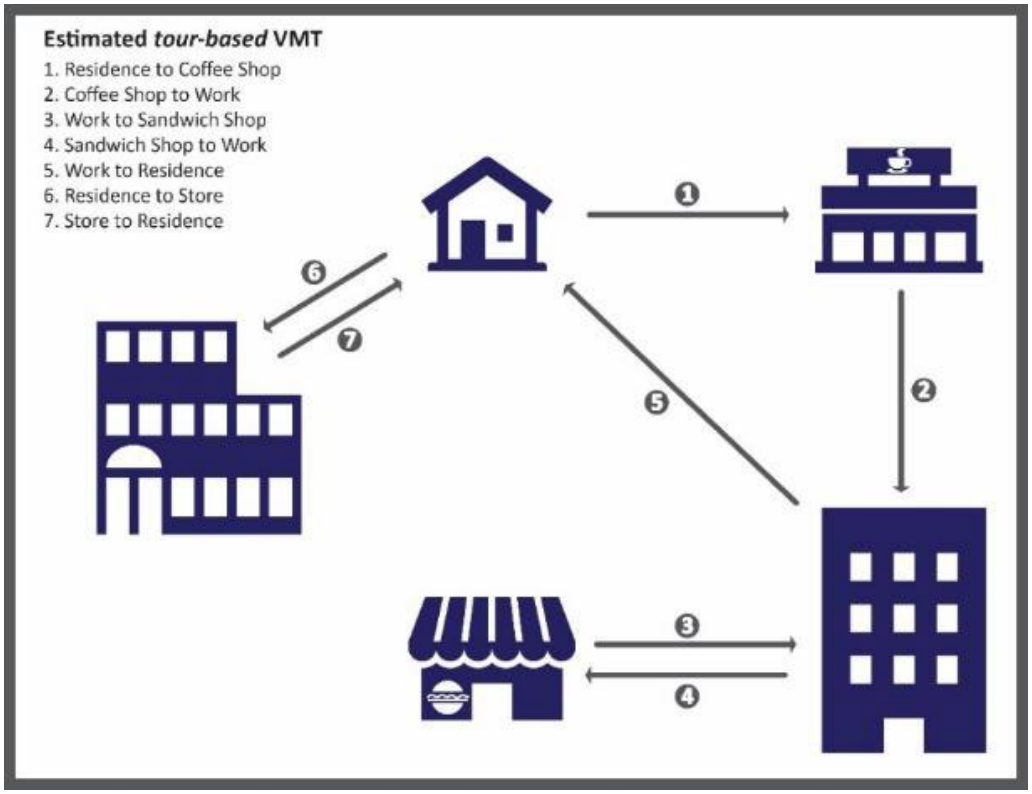


Figure 5: Typical household daily travel in tour-based travel model

Project-generated residential VMT per capita also accounts for the full amount of VMT generated by trips with a trip end located outside of the SACOG region (e.g., Dixon or Vacaville). A select zone analysis was performed for the TAZ containing the project site to determine the number of project-generated residential vehicle trips estimated by the SACSIM19 model.

However, SACSIM, like nearly all other travel demand models, is not sensitive to many project-specific elements or programs that are intended to reduce travel. The following transportation demand management (TDM) strategies that are described in the *California Air Pollution Control Officers Association*

(CAPCOA) Handbook for Assessing GHG Emission Reductions, Climate Vulnerabilities, and Health and Equity (December 2021) Report ("*CAPCOA Report*") are included as part of the project description:

- T-1: Increase residential density
- T-4: Integrate Affordable Housing
- T-17: Improve Street Connectivity
- T-18: Provide Pedestrian Improvement
- T-19-A: Construct or Improve Bike Facility
- T-20: Expand Bikeway Network
- T-25: Extend Transit Network Coverage or Hours
- T-56: Active Modes of Transportation for Youth

Of these, the SACSIM model is generally sensitive to strategies T-1 and T-4, while the other six are not. The following describes how the remaining six strategies were accounted for in the project's VMT estimation.[4]

Improved Street Connectivity

The *CAPCOA Report* suggests intersection density has an elasticity of -14% on VMT. This means that a 100% increase in intersection density would result in a 14% decrease in VMT. The report mentions that average US intersection density for suburban settings is 36 intersections per square mile. The project, by virtue of its density and grid street system, has a greater density of 108 intersections per square mile. Applying these elasticities would translate into an expected 28% reduction in VMT, which is clearly unreasonable and unlikely given the information below.

The SACSIM model estimates that the proposed project's vehicle trips would have an average one-way trip length of about 11 miles. This clearly implies that some project trips have destinations beyond the City of Davis or UC Davis campus (in order for the average 11-mile trip length to be realized). According to the 2022 National Highway Transportation Survey (NHTS)[5], about 4% of all vehicle trips are 0.5 miles or less with trips over 0.5 to 1 mile being another 13%. Hence, there are only a limited number of short-distance trips that may be substituted from being vehicle to becoming non-auto due to improved street connectivity.

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[4] Page 26 of the *Technical Advisory* explicitly mentions that travel demand model results may need to be paired with other tools or research by stating: "Travel demand models, sketch models, spreadsheet models, research, and data can all be used to calculate and estimate VMT."

[5] Source: National Household Travel Survey

The elasticity in the *CAPCOA Report* was obtained from an article in the Journal of the American Planning Association entitled *Does Compact Development Make People Drive Less*? (Stevens, 2016). The closing paragraphs of this article states: "Planners who wish to reduce driving in their communities should probably not automatically assume that compact development will be very effective at achieving that goal. At a minimum, planners and municipal decision makers should not rely on compact development as their only strategy for reducing VMT unless their goals for reduced driving are very modest." In light of this guidance, the relative type and mix of on-site land uses, and the NHTS trip length distribution data, no more than a 3% reduction in VMT can reasonably be assumed for the project based on its street connectivity.

Provide/Improve Pedestrian Improvement

This measure considers how increased sidewalk coverage improves pedestrian access, encouraging people to walk instead of drive. Although the project would construct a number of sidewalks on-site, the measure is meant to be applied only along the public street (i.e., along East Covell Boulevard from Wright Boulevard to Harper Junior High School). The project would increase the total sidewalk or shared-use space in this area from 1.5 miles of sidewalk to 2.0 miles. Based on the methodologies suggested in the *CAPCOA Report*, a 1.7% reduction in VMT would be expected.

Construct or Improve Bike Facility

This measure will construct or improve a single bicycle lane facility (Class I, II, or IV) that connects to a larger existing bikeway network. Providing bicycle infrastructure helps to improve biking conditions within an area. This encourages a mode shift on the roadway parallel to the bicycle facility from vehicles to bicycles, displacing VMT. This strategy has an ultimate effectiveness of a 0.8% reduction in VMT based on a variety of factors, the most significant being the proportion of overall plan or community VMT that is on the roadway parallel to the bike facility being added.

The following order of magnitude calculations were prepared to understand what type of VMT reduction could be achieved by virtue of adding the Class I shared-use path along the project's frontage and the crosswalks at the Alhambra Drive intersection. According to student generation estimates from the Davis Joint Unified School District, the project could yield approximately 288 students in grades kindergarten through 12th grade.[6] The nearby Korematsu Elementary or Harper Junior High Schools serve 11 of the 13 grades between Kindergarten and 12th grade, hence about 250 project students may attend those schools. Each one-way trip would be about 4,300 feet (from the project mid-point to each school). On a daily basis, each of those student walk/bike tours would be replacing four (4) 4,300-foot vehicle trips per day (i.e.,

[6] *Boundary/Enrollment Board Study Session 3* (Davis Joint Unified School District, November 2024) estimated about 0.23 students per unit for proposed project.

morning outbound and return trip, and afternoon outbound and return trip), which equates to about 3.25 VMT per student eliminated. As is presented in detail later in this section, total VMT per dwelling unit is roughly estimated to be about 85 miles of travel per day.[7] If two-thirds of the 250 students attending these two nearby schools choose to walk or bike, the total VMT savings would be 545 VMT. This translates to a total reduction of 0.5% residential VMT.[8]

Given the above and that the extension of the Class I shared use path would likely also encourage other types of project trips to be non-auto, the maximum 0.8% reduction recommended by the *CAPCOA Report* for this TDM strategy is justified.

Other CAPCOA Report Strategies

CAPCOA Report Strategies T-20 (Expand Bikeway Network) and T-56 (Active Modes of Transportation for Youth) were not considered as they duplicate the effects of strategy T-19A, which was considered above. *CAPCOA Report* Strategy T-25 (Extend Transit Network Coverage or Hours) was not considered because although the project would construct new bus stops along East Covell Boulevard, an agreement is not in place with transit service providers to have buses stop at these locations.

VMT Reductions due to Project Attributes

When the above three strategy reductions are summed, the net result is a 5% reduction in VMT. This value is applied to the project's residential VMT per capita as a post-model adjustment.

Table 4 compares the project-generated average residential VMT per capita versus the baseline local (i.e., City of Davis), and baseline regional (i.e., SACOG region) residential VMT per capita. Key findings from this table are:

- The project would generate an average of 32.5 VMT per capita, which is 8% above the City of Davis average and 50% above the SACOG region average.
- To generate VMT at a level equal to or below the significance threshold (for the Davis City-wide average comparison), a 21.2% reduction in VMT per capita would need to be achieved through implementation of transportation demand management (TDM) strategies. An even greater 43.4% reduction would be needed in order for the project's VMT per capita to be below the regional significance threshold (i.e., less than 18.4 VMT per capita).

[7] Calculated as direct SACOG output of 34 miles of travel per capita multiplied by 2.49 persons per household (from 2023 American Community Survey U.S. Census Bureau QuickFacts: Davis city, California).

[8] Calculated as follows: 1,250 units at 85 VMT per unit = 106,250 residential VMT. 545 VMT removed / 106,250 total residential VMT = -0.5%

Table 4: Project Residential Component Weekday Residential VMT per Capita

Scenario	Residential VMT per Capita	Significance Threshold (15% Below Existing Average)	Project Residential Component Compared to Baseline Average	Project-Generated Residential VMT per Capita Reduction Required to Meet Significance Threshold
Project Residential Component	32.5 [1]	--	--	--
Baseline City of Davis Average	30.1	25.6 [2]	+ 8.0%	- 21.2%
Baseline SACOG Region Average	21.7	18.4	+ 50.0%	- 43.4%

Notes: [1] Output from SACOG SACSIM19 travel demand model indicated 34.2 VMT per capita. Value shown here represents a 5% reduction in VMT due to the three project attributes described on the previous pages.

[2] Represents the VMT significance threshold for the City of Davis, which is 85% of the baseline City of Davis residential VMT per capita average. Calculated as follows: 30.1 residential VMT per capita x 0.85 = 25.6 residential VMT per capita.

Sources: SACOG SACSIM19 travel demand model and Fehr & Peers, 2025.

The above analysis necessarily compared the project's VMT per capita against city-wide and region-wide averages, as that is the basis of the significance criteria used for VMT impact analysis. However, when considering a project's VMT impacts, it can also be important to examine how it would affect total VMT generated in the region. By virtue of adding more housing in the City of Davis, it is conceivable that some long-distance trips made to the UC Davis campus and to other employers in the city would be replaced with much shorter trips. To test this hypothesis, the total VMT on all roadways in the SACSIM travel demand model was totaled for the base year model. That total was 63,101,746 miles of travel on a weekday. When the project was added, total miles of travel was 62,997,446, a 104,300 mile decrease.[9] While there would be a region-wide decrease in VMT, total travel within the City would increase, which is contrary to VMT reduction policies and objectives in the City's General Plan and CAAP. Therefore, the significance criteria of evaluating the project's VMT per capita against citywide and regional averages is appropriate.

With regard to the non-residential land uses (i.e., neighborhood retail, daycare center, pickleball courts, community center, playing fields), these uses are primarily intended to support the project and nearby residents. According to Table 2, they would generate about gross 1,250 daily trips, with an estimated 23% of those trips being internalized. Many of the trips attracted to the project's non-residential uses from external locations would be short-distance trips and may be replacement travel. Northeast Davis currently has a limited selection of small retail and coffee shops to serve its residents. While there are tennis courts

[9] The travel demand model pairs trip productions (i.e., residences) and attractions (jobs, university, shopping, etc.). By virtue of adding units here, the model is substituting these trip productions in place of longer distance trips into the city from more remote areas like Sacramento and Woodland. This helps explain the reduction in VMT predicted by the model.

that also allow for pickleball at Slide Hill Park and Covell Park, there is not a designated group of pickleball courts for residents to gather and compete. Thus, the project's non-residential land uses are properly considered local-serving.

Bicycle and Pedestrian Facilities

The impact assessment for bicycle and pedestrian travel considers existing and planned bicycle and pedestrian facilities and reviews the project to determine whether it would physically disrupt an existing facility or interfere with a planned facility. This assessment also considers whether the project would increase conflicts between bicyclists and pedestrians and other modes of travel.

Transit Service and Facilities

The impact assessment for transit considers existing and planned transit facilities and services and reviews the project to determine whether it would physically disrupt an existing service or facility or interfere with a planned service or facility.

With regard to additional bus passengers, Unitrans' policy is to increase headways from 30 minutes to 15 minutes on routes with more than 60 passengers per hour. The three Unitrans routes that operate near the project site have 30 minute headways currently and have ridership levels that are well under the 60 passenger per hour threshold. Development of the project would not cause these thresholds to be exceeded.

Other Impacts

Potential transportation impacts related to hazards, emergency access, and construction activity are based on a review of project changes to the transportation network and a qualitative assessment of whether those changes would conflict with impact threshold expectations.

Project Impacts and Mitigation Measures

Impact 1: Impacts to vehicle miles traveled (VMT) on the roadway system.

Table 4 displays the residential VMT per capita generated by the proposed project compared to baseline local and regional residential VMT per capita averages. As shown in Table 4, residential VMT per capita generated by the proposed project residential component would be 8% and 50% above baseline local and regional residential VMT per capita averages, respectively. Therefore, the proposed project residential component would generate residential VMT per capita exceeding 15% below baseline local and regional residential VMT per capita averages. Altogether, this impact would be **significant**.

Mitigation Measure 1.1. Implement transportation demand management (TDM) strategies to reduce project-generated residential VMT per capita.

Implementation of TDM strategies can result in reductions to a project's VMT based on certain types of project site modifications, programming, and operational changes. The *CAPCOA Report* identifies numerous TDM strategies and quantifies their potential vehicle trip reduction effects. The following CAPCOA strategies are recommended for implementation, assuming they are determined to be feasible.

1. **Implement Conventional Carshare Program (CAPCOA Handbook Strategy T-21A)** – This measure will increase carshare access in the user's community by deploying conventional carshare vehicles. Carsharing offers people convenient access to a vehicle for personal or commuting purposes. This helps encourage transportation alternatives and reduces vehicle ownership, thereby avoiding VMT and associated GHG emissions. According to the *CAPCOA Report*, the maximum effectiveness of this strategy would result in a project VMT decrease of 0.15%. Quantifying the efficacy of this strategy would be dependent on the number of carshare vehicles deployed in the project area.

    - The project applicant shall partner with a carshare service provider and ensure that carshare vehicles are available to project residents in the community park parking lot.

2. **Provide Community-Based Travel Planning (CAPCOA Handbook Strategy T-23)** – This measure will target residences in the plan/community with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing household VMT. The effectiveness of this measure cannot be quantified because it is unknown what proportion of households in the project would participate and what level of VMT reduction would be achieved in each. The *CAPCOA Report* suggest a maximum reduction of 2.3%.

    - Through its Homeowners Association (HOA), the project applicant shall operate a community-based travel planning program for its residents. This involves teams of trained travel advisors visiting all households, having tailored conversations about residents' travel needs, and educating residents about the various transportation options available. Other projects in Davis and elsewhere have considered joining Yolo Commute (source: Yolo Commute) as a means to meet this requirement. This nonprofit organization's mission is to reduce single-occupant (drive alone) commutes throughout Yolo County.

3. **Extend Transit Network Coverage or Hours (CAPCOA Handbook Strategy T-25)** – This measure will expand the local transit network by adding two new bus stops adjacent to the project site. The new stops would likely be used by Unitrans Route P, and Yolobus Route 43. They could potentially increase transit mode split by virtue of providing a more convenient bus passenger loading/unloading area. According to the *CAPCOA Report*, the maximum effectiveness of this strategy would produce a project VMT decrease of 4.6%, though achievement of this level of reduction would require expanding the transit service area and lengthening hours of operation. Quantifying the efficacy of this strategy is not possible at this time due to the uncertainty of which bus routes project residents would select and whether a bus stop closer to the site would change travel behavior.

    - The project applicant shall coordinate with Unitrans and Yolobus to achieve a modification in the service for their Routes P and 43, respectively, to include stops at the project site.

4. **Provide Transit Shelters (CAPCOA Handbook Strategy T-46)** – This measure consists of adding bus shelters and displaying real-time arrival information at the bus stop and transit station that the project proposes to construct along East Covell Boulevard. These amenities make it safer and more comfortable to wait for the bus, protecting passengers from extreme weather (i.e., high temperatures and heavy precipitation). According to the *CAPCOA Report*, the maximum effectiveness of this strategy would be a project VMT decrease of 0.32%. Quantifying the efficacy of this strategy is not possible as it requires a number of inputs (e.g., increase in number of bus boardings, project transit mode split, percent of total travel time spent waiting, etc.) that are not known at this time.

    - The project applicant shall include bus shelters and real-time bus arrival boards at its bus stops. It is expected that the bus pullout, shelter pad and any underground conduit would be constructed with project frontage improvements. But the shelter itself and any electrical connections would likely be deferred until such time that a transit service provider agrees to provide bus service at the stop.

The following *CAPCOA Report* strategies were reviewed, but are not considered feasible at this time (with explanation of infeasible finding included):

- Limit Residential Parking Supply (T-15) – According to the applicant, the public has expressed concerns about the need for adequate parking and limited parking for the community park could impact street parking in surrounding neighborhoods.

- Unbundle Residential Parking Costs from Property Costs (T-16) – According to the applicant, single-family homes and condominium products will have garages as part of design and to accommodate EV charging. The only apartments are deed-restricted affordable housing and the affordable housing developer has indicated that unbundled parking is not feasible for deed-restricted affordable housing and the necessary grant funding sources.
- Implement Bikeshare & Scootershare Programs (T-22A, B, and C) – Spin already provides this type of micromobility service in the City of Davis. So, it is not possible to implement a program at a citywide level.
- Implement Market Price Public Parking (T-24) - This measure consists of pricing on-street parking in a community, with particular focus placed on high-demand parking areas near central business districts, employment centers, and retail centers. As no such uses are proposed on-site, this measure is not applicable.

Additionally, as the project is primarily residential in nature and will not have any large employers, specific TDM strategies focused on employee vehicle trip reductions are also not applicable.

Significance after Mitigation

Implementation of Mitigation Measure 1.1 would reduce residential VMT per capita associated with the project residential component by implementing TDM strategies to reduce external vehicle trips generated by project residents. However, the effectiveness of the TDM strategies cannot be quantified at this time and subsequent vehicle trip reduction effects cannot be guaranteed. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by public or private entities (e.g., transit providers, HOA, etc.).

Finally, even if implemented, it is uncertain if TDM strategies would be able to sufficiently reduce VMT generated by the project to levels below the thresholds of significance. For example, residential VMT per capita generated by the proposed project residential component would need to decrease by 21% to fall below the threshold of significance for the baseline local average and decrease by 43% to fall below the regional residential VMT per capita average. Available evidence suggests that conventional TDM strategies are not capable of achieving such trip reduction outcomes in suburban settings such as that of the project site. Due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce VMT impacts to less-than-significant levels, VMT impacts associated with the proposed project would be considered **significant and unavoidable**.

Impact 2: Impacts to bicycle and pedestrian facilities.

Existing bicycle and pedestrian facilities within the project site vicinity are described in the Environmental Setting. The project description does not include proposed modifications to existing bicycle and pedestrian facilities, and therefore it would not physically disrupt existing bicycle or pedestrian facilities.

The project would construct new bicycle and pedestrian facilities and expand the local bicycle and pedestrian network as follows:

- Extension of Class I shared-use path along the entirety of the project frontage on the north side of East Covell Boulevard, which would connect to the existing path to the west and the underpass of East Covell Boulevard at the project's westerly boundary.
- Multiple shared-use path extensions into the project from the proposed east-west shared-use path along East Covell Boulevard.
- The following modifications to the East Covell Boulevard/Alhambra Drive/Westerly Project Access Intersection would be made to enhance bicycling and walking in the area:
    - The pair of triangular medians in the southwest and southeast corners of the intersection, which currently allow free-flow, yield-controlled vehicle movements would be replaced with signal-controlled right-turn lanes. Additionally, the curb returns in the corners would be reconstructed with smaller radiuses, removing excess pavement and reducing turning speeds.
    - Crosswalks would be added to the west, east, and north legs, and maintain crosswalk on south leg.
    - Bicycle detection and signal phasing/timing would be provided for northbound and southbound movements.
    - Right turn on red (RTOR) would be restricted to reduce conflicts between vehicles and bicyclists and pedestrians.

School-age children residing in the project would have multiple options for accessing nearby Harper Junior High School or Korematsu Elementary School on foot or by bike. To cross East Covell Boulevard, they could either use the underpass or the signalized crosswalks at Alhambra Drive, which would have bicycle-only signal phases.

The project would not physically disrupt an existing bicycle or pedestrian facility and would not interfere with a planned bicycle or pedestrian facility. The *City of Davis Beyond Platinum Bicycle Action Plan* does not show any planned bicycle facilities along the project frontage or near the project. The closest improvements shown are on Loyola Drive (addition of buffered bike lane) between Pole Line Road and Tulip Lane, and on Birch Lane (addition of shared lane) between East Covell Boulevard and Pole Line Road.

The project would not preclude these or any additional crossing improvements near Harper Junior High School from being constructed.

As part of Mitigation Measure 3.2, the project is recommended to construct westbound right-turn lanes at the project's two access points on East Covell Boulevard. As there is currently a Class II bike lane on westbound East Covell Boulevard, the addition of these turn lanes would increase conflicts between bicyclists and vehicles. Thus, Mitigation Measure 3.2 would cause a secondary impact resulting in the proposed project conflicting with a program, plan, ordinance, or policy addressing pedestrian facilities or bicycle facilities, thereby resulting in a ***significant*** impact.

Mitigation Measure 2.1. *Install high visibility bike lane conflict markings on westbound East Covell Boulevard at the project's two access points.*

The project applicant shall install, to the satisfaction of the City Engineer, a green skip-striping bike lane marking at the transition taper (i.e., mixing zone) at the start of each turn pocket, a continuous green bike lane, and then a skip-striped bike lane marking through each intersection.

The design recommended would be similar to what was constructed on eastbound East Covell Boulevard at the signalized access at Harper Junior High School in 2020/2021. These high visibility improvements will alert motorists to the potential for a bicyclist to be present, and also enhance the profile of bicyclists. Implementation of these improvements, or a set of improvements of equal effectiveness as determined by the City of Davis City Engineer, would reduce the potential for conflicts between vehicles and bicyclists thereby improving safety.

Significance after Mitigation

Implementation of Mitigation Measure 2.1 would reduce the project's significant impact to bicycle and pedestrian facilities associated with the proposed project to a **less-than-significant** level.

Impact 3: Impacts to transit services and facilities.

Several bus stops are located in close proximity to the project's westerly access on East Covell Boulevard opposite Alhambra Drive. The project would not conflict with any of those existing facilities. The City of Davis is in the midst of updating its Short Range Transit Plan, with an updated plan anticipated to be adopted in Summer 2026. The project would not cause conflicts with any known future planned transit facilities or services.

With regard to whether the project would decrease the performance or safety of the transit system, existing transit system performance is already strained by peak period congestion on roadways such as

Covell Boulevard and Mace Boulevard. According to the Unitrans General Manager's Report in April 2024 [10]:

> *The worst on-time performance was on the P and Q lines, which are severely impacted by traffic delays. The Q line was only on-time 57% of the time and the P line only 68% of the time. Traffic on the 14th Street corridor during school bell times and Mace Boulevard in the afternoons contributed to low on-time performance.*

On-time performance is defined by Unitrans as a bus arriving at the terminal before the scheduled time or within five minutes of the scheduled time. Arriving more than five minutes late is defined as "late".

The project would cause a substantial increase in travel time in the westbound direction of East Covell Boulevard (approaching the project site) during the evening commute period. The single westbound travel lane at the East Covell Boulevard/Alhambra Drive/Westerly Project Access intersection would experience an average delay increase from less than 10 seconds per vehicle (under existing conditions) to over four (4) minutes per vehicle with the project developed. In other words, with the project built and with no other improvements, a driver on westbound Covell Boulevard would experience a four-minute increase in travel time home or to the store due to the time it would take to pass through the congested West Covell Boulevard/Alhambra Drive intersection. This delay increase would be experienced by private vehicles and public buses alike. As a result of these delays, the performance of the Unitrans and Yolobus routes could suffer, with on-time arrivals becoming more challenging to complete. Altogether, this impact would be considered **significant**.

Mitigation Measure 3.1. Construct dedicated right-turn lanes on westbound East Covell Boulevard at the two project accesses.

These measures will remove the considerable volumes of right-turning traffic entering the project site from the westbound through movement flow that is accommodated by a single travel lane. With this improvement in place, PM peak hour delays to westbound through traffic (including buses) at the East Covell Boulevard/Alhambra Drive/Westerly Project Access intersection would decrease from over four (4) minutes per vehicle without the improvement to 40 seconds with the improvements in place. This improvement would primarily help Route P, which operates in the westbound direction of East Covell Boulevard. The very modest net increase in travel time (between existing and existing plus project with this mitigation in place) at this intersection (40 seconds) is negligible compared to the total 50-minute length of Route P, and typical daily/hourly fluctuations in travel. Thus, the improvements effectively offset any degradations to on-time transit performance.

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[10] Source: Title Layout Accessed on April 10, 2025.

Significance after Mitigation

Implementation of Mitigation Measure 3.1 would reduce the significance of this impact. The identified improvement would offset any worsening of on-time transit service performance. Therefore, this impact would be **less than significant** after mitigation.

Impact 4: Impacts to emergency vehicle access.

The project would include two vehicular access points on East Covell Boulevard. These connections would provide multiple opportunities and routes for emergency vehicles to access the site from different directions. The closest current City of Davis fire station to the project site is located on Mace Boulevard south of I-80. The Davis Fire Department has identified a need for a public safety center (PSC) in the northeastern portion of the City. If the facility is not accommodated elsewhere (e.g., in Village Farms), the proposed project would reserve land to accommodate the PSC on its southwestern multi-family parcel (adjacent to East Covell Boulevard). The PSC would ultimately be designed and implemented by the Davis Fire Department and could consist of a four-bay fire station, training facility, classrooms/Emergency Operations Center (EOC) and police substation. The PSC would have a dedicated entry and exit onto East Covell Boulevard. The PSC is not included as part of the proposed project, and would be subject to independent environmental review if developed. However, if the proposed project is developed, it is reasonable to expect a fire station to be located either on the site or elsewhere in northeast Davis. Traffic signals on East Covell Boulevard are equipped with emergency vehicle pre-emption equipment, enabling emergency responders to turn signals to green. Medical emergency service access to/from Sutter Davis Hospital (located 3.7 miles west of the project site) would be available via East Covell Boulevard via the signalized project access opposite Alhambra Drive. Additionally, the design of the on-site roadways and intersections will be subject to City of Davis code and Public Works Department staff review and approval. Altogether, this impact is considered **less-than-significant**.

Mitigation Measures

No mitigation measures required.

Impact 5: Hazards impacts.

Peak hour traffic operations were analyzed to determine if the addition of project trips would cause off-ramp vehicle queues to spill back onto the I-80 and SR 113 freeway mainline. To the extent possible, Caltrans strives to prevent off-ramp queues from extending to the freeway mainline in order to minimize the potential for associated adverse operational and safety effects (e.g., speed differentials between vehicle traffic on the freeway mainline and stopped/queued off-ramp vehicle traffic that could increase the potential for conflicts). **Table 5** displays the maximum freeway off-ramp queues at the SR 113/West

Covell Boulevard, I-80/Mace Boulevard/Chiles Road, and I-80/County Road 32A/County Road 32B interchanges under Existing and Existing Plus Project conditions (see **Appendix B** for technical calculations). As shown, all maximum queues would continue to be accommodated within the available off-ramp storage under Existing Plus Project conditions. Therefore, no adverse safety hazards associated with off-ramp queuing are expected under this condition.

Mitigation Measures

No mitigation measures required.

Table 5: Freeway Off-Ramp Queuing – Existing and Existing Plus Project Conditions

Off-Ramp	Off-Ramp Distance [1]	Maximum Queue Length[2]			
		Existing Conditions		Existing Plus Project Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
West Covell Boulevard/SR 113 SB Ramps	1,375 feet	475 feet	250 feet	425 feet	275 feet
West Covell Boulevard/SR 113 NB Ramps	1,275 feet	300 feet	375 feet	325 feet	525 feet
Mace Boulevard/I-80 WB Off-Ramp	1,200 feet	200 feet	175 feet	225 feet	300 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	125 feet	175 feet	175 feet	200 feet
County Road 32A/I-80 WB Ramps	1,020 feet	100 feet	100 feet	125 feet	125 feet
Chiles Rd/County Road 32B/I-80 EB Ramps	875 feet	50 feet	50 feet	50 feet	50 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include any auxiliary lanes on freeway mainline.
[2] Maximum queue estimates are based on results from SimTraffic micro-simulation model. Queues are maximum per lane, rounded up to the nearest 25 feet.
Source: Fehr & Peers, 2025.

Impact 6: Conflict with a program, plan, ordinance, or policy addressing the circulation system during construction activities. Based on the analysis below and with implementation of mitigation, the impact is less than significant.

Construction of the project, including site preparation and construction, and delivery activities, would generate employee trips and a variety of construction-related vehicles. Construction activities would include disruptions to the transportation network near the project site, including the possibility of temporary lane closures, street closures, sidewalk closures, and bikeway closures. Bicycle and transit access may also be disrupted.

The transport of heavy construction equipment to the site, haul truck trips, and construction worker commutes could affect the local roadway network. Construction workers typically arrive before the morning peak hour and leave before the evening peak hours of the traditional commute time periods. Deliveries of building material (lumber, concrete, asphalt, etc.) would also normally occur outside of the traditional commute time periods. In addition, any truck traffic to the project site would follow designated truck routes, and construction would likely stage any large vehicles (i.e., earth- moving equipment, cranes, etc.) on the site prior to beginning site work and remove such vehicles at project completion. However, detailed information related to the construction routes and equipment staging, or a construction management plan, is not available. As a result, construction activities could include disruptions to the transportation network near the site. These activities could also result in degraded roadway conditions. Altogether, these factors would result in a **significant** impact related to project construction.

Mitigation Measure 6.1. Prepare a Construction Traffic Control Plan.

Prior to any construction activities for the project site, the project applicant shall prepare a detailed Construction Traffic Control Plan (CTCP) and submit it for review and approval by the City Department of Public Works Engineering and Transportation. The applicant and the City shall consult with Yolo County, Caltrans, Unitrans, Yolobus, and local emergency service providers for their input prior to approving the CTCP. The CTCP shall ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. A copy of the CTCP shall be submitted to local emergency response agencies and the agencies shall be notified at least 14 days prior to the commencement of construction that would partially or fully obstruct roadways. At a minimum, the CTCP shall include:

- The number of truck trips, time, and day of street closures
- Time of day of arrival and departure of trucks
- Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting
- Provision of a truck circulation pattern that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation
- Resurface and/or repair any damage to roadways that occurs as a result of construction traffic
- Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas)
- Maintain safe and efficient access routes for emergency vehicles

- Manual traffic control when necessary
- Proper advance warning and posted signage concerning street closures
- Provisions for pedestrian safety

Significance after Mitigation

Implementation of Mitigation Measure 6.1 would reduce potential significant impacts associated with project construction activity to a **less-than-significant** level by minimizing the effects of project construction to the surrounding multi-modal transportation system.

Cumulative Impact Statements

Impact 7: Cumulative impacts to VMT on the roadway system.

Impact 1 provides an evaluation of potential project impacts to VMT under Existing Plus Project conditions. Under Existing Plus Project conditions, the proposed project would cause a significant impact to VMT by virtue of resulting in project-generated residential VMT per capita measuring above the applicable significance thresholds relative to existing local and regional residential VMT per capita averages. The VMT impact analysis for Existing Plus Project conditions applies to Cumulative Plus Project conditions for the following reasons:

- The VMT significance threshold compares project-generated residential VMT per capita to that of existing local and regional development. This comparison is useful because it provides information regarding how the project aligns with long-term environmental goals related to VMT established based on existing development levels. Use of VMT significance thresholds based on existing development levels is recommended in the LUCI *Technical Advisory*.
- The LUCI *Technical Advisory* explains that if a project-specific VMT analysis concludes that the proposed project falls below an efficiency-based VMT threshold and that the region is trending in the right direction in terms of long-term environmental goals and relevant plans, then that same project is presumed to not have a significant cumulative VMT impact. Using this logic, the converse is also true, meaning that the proposed project's cumulative VMT impact is significant because its project-specific VMT impact was also found significant.

Based on the above, the proposed project's cumulative VMT impact would be considered **significant**.

Mitigation Measure 7.1. Implement transportation demand management (TDM) strategies to reduce project-generated residential VMT per capita.

Implement Mitigation Measure 1.1 (Implement TDM strategies to reduce project-generated residential VMT per capita).

Significance after Mitigation

Implementation of Mitigation Measure 7.1 would reduce residential VMT per capita associated with the project residential component by implementing TDM strategies to reduce external vehicle trips generated by project residents. However, the effectiveness of the TDM strategies cannot be quantified at this time and subsequent vehicle trip reduction effects cannot be guaranteed. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by private entities (e.g., elective use of carpool program by residents) and other agencies (e.g., transit service operators). Finally, even if implemented, it is uncertain if TDM strategies would be able to sufficiently reduce VMT generated by the project to levels below the thresholds of significance.

Due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce cumulative VMT impacts to less-than-significant levels, cumulative VMT impacts associated with the proposed project would be considered **significant and unavoidable**.

Impact 8: Cumulative impacts to bicycle and pedestrian facilities.

Aside from those included as part of the proposed project, no reasonably foreseeable new bicycle or pedestrian facilities would be constructed within the immediate vicinity of the project site under cumulative conditions. However, bicycle, pedestrian, and vehicle travel activity would increase in the project site vicinity due to the proposed project and other reasonably foreseeable land use development located on the East Covell Boulevard/Mace Boulevard corridor such as the Palomino Place, Village Farms, Bretton Woods projects, and DiSC 2022 projects. Growth in background travel activity would not materially change the adverse effects to bicycle and pedestrian facilities that would be attributable to the project. Therefore, the project-specific bicycle and pedestrian impact analysis provided in Impact 2 would similarly apply to cumulative plus project conditions. As a result of Mitigation Measure 3.2, the project is recommended to construct westbound right-turn lanes at the project's two access points on East Covell Boulevard. As there is currently a Class II bike lane on westbound East Covell Boulevard, the addition of these turn lanes would increase conflicts between bicyclists and vehicles. Thus, Mitigation Measure 3.2 would cause a secondary impact resulting in the proposed project conflicting with a program, plan, ordinance, or policy addressing pedestrian facilities or bicycle facilities, thereby resulting in a ***significant*** impact.

Mitigation Measure 8.1. *Install high visibility bike lane conflict markings on westbound East Covell Boulevard at the project's two access points.*

Implement Mitigation Measure 2.1.

Significance after Mitigation

Implementation of Mitigation Measure 8.1 would reduce cumulative significant impacts to bicycle and pedestrian facilities associated with the proposed project to a **less-than-significant** level.

Impact 9: Cumulative impacts to transit service and facilities.

Under cumulative conditions, substantial increases in background vehicle travel activity would occur on study area roadways due to reasonably foreseeable land use development elsewhere in and around Davis. Together with the increase in vehicle travel activity caused by the project (including a new, north leg to the East Covell Boulevard/Alhambra Drive intersection), this would cause adverse effects to transit operations by increasing transit service delay and running times in a manner inconsistent with Unitrans performance standards. Therefore, the project-specific transit service and facility impact analysis provided in Impact 3 would similarly apply to cumulative plus project conditions. This would constitute a **significant** impact to transit service and facilities under cumulative conditions.

Mitigation Measure 9.1. Construct dedicated right-turn lanes on westbound East Covell Boulevard at the two project accesses.

Implement Mitigation Measure 3.1.

Mitigation Measure 9.2. Pay fair share cost to plan and implement transit service and facility improvements serving the project vicinity.

Prior to occupancy of the first residential unit during Phase 1, The project applicant shall contribute fair share funding for the completion of a "Transit Service and Facilities Plan" for the area encompassing the project site and other development areas along the north side of the Covell Boulevard and Mace Boulevard corridor between the westerly city limits and the I-80 interchange. The plan shall be led either by Unitrans and Yolobus, or by the City with Unitrans and Yolobus participating as active project partners. The plan shall be guided by the Unitrans and Yolobus service development processes. The plan shall identify transit service and facility

improvements required in accordance with Unitrans and Yolobus policies related to unmet transit needs, improvement timing, transit service warrants, and performance standards.

As applicant funds would be contributing toward plan development, the plan should explicitly focus on implementing improvements that would address project-related contributions to unmet transit needs and project-related deficiencies with respect to transit service warrants and performance standards. The project shall not be responsible for implementing improvements that address existing deficiencies. Potential transit improvements include, but are not limited to, the following:

1) Modifying existing transit routes or adding new routes to serve the project site, adding service capacity (through increased headways and/or larger vehicles) to prevent overcrowding and maintain productivity standards.
2) Constructing transit priority treatments to improve on-time performance (i.e., transit signal priority and/or ITS upgrades at East Covell Boulevard traffic signals, transit queue jumps at East Covell Boulevard intersections, etc.).
3) Improving terminal facilities (i.e., stops) to accommodate additional passengers and transit vehicles.
4) Implementing transit pass/fare subsidies for residents and employees.

Improvements shall be selected based on relevant performance data and targeted to address those areas not meeting established Unitrans or Yolobus performance standards. Transit facility improvements shall be designed and constructed pursuant to applicable City of Davis, Unitrans, and Yolobus standards.

The project applicant's fair share funding mechanism shall include funding for capital costs and on-going operation of transit services. On-going annual fair share fees would be identified and paid by the applicant to fund necessary transit service and facility improvements. Fair share fees would be assessed on all future project land uses that generate an increased demand for transit services, including residential, commercial, civic, and recreation land uses. The project's funding contributions allocated through the funding mechanism shall be limited to improvements and/or portions of improvements that are attributable to the project's contributions to deficient transit service and/or operations. The project shall not contribute funding towards improvements needed to address existing deficiencies and/or improvements needed to address deficiencies attributable to other future land use projects.

Prior to establishing the funding mechanism and after completion of the "Transit Service and Facilities Plan" by Unitrans and Yolobus, or by the City with Unitrans and Yolobus participating as active project partners, the applicant shall submit to the City for review and approval a complete and adequate report supporting the level of fair share assessments/fees necessary for the establishment and continuation of the funding mechanism. The report shall be prepared by a registered engineer, in consultation with a qualified financial consultant. The report shall identify the fair share of transit services intended to be funded by the funding mechanism, the cost to establish and operate these services, the portion of the overall costs to be funded by the applicant, and the assessment/fees to obtain the necessary funding, including a methodology for calculating fee increases over time. A transit service to be explicitly funded by the funding mechanism and included in the report would be the implementation of transit service and facilities improvements necessary to adhere to Unitrans and Yolobus policies related to unmet transit needs, transit service warrants, and performance standards. Project contributions towards on-going operating costs shall consider other regular established transit funding sources, such as the State of California Local Transportation Fund (LTF) and State Transit Assistance (STA) fund, as well as potential contributions from other future development that would benefit from these transit improvements.

Mitigation Measure 9.3. Pay fair share cost to construct a second westbound travel lane on East Covell Boulevard along the project frontage.

Extreme delays and queuing are anticipated on westbound East Covell Boulevard at the Alhambra Drive/Westerly Project Access intersection under cumulative plus project conditions. During the PM peak hour, the volume on this segment would increase from 516 vehicles under existing conditions to 703 vehicles under existing plus project conditions, and to 961 vehicles under cumulative plus project conditions. Project traffic would represent 42% of westbound PM peak hour traffic growth on this segment of East Covell Boulevard.

While Mitigation Measure 3.2 (adding westbound right-turn lanes at both project accesses) would benefit operations, the cumulative effects of additional background trips plus the addition of project trips necessitates a second westbound through lane to avoid causing added delays to buses traveling in that direction. The addition of the second westbound travel lane along the project frontage (just under 0.5 miles in length) would reduce the average PM peak hour delay per vehicle at the East Covell Boulevard/Alhambra Drive/Westerly Project Access intersection from about three minutes (without the improvement) to 30 seconds (with the improvement).

According to the typical street cross-section drawings for East Covell Boulevard along the project frontage, the project would dedicate 10 feet of frontage for a Class I multi-use path and 25 feet of frontage for a landscape setback. The width needed for the second westbound travel lane would be expected to come from the landscape setback.

A potential indirect effect of this mitigation measure is induced VMT, which can generally be defined as an increase in driving due to reduced travel times from added lane miles. The City of Davis cumulative travel demand model was run without and with the 0.48-mile widening of westbound East Covell Boulevard from one to two lanes along the project frontage. The model did not predict any change in total citywide VMT resulting from the widening, though about 300 vehicles per day diverted onto this segment from parallel roadways. The following two other sources of VMT analysis were also examined for applicability:

1. California Induced Travel Calculator[11] – estimates the VMT induced annually as a result of adding general-purpose lane miles or carpool or toll lane miles to publicly owned roadways. The calculator applies only to facilities with Federal Highway Administration (FHWA) functional classifications of 1, 2 or 3, which are interstate highways, freeways/expressways, principal arterials, respectively. The Caltrans functional class map[12] indicates that this segment of East Covell Boulevard is a minor arterial. Thus, the calculator is not appropriate to use to estimate induced VMT associated with this widening.
2. *Technical Advisory* Qualitative Guidance – Pages 20 and 21 of the *Technical Advisory* list 27 different types of projects that "would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis". That list includes the following:
    - Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety.
    - Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit.

    If a one-mile auxiliary lane added to a freeway or expressway would not lead to an increase in vehicle travel as stated above, it is logical that a less than one-half mile lane addition to an arterial would also not lead to new vehicle travel. Since Caltrans functional class maps refer to this segment as a minor arterial and the widening would also include

11 Source: California Induced Travel Calculator
12 Source: California Road System - Functional Classification

enhanced bicycle and pedestrian facilities and two new bus stops, conditions associated with the second bullet above also appear to be met.

The *City's General Plan Transportation Element* (2013) includes Map 4, which shows Year 2015 planned number of roadways on streets throughout the City. That map shows East Covell Boulevard having three total travel lanes along the project frontage. Page 22 states the following: "The roadway configurations assumed through 2015 (as shown in standards, tables and maps) are based on existing and anticipated land uses through 2015. The Transportation element does not determine the roadway configurations needed in 2035 because the Land Use element would need to be updated with a consistent long-term time frame". Thus, the widening of East Covell Boulevard to add a second westbound travel lane along the project frontage would not represent an inconsistency with the general plan because the general plan did not study or contemplate roadway lane requirements beyond 2015.

Significance after Mitigation

Implementation of Mitigation Measures 9.1 through 9.3 would reduce the significance of this impact. Mitigation Measure 9.3, which is feasible, would have a tangible benefit to buses by eliminating the increase in travel time on westbound East Covell Boulevard caused by the project. However, the remaining fair share contribution sources to enable its construction are not currently known. Additionally, the specific improvements and associated funding sources identified in the transit service and facilities plan (Mitigation Measure 9.2) are not known at this time. Since it is not guaranteed that these improvements would be implemented and/or effective, this impact would remain **significant and unavoidable**. Impacts associated with induced VMT caused by the lane addition on East Covell Boulevard are less than significant and do not require mitigation.

Impact 10: Cumulative impacts to emergency vehicle access.

The project would include two vehicular access points on East Covell Boulevard. These connections would provide multiple opportunities and routes for emergency vehicles to access the site from multiple directions. The cumulative condition would be representative of more overall vehicular traffic in northeast Davis and a likelihood for more frequent emergency calls for service. The Davis Fire Department has identified a need for a public safety center (PSC) in the northeastern portion of the City. If the facility is not accommodated elsewhere (e.g., in Village Farms), the proposed project would reserve land to accommodate the PSC on its southwestern multi-family parcel (adjacent to East Covell Boulevard). The PSC would have a dedicated entry and exit onto East Covell Boulevard. The PSC is not included as part of the proposed project, and would be subject to independent environmental review if developed. However, it is reasonable to expect the PSC to be built somewhere in northeast Davis under cumulative conditions. Traffic signals on East Covell Boulevard are equipped with emergency vehicle pre-emption equipment, enabling emergency responders to turn signals to green. Medical emergency service access to/from

Sutter Davis Hospital (located 3.7 miles west of the project site) would be available via East Covell Boulevard via the signalized project access opposite Alhambra Drive. Additionally, the design of the on-site roadways and intersections will be subject to City of Davis code and Public Works Department staff review and approval. Altogether, this impact is considered **less-than-significant**.

Mitigation Measures

No mitigation measures required.

Impact 11: Cumulative hazards impacts.

Peak hour traffic operations were analyzed to determine the extent to which the project would cause off-ramp queues to spill back to the I-80 and SR 113 mainline under cumulative conditions. **Table 6** displays the maximum freeway off-ramp queues at the SR 113/West Covell Boulevard, I-80/Mace Boulevard/Chiles Road, and I-80/County Road 32A/County Road 32B interchanges under cumulative conditions. As shown, maximum queues would spill back onto the freeway mainline at the West Covell Boulevard/SR 113 Southbound Ramps, West Covell Boulevard/SR 113 Northbound Ramps, Mace Boulevard/I-80 Westbound Off-Ramp, and Chiles Road/I-80 Eastbound Ramp ramp terminal intersections, which would conflict with Caltrans performance expectations related to safety for the State Highway System. Altogether, this impact would be **significant**.

Table 6: Freeway Off-Ramp Queuing – Cumulative Conditions

Off-Ramp	Off-Ramp Distance[1]	Maximum Queue Length[2]	
		Cumulative Conditions	
		AM Peak Hour	PM Peak Hour
West Covell Boulevard/SR 113 SB Ramps	1,375 feet	1,975 feet	1,175 feet
West Covell Boulevard/SR 113 NB Ramps	1,275 feet	1,350 feet	1,900 feet
Mace Boulevard/I-80 WB Off-Ramp	1,200 feet	2,875 feet	300 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	550 feet	1,350 feet
County Road 32A/I-80 WB Ramps	1,020 feet	175 feet	200 feet
Chiles Road/County Road 32B/I-80 EB Ramps	875 feet	50 feet	50 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Maximum queue estimates are based on results from SimTraffic micro-simulation model. Queues are maximum per lane, rounded up to the nearest 25 feet.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.
Source: Fehr & Peers, 2025.

Mitigation Measure 11.1. Contribute fair share funding towards improvements at the West Covell Boulevard/SR 113 and Mace Boulevard/Chiles Road/I-80 interchanges.

The project applicant shall contribute fair share funding to cover their proportionate cost of the following improvements at the West Covell Boulevard/SR 113 and Mace Boulevard/Chiles Road/I-80 interchanges (including nearby surface street intersections that affect interchange operations):

- Covell Boulevard between Shasta Drive/Risling Court and Birch Lane: Coordinate traffic signals, optimize signal timings, and operate with a 140 second cycle length during the a.m. peak period and a 150 second cycle length during the p.m. peak period. Note that these improvements may require controller or communications upgrades.

- Mace Boulevard between Alhambra Drive and Cowell Boulevard: Coordinate traffic signals, optimize signal timings, and operate with a 150 second cycle length during the a.m. and p.m. peak periods. Note that these improvements may require controller or communications upgrades.

- West Covell Boulevard/SR 113 Southbound Ramps: Construct a second westbound left-turn lane from West Covell Boulevard and a second receiving lane on the southbound on-ramp.

- West Covell Boulevard/SR 113 Northbound Ramps: Modify the northbound off-ramp to consist of three lanes approaching West Covell Boulevard, including one left-turn lane, one shared left/through/right lane, and one right-turn lane. Construct a second eastbound left-turn lane on West Covell Boulevard.

- Mace Boulevard/Second Street/County Road 32A: Modify the northbound approach to consist of five lanes, including two left-turn lanes, two through lanes, and one right-turn lane.

- Mace Boulevard/I-80 Eastbound Slip On-Ramp: Extend the on-ramp and relocate the ramp meter 500 feet east of its current location to provide more ramp meter vehicle storage.

- Mace Boulevard/Chiles Road: Modify the southbound channelized right-turn lane to a standard, signal-controlled movement.

- Chiles Road/I-80 Eastbound Off-Ramp: Modify the westbound approach to consist of a single through lane. Modify the eastbound approach to consist of two through lanes and begin the second through lane at the Hanlees Davis Toyota driveway.

- Mace Boulevard between Second Street/County Road 32A and Chiles Road: Construct bicycle and pedestrian facility improvements on this segment of Mace Boulevard. Potential improvement options include a Class I shared-use path, Class II bike lanes, or Class IV separated bikeways. Bicycle facility improvements should reduce the potential for conflicts involving bicyclists at intersections, crossings, and other mixing zones, including (but not limited to) appropriate pavement markings, signage, and physical separation. Pedestrian facility improvement options include modifications to pedestrian crossings of free/channelized vehicular movements to reduce the speed of turning vehicles and to reduce pedestrian exposure to conflicting vehicular traffic.

Significance after Mitigation

Implementation of Mitigation Measure 11.1 would reduce proposed project cumulative impacts by decreasing the degree of vehicle queue spillback at the Mace Boulevard/I-80 and SR 113/Covell Boulevard interchange areas. However, elements of Mitigation Measure 11.1 would occur within Caltrans rights-of-way and would be subject to final approval and actions by Caltrans. Moreover, since the remaining fair share contributions needed for the construction of these improvements have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Therefore, the implementation and effectiveness of these measures cannot be guaranteed and this impact would be considered **significant and unavoidable**.

Appendix A: Trip Generation Memorandum

FEHR PEERS

MEMORANDUM

Date: March 4, 2025

To: Nick Pappani, Raney Planning & Management

From: Greg Behrens and Raina Joby, Fehr & Peers

Subject: ***Willowgrove Property Project Trip Generation***

SA24-0248

This memorandum summarizes the proposed Willowgrove Property (formerly Shriners) project's land uses and estimated weekday daily and peak hour project trip generation.

Project Location

The approximately 232-acre proposed project is located north of the intersection of East Covell Boulevard and Alhambra Drive and adjacent to the northeastern boundary of the City of Davis. The project site is located outside of the City of Davis City Limits and Sphere of Influence. Surrounding uses include agricultural land to the north and east; a City-owned public trail easement to the northeast; Frances Harper Junior High School to the southeast, across East Covell Boulevard; single-family residences to the south, across East Covell Boulevard; and the recently approved Palomino Place residential development, single-family residences, and Wildhorse Golf Course to the west.

Approximate travel distances between the project site and other local activity centers (as measured from the center of the project site) are as follows:

- Harper Junior High School – 0.8 mile
- Korematsu Elementary School – 0.8 mile
- Birch Lane Elementary School – 1.5 miles
- Oak Tree Plaza Shopping Center – 1.7 miles
- Target Shopping Center – 2.0 miles
- El Macero Shopping Center – 2.2 miles
- Davis Senior High School – 2.9 miles
- Downtown Davis – 3.3 miles
- UC Davis (Memorial Union Building) – 3.8 miles

Project Description

According to the project description (*Willowgrove Project Description*, January 2025), the proposed project would consist of the following uses:

- A total of 1,250 dwelling units, comprised of both affordable and market-rate single- and multi-family residences.
- 19.5 acres of parks, including a community park, mini-park, and dog park. The community park would include a playground, recreation center, two lighted softball fields, one multi-purpose (soccer/lacrosse) field, and six lighted pickleball courts.

- A 1.5-acre site for neighborhood retail.
- 43.9 acres of urban agricultural transition area.
- 7.3 acres of neighborhood greenbelts.
- A daycare facility (within the High Density Residential parcel) with approximately 6,300 square feet of building space and 2,700 square feet of playing area.

Vehicle access would be provided via two intersections on East Covell Boulevard. Bicycle and pedestrian access would be provided via East Covell Boulevard on the south edge of the project site and via on-site trails on the east, west, and north edges of the project site. Several connections to the west would be made to the Wildhorse Agricultural Buffer trail system.

Trip Generation Methodology

MXD+

This analysis utilizes the mixed-use trip generation (MXD+) tool to estimate project vehicle trip generation, including internal trip capture that would result from complementary land uses within the project site.

Prior to 2007, conventional methods available to transportation engineers systematically overestimated the trips generated by and impacts of mixed-use development because they did not accurately reflect the amount of internal trip linking or the level of external trips made by transit, biking, and/or walking. This resulted in increased development costs, due to oversized infrastructure, skewed public perception, and resistance to approving smart growth. While the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* does include a methodology for estimating internal trips, it only applies to AM and PM peak hour conditions and has been shown to be less accurate than more academically-oriented efforts.

In the early 2000's, two significant research studies provided the opportunity to improve the state of practice. One study sponsored by the US EPA (MXD) and another by the Transportation Research Board (NCHRP 684) have developed means to improve trip generation estimation for mixed-use development (MXD). The two studies examined over 240 mixed-use development sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MXD+) that combines the strengths of the two individual tools to establish a new best practice. MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development.

The MXD+ method explains 97 percent of the variation in trip generation among mixed-use developments, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly (2 to 4 percent) conservative to avoid systematically understating impacts, it substantially reduces the 35 to 37 percent average overestimate of traffic generation produced by conventional ITE methods.

MXD+ improves the accuracy of impact estimation and gives planners a tool to rationally balance land use mix and to incorporate urban design, context compatibility, and transit orientation to create lower impact development. Fehr & Peers has applied MXD+ on hundreds of EIRs throughout California over the past

decade, including EIRs for several projects in the City of Davis such as Village Farms Davis, The Cannery, the West Davis Active Adult Community, and the DiSC 2022 projects.

Inputs for the MXD+ tool include the types and quantities of project land uses, in accordance with land use categories included in the ITE *Trip Generation Manual, 11th Edition* (Institute of Transportation Engineers, 2021). Other inputs include on-site walkability, presence and quality of transit service, number of jobs within one-mile of the project site, household auto ownership in area, and other variables.

Table 1 summarizes the individual Willowgrove Property project land uses per the updated *Project Description* (January 2025) as well as their corresponding ITE land use type, code, and quantity used in this analysis. Information needed to identify the appropriate ITE residential land use categories was previously verified by City of Davis staff and the project applicant team

Bicycle, Walking, and Transit Trip Reductions

This analysis utilizes US Census Bureau American Community Survey (ACS) journey to work mode share data to estimate external peak hour vehicle trip reductions attributable to bicycle, pedestrian, and transit (i.e., non-auto) use. Because trip rates from the ITE *Trip Generation Manual* are derived from primarily suburban locations (across the US) that have limited transit and bicycle/pedestrian facilities, this process requires accounting for local and national commute mode share patterns, as follows:

1. Calculate non-auto journey to work mode share for existing residential neighborhoods near the project site with similar land use and transportation system characteristics.[1]
2. Calculate non-auto journey to work mode share for the United States.
3. Calculate the difference between local and national non-auto journey to work mode share.
4. Apply the local/national non-auto mode share difference to the raw external peak hour vehicle trip estimates attributable to home-based-work trips generated by the project's residential uses.[2]

Table 2 summarizes the non-auto journey to work mode share used in this analysis.

[1] Journey to work commute mode share data derived from ACS 2022 5-year estimates. Non-motorized mode share estimates represent the weighted averages for Census Tracts 105.05, 106.05, and 106.09, which include Wildhorse, Mace Ranch, and East Davis (east of L Street, north of East Eighth Street, and east of Pole Line Road). Travel behavior associated with existing residential uses within these Census Tracts would reasonably be expected to approximate that of the project residential uses given a) the proximity of these Census Tracts to the project site and b) their comparable land use patterns and transportation system setting relative to those of the project site.

[2] Home-based-work trip purpose percentages for residential uses derived from the Transportation Research Board (TRB) *National Cooperative Highway Research Program (NCHRP) Report 716: Travel Demand Forecasting: Parameters and Techniques* (2012). Residential home-based-work trip purpose percentages used in this analysis are 23%, 46%, and 31% for the daily, AM peak hour, and PM peak hour time periods, respectively.

FEHR PEERS

Table 1: Willowgrove Property Project – Proposed Land Uses

Notice of Preparation Project Description			Transportation Analysis Land Use Inputs	
Land Use Designation	**Land Use Type**	**Quantity[1]**	**ITE Land Use Category (Type and Code)**	**Quantity[1]**
Residential Low Density	Single-Family Detached Units	197 DU	Single Family Detached Housing (210)	197 DU
Residential Medium Density	Single-Family Detached Units	515 DU	Single Family Detached Housing (210)	515 DU
Residential High Density	Affordable Multifamily Units	250 DU	Affordable Housing Income Limits (223)	250 DU
	Other Multifamily Units	288 DU	Multifamily Housing Low Rise (220)	288 DU
Community Park	Recreation Center	9.5 KSF	Recreational Community Center (495)	9.5 KSF
	Softball Fields	2 Fields	Soccer Complex (488)[2]	2 Fields
	Multi-Purpose (Soccer/Lacrosse) Field	1 Field	Soccer Complex (488)	1 Field
	Pickleball Courts	6 Courts	Tennis Courts (490)[3]	6 Courts
	Neighborhood Retail	1.5 Acres	Strip Retail Plaza (822)	5 KSF
Daycare Center	Daycare Center	6.3 KSF	Daycare center (565)	6.3 KSF

Notes: [1] DU = Dwelling Unit. KSF = 1,000 square feet.
[2] ITE does not provide trip generation rates for softball fields. Therefore, ITE trip generation information for soccer fields is used as a reasonable approximation for softball fields due to the similar characteristics of the two uses (e.g., similar number of players utilizing fields, similar weekday practice schedules, etc.).
[3] ITE does not provide trip generation rates for pickleball courts. Therefore, ITE trip generation information for tennis courts is used as a reasonable approximation for pickleball courts due to the similar characteristics of the two uses (e.g., similar number of players utilizing courts, similar weekday utilization, etc.).

Sources: *Willowgrove Property Project Description*, January 17, 2025; Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*, 2021; N. Pappani, personal communication, May 14, 2024; Fehr & Peers, 2025.

Table 2: Willowgrove Property Project – Non-Auto Journey to Work Mode Share

Mode	Journey to Work Mode Share		
	Local[1]	National	Difference (Local – National)
Public Transportation	3.2%	3.8%	-0.6%
Walked	1.7%	2.4%	-0.7%
Bicycle	6.7%	0.5%	6.2%
Non-Auto Total	**11.6%**	**6.7%**	**4.9%**

Notes: [1] Local non-auto mode share estimates represent the weighted averages for Census Tracts 105.05, 106.05, and 106.09, which include Wildhorse, Mace Ranch, and East Davis neighborhoods immediately adjacent to the project site.
Source: US Census Bureau American Community Survey (ACS) 2022 5-year estimates, Table S0801; Fehr & Peers, 2025.

Project Trip Generation

Table 3 summarizes the estimated weekday and peak hour trip generation for the Willowgrove Property project using the methods described previously. The project would generate an estimated 10,428 net new daily trips, 740 net new AM peak hour trips, and 1,046 net new PM peak hour trips during a typical weekday.

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Table 3: Willowgrove Property Project – Vehicle Trip Generation

Land Use	ITE Code	Units	Quantity	Daily	AM In	AM Out	AM Peak Hour Total	PM In	PM Out	PM Total
Net New Uses										
Single-Family Detached	210[1]	Dwelling Units	712	6,714	129	369	498	421	248	669
Multifamily Housing Low Rise	220[2]	Dwelling Units	288	1,941	28	87	115	93	54	147
Affordable Housing	223[3]	Dwelling Units	250	1,203	36	89	125	68	47	115
Recreational Community Center	495[4]	1,000 Sq. Ft. GLA	9.5	274	12	6	18	11	13	24
Soccer Complex	488[5]	Fields	3	215	2	2	4	33	15	48
Tennis Courts	490[6]	Courts	6	182	3	3	6	18	7	25
Strip Retail Plaza	822[7]	1,000 Sq. Ft. GLA	5	272	7	5	12	17	17	33
Daycare Center	565[8]	1,000 Sq. Ft. GLA	6.3	300	37	32	69	33	37	70
		Raw External Vehicle Trips		*11,101*	*254*	*593*	*847*	*694*	*438*	*1,131*
Reductions										
		Internal Capture[9]		-568	-14	-34	-48	-36	-24	-60
		External Walk, Bike, and Transit[10]		-111	-4	-21	-25	-21	-5	-26
		Total Reductions		*-679*	*-18*	*-55*	*-73*	*-57*	*-29*	*-86*
		Net New External Vehicle Trips		**10,422**	**236**	**538**	**774**	**637**	**409**	**1,045**

Notes: Number of trips presented in the table above have been rounded to whole numbers and therefore might not match the exact value obtained when trip rates and directional distribution percentages are applied.

[1] ITE Trip Generation land use category (210) Single-Family Detached Housing (Adj Streets, 7-9A, 4-6P)
Daily: T = 9.43(X)
AM Peak Hour: T = 0.70(X) (25% in, 75% out)
PM Peak Hour: T = 0.94(X) (63% in, 37% out):

[2] ITE Trip Generation land use category (220) Multifamily Housing (Low-Rise) Not Close to Rail Transit (Adj Streets, 7-9A, 4-6P)
Daily: T = 6.74(X)
AM Peak Hour: T = 0.40(X) (24% in, 76% out)
PM Peak Hour: T = 0.51(X) (63% in, 37% out)

[3] ITE Trip Generation land use category (223) Affordable Housing - Income Limits (Adj Streets, 7-9A, 4-6P)
Daily: T = 4.81(X)

AM Peak Hour: T = (0.50(X) (29% in, 71% out))
PM Peak Hour: T = 0.46(X) (59% in, 41% out)

[4] ITE Trip Generation land use category (495) - Recreational Community Center (Adj Streets, 7-9A, 4-6P)
Daily: T = 28.82(X)
AM Peak Hour: T = 1.91(X) (66% in, 34% out)
PM Peak Hour: T = 2.50(X) (47% in, 53% out)

[5] ITE Trip Generation land use category (488) - Soccer Complex (Adj Streets, 7-9A, 4-6P). Includes multi-purpose field and softball fields project components.
Daily: T = 71.33(X)
AM Peak Hour: T = 0.99(X) 61% in, 39% out)
PM Peak Hour: T = 16.43(X) (66% in, 34% out)

[6] ITE Trip Generation land use category (490) - Tennis Courts (Adj Streets, 4-6P). Includes pickleball courts project component.
Daily: T = 30.32(X)
PM Peak Hour: T = 4.21(X)
Peak hour directional distribution for tennis courts not provided in ITE TGM. Percentages estimated by Fehr & Peers based on typical court arrivals and departures.

[7] ITE Trip Generation land use category (822) Strip Retail Plaza (<40k) (Adj Streets, 7-9A, 4-6P)
Daily: T = 54.45(X)
AM Peak Hour: T = 2.36(X) (60% in, 40% out)
PM Peak Hour: T = 6.59(X) (50% in, 50% out)

[8] ITE Trip Generation land use category (565) Daycare Center (Adj Streets, 7-9A, 4-6P)
Daily: T = 47.62(X)
AM Peak Hour: T = 11.00(X) (53% in, 47% out)
PM Peak Hour: T = 11.12(X) (47% in, 53% out)

[9] Internal capture reductions based on application of MXD+ model: Daily = 5.1%, AM Peak Hour = 5.9%, PM Peak Hour = 5.3%.

[10] External walk, bike, and transit trip reductions are derived from MXD+ model for daily trips and US Census Bureau ACS journey to work data.

Sources: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*, 2021; US Census Bureau American Community Survey (ACS) 2022 5-year estimates, Table S0801; Fehr & Peers, 2025.

Appendix B: Supporting Queuing Technical Calculations

Intersection 5 **SR 113 SB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	350	175	12	325	26	350	16	0%	0%
EB	Through/Right	1	350	250	19	400	22	375	17	0%	0%
WB	U/Left Turn	1	175	200	7	275	8	225	0	37%	5%
WB	Through	1	525	250	37	550	37	525	6	0%	0%
WB	Through	2	525	125	21	300	46	475	63	0%	0%
SB	Left/Through	1	1,375	250	54	400	118	475	129	0%	0%
SB	Right Turn	1	875	125	7	175	17	225	47	0%	0%

Intersection 6 **SR 113 NB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	150	75	4	125	11	150	26	0%	0%
EB	Through	1	525	75	8	150	25	225	68	1%	1%
EB	Through	2	525	100	5	175	15	225	29	0%	0%
WB	Through	1	475	175	17	300	35	350	43	0%	0%
WB	Through	2	475	125	14	225	26	275	42	2%	1%
WB	Right Turn	1	175	50	9	125	33	200	77	0%	0%
NB	Left/Through	1	1,275	150	20	250	30	300	45	0%	0%
NB	Right Turn	1	575	75	7	125	19	175	38	0%	0%

Intersection 33 **Mace Blvd & I-80 WB Ramps, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1	700	75	5	125	13	150	19	0%	0%
WB	Left/Through	1	1,225	100	9	175	21	200	29	0%	0%
NB	Left Turn	1	300	100	8	150	14	175	30	0%	0%
NB	Left Turn	2	300	125	6	175	16	200	47	0%	0%
NB	Through	1	500	75	9	150	21	200	54	0%	0%
NB	Through	2	500	25	7	75	23	125	48	0%	0%
SB	Through	1	1,100	175	43	400	101	500	103	0%	0%
SB	Through	2	1,100	275	38	475	90	550	139	8%	0%
SB	Right Turn	1	350	75	34	225	137	300	174	0%	0%

Intersection 35 **Chiles Rd & I-80 EB Off-Ramp, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	3,300	100	9	200	29	275	68	0%	0%
WB	Through	1	400	50	4	100	11	125	17	0%	0%
WB	Through	2	400	75	5	100	10	125	12	0%	0%
SB	Left Turn	1	1,100	25	4	75	7	75	14	0%	0%
SB	Left Turn	2	1,100	50	7	100	15	125	26	0%	0%
SB	Right Turn	1	825	25	3	75	5	75	12	0%	0%

Intersection 5 **SR 113 SB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	350	125	9	225	20	275	31	0%	0%
EB	Through/Right	1	350	125	10	250	24	300	31	0%	0%
WB	U/Left Turn	1	175	175	8	250	11	225	1	14%	3%
WB	Through	1	525	100	15	275	48	400	60	0%	0%
WB	Through	2	525	50	14	150	60	250	133	0%	0%
SB	Left/Through	1	1,375	125	19	200	31	250	54	0%	0%
SB	Right Turn	1	875	75	6	125	11	150	27	0%	0%

Intersection 6 **SR 113 NB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turn	1	150	100	8	175	17	175	24	4%	3%
EB	Through	1	525	75	7	150	16	200	36	0%	0%
EB	Through	2	525	75	6	125	16	150	30	0%	0%
WB	Through	1	475	200	17	300	30	325	41	0%	0%
WB	Through	2	475	150	14	225	24	275	30	4%	1%
WB	Right Turn	1	175	75	10	125	39	200	77	0%	0%
NB	Left/Through	1	1,275	175	10	250	20	325	48	0%	0%
NB	Right Turn	1	575	200	25	325	55	375	59	0%	0%

Intersection 33 **Mace Blvd & I-80 WB Ramps, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1	700	100	6	150	13	175	25	0%	0%
WB	Left/Through	1	1,225	100	6	150	11	175	27	0%	0%
WB	Right Turn	1	1,225	25	0	25	3	25	8	0%	0%
NB	Left Turn	1	300	50	6	100	8	125	19	0%	0%
NB	Left Turn	2	300	75	5	125	8	125	20	0%	0%
NB	Through	1	500	75	9	125	22	175	37	0%	0%
NB	Through	2	500	25	5	50	18	100	42	0%	0%
SB	Through	1	1,100	550	192	1,000	314	1,000	239	0%	0%
SB	Through	2	1,100	650	206	1,125	339	1,100	225	49%	0%
SB	Right Turn	1	350	250	109	525	92	425	0	0%	0%

Intersection 35 **Chiles Rd & I-80 EB Off-Ramp, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	3,300	2,550	378	4,300	158	3,350	15	0%	0%
WB	U/Through	1	400	25	6	75	10	100	16	0%	0%
WB	Through	1	400	50	7	100	9	100	12	0%	0%
SB	Left Turn	1	1,100	25	2	50	5	50	13	0%	0%
SB	Left Turn	2	1,100	50	10	125	25	175	30	0%	0%
SB	Right Turn	1	825	25	4	50	5	75	13	0%	0%

Intersection 5 **SR 113 SB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	350	225	14	375	15	375	7	0%	0%
EB	Through/Right	1	350	300	16	425	13	375	8	0%	0%
WB	U/Left Turn	1	175	225	4	250	9	225	0	47%	3%
WB	Through	1	525	350	27	600	33	525	10	0%	0%
WB	Through	2	525	175	15	400	24	525	14	0%	0%
SB	Left/Through	1	1,375	250	27	400	60	425	70	0%	0%
SB	Right Turn	1	875	125	12	200	19	225	37	0%	0%

Intersection 6 **SR 113 NB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	150	75	7	125	18	175	37	0%	0%
EB	Through	1	525	100	10	200	15	250	24	2%	1%
EB	Through	2	525	125	10	225	19	250	27	0%	0%
WB	Through	1	475	225	14	350	29	400	39	0%	0%
WB	Through	2	475	125	15	250	37	325	75	3%	1%
WB	Right Turn	1	175	50	11	125	40	225	56	0%	0%
NB	Left/Through	1	1,275	175	11	275	23	325	44	0%	0%
NB	Right Turn	1	575	100	7	200	19	250	34	0%	0%

Intersection 33 **Mace Blvd & I-80 WB Ramps, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1	700	75	5	125	11	150	28	0%	0%
WB	Left/Through	1	1,225	125	10	175	17	225	18	0%	0%
NB	Left Turn	1	300	100	9	175	20	200	39	0%	0%
NB	Left Turn	2	300	125	8	175	17	200	35	0%	0%
NB	Through	1	500	100	11	175	20	225	39	0%	0%
NB	Through	2	500	25	7	75	19	125	33	0%	0%
SB	Through	1	450	250	36	450	66	475	51	0%	0%
SB	Through	2	450	325	29	525	55	525	17	16%	9%
SB	Right Turn	1	350	150	42	400	79	425	0	0%	0%

Intersection 35 **Chiles Rd & I-80 EB Off-Ramp, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	3,300	125	9	225	24	300	56	0%	0%
WB	Through	1	400	50	5	100	13	125	29	0%	0%
WB	Through	2	400	75	4	125	11	150	22	0%	0%
SB	Left Turn	1	1,100	50	4	75	5	75	14	0%	0%
SB	Left Turn	2	1,100	75	9	125	21	175	44	0%	0%
SB	Right Turn	1	825	25	4	75	5	75	10	0%	0%

Intersection 5 **SR 113 SB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	350	150	9	250	21	300	39	0%	0%
EB	Through/Right	1	350	150	9	275	22	300	30	0%	0%
WB	U/Left Turn	1	175	175	10	250	9	225	1	17%	4%
WB	Through	1	525	125	41	325	91	425	73	0%	0%
WB	Through	2	525	50	16	125	70	225	146	0%	0%
SB	Left/Through	1	1,375	150	16	225	24	275	42	0%	0%
SB	Right Turn	1	875	75	7	125	13	150	29	0%	0%

Intersection 6 **SR 113 NB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turn	1	150	100	6	175	15	200	23	8%	3%
EB	Through	1	525	100	8	175	17	250	40	1%	1%
EB	Through	2	525	100	7	150	13	175	26	0%	0%
WB	Through	1	475	225	17	325	23	375	61	0%	0%
WB	Through	2	475	175	13	275	19	325	44	6%	2%
WB	Right Turn	1	175	75	10	150	34	225	42	0%	0%
NB	Left/Through	1	1,275	175	10	250	20	300	28	0%	0%
NB	Right Turn	1	575	275	37	450	68	525	88	0%	1%

Intersection 33 **Mace Blvd & I-80 WB Ramps, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1	700	100	9	175	55	225	182	0%	0%
WB	Left/Through	1	1,225	125	21	200	120	300	262	0%	0%
NB	Left Turn	1	300	100	81	225	285	350	421	0%	0%
NB	Left Turn	2	300	75	9	125	11	125	16	0%	0%
NB	Through	1	500	75	8	150	25	175	45	0%	0%
NB	Through	2	500	50	34	125	51	175	68	0%	0%
SB	Through	1	450	350	207	500	263	450	174	0%	0%
SB	Through	2	450	475	52	625	38	550	12	50%	35%
SB	Right Turn	1	350	400	72	600	29	475	66	20%	33%

Intersection 35 **Chiles Rd & I-80 EB Off-Ramp, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	3,300	1,825	154	4,200	170	3,350	17	0%	0%
WB	U/Through	1	400	50	6	75	15	100	19	0%	0%
WB	Through	1	400	50	6	100	12	100	17	0%	0%
SB	Left Turn	1	1,100	25	2	50	2	50	12	0%	0%
SB	Left Turn	2	1,100	75	14	150	49	200	73	0%	0%
SB	Right Turn	1	825	25	4	50	4	50	12	0%	0%

SimTraffic Post-Processor Average Results from 10 Runs | **Willowgrove Property TIS**
Queue Length By Lane With Improvements | **Existing Plus Project Conditions**
AM Peak Hour

Intersection 1 **County Rd 99-Lake Blvd/W Covell Blvd** **All-way Stop**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	250	25	3	50	3	50	0	0%	0%
EB	Through	1	1,575	75	4	100	10	125	22	3%	1%
WB	Left Turn	1	200	50	4	75	9	100	19	0%	0%
WB	Through/Right	1	500	75	3	100	8	125	14	0%	0%
NB	Left Turn	1	50	25	2	50	5	75	16	0%	0%
NB	Through	1	925	50	4	75	14	100	39	2%	1%
NB	Right Turn	1	75	25	4	25	21	50	48	0%	0%
SB	Shared	1	1,250	50	4	75	6	75	7	0%	0%

Intersection 2 **Denali Dr/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	1,350	75	8	125	19	175	26	4%	1%
WB	Left Turn	1	125	50	7	100	15	125	30	0%	0%
WB	Through	1	1,025	25	6	75	16	125	23	0%	0%
NB	Left Turn	1	125	50	5	75	6	75	7	0%	0%

Intersection 5 **SR 113 SB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	350	225	12	375	25	350	11	0%	0%
EB	Through/Right	1	350	300	9	425	15	375	11	0%	0%
WB	U/Left Turn	1	175	225	4	250	9	225	0	48%	4%
WB	Through	1	525	350	36	625	36	525	8	0%	0%
WB	Through	2	525	175	38	425	87	500	51	0%	0%
SB	Left/Through	1	1,375	250	29	425	61	500	82	0%	0%
SB	Right Turn	1	875	125	12	200	26	225	43	0%	0%

Intersection 6 **SR 113 NB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	150	75	8	125	14	175	33	0%	0%
EB	Through	1	525	100	8	200	18	250	29	2%	1%
EB	Through	2	525	125	12	225	26	275	36	0%	0%
WB	Through	1	475	250	24	400	33	475	25	0%	0%
WB	Through	2	475	125	11	275	33	375	54	3%	1%
WB	Right Turn	1	175	75	8	150	23	250	0	0%	0%
NB	Left/Through	1	1,275	200	24	300	59	350	86	0%	0%
NB	Right Turn	1	575	100	8	175	17	200	43	0%	0%

Intersection 32 **Mace Blvd & Second St/Co Rd 32A, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turn	1	275	50	4	100	10	125	21	0%	0%
EB	Through	1	875	25	3	25	6	50	10	0%	0%
EB	Right Turn	1	875	25	6	75	32	150	59	0%	0%
WB	Left Turn	1	175	25	3	50	4	50	10	0%	0%
WB	Through/Right	1	650	50	5	75	12	100	27	0%	0%
NB	Left Turn	1	350	350	51	475	35	425	0	25%	17%
NB	Through	1	650	400	154	750	183	725	71	6%	3%
NB	Through/Right	1	650	175	128	550	280	600	190	0%	0%
SB	U/Left Turn	1	200	25	3	50	5	75	6	0%	0%
SB	Through	1	200	250	6	300	16	300	13	0%	0%
SB	Through	2	200	275	5	300	11	300	6	0%	0%

Intersection 33 **Mace Blvd & I-80 WB Ramps, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1	700	100	6	150	13	175	28	0%	0%
WB	Left/Through	1	1,225	125	6	175	12	200	24	0%	0%
WB	Right Turn	1	1,225	25	11	50	54	75	101	0%	0%
NB	Left Turn	1	300	100	9	175	13	200	21	0%	0%
NB	Left Turn	2	300	125	7	200	16	225	47	0%	0%
NB	Through	1	500	100	17	200	29	250	56	0%	0%
NB	Through	2	500	50	8	100	31	150	61	0%	0%
SB	Through	1	450	225	57	425	91	450	75	0%	0%
SB	Through	2	450	300	56	475	96	475	72	12%	10%
SB	Right Turn	1	350	100	60	275	166	325	149	0%	0%

SimTraffic Post-Processor Average Results from 10 Runs Queue Length By Lane With Improvements

Willowgrove Property TIS
Existing Plus Project with Improvement Conditions
PM Peak Hour

Intersection 1 **County Rd 99-Lake Blvd/W Covell Blvd** **All-way Stop**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	250	0	3	50	2	50	7	0%	0%
EB	Through	1	1,575	50	2	75	7	100	16	2%	1%
WB	Left Turn	1	200	75	5	100	9	100	14	0%	0%
WB	Through/Right	1	500	75	4	100	4	100	6	0%	0%
NB	Left Turn	1	50	25	2	50	3	50	12	0%	0%
NB	Through	1	925	50	2	75	5	75	12	2%	1%
NB	Right Turn	1	75	25	0	25	3	25	9	0%	0%
SB	Shared	1	1,250	50	3	75	8	75	20	0%	0%

Intersection 2 **Denali Dr/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	1,350	75	8	125	16	150	32	3%	1%
WB	Left Turn	1	125	50	4	100	8	125	13	0%	0%
WB	Through	1	1,025	25	6	50	20	100	30	0%	0%
NB	Left Turn	1	125	25	3	50	4	50	10	0%	0%

Intersection 3 **Risling Ct-Shasta Dr/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	175	25	4	50	8	50	16	0%	0%
EB	Through	1	175	75	9	150	10	175	19	0%	0%
EB	Through	2	825	75	6	150	8	175	26	13%	2%
EB	Right Turn	1	75	25	2	25	21	50	61	0%	0%
WB	U/Left Turn	1	325	50	3	100	9	125	19	0%	0%
WB	Left Turn	1	325	75	4	125	9	125	18	0%	0%
WB	Through	1	550	75	7	175	13	200	29	0%	0%
WB	Through	2	550	50	6	100	20	175	35	1%	1%
NB	U/Left Turn	1	150	25	2	50	3	50	7	0%	0%
NB	Through	1	375	25	1	25	6	50	13	0%	0%
NB	Right Turn	1	75	25	4	50	11	75	8	0%	0%
SB	Left Turn	1	100	50	3	100	7	100	13	1%	1%
SB	Through/Right	1	650	25	3	50	4	50	11	0%	0%

Intersection 4 **John Jones Rd/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	125	50	8	75	20	125	40	0%	1%
EB	Through	1	550	75	9	150	28	200	32	2%	1%
EB	Through	2	550	75	10	175	23	200	30	0%	0%
WB	Through	1	350	125	13	225	22	250	25	0%	0%
WB	Through	2	350	50	12	150	33	200	54	1%	1%
WB	Right Turn	1	100	50	4	75	9	100	31	0%	0%
SB	Left Turn	1	225	150	13	225	18	225	7	3%	2%
SB	Right Turn	1	1,125	50	10	125	54	275	102	0%	0%

Intersection 5 **SR 113 SB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	350	150	13	275	15	325	28	0%	0%
EB	Through/Right	1	350	150	14	275	21	325	24	0%	0%
WB	U/Left Turn	1	175	200	7	250	9	225	1	18%	3%
WB	Through	1	525	125	32	325	62	400	70	0%	1%
WB	Through	2	525	50	9	150	42	350	113	0%	0%
SB	Left/Through	1	1,375	150	9	225	27	275	46	0%	0%
SB	Right Turn	1	875	75	9	125	12	150	21	0%	0%

Intersection 6 **SR 113 NB Ramps/W Covell Blvd** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turn	1	150	100	7	150	15	175	19	5%	2%
EB	Through	1	525	100	12	175	26	200	58	1%	1%
EB	Through	2	525	100	11	150	19	175	44	0%	0%
WB	Through	1	475	225	13	325	20	375	40	0%	0%
WB	Through	2	475	175	15	300	28	350	42	6%	2%
WB	Right Turn	1	175	75	12	175	38	225	42	0%	0%
NB	Left/Through	1	1,275	200	59	425	241	575	350	0%	0%
NB	Right Turn	1	575	350	77	600	148	625	108	7%	9%

Intersection 32 **Mace Blvd & Second St/Co Rd 32A, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turn	1	275	150	22	275	56	300	65	2%	3%
EB	Through	1	875	175	82	425	279	550	357	0%	1%
EB	Right Turn	1	875	300	91	650	215	725	235	0%	0%
WB	Left Turn	1	175	75	13	150	26	175	35	4%	5%
WB	Through/Right	1	650	50	9	125	32	175	87	0%	1%
NB	Left Turn	1	350	325	68	475	34	425	0	7%	10%
NB	Through	1	650	500	135	725	131	725	60	45%	26%
NB	Through/Right	1	650	275	211	575	265	625	88	0%	0%
SB	U/Left Turn	1	200	100	7	175	15	200	23	0%	0%
SB	Through	1	200	225	14	300	14	275	13	0%	0%
SB	Through	2	200	250	11	325	11	300	13	0%	0%
SB	Right Turn	1	200	25	2	25	17	25	49	0%	0%

Intersection 33 **Mace Blvd & I-80 WB Ramps, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1	700	100	11	175	55	250	177	0%	0%
WB	Left/Through	1	1,225	100	14	200	71	300	211	0%	0%
WB	Right Turn	1	1,225	75	103	225	357	275	471	0%	0%
NB	Left Turn	1	300	50	4	100	6	125	12	0%	0%
NB	Left Turn	2	300	75	4	125	7	125	17	0%	0%
NB	Through	1	500	100	18	175	30	200	42	0%	0%
NB	Through	2	500	25	12	75	27	125	31	0%	0%
SB	Through	1	450	450	54	650	36	550	16	0%	0%
SB	Through	2	450	475	41	650	27	550	12	64%	14%
SB	Right Turn	1	350	325	67	575	28	425	0	0%	0%

Intersection 34 **Mace Blvd & Chiles Rd, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	1	400	125	12	225	25	275	55	0%	0%
EB	Left Turn	2	400	325	26	475	16	400	2	0%	0%
EB	Through	1	400	225	35	400	52	400	23	0%	0%
WB	Left Turn	1	225	25	3	50	6	75	12	0%	0%
WB	Through	1	1,100	25	4	75	25	100	77	0%	0%
WB	Right Turn	1	225	100	9	175	17	225	29	1%	1%
NB	Left Turn	1	100	25	4	75	7	75	22	0%	0%
NB	Through	1	100	125	8	200	9	175	12	0%	0%
NB	Through/Right	1	100	175	5	200	5	200	13	0%	0%
SB	Left Turn	1	275	225	21	300	18	275	0	29%	13%
SB	Through	1	275	275	56	500	67	425	13	24%	14%
SB	Through	2	275	100	21	225	41	275	35	0%	1%

Intersection 35 **Chiles Rd & I-80 EB Off-Ramp, All Intervals** **Signal**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Through	1	3,300	1,525	369	3,725	521	3,350	17	0%	0%
WB	U/Through	1	400	25	6	75	11	100	16	0%	0%
WB	Through	1	400	50	7	100	11	100	17	0%	0%
SB	Left Turn	1	1,100	25	2	50	4	50	15	0%	0%
SB	Left Turn	2	1,100	75	22	125	60	175	75	0%	0%
SB	Right Turn	1	825	25	4	50	7	50	17	0%	0%